ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION, THIRD ROUND

Buffalo Pumps
City of N. Tonawanda

Site No. 932044
Niagara County

Date: January 1986

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Henry G. Williams, *Commissioner*

Division of Solid and Hazardous Waste
Norman H. Nosenchuck, P.E., *Director*

By:
ENGINEERING-SCIENCE
In Association With
DAMES & MOORE

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

BUFFALO PUMPS

NYS SITE NUMBER 932044

CITY OF NORTH TONAWANDA

NIAGARA COUNTY

NEW YORK STATE

Prepared For

DIVISION OF SOLID AND HAZARDOUS WASTE
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK 12233-0001

Prepared By

ENGINEERING-SCIENCE
290 ELWOOD DAVIS ROAD
LIVERPOOL, NEW YORK 13088

In Association With

DAMES & MOORE
2996 BELGIUM ROAD
BALDWINSVILLE, NEW YORK 13027

DATE OF SUBMITTAL: JANUARY, 1986

BUFFALO PUMPS

TABLE OF CONTENTS

SECTION I

EXECUTIVE SUMMARY

BUFFALO PUMPS

This report, prepared for the New York State Department of Environmental Conservation (NYSDEC), presents the results of the Phase I investigation of the Buffalo Pumps Division Site (NYS Site Number 932044, EPA Site Number D002127199) located in the City of North Tonawanda, Niagara County, New York (see Figure I-1).

SITE BACKGROUND

The site is owned by the Buffalo Pumps Division of the Buffalo Forge Company. The site plan for the Buffalo Pumps manufacturing facility and adjacent disposal area is presented in Figure I-2. From 1900 to 1953, foundry sands and boiler ash from the incineration of wood, paper, and paint wastes were disposed adjacent to the Buffalo Pumps manufacturing facility. Boiler ash continued to be landfilled at the site until 1971 (ES and D&M, 1985).

From 1978 to 1979, construction debris and excavated soil from the demolition of a portion of the Buffalo Pumps Manufacturing facility were disposed in the low-lying area north of the foundry sand-boiler ash disposal area. From 1979 to 1980, additional construction debris and earth material from a North Tonawanda sewer excavation project were disposed of on-site over top of the disposed building construction material. Groundwater and soil samples collected by the USGS in 1982 detected heavy metals, including copper and iron, on-site. During a recent site

inspection (ES and D&M, 1985), HNU meter readings in the north landfill area detected volatile organics on-site in the 5 to 7 ppm range which is above background levels at the site. One reading of 9 ppm was also observed during the site inspection.

ASSESSMENT

In an attempt to quantify the risk associated with this site, the Hazard Ranking Scoring system (HRS) was applied as currently being used by the New York State DEC to evaluate abandoned hazardous waste sites in New York State. This system takes into account the types of wastes at the site, receptors, and transport routes to apply a numerical ranking of the site. As stated in 40 CFR Subpart H Section 300.81, the HRS scoring system was developed to be used in evaluating the relative potential of uncontrolled hazardous substance facilities to cause health or safety problems or ecological or environmental damage. It is assumed by the EPA that a uniform application of the ranking system in each state will permit EPA to identify those releases of hazardous substances that pose the greatest hazard to humans or the environment.

Under the HRS, three numerical scores are computed for each site, to express the relative risk or danger from the site, taking into account the population at risk, the potential for contamination of drinking water supplies, for direct human contact, and for destruction of sensitive ecological systems and other appropriate factors. The three scores are:

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

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

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

The preliminary score was:

S_M	=	4.51	S_A	=	0
S_{GW}	=	3.28	S_{FE}	=	0
S_{SW}	=	7.09	S_{DC}	=	62.50

These scores reflect the permeable nature of the fill material and the toxic nature of the waste disposed on-site.

RECOMMENDATIONS

The following recommendations are made for completion of Phase II:

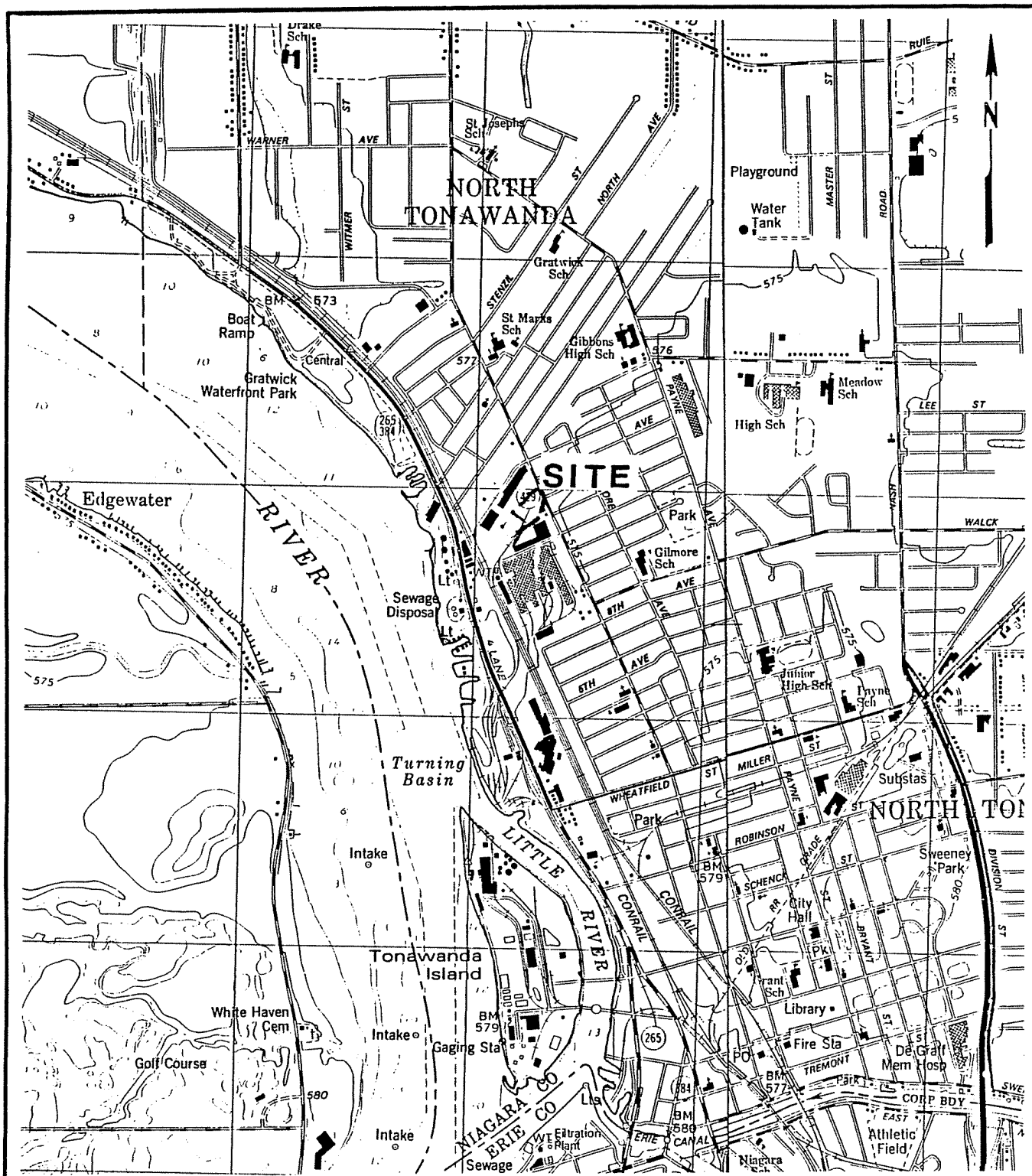
- Collect waste samples from four auger holes to be drilled in the landfill area. Initial proposed Phase II activity. Other tasks should be performed only if wastes are determined to be hazardous.

- Groundwater monitoring system consisting of one upgradient and two downgradient wells.

- Surface water and sediment monitoring system consisting of two stations located in the swamp adjacent to the north disposal area.

- Sample analyses to include GC/MS scan and heavy metals (ICPES).

The estimated man-hour requirements to complete Phase II are 627, while the estimated cost is $54,350.



LATITUDE: 43°02'47"
LONGITUDE: 78°53'09"

SCALE

0 1000 2000 3000 4000 FEET

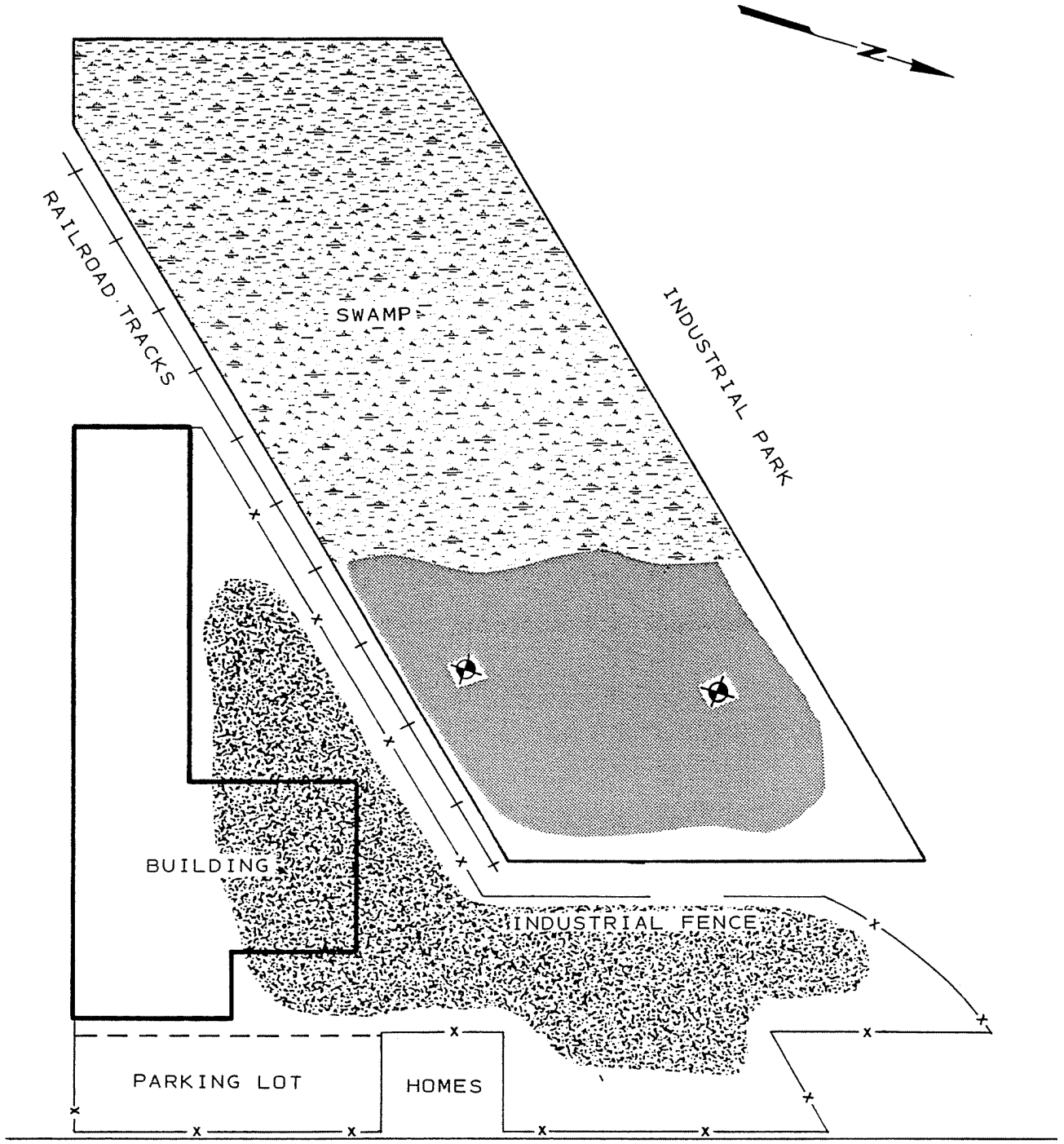
REFERENCE: U.S.G.S. 7.5' Topographic Map
Tonawanda West, NY (1980) and Tonawanda East, NY (1980) Quadrangles

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
BUFFALO PUMPS

FIGURE I-1



NOT TO SCALE

EXPLANATION:

- U.S.G.S. BORING/WELL (1982)
- AREA REPORTEDLY USED FOR DISPOSAL OF FOUNDRY SANDS AND BOILER ASH (MUENCH, 10/16/85)
- DUMPING AREA OF CONSTRUCTION DEBRIS AND MATERIALS FROM STORM SEWERS EXCAVATION (MUENCH, 10/16/85)

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PLOT PLAN

BUFFALO PUMPS

FIGURE I-2

SECTION II

SECTION II

PURPOSE

The purpose of the Phase I investigation at the Buffalo Pumps disposal site was to assess the hazard to the environment caused by the present condition of the site. This assessment is based on the Hazard Ranking System, which involves the compilation and rating of numerous geological, toxicological, environmental, chemical, and demographic factors and the calculation of an HRS score. Details of HRS implementation are included in Section V. During the initial portion of the investigation, available data and records, combined with information collected from a site inspection, were reviewed and evaluated. The investigation at this site focused on the landfilling of foundry sands, boiler ash and construction debris on the north side of the Buffalo Pumps facility. Based on this initial evaluation of the Buffalo Pump site, a Phase II Work Plan has been prepared for collecting any additional data needed to complete the HRS score. In addition, a cost estimate for the recommended Phase II work is provided.

SECTION III

SECTION III

SCOPE OF WORK

The scope of work for the New York State Inactive Site Investigation Program (Phase I) was to collect and review all available information necessary for the documentation and preparation of a Hazard Ranking System score and a Phase II work plan and cost estimate if required. The work activities performed included data collection and review, a site inspection, and interviews with knowledgeable individuals of past and present disposal activities at the site.

The sources contacted during this Phase I investigation included government agencies (federal, state and local), present site owners and operators, and any other individuals that may have knowledge of the site, as identified during the performance of the investigation. These sources are listed in Appendix A. The intent of the list is to identify all persons, departments, and/or agencies contacted during the third round of the Phase I investigations even though useful information may not have been collected from each source contacted.

SECTION IV

SECTION IV

SITE ASSESSMENT

SITE HISTORY

The plant site has been owned by the Buffalo Pumps Division of the Buffalo Forge Company from 1900 to present. The Buffalo Pumps site consists of two separate fill areas. The first site, approximately 2-acres in size, is located adjacent to the production facility and was used to dispose of foundry wastes. North of this site and outside the plant fence, is a 2-acre low-lying area which was used to dispose of demolition, excavation and fill materials. From 1900 to 1953, Buffalo Pumps landfilled foundry sands (used in bronze and iron casting operations) in the disposal site located adjacent to the north side of the manufacturing plant (ES and D&M, 1985). The majority of the fenced in area of the plant, including the area subsequently covered by a building addition, was used for dumping (Muench, 10/85). The foundry sand disposed on-site after 1950 may contain binders containing phenolic compounds and heavy metals. During the same time period through 1971, coal-fired boiler ash from the incineration of wood, paper, and paint wastes was also disposed of in this area. No clean soil was ever placed over the disposed foundry sand and boiler ash material (Muench, 3/85). Presently, the former disposal area has an established grass cover in place.

During 1978 to 1979, construction debris and earth material from the demolition of a portion of the Buffalo Pumps manufacturing facility were disposed of in the low-lying 2-acre fill area north of the foundry sand disposal site. Construction debris and earth fill from a storm

sewer excavation project on Oliver Street in North Tonawanda were disposed of on-site in 1979-80. This fill material was landfilled over the material disposed during the plant demolition project (ES and D&M, 1985). This disposal site is also part of the Buffalo Pumps manufacturing facility.

SITE TOPOGRAPHY

The Buffalo Pumps site is located in the City of North Tonawanda, Niagara County, New York State. The original ground surface was low and swampy. The existing ground surface is level and underlain by approximately four feet of fill. Surface runoff flows into ditches, which drain west into a small swampy area.

The rectangular shape disposal area is located north of the plant building outside of the plant fence on Buffalo Pumps property. East of the site is Oliver Street. Across the street are small businesses and small, older urban homes. To the south of the site is a large plant facility operated by Roblin Steel Company and Armstrong Pumps. To the north of the site is a small industrial park with numerous machine shops and a lumber company. To the west of the site is a large section of railroad tracks.

Local Sensitive Environments

The following information was obtained from Jim Sneider and Mike Wilkinson of the NYSDEC Division of Fish and Wildlife in January of 1985.

A fresh-water wetland is located 0.75 miles to the northeast; surface water flow direction is southwest. There are no critical habitats for endangered species near this site. However, the Niagara River is located along the migration pathway of three endangered species: peregrine falcon, bald eagle, and golden eagle. The river and its major tributaries may provide a wintering-over area for these birds; an adult eagle was observed on the upper Niagara River in late December, 1984.

In addition, these rivers may provide potential breeding areas for these endangered birds, but this has never been confirmed.

The Upper Niagara River is a major wintering area for many common water fowl, including greater scaup, canvas back and common golden eye ducks, thousands of common mergansers, terns, and gulls. This open water wintering area is created by the ice boom at the source of the Niagara River, which keeps the water surface open downriver as far as the Peace Bridge.

The river supports a large water fowl population because of its year-round rich fishing grounds, especially at the source of the river and north of Grand Island.

Wetlands also provide habitats for waterfowl. The best wetland in the Upper Niagara area is on Buckhorn Island (north end of Grand Island). Another important wetland occurs along the shore of Lake Erie, at Times Beach.

The fish population within the Niagara River is part of the larger Lake Erie fish population. The threatened lake sturgeon occurs in Lake Erie and the Niagara River. It is a deep water benthic fish, which may occasionally injest bottom sediment. It commonly occurs off Sturgeon Point (southeast shore of Lake Erie), and is caught occasionally in the Niagara River.

The effects of contamination on the fish and wildlife populations of the Niagara River are largely unknown. An ongoing toxicological study of the common golden eye duck, which feeds on mollusks, is aimed at assessing the impact of known and suspected contaminants on the health of this population.

SITE HYDROLOGY

This summary is based on information from USGS Topographic Maps, NYS Museum and Science Service Bedrock Geology Map and Quaternary Geology Map, USGS (1983) drilling information, and LaSala (1968).

Regional Geology and Hydrology

The site is located in the Erie-Ontario lowlands physiographic province. The bedrock of this region is predominantly limestone, dolostone, and shale. Most of the rocks are deep aquifers with regional flow to the south.

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened pre-existing valleys, and deposited widespread accumulations of till. The melting of ice, ending approximately 12,000 years ago, produced large volumes of meltwater; this water subsequently shaped channels and deposited thick accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. This region is covered by both lake sediments and morainal materials. Sediments associated with Lake Tonawanda are especially widespread in this region. Lake Tonawanda was a shallow elongate lake which occupied an east-west valley and drained north into Lake Iroquois. The sediments consist of beach ridges and lacustrine silts and clays (indicating quiet or deeper water deposition).

Granular deposits in this region frequently act as shallow aquifers, whereas lacustrine clays, as well as tills, often inhibit groundwater movement. However, fine-grained, water-lain sediments, such as silts and clays, frequently contain horizontal laminations and sand seams. These internal features facilitate lateral groundwater movement through otherwise low permeability materials.

Site Hydrogeology

Bedrock beneath the site is expected to be the lower part of the Camillus Shale (Salina Group); top of rock may occur at an approximate depth of 30 feet. Nearby, industrial wells in the bedrock (approximately 100 feet depth) yielded 200,000 to 1,000,000 gallons per day when

they were in operation. The ground water was high in H_2S; other chemicals present included (LaSala, 1968):

Parameter	Concentration (ppm)
Sulfate	1680
Chloride	2340
(Ca, Mg) CO_3	2780
Spec Conductance	9010 umhos
pH	7.5

Soil stratigraphy in the subsurface of the site based on on-site boring logs (USGS, 1982) is expected to be approximately:

Soil Type	Approximate Depth (ft.)
Fill/soil fill	0 - 6
Lacustrine silt and clay	6 - 27
Fine silty sand	27 - 28.5
Top of bedrock	approx. 28.5

The upper surface of the bedrock is likely to be highly weathered and fractured. Above the bedrock may be a thin layer of fine to medium sand, deposited as Lake Tonawanda began to flood the area. The sand grades vertically upward into a thick silty clay unit. This fine-grained material, Lake Tonawanda sediment, is probably grey and reddish brown layered silty clay and clayey silt, with occasional seams of fine sand. On other nearby sites, this lacustrine material is extremely soft, and grades upward to a silty fine sand.

On this site, filling and dumping has occurred on top of the lacustrine deposits. A perched water table exists within the fill, on top of the silty clay. The lacustrine silts and clays are too low in permeability to be considered an aquifer. Therefore, no high-yielding soil aquifer exists on the site. For the purpose of HRS scoring, a permeability of the fill material has been considered to be 10^{-3} cm/sec.

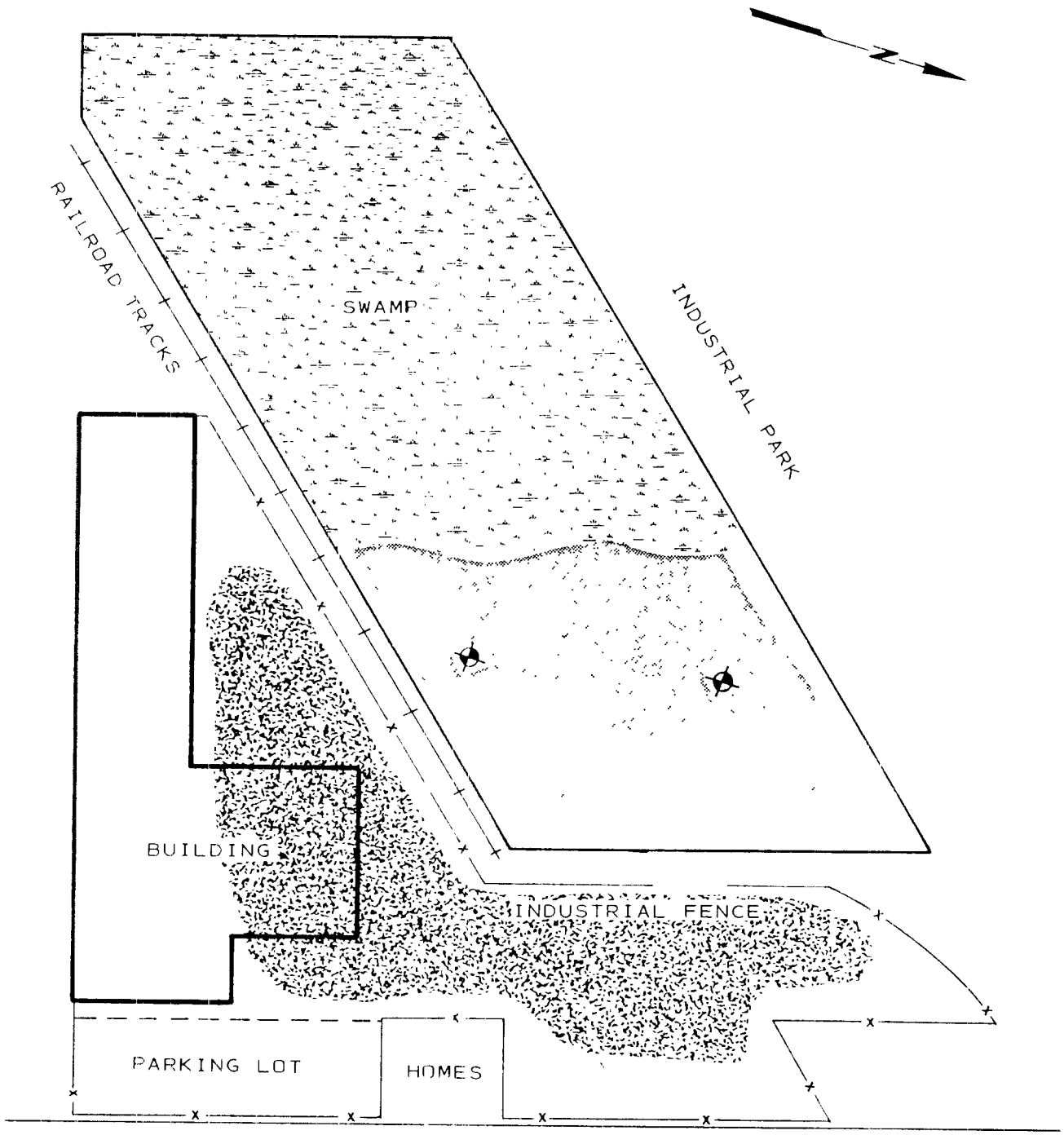
SITE CONTAMINATION

From 1900 to 1953, foundry sands, some possibly containing phenols, were disposed of adjacent to the manufacturing facility. During this period until 1971, boiler ash from the incineration of wood, paper and paint wastes were also landfilled at the site (EPA, 1981). Although the landfill area is presently covered with grass, no soil cover was applied to the fill site after foundry sand disposal practices were discontinued (Muench, 3/85).

Water levels in two on-site groundwater monitoring wells were found to be 3 to 5 feet from the ground surface (USGS, 1983). Water samples were collected from these wells by the USGS and analyzed for chromium, copper and iron. The concentration of these constituents in the samples were 0.04 and 0.15 mg/liter chromium, 0.3 and 3.4 mg/liter copper, and 51 and 260 mg/liter iron. However, the contamination has not been specifically traced to the landfill.

From 1978 to 1979, construction debris and soil from the demolition of a section of the Buffalo Pumps production facility was used as fill in the low-lying disposal site (north landfill) located adjacent to the foundry sand fill area. In approximately 1980, construction debris and fill soil from the excavation of a storm sewer line on Oliver Street in North Tonawanda was placed over top of the demolition material previously in place. The USGS collected soil samples from the well borings in the north landfill in 1983. Significant concentrations of heavy metals, including copper (1.5 g/kg) and iron (10 g/kg) were detected in the samples. Groundwater samples were also collected at the site from two monitoring wells and heavy metals were identified. The location of the groundwater monitoring wells are presented in Figure IV-1.

HNu meter readings for volatile organics in the vicinity of the north fill area averaged 5 to 7 ppm and were highest in the northwestern end of the landfill (9 ppm) (ES and D&M, 1985). Organics analyses of groundwater samples found no specific compounds at parts per million levels (USGS, 1983).



NOT TO SCALE

EXPLANATION:

- U.S.G.S. BORING/WELL (1982)
- AREA REPORTEDLY USED FOR DISPOSAL OF FOUNDRY SANDS AND BOILER ASH (MUENCH, 10/16/85)
- DUMPING AREA OF CONSTRUCTION DEBRIS AND MATERIALS FROM STORM SEWERS EXCAVATION (MUENCH, 10/16/85)

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PLOT PLAN

BUFFALO PUMPS

FIGURE IV-1

SECTION V

NARRATIVE

PRELIMINARY APPLICATION OF HAZARD RANKING SYSTEM

The Buffalo Pumps disposal sites, approximately 2-acres each, are located at the intersections of East Avenue and Oliver Street adjacent to the Buffalo Pumps manufacturing facility in the City of North Tonawanda, Niagara County, New York. The Buffalo Pumps Division of Buffalo Forge Company has owned and operated the plant and the disposal areas from 1952 to present.

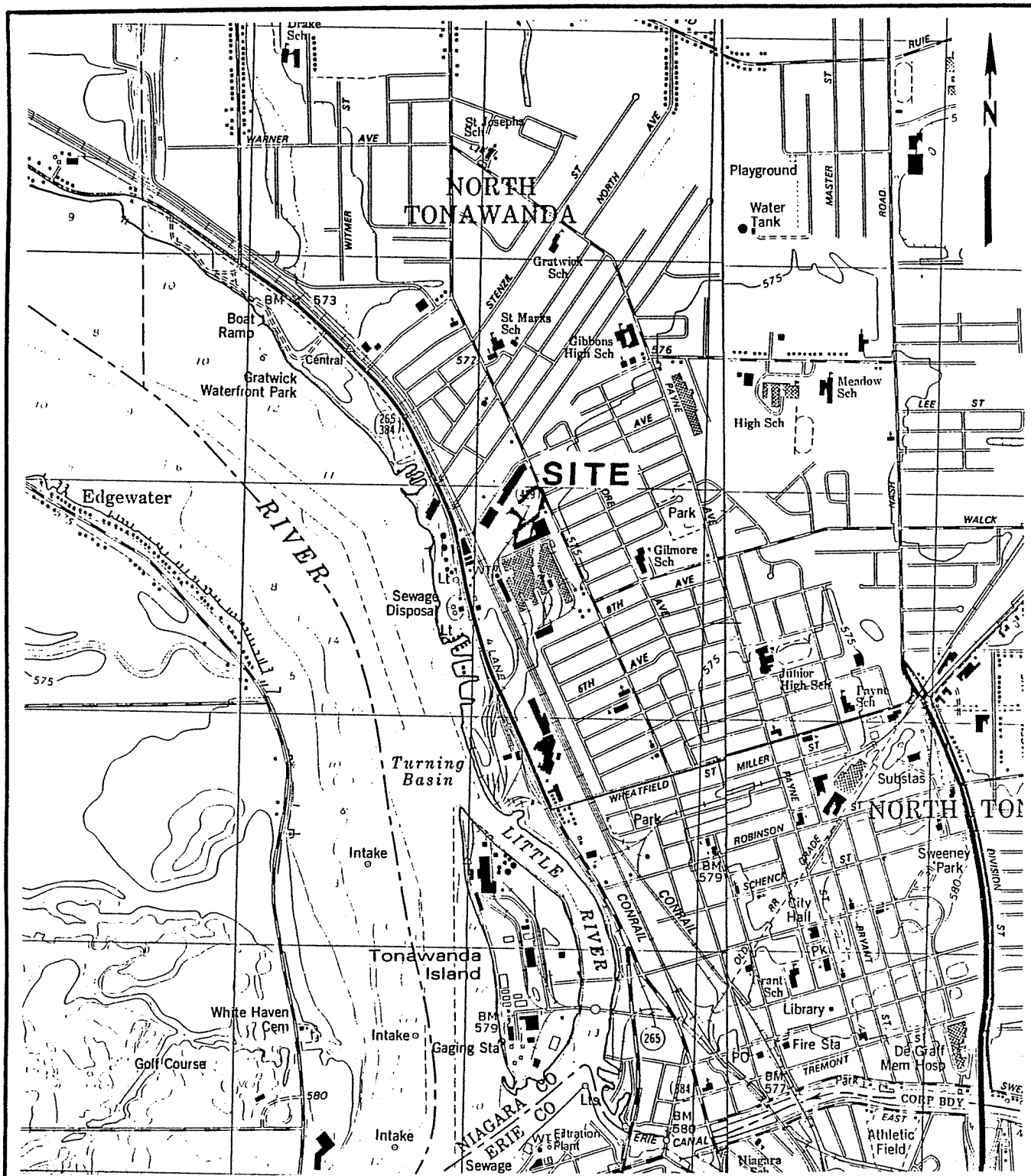
From 1900 to 1953, foundry sands, possibly containing phenolic binders, were landfilled in the disposal site located adjacent to the facility (ES and D&M, 1985). In addition, from 1900 to 1971, boiler ash from the incineration of wood, paper, and paint wastes was disposed in this area (EPA, 1981). Since there is no soil cover over the fill area (Muench, 3/85), the potential exists for contaminant migration via surface water runoff, if hazardous wastes are present in the fill.

In 1978-79, construction debris from the demolition of a portion of the Buffalo Pumps manufacturing facility was disposed in the low-lying fill area north of the foundry sand disposal site. In approximately 1980, construction debris and earth fill from a sewer excavation on Oliver Street in North Tonawanda were disposed of over the top of the building construction debris. Presently, the site is inactive and no signs of waste disposal activities were noted on-site (ES and D&M, 1985).

A soil sample collected in a low-lying area to the west of the site was found to contain concentrations of copper (1.5 g/kg) and iron (10 g/kg). Groundwater samples collected from two monitoring wells located within the landfill were found to have 0.04 and 0.15 mg/liter chromium, 0.3 and 3.4 mg/liter copper and 51 and 260 mg/liter iron (USGS, 1983).

HNU meter readings taken in the north landfill averaged 5 to 7 ppm and were highest (9 ppm) in the northwestern end of the landfill (ES and D&M, 1985). The landfill area that was used to dispose of demolition, excavation and fill materials is not enclosed by a fence to prevent unauthorized entry.

LOCATION



LATITUDE: 43°02'47"
LONGITUDE: 78°53'09"

SCALE

0 1000 2000 3000 4000 FEET

REFERENCE: U.S.G.S. 7.5' Topographic Map
Tonawanda West, NY (1980) and Tonawanda East, NY (1980) Quadrangles

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
BUFFALO PUMPS

FIGURE ii-1

HRS WORKSHEETS

HRS COVER SHEET

Facility Name: Buffalo Pumps

Location: 874 Oliver St.,City of N. Tonawanda, Niagara County, New York

EPA Region: II

Person(s) in charge of the facility: Mr. Muench, Plant Manager

Name of Reviewer: S. Robert Steele, II Date: 4/9/85

General Description of the facility:

The Buffalo Pumps site consists of two disposal areas located on-site. The first, a 2-acre area located adjacent to the plant was used to dispose of foundry sand (1900-1953) and boiler ash and general plant refuse (1900-1971). The second disposal area is located north of the foundry sand-boiler ash fill area and is also approximately 2-acres in size. This site was used to dispose of demolition material during a Buffalo Pumps plant excavation project in 1978-79. Demolition, excavation and fill material from a sewer line demolition project by the City of North Tonawanda was placed over the plant demolition material in approximately 1979-80. The USGS collected soil and water samples on-site in 1982 and heavy metals including chromium, copper and iron were detected in the groundwater samples. HNU meter readings taken on-site detected volatile organics in 5-9 ppm range which is above background levels.

Scores: $S_M = 4.51$ ($S_{gw} = 3.28$ $S_{sw} = 7.09$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 62.50$

Facility Name: Buffalo Pumps Date: 5/23/85

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	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	4	6	
Net Precipitation	0 1 (2) 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1	3	3	
Physical State	0 1 (2) 3	1	2	3	
Total Route Characteristics Score			11	15	
3 Containment	0 1 2 (3)	1	3	3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	
Hazardous Waste Quantity	0 [1] 2 3 4 5 6 7 8	1	1	8	
Total Waste Characteristics Score			19	26	
5 Targets					3.5
Ground Water Use	0 (1) 2 3	3	3	9	
Distance to Nearest Well/Population Served	(0) 4 6 8 10 / 12 16 18 20 / 24 30 32 35 40	1	0	40	
Total Targets Score			3	49	
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			1881	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 3.28		

GROUND WATER ROUTE WORK SHEET

Facility Name: Buffalo Pumps Date: 5/23/85

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	2	3	
Total Route Characteristics Score			10	15	
3 Containment	0 1 2 (3)	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	
Hazardous Waste Quantity	0 [1] 2 3 4 5 6 7 8	1	1	8	
Total Waste Characteristics Score			19	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			4560	64,350	
7 Divide line 6 by 64,350 and multiply by 100			S_{sw} = 7.09		

SURFACE WATER ROUTE WORK SHEET

Facility Name: Buffalo Pumps Date: 5/23/85

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: Site visit March, 1985					
Sampling Protocol: HNU meter survey					
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	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	21	30	
Distance to Sensitive Environment	0 (1) 2 3	2	2	6	
Land Use	0 (1) 2 3	1	1	3	
Total Targets Score			24	39	
[4] Multiply [1] x [2] x [3]				35,100	
[5] Divide line [4] by 35,100 and multiply by 100			S_a = 0		

AIR ROUTE WORK SHEET

Facility Name: Buffalo Pumps Date: 5/23/85

Worksheet for Computing S_M

	S	S^2
Groundwater Route Score (S_{gw})	3.28	10.76
Surface Water Route Score (S_{sw})	7.09	50.27
Air Route Score (S_a)	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$		61.03
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		7.81
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		4.51

WORK SHEET FOR COMPUTING S_M

Facility Name: Buffalo Pimps Date: 5/23/85

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1	0	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} = 0		

FIRE AND EXPLOSION WORK SHEET

Facility Name: Buffalo Pumps Date: 5/23/85

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	15		8.3
4 Waste Characteristics Toxicity	0 1 2 (3)	5	15	15	8.4
5 Targets					8.5
Population Within 1-Mile Radius	0 1 2 3 (4) 5	4	16	20	
Distance to a Critical Habitat	0 (1) 2 3	4	4	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			13520	21,600	
7 Divide line 6 by 21,600 and multiply by 100			S_{DC} = 62.5		

DIRECT CONTACT WORK SHEET

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

FACILITY NAME: Buffalo Pumps

LOCATION: City of North Tonawanda, Niagara County, New York

GROUNDWATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):

Iron, chromium, copper (NYSDEC Registry Sheet, 12/83)

Rationale for attributing the contaminants to the facility:

Groundwater samples taken at site by USGS (USGS Draft Report, 1983). Not scored as a release due to lack of upgradient well.

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

(USGS, 1983).

Name/description of aquifer(s) in concern:

Bedrock aquifer

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

29 feet (USGS, 1982).

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

Less than or equal to 6.2 feet (USGS Test Borings, 1983).

Net Precipitation

(U.S. Dept. of Commerce, National Climatic Center, Climatic Atlas of the United States, 1979)

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

Mean annual precipitation is 36".

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

Mean annual lake evaporation is 27".

Net precipitation (subtract the above figures):

9" (36" - 27" = 9")

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Sand, ash, miscellaneous fill and soil fill (NYSDEC Registry Sheet, 12/83).

Note: Clay material was disposed of in fill area adjacent to boiler ash and binder disposal area.

Permeability associated with soil type

For granular fill, 10^{-3} cm/sec (Freeze, R.A., and J.A. Cherry, Groundwater, 1979, pg. 29).

Physical State

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

Solid (NYSDEC Registry Sheet, 12/83).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Foundry waste and demolition material placed in unlined landfill (ES and D&M Site Inspection, 3/20/85, NYSDEC Registry Sheet, 12/83).

Method with highest score:

Unlined landfilled - 3.

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Copper
Chromium
Incinerated Paint Solids
Phenols (suspected)
(USGS, 1983 and Buffalo Pumps, 1985)

Compound with highest score:

Heavy metals (copper, chromium) (toxicity = 3, persistence = 3) - 18.

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.

Basis of estimating and/or computing waste quantity:

Unknown quantities of contaminated soil are present on-site. For purposes of rating the site, a volume of 1 to 10 cubic yards of hazardous waste was assumed since contaminants were detected during the USGS, 1982 sampling effort.

5. TARGETS

Groundwater Use

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

Not used, but usable (NCHD, 1981).

Distance to Nearest Well

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

None within 3 miles (NCHD, 1981).

Distance to above well or building:

Not applicable.

Population Served by Groundwater Wells Within a 3-Mile Radius

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

None (NCHD, 1981).

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):

None

Total population served by ground water within a 3-mile radius:

0.0 (NCHD, 1981).

SURFACE WATER ROUTE

1. OBSERVED RELEASE

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

Surface water not sampled and analyzed.

Rationale for attributing the contaminants to the facility:

Not applicable.

* * *

2. ROUTE CHARACTERISTICS

(USGS Topographic Maps, Tonawanda West, NY and Tonawanda East Quadrangles)

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0.5%

Name/description of nearest downslope surface water:

Small swamp to northwest of site; storm sewers drain runoff to Niagara River (ES and D&M site inspection, 3/20/85).

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

0.7%

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

Yes, the northwestern disposal area filled in a portion of the swamp (Muench, 10/16/85). Surface water runoff from the site and adjacent swamp are conveyed via a storm drain to the Niagara River (USGS Topographic Maps: Tonawanda West, NY and Tonawanda East Quadrangles).

Is the facility completely surrounded by areas of higher elevation?

No

1-Year 24-Hour Rainfall in Inches

2.1" (USDOC Technical Paper, No. 40).

Distance to Nearest Downslope Surface Water

0.0 feet (Muench, 10/85).

Physical State of Waste

Solid (NYSDEC Registry Sheet, 12/83).

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Disposal in unlined fill area (ES and D&M Site Inspection, 3/20/85, and NYSDEC Registry Sheet, 12/83).

Method with highest score:

Unlined fill area.

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Copper and lead in soil sample collected in the north fill area (USGS, 1983).

Compound with highest score:

Heavy metals (copper, chromium) (toxicity = 3, persistence = 3) - 18.

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 (NYSDEC Registry Sheet, 12/83).

Basis of estimating and/or computing waste quantity:

Unknown quantities of contaminated soil are present on-site. For purposes of rating the site, a volume of 1 to 10 cubic yards of hazadous waste was assumed since contaminants were detected during the USGS 1982 sampling effort.

* * *

5. TARGETS

(USGS Topographic Map, Tonawanda West, NY Quadrangle)

Surface Water Use

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

1. Recreational Greenspace
2. Boat Ramp
3. Commercial Shipping and Recreational Boating

Is there tidal influence?

No

Distance to a Sensitive Environment

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

Not applicable.

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

0.75 miles (NYS Wetlands Maps and Niagara County, Draft 12/5/84).

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

None within 1 mile (NYSDEC Region 9 Division of Fish & Wildlife Files).

Population Served by Surface Water

(NYS Atlas of Community Water System Sources, 1982)

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

None within 3 miles.

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

None within 3 miles.

Total population served:

None.

Name/description of nearest of above water bodies:

Not applicable.

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

Not applicable.

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

HNU meter readings taken during the ES and D&M site inspection (3/20/85) found measureable amounts (5-9 ppm) of volatile organic compounds. HNU meter readings were taken upgradient of the site and were less than 1 ppm. However, the chemical compounds that were responsible for the elevated HNU meter readings is unknown. Therefore, an observed release can not be scored.

Date and location of detection of contaminants:

On 3/20/85, volatile organic compounds were detected on the northern end of the Buffalo Pumps property adjacent to Miller Lumber Co. The north end site is located outside of the fence that encloses the Buffalo Pumps facility. This site received construction debris only. The former disposal site located inside the fenced area adjacent to the Buffalo Pumps facility is suspected of receiving wastes containing phenolic compounds. However, HNU meter readings taken in this area were not above background levels (1 ppm).

Methods used to detect the contaminants:

HNU meter.

Rationale for attributing the contaminants to the site:

Highest HNU meter readings were found close to the landfill surface.

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

No reactive compounds are known to be disposed on-site (NYSDEC Registry Sheet, 1983).

Most incompatible pair of compounds:

No incompatible compounds are known to be disposed on-site (NYSDEC Registry Sheet, 1983).

Toxicity

Most toxic compound:

No toxic compounds are known to be disposed on-site (NYSDEC Registry Sheet, 1983).

Hazardous Waste Quantity

Total quantity of hazardous waste:

The quantity of waste disposed on-site that could potentially impact the air pathway is unknown.

Basis of estimating and/or computing waste quantity:

Not applicable, see above comment.

* * *

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

40,212 people (Compiled from 1980 US Bureau of the Census Data).

Distance to a Sensitive Environment

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

None within 2 miles (Western NYS is not a coastal area).

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

0.75 mile (NYS Wetlands Maps, Niagara County, Dec. 5, 1984 Drafts).

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

None within 1 mile (NYSDEC Region 9 Division of Fish & Wildlife Files).

Land Use

(USGS Topographic Maps, Tonawanda West, Ny and Tonawanda East Quadrangles)

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

0.0 mile. Site is located in industrial area.

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

None within 2 miles.

Distance to residential area, if 2 miles or less:

0.1 mile

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

None within 1 mile (Map: "Agricultural Districts", ECDEP, Division of Planning, 11/84).

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

None within 2 miles (Map: "Agricultural Districts", ECDEP, Division of Planning, 11/84).

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

No

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present:

No information was discovered during the Phase I study which indicates that a fire and explosion situation existed or presently exists at the site.

Type of containment, if applicable:

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

No measurements to determine the fire and explosion potential were taken on-site.

Ignitability

Compound used:

No ignitable compounds are known to exist on-site.

Reactivity

Most reactive compound:

No reactive compounds are known to exist on-site.

Incompatibility

Most incompatible pair of compounds:

No incompatible compounds are known to exist on-site.

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

No hazardous wastes are known to be disposed on-site that could potentially impact the fire and explosion pathway.

Basis of estimating and/or computing waste quantity:

See above comment.

* * *

3. TARGETS

Distance to Nearest Population

0.1 mile to residential area (USGS Topographic Maps: Tonawanda West, NY; and Tonawanda East Quadrangles).

Distance to Nearest Building

0.0 mile. Buffalo Pumps buildings are located on-site (ES and D&M Site Visit, 10/85).

Distance to Sensitive Environment

Distance to wetlands:

0.75 mile (NYS Wetlands Maps, Niagara County, 1984 Drafts).

Distance to critical habitat:

None within 1 mile (NYSDEC, Region 9, Division of Fish and Wildlife Files).

Land Use

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

0.0 mile. Site is located in an industrial area (USGS Topographic Maps: Tonawanda West, NY; and Tonawanda East Quadrangles).

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

None within 2 miles (USGS Topographic Maps: Tonawanda West, NY; and Tonawanda East Quadrangles).

Distance to residential area, if 2 miles or less:

0.1 mile (USGS Topographic Maps: Tonawanda West, NY; and Tonawanda East Quadrangles).

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

None within 1 mile (Map: "Agricultural Districts", ECDEP, Division of Planning, 11/84).

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

None within 2 miles (Map: "Agricultural Districts", ECDEP, Division of Planning, 11/84).

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

No

Population with 2-Mile Radius

28,263 (US Census Data, 1980).

Buildings Within 2-Mile Radius

Unknown.

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No information was found during the Phase I study which indicates that a direct contact incident has occurred at the site which caused injury, illness, or death to human or domestic or wild animals.

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

Barriers do not completely surround the site (ES and D&M Site Visit, March, 1985).

* * *

3. CONTAINMENT

Type of containment, if applicable:

The foundry sand wastes have been covered with construction debris. However, the adjacent site where HNU meter readings were at 9 ppm, no cover is in place to prevent direct contact (Muench, 10/85).

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Heavy metals (copper, chromium) and phenols (suspected) (USGS, 1983).

Compound with highest score:

Heavy metals (toxicity = 3).

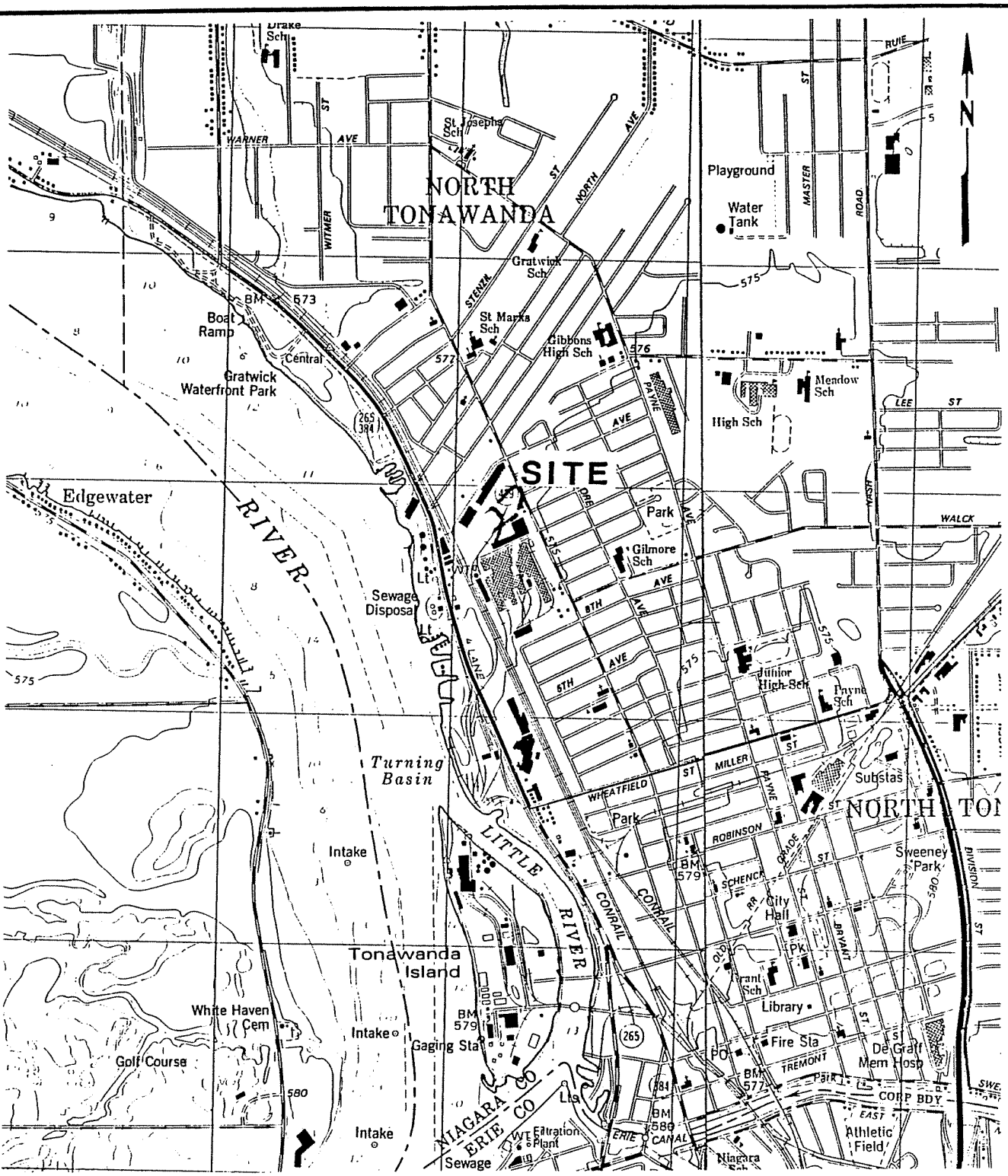
5. TARGETS

Population within one-mile radius

9,456 people (US Census Data, 1980).

Distance to critical habitat (of endangered species)

None within 1 mile (NYSDEC, Region 9, Division of Fish and Wildlife Files).



LATITUDE: 43°02'47"
LONGITUDE: 78°53'09"

SCALE

0 1000 2000 3000 4000 FEET

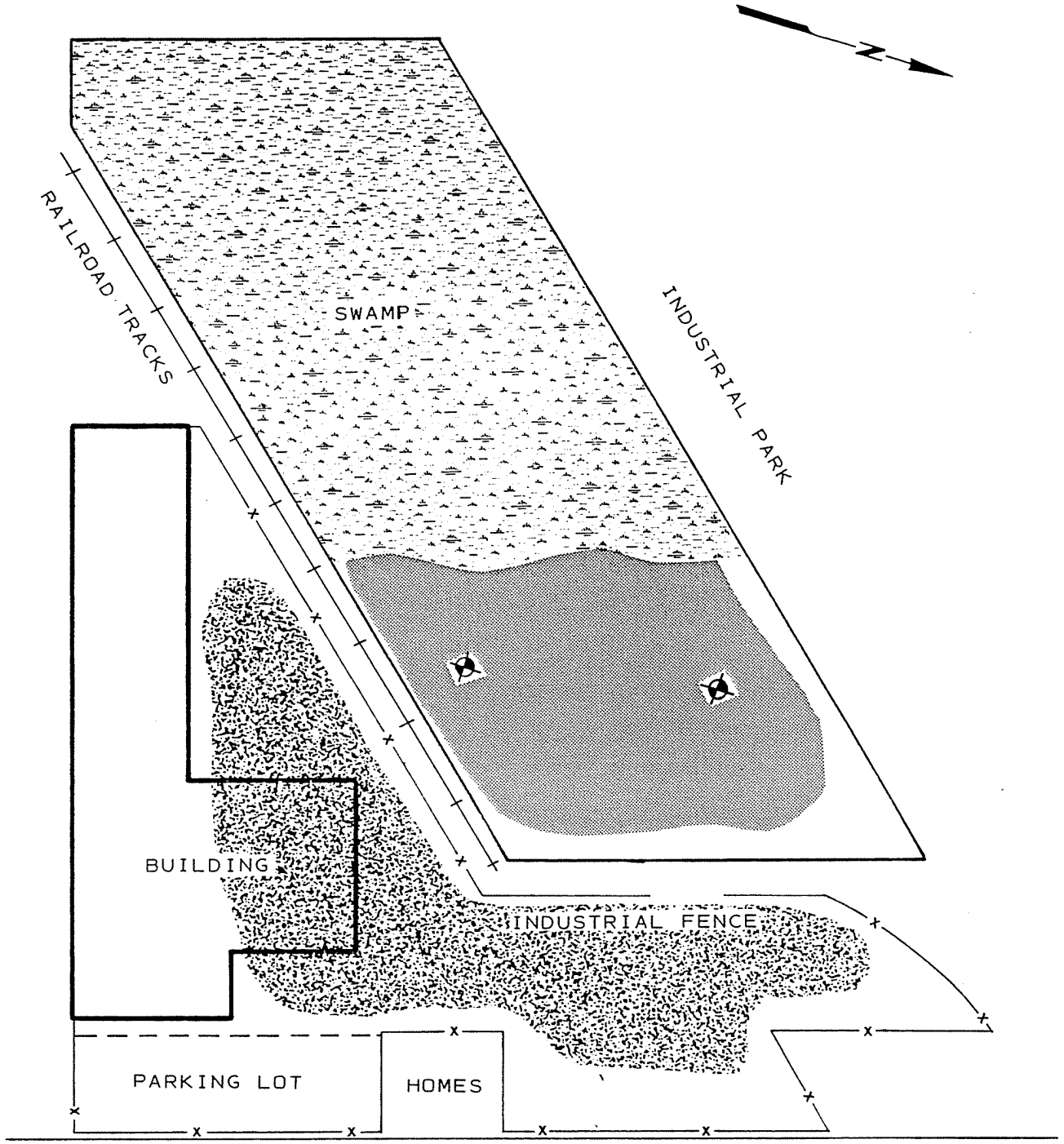
REFERENCE: U.S.G.S. 7.5' Topographic Map
Tonawanda West, NY (1980) and Tonawanda East, NY (1980) Quadrangles

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
BUFFALO PUMPS

FIGURE iv-1



NOT TO SCALE

EXPLANATION:

- U.S.G.S. BORING/WELL (1982)
- AREA REPORTEDLY USED FOR DISPOSAL OF FOUNDRY SANDS AND BOILER ASH (MUENCH, 10/16/85)
- DUMPING AREA OF CONSTRUCTION DEBRIS AND MATERIALS FROM STORM SEWERS EXCAVATION (MUENCH, 10/16/85)

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PLOT PLAN

BUFFALO PUMPS

FIGURE iv-2

HRS REFERENCES

1. ECDEP, Division of Planning, Map: Agricultural Districsts, 11/84.

2. ES and D&M Site Inspection, March/April, 1985.

3. Freeze, R. A., and Cherry, J. A., Groundwater, 1985.

4. LaSala, Groundwater Resources of the Erie-Niagara Basin, New York, 1968.

5. NYS Atlas of Community Water System Sources, NYS Department of Health, 1982.

6. NYSDEC, Inactive Hazardous Waste Disposal Sites Registry Sheet, 12/83.

7. NYSDEC, Region 9, Division of Fish and Wildlife Files.

8. NYS Museum and Science Service Bedrock Geology Map, Map and Chart Series, No. 15 (compiled by Rickard, L. V., and Fisher, D. W.).

9. NYS Museum and Science Service Bedrock Geology Map, Map and Chart Series, No. 28 (compiled by Muller, Ernest, H.), 1977.

10. US Census Data, 1980.

11. US Department of Commerce. "Climatic Atlas of the United States". 1979.

12. US Department of Commerce Technical Paper No. 40. "Rainfall Frequency Atlas of the United States". 1963.

13. USEPA, Potential Hazardous Waste Site Identifications and Preliminary Assessments.

14. USGS Topographic Maps: Tonawanda West - NY, and Tonawanda East Quadrangles (Provided in Report).

15. USGS, Draft Report of Preliminary Evaluation of Chemical Migration to the Niagara River from Hazardous Waste Disposal Sites in Erie and Niagara Counties, 1983.

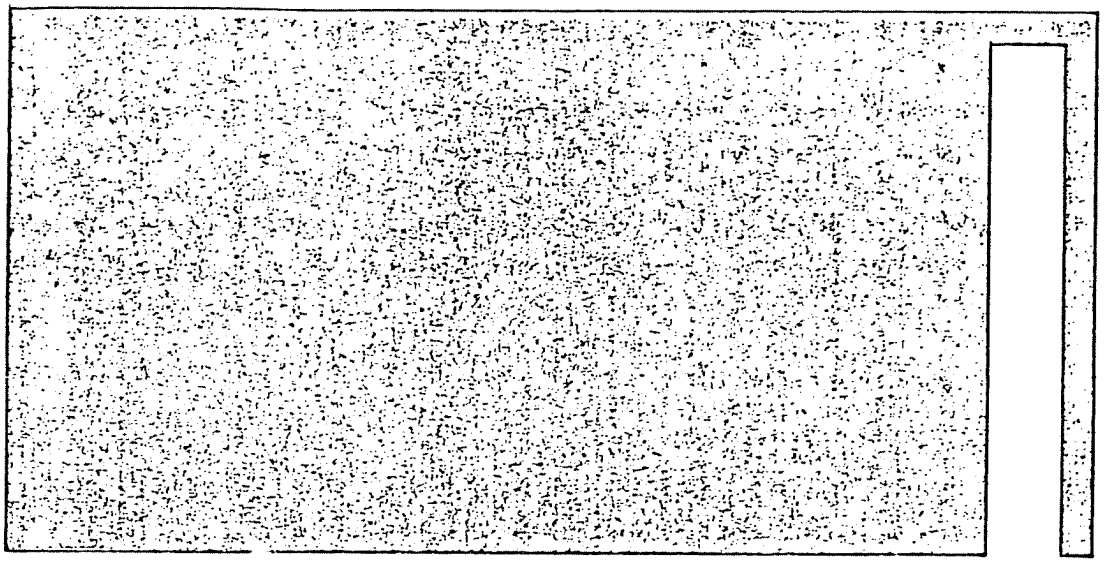
ECDEP Agricultural District Maps

Agricultural Distric Maps prepared by the Erie County, Department of Environment and Planning (November. 1984) were reviewed during the Phase I investigation. Individual maps for each site were not obtained and are, therefore, not included in the Phase I reports. Site-specific information related to the location of agricultural areas within 2 miles of each site is recorded in the documentation section of each Phase I report.

ES AND D&M SITE INSPECTION

Observations made during the ES and D&M Site Inspections are provided on US EPA Forms 2070-12 and 2070-13. Field notes were used to complete these EPA Forms, and are not included herein.

REF 3



R. Allan Freeze

Department of Geological Sciences
University of British Columbia
Vancouver, British Columbia

John A. Cherry

Department of Earth Sciences
University of Waterloo
Waterloo, Ontario

GROUNDWATER

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

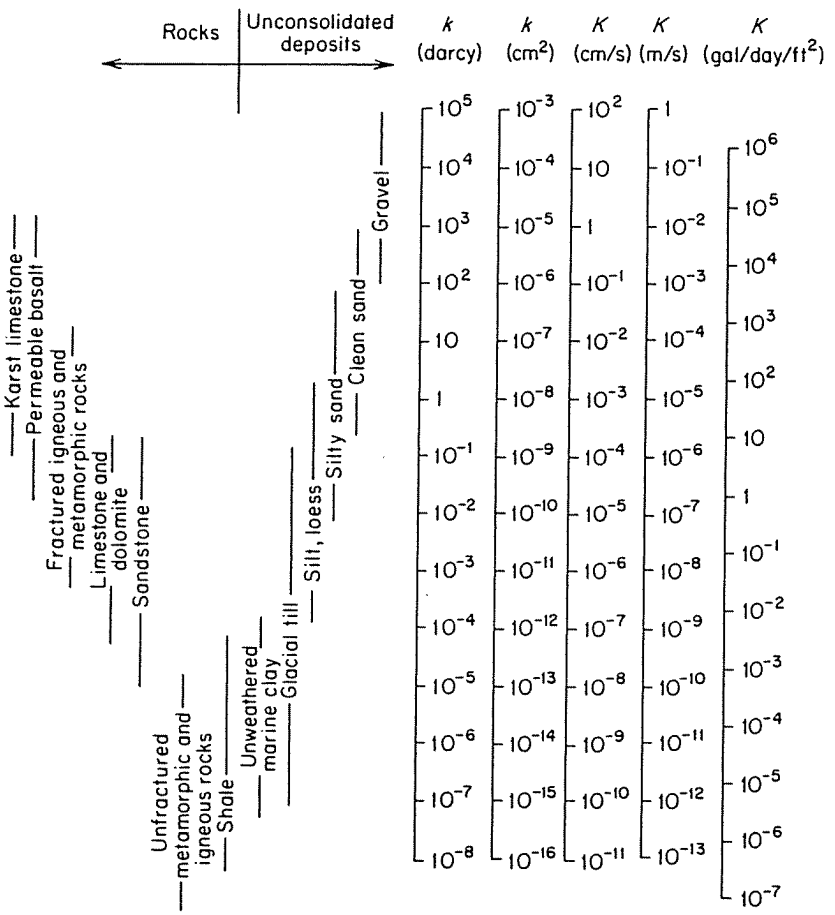


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	$gal/day/ft^2$
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	5.74×10^{5}
$gal/day/ft^2$	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.74×10^{-6}	1

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}.

REF-4

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

(LaSala, 1968)

Yields of wells

The Camillus Shale is by far the most productive bedrock aquifer in the area. Except in the vicinity of Buffalo and Tonawanda, where industrial wells produce from 300 to 1,200 gpm, no attempt has been made to obtain large supplies from the formation. However, the inflow of water to gypsum mines near Clarence Center and Akron indicate that large supplies are not necessarily restricted to the Buffalo and the Tonawanda area. Two examples of large flows of water encountered in gypsum mining have already been mentioned. Pumpage from gypsum mines near Clarence Center (including the mine mentioned previously) is substantial. The water pumped is discharged to Got Creek. On July 2, 1963, the creek had a flow of 2.1 mgd (million gallons per day) about half a mile downstream from the mines, that was due almost entirely to the pumpage. Water for industrial use is pumped from a flooded, abandoned gypsum mine at Akron. This pumpage, at a rate of 500 to 700 gpm, has had no appreciable effect on the water level in the mine.

Probably the larger solution openings are most common in discharge areas near Tonawanda Creek and its tributaries and near the Niagara River; the flow of ground water becomes concentrated as it approaches the streams to which it discharges. Other discharge areas, such as low-lying swampy areas and headwaters of small streams that have perennial flow, are likely places to drill wells.

LIMESTONE UNIT

Bedding and lithology

The term "limestone unit" in this report is applied to a sequence of limestone and dolomite overlying the Camillus Shale. The limestone unit includes the Bertie Limestone at the base, the Akron Dolomite, and the Onondaga Limestone at the top. The lithology and thickness of these units are shown in figure 7. The Bertie Limestone and the Akron Dolomite are Silurian in age and are separated from the overlying Onondaga Limestone of Devonian age by an unconformity or erosional contact.

The Bertie Limestone is mainly dolomite and dolomitic limestone but contains interbedded shale particularly in the thin-bedded lower part of the formation. The middle part is brown, massive dolomite, and the upper part is gray dolomite and shale whose beds are of variable thickness. The total thickness of the formation is about 55 feet (Buehler and Tesmer, 1963, p. 30-31).

The Akron Dolomite is composed of greenish-gray and buff dolomite beds varying from a few inches to about a foot in thickness. The upper contact of the Akron is erosional and is often marked by remnants of shallow stream channels. Thin lenses of sandy sediments lie in the bottoms of some channels. The thickness of the formation is generally between 7 and 9 feet (Buehler and Tesmer, 1963, p. 33-34).

(LaSala, 1968)

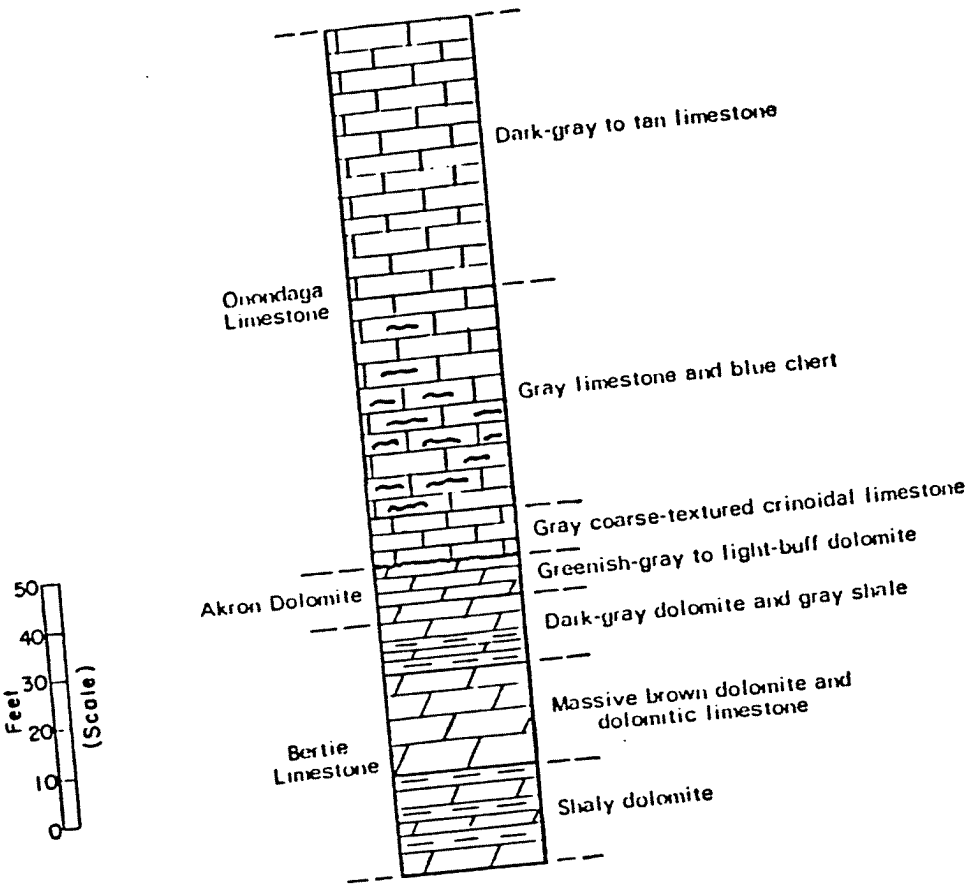


Figure 7.--Lithology of the limestone unit.

The Onondaga Limestone, about 110 feet thick, makes up the greatest thickness of the limestone unit. The formation consists of three members. The lowest member is a gray coarse-grained limestone, generally only a few feet thick. At places this member grades laterally into reef deposits which increases its thickness (Buehler and Tesmer, 1963, p. 35-36).

The middle member of the Onondaga is a cherty limestone. In some zones the chert exceeds the amount of limestone. The unit is probably 40-45 feet thick.

The upper unit is a dark-gray to tan limestone of varying texture and is probably about 50-60 feet thick.

Water-bearing openings

The limestone unit contains water-bearing openings that are similar to those of the Lockport Dolomite. Because the limestone unit is more soluble, however, solution widening of the openings appears to be more

(LaSala, 1968)

nounced. The types of water-bearing joints in the limestone can be
n at the falls of Murder Creek at Akron. Not all of the flow of
d - Creek plunges over the falls. A considerable part of the flow
c lates into the limestone unit upstream from the falls and discharges
n bedding joints both at the face and along the sides of the falls.
rincipal zones of discharge are at the base of the Bertie, and at a
t ct of a shaly zone and overlying thick-bedded dolomite 20 feet above
base.

The falls at Akron also illustrate in an exaggerated way the role of
tical joints. Water from Murder Creek percolates into the rock through
ution-widened vertical joints before reaching the bedding-plane joints.
ontinuous and concentrated flow of water in the creek has widened
ertical joints to an unusual degree. Vertical joints are ordinarily
y narrow. They probably are most effective in aiding the movement of
to the bedding joints where the bedding joints are close to the
surface.

Locally, solution along bedding joints in the limestone unit has been
t enough to cause the rock overlying the solution opening to settle.
ttling of this type probably accounts for at least some of the small
pressions in the outcrop belt of the Onondaga Limestone. A collapsed
l tion zone in the Onondaga Limestone discharges a large volume of water
t a quarry (257-840-A) near Harris Hill. About 3,000 gpm is pumped
om the quarry, and most of the water is reported to come from the
l tion zone.

The limestone unit is cut by a fault on the east side of Batavia.
ts cutting limestone are likely to cause shattering along the fault
thus, create a permeable water-bearing zone.

ologic and hydraulic characteristics

The limestone unit is similar to the Lockport Dolomite in structure.
ever, its hydrology is different. The limestone unit is cut trans-
sely by Tonawanda Creek and Tts major tributaries. Small tributaries
low across it in northerly and westerly directions. The limestone unit
elves water in the interstream areas by percolation into joints. The
er is discharged laterally to the streams and at places along the
rth-facing scarp or enters the Camillus Shale at depth.

The coefficient of transmissibility of the limestone unit probably
anges from about 300 to 25,000 gpd per foot. Specific capacity data are
iven in table 3. Drillers' reports indicate high transmissibilities for
l limestone unit in Williamsville which probably arise from relatively
r ense circulation of ground water near Ellicott Creek. The coefficients
f transmissibility given in table 3 were computed from specific capacity
lata by the method described by Walton (1962, p. 12-13).

New York State Atlas of Community Water System Sources 1982

NEW YORK STATE
DEPARTMENT OF HEALTH

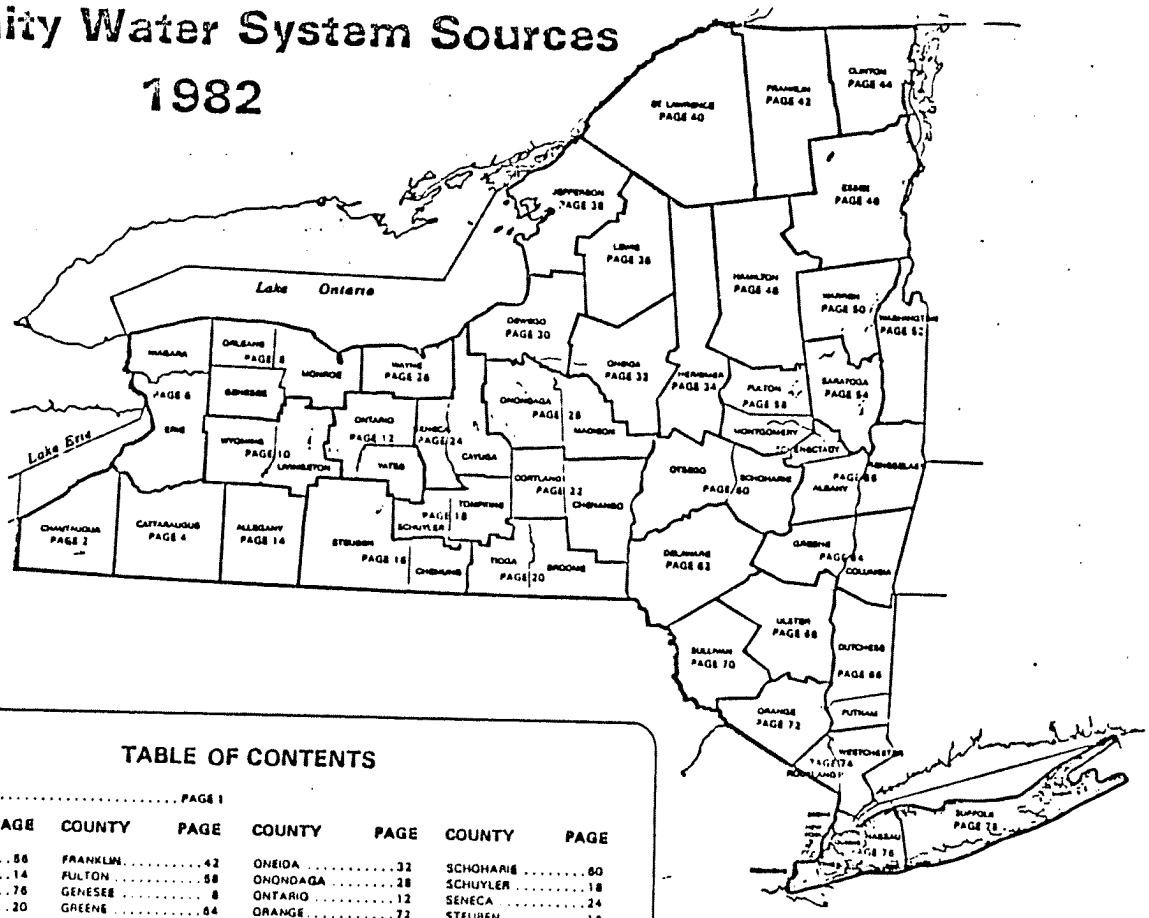


TABLE OF CONTENTS

LEGEND

BOUNDARIES AND PLACES

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

CLASSIFICATION OF POPULATED PLACES

100,000 or more ..... YONKERS
50,000 to 100,000 ..... Levittown
12,500 to 50,000 ..... Poughkeepsie
2,500 to 12,500 ..... Harriman Village
250 to 2,500 .....
250 or less .....

TRANSPORTATION

Highways
- Divided Highways
  - Full Control of Access
  - Partial or No Control of Access
- Undivided Highway
- Interchange
- Touring Route (State, U.S., Interstate) or State Parkway
- Touring Route Markers
  - State
  - U.S.
  - Interstate

Railroads
- Operating Line
- Service Discontinued
- Operator
- Owner (If Other than Operator)
- Company Having Trackage Rights

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

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

RECREATION FACILITIES

- State or National Recreation Area
- State Campground
- State Boat Launching Site
- State Canal Park
- State Fish Hatchery
- Other State Recreation Site

REF-5

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982

ERIE and NIAGARA COUNTIES

BUREAU OF PUBLIC WATER SUPPLY PROTECTION

(47-15-11 (10/83)

REF - 6

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

PRIORITY CODE: 2a SITE CODE: 932044
NAME OF SITE: Buffalo Pumps Division - Buffalo Forge Company REGION: 9
STREET ADDRESS: 874 Oliver Street
TOWN/CITY: North Tonawanda COUNTY: Niagara
NAME OF CURRENT OWNER OF SITE: Buffalo Pumps Division - Buffalo Forge
ADDRESS OF CURRENT OWNER OF SITE: 490 Broadway Avenue, Buffalo, NY

TYPE OF SITE: OPEN DUMP [x] STRUCTURE [ ] LAGOON [ ]
LANDFILL [ ] TREATMENT POND [ ]

ESTIMATED SIZE: 1.3 ACRES

SITE DESCRIPTION:

Buffalo Pumps used coal fired boilers until 1970 and the boiler ash was disposed of in an area adjacent to the north site of the plant. It has been reported that no material other than ash was disposed at this site. Currently the principal wastes generated by the plant include wood, paper, waste oil and paint sludge. They are hauled off-site for disposal, incineration or re-cycling according to a Niagara County Site Profile report of March 1982, or re-cycling according to a Niagara County Site Profile report of March 1982.
USGS collected groundwater and surface water sediment samples in June 1982. No organic compounds were detected. Iron and copper were found to be in high concentration.

HAZARDOUS WASTE DISPOSED: CONFIRMED [ ] SUSPECTED [x]
TYPE AND QUANTITY OF HAZARDOUS WASTES DISPOSED:

TYPE	QUANTITY (POUNDS, DRUMS, TONS, GALLONS)
Boiler Ash	Unknown

TIME PERIOD SITE WAS USED FOR HAZARDOUS WASTE DISPOSAL:

Unknown, 19 00 TO _____, 19 53

OWNER(S) DURING PERIOD OF USE: Buffalo Pumps Division - Buffalo Forge Company

SITE OPERATOR DURING PERIOD OF USE: Buffalo Pumps Division - Buffalo Forge Company

ADDRESS OF SITE OPERATOR: 490 Broadway Avenue, Buffalo, NY

ANALYTICAL DATA AVAILABLE: AIR ☐ SURFACE WATER ☐ GROUNDWATER ☒
SOIL ☐ SEDIMENT ☒ NONE ☐

CONTRAVENTION OF STANDARDS: GROUNDWATER ☒ DRINKING WATER ☐
SURFACE WATER ☐ AIR ☐

SOIL TYPE: Top soil and fill over layers of sand and clay

DEPTH TO GROUNDWATER TABLE: 3' to 5'

LEGAL ACTION: TYPE: None STATE ☐ FEDERAL ☐

STATUS: IN PROGRESS ☐ COMPLETED ☐

REMEDIAL ACTION: PROPOSED ☐ UNDER DESIGN ☐
IN PROGRESS ☐ COMPLETED ☐

NATURE OF ACTION: None

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

No organic compounds were found in groundwater, although iron and copper were found to be in high concentration. Based on USGS analysis, and since there is no use of the groundwater in the immediate vicinity, there appears to be no evidence of a major environmental problem.

ASSESSMENT OF HEALTH PROBLEMS:

INSUFFICIENT INFORMATION

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NAME Abul Barkat
TITLE Sr. Sanitary Engr.
NAME Peter Buechi
TITLE Assoc. Sanitary Engr.
DATE: November 22, 1983

NEW YORK STATE DEPARTMENT OF HEALTH

NAME R. Tramontano
TITLE Bur. Tox. Subst. Assess.
NAME
TITLE
DATE: 12/83

REF-7

5

INTERVIEW FORM

INTERVIEWEE/CODE Jim Snyder Mike Wilkenson /
TITLE - POSITION NYSDEC, Div of Fish & Wildlife
ADDRESS Delaware Ave.
CITY Buffalo STATE NY ZIP
PHONE ( ) . RESIDENCE PERIOD TO
LOCATION: in DEC office INTERVIEWER Eileen Milligan
DATE/TIME 1/10/85 & 1/11/85 /
SUBJECT: Phase I site information

REMARKS: The above-named interviewees provided us with the following information regarding our Phase I site. (see attached list)

1) Wetlands in Niagara Co. & proximity to sites
2) Types of fish & wildlife in Erie/Niagara area
3) Use by fish & wildlife of Niagara River & tributaries
4) Sensitive environments & proposed wetlands in the Erie/Niagara area

Buffalo Pumps site

A fresh water wet-land is 0.75 mile from the site

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

SIGNATURE: James R. Snyder - Sr. Wildlife Biologist
Michael A. Wilkinson - Conservation Biologist (Aquatic)

COMMENTS: No discussion of wetlands/wildlife regarding Niagara Landfill site - referred to Olean Office

GEOLOGIC MAP OF NEW YORK

1970

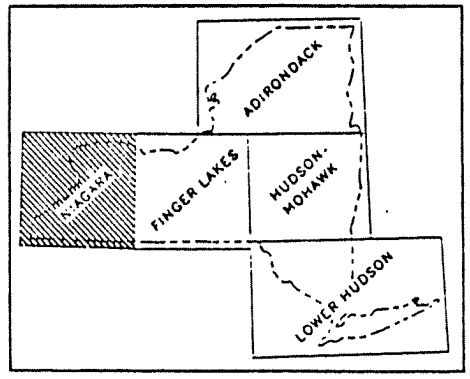
Niagara Sheet

Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET



Topographic Base from AMS Quadrangles 1:250,000 scale.

NEW YORK STATE MUSEUM AND SCIENCE SERVICE

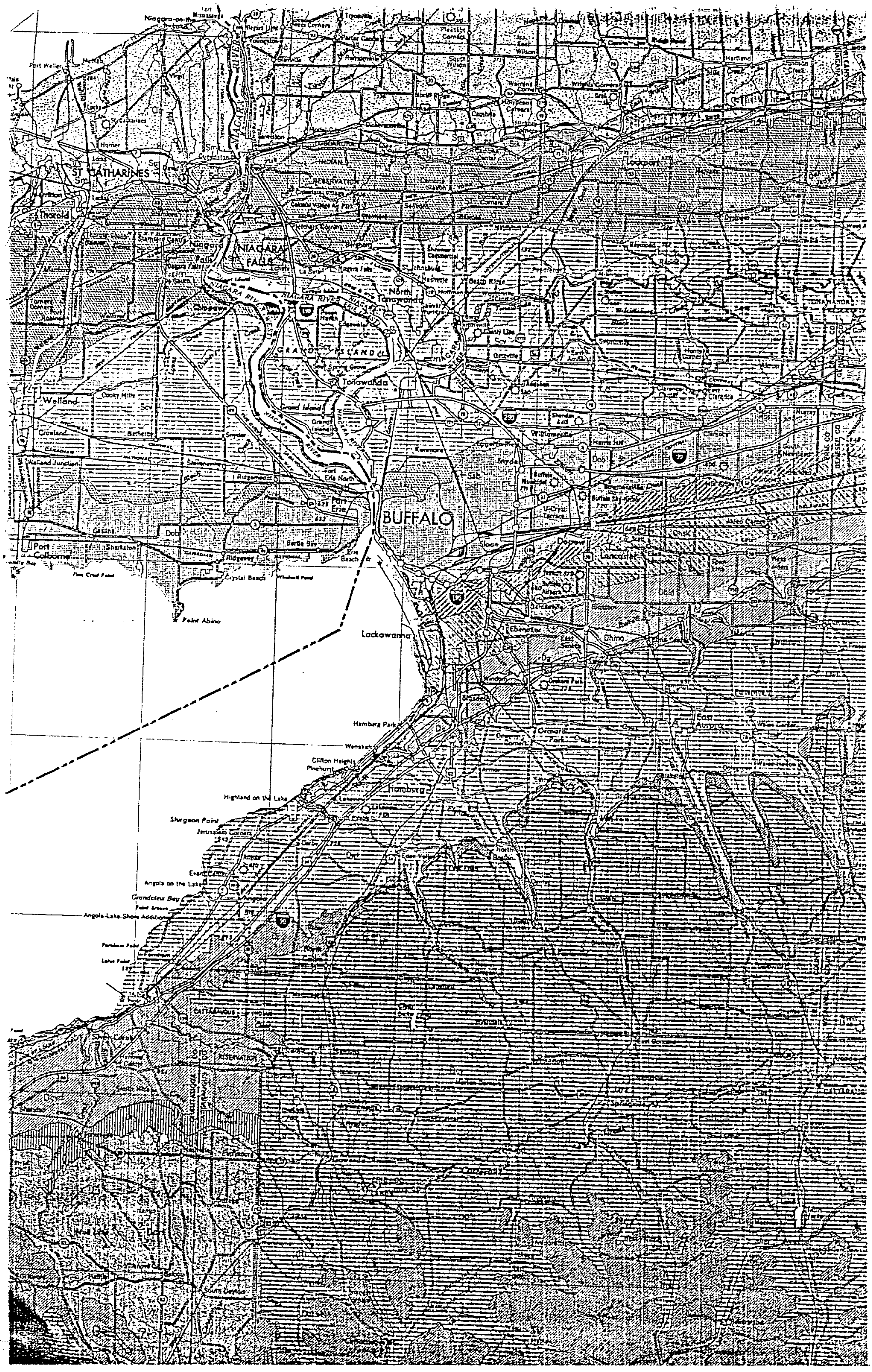
MAP AND CHART SERIES NO. 15

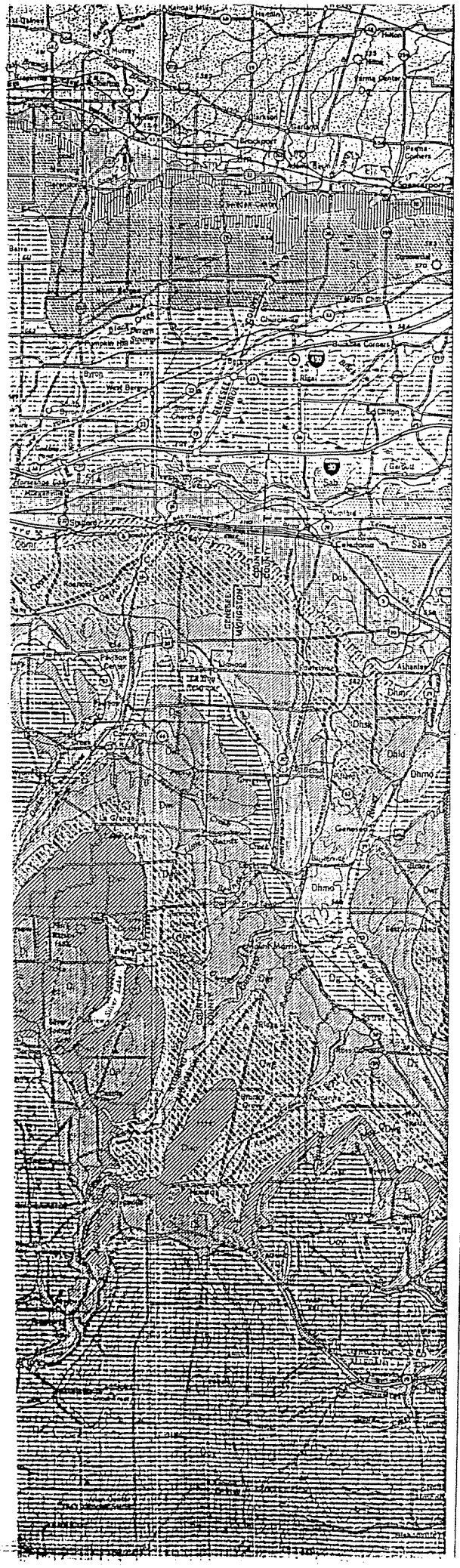
COMPILED AND EDITED BY

Lawrence V. Rickard
Donald W. Fisher

March, 1970

REF-8


Niagara-on-the-Lake
Youngstown
Lewiston
Port Weller
ST. CATHARINES
Thorold
NIAGARA FALLS
Niagara Falls
Chippawa
NIAGARA RIVER
GRAND ISLAND
Grand Island
Tonawanda
North Tonawanda
Kenmore
Lockport
Welland
Crowland
Welland Junction
Stevensville
Ridgemount
Fort Erie North
Port Erie
BUFFALO
Port Colborne
Sherkston
Ridgeway
Crystal Beach
Point Abino
Lackawanna
Lancaster
Williamsville
Clarence
Akron
Sloan
Depew
Ebenezer
Windom
Blasdell
Orchard Park
East Aurora
Hamburg Park
Wanakah
Clifton Heights
Pinehurst
Hamburg
Highland on the Lake
Sturgeon Point
Jerusalem Corners
Angola on the Lake
Grandview Bay
Angola-Lake Shore Addition
Angola
CATTARAUGUS INDIAN RESERVATION



PALEOZOIC

Lower Pennsylvanian

POTTSVILLE GROUP

Pp — Connoquenessing Formation—sandstone, shale; Sharon Formation—shale, sandstone, conglomerate; Olean Conglomerate 50-100 ft. (15-30 m.)

Lower Mississippian

POCONO GROUP

Mp — Cuyahoga Formation—shale, sandstone; Corry Sandstone; Knapp Formation 60-100 ft. (20-30 m.)—shale, conglomerate.

Upper Devonian

CONEWANGO GROUP
450-650 ft. (140-200 m.)

Dco — Oswayo and Venango Formations—shale, siltstone, sandstone; replaced eastwardly by Cattaraugus Formation—shale, sandstone, conglomerate.

CONNEAUT GROUP
250-600 ft. (75-200 m.)

Dct — In west: Ellicott and Dexterville Formations—shale, siltstone.
In east: Germania Formation—shale, sandstone; Whitesville Formation—shale, sandstone; Hinsdale Sandstone; Wellsville Formation—shale, sandstone; Cuba Sandstone.

CANADAWAY GROUP
700-1200 ft. (210-370 m.)

Dcys — Northeast Shale; Shumla Siltstone.
Dcyl — Westfield Shale; Laona Siltstone.
Dcyd — Gowanda, South Wales, and Dunkirk Shales.
Dcy — Machias Formation—shale, siltstone; Rushford Sandstone; Caneadea, Canisteo, and Hume Shales; Canaseraga Sandstone; South Wales and Dunkirk Shales.

JAVA GROUP
100-200 ft. (30-60 m.)

Dj — Hanover Shale; Wiscoy Formation—sandstone, shale; Pipe Creek Shale.

WEST FALLS GROUP
400-950 ft. (120-290 m.)

Dwf — Angola and Rhinestreet Shales.
Dwn — Nunda Formation—sandstone, shale.
Dwg — West Hill and Gardeau Formations—shale, siltstone; Rorickes Glen Shale; upper Beers Hill Shale; Grimes Siltstone.
Dwr — lower Beers Hill Shale; Dunn Hill, Millport, and Moreland Shales.

SONYEA GROUP
50-200 ft. (15-60 m.)

Ds — Cashaqua and Middlesex Shales.

GENESEE GROUP
10-150 ft. (3-45 m.)

Dg — West River Shale; Genundewa Limestone; Penn Yan and Geneseo Shales; North Evans Limestone.

Middle Devonian

HAMILTON GROUP
200-500 ft. (60-150 m.)

Dhmo — Moscow Formation—Windom and Kashong Shales, Menteth Limestone Members.
Dhld — Ludlowville Formation—Deep Run Shale, Tichenor Limestone, Wanakah and Ledyard Shales, Centerfield Limestone Members.
Dhsk — Skaneateles Formation—Levanna Shale, Stafford Limestone Members.
Dhmr — Marcellus Formation—Oatka Creek Shale Member.

Lower Devonian

ONONDAGA AND BOIS BLANC LIMESTONES
150 ft. (45 m.)

Dob — In New York: Onondaga Limestone—Seneca, Morehouse (cherty), and Clarence Limestone Members, Edgecliff cherty Limestone Member, local coral bioherms; Bois Blanc Limestone—sandy, thin, discontinuous.
In Ontario: Dundee Limestone; Lucas Formation—dolostone, limestone (Anderdon); Amherstburg Formation—limestone, dolostone, sandstone (Sylvania); Bois Blanc Formation—dolostone, limestone, sandstone (Springvale).
Do — Oriskany Sandstone.

Upper Silurian

AKRON DOLOSTONE AND SALINA GROUP
400-700 ft. (120-210 m.)

Sab — Akron Dolostone; Bertie Formation—dolostone, shale.
Scv — Camillus, Syracuse, and Vernon Formations—shale, dolostone, salt, and gypsum.

LOCKPORT GROUP
150-200 ft. (45-60 m.)

Sl — Guelph, Oak Orchard, Eramosa, and Goat Island Dolostones; Gasport Limestone—local bioherms.

Lower Silurian

CLINTON GROUP
100-150 ft. (30-45 m.)

Scl — Decew Dolostone; Rochester Shale; Irondequoit and Merriton Limestones.
Sr — Decew Dolostone; Rochester Shale.
Sik — Irondequoit Limestone; Rockway Dolostone; Hickory Corners Limestone; Neahga Shale; Kodak Sandstone.

MEDINA GROUP AND QUEENSTON FORMATION
800 ft. (250 m.)

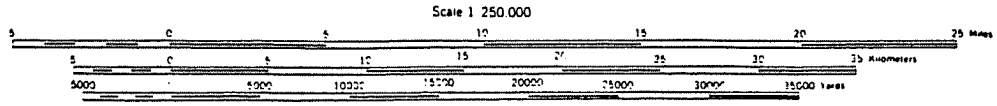
Sm — Thorold Sandstone; Grimsby Formation—sandstone, shale; Power Glen and Cabot Head Shales; Whirlpool Sandstone.
Oq — Queenston Shale.

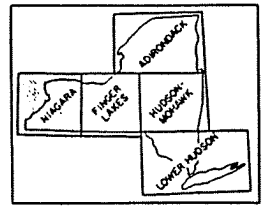
Upper Ordovician

QUATERNARY GEOLOGY OF NEW YORK, NIAGARA SHEET

by Ernest H. Muller

Muller, Ernest H. (1977)
New York State Museum and Science Service
Map and Chart Series Number 28





MAP DATA SOURCES

1. Bartolomucci, Henry A., 1968, A sedimentological study of the Niagara Falls Moraine. S.U.N.Y. Buffalo, M.A. thesis, 76p.

2. Blackmon, Paul, 1956, Glacial geology of the East Aurora, New York Quadrangle. Univ. of Buffalo, M.S. thesis.

3. Bryant, Jay C., 1955, A refinement of the upland glacial drift border in southern Cattaraugus County, N.Y. Cornell Univ. M.S. thesis, 127p.

4. Calkin, Parker, 1970, Strandlines and chronology of the Glacial Great Lakes in northwestern New York: Ohio Jour. Sci. 70:78-96.

5. Chapman, L.F. and D.F. Putnam, 1966, The physiography of southern Ontario. Univ. of Toronto Press, 386p.

6. D'Agostino, John, 1957, Glacial Lake Tonawanda history and development. Unpub. M.S. thesis, S.U.N.Y. Buffalo.

7. Denny, Charles S., 1956, Surficial geology and geomorphology of Potter County, Pennsylvania. U.S.G.S. Prof. Paper 288, 72p.

8. Feenstra, B.H., 1972, Quaternary geology of the Niagara area, southern Ontario; Ontario Div. Mines, Prelim. Map P.764, 1:50,000.

9. Feenstra, B.H., 1972, Quaternary geology of the Welland area, southern Ontario; Ontario Div. Mines, Prelim. Map P.796, 1:50,000.

10. Karrow, P.F., 1963, Pleistocene geology of the Hamilton-Galt area, Ontario; Ontario Div. Mines, Geol. Rep. 16, 68p. and Map 2033.

11. Kindle, E.M. and F.B. Taylor, 1913, Description of the Niagara quadrangle. U.S.G.S. Geol. Atlas Folio 190, 25p.

12. Leverett, Frank, 1902, Glacial formations and drainage features of the Erie and Ohio Basins. U.S.G.S. Monograph 41, 802p.

13. Muller, E.H., 1963, Geology of Chautauqua County, N.Y. Part II: Pleistocene Geology. N.Y.S.M. Bull. 392, 60p.

14. Muller, E.H., Unpub. field mapping. New York State Museum.

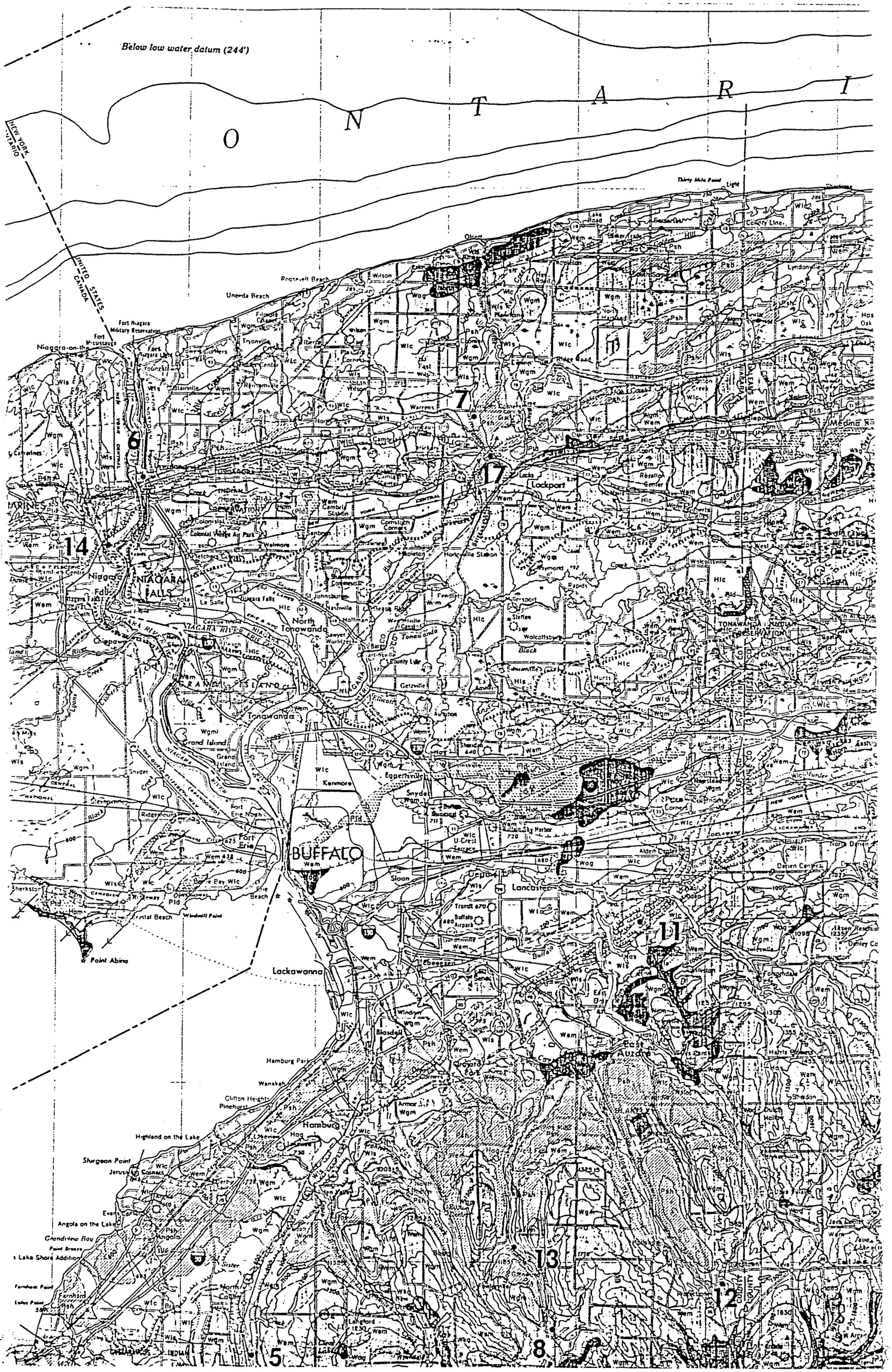
15. Shepps, V.C., G.W. White, J.B. Droste and R.F. Sitler, 1959, Glacial geology of northwestern Pennsylvania. Penna. Geol. Survey Bull. G-32, 4th ser.

16. Sweeney, J.F., 1969, Glacial geology of the Springville, New York and northern part of the Ashford Hollow, New York quadrangles. S.U.N.Y. Buffalo, M.S. thesis, 51p.

17. Symecko, R.E., 1967, Glacial geology of the Orchard Park, New York, quadrangle. S.U.N.Y. Buffalo, M.A. thesis, 64p.

18. Wilson, Michael, 1973, Gravity studies in the vicinity of Walnut Creek, southwestern New York. Unpub. M.S. thesis, S.U.N.Y. College at Fredonia.

REF-9


Below low water datum (244')
O N T A R I
NEW YORK
ONTARIO
UNITED STATES
CANADA
Thirty Mile Point
Roosevelt Beach
Uneeda Beach
Wilson
Olcott
Fort Niagara
Military Reservation
Niagara-on-the
Youngstown
Ransomville
Newfane
Lockport
Lake Road
Ridge Road
Medina
NIAGARA FALLS
NIAGARA RIVER
North Tonawanda
Tonawanda
Grand Island
Kenmore
Snyder
Getzville
Lancaster
BUFFALO
Fort Erie
Ridgeway
Crystal Beach
Point Abino
Lackawanna
Blasdell
Hamburg
East Aurora
Sheldon
Highland on the Lake
Sturgeon Point
Angola
Angola on the Lake
Farnham
Langford
14
6
7
17
11
13
12
5
8

EXPLANATION

HOLOCENE

Has — Alluvial sand and silt

Medium to coarse sand with subordinate intercalated silt and gravel; loosely packed and permeable; generally oxidized and non-calcareous; mellow, but commonly with high water table.

Floodplain deposits of streams in mature reaches. Overbank deposition by streams flowing on low gradients and in open valleys.

Hag — Alluvial gravel

Pebble to cobble gravel with subordinate medium to coarse sand; loosely packed and permeable; generally oxidized and noncalcareous; locally bouldery.

Alluvial fan and channel deposits of streams flowing on steep gradients or emanating from narrow valleys into rapidly aggrading reaches.

Hls — Beach sand and gravel

Coarse sand with subordinate medium sand and gravel lenses; cross-bedded; highly permeable generally well sorted, without significant silt or clay.

Strand and nearshore deposits of large lakes in basins possessing closure independent of the former receding glacier margin, hence persisting after deglaciation. Notable are shore deposits of Lakes Erie and Ontario and former Lake Tonawanda.

Hlc — Lake silt, sand and clay

Silt, fine to medium sand and clay; thin-bedded to massive; in part very regularly bedded with cyclic alternation of clay and silt laminae; moderately permeable along along bedding surfaces.

Offshore deposits of lakes in basins which did not require an impounding ice margin for closure, hence persisted after deglaciation. Notable among filled basins is that of former Lake Tonawanda.

Hwa — Wind deposited sand

Fine to medium sand; well sorted, oxidized and noncalcareous; cross-bedded; highly permeable. Closely associated with strand and nearshore deposits of postglacial lakes.

Wind-reworked littoral and beach sand initially deposited in postglacial lake basins.

Hpm — Peat, marl and muck

Bog deposits, dominantly peat and muck with subordinate gyttja; marl is a major component except in the southern tier of counties. Silt and clay are intercalated at base of organic section.

Deposition during late stages of in-filling of pond and lake basins, including numerous kettles and other shallow depressions on glacial drift; also parts of former Lake Tonawanda such as the Oak Orchard and Bergen Swamps.

WISCONSINAN

Woodfordian

Wls — Beach sand and gravel of ice-dammed lakes

Coarse sand with subordinate meduim sand and gravel lenses; cross-bedded; well-sorted and without significant silt or clay; highly permeable.

Strand and nearshore deposits in proglacial Lakes Whittlesey and Warren in the Erie Basin and Lake Iroquois in the Ontario Basin.

Includes suitable material for generally small scale sand and gravel production.

Wlc — Lake silt, sand and clay

Silt, fine to medium sand and clay; thin-bedded to massive; regularly bedded, in part with cyclic alternation of clay and silt laminae; moderate bedding plane permeability.

Offshore deposits in basins which required ice marginal impondment for closure; includes primitive lakes in northward-draining troughs as well as ancestral Lakes Whittlesey and Warren in the Erie Basin and Lake Iroquois in the Ontario Basin.

Wem — End moraine

Includes both ablation and lodgment till; till generally rather stony with limited admixture of poorly sorted gravel; carbonate and crystalline clasts generally exceed 20%; thickness and permeability variable but generally greater than in associated ground moraine.

Deposited by melting of ice at edge of ice sheet either at end of an advance or during stillstand at a stable ice-border position.

See figure 2 for names of principal moraines and schematic representation of chronology of glacial advance and retreat.

Wgm — Ground moraine

Dominantly lodgment till; silty clay till and sandy till; sparsely to moderately stony; carbonate and crystalline clasts generally exceed 20%; compact and generally very impermeable.

Variably comminuted rock material, transported by and lodged beneath actively flowing ice of the continental ice sheet.

Wkg — Ice-contact stratified drift

Coarse gravel and sand; sorting, poor and variable; ranges from sand to boulder gravel; in some areas with subordinate lenses of unsorted flow till; attitude of beds variable; moderately to highly permeable; carbonate and crystalline clasts comprise more than 20% and commonly dominate coarse fraction; locally indurated by secondary calcium carbonate.

Deposition as ablation moraine, mudflow and by saltwater streams distributing drift on stagnant ice to be deposited finally as the buried ice melted. Steep slopes commonly mark former ice-contact surfaces.

Comprises a major gravel source, but requires washing and crushing for many purposes.

Wag — Outwash, terrace and delta gravel

Pebble and cobble gravel with subordinate sand; well sorted; extremely permeable; carbonate and crystalline clasts generally exceed 30% of the coarse fraction; locally cemented by secondary calcium carbonate.

Deposition by strongly aggrading streams flowing from former ice sheets. Coarse alluvium deposited in coalescent aprons near the ice sheet, or as valley trains where streams drained freely from the glacier margin. Commonly persist as stream terraces or terrace remnants. Includes minor lenses of very coarse torrent (hlavy) deposits.

Comprises a major source of relatively clean and uniform gravel.

Altonian

Aem — End moraine

Includes both ablation and lodgment till; silty clay till to sandy till; moderately to abundantly stony with admixture of poorly sorted gravel; sandstone and siltstone channers generally comprise more than 80% of coarse fraction; permeability and thickness variable but generally greater than for associated ground moraine.

Deposited by melting of ice at edge of ice sheet either at end of an advance or during stillstand at a stable ice-border position.

Agm — Ground moraine

Dominatly lodgment till but locally with a veneer of variably washed ablation drift; clay till, silty clay till and sandy till; moderately to abundantly stony; siltstone and sandstone channers comprise more than 80% of coarse fraction; deeply oxidized and essentially noncalcareous; compact and generally impermeable.

Variably comminuted rock material, transported by and lodged beneath actively flowing ice of the continental ice sheet.

Akg — Ice-contact stratified drift

Coarse gravel and sand; sorting poor and variable; ranges from sand to boulder gravel, in some areas with subordinate lenses of unsorted flow till; attitude of beds variable; moderately to highly permeable; siltstone and sandstone generally more than 80% of coarse fraction; generally uncemented.

Deposition as ablation moraine, mudflow and by meltwater streams distributing drift on stagnant ice to be deposited finally as the buried ice melted. Steep slopes commonly mark former ice-contact surfaces.

Comprises a major gravel source but requires washing and crushing for many purposes.

Aag — Outwash, terrace and delta gravel

Pebble and cobble gravel with subordinate sand; well sorted; extremely permeable; carbonate and crystalline clasts generally less than 30% of the coarse fraction; generally uncemented.

Deposition by strongly aggrading streams flowing from former ice sheets. Coarse alluvium deposited in coalescent aprons near the ice sheet, or as valley trains where streams drained freely from the glacier margin. Commonly persist as stream terraces or terrace remnants.

Comprises a major source of relatively clean and uniform gravel.

ILLINOIAN

Iem — End moraine

Includes both ablation and lodgment till; silty clay till; moderately to abundantly stony with admixture of poorly sorted gravel; sandstone and siltstone channers dominate coarse fraction; permeability and thickness variable but generally greater than for associated ground moraine.

Deposited by melting of ice at edge of ice sheet either at the end of an advance or during stillstand at a stable ice-border position.

Igm — Ground moraine

Dominantly lodgment till but with local veneer of variably washed ablation drift; clay till to silty clay till; moderately to abundantly stony; siltstone and sandstone channers dominate coarse fraction; deeply oxidized and essentially noncalcareous; compact and generally impermeable.

Variably comminuted rock material, transported by and lodged beneath actively flowing ice of the continental ice sheet.

Ikg — Ice-contact stratified drift

Coarse gravel with subordinate pebbly sand; well stratified but laterally variable, ranging from sand to coarse gravel and subordinate lenses of unsorted flow till; attitude of beds variable; moderately to highly permeable; siltstone and sandstone dominate coarse fraction; oxidized and essentially noncalcareous; uncemented.

Deposition as ablation moraine, mudflow and by meltwater streams distributing drift on stagnant ice to be deposited finally as the buried ice melted. Steep slopes commonly mark

Iag — Outwash and terrace gravel

Pebble and cobble gravel with subordinate sand; well-sorted; extremely permeable; carbonate and crystalline clasts generally less than 30% of the coarse fraction; generally uncemented; contains lower proportion of shale than in associated materials; oxidized and noncalcareous in general.

Deposition by strongly aggrading streams flowing from ice sheets. Coarse alluvium deposited as valley trains and preserved as limited terrace remnants beyond the glaciated region.

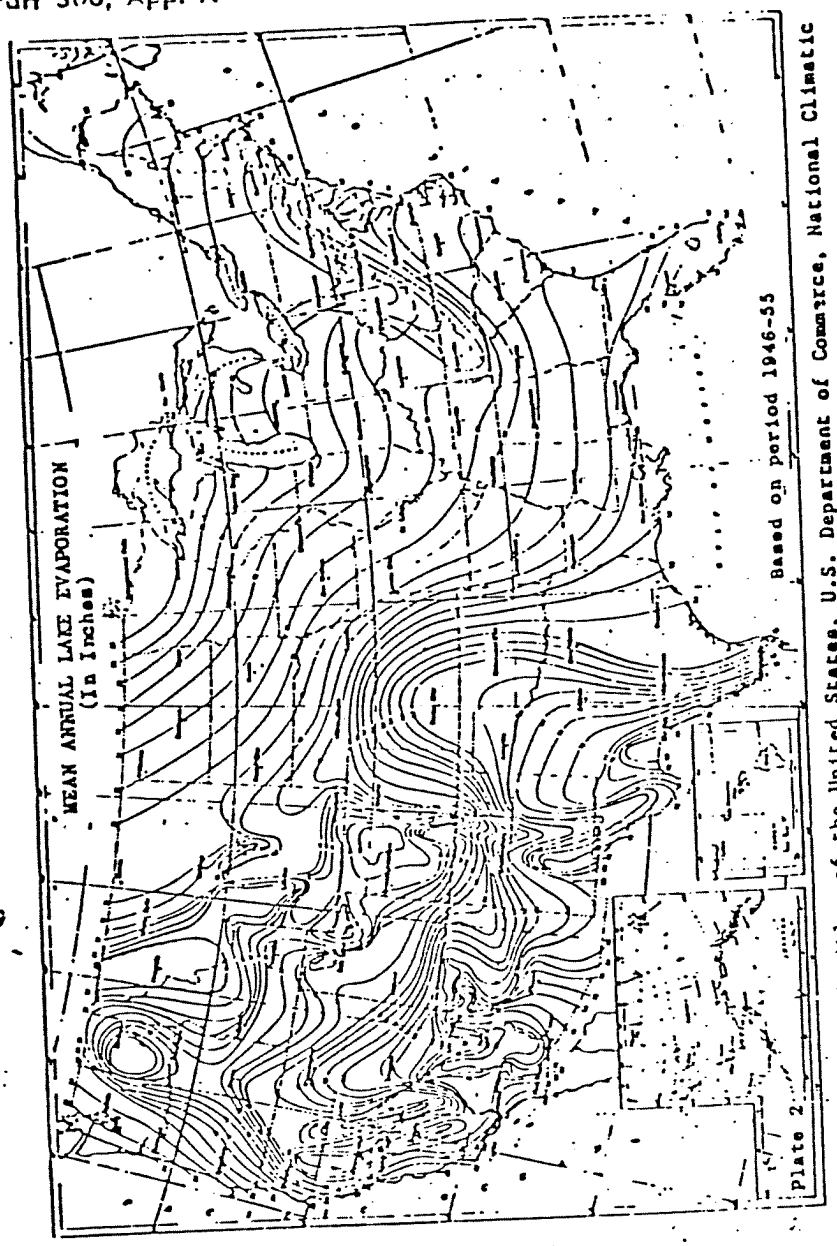
A small fraction of living matter is made up carbon) which disintegra 5570±130 years. In foss ing Radiocarbon atoms tc affords a basis for estir organism died.

SITE	NAME, TOWN
1	Otto, Otto
2	Clear Creek, Collins
3	Corry Bog, Corry
4	Nichols Bk., Sardinia

US CENSUS DATA, 1980

US Census Data used in the HRS scoring was obtained from various County Planning Offices. This data was not obtained from a report. The raw census data combined with County Planning Maps was used to estimate the population within 1, 2, 3, and 4 miles of the Phase I site being investigated. Because of the voluminous amount of data used, the data is not provided in this Appendix.

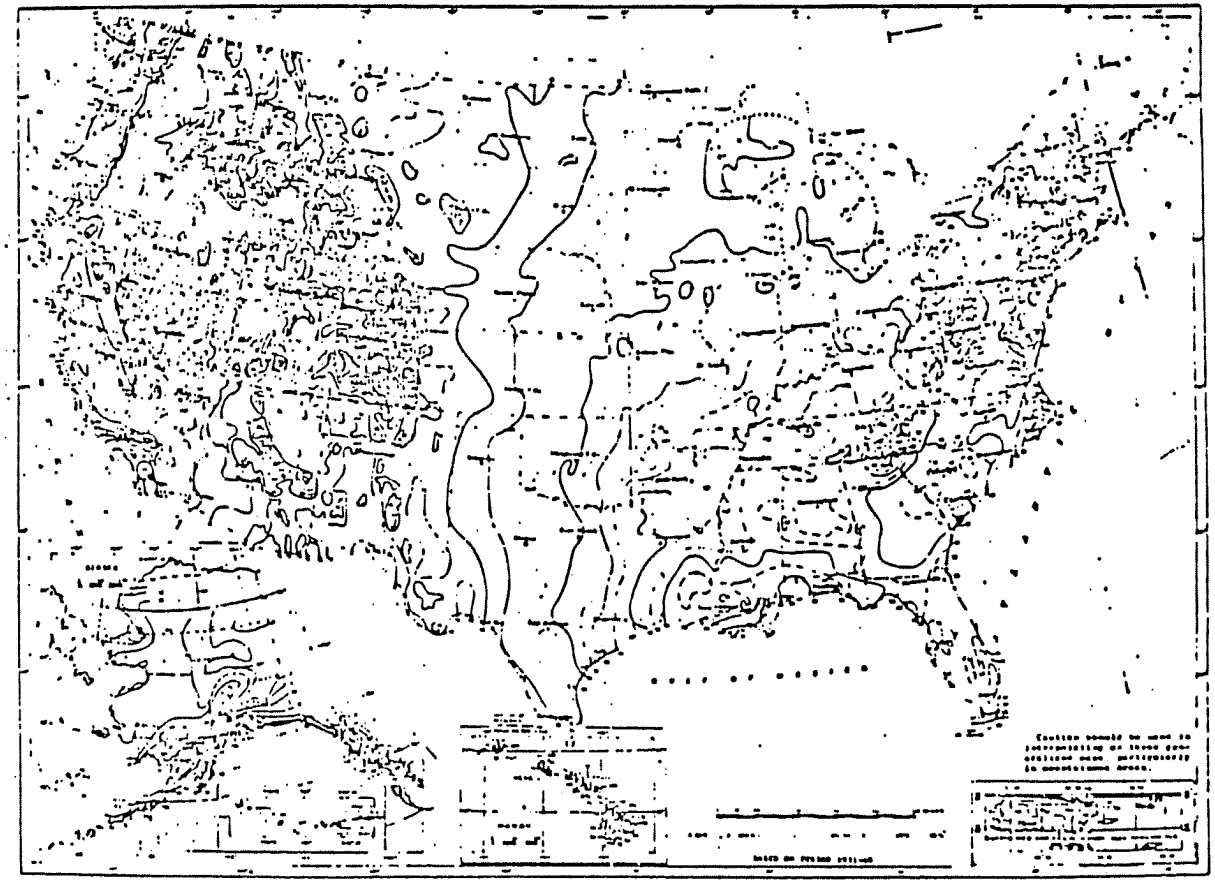
REF-11



Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Ashville, N.C., 1979.

Figure 4

Mean Annual Lake Evaporation (In Inches)

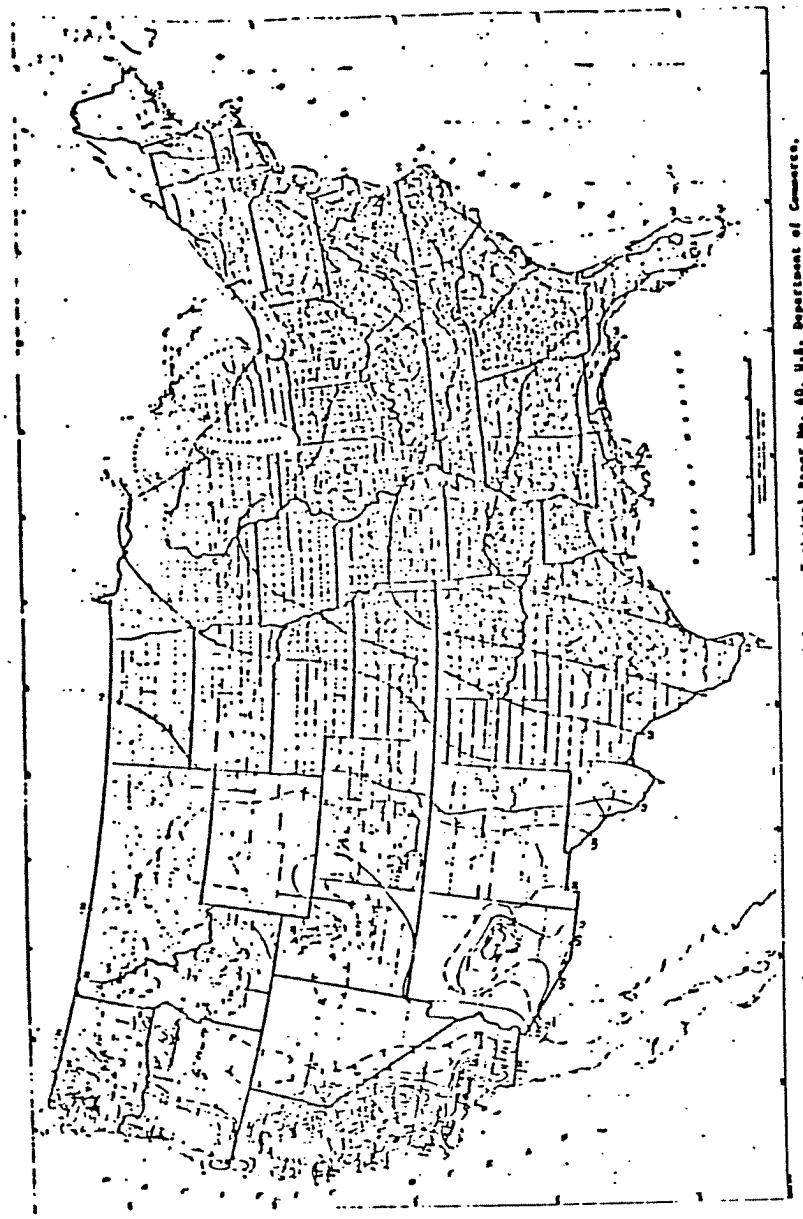


Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Asheville, N.C., 1979.

Figure 5

Normal Annual Total Precipitation (inches)

REF-12



Source: Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.

Figure 8

1-Year 24-Hour Rainfall (Inches)

EPA

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION: II

SITE NUMBER (assigned by HQ): NY 000001980

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

REF-13

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (*Preliminary Assessment*). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (*EN-335*); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME: Buffalo Forge

B. STREET (or other identifier): 874 oliver st.

C. CITY: North Tonawanda

D. STATE: NY

E. ZIP CODE:

F. COUNTY NAME: Niagara

G. OWNER/OPERATOR (*If known*)

1. NAME:

2. TELEPHONE NUMBER:

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION: An inactive landfill containing Boiler station ash from the incineration of wood, paper and paint wastes. Heavy metals from paint wastes could be present in the landfill.

J. HOW IDENTIFIED (*i.e., citizen's complaints, OSHA citations, etc.*)

K. DATE IDENTIFIED (*mo., day, & yr.*)

L. PRINCIPAL STATE CONTACT

1. NAME: Peter Buechi

2. TELEPHONE NUMBER: (716) 842-5826

II. PRELIMINARY ASSESSMENT (*complete this section last*)

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☒ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☐ 1. NO ACTION NEEDED (*no hazard*)

☐ 2. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☒ 4. SITE INSPECTION NEEDED (*low priority*)

C. PREPARER INFORMATION

1. NAME: Raymond Basso

2. TELEPHONE NUMBER: (212) 264-1574

3. DATE (*mo., day, & yr.*): 11/17/81

III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE (*Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if intermittently.*)

☒ 2. INACTIVE (*Those sites which no longer receive wastes.*)

☐ 3. OTHER (*specify*): (*Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.*)

B. IS GENERATOR ON SITE?

☐ 1. NO ☒ 2. YES (*specify generator's four-digit SIC Code*):

C. AREA OF SITE (*in acres*)

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES
1. LATITUDE (*deg.-min.-sec.*)
2. LONGITUDE (*deg.-min.-sec.*)

E. ARE THERE BUILDINGS ON THE SITE?

☐ 1. NO ☒ 2. YES (*specify*):

Continue On Reverse

Continued From Front

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

A. TRANSPORTER	X	B. STORER	X	C. TREATER	X	D. DISPOSER
1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
				7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
				8. SOLVENT RECOVERY		8. OTHER (specify):
				9. OTHER (specify):		

SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1. UNKNOWN ☐ 2. LIQUID ☒ 3. SOLID ☐ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☒ 1. UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4. RADIOACTIVE ☐ 5. HIGHLY VOLATILE
☐ 6. TOXIC ☐ 7. REACTIVE ☐ 8. INERT ☐ 9. FLAMMABLE

☐ 10. OTHER (specify): _____

C. WASTE CATEGORIES

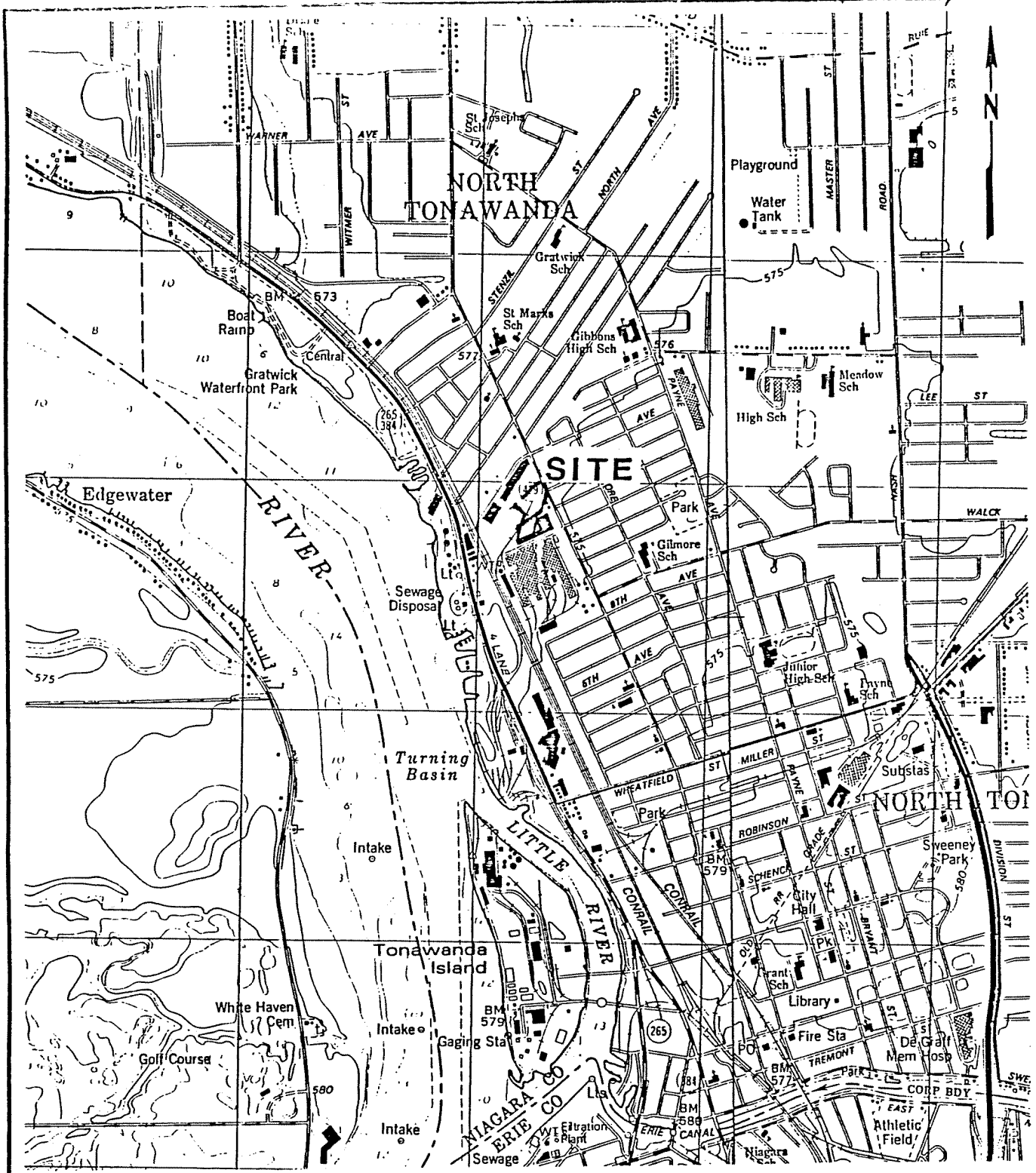
1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount(specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
(1) PAINT, PIGMENTS	X (1) OILY WASTES	X (1) HALOGENATED SOLVENTS	X (1) ACIDS	X (1) FLYASH	X (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER(specify):	(2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER(specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER(specify):			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER(specify):
			(6) CYANIDE	X (6) OTHER(specify): incineration ash from wood, paper and paint wastes	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER(specify)		

Continue On Page 3

REF- 14



LATITUDE: 43°02'47"
LONGITUDE: 78°53'09"

SCALE

0 1000 2000 3000 4000 FEET

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
BUFFALO PUMPS

FIGURE ii-1

REFERENCE: U.S.G.S. 7.5' Topographic Map
Tonawanda West, NY (1980) and Tonawanda
East, NY (1980) Quadrangles

REF- 15

Table B-1.--Analyses of ground-water and sediment samples from Buffalo Pumps Division, site 6, North Tonawanda, N.Y., June 21, 1982.
[Locations shown in fig. B-1. Concentrations are in µg/L and µg/kg respectively; dashes indicate that compound was not found.]

	Sample number		
	Ground water		Surface-water sediment
	1	2	3
Inorganic constituents			
Chromium	150†	40	--
Copper	3,400†	300	1,500,000††
Iron	260,000†	51,000†	10,000,000
Organic compounds	--	--	***

† Exceeds USEPA criterion for maximum permissible concentration in drinking water or NYS standard for maximum concentration in ground water.
†† Exceeds concentrations in samples from undisturbed soils in the Tonawanda area. Undisturbed soils not analyzed for iron.
*** Analyzed at detection limit above that required by this study. No compounds detected.

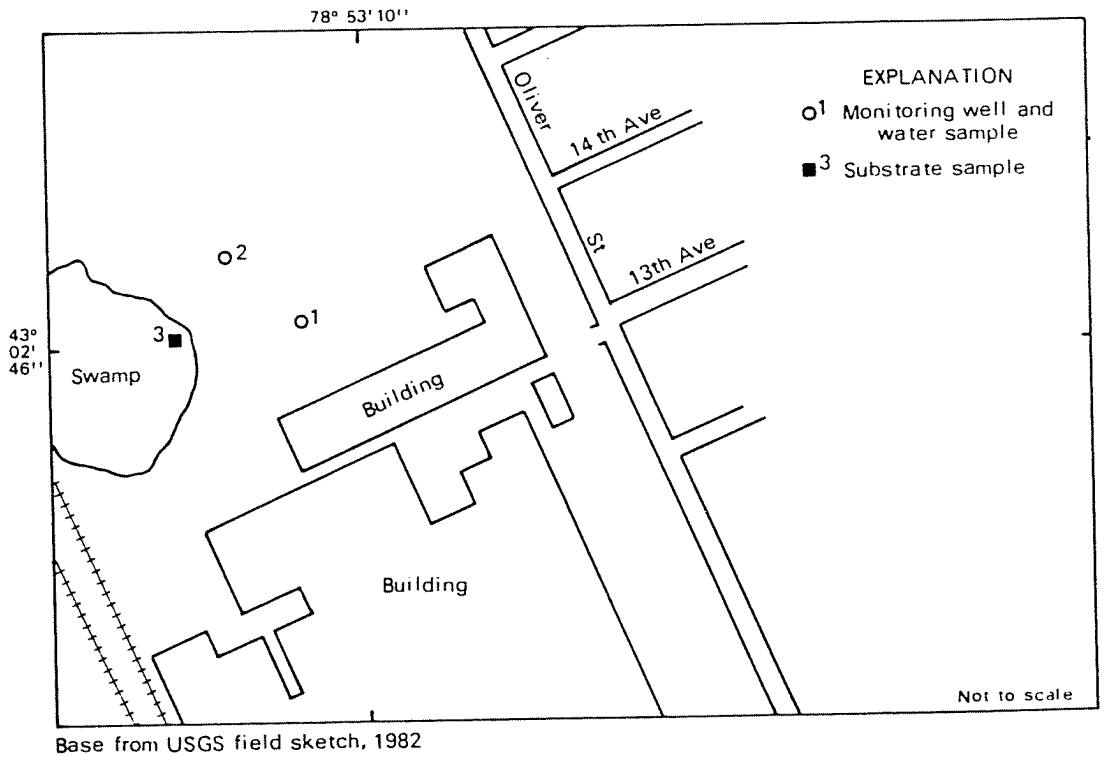


Figure B-1. Location of sampling holes and monitoring well at Buffalo Pumps Division, site 6, North Tonawanda.

USGS Study draft
7/22/10

6. BUFFALO PUMPS DIVISION

General Information and Chemical Migration Potential

The Buffalo Pumps Division site is located in the City of North Tonawanda, and is shown on plate 2.

The site was used to dispose of an unknown quantity of boiler ash. The site was closed in 1971 and has since been partially covered with grass.

The potential for contaminant migration is minor because higher concentrations of heavy metals were found in a sediment sample from a swamp at the west site of the property than in samples from the refuse area. Additional data would be needed to determine whether migration is taking place. A map showing the location of test holes is given in figure __.

Figure __.--(caption on next page) belongs near here.

Geologic Information

The site consists of glacial lacustrine clay overlying bedrock of Camillus Shale. The U.S. Geological Survey drilled on the site in 1982, the locations are shown in figure __. The geologic logs are as follows:

Borehole	Depth (ft)	Description
1	0 - 6.2	Fill.
	6.2 - 11.2	Clay, tan, wet.
	11.2 - 27.0	Same, but wetter.
	27.0 - 28.5	Clay, sandy, pinkish.
	28.5 - 30.0	Bedrock.
		SAMPLE: 5 - 7 ft.
2	0 - 1.0	Topsoil.
	1.0 - 3.0	Clay, gray.
	3.0 - 5.0	Sand, clayey, dark, very wet.
	5.0 - 5.5	Clay, dry.
	5.5 - 6.2	Sand, dry, tight.
		SAMPLE: 3 - 5 ft.

Hydrologic information

Water levels in the two wells indicated the water table to be 3 to 5 ft below land surface. The direction of ground-water flow appeared to be toward the Niagara River.

Chemical information

Water samples were collected from the two wells, and a sediment sample was collected in the swamp on the west side of the property (fig. __). Each sample was analyzed for chromium, copper, iron, and organic compounds. Results are given in table __. No organic compounds were found in the samples, however, the sediment sample was analyzed at a detection limit of mg/Kg instead of ug/Kg. The concentrations of chromium, copper, and iron were higher than the USEPA recommended criteria for drinking water. The substrate sample had a copper concentration higher than background soil samples from undisturbed sites in the Tonawanda area.

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

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	000212799

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Buffalo Pumps Division	874 Oliver Street

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
North Tonawanda	NY	14120	Niagara	063	36

09 COORDINATES LATITUDE	LONGITUDE
43° 02' 42"	78° 53' 09"

10 DIRECTIONS TO SITE (Starting from nearest public road)
The site is located on the northern end of the Buffalo Pumps property at the intersections of East Avenue and Oliver Street.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
Buffalo Forge Company	490 Broadway Avenue

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Buffalo	NY	14204	(716) 847-5121

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)
Buffalo Pumps Division	874 Oliver Street

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
North Tonawanda	NY		(716) 693-1850

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

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

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES ☐ NO DATE 11 17 81 (MONTH DAY YEAR)

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

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

03 YEARS OF OPERATION
1900 (BEGINNING YEAR) 1978 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Boiler ash and foundry sand were landfilled within fenced property north of the facility. Construction debris, excavated fill, and suspected foundry sands were disposed of in a swamp area at the northern boundry of the property

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Suspected metals from incineration of paint wastes and suspected phenolic-based foundry sands pose a potential source of contamination of groundwaters entering Niagara River. Volatile organic gases were detected by HNU meter (5-9 ppm)

V. PRIORITY ASSESSMENT

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

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
S. Robert Steele, II	Engineering-Science (ES)	(703) 591-7575

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
S. Robert Steele, II	—	ES	(703) 591-7575	1 8 85 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D00212-7199

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] A. SOLID
- [x] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER (Specify)
- [ ] E. SLURRY
- [ ] F. LIQUID
- [ ] G. GAS

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

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	Suspected		phenols in foundry sand
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			Chromium, copper, and iron in groundwater sample
BAS	BASES			
MES	HEAVY METALS	1500	mg/kg	copper in surface water sediment adjacent to landfill

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

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Phenol	180-95-2	landfill	unknown	
MES	chromium	7440-47-3	unknown	0.150	mg/kg
MES	copper	7440-50-8	unknown	1500	mg/kg
	boiler ash from incineration of wood paper and paint waster was also disposed onsite				

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)

1. USGS site investigation, Draft Study report, 1983
2. ES and D&M site investigation, 3/20/85
3. Niagara County Health Department, site investigation, 2/22/84

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 800212799

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: 1983) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Metal contamination detected in USGS sampling wells

01 ☒ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: 1983) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Swamp sediment from disposal area Cadjacent & downgradient contained metal contamination

01 ☒ C. CONTAMINATION OF AIR — 02 ☒ OBSERVED (DATE: 1985) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Organic vapors detected near ground surface during HNU meter survey

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
No

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

01 ☒ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) 04 NARRATIVE DESCRIPTION
1) Soil placed on site from sewer excavation may have contained contaminants
2) Contaminants may migrate with groundwater

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
No

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
No

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

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
unknown

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *(Include name(s) of species)*
unknown

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
unknown

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/Runoff/Standing liquids, Leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
unlined facility

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
No

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
No

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Possible midnight dumping - nonsecure area

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION *(Cite specific references, e. g., state files, sample analysis, reports)*
Site Visit, 1985
USGS, 1983

EPA FORM 2070-13 (7-81)

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

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Buffalo Pumps Division	874 Oliver Street

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
North Tonawanda	NY	14120	Niagara	063	36

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
43° 02' 42"	78° 53' 09"	☒ 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
3 20 85 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	1900 (BEGINNING YEAR) 1978 (ENDING YEAR) ☐ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR Engineering - Science (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR (Name of firm)

☐ E. STATE ☒ F. STATE CONTRACTOR Dames & Moore (Name of firm) ☐ G. OTHER (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
S. Robert STEELE II		ES	(703) 671-7575
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Eileen Gilligan	Geologist	DEC	(518) 457-9276
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Mr. Muench	plant manager	870 Oliver St Niagara, NY 14120	(716) 693-1850
Mr. Richard Soos	maintenance department	— same as above —	(716) 693-1850
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	8:30 AM	Cool (40's F) Sunny

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
S. Robert STEELE II	Engineering - Science (ES)	(703) 671-7575

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
S. Robert STEELE II		ES	(703) 671-7575	3 20 85 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D083127199

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] A. SOLID
- [x] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER _____ (Specify)
- [ ] E. SLURRY
- [ ] F. LIQUID
- [ ] G. GAS

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

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	Suspected		phenols in foundry sand
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			Chromium, copper, and iron in groundwater sample
BAS	BASES			
MES	HEAVY METALS	1500	mg/kg	Copper in surface water sediment adjacent to landfill

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

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Phenol	180-95-2	landfill	unknown	
MES	chromium	7440-47-3	unknown	0.150	mg/kg
MES	copper	7440-50-8	unknown	1500	mg/kg
	boiler ash from incineration of wood paper and paint waster was also disposed onsite				

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)

1. USGS site investigation, draft study report
2. ES and D&M site investigation, 3/20/85.
3. Niagara County Health Department, site investigation, 2/22/84

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

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)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☒ H. OPEN DUMP	Unknown	
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

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

05 OTHER

- ☐ A. BUILDINGS ON SITE

06 AREA OF SITE

Approx 4 (Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

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

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

The waste material (ie, boiler ash) was disposed directly on the ground. The inactive disposal area was covered by an estimated three (3) feet of clean fill soil.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS The landfill on the northern end of the property is covered with clean fill. There is no fence to prevent unauthorized entry.

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

Niagara County Health Department, Site Profile Report,

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY *(Check as applicable)*

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

02 STATUS

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

03 DISTANCE TO SITE

A. > 3.0 (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY *(Check one)*

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

02 POPULATION SERVED BY GROUND WATER ~100

03 DISTANCE TO NEAREST DRINKING WATER WELL > 3.0 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
3-5 (ft)	Probably W	~30 (ft)	Unknown (gpd)	☐ YES ☒ NO

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

Three industrial wells at east of site. Hooker-Durez D.V., 1.5 miles

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS: Unknown	☐ YES ☐ NO	COMMENTS: Unknown

IV. SURFACE WATER

01 SURFACE WATER USE *(Check one)*

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

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Niagara River	☐	0.2 (mi)
	☐	_____ (mi)
	☐	_____ (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. 9456 NO. OF PERSONS	B. 28,263 NO. OF PERSONS	C. 37,746 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

0.1 (mi)

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

Unknown

04 DISTANCE TO NEAREST OFF-SITE BUILDING

0.0 (mi)

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

older residential area east of site.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127 99

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

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

02 PERMEABILITY OF BEDROCK (Check one)

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

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
30 (ft)	unknown (ft)	unknown	

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)	0.5 %		0.7 %

09 FLOOD POTENTIAL

SITE IS IN >100 YEAR FLOODPLAIN

10

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. >2.0 (mi)	B. 0.75 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

MIGRATORY BIRDS >1 (mi)

ENDANGERED SPECIES: HALIAEETUS LEUCOCEPH AQUILA CHRYSAETOS FALCO PEREGRENES

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A. 0.0 (mi)	B. 0.04 (mi)	C. 72 (mi)	D. >1 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is level filled area adjacent to a lower lying swamp. Surface water runoff from the swamp and site drains to the Niagara River via storm sewers.

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

NCDOH Site Profile 1981.
NYSDEC Reg. 9 Dept. of Fish & Wildlife files
NYS Wetlands Maps
USDOC Technical Paper No. 40
USDOC Climatic Atlas of the United States
NYS Atlas of Community Water System Sources, 1982

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR	5	measurements made onsite	
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
HNU meter	HNU readings were 5-7 ppm (at a distance of 5-6" above ground) over the fill area. The highest readings were found in the northwestern end of the landfill (9 ppm). Background readings at the site were 1-2 ppm.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF _____ (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS: site map was updated during site inspection

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

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

ES and D&M site inspection, 3/20/85

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

II. CURRENT OWNER(S) / **PARENT COMPANY** *(If applicable)*

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
Buffalo Pumps Division		Buffalo Forge Company	

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	11 SIC CODE
874 Oliver Street		490 Broadway Avenue	

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
North Tonawanda	NY	14120	North Tonawanda	NY	

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	10 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) *(List most recent first)* / **IV. REALTY OWNER(S)** *(If applicable; list most recent first)*

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Voelker and Felthousen			

03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE
874 Oliver Street			

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
North Tonawanda	NY				

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)*

ES and D&M site inspection, 3/20/85

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002127199

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
Buffalo Pumps Divisions	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
874 Oliver Street	

05 CITY	06 STATE	07 ZIP CODE
North Tonawanda		

08 YEARS OF OPERATION	09 NAME OF OWNER
1931 - present	(SAME)

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
Buffalo Forge Company	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
490 Broadway Avenue	

14 CITY	15 STATE	16 ZIP CODE
Buffalo	NY	14204

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

01 NAME	02 D+B NUMBER
Buffalo Steam Pump Co.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
874 Oliver Street	

05 CITY	06 STATE	07 ZIP CODE
North Tonawanda		

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1891 - 1931	(SAME)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 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

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

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

Niagara County Health Department, Site Profile Report

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D012127199

II. ON-SITE GENERATOR

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

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
UNKNOWN			
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
Not applicable			
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)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D002127199

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D006212799

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☒ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: construction debris fill covers site (3-4 feet)

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: NO

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)

ES and D&M site inspection, 3/20/85

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D002127199

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

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

NONE

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

NYSDEC, Environmental Enforcement Division

NYS, Attorney General Office

SECTION VI

SECTION VI

ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

ASSESSMENT OF DATA ADEQUACY

A summary assessment of the adequacy of existing data for completion of the HRS score is presented in Table VI-1. Based on this assessment, the following Phase II work plan and cost estimate has been prepared.

PHASE II WORK PLAN

Objectives

The objectives of the Phase II activities are:

- To collect additional field data necessary to identify the occurrence and extent of contamination and to determine if any imminent health hazard exists.

- To perform a conceptual evaluation of remedial alternatives and estimate budgetary costs for the most likely alternative.

- To prepare a site investigation report including final HRS score.

The additional field data required to complete this investigation are described as follows:

Auger Holes - Drill four auger holes to a maximum depth of 10 feet. One sample from each auger hole is to be analyzed for GC/MS scan and heavy metals (ICPES).

Groundwater - A groundwater monitoring system consisting of 3 wells is recommended. Borings will be drilled to a maximum depth of 35 feet; soil samples will be taken every 5 feet or more frequently if a change in soil lithology is encountered. The wells will be placed in the aquifer of concern and constructed of 2" PVC pipe. The groundwater samples will be analyzed for GC/MS scan and heavy metals (ICPES). In addition, sieve and hydrometer analyses will be performed on representative samples of the subsurface soils. Finally, an in-situ permeability test will be performed on each well.

Surface Water and Sediment - A surface water and sediment monitoring system consisting of 2 monitoring stations is recommended. Two stations (S-1 and S-2) will be located in the swamp west of the site. The surface water and sediment samples will be analyzed for GC/MS scan and heavy metals (ICPES).

Air - An air monitoring survey with an HNU meter is recommended to test the air quality during site activities. If high HNu meter readings are observed on-site, a more quantitative air survey will be conducted.

TASK DESCRIPTION

The proposed Phase II tasks are described in Table VI-2 as required under the site specific health and safety plan and quality assurance plan which must be submitted prior to initiation of field activities. The proposed monitoring well and sampling locations are presented in Figure VI-1.

COST ESTIMATE

The estimated man-hours required for the Phase II project are presented in Table VI-3 and the estimated project costs by tasks are presented in Table VI-4. The estimate total cost for this project is $54,350.

TABLE VI-1

ASSESSMENT OF DATA ADEQUACY

HRS Data Requirement	Comments on Data
Observed Release	
Groundwater	Inadequate for HRS score, no upgradient well
Surface Water	More data needed to assess observed release to surface water
Air	Inadequate data to score observed release
Route Characteristics	
Groundwater	Adequate for HRS score
Surface Water	Adequate for HRS score
Air	Adequate for HRS score
Containment	Adequate for HRS score
Waste Characteristics	Insufficient for HRS score
Targets	Adequate for HRS score
Observed Incident	Adequate for HRS score
Accessibility	Adequate for HRS score

TABLE VI-2

PHASE II WORK PLAN - TASK DESCRIPTION

	Tasks	Description of Task
II-A	Update Work Plan	Review the information in the Phase I report, conduct a site visit, and revise the Phase II work plan.
II-B	Conduct Geophysical Studies	No further studies necessary.
II-C	Conduct Boring/Install Monitoring Wells	Install 1 upgradient and 2 downgradient wells. The borings will be drilled to a depth of approximately 35 feet. Wells will be constructed of 2" PVC pipe. Bedrock aquifer will be screened.
II-D	Construct Test Pits/Auger Holes	Drill 4 test auger holes to a maximum depth of 10 feet.
II-E	Perform Sampling & Analysis	
	Soil samples from borings	Soil samples collected at 5 ft. intervals during drilling and at changes in subsurface lithologies. Perform one grain size analysis and permeability test per subsurface lithology change.
	Soil samples from surface soils	No further studies necessary.
	Soil samples from auger holes/test pits	Collect 1 composite sample from each of the borings to be analyzed for GC/MS scan and heavy metals (ICPES).
	Sediment samples from surface water	2 sediment samples are to be collected and analyzed for GC/MS scan and heavy metals (ICPES).
	Groundwater samples	3 groundwater samples are to be collected and analyzed for GC/MS scan and heavy metals (ICPES).
	Surface water samples	2 surface water samples are to be collected and analyzed for GC/MS scan and heavy metals (ICPES).

TABLE VI-2 (Continued)

PHASE II WORK PLAN - TASK DESCRIPTION

Tasks		Description of Task
	Air samples	Using the HNU determine the presence of organics.
	Waste samples	Soil samples from auger holes/test pits (see Task II-E).
II-F	Calculate Final HRS	Based on the field data collected in Tasks II-B - II-E, complete the HRS form.
II-G	Conduct Site Assessment	Prepare final report containing significant Phase I information, additional field data, final HRS and HRS documentation records, and site assessments. The site assessment will consist of a conceptual evaluation of alternatives and a preliminary cost estimate of the most probable alternative.
II-H	Project Management	Project coordination, administration and reporting.

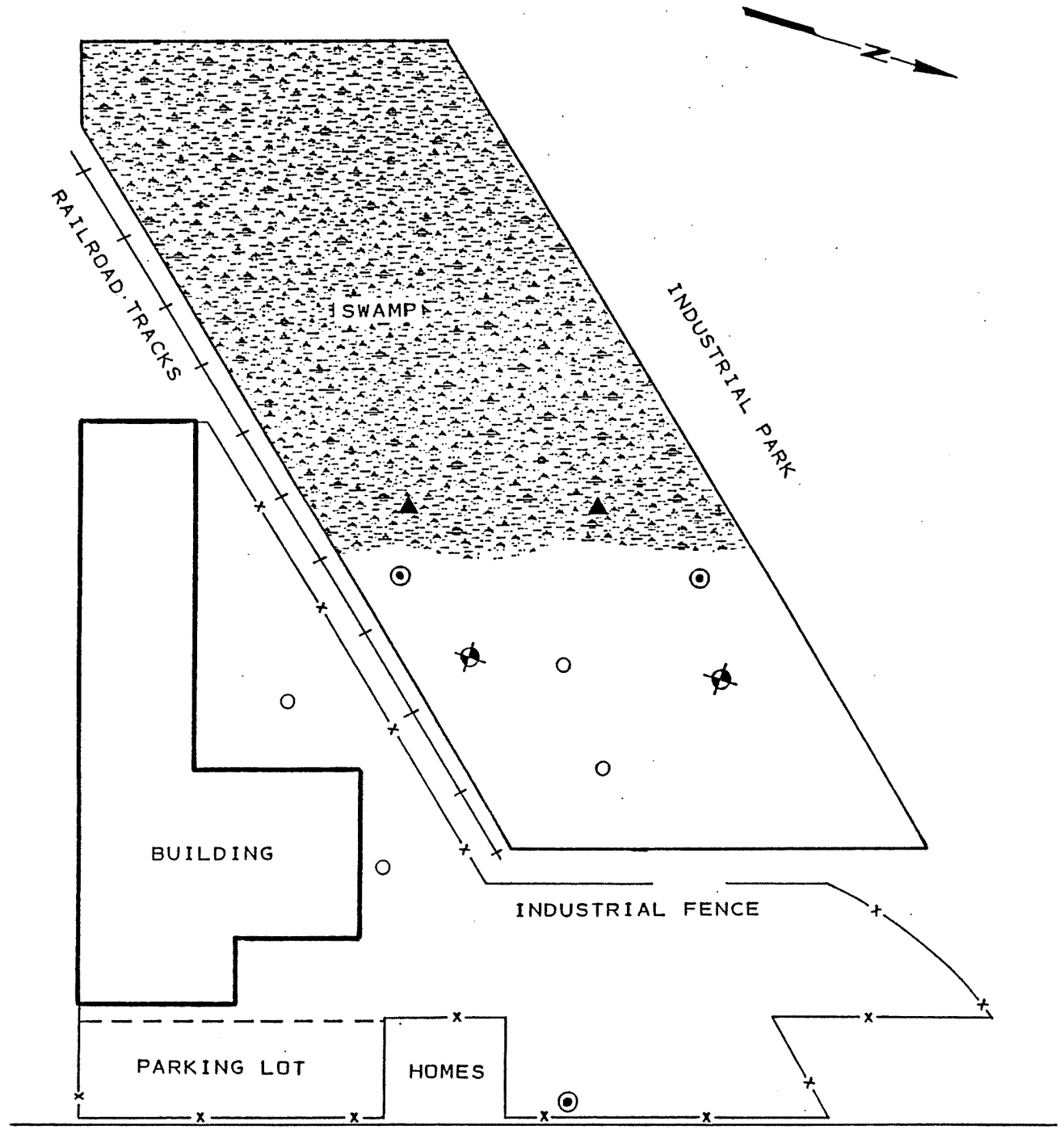
TABLE VI-3
PERSONNEL RESOURCES BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: BUFFALO PUMPS)

TASK DESCRIPTION	TEAM MEMBERS, MANHOURS												TOTAL HOURS	TOTAL $
	PIC	TRB	PM	DPM	PCM	QAM	HSM	FTL	FT	RAAL	RAAT	SS		
II-A UPDATE WORK PLAN	1	1	8	4		4	4	16		8		28	74	1144.1
II-B CONDUCT GEOPHYSICAL STUDIES													0	0
II-C CONDUCT BORING/INSTALL MONITORING WELLS			8	16		4	4	24	50			24	130	1896.96
II-D CONSTRUCT TEST PITS/AUGER HOLES			4	4		2	2	16	24			24	76	992.1
II-E PERFORM SAMPLING AND ANALYSIS														
SOIL SAMPLES FROM BORINGS			4	4		2	2	4	16			8	40	555.14
SOIL SAMPLES FROM SURFACE SOILS													0	0
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES			4	4		2	2	4	8			16	40	540.1
SEDIMENT SAMPLES FROM SURFACE WATER			4	4		1	1	4	8			4	26	425.11
GROUND-WATER SAMPLES			4	2		1	1	4	8			2	22	351.57
SURFACE WATER SAMPLES			4	2		1	1	4	8			4	24	366.41
AIR SAMPLES			2	2			1	2	4			2	13	214.61
WASTE SAMPLES													0	0
II-F CALCULATE FINAL HRS			4	4				4	4	2		4	22	394.56
II-G CONDUCT SITE ASSESSMENT	2	2	8	2				24	32	12	40	50	172	2217.02
II-H PROJECT MANAGEMENT	2		6	2	3	4	4					12	33	529.88
TOTALS	5	3	60	50	3	21	22	106	162	22	40	178	672	9627.56

TABLE VI-4
COST ESTIMATE BREAKDOWN BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: BUFFALO PUMPS)

TASK DESCRIPTION	DIRECT LABOR HOURS	DIRECT LABOR COST	OTHER DIRECT COSTS (ODC), $ LAB ANALYSIS	TRAVEL AND SUBSISTANCE	SUPPLIES	EQUIP. CHARGES	SUBCON-TRACTORS	MISC.	SUBTOTAL ODC	TOTAL ($)
II-A UPDATE WORK PLAN	74	$1,144.10		$200.00	$50.00	$50.00		$50.00	$350.00	$1,494.10
II-B CONDUCT GEOPHYSICAL STUDIES	0	$0.00							$0.00	$0.00
II-C CONDUCT BORING/INSTALL MONITORING WELLS	130	$1,896.96		$450.00	$250.00	$600.00	$3,500.00	$250.00	$5,050.00	$6,946.96
II-D CONSTRUCT TEST PITS/AUGER HOLES	76	$992.10		$150.00	$125.00	$300.00	$1,500.00	$125.00	$2,200.00	$3,192.10
II-E PERFORM SAMPLING AND ANALYSIS										
SOIL SAMPLES FROM BORINGS	40	$555.14			$100.00	$150.00		$50.00	$300.00	$855.14
SOIL SAMPLES FROM SURFACE SOILS	0	$0.00							$0.00	$0.00
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES	40	$540.10	$6,400.00		$100.00	$125.00		$75.00	$6,700.00	$7,240.10
SEDIMENT SAMPLES FROM SURFACE WATER	26	$425.11	$3,200.00	$85.00	$20.00	$75.00		$50.00	$3,430.00	$3,855.11
GROUND-WATER SAMPLES	22	$351.57	$3,600.00	$150.00	$60.00	$150.00		$50.00	$4,010.00	$4,361.57
SURFACE WATER SAMPLES	24	$366.41	$2,400.00	$85.00	$20.00	$75.00		$50.00	$2,630.00	$2,996.41
AIR SAMPLES	13	$214.61				$60.00			$60.00	$274.61
WASTE SAMPLES	0	$0.00							$0.00	$0.00
II-F CALCULATE FINAL HRS	22	$394.56			$150.00	$50.00		$50.00	$250.00	$644.56
II-G CONDUCT SITE ASSESSMENT	172	$2,217.02			$750.00	$300.00		$75.00	$1,125.00	$3,342.02
II-H PROJECT MANAGEMENT	33	$529.88	$1,200.00	$300.00	$150.00	$50.00		$50.00	$1,750.00	$2,279.88
TOTALS	672	$9,627.56	$16,800.00	$1,420.00	$1,775.00	$1,985.00	$5,000.00	$875.00	$27,855.00	$37,482.56

OVERHEAD=	$13,748.16
SUBTOTAL=	$51,230.72
FEE=	$3,119.62
TOTAL PROJECT COST=	$54,350.33



NOT TO SCALE

EXPLANATION:

- U.S.G.S. BORING/WELL (1982)
- PROPOSED AUGER HOLES
- PROPOSED GROUNDWATER MONITORING WELL
- PROPOSED SURFACE WATER AND SEDIMENT SAMPLES

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PROPOSED SAMPLING LOCATIONS

BUFFALO PUMPS

FIGURE VI-1

APPENDIX A

REFERENCES

Sources Contacted

Documentation

SOURCES CONTACTED FOR
BUFFALO PUMPS INVESTIGATION

CONTACT	DATE CONTACTED	PERSON CONTACTED	TELEPHONE NUMBER	LOCATION	INFORMATION COLLECTED
USEPA Headquarters, Superfund Office	4/2/85	Hamid Saebfed	(202) 382-4839	401 M Street, NW Washington, D.C. 20460	Reviewed list of sites to determine if additional information was available.
USEPA - Region II, OERR	3/22/85	Mel Hauptman	(212) 264-7681	Room 402 26 Federal Plaza NY, NY 10278	General information from site files.
NYSDEC - Division of Solid and Hazardous	12/19/84	Marsden Chen	(518) 457-0639	50 Wolf Road Albany, NY 12233	General information from site files.
NYSDEC - Division of Water	12/19/84	Sal Pagano	(518) 457-6675	50 Wolf Road Albany, NY 12233	Mr. Pagano set up meetings with three bureaus within Division of Water.
NYSDEC - Division of Water SPDES Files	12/20/84	Bob Hannaford	(518) 457-6716	50 Wolf Road Albany, NY 12233	Reviewed SPDES Files for permit numbers and conditions.
NYSDEC - Division of Water DMR Files	12/21/84	George Hansen	(518) 457-2010	50 Wolf Road Albany, NY 12233	Reviewed DMR files for discharge violations.
NYSDEC - Division of Air Toxics	12/21/84	Art Fossa	(518) 457-7454	50 Wolf Road Albany, NY 12233	Reviewed site list to identify sites with potential air emissions.
NYSDEC - Division of Monitoring and Assessment	12/21/84	Bill Berner Frank Estabrooks Fred Van Alstyne	(518) 457-7363 (518) 457-7363 (518) 457-7363	50 Wolf Road Albany, NY 12233	Reviewed geology and monitoring information for specific sites.

SOURCES CONTACTED FOR

BUFFALO PUMPS INVESTIGATION

CONTACT	DATE CONTACTED	PERSON CONTACTED	TELEPHONE NUMBER	LOCATION	INFORMATION COLLECTED
NYSDEC - Division of Environmental Enforcement	12/20/84	Kevin Walter	(518) 457-4346	50 Wolf Road Albany, NY 12233	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYS - Attorney General's Office, Dept. of Law	1/7/85	Val Washington	(518) 473-3105	Empire State Plaza Justice Building Albany, NY 12233	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYS - Attorney's Office	1/3/85	Albert Bronson	(716) 847-7196	Buffalo State Office Bldg. Buffalo, NY 14202	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYSDEC - Division of Solid and Hazardous Waste	1/7/85	Ahmad Tayyebi Larry Clare Peter Buechi Jack Tygert	(716) 847-4615 (716) 847-4615 (716) 847-4590 (716) 847-4585	600 Delaware Ave. Buffalo, NY 14202	Collected information from site files.
NYSDEC - Region 9 Division of Air	1/8/85	Henry Sandonato Robert Armbrust	(716) 847-4565	600 Delaware Ave. Buffalo, NY 14202	Collected information concerning previous air emissions from inactive disposal sites.

SOURCES CONTACTED FOR
BUFFALO PUMPS INVESTIGATION

CONTACT	DATE CONTACTED	PERSON CONTACTED	TELEPHONE NUMBER	LOCATION	INFORMATION COLLECTED
NYSDEC - Regional Attorney	1/10/85	Peter J. Burke	(716) 847-4551	600 Delaware Ave. Buffalo, NY 14202	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYS Dept. of Health, Buffalo Region, Public Health Engineering	1/8/85	Lou Violanti	(716) 847-4500	584 Delaware Ave. Buffalo, NY 14202	Collected information from site files.
NYSDEC - Region 9 Division of Fish and Wildlife	1/10/85 & 1/11/85	Mike Wilkinson Jim Sneider	(716) 847-4600 (716) 847-4600	600 Delaware Ave. Buffalo, NY 14202	Collected information from site files
Niagara County Dept. of Health	1/9/85	Mike Hopkins	(716) 284-3124	Tenth & East Falls Street Niagara Falls, NY 14302	Collected information from Niagara County site files. Obtained additional information through interview.
Niagara County Dept. of Planning and Industrial Development	2/22/85	Dave Urso	(716) 439-6033	59 Park Ave. Lockport, NY 14094	Obtained 1980 U.S. Census Data.
Buffalo Pumps Company	3/20/85 4/10/85	Mr. Muench	(716) 693-1850	874 Oliver St. N. Tonawanda, NY 14120	Interviewed regarding waste disposal at the Buffalo Pumps Site.
Buffalo Pumps Company	3/20/85	Richard Soos	(716) 693-1850	874 Oliver St. N. Tonawanda, NY 14120	Interviewed regarding waste disposal at the Buffalo Pumps Site.

REFERENCES

1. Muench, Buffalo Pumps, Interview during ES and D&M Site Visit, 3/20/85.

2. Muench, Buffalo Pumps, Follow-up Telephone Interview, 10/85.

3. Niagara County Health Department, Site Profile Report, 1981.

REF-1

INTERVIEW FORM

INTERVIEWEE/CODE Mr. Muench /

TITLE - POSITION plant manager / Buffalo Pumps

ADDRESS 875 Oliver St. "

CITY North Tonawanda STATE NY ZIP 14120

PHONE (716) 693-1850 RESIDENCE PERIOD _____ TO _____

LOCATION Site inspection interview INTERVIEWER Bob Steele / John Botts

DATE/TIME 3/20/85 and 4/10/85

SUBJECT: onsite waste disposal / PHASE I Investigation

REMARKS: In the period 1900 to 1953 foundry sands used in bronze and iron casting were disposed adjacent to the manufacturing plant. In addition, during the same period through to 1971, boiler ash was disposed in this area. No soil cover has been applied to the site.

In 1977 to 1978, construction debris and earthen material from the excavation of a storm sewer on Oliver Street was landfilled in an area north of an Erie Railroad easement. In 1979 to 1980, construction debris and earthen material from the demolition of an onsite building was added to the fill. The USGS has two monitoring wells in the fill area. One well may have been destroyed by construction activity conducted by a neighboring business.

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

SIGNATURE:

COMMENTS:

INTERVIEW FORM

REF-2

RECEIVED ____
FILE ____
FILED ____ INCOMING
COPIES TO 13305-019
CIRCULATE TO ____

INTERVIEWEE/CODE Mr. Muench

TITLE - POSITION Buffalo Pumps Plant Manager

ADDRESS 875 Oliver St

CITY North Tonawanda STATE NY ZIP 14120

PHONE (716) 693-1850 RESIDENCE PERIOD ____ TO ____

LOCATION over telephone INTERVIEWER Lisa Ryan

DATE/TIME 6/10/85 @ 11:15

SUBJECT: Buffalo Pumps Phase I Investigation

REMARKS: Mr. Muench clarified information concerning the location of onsite dumping and the type of materials dumped. From 1900 to 1953 foundry sands were dumped adjacent to the plant building and until 1971 boiler ash was also dumped. These materials were dumped over the entire fenced in area of the plant including the area subsequently covered by a plant addition (on north side of building). No soil cover was ever added to this area.

A second disposal area is located to the NW of the abandoned railroad tracks. This area received construction debris and was later covered with clayey materials from the excavation of a storm sewer on Oliver St. In this area landfilling occurred in low lying swampy area, and the out edge was moved back to its present location.

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

Michael J Muench
SIGNATURE

COMMENTS: Construction Debris as noted consisted of no more than 15 cubic yards of brick only.

NCHH

Ref 3

Niagara County Health Dept Report
Dec, 1981

NAME

BUFFALO PUMPS DIVISION (DEC #932044)

LOCATION

The disposal area is located north of the Buffalo Pumps Plant at 874 Oliver Street, North Tonawanda, NY. This area is a 1.3 acre lot between the plant fence line and a property line running roughly parallel to and 200 feet south of Industrial Drive. The lot measures approximately 200 feet by 300 feet.

A site sketch is attached.

OWNERSHIP

The property is owned by Buffalo Pumps Division, Buffalo Forge Company. Contact can be made through Mr. Kibbe at the North Tonawanda Plant.

HISTORY

According to the Inter-Agency Task Force Report (1979) the plant was purchased in 1891 by Voelker and Felthousen and operated as the Buffalo Steam Pump Company until 1931. In 1931, the plant became the Buffalo Pump Division, Buffalo Forge Company. Buffalo Pumps manufactures centrifugal pumps.

Buffalo Pumps used coal fired boilers until 1970 when gas/oil burners were installed. Prior to 1971, boiler ash was disposed of in an area adjacent to the north side of the plant yard. After 1970 ash was not generated. The total volume of ash disposed of is not known.

An inspection of the inactive disposal area was made by this department in December, 1981. The area has recently received up to three feet of clean fill as part of an expansion by Buffalo Pumps. Because of this fill material, a visual inspection of waste material was not possible. According to Mr. Kibbe of Buffalo Pumps, no material other than ash was disposed of here. The lot has been vacant for many years previous to this writing.

Currently the principal wastes generated by Buffalo Pumps are wood, paper, waste oil and paint sludge. The wastes generated while the site was active are expected to be the same with the addition of boiler ash. Wood, paper and general refuse are hauled off-site by Rapid Disposal. Waste oils are removed by Booth Oil. Paint sludge and scraped metals are transported to the Cheektowaga Plant of Buffalo Forge where they are incinerated, recycled or hauled off-site for disposal.

A review of USGS maps (Tonawanda west - 7½') and USDA aerial photos (ARE 3V-75, 1958) provided no additional information.

RESULTS OF PREVIOUS SAMPLING AND ANALYSIS

There is no record of any prior sampling. Mr. Kibbe of Buffalo Forge was unaware of any previous sampling.

SOILS/GEOLOGY

The exact composition of the original soils is unknown. A detailed soil survey for this area is unavailable. Data from nearby areas indicates that the soils are likely to contain a large percentage of clay and exhibit a low permeability in one or more levels.

The structural fill being deposited here was found to contain a variety of soil types including coarse components such as gravel and bricks. The properties of this material are unknown.

If this site is built upon as planned, the buildings and the adjacent pavement should render the surface impermeable and provide for drainage of runoff.

The bedrock is expected to be Lockport Dolomite although this has not been documented. The thickness of the Dolomite and the depth to water bearing zones is not known.

GROUNDWATER

The depth to groundwater has not been determined. The direction of flow is expected to be generally toward the Niagara River(West).

There are no known drinking water wells within three miles of this site. Public water is available throughout this area. There are no industrial or other users of groundwater in the area. There are no monitoring wells near the site.

SURFACE WATER

The nearest surface water body is the Niagara River, 1500 feet away. Direct entry of runoff to the River is not possible, but storm sewers draining this area do enter the river. Groundwater beneath this site is expected to enter the Niagara River.

The Niagara River is used for industrial and drinking water, recreation, navigation and other uses. The City of Niagara Falls water intakes are located four miles downstream. The site is not subject to flooding and there are no wetlands within one mile.

AIR

There have been no complaints of odors or other air quality problems received regarding this site. Due to the nature of the wastes present, none are expected.

The nearest residence is less than 400 feet away. 3000 to 10,000 people live within one mile of the site. Commercial and industrial areas ajoin the former disposal area. The property is entirely within the City Limits of North Tonawanda.

FIRE AND EXPLOSION

The potential for fire or explosion is very small, due to the nature of the wastes present.

Several thousand buildings and over 10,000 people are located within 2 miles. The nearest off-site building is less than 200 feet away.

DIRECT CONTACT

Although physical access is not restricted, all wastes are or will be covered to prevent direct contact. When the expansion is complete access will presumably be restricted and standard plant security measures used.

CONCLUSIONS

This site is believed to be a disposal area for coal-boiler ash. There is no indication that other materials have been disposed of here. Future construction on this site should eliminate the infiltration through the wastes.

Samples of the waste materials could be obtained from augered holes if construction activities do not prevent access to the soil (for example by pouring concrete slabs, etc.) Groundwater and soil samples could be obtained from holes around the perimeter of the site. The western boundary of the property is expected to be the downgradient side. If borings or wells are placed, additional geotechnical and hydrological data could be obtained.

Further inspections are not recommended as the condition of the wastes is not detectable from the surface.

APPENDIX B

PROPOSED UPDATED NYS REGISTRY SHEET

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

CLASSIFICATION CODE: 2a REGION: 9 SITE CODE: 932044

NAME OF SITE : Buffalo Pumps Div-Buf. Forge Comp
STREET ADDRESS: 874 Oliver Street
TOWN/CITY: COUNTY: ZIP:
North Tonawanda Niagara

SITE TYPE: Open Dump- Structure- Lagoon- Landfill-X Treatment Pond-
ESTIMATED SIZE: 1.3 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: Buffalo Pumps Div-Buffalo Forge
CURRENT OWNER ADDRESS.: 490 Broadway Ave., Buffalo, NY
OWNER(S) DURING USE...: Buf Pumps Div-Buf. Forge Company
OPERATOR DURING USE...: Buf Pumps Div-Buf. Forge Company
OPERATOR ADDRESS.....: 490 Broadway Ave., Buffalo, NY
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From Unknown To 1970

SITE DESCRIPTION:
Buffalo Pumps used coal fired boilers until 1970 and the boiler ash was disposed of in an area adjacent to the north side of the plant. It has been reported that no material other than ash was disposed at this site. Currently the prinicipal wastes generated by the plant include wood, paper, waste oil and paint sludge. They are hauled off-site for disposal, incineration or re-cycling according to a Niagara County Site Profile report of March 1982, or re-cycling according to a Niagara County Site Profile report of March 1982.
North of the ash disposal site, construction debris and excavated sewer-line soil have been disposed. USGS collected groundwater and surface water sediment samples in June 1982. No organic compounds were detected. Iron and copper were found to be in high concentration.

HAZARDOUS WASTE DISPOSED: Confirmed- Suspected -X

TYPE	QUANTITY (units)
Boiler Ash	Unknown
Waste sewer-line soil	Unknown