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915129

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION

Old Land Reclamation Site No. 915129
Depew Erie County

DATE: June 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:

Recra Environmental, Inc.

3/3477

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

Old Land Reclamation
Village of Depew
Erie County, New York
Site #915129

Prepared For:

Division of Solid and Hazardous Waste
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-0001

Prepared By:

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4248 Ridge Lea Road
Amherst, NY 14226

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OLD LAND RECLAMATION

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SECTION 1

1.0 EXECUTIVE SUMMARY

The Old Land Reclamation site is located along Broadway in the southwest portion of the Village of Depew, Erie County, New York (Figures 1 and 2). The site is presently owned by four separate parties: (1) the Village of Depew; (2) Mecca Brothers, 10788 Main Street, North Collins, New York; (3) Hirsch et. al., Buffalo, New York; and (4) Samuel Greenfield, P.O. Box 246, Buffalo, New York. The 64 acre site was operated as a solid waste landfill from approximately 1960 to 1975 and received industrial wastes including foundry sands, slag, flyash, oil sludge, pine tar pitch, inks, waste colors, and miscellaneous refuse.

In 1984, the Erie County Department of Environment and Planning conducted a sampling study and site evaluation. Barium, lead, zinc, phenol, aniline, and aniline derivatives were detected in surface water samples from drainage ditches and leachate seeps. These levels exceeded New York State regulatory and guidance criteria for discharges to state receiving waters. Soil quality was not significantly different than background levels from the Buffalo area for the parameters tested. The County concluded that disposal of industrial wastes had occurred at the landfill but that the landfill was not the only source of contamination.

The Phase I Summary Report presented herein represents a compilation of available information regarding the Old Land Reclamation site. Information sources include New York State Department of Environmental Conservation (NYSDEC) Region 9, Erie County Department of Environment and Planning (DEP) and personnel familiar with the site.

SECTION 2

The intent of the Hazard Ranking System (HRS) is to provide a method by which uncontrolled hazardous waste sites may be systematically assessed as to the potential risk that a site may pose to human health and the environment. The HRS is designed to provide a numerical value through an assessment of technical data and information, and relating that information with respect to:

- o migration of hazardous substances from the site (S_m)
- o risk involved with direct contact (S_{dc})
- o the potential for fire and explosion (S_{fe}).

The risks involved with direct contact (S_{dc}) and the potential for fire and explosion (S_{fe}) are evaluated according to site specific information including toxicity of waste, quantity, site demographics, location with respect to sensitive habitats of wildlife, etc. Migration potential (S_m) is evaluated through the rating of factors associated with three routes or pathways: groundwater (S_{gw}), surface water (S_{sw}) and air (S_a). The scored value for each route is composited to determine the risk to humans and/or the environment from the migration of hazardous substances from the site (S_m).

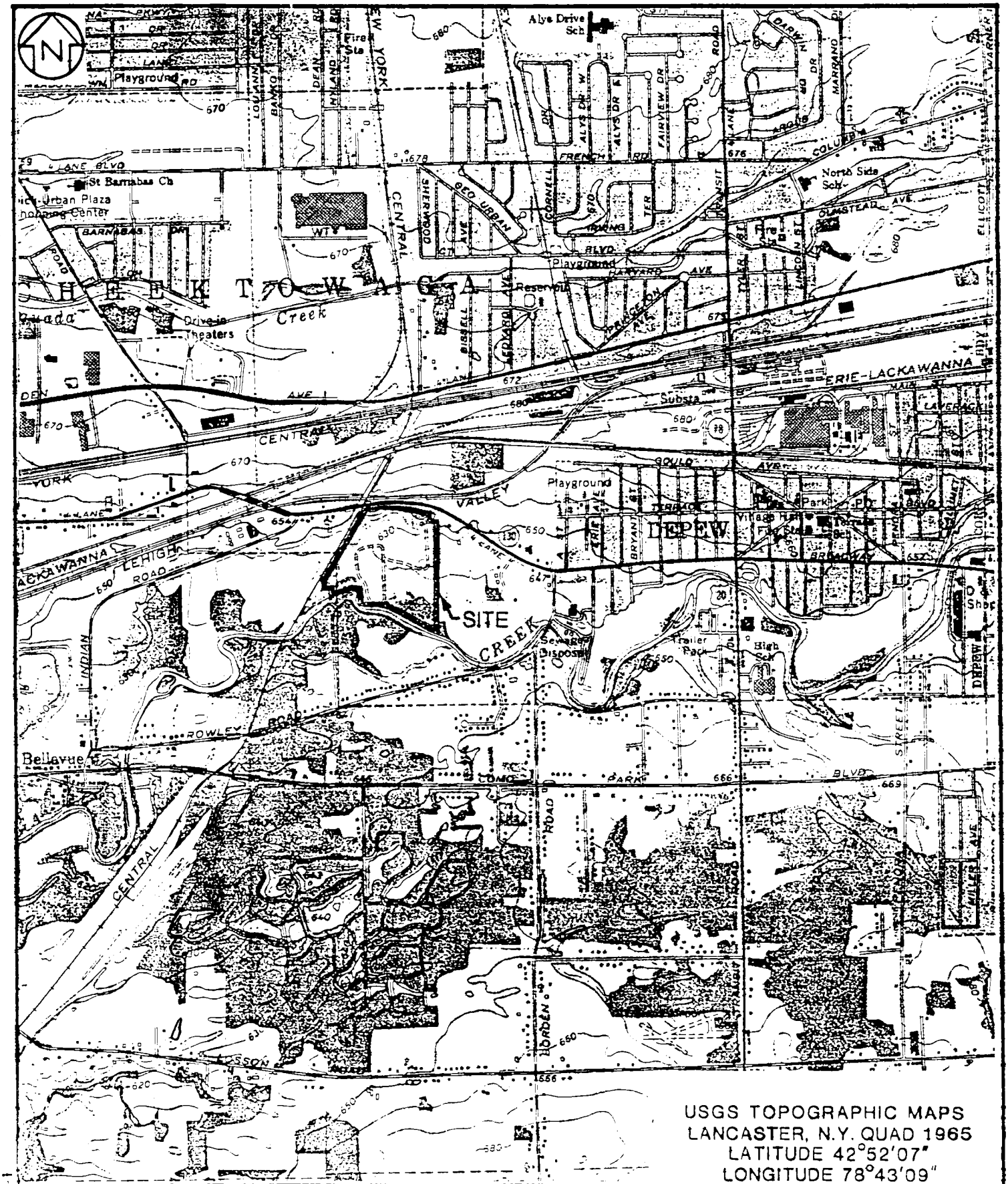
Based on the available information, the Old Land Reclamation site was scored according to the Mitre Corporation Hazard Ranking System (HRS) and the following scores were obtained:

$S_m = 7.08$ ($S_{gw} = 4.18$; $S_{sw} = 11.52$; $S_a = 0$)

$S_{fe} = 0$

$S_{dc} = 50$

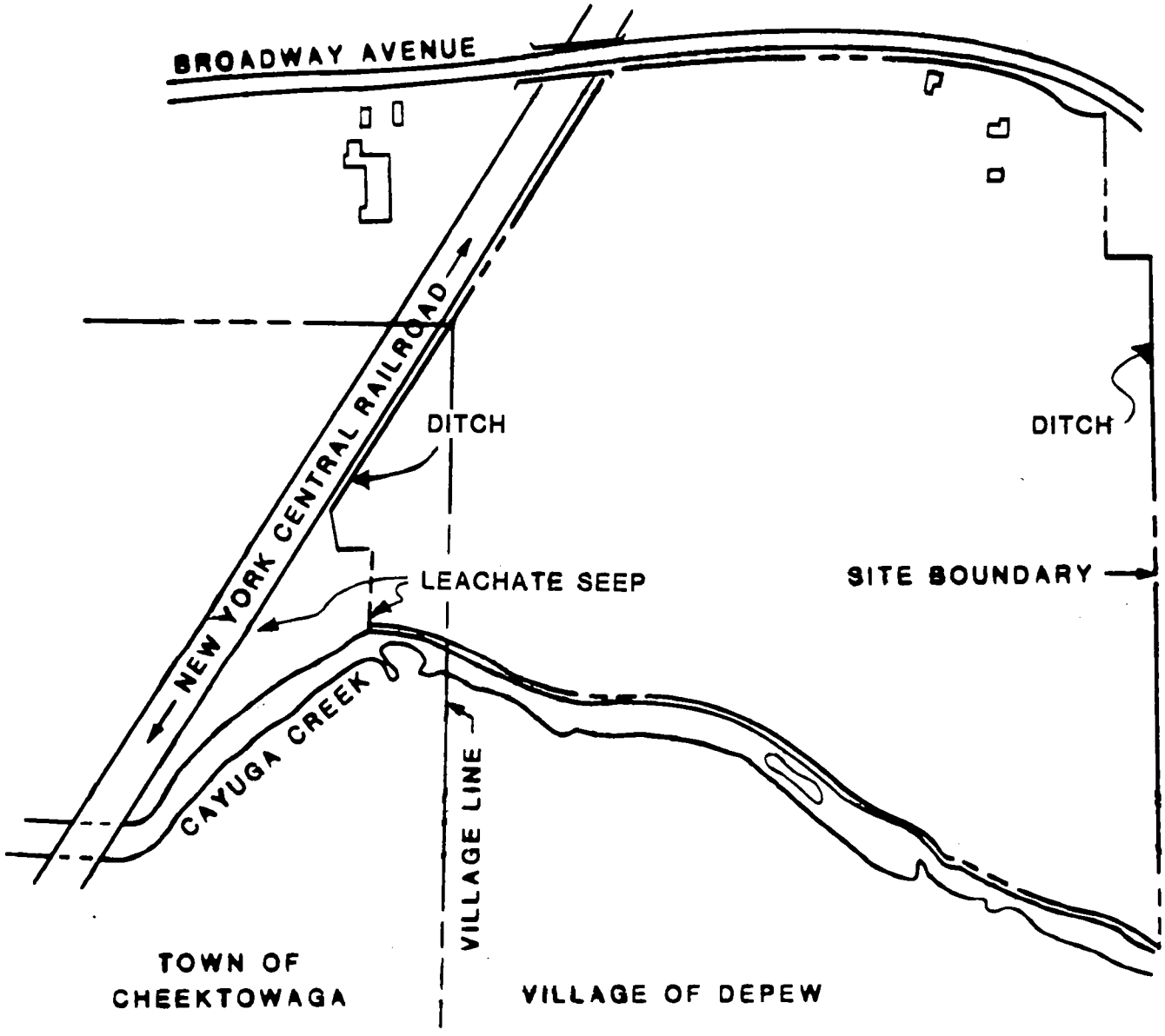
A Phase II investigation is recommended for this site and should include five test borings/monitoring wells, soil/fill sampling, groundwater sampling, and sampling of ditch water, leachate seeps, and Cayuga Creek upstream and downstream of the site. The study should also include air monitoring, a geophysical survey, in-situ permeability testing, surveying, geotechnical testing, and chemical analytical testing. It is proposed that monitoring wells be screened in Recent alluvial deposits which are reported to underly and form the base of the landfill and to consist of highly permeable sand and gravel. These deposits are in direct hydraulic continuity with Cayuga Creek.



USGS TOPOGRAPHIC MAPS
LANCASTER, N.Y. QUAD 1965
LATITUDE 42°52'07"
LONGITUDE 78°43'09"

RECRA RESEARCH INC. BUFFALO, NEW YORK	Scale: 1:24000			OLD LAND RECLAMATION DEPEW, N.Y. N.Y.S. SUPERFUND PHASE I	VICINITY MAP
		By	Date		
	Dwn.	MJS	12/85		
	Ckd.				
	Ap'vd.				
	Rev.			Project No. 5C280416	A FIGURE 1

BRUNING 61160-1



RECRA RESEARCH INC. BUFFALO, NEW YORK	Scale: NTS	OLD LAND RECLAMATION DEPEW, N.Y. N.Y.S. SUPERFUND PHASE I	SITE PLAN
	By / Date		
	Dwn. MJS 3/86		
	Ckd.		
	Ap'vd.		
	Rev.	Project No. 5C280416	A FIGURE 2

61160-1

BRUNING

2.0 PURPOSE

The objective of this Phase I investigation is to prepare a report for the Old Land Reclamation site that provides a history and preliminary assessment of the site based on a review of available data, assigns a numerical value to the site through the use of the HRS and develops a proposed Phase II work plan designed to address the data inadequacies identified during report preparation. The purpose of developing a Phase I report in this manner is to provide an objective evaluation of the site and the potential impact it may pose to human health and the environment.

The Phase I objective was met through the following activities:

- site inspection.
- collection and review of available data for report preparation and preliminary scoring of the HRS.
- evaluation of data for completeness and identification of data inadequacies.
- development of a proposed Phase II work plan to address the data inadequacies identified.

The site inspection is an integral part of the Phase I report preparation and is conducted to confirm actual site conditions. Typically, the site visit is designed to note the general topography and geology of the site, evidence of waste disposal, form of waste disposal, visible signs of contaminant release to the environment (e.g. leachate), access to the site, and location of water resources, population centers, and sensitive environments such as wetlands.

SECTION 3

3.0 SCOPE OF WORK

In order to permit an accurate characterization of the Old Land Reclamation site, Recra Environmental, Inc. (Recra) personnel conducted a search for literature and information regarding the site and site vicinity. This search included the review of general information available at area colleges and universities concerning regional geography, geology and hydrogeology of the study area. The search also included review of state and county office files as well as personal interviews with parties associated and/or familiar with the site and site vicinity.

Information received from NYSDEC Region 9, located at 600 Delaware Avenue, Buffalo, New York, 14202 (telephone 716/847-4600) and the Erie County Department of Environment and Planning located at 95 Franklin Street, Buffalo, New York (telephone 716/847-6370), comprises the majority of the data base utilized in developing this report. Review of these office files provided information related to past operations and site conditions during past inspections.

Recra personnel also conducted a telephone interview with Mr. William Miller of BFI Waste Systems, 2321 Kenmore Avenue, Kenmore, New York (telephone 716/873-7500). Documentation of this conversation is presented as Reference 6 of this report.

In addition to the above mentioned activities, Recra personnel conducted an inspection of the site on January 24, 1986 to become familiar with the site and identify the present condition of the facility. Weather during the site visit was partly cloudy and 28°F with some snow cover on the

ground. No air monitoring was performed at the site during the inspection because of the low temperature.

SECTION 4

4.0 SITE ASSESSMENT

4.1 Site History

The Old Land Reclamation site is located in the Village of Depew, New York (Figure 1). The 64 acre site is bounded to the north by Broadway, to the west by a Conrail right-of-way and to the south by Cayuga Creek. The site was operated as a landfill for municipal and industrial solid waste from about 1960 to 1975.

Operational history of the site is as follows: GCF, Inc. leased property owned by Samuel Greenfield for use as a garbage and refuse disposal site. In October 1968, GCF, Inc. sublet its lease to Wilfred E. Schultz, Inc. The Schultz Corporation contracted with the Town of Cheektowaga and Village of Depew for the disposal of municipal solid wastes. In April 1970, the Schultz Corporation assigned its rights under the lease and municipal contracts to the South Ogden Land Development Corp., an affiliate of NEWCO Waste Systems, now BFI Waste Systems (Ref. 6 and 7).

The South Ogden Land Development Corp. operated the site from 1970 to 1975. During this time the Land Reclamation site, located adjacent to the site's west side, was also being operated as a landfill. Both sites were operated simultaneously at this time and received similar wastes (Ref. 1, 5 and 6). Therefore, wastes disposed of at Old Land Reclamation are considered to be similar to those deposited at Land Reclamation up to 1975, as listed in the Interagency Task Force on Hazardous Wastes, Draft Report, March 1979 (Ref. 5).

At closure in 1975, the site was graded flat at the request of the Village of Depew who planned to turn the site into a park (Ref. 6).

In April 1984, the site was sampled by the Erie County Department of Environment and Planning. Soil, surface water, and leachate samples were collected and analyzed at this time.

Recra personnel inspected the site on January 24, 1986. The site was found to be generally flat and covered with field vegetation. Leachate was observed draining from a culvert located in the southwest section of the landfill to a ditch leading to Cayuga Creek (Ref. 4). The drainage in the culvert was originating in the landfill. Leachate was also observed in a ditch west of the culvert and east of an old railroad bed. This ditch was apparently collecting drainage from a scrapyard located northwest of the site (Ref. 4).

4.2 Site Area Surface Features

4.2.1 Topography and Drainage

Topography of the site and its vicinity is typically flat, with a surface slope of less than two percent. Surface drainage flows to drainage ditches along the east and west sides of the site which flow south into Cayuga Creek. The relatively flat surface encourages ponding of run off, which may contribute to the generation of leachate within the landfill (Ref. 1 and 4).

There are no critical habitats within one mile of the site. A designated wetland exists within 200 feet of the site, along the south side

(opposite shore) of Cayuga Creek. A small portion of the site lies within the 100-year floodplain along Cayuga Creek as shown on the floodplain map (Ref. 12).

4.2.2 Environmental Setting

Land use surrounding the site is a mixture of residential, industrial, and open land. Population density within one mile of the site is approximately 5700 as per the U.S. Bureau of the Census, 1980. Cayuga Creek, which flows in a westerly direction, forms the southern boundary of the site. Both surface and groundwater flows into the creek from the site. This portion of Cayuga Creek is designated a Class "C" stream under 6NYCRR 835 and 701. Class "C" waters are considered suitable for fishing and other uses except as a source of drinking water supply or primary contact recreation (Ref. 11).

4.3 Site Hydrogeology

4.3.1 Geology

The upper bedrock unit across most of the Old Land Reclamation site is the Onondaga Limestone. The Onondaga Limestone consists of three members. The lowest member is a gray coarse-grained limestone, generally only a few feet thick. The middle member consists of a gray limestone and blue chert and reaches a thickness of 40 to 45 feet. The upper member is a dark gray to tan limestone ranging in thickness from 50 to 60 feet. The overall thickness of the Onondaga Limestone is approximately 110 feet (Ref. 2 and 10).

A small portion of the site along the eastern boundary is underlain by the Marcellus Shale. According to LaSala, this unit is predominantly shale, but also includes thin beds of limestone and sandstone. The rocks dip southward at a slope of about 40 feet per mile (Ref. 10).

4.3.2 Soils

A hydrogeologic investigation of the Land Reclamation site adjacent to the Old Land Reclamation site characterized the upper geology of the site vicinity (Ref. 2). Glacial till consisting of clays, silts, gravel, and sand is encountered along Broadway, forming the northern boundary of the original floodplain of Cayuga Creek. Surficial soils along Broadway are designated "urban" soils (Ref. 1).

Recent alluvial deposits underlie the majority of the site. The recent alluvium is generally composed of two units: an upper fine-grained unit consisting of laminated silts, clays, and fine sand, and a basal unit consisting of highly permeable sand and gravel. The total thickness of the alluvium, where intact, is roughly nine to ten feet. The upper unit is typically two to five feet in thickness, while the basal sand and gravel varies from zero to eight feet thick. It is the basal unit which is of prime concern for an evaluation of leachate migration from the landfill. The very high permeability of the basal unit, estimated by grain-size analysis to be between 650 and 1,850 gpd/ft^2 (3.1×10^{-2} to 8.7×10^{-2} cm/sec) allows the unit to act as a conduit to convey leachate from the landfill to Cayuga Creek, with which it is in direct hydraulic continuity (Ref. 2). The original surficial soils are designated Teel and Middlebury soils formed in alluvial deposits dominated by silt (Ref. 1).

4.3.3 Fill Materials

The majority of the property has been landfilled over the years. Landfilling was apparently conducted employing an area-fill method directly over the recent alluvium and surficial soils (Ref. 1). According to the final grading plan, the refuse has been deposited to an average depth of twenty feet over most of the site (Ref. 8).

Since both the Old Land Reclamation and the Land Reclamation sites were operated simultaneously from 1970 to 1975, industrial wastes received at the Old Land Reclamation site are considered to be similar to wastes received at the Land Reclamation site during this period (Ref. 1 and 6). The Interagency Task Force on Hazardous Wastes, in their March, 1979 Draft Report, listed Land Reclamation as having received a wide range of industrial wastes. These wastes included foundry sands, slag, flyash, oil sludge, pine-tar pitch, inks, waste colors and miscellaneous refuse. A tabulation of the firms and haulers reported to have used the Land Reclamation site during the time the Old Land Reclamation site was in operation is found in Reference 5 of this report. Additionally, it is reported that foundry sand was used for daily cover and slag was used for temporary roads at the Old Land Reclamation site (Ref. 6).

The solid waste, itself, is quite permeable and serves as a medium of leachate migration in the same manner as the underlying sand and gravel. The permeability of such waste has been found to be typically greater than 1×10^{-3} cm/sec or greater than 200 gpd/ft^2 (Ref. 2).

4.3.4 Groundwater

The hydrogeologic investigation on the adjacent Land Reclamation site revealed groundwater under unconfined conditions. Since the geology of both sites are similar, the Land Reclamation site findings can be applied to the Old Land Reclamation site. The aquifer at the site is sometimes composed of the recent alluvial deposits and the saturated basal portion of the landfill itself. Another common situation, which occurs along Broadway, is the existence of the aquifer solely within the glacial till. Along Cayuga Creek the groundwater table is found within the recent alluvial deposits and is in direct hydraulic continuity with the creek.

The Recent alluvial deposits are of prime concern in evaluating the impact of the landfill on surface and groundwater resources for a number of reasons. First, the basal member of the alluvial deposits is composed of highly permeable sand and gravel and has a high capacity to transmit groundwater. Secondly, the sand and gravel are in direct hydraulic continuity with Cayuga Creek and thus can serve to conduct contaminated groundwater from beneath or within the landfill to the creek. Lastly, it is likely that the permeable alluvium underlies a major portion of the landfill and is in intimate hydraulic continuity with leachate within the landfill (Ref. 2).

Groundwater is also encountered within the Onondaga Limestone which directly underlies the unconsolidated deposits. The Land Reclamation hydrogeologic investigation has revealed that there may be a potentially significant hydraulic connection between surficial groundwaters in the unconsolidated deposits (including the landfill), and groundwater within

the bedrock. There is some concern that the quarry to the west of the landfill may be influencing groundwater flow in the Onondaga Limestone as a result of its dewatering activities (Ref. 2).

4.4 Previous Sampling and Analysis

4.4.1 Groundwater Quality Data

No groundwater monitoring wells are located on the Old Land Reclamation site. As part of the sampling study and site evaluation by the Erie County DEP, barium, lead, zinc, phenol, aniline and aniline derivatives were detected in surface water samples from drainage ditches and leachate seeps around the site. These levels exceeded New York State regulatory and guidance criteria for discharges to state receiving waters (Ref. 1). Because of the hydraulic continuity between the landfill and the alluvial deposits, these results may be indicative of groundwater quality in the unconsolidated deposits (Ref. 1 and 2). Although the results document the presence of hazardous substances at the landfill, there is no evidence of groundwater contamination.

No site specific groundwater quality data exists for the bedrock aquifer. General groundwater quality for the bedrock aquifer in this area has been documented by LaSala (1968): sulfate ranges from 100 to 500 ppm; hardness from 150 to 1000 ppm (as $CaCO_3$); chloride from 100 to 1500 ppm; and specific conductance from 1000 to 9000 micromhos. There is no record of this aquifer being used for drinking water (Ref. 10).

4.4.2 Surface Water Quality

The Erie County DEP study included surface water sampling from drainage ditches and leachate seeps along the landfill perimeter. New York State regulatory and guidance criteria for state receving waters were exceeded for barium, lead, zinc, phenol, aniline, and aniline derivatives (Ref. 1).

4.4.3 Air Quality Data

There is no air quality data available for this site.

4.4.4 Other Analytical Data

The Erie County DEP collected twelve soil samples including one control sample along the landfill perimeter (Ref. 1). Soil samples were analyzed for PCBs, pesticides, arsenic, barium, cadmium, chromium, lead, mercury, and zinc. PCBs were found at detectable levels in six of the eleven samples but not in the control sample. The highest value obtained for PCBs was 1.9 ppm. Herbicides and pesticides were not detected in any of the samples. Values for metals were compared with background concentrations from the Buffalo area, a control sample from Tifft Farm Nature Preserve, and USEPA guidelines for unpolluted sediment. In general, the soil samples had metal concentrations higher than the USEPA guidelines but lower than average concentration of metals found in the Buffalo area and Tifft Farm (Ref. 1).

SECTION 5

5.0 PRELIMINARY APPLICATION OF THE HAZARD RANKING SYSTEM

5.1 Narrative

The Old Land Reclamation site is located along Broadway in the southwest portion of the Village of Depew, Erie County, New York. The site is approximately 64 acres in size and was operated as a solid waste landfill from approximately 1960 to 1975 and received industrial wastes including foundry sands, slag, flyash, oil sludge, pine-tar pitch, inks, waste colors and miscellaneous refuse (Ref. 5 and 6).

In 1984, the Erie County Department of Environment and Planning (DEP) conducted a sampling study and site evaluation (Ref. 1). Barium, lead, zinc, phenol, aniline, and aniline derivatives were detected in surface water samples from drainage ditches and leachate seeps around the site. These levels exceeded New York State regulatory and guidance criteria for state receiving waters. Soil quality was not significantly different from background levels in the Buffalo area. The DEP concluded that disposal of industrial wastes had occurred at the landfill but that the landfill was not the only source of contamination.

Land use surrounding the site is a mixture of residential, industrial and open land (Ref. 13). The site's southern boundary lies along Cayuga Creek. New York State regulated wetlands exist within 200 feet of the site along the south (opposite) bank of Cayuga Creek. A small portion of the site lies within the 100-year floodplain of Cayuga Creek (Ref. 12).

HRS WORKSHEETS

Facility name: Old Land Reclamation

Location: Broadway, Village of Depew, New York

EPA Region: II

Person(s) in charge of the facility: Joseph Schultz

Attorney for the Village of Depew, New York

Name of Reviewer: Recra Date: March 1986

General description of the facility:

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

The 64 acre site was used as a landfill from approximately 1960 to 1975 and received both municipal and industrial wastes. Soil and leachate sampling was performed in 1984. Surface water in drainage ditches and leachate seeps contained elevated barium, lead, zinc, phenol and aniline. Soil quality was not different from background. Leachate from site enters Cayuga Creek and probably groundwater.

Scores: $S_M = 7.08$ ($S_{gw} = 4.18$ $S_{sw} = 11.52$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 50$

FIGURE 1
HRS COVER SHEET

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	6	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	3	3	
Total Route Characteristics Score			14	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			2394	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 4.18		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0)	45	1	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	2	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	3	3	
Total Route Characteristics Score				13	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	4	6	
Population Served/Distance to Water Intake Downstream	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40		1	0	40	
Total Targets Score				10	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5				7410	64,350	
7 Divide line 6 by 64,350 and multiply by 100			S_{SW} = 11.52			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line [1] is 0, the S_a = 0. Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[2] Waste Characteristics					5.2
Reactivity and Incompatibility	(0) 1 2 3	1	0	3	
Toxicity	0 1 2 (3)	3	9	9	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1	1	8	
	Total Waste Characteristics Score		10	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	4	6	
Land Use	0 1 2 (3)	1	3	3	
	Total Targets Score		28	39	
[4] Multiply [1] x [2] x [3]			0	35,100	
[5] Divide line [4] by 35,100 and multiply by 100		S_a =	0		

FIGURE 9
AIR ROUTE WORK SHEET

	S	S^2
Groundwater Route Score (S_{gw})	4.18	17.47
Surface Water Route Score (S_{sw})	11.52	132.71
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		150.18
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		12.25
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} \,/\, 1.73 = S_M =$		7.08

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
1 Containment	(1) 3	1	1	3	7.1	
2 Waste Characteristics					7.2	
Direct Evidence	(0) 3	1	0	3		
Ignitability	(0) 1 2 3	1	0	3		
Reactivity	(0) 1 2 3	1	0	3		
Incompatibility	(0) 1 2 3	1	0	3		
Hazardous Waste Quantity	(0) 1 2 3 4 5 6 7 8	1	0	8		
Total Waste Characteristics Score			0	20		
3 Targets					7.3	
Distance to Nearest Population	0 1 2 (3) 4 5	1	3	5		
Distance to Nearest Building	0 1 (2) 3	1	2	3		
Distance to Sensitive Environment	(0) 1 2 3	1	0	3		
Land Use	0 1 2 (3)	1	3	3		
Population Within 2-Mile Radius	0 1 2 3 4 (5)	1	5	5		
Buildings Within 2-Mile Radius	0 1 2 3 4 (5)	1	5	5		
Total Targets Score			18	24		
4 Multiply 1 x 2 x 3			0	1,440		
5 Divide line 4 by 1,440 and multiply by 100		S_{FE} = 0				

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Incident	(0) 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 (3)	1	3	3	8.2
3 Containment	0 (15)	1	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 (3)	5	15	15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 3 (4) 5	4	16	20	
Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
Total Targets Score			16	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			10800	21,600	
7 Divide line 6 by 21,600 and multiply by 100		S_{DC} = 50			

FIGURE 12
DIRECT CONTACT WORK SHEET

HRS DOCUMENTATION RECORDS

DOCUMENTATION RECORDS FOR HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: OLD LAND RECLAMATION

LOCATION: Broadway, Depew, New York

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

No analytical data

Rationale for attributing the contaminants to the facility:

N/A

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern: Recent alluvium and Onondaga Limestone.

Recent alluvium, consisting of: upper unit of silts, clays and sand; lower unit of sand and gravel. This aquifer is in direct hydraulic continuity with Cayuga Creek. (Ref. 2)
A potentially significant hydraulic connection may exist between the overburden groundwater and the 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:

<20 feet from the natural ground surface to to the water table. (Ref. 2)

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

Waste disposal onto ground surface by area fill method. Average 20 feet of fill over natural ground surface. (Ref. 1)

Net Precipitation

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

36 inches (Ref. 3)

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

27 inches (Ref. 3)

Net precipitation (subtract the above figures):

9 inches (Ref. 3)

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Sand (Ref. 2)

Permeability associated with soil type:

$>10^{-3}$ cm/sec. (Ref. 2 and 3)

Physical State

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

Solids, fine material, sludge and liquids (protruding drums) (Ref. 2, 5, 6)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Wastes were placed by the area fill method.
At closure, the landfill was graded flat. (Ref. 1 and 6)

Method with highest score:

Landfill, no liner; landfill surface encourages ponding. (Ref. 1, 3 and 6)

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Barium, lead, phenol, aniline (Ref. 1)

Compound with highest score:

Barium, lead (Ref. 3)

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):

Presence of hazardous substances confirmed by analytical results. Quantity unknown. (Ref. 1)

Basis of estimating and/or computing waste quantity:

Quantity unknown

* * *

5 TARGETS

Ground Water Use

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

Industrial; not used, but usable (Ref. 3 and 10)

Distance to Nearest Well

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

Industrial wells no longer in use (Ref. 10)

Distance to above well or building:

N/A

Population Served by Ground Water Wells Within a 3-Mile Radius

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

None (Ref. 10)

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):

N/A

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

None (Ref. 10)

SURFACE WATER ROUTE

1 OBSERVED RELEASE

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

No analytical data for Cayuga Creek.

Rationale for attributing the contaminants to the facility:

Barium, lead, zinc, phenol, and aniline were detected in drainage ditches and leachate seeps. These are not considered surface waters for HRS scoring purposes. (Ref. 1)

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

± 1.5% (Ref. 8)

Name/description of nearest downslope surface water:

Cayuga Creek

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

>8% Adjacent to creek (Ref. 8)

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

No

Is the facility completely surrounded by areas of higher elevation?

No

1-Year 24-Hour Rainfall in Inches

Approximately 2.1 inches (Ref. 3)

Distance to Nearest Downslope Surface Water

Adjacent to site (Ref. 1, 4)

Physical State of Waste

Solids, fine material, sludge and liquid (protruding drums) (Ref. 2, 5, 6)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Wastes were placed by the area fill method. At closure, the landfill was graded flat. (Ref. 1 and 6)

Method with highest score:

Landfill not covered and no diversion system. (Ref. 1 and 3)

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Barium, Lead, Zinc, Phenol, Aniline (Ref. 1)

Compound with highest score:

Barium, lead (Ref. 3)

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):

Presence of hazardous substances confirmed by analytical results.
Quantity unknown. (Ref. 1)

Basis of estimating and/or computing waste quantity:

Quantity unknown

* * *

5 TARGETS

Surface Water Use

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

Recreation and fishing (Ref. 14)

Is there tidal influence?

No

Distance to a Sensitive Environment

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

N/A

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

WETLAND #LA-7: 200 feet
#LA-6: 3200 feet

(Ref. 12)

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

> 1 mile (Ref. 12)

Population Served by Surface Water

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

None (Ref. 9)

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

N/A

Total population served:

N/A

Name/description of nearest of above water bodies:

Cayuga Creek

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

N/A

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

No analytical data

Date and location of detection of contaminants

N/A

Methods used to detect the contaminants:

N/A

Rationale for attributing the contaminants to the site:

N/A

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Unknown

Most incompatible pair of compounds:

Unknown

Toxicity

Most toxic compound:

Aniline (Ref. 1)

Hazardous Waste Quantity

Total quantity of hazardous waste:

Unknown

Basis of estimating and/or computing waste quantity:

Unknown

* * *

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

± 5,700 (Ref. U.S. Bureau of the Census, 1980)

Distance to a Sensitive Environment

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

N/A

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

100 to 200 feet (Ref. 12)

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

1 mile (Ref. 12)

Land Use

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

2000 feet (Ref. 13)

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

N/A

Distance to residential area, if 2 miles or less:

500 feet (Ref. 13)

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

N/A (Ref. 13)

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

N/A (Ref. 13)

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

N/A

FIRE AND EXPLOSION

1 CONTAINMENT

Hazardous substances present:

N/A

Type of containment, if applicable:

N/A

(Ref. 1)

* * *

2 WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

N/A

Ignitability

Compound used:

N/A

Reactivity

Most reactive compound:

N/A

Incompatibility

Most incompatible pair of compounds:

N/A

* * *

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

Unknown (Ref. 1)

Basis of estimating and/or computing waste quantity:

Quantity unknown

* * *

3 TARGETS

Distance to Nearest Population

500 feet (Ref. 13)

Distance to Nearest Building

200 feet (Ref. 13)

Distance to Sensitive Environment

Distance to wetlands:

200 feet to Wetland #LA-7 (Ref. 12)

Distance to critical habitat:

> one mile (Ref. 12)

Land Use

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

2000 feet (Ref. 13)

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

N/A

Distance to residential area, if 2 miles or less:

500 feet (Ref. 13)

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

N/A (Ref. 13)

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

N/A (Ref. 13)

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

No

Population Within 2-Mile Radius

> 10,000 (Ref. 13)

Buildings Within 2-Mile Radius

> 1000 (Ref. 13)

DIRECT CONTACT

1 OBSERVED INCIDENT

Date, location, and pertinent details of incident:

N/A

* * *

2 ACCESSIBILITY

Describe type of barrier(s):

No barriers to entry (Ref. 4)

* * *

3 CONTAINMENT

Type of containment, if applicable:

Drums protruding from side slope (Ref. 4)

* * *

4 WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Barium, lead, phenol, aniline (Ref. 1)

Compound with highest score:

Barium, lead (Ref. 3)

* * *

5 TARGETS

Population within one-mile radius

> 5,000

(Ref. 13)

Distance to critical habitat (of endangered species)

> one mile

(Ref. 12)

EPA 2070-12

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Old Land Reclamation	Broadway

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Village of Depew	N.Y.	14043	Erie		

09 COORDINATES: LATITUDE 42° 52' 07" | LONGITUDE 078° 43' 09"

10 DIRECTIONS TO SITE (Starting from nearest public road): South of Broadway, east of old N.Y. Central railroad and north of Cayuga Creek in the Village of Depew, N.Y.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
Village of Depew (and others)	Mun. Bldg., 85 Manitou St.

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Depew	N.Y.	14043	(716) 683-1400

07 OPERATOR (If known and different from owner) (BFI)	08 STREET (Business, mailing, residential)
South Ogden Land Development Corp.	2321 Kenmore Ave

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Kenmore	N.Y.	14217	(716) 873-7500

13 TYPE OF OWNERSHIP (Check one)
☐ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☒ F. OTHER: Multiple (see Part 7 - site Inspection) (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 DATE 7/84 (MONTH DAY YEAR)
☐ NO

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

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

03 YEARS OF OPERATION: ±1960 (BEGINNING YEAR) | 1975 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Municipal and commercial solid wastes, construction/demolition debris; industrial wastes including foundry sand, slag, fly ash, oil sludge, pine tar pitch, inks, waste colors, misc. refuse.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Possible contamination of groundwater and surface water.

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
Thomas P Connare	Recra Environmental INC	(716) 833-8200

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Paul A. Rydzynski		Recra	(716) 833-8203	3/1986 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
N.Y.	915129

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [x] A. SOLID
- [x] B. POWDER, FINES
- [x] 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	Unknown		
OLW	OILY WASTE	Unknown		
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	Unknown		
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown		

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

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 analyses, reports)

- NYSDEC REGION 9
- ERIE COUNTY DEPARTMENT OF ENVIRONMENT AND PLANNING (DEP)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
Landfill leachate discharges directly to groundwater

01 ☐ B. SURFACE WATER CONTAMINATION
02 ☒ OBSERVED (DATE: 4/84) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
Leachate seeps to drainage ditches and Cayuga Creek were observed and sampled.

01 ☐ C. CONTAMINATION OF AIR
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
Not Applicable

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
Not Applicable

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

01 ☐ F. CONTAMINATION OF SOIL
02 ☒ OBSERVED (DATE 4/84) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 64 acres (ACRES)
04 NARRATIVE DESCRIPTION
Soil samples contained elevated levels of arsenic, barium, chromium, lead, zinc. These levels were not significantly different from background levels in the Buffalo area

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

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

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

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
N.Y.	915129

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: 4/84) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

Leachate seeps observed and sampled.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Unknown

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

Unknown

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

Unknown

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: UNKNOWN

IV. COMMENTS

Landfill site received municipal and industrial wastes until 1975. Foundry sand was used as daily cover.

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

NYS DEC REGION 9
ERIE COUNTY DOH

EPA 2070-13

5.5 EPA SITE INSPECTION REPORT
(FORM 2070-13)

EPA

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

I. IDENTIFICATION
01 STATE: N.Y. | 02 SITE NUMBER: 915129

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Old Land Reclamation	Broadway

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Village of Depew	N.Y.	14043	Erie		

09 COORDINATES: LATITUDE 42°52'07" | LONGITUDE 78°43'09"

10 TYPE OF OWNERSHIP (Check one): ☐ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☒ F. OTHER Multiple (See Part 7) ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
1 24 86 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	±1960 (BEGINNING YEAR) 1975 (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☒ F. STATE CONTRACTOR Recra Research, Inc. (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Sheldon Nozik	Environmental Scientist	Recra	(716) 833-8203
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Andre Lapres	"	"	(716) 833-8203
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Joseph Schultz	Village of Depew Attorney	85 Manitou St., Depew	(716) 683-1400
William Miller	Manager, BFI Waste Sys.	2321 Kenmore Ave, Kenmore, N.Y. 14217	(716) 873-7500
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	2:00PM	Partly Cloudy, 28°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Thomas P Connare	Recra Environmental Inc.	(716) 833-5203

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Paul A. Rydzynski	Recra	Recra	(716) 833-8203	3 10 86 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915129

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

Unknown - No Record of wastes

01 PHYSICAL STATES (Check all that apply)

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

02 WASTE QUANTITY AT SITE

(Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

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

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

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)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. HAZARDOUS CONDITIONS AND INCIDENTS

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

Unknown

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

Leachate seeps observed

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

Not Applicable

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

Not Applicable

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

Unknown

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

Unknown

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

Unknown

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

Unknown

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: NY | 02 SITE NUMBER: 915129

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
Leachate seeps and exposed wastes (i.e. tires) observed

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

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

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: Unknown

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
- NYSDEC REGION 9
- ERIE COUNTY D.E.P.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915129

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				INACTIVE SITE

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	Unknown	
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

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

05 OTHER

- ☐ A. BUILDINGS ON SITE

06 AREA OF SITE

64 (Acres)

07 COMMENTS: Site was used as a landfill for disposal of municipal, commercial and industrial solid wastes. Site was operated under permit from The Erie Co. Health Dept. No records are available.

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

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS: THERE ARE NO BARRIERS TO PREVENT ENTRY TO THE SITE. WASTES ARE COVERED BUT LEACHATE SEEPS ARE EXPOSED

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

- NYSDEC REGION 9
- ERIE COUNTY D.E.P.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	915129

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. 10 (mi)
B. 9.5 (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 N/A

03 DISTANCE TO NEAREST DRINKING WATER WELL 9.5 (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
± 20 (ft)	South	< 20 (ft)	(gpd)	☐ YES ☑ NO

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

N/A

10 RECHARGE AREA		11 DISCHARGE AREA	
☑ YES ☐ NO	COMMENTS: Landfill generally flat with some ponding potential	☑ YES ☐ NO	COMMENTS: Direct hydraulic continuity between landfill and upper groundwater table.

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
Cayuga Creek	☐	0 (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. > 5000 NO. OF PERSONS	B. > 10000 NO. OF PERSONS	C. > 10,000 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

< 0.1 (mi)

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

> 1000

04 DISTANCE TO NEAREST OFF-SITE BUILDING

< 0.1 (mi)

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

The site is located in the Village of Depew with a smaller portion in the Town of Cheektowaga. The surrounding area is residential and industrial to the north and east; mixed open land and residential to the south and west.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

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^{-3} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-3} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
Unknown (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)	± 1-2 %	East, west and South	± 1.5 %

09 FLOOD POTENTIAL
SITE IS IN 100 YEAR FLOODPLAIN

10
☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)
ESTUARINE: A. _____ (mi)
OTHER: B. < 0.1 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)
> 1 (mi)
ENDANGERED SPECIES: None

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 (mi)	B. < 1 (mi)	C. > 3 (mi)	D. > 3 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is located in a mixed open - industrial area of Depew and Cheektowaga. The site is bounded by a municipal landfill on the west (Land Reclamation, Inc.), industrial area to the north, residential areas to the east and Cayuga Creek to the south. Topography is generally flat, sloping toward drainage ditches on the east and west sides and toward Cayuga Creek on the south side.

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

- NYSDEC REGION 9
- ERIE COUNTY D.E.P.

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. SAMPLES TAKEN

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

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
	No Measurements Taken

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☑ AERIAL

02 IN CUSTODY OF Erie Co. Dept. of Environment and Planning
(Name of organization or individual)

03 MAPS ☑ YES ☐ NO

04 LOCATION OF MAPS: Recra Research, Inc.

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

The Erie Co. Dept. of Environment and Planning conducted a sampling study of the old Land Reclamation site in April, 1985. Twelve (12) soil and twelve (12) surface water samples were taken around the site perimeter. Samples were analyzed for metals, PCB's, Pesticides, Phenol, Total Halogenated Organics and Aniline.

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

- NYSDEC REGION 9
- ERIE COUNTY D.E.P.

EPA FORM 2070-13 (7-81)

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

EPA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915129

II. CURRENT OWNER(S) / PARENT COMPANY (if applicable)

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
Village of Depew			

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

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
Depew	N.Y.	14043			

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

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
10788 Main St.			

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
North Collins	N.Y.	14111			

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
Hirsch et. al.			

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
Buffalo	N.Y.				

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

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
P.O. Box 246			

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
Buffalo	N.Y.	14240			

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

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

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)

-ERIE COUNTY D.E.P.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - OPERATOR INFORMATION

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER

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

14 CITY	15 STATE	16 ZIP CODE

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

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
S. Ogden Land Dev. Corp.		NEWCO (BFI)	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
350 Fillmore Ave.		2321 Kenmore Ave.	

06 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
Buffalo	N.Y.		Kenmore	N.Y.	14217

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
5	

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
Wilfred E. Schultz			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
6100 Hunters Creek Rd.			

05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE
South Wales	N.Y.	14139			

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
2	Samuel Greenfield

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	14 CITY	15 STATE	16 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

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

- ERIE COUNTY D.E.P.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915129

II. ON-SITE GENERATOR — Not Applicable

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

III. OFF-SITE GENERATOR(S) — Not Applicable

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

IV. TRANSPORTER(S) — Not Applicable

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)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. PAST RESPONSE ACTIVITIES: Unknown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 915129

II. PAST RESPONSE ACTIVITIES (Continued) Unknown

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

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

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

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

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

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

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

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

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

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

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

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

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

. Unknown based on available information

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	915129

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☑ NO

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

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

EPA FORM 2070-13 (7-81)

SECTION 6

6.0 ADEQUACY OF AVAILABLE DATA

Based on the available information, the Old Land Reclamation site was scored according to the Hazard Ranking System (HRS)and received a migration potential score (S_m) of 7.08. However, in completing the HRS worksheet, inadequacies in the data base were identified. Information required to address these inadequacies would include:

- subsurface information including depth to bedrock, depth to groundwater, direction of groundwater flow, permeability of unconsolidated deposits, and groundwater quality.
- identity and quantities of landfilled wastes.
- more extensive testing of site soils and drainage ditches.
- existing site drainage pattern.
- sediment and surface water quality in Cayuga Creek, upstream and downstream of the site.

SECTION 7

7.0 PROPOSED PHASE II WORK PLAN

This section outlines the recommended procedures and technical means by which a Phase II investigation may be conducted. Any work plan which is submitted to NYSDEC for conducting a Phase II type study must follow the guidelines established by NYSDEC and subsequently be approved by NYSDEC.

7.1 Project Objectives

The purpose and objective of this proposed Phase II investigation is to obtain a final HRS score for the site as defined under the auspices of the New York State Superfund program and assess concerns regarding past disposal practices. The site investigation proposed herein is designed to generate data for the above identified tasks. The scope of this investigation may include:

- o air monitoring
- o surface geophysics
- o test bore drilling
- o monitoring well installation
- o in-situ permeability testing
- o groundwater, leachate stream, surface water, soil, and sediment sampling
- o surveying and mapping
- o chemical analytical testing
- o laboratory geotechnical testing
- o groundwater well survey
- o data analysis and reporting
- o characterizing the physical and chemical nature of the site

- o scoring the site under the Hazard Ranking System
- o reporting.

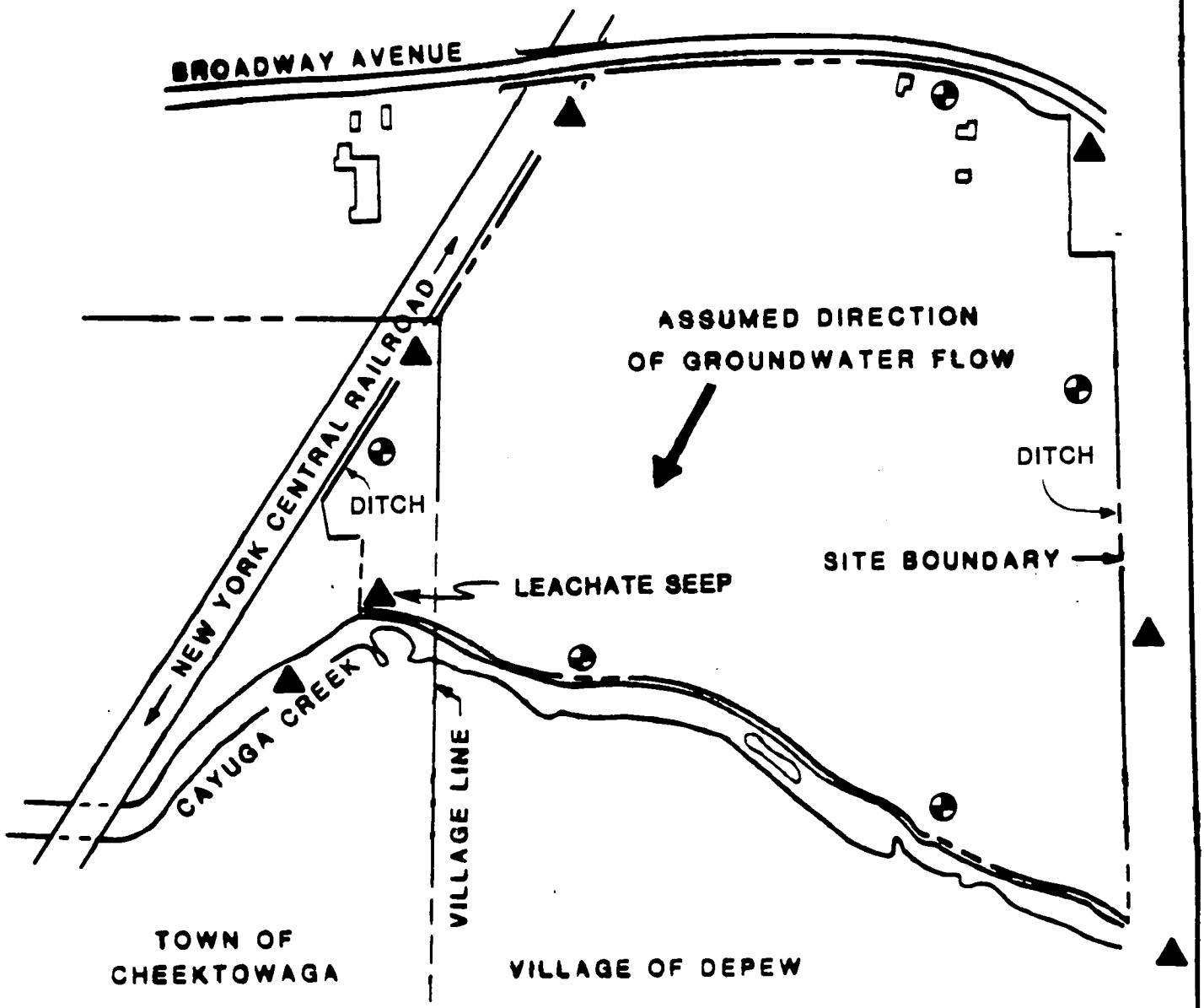
7.2 Scope of Work

It has been recommended that Old Land Reclamation site and Land Reclamation site be combined into one site for a Phase II investigation. The sites are adjacent to one another and reportedly received similar waste types during years of operation. Pending a decision by NYSDEC concerning investigation of the two sites simultaneously, the scope of work that follows is meant to address a Phase II study for Old Land Reclamation only.

7.2.1 Geophysical Survey

A geophysical survey will be conducted over the site where access and topography permit to define the vertical and horizontal extent of the fill material and establish the final locations for monitoring well installations. The geophysical survey will be conducted using Terrain Conductivity.

Terrain conductivity readings will be obtained using a Geonics Model EM 31 terrain conductivity meter. A 20 meter grid system will be established. The conductivity readings may serve to detect clusters of drums, tanks, cables, lateral fill variations, and contaminated groundwater plume geometry, if present. The 20 meter grid network is designed to obtain maximum efficiency from the survey.



LEGEND

- PROPOSED TEST BORING AND MONITORING WELL
- PROPOSED SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS

Scale: NTS			OLD LAND RECLAMATION DEPEW, N.Y. N.Y.S. SUPERFUND PHASE II	SAMPLING AND MONITORING WELL LOCATION MAP
	By	Date		
Dwn.	MJS	3/86		
Ckd.				
Ap'vd.				
Rev.				
			Project No. 5C280418	A FIGURE 3

BRLINING 61160-1

All geophysical data and interpretations will be used to finalize the locations of proposed borings and monitoring wells. No borings or monitoring wells will be placed in the field until the final locations are determined by Recra in concurrence with NYSDEC. NYSDEC will be informed of any changes in boring and monitoring well location should they be necessary.

7.2.2 Test Borings

Five test borings will be advanced at the site. Based on a field review of the site, tentative locations for the borings will be selected by NYSDEC. Recommendations for the final locations will be based on the results of the geophysical survey. Final locations will be determined by Recra upon review of the geophysical data and interpretations. Preliminary proposed locations for test borings are indicated in Figure 3.

Prior to initiating drilling activities, the drilling rig, augers, rods, split spoons, appurtenant equipment, well pipe and screens will be cleaned with steam. This cleaning procedure will also be used between each boring. These activities will be performed in a designated on-site decontamination area. Throughout and after the cleaning processes, direct contact between equipment and the ground surface will be avoided. Plastic sheeting and/or clean support structures will be used.

Test borings will be advanced with hollow stem augers, driven by truck mounted drilling equipment. During the drilling, an HNU photoionization detector will be used to monitor the gases exiting the hole. Auger cuttings will be contained in all downgradient borings. Soil samples will be collected using a two inch outside diameter split-barrel sampler advanced in accordance with the standard penetration test procedure (ASTM D-1586). The sample barrel(s) will be cleaned prior to each use by the following procedure:

- o initially cleaned of all foreign matter
- o washed with a detergent and water mixture
- o rinsed with potable water
- o washed with acetone
- o rinsed with distilled water
- o allowed to air dry.

An HNU detector will be used to monitor the gases from each sample as the split barrel sampler is opened. All samples will be placed in precleaned, teflon-lined screw cap glass jars. The cleaning of the sample jars will include:

- o soap wash
- o. tap water rinse
- o acetone rinse (pesticide grade)
- o rinse with copious quantities of deionized water (at least six rinsings) until no residual acetone is detected.

Samples will be delivered daily under chain of custody control to the Recra Environmental Laboratories in Tonawanda, New York. A composite

soil sample from each boring will be analyzed for priority pollutant metals and organics (Contract Laboratory Protocol) and PCBs. GC/MS procedures will include the identification and quantification of all peaks 10% or greater than the nearest calibrating standard.

Split-spoon samples will be taken every five feet until the water table is reached unless a change in geologic material or overlying waste material is discovered through visual or HNU detection. Once encountered, continuous split-spoon sampling will be conducted through the shallow water bearing zone. Geologic classification of split-spoon samples will be performed and boring logs maintained by a Recra geologist.

At a minimum, each boring log will include:

- date, test hole identification, and project identification
- name of individual developing the log
- name of driller and assistant(s)
- drill make and model, auger size
- identification of alternative drilling methods used and justification thereof (e.g. rotary drilling with a specific bit type to remove a sand plug from within the hollow stem augers)
- depths recorded in feet and fractions thereof (tenths or inches), referenced to ground surface
- standard penetration test (ASTM D-1586) blow counts
- for samples, the length of the sample interval and the length of the sample recovered
- the first encountered water table along with the method of determination, referenced to ground surface
- drill and borehole characteristics

o sequential stratigraphic boundaries.

Selected split-spoon samples obtained while sampling at five foot intervals or when a change in lithology has occurred will be analyzed for Atterberg limits and moisture content. Analysis of a selected split-spoon sample from the encountered water bearing material will be performed for grain size determination. In the event that the borehole/monitoring well must be left unattended prior to completion, the borehole/monitoring well will be properly secured to ensure its integrity.

7.2.3 Groundwater Monitoring and Sampling

Five monitoring wells will be installed at the location of the test borings. The proposed monitoring wells should be screened in the lower alluvial deposits. As noted in Section 4.3.4, the water-bearing zone is composed of both the Recent alluvial deposits of sands and gravel and the basal portion of the landfill. The alluvial deposits are thought to underly a major portion of the landfill and thus are in intimate hydraulic continuity with leachate from the landfill. The alluvial deposits are also in hydraulic conductivity with Cayuga Creek, and can potentially conduct contaminated groundwater from beneath or within the landfill directly to the creek.

Although the potential exists for vertical migration of contaminants between groundwater in the alluvial deposits/fill material and groundwater in the bedrock aquifer, most leachate generated within the landfill is probably discharged locally, especially to Cayuga Creek via the alluvial

deposits. In addition, boring logs from the hydrogeologic study at Land Reclamation indicate the presence of relatively impermeable to marginally permeable glacial till deposits between the alluvial deposits and the bedrock. The till deposits may act as an aquitard to the downward migration of contaminants to the bedrock aquifer.

Wells will be constructed of 5-foot long, 2-inch I.D. threaded flush-jointed PVC screen and riser casing. Well screens will be installed with the top of the well screen located approximately one foot above the encountered groundwater table, dependent upon the major geologic changes encountered. All installations will include a washed, graded, sand pack surrounding the screen and extending two feet above the screen top. A two-foot thick bentonite seal will be placed above the sand pack and the remaining annulus filled with bentonite/grout to within two feet of the ground surface. A four to six inch diameter steel casing with locking cap will be placed over each well and cemented in place.

Well development will be performed using a pump or bottom discharge bailer at each well no sooner than 48 hours after the well grouting has been completed. Bailing will utilize pre-cleaned, dedicated stainless steel or PVC bailers at each well. Pumping will utilize a surface peristaltic pump fitted with pre-cleaned, dedicated polyethylene tubing for each well.

Prior to water and sediment evacuation, static water level and well bottom measurements will be recorded at each well using an electric level sounder or fiberglass tape. These will be cleaned prior to and after each use. The well water/sediment volume will also be calculated.

Well evacuation will be supplemented by:

- Temperature, pH, and specific conductance measurements
- Evacuation volume measurement
- Visual identification of water clarity and color
- Visual identification of the physical characteristics of removed sediments

The development process will continue until a stabilization of pH, specific conductance, temperature, and clarity of discharge is achieved.

The well development is designed to correct any clogging of the water-bearing formation which may occur as a side effect of the drilling, and remove any drilling water (if used) from the water table such that each well will yield water which is representative of the in-situ conditions. Static water level measurements will also be made following well development.

Groundwater sampling will be initiated one week after the well development has been completed. Each sample will be analyzed for priority pollutant metals and organics (Contract Laboratory Protocol), PCBs, hardness and specific conductance. GC/MS procedures will include the identification and quantification of all peaks 10% or greater than the nearest calibrating standard.

At each well location, initial static water level and well bottom measurements will be recorded using an electric level sounder and/or fiberglass tape which will be cleaned between each well. Well water will be evacuated prior to sample collection by bailing or pumping to dryness or removing a minimum of three equilibrated well water volumes. Pre-cleaned, dedicated galvanized steel bailers will be used for sampling at each well.

Permeability testing of the newly installed monitoring wells will be conducted following sampling. Initial static water level measurements will be made in each well followed by the injection of a weighted slug of specific volume. An instantaneous head displacement associated with the slug volume will be created and the subsequent decline in water level will be measured with an electric water level sounder. Once head conditions reach a static state, the slug will be removed and a negative head condition will result relative to the initial static water level. The subsequent rise in water level will be measured with an electric water level sounder.

Data analysis will involve the determination of the coefficient of permeability. The analysis will utilize a technique provided by Harry R. Cedergren in Seepage, Drainage and Flow Nets, 2nd Edition, whereby the log of head ratio (dependent variable) is plotted with respect to elapsed time (independent variable). Data points for permeability determination are obtained from a linearization of this plot and utilized in an appropriate equation.

The testing will provide data on the permeability of the materials at the top of the water table. These values will subsequently be utilized for determining approximate flow rates within the saturated zone, and extrapolated to approximate permeability in the unsaturated zone as required in the scoring under the HRS. This data will be useful in assessing the rate of groundwater flow in this area and as data input in evaluating potential remedial alternatives if required.

7.2.4 Other Sampling

Sediment and surface water samples will be collected from the drainage ditches along the site perimeter, from Cayuga Creek upstream and downstream of drainage pathways from the site and from leachate seeps (Figure 3). Samples will be collected and analyzed according to the procedures outlined in Sections 7.2.3 and 9.2.2 of this report.

7.2.5 Air Monitoring

Air monitoring with an HNU photoionization detector will be performed as follows:

- o at least one upwind and downwind location prior to any site work
- o during borings and monitoring well installations
- o for all split-spoon samples
- o for all surface soil and sediment samples
- o weather including wind direction and wind speed (estimate) will be recorded during sampling
- o all measurements will be taken within the normal breathing zone

7.2.6 Surveying

A map will be prepared showing the location and appropriate elevations (ground surface, top of monitor well casing) for each boring, sampling location, and monitoring well installation and other key contour points as determined by Recra.

A licensed land surveyor will be used to establish the locations and elevations of each above-mentioned point, as follows:

- Vertical Control - Elevations (0.01') will be established for the ground surface at the well, the top of monitor well casing (T.C.), and at least one other permanent object in the vicinity of the boring and well. Elevations will be relative to a regional, local or project specific datum. USGS benchmarks will be used whenever available.
- Horizontal Control - Exploratory borings and monitor wells will be located by ties (location and distance) to at least two nearby permanent objects. USGS benchmarks will be used whenever available.

7.3 Quality Assurance and Quality Control

An overall Quality Assurance Program is essential for the production of high-quality analytical data. Such a program requires precise control of laboratory activities. For the Quality Assurance Program in effect at the Laboratories of Recra the reader is referred to a document previously submitted by Recra to NYSDEC, entitled, "Operation Manual - Field and Analytical Services."

All laboratory analytical testing will follow Contract Laboratory Protocol.

7.4 Final Hazard Ranking System Score

Upon completion of all field work and laboratory analysis, the Final Hazard Ranking System score will be calculated per NYSDEC guidelines.

7.5 Phase II Report

Upon completion of the investigation, a Phase II report will be prepared in complete accordance with the NYSDEC's Phase II report format. The Phase II report will include a plot plan drawing showing the following:

- o groundwater gradient
- o topographic relief
- o sampling locations
- o physical parameters and major contaminants/concentrations identified for each sampling location
- o any contaminant plumes (based on geophysical and monitoring data).

Five copies of the draft final Phase II report and fifteen copies of the final Phase II report will be submitted.

7.6 Applicable Procedures and Standards

All work performed for this project, including but not necessarily limited to, borings, monitoring well installations, monitoring, sampling, surveying, chain of custody, sample preservation, sample extraction, sample analysis, and HRS scoring, will conform to all applicable standards, guidelines, and prescribed methods and practices of the U.S. Environmental Protection Agency (USEPA), NYSDEC, and other applicable regulatory agencies. Any changes or modifications in these specifications will require approval by NYSDEC.

7.7 Estimated Cost

The estimated cost of the Phase II Work Plan is described below. This estimate is based on the placement of five monitoring wells in unconsolidated deposits at 30 feet below ground surface. Actual conditions may require additional monitoring wells that might include bedrock wells. In addition to groundwater and split spoon samples, the estimate assumes two Cayuga Creek samples, two ditch samples, and two leachate samples.

o Subsurface Investigation	$15,000.00
o Analyses	32,440.00*
o Preliminary Engineering Evaluation, Final HRS Scoring and Report	8,000.00
o Geophysics	5,000.00
Total Phase II	$60,440.00

* Price includes Contract Laboratory Protocol for priority pollutant metals and organics. Prices will vary among contracted laboratories.

APPENDIX A

APPENDIX A

DATA SOURCES AND REFERENCES

K086

K103

K104

U012

chloroaniline - TCL

REFERENCES

1. Old Land Reclamation, Village of Depew, Sampling Study and Site Evaluation. Prepared by the Erie County Department of Environment and Planning, March 1985.

2. Hydrogeologic Investigation, Land Reclamation, Inc. Sanitary Landfill, Cheektowaga, Erie County, New York. Prepared by Recra Research, Inc., and Wehran Engineering, P.C., May, 1979.

3. Uncontrolled Hazardous Waste Site Ranking System-Users Manual, Draft, June 10, 1982.

4. Field Report: Old Land Reclamation site. Recra Research, Inc., January 24, 1986.

5. Interagency Task Force on Hazardous Wastes. Draft Report, March, 1979.

6. Letter of documentation to Mr. William Miller, BFI Waste Systems, March 5, 1986.

7. Letter from Attorney for Wilfred Schultz, March 7, 1986.

8. Old Land Reclamation, Final Grading Plan. Prepared by Krehbiel-Guay-Rugg-Hall, January, 1973.

9. New York State Atlas of Community Water System Sources, 1982. New York State Department of Health.

10. LaSala, A.M. Jr., 1968. Groundwater Resources of the Erie-Niagara Basin, New York. Prepared for the Erie-Niagara Basin Regional Water Resources Planning Board. Basin Planning Report ENB-3.

11. NYSDEC Division of Water Resources. Classes and Standards of Quality and Purity: Lake Erie - Niagara River Drainage Basin Series, 6 NYCRR 835 and 701.

12. Documentation of Freshwater Wetlands and Critical Habitats of Endangered Species from NYSDEC, Region 9. December 18, 1985.

13. United States Geological Survey 7.5 minute Topographic Map. Lancaster, New York, 1965.

14. Letter of Documentation to Lawrence Clare, NYSDEC Region 9, from Thomas P. Connare, Recra Environmental, Inc., February 17, 1987.

REFERENCE 1

To: Ron Koczaja
FYI

DRAFT

OLD LAND RECLAMATION

VILLAGE OF DEPEW

Sampling Study and Site Evaluation

Erie County Dept. Environment and Planning

Conducted by Ronald D. Koczaja,
Asst. Env. Quality Engineer

Cameron O'Connor
Env. Quality Technician

MARCH 1985

ADVISORY NOTE

The information contained in this document is presented to show environmental conditions, comparisons to ambient environmental standards and criteria and compliance status relative to applicable environmental regulations.

Any use of this information to assess the risks to personal or public health, identify potential personal or public liability or to estimate the costs of remedial activity should only be done after consultation with appropriate government agencies or private consultants.

TABLE OF CONTENTS

Old Land Reclamation
Broadway
Village of Depew

1.0 INTRODUCTION

On January 5, 1984, the Erie County Department of Environment and Planning received a complaint from a resident living at 4447 Broadway in regard to an "oily liquid" in a stream located adjacent to the western edge of his property.

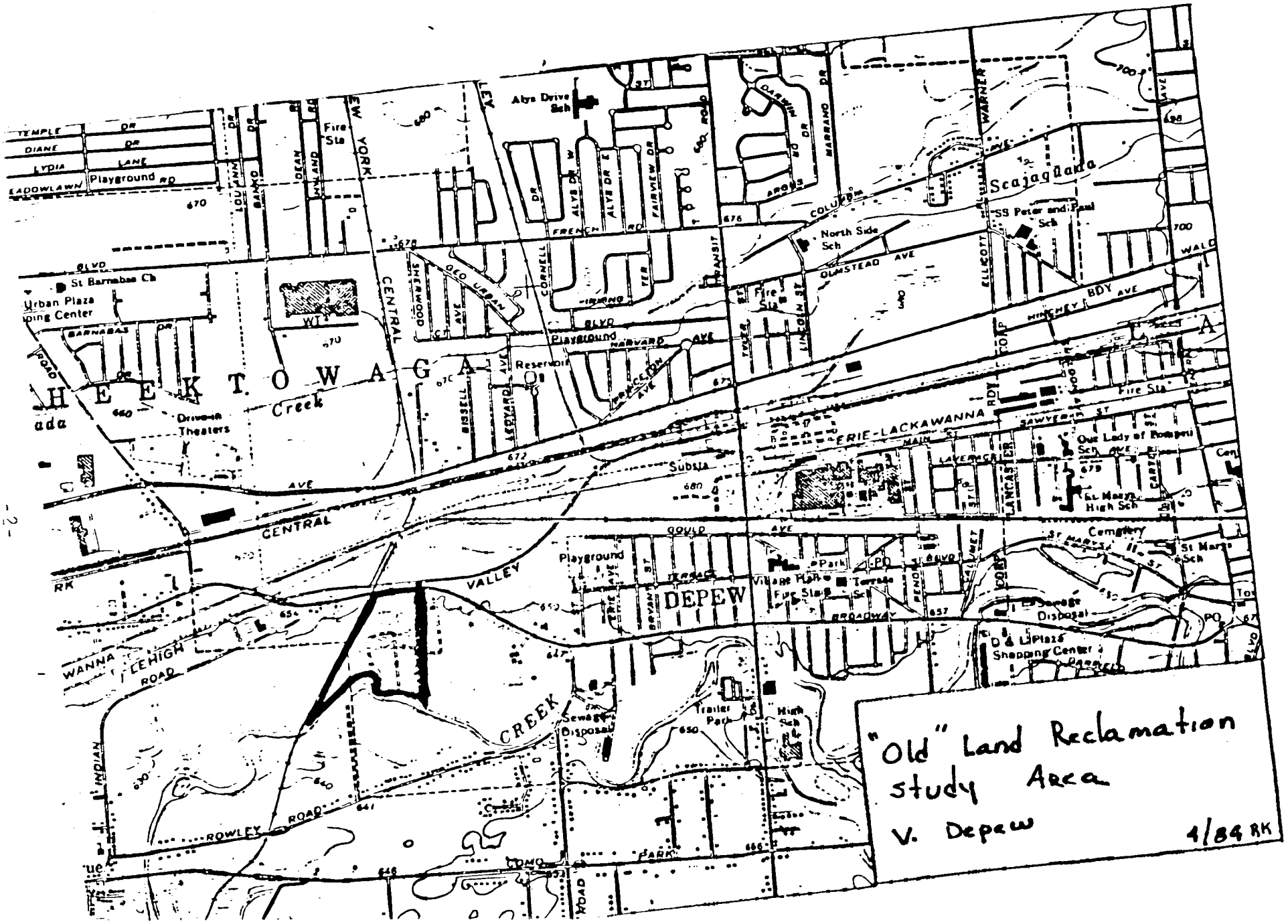
A field inspection was performed by Mr. Campbell of the Division of Environmental Control on the day the complaint was received. Mr. Campbell identified the oily liquid as typical leachate. The source of the leachate was determined to be a former landfill.

It was decided by County Solid Waste personnel, since little information was known about the landfill's history, that a comprehensive site evaluation and sampling study should be performed.

2.0 BACKGROUND AND AERIAL PHOTOGRAPHY

This site is located south of Broadway and east of the Land Reclamation Transfer Station on Indian Road in the Town of Cheektowaga. The site itself is located in the Village of Depew. Site ownership presently lies with 4 parties: 1) the Village of Depew; 2) Mecca Brothers, 10788 Main Street, North Collins, N.Y.; 3) Hirsch et. al., Buffalo, N.Y.; and 4) Samuel Greenfield, P.O. Box 246, Buffalo, N.Y.

On July 9, 1984, Mr. Koczaja of Erie County DEP spoke with Joseph Schultz, Village of Depew Attorney, who advised that this site was not a municipal landfill operated by the Village of Depew. It was operated privately under a contract with the Village, with the land returning to the Village upon closure of the site. The Depew Village Attorney indicated that only municipal refuse from the Village of Depew, the Town of Cheektowga, and the City of Buffalo was disposed of at the site. No industrial wastes were allowed. A portion of this site owned by the Mecca Brothers contained a hole approximately 30 feet deep. This portion of the site reverted to the Mecca Brothers following completion of landfilling. The site is currently zoned LC (land conservation) by the Village of Depew The Village envisions the site becoming a park in approximately 10 years if Federal monies become available. No commercial or residential building or development is contemplated for this area.


"Old" Land Reclamation
study Area
V. Depew
4/84 RK

A review of aerial photographs[1] provided an insight into the site's history. The first evidence of landfilling was visible on the 1958-60 aerial photographs. These photographs indicated the start of a landfilling operation in the northwest portion of the site. Area placement is believed to be the fill method which was employed at that time. The fill material was uniform in tone and mounds of material were readily observable. The light tone may indicate the placement of newly excavated earth or slag. Ponded water was noted at the toe of the landfilling area. Access to the disposal area was from Broadway. To the southeast of the major disposal area was an area of isolated dumping. Access to this area was from a different road and it is unknown if this disposal was associated with Old Land Reclamation activities. There was no activity observed to the west of the railroad tracks in the area which is now occupied by the Land Reclamation Landfill. An oxbow of Cayuga Creek was evident in the southwest corner of the Old Land Reclamation site.

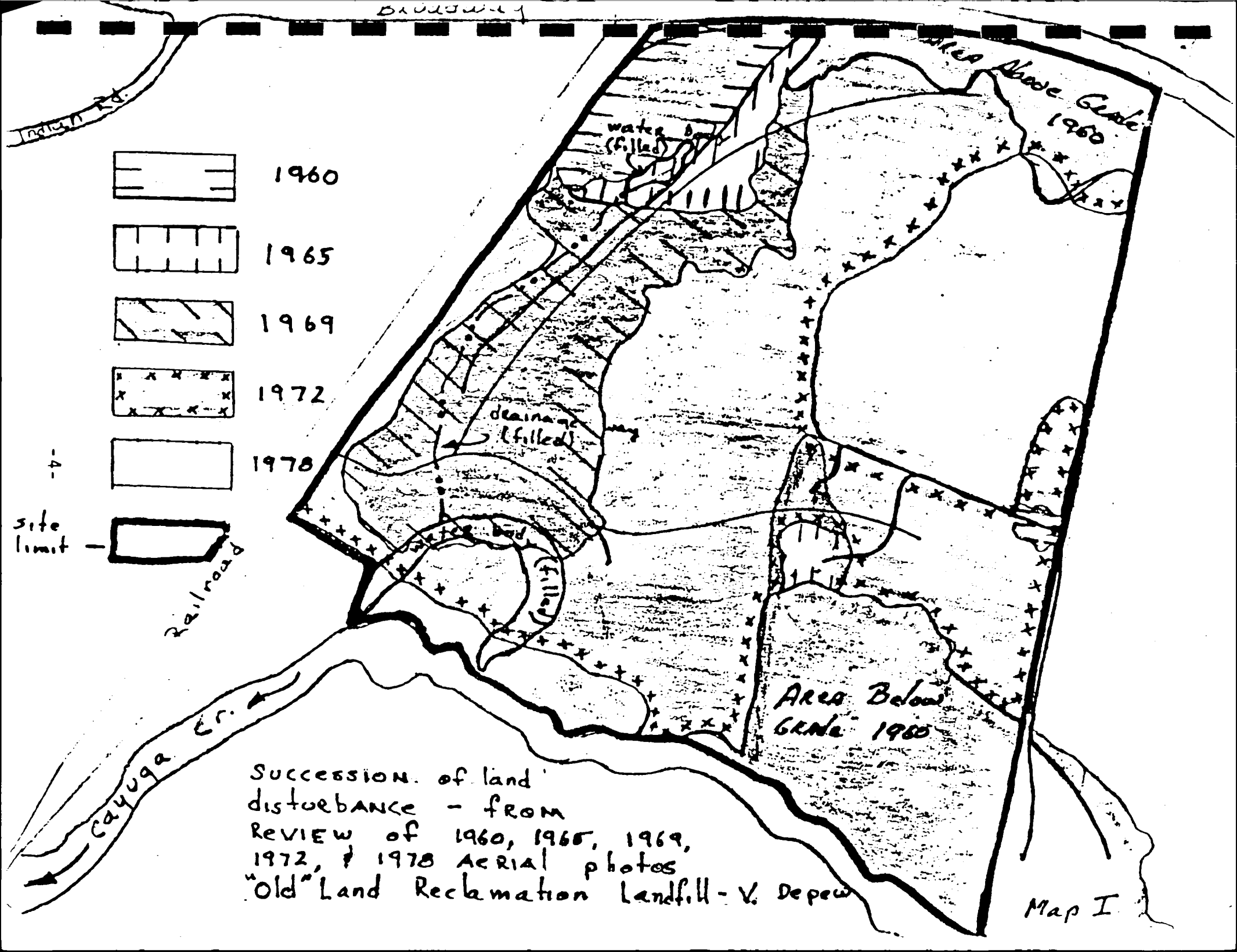
The 1965 aerial photograph showed the continuation of landfilling in the Old Land Reclamation area. Fill progression was to the south and east of the area of disposal which was evident in the 1960 photos. There once again appeared to be minor disposal activity in the isolated area which was first observed in the 1958 and 1960 photos.

The 1969 aerial photograph indicated extensive disposal activity at the Land Reclamation Landfill. Disposal at the Old Land Reclamation site had progressed southward towards Cayuga Creek. The active phase of landfilling activity at the Old Land Reclamation site covered the northern curve of the Cayuga Creek oxbow in this photo. A common access road joining the Old Land Reclamation area with the Land Reclamation Landfill was visible. The 1972 aerial photograph indicated increased operations at both the Old Land Reclamation Landfill and the Land Reclamation Landfill sites. On the Old Land Reclamation site, landfilling had expanded to the east and south from the area previously disturbed. Numerous piles of what could be foundry sand were noted in the aerial photograph. The oxbow of Cayuga Creek was all but covered in this photograph.

The 1978 aerial photograph indicated that landfilling at the Old Land Reclamation site had been completed. Map I shows the historical progression of landfilling at the site.

3.0 HYDROGEOLOGY OF THE SITE

Bedrock under the site is limestone. It has been reported that the bedrock is found at a depth greater than 4 feet below the surface of the site.[2] Cayuga Creek which is located along the south edge of the site, was observed to have a fractured limestone bottom.



SUCCESSION of land disturbance - from REVIEW of 1960, 1965, 1969, 1972, & 1978 AERIAL photos "Old" Land Reclamation Landfill - V. Depew

Map I

The northern section of the study area is reported to have "urban soils" by the Soil Conservation Service. The soil permeability, texture, and depth to groundwater of "urban" soils is "miscellaneous". The southern portion of the study area was reported to contain Teel and Middlebury soils. The Teel and Middlebury soils were formed in recent alluvial deposits dominated by silt. Teel soils are slightly more silty and are less acid than Middlebury soils. Both of these soils are moderately well drained to somewhat poorly drained and have a seasonal high water table that rises into the subsoil for brief periods during the early Spring. The water table is influenced by the water level in the adjacent stream. In some years, these soils are subject to flooding, usually in the early Spring. In both Teel and Middlebury soils, the rate of groundwater movement through the subsoil is moderate. Gravel lenses are commonly present in the soils.[3]

The hydrogeologic data indicates that this was a poor location for a sanitary landfill. The potential for pollution to the groundwater is likely to be high.

4.0 INVESTIGATION PROGRAM

Sample locations were chosen by use of aerial photography and by field inspection. Aerial photographs were used to identify areas that may act as hydraulic connections between the older fill material and Cayuga Creek (i.e. filled in oxbow and drainage ditches). Field inspection was then performed to try to locate those areas found on the aerial photography and also identify other sampling points, such as leachate seeps, that would help characterize environmental conditions on site.

4.1 Field Observation

Field vegetation has established itself over the entire surface of the landfill. There are numerous low spots on the surface which contain ponded water. This indicates poor drainage and the enhanced likelihood of percolation of water through the fill material.

Numerous lechate seeps were evident along the edges of the former landfill. The leachate from the seeps either entered Cayuga Creek directly or via drainage ditches along the east and west sides of the landfill.

Exposed debris was noted along the side slopes of the landfill. Protruding refuse observed included construction and demolition debris, tires, machine parts, hoses, clothing and foundry sand. Fifty-five gallon drums were observed protruding from the landfill in several areas; however, they were in an advanced state of decomposition and it is unknown if they contained waste.

Erosion of the southern slope of the landfill indicates periodic flooding by Cayuga Creek.

The former landfill site appeared to be heavily used by wildlife. Fauna observed on site included deer, raccoons, rabbits, ducks (migration route) reptiles, hawk and song birds. Human use of the site appeared to be limited to horse and dirt bike riding.

Sampling Procedures

Prior to sampling, the sampling sites were chosen and marked with an orange paint for reference. Arrangements were made with the Erie County Laboratory for the receipt and analysis of all samples. Laboratory analyses included PCB, total halogenated organics, anilines, lead, chromium, zinc, arsenic, barium, mercury and phenol. These parameters were chosen as indicators of industrial waste disposal. The Erie County Laboratory prepared and provided the sampling containers. The actual sampling of the site occurred on April 26 and May 2 and 7, 1984.

Soil samples were obtained using a Veiemeyer soil sampler from drainage ditches or from the areas affected by leachate seeps. The sampler was driven to a depth of 36" at each site with the exception of sites #5 and #9. At sampling locations #5 and #9, refusal was at a depth less than 36". The soil core obtained was removed from the sampler, measured and divided. In all cases recovery was less than the penetration depth. Recovery of soil varied from 19-88% and was dependent on the nature of the soil at the sampling site. Replicate soil cores were obtained at each site to assure that the recovery was maximized. The soil samples were then broken into lengths and placed into glass bottles. Observations noted during sampling were recorded. These observations included soil texture, colors, and unusual odors.

Liquid samples were taken from the drainage ditches on the east and west edges of the landfill, and, if possible, directly from leachate seeps.

Charts I, II and III describe the sampling points, water, and soil samples respectively.

5.0 ANALYTICAL RESULTS

The analytical results are displayed in Appendix I. Soil and water sample Number 1 taken upstream of the landfill, served as a control sample. Soil and water samples 2 through 12 were taken from the Old Land Reclamation disposal site as shown on Map II.

5.1 Soil Samples

Soils were analyzed for PCB's, pesticides, arsenic, barium, cadmium, chromium, lead, mercury, and zinc.

PCB's were found at detectable levels in 6 of the 11 sites taken at the landfill site. The highest PCB concentration reported was 1.9 ppm, all other PCB concentrations were 0.29 or less. The concentrations found were well below the 50 ppm criteria for being considered a hazardous substance. They were also below the 10 ppm or greater level that the USEPA has established to classify sediment pollution.[4] The control sample did not contain PCB's at detectable levels.

Herbicides and pesticides were not detected in any sample from the study area.

A comparison was made of metal concentrations at Old Land Reclamation against background concentrations provided by NYSDEC from a 1982 USGS study*, the USEPA guidelines for polluted classification of sediments and the control samples taken during a 1982 Tifft Farm Study** to identify the relative environmental quality at the former landfill. The results of the control samples taken during the Tifft Farm were used for comparison as they reflect urban soils where no known landfilling has occurred.

* The background concentrations were taken as part of NYSDEC, The Niagara River Toxic Study.

** Tifft Farm Nature Preserve soil quality study performed by DEP.

For this comparison, the arithmetic mean was computed for arsenic, barium, chromium, lead and zinc using the highest concentration found at each sample location (#2 through 12). The control sample was not included. Statistical analysis of mercury and cadmium was not performed from analytical data gathered at the Old Land Reclamation site since the majority of the results were below the detection limit. Table 1 in Appendix I shows the compared values.

Detectable amounts of arsenic were found in all samples taken at the landfill. The highest value detected was 10 ppm, the average being 5.6 ppm. This average was above the EPA guidelines of 3 ppm; however, it was below the average for the control samples taken for the Tifft Farm Study.

Barium was detected in 9 out of 11 sampling locations at the Old Land Reclamation site. The highest concentration encountered was 90.0 ppm, the average being 57.2 ppm. This was above the EPA sediment guideline of 20 ppm. The upstream control sample contained 70 ppm for its highest concentration. The elevated level found in the control sample precludes identification of the landfill as the source of barium.

All samples had detectable concentrations of chromium. The highest value encountered was sample #9 at 950 ppm. All other concentrations were 27 ppm or less. The increase in concentration in sample #9 suggested local rather than area-wide contamination with chromium. The average chromium concentration was 103.6 ppm; however, due to sample #9, a more appropriate statistic is probably the median, which was computed at 21.0 ppm. This value was below the USEPA guideline and the Tifft Farm control samples; however, higher than the computed background number in the USGS study. The value for chromium in the control sample did not significantly differ from the majority of values at the former landfill.

Lead was detectable in all samples. The highest value was 340 ppm, all other values were 240 ppm or below. The average concentration was 127.3 ppm. This value was above the USGS background and the USEPA guideline for unpolluted sediments. It is lower than the values computed for the Tifft Farm control samples. The highest lead concentration in the control sample was 52 ppm.

Measurable amounts of mercury were found in 5 of 11 samples. The highest was 0.28 ppm. All other concentrations of mercury were .15 and lower. The control sample contained 0.1 ppm of mercury. These values are lower than the USEPA guidelines for unpolluted sediments and the average found in the Tifft Farm control samples. However, where mercury was detected, the values were above the normal soil background values which have been identified by the NYS Department of Health, as in the range of .01 ppm and .06

ppm.[5] The elevated values indicate minor contamination of soil with mercury; however, the elevated level found in the control sample precludes identification of the landfill as the source of the mercury.

Cadmium was not detected in any of the samples taken during the Old Land Reclamation. Most data available through literature research indicated that background levels for cadmium were below the E.C. Laboratory detection limit of 5.0 ppm, consequently, reliable comparisons were not possible. In the Principles of Geochemistry-Second Edition the average concentration of cadmium in soil is reported to be 0.2 ppm. The NYSDEC has reported that the cadmium background level in this area, as established by the USGS study, is 4.0 ppm. (The USGS studies included sampling at a City of Buffalo Park and Holy Cross Cemetery). Cadmium compounds are used in fungicides, insecticides, nematocides, and superphosphate fertiliers. Consequently, the reported average of 4.0 ppm is probably affected by several samples with altered soil conditions from use of cadmium-containing soil additives).

Zinc was found in detectable levels in all soil samples. The highest concentration found was 327 ppm. Zinc concentrations were elevated throughout the Old Land Reclamation site. The average was 210.8. The upstream sample contained 89 ppm. This average is higher than the background concentration found in the USGS study and for the USEPA guideline for unpolluted sediment, however lower than the average from samples secured during the Tifft Farm study program.

The following conclusions are made based on the above information regarding soil conditions at Old Land Reclamation.

1) Pesticides and PCB contamination was not significant in the areas sampled.
2) Metals concentrations from surface soil samples were not substantially different from samples taken at depth.
3) The soil at the Old Land Reclamation site had elevated concentrations of metals generally higher than the USEPA guidelines for unpolluted sediments. The concentrations are lower than average concentrations of metals found in two parks and Holy Cross Cemetery in the City of Buffalo.

5.2 Liquid Analysis

Liquid samples consisted of both water from drainage tributaries of Cayuga Creek and leachate seeps. The analytical results are displayed in Table II of Appendix I.

The results were compared with information obtained in New York State Ambient Water quality Regulatory and Guidance Criteria by NYSDEC (May 10, 1984). This manual lists regulatory criteria and guidance criteria according to the receiving waters classification. Regulatory criteria and guidance criteria have not been established for all parameters for all classes of streams, consequently, particular attention should be given to the special remarks which are listed in Table 2. In all cases, it was attempted to use the regulatory guidance criteria most suited for Cayuga Creek (Class C) which receives effluent from the tributary ditches and leachate seeps. If Class C criteria were not available, the criteria set forth for water classified as a potable water supply source were used. (It is recognized that the comparisons of analytical data from the leachate seeps with stream guidance criteria is not suitable from a regulatory standpoint. However, the intentof the study was to determine the relative environmental quality in the vicinity of the landfill).

Metals

Liquid samples were analyzed for arsenic, barium, cadmium, chromium, copper, lead, mercury and zinc.

Cadmium and mercury were not detected in any of the sample locations.

Arsenic was detected only in Sample 10. The concentration recorded, 0.08 ppm, exceeded the guideline criteria identified in Table 2.

Barium was detected in five of the twelve samples. Samples 3, 5, 6 and 9 had concentrations at or below the guidelines criteria. Sample 11 was reported to have a concentration of 18.8 which is almost 19 times the criteria identified.

Chromium and copper were detectable only in Sample 11. Chromium was reported as 0.1 ppm which was above the guideline criteria. Copper did not exceed the regulatory criteria.

Lead was detectable in two samples (8 and 11). Both exceeded the guidance criteria. Sample 11 had the highest concentration at 0.8 ppm.

Zinc was found at concentrations above the guidance criteria in 9 of 12samples. The highest concentration was reported at sampling point 11 (1.3 ppm). Zinc was not found in the control sample.

Organics

Samples were analyzed for phenols, THO, pesticides, PCB and an aniline series.

Laboratory analysis did not indicate substantial loss of total halogenated organics to the environment. No pesticides were detected in any of the samples. PCBs were detected in three of twelve samples. The highest concentration (.2 ppb) was encountered in upstream control sample 1.

Phenols were detected in 10 of 12 samples. Six of the sampling sites had phenol concentrations at or greater than the guidance criteria as shown in Table II. The highest value reported (31ppb) was at Sample 7. No phenols were reported in the upstream sample.

Elevated levels of aniline and aniline derivatives were found in all samples taken at the landfill site and the upstream control sample. At all sampling sites, aniline and/or one of its derivatives far exceeds the guidline criteria as set forth by NYSDEC/DOH.

The following observations can be made in regards to liquid sample results.

1) The concentrations of contaminants did not significantly differ between water and leachate samples.

2) Generally, both metal and organic chemical concentrations were higher on the southeast and eastern portions of the landfill.

3) Sample 11 (leachate) contained the highest concentrations of metals encountered during the study. Heavy metal concentrations at the other sample locations did not appear to represent a significant threat to the environment.

4) The landfill appeared to be a source of low level discharge of phenols to the environment.

5) Aniline and aniline derivatives were elevated throughout the landfill. Aniline is not naturally occurring, and therefore is an indication of disposal of industrial waste at the landfill. However, the elevated level in upstream control Sample 1 indicates that the landfill may not be the only source of aniline to the environment.

A literature search was performed for aniline to determine possible sources of discharge to the environment. Aniline is used as the parent compound for more than 300 chemical products. Major uses for this compound are dyes, vulcanization of rubber, an intermediate for monomeric and polymeric isocyanates and intermediates of pesticides and herbicides.[6] It has been reported in the IATF that Land Reclamation received wastes from Allied Dye Corp. This as well as other industrial waste components are likely sources of aniline found in the landfill site samples.

The elevated concentrations in the upstream presents a question as far as identification of possible sources. Because of anilines widespread use, it might be a likely component of industrial wastewater discharges. However, the concentrations of aniline in such discharges have not been studied on a regular basis. Available information indicates that where aniline was being discharge in measurable amounts, that the compound was not detected downstream of the source nor in the stream sediments.[7]

The aniline detected in the upstream sample may also be due to the use of defoliants upstream of the sample location.

The USEPA has designated 950 ppb (aniline) and 450 ppb (n-methylaniline) as a provisional limit for soil and water contamination.[8]

Aniline is reported to be biogradable in wastewater with activated sludges. It is unknown at what rate it degrades in the environment. Little is known about aniline as a human or environmental risk.[9] It is on the USEPA Priority List of Chemicals (TSCA, Section 4(e)).

6.0 CONCLUSIONS

The elevated concentrations of phenols, aniline, and aniline derivatives, the visible observation of foundry sand and 55-gallon drums as well as aerial photography interpretation indicate that the Old Land Reclamation site received industrial waste.

The analytical results in both the liquid and soil samples do not indicate that the areas sampled pose a significant threat to the environment. The samples did not indicate that the landfill was losing substantial amounts of metals and total halogenated organics to its surroundings; however the potential for the loss, or the existance of non-halogenated organic materials could not be assessed.

The discharge of leachate noted at the landfill is a potential violation of Part 360.8 (a)(3) of the Environmental Conservation Rules and Regulations. It is unlikely that capping the leachate seeps will be sufficient to preclude future horizontal extrusions due to the general poor (or nonexistence) cover material and because the southern toe of the landfill is in Cayuga Creeks floodplain. A leachate containment system without a collection system would probably cause vertical migration. Due to the shallow bedrock depth at the southern toe of the landfill and the general limestone bedrock geology of the site, vertical leachate would most likely effect groundwater quality in the area.

7.0. RECOMMENDATIONS

Further analysis of the site is required in order to determine the need for and extent of remedial action at the Old Land Reclamation site.

Additional historical review of what waste materials went into this site should be performed. This should include interviews with private operators, Village employees, etc. This information may provide insight for additional sampling areas, and parameters. The aniline and aniline derivative concentrations found during the investigation should be confirmed by additional water and soil analysis. Volatile organic compounds should also be included in future sampling programs.

Any future development of this site should consider it's past history. Potential developers should become aware of the site's past land use and the limitations to development due to environmental consideration or pending remedial actions determined necessary for the site under the NYS Inactive Hazardous Waste Site clean up program.

Any development alternative that includes excavations or the potential of release of materials in the landfill should be monitored by the appropriate environmental agencies.

Land uses plan which may increase human use of the site should be submitted, along with sampling data, to the Erie County and New York State Health Departments for their review relative to potential risks to the public health. This site should be added to the NYS Registry of Inactive Waste Disposal Sites in accordance with Article 17, Title 13 of the Environmental Conservation Law.

REFERENCES

1. Aerial Photography donated to DEP by Cheektowaga Town Historian.

2. URS Engineers, Map 719-9-0 (A) Bedrock Formation.

3. USDA Soil Conservation Service. General Soil Map and Interpretation, Erie County, 1979.

4. USEPA, 1977 Guidelines for the Pollution Classification of Great Lakes Harbor Sediments.

5. ECHD memorandum, June 15, 1983. Mr. Barry to Mr. Clare.

6. National Academy Press, Washington, D.C., 1981. Aromatic Amine: An Assessment of the Biological and Environmental Effects Page 126.

7. Ibid, Page 131.

8. USEPA, August 1973. Recommended Methods of Reduction, Neutralization, Recovery or Disposal of Hazardous Waste. Volume X Organic Compounds, Page 218.

9. Ibid (6), Page 152

CHARTS I, II, AND III

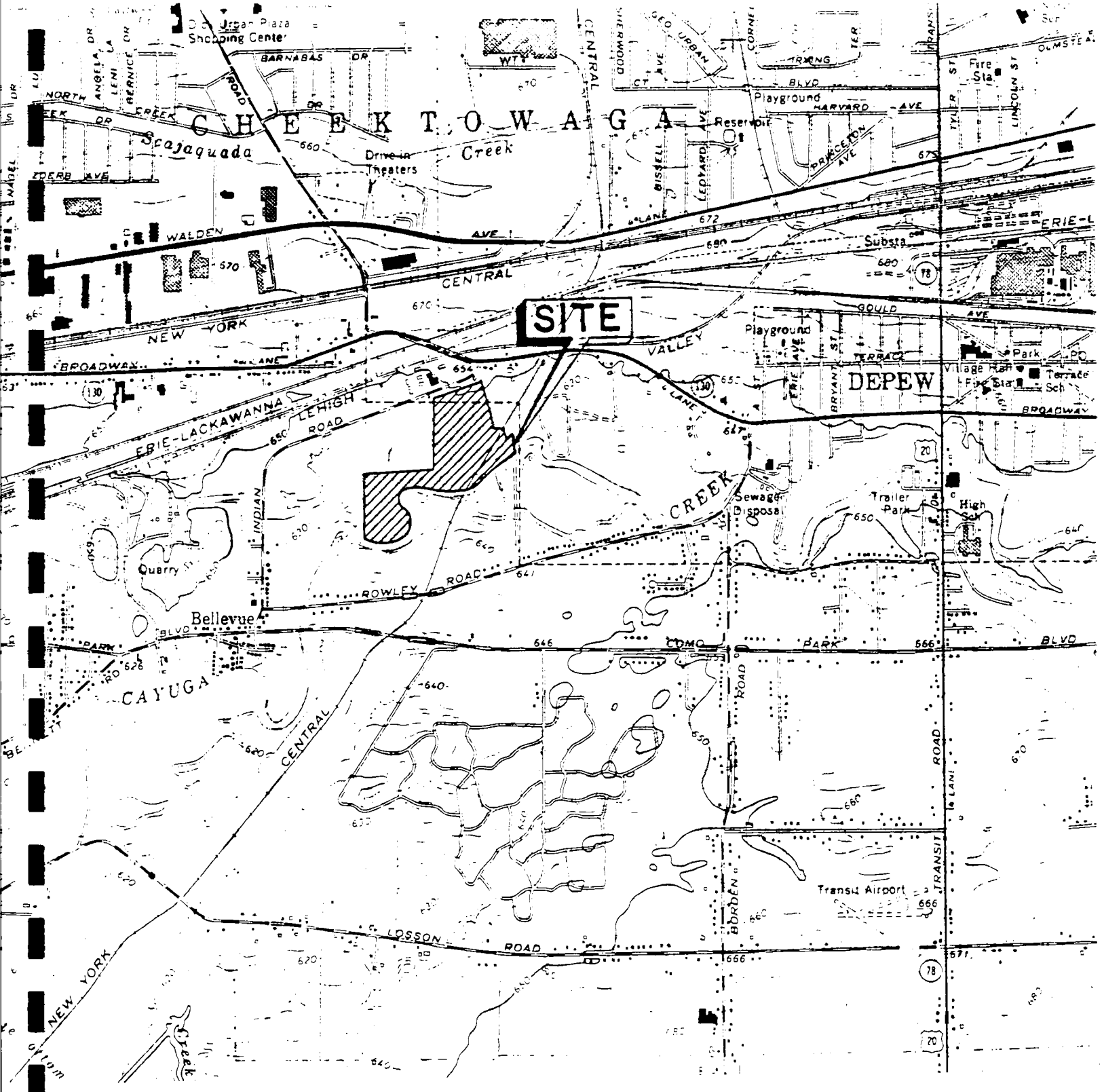
LIST OF FIGURES

INTRODUCTION

The Land Reclamation, Inc. Sanitary Landfill is located in the Town of Cheektowaga and Village of Depew, Erie County, New York and encompasses approximately 60 acres. The site is situated adjacent to Cayuga Creek along Indian Road at its intersection with Broadway Avenue, as indicated in Figure 1.

Land Reclamation, Inc., the present site operator, has reported that the current waste stream is comprised primarily of municipal solid waste and construction wastes, exclusive of liquids, hazardous material, tires, and trees. The Interagency Task Force on Hazardous Wastes in their March, 1979 Draft Report (1) indicated that the landfill may have accepted in the past a wide range of industrial wastes, some which would be classified as hazardous. A tabulation of the interagency Task Force conclusions relative to Land Reclamation's waste stream has been provided in the Appendix.

Pursuant to Part 360, Title 6, of the Official Compilation of Codes, Rules, and Regulations of the State of New York, all landfills in the state were required to submit an application for an Operating Permit accompanied by all pertinent operations, engineering, and hydrogeologic data. In accordance with the time schedule mandated by the New York State Department of Environmental Conservation, this Hydrogeologic Investigation represents the initial submittal in accord with the previously quoted regulations. On or before July 1, 1979, the engineering plans, reports, and attendant applications will also be submitted to the Department to complete the overall submission.



NOTE : TOPOGRAPHY TAKEN FROM THE LANCASTER, N.Y. USGS QUAD - RANGLE (1965)

FIGURE I

LOCATION MAP

LAND RECLAMATION, INC. SANITARY LANDFILL

TOWN OF CHEEKTOWAGA
ERIE COUNTY, NEW YORK

In general, the objectives of this study have been as follows:

(1) To define the general hydrogeologic conditions of the subject area with particular emphasis on how these conditions relate to the potential for migration of leachate from the landfill,

(2) To determine the present extent of surface or ground-water contamination, if any, within the study area, and the potential for further migration and manifestation of such contamination, and

(3) To provide a hydrogeologic foundation upon which to base the engineering design of the landfill.

HYDROGEOLOGIC FIELD INVESTIGATION

It was decided that the objectives of the hydrogeologic investigation could best be met by drilling five exploratory borings and excavating a large number of exploratory test pits, in a conjunctive effort. The scope of the investigation was presented to and approved by the NYSDEC initially at a meeting on December 19, 1979 and, subsequently, more formally set forth in a letter dated January 18, 1979. The layout of the investigation is illustrated on Map No. 1 in the rear of the report. The object of the exploratory test pits was to define surficial conditions, to permit detailed soil sampling, and to enable construction of a large number of well points to measure ground-water table elevations. Conversely, the deep borings permitted study of the lithologic and the hydrogeologic properties of deeper strata and

a determination of the depth to bedrock. The actual field work was accomplished during the months of January and February, 1979. The logs of the borings and the test pits are included in the Appendix. A discussion of each aspect of the investigation follows:

Test Borings and Ground-Water Monitoring Wells

Three of the five exploratory borings drilled were completed as ground-water monitoring wells and, therefore, have been designated as W-1 through W-3. The remaining exploratory borings have been designated B-1 and B-2. Due to the shallow occurrence of bedrock, all of the exploratory borings were extended into the bedrock by means of NX rock coring with the exception of B-1. This permitted characterization of all the underlying formations as well as direct observation of the character of the bedrock.

Each exploratory boring was constructed by utilizing an auger to the top of the bedrock. Where drilling was extended into bedrock, NX rock coring was performed to various depths with a minimum penetration of approximately 1-1/2 feet.

The ground-water monitoring wells were provided with a minimum of five feet of four-inch PVC well screen within saturated zones of the till and the Recent alluvium. The wells were completed with:

(a) A four-inch PVC casing,

(b) Sand backfill in the annular space around the well screen, and

(c) Cement grout backfill in the annular space around the casing from the well screen to existing grade.

Care was taken in all grouting operations to preclude any preferential migration of ground water.

The remaining borings (B-1 and B-2) were completed with Johnson, wire-wound, steel well points and steel casing, to permit ground-water level measurements and sampling. These two installations were sand-packed to within one foot of surface and then sealed with cement.

Split-spoon samples were collected at maximum five-foot intervals, or as frequently as required for definition of strata changes. Sampling was performed less frequently in the solid waste, where the objective was simply to define the base of the landfill. Samples were visually identified in the field and then stored in moisture-tight glass jars for possible further laboratory study. These samples and the rock corings are now available for inspection by interested parties at the office of Wehran Engineering, P. C. All drilling and well construction were performed by Empire Soils Investigation, Inc. of Orchard Park, New York, under the supervision of Wehran Engineering.

Exploratory Test Pits

The exploratory test pits were excavated following the completion of the test borings in January and February of 1979. The test pits were primarily intended to supplement the geologic data obtained from the borings and to permit installation of well points. They are designated as TP-1 through TP-14. The numerous well points installed by means of the test pits, permit a more accurate mapping of the configuration of the ground-water table.

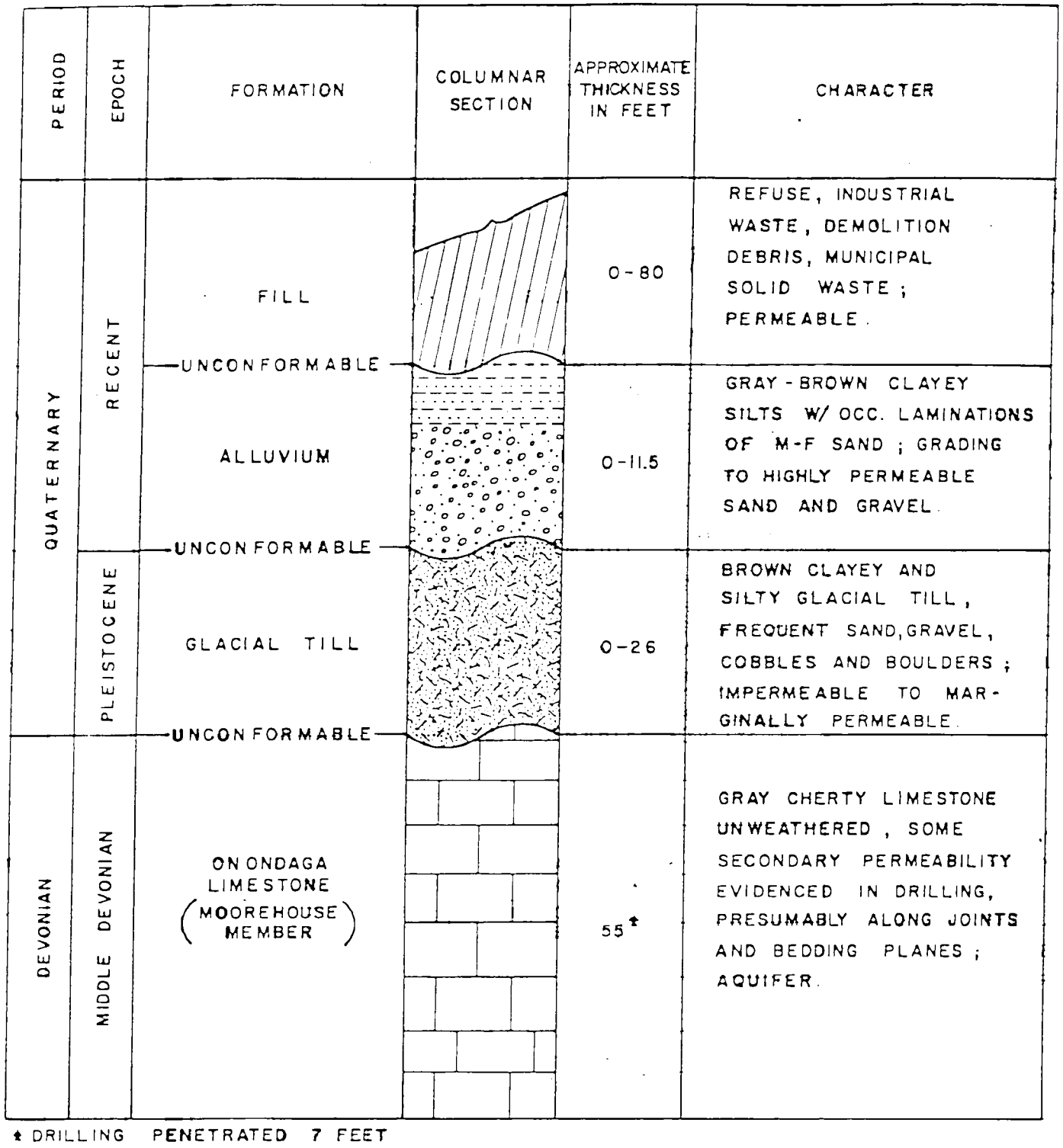
Test pits, in general, also have the advantage of exposing a relatively large portion of the subsurface - often exposing transitional contacts, basal conglomerates, lenticular strata, or other lithologic variations which could go unnoticed in a similarly situated test boring. Their depth is limited, however, to the capability of a particular backhoe. A Caterpillar 225 backhoe was used on site, with a corresponding maximum depth of excavation of approximately 21 feet.

Excavation was performed under the continuous supervision of Wehran Engineering. Representative samples of the soil encountered were collected and placed in moisture-tight, heavy-duty plastic bags. During the excavation of each test pit, a log was kept of soil types, strata changes, seepage zones, water levels, ground-water infiltration rates, and trench stability.

Well points were installed in all test pits for measurement of static water levels and water sampling. The well points consisted of a one-inch PVC casing, fitted with a 12-inch length of Vyon, porous polyethylene, tubing at the tip as an intake "screen".

GEOLOGY

One of the major objectives of this investigation has been to establish the character, hydrologic properties, and areal extent of the various geologic strata and formations encountered on the property. Figure 2 illustrates the full range of the geologic conditions encountered on the property. Each of these strata are described in detail in the individual test boring logs and are graphically depicted on Geologic Sections A-A and B-B (Figures 4 and 5).



* DRILLING PENETRATED 7 FEET

FIGURE 2

GEOLOGIC COLUMN

Onondaga Limestone

The Land Reclamation property is underlain by the Moorehouse member of the Onondaga Limestone of Middle Devonian age. Figure 5, illustrating the bedrock geology of the area, indicates the outcrop area of the Onondaga Limestone. Buehler and Tesmer (2) describe the character of the Moorehouse member in the following manner:

> "The Moorehouse Limestone Member bears a coral-brachiopod-bryozoan fauna. The texture varies from coarse to very finely crystalline and the color from dark gray to tan. Chert, some light buff in color, and disseminated bituminous matter are present."

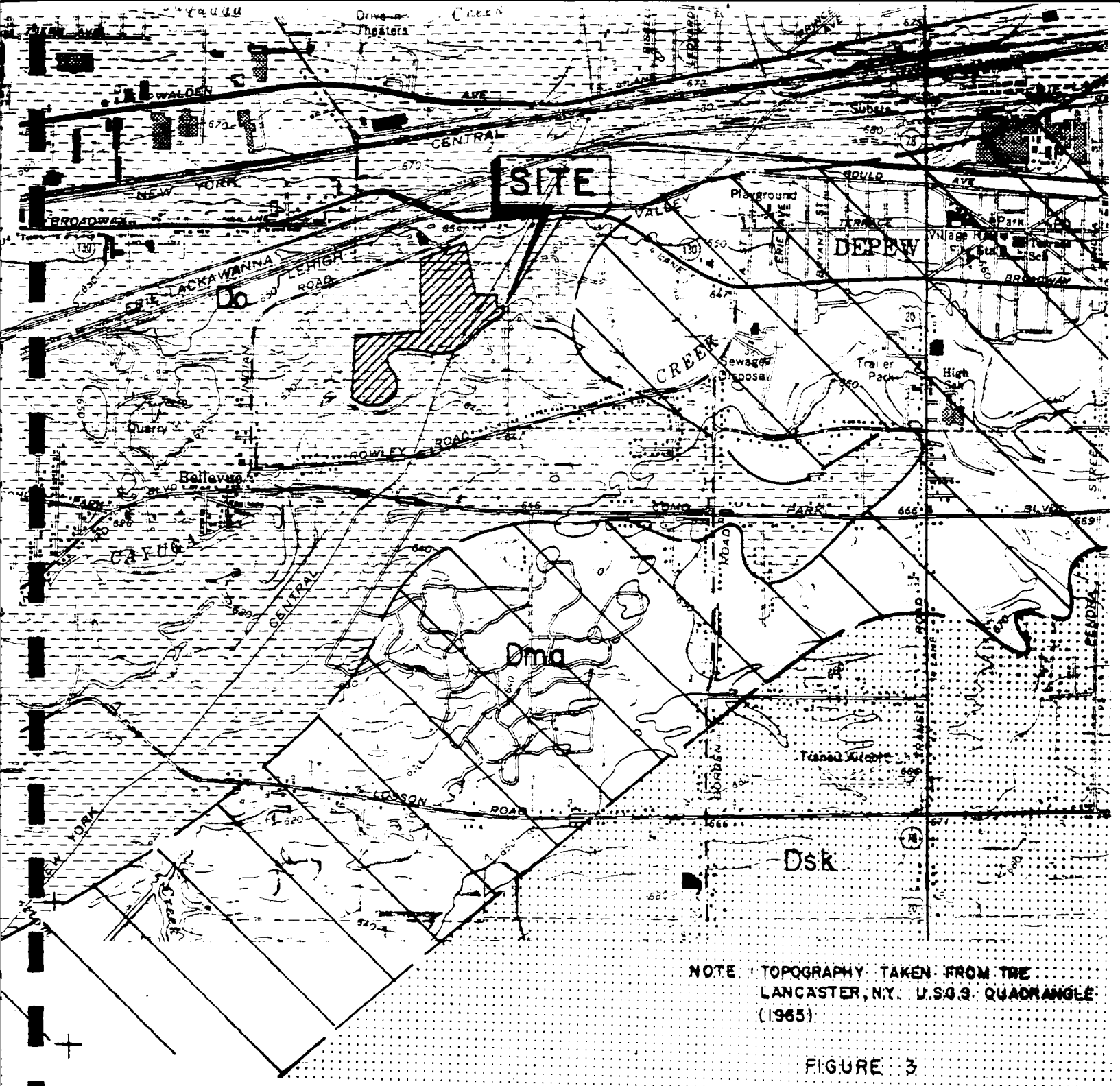
Kindle and Taylor (3) describe the formation similarly:

> "The rock is free from magnesia and the greater part of the formation consists of nearly pure calcium carbonate. Its color ranges from light gray to bluish gray ... Thin partings of greenish shale, as a rule marly or calcareous, a quarter of an inch to an inch thick, here and there separate the thicker beds of limestone. Most sections of the formation contain one or more zones of thin chert layers and concretions. Most of the chert is black, though some of it is gray, and it does not appear to occur at any definite horizon in the formation."

These descriptions agree quite closely with the character of the formation observed in Boring No. 2, Well No. 1, Well No. 2, and Well No. 3. No bituminous matter was noted, however, In Boring No. 2 the formation was described as:

> "Dark, gray limestone - hard ... Very thin yellow clay seams @ 19' and 20'. Frequent irregular horizontal fissures. Some appear 'healed' others possibly opened during drilling."

The limestone evidenced some secondary permeability during the drilling, presumably as a result of open joints and bedding planes in the rock.



NOTE: TOPOGRAPHY TAKEN FROM THE LANCASTER, N.Y. U.S.G.S. QUADRANGLE (1965)

FIGURE 3

BEDROCK GEOLOGY

LAND RECLAMATION, INC.

SANITARY LANDFILL

TOWN OF CHEEKTOWAGA
ERIE COUNTY, NEW YORK

PROJECT NO. 01539022

LEGEND

- INFERRED CONTACTS
- Dsk — SKANEATELES FORMATION
- Dma — MARCELLUS FORMATION
- Do — ONONDAGA LIMESTONE

SCALE 1" = 2000

La Sala (4) reports that the transmissivity of what he terms the "Limestone Unit", which is comprised of the Bertie Limestone, the Akron Dolomite, and the Onondaga Limestone, ranges from about 300 to 25,000 gpd per foot. It appears that the majority of water movement in the rock occurs within several distinct water-bearing bedding units which have been enlarged through dissolution of the rock. La Sala's following description of a quarry in the Onondaga is indicative of this characteristic of the formation.

> "Locally, solution along bedding joints in the limestone unit has been great enough to cause the rock overlying the solution opening to settle. Settling of this type probably accounts for at least some of the small depressions in the outcrop belt of the Onondaga Limestone. A collapsed solution zone in the Onondaga Limestone discharges a large volume of water into a quarry (257-840-A) near Harris Hill. About 3,000 gpm is pumped from the quarry, and most of the water is reported to come from the solution zone (4)."

Glacial Till

The term "till", or "glacial till", although a widely recognized and common place term is nonetheless probably more variable than any other sediment known by a single term. It may consist of 99% clay particles or 99% cobbles and boulders and still be considered as till. Its distinguishing feature is that it was deposited directly by glacier ice with essentially, no sorting by melt waters or other mechanisms. The composition of till is typically characteristic, in many respects, to the source rocks over which the glacier transgressed. A till formed from the glacial erosion of shale will often be relatively fine-

grained, and cobble and boulder-size materials will be relatively sparse in the till, due principally to the rapidity with which shale weathers and its fissility. Till formed over a terrain underlain by granitic rocks, on the other hand, is characteristically much coarser grained and cobbles and boulders of the parent rock often constitutes a significant percentage of the till. Cobbles found in till are often striated or faceted as a result of abrasion during transport. The till observed on the Land Reclamation site is presumably formed from the erosion of the Onondaga Limestone and other bedrock units to the north and east of the site, as well as, unconsolidated deposits which may have overlain the rock prior to advance of the glacier ice. The most outstanding physical characteristic of till is its heterogeneity. However, stratified sediments may be incorporated within the till and yet the whole is still considered till. Since till can be so variable, special care must be exercised in describing its character and hydrogeologic properties.

The glacial till stratum is encountered along Indian Road, forming the northern boundary of the original flood plain of Cayuga Creek. It is likely that the glacial till stratum once extended across the entire site, but has subsequently been removed by the erosional work of Cayuga Creek. Remnants, or outliers, of the till within the flood plain, may exist but were not encountered in the investigation. The flood plain is presently underlain by Recent alluvial deposits which will be described momentarily.

The glacial till directly overlies the Onondaga Limestone, having been laid down directly by the glacial ice, during its transgression and regression across Erie County. The glacial till was well exhibited in Boring No. 1, where it was described as:

> "Brown gray CLAY & SILT, little medium-to-fine Gravel, trace fine Sand. Gravel is angular to subrounded, moist, very stiff."

The till exhibited a moderate disparity of texture, however, grading to "SILT, and fine Sand, little Gravel" in some areas.

As a result of this observed textural variability, the permeability of the till is presumed to be correspondingly variable. Overall, this glacial till serves as an aquitard, restricting, but not precluding ground-water movements.

Recent Alluvial Deposits

The Recent alluvial deposits outcrop over the majority of the site, disregarding the presence of the landfill. Landfilling was apparently conducted employing an area-fill method directly over the Recent alluvium. The only test pit or boring which indicates that excavation of the Recent alluvium preceded waste disposition is Test Pit No. 4 which clearly reflects a six to eight foot excavation. Test Pit No. 4 is located on the Schultz property near the toe of slope of the landfill. Regardless of whether or not widespread excavation of the alluvium preceded solid waste disposal, there exists a direct hydraulic continuity between the landfill and the sandy alluvium as will be described subsequently.

The Recent alluvium is generally comprised of two units; an upper fine-grained unit consisting of laminated silts, clays, and fine sand, and a basal unit consisting of highly permeable sand and gravel. The total thickness of the alluvium, where intact, is roughly nine to ten feet. The upper unit is typically two to five feet in thickness, while the basal sand and gravel varies from zero to eight feet thick. It is the basal unit which is of prime concern to an evaluation of leachate migration from the landfill. The very high permeability of the basal unit, estimated by grain-size analysis to be between 650 and 1,850 gpd/ft^2 (3.1×10^{-2} to 8.7×10^{-2} cm/sec) allows it to act as a conduit to convey leachate from the landfill to Cayuga Creek, with which it is in direct hydraulic continuity.

On Geologic Section A-A, the alluvial Stratum is depicted as being continuous, and essentially intact, although it is conceivable that localized or widespread, excavation of the stratum may have preceded solid waste disposition.

Fill

The majority of the property has been landfilled over the years. The refuse reaches a maximum depth of approximately 70 to 80 feet, while the average depth of the main portion of the landfill is closer to 45 to 50 feet. The nature of the fill materials, themselves were well exposed in the exploratory test pits. The waste was observed to consist primarily of ordinary municipal solid waste, with some demolition debris.

In all cases, the test pits were excavated around the perimeter of the landfill and, therefore, are representative of the fill comprising the basal, or initial, lifts of the landfill and not, necessarily, the landfill as a whole.

The Interagency Task Force on Hazardous Wastes, in their March, 1979 Draft Report (1) listed Land Reclamation as having received for disposal a wide range of industrial wastes. The wastes listed by the Interagency Task Force include fly ash, oil sludge, waste colors, calcium, and other salts of sulfuric acid and nitric acid, phenolic binders, and miscellaneous industrial waste. A tabulation of the firms reported to have used the Land Reclamation, Inc., the nature of the wastes, approximate quantities, and the time period of disposal is provided in the Appendix.

The solid waste, itself, is quite permeable and serves as a medium of leachate migration in the same manner as the underlying sand and gravel. Hughes et al (5) report the permeability of such waste to be typically greater than 1×10^{-3} cm/sec (212 gpd/ft^2). In our studies we have found that the permeability of municipal solid waste varies appreciably at different points in the landfill, but usually approaches an average value of 100 to 200 gpd/ft^2. Values of solid waste permeability as high as 5,000 gpd/ft^2 have been measured by this office in actual pumping tests at municipal solid waste landfills.

GROUND WATER

Ground water on the Land Reclamation, Inc. site occurs under unconfined, or ground-water table conditions. The formation, or formations, within which the ground-water table is encountered varies however. A common place occurrence on the property is the case where the ground-water table aquifer is comprised of the Recent alluvial deposits and the saturated basal, portion of the landfill, itself. Another common situation, which occurs along Indian Road, is the presence of the ground-water table aquifer solely within the glacial till. Along Cayuga Creek the ground-water table is found within the Recent alluvial deposits and is in direct hydraulic continuity with the creek.

It is the Recent alluvial deposits which are of prime concern to evaluation of the landfill's impact on surface and ground-water resources for a number of reasons. Firstly, the basal member of the alluvial deposits is composed of highly permeable sand and gravel and has a high capacity to transmit ground water. Secondly, the sand and gravel is in direct hydraulic continuity with Cayuga Creek and thus can serve to conduct contaminated ground water from beneath or within the landfill to the creek. Lastly, there is every indication that the permeable alluvium underlies a major portion of the landfill and is in intimate hydraulic continuity with leachate within the landfill. For the above noted reasons, the permeable alluvial

deposits have been the focal point of our investigative and monitoring efforts.

Ground water is also encountered within the Onondaga Limestone which underlies the previously-mentioned unconsolidated formations. The work undertaken as part of this investigation has revealed that there may be a potentially significant hydraulic connection between surficial ground waters in the unconsolidated formations (including the landfill, proper) and ground water within the bedrock. As a result, it is a recommendation of this investigation that three bedrock monitoring wells be constructed. The wells would serve to assess ground-water quality in the Onondaga with respect to the presence of landfill-derived contaminants, to further evaluate the extent of the hydraulic continuity between the landfill and the Onondaga, and to establish ground-water flow directions in the rock. (There is some concern that the quarry to the west of the landfill may be influencing ground-water flow in the Onondaga as a result of its dewatering activities.) Proposed sitings of these wells are depicted as DW-1 through DW-3 on Map No. 1 at the rear of this report.

In reference to long-term ground-water monitoring facilities, it is also proposed that existing Well No. 2 be relocated in a more easterly position in order to monitor ground-water impacts in that region. The proposed siting for the relocated Well No. 2 is illustrated on Map No. 1. The

original intent of the investigation was to construct the well in a similar position, but ice and unstable soil conditions prevented access of a drill rig.

The water-table, which represents the top of the zone at saturation, is a variable surface subject to seasonal fluctuations in response to differential rates of recharge. The elevations of the ground-water table within the landfill, as observed on April 4, 1979, in the numerous well points are presented in Table 1. The approximate configuration of the ground-water table is illustrated in Map No. 2.

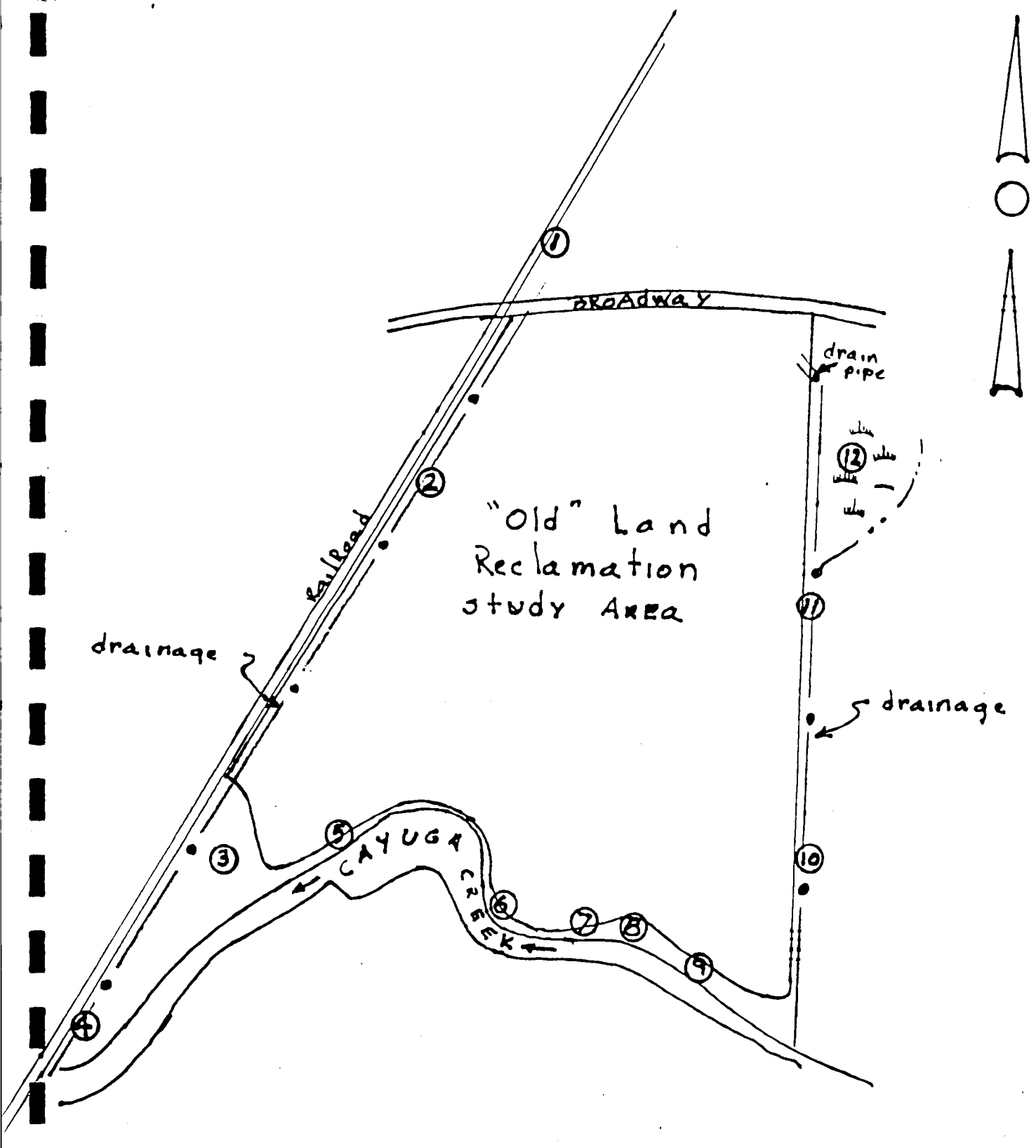
As depicted in Map No. 2, disruption of normal drainage patterns by the landfilling has resulted in the formation of an essentially, undrained depression. Surface runoff in this area has no recourse but to collect in the undrained depression at the base of the drainage area and either evaporate or percolate into the ground. The obvious effect of this is to aggravate leachate generation, since the percolating water must pass through solid waste. In effect, the undrained depression serves as a recharge basin, increasing ground-water recharge and raising ground-water levels.

TABLE 1

GROUND-WATER TABLE ELEVATIONS

POINT	Formation in which Screened*	Elevation of Reference Point (ft)	April 4, 1979 Depth to Water Surface (ft)	April 4, 1979 Elevation of Ground-Water Table (ft)
Boring No. 1	Qt	646.2	7.2	639.0
Boring No. 2	Ra	639.0	11.6	627.4
Well No. 1	Qt	655.2	7.5	647.7
Well No. 2	Ra	619.9	2.0	617.9
Well No. 3	Ra	620.3	3.5	616.8
Test Pit No. 1	Qt	650.9	5.5	645.4
Test Pit No. 2	F	650.0	21.0	629.0
Test Pit No. 3	F	637.5	9.1	628.4
Test Pit No. 4	F	634.5	14.3	620.2
Test Pit No. 5	Ra	636.2	15.0	621.2
Test Pit No. 6	Ra	630.6	12.8	617.8
Test Pit No. 8	Ra	635.6	14.2	621.4
Test Pit No. 9	F	638.9	18.5	620.4
Test Pit No. 10	Ra	628.3	14.3	614.0
Test Pit No. 11	Ra	626.8	10.0	616.8
Test Pit No. 12	F	646.4	13.1	633.3
Test Pit No. 13	F	644.8	16.5	628.3
Test Pit No. 14	F	637.7	14.7	623.0

*
F = Fill
Ra = Recent Alluvium
Qt = Glacial Till



"Old" Land Reclamation Sampling Points 4/84

TABLE 1.

OLD LAND RECLAMATION

SOIL SAMPLE COMPARISON

All Values in PPM

PARAMETER	BACKGROUND 1 USGS STUDY MEAN	USEPA 2 GUIDELINES FOR UNPOLLUTED SEDIMENTS	CITY OF BUFFALO TIFFT FARM STUDY CONTROLS 3 MEAN	OLD LAND RECLAMATION CONTROL Sample #1	OLD LAND RECLAMATION MEAN OF Samples 2-12
Arsenic	NA	Less than 3.0	16.0	6.0	5.6
Barium	NA	Less than 20.0	NA	70.0	57.2
Chromium	11.0	Less than 25.0	39.5	16.0	103.6 (21)
Lead	37.0	Less than 40.0	240.0	52.0	127.3
Mercury	0.1	Less than 1.0	0.33	0.1	/
Cadmium	4.0	Not established	/	less than 5.0	/
Zinc	55.0	Less than 90.0	472.0	89.0	210.8

1. Data provided by NYSDEC (9 Locations)
2. Data from 1981 Buffalo New York Area Sediment Survey (BASS) USEPA, April 1984
3. Tifft Farm control samples were taken at South Park, Holy Cross Cemetery and the Botantical Gardens
4. NA - not available
5. / - Data is unsuitable for statistical analysis
6. Median is also shown for Chromium (21)

TABLE 2

ANALYTIC RESULTS
Old Land Reclamation, Inc.

Surface Water/Leachate Samples

Parameter	Units	Regulatory Guidance Criteria	Sample Identification					
			1	2	3	4	5	6
*Arsenic	ppm	0.010*	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Barium	ppm	1.0*	<0.2	<0.2	0.3	<0.2	0.7	0.8
Cadmium	ppm	0.3**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium (total)	ppm	0.05*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	ppm	0.2***	<0.02	<0.02	<0.02	<0.02	0.02	<0.02
Mercury	ppm	Below Det. Limit	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Zinc	ppm	0.03*	<0.02	<0.02	0.10	0.12	0.08	0.10
PCB	ppb	0.001*	0.20	<0.05	<0.05	<0.05	<0.05	0.19
Pesticides	ppb	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenol	ppb	5.0*	<1.0	1.0	1.0	2.0	12.0	28.0
THO	ppb	-	-	<0.05	<0.05	<0.05	<0.05	0.49
Aniline	ppb	[50]	15.50	68.0	56.0	62.0	16.0	21.0
Methyl Aniline	ppb	[50]	140.0	39.0	33.0	61.0	42.0	14.0
Dimethyl Aniline	ppb	5**	34.0	18.0	68.0	27.0	58.0	13.0
Diethyl Aniline	ppb	[50]	145.0	104.0	58.0	14.0	12.0	9.0

Key

< - Less than detection limit

* - Guidance Criteria - Classes B; C (Aquatic)

xx - Guidance Criteria - Classes AA; AA-s; A, A-S (Human)

xxx - Regulatory Criteria - applies to Class AA, A, A-S, B, C, D Water with a 1 Kalinity equal to or greater than 80 miligrams per liter

[50] - General Organic Chemical guideline in waters classified for a drinking water supply

TABLE 2

ANALYTIC RESULTS
Old Land Reclamation, Inc.

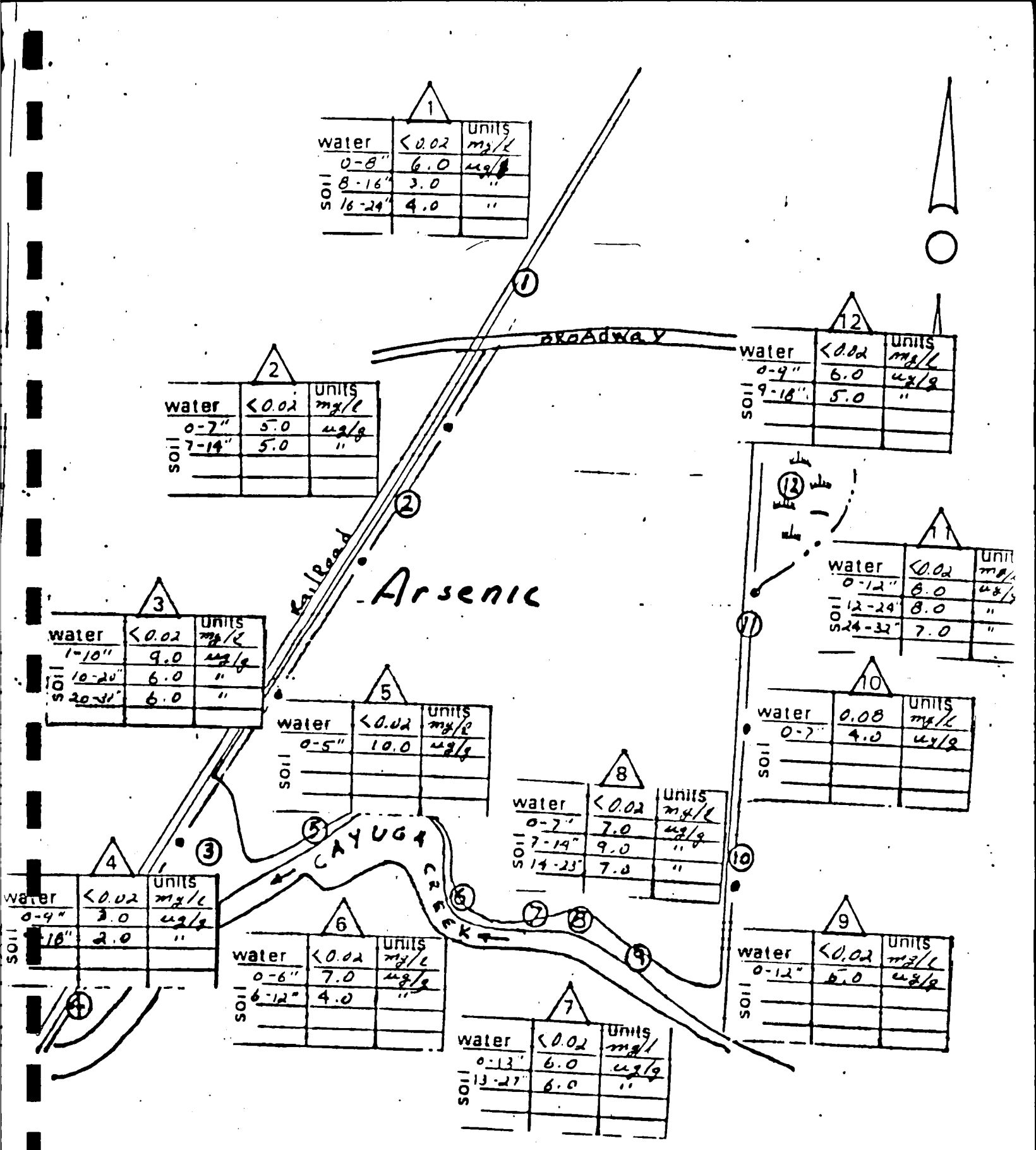
Surface Water/Leachate Samples

Parameter	Units	Regulatory Guidance Criteria	Sample Identification					
			7	8	9	10	11	12
Arsenic	ppm	0.010*	<0.02	<0.02	<0.02	0.08	<0.02	<0.02
Barium	ppm	1.0**	0.8	0.7	1.0	0.2	18.8	<0.2
Cadmium	ppm	0.3***	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	ppm	0.05*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	ppm	0.2***	<0.02	<0.02	<0.02	<0.02	0.12	<0.02
Lead	ppm	0.050**	<0.1	<0.1	<0.1	<0.1	0.8	<0.1
Mercury	ppm	Below Det.Limit	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Zinc	ppm	0.03*	0.16	0.15	0.18	0.04	1.3	<0.02
PCB	ppb	0.001*	0.12	<0.05	<0.05	<0.05	<0.05	<0.05
Pesticides	ppb	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenol	ppb	0.005*	31.0	-	20.0	5.0	2.0	15.0
THO	ppb		0.26	0.70	0.53	0.22	0.42	0.05
Aniline	ppb	[50]	513.0	120.0	262.0	360.0	250.0	160.0
Methyl Aniline	ppb	[50]	293.0	90.0	161.0	210.0	150.0	<10.0
Dimethyl Aniline	ppb	5**	263.0	40.0	<10.0	340.0	300.0	170.0
Diethyl Aniline	ppb	[50]	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

Key

< - less than detection limit
* - Guidance Criteria - Classes B, C, (Aquatic)
** - Guidance Criteria - Classes AA, AA-s, A, A-S (human)
*** - Regulatory Criteria - applies to Class AA, A, A-S, B, C, D, matter with alkalinity equal to or greater than 80 milligrams per liter

[50] - General Organic Chemical Guideline in waters for a drinking water supply



"Old" Land Reclamation
Sampling Points
4/84

Highest Value Reported water ☐
soil ☐

REFERENCE 2

HYDROGEOLOGIC INVESTIGATION

LAND RECLAMATION, INC. SANITARY LANDFILL

CHEEKTOWAGA, ERIE COUNTY, NEW YORK

Prepared for

LAND RECLAMATION, INC.

1300 Military Rd.

Kenmore, N.Y. 14217

Prepared by

RECRA RESEARCH, INC.
and
WEHRAN ENGINEERING, P.C.

TABLE OF CONTENTS

TABLE 4 (continued)

Contributing Factor	Anticipated Leachate Generation
3. Contribution of Surface-Water Runoff from the Land Reclamation site to leachate generation on the Schultz property	1,076,000 gal/yr
4. Leachate generation on the Land Reclamation Site, Proper	12,912,000 gal/yr
Total	24,038,000 gal/yr

As mentioned earlier, 5,132,000 gallons of the total leachate generation (Items 2 and 3) could be readily avoided by correcting the drainage problems currently plaguing the two contiguous properties. Other measures which could be implemented to reduce leachate generation considerably further will be discussed at length in the Engineering Report for the landfill which is scheduled to be submitted to the Department on July 1, 1979.

Ground-Water Discharge

The ground-water (leachate) table within the landfill is, in a quasi-equilibrium condition, wherein the rate of recharge to the ground-water table balances the rate of discharge. Intermittent recharge events manifest themselves as periodic fluctuations in the height of the ground-water table. In the absence of recharge events, a slow decline of the water table begins, as discharge proceeds essentially continuously. The rate of discharge is a function of the height of the water table, however.

Generally, water within a ground-water table aquifer discharges locally; that is, it finds its way to a stream or other surface water body, within a relatively short distance from its point of entrance to the aquifer. This is particularly true in the case of the "leachate-table" contained within the landfill, which for the most part, discharges to Cayuga Creek. There may also be some deep-seated ground-water movement into the Onondaga Limestone, which the recommended monitoring wells would assess. The residence time of water within the landfill is graphically depicted in Map No. 2 at the rear of this report. A particle of water reaching the water table at any point "A" would join the prevailing flow of the aquifer, which is depicted by the ground-water contour map, and ultimately be discharged to Cayuga Creek at the corresponding Point B.

The storm drainage culvert which underlies the landfill apparently also serves as a mechanism of ground-water discharge. This conclusion is based upon the fact that the culvert is for the most part fully submerged beneath the ground-water table and the analytical data reflect the infiltration of leachate from the landfill.

As mentioned previously, the average permeability of municipal solid waste is often around 100-200 gpd/ft^2. This is confirmed in the following analysis of ground-water discharge from the landfill. As illustrated in Map No. 2, roughly 80% of ground-water discharging to Cayuga Creek (19,200,000 gallons/year) would do so along a 2,000 foot wide strip stretching from a

point opposite B-2 to a point opposite TP-9. It is safe to assume for the purposes of this calculation that inflow of ground water from the relatively impermeable glacial till is negligible. Employing Darcy's Law and the following approximations, it is possible to calculate a rough permeability of the solid waste and the Recent alluvium (which act as a composite aquifer).

$$k = \frac{Q}{iLm}$$

where:

k = permeability in gpd/ft^2
Q = 19,200,000 = ground-water flow in gallons per year
i = 0.01 = average hydraulic grade, in feet per feet
L = 2,000 feet = length of discharge area
m = 13 feet = saturated thickness of the aquifer

Employing the proper conversion factors, the resultant permeability is 200 gpd/ft^2. This is, of course, an effective permeability of the solid waste and alluvial sand and gravel working in unison. The fact that the composite permeability of the units closely compares to the permeability normally associated with solid waste, may indicate that the sand and gravel is largely absent, or its permeability is lower than previously estimated.

The average seepage velocity of leachate within the landfill or the Recent alluvial sand can then be calculated employing the following relationship taken from Cedergren (10).

$$V_s = \frac{ki}{S.Y.}$$

where:

V_s = seepage velocity
k = permeability
i = hydraulic grade
S.Y. = specific yield

The specific yield for the solid waste has been assumed to be 0.30 from research done by Hughes, et al (5). This is also a reasonably specific yield for the alluvial sand, if present. Using these and the previously-mentioned values, the seepage velocity can be shown to be roughly 0.90 feet/day. In view of the roughness of the estimates upon which the above analysis is based, rounding off the seepage velocity to 1.0 feet per day seems appropriate. For illustrative purposes, the resultant residence time of a particle of water within the landfill has been depicted on Map No. 2 for each of the A-B representative flow paths.

Leachate Assimilation

In an effort to ascertain the effects of leachate discharge on Cayuga Creek, an estimate of the assimilative capacity of the stream in relation to expected leachate quality is required. This assimilation study necessitates the development of the following data:

(a) Estimates of stream flow and leachate generation contributory to Cayuga Creek.

(b) Estimates of background stream flow quality and leachate quality adjacent to the stream

(c) Weighted average quality of stream flow based on the respective flows of Cayuga Creek and landfill leachate

(d) An assessment of weighted average characteristics in terms of stream classification and quality standards

TABLE 6

BEST USAGE AND QUALITY STANDARDS

CLASS "C"

Best usage of waters. Suitable for fishing and all other uses except as a source of water supply for drinking, culinary, or food processing purposes and primary contact recreation.

Quality Standards for Class "C" Waters

ITEMS	SPECIFICATIONS
1. Coliform	The monthly geometric mean total coliform value for one hundred ml of sample shall not exceed ten thousand and the monthly geometric mean fecal coliform value for one hundred ml of sample shall not exceed two thousand from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5
3. Total Dissolved Solids	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved Oxygen	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Note 1: With reference to certain toxic substances affecting fishlife, the establishment of any single numerical standard for waters of New York State would be too restrictive. There are many waters, which because of poor buffering capacity and composition will require special study to determine safe concentrations of toxic substances. However, most of the non-trout waters near industrial areas in this State will have an alkalinity of 80 milligrams per liter or above. Without considering increased or decreased toxicity from possible combinations, the following may be considered as safe stream concentrations for certain substances to comply with the above standard for this type of water. Waters of lower alkalinity must be specifically considered since the toxic effect of most pollutants will be greatly increased.

TABLE 6 (continued)

Ammonia or Ammonium Compounds	Not greater than 2.0 milligrams per liter expressed as NH_3 at pH of 8.0 or above.
Cyanide	Not greater than 0.1 milligrams per liter expressed as CN.
Ferro - or Ferricyanide	Not greater than 0.4 milligrams per liter expressed as Fe(CN)6.
Copper	Not greater than 0.2 milligrams per liter expressed as Cu.
Zinc	Not greater than 0.3 milligrams per liter expressed as Zn.
Cadmium	Not greater than 0.3 milligrams per liter expressed as Cd.

CONCLUSIONS

1. Ground water on the Land Reclamation site occurs under ground-water table, or unconfined conditions. The unconfined, water-bearing zone is found within the basal portions of the landfill and underlying Recent alluvial deposits. The basal member of the Recent alluvial deposits was generally a highly permeable sand, or sand and gravel. The estimated permeability of the unit, as estimated by means of grain-size analyses, ranged from 650 to 1,850 gpd/ft^2. The permeability of the solid waste was estimated to be roughly 200 gpd/ft^2.

2. The landfill and the Recent alluvial deposits were found to be in direct hydraulic continuity with Cayuga Creek. As a result, contaminated ground water within the landfill is subject to rapid migration and ultimate discharge to the creek. Ground-water flow velocities were estimated to be roughly one foot per day, on the average.

3. The investigation revealed a potential hydraulic connection between ground water within the landfill and the Recent alluvium, and the underlying Onondaga Limestone. It has, therefore, been recommended that three ground-water monitoring wells be constructed in the Onondaga Limestone to more closely appraise the situation. The proposed locations of these wells are depicted on Map No. 1.

4. The Schultz property, which is contiguous with the landfill, shares an intimate and important relationship with the landfill in terms of surface-water drainage and leachate generation. The table included in Conclusion No. 5 which is a repetition of Table 4, illustrates this complex interrelationship. Further discussion of the relationship between

the two properties is provided in the "Ground-Water Recharge" section of this report.

5. Current leachate generation from the Land Reclamation, Inc. Sanitary Landfill and the adjacent Schultz property is summarized in the following table, which is a repetition of Table 4, found with the "Ground-Water Recharge" section of this report.

Anticipated Leachate Generation for the Land Reclamation, Inc. Sanitary Landfill and the Adjacent Schultz Property

Contributing Factor	Anticipated Leachate Generation
1. Normal Percolation on the Schultz Property under free-draining conditions	5,994,000 gal/yr
2. Effect of Obstructed Drainage Basin	4,056,000 gal/yr
3. Contribution of Surface-Water Runoff from the Land Reclamation site to leachate generation on the Schultz property	1,076,000 gal/yr
4. Leachate generation on the Land Reclamation Site, Proper	12,912,000 gal/yr
Total	24,038,000 gal/yr

6. The assimilation analysis relative to assimilation of leachate from the Land Reclamation, Inc. Sanitary Landfill into Cayuga Creek indicates that the assimilative capacity of the creek is sufficient to largely attenuate the impact of the leachate. The remedial measures discussed in the forthcoming engineering plans and reports will further mitigate the landfill's impact on Cayuga Creek.

BIBLIOGRAPHY

(1) Interagency Task Force on Hazardous Wastes. Draft Report, March 1979.

(2) Buehler, Edward J., and Irving H. Tesmer. Geology of Erie County, New York. Buffalo Society of Natural Sciences, Vol. 21, No. 3, Buffalo, 1963.

(3) Kindle, E. M. and F. B. Taylor. Geologic Atlas of the United States, Folio 190, Niagara, New York. Washington: U.S. Geological Survey, 1914.

(4) La Sala Jr., A.M. Ground-Water Resources of the Erie Niagara Basin, New York: State of New York, Conservation Department, Water Resources Commission, Basin Planning Report ENB-3:1968.

(5) Hughes, G.M., et al. Hydrogeology of Solid Waste Disposal Sites in Northeastern Illinois. Washington: U.S. Environmental Protection Agency, 1971.

(6) C. W. Thornthwaite Associates. Average Climatic Water Balance Data of the Continents. Centerton, New Jersey: Publications in Climatology, Volume 17, No. 3, 1964.

(7) Thornthwaite, C. W. and J. R. Mather. Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance. Centerton, New Jersey: Publications in Climatology, Volume 10, No. 3, 1957.

(8) Fenn, D. G., et al. Use of the Water Balance Method for Predicting Leachate Generation from Solid Waste Disposal Sites. Washington, D. C.: U.S. Environmental Protection Agency, 1975.

(9) National Oceanic and Atmosphere Administration. Local Climatological Data, Annual Summary with Comparative Data. Buffalo, New York, 1977.

(10) Cedergren, H.R. Seepage, Drainage and Flow Nets. New York: John Wiley & Sons, Inc., 1967.

INDUSTRIAL WASTE REPORTED
TO HAVE BEEN DISPOSED OF AT
LAND RECLAMATION, INC. (a)

GENERATORS		WASTE DESCRIPTION	QUANTITIES	TIME PERIOD
Ford Motor Co.	a)	Oil Sludge	---	1970 to 1974
	b)	Garbage & Rubbish	---	1970 to 1974 and 1977 to 1978
F.N. Burt Co., Inc.	a)	Paperboard, cellophane & Gold leaf, scrap wood, plastic, garbage, adhesive (animal glue, polyvinyl acetate & dextrins) inks, incinerator residue & fly ash, waste cans, metal	---	1958 to 1968
Allied Chemical, Corp. Dye Plant	a)	trash & rubble	---	1968 to 1975
	b)	Drummed Laboratory sample bottles & waste colors	100,000 gallons	1968 to 1975
The Anaconda Company	a)	spent refractories, scrap wood & sawdust	---	1978 to present
Trico Products Corp.	a)	solid bulk refuse	---	1960 to present
Chevrolet Motor Division	a)	cardboard, wooden pallets, and cafeteria wastes	---	unknown to present
American Optical Corporation	a)	Garbage, scrap glass, emery metal, silicon, rouge, plastic particles, pine tar pitch & incinerator ash	---	1957 to present
Pratt & Letchworth	a)	Sand	13,000 tons/year	1970 to 1978
	b)	Slag	1,000 tons/year	"
	c)	Paper & Wood	3,000 cu. yd./year	"
Allied Chemical Corp. Industrial Chemicals Division	a)	Spent vanadium pentoxide catalyst, sulfur drainings, cinder, slag, misc. construction & demolition debris, calcium & other salts of sulfuric acid & nitric acid, solid polymerized sulphan	---	1977

GENERATORS	WASTE DESCRIPTION	QUANTITIES	TIME PERIOD
Dresser Industries, Inc.	a) Steel castings, spent bentonite clay, Manley sand, slag, lubricating oil, brick & phenolic binders (ammonia & cyanide)	15,000 cy/year	1976-present

(a) Taken largely from the Draft Report, March 1979 of the Interagency Task Force on Hazardous Wastes.

APPENDIX

DRAFT

UNCONTROLLED HAZARDOUS WASTE
SITE RANKING SYSTEM -
A USERS MANUAL

DRAFT

10 June 1982
(errata included)

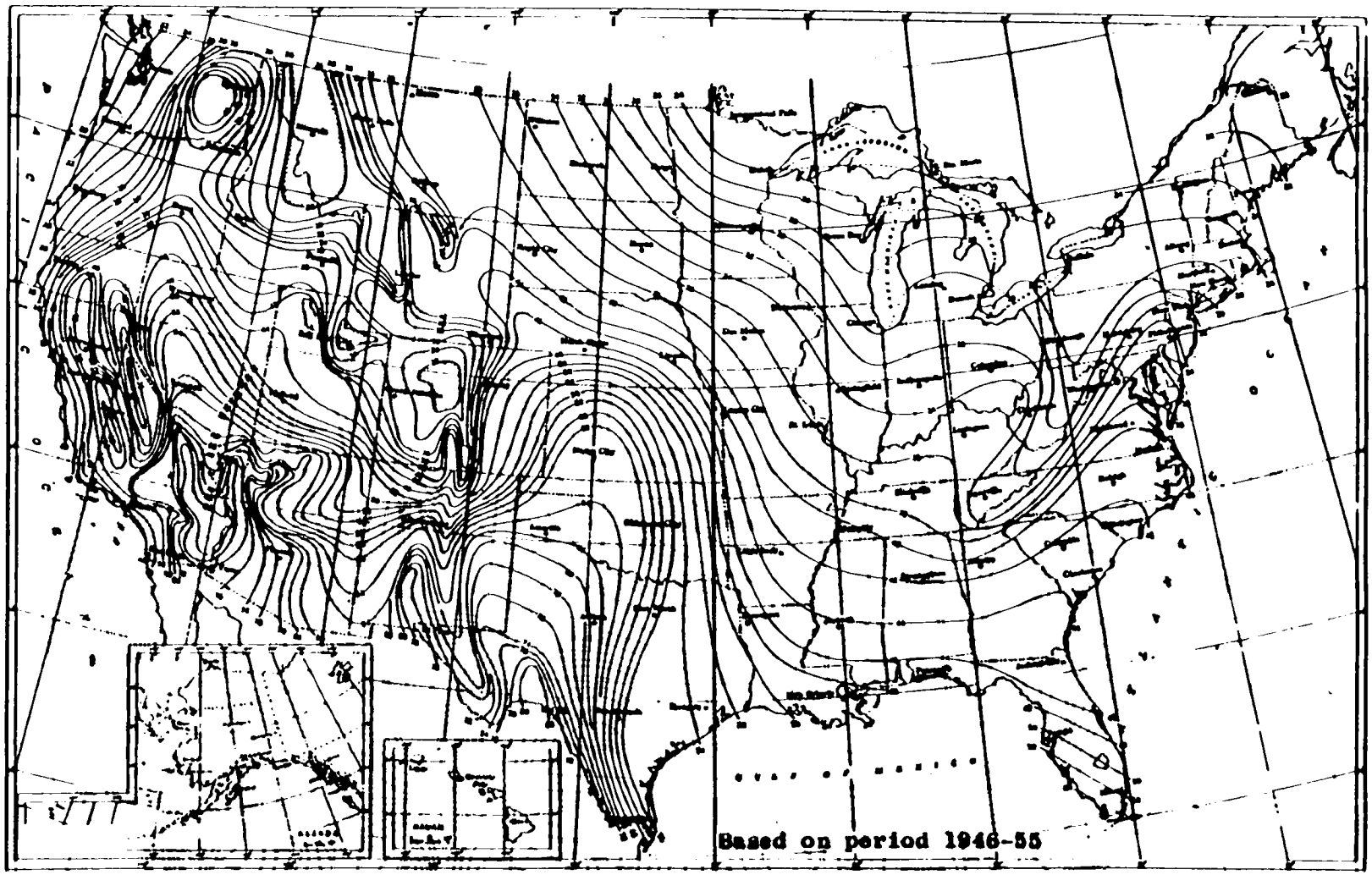


Figure 4

Mean Annual Lake Evaporation (In Inches)

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

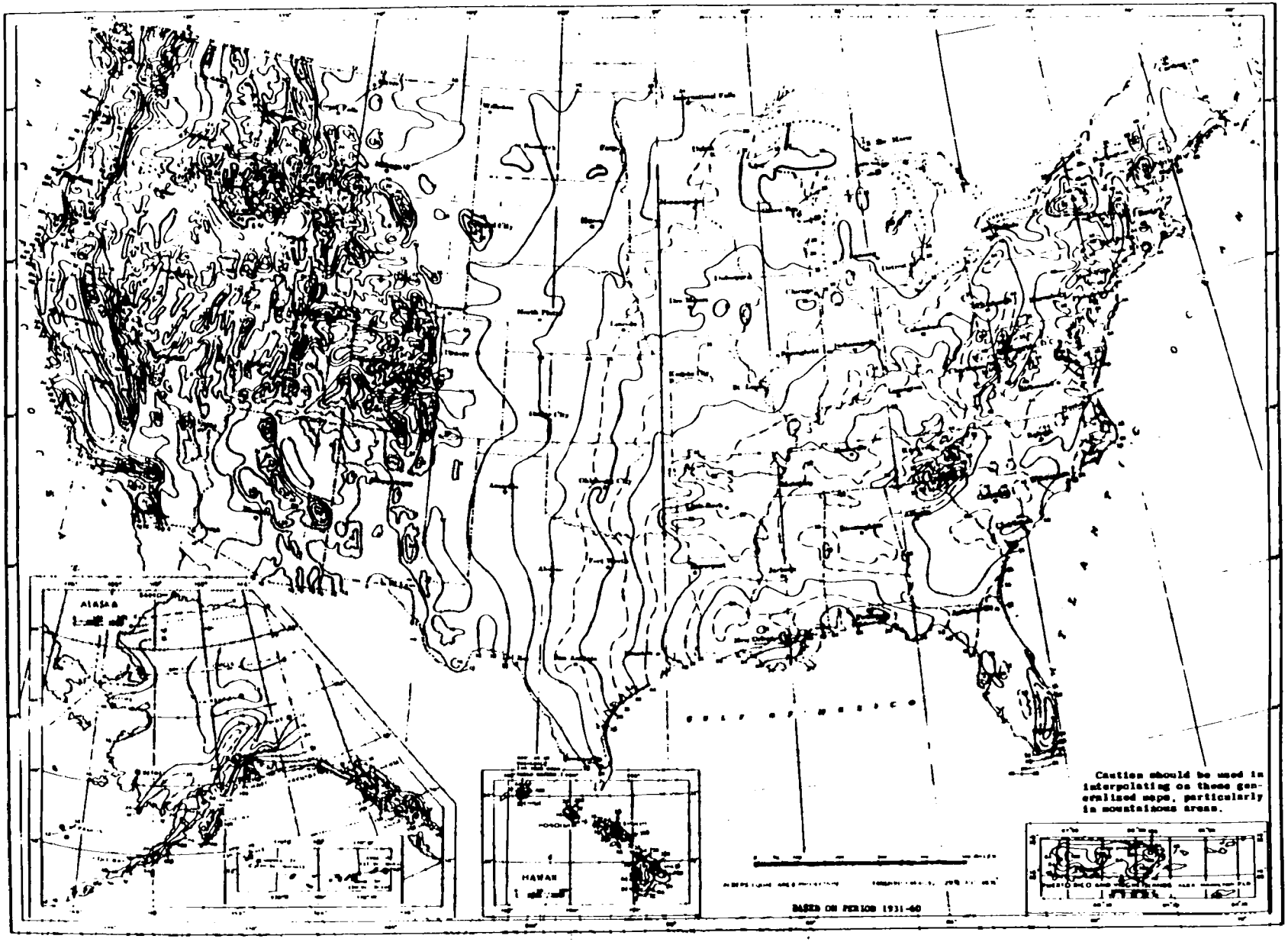


Figure 5

Normal Annual Total Precipitation (inches)

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

TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

TYPE OF MATERIAL	APPROXIMATE RANGE OF HYDRAULIC CONDUCTIVITY	ASSIGNED VALUE
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$< 10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$< 10^{-5} \geq 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$< 10^{-3} \geq 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$> 10^{-3}$ cm/sec	3

*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

3.3 Containment

Containment is a measure of the natural or artificial means that have been used to minimize or prevent a contaminant from entering ground water. Examples include liners, leachate collection systems, and sealed containers. In assigning a value to this rating factor (Table 3), consider all ways in which hazardous substances are stored or disposed at the facility. If the facility involves more than one method of storage or disposal, assign the highest from among all applicable values (e.g., if a landfill has a containment value of 1, and, at the same location, a surface impoundment has a value of 2, assign containment a value of 2).

3.4 Waste Characteristics

In determining a waste characteristics score, evaluate the most hazardous substances at the facility that could migrate (i.e., if scored, containment is not equal to zero) to ground water. Take the substance with the highest score as representative of the potential hazard due to waste characteristics. Note that the substance that may have been observed in the release category can differ from the substance used in rating waste characteristics. Where the total inventory of substances in a facility is known, only those present in amounts greater than the reportable quantity (see CERCLA Section 102 for definition) may be evaluated.

Toxicity and Persistence have been combined in the matrix below because of their important relationship. To determine the overall value for this combined factor, evaluate each factor individually as

TABLE 3

CONTAINMENT VALUES FOR GROUND WATER ROUTE

Assign containment a value of 0 if: (1) all the hazardous substances at the facility are underlain by an essentially non permeable surface (natural or artificial) and adequate leachate collection systems and diversion systems are present; or (2) there is no ground water in the vicinity. The value "0" does not **indicate no risk. Rather, it indicates a significantly lower relative risk when compared with more serious sites on a national level. Otherwise, evaluate** the containment for each of the different means of storage or disposal at the facility using the following guidance.

A. Surface Impoundment

	Assigned Value
Sound run-on diversion structure, essentially non permeable liner (natural or artificial) compatible with the waste, and adequate leachate collection system	0
Essentially non permeable compatible liner with no leachate collection system; or inadequate freeboard	1
Potentially unsound run-on diversion structure; or moderately permeable compatible liner	2
Unsound run-on diversion structure; no liner; or incompatible liner	3

B. Containers

	Assigned Value
Containers sealed and in sound condition, adequate liner, and adequate leachate collection system	0
Containers sealed and in sound condition, no liner or moderately permeable liner	1
Containers leaking, moderately permeable liner	2
Containers leaking and no liner or incompatible liner	3

C. Piles

	Assigned Value
Piles uncovered and waste stabilized; or piles covered, waste unstabilized, and essentially non permeable liner	0
Piles uncovered, waste unstablized, moderately permeable liner, and leachate collection system	1
Piles uncovered, waste unstabilized, moderately permeable liner, and no leachate collection system	2
Piles uncovered, waste unstablized, and no liner	3

D. Landfill

	Assigned Value
Essentially non permeable liner, liner compatible with waste, and adequate leachate collection system	0
Essentially non permeable compatible liner, no leachate collection system, and landfill surface precludes ponding	1
Moderately permeable, compatible liner, and landfill surface precludes ponding	2
No liner or incompatible liner; moderately permeable compatible liner; landfill surface encourages ponding; no run-on control	3

discussed below. Match the individual values assigned with the values in the matrix for the combined rating factor. Evaluate several of the most hazardous substances at the facility independently and enter only the highest score in the matrix on the work sheet.

	Value for Persistence			
Value for Toxicity	0	1	2	3
0	0	0	0	0
1	3	6	9	12
2	6	9	12	15
3	9	12	15	18

Persistence of each hazardous substance is evaluated on its biodegradability as follows:

Substance	Easily biodegradable compounds	Straight chain hydrocarbons	Substituted and other ring compounds	Metals, polycyclic compounds and halogenated hydrocarbons
Value	0	1	2	3

More specific information is given in Tables 4 and 5.

Toxicity of each hazardous substance being evaluated is given a value using the rating scheme of Sax (Table 6) or the National Fire Protection Association (NFPA) (Table 7) and the following guidance:

Toxicity	Sax level 0 or NFPA level 0	Sax level 1 or NFPA level 1	Sax level 2 or NFPA level 2	Sax level 3 or NFPA level 3 or 4
Value	0	1	2	3

Table 4 presents values for some common compounds.

TABLE 4

WASTE CHARACTERISTICS VALUES FOR SOME COMMON CHEMICALS

CHEMICAL/COMPOUND	TOXICITY [1]	PERSISTENCE [2]	IGNITABILITY [3]	REACTIVITY [3]
Acetaldehyde	3	0	3	2
Acetic Acid	3	0	2	1
Acetone	2	0	3	0
Aldrin	3	3	1	0
Ammonia, Anhydrous	3	0	1	0
Aniline	3	1	2	0
Benzene	3	1	3	0
Carbon Tetrachloride	3	3	0	0
Chlordane	3	3	0*	0*
Chlorobenzene	2	2	3	0
Chloroform	3	3	0	0
Cresol-O	3	1	2	0
Cresol-M&P	3	1	1	0
Cyclohexane	2	2	3	0
Endrin	3	3	1	0
Ethyl Benzene	2	1	3	0
Formaldehyde	3	0	2	0
Formic Acid	3	0	2	0
Hydrochloric Acid	3	0	0	0
Isopropyl Ether	3	1	3	1
Lindane	3	3	1	0
Methane	1	1	3	0
Methyl Ethyl Ketone	2	0	3	0
Methyl Parathion in Xylene Solution	3	0Δ	3	2
Naphthalene	2	1	2	0
Nitric Acid	3	0	0	0
Parathion	3	0Δ	1	2
PCB	3	3	0Δ	0Δ
Petroleum, Kerosene (Fuel Oil No. 1)	3	1	2	0
Phenol	3	1	2	0
Sulfuric Acid	3	0	0	2
Toluene	2	1	3	0
Trichlorobenzene	2	3	1	0
α-Trichloroethene	2	2	1	0
Xylene	2	1	3	0

[1] Sax, N. I., Dangerous Properties of Industrial Materials, Van Nostrand Rheinhold Co., New York, 4th ed., 1975. The highest rating listed under each chemical is used.

[2] JRB Associates, Inc., Methodology for Rating the Hazard Potential of Waste Disposal Sites, May 5, 1980.

[3] National Fire Protection Association, National Fire Codes, Vol. 13, No. 49, 1977.

* Professional judgment based on information contained in the U.S. Coast Guard CHRIS Hazardous Chemical Data, 1978.

Δ Professional judgment based on existing literature.

REFERENCE 3

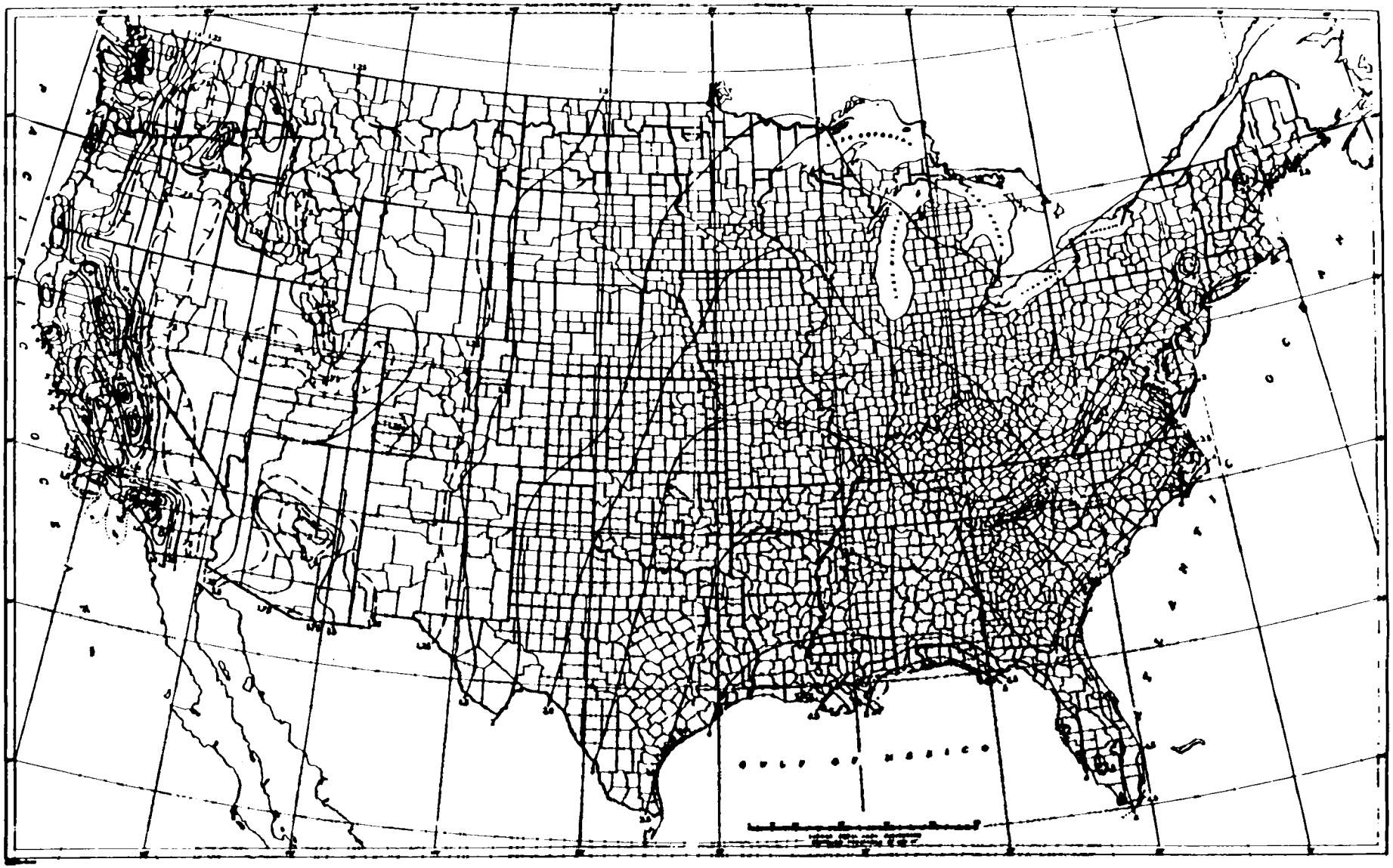


FIGURE 8

1-Year 24-Hour Rainfall (Inches)

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.

REFERENCE 4

DAILY FIELD REPORT

PROJECT NO. 5C280416 LOCATION OLD LAND RECLAMATION LANDFILL

DATE 1/24/86 REPORT NO. _____

WEATHER CONDITIONS Partly Cloudy ~28°F some snow on ground

REPORT

ACTIVITIES

Andre Lapres and Sheldon Nozik on site about 2:00 p.m.

Walked around most of site and up along railroad grade to bridge above Cayuga Creek. Observed well located at southeast corner of Land Rec landfill to west of site.

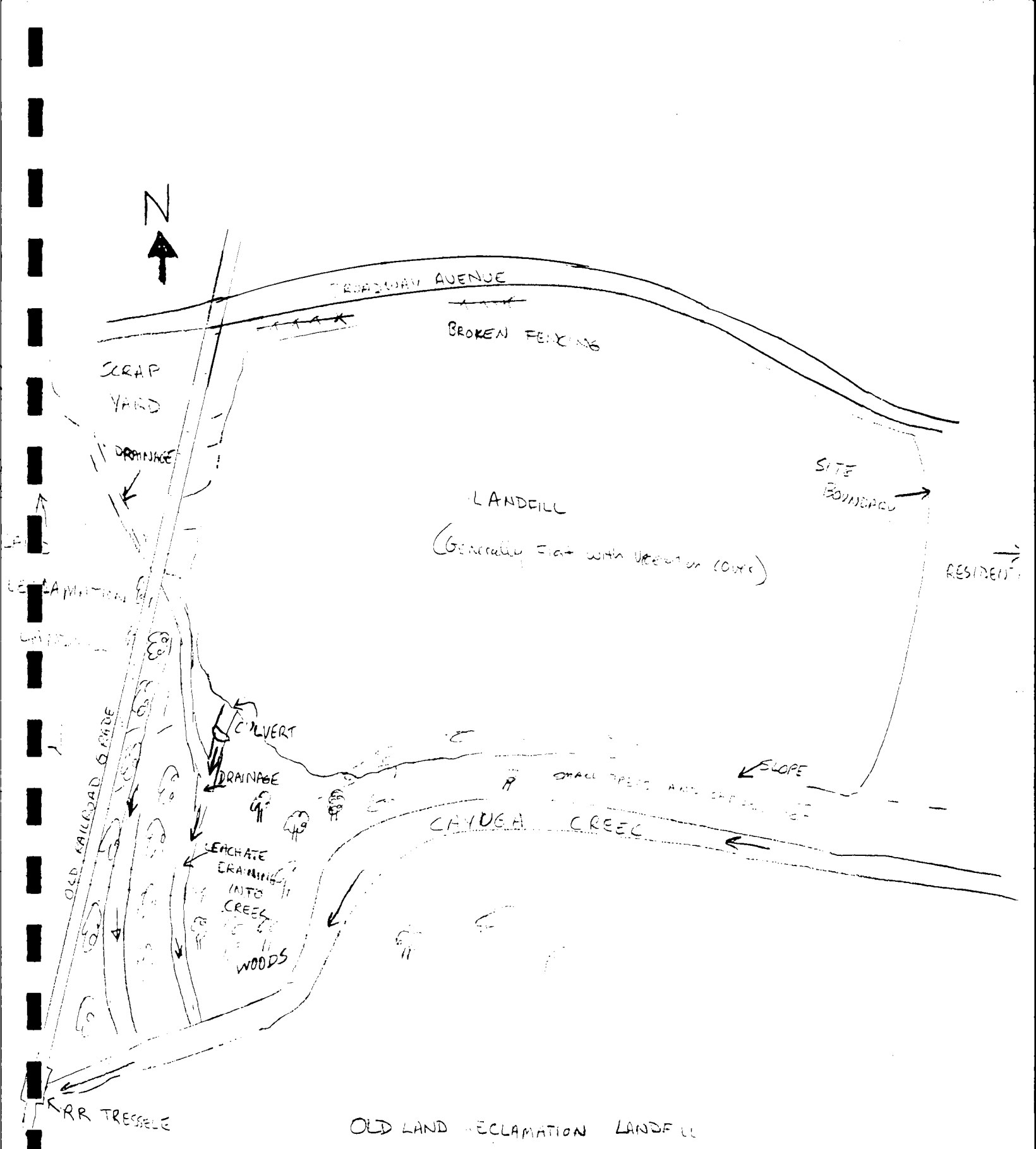
Walked back and down through shrubs to observe drainage flowing from scrap yard area to ditch with culvert that drains from landfill to cayuga creek (see sketch). Drainage ditch below railroad grade was flowing and appeared to be stained by leachate (iron). Area between Cayuga Creek and landfill boundary was flooded. Evidence of beaver and other wildlife.

DELAYS

Landfill is generally flat with grass and weeds coving surface. Some refuse showing through (tires etc). Residential area east of landfill ~ 0.5 miles

REMARKS

Sheldon Nozik



OLD LAND RECLAMATION LANDFILL

DEPEW, NEW YORK

NYS. SUPERFUND

PHASE II

SCALE

N-S

FIG. 2

REFERENCE 5

cfs

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES

DRAFT REPORT

ON

HAZARDOUS WASTE DISPOSAL

IN

ERIE AND NIAGARA COUNTIES, NEW YORK

ERRATA

1. The Village of Depew, Ed Ball, Eden Sanitation and Empire Waste sites on page II-38 of the Draft Report should all be in the Priority III category.

2. The two Shanco Plastics disposal sites identified on pages II-15 and II-16 of the Draft Report are located at 2716 Kenmore Avenue, Tonawanda, and not at 111 Wales Avenue, Tonawanda.

3. Hooker's V-80 Area site identified on page II-29 of the Draft Report should be in the Priority I category.

March 1979

TABLE OF CONTENTS

MUNICIPAL, STATE AND PRIVATE WASTE DISPOSAL AREAS

ERIE COUNTY

Priority	Name of Site & Operator	Site Location	Present Status & Dates Used	Communities Using Site	Industries Using Site	Descriptions of Wastes Accepted and Comments
II	Lancaster Sanitary Landfill Lancaster Sanitary Landfill, Inc.	Gunnville Road Lancaster	Active 1961 to present	Northern Erie County	Allied Chemical Dye Plant Wilson Greatbatch Strippit Curtiss-Wright Corp. Arcata Graphics DuPont Ford Motor Co. Westinghouse Chevrolet Trico Products Harrison Radiator Snyder Tank F. N. Burt	Mostly residential and commercial refuse; Some demolition debirs. Until recently, accepted septage; Has accepted some liquid waste, "Corian", "Tedlar", "Vexar" netting, filtration sludges, waste colors and solvents.
II	Lancaster Reclamation Ferry Concrete Company, Inc.	403 Pavement Road Lancaster	Active	None	Dresser Industries Chevrolet Allied Chemical Dye Plant Buffalo Color	Foundry sand and dye wastes.
II	Land Reclamation Land Reclamation, Inc.	Broadway and Indian Road Cheektowaga	Active	Village of Depew Town of Cheektowaga	Ford Motor Co. F.N. Burt Allied Chem. Dye Anaconda Trico Chevrolet Arcata Graphics American Optical Pratt & Letchworth	Pine tar pitch, inks, laboratory sample bottles, waste colors, foundry sand, slag, spent refractories, paper and wood, sulfur drainings, calcium and other salts of sulfuric acid and nitric acid, solid polymerized sulphan, spent vanadium pentoxide, sulfur drainings, cinder; Probably only accepts residential and commercial waste now.
III	La Salle Reservoir City of Buffalo	East Aurora and Park Ridge Streets Buffalo	Inactive	City of Buffalo	None	Mostly non-combustible materials, Some illegal refuse.

Estimated amounts of wastes generated at the plant:

	Tons per Year	Total Tons (1930 to 1978)
Charred coal tar dust ash and coal and coke fines	1000 tons (1977-78)	N/A
Tar sludge fly ash and cinders	4680 tons	210,600 tons
Boiler fly ash	19,760	889,200
Brick, rubble and related demolition material		10
General plant refuse	2340	126,060
Spent iron oxide and wood shavings	728	32,760
Plant scrap, mostly metal	1248	56,160
Contaminated Chloroethane		750 gallons

Charred coal tar dust, ash and coal and coke fines were disposed of at Newco Waste Systems in Niagara Falls. Tar sludge, fly ash, cinders and boiler fly ash were disposed of in the southwest part of plant property. Brick, rubble and related demolition material were disposed in the northwest part of plant property. General plant refuse was incinerated on premises. Spent iron oxide and wood shavings were disposed of in the southeast part of plant premises. Plant scrap was disposed of at the Seaway Industrial Park in Tonawanda. Chloroethane was hauled to Buffalo Waste Oil of North Tonawanda. In 1977, Superior Pipe Cleaning and Elmwood Tank Cleaning removed oils from an in process lagoon for disposal or reclamation elsewhere.

ALLIED CHEMICAL CORPORATION
Specialty Chemicals Division
Buffalo Dye Plant
340 Elk Street
Buffalo

The Allied Chemical Corporation was incorporated in New York as the Allied Chemical and Dye Corporation. The Buffalo Dye Plant was owned and operated by National Aniline & Chemical

4. Deep Well Disposal

A deep well injection operation was used at the plant from November 1960 until mid-1963. The deep well was operated in compliance with the requirements of a permit issued by the Erie County Health Department. It was 450 feet deep and was used to dispose of approximately 3,500,000 gallons of 40 percent ammonum sulfate solution. Prior to injection in the deep well, this waste material was treated with carbon to remove organic material.

B. Off-Plant Waste Disposal Sites

1. Niagara Recycling (Niagara Falls)

Niagara Recycling was used from 1970 to 1975 to dispose of approximately 13,000 tons of pretreatment sludge containing calcium sulfate, low levels of benzidine and minor amounts of metal hydroxides including zinc, copper, chromium, lead and organics. In addition, about 3700 tons of still bottoms and filter sludges containing organics, colors and metals, along with about 6000 tons of trash, were disposed of at this site. Niagara Sanitation was the contractor who hauled these materials. The materials were transported in 5 cubic yard boxes.

2. Frontier Chemical (Pendleton)

Frontier Chemical transported approximately 600,000 gallons of residue consisting of tetrapropylene and process sludges, solvents, waste oil and waste colors to its site in Pendleton. Materials were transported in drums as sludges and liquids.

3. Land Reclamation (Cheektowaga)

This site was used primarily for trash and rubble disposal between 1968 and 1975. Rapid Disposal of Buffalo and Downing Container transported the wastes to this site. These haulers also transported about 100,000 gallons of drummed laboratory sample bottles and waste colors to this site for disposal.

4. Lancaster Sanitary Landfill (Lancaster)

From 1970 to 1971, Buffalo Sanitation hauled drummed quantities of filtration sludges, waste colors and solvents to this site for disposal. The total quantity of waste transported to this site was over 200,000 gallons.

5. Chem-Trol (Blasdell)

Chem-Trol was used as a disposal site for drummed quantities of sludges from about 1965 to approximately 1970. Chem-Trol hauled about 55,000 gallons of tetrapropylene waste and nearly

In addition to the above chemical wastes, AMAX generated spent cutting and lubrication oils. AMAX has indicated that only minimal amounts of such oils were generated. From 1967 to 1978, these oils were hauled away by Rural Sanitation Services, Inc.

Waste oil was also hauled off premises by Booth Oil of Buffalo. Finally, in September 1978, one shipment of 90 fifty-five gallon drums of low level radioactive material was taken from AMAX by Chem-Nuclear Systems to South Carolina. A follow-up radiological survey at the AMAX plant conducted by ATCOR Corp. indicated no unusual radioactivity levels at the plant.

Carborundum and AMAX both indicated they had no information on waste generation at the Akron facility before 1967. AMAX did indicate that ammonium chloride, ammonium sulfate and zirconium oxide were disposed of in the on-site lagoons before 1967.

AMERICAN OPTICAL CORPORATION
Scientific Instrument Division
Eggert and Sugar Roads
Buffalo

The American Optical Corporation was incorporated in Delaware in 1963. The company began operations in western New York with the acquisition in 1938 of the Spencer Lens Company located at Doat and Genesee Streets in Buffalo. In 1942, the company moved to its present location. American Optical is a subsidiary of Warner Lambert.

The manufacturing processes used at the plant include plating and anodizing of metal parts, painting and spraying of metal parts, vapor degreasing, metal machining and lens grinding, polishing and coating.

Principal products include microscopes and microtomes (since 1938), ophthamlmic instruments (since 1938); projectors (1938 to 1978); optical machinery (1958 to 1969) and periscopes and sniperscopes (1940 to 1957).

The main waste products generated at the plant are garbage, incinerator ash (since 1961), waste solvents, waste paints and thinners, scrap glass, metal, emery silicon and rouge, water soluble cutting oils (since the 1950's), non-soluble cutting oils, plastic particles, lubrication oil, sodium cyanide, solid pine tar pitch and oil contaminated fuller's earth. Solvents disposed of include chloroethane, acetone, 1,1,1 - trichloro-ethane, methylene chloride, freon/genatron, methanol, Stoddard solvent, naptha, toluene, toluene diisoyenate and xylene.

Company records do not indicate where Spencer Lens disposed of wastes before 1938. Two former American Optical employees,

one of whom had worked at Spencer Lens, advised the Task Force that no wastes were disposed of on premises by Spencer Lens and that most wastes were discharged to sewers.

From 1946 to 1956, American Optical disposed of garbage, fuller's earth contaminated with oil, waste solvents, waste paints and thinners, scrap glass, metal, emery, silicon, rouge, pine tar pitch, and cutting oils at Pfohl's Dump in Cheektowaga. From 1957 to 1961, Fuller's earth, waste solvents, waste paints and thinners and cutting oils were incinerated at the Cheektowaga incinerator. Since 1957, garbage, scrap glass, emery, metal, silicon, rouge, plastic particles, pine tar pitch and incinerator ash have been taken to the Land Reclamation site in Cheektowaga. Since 1954, Downing Container has hauled oil contaminated fuller's earth, cutting oils, glass fines, lubrication oils, solvents, paint and paint thinner to an unknown site. Since 1975, Ashland Chemical, Chem-Trol Corporation of Avon, Ohio and Downing have hauled waste solvents, paint, paint thinner, oil and pine tar pitch.

The Company discharged sodium cyanide to sewers before 1976. Since 1976, Ashland Chemical has hauled cyanide from the plant.

The amounts of some of the wastes identified above were estimated by the company for 1977 as follows:

Scrap metal fines	3.6 tons
Scrap rouge	.3 tons
Scrap silicon	1.1 tons
Water soluable cutting oil and glass fines	2750 gallons
Contaminated cutting oil and lubrication oil	1195 gallons
Contaminated solvents	6379 gallons
Solid paint particles	10 tons
Solid plastic particles	1 ton
Sodium cyanide	110 gallons
Pine tar pitch	8.4 tons
Incinerator ash	18 tons
Fuller's earth (1978)	20 tons*

*Company's 1979 estimates for 1978.

American Optical has indicated to the Task Force that its facility is five times as large now as it was in 1939 so that "to extrapolate this [quantitative] information over a period of 1930-1975 would be extremely speculative."

ARCATA GRAPHICS
TC Industrial Park
Depew

Arcata Graphics began operations as the J.W. Clement Company in 1878 and was incorporated under that name in New York in 1908. The name of the company was changed to Arcata Graphics in 1970. Arcata Graphics is a subsidiary of the Arcata Corporation.

From 1914 to 1962, the Company had facilities at Seneca and Lord Streets, Buffalo and, from 1940 to 1962, at Erie Street, Buffalo. Computer Printing, Inc., another division of the Arcata Corporation, is located in Buffalo.

Arcata Graphics produces magazines and books. Its manufacturing processes include letter press printing (since 1930); offset printing (since 1966); gravure printing (since 1977); magazine and book binding (since 1930); and plate making (since 1930).

Wastes generated by the company include paper, paper dust, wood, general refuse, ink solvents and lubrication oils, contaminated solvents from gravure press operations, nitric acid waste and waste ammonia. Since 1976, the contaminated solvents have contained lactol spirits, xylene and toluene. The nitric acid wastes contain hexavalent chromium.

The company has estimated that approximately 5300 cubic yards of paper, paper dust, wood and general refuse; 36,000 gallons of ink solvents and lubrication oils; 48,000 gallons of solvents from the gravure press operation and 57,600 gallons of nitric acid wastes have been generated annually since 1962.

From 1962 to 1978, Continental Transfer System, Inc. hauled paper, paper dust, wood and general refuse to the Village of Depew dump site. Since June 1978, Continental has taken the same waste to the Lancaster Sanitary Landfill.

Liquid wastes were hauled by Frontier Chemical and Chem-Trol from 1962 to 1974 presumably to disposal sites at Frontier's Pendleton facility and Chem-Trol's facilities in Blasdell and then Porter. Since 1974, liquid wastes have been hauled by Interflow Systems (also known as K.D. Enterprises) to its disposal facilities in Hamilton, Ontario.

Arcata indicated that its old Buffalo facilities were both located in congested areas and that no on-site land disposal had occurred at either location. This was confirmed by former employees who indicated that wastes generated at the Erie Street facility were either burned or dumped in the Buffalo River.

The plant foreman and general manager at Computer Printing indicated that that facility generates waste paper, waste ink and paper scrap. Paper scrap has been hauled off premises for

The company generates paper, wood, waste oils, and paint wastes. Paper and wood (3,500 tons/yr.) were incinerated and the incinerator ash disposed of on-site prior to 1970 and 1971. Thereafter, paper and wood was hauled away by Rapid Disposal.

Waste oil (1,100 gallons/yr.) was hauled by Buffalo Waste Oil in Buffalo and is now hauled by Southgate Oil.

Paint wastes (up to 3,300 gallons/yr.) were mixed with sawdust and incinerated on site and are now disposed of at Chem-Trol in Porter.

F.N. BURT COMPANY, INC.
2345 Walden Avenue
Cheektowaga

The F. N. Burt Company commenced operations in Erie County in 1886 and was incorporated in Delaware in 1936. It is a subsidiary of Moore Corporation, Ltd. of Toronto. The company had three separate facilities in Buffalo before moving to its present location in 1958, 383 Babcock Street, 500-540 Seneca Street, and Main and Bryant Streets.

F. N. Burt manufactures rigid paperboard boxes, folding cartons and plastic boxes. Its manufacturing processes include cutting paper and paperboard, printing, cerating, forming, leaf stamping, die cutting and gluing paperboard and, from 1963 to 1973, injection molding plastics.

Wastes generated at the F. N. Burt plant include paperboard, cellophane and goldleaf, scrap wood, plastic, garbage, adhesive (animal glue, polyvinyl acetate and dextrins), inks, incinerator residue and fly ash (1930 to 1968), waste cans, metal, waste oils and solvents. The company has estimated that it generates approximately 5500 gallons per year of waste oil and solvents. The company indicated that it does not have information on the amounts of solid waste generated. However, data gathered as part of the 1972 Erie and Niagara Counties Comprehensive Solid Waste Survey indicate that approximately 4,500 tons per year of waste paper and wood were generated by the company.

From 1930 to 1963, waste solids and inks identified above were hauled to the Altift Realty Site at Tifft Street in Buffalo by Rapid Disposal Service and F. N. Burt itself. The same haulers took solid wastes and inks to the Land Reclamation site in Cheektowaga from 1958 to 1968 and to the Lancaster Sanitary Landfill from 1958 to 1975. Rapid Disposal also took solid wastes to the City of Buffalo Incinerator at Niagara Street and the Seaway Industrial Park in Tonawanda during undetermined periods of time.

Wastes generated by the Research and Development Division included hydrochloric acid which was hauled to Chem-Trol Pollution Services, Inc. in Porter from 1965 to 1972 and treated on-site thereafter and scrap paper, wood, resins and empty containers disposed of at the Niagara County Dump at Witmer Road in Wheatfield from 1965 to 1975 and at Newco Waste Systems, Inc. since 1972. In 1977, the total amount of scrap hauled away was 258 tons. Approximately 2700 gallons of waste chemicals (hydrochloric acid and formaldehyde) were taken to Newco in one pick-up in March 1977.

E. Other Plants

Carborundum could provide no information about waste generation at the Akron plant which it operated from 1951 to 1967. The present owner of the plant, AMAX Specialty Metals, also had no information about pre-1967 operations. The plant produced hafnium and zirconium metals and it may be presumed that wastes generated before 1967 were disposed of on-premises.

The Lockport Felt plant produces felt belts for the paper industry. According to the present management at the plant, the little waste that is generated there is discharged to sewers. A small amount of waste machine oil, paper and cardboard waste is disposed of with garbage at the Lockport City Dump.

CHEVROLET MOTOR DIVISION
General Motors Corporation
Buffalo Plant
1001 East Delavan Avenue
Buffalo

The General Motors Company was incorporated in New Jersey in 1908. The present company, General Motors Corporation, was incorporated in Delaware in 1916. The Chevrolet Buffalo Plant began operating in August 1916 in a new facility.

The company has produced the following products at this plant:

Automobiles	1930 to 1941
Aircraft engines	1941 to 1945
Mounting brackets, auto axles, brake and clutch pedals	1945 to 1949
Auto axles, aircraft engine tank parts and linkages	1949 to 1952
Auto axles and linkages	Since 1952

Processes used since 1956 are machining, grinding, heat treating, lubriting, parts washing, painting, welding, shot blasting, metal forming (hot and cold) and greasing.

The company has generated the following wastes:

Cardboard, wooden pallets and cafeteria waste
Waste oil
Iron oxide scale
Metal and carbide
Grinding dust
Grinding sludge (steel, silica, binder and water soluble oil)
Waste treatment sludge (varnishes, oil and insoluble hydrocarbons)
PCBs from scrap capacitors and lighting ballasts
Lapping compound (silicon carbide and oil)

Cardboard, wooden pallets and cafeteria wastes have been disposed of at Land Reclamation in Cheektowaga (unknown date to present), Newco Waste Systems in Niagara Falls (unknown date to present) and the Lancaster Sanitary Landfill (unknown date through 1972). According to the 1972 Erie and Niagara Comprehensive Solid Waste Survey, approximately 1,180.8 tons of paper and 322.4 tons of wood were being generated annually by the Chevrolet plant.

Waste oil in unknown quantities has been hauled from the plant by Booth Oil.

Iron oxide scale (72 tons/yr.) and grinding dust (1.5 tons/yr.). have been hauled to Land Reclamation.

Grinding sludge (44 tons/yr.) and lapping compound (13,750 gallons/yr.) have been hauled to Niagara Recycling, Inc. in Niagara Falls.

Waste treatment sludge (4,000 gallons/yr.) was hauled from the plant by Superior Pipe Cleaning until 1974.

PCBs (two gallons/yr.) have been disposed of at Chem-Trol Pollution Services in Porter.

"Donner-Hanna employs no waste haulers or disposer other than Downing Container Service, which provides and exchanges containers for garbage such as paper, wood, etc. which was previously burned. Products which Donner-Hanna make that might be candidates for waste disposal operations are now and have been recycled with raw material coal, so as to be reconstituted as saleable products. The sludge from our waste water pathway is principally insoluable calcium carbonate. It is not hazardous and has not warranted analysis.

"Once each year, we have dug calcium carbonate and earthen sediment from our waste water pathway to the Buffalo River and deployed it on the surface (of filled property which we use for coke storage) as is appropriate for non-hazardous material not requiring burial."

Erie County records indicate that ammonia still waste containing phenol was at one time discharged to the "black" water stratum some 145 feet below ground level at the Donner-Hanna facility until, after four years of use, the wells plugged and the project was abandoned. This discharge took place before 1953.

DRESSER INDUSTRIES, INC.
Dresser Transportation Equipment Division
Two Main Street
Depew

Dresser Industries began operations in Erie County in 1892. The company has been known since 1930 under the names Gould Coupler Company, Symington-Gould Corporation, Symington-Wayne Corporation and, since 1968, as the Dresser Transportation Equipment Division of Dresser Industries of Dallas, Texas.

The company produces steel castings by the foundry process. It generates spent bentonite clay (since 1938), Manley sand (since 1938), slag (since 1930), lubricating oil and small amounts of brick and phenolic binders (ammonia and cyanide) as waste products.

In 1976, the company estimated that it was generating 8800 tons per year of the wastes identified above. Since 1976, 15,000 cubic yards of such wastes have been generated each year.

From 1961 to 1976, all wastes were disposed of at Stocks Pond at the southeast corner of Broadway and Transit Road in Depew. Since 1976, all such wastes have been disposed of at the Lancaster Reclamation site by the Ferry Construction Company. Wastes are also dumped at a staging area on Dresser's own property west of Transit Road.

Before 1961, sand and clay wastes were hauled by Rayburn Smith, Inc. to an unknown site.

From 1942 until after World War II, the company operated an Army owned facility in Depew for the production of steel armor castings for tanks. The wastes generated at this facility, silica and bentonite clay casting cores and scrap metals from chipping and grinding operations, were probably hauled by Rayburn Smith.

DUNLOP TIRE AND RUBBER CORPORATION
Sheridan and River Roads
Tonawanda

Dunlop Tire and Rubber Corporation began operations in Buffalo in 1920. Dunlop has manufactured a wide variety of products including foam rubber (1942 to 1960), duthane (1959 to 1968), urethane foam (1959 to 1960), nylon (1962 to 1963), tire tubes (1938 to 1960), tennis balls, tennis rackets and golf balls (1940 to 1960), tires (since 1923), balata (since 1940), and blimps (1942 to 1945) using milling, mixing, extruding, calendering, tire building, curing and finishing processes.

Waste products generated include carbon black and powders, scrap wood, fly ash, scrap tires, wire tire beads, golf balls, scrap rubber, latex rubber, foam rubber, sulphur, plastics, oils, grease, oily sludge and tank residue, general refuse, chemical wastes (amines and nitrogen-containing compounds) and waste organic solvents (toluene and xylene).

All of these wastes have been disposed of at three sites on plant premises since 1921. In addition, (a) some solvents and degreasers (110 gallons/yr.) have been hauled by Downing Container and Elmwood Tank Cleaning to unknown sites, (b) carbon black, scrap wood, general refuse, oily sludge and tank residues were disposed of at Seaway Industrial Park in Tonawanda in 1976 and (c) some wastes have been hauled since 1930 by at least 20 haulers identified by the company.

The company does not know how much wastes it has generated. However, in 1976 the company indicated that it was generating the following amounts of wastes per year:

Waste oil and sludge	32,000 gallons
Oil skimmings	3,000 gallons
Solvent	13,750 gallons
Tank residue	2,750 gallons
Carbon black dust	40 tons
Scrap tires	660 tons

FMC CORPORATION
Industrial Chemical Division
34 Sawyer Avenue
Tonawanda

FMC Corporation was established in 1925 as the Buffalo Electro-Chemical Company. The company later became known as Food Machinery and Chemical Corporation. In 1961, the name was shortened to FMC.

The company manufactures a variety of products including ammonium persulfate (since 1951), potassium persulfate (since 1927), sodium persulfate (since 1961), hydrogen peroxide (1927 to 1970), peracetic acid (since 1927), zinc and calcium peroxides (1958 to 1968) and dipicolinic acid (since 1958).

The company generates floor sweepings, scrap products, borax, potassium perdiphosphate, potassium phosphate, potassium flouride, manganese oxide, filter backwashes containing ammonium persulfate, ammonium sulfate, metal oxide, scrap perburate and miscellaneous garbage as wastes.

Four pits on site, each 4,000 cubic feet in size, were used for disposal of floor sweepings (660 gallons/year), scrap products and borax from 1964 to 1976. Since 1974, Chem-Trol Pollution Service, Inc. has been used for the removal and disposal of floor sweepings, scrap products including persulphates, perberates, sodium carbonate peroxide, hydrogen peroxide, paracetic acid, calcium and zinc peroxide, magnesium, urea, pyrophosphate and dipicolinic acid.

Since 1962, Seaway Industrial Park in Tonawanda has been used for disposal of yard trash, floor sweepings, scrap perborate and miscellaneous garbage. The company has no records of waste disposal activities prior to 1962.

FORD MOTOR COMPANY
Ford Stamping Plant
3660 Lake Shore Road
Buffalo

The Ford Motor Company has operated two manufacturing facilities in Buffalo, an assembly plant which operated from 1924 to 1957 in a building now occupied by the Niagara Frontier Port Authority, and the Stamping Plant at Lake Shore Road which has been operating since 1950.

Zinc primer sludge (3600 gallons/yr. in 1977 and 1978), ammonia sludge (50 gallons/yr. in 1977 and 1978) and cyanide wastes (100 gallons in 1977 and 1978) have been disposed of at Newco Waste Systems in Niagara Falls since 1977.

Oil sludge (at least 100,000 gallons/yr.) has been disposed of at Land Reclamation (1970 to 1974), Chem-Trol Pollution Services, Inc. in Porter (1971 to 1975), Lancaster Sanitary Landfill (1974 to 1977), Newco Waste Systems (1977 to 1978) and at an unknown site used by Northeast Oil Service (1977 to 1978).

Oil contaminated water (20,000 gallons/yr.) has been sent to Chem-Trol in Porter from 1971 through 1978).

Garbage and rubbish from the stamping plant has been disposed of at Land Reclamation (1970 to 1974 and 1977 to 1978), the Chaffee Landfill (1974 to 1977) and the Seaway Industrial Park (1972).

Ford does not have documentation describing the disposal of wastes before the earliest dates indicated above. However, the Environmental Representative of the Stamping Division has indicated to the Task Force that the company suspects that cyanide wastes may have been disposed of on plant premises at some unknown location.

GENERAL ELECTRIC COMPANY
Apparatus Service Division
175 Millens Road
Tonawanda

The General Electric Company, Apparatus Service Division, began operations in Erie County in 1928. Until 1969, the Division had a plant on 318 Urban Street in Buffalo. From about 1919 to 1972, GE also operated a manufacturing facility at 1495 Fillmore Avenue in Buffalo.

Since 1930, the Apparatus Service Division has repaired electric motors, transformers and mechanical units.

The primary wastes generated by the Apparatus Service Division are waste oil, grease and solvent, waste transformer oil, varnish, paint residue, sludges, wood and oil contaminated materials. Transformer oil is generated when transformers brought in for repairs are "untanked". Since 1965, some of the transformer oils disposed of have contained PCBs. These oils have been known under the name "Pyranol". Transformer oils not containing PCBs are known as "IOC" oils.

The waste products generated by Pratt & Lambert consist of solvent paint wastes sludges (acetone, toluene, xylene, methylethyl ketone and other aliphatic and aromatic hydrocarbons), waste acids (phosphoric and other inorganic acids), aqueous process waste, liquid paint solvents, general refuse and miscellaneous trash.

Solvent paint wastes sludge (est. 15,000 gallons/yr.) has been hauled by Downing Container to unknown locations (since 1962), by Chem-Trol presumably to its Porter disposal site (1971 to 1976), by Frontier Chemical Waste for reclamation or disposal (since 1973) and by Pratt & Lambert to Newco Waste Systems in Niagara Falls for disposal (1977).

Waste acids (250 gallons/yr.) have been hauled to Frontier Chemical Waste in Niagara Falls for treatment since 1973.

Aqueous process waste (at least 500,000 gallons/yr.) was hauled by Chem-Trol presumably to its Porter disposal site (1971 to 1976) and by Frontier Chemical Waste in Niagara Falls since 1973.

Liquid paint solvents have been hauled to Solvent Recovery Service of Linden, New Jersey for reclamation or, since 1945, in amounts of 63,000 gallons per year, incinerated on plant premises.

Refuse and trash were hauled to and incinerated at the "Piggery" at River Road in Tonawanda (1937 to 1945), hauled by R. C. Knapp of Tonawanda to an unknown site (1945 to 1975) and hauled by Downing Container to an unknown site since 1962.

A former plant employee recalled that some of the waste materials identified above may have been disposed of in the bed of the Erie Canal in Tonawanda.

PRATT & LETCHWORTH DIVISION
Dayton Malleable Inc.
189 Tonawanda Street
Buffalo

Dayton Malleable Iron Co. was founded in 1848 and incorporated in Ohio in 1869. In 1923, Pratt & Letchworth was purchased by Dayton. In 1973, Dayton changed its name to Dayton Malleable Inc.

Since 1900, Pratt & Letchworth has used the casting process at its Buffalo plant to produce railroad steel castings. The company also produces forged steel. Wastes generated are sand (from dry sand scrubbers), slag, paper and wood, and motor and hydraulic oil.

Estimated amounts of wastes generated at Pratt & Letchworth:

	Amounts per Year	Total Since 1930
Sand	13,200 tons	633,600 tons
Slag	1,000 tons	48,000 tons
Paper and wood	3,000 cu. yds.	144,000 cu. yds.
Waste oil	14,300 gallons	686,400 gallons

From 1930 to 1949, sand and slag waste was hauled by Anderson Trucking and by Pikowski Trucking of Kenmore for use as fill. From 1930 to 1949, the railroad track which crossed Amherst Street at street level was raised to make a viaduct. Fill material from plant property along with tons of sand and slag were used for the project. The void created on plant property by fill removal was refilled with plant wastes. Finally, plant refuse was also hauled to the stone quarry directly opposite the plant site on Amherst Street.

From 1949 through 1965, wastes were either incinerated or land disposed on 23 acres of Pratt & Letchworth property next to the Scajaquada Creek and Amherst Street designated for disposal. Waste Oil was generally spread on internal roadways for dust suppression. William Beck Trucking Co. hauled slag and sand from 1949 to 1955 to be reclaimed.

Since 1965, sand and slag have been hauled by Pratt & Letchworth to the City of Buffalo West Side Incinerator pit located on Squaw Island.

Since approximately 1960, Downing Containter Service has hauled sand, dust, paper and wood from Pratt & Letchworth.

From 1970 to 1978, Pratt & Letchworth has used the Land Reclamation Site in Cheektowaga for disposal of sand, slag and paper and wood.

RAMCO STEEL INC.
110 Hopkins Street
Buffalo

Ramco Steel Inc., a subsidiary of Ramcorp Metals Inc., was founded and incorporated in New York in 1972. The present plant was owned and operated by Bliss and Laughlin Steel from 1929 to 1972.

TRICO PRODUCTS CORPORATION
500 Elk Street
817 Washington Street
2495 Main Street
Buffalo

The Trico Products Corporation was incorporated in 1920. There are presently three operating plants in Buffalo: Plant No. 1 at 817 Washington Street, Plant No. 2 at 2495 Main Street and Plant No. 3 at 500 Elk Street. The operations at the three plants are fully integrated. There have been three other plant locations in Buffalo in the past: 956 Washington Street (a warehouse from 1946 to 1959), 990 Niagara Street (Plant No. 4 from 1947 to 1963) and 86-100 Leroy Avenue (Plant No. 5 from 1947 to 1960).

All three operating plants produce auto parts. Processes used at the plants since 1930 are electroplating, degreasing, phosphating, painting, heat treating, burnishing, zinc die casting, machining, buffing and screw machining. Electropolishing was practiced from 1954 to 1960. Plastic molding and powdered metal operations have been used since 1940 and 1949 respectively.

Wastes generated by Trico are paint sludges, plastic purgings (methylene chloride solvent and plastic materials in solution), solid bulk refuse, waste oils and lubricants, scrap polyethylene, paint thinners, degreasing sludge and zinc oxide and ash.

Paint sludges (4,000 to 6,000 gallons/yr.) have been hauled from the plant by William Adamiec of Riverside Avenue, Buffalo and, since 1978, by Newco Chemical Waste Systems of Niagara Falls.

Plastic purgings (700 gallons/yr.) have been hauled by Leonard Kroll of Woodgate Avenue, Tonawanda to an unknown location and by Lancaster Sanitary Landfill, Inc. to the Lancaster Sanitary Landfill.

Solid bulk refuse has been hauled by Rapid Disposal since 1960 to Land Reclamation Site in Depew and/or Seaway Industrial Park in Tonawanda. In 1972, the company estimated it was generating 2,480 tons per year of paper, wood, rubber, plastics, gears and miscellaneous waste.

Waste oil and lubricants (16,000 gallons/yr.) have been hauled by Booth Oil Co. and Southgate Oil Co. for reclamation.

Scrap polyethylene in unknown amounts was reused internally until 1976. Since 1976, it has been hauled and resold by William Shuman and Sons in Depew.

WORTHINGTON COMPRESSORS, INC.
Process and Gas Division
45 Roberts Avenue
Buffalo

Worthington Compressors was founded in 1840 and began operations in Erie County in the 1890's under the name Snow Steam Pump. Other company names have been the Worthington Pump and Machinery Co. (to 1954), the Worthington Corporation (1954 to 1966), Studebaker Worthington, Inc. (1966 to 1971), Worthington - C.E.I. (1971 to 1973) and Worthington Compressors, Inc. (since 1973). The company is a subsidiary of Studebaker Worthington, Inc.

Worthington now produces compressors. Until 1973, it also made diesel engines.

Processes used at the plant are plating, phosphating and cupola. Plating was discontinued in 1947. Cast iron parts for the compressors are made in the grey iron foundry.

The company has generated the following wastes;

Casting sands, slags, flyash and various binders
Waste oils
Crystalized salts from the "kolene" process
Degreasers (1,1,1, trichloroethylene, grease and dirt)
Polyester sludge

Casting sand and slags in amounts increasing from 4,000 tons per year in the 1930's were disposed at Houghton Park in Buffalo through 1973, and, since then, hauled by Niagara Sanitation in Niagara Falls and by Downing Container Service.

Waste oils (1,000 to 2,000 gallons/yr.) were used until 1974 for dust control off premises by a company employee until 1974. Since 1974, oil has been used for dust control on the plant premises and has been hauled from the plant by Booth Oil and Chem-trol in Porter.

Crystalized salts (100 gallons/yr.) and degreasers (55 gallons/yr.) have been hauled by Niagara Sanitation.

CID REFUSE SERVICE
7121 Parkside Drive
Hamburg

Began operations in 1972

Wastes Handled - Mixed municipal, commercial, institutional wastes and demolition and clean-up material.

Companies served

Unknown

Disposal Sites

Lancaster Sanitary Landfill
Land Reclamation (Cheektowaga)
Seaway Industrial Park
Chaffee Landfill

At present, all material is disposed of at the Chaffee Landfill.

CLINTON DISPOSAL SERVICE, INC.
1273 Seneca Street
Buffalo

Began operations in 1964

Wastes Handled

Mixed commercial, institutional and municipal wastes, demolition and building rehabilitation debris.

Companies Served

Dresser Industries
AMAX Specialty Metals

Clinton has no major industrial accounts at present.

Disposal Sites

Squaw Island
Buffalo Incinerator
East Side Transfer Station (Buffalo)
Land Reclamation (Cheektowaga)
Seaway Industrial Park
Lancaster Sanitary Landfill
Pfohl Landfill

Flyash from Dresser Industries was taken to Dresser's on-premises site or Land Reclamation in Cheektowaga.

CONTINENTAL TRANSFER SYSTEM, INC.
2450 William Street
Cheektowaga

Wastes Handled

Paper, paper dust, wood, general refuse, oil sludge and drums

Companies Served

Arcata Graphics
Ford Motor Company
Westinghouse

Disposal Sites

Village of Depew
Lancaster Sanitary Landfill
Seaway Industrial Park
Land Reclamation (Cheektowaga)

COUNTRYSIDE DISPOSAL, INC.
1853 Saunders Settlement Road
Lewiston

Wastes Handled

General refuse

Companies Served

Bell Aerospace
Lockport Air Force Base

CRAYGO COMPANY, INC.

Wastes Handled

Gasoline storage tank sediment and crude oil tank sediment

Companies Served

Mobil Oil

DOWNING CONTAINER SERVICE
191 Ganson Street
Buffalo

Began operation in 1952

Wastes Hauled

Plastics, solvents, paint sludges and filters, dust collector wastes, phenolic and other plastic resins, solvent sludge, still bottoms, pharmaceutical powders, heavy metal sludges, ink, oil and greases mixed with solids, sand, rubber, spent refractories, carbon blacks, Fuller's earth contaminated with waste oil, cutting oils, glass fines, lubrication oil, solvents, paint, paint thinner and paint waste sludge, laboratory sample bottles, waste colors, food processing, paper, packaging materials and domestic garbage.

Companies Served

Allied Chemical Specialty Chemicals Div. (Plastics)
Allied Chemical Specialty Chemicals Div. (Dye Plant)
Worthington Compressor
American Optical
Bernel Foam Products
Blaw Knox
Dunlop Tire & Rubber
Fibron Products
Greater Buffalo Press
Madison Wire Works
Polymer Applications
Spencer Kellogg
The Witteman Company
Pratt and Lambert
Chevrolet
Mobil Oil
Macnaughton-Brooks
Pratt and Letchworth
Donner-Hanna
FMC Corp.
Anaconda
Ramco Steel
Western Electric
Roblin Steel
Computer Printing
Union Carbide Linde Division
Westwood Pharmaceuticals

Disposal Sites

Past

Altift Realty (Tifft Street, Buffalo)
Pfohl Landfill
Niagara County Refuse Disposal District (Wheatfield)

Present

Lancaster Sanitary Landfill
Land Reclamation (Cheektowaga)
Seaway Industrial Park
Niagara Recycling (Niagara Falls)
Niagara County Refuse Agency (Lockport)

FERRY CONCRETE CONSTRUCTION CO.
3179 Walden Avenue
Depew

Began operations in 1961

Wastes handled

Foundry sand, slag, lubrication oil, brick, phenolic binders and slurry from sand washing (with bentonite clay)

Companies Served

Dresser Industries (1961 to present)
Chevrolet (1978)

Disposal Sites

1961-1976

Dresser Industries on-premises site

1976-present

Lancaster Sanitary landfill
Land Reclamation (Cheektowaga)
Lancaster Reclamation site
Various sites for construction fill

FMC CORPORATION
100 Niagara Street
Middleport

Wastes Handled

Waste kerosene with traces of pesticides, spent caustic, laboratory chemicals, furadan aqueous sludge, furadan and clay, plant floor sweepings and duct house bags, mixed liquid pesticide, polyram and clay, ferric hydroxide sludge with traces of arsenic, acidic calcium hydroxide sludge and water, empty pesticide containers and refuse.

Companies Served

FMC

Disposal Sites

SCA (Porter)
Newco Waste Systems (Niagara Falls)
Niagara County Refuse Disposal District (Lockport)

NIAGARA SANITATION COMPANY, INC.
262 Pullman Street
Buffalo

Began operations in 1956

Wastes Handled

Mixed municipal, commercial, institutional, industrial refuse, sludges, animal and vegetable fats, still bottoms, phenolic sludges, phenolic resins, heavy metal sludges, paint spray filters, oil contaminated material, spent foundry sand, carbonaceous furnace insulation, refractories, carbon materials, tar, linseed oil, burnable laboratory refuse, "Corian", "Tedlar" and "Vexar" netting.

Industries Served

Carborundum (Niagara Falls and Wheatfield)
DuPont (Niagara Falls and Buffalo)
Hooker (Niagara Falls and North Tonawanda)
Allied Chemical Industrial Chemicals Division
Allied Chemical Specialty Chemicals Division (Plastics, R & D and Dye Plant)
Allied Chemical Semet Solvay Division
Dunlop Tire and Rubber
Airco Speer
Bell Aerospace
Ford Motor Company
Strippit
Varcum Chemical
Westinghouse
Bisonite
Buffalo Color Corp.
Chevrolet (Tonawanda and Buffalo)
Grand Island Biological
Herculese Division Richardson Corp.
Worthington Compressor
Niagara Falls Waste Water Treatment Plant
Niagara Falls Air Force Base (Porter Road)
Stauffer Chemical
Noury Chemical
Spaulding Fibre
PASNY

Disposal Sites

Past

Niagara County Refuse Disposal District (Wheatfield)
Niagara Falls Incinerator (Niagara Falls)
Town of Niagara, Wheatfield (Nash Road)
Lynch Park
Town of Lewiston Landfill

Present

Lancaster Sanitary Landfill
Land Reclamation (Cheektowaga)
Newco Waste Systems (Niagara Falls)
Niagara County Refuse Disposal District (Lockport)
Seaway Industrial Park
Wilson/Cambria/Newfane Site

All chemical wastes are now taken to Newco Waste Systems.

TOWN OF NIAGARA SANITATION DEPARTMENT
Niagara

Wastes Handled

Fumed silicon
Paper bags
Zircon-zirconia sludge

Companies Served

NL Industries

NORTHEAST OIL SERVICE
2802 Lodi
Syracuse

Wastes Handled

Wash oil, oil sludge

Companies Served

Ramco Steel
Chevrolet
Ford Motor Company

RAPID DISPOSAL
22 Metcalf Street
Buffalo

Began operations in 1958

Wastes Handled

Mixed commercial, institutional and industrial wastes, building demolition debris, scrap metal, paper, trash, containerized sludges, precipitated metal salts, laboratory sample bottles, waste colors, off specification undercoating, polyvinyl chloride and resins, "Corian", "Tedlar" and "Vexar" netting

Companies Served

Du Pont (Buffalo)
Quaker State
Pierce and Stevens
Dresser Industries
Chevrolet
Trico Products
Allied Chemical Specialty Chemical Div. (Dye Plant)
Carborundum
Buffalo Pumps Division
F. N. Burt Co.
Bell Aerospace
Dunlop Tire and Rubber
Mobil Oil

Disposal Sites

Past

Altift Realty
Pfohl Landfill
Niagara County Refuse District (Wheatfield)
Squaw Island (Buffalo)

Present

Lancaster Sanitary Landfill
Land Reclamation (Cheektowaga)
Seaway Industrial Park
Niagara Recycling (Niagara Falls)
Buffalo West Side Incinerator
Buffalo Transfer Station (No. Ogden Street, Buffalo)

REFERENCE 6

4/3476

RECRA RESEARCH, INC.

Hazardous Waste And Toxic Substance Control

April 24, 1986

Mr. William Miller
BFI Waste Systems
2321 Kenmore Avenue
Kenmore, NY 14217

Re: Old Land Reclamation
NYSDEC Superfund Site #915129

Dear Mr. Miller:

Thank you for your assistance in the Phase I Superfund investigation we are conducting presently with regard to the Old Land Reclamation site, an inactive landfill formerly operated and partially owned by a NEWCO affiliate.

As part of the background research requirements for the NYSDEC Superfund investigations, we the consultants are required to have all of our interviews, personal or by telephone, documented. Below is an account of our conversation on March 4, 1986. Please read the account, check its accuracy, sign at the bottom and return the original to me. This is only to serve as documentation that the conversation took place.

The history of disposal activities at the Old Land Reclamation site is as follows:

- The property which now belongs to the Village of Depew was formerly owned by NEWCO and/or a subsidiary. The property was deeded over to the Village in successive stages during the active life of the landfill.

- The landfill was operated by South Ogden Land Development Corp., a NEWCO affiliate, until 1975, when the landfill was closed.

- Before South Ogden Land Development Corp.'s operations, Wilfred Schultz leased the Samuel Greenfield property for disposal of municipal refuse from the Town of Cheektowaga and the Village of Depew. South Ogden Land Development Corp. took over this lease and also leased the property owned by the Mecca Bros.

- The site was graded flat at the request of the Village of Depew, who planned to turn the site into a park.

4248 Ridge Lea Road, Amherst, New York 14226 Telephone (716) 836-6200

- Foundry sand was used for daily cover. Slag was used for on-site roads.
- Haulers to the site included Clinton Disposal, Rapid Disposal, Downing Container Service, Ferry Concrete Construction Co.

Thank you for your cooperation.

Sincerely,

RECRA RESEARCH, INC.

Paul A. Rydzynski

Paul A. Rydzynski
Environmental Engineer

PAR/pal

Mr. William Miller

REFERENCE 7

ALBERT J. RYDZYNSKI, B.S., L.L.B., J.D.
Attorney and Counsellor at Law
2 GIERLACH STREET
BUFFALO, NEW YORK 14212

PHONE (716) 895-8891

March 7, 1986

Recra Research Inc.
4248 Ridge Lea Rd.
Amherst, New York 14226

Re: "Greenfield" property located on
Broadway near Indian Road, Depew, New York

Attention : Mr. Sheldon Nozik

Dear Sirs :

In response to inquiries made to me concerning the above premises, please be advised as follows.

GCF Inc., 31 Stone Street, Buffalo, New York, as successor corporation to Samuel Greenfield Co., Inc., was the lessee of certain premises located on the south side of Broadway in the Village of Depew, N. Y., under a lease agreement with Samuel Greenfield Iron & Metal Co. Inc., later Broadadel Corp., dated January 1, 1963, covering a 20 year lease.

In October 1968, GCF Inc. sublet its lease for the premises to Wilfred E. Schultz, Inc., 337 North Ogden Street Buffalo, New York for a period of three (3) years for use as a garbage and refuse disposal site.

The Schultz corporation thereupon entered into an exclusive contract with the Town of Cheektowaga and Village of Depew for the disposal of the garbage wastes of both municipalities, and operated such landfill under permit of the Erie County Health Department. No other dumpers were permitted under the municipal contract. Cover was obtained from a quarry in Lancaster, New York.

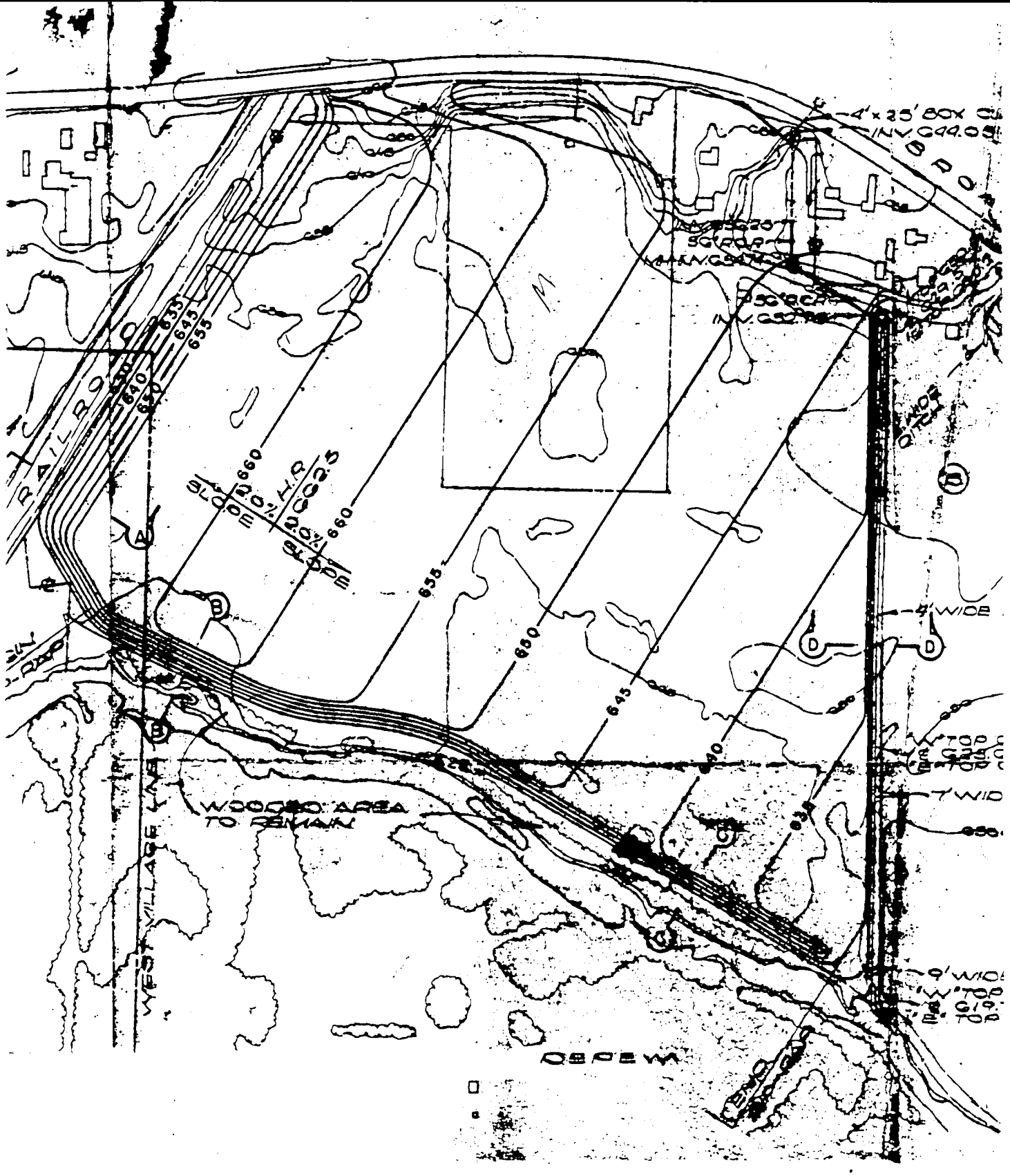
In April, 1970 the Schultz corporation assigned its rights under the lease and municipal contracts to the South Ogden Land Development Corp., 350 Fillmore Avenue, Buffalo, New York and thereafter had no further control over said premises. This information is provided from my files and personal recollection as attorney for the Schultz Corporation.

Yours truly,

AJR:eh

Albert J. Rydzynski

REFERENCE 8

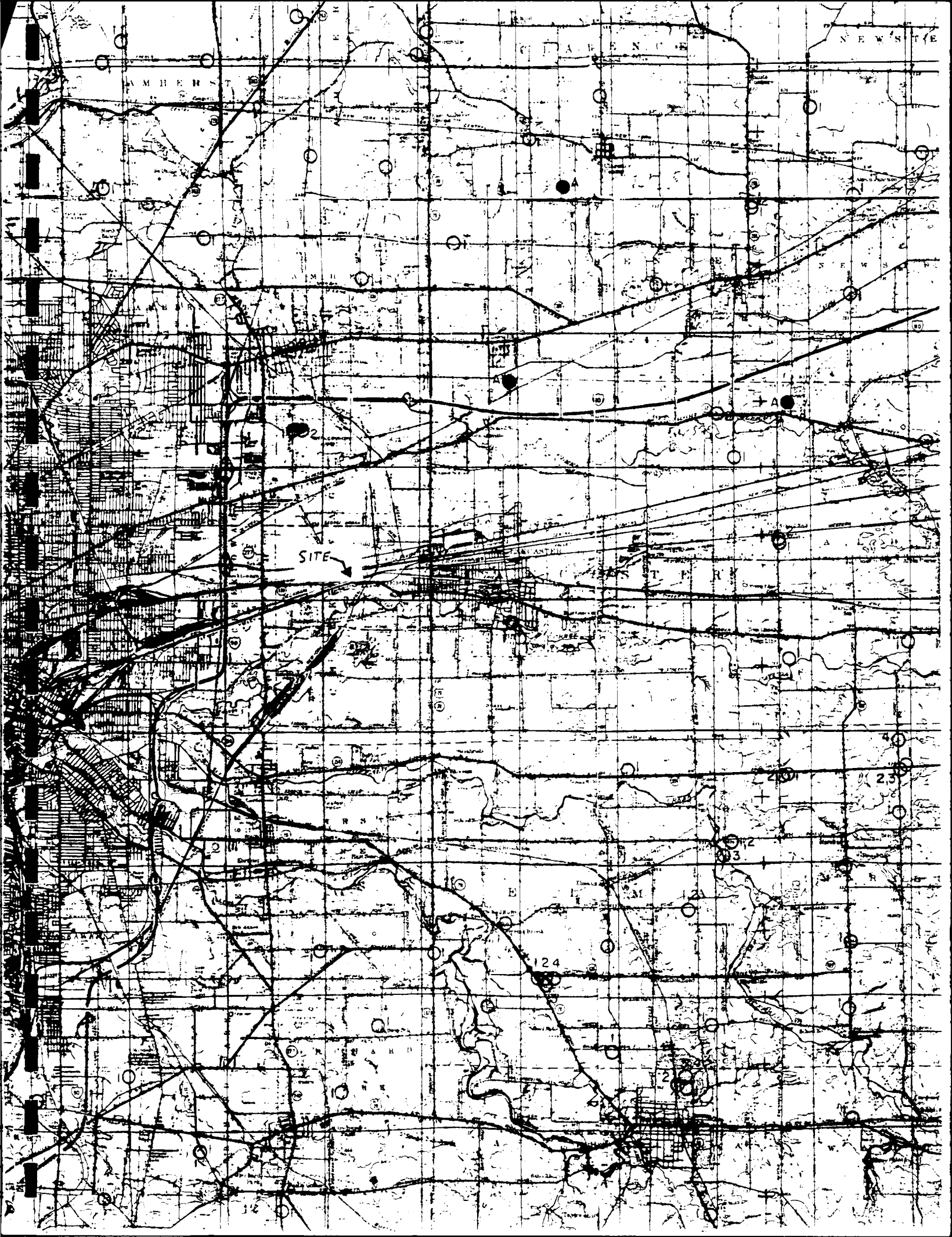


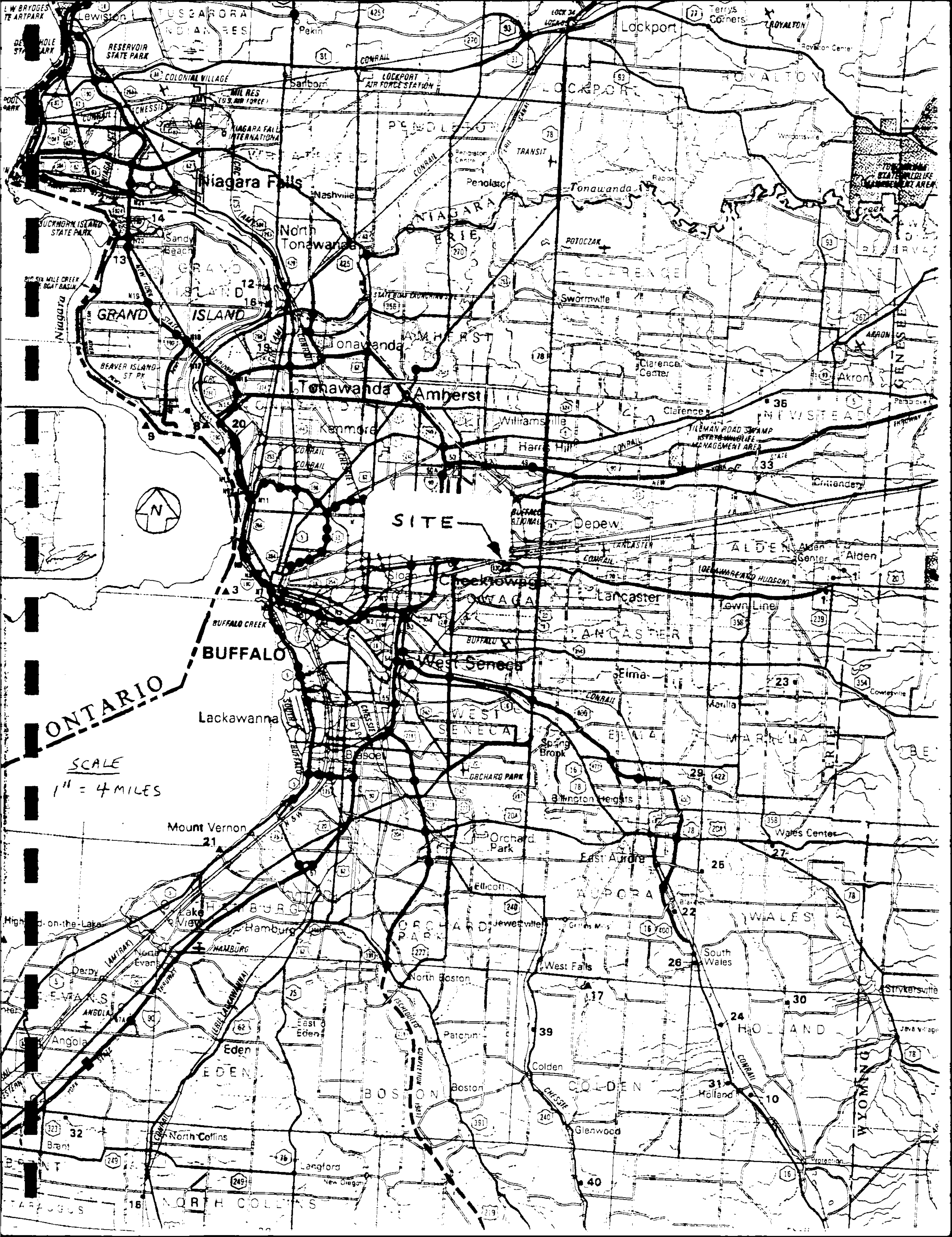
Old Land Reclamation Site
Final Grading Plan
Prepared by Krehbiel - Guay - Rugg - Hall
January, 1973
Revised October, 1974

REFERENCE 9

New York State Atlas of Community Water System Sources 1982

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


SITE



SITE
SCALE
1" = 4 MILES
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ONTARIO
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Lackawanna
Niagara Falls
North Tonawanda
Tonawanda
Amherst
Kenmore
Williamsville
Harris Hill
Depew
Cheektowaga
Sloan
Lancaster
West Seneca
Elma
Marilla
Alden
Alden Center
Akron
Clarence
Clarence Center
Swormville
Pendleton
Lockport
Terrys Corners
Royalton Center
Sanborn
Pekin
Lewiston
GRAND ISLAND
Sandy Beach
BEAVER ISLAND ST PK
RESERVOIR STATE PARK
LOCKPORT AIR FORCE STATION
NIAGARA FALLS INTERNATIONAL
BUFFALO CREEK
BUFFALO
BUFFALO NATIONAL
Town Line
Crittenden
TILLMAN ROAD SWAMP STATE WILDLIFE MANAGEMENT AREA
Blasdell
Orchard Park
ORCHARD PARK
Spring Brook
Billington Heights
East Aurora
AURORA
Wales Center
WALES
South Wales
Mount Vernon
Lake View
Hamburg
HAMBURG
Derby
North Evans
Angola
ANGOLA
Eden
EDEN
East Eden
Patchin
North Boston
BOSTON
Boston
Ellicott
Jewettville
West Falls
Colden
COLDEN
Glenwood
Holland
HOLLAND
Strykersville
WYOMING
North Collins
NORTH COLLINS
Brant
Langford
New Oregon
CONRAIL
CHESSIE
AMTRAK
THRUWAY
DELAWARE AND HUDSON
NIAGARA
ERIE
CLARENCE
AMHERST
LANCASTER
NEWSTEAD
ALDEN
MARILLA
ELMA
WEST SENECA
GENESEE
Highland-on-the-Lake
Tonawanda Creek
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ERIE COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
	Akron Village (See No 1 Wyoming Co, Page 10).	3640	
1	Alden Village.	3460.	Wells
2	Angola Village.	8500.	Lake Erie
3	Buffalo City Division of Water.	357870.	Lake Erie
4	Caffee Water Company.	210.	Wells
5	Collins Water District #3.	704.	Wells
6	Collins Water Districts #1 and #2.	1384.	Wells
7	Erie County Water Authority (Sturgeon Point Intake).	375000.	Lake Erie
8	Erie County Water Authority (Van DeWater Intake).	NA.	Niagara River - East Branch
9	Grand Island Water District #2.	9390.	Niagara River
10	Holland Water District.	1670.	Wells
11	Lawtons Water Company.	138.	Wells
12	Lockport City (Niagara Co).		Niagara River - East Branch
13	Niagara County Water District (Niagara Co).		Niagara River - West Branch
14	Niagara Falls City (Niagara Co).		Niagara River - West Branch
15	North Collins Village.	1500.	Wells
16	North Tonawanda City (Niagara Co).		Niagara River - West Branch
17	Orchard Park Village.	3671.	Pipe Creek Reservoir
18	Springville Village.	4169.	Wells
19	Tonawanda City.	18538.	Niagara River - East Branch
20	Tonawanda Water District #1.	91269.	Niagara River
21	Wanakah Water Company.	10750.	Lake Erie
Non-Municipal Community			
22	Aurora Mobile Park.	125.	Wells
23	Bush Gardens Mobile Home Park.	270.	Wells
24	Circle B Trailer Court.	50.	Wells
25	Circle Court Mobile Park.	125.	Wells
26	Creekside Mobile Home Park.	120.	Wells
27	Donnelly's Mobile Home Court.	99.	Wells
28	Gowanda State Hospital.	NA.	Clear Lake
29	Hillside Estates.	160.	Wells
30	Hunters Creek Mobile Home Park.	150.	Wells
31	Knox Apartments.	NA.	Wells
32	Maple Grove Trailer Court.	72.	Wells
33	Millgrove Mobile Park.	100.	Wells
34	Perkins Trailer Park.	75.	Wells
35	Quarry Hill Estates.	400.	Wells
36	Springville Mobile Park.	114.	Wells
37	Springwood Mobile Village.	132.	Wells
38	Taylors Grove Trailer Park.	39.	Wells
39	Valley View Mobile Court.	42.	Wells
40	Villager Apartments.	NA.	Wells

REFERENCE 10

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

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).

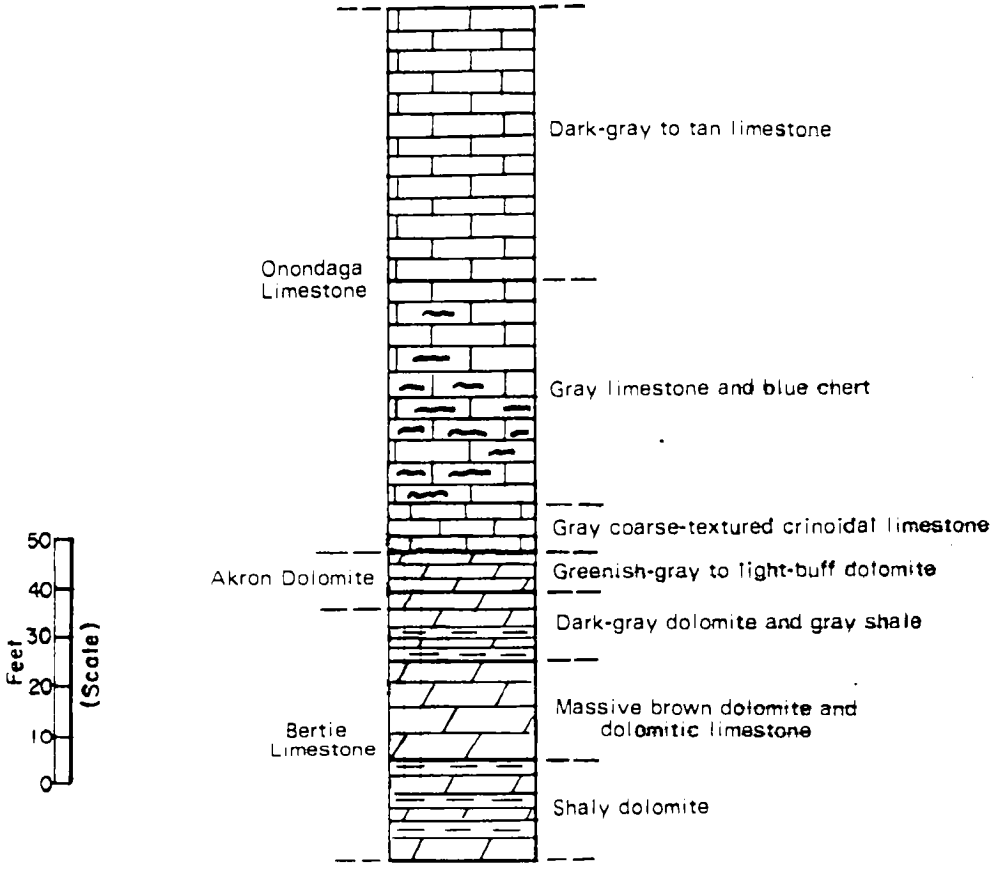


Figure 7.--Lithology of the limestone unit.

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

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

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

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

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

Hydrologic and hydraulic characteristics

The limestone unit is similar to the Lockport Dolomite in structure. However, its hydrology is different. The limestone unit is cut transversely by Tonawanda Creek and its major tributaries. Small tributaries flow across it in northerly and westerly directions. The limestone unit receives water in the interstream areas by percolation into joints. The water is discharged laterally to the streams and at places along the north-facing scarp or enters the Camillus Shale at depth.

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

Table 3.--Specific-capacity tests of wells finished in the limestone unit

Well number	Pumping rate (gpm)	Duration of pumping (hours)	Drawdown (feet)	Specific capacity (gpm/ft)	Coefficient of transmissibility (gpd/ft)
252-852-1	85	34	7	12.1	25,000
-2	30	--	17	2	4,000
255-848-1	130	--	10	13	25,000
255-850-1	180	6	45	4	8,000
259-824-1	100	8	30	3.3	6,000
-2	100	8	12	8.3	15,000
300-824-1	104	8	28	3.7	7,000

The coefficient of storage of the limestone unit is probably between those of the Lockport Dolomite and the Camillus Shale. The storage coefficients of these three units vary mainly with the volume of the openings in the rocks which, in turn, vary with the solubility of the rocks. Limestone is more soluble than dolomite but less soluble than gypsum. Storage coefficients in the limestone unit should, therefore, be somewhat higher than those of the Lockport Dolomite but somewhat lower than those of the Camillus Shale.

Yields of wells

The limestone unit is more productive than the Lockport. A number of large-yield wells in Buffalo, Cheektowaga, Williamsville, Pembroke, and Batavia are finished in the limestone unit and indicate that yields of 300 gpm and possibly more can be obtained. Like the Lockport Dolomite, the yields of wells in the limestone unit range through a broad spectrum. However, the more productive wells in the limestone unit are relatively abundant when compared to those in the Lockport. Of significance also is that three wells half a mile apart drilled for an industrial firm near Pembroke, each sustained a discharge of about 100 gpm (table 6, wells 259-824-1, -2, and 300-824-1). These three wells indicate that such yields are available in some areas.

SHALE

Bedding and lithology

The Marcellus Shale and all overlying formations are distributed through the southern half of the Erie-Niagara basin. They are predominantly shale but include a few thin limestone members at various stratigraphic positions (fig. 2). Thin beds of fine-grained sandstone are also interbedded with the shale in the upper part of the section. The rocks dip southward at about 40 feet per mile. They underlie the upland part of the basin and also a broad plain along Lake Erie in the southern part of the basin. Streams eroded deep valleys in the uplands prior to glaciation. The rocks were further eroded during glaciation and later these valleys were partly filled with stratified glacial deposits and the hills were veneered with till. The rocks on the lake plain are thinly covered with till and clay. In postglacial time Cattaraugus and Eighteenmile Creeks, where they cross the lake plain, cut spectacular gorges in the shale.

Water-bearing openings

The shale formations are cut by both vertical and bedding-plane joints along which are hairline openings. Locally, openings along thin limestone beds may be widened by solution. An important feature of the shale is a discontinuous zone of fracturing that follows the upper surface of the rock. In places, this zone consists only of shallow tension cracks caused by the movement of glacial ice over the rock. At other places, the zone is as much as 10 feet thick and consists of crumpled and broken rock. Some exposures show convoluted beds interfolded with glacial deposits.

Hydrologic characteristics

Water enters the shale almost exclusively by percolation from the overlying glacial deposits in interstream areas. Generally, the water table or top of the saturated zone lies in the glacial deposits above the shale. The water table lies within the shale only where the glacial deposits are absent or thin. The fracture zone at the top of the rock is directly connected to the glacial deposits and, therefore, is most advantageously positioned to receive water. At places, the fracture zone is overlain by a thin section of coarse-grained till which is, in turn, overlain by clayey till of much lower permeability. The coarse-grained till and fracture zone then act as a single water-bearing zone. The vertical and bedding joints, which extend into the shale at depth, receive water where they intersect the fracture zone along the top of the rock or intersect the overlying glacial deposits. The joints are thin and widely spaced. The shale at depth, therefore, has a much lower permeability than the fracture zone at the top of the shale.

Yields of wells

The shale formations generally yield only small supplies of water to wells. Individual wells provide adequate and dependable supplies for numerous homes and farms in the area. Yields of as much as 40 gpm are obtained from the Hamilton Group, probably because it contains limestone with openings that have been enlarged by solution. Elsewhere, the maximum yields of wells are generally 10 to 15 gpm from the fracture zone. If the fracture zone is absent, water is obtained from joints deeper in the rock and the yields of wells are much smaller. The small number of applicable data in table 6 indicate that the yields of wells drawing from the deeper fractures range from 1 to 7 gpm. However, dry holes or wells with inadequate yields are not uncommon and are not restricted to any stratigraphic unit or geographic area. The data are sparse by which to study the relationship of topography to yields. It does appear that the wells drilled in valleys, particularly if the shale is overlain by thick unconsolidated deposits, have somewhat larger yields than those wells on hills.

Table 6.--Records of selected wells in the Erie-Niagara basin

Well number: See "Well-Numbering and Location System" in text for explanation.

Year completed: a - about
b - before

Type of well: Drl - drilled
Drv - driven

Depth of well: All depths below land surface.
a - about
r - reported
all others measured

Diameter of well: Diameters of dug wells are approximate.
Where two or more sizes of casings were used, they are shown in descending order.

Depth to bedrock: All depths below land surface
a - about
m - measured
all others reported

Water-bearing material: Gravel, sand, silt, and till - glacial deposits of Pleistocene age.
Camillus Shale - Camillus Shale of Silurian age.
Limestone - limestone unit consisting of the Onondaga Limestone of Devonian age and the Bertie Limestone and Akron Dolomite of Silurian age.
Lockport Dolomite - Lockport Dolomite of Silurian age.
Shale - Hamilton Group and Conneaut Group of Chadwick (1934) and intervening units, all of Devonian age.

Altitude above sea level: Estimated from topographic maps to nearest 5 feet.

Water level: All water levels are below land surface except those preceded by a (+) sign, which are above land surface.
a - about
p - pumping effect is probable
Flow - water flows above land surface but static head could not be measured.
r - reported
all others measured by U.S.G.S. personnel

Method of lift: AL - air lift
Dw - deep well cylinder pump
Jet - deep well jet pump
Sub - submersible pump
Sw - shallow-well pump
Tur - turbine pump

Type of power is indicated as -- I - internal combustion engine
M - manual
all others are electrically powered

Estimated pumpage: Average daily pumpage supplied by owner, tenant, or operator, or computed on basis of per capita consumption of 50 gpd per person or 20 gpd per milk cow.

Use: A - abandoned
Ag - agricultural
C - commercial
D - domestic
F - dairy farm
GT - gas test
I - industrial
In - institutional
Ir - irrigation only
PS - public supply
T - test
U - unused
X - destroyed

Remarks: anal - chemical analysis in this report
dd - drawdown
est - estimated
gas - flammable gas issues from well
gpd - gallons per day
gpm - gallons per minute
H_2S - hydrogen sulfide gas present in ground water
Iron - water has noticeable iron content
LS - land surface
OW - observation well, series of water-level measurements available
r - reported
swl - static water level
temp - temperature, in degrees Fahrenheit, measured by U.S.G.S. on same day water level was measured unless otherwise noted

Table 6.--Records of selected wells in the Erie-Niagara basin (Continued)

Well number	County	Owner	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level: Below land surface (feet)	Water level: Date	Method of lift	Estimated pumpage or flow (gallons per day)	Use	Remarks
251-850-1	Erie	Donner-Hanna Coke Corp.	1928	Drl	r119	6	--	Limestone	585	--	--	AL	35,000	I	H_2S; yield 30 gpm (r); in use about 150 days per year during summer and early fall; a test boring nearby penetrated 62.5 ft of silty clay, refusal at 62.5 ft.
-2	do.	do.	1928	Drl	r116	6	--	do.	585	--	--	AL	35,000	I	Anal; also see remarks for well 251-850-1.
252-814-1	Genesee	A. Waite	1963	Drl	99	6	--	Sand and gravel	1,125	p46.3	6-18-64	Jet	500	F	Bailed 5 gpm (r).
252-815-1	do.	F. Stevens	1963	Drl	88	5 5/8	80	Shale	975	23.8	6-18-64	Jet	--	D	
252-818-1	do.	E. Snyder	1959	Drl	r23.5	6	a19	do.	1,040	r8	--	Sw	200	D	Anal; iron; H_2S; yield 5 gpm (r).
252-850-1	Erie	Artic Ice Co.	a1900	Drl	r180	6	a20	Limestone; Camillus Shale	590	r20	1951	Tur	--	U	Anal; yield 300 gpm (r); supplied 300,000 gpd.
252-852-1	do.	New York Telephone Co.	1955	Drl	r80	12	53	Limestone	605	30	3-20-63	Tur	--	U	H_2S; pumping test 85 gpm, swl 28 ft, dd 7 ft after 34 hours of pumping.
-2	do.	W & F Manufacturing Co.	1947	Drl	r101	8	8	do.	590	r,p37	1951	Tur	--	I	H_2S; water-bearing zones from 89 to 101 ft depth, underlying cherty beds in Onondaga Limestone; pumping data, 30 gpm, dd 17 ft (r).
-3	do.	Fairmont Foods Co., Inc.	1925	Drl	r127	8	30	do.	580	rFlow	1951	Tur	40,000	I	Anal; H_2S.
253-813-1	Genesee	D. Lapp	--	Drl	65.3	6	--	Sand and gravel	990	14.1	6-12-64	Jet	250	D	
253-820-1	do.	F. Pierl	1963	Drl	63.7	6	--	do.	1,060	19.3	7-30-64	Sw	250	D	
253-824-1	do.	A. Baginski	1960	Drl	41.1	6	--	do.	995	5.7	8- 8-63	Jet	150	D	Anal; yield 3 gpm (r).
253-829-1	Erie	J. Murray	1961	Drl	26.1	8	--	Shale	900	p11.3	7-31-63	Sw	250	D	Anal; iron; water level occasionally is pumped down to bottom of suction pipe at 24 ft.
-2	do.	do.	1961	Drl	22.0	6	--	do.	900	9.18	7-31-63	Sw	--	U	Iron.
-3	do.	Village of Alden	1961	Drl	r27	60, 18	27	Sand and gravel	840	--	--	Tur	75,000	PS	Concrete tile from 0-16 ft installed 1947; 18-inch diameter screen, gravel packed, from 16-27 ft installed 1961.
253-832-1	do.	D. Klinkman	1957	Drl	47.8	6	a40	Shale	830	11.3	7-31-63	Jet	250	D	Anal; iron; yield 10 gpm (r).
253-834-1	do.	J. Gilbride	1962	Drl	61.7	6	--	do.	775	28.8	7-31-63	Jet	250	D	Anal; iron; H_2S; yield 10 gpm (r).
253-840-1	do.	D. Klock	--	Drl	24.3	5	m8	do.	660	9.3	6-27-63	Sw	--	U	Anal; temp 49.
253-850-1	do.	Rivoli Theater	1941	Drl	r110	8	20	Limestone	605	r,p40	1951	Tur	50,000	C	Air-conditioning use; water is returned to ground through a disposal well 150 ft away; pumping data, 150 gpm, dd 4 ft (r).
-2	do.	Roosevelt Theater	1936	Drl	r60	8	20	do.	605	r,p30	1951	Tur	60,000	C	H_2S; air-conditioning use; water is returned to ground through a disposal well 150 ft away.
254-812-1	Genesee	E. Rhodes	1959	Drl	33.3	6	--	Sand and gravel	985	13.0	6-16-64	Jet	1,250	F	Iron; yield 15 gpm (r).
254-826-1	do.	F. Kaczmarek	1950	Drl	67.5	6	a50	Shale	940	11.8	8- 9-63	Jet	1,250	F	Anal; iron; H_2S; yield 8 gpm (r).
254-829-1	Erie	Village of Alden	1957	Drl	r35.7	16, 8	34	Sand and gravel	830	r7.1	1-31-58	Tur	100,000	PS	Iron; H_2S; screen, 8-inch diameter, 125-slot from 29-34 ft; gravel packed from 22-34 ft; pumping test, 220 gpm, swl 8.6 ft, dd 11.1 ft after 8 hours pumping.
-2	do.	do.	--	Dug	r14	140	--	do.	825	--	--	Sw	9,000	PS	One of a group of three dug wells at Alden No. 1 pumping plant; total pumpage from these three wells is about 27,000 gpd.

Table 6.--Records of selected wells in the Erie-Niagara basin (Continued)

Well number	County	Owner	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level: Below land surface (feet)	Water level: Date	Method of lift	Estimated pumpage or flow (gallons per day)	Use	Remarks
254-829-3	Erie	Village of Alden	1964	Drl	ra35	--	--	Sand and gravel	845	--	--	Tur	--	PS	Construction of well is reported to be similar to that of well 254-829-1; yield 220 gpm.
254-830-1	do.	W. and J. Fahrinqer	a1904	Drl	r1,150	8	--	Lockport Dolomite?	840	r350	8-62	Dw	--	C	Gas test well which yields a black brine used for mineral baths.
254-834-1	do.	G. Glose	1962	Drl	66.2	10	a7	Shale	770	p26.3	8-19-64	Jet	450	D	H_2S.
-2	do.	R. Maue	1961	Drl	52.9	6	a10	do.	765	7.1	8-19-64	Jet	200	D	Iron; H_2S; water-bearing zone at 25 feet; blasting charge fired at 20-25 ft to increase yield.
255-812-1	Genesee	Western New York Concrete Corp.	1957	Drl	85.9	8	--	Sand and gravel	965	2.4	7-17-63	--	--	A	Anal; screen, 8-inch diameter; 77.9-85.9 ft; pumping test 60 gpm, swl 2 ft, dd 42 ft (r).
-2	do.	do.	1957	Drl	81.4	8	--	do.	970	7.3	7-17-63	--	--	A	Yield about 50 gpm (r); OW.
-3	do.	H. Eart	1944	Drl	38.5	6	--	do.	945	6.3	6-16-64	Sw	1,000	F	Iron.
255-848-1	Erie	Commodore Theater	--	Drl	r75	8	7	Limestone	640	0	1951	Tur	--	C	Air-conditioning use; pumping data, 130 gpm, dd 10 ft (r).
255-850-1	do.	Nagel Dairy	--	Drl	r90	8	20	do.	660	r,p20	1951	Tur	--	C	Pumping data, 180 gpm, dd 45 ft.
256-818-1	Genesee	D. Hegge	1959	Drl	45	6	a30	Shale	935	9.7	7-30-64	Jet	700	F	Yield 8 gpm (r).
256-822-1	do.	K. Skeet	1962	Drl	27.5	6	3	do.	890	7.3	7-30-64	Sw	300	D	Anal; H_2S.
256-831-1	Erie	Sierackl	1959	Drl	52.3	6	a40	do.	800	16.6	8-19-64	Jet	200	D	Anal.
256-835-1	do.	Huber	1964	Drl	68.5	6	--	do.	770	18.7	7-23-64	--	--	D	
-2	do.	C. Suess	1958	Drl	59	6	a34	Limestone	750	29.6	8-19-64	Jet	250	D	Anal.
256-844-1	do.	Twin Industries Corp., Aerospace Division	1951	Drl	r117	6	--	do.	715	--	--	Tur	--	U, I	Iron; H_2S; well is unused because quality of water has deteriorated; formerly supplied 150,000 gpd; yield about 285 gpm.
-2	do.	do.	1951	Drl	90	8	--	do.	715	r45	7- 3-64	--	--	U, I	
257-812-1	Genesee	E. Foster	1955	Drl	65	6	--	Sand and gravel	895	5.2	6-16-64	Jet	1,500	F	
-2	do.	W. Cook	1960	Drl	71.3	6	--	do.	895	5.2	6-16-64	Sw	150	D	Anal; Iron.
257-817-1	do.	J. Penkszyck	1961	Drl	r52	--	--	Shale	920	--	--	Jet	--	D	Iron.
257-824-1	do.	Village of Corfu	1954	Drl	r39.3	12, 8	30	Sand and gravel; shale	850	6	1- 6-54	Tur	55,000	PS	Temp 49.8, 1-17-63; screen, 8-inch diameter, 100-slot from 34.3-39.3 ft; 12-inch diameter gravel pack from 32-39.3 ft; pumping rate 90 gpm; pumping test 100 gpm, swl 6 ft, dd 11 ft.
-2	do.	do.	1952	Drl	r36.6	12	32	do.	850	4	10-27-52	--	--	A	Pumping test, 110 gpm, swl 4 ft, dd 12 ft.
257-855-1	Erie	E. I. du Pont de Nemours & Co.	1925	Drl	r101	8	55	Camillus Shale	590	r30	1951	AL	--	A, I	Yield 125 gpm; 1 of 3 wells of the "north" well field; combined pumpage was 200,000 gpd.
-2	do.	do.	1925	Drl	r123	8	55	do.	590	r30	1951	AL	--	A, I	Yield 125 gpm; 1 of 7 wells of the "south" well field; combined pumpage was 1 mgd.
258-809-1	Genesee	O-AT-KA Milk Products Cooperative, Inc.	1958	Drl	r49.2	18, 10	--	Sand and gravel	900	26.5	8- 1-58	Tur	--	I	Screen, 10-inch diameter, 125-slot, from 41 to 49 ft; gravel packed, Cape May No. 5 gravel; pumping test, 456 gpm, swl 26.5 ft, dd 12.8 ft.
-2	do.	do.	1958	Drl	--	8	--	do.	900	22.2	5- 8-63	Tur	--	I	
258-813-1	do.	H. Loveland	--	Drl	11.7	3	--	Shale	900	8.1	6-26-63	--	--	A	
-2	do.	do.	--	Drl	33	6	--	do.	900	12.1	6-26-63	Sw	--	U	Anal; Iron; temp 48.0.

Table 6.--Records of selected wells in the Erie-Niagara basin (Continued)

e/ Iron (Fe) - 1.2 ppm, in solution when collected.
f/ Iron (Fe) - 2.4 ppm, in solution when collected.
g/ Iron (Fe) - 4.1 ppm, in solution when collected.

Table 9.--Chemical analyses of selected chemical constituents and characteristics of ground water from the Erie-Niagara basin (Continued)

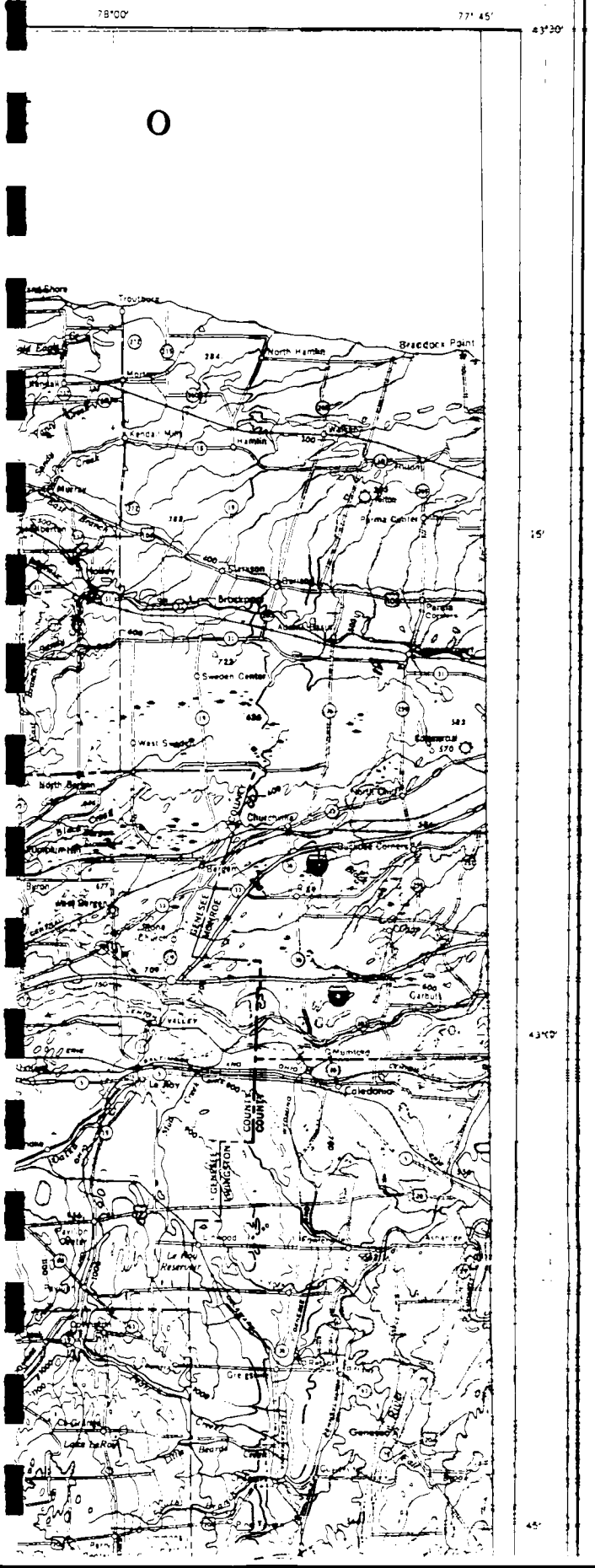
Site number	Depth of well (feet)	Water-bearing material	Date of collection	Sulfate (SO_4)	Chloride (Cl)	Calcium, magnesium-hardness (as $CaCO_3$)	Specific conductance (micromhos at 25°C)	pH
244-826-1	13	Sgd	7-20-63	71	6.8	128	297	6.3
244-829-1	r148	Sgd	7-18-63	.2	8.0	166	415	7.5
244-830-1	47	Sh	7-18-63	37	18	218	437	7.5
244-835-1	93	Sgd	8-14-63	6.3	52	142	576	7.6
244-836-1	r128	Sh	8-14-63	25	12	230	514	7.4
244-844-1	51	Sh	7-25-63	7.2	340	152	1,750	7.5
h/244-846-1	65	Sh	7-23-63	42	35	247	511	7.4
244-848-1	65	Sh	7-24-63	.8	94	317	948	7.4
245-817-1	44	Sh	8-10-63	21	2.8	182	370	7.5
245-818-1	r118	Sgd	7-26-63	4.1	2.0	192	373	7.6
245-830-1	r43	Sgd;Sh	7-18-63	74	10	258	503	7.6
245-846-1	58	Sh	7-25-63	9.2	80	352	914	7.2
246-818-1	132	Sh	8-12-63	15	12	193	420	7.5
246-824-1	24	Sh	8-10-63	53	17	300	605	7.5
246-830-1	76	Sh	8- 2-63	54	28	198	658	7.1
i/246-833-1	r140	Sh	8- 1-63	4.0	70	180	968	7.3
246-849-1	39	Sh	7-27-63	193	16	452	853	7.3
247-823-1	37	Sgd	8- 9-63	30	2.0	212	412	7.5
247-838-1	33	Sh	7-30-63	42	154	415	934	7.1
247-840-1	40	Sh	7-26-63	15	33	248	765	7.1
247-842-1	52	Sgd	7-26-63	82	9.0	276	648	7.3
248-818-1	r140	Sh	8-12-63	12	9.0	170	432	7.5
248-825-1	r112	Sh	8- 2-63	34	11	149	387	7.1
248-828-1	r112	Sh	8- 2-63	32	9.0	219	443	7.2
248-829-1	36	Sh	8- 2-63	38	48	195	476	8.0
248-833-1	36	Sgd;Sh	8- 1-63	43	13	104	230	7.0
248-838-1	59	Sh	7-30-63	16	108	212	1,510	7.0
248-839-1	86	Sh	9-23-63	164	92	621	1,170	6.9
248-839-2	25	Sh	9-23-63	160	98	518	1,040	7.1
248-841-1	44	Sh	7-26-63	130	46	440	918	7.0
248-844-1	20	Sh	7-26-63	109	57	446	1,130	7.2
j/248-850-1	r40	Sh	3-20-63	93	124	538	1,290	6.9
249-818-1	59	Sh	8-12-63	16	3.8	251	463	7.5
249-823-1	82	Sh	8- 9-63	19	2.4	242	469	7.7
249-826-1	r70	Sh	8- 2-63	61	14	223	518	7.6
249-833-1	68	Sh	8- 1-63	11	25	175	431	7.3
249-836-1	71	Sh	7-31-63	17	65	401	1,220	6.8
249-836-2	21	Sh	7-31-63	41	14	274	826	7.1
249-840-1	22	Sgd	7-26-63	35	19	145	349	7.5
250-810-1	62	Sh	6- 9-64	.4	46	200	849	7.3
250-816-1	6	Sgd	8- 5-64	39	21	356	636	7.5
250-817-1	r195	Sgd	8-12-63	15	26	199	459	7.5
k/250-821-1		Dol	8- 6-64	1,260	118,000	40,100	154,000	7.0
250-824-1	12	Sgd	8- 8-63	74	5.6	315	624	7.8
250-835-1	51	Sh	7-30-63	49	19	307	608	7.4
251-809-1Sp		T	6-10-64	60	461	510	1,970	7.0
251-809-2	65	Sh	11-20-64	7.8	22	135	569	7.5
251-815-1	130	Sgd	11-20-64	29	3.6	124	307	8.7
251-829-1	58	Sh	8- 1-63	1.0	444	500	2,050	7.1
251-832-1	57	Sh	7-31-63	24	372	499	1,700	7.2
251-834-1	84	Sh	7-31-63	21	3.0	145	299	7.7
251-837-1	74	Sh	7-30-63	9.0	120	305	1,010	7.5
251-850-2	r116	Ls	9-11-63	104	334	338	1,750	7.2
252-818-1	r24	Sh	11- 9-64	88	18	296	568	7.8
253-824-1	41	Sgd	8- 8-63	29	2.0	205	394	7.4
253-829-1	26	Sh	7-31-63	67	4.0	332	610	7.3
253-832-1	48	Sh	7-31-63	5.7	43	170	472	7.6
253-834-1	62	Sh	7-31-63	21	9.6	225	508	7.2
253-840-1	24	Sh	7-27-63	102	51	448	998	7.3
254-826-1	68	Sh	8- 9-63	9.7	144	256	1,160	7.6

h/ Iron (Fe) - 0.79 ppm, in solution when collected.
i/ Iron (Fe) - 1.0 ppm, in solution when collected.
j/ Complete analysis of sample collected 6/11/51 in table 8.
k/ Density at 20° C - 1.46 gr

PLANNING REPORT ENB 3 PLATE 2

/ YORK STATE WATER RESOURCES COMMISSION

EPARTMENT , DIVISION OF WATER RESOURCES



EXPLANATION

SHALE UNITS

Paleozoic

Upper Devonian

Dcf

Conneaut Group of Chadwick (1934)

Dc

Canadaway Group of Chadwick (1933)

Dj

Java Formation

Dw

West Falls Formation

Dg

Genesee and Sonyea Formations

Devonian

Middle Devonian

Dl

Ludlowville and Moscow Shales

Dm

Marcellus and Skaneateles Shales

Note: Yields of wells range from less than 1 gpm to about 40 gpm, more commonly from 3 to 15 gpm.

LIMESTONE UNITS

Do

Onondaga Limestone

Sb

Bertie Limestone and Akron Dolomite

Note: Yields range from about 1 to 300 gpm; the largest yields are obtained in the western part of the outcrop belt. Yields of 100 gpm are generally obtainable in some parts of the outcrop belt, but yields of 30 gpm or less are more common.

Upper Silurian

Sc

Camillus Shale

Note: Yields of wells range from a few gallons per minute to 1,200 gpm. The larger yields (300 to 1,200 gpm) are obtained at places in the western end of the outcrop belt. The maximum yield available generally is less than 50 gpm.

Silurian

Middle Silurian

Sl

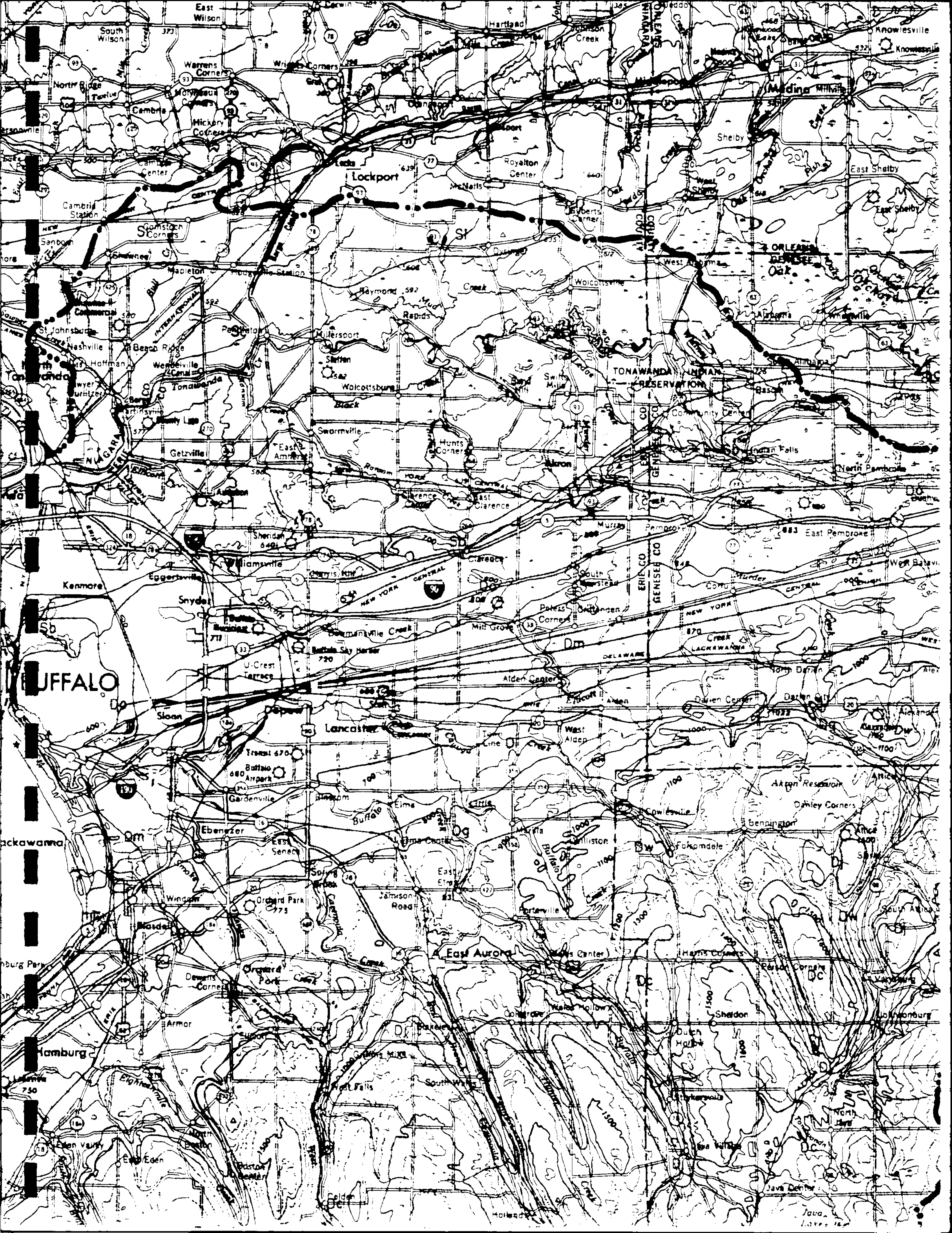
Lockport Dolomite

Note: Yields of wells average 30 gpm and range from about 1 to 100 gpm.

Geologic contact

Inferred normal fault hachures on downthrown side

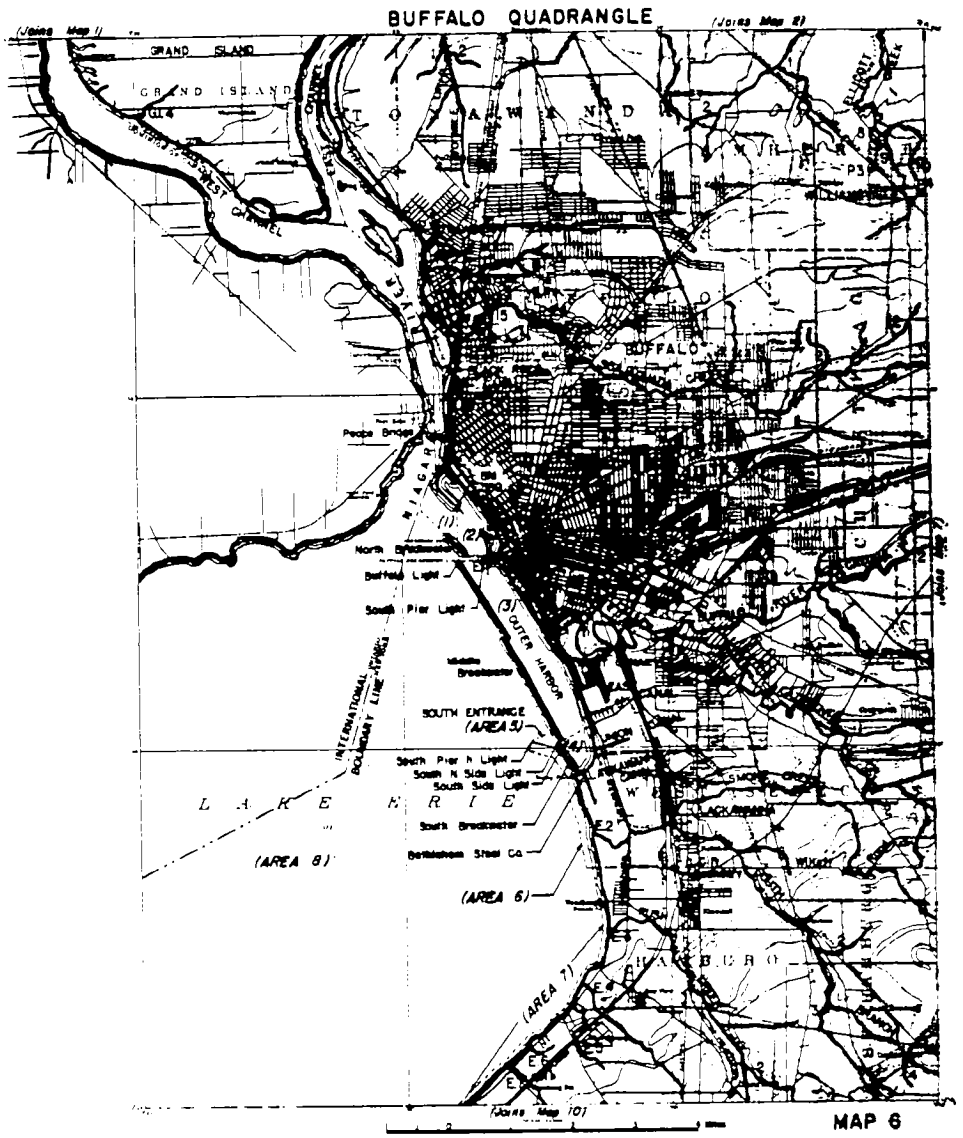
Basin boundary


East Wilson
South Wilson
Hartland
Knowlesville
Warrens Corners
North Ridge
Cambria
Hickory Corners
Medina
Millville
Shelby
East Shelby
Lockport
Royalton Center
McNalls
Cambria Station
Sanborn
Comstock Corners
Shawnee
Mapleton
Raymond
Rapids
Wolcottsville
West Alabama
ORLEANS
GENESEE
Alabama
St Johnsburg
Nashville
Beach Ridge
Wendelville
Pendleton
Millersport
Tonawanda
Wolcottsburg
Swift Mills
TONAWANDA INDIAN RESERVATION
Basom
Community Center
Indian Falls
North Pembroke
Swormville
Hunts Corners
East Amherst
Getzville
Akron
Clarence Center
East Clarence
Sheridan
Murray
Pembroke
East Pembroke
Williamsville
Clarence
Kenmore
Eggertsville
Snyder
South Newstead
Peters Corners
Crittenden
Mill Grove
West Batavia
NEW YORK CENTRAL
ERIE CO
GENESEE CO
Ellicott
U-Crest Terrace
BUFFALO
Alden Center
North Darien
Darien Center
Sloan
Depew
Lancaster
Town Line
West Alden
Alden
Darien City
Transit
Buffalo Airpark
Gardenville
Akron Reservoir
Attica
Danley Corners
Bennington
Cowlesville
Ebenezer
East Seneca
Elma Center
Elma
Marilla
Williston
Folsomdale
Lackawanna
Windom
Orchard Park
Jamison Road
East Elma
Porterville
South Attica
Blasdell
East Aurora
Harris Corners
Dewey Corners
Orchard Park
Colden
Wales Hollow
Sheldon
Varysburg
Armor
Johnsonburg
Hamburg
Dutch Hollow
West Falls
South Wales
North Java
Eden Valley
East Eden
North Boston
Boston Center
Java Village
Java Center
Holland
Java Lake

REFERENCE 11

TABLE I (contd.)

Item No.	Waters Index Number	Name	Description	Map Ref. No.	Class	Standards
171	E-1-4-15-22 and tribs. as shown on reference map	Spencer Brook	Enters West Branch Cazenovia Creek from east approximately 2.5 miles above Colden-Concord town line.	11	B	B
172	E-1-4-15-23	Graff Brook	Enters West Branch Cazenovia Creek from east approximately 4.0 miles above Colden-Concord town line.	11	B	B
173	E-1-6 portion as described	Cayuga Creek	Enters Buffalo River from east approximately 1.0 mile east of City of Buffalo-Cheektowaga town line. Mouth to Plumb Bottom Creek, item no. 178.	6,7	C	C
174	E-1-6 portion as described including P 65 (Como Lake)	Cayuga Creek	From Plumb Bottom Creek, item no. 178, to source.	7,8,12	B	B
175	E-1-6-1	Tributary of Cayuga Creek	Enters Cayuga Creek from west approximately 0.5 mile above mouth.	6	D	D
176	E-1-6-2 and tribs. as shown on reference map	Slate Bottom Creek	Enters Cayuga Creek from east approximately 2.0 miles above mouth.	6,7	D	D
177	E-1-6-3,4 and 5	Tributaries of Cayuga Creek	Enter Cayuga Creek between Slate Bottom Creek, item no. 176, and western boundary of Village of Lancaster.	7	D	D


BUFFALO QUADRANGLE
GRAND ISLAND
BUFFALO
NIAGARA
(1)
(2)
(3)
OUTER HARBOR
SOUTH ENTRANCE
(AREA 5)
(4)
INTERNATIONAL BOUNDARY LINE
L A K E E R I E
(AREA 8)
(AREA 6)
(AREA 7)
South Pier N Light
South N Side Light
South Side Light
South Breakwater
Bethlehem Steel Co
Buffalo Light
South Pier Light
MAP 6

STATE OF NEW YORK

OFFICIAL COMPILATION

OF

CODES, RULES AND REGULATIONS

MARIO M. CUOMO
Governor

GAIL S. SHAFFER
Secretary of State

Published by
DEPARTMENT OF STATE
162 Washington Avenue
Albany, New York 12231

1/83

PART 701

CLASSIFICATIONS AND STANDARDS OF QUALITY AND PURITY

(Statutory authority: Environmental Conservation Law, §§ 3-0301[2][m], 15-0313, 17-0301)

Historical Note

Part repealed, new filed: April 28, 1972; Feb. 25, 1974 eff. 30 days after filing.

Section 701.1 Definitions. The terms, words or phrases used in Parts 700, 701, 702 and 704 of this Title shall have the following meanings:

(a) *Commissioner* shall mean the Commissioner of the Department of Environmental Conservation.

(b) *Administrator* shall mean the administrator of the United States Environmental Protection Agency.

(c) *Best usage of waters* as specified for each class shall be those used as determined by the commissioner and the administrator in accordance with the considerations prescribed by the Environmental Conservation Law and the Federal Water Pollution Control Act of 1972 (see section 705.1 of this Title).

(d) *Approved treatment* as applied to water supplies shall mean treatment accepted as satisfactory by the authorities responsible for exercising supervision over the sanitary quality of water supplies.

(e) *Source of water supply for drinking, culinary or food processing purposes* shall mean any source, either public or private, the waters from which are used for domestic consumption or used in connection with the processing of milk, beverages or foods. (When water is taken for public drinking, culinary or food processing purposes, refer to New York State Department of Health regulations—10 NYCRR Part 170.)

(f) *Primary contact recreation* shall mean recreational activities where the human body may come in direct contact with raw water to the point of complete body submergence. Such uses include swimming, diving, water skiing, skin diving and surfing.

3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.
5. Phenolic compounds.	Shall not be greater than 0.001 milligram per liter (Phenol).
6. Radioactivity.	
a. Gross Beta	Shall not exceed 1,000 picocuries per liter in the absence of Sr90 and alpha emitters.
b. Radium 226	Shall not exceed 3 picocuries per liter.
c. Strontium 90	Shall not exceed 10 picocuries per liter.

Note: With reference to certain toxic substances affecting fishlife, the establishment of any single numerical standard for waters of New York State would be too restrictive. There are many waters which, because of poor buffering capacity and composition, will require special study to determine safe concentrations of toxic substances. However, most of the non-trout waters near industrial areas in this State will have an alkalinity of 80 milligrams per liter or above. Without considering increased or decreased toxicity from possible combinations, the following may be considered as safe stream concentrations for certain substances to comply with the above standard for this type of water. Waters of lower alkalinity must be specifically considered since the toxic effect of most pollutants will be greatly increased.

Ammonia or Ammonium compounds	Not greater than 2.0 milligrams per liter expressed as NH_3 at pH of 8.0 or above.
Cyanide	Not greater than 0.1 milligram per liter expressed as CN.
Ferro—or Ferricyanide	Not greater than 0.4 milligram per liter expressed as $Fe(CN)_6$.
Copper	Not greater than 0.2 milligram per liter expressed as Cu.
Zinc	Not greater than 0.3 milligram per liter expressed as Zn.
Cadmium	Not greater than 0.3 milligram per liter expressed as Cd.

CLASS "A"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "A" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.
5. Phenolic compounds.	Shall not be greater than 0.005 milligram per liter (Phenol).
6. Radioactivity.	
a. Gross Beta	Shall not exceed 1,000 picocuries per liter in the absence of Sr90 and alpha emitters.
b. Radium 226	Shall not exceed 3 picocuries per liter.
c. Strontium 90	Shall not exceed 10 picocuries per liter.

Note: Refer to Note under Class "AA" which is also applicable to Class "A" standards.

CLASS "B"

Best usage of waters. Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

Quality Standards for Class "B" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Note: Refer to Note under Class "AA" which is also applicable to Class "B" standards.

CLASS "C"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "C" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.

4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Note: Refer to Note under Class "AA" which is also applicable to Class "C" standards.

CLASS "D"

Best usage of waters. The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters. The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	*Specifications*
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Note: Refer to Note under Class "AA" which is also applicable to Class "D" standards.

Historical Note

Sec. added by renum. 701.4, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

701.20 Classes and standards for saline surface waters. The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Saline Surface Waters

Items	*Specifications*
1. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the marine district as defined by Environmental Conservation Law (§ 17-0105)

PART 702

SPECIAL CLASSIFICATIONS AND STANDARDS

(Statutory authority: Environmental Conservation Law, §§ 3-0301[2][m], 15-0313, 17-0301)

Historical Note

Part repealed, new filed: April 28, 1972; Feb. 25, 1974 eff. 30 days after filing.

Section 702.1 Class A – Special (International boundary waters).

(GREAT LAKES WATER QUALITY AGREEMENT OF 1972)

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes, primary contact recreation and any other usages.

Conditions related to best usage. The waters, if subjected to approved treatment, equal to coagulation, sedimentation, filtration and disinfection with additional treatment, if necessary, to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class A – Special Waters (International Boundary Waters)

Items	*Specifications*
1. Coliform.	The geometric mean of not less than five samples taken over not more than a 30-day period should not exceed 1,000 per 100 ml total coliform nor 200 per 100 ml fecal coliform.
2. Dissolved oxygen.	In the rivers and upper waters of the lakes not less than 6.0 mg/l at any time. In hypolimnetic waters, it should be not less than necessary for the support of fishlife, particularly cold water species.

Items	*Specifications*
3. Total dissolved solids.	Should not exceed 200 milligrams per liter.
4. pH	Should not be outside the range of 6.7 to 8.5.
5. Iron.	Should not exceed 0.3 milligrams per liter as Fe.
6. Phorphorus.	Concentrations should be limited to the extent necessary to prevent nuisance growths of algae, weeds and slimes that are or may become injurious to any beneficial water use.
7. Radioactivity.	Should be kept at the lowest practicable levels, and in any event should be controlled to the extent necessary to prevent harmful effects on health.
8. Taste and odor-producing substances, toxic wates and deleterious substances.	None in amounts that will interfere with use for primary contact recreation or that will be injurious to the growth and propagation of fish, or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.
9. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to this class.
10. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.
11. Thermal discharges.	(See Part 704 of this Title.)

To meet the water quality objectives referred to in the "Great Lakes Water Quality Agreement of 1972," the standards listed above shall be subject to revision from time to time after further hearings on due notice.

Note: Refer to Note 1 under Class "AA," which is also applicable to Class A-Special (International Boundary Waters) standards.

Historical Note

Sec. repealed, new filed: April 28, 1972; Feb. 25, 1974; amd. filed Sept. 20, 1974 eff. 30 days after filing.

702.2 Class AA – Special (Lake Champlain drainage basin).

CLASS AA – SPECIAL

Best usage of waters. Any usage except for disposal of sewage, industrial wastes or other wastes.

Quality Standards for Class AA – Special Waters (Lake Champlain drainage basin)

Items	*Specifications*
1. Floating solids, settleable solids; oil; sludge deposits; toxic wastes; deleterious substances; colored or other wastes or heated liquids.	None attributable to sewage, industrial waste or other wastes.
2. Sewage or waste effluents.	None into waters of this class.

Historical Note

Sec. repealed, new filed: April 28, 1972; Feb. 25, 1974 eff. 30 days after filing; provided, however, if the application, pursuant to Parts 800 to 941, inclusive, of Title 6, of any provision of Part 701 or 702 shall be found to be invalid, the corresponding provision of Part 701 or 702 in effect immediately prior to such effective date shall be deemed not to have been repealed and shall remain in effect until such time as the provision, the application of which was found to be invalid, can lawfully be made applicable.

702.3 Special classes and standards for the Lower Hudson River, Arthur Kill, Kill Van Kull, Harlem River, Raritan Bay and Lower East River drainage basins, New York Bay area, Nassau County, including Long Island Sound, Suffolk County, Upper East River, Long Island Sound drainage basins within Queens, Bronx and Westchester Counties, and Jamaica Bay drainage basin within Kings and Queens Counties, including a certain portion of Rockaway Inlet. (a) This section applies to the waters within the following areas, which constitute the Interstate Sanitation District:

(1) the drainage basin of the Lower Hudson River, from the mouth to northern Westchester-Rockland county lines, except Saw Mill River and Sparkill Creek drainage basins;

(2) the drainage basins of Arthur Kill, Kill Van Kull, Harlem River and Raritan Bay;

(3) the drainage basin of Lower East River, from the mouth to a line across East River north of Wards Island between Stony Point in Bronx County and Lawrence Point in Queens County;

(4) New York Bay, including Gravesend Bay, Coney Island Creek, Atlantic Basin, Erie Basin, Gowanus Bay, Gowanus Canal. The Narrows and Atlantic Ocean waters off Coney Island lying westerly of a north-south line from Light Inlet at the southeasterly tip of Coney Island Peninsula to the south tip of Rockaway Point, thence along the jetty to Rockaway jetty light, thence due south to the New York - New Jersey boundary line;

REFERENCE 12

New York State Department of Environmental Conservation
600 Delaware Avenue, Buffalo, NY 14202-1073 716/847-4560

Henry G. Williams
Commissioner

December 18, 1985

Mr. Sheldon S. Nozik
RECRA Research, Inc.
4248 Ridge Lea Road
Amherst, NY 14226

Dear Mr. Nozik:

Tentative Erie County and final Niagara County freshwater wetlands are shown directly on your site maps for the Superfund sites you are studying. Please be sure to examine all the maps since I did not copy all wetland boundaries if a given area was shown on another map.

Also, our maps show only those wetlands which exceed 5 ha in size. We have no information compiled for wetlands less than 5 acres in size.

To my knowledge, we have no "critical habitats" within one mile of the sites in question. Further, I am not aware of endangered or threatened species occupying these sites.

If you need some specific information on the wetlands within your study area, you will need to come to Regional Headquarters to compile those data.

Sincerely,

Gordon R. Batcheller
Senior Wildlife Biologist
Region 9

GRB:ls

Enc.

cc: Mr. Pomeroy

RECRA RESEARCH, INC.
Hazardous Waste And Toxic Substance Control

December 13, 1985

Mr. James Pomeroy
Habit Protection Biologist
NYSDEC Fish and Wildlife Office
128 South Street
Olean, NY 14760

Dear Mr. Pomeroy:

As per our telephone conversation on December 3, 1985, enclosed are sections of the topographic maps for the NYSDEC Phase I Superfund sites we are presently working on. Below is a list of these sites:

1. Exolon Company
2. Pennwalt-Lucidal
3. Mollenberg-Betz Co.
4. Empire Waste
5. Bisonite Paint Co.
6. Stocks Pond
7. Aluminum Matchplate
8. Otis Elevator (Stimm Assoc.)
9. LaSalle Reservoir
10. Tonawanda City Landfill
11. Union Road Site
12. Central Auto Wrecking (Diarsonal Co.)
13. Procknal and Katra
14. Consolidated Freightway
15. U.S. Steel (Stimm Assoc.)
16. Ernst Steel
17. American Brass (Anaconda)
18. Erie-Lackawanna Site
19. Dresser Industries
20. W. Seneca Transfer Station
21. Old Land Reclamation
22. Northern Demolition
23. Lackawanna Landfill
24. South Stockton Landfill*
25. Chadakoin River Park*
26. Dunkirk Landfill*
27. Felmont Oil Co.*
28. NFTA**
29. Walmore Road Site**
30. Schreck's Scrapyard**

* Chautaugua County
** Niagara County

As part of the search requirements for the NYSDEC Superfund sites, each of these sites must be documented as follows:

- if there are any coastal wetlands within two (2) miles of the site
- if there are any freshwater wetlands within one (1) mile of the site (5 acre min
- if there are any critical habitats within one (1) mile of the site (endangered species or wildlife refuges)

Continued . . .

4248 Ridge Lea Road, Amherst, New York 14226 Telephone (716) 838-6200

Would you please forward information on sites 1-10 as soon as possible, as we have a January 15, 1986 deadline for submittal of these reports to Albany.

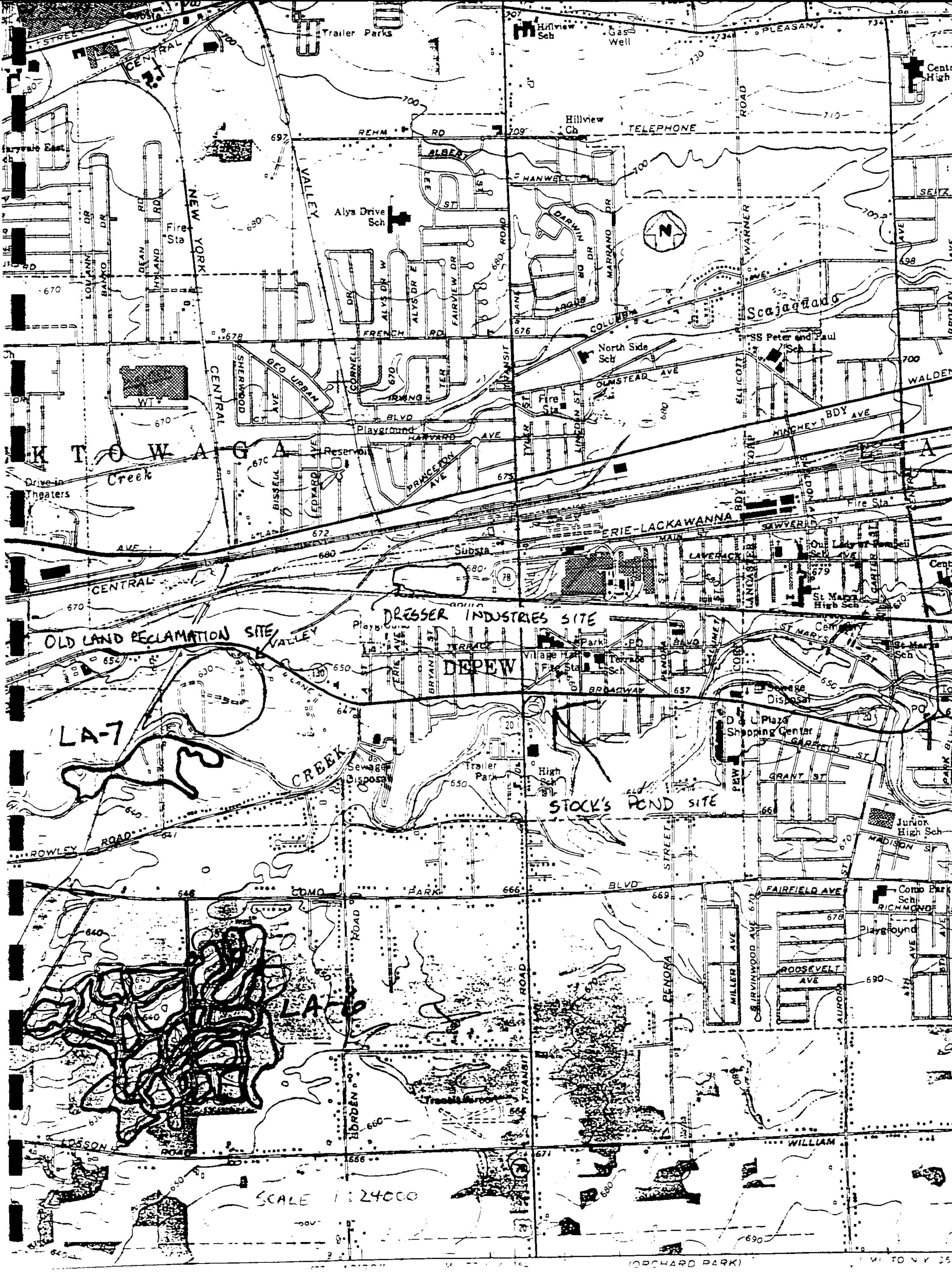
Thank you very much for your assistance and promptness in these matters. Should you have any questions or comments, please do not hesitate to call.

Sincerely,

RECRA RESEARCH, INC.

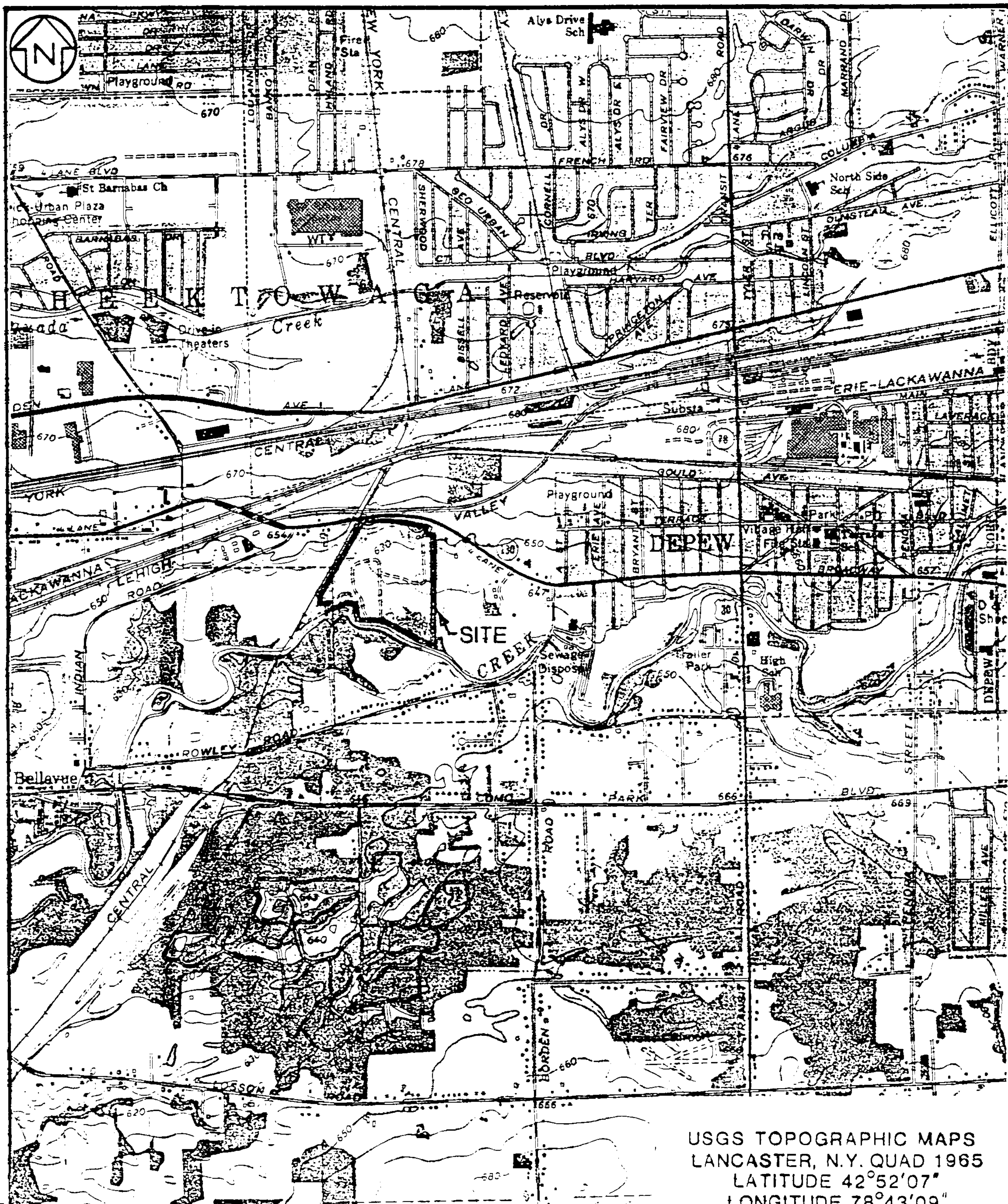
Sheldon S. Nozik
Environmental Specialist

SSN/jlo
Enclosure


DRESSER INDUSTRIES SITE
OLD LAND RECLAMATION SITE
LA-7
LA-6
STOCK'S POND SITE
SCALE 1:24000
DEPEW
CHEEKTOWAGA
Scajaquada Creek
ERIE-LACKAWANNA
NEW YORK CENTRAL
Trailer Parks
Hillview Sch
Gas Well
Hillview Ch
Alys Drive Sch
North Side Sch
SS Peter and Paul Sch
Fire Sta
Reservoir
Playground
Drive-in Theaters
Substa
Our Lady of Pompeii Sch
St Marys High Sch
Cemetery
St Marys Sch
Village Hall
Terrace Sch
Sewage Disposal
D & L Plaza Shopping Center
Trailer Park
High Sch
Junior High Sch
Como Park Sch
Transit Airport
REHM RD
TELEPHONE
PLEASANT
FRENCH RD
WALDEN
COLUMBIA
BROADWAY
COMO PARK BLVD
ROWLEY ROAD
LOSSON ROAD
WILLIAM
TRANSIT ROAD
BORDEN ROAD
(ORCHARD PARK)

FLOOD BOUNDARY MAP ZONE A4 ZONE B
FEDERAL INSURANCE ADMINISTRATION

REFERENCE 13



USGS TOPOGRAPHIC MAPS
LANCASTER, N.Y. QUAD 1965
LATITUDE 42°52'07"
LONGITUDE 78°43'09"

Scale: 1:24000			OLD LAND RECLAMATION DEPEW, N.Y. N.Y.S. SUPERFUND PHASE I
	By	Date	
Dwn.	MJS	12/85	
Ckd.			
Ap'vd.			
Rev.			

RECRA RESEARCH INC.
BUFFALO, NEW YORK

VICINITY MAP

Project No. 5C280416

A

FIGURE 1

REFERENCE 14

1/L4847

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

February 17, 1987

Mr. Lawrence Clare, P.E.
New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202

Re: Old Land Reclamation
NYSDEC Superfund Site #915129

Dear Mr. Clare:

Thank you for your assistance in the Phase I Superfund investigation we are conducting with regard to the Old Land Reclamation site.

As part of the background research requirements for the NYSDEC Superfund investigations, we the consultants are required to have all of our interviews, personal or by telephone, documented. Below is an account of our conversation on February 17, 1987. Please read the account, check its accuracy, sign at the bottom and return the original to me. This is only to serve as documentation that the conversation took place.

- To the best of your knowledge, usage of Cayuga Creek within three miles downstream of the Old Land Reclamation site is limited to casual recreation including some fishing.

Thank you for your cooperation.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Thomas P. Connare
Environmental Analyst

TPC/dls

Lawrence Clare

Audubon Business Centre • 10 Hazelwood Drive, Suite No. 106 • Amherst, New York 14150 • (716) 691-2600

APPENDIX B

APPENDIX B

REVISED "HAZARDOUS WASTE DISPOSAL SITE REPORT"

TIME PERIOD SITE WAS USED FOR HAZARDOUS WASTE DISPOSAL:

_____, 19 60 TO _____, 19 75

OWNER(S) DURING PERIOD OF USE: Samuel Greenfield Company

SITE OPERATOR DURING PERIOD OF USE: GCF, Inc.; Shultz Corporation; South Ogden Land Development Corp.

ADDRESS OF SITE OPERATOR: Unknown

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

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

SOIL TYPE. Silt, clay, sand and gravel

DEPTH TO GROUNDWATER TABLE: Variable, 2-21 feet

LEGAL ACTION: TYPE: _____ STATE ☐ FEDERAL ☐
STATUS: IN PROGRESS ☐ COMPLETED ☐
REMEDIAL ACTION: PROPOSED ☐ UNDER DESIGN ☐
IN PROGRESS ☐ COMPLETED ☐

NATURE OF ACTION: _____

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Elevated heavy metals in site surface waters and soils; PCBs, phenol, and aniline also detected

ASSESSMENT OF HEALTH PROBLEMS:

Unknown; Cayuga Creek receives site run-off and is used for fishing and recreation

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION	NEW YORK STATE DEPARTMENT OF HEALTH
NAME Thomas P. Connare (Recra)	NAME _____
TITLE Environmental Scientist	TITLE _____
NAME _____	NAME _____
TITLE _____	TITLE _____
DATE: _____	DATE: _____

(47-15-11 (10/83)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

PRIORITY CODE: 2a SITE CODE: 915129

NAME OF SITE: Old Land Reclamation REGION: 9

STREET ADDRESS: Broadway

TOWN/CITY: Village of Depew COUNTY: Erie

NAME OF CURRENT OWNER OF SITE: Village of Depew

ADDRESS OF CURRENT OWNER OF SITE:

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

ESTIMATED SIZE: 64 ACRES

SITE DESCRIPTION:

Site was operated as solid waste landfill from 1960 to 1975 and received industrial wastes including foundry sands, slag, flyash, oil sludge, pine tar pitch, inks, waste colors, and miscellaneous refuse.

HAZARDOUS WASTE DISPOSED: CONFIRMED ☐ SUSPECTED [XX]

TYPE AND QUANTITY OF HAZARDOUS WASTES DISPOSED:

TYPE	QUANTITY (POUNDS, DRUMS, TONS, GALLONS)
Foundry sands	Unknown
Oil sludge	Unknown
Inks	Unknown
Flyash	Unknown
Pine tar pitch	Unknown