915136

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE 1 INVESTIGATION

Sleepy Hollow Campgrounds (Feitshans) Site No. 915136

Newstead (T) Erie County

DATE: August 1989

Prepared for:

New York State Department of Environmental Conservation

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

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

BY:

Recra Environmental, Inc.
and
Lawler, Matusky, & Skelly Engineers

New York State Department of Environmental Conservation

MEMORANDUM

TO: Report Reviewer
FROM: Bureau of Hazardous Site Control
SUBJECT: Division of Hazardous Waste Remediation
DATE: Sleepy Hollow Campgrounds
December 20, 1989

To the reader of this report who is unfamiliar with the specifics of this site and/or who has not completed a site inspection, it may be unclear what the current site conditions are. There have been two seperate drum removals at this site. The first occured in 1981 from which 50-60 drums full of waste materials (originating from the F.N. Burt Company) were removed from an area near the entrance to the site off Siehl Road. The second drum removal occured in November 1986. A total of 17 drums of waste and 13 drums of contaminated soil were removed from a swampy area in the north portion of the site.

During the November, 1986 drum removal an additional ten drums full of unknown material were observed near the on-site maintenance building near the south entrance, as well as an estimated 100 empty drums scattered around on-site. Some of the empty drums are apparently used for refuse collection at the campsites. None of the ten full were removed at that time. During the Phase I site inspection (November 2, 1988) the 10 full and numerous empty drums were still present.

A July 6, 1989 inspection by the New York State Department of Health indicates the 10 full drums were <u>not</u> observed near the on-site maintenance building, although some drums containing an unknown waste were observed in an adjacent shed. The DEC is attempting to determine the fate of these drums. Sampling of three on-site wells by the NYSDOH indicated no contaminants above drinking water standards. Additional sampling is planned.

1/10400

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

Sleepy Hollow Campgrounds (Feitshans)
Town Of Newstead, Erie County
NYSDEC I.D. No. 915136

Prepared For

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road
Albany, New York 12233-0001

Prepared By

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August 1989

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1.0 EXECUTIVE SUMMARY

The Sleepy Hollow Campgrounds site is located on Siehl Road in the Town of Newstead, New York, in the extreme eastern portion of Erie County (Figures 1-1, 1-2 and 1-3). This rural community is approximately 17 miles east of the City of Buffalo, New York. The estimated 104-acre site is the location of a campground which is currently owned and operated by Mario and Anthony Latello of Lancaster, New York. During the early 1970s, Fietshans and Mauer Trucking, Inc., the former owners of this property, disposed of numerous drums containing waste solvents, oils, adhesives and other liquids and sludges generated by the F. N. Burt Company, Inc. of Buffalo.

The site has the potential to impact both human health and the environment. Analyses performed on waste samples collected by the New York State Department of Environmental Conservation (NYSDEC) in 1985 indicated the presence of several hazardous compounds including toluene, xylene, chlorobenzene and others. Potential groundwater contamination is of major concern since private wells serve the majority of the population in the area with a potable water supply. Potential surface water contamination of tributaries of Ellicott Creek and on-site Sleepy Hollow Lake, which are used for recreation, are also of concern. Additionally, due to the nature of the site (i.e., campground) and lack of restrictive measures, the potential for direct contact with remaining drums and contaminated soil is a significant potential human exposure concern.

The Phase I effort involved the compilation of information gathered from several sources including, but not limited to, the following: the NYSDEC - Central Office and Region 9, the Erie County Department of Environment and Planning, and a site inspection conducted by Recra Environmental, Inc.

personnel on November 2, 1988. Photographs taken during this site inspection are presented in Appendix B.

The Sleepy Hollow Campgrounds site was evaluated and scored in accordance with the Hazard Ranking System (HRS). USEPA uses a hazard ranking system (HRS) to apply uniform technical judgement in evaluating the relative hazards presented by sites being considered for federal superfund remediation. The HRS is sometimes called the MITRE Model because it was developed by the MITRE Corporation under contract to the USEPA. HRS addresses only relative hazard. It does not assess the feasibility, desireability, or degree of cleanup required, and does not address all potential environmental or health impacts.

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

a. S_M, reflecting the potential for harm to humans or the environment from migration of a hazardous substance from the facility by groundwater, surface water or air. It is a composite of separate scores for each of the three routes.

b. S_{FE}, reflecting the potential for harm for substances that can explode or cause fires.

c. S_{DC}, reflecting the potential for harm from direct contact with hazardous substances at the facility.

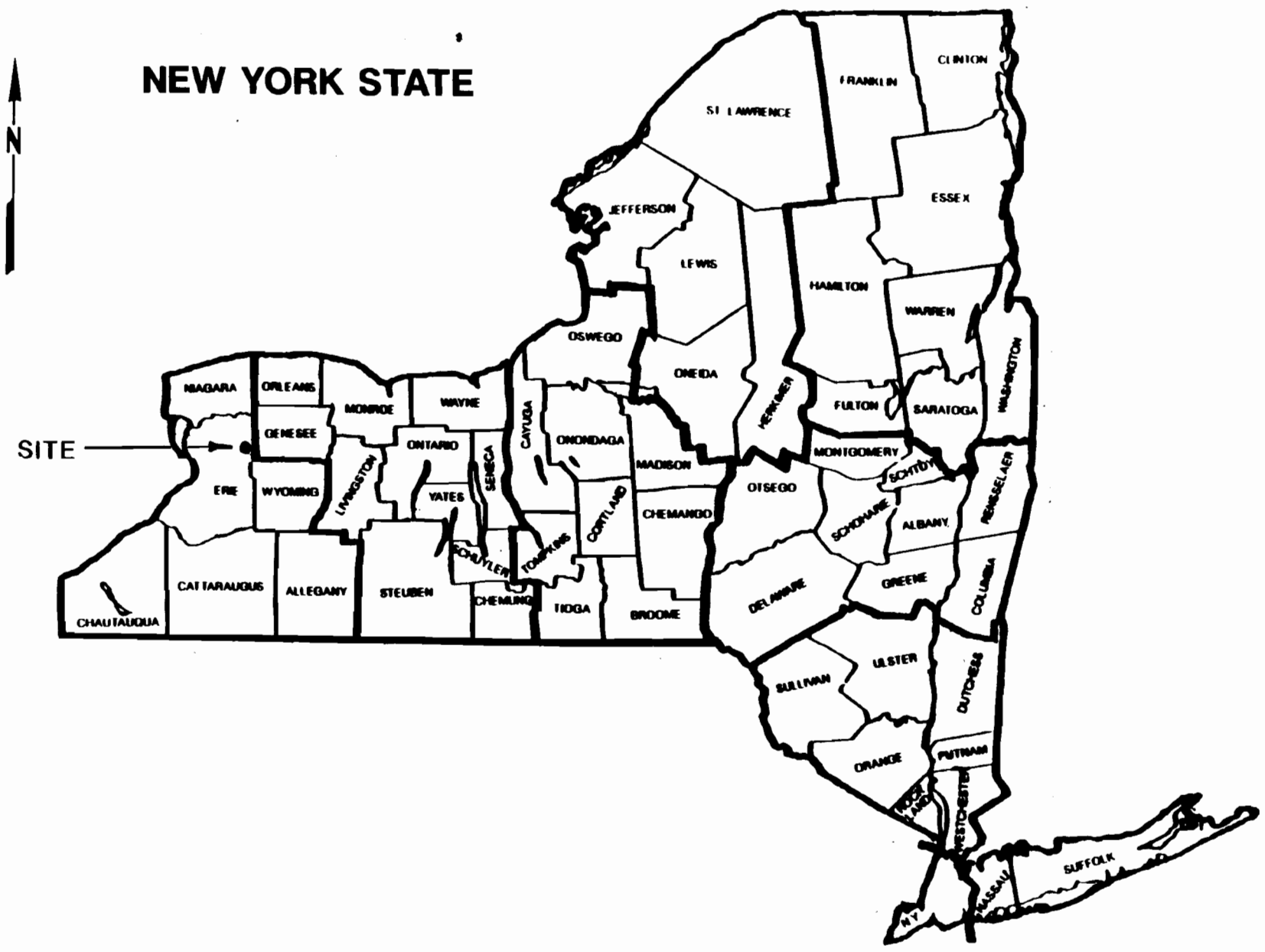
Based on information gathered during this investigation of the Sleepy Hollow Campgrounds site, the following HRS scores were obtained:

S_M = 26.96 (S_{gw} = 45.10, S_{sw} = 11.89, S_a = 0.00)

S_{FE} = N.S.

S_{DC} = 25.00

The data available in several areas of this Phase I Investigation is considered inadequate for a proper site assessment; therefore, additional data gathering and evaluation are suggested. Proposed activities include subsurface investigation using borings and monitoring wells, in addition to groundwater, surface water and soil sampling and analyses.



SCALE: N.T.S.		
	BY	DATE
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CKD.	[illegible]	4/89
APPVD.	RAC	5/7/89
REV.		

Recra Environmental, Inc.

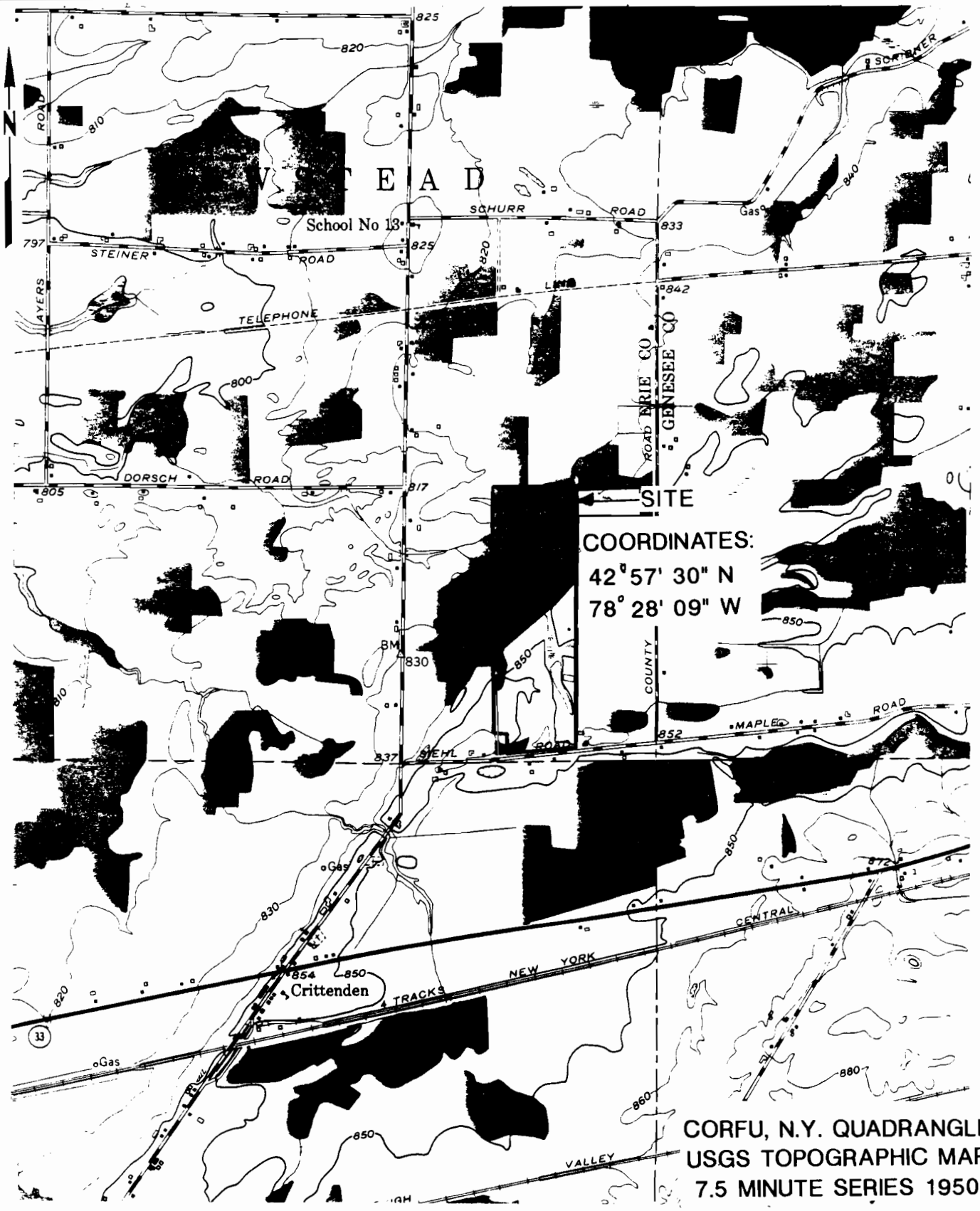
NYSDEC
SUPERFUND PHASE I INVESTIGATION
SLEEPY HOLLOW CAMPGROUNDS
SITE NO. 915136

PROJECT NO: 8C1301BB

SITE LOCATION MAP

FIGURE 1-1

A



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	BY	DATE
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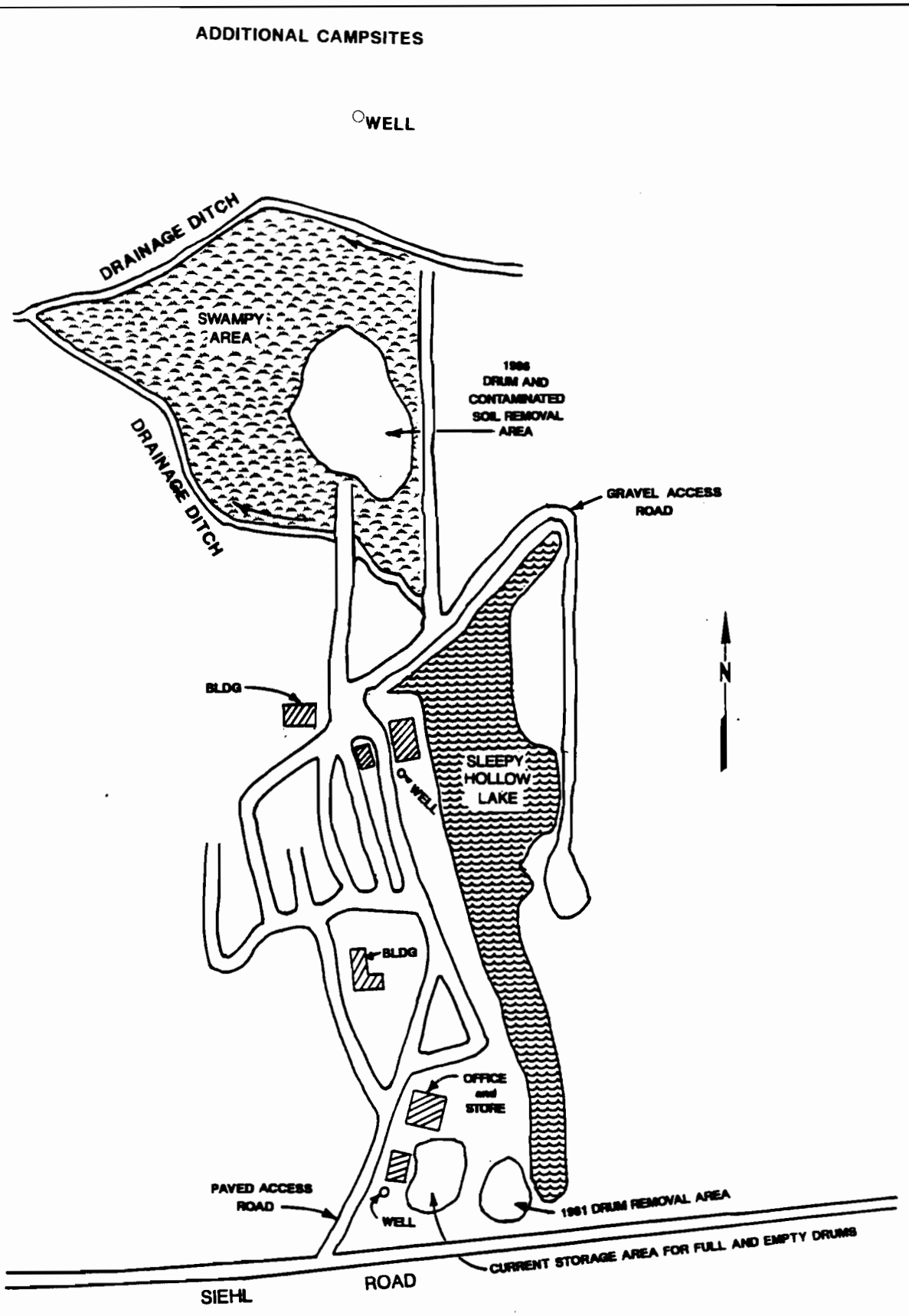
APPVD	RAC	5/2/89
REV.		

NYSDEC SUPERFUND
PHASE I INVESTIGATION
SLEEPY HOLLOW CAMPGROUNDS
SITE NO. 915136

PROJECT NO. 8C1301BB

SITE VICINITY MAP

A | FIGURE 1-2



SCALE: NTS			NYSDEC PHASE I INVESTIGATION SLEEPY HOLLOW CAMPGRDS SITE # 915136	SITE SKETCH
	BY	DATE		
DWN.	LMM	8/89		
CKD.				
APPVD.				
REV.			PROJECT NO. 8C1301BB	A FIGURE 1-3

2.0 PURPOSE

The purpose of this Phase I Investigation is to provide a preliminary characterization of hazardous substances present at the Sleepy Hollow Campgrounds site, to estimate pathways by which pollutants might be migrating from the site, to determine if populations or resources might be affected by pollutants from the site, to determine how the disposal area was used or operated, and to gather information regarding responsibility for possible site wastes.

This investigation was conducted with the following objectives:

- Collect and review available site-specific data and prepare a preliminary Hazard Ranking System (HRS) score.
- Conduct a site inspection and air monitoring survey.
- Evaluate existing data for completeness and identify environmental data needed to determine if the site poses a significant threat to the environment.
- Prepare a summary report.

The purpose of developing the Phase I report in this manner is to provide an objective assessment of the site and the potential impact it may pose on human health and the environment.

3.0 SCOPE OF WORK

The scope of work for the Phase I Investigation of the Sleepy Hollow Campgrounds site included data collection and review, site inspection and air monitoring survey, interviews with individuals who possess knowledge or information pertinent to site activities, development of a preliminary HRS score, and report preparation.

The sources contacted during this Phase I Investigation included federal, state, and local government agencies; site owners and operators; and business and/or individuals with knowledge of the site activities. These sources are listed below:

- NYSDOH - Bureau of Environmental Exposure
  2 University Place, Room 205
  Albany, NY 12203
  (518) 458-6310
  Michael Rivara
  October 3, 1988
  - general file information

- NYSDEC - Central Office
  Division of Hazardous Waste Remediation
  50 Wolf Road
  Albany, NY 12233
  (518) 457-0639
  Michael Komoroske
  October 3-5, 1988
  - general file information

- NY Office of Parks, Recreation and Historical Preservation
  Building 1, Empire State Plaza
  Albany, NY 12233
  (518) 474-3176
  Linda Harvey and Mark Peckham
  October 5, 1988
  - National Register and historical site information

- NYSDEC - Region 9, Division of Hazardous Waste Remediation
  584 Delaware Ave.
  Buffalo, NY 14202
  (716) 847-4585
  Jack Tygert, Ed Feron and Robert Wozniak
  October 26, 1988 and March 17, 1989
  - general file information and "Community Right-To-Know" information

- NYSDOH - Regional Toxic Program
  584 Delaware Ave.
  Buffalo, NY 14202
  (716) 847-4699
  Linda J. Rusin, Engineer
  October 26, 1988
  - general gile information

- Erie County Department of Environment and Planning
  95 Franklin St.
  Buffalo, NY 14202
  (716) 846-7583
  Jerome L. Miller, Environmentalist - Hazardous Waste
  October 26, 1988 and March 17, 1989
  - general file information and tax maps

- NYSDEC - DEE
  600 Delaware Ave.
  Buffalo, NY 14202
  (716) 847-4582
  JoAnn Gould, Attorney
  October 27, 1988 and November 2, 1988
  - environmental enforcement action information

- USEPA - Region II, Site Investigation Section
  26 Federal Plaza
  NY, NY 10278
  (212) 264-6668
  Jeffrey Gall
  October 28, 1988
  - general file information

- LV & L Resort Corporation
  146 Sheldon Ave.
  Lancaster, NY 14086
  (716) 685-3031
  Anthony Latello, Site Owner/Operator
  November 2, 1988
  - site inspection, site history, background information

- NYSDEC - Region 9, Natural Resources Division
  128 South Street
  Olean, NY 14760
  (716) 372-0645
  James K. Pomeroy, Habitat Protection Biologist
  December 27, 1988
  - wetland, critical habitat, endangered species and stream classification information

- Genesee County Soil and Water Conservation District
  U.S.D.A. Center
  166 Washington Ave.
  Batavia, NY 14020
  (716) 343-2362
  Arthur Hanson, District Conservationist
  March 8, 1989
  - irrigation and agricultural land information

- Erie County Soil and Water Conservation District
  21 South Grove St.
  East Aurora, NY 14052
  (716) 652-8480
  John R. Whitney, District Conservationist and Thomas Bielli
  March 8, 1989
  - irrigation and agricultural information, and aerial photographs

- NYSDEC - Region 8, Fish and Wildlife Division
  6274 East Avon-Lima Rd.
  Avon, NY 14414
  (716) 226-2466
  Kathy Kirsch, Fish and Wildlife Technician
  March 8, 1989
  - wetland, critical habitat and endangered species information

- Town of Newstead, NY
  Newstead Town Hall
  P. O. Box 227
  Akron, NY 14001
  (716) 542-4573
  Carole D. Borchert, Town Clerk and
  Donald D. Folger, Building and Fire Inspector
  March 9, 1989 and March 21, 1989
  - source of water information and fire/explosion threat information

- Town of Alden, NY
  Town Hall
  11901 Broadway
  Alden, NY 14004
  (716) 937-9286
  Rose Armitage, Town Accountant
  March 9, 1989
  - source of water information

- Town of Pembroke, NY
  1145 Main Rd.
  Corfu, NY 14037
  (716) 599-4892
  Doreen Gross, Town Clerk
  March 9, 1989
  - source of water information

- Village of Corfu, NY
  116 E. Main St.
  P. O. Box 52
  Corfu, NY 14036
  (716) 599-3327
  Carol A. Duckworth, Village Clerk-Treasurer
  March 9, 1989
  - source of water information

- Town of Darien, NY
  10631 Allegany Rd.
  Darien Center, NY 14040
  (716) 547-3512
  Jennie Kershenski, Town Clerk
  March 10, 1989
  - source of water information

- University of Buffalo - Science and Engineering Library
  Amherst Campus
  Amherst, NY
  (716) 636-2946
  March 17 and 23, 1989
  - USGS topographic maps, geological and hydrogeological information

- Buffalo and Erie County Public Library
  Lafayette Square
  Buffalo, NY
  (716) 846-7101
  March 25, 1989
  - geological and hydrogeological information, 1980 Census of Population figures and climatological information

- New York State Museum and Science Service
  Albany, NY
  (518) 474-3505
  - geological maps

In addition to obtaining information from available literature and the data sources delineated above, Recra personnel conducted an inspection of the site on November 2, 1988. The inspection was conducted so as to identify

the present conditions of the site. During the inspection, an air monitoring survey was performed utilizing a photoionization analyzer to determine the presence of volatile emissions. No organic vapors exceeding background were detected.

4.0 SITE ASSESSMENT

4.1 Site History

The Sleepy Hollow Campgrounds site is currently owned and operated by Anthony Latello and Mario Latello of Lancaster, New York, under the name of LV & L Resort Corp. The property was purchased by the Latellos from Feitshans and Mauer Trucking, Inc. in 1976 (Ref. 9, pg. R57 and 28, pg. R128-R130).

Aerial photographs taken from 1938 through 1985 indicate the progression of the site property from undeveloped land to its current use as a campground. The 1938 photograph shows the site consisted predominantly of wooded and agricultural lands. By 1959 clearing of the property had occurred for campsites and a narrow, elongated lake is evident in the location of the present-day Sleepy Hollow Lake. The 1978 photograph illustrates that site development continued to include enlargement of the lake and installation of roadways throughout the site. A fairly large area of disturbed land is evident along the eastern side of the lake, adjacent to the site boundary. Active use of the property as a campground occurred by this time. With the exception of vegetative growth over the former disturbed area, the 1985 photograph does not indicate much, if any, change to the site (Ref. 29, pg. R131-R134).

In the early 1970s, Feitshans and Mauer Trucking, Inc. transported and disposed of numerous 55-gallon drums of waste materials at the site. The wastes included oils, solvents, adhesives and other liquids and sludges generated by the F. N. Burt Company, Inc. of Buffalo, New York (Ref. 9, pg. R57).

The Erie County Department of Environment and Planning (ECDEP) investigated the site in June 1981 upon receipt of a complaint concerning drums at the facility. Approximately 50 to 60 drums full of wastes were found in the vicinity of Sleepy Hollow Lake and Siehl Road (the southern portion of the site). The waste material was described as glue or adhesive and waste oil generated by F. N. Burt Company. The drums were leaking and wastes were reported on the ground surface. Vegetation in the area was discolored. Approximately 100 additional, but empty, drums were also reported on-site at this time. Shortly thereafter, the drummed wastes were removed by Latello, the site owner, to a private address. Latello was charged by the NYSDEC for storage and transportation without a permit. The drums were subsequently disposed of at Frontier Chemical Services in Niagara Falls, New York under supervision of the NYSDEC (Ref. 10, pg. R69-R70).

During a site inspection conducted by the NYSDEC in May 1985, several additional drums in various stages of deterioration were reported in the swampy area north of the lake. Wastes were observed leaking from the drums. Chemical analyses performed on three waste samples detected several volatile organic compounds including, but not limited to, toluene, chlorobenzene and methylene chloride (Ref. 4, pg. R33 and 11, pg. R74-R79). (Further discussion of the waste sampling program and analytical results is presented in Section 4.4 on the Site Contamination Assessment.) A consent order was filed by the NYSDEC for the removal and proper disposal of those drums containing wastes as well as nearby contaminated soil. The consent order was executed by the Latellos and F.N. Burt Company in October 1986 (Ref. 9, pg. R63, R65-R66).

In November 1986, a total of 17 drums of waste and 13 drums of contaminated

soil were removed from the site under supervision of the NYSDEC. At this time, November 1986, ten additional drums of unknown material were reported near the on-site maintenance building, as well as an estimated 100 empty drums which were previously reported by the ECDEP (Ref. 13, Pg. R87). These drums have not been removed and were also observed during the site inspection conducted as part of this Phase I Investigation (Ref. 21, pg. R106-R110). In addition to the drums, during the Phase I site visit fuel tanks were observed behind the garage. One above-ground tank was reported to contain diesel fuel and one underground tank was reported to contain gasoline (Ref. 21, pg. R106-R110).

4.2 SITE CHARACTERISTICS

4.2.1 Environmental Setting

The site is located on the north side of Siehl Road in the extreme southeastern corner of the Town of Newstead, Erie County, New York. The estimated 104-acre site lies roughly midway between the Villages of Akron and Alden, and is less than ¼ mile west of the Genesee County border. The location lies approximately 17 miles east of the City of Buffalo, New York. Site coordinates are N42° 57' 30" latitude and W78° 28' 09" longitude (Ref. 20, pg. R105; 28, pg. R128, R129; and 30, pg. R136).

The facility is situated in a sparsely-populated, rural, residential and agricultural area. The nearest major population center is the Village of Corfu (population 689) which is located approximately 2.7 miles to the east (Ref. 31, pg. R138). A number of residences are located in proximity to the site with the closest being about 500 feet to the southeast along Siehl Road. Active farmland is also in the vicinity, including corn and

barley fields (Ref. 20, pg. R105 and 22, pg. R111).

The site is partially wooded and generally covered with grass and weeds. A long and narrow lake (Sleepy Hollow Lake) extends along the eastern site boundary. Several small buildings are located on-site, including a maintenance building, office and store, a restaurant and others. Small, gravel-covered and paved roadways accessing the campgrounds transect the site. Although use of the facility is seasonal, several camper units remain at the site year-round. Numerous, predominantly empty drums remain on-site. Various other waste debris including tires, scrap metal and construction materials were also observed. Although a lockable gate exists at the road entrance to the campground, the site is not fenced and is easily accessible (Ref. 21, pg. R106-R110).

4.2.2 Topography and Drainage

The site topography and that of the surrounding area is relatively flat-lying. Surface elevations at the site range from about 830 feet to 850 feet above mean sea level. The site slopes at approximately 0.5% to the northwest. Surface water runoff drains predominantly in this direction. Sleepy Hollow Lake drains into the swampy area to the north. This area is then drained by small tributaries of Ellicott Creek which lies approximately 6 or more miles downstream. Ellicott Creek eventually discharges into the Niagara River at a location north of Buffalo, New York (Ref. 20, pg. R105 and 30, pg. R136). Several Class II NYSDEC-regulated freshwater wetlands, which by classification provide important wetland benefits, lie in proximity to the site (Ref. 24, pg. R114; 26, R120; and 32, pg. R140).

4.3 SITE HYDROGEOLOGY

4.3.1 Geology

The Sleepy Hollow Campgrounds site is situated in the extreme western portion of the Erie-Ontario Lowlands physiographic province. This province consists of relatively low, flat-lying areas which rise gently to the east and south from Lake Erie and Lake Ontario, respectively. The land relief has been altered by glacial deposition which formed drumlins, recessional moraines and shoreline deposits, and also by karst features including sinkholes and swallets (Ref. 2, pg. R15-R17 and 33, pg. R143).

Regional geologic mapping indicates that bedrock underlying the site consists of Middle Devonian shale and limestone of the Hamilton Group. The site lies on the contact between the Skaneateles Formation and older rocks of the Marcellus Formation. The site lies just south of the contact with the older marine deposits of the Onondaga Limestone. The Onondaga Formation is a nearly flat-lying, massive, cherty and argillaceous limestone ranging in thickness from about 25 to 140 feet. These sedimentary rocks of Paleozoic age trend east-west, dipping gently to the south-southwest at approximately 40 feet/mile (Ref. 2, pg. R15 and 34, pg. R145-R146).

Surficial geologic mapping indicates the site is underlain by glaciolacustrine beach deposits consisting of well-sorted sand and gravel sediments deposited at a lake shoreline. The unit is generally stratified, permeable and well drained. Unit thickness generally varies in the area from about 1 to 15 feet. Also occurring in the vicinity of the site are deposits of lacustrine silt and clay which were formed in proglacial lakes.

These units are generally laminated and about 3 to 15 feet thick. A large amount of till morainal deposits also occur in the area. These sediments were deposited adjacent to the glacial ice and are generally better sorted and more permeable than till. Some till is also mapped in the area although not to a great extent. Till deposits are typically variably textured, poorly sorted and relatively impermeable. The till unit is generally not very thick in the area, with underlying bedrock frequently within 10 feet of ground surface (Ref. 2, pg. R15-R17 and 35, pg. R148-R151).

4.3.2 Groundwater

Groundwater largely occurs in the voids of the Onondaga Limestone which have been enlarged by dissolution. This secondary porosity includes bedding planes, vertical joints, and fractures, particularly those occurring within the upper 5 to 15 feet of the formation. Depth to water is commonly within 30 feet of ground surface, and frequently much less. Well yields range from 3 to 100 gallons per minute (gpm) and average 20 gpm. Groundwater is also found in the pore spaces of the unconsolidated overburden sediments, particularly glacial outwash and lacustrine sand and gravel deposits, as well as morainal sand deposits. The water-bearing unconsolidated units are generally thin with a saturated thickness ranging from 10 to 25 feet. Most of the population in the area utilize the underlying Onondaga Limestone as a source of water because it tends to be more productive. Regional groundwater flow is generally to the west, from the areas of higher elevation in the eastern portion of the Erie-Niagara Basin to lower topographic areas in the west, with eventual discharge to Lake Erie or the Niagara River. Locally, mapping indicates groundwater flow in a northwesterly direction from the site. Although relatively

impermeable lodgement till and lacustrine silt and clay units reportedly can act locally as confining layers, they are not considered continuous within the entire 3-mile radius of the site. In addition, hydrogeologic investigations conducted in an area to the west of the site report a significant downward vertical gradient in the overburden and indicate groundwater movement both laterally and downward to the underlying Onondaga Limestone. Therefore, for purposes of HRS scoring, the bedrock and overburden units are collectively considered the aquifer of concern (Ref. 1, pg. R-3-R10 and 2, pg. R18-R30).

4.4 SITE CONTAMINATION ASSESSMENT

4.4.1 Waste Quantity and Type

During a site inspection conducted by the Erie County Department of Environment and Planning (ECDEP) in 1981, approximately 50 to 60 drums of wastes (described as glue or adhesive and waste oil) were reported. In addition, approximately 100 empty drums were observed on-site at this time (Ref. 10, pg. R69).

Subsequently, during a site inspection by the NYSDEC in 1985, additional drums containing wastes were observed. The contents of the drums varied, but were generally described as consisting of liquids and sludges frequently having a solvent odor. Others were described as containing a glue-like substance or motor oil (Ref. 4, pg. R33). The drums were rusted, leaking and generally in poor condition. As a result, a total of 17 drums of waste and 13 drums of contaminated soil were removed from the site in 1986 under the supervision of the NYSDEC (Ref.13, pg. R87). An additional 10 full or partially-full drums of unidentified material were observed at

this time and currently remain on-site (as well as numerous empty drums). Waste quantities were computed for the HRS score using only those drums reported as containing waste material; the empty drums were not included in the estimate since their contents, if any, are not known.

4.4.2 Previous Sampling and Analysis

On May 24, 1985 the NYSDEC collected waste samples from 3 of the drums discovered in the swampy area north of the lake. Chemical analyses performed by ERCO, a division of ENSECO, detected the following volatile organic compounds (concentrations represent the highest detected for all 3 samples): toluene (650,000 ppm); m- and p-xylene (110,000 ppm); o-xylene (45,000 ppm); ethyl benzene (28,000 ppm); chlorobenzene (1,300 ppm); trichloroethylene (800 ppm); methylene chloride (110 ppm); tetrachloroethylene (39 ppm); and, 1,2-dichloroethane (6.9 ppm) (Ref.11, pg. R74-R79). High concentrations of toluene were reported in all 3 samples.

No groundwater or surface water sampling has been conducted at the site.

4.4.3 Groundwater Quality

Groundwater contamination from the site potentially exists and is of major concern. With the exception of a few residences within and near the Village of Corfu, and a few located along Route 5 near the Village of Akron, the entire population within a 3-mile radius of the site is served by private wells. This computes to an estimated 1,098 persons who do not have an alternate, unthreatened source of potable water presently available. Although there are no wells serving community municipal water systems in the immediate area, the Village of Corfu municipal water well lies just outside of the 3-mile radius (Ref. 14, pg. R89-R92; 15, pg.

R93-R94; 16, pg. R96; 17, pg. R99; 18, pg. R101; 19, pg. R103; and 20, pg. R105).

4.4.4 Surface Water Quality

A total of 17 drums containing hazardous waste materials were observed in the swampy area in the northern portion of the site. The drums were in various stages of deterioration and some were leaking wastes, thereby constituting an observed release for HRS scoring (Ref. 4, pg. R33 and 13, pg. R87). The swampy area drains into unnamed tributaries of Ellicott Creek, which are NYSDEC-designated Class "C" surface waters (water quality standards allow them to be suitable for primary and secondary contact recreation, including fishing). There are no known surface water intakes for drinking water or irrigation within 3 miles downstream from the site (Ref. 20, pg. R105; 22, pg. R111; 23, pg. R113; 24, pg. R114; and 25, pg. R119).

4.4.5 Air Quality

As part of this Phase I Investigation, preliminary air monitoring was conducted during the site inspection. A Century OVA-128GC instrument was used for detecting organic vapors in the breathing zone. No measurements exceeding background were detected. No major population centers are situated in the site vicinity (Ref. 20, pg. R105).

4.4.6 Soil Contamination

During the NYSDEC-supervised drum-removal program conducted at the site in 1986, a total of 13 drums of contaminated soil were also removed at this time. The excavation area was restricted to the swamp in the northern por-

tion of the site. Further soil contamination, both in the swampy area and in the southern portion of the site (ECDEP drum-discovery area) potentially exists (Ref. 13, pg. R87; and 10, pg. R69-R71). There is a lockable gate at the Siehl Road entrance to the site; however, the site is not fenced.

5.0 PRELIMINARY APPLICATION OF THE HAZARD RANKING SYSTEM

5.1 Narrative

Sleepy Hollow Campgrounds
Siehl Road
Town of Newstead, Erie County, New York

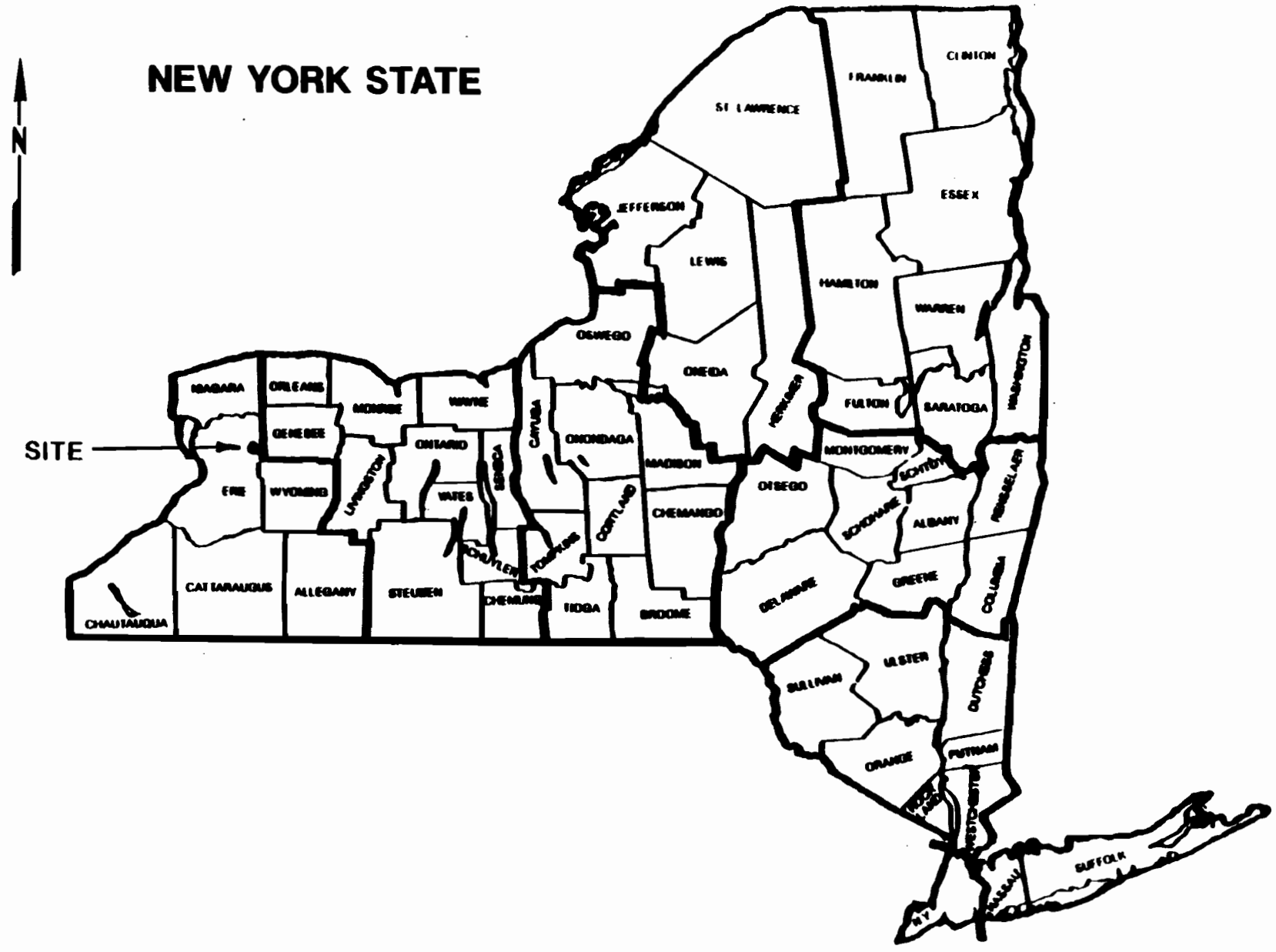
The Sleepy Hollow Campgrounds site covers approximately 104 acres in the Town of Newstead, Erie County, New York. Feitshans and Mauer Trucking, Inc. owned and operated the campground at the site until 1976, when Anthony and Mario Latello of Lancaster, New York purchased the property. The Latellos continued the operations of the campground.

In the early 1970s, Feitshans disposed of numerous drums containing waste solvents and adhesives generated by F.N. Burt Company, Inc. of Buffalo, New York at the site. The NYSDEC collected three waste samples in May 1985. Chemical analytical data indicate the presence of several volatile organic compounds including methylene chloride, trichloroethylene, toluene and others. No groundwater or surface water sampling has been conducted at the site. Potential groundwater contamination is of major concern because the majority of the population within a 3-mile radius of the site is served by private wells as the sole source of potable water. Surface water contamination is also of concern since wastes were observed leaking into the swampy area in the northern portion of the site which drains into NYSDEC-designated Class "C" surface waters.

A consent order was filed by the NYSDEC in 1986 for the removal and proper disposal of drummed wastes at the site. Although several drums of waste and contaminated soil were removed in 1986, about 10 additional drums of unidentified material currently remain on-site.

SECTION 5.2

LOCATION



SCALE: N.T.S.		
	BY	DATE
DWN.	G.L.S.	4/89
CKD.	[illegible]	4/89
APPVD.	ZAC	5/7/89
REV.		

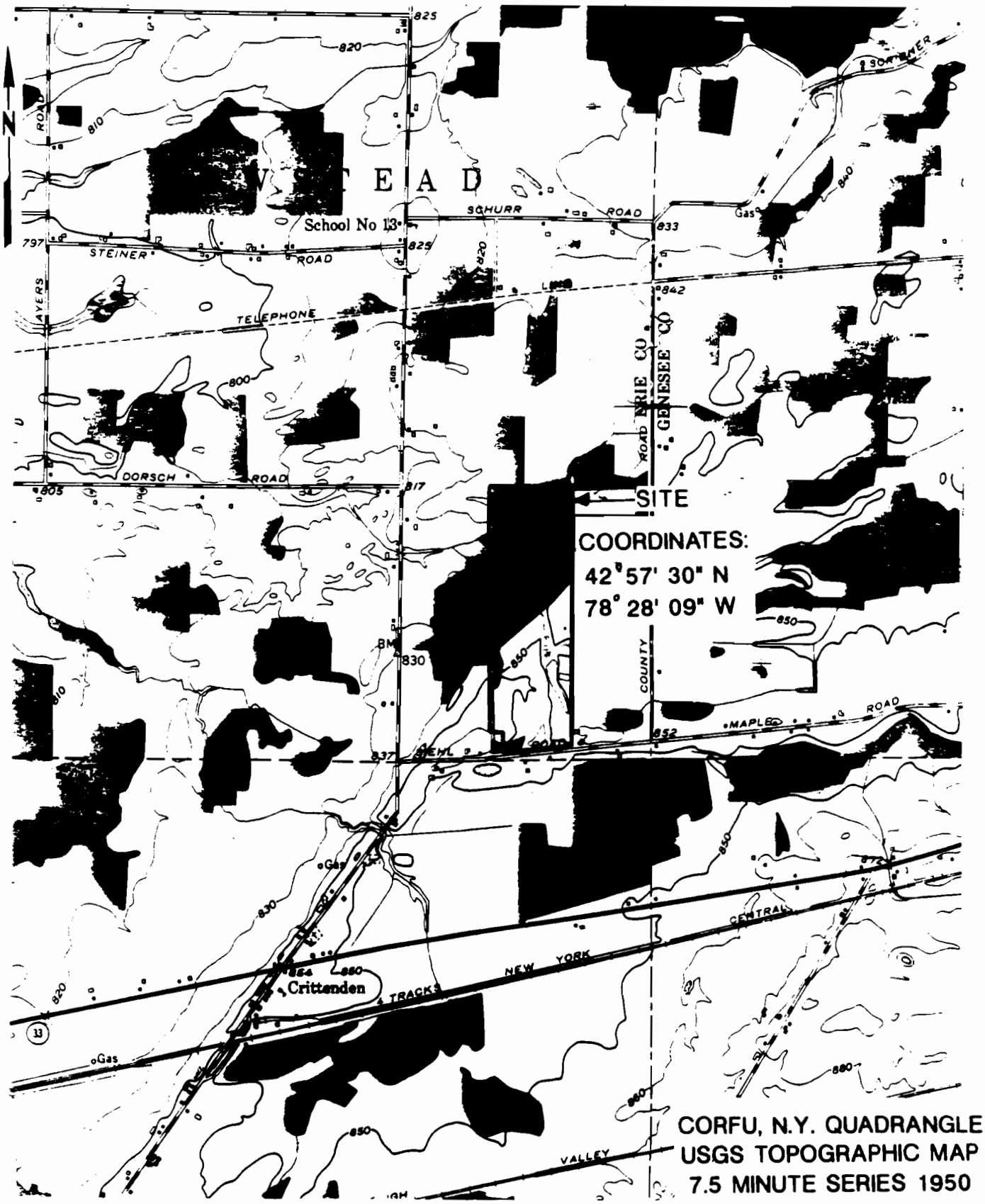
Recra Environmental, Inc.

NYSDEC
SUPERFUND PHASE I INVESTIGATION
SLEEPY HOLLOW CAMPGROUNDS
SITE NO. 915136

PROJECT NO: 8C1301BB

SITE LOCATION MAP

FIGURE 1-1 | **A**



SCALE: 1:24,000		
	BY	DATE
DWN.	G.L.S.	4/89
CKD.	[illegible]	4/89
APPVD	RAC	5/2/89
REV.		

NYSDEC SUPERFUND PHASE I INVESTIGATION SLEEPY HOLLOW CAMPGROUNDS SITE NO. 915136

PROJECT NO. 8C1301BB

SITE VICINITY MAP

A | FIGURE 1-2

Facility name: Sleepy Hollow Campgrounds

Location: Siehl Road - Town of Newstead, Erie County, New York

EPA Region: II

Person(s) in charge of the facility: Anthony Latello and Mario Latello
146 Sheldon Avenue
Lancaster, New York 14086

Name of Reviewer: Linda Clarke, REI **Date:** April 3, 1989

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 104 acre site is the location of an active campground at which numerous drums of waste solvents, oils, adhesives and other liquids and sludges were disposed of on the ground surface. Chemical analyses performed on waste samples detected several volatile organic compounds. No groundwater or surface water sampling has been conducted at the site. Potential groundwater contamination is of major concern because private wells are used by the majority of the population in the area. Potential surface water contamination of tributaries of Ellicott Creek and on-site Sleepy Hollow Lake, which are used for recreation.

Scores: S_M = 26.96 (S_{gw} = 45.10 S_{sw} = 11.89 S_a = 0.00)

S_{FE} = N.S.

S_{DC} = 25.00

FIGURE 1
HRS COVER SHEET

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	3.1
If observed release is given a score of 45, proceed to line 4 If observed release is given a score of 0, proceed to line 2					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 (3)	2	6	6	
Net Precipitation	0 1 (2) 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 (2) 3	1	2	3	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			13	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	15	18	
Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8	1	2	8	
Total Waste Characteristics Score			17	26	
5 Targets					3.5
Ground Water Use	0 1 2 (3)	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 (30) 32 35 40	1	30	40	
Total Targets Score			39	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			25,857	57,330	
7 Divide line 6 by 57,330 and multiply by 100	S_{gw} = 45.10				

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet

	Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1	Observed Release	0 (45)	1	45	45	4.1
	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					4.2
	Facility Slope and Intervening Terrain	0 1 2 3	1		3	
	1-yr. 24-hr. Rainfall	0 1 2 3	1		3	
	Distance to Nearest Surface Water	0 1 2 3	2		6	
	Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score				15	
3	Containment	0 1 2 3	1		3	4.3
4	Waste Characteristics					4.4
	Toxicity/Persistence	0 3 6 9 12 (15) 18	1	15	18	
	Hazardous Waste Quantity	0 1 (2) 3 4 5 6 7 8	1	2	8	
	Total Waste Characteristics Score			17	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			7,650	64,350	
7	Divide line 6 by 64,350 and multiply by 100			S_{sw} = 11.89		

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line 1 is 0, the S_a = 0. Enter on line 5. If line 1 is 45, then proceed to line 2.					
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
Total Targets Score				39	
4 Multiply 1 x 2 x 3				35,100	
5 Divide line 4 by 35,100 and multiply by 100			S_a = 0.00		

FIGURE 9
AIR ROUTE WORK SHEET

	S	S^2
Groundwater Route Score (S_{gw})	45.10	2,034.01
Surface Water Route Score (S_{sw})	11.89	141.37
Air Route Score (S_a)	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$		2,175.38
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		46.64
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		26.96

FIGURE 10
WORKSHEET FOR COMPUTING S_M

NO DOCUMENTED FIRE OR EXPLOSION THREAT.

Fire and Explosion Work Sheet

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

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet

	Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1	Observed Incident	(0) 45	1	0	45	8.1
	If 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	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	8	20	
	Distance to a Critical Habitat	(0) 1 2 3 4 5	4	0	12	
	Total Targets Score			8	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			5,400	21,600	
7	Divide line 6 by 21,600 and multiply by 100	S_{DC} = 25.00				

FIGURE 12
DIRECT CONTACT WORK SHEET

5.4 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: Sleepy Hollow Campgrounds (FEITSHANS)

LOCATION: Siehl Road, Town of Newstead, Erie County, New York

DATE: March 1989

PERSON SCORING: Linda Clark

PRIMARY SOURCE(S) OF INFORMATION (e.g. EPA Regions, State, FIT, etc.):

NYSDEC Region 9 and Albany; NYSDOH - Albany; ECDEP; USEPA Region II

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

COMMENTS OR QUALIFICATIONS:

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

No groundwater sampling has been conducted at the site.

Rationale for attributing the contaminants to the facility:

N/A

Assigned Value = 0

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Groundwater largely occurs within the fractures, solution openings and along bedding planes of the Middle Devonian Onondaga Limestone, and to a lesser extent within the pore spaces of the unconsolidated overburden sediments (primarily glacio-lacustrine beach and glacial moraine deposits of sand and gravel). Collectively, these units are considered the aquifer of concern.
(Ref. 1, pg. R3-R10; and 2, pg. R18-R30)

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

Known highest level occurs at a depth of 4.5 feet below ground surface.
(Ref. 2, pg. R18-R30)

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

Wastes were observed on ground surface and drummed waste reportedly disposed of in swamp area. Depths of subsurface wastes are not known; therefore, allowable depth of 6 feet is assumed.
(Ref. 3, pg. R32 and 4, pg. R33)

Assigned Value = 3

Net Precipitation

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

33.00 inches mean annual precipitation
(Ref. 5, pg. R35 and 6, pg. R37)

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

26.8 inches mean annual lake evaporation
(Ref. 5, pg. R35 and 6, pg. R39)

Net precipitation (subtract the above figures):

6.2 inches

Assigned Value = 2

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

On-site soils consist of Palms muck (Pa) which is typically underlain by clay loam to fine sand loam; Pu which has a high sand and gravel content (generally moderately high to high permeability); and various silty loams to fine gravelly loams (primarily located in the northern portion of the site).
(Ref. 7, pg. R43-R45, R51-R52)

Permeability associated with soil type:

Approximately 10^{-4} to 10^{-5}
(Ref. 5, pg. R35)

Assigned Value = 2

Physical State

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

Liquids and sludges
(Ref. 8, pg. R53 and 9, pg. R57)

Assigned Value = 3

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Drums were observed on the unlined ground surface. Drums were rusted and in unsound condition, many reportedly leaking their contents.
(Ref 4, pg. R33 and 10, pg. R70)

Method with highest score:

Containers - leaking, no liner.

Assigned Value = 3

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Methylene chloride, trichloroethylene, tetrachloroethylene, chlorobenzene, toluene, ethyl benzene, xylene (o, m and p), and 1,2-dichloroethane.
(Ref. 8, pg. R53 and 11, pg. R74-R79)

Compound with highest score:

Methylene chloride and trichloroethylene.
(Ref. 5, pg. R35 and 12, pg. R81-R86)

	Toxicity	Persistence	Matrix Value
methylene chloride	3	2	15
trichloroethylene	3	2	15
tetrachloroethylene	3	1	12
chlorobenzene	2	2	12
toluene	2	1	9
ethyl benzene	2	1	9
xylene	2	1	9
1,2-dichloroethane	2	1	9

Assigned Value = 15

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):

Minimum of 100 drums (represents quantity known to have been present).
(Ref. 4, pg. R33; 10, pg. R70; and 13, pg. R87)

Basis of estimating and/or computing waste quantity:

Approximately 50 to 60 drums of wastes were reported at the site by the ECDEP in 1981 and subsequently removed. A total of 17 additional drums of waste material and 13 drums of soil were reportedly removed from the site in November 1986. An additional 10 drums (full or partially full) were observed at this time, and remain on-site. (Approximately 100 additional crushed and empty drums were observed in swamp area - former contents, if any, are unknown; therefore, these drums were not computed in waste quantity).
(Ref. 4, pg. R33; 10, pg. R70; and 13, pg. R87)

Assigned Value = 2

5 TARGETS

Ground Water Use

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

Drinking water (private wells) with no municipal water presently available
(Ref. 14, pg. R89-R92; 15, pg. R93-R94; 16, pg. R96; 17, pg. R99; 18, pg. R101; and 19, pg. R103)

Assigned Value = 3

Distance to Nearest Well

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

The nearest well serves a residence located just east of the site on Siehl Road. Depth of well is unknown. (There are also private wells located on-site; however, their use is seasonal).
(Ref. 15, pg. R94; 20, pg. R105; and 21, pg. R106-R110)

Distance to above well or building:

Approximately 500 feet to the southeast
(Ref. 20, pg. R105)

(value = 4)

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:

Private wells provide a sole source of potable water to the entire population within a 3-mile radius of the site, with the following exceptions:

- o Town of Newstead - 23 units x 3.8 persons/unit = 87 persons
- o Town of Pembroke - 30 units x 3.8 persons/unit = 114 persons
- o Village of Corfu - 9 units x 3.8 persons/unit = 34 persons

Remaining population of Towns of Newstead, Pembroke, Darien and Alden served by private wells within specified distance - 289 units x 3.8 persons/unit = 1,098 persons (Village of Corfu municipal well lies outside 3-mile radius)

(Ref. 14, pg, R89-R92; 15, pg. R93-R94; 16, pg. R96; 17, pg. R99; 18, pg. R101; 19, pg. R103; and 20, pg. R105)

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):

No known irrigation from wells within specified distance.
(Ref. 22, pg. R111; and 23, pg. R113)

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

1,098 persons

(value = 3)
Assigned Value = 30

* * *

SURFACE WATER ROUTE

1 OBSERVED RELEASE

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

Methylene chloride, trichloroethylene, tetrachloroethylene, chlorobenzene and toluene.
(Ref. 8, R53; and 11, pg. R74-R79)

Rationale for attributing the contaminants to the facility:

No surface water sampling conducted at the site; however, wastes (from leaking drums) were observed in swamp area located at north end of Sleepy Hollow Lake. Analytical results from waste sampling conducted in May 1985 confirm presence of above-cited contaminants.
(Ref. 4, pg. R33; 8, pg. R53; 11, pg. R74-R79; and 13, pg. 87)

Assigned Value = 45

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

Approximately 0.5% slope to the northwest.
(Ref. 20, pg. R105)

Name/description of nearest downslope surface water:

Sleepy Hollow Lake is located on-site. The lake drains into wetlands to the north and unnamed tributaries of Ellicott Creek.
(Ref. 20, pg. R105; and 21, pg. R106-R110)

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

Surface water body is located on-site; facility slope is approximately 0.5% to the northwest.
(Ref. 20, pg. R105; and 21, pg. R106-R110)

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

Yes; Sleepy Hollow Lake is located on-site.
Ref. 20, pg. R105; and 21, pg. R106-R110)

Is the facility completely surrounded by areas of higher elevation?

No, the surrounding area is relatively flat-lying
(Ref. 20, pg. R105; and 21, pg. R106-R110)

Assigned Value = 3

1-Year 24-Hour Rainfall in Inches

2.1 inches
(Ref. 5, pg. R35; and 6, pg. R36)

Assigned Value = 2

Distance to Nearest Downslope Surface Water

Sleepy Hollow Lake is located on-site. Unnamed tributaries of Ellicott Creek lie adjacent to the site. Ellicott Creek lies approximately 6+ stream miles from the site
(Ref. 20, pg. R105; and 21, pg. R106-R110)

Assigned Value = 3

Physical State of Waste

Liquid and sludges
(Ref. 8, pg. R53; and 9, pg. R57)

Assigned Value = 3

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Drums are rusted and in unsound condition, some reportedly leaking their contents into on-site surface water. No diversion or containment structures present
(Ref. 4, pg. R33; 10, pg. R70; 13, pg. R87; and 21, pg. R106-R110)

Method with highest score:

Containers - leaking, no diversion or containment structures present.

Assigned Value = 3

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Methylene chloride, trichloroethylene, tetrachloroethylene, chlorobenzene, toluene, ethyl benzene, xylene (o, m and p), and 1,2-dichloroethane.
(Ref. 8, pg. R53; and 11, pg. R74-R79)

Compound with highest score:

Methylene chloride and trichloroethylene
(Ref. 5, pg. R35; and 11, pg. R74-R79)

	Toxicity	Persistence	Matrix Value
methylene chloride	3	2	15
trichloroethylene	3	2	15
tetrachlorethylene	3	1	12
chlorobenzene	2	2	12
toluene	2	1	9
ethyl benzene	2	1	9
xylene	2	1	9
1,2-dichloroethane	2	1	9

Assigned Value = 15

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):

Minimum of 100 drums (represents quantity known to have been present).
(Ref. 4, pg. R33; 10, pg. R70; and 13, pg. R87)

Basis of estimating and/or computing waste quantity:

Approximately 50 to 60 drums of wastes were reported at the site by the ECDEP in 1981 and subsequently removed. A total of 17 additional drums of waste material and 13 drums of soil were reportedly removed from the site in November 1986. An additional 10 drums (full or partially full) were observed at this time, and remain on-site. (Approximately 100 additional crushed and empty drums were observed in swamp area - former contents, if any, are unknown; therefore, these drums were not computed in waste quantity.)
(Ref. 4, pg. R33; 10, pg. R70; and 13, pg. R87)

Assigned Value = 2

5 TARGETS

Surface Water Use

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

Surface water in the vicinity of the site is NYSDEC-designated Class "C" waters, which includes waters suitable for primary and secondard contact recreation, including fishing (in terms of water quality standards).
(Ref. 24, pg. R114; and 25, pg. R119)

Assigned Value = 2

Is there tidal influence?

No tidal influence on the site
(Ref. 20, pg. R105)

Distance to a Sensitive Environment

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

No coastal wetlands within 2 miles.
(Ref. 20, pg. R105; 24, pg. R114; and 26, pg. 120)

(value = 0)

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

Approximately 1,000 feet to the south to NYSDEC-regulated Class II wetland CR-16.
(Ref. 24, pg. R114; and 26, pg. R120)

(value = 2)

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

None within one mile.
(Ref. 24, pg. R114; and 26, pg. R120

(value = 0)

Assigned Value = 2

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:

No surface water intakes within the specified distance downstream from the site
(Ref. 14, pg. R89-R92; and 24, pg. R114)

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

No known irrigation of land by surface water intakes within the specified distance.
(Ref. 22, pg. R111; 23, pg. R113; and 24, pg. R114)

Total population served:

0 (zero)

Name/description of nearest of above water bodies:

N/A

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

N/A

Assigned Value = 0

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

As part of this investigation, preliminary air monitoring was conducted using a Century OVA-128 GC instrument. No organic vapors exceeding background were detected.
(Ref. 21, pg. R106-R110)

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

Assigned Value = 0

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

methylene chloride
(Ref. 5, pg. R35; 11, pg. R74-R79; 12, pg. R81-R86)

(value = 1)

Most incompatible pair of compounds:

None known to be present
(Ref. 5, pg. R35; 11, pg. R74-R79; and 12, pg. R81-R86)

(value = 0)

Assigned Value = 1

Toxicity

Most toxic compound:

methylene chloride, trichloroethylene and tetrachloroethylene
(Ref. 5, pg. R35; 11, pg. R74-R79; and 12, pg. R81-R86)

Assigned Value = 3

Hazardous Waste Quantity

Total quantity of hazardous waste:

Minimum of 100 drums (represents quantity known to have been present).
(Ref. 4, pg. R33; 10, pg. R70; and 13, pg. R87)

Basis of estimating and/or computing waste quantity:

Approximately 50 to 60 drums of wastes were reported at the site by the ECDEP is 1981 and subsequently removed. A total of 17 additional drums of waste material and 13 drums of soil were reportedly removed from the site in November 1986. An additional 10 drums (full or partially full) were observed at this time, and remain on-site. (Approximately 100 additional crushed and empty drums were observed in swamp area - former contents, if any, are unknown; therefore, these drums were not computed in waste quantity.)
(Ref. 4, pg. R33; 10, pg. R70; and 13, pg. R87)

Assigned Value = 2

* * *

3 TARGETS

Population Within 4-Mile Radius

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

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

Sleepy Hollow Campground -- 200 sites x 3.8 people/site = 760
Homes within 1/4 mile radius -- 4 homes x 3.8 people/home = 15
Target population 775

(Ref. 20, pg. R105)

Assigned Value = 21

Distance to a Sensitive Environment

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

No coastal wetlands within 2 miles.
(Ref. 20, pg. R105; 24, pg. R114; and 26, pg. R120)
(value = 0)

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

Approximately 1,000 feet to the south to NYSDEC-regulated Class II wetland CR-16.
(Ref. 20, pg. R105; 24, pg. R114; and 26, pg. R120)

(value = 2)

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

None within one mile
(Ref. 20, pg. R105; 24, pg. R114; and 26, pg. R120)

(value = 0)

Assigned Value = 2

Land Use

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

Approximately 900 feet to the north.
(Ref. 20, pg. R105)

(Value = 3)

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

None within 2 miles
(Ref. 20, pg. 105; and 26, pg. R120)

(value = 0)

Distance to residential area, if 2 miles or less:

Residences located along Siehl Road, just south of site; nearest residence is at a distance of approximately 500 feet
(Ref. 20, pg. R105)

(value = 3)

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

Located immediately adjacent to the site, along the eastern site boundary.
(Ref. 22, pg. R111; and 23, pg. R113)

(value = 3)

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

Located immediately adjacent to the site, along the eastern site boundary.
(Ref. 20, pg. R105; and 22, pg. R111)

(value = 3)

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

None known to be within view.
(Ref. 21, pg. R106-R110)

(value = 0)

Assigned Value = 3 (based on distances to commercial area, residential area, agricultural land and prime agricultural land).

FIRE AND EXPLOSION

1 CONTAINMENT

Hazardous substances present:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Type of containment, if applicable:

N/A

Assigned Value = 0

* * *

2 WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

No documented fire or explosion threat. (Ref. 27, pg. R126-127)

Assigned Value = 0

Ignitability

Compound used:

No documented fire or explosion threat. (Ref. 27, pg. R126-R126)

Assigned Value = 0

Reactivity

Most reactive compound:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Incompatibility

Most incompatible pair of compounds:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

* * *

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Basis of estimating and/or computing waste quantity:

N/A

Assigned Value = 0

* * *

3 TARGETS

Distance to Nearest Population

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Distance to Nearest Building

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Distance to Sensitive Environment

Distance to wetlands:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Distance to critical habitat:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Land Use

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

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

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

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Distance to residential area, if 2 miles or less:

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

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

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

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

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

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

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Population Within 2-Mile Radius

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

Buildings Within 2-Mile Radius

No documented fire or explosion threat. (Ref. 27, pg. R126-R127)

Assigned Value = 0

1 OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No known incident

Assigned Value = 0

* * *

2 ACCESSIBILITY

Describe type of barrier(s):

A locked gate exists at the site entrance; however, there is no fence or artificial or natural barrier which completely surrounds the site.
(Ref. 21, pg. R106-R110)

Assigned Value = 3

2 CONTAINMENT

Type of containment, if applicable:

Drums - rusted, holes present and leaking wastes onto ground surface (swamp area).
(Ref. 4, pg. R33; and 10, pg. R70)

Assigned Value = 15

* * *

4 WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Methylene chloride, trichloroethylene, tetrachloroethylene chlorobenzene, toluene, ethyl benzene, xylene (o, m and p), and 1,2-dichloroethane.
(Ref. 8, pg. R53; and 11, pg. R74-R79)

Compound with highest score:

Methylene chloride, trichloroethylene and tetrachloroethylene.
(Ref. 5, pg. R35; and 12, pg. R80-R86)

Assigned Value = 3

5 TARGETS

Population within one-mile radius

Sleepy Hollow Campground --	200 sites x 3.8 people/site =	760
Homes with 1 mile radius	38 x 3.8 people /home =	144
	Target population	904

(Ref. 20, R105)

Distance to critical habitat (of endangered species)

None within one mile

(Ref. 24, pg. R114; and 26, pg. R120)

Assigned Vaue = 0

REFERENCES - DOCUMENTATION RECORDS

		Page
1.	Hydrogeologic Appraisal of Five Selected Aquifers in Erie County, New York, U.S. Geological Survey Water - Resources Investigations Report 84-4334, Todd S. Miller and Ward W. Staubitz, prepared in cooperation with Erie County Department of Environment and Planning, 1985.	R1-R10
2.	Geology and Hydrology of the Onondaga Aquifer in Eastern Erie County, New York, with Emphasis on Groundwater-Level Declines Since 1982, U.S. Geological Survey Water - Resources Investigations Report 86-4317, by Ward W. Staubitz and Todd S. Miller, prepared in cooperation with Erie County Department of Environment and Planning, Towns of Clarence and Newstead, 1987.	R11-R30
3.	Superfund National Priorities List Seminar - EPA Region II, The Mitre Corporation, April 2-3, 1986.	R31-R32
4.	Dennis Farrar - New York State Department of Environmental Conservation Memorandum to File, May 28, 1985.	R33-R34
5.	Uncontrolled Hazardous Waste Site Ranking System - A Users Manual (HW-10), U.S. Environmental Protection Agency, 1984.	R35
6.	Weather Atlas of the United States (originally titled: Climatic Atlas of the United States), U.S. Department of Commerce, June 1986.	R36-R39
7.	Soil Survey of Erie County, New York, U.S. Department of Agriculture, Soil Conservation Service, in Cooperation with the Cornell University Agricultural Experiment Station, December 1986.	R40-R52
8.	Robert N. Leary - New York State Department of Environmental Conservation Memorandum to File, July 30, 1985.	R53-R55
9.	State of New York: Department of Environmental Conservation Order on Consent to F. N. Burt Company, Inc., et.al., executed October 1986.	R56-R66
10.	Feitzhans Report, Erie County Department of Environment and Planning, date unknown.	R67-R73
11.	Volatile Organics Analysis by EPA Methods 601 and 602 Data Report, Erco, 1985.	R74-R79
12.	Dangerous Properties of Industrial Materials - 6th Edition, N. Irving Sax, Van Nostrand Reinhold Company, New York, 1984.	R80-R86

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14.	New York State Atlas of Community Water System Sources, New York State Department of Health - Division of Environmental Protection, Bureau of Public Water Supply Protection, 1982.	R88-R92
15.	Carole D. Borchert, Town Clerk - Town of Newstead, NY letter to Linda J. Clark, Project Geologist - Recra Environmental, Inc., March 16, 1989.	R93-R95
16.	Linda J. Clark, Project Geologist - Recra Environmental, Inc. letter to Carol Duckworth, Village Clerk - Village of Corfu, NY, March 14, 1989.	R96-R98
17.	Linda J. Clark, Project Geologist - Recra Environmental, Inc. letter to Jenny Kershenski, Town Clerk - Town of Darien, NY, March 14, 1989.	R99-R100
18.	Linda J. Clark, Project Geologist - Recra Environmental, Inc. letter to Doreen Gross, Town Clerk - Town of Pembroke, NY, March 14, 1989.	R101-R102
19.	Linda J. Clark, Project Geologist - Recra Environmental, Inc. letter to Rose Armitage, Town Accountant - Town of Alden, NY, March 14, 1989.	R103-R104
20.	U.S.G.S. Topographic Maps - 7.5 Minute Series; Wolcottsville, NY Quadrangle, 1980; Akron, NY Quadrangle, 1981; Corfu, NY Quadrangle, 1950; Clarence, NY Quadrangle, 1965.	R105
21.	Phase I Site Visit, 11/2/89	R106-R110
22.	Art Hanson, District Conservationist - U.S. Department of Agriculture, Genesee County Soil Conservation Service letter to Linda J. Clark, Project Geologist - Recra Environmental, Inc. March 17, 1989.	R111-R112
23.	John R. Whitney, District Conservationist - U.S. Department of Agriculture - Erie County Soil Conservation Service letter to Linda J. Clark, Project Geologist - Recra Environmental, Inc., March 14, 1989.	R113
24.	James K. Pomeroy, Habitat Protection Biologist, New York State Department of Environmental Conservation, letter to Kenneth A. Shisler, Jr., Staff Geologist - Recra Environmental, Inc., December 27, 1988.	R114-R117

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		Page
25.	Water Quality Regulations, Surface Water and Groundwater Classifications and Standards, New York State Codes, Rules, Regulations, Title 6, Chapter X, Parts 700-705, New York State Department of Environmental Conservation, March 31, 1986.	R118-R119
26.	Linda J. Clark, Project Geologist - Recra Environmental, Inc. letter to Kathy Kirsch, Fish and Wildlife Technician - New York State Department of Environmental Conservation, Fish and Wildlife Division, March 9, 1989.	R120-R125
27.	Linda J. Clark, Project Geologist - Recra Environmental, Inc. letter to Donald Folger, Building and Fire Inspector - Town of Newstead, NY, March 22, 1989.	R126-R127

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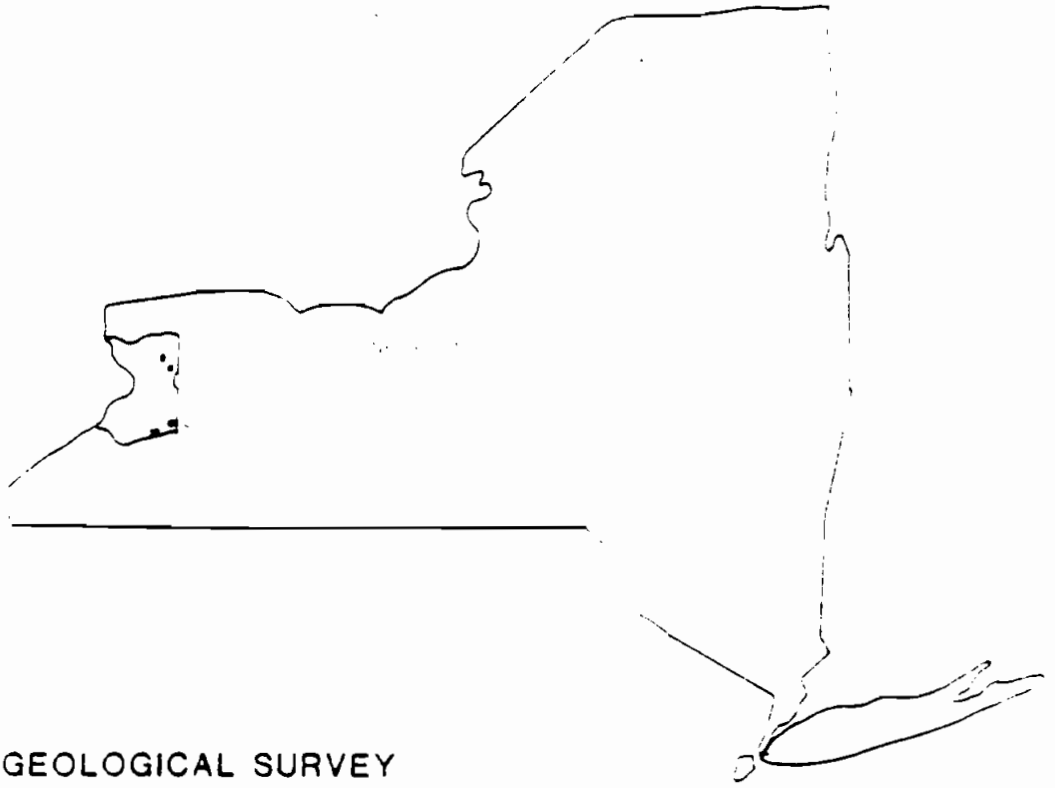
Hydrogeologic Appraisal of Five Selected Aquifers in Erie County, New York



U.S. GEOLOGICAL SURVEY
Water-Resources Investigations
Report 84-4334

Prepared in cooperation with

ERIE COUNTY DEPARTMENT OF
ENVIRONMENT AND PLANNING

HYDROGEOLOGIC APPRAISAL OF FIVE SELECTED AQUIFERS IN ERIE COUNTY, NEW YORK

By Todd S. Miller and Ward W. Staubitz

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 84-4334

Prepared in cooperation with

ERIE COUNTY DEPARTMENT OF ENVIRONMENT AND PLANNING

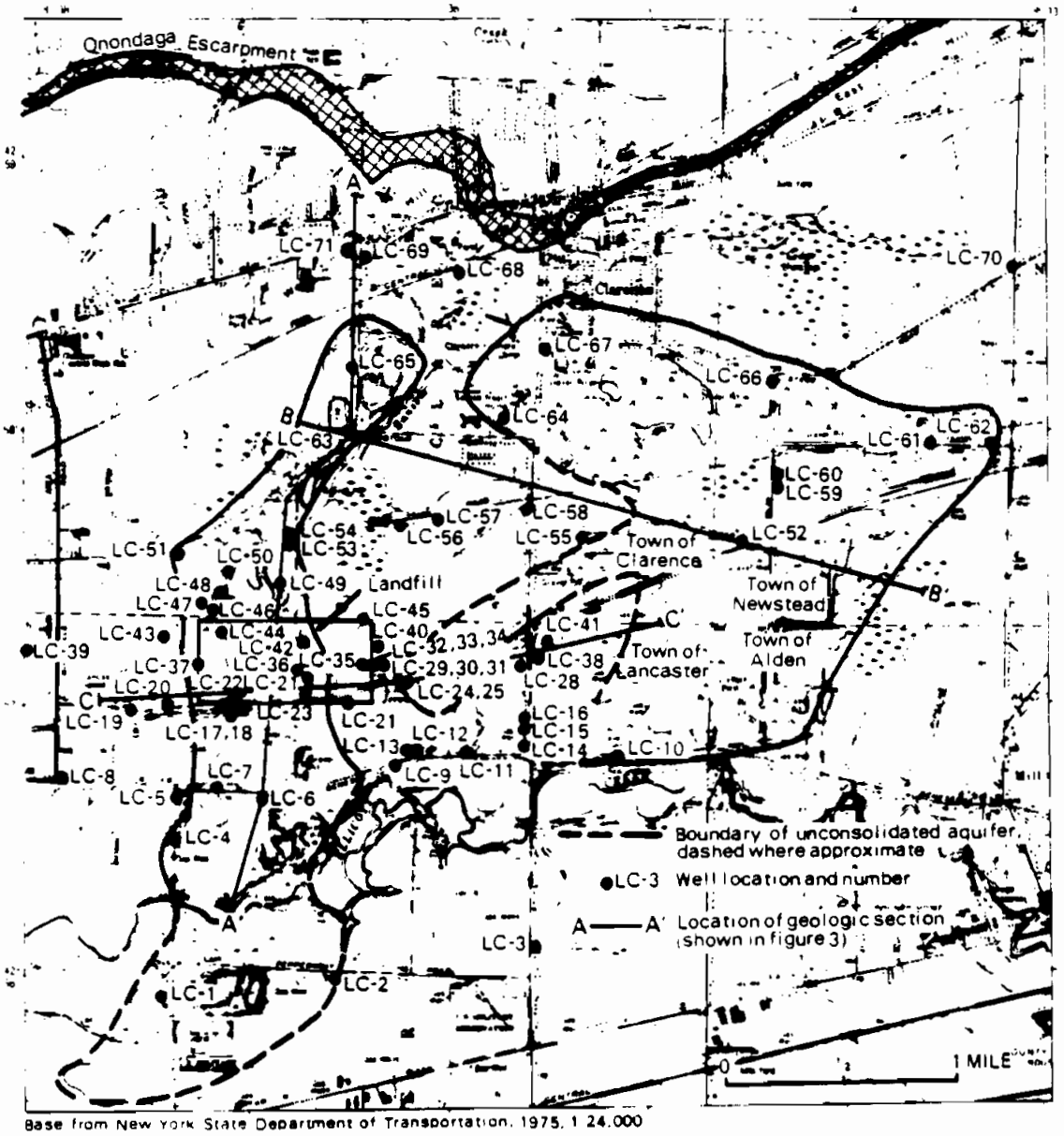
Ithaca, New York

1985

R2

Onondaga Limestone or the sand and gravel deposits as their primary or secondary source. For example, a nursing home in Clarence uses ground water for air conditioning, and many residents use ground water to water lawns. Ground water is the sole source of water for the Town of Newstead.

Ground-water use is not quantified because the number of residences in Clarence and Lancaster that use ground water is unknown, because withdrawals at several commercial facilities and institutions are unmetered, and because use of wells installed in sand and gravel and the underlying bedrock to supplement the public water-supply system is sometimes unreported.



Base from New York State Department of Transportation, 1975, 1:24,000

Figure 2.--Location of wells, landfill, Onondaga Escarpment, and geologic sections in Clarence-Lancaster-Newstead area. (Geologic sections are shown in fig. 3.)

R3

Hydrogeologic Framework

The unconsolidated surficial sand and gravel aquifer underlies parts of the gently westward sloping plain that overlies the Onondaga Limestone, as shown in figure 2. The part of the Onondaga Limestone that was investigated in this study is the part that directly underlies the unconsolidated aquifer.

Unconsolidated Aquifer

Glaciation of the area resulted in the deposition of a variety of sediments on the Onondaga Limestone. In the southwestern and central parts of the area (Muller, 1977), till overlies a poorly defined end moraine (poorly sorted silt, sand, gravel, and boulders that were deposited in front of the glacier) and subglacial or subaqueous outwash (sorted and stratified sand, or sand and gravel deposited by glacial meltwaters at the bottom of grounded ice). Logs of borings along the western side of the aquifer (section A-A', fig. 3) indicate 30 to 45 ft of sand with some gravel between a basal lodgment till 3 to 15 ft thick and an overlying surficial till. Well logs reveal that glacial sediments are thickest (30 to 45 ft) where they fill a buried north-south-trending preglacial valley incised into the Onondaga Limestone. (See section B-B' in fig. 3 and C-C' and the structure-contour map in fig. 4). The extent of the moraine in the center of the area is poorly defined because relatively few borings have been made and because its subdued, low to flat relief makes its extent difficult to trace.

Several borings in the southeastern part of the area reveal 20 to 30 ft of well-sorted stratified outwash sand and gravel underlain by 10 to 15 ft of lacustrine silt and sandy silt that is in turn underlain by 2 to 12 ft of

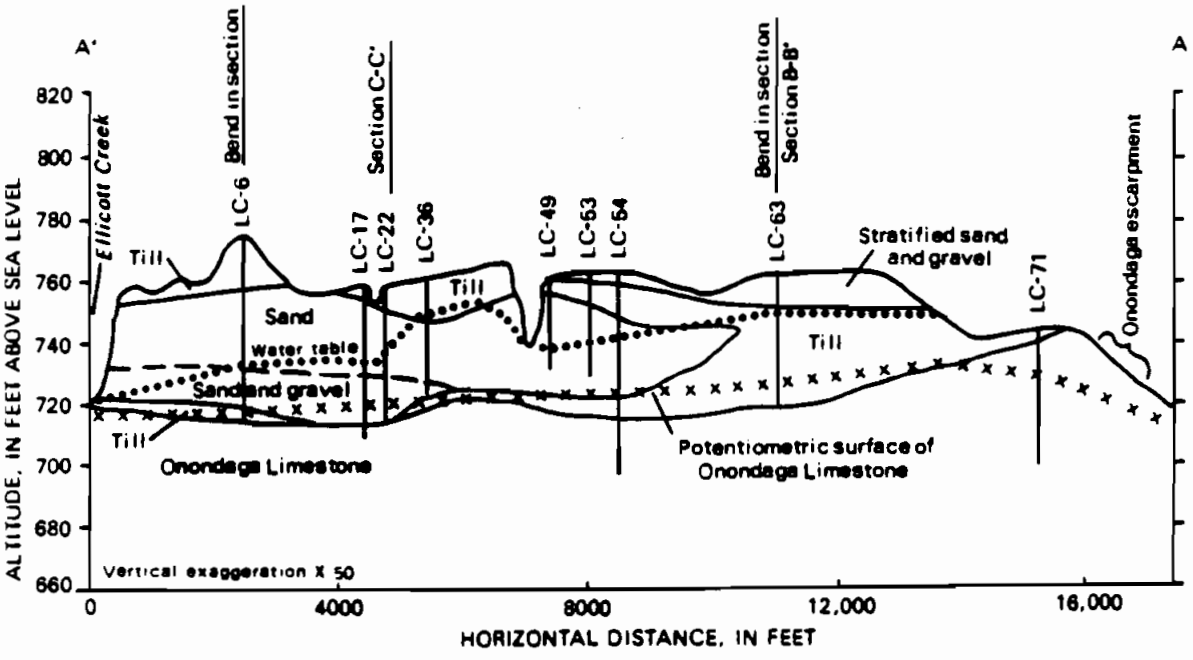


Figure 3A.--Geologic section A-A' north-south through Clarence-Lancaster-Newstead area. (Location is shown in fig. 2.)

R4

lodgment till. (See section C-C' in fig. 3 and map in fig. 4.) A gravel pit in the central area near Jones and Stage Roads exposes morainal deposits of sand and gravel with large boulders of Onondaga Limestone (sec. B-B' in fig. 3). The morainal sand and gravel disappears near Stage Road south of Clarence. A large amount of the outwash and morainal deposits have been extracted by sand and gravel mining.

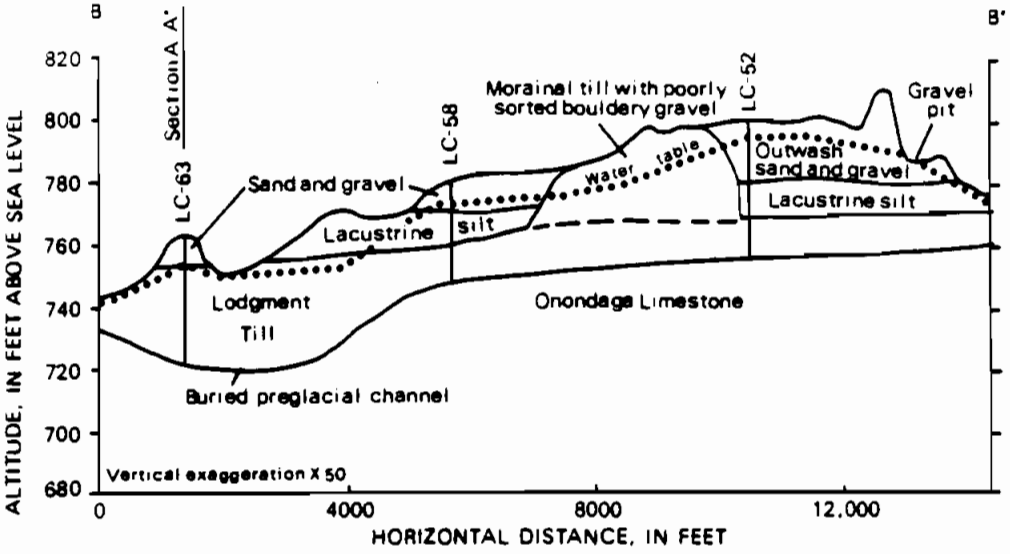


Figure 3B.--Geologic section B-B' through northern part of Clarence-Lancaster-Newstead area. (Location is shown in fig. 2.)

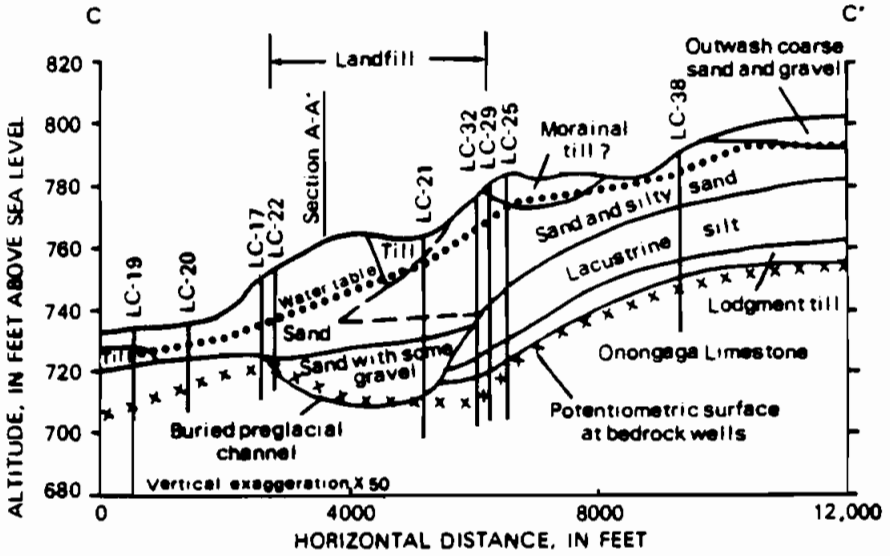
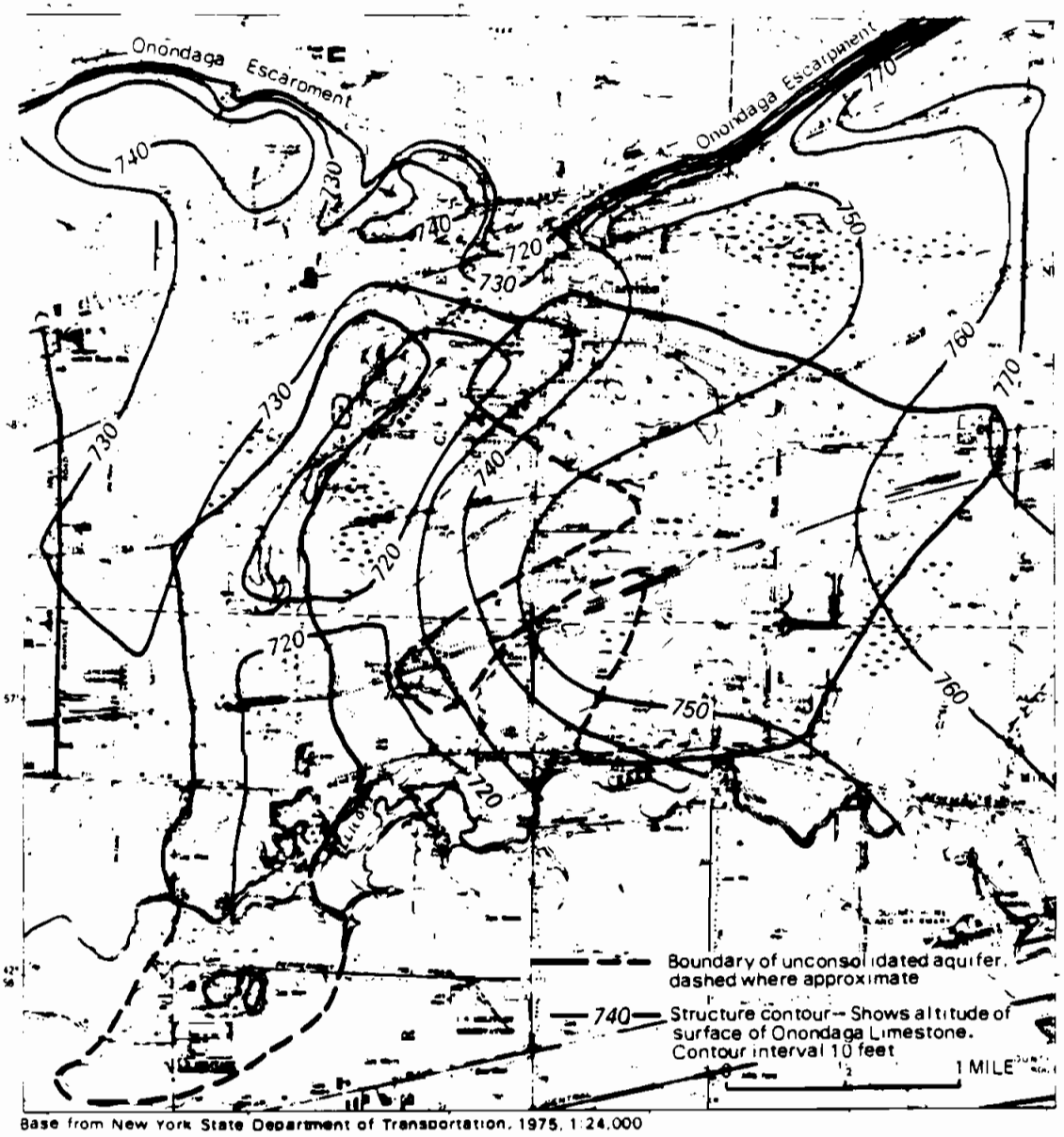


Figure 3C.--Geologic section C-C' through southern part of Clarence-Lancaster-Newstead area. (Location is shown in fig. 2.)

R5



Base from New York State Department of Transportation, 1975, 1:24,000

Figure 4.--Altitude of top of Onondaga Limestone and boundary of unconsolidated aquifer in Clarence-Lancaster-Newstead area.

Onondaga Limestone

The Onondaga Limestone is a productive aquifer that extends from Buffalo to Albany as an east-west belt several miles wide. It is a massive cherty and argillaceous limestone approximately 140 ft thick (Buehler, 1966) where it has not been subjected to erosion. Along the escarpment in the Clarence area, it has been eroded to several tens of feet thick.

The Onondaga Limestone contains little primary porosity but does contain significant secondary openings in the form of joints and fractures, widened by solutioning. Where the widening of joints and fractures is significant, the

RG

overlying rock and sediments may collapse, forming sinkholes. Sinkholes were observed both east and west of the landfill area. Wells installed in the limestone typically yield 10 to 300 gal/min (La Sala, 1968). Most wells do not fully penetrate to the bottom of the Onondaga Limestone, so the thickness of this unit could not be determined.

Saturated Thickness

The unconsolidated aquifers lie within relatively thin outwash and morainal deposits that range in thickness from 5 to 55 ft; the saturated thickness is between 10 and 25 ft in most places (fig. 5). The thickest saturated deposits are in the buried preglacial valley. In the eastern part

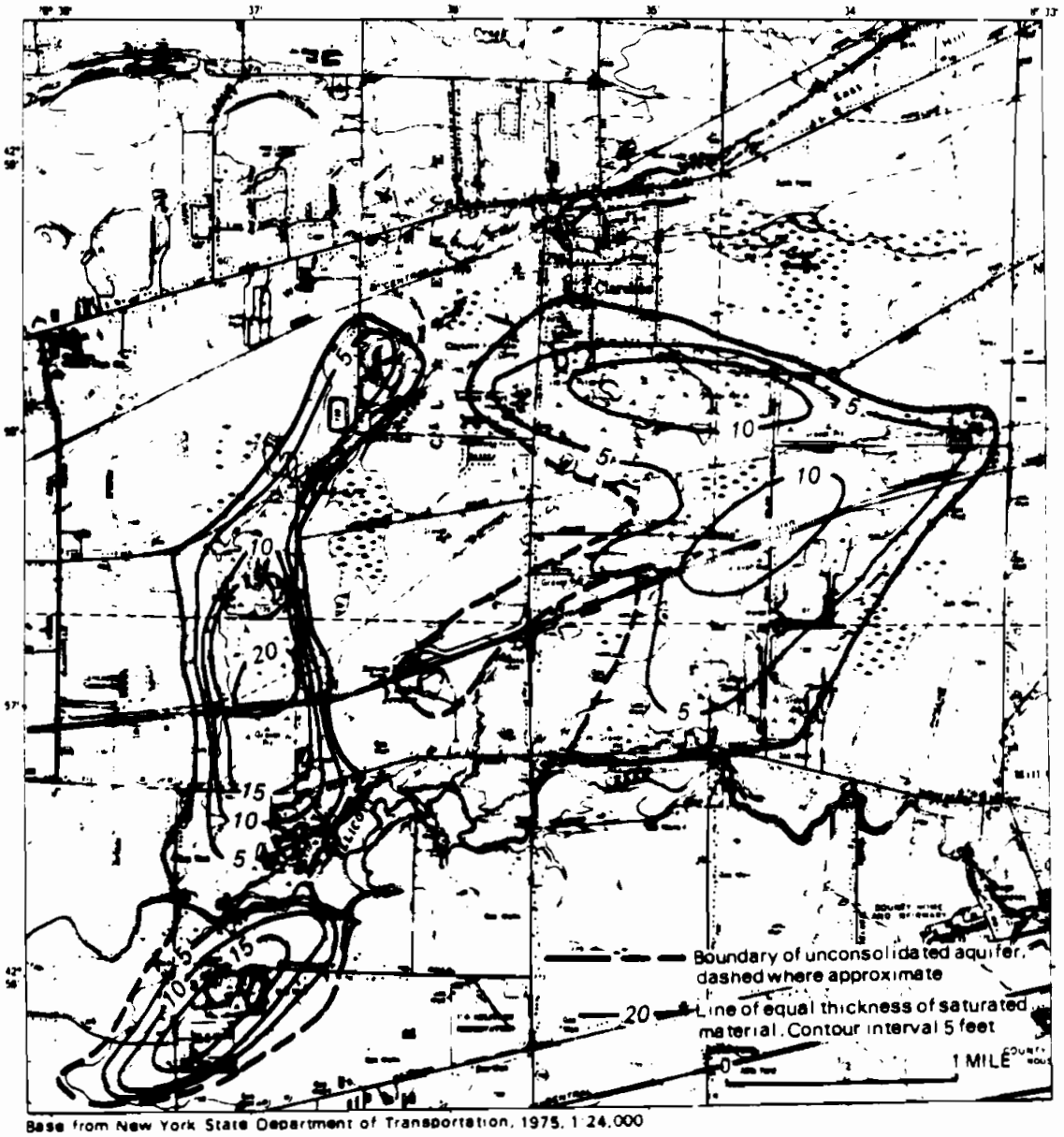


Figure 5.--Saturated thickness of unconsolidated aquifer in the Clarence-Lancaster-Newstead area.

R7

of the aquifer, where much of the sand and gravel has been mined away, 5 to 14 ft of saturated sand and gravel overlies thin lake and till deposits (fig. 3, section B-B'). In the western part of the aquifer, 5 to 23 ft of saturated sand with some sand and gravel in the deeper zones overlies the buried bedrock valley (fig. 3, section A-A'). Saturated thickness is greatest (25 ft) in the area under the landfill. South of Ellicott Creek, a gravel pit and a log from well LC-2 indicate 5 to 15 ft of saturated morainal sand and sand and gravel.

Ground-Water Movement

Recharge

Unconsolidated aquifer.-Recharge to the unconsolidated aquifer, which contains the water table, is solely from precipitation that infiltrates downward to the water table. Because the unconsolidated aquifer is on a level area on a topographic high, it is not bounded by valley walls that could provide recharge, nor does it have streams to provide seepage from higher areas. Estimated average annual recharge ranges from 0.2 to 0.4 (Mgal/d)/mi^2 La Sala, 1968).

The water table rises and falls in response to changes in the rate of recharge and discharge of ground water. Water-level measurements were used to construct hydrographs (fig. 6), which indicate that most recharge occurs from October or November through April, when evapotranspiration is at a minimum,

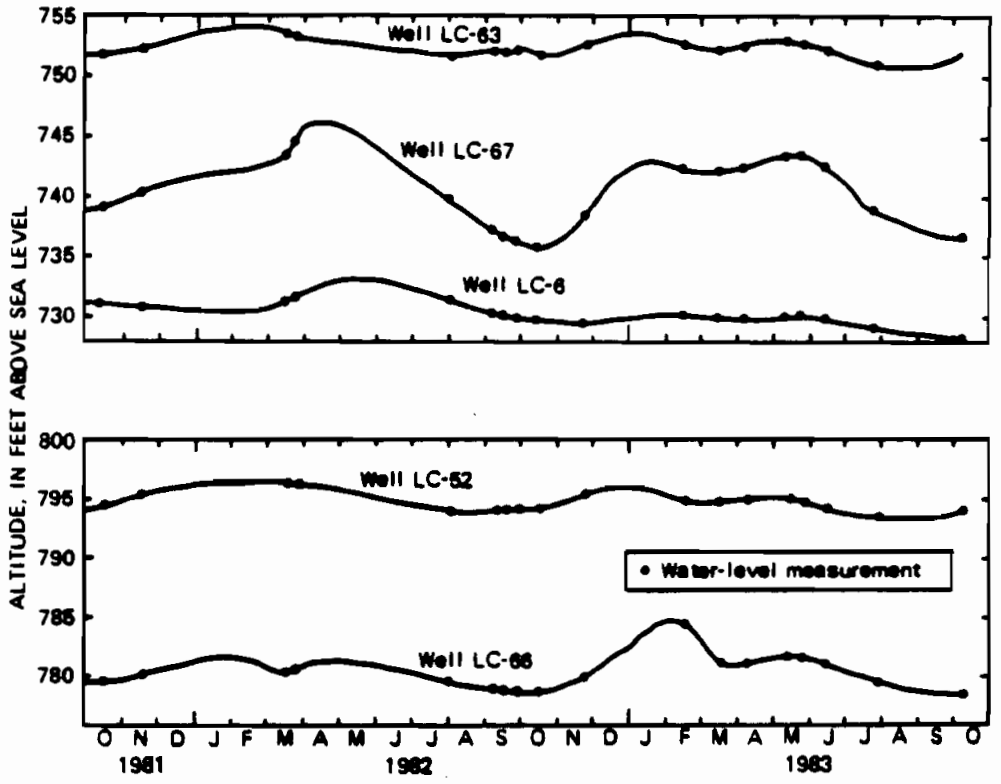


Figure 6.--1981-83 hydrographs of wells that tap the unconsolidated aquifer in Clarence-Lancaster-Newstead area. (Well locations are shown in fig. 2.)

R8

and that water levels were highest in February. A second peak in May 1983 was due to an unseasonably wet spring. Annual water-level fluctuations ranged from 2 to 8 ft and averaged 4 ft. Water levels at wells LC-52, LC-63, and LC-6, which are near ground-water discharge areas such as ponds, wetlands, and streams, fluctuated less because relatively large amounts of ground water move from the edges of the aquifer toward these discharge areas. Water levels in wells LC-66 and LC-67, which are nearer the ground-water divide and further from discharge areas, fluctuated more because they have smaller catchment areas and receive less ground-water flow.

Onondaga Limestone aquifer.--Recharge to the limestone aquifer occurs (1) by infiltration of precipitation into the joints, fractures, and solution openings where the formation crops out at or near land surface, (2) by downward seepage of water from the overlying unconsolidated deposits and wetlands, (3) by seepage from storm runoff and streams flowing into sinks or swallets on top of the limestone, and (4) possibly by water that has been pumped out of a quarry 6 mi east of the study area and then discharged as surface flow, some of which may infiltrate back into the limestone.

Discharge

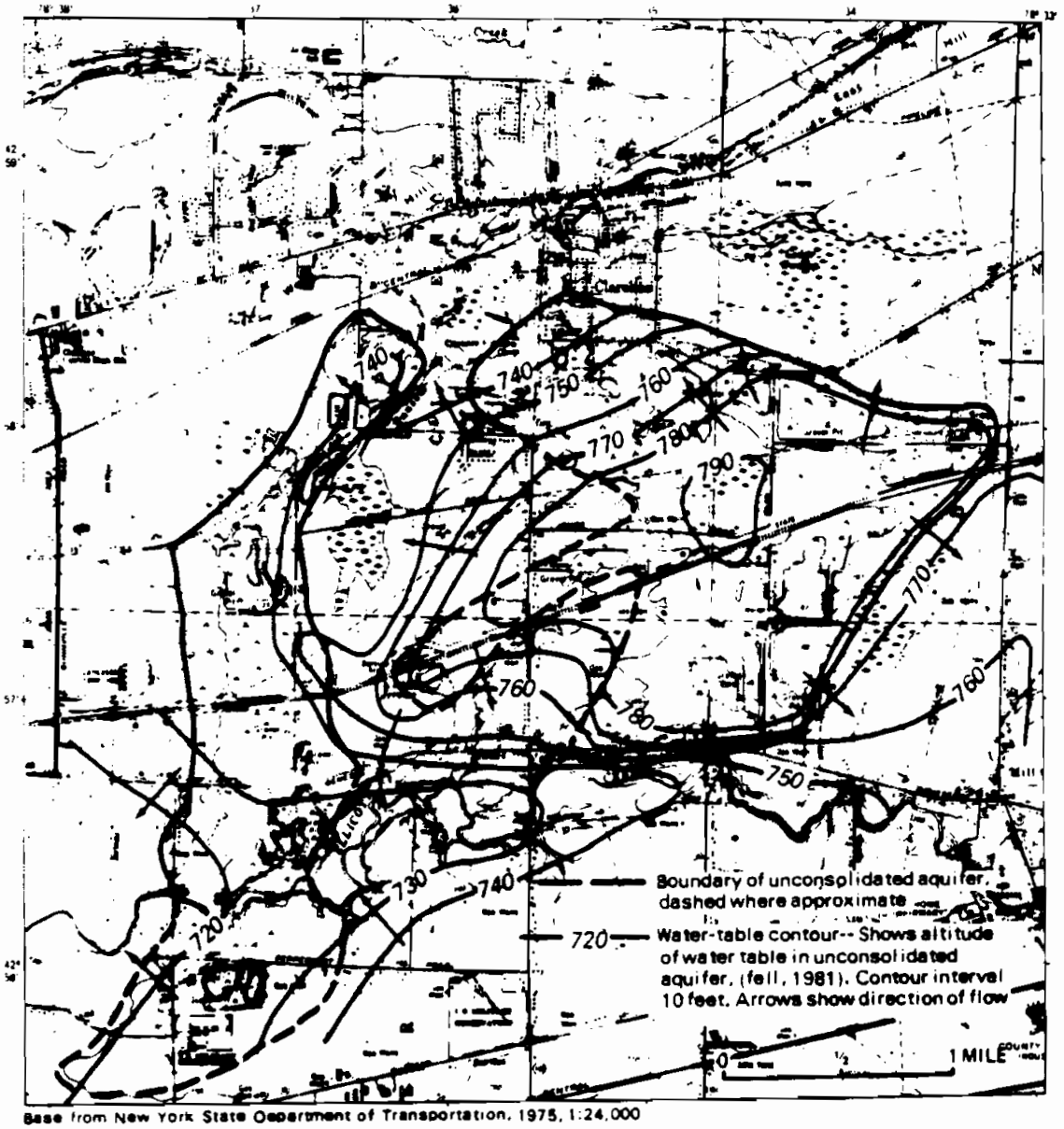
Unconsolidated aquifer.--During the late spring, summer, and early fall, when most precipitation is lost through evapotranspiration, the ground-water discharge to springs, streams, wetlands, and underlying bedrock exceeds the recharge, and the water table declines. A map of the water-table altitude with directions of ground-water flow is given in figure 7. The contours are based on water levels measured by the U.S. Geological Survey and the Erie County Department of Environment and Planning on October 15, 1981, in shallow wells and where water was first encountered during the drilling of deeper wells. A ground-water divide trends roughly east-west through the unconsolidated deposits. Ground-water flow south of the divide moves predominantly south and southwestward and discharges into Ellicott Creek, and ground water south of Ellicott Creek moves northwestward into Ellicott Creek. Ground water north of the divide moves northward and discharges to surface-water bodies such as Tillman and Cedar Swamps, and ultimately into Ransom Creek, which flows north over the Onondaga Escarpment.

Deep piezometers in sets of nested piezometers near the landfill had lower potentiometric surfaces than shallow piezometers at the same location (Wehran Engineering and Recra Research, 1980), which indicates a significant downward gradient. Therefore, ground water in the unconsolidated aquifer moves not only laterally but also downward to the underlying limestone.

Onondaga Limestone aquifer.--Ground water leaves the limestone aquifer as pumpage from wells at quarries, private residences, institutions, and commercial facilities; as seepage to the underlying rock formations and to Ellicott Creek, and to streams and springs along the lower part of the face of the escarpment. Water levels measured during late summer and early fall of 1981 were used to compile a potentiometric-surface map of the Onondaga Limestone (fig. 8); the contours indicate a ground-water divide trending east-west approximately 1 mi south of the escarpment. Ground water south of the divide moves west-southwest and discharges into Ellicott Creek and quarries; ground water north of the divide flows north and discharges as springs and headwaters of streams at the base of the escarpment.

R9

Several wetlands in the Clarence-Newstead area and many wells in the Newstead area went dry and had to be deepened during the summers of 1982 and 1983 because of severely declining water levels in the limestone aquifer. The cause of the decline is not known at this time. Water levels in the overlying unconsolidated deposits declined considerably less, probably because of the relatively impermeable lacustrine silt and lodgment till between the two layers, which retards vertical movement of ground water. If the confining unit were absent, ground water would have moved downward to recharge the limestone aquifer, and the water level in the sand and gravel would have declined more.



Base from New York State Department of Transportation, 1975, 1:24,000

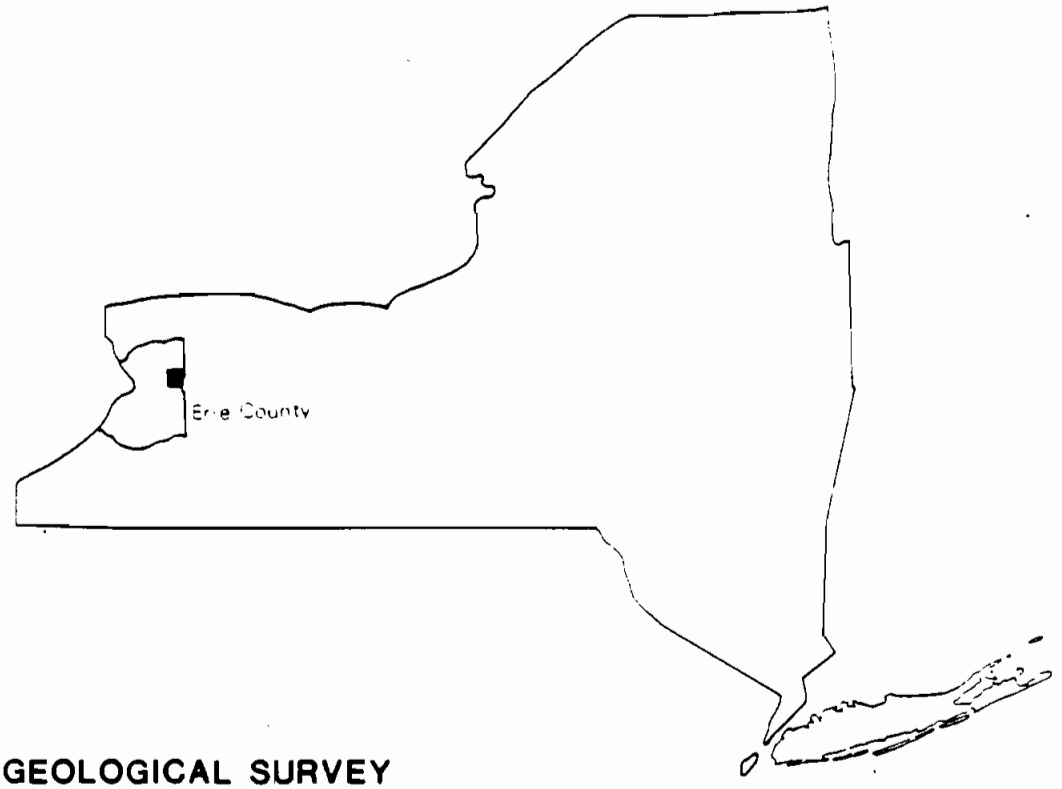
Figure 7.--Water-table altitude in fall 1981 and direction of ground-water flow in unconsolidated aquifer, Clarence-Lancaster-Newstead area.

R10

REFERENCE 2

Geology and Hydrology of the Onondaga Aquifer in Eastern Erie County, New York--

with emphasis on ground-water-level declines since 1982



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Water-Resources Investigations
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Prepared in cooperation with the

ERIE COUNTY DEPARTMENT OF ENVIRONMENT AND PLANNING

TOWNS OF CLARENCE AND NEWSTEAD

R11

GEOLOGY AND HYDROLOGY OF THE ONONDAGA AQUIFER IN EASTERN ERIE COUNTY, NEW YORK, WITH EMPHASIS ON GROUND-WATER-LEVEL DECLINES SINCE 1982

By Ward W. Staubitz and Todd S. Miller

U.S. GEOLOGICAL SURVEY

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TOWNS OF CLARENCE AND NEWSTEAD

Ithaca, New York

1987

Geology and Hydrology of the Onondaga Aquifer in Eastern Erie County, New York, with Emphasis on Ground-Water-Level Declines Since 1982

By Ward W. Staubitz and Todd S. Miller

ABSTRACT

The Onondaga aquifer is a nearly flat-lying, 25- to 110-foot-thick, cherty limestone with moderately developed karst features such as sinkholes, disappearing streams, and solution-widened joints. Most ground water moves through solution-widened bedding planes, and some moves through vertical joints. Yield of water to 42 wells ranges from 3 to 100 gallons per minute and averages 20 gallons per minute.

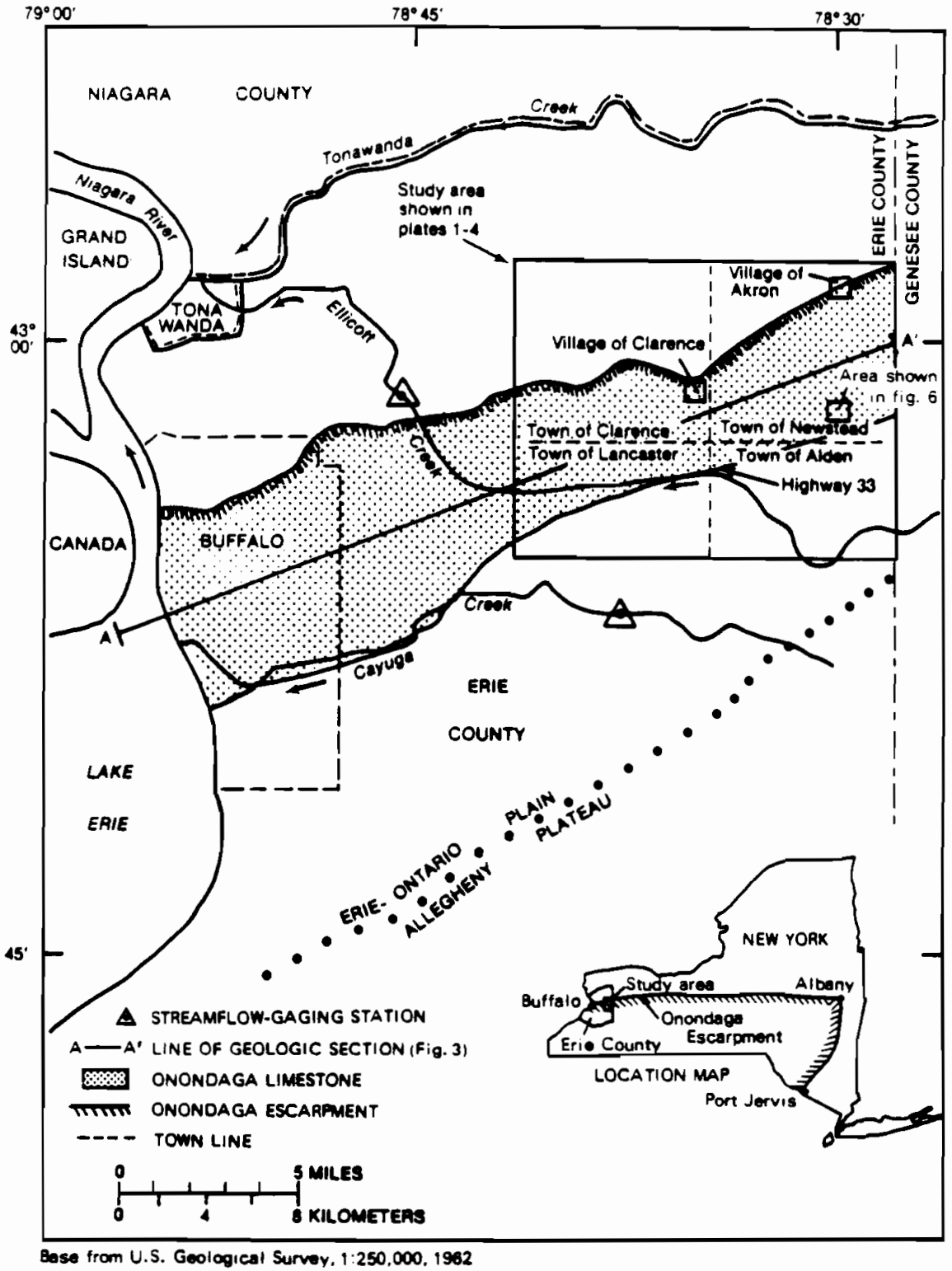
Ground-water levels in the Onondaga aquifer declined during the fall of 1981 and summer and fall of 1982-85 near a 2.2-mile-long and 800-foot-wide land-surface depression in the eastern part of Erie County. More than 60 wells and several wetlands went dry, and at least three sinkholes developed. Ground-water levels were measured in 150 wells during a high-water-level period in April 1984 and a low-water period in October 1984. Water levels fluctuated 20 to 50 feet near the depression and near quarries but fluctuated only 5 to 10 feet elsewhere. The water-level decline is caused by the combined effect of ground-water removal by pumpage from a quarry (the water is then discharged to Dorsch Creek) and by the diversion of some water of Dorsch Creek since 1981 away from swallets in the 2.2-mile-long depression area, which are recharge points for the aquifer. In 1982, sinkholes formed in a surface-depression area in Harris Hill. The enlargement of sinkholes in the Harris Hill area seems unrelated to the water-level decline in the eastern part of the county and is probably caused by local drainage alterations.

INTRODUCTION

Ground-water levels in some parts of the Towns of Newstead and Clarence in eastern Erie County (fig. 1) declined greatly during the fall of 1981 and each summer and fall during 1982-85. More than 60 wells went dry during this period, most of which were then drilled deeper. Some of the redrilled wells went dry in subsequent years, and others have nearly gone dry. Several wetlands in the central part of the Towns of Newstead and Clarence reportedly dried up during the summer of 1982, and at least three sinkholes developed or enlarged in the Harris Hill area in the Town of Clarence (pl. 1).

The area where water levels declined is underlain by the Onondaga Limestone--an important aquifer that, in eastern Erie County, supplies water to approximately 750 households, 20 commercial and industrial facilities, and many farms. The Onondaga aquifer is a major source of water supply elsewhere in New York State (fig. 1) and is particularly important because it provides water of suitable quality for most uses. Water in the underlying Akron and Bertie Dolomites and Camillus Shale is less desirable for most uses because it contains elevated levels of hydrogen sulfide and dissolved iron and manganese.

R13



Base from U.S. Geological Survey, 1:250,000, 1962

Figure 1.--Location and major geographic features of Newstead-Clarence area, Erie County, N.Y.

R14

Discharge measurements also were made at several locations along Dorsch Creek downstream from the gaging station and along several small streams that flow over the escarpment to locate sites of ground-water discharge to the streams and where the streams lose water to the aquifer.

Survey of Springs

The locations of springs were plotted on a map, and discharge, pH, water temperature, and specific conductance of most springs were measured to identify ground-water discharge areas. Specific conductance and pH indicate whether the water is from the Onondaga aquifer or the underlying Camillus Shale. (The latter has higher specific conductance and lower pH.) The discharge indicates whether the source of the spring is a diffuse flow system through small joints (discharge less than 0.5 ft^3/s) or from a cave-conduit or solution-widened joint system (discharge greater than 0.5 ft^3/s).

Dye-Tracer Study

Two dye-tracer studies were conducted at a swallet (sinkhole into which a stream disappears) in the Harris Hill area in the western part of the Town of Clarence in April 1984 and October 1985 in an attempt to determine the velocity and direction of ground-water flow. In April 1984, fluoroscene dye was mixed with stream water that flowed into the swallet, and activated-charcoal packets that adsorb the dye were placed in 14 springs considered likely discharge areas at the base of the Onondaga Escarpment. The charcoal packets were replaced periodically and analyzed in the laboratory by fluorometer to detect the dye (Aley and Fletcher, 1976). In October 1985, dye was again mixed with stream water that flowed into the swallet, but this time, charcoal packets were placed along seepage faces in a quarry 0.9 mi south of the swallet and in a drainage ditch that receives pumpage from the quarry.

Precipitation and Evapotranspiration Measurements

Monthly, annual, and long-term average precipitation values in the study area were tabulated from data from the U.S. Weather Service station at the Buffalo International Airport (2 mi southwest of the study area, pl. 1) and from a local observer in Clarence. Potential evapotranspiration in the study area was calculated through Hamon's method (1961) and long-term average monthly temperature data from the airport.

GEOLOGY

The study area is underlain by Devonian and Silurian sedimentary rocks that trend east-west and dip slightly to the south-southwest at about 40 ft/mi. The bedrock in most of the area is overlain by unconsolidated deposits. The western and eastern ends of the study area are mantled by a thin cover of till and (or) lacustrine silt and clay, generally 3 to 15 ft thick, and the central part by sand and gravel, sand, and till deposits 25 to 50 ft thick that fill a north-south-trending buried valley (Miller and Staubitz, 1985) shown on plate 1. The uppermost formation in the study area is the Onondaga Limestone, which is underlain by the Bois Blanc Limestone (locally absent) and the Akron and Bertie Dolomites, which overlie the Camillus shale (table 1).

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Table 1.--Summary of geologic units in Newstead-Clarence area, Erie County, N.Y. (Modified from Oliver, 1956.)

Period	Formation	Member	Thickness (feet)	Description
Devonian	Onondaga Limestone	Seneca	40	Olive-gray, massive bedded limestone, contains sparse tabulate and rugose corals and abundant dark nodular chert (5 to 25 percent). Exposures are few because the upper part of the Onondaga Limestone is eroded.
		Moorehouse	55	Olive-gray and light olive-gray, fine-grained, massive bedded limestone, contains brachiopods, sparse tabulate and rugose corals, and abundant nodular chert (5 to 50 percent).
		Clarence	40	Olive-gray, fine-grained, massive bedded limestone, contains few fossils and extremely abundant chert (25 to 75 percent).
		Edgecliff	5	Light-gray, coarsely crystalline, massive bedded limestone, numerous corals, and some nodular chert (5 to 25 percent).
	Bois Blanc Limestone		0-4	Gray, fine-grained, discontinuous limestone.
Silurian	Akron Dolomite		8	Greenish-gray to light buff, mottled and banded fine-grained dolomite.
	Bertie Dolomite		55	Gray to dark gray, thin to medium-bedded, fine-grained dolomite, dolomitic limestone, and shaly dolomite.
	Camillus Shale		400	Gray to brownish gray, thin to massive-bedded, shale with some interbedded limestone and dolomite, contains abundant gypsum with beds up to 5 ft thick. No fossils. Gypsum is mined near Akron.

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The study area is characterized by minor development of karst features such as sinkholes, solution-widened joints, and swallets. Sinkholes are surface depressions, typically several feet to several tens of feet in diameter, that form when surficial unconsolidated sediments subside into enlarged subsurface openings produced by solution of carbonate rocks such as limestones and dolomites, or when the roof of a subsurface cave in the rock collapses. Solution-widened joints are secondary openings in the rock, such as horizontal bedding joints or vertical fractures, that have been enlarged by the dissolution of the carbonate rock by circulating ground water. Swallets are sinkholes into which a stream flows; thus, the streamflow recharges the groundwater reservoir. Swallets generally form over solution-widened joints in the limestone.

Onondaga Limestone

In New York, the Onondaga Limestone outcrop extends east-west from Lake Erie to just south of Albany, then south to Port Jervis. (See inset in fig. 1). It is a nearly flat-lying complex of massive, cherty, and argillaceous limestones deposited in a marine environment during Middle Devonian time. In Erie County, the outcrop area is 4 mi wide and 23 mi long and extends east-west from Lake Erie to the Erie-Genesee County border (fig. 1). The gentle south-southwestward dip of the Onondaga Limestone gives rise to a 20- to 50-ft-high escarpment that trends roughly east-west and marks the northern extent of the Onondaga. South of the escarpment, the land surface parallels the gently dipping surface of the Onondaga. The escarpment separates a low-lying plain to the north from a higher plain to the south.

The formation is 140 ft thick (Oliver, 1966) south of the study area, where it is buried and protected from erosion by more recent overlying formations. Where it crops out within the study area, however, it ranges from only 25 to 110 ft in thickness because erosion has removed its upper levels.

In western New York, the Onondaga is divided into four members, which are, in descending order, the Seneca, Moorehouse, Clarence, and Edgecliff. The northward-facing cliff of the Onondaga Escarpment consists chiefly of the Edgecliff and Clarence. The stratigraphy of the Onondaga and deeper formations is depicted in table 1.

The Onondaga Limestone is an important source of crushed stone in Erie County. Currently, three quarries operate in the study area (pl. 1).

Bois Blanc Limestone

Underlying the Onondaga Limestone is the Bois Blanc Limestone, a gray, fine-grained limestone that was deposited in a marine environment during Devonian time. It ranges in thickness from a few inches to 4 ft but is discontinuous within the study area and may be absent in many places.

Akron and Bertie Dolomites

Underlying the Bois Blanc Limestone and, in places, the Onondaga Limestone, are the Akron and Bertie Dolomites, which are fine-grained dolomites, shaly

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Table 8.--Chemical analyses of water from selected degree of saturation of each water sample

[Concentrations are in milligrams per liter.

Constituent or characteristic	Well or spring number[1], formation[2], 09-44 OLS (4-84)	49-47 OLS (4-84)	39-48 OLS (4-84)	53-20 OLS (8-85)	40-20 OLS (8-85)	13-07 OLS (8-85)	36-13 OLS (8-85)	31-11 OLS (8-85)	23-39 OLS (8-85)	34-24 OLS (4-84)
					Concentration					
Specific conductance (µS/cm)	790	783	636	790	730	870	760	710	1,100	1,610
pH	7.5	7.1	7.3	7.1	6.9	7.0	6.9	6.9	6.9	7.0
Calcium (mg/L)	94	97	80	116	98	126	106	106	135	155
Magnesium (mg/L)	46	36	38	20	16	19	35	23	46	34
Sodium (mg/L)	13	30	13	21	26	36	6.8	11	68	158
Chloride (mg/L)	55	72	28	38	53	68	7.5	23	75	325
Sulfate (mg/L)	77	47	47	196	101	161	98	75	89	66
Bicarbonate (mg/L)	176	172	174	113	118	123	172	168	261	188
Mineral					Saturation Index[3]					
Anhydrite ($CaSO_4$)	-2.0	-2.2	-2.24	-1.40	-1.78	-1.56	-1.76	-1.90	-1.77	-1.95
Aragonite ($CaCO_3$)	-.165	-.55	-.41	-.50	-.83	-.69	-.64	-.71	-.39	-.47
Calcite ($CaCO_3$)	-.01	-.396	-.26	-.35	-.68	-.54	-.49	-.56	-.24	-.32
Dolomite [$CaMg(CO_3)_2$]	-.195	-1.09	-.70	-1.14	-1.93	-1.71	-1.18	-1.57	-.67	-1.16
Gypsum ($CaSO_4.2H_2O$)	-1.60	-1.79	-1.85	-1.16	-1.45	-1.19	-1.47	-1.55	-1.48	-1.55
Magnesite ($MgCO_3$)	-.50	-1.00	-.76	-1.15	-1.59	-1.50	-1.05	-1.35	-.78	-1.16

[1] Well numbers and locations of wells are described in table 12; spring numbers and locations of springs are listed in table 10.

[2] OLS = Onondaga Limestone, BDL = Akron and Bertie Dolomites, CMS = Camillus Shale

Ground Water in the Onondaga Limestone

Ground water occurs in bedding planes and vertical joints and fractures in the Onondaga Limestone, some of which have been widened by dissolution. The upper 5 to 15 ft of the limestone contains the most joints, all of which are widened by the more intense weathering that occurs near land surface.

Bedding planes.--Bedding planes, which transmit most of the water in the Onondaga Limestone, are planar openings parallel to the nearly horizontal bedding in the rock. They were formed by the expansion of the rock during removal of weight by erosion of overlying rock units and by the retreat of

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wells and springs in the Newstead-Clarence area and with respect to selected minerals.

Analyses by Erie County Laboratory.]

and date (month-year) of samples											
34-24 OLS (8-85)	24-48 OLS (4-84)	24-48 OLS (8-85)	55-48 OLS (4-84)	55-48 OLS (8-85)	38-59 BDL (2-84)	56-59 CMS (2-84)	30-59 OLS (2-84)	Spring 22 (4-84)	Spring 9 (4-84)	Spring 8 (4-84)	Spring 12 (4-84)
Concentration											
1,300	1,600	1,400	1,090	1,100	580	1,020	640	490	597	481	433
7.2	6.8	7.1	7.1	7.1	7.5	7.5	7.5	7.0	6.8	6.7	7.1
141	150	150	110	126	79	160	81	75	92	76	68
35	53	42	49	50	14	28	12	11	9.1	8.3	5.8
92	125	65	44	61	17	4	33	23	35	20	22
170	275	135	10	145	36	9.4	68	40	65	40	43
236	121	230	93	118	33	310	31	37	22	23	19
137	250	187	176	226	124	130	114	95	119	104	88
Saturation Index											
-1.3	-1.71	-1.40	-1.86	-1.61	-2.33	-1.24	-2.4	-2.3	-2.5	-2.5	-2.61
-.28	-.55	-.34	-.48	-.13	-.31	-1.11	-.34	-.63	-1.04	-1.26	-.95
-.134	-.40	-.19	-.48	+.02	-.16	+.40	-.19	-.47	-.88	-1.11	-.79
-.537	-1.08	-.70	-.82	+.02	-.90	-.49	-1.05	-1.69	-2.69	-3.09	-2.54
-1.08	-1.34	-1.05	-1.50	-1.42	-1.96	-.87	-1.98	-1.90	-2.07	-2.09	-2.19
-.77	-1.08	-.851	-.82	-.38	-1.07	-.86	-1.20	-1.52	-2.11	-2.29	-2.06

[3] Saturation index (SI) <0 indicates the water is undersaturated with respect to the mineral,
SI = 0 indicates the water is in theoretical equilibrium with the mineral.
SI >0 = indicates the water is oversaturated with respect to the mineral.

glaciers from the area. Major bedding planes extend at least several miles, which makes them effective conduits for ground water. Although the separation along bedding planes is generally small (less than 1/4 inch), dissolution has widened them to several inches in some places. Bedding planes widened by dissolution were observed in quarries and along the escarpment at the bottom of the Onondaga and at the top of the Clarence Member of the Onondaga. These planes undergo a greater rate of dissolution than smaller joints because they form a preferential path for horizontal ground-water flow. The downward migration of water is inhibited by the relatively impermeable underlying Akron and Bertie Dolomites and some massive beds within the Onondaga, especially the Clarence Member of the Onondaga, 50 to 75 percent of which is highly insoluble chert.

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The walls of quarries show where prominent joints occur in the Onondaga Limestone. A quarry in the southwestern part of the study area (pl. 1) has large seeps of water from two prominent bedding planes; one was observed on top of the cherty Clarence Member (altitude about 625 ft), and the other was reported by the quarry operator to be at the base of the Onondaga (altitude 565 ft), where water cascades into a sump pit.

Vertical joints.--Vertical joints are planar openings roughly perpendicular to bedding planes but are generally less extensive and therefore form less significant water-bearing openings except where dissolution has widened them. Vertical joints in the study area are typically 5 to 18 ft apart, penetrate 10 to 25 ft, and are preferentially oriented N75°E, N40°W, and N5°E (Goldberg-Zoino Associates, 1984). Most vertical joints extend several tens of feet laterally, but some extend for several miles. A quarry that previously occupied the site of Spaulding Lake, north of Main Street in the Town of Clarence (pl. 1), was abandoned when mining intercepted a major vertical joint from which large volumes of water flooded the quarry. The joint's trend is N43°W and is traceable on air photos from the escarpment at County Route 216 (Old Goodrich Road) to Tillman Swamp.

The separation along vertical joints ranges from less than 1/16 inch to 0.5 ft. The wider separations are in the upper 5 to 15 ft of the Onondaga Limestone, where dissolution is most rapid, and at the escarpment, where tension-release stresses from the absence of supporting rock mass has caused the rock to expand away from the cliff. Vertical joints become narrower, less numerous, and less continuous with depth.

Well yields.--The reported yield of 42 wells with open-hole construction that tap the Onondaga aquifer indicated that the yields of wells range from 3 to 100 gal/min and average 20 gal/min. The yield of water to a well depends on how many saturated bedding planes and vertical joints with significant openings are penetrated. The highest reported well yields in the study area are near the channellike depression in the central part of Newstead (pl. 1), which indicates the presence of numerous, continuous, solution-widened joints beneath the depression area.

Recharge.--The ultimate source of recharge is precipitation, which reaches the saturated zone in the Onondaga aquifer by (1) direct areal infiltration of rain and snow-melt through the overlying unconsolidated deposits (lake deposits and till), (2) flow of stream water into swallets and into vertical joints that intersect stream channels, and (3) seepage of water from wetlands through the underlying organic debris and glacial deposits into the Onondaga aquifer. Recharge occurs over most of the study area except at the base of the escarpment, in quarries where water is pumped, in the upgradient parts of wetlands during periods of high water levels, and in the channellike depression during periods of low water levels. The rate of recharge to the aquifer depends on the amount of precipitation and streamflow available for recharge, the amount of water lost through evapotranspiration, and the permeability of the Onondaga Limestone and overlying unconsolidated deposits. Each of these factors is described below.

Infiltration of precipitation. If the amount of water available for recharge either exceeds the rate at which water can move to the water table, or the

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rate at which water can flow through the aquifer, recharge either becomes ponded at land surface or is lost as runoff. This occurs in many places in the spring, when large amounts of snowmelt and rain exceed the infiltration capacity of the area. During this period, intermittent streams flow from a few weeks to several months, and water accumulates in low areas, such as wetlands and the channellike depression areas in Newstead and Harris Hill.

Conversely, when the amount of water available for recharge is less than the discharge from the aquifer, ground-water levels decline. Comparison of the long-term average monthly precipitation with the corresponding estimated potential evapotranspiration (table 4) reveals that the 19.6 inches of potential evapotranspiration exceeds the 16.1 inches of precipitation from May through September, which means that little of the precipitation during this period is available for ground-water recharge, so that ground-water levels decline. Intermittent streams flow and water ponds in low areas only during heavy rains and snowmelt. After periods of significant precipitation, ground-water levels rise for a time (from several hours to 3 days). Hydrographs of water levels in wells measured during 1983-85 (pl. 4) show that water levels declined from May through October and rose from November through April.

Infiltration from streams. Streamflow that seeps into swallets provides a significant amount of recharge to the Onondaga aquifer. At least 14 swallets were identified in the study area, the majority of which are clustered within the channellike depression near South Newstead Road, Steiner Road, and Ayers Road in the Town of Newstead (pl. 1). Individual swallets were observed to accept streamflow at rates of 0.1 to 1.5 ft^3/s without overflowing; a cluster of swallets, such as those within the channellike depression in the Newstead area, could probably accept several times that amount before ponding would occur. Immediately after snowmelt or particularly heavy rains, however, the swallets may not accept all of the incoming streamflow if the carrying capacity of the aquifer is exceeded and ground-water levels rise. During these periods, the swallet may overflow and produce runoff to tributaries that drain outside the study area. During the summer and fall, intermittent streams that flow into swallets dry up.

At the top of the escarpment, some streamflow seeps downward through vertical joints exposed in the stream channels. These joints have been enlarged by tension-release stresses, ice wedging, and dissolution; they range in width from 0.25 to 8 inches. Most of the water that seeps into the Onondaga aquifer at the top of the escarpment discharges to springs and streams at the base of the escarpment, where more impermeable bedrock units (Akron and Bertie Dolomites) that underlie the Onondaga Limestone retard further vertical seepage.

Regional flow and discharge.--Ground water in the Onondaga aquifer moves from areas of higher head (recharge areas) to areas of lower head (discharge areas) through a network of joints and bedding planes. The direction of ground-water movement in the Onondaga aquifer during a period of high ground-water levels (April 1984) and low ground-water levels (October 1984) is shown by arrows on the potentiometric-surface maps in plates 2 and 3, respectively. Water levels in approximately 150 wells were measured once during each of

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these two months to document the seasonal fluctuation of ground-water levels and the changes in direction of ground-water flow. Ground water discharges to wells, springs, wetlands, the channellike depressions, and quarries.

Ground-water movement in the Onondaga aquifer generally follows the east-to-west slope of the Erie-Niagara basin--that is, it moves from the higher parts of the basin in eastern Erie County to lower areas further west and eventually discharges to Lake Erie or the Niagara River (fig. 3). In the central part of the study area, flow paths in the underlying Akron and Bertie Dolomites and Camillus Shale are similar to those of the Onondaga aquifer (Goldberg-Zoino and Associates, 1984), except that the Akron and Bertie Dolomites have a larger downward component of flow than the Onondaga aquifer (fig. 3).

The differences in hydraulic conductivity (permeability) of the four formations have a significant effect on the regional flow system. Hydraulic conductivity values for the Onondaga Limestone, Akron Dolomite, Bertie Dolomite, and Camillus Shale are summarized in table 9. The Camillus Shale is the most permeable aquifer. As a result of dissolution of gypsum, the shale is 2 to 3 times more permeable than the Onondaga Limestone, which is, in turn, 4 to 10 times more permeable than the Akron and Bertie Dolomites.

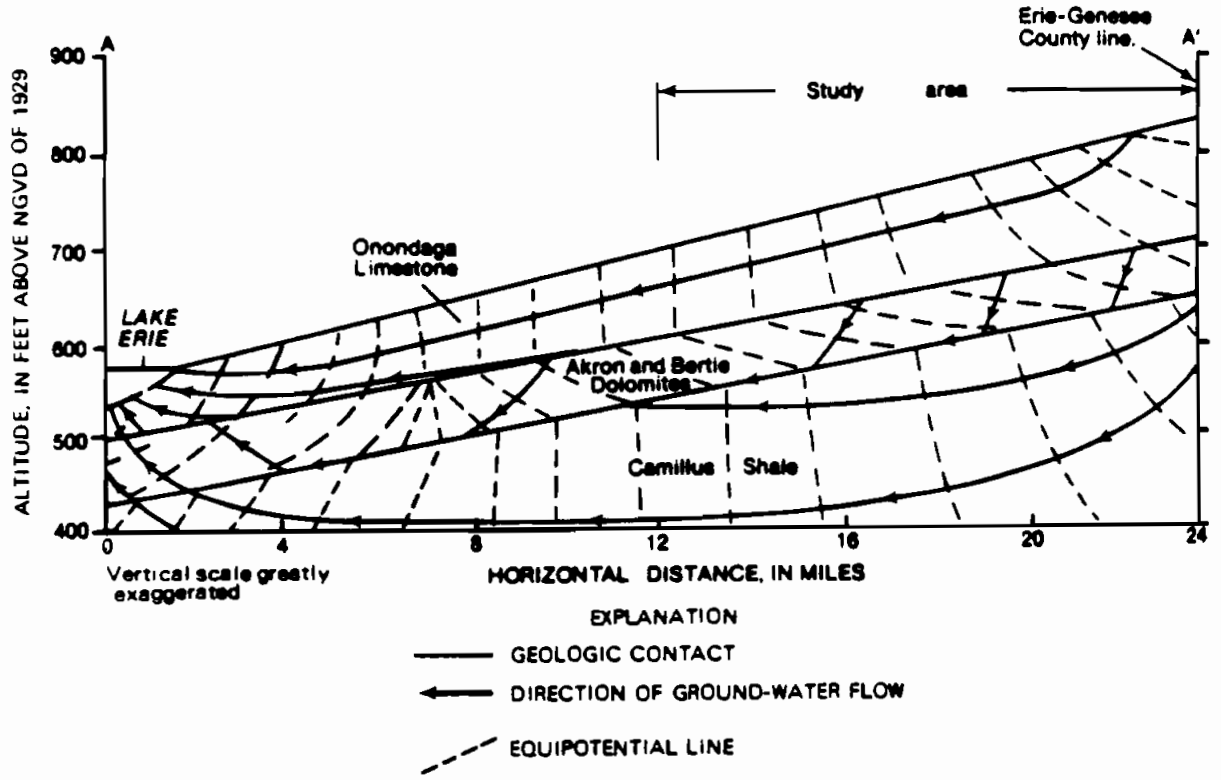

Figure 3.--Generalized regional ground-water movement from study area to Lake Erie.

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SUMMARY

The Onondaga aquifer is a nearly flat-lying, 25- to 110-ft-thick, cherty limestone with moderately developed karst features such as sinkholes, swallets, and solution-widened joints. Most ground water moves through solution-widened bedding planes, although some moves through vertical joints. Yield of water to 42 wells in the study area ranged from 3 to 100 gal/min and averaged 20 gal/min.

Ground-water levels declined sharply during the fall of 1981 and each summer and fall from 1982 through 1985 in some parts of the Onondaga aquifer in the Towns of Newstead and Clarence. Several wetlands and more than 60 wells went dry, and at least three sinkholes formed. The area contains two large, channellike surface depressions--one in Harris Hill and one in the Town of Newstead. Sinkholes formed in the depression in Harris Hill in 1982, and wells went dry near the depression in Newstead.

Water-level measurements during periods of high and low water levels indicate that greater annual fluctuations (20 to 50 ft) occur near the depressions than in the surrounding area (5 to 10 ft). During periods of low water levels in summer and fall, ground water drains toward the depression in the Newstead area and then flows westward. Water-level fluctuations in the vicinity of the channellike depression are greater than in other areas because the depression has a high density of solution-widened joints that can quickly drain the area. Water-level fluctuations decrease with distance from the depression. The area of severe water-level declines is within 2,500 ft of the center line of the depression in the Newstead area.

An average of 5.3 Mgal/d of water is pumped into Dorsch Creek from a quarry 1.5 mi east of the channellike depression. Before 1981, some of this water reentered the ground when part of the discharge of Dorsch Creek flowed into swallets within the depression. The water entering the swallet was a major source of ground-water recharge during the summer and fall. When the channel of Dorsch Creek was improved and its flow diverted from the swallets, a significant part of the summer and fall recharge was lost, and ground-water levels declined within the aquifer.

The formation of sinkholes in the Harris Hill area is caused by slumping of unconsolidated deposits into solution-widened openings in the bedrock. The sinkholes are in a surface-depression area and are underlain by a relatively thick (up to 16 ft) deposit of cohesive silty clay; sinkholes are less likely to form where the surficial deposits are thin or absent. The enlargement of sinkholes in the Harris Hill area seems unrelated to the water-level decline in the eastern part of the study area and is likely the result of local drainage alteration in the Harris Hill area.

Water in the Onondaga aquifer is generally of good quality and is suitable for most domestic and agricultural purposes. Water in the underlying Akron and Bertie Dolomites and Camillus Shale tends to be of poorer quality, especially in the Camillus Shale, where the water contains appreciable concentrations of dissolved iron and manganese and has a strong hydrogen sulfide odor. Water from wells close to the depression in Newstead had elevated sulfate concentrations during a low-water period. This indicates that water

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Table 12.--Records of Selected Wells in Eastern Erie County, N.Y.

NUMBERING AND ARRANGEMENT OF WELLS

All wells and borings are identified by latitude and longitude to the nearest second, as measured from 7 1/2-minute topographic maps, scale 1:24,000. The location of each well or boring record was plotted on these maps by U.S. Geological Survey staff during a visit to the site or from large-scale engineering drawings.

The location of each well and boring is shown on plate 4 and on additional maps within the text. The four numbers used to identify each well on these illustrations are the seconds of latitude and longitude. For example, a well located at 42°45'38" latitude and 78°34'31" longitude is identified in illustrations as well 38-31. Data are arranged in 1-minute strips of latitude and longitude, and well numbers are placed near the well symbols. The first well in this listing is in the southernmost strip and is followed by other strips successively farther north.

ABBREVIATIONS

1. Type of well

Drl = drilled
Dug = dug
Drv = driven
Aug = augered

2. Well finish

S = screen
O = open hole

3. Aquifer type

On = Onondaga Limestone
AB = Akron and Bertie Dolomites
Cm = Camillus Shale
S&G = Sand and gravel

4. Land-surface elevation

in feet above sea level, estimated from topographic maps.

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Table 12.--Records of selected wells in eastern Erie County, N.Y.

[A dash indicates no data available]

Location latitude-longitude	Owner	Date drilled	Type of well	Well depth (ft)	Casing or hole diam. (in.)	Well finish	Aquifer type	Land-surface elevation (ft)	Water level: Depth below land surface (ft) April 24-25, 1984	Water level: Depth below land surface (ft) Oct. 11-12, 1984	Well yield (gal/min)	Remarks
4256 38 7834 31	U.S. Geological Survey	1981	Aug	58	2	S	S & G	775	33.0	43.8		
4256 40 7837 57	Toby Greenhouse	--	Drl	155	6	O	On,Ab,Cm	735	63.6	72.4		
4256 42 7837 06	C. Kicak	--	Drl	--	6	O	On	765	19.9	28.9		
4256 47 7839 07	J. Pawlak	--	Drl	--	6	O	On	715	7.6	12.2		
4257 00 7841 28	G. Wojcki	--	Drl	20	6	O	On	710	10.1	13.8		
4257 06 7833 10	Jacks	--	Drl	45	6	O	On	774	9.6	--		
4257 07 7833 10	Fonmer	--	Drl	61	6	O	On	774	9.7	21.3		
4257 11 7835 31	Auction House	--	Drl	--	6	O	On	790	38.4	41.0		
4257 14 7831 53	--	1982	Drl	66	6	O	On	781	--	28.5	10	
4257 16 7841 24	E. Walters	--	Drl	20	6	O	On	712	12.7	--		
4257 17 7830 47	H. Smith	8/82	Drl	42	6	O	On	796	2.8	--		Redrilled, old depth = 36 ft
4257 19 7836 49	Lancaster Landfill	1980	Drl	66	4	O	On	762	32.0	33.4	2	
4257 20 7841 05	Rose Gerdan	--	Drl	--	6	O	On	720	14.4	18.5		
4257 24 7839 11	Londos	8/80	Drl	66	6	O	On	725	25.2	36.2	30	
4257 26 7828 44	R. Kiegler	1982	Drl	72	6	O	On	828.6	4.5	6.0	10	
4257 26 7838 05	Bender	--	Drl	--	6	O	On	730	8.3	32.4		
4257 29 7831 51	Johnson	10/83	Drl	65	6	O	On	783	8.6	25.4	25	Redrilled
4257 30 7837 59	Harris	7/82	Drl	52	6	O	On	733	8.6	31.5	10	
4257 31 7838 41	P. Treep	--	Drl	30	6	O	On	728	8.3	22.3		
4257 35 7834 31	U.S. Geological Survey	1981	Aug	16	2	O	On	798	1.5	3.4		
4257 36 7833 10	Kurpita	--	Drl	40	6	O	On	778	3.4	14.7		
4257 37 7839 26	Scarpello	--	Drl	45	6	O	On	721	13.5	18.2		
4257 38 7834 20	Schabert	10/82	Drl	102	6	O	On	794.5	33.8	65.8	10	Redrilled, old depth = 72 ft
4257 38 7839 12	Majewski	--	Drl	77	6	O	On	727	8.8	16.1		
4257 38 7839 59	GZA	1984	Drl	102	6	O	Ab	737.3	--	--		
4257 39 7835 36	Minnick	--	Drl	40	6	O	On	791	36.8	36.8		
4257 40 7834 20	D. Crist	--	Drl	90	6	O	On	795.8	66.9	66.9		Redrilled, old depth = 68 ft
4257 40 7836 02	D. Volker	1981	Drl	50	6	O	On	763	43.3	43.3	10	Redrilled
4257 41 7835 55	DePaolo	9/82	Drl	89	6	O	On	769	50.5	50.5	10	Redrilled
4257 42 7834 20	Marek	10/82	Drl	90	6	O	On	793.7	65.0	65.0	10	Redrilled, old depth = 60 ft

Table 12.--Records of selected wells in eastern Erie County, N.Y. (continued).

Location latitude-longitude	Owner	Date drilled	Type of well	Well depth (ft)	Casing or hole diam. (in.)	Well finish	Aquifer type	Land-surface elevation (ft)	Water level: Depth below land surface (ft) April 24-25, 1984	Water level: Depth below land surface (ft) Oct. 11-12, 1984	Well yield (gal/min)	Remarks
4257 42 7837 58	A. Pfaelb	--	Drl	--	6	O	On	736.3	15.0	15.0		
4257 43 7830 48	K. Smith	--	Drl	54	6	O	On	796	11.3	20.2		
4257 45 7834 20	L. Wieniewski	1983	Drl	96	6	O	On	793.2	32.3	64.4		Redrilled, old depth = 72 ft
4257 47 7834 21	Messinger	--	Drl	95	6	O	On	792.1	32.5	63.1		Redrilled, old depth = 70 ft
4257 47 7834 25	B. McCumber	--	Drl	95	6	O	On	790.6	31.9	60.9		Redrilled, old depth = 60 ft
4257 50 7834 20	Remingtoe	10/82	Drl	100	6	O	On	791.9	30.9	62.8	10	Redrilled
4257 51 7838 41	--	1981	Drl	38	0.75	S	On	722	+0.1	3.5		
4257 52 7833 42	--	--	Drl	54	6	O	On	798	23.6	Dry		
4257 53 7834 20	Rainecki	10/82	Drl	110	6	O	On	792.1	31.1	63.2	50	Redrilled
4257 54 7838 11	--	1981	Drl	35	.75	S	On	723	1.2	3.3		
4257 55 7829 45	Terboy	--	Drl	50	6	O	On	809	7.0	13.7		
	Richardson	9/82	Drl	94	6	O	On	807	--	--		Redrilled
4257 55 7830 28	D. Milsham	--	Drl	70	6	O	On	800	5.8	12.7		
4257 55 7830 48	Guidie	7/83	Drl	82	8	O	On	803	21.9	32.4	10	
4257 55 7834 20	Hoffman	1982	Drl	102	6	O	On	791.4	30.6	62.5	20	
4257 56 7837 59	GZA	1984	Drl	175	6	S	Ca	727.7	--	--		
4257 57 7829 01	Brzuszkiewicz	--	Drl	30	2	O	On	813	4.1	3.9		
4257 57 7834 23	Tagbierino	--	Drl	125	6	O	On,Ab	801	--	72.1	1	Redrilled, old depth = 77 ft
4257 59 7836 29	U.S. Geological Survey	1981	Aug	12	.75	S	S & G	763.7	8.1	9.9		
4258 01 7830 48	Vohwinkel	--	Drl	32	6	O	S & G	805	7.1	--	30	
4258 02 7840 00	--	1981	Drl	41	6	S	On	694.9	30.6	45.6		
4258 05 7830 45	Schoenthal	--	Drl	22	6	O	S & G	803	2.7	--		
4258 05 7830 48	Koelles	--	Drl	20	6	O	S & G	805	3.5	--		
4258 09 7839 42	Burdette	--	Drl	--	6	O	On	705	--	11.0		
4258 09 7839 46	Lauge	--	Drl	--	6	O	On	705	4.7	11.3		
4258 11 7828 42	Goodhue	--	Drl	--	2	O	On	832.9	32.2	32.3	5	
4258 11 7834 03	T. Wende	--	Drl	--	6	O	On	783.9	21.0	33.0		
4258 11 7834 23	U.S. Geological Survey	--	Aug	32	2	S	S & G	798.4	14.8	18.7		
4258 13 7833 07	Schultz	--	Drl	100	6	O	On	784.4	15.2	48.6	75	Redrilled, old depth = 57 ft
4258 15 7834 51	Town of Clarence	--	Drl	>100	2	S	Ab,Ca	801.9	52.1	74.0		
4258 16 7832 51	Burke	--	Drl	86	6	O	On	791.0	21.3	54.5		Redrilled, old depth = 56 ft
4258 18 7835 30	U.S. Geological Survey	1981	Aug	43	2	S	S & G	770.1	23.3	32.1		
4258 19 7835 07	Melbourne	--	Drl	40	6	O	On	790.1	24.8	24.3		
4258 20 7831 39	Meiman	--	Drl	105	6	O	On	788	--	35.6		Redrilled, old depth = 37 ft
4258 20 7831 54	Thompson	--	Drl	--	6	O	On	785	11.0	27.8		
4258 20 7832 01	Ferris	8/83	Drl	170	6	O	On,Ab,Ca	785	12.0	--	20	Redrilled, old depth = 60 ft

R26

Table 12.--Records of selected wells in eastern Erie County, N.Y. (continued).

Location latitude-longitude	Owner	Date drilled	Type of well	Well depth (ft)	Casing or hole diam. (in.)	Well finish	Aquifer type	Land-surface elevation (ft)	Water level Depth below land surface (ft) April 24-25, 1984	Water level Depth below land surface (ft) Oct. 11-12, 1984	Well yield (gal/min)	Remarks
4258 21 7831 32	Werner	8/83	Drl	81	6	O	On	789	14.0	--		Redrilled, old depth = 29 ft
4258 21 7835 20	H. Bloodsworth	--	Drl	49	6	O	On	779.5	32.5	40.5		
4258 21 7835 23	R. Bickert	--	Drl	50	6	O	On	776.6	31.4	39.4		
4258 22 7833 08	D. Bugenhagen	--	Drl	95	6	O	On	782.9	13.5	46.1		
4258 22 7833 42	G. Dorr	8/82	Drl	110	6	O	On	767.0	2.1	31.6	10	Redrilled, old depth = 28 ft
4258 22 7839 42	G. Compton	--	Drl	--	6	O	On	713	5.6	15.7		
4258 23 7827 51	Jarudzin	--	Drl	72	6	O	On	843.1	--	51.0		Redrilled, old depth = 50 ft
4258 23 7831 39	Broady	--	Drl	--	6	O	On	795	--	--		
4258 23 7832 17	J. Weaver	--	Drl	86	6	O	On	782.4	11.5	41.1	10	Redrilled
4258 23 7833 34	A. Bugenhagen	8/82	Drl	100	6	O	On	772.0	7.3	31.8		Redrilled, old depth = 40 ft
4258 23 7841 14	--	8/81	Drl	34	0.75	S	On	703	8.2	17.5		
4258 24 7830 48	Richardson	9.82	Drl	94	6	O	On	807	--	--		Redrilled, old depth = 81 ft
4258 24 7839 38	K. Metz	--	Drl	--	6	O	On	714	5.1	14.2		
4258 29 7827 50	Jarudzin	7/78	Drl	84	6	O	On	842.7	28.1	51.6	10	Redrilled
4258 29 7828 46	Carlson	9/76	Drl	73	6	O	On	817.7	17.2	--		
4258 29 7837 34	Stephan	--	Drl	--	6	O	On	731	6.2	13.5		
4258 30 7832 16	Szpylmans	9/83	Drl	131	6	O	On,Ab	781.9	9.4	43.9	3	Redrilled
4258 31 7827 41	Fisher	--	Drl	110	6	O	On	821	23.2	38.3		
4258 31 7829 11	Raduns	8/85	Drl	76	6	O	On	807.4	10.4	25.6		Redrilled from 32 to 76 ft, yield = 20 gal/min
4258 32 7829 46	Casseri	--	Drl	--	6	O	On	800	11.3	23.6		
4258 33 7830 55	U.S. Geological Survey	7/84	Drl	40	2	S	On	790	--	38.9		
4258 34 7828 14	Hyde	--	Drl	90	6	O	On	823	20.8	24.0		
4258 34 7828 32	Fosmer	1972	Drl	50	6	O	On	822.5	23.8	31.6		
4258 34 7828 35	Kuhn	--	Drl	--	6	O	On	823.0	--	38.8	15	
4258 35 7830 25	Baumler	--	Drl	72	6	O	On	802	27.5	62.5		Redrilled
4258 34 7833 07	D. Berghom	9/82	Drl	96	6	O	On	719.2	15.9	32.3	10	
4258 35 7829 55	W. Nadrowski	--	Drl	52	6	O	On	798.3	10.6	23.9		
4258 35 7830 25	Baumler	--	Drl	75	6	O	On	802	26.9	dry		
4258 35 7833 10	Rebrovitch	--	Drl	40	6	O	On	770.3	12.9	22.3		
4258 35 7835 55	Twele	7/82	Drl	62	6	O	On	732	15.8	21.5	25	Redrilled
4258 36 7828 43	Ballow	--	Drl	--	6	O	On	823.6	24.2	--		
4258 36 7829 50	S. Nagy	--	Drl	--	6	O	On	798.6	16.4	29.1		
4258 36 7832 13	Eckert	8/82	Drl	91	6	O	On	781.9	11.6	43.7	10	Redrilled
4258 36 7838 49	McLaughlin	--	Drl	97	6	O	On	726	12.8	23.6		
4258 37 7828 43	Bednarek	--	Drl	--	6	O	On	819.2	17.4	28.6	10	

R27

Table 12.--Records of selected wells in eastern Erie County, N.Y. (continued).

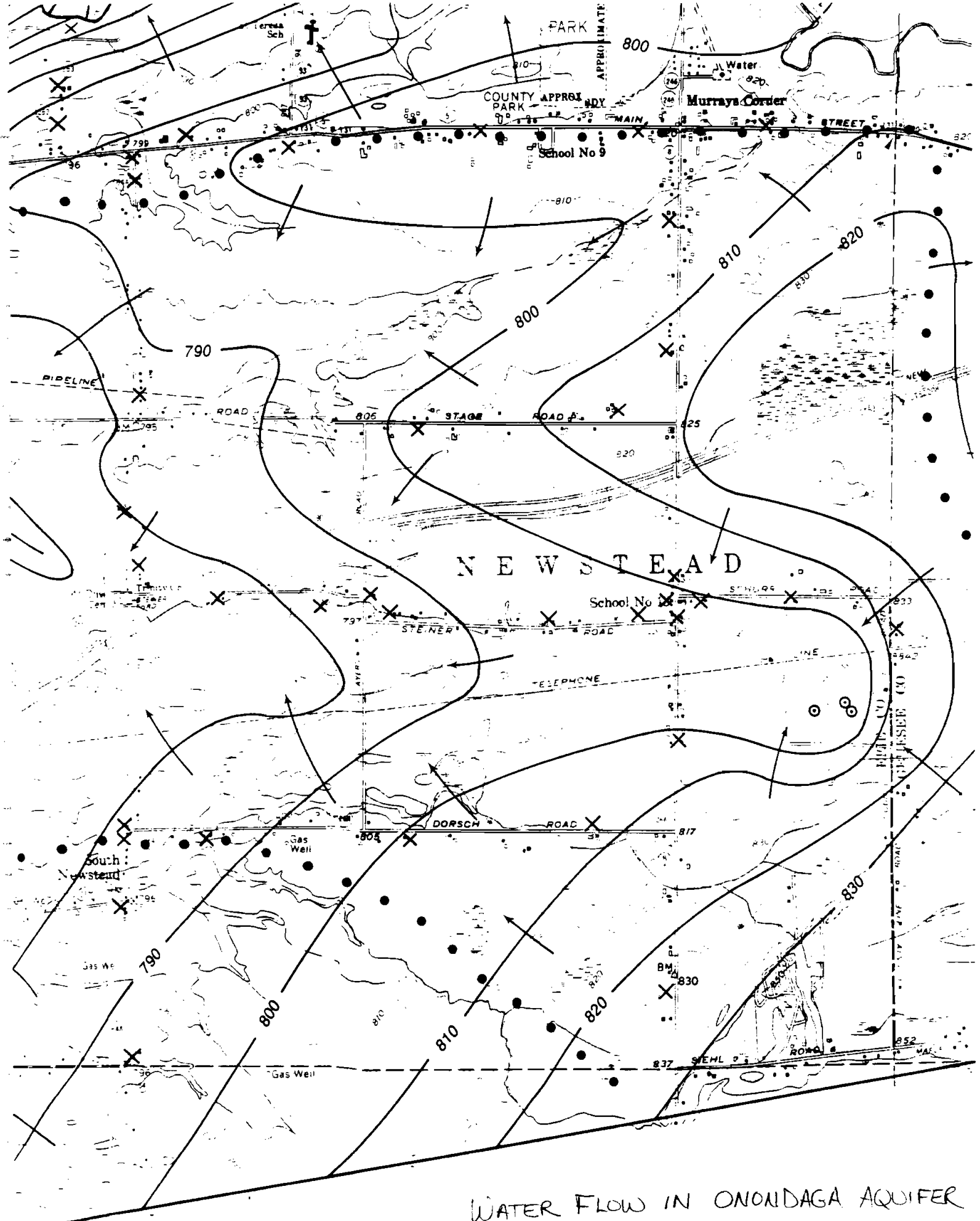
Location latitude-longitude	Owner	Date drilled	Type of well	Well depth (ft)	Casing or hole diam. (in.)	Well finish	Aquifer type	Land-surface elevation (ft)	Water level: Depth below land surface (ft) April 24-25, 1984	Water level: Depth below land surface (ft) Oct. 11-12, 1984	Well yield (gal/min)	Remarks
4258 38 7833 03	Thallman	9/82	Dr1	86	6	0	On	777.5	17.4	28.9	4	Redrilled, old depth = 48 ft
4258 38 7838 52	Miller	--	Dr1	--	6	0	On	720	47.3	56.1		
4258 38 7840 24	--	8/81	Dr1	23	0.75	0	Ab	668	8.4	18.2		
4258 39 7838 34	Scavone	11/83	Dr1	113	6	0	On,Ab	732	30.2	41.3		
4258 39 7830 48	Schoenthal	--	Dr1	60	6	0	On	803	--	--		
4258 40 7833 01	Hofner	--	Dr1	75	6	0	On	782.7	21.1	30.4		
4258 40 7830 44	Pouthier	--	Dr1	60	6	0	On	801	27.8	43.6		
4258 41 7833 06	Blumont	6/81	Dr1	67	6	0	On	766.7	8.8	17.7	7	
4258 43 7835 10	--	--	Dr1	--	6	0	On	752	15.6	24.2		
4258 43 7837 10	D. Hughes	--	Dr1	70	6	0	On	738	6.4	12.4		
4258 45 7832 13	Laver	11/82	Dr1	97	6	0	On	788.4	18.1	50.0	10	Redrilled, old depth = 57 ft
4258 47 7832 27	Antolik	2/82	Dr1	100	6	0	On	785.2	13.0	45.3	5	Redrilled, old depth = 55 ft
4258 49 7830 47	Pingitore	8/56	Dr1	52	6	0	On	800	20.0	29.0	55	
4258 49 7832 12	Trapp	9/83	Dr1	100	6	0	On	785.0	12.6	46.3	25	Redrilled, old depth = 57 ft
4258 50 7828 40	--	--	Dr1	--	6	0	On	820	--	14.2		
4258 51 7832 13	Richards	9/83	Dr1	100	6	0	On	784.3	11.7	44.6		Redrilled
4258 52 7838 33	Smith	--	Dr1	--	6	0	On	705	21.8	25.8		
4258 56 7835 49	Rouse	1954	Dr1	35	6	0	On	710	8.1	14.0		
4258 56 7836 31	L. Scott	1958	Dr1	58	6	0	On	736	14.1	30.6		
4259 02 7832 02	Kampler	10/83	Dr1	92	6	0	On	781.6	--	40.5	10	Redrilled, old depth = 62 ft
4259 03 7828 43	Holmes	--	Dr1	24	6	0	On	822	--	9.7		
4259 03 7829 39	Knop	--	Dr1	32	6	0	On	812	8.4	10.9		
4259 04 7831 59	D. Roper	--	Dr1	100	6	0	On	781.5	13.9	39.4		Redrilled, old depth = 55 ft
4259 04 7835 50	Erikson	--	Dr1	--	6	0	On	696	1.1	--		
4259 05 7828 55	J. Finch	--	Dr1	50	6	0	On	826	--	26.6		
4259 05 7828 56	J. Finch	--	Dr1	150	6	0	On,Ab	824	7.3	25.6	12	
4259 07 7834 12	Parker	--	Dr1	--	6	0	On	770	38.1	50.4		
4259 08 7838 09	Koehler	--	Dr1	--	6	0	On	741	51.0	55.7		
4259 09 7830 44	Statler	--	Dr1	--	6	0	On	796	8.6	14.2		
4259 16 7828 42	Wight	--	Dr1	--	6	0	On	824	11.4	29.2		
4259 16 7828 43	Wight	4/80	Dr1	58	6	0	On	824	11.3	29.0	20	
4259 20 7837 54	Torak	--	Dr1	110	6	0	On	699	0.0	26.6		
4259 23 7832 50	Quarry Hill	--	Dr1	140	6	0	On,Ab	775	--	35.4	75	
4259 26 7830 45	--	--	Dr1	62	6	0	On	811	--	11.7		
4259 31 7833 00	Schlecta	--	Dr1	75	6	0	On	770	19.0	31.6		

R28

Table 12.--Records of selected wells in eastern Erie County, N.Y. (continued).

Location latitude-longitude	Owner	Date drilled	Type of well	Well depth (ft)	Casing or hole diam. (in.)	Well finish	Aquifer type	Land-surface elevation (ft)	Water level: Depth below land surface (ft) April 24-25, 1984	Water level: Depth below land surface (ft) Oct. 11-12, 1984	Well yield (gal/min)	Remarks
4259 34 7833 09	Martin	--	Dr1	--	6	0	On,Ab	745	17.7	15.7		
4259 36 7833 09	Stein	--	Dr1	75	6	0	On	720	6.0	22.3		
4259 38 7833 42	Hernandez	--	Dr1	27	6	0	On	805	1.7	12.9		
4259 45 7830 44	Hammond	--	Dr1	40	6	0	On	799	3.0	7.8		
4259 49 7830 44	--	--	Dr1	--	6	0	On	799	4.2	8.6		
4259 51 7830 09	JM Gunsmith	--	Dr1	36	6	0	On	810	1.6	9.0	15	
4259 52 7830 36	MCA	--	Dr1	49	6	0	On	799	3.5	6.2		
4259 53 7828 50	Shaff	1977	Dr1	38	6	0	On	815	7.7	14.3	50	
4259 53 7829 25	--	--	Dr1	62	6	0	On	811	2.8	9.7		
4259 54 7828 18	Groneau	7/79	Dr1	37	6	0	On	815	11.8	16.7	15	
4259 55 7831 01	Machelski	--	Dr1	--	6	0	On	790	7.5	10.1		
4300 01 7831 01	Popelski	--	Dr1	49	6	0	On	788	9.7	--		
4300 04 7831 01	Hewstead Fire Station	10/62	Dr1	65	6	0	On	790	--	25.0		
4300 04 7831 03	Hewstead Fire Station	--	Dr1	53	6	0	On	793	--	19.8		
4300 05 7828 43	--	--	Dr1	62	6	0	On	811	2.8	11.2		
4300 17 7830 56	Edwards	11/83	Dr1	47	6	0	On	780	27.1	36.5	10	

R29



WATER FLOW IN ONONDAGA AQUIFER
APRIL 25-26, 1984

R30

REFERENCE 3

SUPERFUND

NATIONAL PRIORITIES LIST SEMINAR

EPA REGION II

ALBANY, NY

The MITRE Corporation

April 2-3, 1986

R31

Observed Release

The release and the background well must be in the same aquifer at comparable elevations.

Knowledge of flow gradients helps in determining where to look for background versus contamination...but beware of local or seasonal variation. The purpose is to find a nearby well in the aquifer of concern that is not under the influence of the site.

Background well(s) must discriminate out any alternative sources of the contamination.

The attribution of the release to the facility is strengthened if the substances found in the release are documented to have been deposited at the facility.

Depth of the Aquifer of Concern (Page 12)

- Distance between the deepest point of known contamination and the top of the aquifer of concern.

  - Deepest level at which contamination is documented.
  - Highest seasonal level of the saturated zone of the aquifer.

- If depth of deposit is unknown, 6 feet may be assumed.

REFERENCE 4

MEMORANDUM

TO: Sleepy Hollow Lake Campground File
FROM: Dennis Farrar
SUBJECT: Inspection and Sampling Event
DATE: 5/28/85

On 5/24/85 I met Investigator Don Becker for the purpose of inspecting and sampling the Sleepy Hollow Lake Campground in the Town of Newstead. We arrived at the site at 10:00 a.m. and were given permission to proceed. We drove back to a dumpsite in the rear of the campground which contained cleared brush, some rubbish and 2 - 3 drums which had been cut open at one or both ends and were empty. On the right side of the road was a wetland, to which the lake drained. There were many drums in this area, all approximately 5 - 20 feet from the road. After a count was taken, it was determined that 18 drums were present. It appeared that the drums had been in place for some time, as they had sunk into the swamp and were quite rusty. No labels were evident on any drums and all were very difficult to open, if at all possible. An inventory is attached. At 1:20 p.m. we completed the sampling. Three samples were taken, #5, #9 and #10. As we were leaving the site, we met Tony, who is the current owner of the site. He indicated that the former owner of the site is responsible for the dumping and he (Tony) would be unwilling to pay for a cleanup again. Investigator Becker told him that HE, as the property holder would probably be responsible. We left the site at about 1:30 p.m.

DF:jb
Att.

R 33
(2)

DRUM INVENTORY

DRUM #		DESCRIPTION
1 - 4	-	Unable to open; #1 was determined to be empty; #2 - #4 had some material in them.
5	-	25 gallons of a thick, hardened light brown sludge. Some liquid was evident in the sludge. A solvent odor was noticed.
6	-	Empty, crushed drum.
7		Open bung, drum contained 25 gallons of swamp water.
8	-	30 gallons of a hardened green sludge, solvent odor was noticed.
9	-	40 gallons of a clear, non-viscous liquid, with a very strong solvent odor. Material appeared to be pure solvent.
10	-	Vented upon opening, contained a pink-orange material mixed with a brown sludge. This material quickly hardened to form a plastic glue-like substance. A solvent odor was again noticed.
11	-	Upside down - appeared to be empty.
12	-	Upside down - had some material in it.
13	-	Drum was quite heavy, but I was unable to open it.
14	-	Drum was quite heavy, but I was unable to open it.
15	-	Holes in bottom of drum, appeared to be full of swamp water.
16	-	25 gallons of what appeared to be a motor oil and water mixture.
17	-	25 gallons of what appeared to be a motor oil and water mixture.
18	-	Holes in drum top - leaking a very viscous white glue-like substance.

REFERENCE 5

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

REFERENCE 6

WEATHER ATLAS of the UNITED STATES

Originally titled: CLIMATIC ATLAS OF THE UNITED STATES

U.S. DEPARTMENT OF COMMERCE
C. R. Smith, Secretary

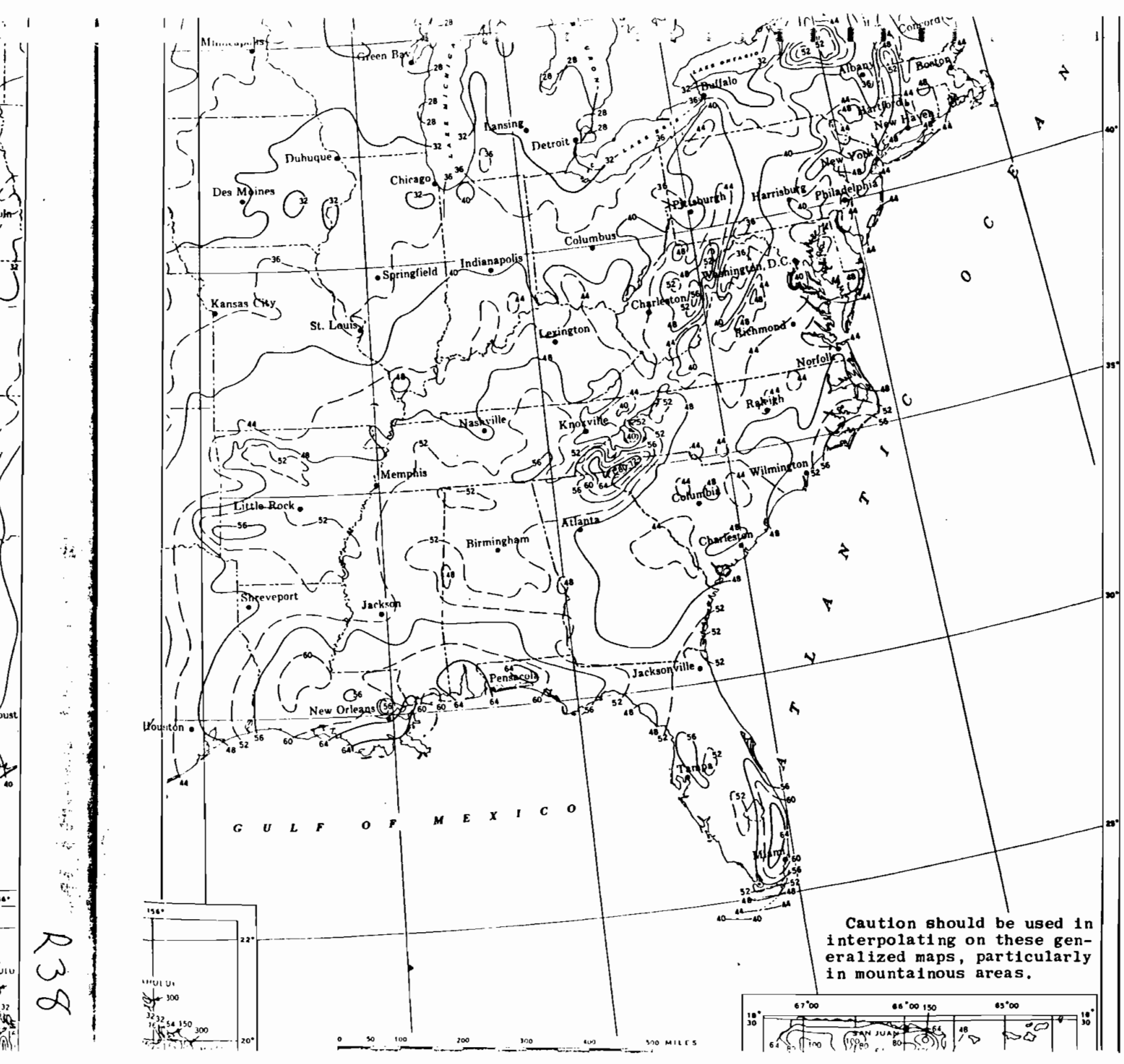
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
Robert M. White, Administrator

ENVIRONMENTAL DATA SERVICE
Woodrow C. Jacobs, Director

JUNE 1968

Reprinted 1975 by
GALE RESEARCH COMPANY
Book Tower, Detroit, Michigan 48226

PRECIPITATION (Inches)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Green Bay
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Detroit
Buffalo
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New Haven
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Philadelphia
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Kansas City
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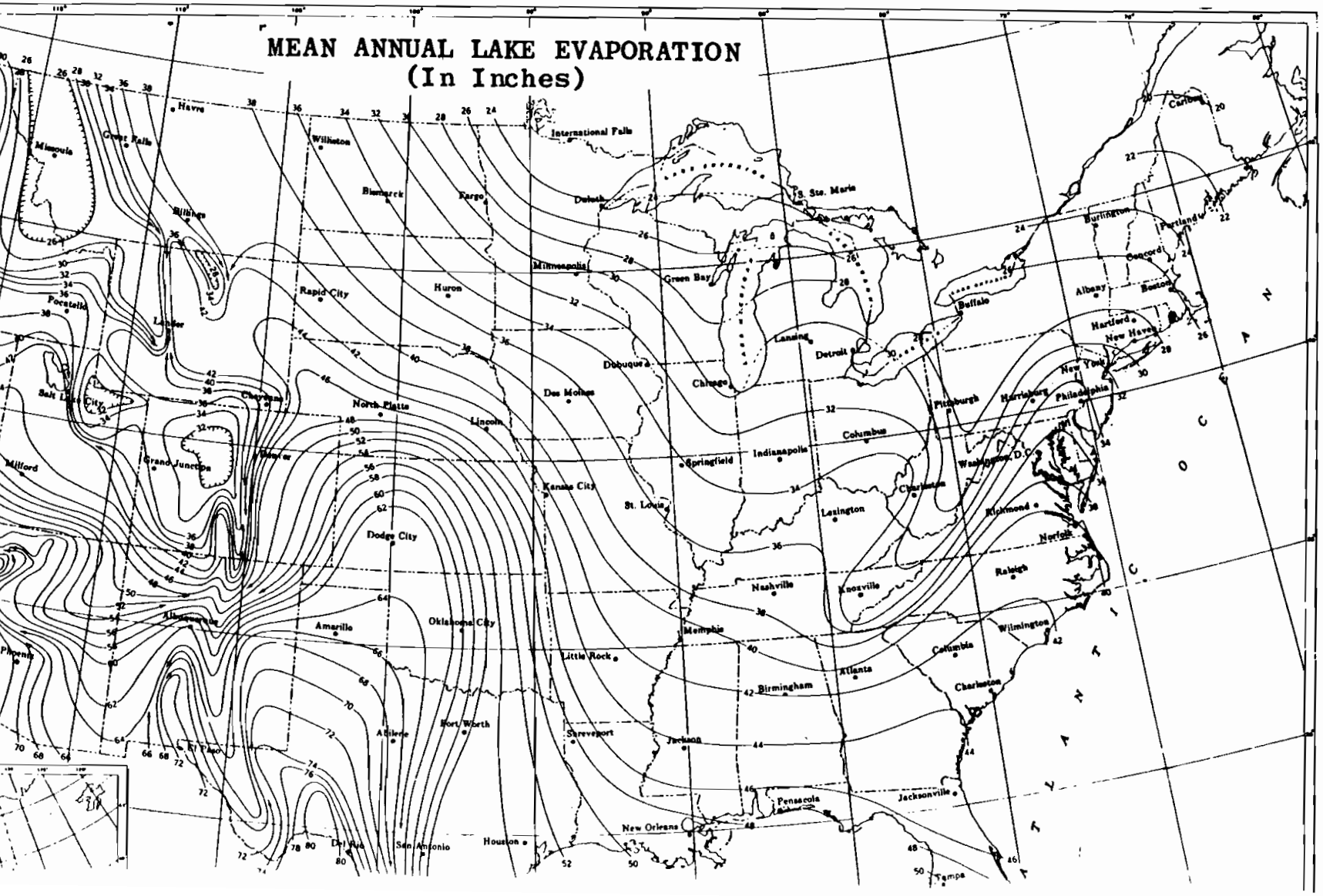
Charleston
Lexington
Richmond
Norfolk
Raleigh
Nashville
Knoxville
Memphis
Wilmington
Little Rock
Columbia
Atlanta
Charleston
Birmingham
Shreveport
Jackson
Jacksonville
Pensacola
New Orleans
Houston
Tampa
Miami
ATLANTIC OCEAN
GULF OF MEXICO
Caution should be used in interpolating on these generalized maps, particularly in mountainous areas.
0 50 100 200 300 400 500 MILES
SAN JUAN

R38

MEAN ANNUAL LAKE EVAPORATION
(In Inches)



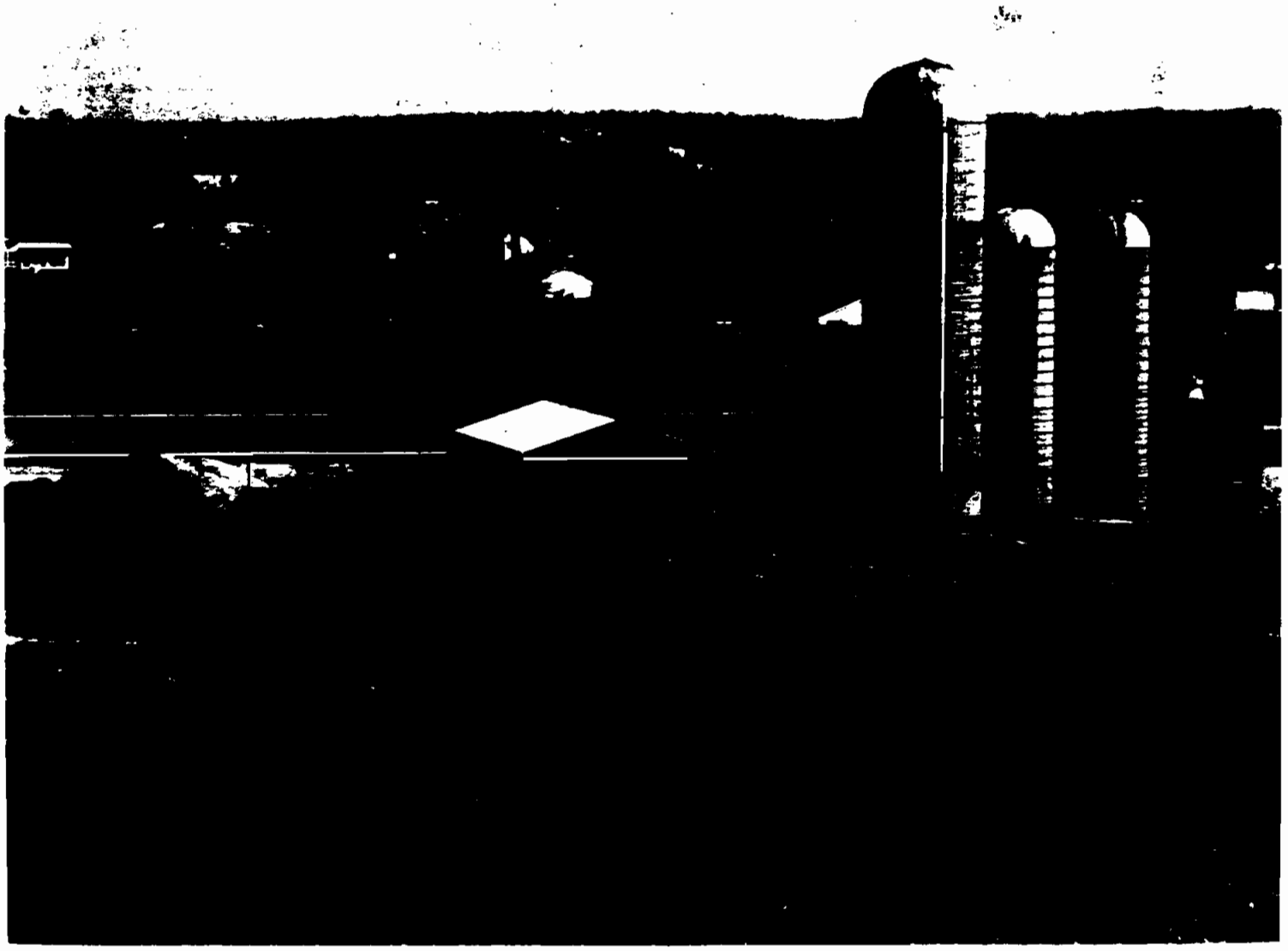
REFERENCE 7

United States
Department of
Agriculture

Soil
Conservation
Service

In Cooperation with
the Cornell University
Agricultural
Experiment Station

Soil Survey of Erie County, New York



R40

Depth to bedrock is 5 feet or more. The surface layer and subsoil are very strongly acid to medium acid.

This soil is well suited to farming, and most of the acreage is farmed. It has few limitations for most urban uses.

This Allard soil is well suited to most cultivated crops. Potatoes do exceptionally well. Corn, potatoes, and beans are the main crops. Crops respond well to liberal application of lime and fertilizer. The use of mechanical harvesters is not restricted by gravel or cobblestones. This soil dries out quickly early in the spring and after heavy rains. Keeping tillage to a minimum, using cover crops, incorporating crop residues into the soil, and rotating crops help maintain the organic matter content and good tilth. Irrigation systems are easy to manage on this nearly level soil.

This soil is suited to pasture and hay. Proper stocking, rotational grazing, yearly mowing, and deferment of grazing when the soil is wet are the chief management needs for maintaining high quality pasture.

The potential of this soil for wood crops is good, but only a small acreage is wooded. There are few limitations for the use of equipment, and there is little hazard of erosion or of trees uprooting during windstorms. Seedling mortality is usually low because of the high available water capacity of the soil.

This Allard soil is well suited to most urban and recreational uses. Septic tank absorption fields function well, but care must be taken to avoid possible contamination of the water table because the substratum is rapidly permeable. Frequent fertilization, liming, and irrigation help maintain grass and shrubs. This soil is a good source of topsoil, and when the silty overburden is removed, it is a good source of sand and gravel. Some areas provide excellent sites for athletic fields or for other uses that require a nearly level, stone-free site.

This Allard soil is in capability class I.

AlB—Allard silt loam, 3 to 8 percent slopes. This gently sloping soil is deep and well drained. It is on stream terraces of silt-mantled glacial outwash. Areas of this soil are roughly rectangular or oblong and range from 5 to 20 acres.

Typically, this soil has a surface layer of dark brown silt loam about 9 inches thick. The subsoil extends to a depth of 27 inches. It is strong brown silt loam in the upper part and yellowish brown light silt loam in the lower part. The substratum to a depth of 60 inches is brown and light grayish brown very gravelly loamy sand.

Included with this soil in mapping are small intermingled areas of moderately well drained Scio soils in slight depressions where a thick silt mantle is underlain by gravel deposits. Also included is a soil that has a silt mantle less than 18 inches thick. Areas of the included soils are 1/4 acre to 3 acres.

The permeability of this Allard soil is moderate in the subsoil and rapid or very rapid in the substratum. The available water capacity is high, and runoff is medium. There is generally no gravel in the surface layer and subsoil. Depth to bedrock is 5 feet or more. The surface layer and subsoil are very strongly acid to medium acid.

This soil is well suited to farming, and most of the acreage is farmed. It has few limitations for most urban uses.

This Allard soil is suited to most cultivated crops. Corn, potatoes, and beans are the main crops. Because the soil is acid and low in natural fertility, crops respond well to liberal application of both lime and fertilizer. The use of mechanical harvesters is not restricted by gravel or cobblestones. This soil dries out quickly in the spring and after heavy rains. Erosion is a hazard, particularly where slopes are long. Keeping tillage to a minimum, tilling across slope, using cover crops, incorporating crop residues into the soil, and including sod crops in the cropping system help reduce the erosion hazard, maintain the organic matter content, and preserve tilth. This soil is suited to irrigation, but irrigation systems are more difficult to manage than on the nearly level Allard soils.

This soil is suited to pasture and hay. Proper stocking, rotational grazing, yearly mowing, and deferment of grazing when the soil is wet help prevent seedling loss and promote good forage growth. Fertilizer and lime should be applied for best pasture growth.

The potential of this soil for wood crops is good, but only a small acreage is wooded. There are few limitations for the use of equipment, and the uprooting of trees during windstorms is usually not a hazard. Erosion along logging trails can be a problem on long slopes. Seedling mortality is normally low because of the high available water capacity of the soil.

This Allard soil is suitable for many urban and recreational uses. It is suitable for septic tank absorption fields, but care must be taken to avoid possible contamination of the underlying water table because the substratum is rapidly permeable. Frequent fertilization, liming, and irrigation help maintain grass and shrubs. This soil is a good source of topsoil, and the substratum is a suitable source of sand and gravel.

This Allard soil is in capability subclass IIe.

AmA—Alton fine gravelly loam, 0 to 3 percent slopes. This nearly level soil is deep and well drained and somewhat excessively drained. It formed in beach and deltaic deposits that are dominantly sand and gravel. This soil is on ridgetops, terraces, and remnant deltas. Areas of this soil range from 5 to 100 acres or more and are generally oblong.

Typically, this soil has a surface layer of very friable, dark grayish brown fine gravelly loam about 9 inches thick. The subsoil extends to a depth of about 30 inches. It is yellowish brown fine gravelly loam in the upper part and dark yellowish brown fine very gravelly sandy loam in the lower part. The substratum is loose, dark brown

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fine very gravelly loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of slightly wetter Phelps soils in small depressions. Also included are small areas of the sandy Colonie soils, the gravelly Palmyra soils, and the shaly Blasdell soils. A few included areas are gently sloping. Included wet spots and sand spots are indicated by special symbols on the soil map. Areas of included soils range from 1/4 acre to 2 acres.

The permeability of this Alton soil is moderately rapid in the subsoil and rapid to very rapid in the substratum. The available water capacity in the root zone is low to moderate, and runoff is slow. Gravel makes up 20 to 35 percent of the surface layer and consists mostly of pebbles less than one-half inch in diameter. Unless this soil is limed, reaction is strongly acid or very strongly acid in the surface layer and strongly acid to neutral in the subsoil.

This soil is suitable for farming. Most of the acreage is cultivated and used for vegetables.

This Alton soil is well suited to cultivated crops and is especially productive for selected vegetable crops. Fine gravel, summer droughtiness, and rapid leaching of nutrients are the main limitations. This nearly level soil responds well to irrigation during extended dry periods and is somewhat easier to irrigate than the gently sloping Alton soils. Management should include additions of large quantities of organic matter and fertilizer during the growing season. Keeping tillage to a minimum, using cover crops, incorporating crop residues into the soil, and rotating crops help maintain good tilth and increase the organic matter content. Increasing the organic matter content improves the available water capacity of the soil.

This soil is also suited to hay and pasture. Overgrazing when the soil is dry can cause the loss of the forage plants.

Timber production on this soil is good. There are generally no limitations to the use of equipment on this soil. Seedling mortality is generally not a problem, but seedlings should be planted in the spring when the soil is moist. Removing brush, careful planting, and fertilizing improve seedling survival.

This soil is suited to many urban uses. The pollution of the water table is a hazard if the soil is used for septic tank absorption fields because the substratum is rapidly to very rapidly permeable. Although small, gravel can be bothersome in landscaping and seeding lawns. Frequent fertilization and irrigation help maintain grass and shrubs. Some areas of this soil are suitable for athletic fields and other uses that require a nearly level site, although fine gravel and a slight tendency to droughtiness are minor limitations.

This Alton soil is in capability subclass IIs.

AmB—Alton fine gravelly loam, 3 to 8 percent slopes. This gently sloping soil is deep and well drained and somewhat excessively drained. It formed in beach and deltaic deposits. This soil is on ridges, undulating terraces, and remnant deltas. Areas of this soil range from 5 to 100 acres or more and are generally oblong.

Typically, this soil has a surface layer of very friable, dark grayish brown fine gravelly loam about 9 inches thick. The subsoil extends to a depth of about 30 inches. It is yellowish brown fine gravelly loam in the upper part and dark yellowish brown fine very gravelly sandy loam in the lower part. The substratum is loose, dark brown fine very gravelly loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of slightly wetter Phelps soils in small depressions. Also included are small areas of the sandy Colonie soils, the gravelly Palmyra soils, and the shaly Blasdell soils. Included wet spots and sand spots are indicated by special symbols on the soil map. Areas of included soils range from 1/4 acre to 2 acres.

The permeability of this Alton soil is moderately rapid in the subsoil and rapid to very rapid in the substratum. The available water capacity in the root zone is low to moderate, and runoff is slow. Gravel makes up 20 to 35 percent of the surface layer and consists mostly of pebbles less than one-half inch in diameter. Unless this soil is limed, reaction is strongly acid or very strongly acid in the surface layer and strongly acid to neutral in the subsoil.

This soil is suited to farming. Most of the acreage is cultivated and used for vegetables.

This Alton soil is suited to cultivated crops and is especially productive for selected vegetable crops. The slight erosion hazard, droughtiness in midsummer, gravel, and the rapid leaching of nutrients are the main limitations. Tillage of row crops or clean-cultivated crops should be on the contour as much as possible to control erosion. The soil responds well to irrigation during extended dry periods but is somewhat more difficult to irrigate than the nearly level Alton soils. Fertilizer should be applied at intervals during the growing season. Keeping tillage to a minimum, using cover crops, incorporating crop residues into the soil, and rotating crops help maintain tilth and increase organic matter content. Increasing the organic matter content improves the available water capacity of the soil.

Hay and pasture crops do well on this soil, especially deep-rooted forage plants, such as alfalfa. Overgrazing when the soil is dry can cause the loss of the pasture plants.

Timber production on this soil is good. Although the erosion hazard is slight, logging roads and skid trails should be on the contour or across the slope wherever possible. There are generally no limitations to the use of equipment on this soil. Seedling mortality is generally not a problem, but seedlings should be planted in the spring when the soil is moist. Removing brush, careful planting, and fertilizing improve seedling survival.

suitable for many crops grown in the county, except for early-market and long-season varieties.

Without adequate drainage this soil is better suited to hay or pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management. They cause soil compaction and trampling of forage plants, which lead to reduced plant growth and the eventual loss of the pasture seeding. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing during wet periods are the chief management needs.

The potential of this soil for wood crops is fair to good. Erosion is usually not a hazard, but seasonal wetness causes moderate seedling mortality and limits the use of equipment. The seasonal high water table also limits rooting depth, which can result in uprooting of trees during windstorms. Trees that can withstand high lime conditions are best suited to this soil.

The seasonal high water table, slow permeability in the substratum, and danger of frost heave are serious limitations for many urban uses of this Ovid soil. Drains around foundations are needed to minimize wetness. Some areas are suitable sites for recreation, such as picnic areas and hiking trails. Many areas are good sites for dugout ponds.

This Ovid soil is in capability subclass IIIw.

OvB—Ovid silt loam, 3 to 8 percent slopes. This gently sloping soil is somewhat poorly drained. It is in low, undulating, slightly concave areas on lower sideslopes, along field drainageways, and in shallow depressions. This soil formed in red glacial till or lacustrine sediments that were reglaciated and mixed with till. Areas of this soil are oblong or irregular in shape and range from 3 to 50 acres or more.

Typically, this soil has a surface layer of very dark grayish brown silt loam 10 inches thick. The subsoil extends to a depth of 20 inches. The upper 2 inches is mottled, brown light silty clay loam, and the lower part is mottled, dark brown clay loam. The substratum is mottled, reddish brown gravelly loam to a depth of 60 inches.

Included with this soil in mapping are small areas of the Cazenovia, Kendaia, Appleton, Churchville, and Ilion soils. The well drained and moderately well drained Cazenovia soils are on a few small convex knolls. The Kendaia and Appleton soils have a lower clay content in the subsoil than this Ovid soil. The Churchville soils have a moderately deep layer of clayey sediments. The poorly drained Ilion soils are in wet spots and the bottom of drainageways. Areas of included soils range from 1/2 acre to 3 acres.

From January through May this Ovid soil has a perched seasonal high water table in the upper part of the subsoil. Permeability is moderately slow in the subsoil and slow in the substratum. The available water capacity is moderate to high, and runoff is slow to medium. Gravel makes up 0 to 15 percent of the surface layer. Bedrock is generally many feet deep, but may be as little as 5 feet deep. Unless limed, the surface layer is medium acid or slightly acid and the subsoil is medium acid to neutral.

Because of seasonal wetness and slow permeability, this soil is only moderately suited to farming and is poorly suited to many urban uses. Most of the acreage is farmed, in woodland, or idle. A few areas are urbanized.

This Ovid soil is moderately suited to cultivated crops, unless drained. Subsurface drains generally require close spacing to be effective. Interceptor drains divert runoff and seepage. Erosion is a moderate hazard, and puddling and soil compaction are problems if the soil is tilled when wet. Keeping tillage to a minimum, using cover crops, plowing at the proper soil moisture level, tilling across slopes, and including grasses and legumes in the cropping system improve tilth, increase crop yields, and control erosion. This gently sloping soil is often easier to drain than the nearly level Ovid soil because suitable outlets are available. With adequate drainage and maintenance of tilth and fertility, this soil is suitable for many crops grown in the county, except for early-market and long-season varieties.

Without adequate drainage, this soil is often better suited to hay crops or pasture. Overgrazing and grazing when the soil is wet are major concerns of pasture management. Overgrazing can cause the loss of the pasture seeding. Grazing when the soil is wet can cause soil compaction and trampling of forage plants. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing during wet periods are the chief management needs.

The potential of this soil for wood crops is fair to good. Erosion is usually not a hazard, but seasonal wetness causes moderate seeding mortality and limits the use of equipment on this soil. The seasonal high water table also limits rooting depth, which can result in the uprooting of trees during windstorms.

The seasonal high water table, slow permeability in the substratum, and danger of frost heave are serious limitations for many urban uses of this Ovid soil. Drains around foundations and interceptor drains placed upslope from buildings minimize the wetness. Many areas are good sites for diked ponds.

This Ovid soil is in capability subclass IIIw.

Pa—Palms muck. This nearly level organic soil is deep and very poorly drained. It is in basinlike areas on the lowland lake plain and in depressions on the upland plateau. The organic material is well decomposed and 16 to 50 inches thick. It is underlain by loamy mineral soil. Areas of this soil are roughly oval or irregular in shape and range from 3 to 50 acres, but areas of 5 to 20 acres are most common.

Typically, this soil has a black, well decomposed, organic (muck) surface layer about 12 inches thick. The subsurfce layer extends to a depth of about 38 inches. It

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is friable, black to dark grayish brown well decomposed muck. The mineral substratum below a depth of about 38 inches is dark gray to gray loam.

Included with this soil in mapping are small intermingled areas of the Canandaigua, Lamson, and Lyons soils that have a mucky surface layer. These soils formed in organic deposits that are less than 16 inches deep. The Canandaigua soils have a silty subsoil, the Lamson soils have a high sand content in the subsoil, and the Lyons soils have gravel and stones mixed with the mineral material. These mineral soils generally are narrow bands around the edge of this map unit or on slight rises within the unit. Also included in mapping are small areas of muck deposits deeper than 50 inches, usually near the center of the mapped area. Areas of included soils range up to 3 acres.

This Palms soil is subject to frequent flooding or ponding. It has a high water table at or near the soil surface from November through May. Permeability is moderately slow to moderately rapid in the organic layers and moderate or moderately slow in the loamy mineral substratum. The available water capacity is high, and runoff and internal drainage are very slow. Bedrock is at a depth of more than 6 feet. The organic layers range from strongly acid to moderately alkaline.

Palms muck, where drained, is well suited to special crops and many field crops. It has very serious limitations for urban and recreational uses, mainly because of excessive wetness, flooding, and instability. Most of the acreage is in cattails and other water-tolerant grasses, sedges, brush, and trees. A few areas are drained and farmed.

This Palms soil is well suited to many cultivated crops, particularly vegetable crops, if it is properly drained. Drainage usually requires a system of open ditches and subsurface drains. Drainage is extremely difficult to install in many areas because the soil is low on the landscape and suitable outlets are not available. If the soil is drained, keeping tillage to a minimum, using cover crops, plowing at proper soil moisture level, and rotating crops help maintain good tilth and reduce the loss of organic matter. If this organic soil is drained and left idle it is subject to wind erosion, but by maintaining windbreaks and cover crops or sod crops on the soil this hazard is reduced. Using equipment that minimizes soil compaction helps maintain tilth and a good rate of water percolation through the soil. Lettuce, onions, and potatoes do very well in drained areas of this muck soil.

Undrained areas are usually poorly suited to pasture or hay crops. Soil compaction and trampling of desirable grasses are serious problems in pastured areas.

The potential of this soil for wood crops is poor because of prolonged wetness. Use of equipment, seedling mortality, and uprooting of trees during windstorms are very serious problems on this soil. Only seedlings that can withstand excessive wetness can be grown.

Prolonged wetness, seepage, excess humus, frequent flooding or ponding, compressibility, and high risk of frost damage are severe limitations for most urban and recreational uses of this soil. Many areas are suited to wetland wildlife habitat.

This Palms muck soil is in capability subclass Vw.

PbA—Palmyra gravelly loam, 0 to 3 percent slopes. This nearly level soil is deep and well drained. It is on flat terraces and plains in the northern part of the county. This loamy soil is derived from outwash deposits that have a relatively high content of sand and limestone gravel. Areas of this soil are large and oblong or irregular in shape, and range from 3 to 200 acres, but areas of 5 to 20 acres are most common.

Typically, this soil has a surface layer of very dark grayish brown gravelly loam 9 inches thick. The subsoil extends to a depth of 28 inches. It is brown gravelly loam in the upper part, brown gravelly heavy loam in the middle part, and brown gravelly light clay loam in the lower part. The grayish brown substratum is very gravelly loamy sand in the upper part and very gravelly sand in the lower part.

Included with this soil in mapping are small areas of the Phelps, Halsey, Arkport, and Minoa soils. The Phelps soils are not as well drained as this Palmyra soil and are on slightly lower terraces. The Halsey soils are in wet depressions and in other low areas. The well drained Arkport soils and the somewhat poorly drained Minoa soils are free of gravel and cobblestones. Also included are a few areas of a gently sloping soil. Areas of included soils range from 1/4 acre to 3 acres.

The permeability of this Palmyra soil is moderate in the surface layer and subsoil and very rapid in the substratum. The available water capacity is moderate, and runoff is slow. Depth to bedrock is 5 feet or more. Gravel makes up 15 to 30 percent of the surface layer. In unlimed areas, the surface layer is medium acid to neutral, and the subsoil is slightly acid to mildly alkaline.

This soil is well suited to farming and to many urban uses. Most of the acreage is urbanized or is farmed. A few small areas of this soil are idle.

This Palmyra soil is well suited to cultivated crops. Gravel in the surface layer interferes with the planting and harvesting of some specialized crops and causes more rapid wear of equipment. Keeping tillage to a minimum, using cover crops, incorporating crop residues into the soil, and occasionally including sod crops in the cropping system help maintain tilth and improve the organic matter content. This soil is suited to irrigated vegetable crops, and irrigation systems are easier to manage than on the more sloping Palmyra soil.

Pasture and hay crops also do well on this soil. Overgrazing restricts plant growth and can cause the loss of the pasture plants. Proper stocking, rotation of pastures, yearly mowing, and deferment of grazing when

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investigations are essential, and each site must be considered individually.

Pits, borrow, have not been assigned a capability subclass.

Pu—Pits, gravel. This unit consists of excavated areas from which gravel has been removed for construction purposes. They are usually 5 to about 50 feet deep. The soils in these areas have a high sand and gravel content. Pit sides are mostly steep, and the floor is relatively level. Piles of stones and boulders and sloughed materials are commonly scattered over the floor. Small pools of water are common in low parts of some of the pits, particularly in the spring. These excavated areas are commonly irregular in shape, depending on the nature of the soil deposits and ownership boundaries, and they range from 3 to 200 acres or more.

Pits are usually devoid of vegetation; however in some of the older ones there are scattered bushes and grass. Pits are droughty because of the very low available water capacity of the soil. Permeability varies, but usually it is moderately rapid to very rapid.

These miscellaneous areas are generally not suited to farming and woodland because the topsoil has been removed and the subsoil material is not suitable for root development. The potential of these areas is usually poor for wildlife habitat, although some animals and birds may find shelter or refuge in these areas.

The suitability of these areas for urban and recreational uses ranges from good to poor. Onsite investigations are essential and each site must be considered individually.

Pits, gravel, have not been assigned a capability subclass.

Qu—Quarries. These are open pits created by removing limestone rock for agricultural, industrial, and construction purposes. They are mainly in the northern part of the county, and the surrounding soils are usually shallow over bedrock. The excavated areas are usually 20 to 100 feet deep. They are irregular in shape, depending on the nature of the bedrock strata and ownership boundaries. They range from 3 to 125 acres or more.

Quarries are generally devoid of vegetation; however, in some of the older quarries, scattered plants and grass have become established in cracks where the bedrock has weathered and some soil has accumulated. Piles of stones and boulders are commonly scattered over the quarry floor. Included in mapping are small pools of water on many of the quarry floors. The entire floor of some abandoned quarries is covered with water up to several feet deep.

The suitability of abandoned areas for some urban and recreational uses ranges from poor to fair. Onsite investigation is necessary, and each site is considered individually for any proposed use.

Some areas are well suited to educational uses, such as outdoor classrooms for studying the bedrock geology of the region. Onsite investigation is needed to determine the feasibility of using Quarries for such purposes.

Abandoned Quarries are usually poorly suited to farming and woodland becuase of the lack of soil material. Some areas provide habitat for certain kinds of wildlife and birds, and a few areas that are ponded contain fish and other aquatic animals. Boating is also possible in some of the pits that are ponded. Where trash and other wastes are dumped in abandoned quarries there is a hazard of pollution of the water table by seepage through the cavernous and fractured limestone bedrock.

Quarries are not assigned a capability subclass.

RaA—Raynham silt loam, 0 to 3 percent slopes. This level or nearly level, silty soil is deep and somewhat poorly drained. It is mainly on broad plains in the lowlands in the northern part of the county and in small pockets on the upland plateau. Areas of this soil are irregular in shape or roughly elongated where they parallel streams. Most areas range from 50 to 200 acres or more, but in the uplands, areas range from 3 to 50 acres in size.

Typically, this soil has a surface layer of dark grayish brown silt loam about 8 inches thick. The subsoil is about 18 inches thick. It is mottled, yellowish brown silt loam. The substratum extends to a depth of 60 inches. The upper part is mottled, yellowish brown silt loam, and the lower part is grayish brown fine sand.

Included with this soil in mapping are small areas of the Minoa and the Niagara soils. The Minoa soils are more sandy and the Niagara soils are more clayey than this Raynham soil. Also included are soils that are similar to this Raynham soil but have a dense fragipan in the subsoil. In some areas, particularly in the uplands, the subsoil is more acid than is typical for this Raynham soil. Areas of included soils range from 1/2 acre to 3 acres.

From November through June this Raynham soil has a seasonal high water table in the upper part of the subsoil. Permeability is moderate or moderately slow in the subsoil and slow in the substratum. The available water capacity is high, and internal drainage and runoff are slow. There is usually no gravel in this soil, and bedrock is more than 5 feet deep. The surface layer and subsoil are strongly acid to neutral.

This soil is moderately suited to farming but poorly suited to many urban uses. Most of the acreage is in hay, pasture, woodland, or it is idle. Some areas of this soil are in residential development.

The suitability of this Raynham soil for cultivated crops can be improved with drainage. In undrained areas, seasonal wetness delays planting until late spring.

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TABLE 15.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AlA, AlB---------- Allard	0-9	Silt loam-------	ML, CL-ML, SM, SM-SC	A-4	0	100	95-100	65-100	36-90	<35	NP-10
	9-27	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	60-90	<35	NP-10
	27-60	Stratified sand to very gravelly loamy sand.	GM, GW, SW, SM	A-1, A-2, A-3	0	25-100	20-100	10-75	0-30	---	NP
AmA, AmB, AmC------ Alton	0-9	Fine gravelly loam.	SM, ML, GM, GP-GM	A-2, A-4, A-1	0-5	65-75	60-70	30-65	10-60	<10	NP-3
	9-30	Gravelly loam, very gravelly sandy loam.	GM, SM	A-2, A-4, A-1	5-25	45-70	35-55	20-50	20-40	<10	NP-3
	30-60	Very gravelly sand, very gravelly loamy sand.	GP, GM, SM, SP	A-1	10-25	45-60	40-50	20-40	2-15	---	NP
AnB, AnC---------- Alton	0-8	Gravelly loam---	SM, ML, GM, GP-GM	A-2, A-4, A-1	0-5	65-75	60-70	30-65	10-60	<10	NP-3
	8-30	Gravelly loam, very gravelly sandy loam.	GM, SM	A-2, A-4, A-1	5-25	45-70	35-55	20-50	20-40	<10	NP-3
	30-50	Very gravelly sand, very gravelly loamy sand.	GP, GM, SM, SP	A-1	10-25	45-60	40-50	20-40	2-15	---	NP
	50-60	Silt, very fine sand.	SM, ML	A-4	0	100	100	75-100	35-100	<10	NP-3
AoA, AoB---------- Angola	0-11	Silt loam-------	ML, CL, OL	A-4, A-5, A-6, A-7	0	100	75-100	65-100	55-95	25-45	3-20
	11-26	Silty clay loam, clay loam, shaly loam.	GM, GC, ML, CL	A-4, A-6	0-5	60-100	55-95	45-95	35-90	15-35	3-20
	26-30	Shaly clay loam, very shaly loam, channery silty clay loam.	GM, GC, ML, CL	A-1, A-2, A-4, A-6	0-5	40-80	35-75	30-75	20-70	15-35	3-20
	30	Weathered bedrock.	---	---	---	---	---	---	---	---	---
ApA, ApB---------- Appleton	0-9	Silt loam-------	ML, SM	A-2, A-6, A-7	0-5	85-100	80-95	55-95	30-85	35-45	10-15
	9-15	Loam, silt loam, gravelly very fine sandy loam.	ML, SM, GM, CL-ML	A-2, A-4	0-5	65-95	60-95	50-90	30-85	25-35	5-10
	15-29	Loam, sandy clay loam, gravelly silt loam.	CL, SC, GC, GM-GC	A-4, A-2	0-5	65-95	60-95	50-90	25-85	20-30	5-10
	29-60	Loam, gravelly silt loam, fine sandy loam.	CL, SC, GC, CL-ML	A-4, A-2	0-5	65-90	60-85	40-80	30-75	15-25	5-10

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TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
[illegible]essa	0-9	Silt loam	CL, ML, OL	A-6, A-7	0	100	95-100	80-100	65-95	35-50	12-20
	9-22	Silty clay loam, silty clay, clay.	CL, CH	A-7, A-6	0	100	95-100	90-100	80-100	35-60	20-35
	22-60	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	100	95-100	90-100	80-100	35-60	20-35
Lakemont	0-9	Silt loam	OL, CL, ML	A-6, A-7	0	100	95-100	80-100	65-95	35-48	12-20
	9-29	Silty clay, silty clay loam, clay.	CL, CH, ML, MH	A-6, A-7	0	100	95-100	90-100	80-100	30-55	10-25
	29-60	Silty clay, clay	CL, CH, ML, MH	A-6, A-7	0	100	95-100	90-100	80-100	30-55	10-25
OrA, OrB, OrC Orpark	0-9	Silt clay loam	ML, OL	A-4, A-6, A-5, A-7	0	90-100	85-100	70-100	70-100	35-49	6-15
	9-27	Silt loam, silty clay loam.	ML, CL-ML	A-4, A-6, A-5, A-7	0	90-100	85-100	75-100	70-100	30-40	6-15
	27	Weathered bedrock.	---	---	---	---	---	---	---	---	---
OvA, OvB Ovid	0-10	Silt loam	ML, SM, SM-SC, CL-ML	A-4, A-6, A-7, A-2	0	80-100	75-100	50-95	30-90	25-45	5-15
	10-20	Silty clay loam, clay loam, gravelly clay loam.	CL, CL-ML, SC, GM-GC	A-4, A-6	0-5	65-100	65-95	60-95	45-90	20-35	5-15
	20-60	Silty clay loam, clay loam, gravelly loam.	CL, GC, SC, CL-ML	A-4, A-6	0-5	65-90	60-90	55-85	40-80	20-35	5-15
Pa Palms	0-38	Sapric material	PT	---	---	---	---	---	---	---	---
	38-60	Clay loam, silty clay loam, fine sandy loam.	CL-ML, CL	A-4, A-6	0	85-100	80-100	70-95	50-90	25-40	5-20
PbA, PbB Palmyra	0-9	Gravelly loam	ML, SM, GM, CL-ML	A-2, A-4, A-1	0-25	55-80	50-75	30-75	15-70	25-35	5-10
	9-28	Gravelly loam, gravelly clay loam, gravelly fine sandy loam.	SM, ML, GM, GM-GC	A-2, A-4, A-1	0-25	50-80	45-75	30-75	20-60	25-35	5-10
	28-60	Very gravelly sand, very gravelly loamy sand.	GP, GW, GM	A-1	5-30	15-50	10-45	5-35	0-15	<5	NP
Pc Patchin	0-10	Silt loam	ML, OL	A-4, A-5, A-6, A-7	0	90-100	85-100	75-100	60-95	30-48	6-15
	10-23	Silt loam, silty clay loam.	ML, CL-ML	A-4, A-6	0-10	90-100	85-100	75-100	60-95	23-40	6-14
	23	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

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TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PhA, PhB---------- Phelps	0-10	Gravelly loam---	ML, SM, GM, CL-ML	A-2, A-4, A-1	0-25	50-80	45-75	25-75	15-70	20-35	2-10
	10-15	Gravelly loam, gravelly clay loam, silt loam.	ML, SM, GM, CL-ML	A-2, A-4, A-1	0-25	50-95	45-90	35-90	25-70	20-35	2-10
	15-32	Gravelly sandy loam, clay loam, gravelly silt loam.	ML, SM, GM, CL-ML	A-1, A-2, A-4	0-25	50-95	45-90	35-90	15-70	20-35	2-10
	32-60	Stratified very gravelly sand to very gravelly loamy sand.	GW, GP, GM, GW-GM	A-1	5-30	15-55	10-50	5-40	0-15	<20	NP-2
Pt*, Pu*. Pits											
Qu*. Quarries											
RaA, RaB---------- Raynham	0-8	Silt loam-------	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
	8-26	Silt loam, silt, very fine sandy loam.	ML	A-4	0	100	95-100	80-100	55-95	20-35	NP-10
	26-60	Silt loam, very fine sandy loam loam, fine sand	ML, SM	A-4, A-2	0	100	95-100	65-100	20-95	<35	NP-10
Re---------- Red Hook	0-10	Silt loam-------	ML, SM, SM-SC, CL-ML	A-4, A-2	0-5	80-100	75-95	50-95	30-80	15-40	1-15
	10-23	Silt loam, loam, very gravelly sandy loam.	ML, SM, GM, SM-SC	A-1, A-2, A-4	0-5	30-90	25-85	15-80	10-70	15-30	1-15
	23-60	Gravelly loam, gravelly silt loam, very gravelly sandy loam.	GM, SM, SM-SC, ML	A-1, A-2, A-4	5-10	30-80	25-75	15-75	10-70	15-30	1-15
RfA, RfB, RfC------ Remsen	0-9	Silty clay loam	CL, CH	A-7	0-10	90-100	85-100	75-100	60-100	45-55	20-30
	9-36	Silty clay, clay	CL, CH	A-7	0-10	90-100	85-100	75-100	65-100	45-55	20-30
	36-60	Clay, silty clay	CL, ML, SC	A-6, A-7	0-10	60-100	55-100	50-100	45-95	35-45	10-20
RgA, RgB---------- Rhinebeck	0-9	Silt loam-------	ML, MH, CL, CH	A-6, A-7	0	80-100	75-100	70-100	60-90	30-55	10-25
	9-37	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-95	30-55	15-30
	37-70	Silty clay loam, silty clay, clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-95	30-55	15-30
RhC3---------- Rhinebeck	0-9	Silty clay loam	ML, MH, CL, CH	A-6, A-7	0	80-100	75-100	70-100	60-90	30-55	10-25
	9-37	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-95	30-55	15-30
	37-70	Silty clay loam, silty clay, clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-95	30-55	15-30

See footnote at end of table.

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SOIL LEGEND

The publication symbol consists of letters. The first letter always is the initial letter of the mapping unit name. The second letter is a c The third letter, always a capital A, B, C, D, E, or F, indicates the slop without a slope letter are those of nearly level soils. A final number that the soil is severely eroded.

SYMBOL	NAME
AlA	Allard silt loam, 0 to 3 percent slopes
AlB	Allard silt loam, 3 to 8 percent slopes
AmA	Alton fine gravelly loam, 0 to 3 percent slopes
AmB	Alton fine gravelly loam, 3 to 8 percent slopes
AmC	Alton fine gravelly loam, 8 to 15 percent slopes
AnB	Alton gravelly loam, silty substratum, 3 to 8 percent slopes
AnC	Alton gravelly loam, silty substratum, 8 to 15 percent slopes
AoA	Angola silt loam, 0 to 3 percent slopes
AoB	Angola silt loam, 3 to 8 percent slopes
ApA	Appleton silt loam, 0 to 3 percent slopes
ApB	Appleton silt loam, 3 to 8 percent slopes
ArB	Arkport very fine sandy loam, 3 to 8 percent slopes
ArC	Arkport very fine sandy loam, 8 to 15 percent slopes
ArD	Arkport very fine sandy loam, 15 to 25 percent slopes
ArE	Arkport very fine sandy loam, 25 to 40 percent slopes
AuC	Aurora shaly silt loam, 8 to 15 percent slopes
Be	Beaches
BfA	Benson very cherty loam, 0 to 3 percent slopes
BfB	Benson very cherty loam, 3 to 8 percent slopes
BgC	Benson very cherty loam, very rocky, 8 to 15 percent slopes
BhB	Benson-Rock outcrop complex, 3 to 8 percent slopes
BlA	Blasdell shaly silt loam, 0 to 3 percent slopes
BlB	Blasdell shaly silt loam, 3 to 8 percent slopes
BlC	Blasdell shaly silt loam, 8 to 15 percent slopes
BlD	Blasdell shaly silt loam, 15 to 25 percent slopes
BrA	Brockport silty clay loam, 0 to 3 percent slopes
BrB	Brockport silty clay loam, 3 to 8 percent slopes
Ca	Canadice silt loam
Cb	Canadice silt loam, shaly till substratum
Cc	Canandaigua silt loam
Cd	Canandaigua mucky silt loam
CeA	Castile gravelly loam, 0 to 3 percent slopes
CeB	Castile gravelly loam, 3 to 8 percent slopes
CfB	Cayuga silt loam, 3 to 8 percent slopes
CfC	Cayuga silt loam, 8 to 15 percent slopes
CgB	Cazenovia silt loam, 3 to 8 percent slopes
CgC	Cazenovia silt loam, 8 to 15 percent slopes
Ch	Cheektowaga fine sandy loam
CkA	Chenango gravelly loam, 0 to 3 percent slopes
CkB	Chenango gravelly loam, 3 to 8 percent slopes
CkC	Chenango gravelly loam, 8 to 15 percent slopes
CkD	Chenango gravelly loam, 15 to 25 percent slopes
ClA	Chenango channery silt loam, fan, 0 to 3 percent slopes
ClB	Chenango channery silt loam, fan, 3 to 8 percent slopes
CmE	Chenango and Palmyra soils, 25 to 40 percent slopes
Cn	Chippewa silt loam
CoA	Churchville silt loam, 0 to 3 percent slopes
CoB	Churchville silt loam, 3 to 8 percent slopes
CrA	Claverack loamy fine sand, 0 to 3 percent slopes
CrB	Claverack loamy fine sand, 3 to 8 percent slopes
CsA	Collamer silt loam, 0 to 3 percent slopes
CsB	Collamer silt loam, 3 to 8 percent slopes
CsC	Collamer silt loam, 8 to 15 percent slopes
CtB	Collamer silt loam, till substratum, 3 to 8 percent slopes
CuB	Colonie loamy fine sand, 3 to 8 percent slopes
CuC	Colonie loamy fine sand, 8 to 15 percent slopes
Cv	Cosad loamy fine sand
DaB	Danley silt loam, 3 to 8 percent slopes
DaC	Danley silt loam, 8 to 15 percent slopes
DaD	Danley silt loam, 15 to 25 percent slopes
DbA	Darien silt loam, 0 to 3 percent slopes
DbB	Darien silt loam, 3 to 8 percent slopes
DbC	Darien silt loam, 8 to 15 percent slopes
DcB	Darien silt loam, silty substratum, 3 to 8 percent slopes
DdA	Derb silt loam, 0 to 3 percent slopes
DdB	Derb silt loam, 3 to 8 percent slopes
DdC	Derb silt loam, 8 to 15 percent slopes
Dp	Dumps
Du	Dumps, slag
Ed	Edwards muck
ElA	Elnora loamy fine sand, 0 to 3 percent slopes
ElB	Elnora loamy fine sand, 3 to 8 percent slopes
ErA	Erie channery silt loam, 0 to 3 percent slopes
ErB	Erie channery silt loam, 3 to 8 percent slopes
ErC	Erie channery silt loam, 8 to 15 percent slopes
FaA	Farmington cherty loam, 0 to 3 percent slopes
FaB	Farmington cherty loam, 3 to 8 percent slopes
FbA	Farnham shaly silt loam, 0 to 3 percent slopes
FbB	Farnham shaly silt loam, 3 to 8 percent slopes
FcA	Farnham shaly silt loam, fan, 0 to 3 percent slopes
FcB	Farnham shaly silt loam, fan, 3 to 8 percent slopes
Fu	Fluvaquents and Udifluvents, frequently flooded
GaA	Galen very fine sandy loam, 0 to 3 percent slopes
GaB	Galen very fine sandy loam, 3 to 8 percent slopes
GbB	Galen fine sandy loam, till substratum, 3 to 8 percen
Ge	Getzville silt loam
Ha	Halsey silt loam
Hn	Haplaquolls, ponded
Hm	Hamlin silt loam
HoA	Honeoye loam, 0 to 3 percent slopes
HoB	Honeoye loam, 3 to 8 percent slopes
HrA	Hornell silt loam, 0 to 3 percent slopes
HrB	Hornell silt loam, 3 to 8 percent slopes
HsC	Hornell silt clay loam, 8 to 15 percent slopes
HuB	Hudson silt loam, 3 to 8 percent slopes
HuC	Hudson silt loam, 8 to 15 percent slopes
HvD	Hudson silty clay loam, 15 to 25 percent slopes
HvE	Hudson silty clay loam, 25 to 40 percent slopes
HwD	Hudson gravelly loam, hilly
In	Ilion silt loam
Ke	Kendaia silt loam
La	Lakemont silt loam
Lb	Lakemont mucky silt loam
Lc	Lamson very fine sandy loam
Ld	Lamson mucky very fine sandy loam
LfB	Langford channery silt loam, 3 to 8 percent slopes
LfC	Langford channery silt loam, 8 to 15 percent slopes
LfD	Langford channery silt loam, 15 to 25 percent slopes
LgC	Langford channery silt loam, silty substratum, 8 to 1
LgD	Langford channery silt loam, silty substratum, 15 to
LmA	Lima loam, 0 to 3 percent slopes
LmB	Lima loam, 3 to 8 percent slopes
Lv	Lyons silt loam
Lz	Lyons mucky silt loam
MaA	Manlius shaly silt loam, 0 to 3 percent slopes
MaB	Manlius shaly silt loam, 3 to 8 percent slopes
MaC	Manlius shaly silt loam, 8 to 15 percent slopes
MaD	Manlius shaly silt loam, 15 to 25 percent slopes
MbE	Manlius very shaly silt loam, 25 to 35 percent slope
MbF	Manlius very shaly silt loam, 35 to 50 percent slope
McB	Mardin silt loam, 3 to 8 percent slopes
McC	Mardin silt loam, 8 to 15 percent slopes
MdB	Mardin channery silt loam, 3 to 8 percent slopes
MdC	Mardin channery silt loam, 8 to 15 percent slopes
MdD	Mardin channery silt loam, 15 to 25 percent slopes
MeF	Mardin-Valois complex, 25 to 50 percent slopes
MfA	Marilla shaly silt loam, 0 to 3 percent slopes
MfB	Marilla shaly silt loam, 3 to 8 percent slopes
MfC	Marilla shaly silt loam, 8 to 15 percent slopes
Mg	Middlebury silt loam
Mh	Minoa very fine sandy loam
Ne	Newstead loam
NfA	Niagara silt loam, 0 to 3 percent slopes
NfB	Niagara silt loam, 3 to 8 percent slopes
Ng	Niagara silt loam, fan
Nh	Niagara silt loam, till substratum
Od	Odessa silt loam
Oe	Odessa-Lakemont silt loams
OrA	Orpark silty clay loam, 0 to 3 percent slopes
OrB	Orpark silty clay loam, 3 to 8 percent slopes
OrC	Orpark silty clay loam, 8 to 15 percent slopes
OvA	Ovid silt loam, 0 to 3 percent slopes
OvB	Ovid silt loam, 3 to 8 percent slopes
Pa	Palms muck
PbA	Palmyra gravelly loam, 0 to 3 percent slopes
PbB	Palmyra gravelly loam, 3 to 8 percent slopes

E D

e f letter always a capital,
se d letter is a small letter
F. icates the slope. Symbols
s A final number, 3, shows

	SYMBOL	NAME
erc slopes	Pc	Patchin silt loam
erc slopes	PhA	Phelps gravelly loam, 0 to 3 percent slopes
erc slopes	PhB	Phelps gravelly loam, 3 to 8 percent slopes
erc slopes	Pt	Pits, borrow
3 percent slopes	— Pu	Pits, gravel
8 percent slopes		
ue flooded	Qu	Quarries
	RaA	Raynham silt loam, 0 to 3 percent slopes
3 p nt slopes	RaB	Raynham silt loam, 3 to 8 percent slopes
3 p nt slopes	Re	Red Hook silt loam
atum, 3 to 8 percent slopes	RfA	Remsen silty clay loam, 0 to 3 percent slopes
	RfB	Remsen silty clay loam, 3 to 8 percent slopes
	RfC	Remsen silty clay loam, 8 to 15 percent slopes
	RgA	Rhinebeck silt loam, 0 to 3 percent slopes
	RgB	Rhinebeck silt loam, 3 to 8 percent slopes
	RhC3	Rhinebeck silty clay loam, 8 to 15 percent slopes, severely eroded
pes	RkA	Rhinebeck gravelly loam, 0 to 3 percent slopes
pes	RkB	Rhinebeck gravelly loam, 3 to 8 percent slopes
lopes	RmA	Rhinebeck silty clay loam, stratified substratum, 0 to 3 percent slopes
lop	RmB	Rhinebeck silty clay loam, stratified substratum, 3 to 8 percent slopes
cer opes	Ro	Rock outcrop
slopes		
slopes	SaA	Schoharie silt loam, 0 to 3 percent slopes
percent slopes	SaB	Schoharie silt loam, 3 to 8 percent slopes
percent slopes	SbC3	Schoharie silty clay loam, 8 to 15 percent slopes, severely eroded
	ScD	Schuyler silt loam, 15 to 25 percent slopes
	ScE	Schuyler silt loam, 25 to 40 percent slopes
	Sd	Scio silt loam
	Sw	Swormville clay loam
	Te	Teel silt loam
	To	Tioga silt loam
am	— Uc	Udorthents, smoothed
8 percent slopes	Ud	Urban land
15 percent slopes	UeB	Urban land-Benson complex, 3 to 6 percent slopes
2 ercent slopes	Uf	Urban land-Canandaigua complex
su atum, 8 to 15 percent slopes	Ug	Urban land-Cayuga complex
su atum, 15 to 25 percent slopes	Uh	Urban land-Churchville complex
	Uk	Urban land-Claverack complex
	UmA	Urban land-Collamer complex, 1 to 6 percent slopes
	UnB	Urban land-Colonie complex, 3 to 6 percent slopes
	Uo	Urban land-Cosad complex
	Up	Urban land-Galen complex
	UrA	Urban land-Lima complex, 1 to 6 percent slopes
cer opes	Us	Urban land-Niagara complex
cer opes	Ut	Urban land-Odessa complex
rcent slopes	Uu	Urban land-Schoharie complex
ercent slopes	Uv	Urban land-Swormville complex
3 ercent slopes	Uw	Urban land-Teel complex
5 ercent slopes	Ux	Urban land-Wassaic complex
op		
slopes	VaB	Valois gravelly silt loam, 3 to 8 percent slopes
percent slopes	VaC	Valois gravelly silt loam, 8 to 15 percent slopes
5 percent slopes	VaD	Valois gravelly silt loam, 15 to 25 percent slopes
25 cent slopes	VbA	Varysburg gravelly loam, 0 to 3 percent slopes
per t slopes	VbB	Varysburg gravelly loam, 3 to 8 percent slopes
cen opes	VbC	Varysburg gravelly loam, 8 to 15 percent slopes
cen opes	VbD	Varysburg gravelly loam, 15 to 25 percent slopes
rcent slopes	VbE	Varysburg gravelly loam, 25 to 40 percent slopes
	VoA	Volusia silt loam, 0 to 3 percent slopes
	VoB	Volusia silt loam, 3 to 8 percent slopes
	VpA	Volusia channery silt loam, 0 to 3 percent slopes
	VpB	Volusia channery silt loam, 3 to 8 percent slopes
lopes		
lopes	WaA	Wassaic silt loam, 0 to 3 percent slopes
	WaB	Wassaic silt loam, 3 to 8 percent slopes
	WbB	Wassaic very stony loam, 3 to 8 percent slopes
	WcE	Wassaic-Rock outcrop complex, 25 to 40 percent slopes
	Wd	Wayland silt loam
	WeB	Williamson silt loam, 3 to 8 percent slopes
	WeC	Williamson silt loam, 8 to 15 percent slopes
cent slopes		
cent slopes		
rcent slopes		
es		
es		
cent slopes		
cent slopes		

R50

NEW YORK – SHEET NUMBER 28

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28

N

5000 Feet

1 Kilometer

Scale - 1:15840

ApA

CtB

LmA

Murrayville Cemetery

ApA

OvA

LmB

ApA

LmA

OvA

LmA

OvB

Qu

OvA

REFERENCE 8

New York State Department of Environmental Conservation

MEMORANDUM

TO: Sleepy Hollow Lake Campground File
FROM: Robert N. Leary RNL
SUBJECT: Sampling Results
DATE: 7/30/85

The results of the analyses of our samples were received by this office on July 26, 1985. Three samples, representing 120 gallons of liquid and sludge, were analyzed with the following results:

Volatiles found: Methylene chloride, trichloroethylene, Tetrachloroethylene, chlorobenzene. toluene, ethyl benzene, xylene (o,m, and p), and 1,2,-dichloroethane

As shown in the attached table, extremely high concentrations in percent levels were found for toluene in all three drums and ethyl benzene, m, p - xylene, and o - xylene in drum #5. A primary use of these five chemicals is as a solvent for paint, varnish, lacquer, resins, fats, oils, etc. Methylene chloride, 1,2-dichloroethane, trichloroethylene, and tetrachloroethylene are also primarily used as solvents. Chlorobenzene can be used as a solvent but is primarily a chemical intermediate.

All the chemicals except 1,2-dichloroethane are listed Generic Hazardous Wastes. All the chemicals except 1,2-dichloroethane, chlorobenzene, and ethyl benzene are listed Toxic Wastes.

RNL:jb

Encl.

cc: Don Becker

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SLEEPY HOLLOW LAKE
SUMMARY OF SAMPLING RESULTS

Contaminant ppm \ Sample #	05 DRUM	09 DRUM	10 DRUM
Methylene Chloride	110	75	60
1,2- dichloroethane			6.9
Trichloroethylene	110		800
Tetrachloroethylene	39		4.9
Chlorobenzene	110		1300
Toluene	650,000	460,000	210 000
Ethyl Benzene	28.000		
Xylene (m,p)	110.000		
Xylene (o)	45.000		

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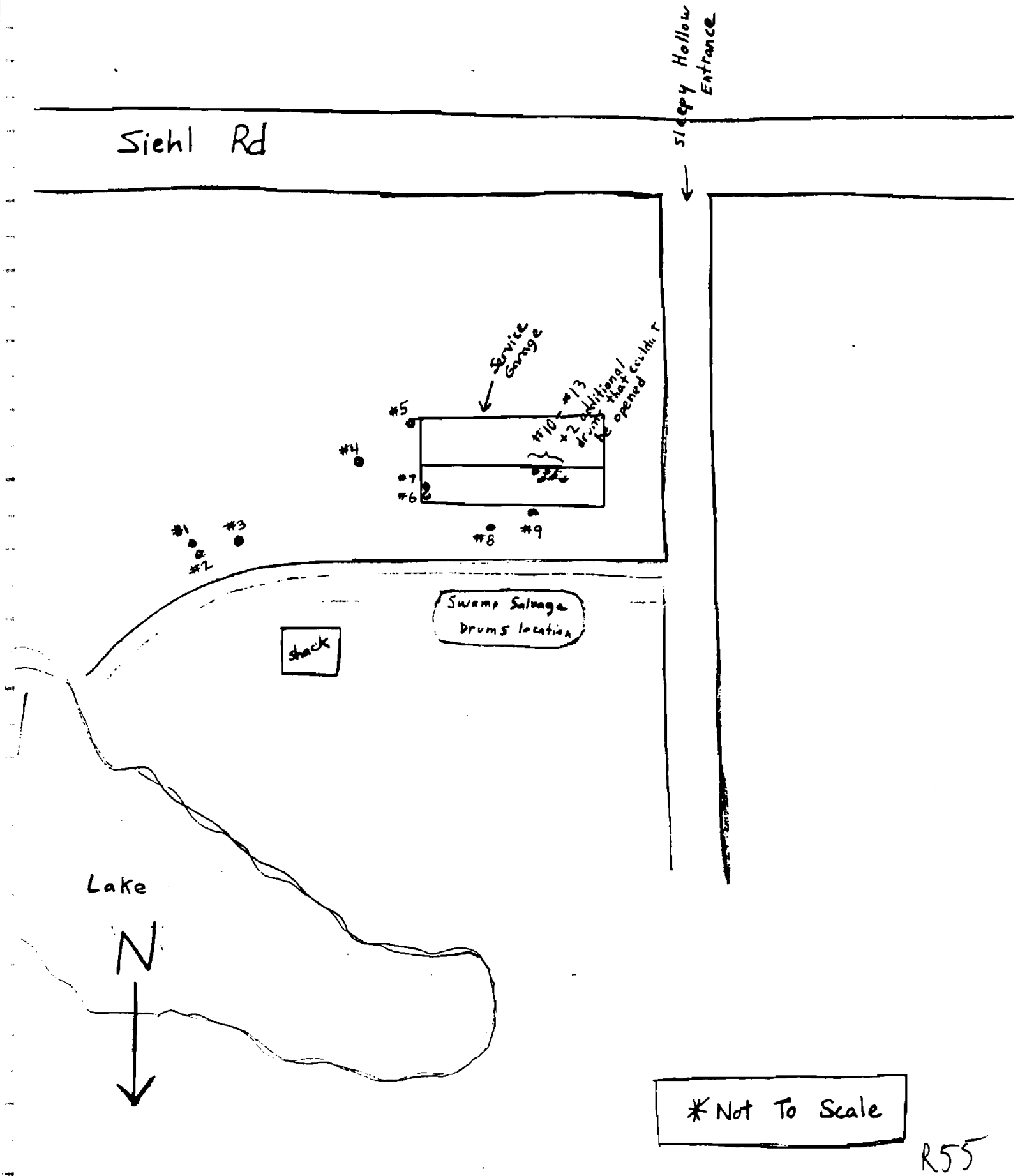
Sleepy Hollow Campground



R55

REFERENCE 9

STATE OF NEW YORK : DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of a Remedial Program pursuant to Article 27 of the Environmental Conservation Law, to Eliminate any Threat to the Environment Caused by the Storage or Disposal of Hazardous Wastes,

ORDER ON CONSENT

BY:

F. N. BURT COMPANY, INC.

FEITZHANS AND MAUER TRUCKING, INC.

ANTHONY LATELLO

MARIO LATELLO

RESPONDENTS

B9-0100-85-07

WHEREAS:

1. The New York State Department of Environmental Conservation (the "Department") is responsible for the enforcement of Article 27, Title 13, of the Environmental Conservation Law of the State of New York (the "ECL"), entitled "Inactive Hazardous Waste Disposal Sites".

2. Respondent F. N. Burt Company, Inc. is a corporation organized and existing under the laws of the State of Delaware authorized to do business and doing business in the State of New York.

3. Respondent Feitzhans & Mauer Trucking, Inc. is a corporation organized and existing under the laws of the State of New York and is doing business in the State of New York.

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4. Respondent, F. N. Burt Company, Inc. in or around the year 1971, was the generator of approximately eighteen 55-gallon drums of oils, solvents and other liquids and sludges which were excess materials and constituted wastes as defined by statutes and regulations, which were turned over to Respondent Feitzhans and Mauer Trucking, Inc. for disposition.

5. Respondent Feitzhans and Mauer Trucking, Inc., in or around the year 1971, transported a number of 55-gallon drums of waste materials from F. N. Burt Company and placed the drums on property then owned by Respondent, Feitzhans and Mauer Trucking, Inc., and left them there.

6. The real property on which the wastes had been placed was sold in 1976 to Respondents Anthony Latello and Mario Latello, the current owners of this real property (the "Site"), known as "Sleepy Hollow Campsite" located on Siehl Road in the Town of Newstead, County of Erie, State of New York.

7. During the spring of 1985, the presence of these drums was brought to the attention of the Department. Inspection of the Site by Department personnel revealed that there are approximately 18 55-gallon drums of waste materials, some of the drums being full and some partially full, while others may contain waste residue.

8. On or about May 24, 1985, the Department collected some samples of the contents of drums for laboratory analysis. Laboratory analysis of the samples indicates the presence of Methylene chloride, Trichloroethylene, Tetrachloroethylene, Toluene, Xylene and other substances among the waste within said drums.

9. Each of these spent solvents is a hazardous waste as that term is defined at 27-0903(3) of the ECL and is included in the listing of hazardous wastes under 6 NYCRR Part 371.4(d)(6) as a toxic substance.

10. The Site is an inactive hazardous waste disposal site as that term is defined in of ECL §27-1301(2).

11. Pursuant to ECL Section 27-1313(3)(a), whenever the Commissioner of Environmental Conservation (the "Commissioner") "finds that hazardous wastes at an inactive hazardous waste disposal site constitute a significant threat to the environment, he may order the owner of such site and/or any person responsible for the disposal of hazardous wastes at such site (i) to develop an inactive hazardous waste disposal site remedial program, subject to the approval of the Department, at such site, and (ii) to implement such program within reasonable time limits specified in the order".

12. Respondents have submitted to the Department, a consultant's estimate for a drum and waste disposal program which has been reviewed by the Department and tentatively approved, subject to oversight and approval by Department representatives of all procedures undertaken at the time of implementation. Such proposal is attached hereto and incorporated herein as Appendix "A".

13. Respondents, having waived their rights to a hearing herein as provided by law, and having consented to the issuance and entry of this Order, agree to be bound by the provisions, terms and conditions hereof.

14. The Department and Respondents acknowledge that the goals of this Order shall be that Respondents shall develop and implement a remedial program to remove and properly dispose of all drums present at the Site, as well as adjacent soils contaminated thereby.

NOW THEREFORE, having considered this matter and being duly advised, it is ORDERED that:

I. Respondents shall undertake and complete at the Site, the proposed drum and waste disposal program described in Appendix "A", subject to the oversight and approval by the Department, of any specific protocols and procedures which are not delineated in Appendix "A", and shall complete the implementation of the program not later than 45 days after

the effective date of this Order. The program shall include, but need not be limited to, the following:

A) All drums present at the Site shall be properly packaged in accordance with applicable State and Federal laws and regulations.

B) Lawful removal of the drums and their contents to an authorized treatment or disposal facility via a properly permitted waste transporter.

C) All visibly stained or otherwise contaminated surficial soils in the general vicinity of the drum disposal areas shall be excavated, removed from the Site, and transported and disposed of as hazardous wastes in accordance with applicable provisions of Federal and State laws and regulations.

II. Respondents shall provide notice to the Department of all excavating, sampling or other field activities to be conducted pursuant to the terms of this Order at least five (5) working days in advance of such activities.

III. The failure of Respondent to comply with any provision of this Order shall constitute a default and a failure to perform an obligation under this Order and under the ECL.

RGO

IV. The effective date of this Order shall be the date upon which the Order, signed by the Commissioner or his designated representative, is delivered to the Respondents.

V. The provisions of this Order shall be deemed to bind the consenting Respondents, successors and assigns, individually and jointly with the other signatories hereto, regardless of whether all Respondents herein named consent to the issuing and entering of this Order.

VI. This Order shall remain in effect until Respondents receive written notification from the Department that Respondents have satisfactorily complied with the terms of this Order and the approved removal program.

VII. Copies of all laboratory analytical results, all permits, manifests and other administrative documents prepared during the preparation and implementation of this removal program shall be submitted to the Department at the following address:

RC1

New York State Department of
Environmental Conservation
Division of Solid and Hazardous Waste
600 Delaware Avenue
Buffalo New York 14202-1073

This paragraph shall be in addition to any other submissions required by law, regulation or procedure.

Dated: FEB 03 1987

Henry G. Williams
Commissioner

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CONSENT BY RESPONDENT

Respondents have read the foregoing Order, believe it to be reasonable, and consent to issuance and its terms. Respondents admit the jurisdictional allegations and neither admit or deny the specific factual allegations. Respondents explicitly waive their right to request a hearing on this matter, and agree to be bound by the provisions, terms and conditions contained in this Order.

F. N. BURT COMPANY

BY: W. Russell Hurd

TITLE: Executive Vice President

DATE: 10/23/86

State of New York)
County of Erie) s.s.:
)

On this 23rd day of October, 1986, before me personally came W. Russell Hurd to me known, who, being by me duly sworn, did depose and say that he resides in Amherst, N.Y.; that he is the Exec. Vice President of F.N. Burt Company, Inc., the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Gregory C. Yungbluth

NOTARY PUBLIC

GREGORY C. YUNGBLUTH
NOTARY PUBLIC, State of New York
Qualified in Erie County
My Commission Expires March 30, 1987

R63

CONSENT BY RESPONDENT

Respondents have read the foregoing Order, believe it to be reasonable, and consent to issuance and its terms. Respondents admit the jurisdictional allegations and neither admit or deny the specific factual allegations. Respondents explicitly waive their right to request a hearing on this matter, and agree to be bound by the provisions, terms and conditions contained in this Order.

FEITZHANS AND MAUER TRUCKING CO., INC.

BY: _____

TITLE: _____

DATE: _____

State of New York)
County of) s.s.:
)

On this day of , 1986, before me personally came to me known, who, being by me duly sworn, did depose and say that he resides in ; that he is the of , the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

_____
NOTARY PUBLIC

R64

CONSENT BY RESPONDENT

Respondent Anthony Latello hereby consents to the issuing and entering of the foregoing Order, waives his right to a hearing herein as provided by law, and agrees to be bound by the provisions, terms and conditions contained herein.

ANTHONY LATELLO

By: Anthony Latello

Date: 10/22/86

STATE OF NEW YORK)
) ss.:
COUNTY OF Erie)

On this 22nd day of October, 1986, before me personally came Anthony Latello to me known, who, being by me duly sworn, did depose and say that he resides in Erie County; that he is the individual named in and who executed the foregoing instrument.

Mark Spitler
NOTARY PUBLIC

MARK SPITLER
NOTARY PUBLIC, State of New York
Qualified in Erie County
My Commission Expires March 30, 19__

R65

CONSENT BY RESPONDENT

Respondent Anthony Latello hereby consents to the issuing and entering of the foregoing Order, waives his right to a hearing herein as provided by law, and agrees to be bound by the provisions, terms and conditions contained herein.

MARIO LATELLO

By: Mario Latello

Date: Oct 22, 1986

STATE OF NEW YORK)
) ss.:
COUNTY OF Erie)

On this 22nd day of October, 1986, before me personally came Mario Latello to me known, who, being by me duly sworn, did depose and say that he resides in Erie County ; that he is the individual named in and who executed the foregoing instrument.

Mark Spitler
NOTARY PUBLIC

MARK SPITLER
NOTARY PUBLIC, State of New York
Qualified in Erie County
My Commission Expires March 30, 19[illegible]7

R66

REFERENCE 10

FEITSHANS

Siehl Road

Town of Newstead, Erie County, New York

D.E.C. Right To Know Site Number 915516T

R67

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.

R68

General Information

Feitshans, Siehl Road, Town of Newstead, Erie County 14001. The site is known as the Sleepy Hollow Campgrounds. The present owners are Mario and Anthony Latello, 146 Sheldon Avenue, Lancaster, New York. Phone number 716-685-3031.

Disposition of Assigned Site Number

Based on the inspection findings, and on going actions by the New York State Department of Environmental Conservation it is recommended on the site be added to this Registry.

Background

Sleepy Hollow Campground which covers an area of about 100 acres, was developed into a camping area in the early 1960's. Aerial photography showed the site to be wooded and agricultural in 1950. The 1960 photo showed development into a campground had started. By 1972 aerial photos showed a long narrow lake along the eastern boundry and campsites in both wooded and cleared areas throughout. Numerous permanent buildings and shelters were evident in the cleared areas. Site inspections on 10/21/85 and 11/1/85 show little or no changes since 1972. The campsite was owned and operated by the Feitshans family until 1976 when the property was purchased by the Latello's.

June 4th, 1981 - the ECDEP received a complaint stating numerous drums on site at Sleepy Hollow Campgrounds. An ECDEP investigator found about "50 to 60 unlabled drums full of waste material", adjacent to the lake and near Siehl Road. "Most drums are leaking, and large quantities of waste material is on the ground. Vegetation in the area is discolored. Waste appears to be glue or adhesive and waste oil". Another 100 empty drums were also found on site.

Mr. Anthony Latello, current owner of the campground, informed the investigator that the drums were on site when he purchased the property in 1976. Mr. Latello was advised not to move or disturb the drums until proper disposal was arranged through the NYSDEC.

Sometime in June or early July of 1981 Mr. Latello moved the drums to the property of Elmer Case at 13970 Genesee Street, Alden, NY. On 9/9/82 NYSDEC charged Mr. Latello with storage and transportation of waste material without a permit. Mr. Case was charged with storage without a permit.

During the DEC investigation in was learned that the waste material had originated at the F.N. Burt Co. of Buffalo. DEC negotiated to have Mr. Latello pay for loading and transportion of drums and F.N. Burt Co. pay for disposal of drums at Frontier Chamical Services in Niagara Falls. Mr. Case was fined $100.00 and all other charges were dismissed upon removal and disposal of drums.

April 25, 1985 - Don Folger, Town of Newstead Building Inspector, discovered some drums in a swampy area north of the lake. Mr. Donald Becker investigator for NYSDEC and Mr. Dennis Farrar also of DEC conducted a site inspection on 5/24/85.

Mr. Becker and Mr. Farrar found 18 drums in a swampy area toward the north end of the property. The drums were numbered and samples were taken from drums #5, 9 and 10. Analysis found all three drums to have high Toluene concentrations. Almost all the contaminants detected by the analysis are listed as toxic wastes. Mr. Farrar's drum inventory list and a table with analytical results are included in this report. Mr. Becker has been designated to coordinate the removal of the drums.

Inspection Findings

The site was inspected by Erie County Department of Environment and Planning on November 1st, 1985.

A) Raw Material

1. The site is not a processor or manufacturer. No raw material was observed on site.

R70

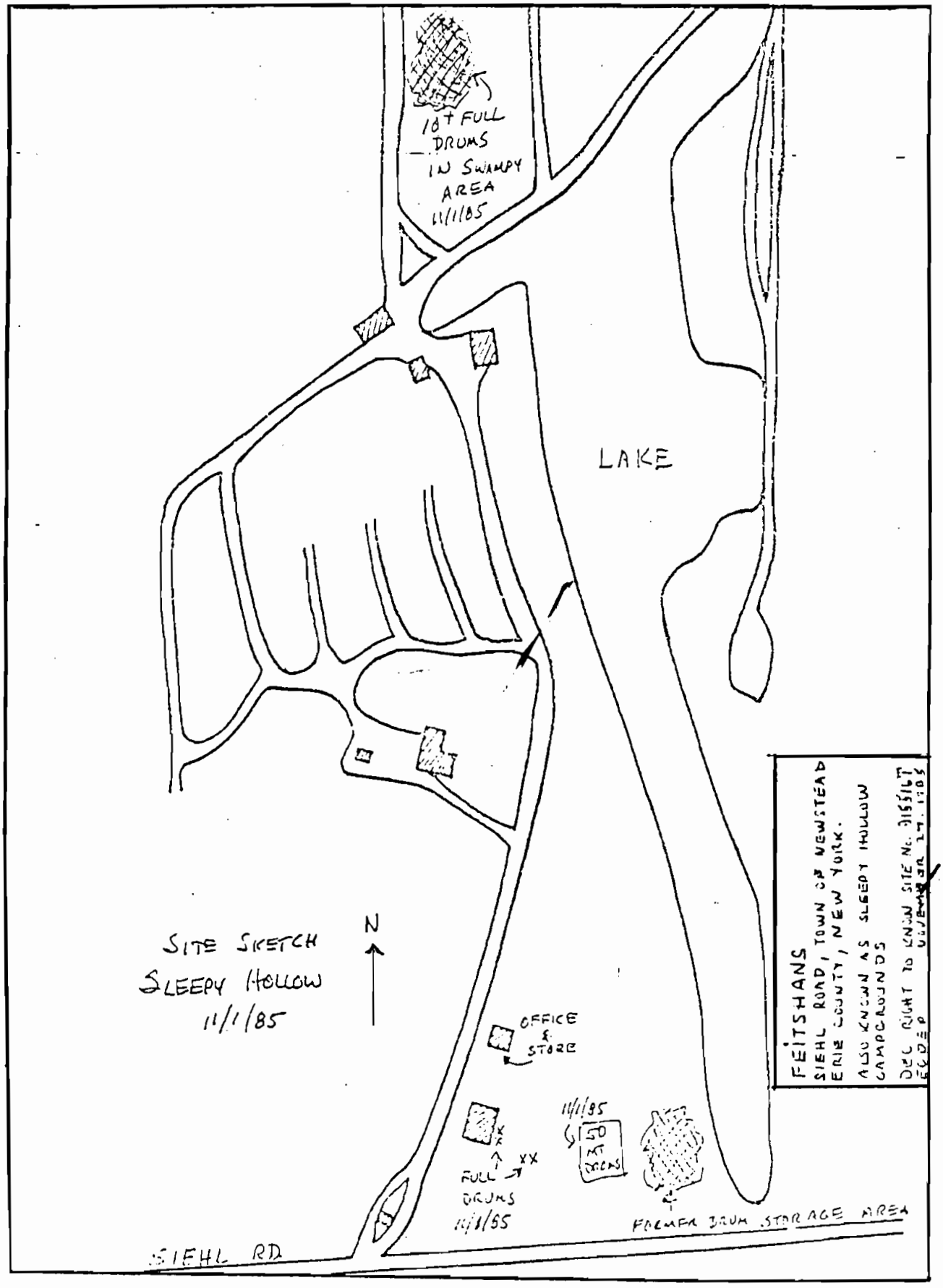
B) Waste Handling and Disposal

1. The drums originally located by D.E.C. were observed in the swamp located at the rear of the campgrounds. No evidence of removal or relocation of the drums was noted. Several other drums containing an unknown substance were observed on site next to buildings located near Siehl Road. Approximately 50 empty drums were also noted in this same area.

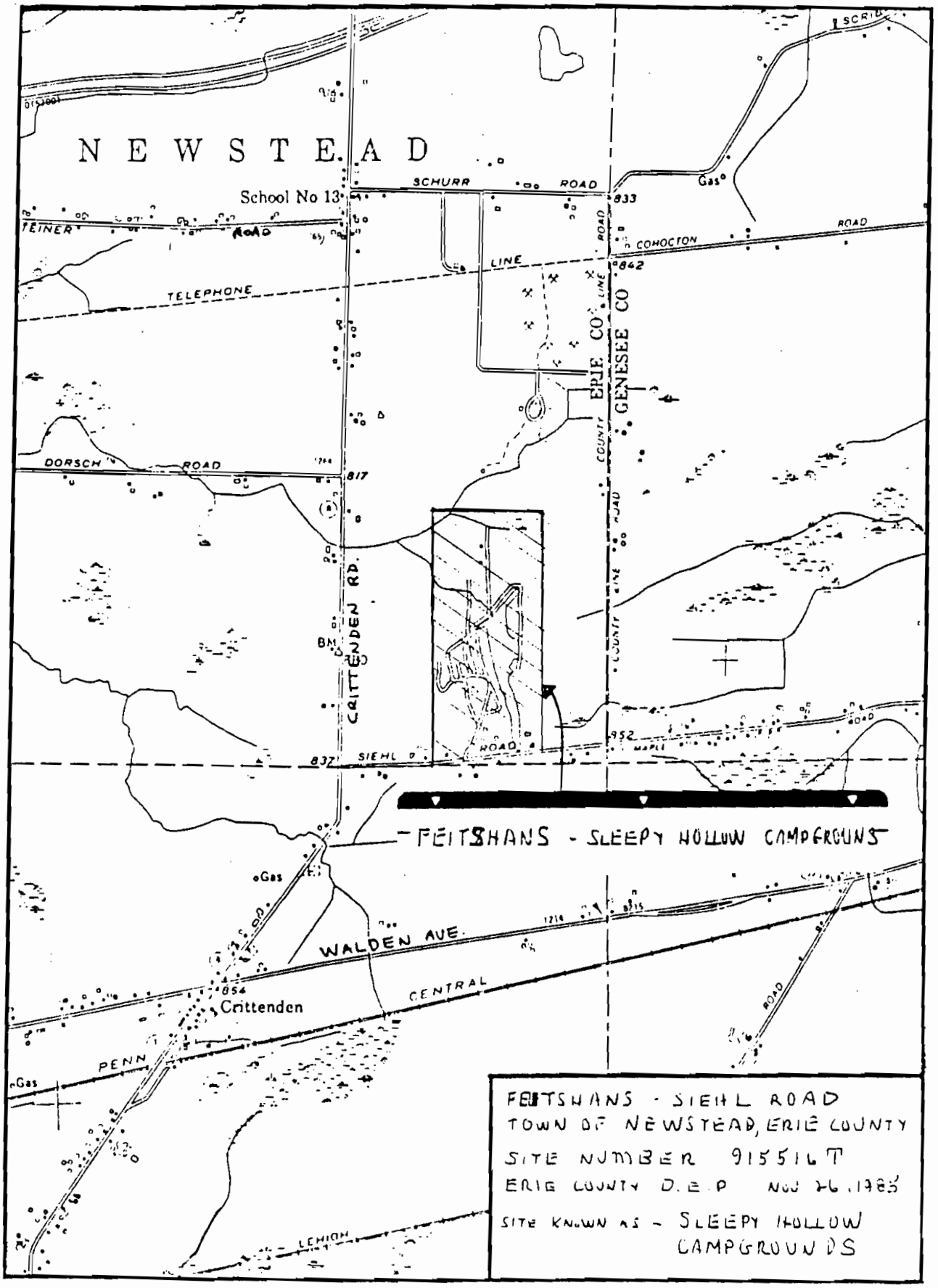
Conclusions and Reccommendations

Based on the fact that the drums of concern are located directly in the swamp and that analysis shows they contain solvents which are listed hazardous waste, it is recommended that immediate action is undertaken to satisfactorly remove and properly dispose of this material. It is understood that D.E.C. is handling this matter. The drummed material containing an unknown substance should be analyzed and properly disposed. Further follow up by D.E.C. is recommended.

SITE SKETCH



R72


NEWSTEAD
School No 13
SCHURR ROAD
TEINER ROAD
TELEPHONE LINE
COHOCTON ROAD
ERIE CO. LINE
GENESEE CO.
COUNTY LINE ROAD
DORSCH ROAD
CRITTENDEN RD.
SIEHL ROAD
MAPLE ROAD
FEITSHANS - SLEEPY HOLLOW CAMPGROUNS
WALDEN AVE.
CENTRAL
PENN
LEHIGH
Crittenden
Gas
FEITSHANS - SIEHL ROAD
TOWN OF NEWSTEAD, ERIE COUNTY
SITE NUMBER 915516 T
ERIE COUNTY D.E.P NOV 26, 1985
SITE KNOWN AS - SLEEPY HOLLOW CAMPGROUNDS

R 73

REFERENCE 11

CLIENT	NY DEC
CLIENT ID	P-985-E05-05
ERCO ID	16929
SAMPLE RECEIVED	6/11/85
ANALYSIS COMPLETED	6/27/85
RESULTS IN	ng/g (ppb)

ERCO / A Division of ENSECO

NOV - 3 1988

ECRA ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS
BY EPA METHOD 601

- Data Report -

	Compound	Result	Minimum Reporting Limit
45V	Chloromethane	ND	5
46V	Bromomethane	ND	5
88V	Vinyl chloride	ND	2
16V	Chloroethane	ND	5
44V	Methylene chloride	110,000	1
29V	1,1-dichloroethylene	ND	1
13V	1,1-dichloroethane	ND	1
30V	1,2-trans-dichloroethylene	ND	1
23V	Chloroform	ND	1
10V	1,2-dichloroethane	ND	1
11V	1,1,1-trichloroethane	ND	1
6V	Carbon tetrachloride	ND	1
48V	Bromodichloromethane	ND	1
32V	1,2-dichloropropane	ND	2
33V	Trans-1,3-dichloropropylene	ND	2
87V	Trichloroethylene	110,000	1
51V	Dibromochloromethane	ND	1
33V	Cis-1,3-dichloropropylene	ND	2
14V	1,1,2-trichloroethane	ND	2
47V	Bromoform	ND	5
15V	1,1,2,2-tetrachloroethane	ND	2
85V	Tetrachloroethylene	39,000	1
7V	Chlorobenzene	110,000	5
19V	2-chloroethyl vinyl ether	ND	10

Multiply minimum reporting limit by dilution factor to obtain true minimum limit.

Dilution factor: 2,400

ND = Not detected above the minimum reporting limit.

Reported by: WB

Checked by: NB

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CLIENT	NY DEC	ERCO / A Division of ENSECO
CLIENT ID	P-985-E05-05	
ERCO ID	16929	VOLATILE ORGANICS ANALYSIS
SAMPLE RECEIVED	6/11/85	BY EPA METHOD 602
ANALYSIS COMPLETED	7/1/85	
RESULTS IN	ng/g (ppb)	- Data Report -

Benzene	ND
Toluene	650,000,000
Ethyl benzene	28,000,000
P-Xylene and M-Xylene*	110,000,000
O-Xylene	45,000,000
Styrene	ND
N-Propylbenzene	ND
O-Chlorotoluene	ND
Trimethyl benzene	ND
P-Dichlorobenzene	ND
M-Dichlorobenzene	ND
N-Butylbenzene	ND
O-Dichlorobenzene	ND
1,2,4 Trichlorobenzene	ND

ND = Not detected above the minimum reporting limit of 2,400,000 ppb.

* Calculated using an average response factor due to co-elution.

Reported by: _____

Checked by: _____

CLIENT	NY DEC	ERCO / A Division of ENSECO	
CLIENT ID	P-985-E05-09		
ERCO ID	16927	VOLATILE ORGANICS ANALYSIS	
SAMPLE RECEIVED	6/11/85	BY EPA METHOD 601	
ANALYSIS COMPLETED	6/27/85		
RESULTS IN	ng/g (ppb)	- Data Report -	

	Compound	Result	Minimum Reporting Limit
45V	Chloromethane	ND	5
46V	Bromomethane	ND	5
88V	Vinyl chloride	ND	2
16V	Chloroethane	ND	5
44V	Methylene chloride	75,000	1
29V	1,1-dichloroethylene	ND	1
13V	1,1-dichloroethane	ND	1
30V	1,2-trans-dichloroethylene	ND	1
23V	Chloroform	ND	1
10V	1,2-dichloroethane	ND	1
11V	1,1,1-trichloroethane	ND	1
6V	Carbon tetrachloride	ND	1
48V	Bromodichloromethane	ND	1
32V	1,2-dichloropropane	ND	2
33V	Trans-1,3-dichloropropylene	ND	2
87V	Trichloroethylene	ND	1
51V	Dibromochloromethane	ND	1
33V	Cis-1,3-dichloropropylene	ND	2
14V	1,1,2-trichloroethane	ND	2
47V	Bromoform	ND	5
15V	1,1,2,2-tetrachloroethane	ND	2
85V	Tetrachloroethylene	ND	1
7V	Chlorobenzene	ND	5
19V	2-chloroethyl vinyl ether	ND	10

Multiply minimum reporting limit by dilution factor to obtain true minimum limit.

Dilution factor: 2,400

ND = Not detected above the minimum reporting limit.

Reported by: _____

Checked by: _____

R76

CLIENT	NY DEC
CLIENT ID	P-985-E05-09
ERCO ID	16927
SAMPLE RECEIVED	6/11/85
ANALYSIS COMPLETED	7/1/85
RESULTS IN	ng/g (ppb)

ERCO / A Division of ENSECO

VOLATILE ORGANICS ANALYSIS
BY EPA METHOD 602

- Data Report -

Benzene	ND
Toluene	460,000,000
Ethyl benzene	ND
P-Xylene and M-Xylene	ND
O-Xylene	ND
Styrene	ND
N-Propylbenzene	ND
O-Chlorotoluene	ND
Trimethyl benzene	ND
P-Dichlorobenzene	ND
M-Dichlorobenzene	ND
N-Butylbenzene	ND
O-Dichlorobenzene	ND
1,2,4 Trichlorobenzene	ND

ND = Not detected above the minimum reporting limit of 2,400,000 ppb.

Reported by:
Checked by:

R77 (4)

CLIENT	NY DEC
CLIENT ID	P-985-E05-10
ERCO ID	16928
SAMPLE RECEIVED	6/11/85
ANALYSIS COMPLETED	6/27/85
RESULTS IN	ng/g (ppb)

ERCO / A Division of ENSECO

VOLATILE ORGANICS ANALYSIS
BY EPA METHOD 601

- Data Report -

	Compound	Result	Minimum Reporting Limit
45V	Chloromethane	ND	5
46V	Bromomethane	ND	5
88V	Vinyl chloride	ND	2
16V	Chloroethane	ND	5
44V	Methylene chloride	66,000	1
29V	1,1-dichloroethylene	ND	1
13V	1,1-dichloroethane	ND	1
30V	1,2-trans-dichloroethylene	ND	1
23V	Chloroform	ND	1
10V	1,2-dichloroethane	6,900	1
11V	1,1,1-trichloroethane	ND	1
6V	Carbon tetrachloride	ND	1
48V	Bromodichloromethane	ND	1
32V	1,2-dichloropropane	ND	2
33V	Trans-1,3-dichloropropylene	ND	2
87V	Trichloroethylene	800,000	1
51V	Dibromochloromethane	ND	1
33V	Cis-1,3-dichloropropylene	ND	2
14V	1,1,2-trichloroethane	ND	2
47V	Bromoform	ND	5
15V	1,1,2,2-tetrachloroethane	ND	2
85V	Tetrachloroethylene	4,900	1
7V	Chlorobenzene	1,300,000	5
19V	2-chloroethyl vinyl ether	ND	10

Multiply minimum reporting limit by dilution factor to obtain true minimum limit.

Dilution factor: 2,100.

ND = Not detected above the minimum reporting limit.

Reported by: MTR
Checked by: NS

CAMPGROUND

R78 (4)

CLIENT	NY DEC
CLIENT ID	P-985-E05-10
ERCO ID	16928
SAMPLE RECEIVED	6/11/85
ANALYSIS COMPLETED	7/1/85
RESULTS IN	ng/g (ppb)

ERCO / A Division of ENSECO

VOLATILE ORGANICS ANALYSIS
BY EPA METHOD 602

- Data Report -

Benzene	ND
Toluene	210,000,000
Ethyl Benzene	ND
P-Xylene and M-Xylene	ND
O-Xylene	ND
Styrene	ND
N-Propylbenzene	ND
O-Chlorotoluene	ND
Trimethyl benzene	ND
P-Dichlorobenzene	ND
M-Dichlorobenzene	ND
N-Butylbenzene	ND
O-Dichlorobenzene	ND
1,2,4 Trichlorobenzene	ND

ND = Not detected above the minimum reporting limit of 2,100,000 ppb.

Reported by:
Checked by: NS

R79

REFERENCE 12

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY

New York

its low volatility, narcosis is less severe and much less common in industrial poisoning than in the case of other chlorinated HC. The toxic action of this material is chiefly on the liver, where it produces acute yellow atrophy and cirrhosis. Fatty degeneration of the kidneys and heart, hemorrhage into the lungs and serous membranes, and edema of the brain have also been found in fatal cases. Some reports indicate a toxic action on the CNS, with changes in the brain and in the peripheral nerves. The effect on the blood is one of hemolysis, with appearance of young cells in the circulation and a monocytosis. Due to its solvent action on the natural skin oils, dermatitis is not uncommon.

The initial symptoms resulting from exposure to the vapor are lacrimation, salivation and irritation of the nose and throat. Continued exposure to high concentrations results in restlessness, dizziness, nausea and vomiting and narcosis. The latter, however, is rare in industry. More commonly, exposure is less severe, and most complaints are vague and related to the digestive and nervous systems. The patient's symptoms gradually progress to a more serious illness, with development of toxic jaundice, liver tenderness, etc., and possibly albuminuria and edema. With serious liver damage the jaundice increases and tox symptoms appear, with somnolence, delirium, convulsions and coma usually preceding death. An exper CARC, ETA. MUT data.

This material is considered to be a very severe industrial hazard and its use has been restricted or even forbidden in certain countries.

Explosion Hazard: Reacts violently with N_2O_4, 2,4-dinitrophenyl disulfide and contact with sodium or potassium. When heated in contact with solid potassium hydroxide, a spontaneous flammable gas is evolved. Any water can cause appreciable hydrolysis even at room temp. and both hydrolysis and oxidation become comparatively rapid above 110°.

Disaster Hazard: Dangerous; when heated it emits highly tox decomp products.

ACETYLENE TRICHLORIDE

CAS RN: 79016 NIOSH #: KX 4550000
mf: C_2HCl_3; mw: 131.38

Stable, colorless, heavy, mobile liquid, chloroform-like odor. mp: −73°, bp: 87.1°, fp: −86.8°, d: 1.45560 @ 25°/4°, autoign. temp.: 788°F; vap. press: 100 mm @ 32°, vap. d: 4.53, flash p: none, lel = 12.5%, uel = 90%.

SYNS:

BLANCOSOLV
1-CHLORO-2,2-DICHLOROETHYLENE
CIRCOSOLV
1,1-DICHLORO-2-CHLOROETHYLENE
ETHINYL TRICHLORIDE
ETHYLENE TRICHLORIDE
NCI-C04546
TRICHLOORETHEEN (DUTCH)
TRICHLORAETHEN (GERMAN)
TRICHLORETHENE (FRENCH)
TRICHLORETHYLENE
TRICHLOROETHENE
TRICHLOROETHYLENE
1,1,2-TRICHLOROETHYLENE
1,2,2-TRICHLOROETHYLENE
TRI-CLENE
TRICLORETENE (ITALIAN)
TRICLOROETILENE (ITALIAN)
TRIELINA (ITALIAN)

TOXICITY DATA: 3

	CODEN:
ihl-rat TCLo:1800 ppm/24H	APTOD9 19,A22,80
ihl-rat TCLo:100 ppm/4H	JPHYA7 276,248,78
eye-hmn 5 ppm	JOCMA7 2,383,60
skn-rbt 500 mg/24H SEV	28ZPAK -,28,72
eye-rbt 20 mg/24H SEV	28ZPAK -,28,72
ihl-rat TCLo:500 ppm/6H/77W-I:ETA	ARTODN 43,237,80
orl-mus TDLo:455 gm/kg/78W-I:CAR	NCITR* NCI-CG-TR-2,76
ihl-mus TCLo:100 ppm/6H/77W-I:ETA	ARTODN 43;237,80
ihl-ham TCLo:100 ppm/6H/77W-I:ETA	ARTODN 43,237,80
orl-mus TD:912 gm/kg/78W-I:CAR	NCITR* NCI-CG-TR-2,76
orl-hmn LDLo:7 gm/kg	ARTODN 35,295,76
ihl-hmn TCLo:6900 mg/m3/10M:CNS	AHBAAM 116,131,36
ihl-hmn TCLo:160 ppm/83M:CNS	AIHAAP 23,167,62
ihl-hmn TDLo:812 mg/kg:SYS	BMJOAE 2,689,45
ihl-man TCLo:110 ppm/8H:IRR	BJIMAG 28,293,71
ihl-man LCLo:2900 ppm	NZMJAX 50,119,51
orl-rat LD50:4920 mg/kg	AIHAAP 30,470,69
ihl-rat LCLo:8000 ppm/4H	AIHAAP 30,470,69
ihl-mus LCLo:3000 ppm/2H	AEPPAE 141,19,29
ipr-mus LD50:3000 mg/kg	JETOAS 7(4),247,74
ivn-mus LD50:34 mg/kg	CBCCT* 6,141,54
orl-dog LDLo:5860 mg/kg	12VXA5 8,1069,68
ipr-dog LD50:1900 mg/kg	TXAPA9 10,119,67
scu-dog LDLo:150 mg/kg	HBTXAC 5,76,59
ivn-dog LDLo:150 mg/kg	QJPPAL 7,205,34
orl-cat LDLo:5864 mg/kg	HBTXAC 5,76,59
ihl-cat LCLo:32500 mg/m3/2H	AHBAAM 116,131,36
orl-rbt LDLo:7330 mg/kg	HBTXAC 5,76,59
scu-rbt LDLo:1800 mg/kg	QJPPAL 7,205,34
ihl-gpg LCLo:37200 ppm/40M	HBTXAC 5,76,59

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 3,-,74. Carcinogenic Determination: Animal positive IARC** 20,545,79; IARC** 11,263,76.

TLV: Air: 50 ppm DTLVS* 4,406,80. *Toxicology Review:* JTEHD6 2(3),671,77; CLPTAT 8,91,67; JOCMA7 16(3),194,74; JOCMA7 17(9),603,75; FNSCA6 2,-67,73; BNYMAM 54,413,78; 27ZTAP 3,146,69. OSHA Standard: Air: TWA 100 ppm;CL 200;Pk 300/5M/2H (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Trichloroethylene recm std: Air: TWA 100 ppm;CL 150 ppm/10M NTIS**. Occupational Exposure to Waste Anesthetic Gases and Vapors recm std: Air: CL 2 ppm/1H NTIS**. NCI Carcinogenesis Bioassay Completed; Results positive: Mouse (NCITR* NCI-CG-TR-2,76). NCI Carcinogenesis Bioassay Completed; Results negative: Rat (NCITR* NCI-CG-TR-2,76). Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. "NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S336. NIOSH Current Intelligence Bulletin 2, 1975. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No. 05780146—Followup sent as of April, 1979.

THR: HIGH via ivn; MOD via ipr, inhal, orl. An exper CARC, ETA. MUT data. Inhal of high conc causes narcosis and anesthesia. A form of addiction has been observed in exposed workers. Prolonged inhal of mod conc causes headache and drowsiness. Fatalities follow-

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ing severe, acute exposure have been attributed to ventricular fibrillation resulting in cardiac failure. There is damage to liver and other organs from chronic exposure. Cases have been reported but are of questionable validity. Determination of the metabolites trichloracetic acid and trichloroethanol in urine reflects the absorption of trichloroethylene. A food additive permitted in food for human consumption. A common air contaminant. SEV eye irr in rbt.

Fire Hazard: Low, when exposed to heat or flame. High conc of trichloroethylene vapor in high-temp. air can be made to burn mildly if plied with a strong flame. Though such a condition is difficult to produce, flames or arcs should not be used in closed equipment which contains any solvent residue or vapor. Can react violently with Al, Ba, N_2O_4, Li, Mg, liquid O_2, O_2, KOH, KNO_3, Na, NaOH, Ti.

Spontaneous Heating: No.

Disaster Hazard: Dangerous; see chlorides.

N-ACETYL ETHYL CARBAMATE

CAS RN: 2597548 NIOSH #: EY 8290000
mf: $C_6H_9NO_3$; mw: 131.15

TOXICITY DATA:	3	CODEN:
ipr-mus TDLo:2400 mg/kg/4W-1:NEO		CNREA8 29,2184,69

THR: An exper NEO. See also carbamates.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

N-ACETYLETHYL-2-cis-CROTONYLCARBAMIDE

CAS RN: 25614782 NIOSH #: YR 6650000
mf: $C_6H_{14}N_2O_3$; mw: 198.25

SYN: HOMEOSTAN

TOXICITY DATA:	3-2	CODEN:
orl-mus LD50:3500 mg/kg		27ZQAG -,423,72
ipr-mus LD50:1500 mg/kg		27ZQAG -,423,72
ivn-mus LD50:300 mg/kg		27ZQAG -,423,72

THR: HIGH ivn. MOD orl, ipr.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

N'-ACETYL ETHYLNITROSOUREA

CAS RN: 52217477 NIOSH #: YR 6825000
mf: $C_5H_9N_3O_3$; mw: 159.17

TOXICITY DATA:	3	CODEN:
orl-rat TDLo:520 mg/kg/52W-1:ETA		27NZAH 2,73,72
orl-rat LD50:550 mg/kg		27NZAH 2,85,72

THR: An exper ETA. MOD orl.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

ACETYL ETHYL TETRAMETHYL TETRALIN

CAS RN: 88299 NIOSH#: AL 3031000
mf: $C_{18}H_{26}O$; mw: 258.44

White crystals.

SYN:

2'-ACETONAPHTHONE, 3'-ETHYL-5',6',7',8'-TETRAHYDRO-5',5',8'-TETRAMETHYL-
7-ACETYL-1,1,4,4-TETRAMETHYL-1,2,3,4-TETRAHYDRONAPHTHALENE
ACETYLETHYL TETRAMETHYLTETRALIN
6-ACETYL-1,1,4,4-TETRAMETHYL-7-ETHYL-1,2,3,4,-TETRALIN
AETT
ETHANONE, 1-(3-ETHYL-5,6,7,8-TETRAHYDRO-5,5,8,8-TETRAMETHYL-2-NAPHTHALENYL)-(9CI)
3'-ETHYL-5',6',7',8'-TETRAHYDRO-5',5',8'-TETRAMETHYL-2'-ACETONAPHTHONE
1-(3-ETHYL-5,6,7,8-TETRAHYDRO-5,5,8,8-TETRAMETHYL-2-NAPHTHALENYL)-ETHANONE
MUSK 36A
POLYCYCLIC MUSK
VERSALIDE

TOXICITY DATA:	3-2	CODEN:
skn-rbt 500 mg/24H MLD		FCTXAV 17,357,79
orl-rat LD50:316 mg/kg		FCTXAV 17,357,79
ipr-rat LD50:126 mg/kg		FCTXAV 17,357,79
scu-rat LD50:584 mg/kg		FCTXAV 17,357,79

Reported in EPA TSCA Inventory, 1980. Meets Criteria for Proposed OSHA Medical Record Rule FEREAC 47,30420,82.

THR: Exposure causes blue coloration of internal organs. It is slowly metabolized and excreted via feces. Exposure causes CNS effects, i.e., hyperexcitability, tremors, lack of coordination, hunched back and loss of weight. Symptoms persist for 90 days after exposure. Severity of symptoms seems proportional to length of exposure. It is freely absorbed via human skn. MOD skn irr. HIGH orl, ipr. MOD scu.

ACETYL FLUORIDE

CAS RN: 557993 NIOSH #: AP 2800000
mf: C_2H_3FO; mw: 62.05

d: 1.002 @ 15°/4°; mp: −60°; bp: 20.8°. Sl sol in alc, ether, acetone and benzene.

SYN: METHYLCARBONYL FLUORIDE

TOXICITY DATA:	2	CODEN:
ihl-mus LCLo:2500 mg/m3		NDRC** -,7,43
ihl-dog LCLo:2000 mg/m3/30M		11FYAN 3,74,63

Reported in EPA TSCA Inventory, 1980.

THR: MOD ihl. See also fluorides.

Disaster Hazard: When heated to decomp it emits tox fumes of F^-.

16-ACETYLGITOXIN

CAS RN: 7242071 NIOSH #: LZ 0875000
mf: $C_{43}H_{66}O_{15}$; mw: 823.09

TOXICITY DATA:	3	CODEN:
orl-cat LD50:120 ug/kg		AIPTAK 159,1,66
ivn-cat LDLo:1171 ug/kg		JMPCAS 5,988,62
orl-gpg LD50:2500 ug/kg		AIPTAK 159,1,66

Toxicology Review: 85ELDJ -,187,63.

THR: HIGH oral, ivn.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

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DICHLORODIPROPYLSTANNANE

CAS RN: 867367 NIOSH #: WH 7255000
mf: $C_6H_{14}Cl_2Sn$; mw: 275.79

Colorless crystals. Sol in organic solvents. mp: 81°.

SYNS:
DICHLORODIPROPYLTIN
DIPROPYLTIN CHLORIDE
DI-N-PROPYLTIN DICHLORIDE
DIPROPYLTIN DICHLORIDE

TOXICITY DATA:	3	CODEN:
orl-rat LDLo:160 mg/kg		BJIMAG 15,15,58

OSHA Standard: Air: TWA 100 ug(Sn)/m3 (skin) (SCP-X) FEREAC 39,23540,74. Occupational Exposure to Organotin Compounds recm std: Air: TWA 0.1 mg(Sn)/m3 NTIS**.
THR: HIGH orl. See also tin compounds and chlorides.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

1,4-DICHLORO-2,3-EPOXYBUTANE

CAS RN: 3583479 NIOSH #: EJ 8050000
mf: $C_4H_6Cl_2O$; mw: 141.00

SYN: BUTANE, 1,4-DICHLORO-2,3-EPOXY

TOXICITY DATA:	2	CODEN:
mmo-klp 5 mmol/L		MUREAV 89,269,81
skn-rbt 10 mg/24H open MLD		AIHAAP 23,95,62
mma-sat 1 mmol/L		ARTODN 41,249,79
orl-rat LDLo:710 mg/kg		AIHAAP 23,95,62
skn-rbt LDLo:2830 mg/kg		AIHAAP 23,95,62

THR: An irr in rbt skn. MUT data. MOD via oral, inhal and dermal routes.
Disaster Hazard: Dangerous; see chlorides.

DICHLOROETHANE

CAS RN: 1300216 NIOSH #: KH 9800000
mf: $C_2H_4Cl_2$; mw: 98.96

Lel = 5.6%; uel = 11.4%.

TOXICITY DATA:	2	CODEN:
orl-rat LD50:1120 mg/kg		HYSAAV 32,349,67
orl-mus LD50:625 mg/kg		HYSAAV 32,349,67
ihl-mus LCLo:10 gm/m3		GISAAA 20(8),19,55
skn-rbt LD50:3890 mg/kg		UCDS** 3/23/70
ihl-rat TCLo:6000 ppm (6-15D preg) TER		TXAPA9 28,452,74
ihl-rat TCLo:6000 ppm (6-15D preg)		TXAPA9 28,452,74

THR: MOD orl in rat, mus. MOD skn in rbt.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-.

1,2-DICHLOROETHANE

mf: $C_2H_4Cl_2$; mw: 98.96

Lel = 6.2%; uel = 15.9%; flash p: 55.4°F.

Incomp: Dinitrogen tetraoxide; metals.
For further information see Vol. 1, No. 4 of *DPIM Report.*

2,2-DICHLOROETHANOL

CAS RN: 598389 NIOSH #: KK 4100000
mf: $C_2H_4Cl_2O$; mw: 114.96

TOXICITY DATA:	CODEN:
mmo-omi 80 uL/plate	CBINA8 30,9,80
mmo-asn 20 uL/plate/2H	GBINA8 30,9,80

Reported in EPA TSCA Inventory, 1980.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

2,2-DICHLOROETHENYL DIETHYL PHOSPHATE

NIOSH #: TC 0280000
mf: $C_6H_{11}Cl_2O_4P$; mw: 249.04

SYNS:
DICHLORVOS-ETHYL
2,2-DICHLOROVINYL DIETHYL PHOSPHATE
O-(2,2-DICHLORVINYL)-O,O-DIETHYLPHOSPHAT (GERMAN)

TOXICITY DATA:	3	CODEN:
mmo-sat 5 uL/plate		MUREAV 28,405,75
ipr-mus LD50:12 mg/kg		ARZNAD 5,746,55

THR: MUT data. HIGH ipr. See also esters.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and PO_x.

DICHLORO(4-ETHOXY-o-PHENYLENEDIAMMINE)PLATINUM (II)

NIOSH #: TP 2497050
mf: $C_8H_{12}Cl_2N_2OPt$; mw: 418.21

TOXICITY DATA:	CODEN:
mmo-sat 2500 nmol/L	JMCMAR 23,459,80
mma-sat 2500 nmol/L	JMCMAR 23,459,80

THR: MUT data. See also platinum compounds.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and NO_x.

DI(2-CHLOROETHYL) ACETAL

CAS RN: 14689975 NIOSH #: KI 3600000
mf: $C_6H_{12}Cl_2O_2$; mw: 187.08

SYN: 1,1'-(ETHYLIDENE)BIS(OXY)BIS(2-CHLOROETHANE)

TOXICITY DATA:	3	CODEN:
orl-rat LD50:310 mg/kg		AIHAAP 30,470,69
skn-rbt LD50:200 mg/kg		AIHAAP 30,470,69

THR: HIGH orl. HIGH skn.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

4-DI-2''-CHLOROETHYLAMINOAZOBENZENE-2'-CARBOXYLIC ACID

NIOSH #: DG 7450000
mf: $C_{17}H_{17}Cl_2N_3O_2$; mw: 366.27

TOXICITY DATA: 1 CODEN:

Aquatic Toxicity Rating: TLm96:over 1000 ppm WQCHM*. 3,-,74. DOT: Flammable Gas, Label: Flammable Gas FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.

THR: A simple asphyxiant. See argon.

Fire Hazard: Very dangerous, when exposed to heat or flame. Reacts violently with BrF_5, Cl_2, ClO_2, NF_3, liquid O_2, OF_2.

Spontaneous Heating: No.

Explosion Hazard: Dangerous, when exposed to heat or flame.

Disaster Hazard: Dangerous.

To Fight Fire: Stop flow of gas, CO_2 or dry chemical.

Incomp: halogens or interhalogens; oxidants, air (forms explosive mixtures).

METHANE DICHLORIDE

CAS RN: 75092 NIOSH #: PA 8050000
mf: CH_2Cl_2; mw: 84.93

Colorless volatile liquid. bp: 39.8°, lel = 15.5% in O_2, uel = 66.4% in O_2, fp: −96.7°, d: 1.326 @ 20°/4°, autoign. temp.: 1139°F, vap. press: 380 mm @ 22°, vap. d: 2.93.

SYNS:

CHLORURE DE METHYLENE (FRENCH)
DICHLOROMETHANE (DOT)
FREON 30
METHYLENE BICHLORIDE
METHYLENE CHLORIDE (DOT)
METHYLENE DICHLORIDE
METYLENU CHLOREK (POLISH)
NCI-C50102

TOXICITY DATA: 3	CODEN:
skn-rbt 810 mg/24H SEV	JETOAS 9,171,76
eye-rbt 162 mg MOD	JETOAS 9,171,76
eye-rbt 10 mg MLD	TXCYAC 6,173,76
eye-rbt 17500 mg/m3/10M	TXCYAC 6,173,76
mmo-sat 5700 ppm	MUREAV 56,245,78
mma-sat 5700 ppm	MUREAV 56,245,78
dni-hmn:fbr 5000 ppm/1H-C	MUREAV 81,203,81
dni-ham:lng 5000 ppm/1H-C	MUREAV 81,203,81
sce-ham:lng 5000 ppm/1H-C	MUREAV 81,203,81
ihl-rat TCLo:4500 ppm/24H (1-17D preg)	TXAPA9 52,29,80
ihl-rat TCLo:1250 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-mus TCLo:1250 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-rat TCLo:500 ppm/6H/2Y:ETA	TXAPA9 48,A185,79
ihl-hmn TCLo:500 ppm/1Y-I:CNS	ABHYAE 43,1123,68
ihl-hmn TCLo:500 ppm/8H:BLD	SCIEAS 176,295,72
orl-rat LD50:167 mg/kg	DOWSD* 1/26/76
ihl-rat LC50:88000 mg/m3/30M	FAVUAI 7,35,75
ihl-mus LC50:14400 ppm/7H	NIHBAZ 191,1,49
ipr-mus LD50:1500 mg/kg	TXAPA9 9,139,66
scu-mus LD50:6460 mg/kg	TXAPA9 4,354,62
orl-dog LDLo:3000 mg/kg	QJPPAL 7,205,34
ihl-dog LCLo:14108 ppm/7H	NIHBAZ 191,1,49
ipr-dog LDLo:950 mg/kg	TXAPA9 10,119,67
scu-dog LDLo:2700 mg/kg	QJPPAL 7,205,34
ivn-dog LDLo:200 mg/kg	QJPPAL 7,205,34
ihl-cat LCLo:43400 mg/m3/4.5H	AHBAAM 116,131,36
orl-rab LDLo:1900 mg/kg	HBTXAC 1,94,56
scu-rbt LDLo:2700 mg/kg	QJPPAL 7,205,34
ihl-gpg LCLo:5000 ppm/2H	FLCRAP 1,197,67

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 3,-,74. Carcinogenic Determination: Indefinite IARC** 20,449,79.

TLV: Air: 100 ppm DTLVS* 4,275,80. *Toxicology Review:* FAZMAE 18,365,74; 27ZTAP 3,94,69. OSHA Standard: Air: TWA 500 ppm; CL 1000; Pk 2000/5M/2H (SCP-J) FEREAC 39,23540,74. DOT-ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Methylene Chloride recm std: Air: TWA 75 ppm; Pk 500 ppm/15M NTIS**. Currently tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. "NIOSH Manual of Analytical Methods" Vol 1 127, Vol 3 S329. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: MUT data. A skn, eye irr. An exper ETA, ± CARC. A hmn CNS, BLD. HIGH orl, ivn; MOD ipr, orl, scu, ihl; LOW ihl, scu. See also chlorinated aliphatic hydrocarbons. Very dangerous to the eyes. Except for its property of inducing narcosis, it has very few other acute toxicity effects. Its narcotic powers are quite strong, and in view of its great volatility, care should be taken in its use. It will not form explosive mixtures with air at ordinary temp. However, it can be decomp by contact with hot surfaces and open flame, and it can then yield toxic fumes, which are irr and will thus give warning of their presence. It has been used as an anesthetic in Europe and is still used there for local anesthesia. Exper have shown that 25,000 ppm conc for 2 hr exposures were not lethal. Conc of 7,200 ppm after 8 min caused paresthesia of the extremities; after 16 min, acceleration of the pulse to 100; during the first 20 min, congestion in the head, a sense of heat and slight irr of the eyes. At a level of 2,300 ppm, there was no feeling of dizziness during 1-hr exposures, but nausea did occur after 30 min of exposure. The limit of perception by smell is set at 25-50 ppm conc. Can cause a dermatitis upon prolonged skin contact. A respirator for organic vapors and fumes should be worn to avoid excessive inhal. Used as a food additive permitted in food for human consumption.

Fire Hazard: Reacts violently with Li, NaK, potassium-*tert*-butoxide, (KOH + *n*-methyl-*n*-nitrosourea).

Explosion Hazard: None under ordinary conditions, but will form explosive mixtures in atmosphere having high oxygen content, in liquid O_2, N_2O_4, K, Na, NaK.

Disaster Hazard: Dangerous; when heated to decomp, emits highly tox fumes of phosgene.

METHANESULFONIC ACID

CAS RN: 75752 NIOSH #: PB 1140000
mf: CH_4O_3S; mw: 96.11

Solid. Sol in water, alc and ether; d: 1.4812 @ 18°/4°; mp: 20°; bp: 167° @ 10 mm. Corrosive to iron, steel, brass, copper and lead.

SYN: WSQ 1

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TLV: Air: 5 ppm DTLVS* 3,249,71. DOT: ORM-A, Label: None FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: HIGH orl, ihl in rat. MOD skn, ipr in rbt, gpg.

Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

For further information see Vol. 1, No. 5 of *DPIM Report.*

1,1,1,2-TETRACHLOROETHANE

CAS RN: 630206 NIOSH #: KI 8450000
mf: $C_2H_2Cl_4$; mw: 167.84

Liquid; d: 1.588 @ 20°/4°; bp: 129°-130°; sol in water; misc in alc, ether.

SYN: NCI-C52459

TOXICITY DATA: 2	CODEN:
skn-rbt 500 mg/24H	AMPMAR 35,593,74
eye-rbt 100 mg SEV	AMPMAR 35,593,74

Toxicology Review: AIHAAP 40,A46,79. Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. NIOSH Current Intelligence Bulletin 27, 1978. Reported in EPA TSCA Inventory, 1980.

THR: Possible CARC. An irr (SEV) in rbt eyes and MOD in rbt skn.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-.

Incomp: Dinitrogen tetraoxide.

For further information see Vol. 2, No. 6 and Vol. 3, No. 2 of *DPIM Report.*

1,1,2,2-TETRACHLOROETHYLENE

CAS RN: 127184 NIOSH #: KX 3850000
mf: C_2Cl_4; mw: 165.82

Colorless liquid, chloroform-like odor. mp: −23.35°, bp: 121.20°, flash p: none, d: 1.6311 @ 15°/4°, vap. press: 15.8 mm @ 22°, vap. d: 5.83.

SYNS:

CARBON BICHLORIDE
CARBON DICHLORIDE
CZTEROCHLOROETYLEN (POLISH)
DOW-PER
ETHYLENE TETRACHLORIDE
NCI-C04580
PERCHLOORETHYLEEN, PER (DUTCH)
PERCHLORAETHYLEN, PER (GERMAN)
PERCHLORETHYLENE, PER (FRENCH)
PERCHLOROETHYLENE
PERCLENE
PERCLOROETILENE (ITALIAN)
TETRACHLOORETHEEN (DUTCH)
TETRACHLORAETHEN (GERMAN)
TETRACHLOROETHYLENE (DOT)
TETRACLOROETENE (ITALIAN)

TOXICITY DATA: 3	CODEN:
ihl-rat TCLo:1000 ppm/24H (14D pre/1-22D preg)	APTOD9 19,A21,80
ihl-rat TCLo:1000 ppm/24H (1-22D preg)	APTOD9 19,A21,80
ihl-rat TCLo:900 ppm/7H (7-13D preg)	TJADAB 19,41A,79
ihl-rat TCLo:300 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-mus TCLo:300 ppm/7H (6-15D preg)	TXAPA9 32,84,75
skn-rbt 810 mg/24H SEV	JETOAS 9,171,76
eye-rbt 162 mg MLD	JETOAS 9,171,76
mmo-sat 50 uL/plate	NIOSH* 5AUG77
mma-sat 200 uL/plate	NIOSH* 5AUG77
orl-mus TDLo:195 gm/kg/50W-I:CAR	NCITR* NCI-CG-TR-13,77
orl-mus TD:240 gm/kg/62W-I:CAR	NCITR* NCI-CG-TR-13,77
ihl-hmn TCLo:96 ppm/7H:SYS	NTIS** PB257-185
ihl-man TCLo:280 ppm/2H:EYE	AMIHBC 5,566,52
ihl-man TCLo:600 ppm/10M:CNS	AMIHBC 5,566,52
orl-rat LD50:8850 mg/kg	NPIRI* 1,96,74
ihl-rat LCLo:4000 ppm/4H	JOCMA7 4,262,62
orl-mus LD50:8100 mg/kg	NTIS** PB257-185
ihl-mus LCLo:23000 mg/m3/2H	AHBAAM 116,131,36
ipr-mus LD50:4700 mg/kg	NTIS** PB257-185
orl-dog LDLo:4000 mg/kg	AJHYA2 9,430,29
ipr-dog LD50:2100 mg/kg	TXAPA9 10,119,67
ivn-dog LDLo:85 mg/kg	QJPPAL 7,205,34
orl-cat LDLo:4000 mg/kg	AJHYA2 9,430,29
orl-rbt LDLo:5000 mg/kg	AJHYA2 9,430,29
scu-rbt LDLo:2200 mg/kg	QJPPAL 7,205,34

Aquatic Toxicity Rating: TLm96:100-10 ppm WQCHM* 3,-,74. Carcinogenic Determination: Animal Positive IARC** 20,491,79.

TLV: Air: 50 ppm (skin) DTLVS* 4,325,80. *Toxicology Review:* AJMEAZ 38,409,65; 27ZTAP 3,139,69. OSHA Standard: Air: TWA 100 ppm; CL 200; Pk 300/5M/3H (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Tetrachloroethylene recm std: Air: TWA 50 ppm; CL 100 ppm/15M NTIS**. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR* NCI-CG-TR-13,77). NCI Carcinogenesis Bioassay Completed; Results Negative: Rat (NCITR* NCI-CG-TR-13,77). Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980."NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S335. NIOSH Current Intelligence Bulletin 20, 1978. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No: 05780146-Followup Sent as of April, 1979.

THR: MOD via inhal, oral, scu, ipr and dermal routes. HIGH via ivn route. Not corrosive or dangerously acutely reactive, but toxic by inhal, by prolonged or repeated contact with the skin or mu mem, or when ingested by mouth. The liquid can cause injuries to the eyes; however, with proper precautions it can be handled safely. The symptoms of acute intoxication from this material are the result of its effects upon the nervous system.

Exposures to higher conc than 200 ppm cause irr, lachrymation and burning of the eyes and irr of the nose and throat. There may be vomiting, nausea, drowsiness, an attitude of irresponsibility, and even an appearance resembling alcoholic intoxication. This material also acts as an anesthetic, through the inhalation of excessive amounts within a short time. The symptoms of fatal intoxication are irritation of the eyes, nose and throat, then fullness in the head, mental confusion; there may be headache stupefaction, nausea and vomiting, personnel suffering from subacute poisoning

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may suffer from such symptoms as headache, fatigue, nausea, vomiting, mental confusion and temporary blurring of the vision. This can occur when inadequate ventilation results in concentrations higher than 200 ppm, or where the vapor conc are intermittently high due to faulty handling of the material, or when an individual fails to take adequate precautionary measures.

This material can cause dermatitis, particularly after repeated or prolonged contact with the skin. The dermatitis is preceded by a reddening and burning and more rarely, a blistering of the skin. In any event, the skin becomes rough and dry, due largely to the removal of skin oils by material. The skin then cracks easily and is readily susceptible to infection. Upon ingestion it causes irr of the gastrointestinal tract, which, in turn, causes nausea, vomiting, diarrhea and bloody stools. However, such effects are usually less severe than the effects of swallowing similar amounts of other chlorinated hydrocarbons. An exper CARC. MUT data.

It may be handled in the presence or absence of air, water, and light with any of the common construction materials at temp. up to 140°C. This material is extremely stable and resists hydrolysis. A common air contaminant. Reacts violently with Ba, Be, Li; N_2O_4; metals; NaOH.

Disaster Hazard: Dangerous; when heated to decomp it emits high tox fumes of chlorides.

For further information see Perchloroethylene Vol. 1, No. 2 of *DPIM Report.*

TETRACHLORO HYDROQUINONE

CAS RN: 87876 NIOSH #: MX 7700000
mf: $C_6H_2Cl_4O_2$; mw: 247.88

SYN: USAF DO-62

TOXICITY DATA: 3-2 CODEN:
orl-mus LD50:500 mg/kg ARTODN 40,63,78
ipr-mus LD50:25 mg/kg NTIS** AD277-689

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ipr. MOD orl.

TETRACHLOROISOPHTHALONITRILE

CAS RN: 1897456 NIOSH #: NT 2600000
mf: $C_8Cl_4N_2$; mw: 265.90

SYNS:
CHLORTHALONIL (GERMAN)
NCI-C00102
M-TETRACHLOROPHTHALONITRILE

TOXICITY DATA: 3 CODEN:
orl-rat TDLo:142 gm/kg/80W-C:CAR NCITR* NCI-CG-TR-41,78
orl-rat LD50:10000 mg/kg 85ARAE 4,75,76
ipr-mus LD50:2500 mg/kg INHEAO 4,11,66

NCI Carcinogenesis Bioassay Completed; Results Positive: Rat (NCITR* NCI-CG-TR-41,78); Results Negative: Mouse (NCITR* NCI-CG-TR-41,78). Reported in EPA TSCA Inventory, 1980.

THR: An exper CARC. MOD acute ipr and LOW acute orl.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-, NO_x and CN^-.

TETRACHLORONAPHTHALENE

CAS RN: 1335882 NIOSH #: QK 3700000
mf: $C_{10}H_4Cl_4$; mw: 265.94

Crystals. mp: 182°.

TOXICITY DATA: 3 CODEN:
ihl-hmn TCLo:3 mg/m3:SYS DTLVS* 3,251,71

TLV: Air: 2 mg/m3 (skin) DTLVS* 4,391,80. OSHA Standard: Air: TWA 2 mg/m3 (skin) (SCP-I) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 2 S130. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646, 80.

THR: HIGH via inhal and dermal routes. See also chlorinated naphthalenes and chlorinated diphenyls.

Disaster Hazard: Dangerous; when heated to decomp it emits highly toxic fumes of Cl^-.

TETRACHLORONITROANISOLE

CAS RN: 2438882 NIOSH #: BZ 9625000
mf: $C_7H_3Cl_4NO_3$; mw: 290.91

SYNS:
BENZENE, 1,2,4,5-TETRACHLORO-3-METHOXY-6-NITRO- (9CI)
ENT 22,335
NCI-C03032
4-NITRO-2,3,5,6-TETRACHLORANISOLE
2,3,5,6-TETRACHLORO-4-NITROANISOLE

TOXICITY DATA: 3 CODEN:
orl-rat LD50:260 mg/kg IHFCAY 6,1,67

NCI Carcinogenesis Bioassay Completed; Results Negative (NCITR* NCI-CG-TR-114,78).

THR: HIGH orl.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and NO_x.

2,3,4,6-TETRACHLORONITROBENZENE

CAS RN: 3714623 NIOSH #: DB 9800000
mf: $C_6HCl_4NO_2$; mw: 260.88

SYN: 1,2,3,5-TETRACHLORO-4-NITROBENZENE

TOXICITY DATA: 3 CODEN:
skn-mus TDLo:576 mg/kg/12W-I:NEO CNREA8 26,12,66

THR: An exper NEO.

Disaster Hazard: When heated to decomp it emits very tox fumes of HCl and NO_x.

2,3,5,6-TETRACHLORONITROBENZENE

CAS RN: 117180 NIOSH #: DC 0175000
mf: $C_6HCl_4NO_2$; mw: 260.88

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REFERENCE 13

15 (12-75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Ms. JoAnn Gould
FROM: Mr. Robert Wozniak RW
SUBJECT: DRUM REMOVAL SLEEPY HOLLOW CAMPGROUND

DATE: November 21, 1986

On 11/17/86, Ms. Nancy Overfield witnessed the removal of ten drums and four drums full of soil from the swamp located at the north end of Sleepy Hollow Lake. This removal was performed by two technicians working for Envirosure Management Corporation, cleanup contractor for F. N. Burt Company, Inc. All work was performed to the C.E.S. work plan submitted to this office.

On Tuesday, 11/18/86, the writer witnessed the removal of seven additional drums and nine drums of soil from the same swamp area. The work was performed by the same Envirosure people; Mr. Eugene Manning, Supervisor and Mr. Kent Brong, Technician. Another technician, no name obtained, arrived at approximately 1:00 PM to obtain samples from the drums and soil.

Mr. Fred Connine represented F. N. Burt, and he stated Mr. Mario Latello had called a lady across the street from the campground and asked her to tell Mr. Connine there was four additional drums at the maintenance building that should be removed. Mr. Connine questioned removing those drums since he was not sure they originated from F. N. Burt, and the original DEC survey indicated there was only a total of 18 drums. He also stated their contact with Envirosure was for a total of 18 drums.

The writer searched the area around the maintenance building and found ten additional drums full or partially full of unknown material. This was shown to Mr. Connine, and he elected not to have Envirosure remove the drums from the maintenance area until he gets assurance that the material originated from F. N. Burt and he gets approval from F. N. Burt's owners that they agree to pay the additional handling and disposal cost.

You may have to review the original order on consent to see if these ten additional drums are covered and if they are not, you may have to contact Mr. Mark Spitler or Mr. Fred Connine and renegotiate. I am sure Mr. Tom Johnson or the writer or both could QC the remaining ten drums. Since these drums are staged at the maintenance building, there is the possibility they could have originated from the operation of the campground or Mr. Fitzhans Trucking concern.

Besides the full drums on site, it should be noted that there are 100 plus drums that are empty. Many of these drums are crushed and used as fill material in the wetlands. Mr. Latello stated these drums were brought out to the campground by the Fitzhans to be used as burn barrels. No doubt the contents were also emptied into the same swamp area as the full drums.

RCW:sz

cc: Mr. Peter Buechi/Mr. John Tygert
Mr. Robert Mitrey
Ms. Nancy Overfield

R 87

REFERENCE 14

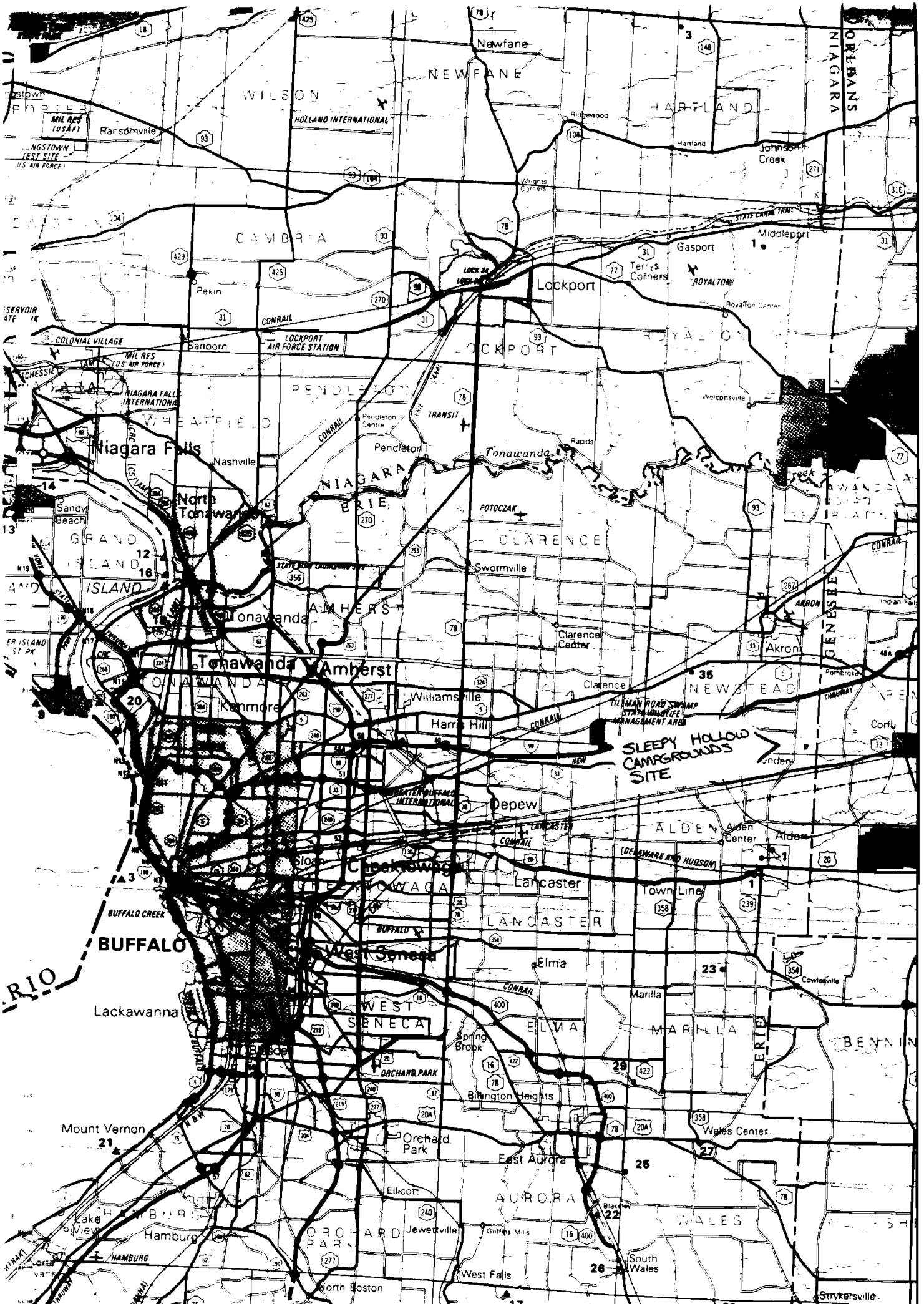
New York State Atlas of Community Water System Sources 1982

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

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

R89



TION OF COMMUNITY WATER SYSTEM SOURCES-1982

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

R90

GENESEE COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
1	Batavia City.	16703. .	.Tonawanda Creek, Wells
2	Bergen Village.	.1040. .	.Wells
3	Corfu Village.	.760. .	.Wells
4	Elba Village.	805. .	.Wells
5	Leroy Village (See also No 7 Wyoming Co, Page 10).	100. .	.Lake Leroy
6	Oaks Subdivision.	.70. .	.Wells
7	Pavillion Water District #1.	.560. .	.Wells
8	South Alabama.	50. .	.Wells
Non-Municipal Community			
9	Antones Trailer Park.	.56. .	.Wells
10	Apple Grove Trailer Park.	.98. .	.Wells
11	Boulder Trailer Park.	.24. .	.Wells
12	Broadway Acres.	.40. .	.Wells
13	Chapells Trailer Park.	60. .	.Wells
14	Del-Mar Trailer Park.	.NA. .	.Wells
15	Elmwood Trailer Park.	.21. .	.Wells
16	Godfreys Pond.	40. .	.Wells
17	Golden Mobile Home Park.	54. .	.Wells
18	Happy Hollow Trailer Court.	.15. .	.Wells
19	Harris Apartments.	30. .	.Wells
20	Hel-Ken Apartments.	.NA. .	.Wells
21	Huskey's Trailer Court.	.20. .	.Wells
22	Schoolhouse Apartments.	.18. .	.Wells
23	Valley View Trailer Park.	.52. .	.Wells
24	Weaver Trailer Park.	NA. .	.Wells
25	Willard Apartments.	.30. .	.Wells

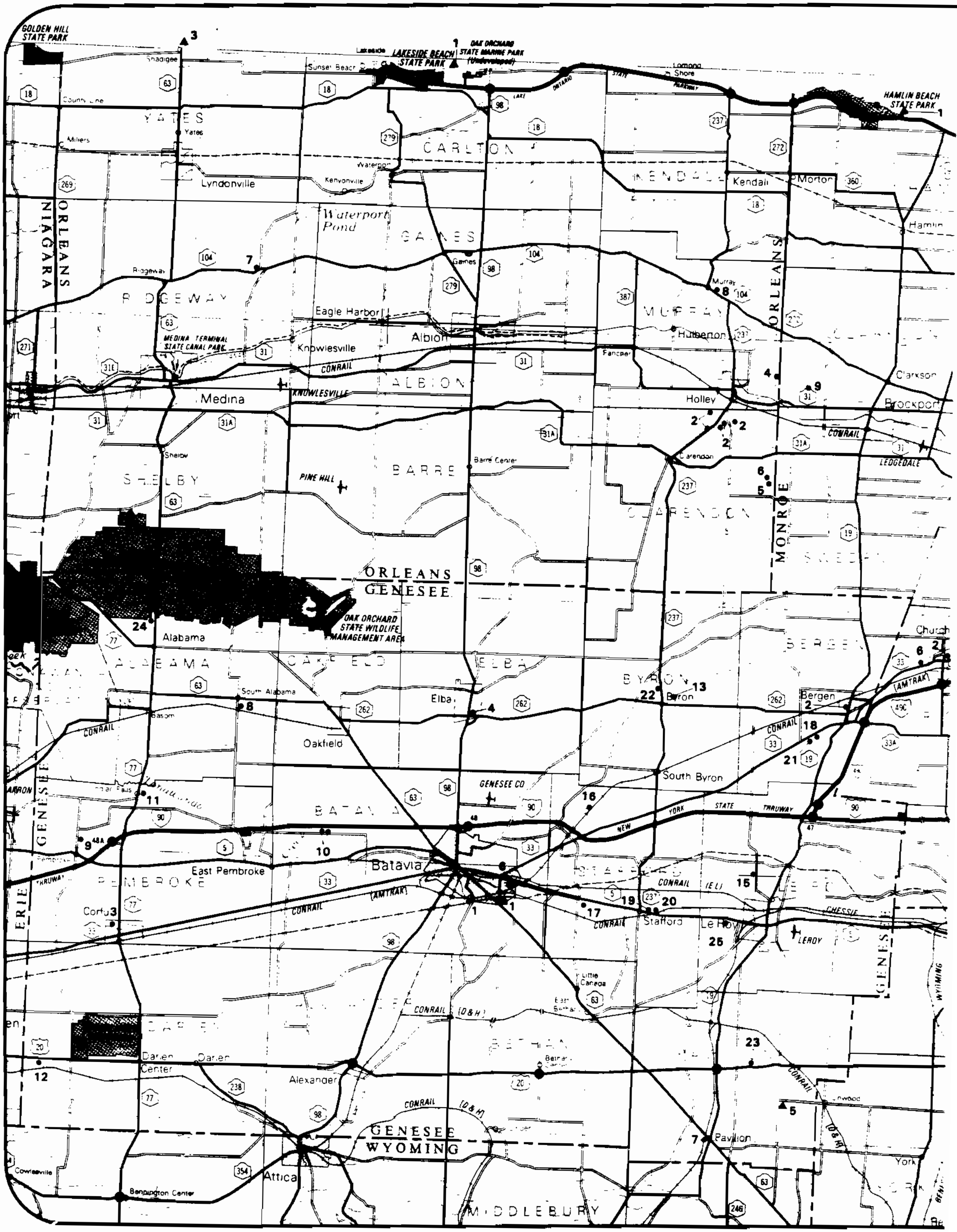
MONROE COUN

ID NO	COMMUNITY WATER
Municipal Community	
1	Brockport Village
2	Churchville Villa
3	East Rochester V Fairport Village Co, Page 12).
4	Hilton Village.
5	Monroe County Wat
6	Park Road Extens
7	Pittsford Village Rochester City (S Co, Page 10 and Page 12). . .
8	Webster Village.
Non-Municipal Community	
9	John B. Martin &

R91

NEW YORK STATE D
DIVISION OF ENVIR
BUREAU OF PUBLIC W

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982



REFERENCE 15

Town of Newstead

Church & John St. P. O. Box 227
Akron, N. Y. 14001 Phone (716) 542-4573

March 16, 1989

Recra Environmental, Inc.
Audubon Business Centre
10 Hazelwood Drive Suite 106
Amherst, New York 14150

Attention: Linda J. Clark
Project Geologist

Dear Ms. Clark:

Per the enclosed please be advised that a small portion, as indicated on the map in red, is in the Town of Newstead Water DIstrict #4 on Route 5 (Main Road). The balance of the areas indicated are served by private water wells.

If further information is needed, please advise.

Sincerely,

Carole D Borchert

Carole D. Borchert
Town Clerk

Enclosures

Water source being the Village of Akron private municipal reservoir in Bennington, New York.

R93

1/11154.3

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

March 14, 1989

Ms. Carol Borcht
Town Clerk
Newstead Town Hall
P. O. Box 227
Akron, NY 14001

Dear Ms. Borcht:

As I mentioned during our telephone conversations on March 9, 1989 and March 13, 1989, Recra Environmental, Inc. is currently conducting a Phase I investigation of the Sleepy Hollow Campground Site located on Shiehl Rd., Town of Newstead, NY and the Lancaster Sanitary Landfill Site located on Gunnville Rd., Town of Lancaster, NY.

We are performing this investigation for the New York State Department of Environmental Conservation pursuant to the requirements of the New York State Superfund Law (Chapter 857 of the Laws of 1982).

This is to confirm our telephone conservation wherein you provided the following information:

- Within a 3-mile radius of both sites, the population of the Town of Newstead, NY uses private wells as a sole source of water and no municipal water system readily available. (Please see maps enclosed.)

We would appreciate if you would review this information, note any necessary corrections and return a signed and dated copy to indicate your concurrence. Your prompt attention to this would be appreciated, as the information is necessary to complete our evaluation of the site.

Thank you for your assistance.

Sincerely,

Linda J. Clark

Linda J. Clark
Project Geologist

I agree with the information as it is presented.

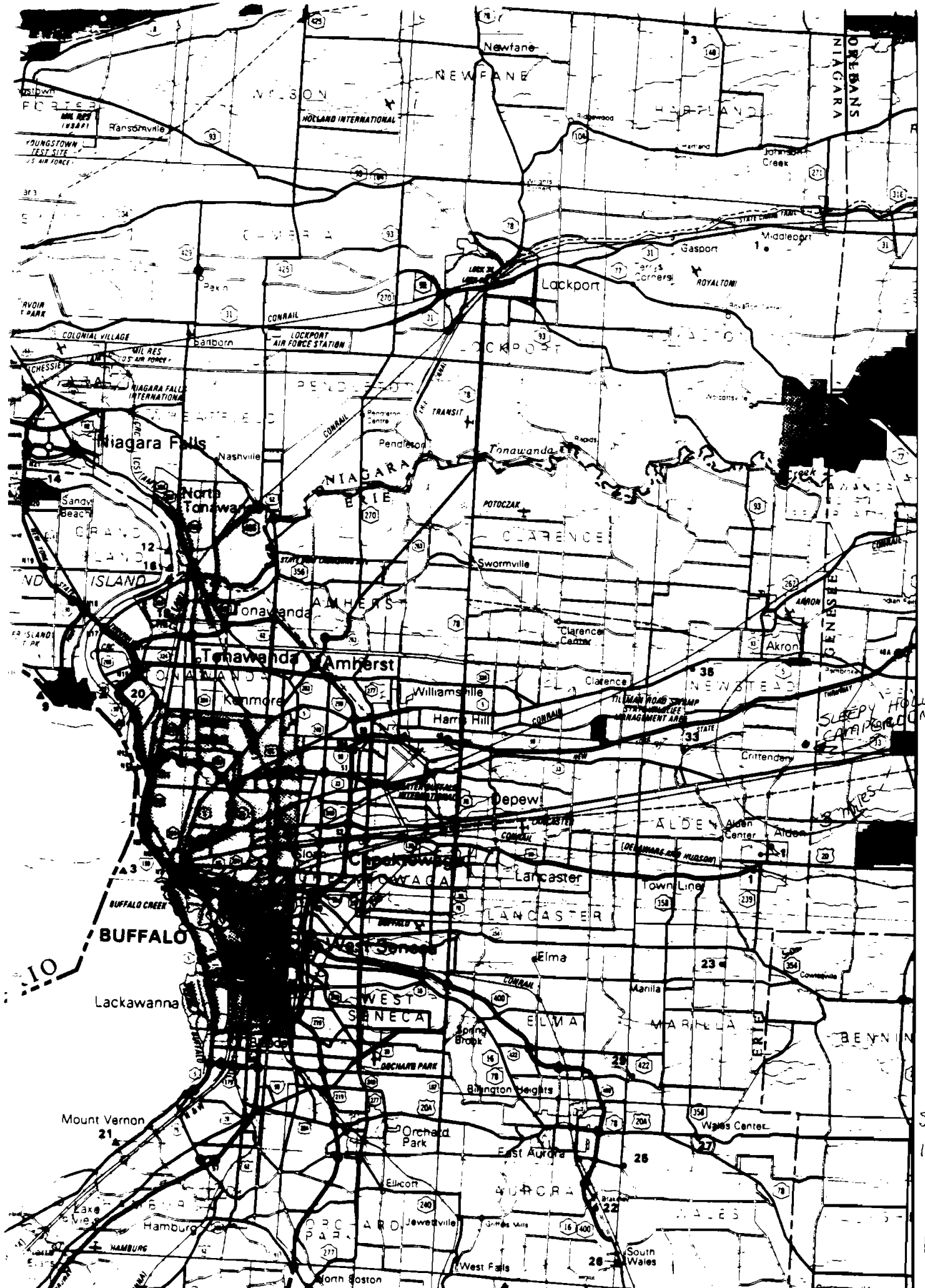
Carole D. Borchert

Carol ~~Borcht~~ CAROLE BORCHERT

3/17/89

Date

(See attached)



TION OF COMMUNITY WATER SYSTEM SOURCES-1982

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

N

SCALE
1:250,000

R95

REFERENCE 16

1/11154.5

MAR 24 1989

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

March 14, 1989

Ms. Carol Duckworth
Village of Corfu Clerk
116 E. Main St.
P. O. Box 52
Corfu, NY 14036

Dear Ms. Duckworth:

As I mentioned during our telephone conversation on March 9, 1989, Recra Environmental, Inc. is currently conducting a Phase I investigation of the Sleepy Hollow Campground Site located on Siehl Rd., Town of Newstead, NY.

We are performing this investigation for the New York State Department of Environmental Conservation pursuant to the requirements of the New York State Superfund Law (Chapter 857 of the Laws of 1982).

This is to confirm our telephone conservation wherein you provided the following information:

- The population of the Village of Corfu, NY is served by a municipal well which is located just west of Allegany Rd. and south of the cemetary, as indicated on the map enclosed.
- In addition to the Village of Corfu, this well serves a portion of the population of the Town of Pembroke, NY (approximately 30 residences located along Route 33, just west of the Village of Corfu, NY corporate boundary) and a portion of the population of the Town of Darien, NY (approximately 30 residences located along Ganson Ave. and Route 77).

We would appreciate if you would review this information, note any necessary corrections and return a signed and dated copy to indicate your concurrence. Your prompt attention to this would be appreciated, as the information is necessary to complete our evaluation of the site.

Thank you for your assistance.

Sincerely,

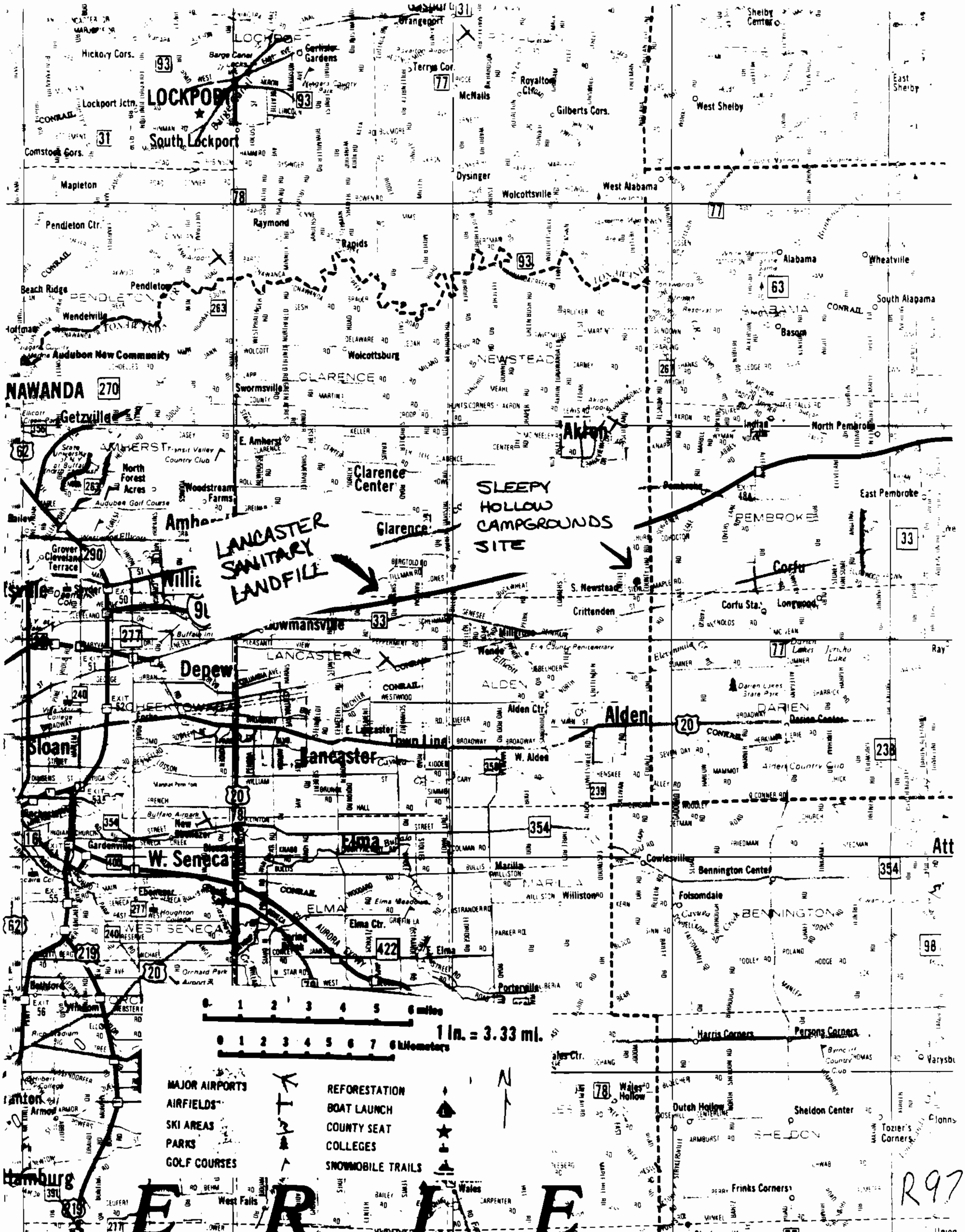
Linda J. Clark

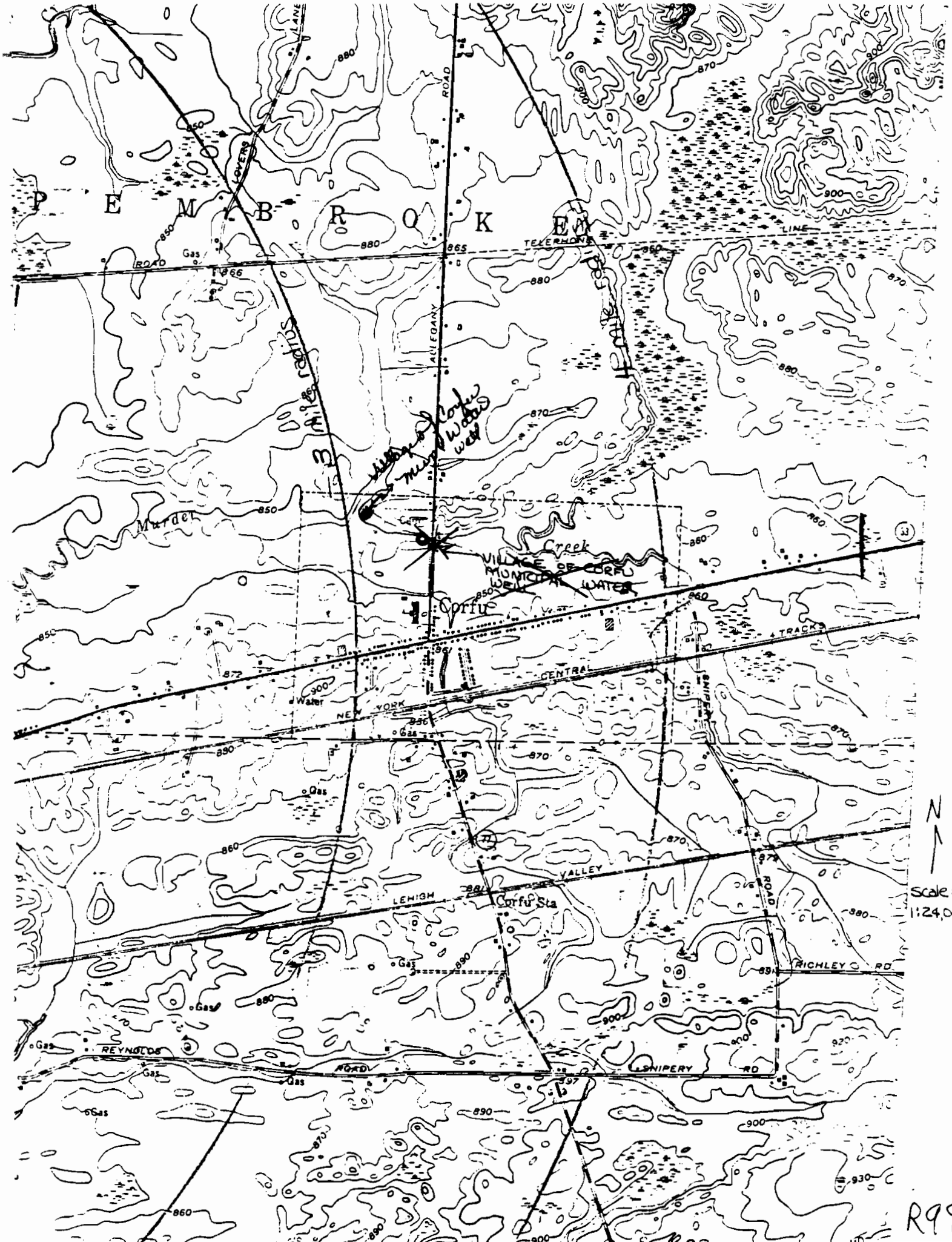
Linda J. Clark
Project Geologist

I agree with the information as it is ~~presented~~ corrected as D.

Carol A. Duckworth
Carol Duckworth
Clerk Treas

3/23/89
Date


LANCASTER SANITARY LANDFILL
SLEEPY HOLLOW CAMPGROUNDS SITE
LOCKPORT
South Lockport
Hickory Cors.
Lockport Jctn.
Comstock Cors.
Mapleton
Gasport
Orangeport
Gerlach Gardens
Terrys Cor.
McNalls
Royalton Ctr.
Gilberts Cors.
West Shelby
Shelby Center
East Shelby
Dysinger
Wolcottsville
West Alabama
Pendleton Ctr.
Raymond
Rapids
Pendleton
Beach Ridge
PENDLETON
Wendelville
Audubon New Community
Alabama
Wheatville
South Alabama
ALABAMA
Basom
NEWSTEAD
Wolcottsburg
CLARENCE
Swormsville
NAWANDA
Getzville
AMHERST
E. Amherst
Akron
Indian Falls
North Pembroke
North Forest Acres
Woodstream Farms
Clarence Center
Clarence
Pembroke
East Pembroke
PEMBROKE
Grover Cleveland Terrace
Snyder
S. Newstead
Crittenden
Corfu
Corfu Sta.
Longwood
Bowmansville
LANCASTER
Depew
CHEEKTOWAGA
Sloan
Lancaster
E. Lancaster
Town Line
Wende
ALDEN
Alden Ctr.
Alden
W. Alden
Darien Lakes
Jericho Lake
DARIEN
Darien Center
Elma
W. Seneca
Gardenville
Ebenezer
WEST SENECA
ELMA
Elma Ctr.
Marilla
MARILLA
Williston
Cowlesville
Bennington Center
Folsomdale
BENNINGTON
Porterville
Harris Corners
Persons Corners
Wales Hollow
Dutch Hollow
Sheldon Center
SHELDON
Tozier's Corners
Varysburg
Frinks Corners
Wales
West Falls
Hamburg
Armor
Windom
0 1 2 3 4 5 6 miles
0 1 2 3 4 5 6 7 8 kilometers
1 In. = 3.33 mi.
MAJOR AIRPORTS
AIRFIELDS
SKI AREAS
PARKS
GOLF COURSES
REFORESTATION
BOAT LAUNCH
COUNTY SEAT
COLLEGES
SNOWMOBILE TRAILS
N
E R I E
R97


P E M B R O K E
ROAD
LANE
LOVERS
ROAD
ALLEGANY
TELEPHONE LINE
Gas
Murder Creek
Corfu
VILLAGE OF CORFU MUNICIPAL WELL WATER
TRACK
CENTRAL NEW YORK
Water
Gas
SNIPERY
VALLEY
LEHIGH
Corfu Sta
ROAD
RICHLEY RD
REYNOLDS ROAD
SNIPERY RD
N
scale = 1:24,000
R98

REFERENCE 17

1/11157.2

MAR 2 2 1989

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

March 14, 1989

Ms. Jenny Kershenski
Town of Darien Clerk
10631 Allegany Rd.
Darien Center, NY 14040

Dear Ms. Kershenski:

As I mentioned during our telephone conversation on March 10, 1989, Recra Environmental, Inc. is currently conducting a Phase I investigation of the Sleepy Hollow Campground Site located on Siehl Rd., Town of Newstead, NY.

We are performing this investigation for the New York State Department of Environmental Conservation pursuant to the requirements of the New York State Superfund Law (Chapter 857 of the Laws of 1982).

This is to confirm our telephone conservation wherein you provided the following information:

- The population of the Town of Darien, NY, which is located within a 3-mile radius of the site, uses private wells as a sole source of water.
- A municipal water system serves residences along Sumner Rd., for approximately one mile west of Allegany Rd. (but not as far west as Harlow Rd.). The source of water for this water district is located outside of the 3-mile radius from the site. (Please see map enclosed.)

We would appreciate if you would review this information, note any necessary corrections and return a signed and dated copy to indicate your concurrence. Your prompt attention to this would be appreciated, as the information is necessary to complete our evaluation of the site.

Thank you for your assistance.

Sincerely,

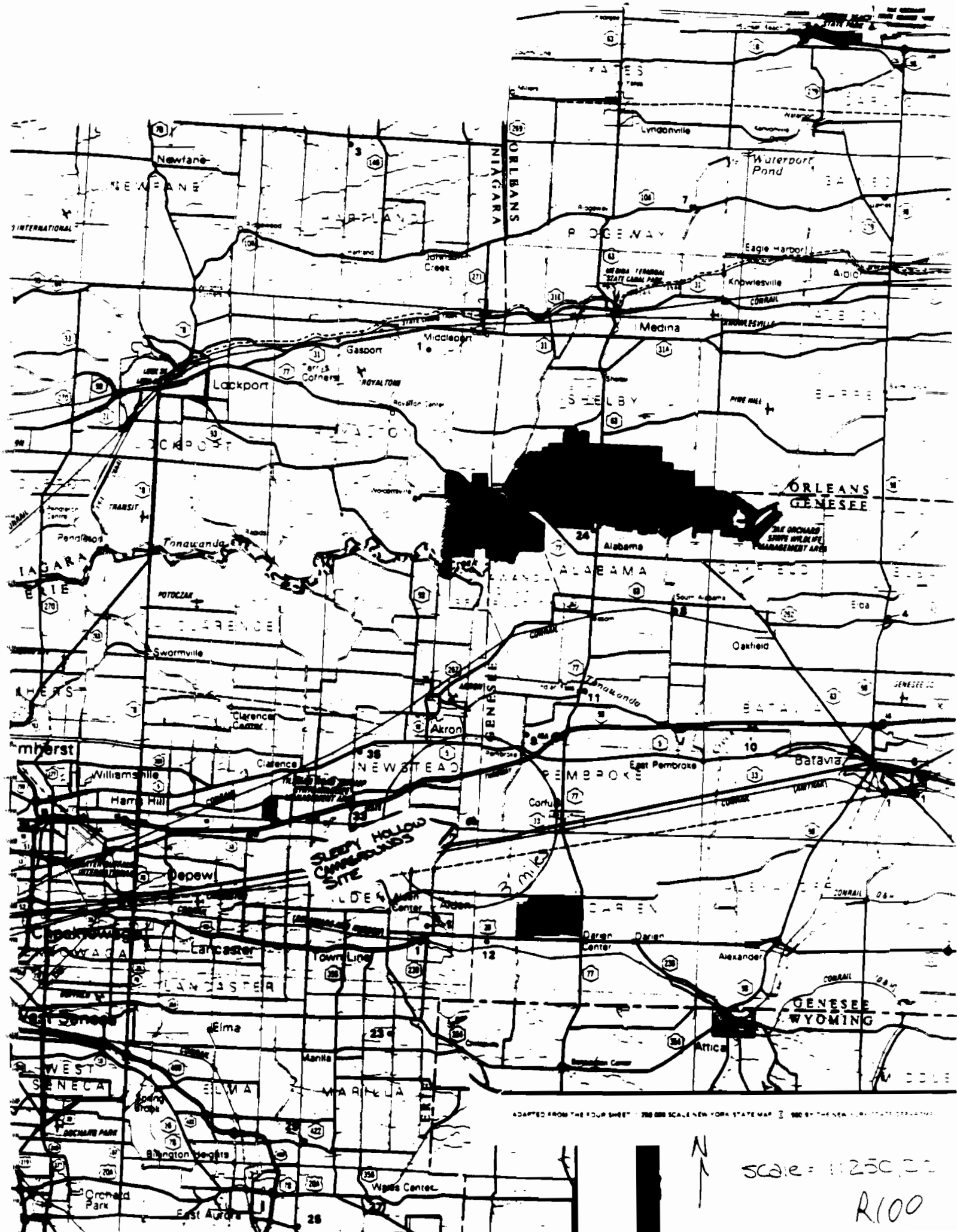
Linda J. Clark

Linda J. Clark
Project Geologist

I agree with the information as it is presented.

Jennie Kershenski
Jenny Kershenski

March 21, 1989
Date


Lyndonville
Waterport Pond
Newfane
NEWFANE
NIAGARA
ORLEANS
Eagle Harbor
Knowlesville
Middleport
Medina
Gasport
Lockport
SHELBY
ORLEANS
GENESEE
Pendleton
Tonawanda
Alabama
ALABAMA
Elba
Oakfield
Swormville
CLARENCE
Akron
Clarence
NEWSTEAD
Williamsville
Harris Hill
East Pembroke
Batavia
Depew
SLOAN HOLLOW CAMPGROUNDS SITE
3 mile
Lancaster
Town Line
Darien
Alexander
GENESEE
WYOMING
Attica
West Seneca
Elma
Manlius
Orchard Park
East Aurora
Wales Center
scale = 1:250,000
R100

REFERENCE 18

1/11154.2

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

March 14, 1989

Ms. Doreen Gross
Town of Pembroke Clerk
1145 Main Rd.
Corfu, NY 14037

Dear Ms. Gross:

As I mentioned during our telephone conversation on March 9, 1989, Recra Environmental, Inc. is currently conducting a Phase I investigation of the Sleepy Hollow Campground Site located on Siehl Rd., Town of Newstead, NY.

We are performing this investigation for the New York State Department of Environmental Conservation pursuant to the requirements of the New York State Superfund Law (Chapter 857 of the Laws of 1982).

This is to confirm our telephone conservation wherein you provided the following information:

- Within a 3-mile radius of the site, the population of the Town of Pembroke, NY uses private wells as a sole source of water and no municipal water system readily available. The only exception to this includes a few residences located along Route 33 just west of the Village of Corfu corporate boundary which are served by the Village of Corfu's municipal water well. (Please see map enclosed.)

We would appreciate if you would review this information, note any necessary corrections and return a signed and dated copy to indicate your concurrence. Your prompt attention to this would be appreciated, as the information is necessary to complete our evaluation of the site.

Thank you for your assistance.

Sincerely,

Linda J. Clark

Linda J. Clark
Project Geologist

I agree with the information as it is presented.

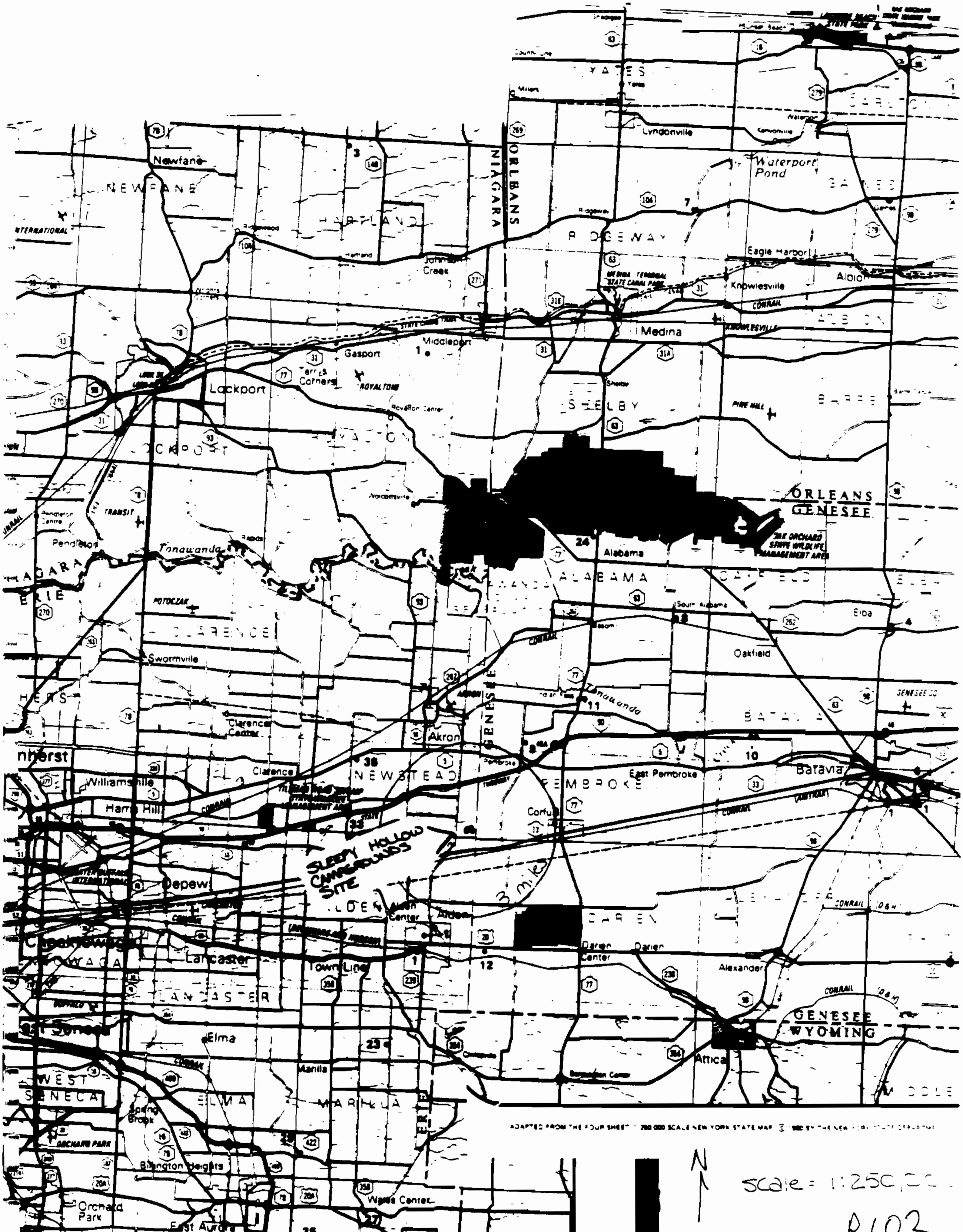
Doreen Gross

Doreen Gross

March 17, 1989

Date

R101



Lyndonville
Waterport Pond
Newfane
NEWFANE
HARTLAND
NIAGARA
ORLEANS
RIDGEWAY
Eagle Harbor
Albion
Knowlesville
Medina
Middleport
Gasport
Lockport
Terrys Corners
ROYALTON
SHELBY
LOCKPORT
ORLEANS
GENESEE
Pendleton
Tonawanda
Alabama
ALABAMA
ERIE
CLARENCE
Swormville
Oakfield
Elba
Clarence Center
Akron
Amherst
Clarence
NEWSTEAD
Williamsville
Harris Hill
East Pembroke
PEMBROKE
Batavia
BATAVIA
Corfu
Depew
SLEEPY HOLLOW CAMPGROUNDS SITE
3 mile
Alden
DARIEN
Darien Center
Darien
Lancaster
Town Line
LANCASTER
Alexander
GENESEE
WYOMING
Elma
Attica
Marilla
WEST SENECA
ELMA
MARILLA
Orchard Park
East Aurora
Wales Center
scale = 1:250,000
D102

REFERENCE 19

1/11154.4

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

March 14, 1989

Ms. Rose Armitage
Town of Alden Accountant
Town Hall
11901 Broadway
Alden, NY 14004

Dear Ms. Armitage:

As I mentioned during our telephone conversation on March 9, 1989, Recra Environmental, Inc. is currently conducting a Phase I investigation of the Sleepy Hollow Campground Site located on Siehl Rd., Town of Newstead, NY.

We are performing this investigation for the New York State Department of Environmental Conservation pursuant to the requirements of the New York State Superfund Law (Chapter 857 of the Laws of 1982).

This is to confirm our telephone conservation wherein you provided the following information:

- Within a 3-mile radius of the site, the population of the Town of Alden, NY uses private wells as a sole source of water. There is no municipal water system readily available to these residents. (Please see map enclosed.)

We would appreciate if you would review this information, note any necessary corrections and return a signed and dated copy to indicate your concurrence. Your prompt attention to this would be appreciated, as the information is necessary to complete our evaluation of the site.

Thank you for your assistance.

Sincerely,

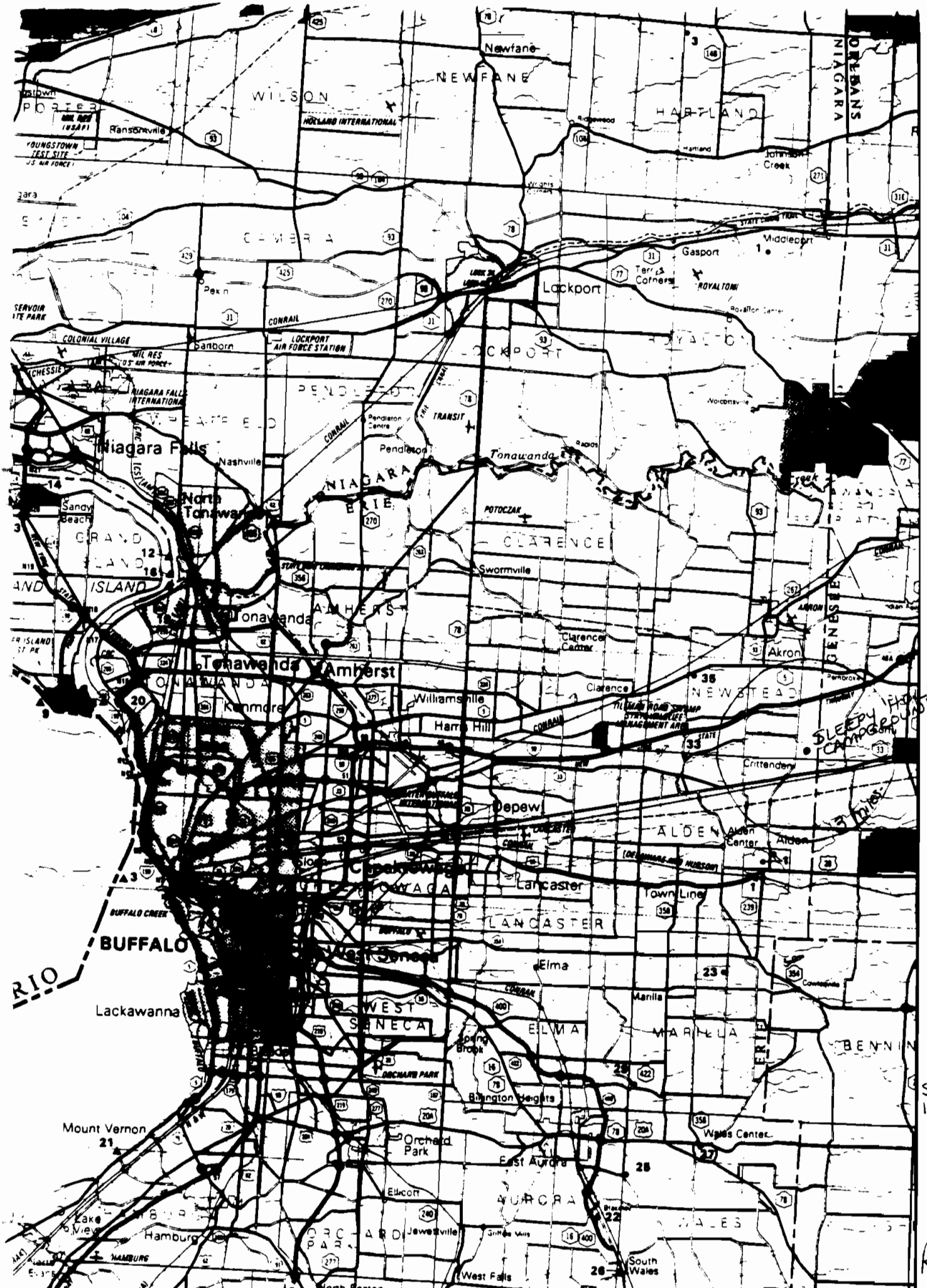
Linda J. Clark

Linda J. Clark
Project Geologist

I agree with the information as it is presented.

Rosalie Armitage
Rose Armitage

3/15/89
Date



TION OF COMMUNITY WATER SYSTEM SOURCES-1982

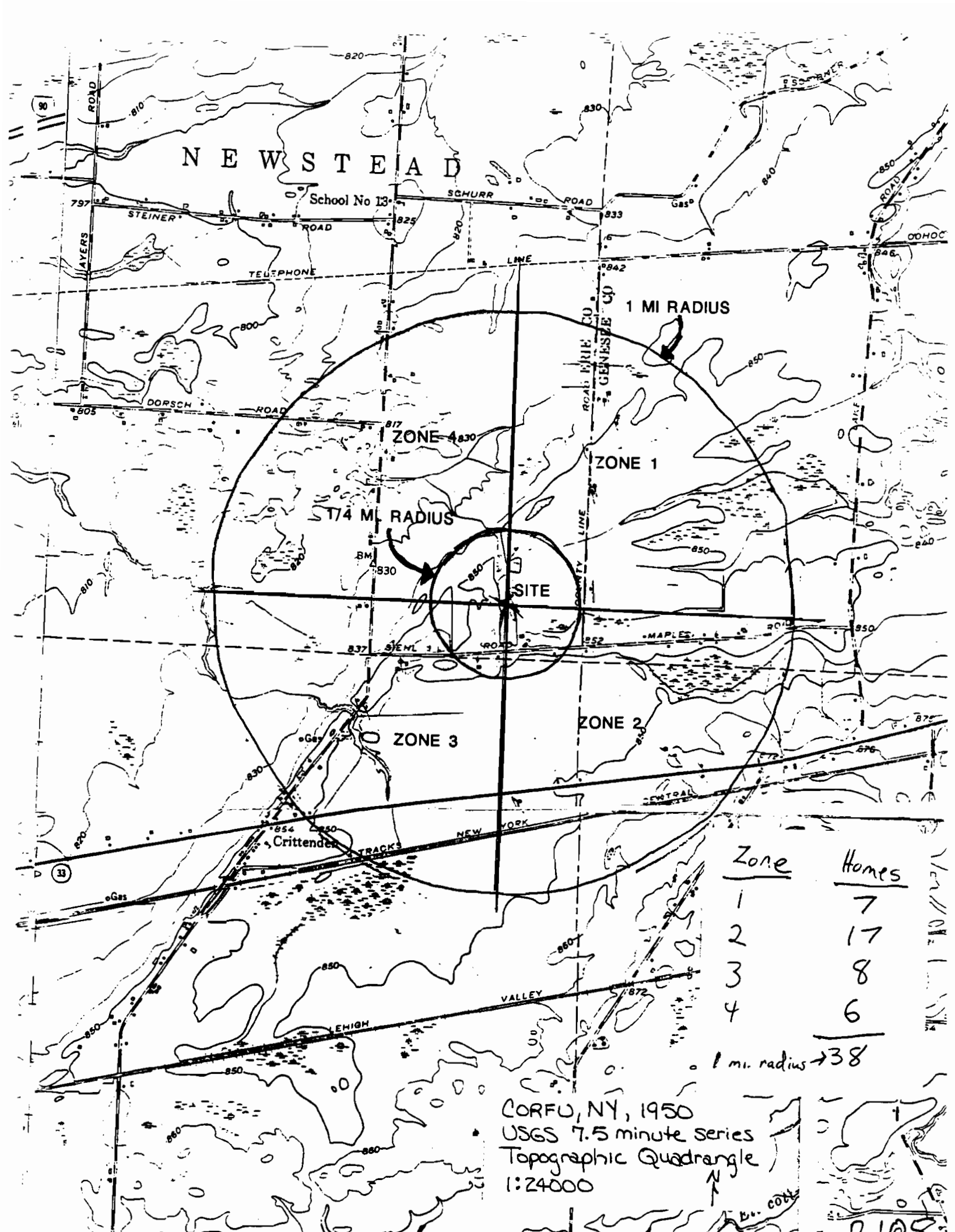
NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

N

SCALE:
1:250,000

R104

REFERENCE 20



Zone	Homes
1	7
2	17
3	8
4	6
1 mi. radius →	38

CORFU, NY, 1950
USGS 7.5 minute series
Topographic Quadrangle
1:24000

REFERENCE 21

PROJECT: _____ Continued From Page _____

Empty drum storage area

1 of the 3 drums (lying on side) near the empty drum storage area read 100 ppm inside.

No readings above background upwind or downwind in breathing zone

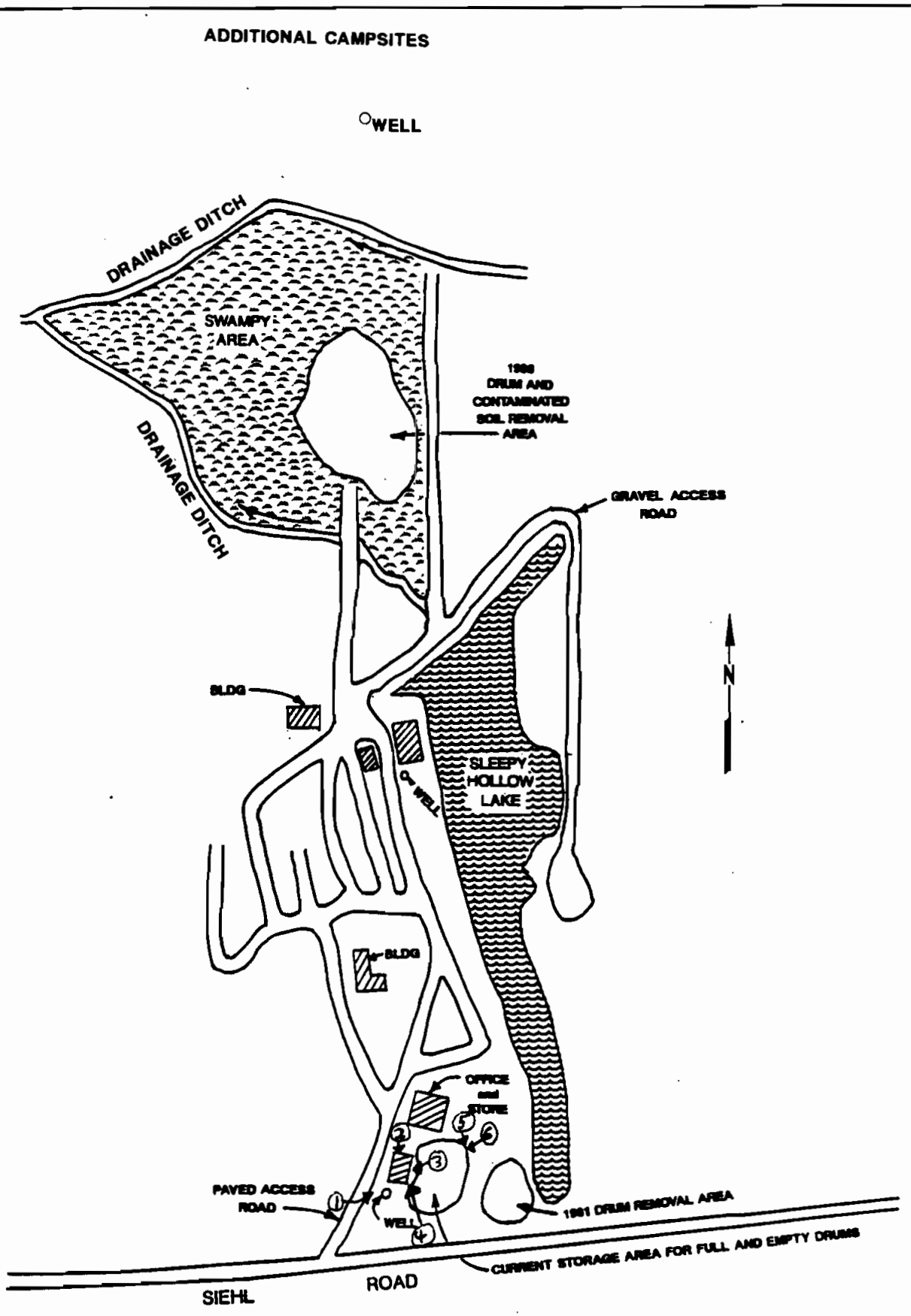
13:44 Anthony Latella leaves site shortly followed by Bill Marflock

13:54 Ken Shisler leaves site

Continued on Page

Read and Understood By

Signed _____ Date _____ Signed _____ Date _____



SCALE: NTS		
	BY	DATE
DWN.	LMM	8/89
CKD.		

NYSDEC
PHASE I INVESTIGATION
SLEEPY HOLLOW CAMPGRDS
SITE # 3-15-136

PHOTO LOCATION MAP

SLEEPY HOLLOW CAMPGROUND

Photo Log

11/2/88

1.

Main well near garage building.

2.

Drums in shed (DEC #'s 6 and 7) containing roofing tar.

SLEEPY HOLLOW CAMPGROUND

Photo Log (con't)

3.

Fuel tanks behind garage - diesel (above ground);
gas (underground).

4.

Five drums at corner of garage (DEC #'s 1-5),
approximately 100 feet from well.

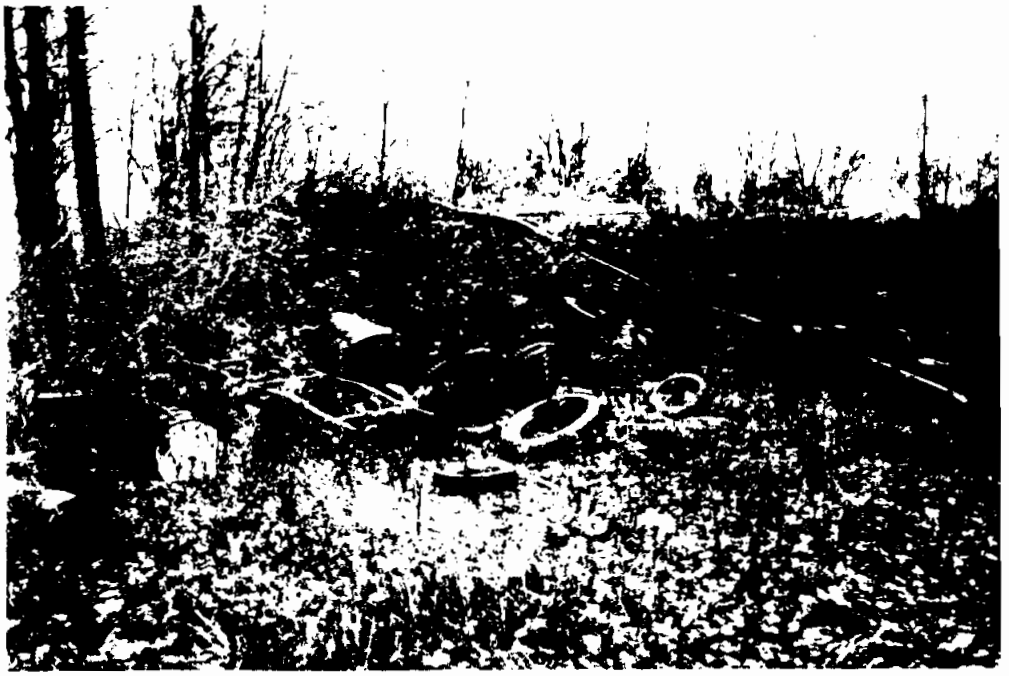
SLEEPY HOLLOW CAMPGROUND

Photo Log (con't)

5.

Two drums in foreground containing liquid;
drums in background are empty.

6.



Two drums containing liquid.

REFERENCE 22

United States Department of Agriculture

Soil Conservation Service

166 Washington Ave.
Batavia, N.Y. 14020
March 17, 1989

Ms. Linda Clark
Project Geologist
Recra Environmental, Inc.
Audobon Business Centre
10 Hazelwood Drive
Suite No. 106
Amherst, New York 14150

Dear Ms. Clark:

The following information is in response to your written request concerning irrigation and agricultural production activity in the vicinity of Sleepy Hollow Campgrounds. I am not aware of any irrigation from wells or surface water within a three-mile radius of the campground in Genesee Linda Clark

I have enclosed an 1985 aerial photo showing cropland fields outlined in blue which were in crop production during the past five years. Field number one on Tract 1540 was in barley and corn during 1988. Field three on Tract 1973 was in corn in 1986. These fields are within 2000 feet of the camp.

Also, enclosed is a map showing prime farmland and additional farmland of statewide importance in Genesee Co. The above fields occupy prime farmland soils and farmland of statewide importance.

Hopefully, I have answered all your questions. If you need any further assistance, please feel free to call or write.

Sincerely,

Art Hanson

Art Hanson,
District Conservationist

AH/dl

Enc.

R111


County Line
H184
1093
H148
H321
1849
H285
R112
T232

REFERENCE 23

United States Department of Agriculture
Soil Conservation Service

21 South Grove Street
East Aurora, New York 14052
(716) 652-8480
March 14, ~~1897~~ 1989 KJC

To: Linda J. Clark, Project Geologist
RECRA ENVIRONMENTAL, INC.
Audubon Business Centre
10 Hazelwood Drive, Suite No. 106
Amherst, New York 14150

Subject: Phase I Investigation of Two (2) Hazardous Waste Disposal Sites in Erie County, New York

In response to your letter dated March 9, 1989 the following is information is provided:

Lancaster Sanitary Landfill, Town of Lancaster, New York

-no known or indicated use of groundwater from wells for agricultural irrigation within a three mile radius of the center of the site at present
-no known or indicated use of surface water for agricultural irrigation within three miles downstream from the site at present
-closest agricultural land in production within the past 5 years is immediately south of the site separated from the site by the NYS Thruway and its right-of-way (approx. 250 ft.)
-closest prime agricultural land in production within the past 5 years is immediately south of the site separated from the site by the NYS Thruway and its right-of-way (approx. 250 ft.)

Sleep Hollow Campgrounds, Town of Newstead, New York

-no known or indicated use of groundwater from wells for agricultural irrigation within a three mile radius of the center of the site at present (in Erie County)
-no known or indicated use of surface water for agricultural irrigation within three miles downstream from the site at present (in Erie County)
-closest agricultural land in production within the past 5 years is immediately adjacent to the site along the eastern edge of the site
-closest prime agricultural land in production with the past 5 years is immediately adjacent to the site along the eastern edge of the site

This information is true and complete to the best of my knowledge. The potential for agricultural irrigation exists within a three mile radius of both sites. Your evaluation should consider this factor as well. Small scale irrigation of gardens, lawns, etc. is possible and likely though we have no data regarding this usage of either groundwater or surface water within a three mile radius of either site.

Sincerely,

John R. Whitney
District Conservationist

R113

REFERENCE 24

New York State Department of Environmental Conservation
Natural Resources - Region 9
128 South Street
Olean, NY 14760-9990

Thomas C. Jorling
Commissioner

December 27, 1988

Mr. Kenneth A. Shisler, Jr.
Recra Environmental, Inc.
Audubon Business Centre
10 Hazelwood Drive
Suite No. 106
Amherst, NY 14150

Dear Mr. Shisler:

Your letter of December 5 to James R. Snider in regard to three sites in Region 9 under Phase I investigations has been referred to me for an overall response.

I have enclosed maps of DEC regulated wetlands and stream classification maps for each of the sites. A few comments about each site are appropriate.

Lancaster Sanitary Landfill - ID #915068

Segments of streams classified "C(T)" are shown in red; those that are "B" are purple. All other classified waters may be assumed to be "D" at the present time with probable elevation to a "C" status once the Erie-Niagara Basin goes through the next round of reclassification hearings. Mr. Gordon Batchellor Region 9 Wildlife Biologist reports that there are no "critical habitats" for any wildlife species in the area. The landfill is, however, very close to the DEC owned Tillman Road Wildlife Management Area (see special map). My review of material excerpted from the Natural Heritage Program Operations Manual suggests that no endangered plant or animal species have been documented near the landfill site.

Sleepy Hollow Lake Campground - ID #915136

Essentially all surface waters near this site are or will be classified "C". I believe this is also true of the nearby area within Genesee County which is under the jurisdiction of the Region 8 DEC office at Avon, New York. We do not have maps of DEC regulated wetlands in Genesee County so it will be necessary for you to consult with the Region 8 office if you have not already done so. Comments on "critical habitats" and endangered plant and animal species are the same as those for the preceding site; again this pertains only to Region 9.

R114

Day's Farm - ID #902013

Waters classified "C(T)" are outlined in red; all other streams or segments thereof may be assumed to be "C". Mr. Michael Ermer, Region 9 Wildlife Biologist reports that there are no closely "critical habitats" for wildlife. Review of material excerpted from the Natural Heritage Program Operations Manual indicates that there is concern for several species of fish, primarily darters, in Oswayo Creek and the Allegheny River System into which the Little Genesee Creek drains. Some of these species are on the rare and endangered species list. I suggest that you contact Ms. Rachel Pleuthner at 518-439-7488 for further information as well as for confirmation of any other statements I have made based upon the Natural Heritage Program Operations Manual.

Sincerely,

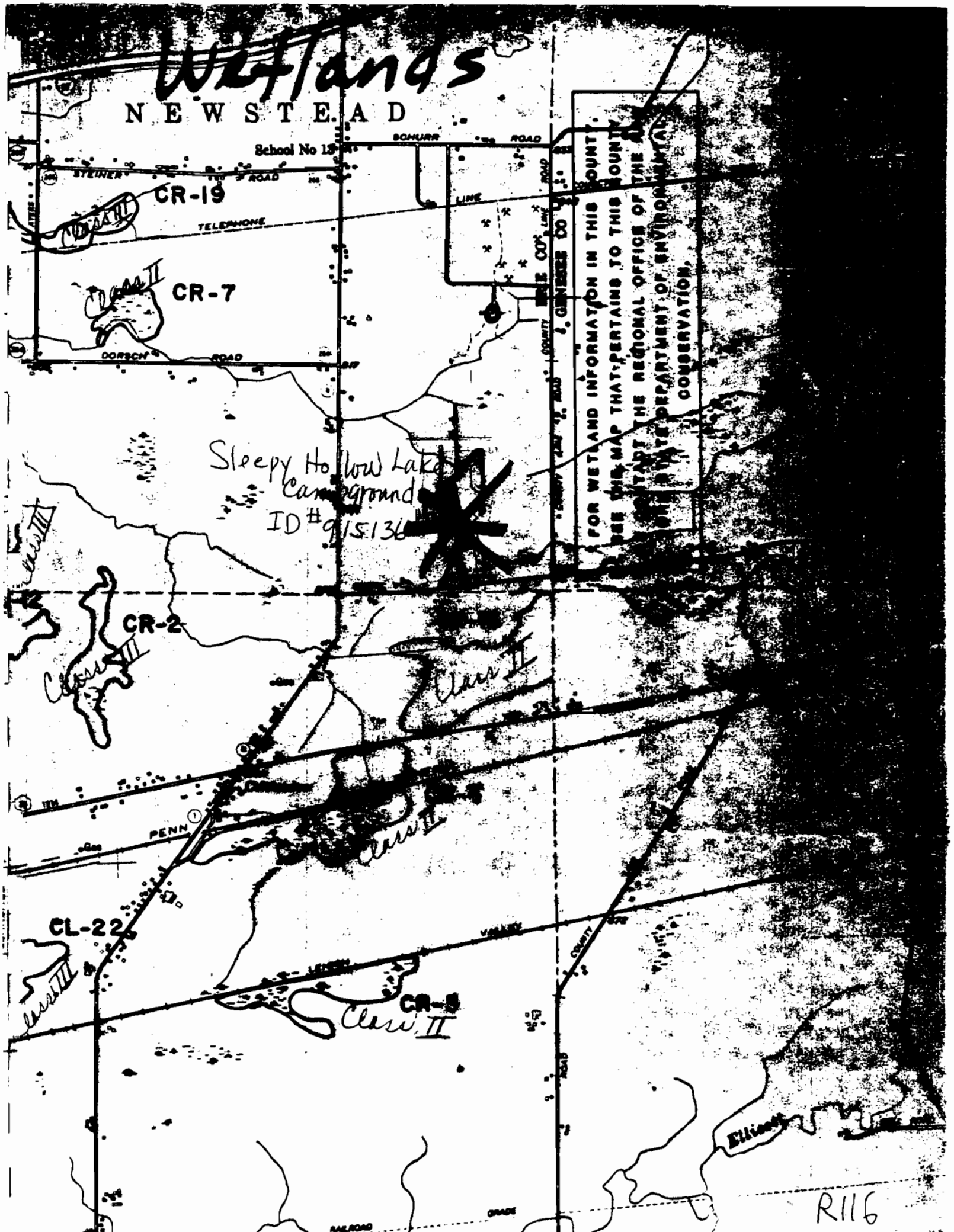
James K. Pomeroy
Habitat Protection Biologist
Region 9 - Olean

JKP/tg

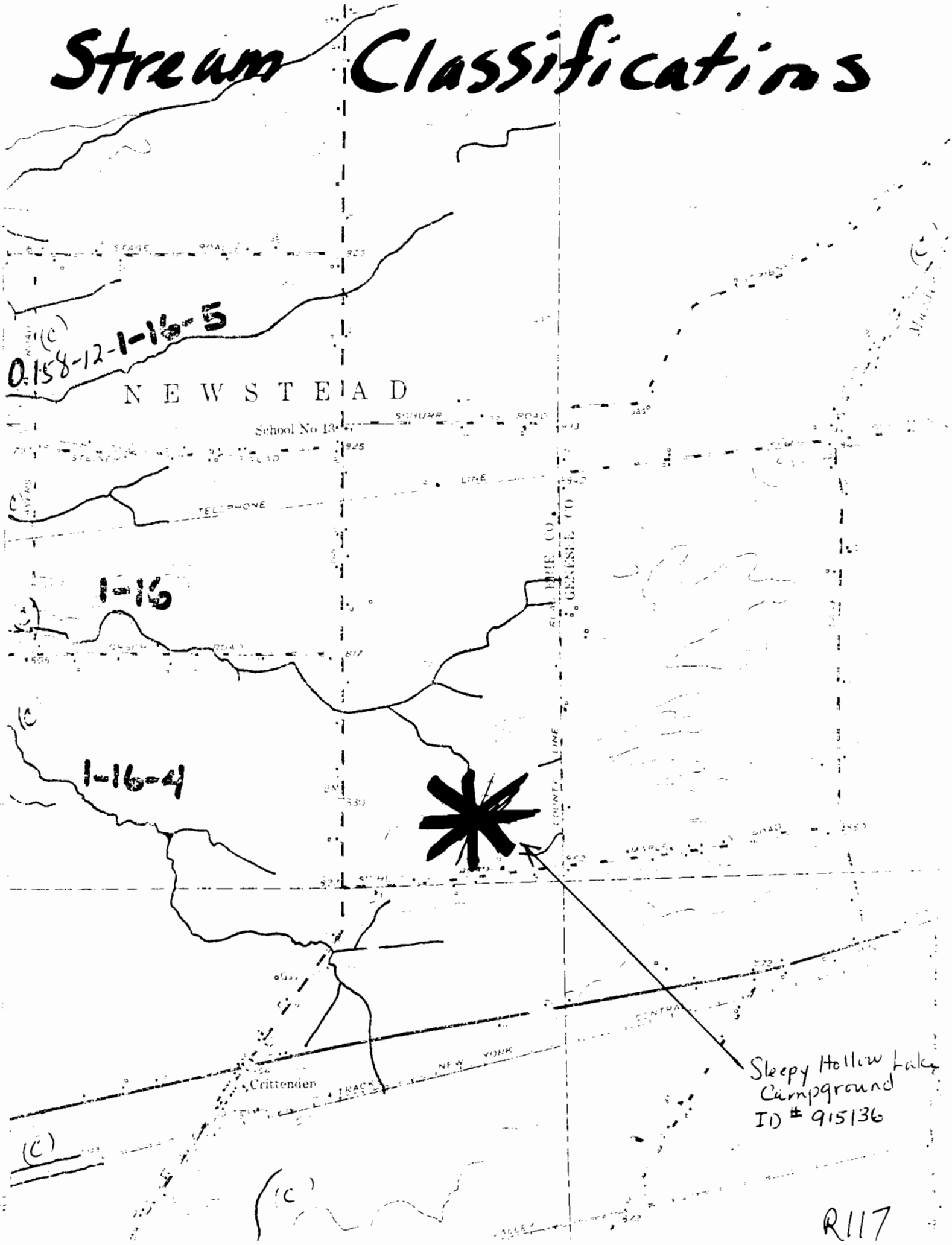
Enclosures

cc: Mr. Terry Moore

R115


Wetlands
NEWSTEAD
School No 15
SCHURR ROAD
STEINER ROAD
CR-19
TELEPHONE LINE
CR-7
DORSCH ROAD
Sleepy Hollow Lake Campground
ID # 915136
CR-2
Class II
Class III
PENN
CL-22
CR-8
VALLEY
COUNTY
ROAD
Ellicott
R116
FOR WETLAND INFORMATION IN THIS COUNTY
SEE THE MAP THAT PERTAINS TO THIS COUNTY
AT THE REGIONAL OFFICE OF THE DEPARTMENT OF ENVIRONMENTAL
CONSERVATION.

Stream Classifications



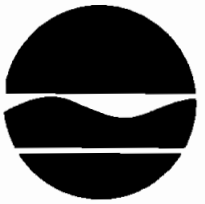
R117

REFERENCE 25

WATER QUALITY REGULATIONS

SURFACE WATER AND GROUNDWATER CLASSIFICATIONS AND STANDARDS

New York State
Codes, Rules and Regulations
Title 6, Chapter X
Parts 700-705



New York State Department of Environmental Conservation

R118

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.

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.

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.

Historical Note

Sec. added by renum. and amd. 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.

REFERENCE 26

1/L11098

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevent[illegible] and Control

RECEIVED March 9, 1989

MAR 1[illegible]

REGION #8
Regional Supervisor

Ms. Kathy Kirsch
Fish and Wildlife Technician
NYSDEC - Fish and Wildlife Division
6274 East Avon - Lima Road
Avon, New York 14414

Dear Ms. Kirsch:

As discussed during our telephone conversation on March 8, 1989, Recra Envionmental, Inc. is currently conducting a Phase I investigation of the following site:

Sleepy Hollow Campgrounds (Feitshans) (#915136)
Siehl Road
Town of Newstead, Erie County, New York

Although the site is located in Erie County (NYSDEC Region 9), a portion of the area of concern extends into Genesee County (Region 8).

In order to complete a Hazard Ranking System (HRS) evaluation, we request the following information on the above site, for the Genesee County portion only:

- ✓o Location of 5-acre (minimum) coastal wetland, if 2 miles or less. none
- ✓o Location of 5-acre (minimum) fresh-water wetland, if 1 mile or less. wetland map attached
- ✓o Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less. none within 1 mile
- ✓o Distance to national or state park, forest, or wildlife reserve, if 2 miles or less. none within 2 miles

R120

Each site has been located on a road map and the appropriate USGS 7½ minute quadrangle, portions of which are enclosed. If you have any questions, please contact me. We would appreciate your prompt attention to this, as the information is necessary to complete our evaluation of the site. Thank you for your assistance.

Sincerely,

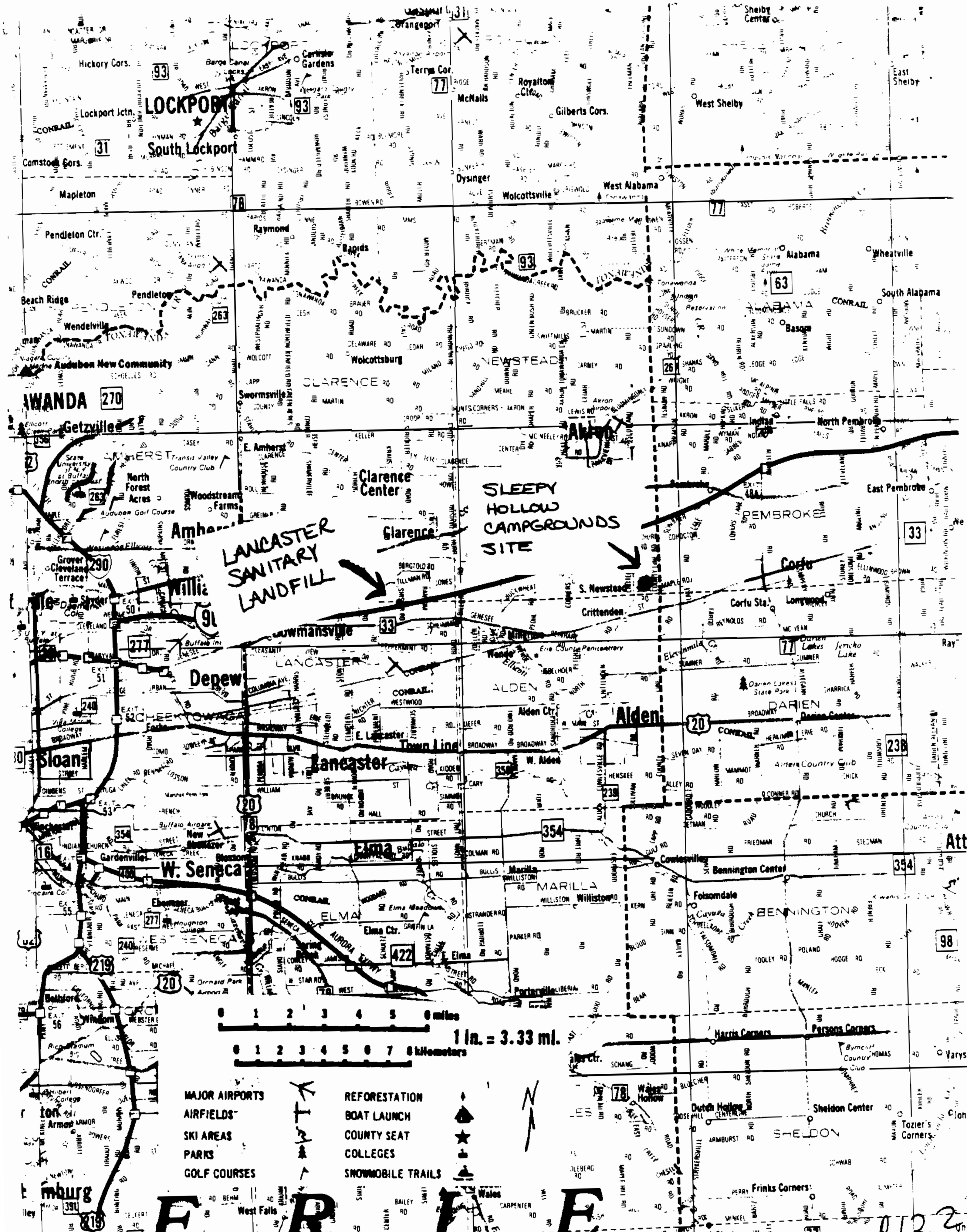
RECRA ENVIRONMENTAL, INC.

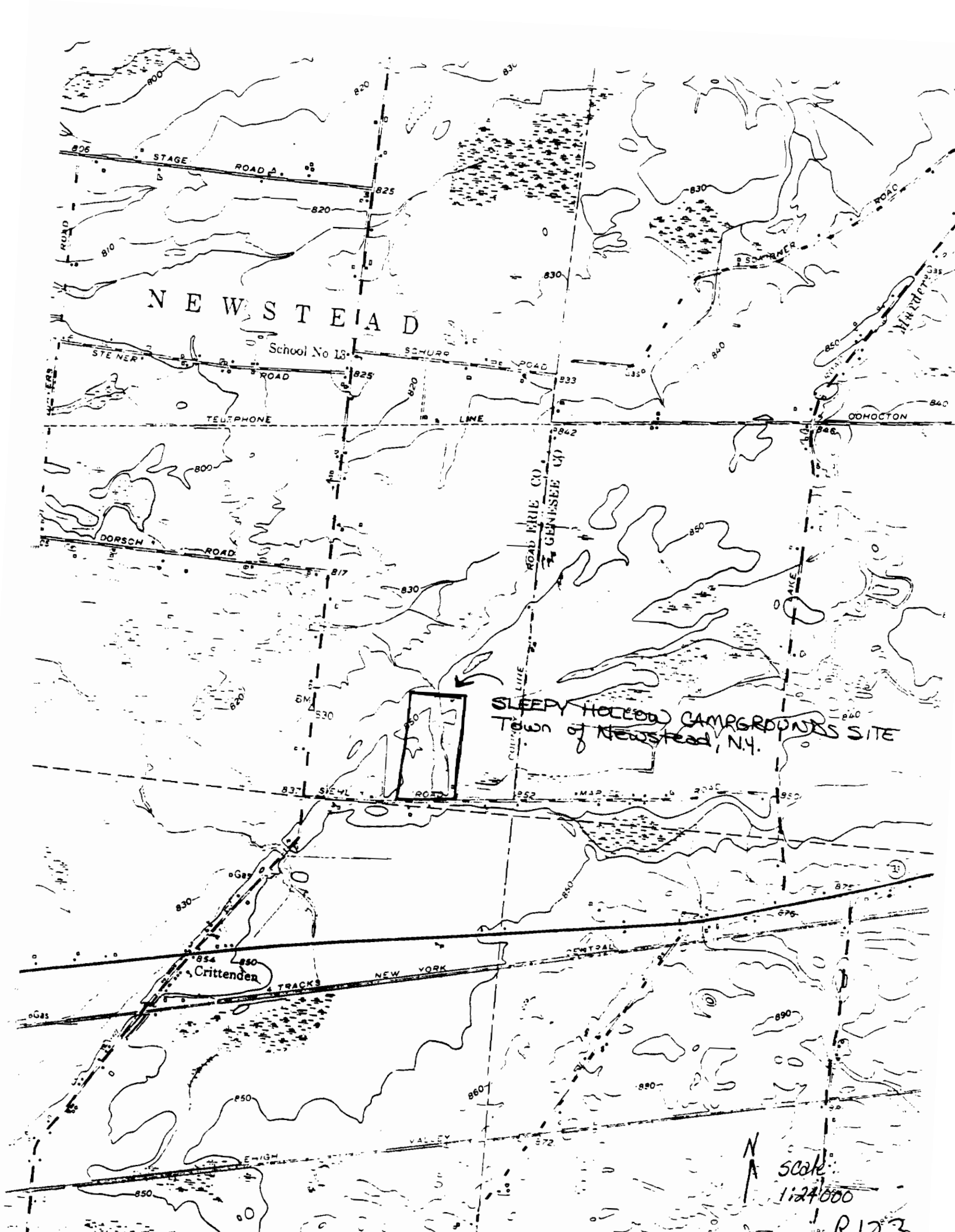
Linda J. Clark

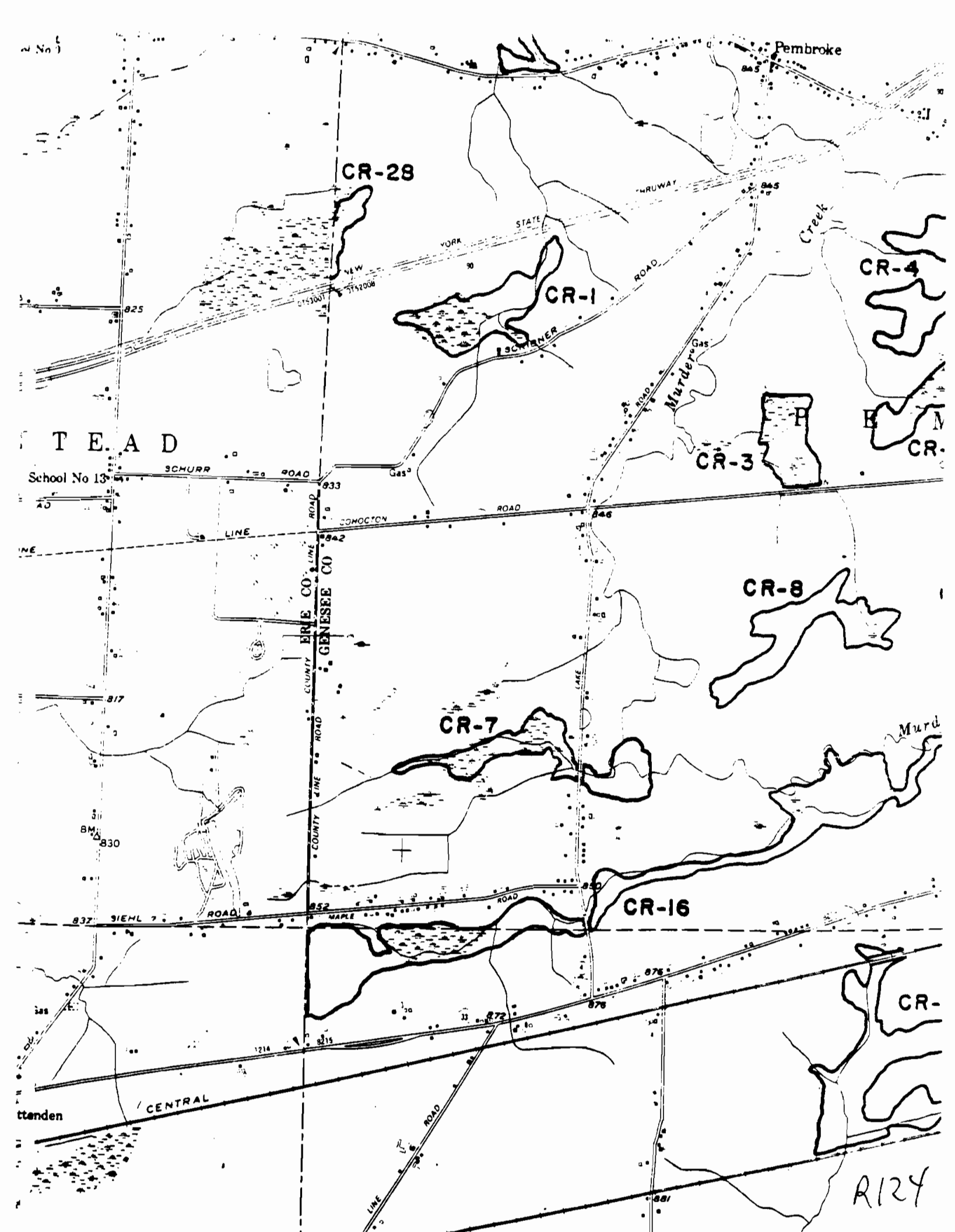
Linda J. Clark
Project Geologist

LJC/fl
Enclosure

R131


LANCASTER SANITARY LANDFILL
SLEEPY HOLLOW CAMPGROUNDS SITE
Lockport
South Lockport
Lockport Jctn.
Hickory Cors.
Comstock Cors.
Mapleton
Pendleton Ctr.
Pendleton
Beach Ridge
Wendelville
Audubon New Community
Getzville
Amherst
North Forest Acres
Woodstream Farms
Raymond
Rapids
Swormsville
Wolcottsburg
Clarence Center
Clarence
Bowmansville
Lancaster
Depew
Cheektowaga
Sloan
W. Seneca
Elma
Elma Ctr.
Marilla
Willistons
Alden
Alden Ctr.
W. Alden
Town Line
E. Lancaster
Akron
Newstead
S. Newstead
Crittenden
Corfu
Corfu Sta.
Pembroke
East Pembroke
Indian Falls
North Pembroke
Alabama
South Alabama
Basom
Wheatville
West Alabama
Wolcottsville
Oysinger
Gilberts Cors.
Royalton Ctr.
McNalls
Terry Cor.
Orangeport
Shelby Center
East Shelby
West Shelby
Darien
Darien Center
Darien Lakes State Park
Cowlesville
Bennington Center
Folsomdale
Bennington
Harris Corners
Persons Corners
Wales Hollow
Dutch Hollow
Sheldon Center
Sheldon
Frinks Corners
Tozier's Corners
Porterville
West Falls
Gardenville
Ebenezer
Orchard Park Airport
Erie County Penitentiary
Clarence Center
Tonawanda Indian Reservation
0 1 2 3 4 5 6 miles
0 1 2 3 4 5 6 7 8 kilometers
1 in. = 3.33 mi.
MAJOR AIRPORTS
AIRFIELDS
SKI AREAS
PARKS
GOLF COURSES
REFORESTATION
BOAT LAUNCH
COUNTY SEAT
COLLEGES
SNOWMOBILE TRAILS
N
E R I E


NEWSTEAD
School No 13
STAGE ROAD
STENER ROAD
SCHURG ROAD
TELEPHONE LINE
DORSCH ROAD
ERIE CO
GENESEE CO
COUNTY LINE
SIEGL ROAD
SUMMER ROAD
ODHOCTON
Crittenden
NEW YORK CENTRAL TRACKS
LEHIGH VALLEY
SLEEPY HOLLOW CAMPGROUNDS SITE
Town of Newstead, N.Y.
N
scale 1:24000


Pembroke
CR-28
CR-1
CR-4
CR-3
CR-8
CR-7
CR-16
CR-
T E A D
School No 13
SCHURR ROAD
COHOCTON ROAD
ERIE CO
GENESEE CO
COUNTY LINE ROAD
LAKE ROAD
SIEHL ROAD
MAPLE ROAD
CENTRAL
LINE ROAD
Murder Creek
Gas
BM 830
825
833
842
846
817
837
852
876
872
881
R124

00-17-1 (5/76)
Formerly GA-4

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

TRANSMITTAL SLIP

TO: Linda Clark

FROM: Kathy Kirsch

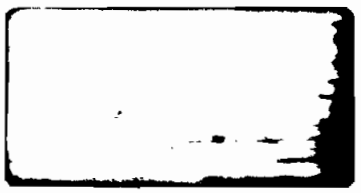
DATE: 3/16/89

RE: Sleepy Hollow Campgrounds T1O Newstead, Erie County

I have reviewed the Genesee County portion of this site and found ① no coastal wetlands ② Two state-regulated wetlands within 1 mile as noted on the attached Wetland Map ③ no critical habitat of an endangered species/wildlife refuge. ④ No national or state park/forest with 2 miles of the site.

FOR ACTION AS INDICATED:

- ☐ Please Handle
- ☐ Prepare Reply
- ☐ Prepare Reply for _____ Signature
- ☐ Information
- ☐ Approval
- ☐ Prepare final/draft in _____ Copies
- ☐ Comments
- ☐ Signature
- ☐ File
- ☐ Return to me
- ☐ _____
- ☐ _____



R125

REFERENCE 27

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

March 22, 1989

Mr. Donald Folger
Building & Fire Inspector
Town of Newstead
Town Hall
P.O. Box 227
Akron, New York 14001

Dear Mr. Folger:

As I mentioned during our telephone conversation on March 21, 1989, Recra Environmental is currently conducting a Phase I investigation of the Sleepy Hollow Campgrounds site located on Siehl Road, Town of Newstead, New York.

We are performing this investigation for the New York State Department of Environmental Conservation pursuant to the requirements of the New York State Superfund Law (Chapter 857 of the Laws of 1982).

This is to confirm our telephone conversation wherein you provided the following information:

- o The facility does not present a <u>significant</u> threat of fire or explosion (no certified threat exists).

We would appreciate if you would review this information, note any necessary corrections, and return a signed and dated copy to indicate your

concurrence. Your prompt attention to this would be appreciated, as the information is necessary to complete our evaluation of the site. Thank you for your assistance.

Sincerely,

Linda J. Clark

Recra Environmental, Inc.
Linda J. Clark
Project Geologist

I agree with the information as it is presented.

Donald Folger

3-23-89
Date

LJC/dlf
encl.

5.5 USEPA Site Inspection Form 2070-13

Site Inspection Report

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

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Sleepy Hollow Campgrounds	Siehl Road				
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 COUNTY**	**07 COUNTY CODE**	**08 CONG DIST**
Town of Newstead	NY	14001	Erie		

09 COORDINATES: 42° 57' 30" N (LATITUDE) | 78° 28' 09" W (LONGITUDE)

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

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
11/02/88 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1971 (BEGINNING YEAR) Present (ENDING YEAR) ☐ UNKNOWN (of hazardous waste disposal)

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 Environmental (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Kenneth A. Shisler, Jr.	Staff Geologist	Recra	(716) 691-2600
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO.**
			( )
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Anthony Lotello	Owner	146 Sheldon Ave. Lancaster, NY 14086	(716) 685-3031
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	9:34 a.m.	Cloudy with intermittent rain; clearing

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Robert Wozniak	NYSDEC - Region 9	716 847-4585

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Linda J. Clark		Recra	716/691-2600	04 / 03 / 89 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

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

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

- TONS: ____
- CUBIC YARDS: ____
- NO OF DRUMS: 100

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	Unknown *		*collectively, 100 drums of waste
OLW	OILY WASTE	Unknown *		solvents, oils, adhesives and
SOL	SOLVENTS	Unknown *		other liquids and sludges were
PSD	PESTICIDES			reported and/or removed from
OCC	OTHER ORGANIC CHEMICALS	Unknown *		site (13 drums of these contained
IOC	INORGANIC CHEMICALS			contaminated soil).
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
	Methylene Chloride		drums/ground surface	110	ppm
	Trichloroethylene	79-01-6	drums/ground surface	800	ppm
	Tetrachloroethylene		drums/ground surface	39	ppm
	Chlorobenzene	108-90-7	drums/ground surface	110	ppm
	Toluene	108-88-3	drums/ground surface	650,000	ppm
	Ethylbenzene	100-41-4	drums/ground surface	28,000	ppm
	Xylene (m,p)	1330-20-7	drums/ground surface	110,000	ppm
	Xylene (o)	1330-20-7	drums/ground surface	45,000	ppm
	1,2-dichloroethane		drums/ground surface	6.9	ppm

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

NYSDEC - Region 9 and Central Office
Erie County Department of Environment and Planning (ECDEP)
Site Inspection (11/2/88)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 1,098
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Wastes observed leaking onto ground surface. Groundwater used as a source of potable water in area. No groundwater sampling conducted.

01 [X] B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 1,334
02 [X] OBSERVED (DATE: 5-85) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Wastes observed leaking into swampy area on-site. Swamp drains into tributaries of Ellicott Creek. Surface waters are NYSDEC designated Class "C" waters in site area.

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

None reported; no organic vapors detected in breathing zone.

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

None reported.

01 [X] E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 228
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

(Estimated population within one mile radius) Wastes observed on ground surface. Site not fenced; no other barriers which completely surround the facility.

01 [X] F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 109 (Acres)
02 [X] OBSERVED (DATE 5-85) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Contaminated soil reportedly removed under NYSDEC supervision in 1985. Additional contaminated soils on-site possible.

01 [X] G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 1,098
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Wastes observed leaking onto ground surface and swampy area. Majority of population in area use private wells as a sole source of water.

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

None reported.

01 [X] I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: 1,334
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

Population within a 3 mile radius of site can be affected by potential gorundwater and surface water contamination.

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D982531998
NYSDEC #915136

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA
02 ☒ OBSERVED (DATE: 6/1981) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Vegetation discolored in area of drum disposal (observed during ECDEP inspection in 1981).

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

None reported.

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

None reported

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES
(Spills, Runoff, Standing liquids, Leaking drums)
02 ☒ OBSERVED (DATE: 1981 & 1985) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 1,334
04 NARRATIVE DESCRIPTION

Wastes observed leaking from drums onto ground surface and swampy area on-site.

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

None reported

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

None reported

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING
02 ☒ OBSERVED (DATE: 1981+1985) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Drums containing wastes observed on-site.

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

None known

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

Population in surrounding area is currently served by wells for a sole source of water. No groundwater or surface water sampling has been conducted at site.

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

NYSDEC - Region 9 and Central Office
Towns of Newstead, Alden, Darien and Pembrook, NY
Village of Corfu, NY
ECDEP

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531993

NYSDEC #915136

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☒ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☒ C. DRUMS, ABOVE GROUND	100	
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☒ H. OTHER 90 removed (Specify)

05 OTHER

☒ A. BUILDINGS ON SITE

06 AREA OF SITE

10 4 (Acres)

07 COMMENTS

Approximately 77 drums containing wastes and 13 drums of contaminated soil were removed from the site in 1981 and 1986. An additional 10 drums of wastes remain on-site.

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.

Drums were rusted and in various stages of deterioration. Wastes were observed leaking from some of the drums.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

The site is not fenced; drums leaked onto ground surface.

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

NYSDEC - Region 9
ECDEP
Site Inspection (11/2/88)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

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. _____ (mi)
B. 0.1 (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 1,098

03 DISTANCE TO NEAREST DRINKING WATER WELL 0.1 (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
4.5 (ft)	Northwest	4.5 (ft)	100 gpm (Est.)	☒ YES ☐ NO

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

Groundwater largely occurs within fractures, solution openings and along bedding planes of the Middle Devonian Onondaga Limestone, and to a lesser extent within the overburden at depths frequently less than 30 feet.

10 RECHARGE AREA		11 DISCHARGE AREA	
☒ YES ☐ NO	COMMENTS	☐ YES ☐ NO	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

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

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Sleepy Hollow Lake	☐	0 (on-site) (mi)
Unnamed tributary of Ellicott Creek	☐	0 (on-site) (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. 904 NO. OF PERSONS	B. 1,100 NO. OF PERSONS	C. 2,000 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

0.1 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
212	0.1 (mi)

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

The site is located in a sparsely-populated, rural, residential and agricultural area. The population is predominantly served by private wells for a sole source of potable water.

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D982531998
NYSDEC #915136

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

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

02 PERMEABILITY OF BEDROCK (Check one)

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

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
0-10 (ft)	Unknown (ft)		

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
6.2 (in)	2.1 (in)	0.5 %	Northwest	0.5 %

09 FLOOD POTENTIAL
SITE IS IN _____ YEAR FLOODPLAIN

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

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. _____ (mi)	B. 0.2 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)
_____ (mi)
ENDANGERED SPECIES: None within one mile

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. 0.2 (mi)	B. 0.1 (mi)	C. Adjacent (mi)	D. Adjacent (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site and surrounding area is relatively flat lying, sloping gently to the northwest. The site is largely covered with vegetation, including grasses, weeds & trees. A long and narrow lake (Sleepy Hollow Lake) is located along the eastern boundary. A swampy area (into which the lake drains) lies in the northern portion of the site.

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

NYSDEC - Region 9
Erie County Soil and Water Conservation District
NYS Museum and Science Service - map and chart series #15 & 40.
USGS 7.5 minute series topographic maps (Wolcottsville, NY, 1980; Akron, NY 1981); Corfu, NY, 1950; and Clarence, NY, 1965 Quadrangles)
USGS Water Resources Investigation Reports #84-4334 and 86-4317.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II. SAMPLES TAKEN

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

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☒ AERIAL

02 IN CUSTODY OF Recra Environmental, Inc.
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS Recra Environmental, Inc., 10 Hazelwood Dr., Amherst, NY 14150

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Preliminary air monitoring conducted using a Century OVA-128 GC instrument. No organic vapors exceeding background were detected.

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

Site Inspection (11/2/88)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998 NYSDEC #915136

II. CURRENT OWNER(S)			**PARENT COMPANY** (If applicable)		
01 NAME Anthony & Mario Latello		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.) 146 Sheldon Avenue		04 SIC CODE	10 STREET ADDRESS (P O Box, RFD #, etc.)		11 SIC CODE
05 CITY Lancaster	06 STATE NY	07 ZIP CODE 14086	12 CITY	13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P O Box, RFD #, etc.)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P O Box, RFD #, etc.)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)		04 SIC CODE	10 STREET ADDRESS (P O Box, RFD #, etc.)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)			**IV. REALTY OWNER(S)** (If applicable, list most recent first)		
01 NAME Feitshans & Mauer Trucking, Inc.		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.) Unknown		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)

NYSDEC - Region 9

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998
	NYSDEC #915136

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
Same as owner info.	

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
Same as owner info.			

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

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

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)

NYSDEC - Region 9

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II. ON-SITE GENERATOR

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)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
F. N. Burt Company, Inc.			

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
Buffalo	NY				

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

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

NYSDEC - Region 9

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D982531998
NYSDEC #915136

II. PAST RESPONSE ACTIVITIES

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

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

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

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

01 ☒ E. CONTAMINATED SOIL REMOVED — 02 DATE 11/86 — 03 AGENCY NYSDEC
04 DESCRIPTION A total of 13 drums of contaminated soil removed from swampy area in northern portion of site under supervision of NYSDEC.

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

01 ☒ G. WASTE DISPOSED ELSEWHERE — 02 DATE 1981-1986 — 03 AGENCY NYSDEC
04 DESCRIPTION
Approx. 77 drums of waste were removed from site and taken to Frontier Chemical Services in Niagara Falls, NY under NYSDEC supervision.

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	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II PAST RESPONSE ACTIVITIES *(Continued)*

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

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

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

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

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

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

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

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

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

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

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

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

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

NYSDEC - Region 9
ECDEP

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D982531998

NYSDEC #915136

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION [X] YES [ ] NO

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

An Order on Consent filed by the NYSDEC for the implementation of a drum removal program at the site was executed by F. N. Burt Company (generator of waste), Mario Latello and Anthony Latello (current site owners) in October 1986.

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

NYSDEC - Region 9
ECDEP

6.0 ASSESSMENT OF DATE ADEQUACY AND RECOMMENDATIONS

6.1 Assessment of Data Adequacy

Data collected during the Phase I Investigation of the Sleepy Hollow Campgrounds site, which were used to develop the Hazard Ranking System (HRS) scores for the site, are considered inadequate in the following areas:

- o Observed Release:
  - No groundwater sampling and analysis have been performed at, or in the vicinity of, the site. Therefore, additional information is necessary to determine groundwater flow patterns and the extent, if any, of contaminant migration from the site.
  - No surface water sampling and analysis have been conducted at the site; therefore, no information is presently available to conclusively assess the impact of the site on this route.
  - As part of this investigation, a preliminary survey was performed using a Century OVA-128GC instrument. Although no organic vapors exceeding background were detected, a complete program is necessary to further assess the impact of the site on this particular route.
- o Waste Characteristics:
  - Limited waste sampling and analytical data have confirmed the presence of some contaminants at the site. However, additional information is necessary to identify all hazardous substances, the outcome of which could increase the final toxicity/ per-

sistence scores. (At present the toxicity/persistence score is 15; maximum score possible is 18). This could effect both the groundwater and surface water route scores, as well as the composite migration route score.

- Additional information is necessary in order to provide an accurate assessment of waste quantity. Scoring was based on the number of drums of waste and contaminated soil reportedly removed from the site and/or observed to be present at the site. These figures do not include any drums which may have contained hazardous materials at the time of disposal (quantity unknown) and have since leaked their contents. (An estimated 100 or more empty drums were reported at the site.)

o Direct Contact:

- Wastes were observed leaking onto the ground surface in both the swampy area to the north, and near Siehl Road in the southern portion of the site. Although soils were removed in the northern area (in 1986), soil sampling and analyses are necessary to further assess the potential impact of the site on the direct contact hazard mode.

6.2 Recommendations

Several data inadequacies exist, as delineated in Section 6.1, which prohibit the computation and support of a final, defensible HRS score. The following activities have been identified for the Phase II Investigation:

o Air Monitoring

- o Geophysical Investigation
- o Subsurface Investigation
- o Monitoring Well Installation
- o Sampling and Analysis

6.2.1 Air Monitoring

Air monitoring conducted during the Phase I site visit did not result in measureable (ie., OVA) air contaminants being identified. However, a further in-depth air monitoring program should be conducted to determine if contaminants are actually migrating from the site via the air route and to assist in the development of a future Health and Safety Plan for field activities.

An initial site perimeter screening should be conducted using an Organic Vapor Analyzer (OVA) and/or an HNu photoionizer.

6.2.2 Geophysical Investigation

After initial assessment of the ambient air quality at the site, a geophysical terrain conductivity investigation should be performed to determine possible presence of buried drums, to characterize the electrical conductivity of the site, and to determine the possible presence of conductive groundwater contaminant plumes. The geophysical information obtained should be used to minimize the number of drill sites, assist in determining the location of monitoring wells, and reduce the risk associated with drilling into unknown terrain and waste.

6.2.3 Subsurface Investigation

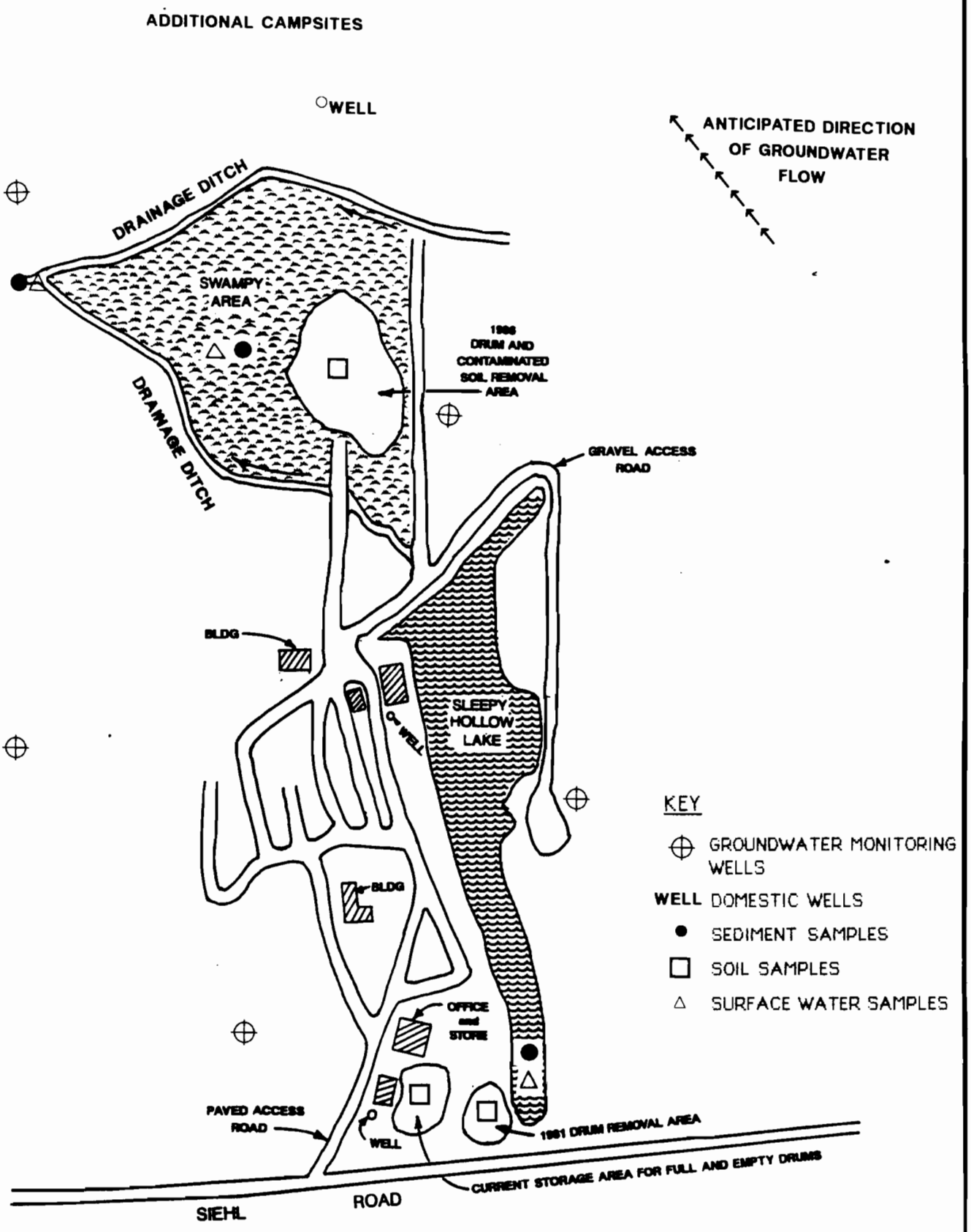
In order to obtain additional information concerning possible groundwater contamination originating from the Sleepy Hollow site, a subsurface investigation consisting of drilling 5 test borings should be conducted (Figure 6-1). The borings should be terminated at the upper water bearing zone (approx. 30 feet). Drilling identification and decontamination operations should be conducted in accordance with NYSDEC protocol for Phase II investigations.

6.2.4 Monitoring Well Installation

It is proposed that 5 monitoring wells be installed within the original test boring holes. A field determination should be made as to the placement of the well screens. This determination will be based on the information obtained from soil samples and water level measurements. Well construction and development should be conducted according to NYSDEC protocol for Phase I Investigations.

6.2.5 Sampling and Analysis

As identified in Figure 6-1, it is proposed that several environmental samples be secured to determine the possible existance of contamination. Sampling and analysis should be conducted according to NYSDEC protocol for Phase II investigations. Table 6-1 identifies the proposed analytical parameters for each sample type.



SCALE: NTS			NYSDEC PHASE I INVESTIGATION SLEEPY HOLLOW CAMPGRDS SITE # 915136	PROPOSED MONITORING WELL AND SAMPLE LOCATIONS
	BY	DATE		
DWN.	LMM	8/89		
CKD.				
APPVD.				
REV.			PROJECT NO. 8C1301BB	A FIGURE 6-1

TABLE 6-1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PHASE II INVESTIGATIONS
RECOMMENDED CHEMICAL ANALYSES

Site Name and I.D.: Sleepy Hollow Site

Type of Sample	Class 1	2	3	4	5	6	7	8	9	No. of Samples
Groundwater (Monitoring Wells)	X	X							X	5
Groundwater (Current D.W. Wells)	X	X							X	3
Surface Water	X	X							X	3
Sediment	X						X			3
Soil (Composites)	X				X		X			3

1) Hazardous Substance List organics, volatile and base/neutral/acid fractions, in accordance with Contract Laboratory Protocol
2) Hazardous Substance List metals in accordance with Contract Laboratory Protocol
3) Ammonia
4) Dioxin
5) PCB
6) Priority Pollutant Polynuclear Aromatic Hydrocarbons (PNAs, Method 8310)
7) E.P. Toxicity
8) Sulfate
9) Specific Conductance

APPENDIX A

1/10400.5.22

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

CLASSIFICATION CODE: _____ REGION: 9 SITE CODE: 915136

NAME OF SITE: Sleepy Hollow Campgrounds (Feitshans)
STREET ADDRESS: Siehl Road
TOWN/CITY: Town of Newstead COUNTY: Erie ZIP: 14001

SITE TYPE: Open Dump X Structure _ Lagoon _ Landfill _ Treatment Pond _
ESTIMATED SIZE: 109 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME: Anthony Latello and Mario Latello
CURRENT OWNER ADDRESS: 146 Sheldon Avenue, Lancaster, NY 14086
OWNER(S) DURING USE: Feitshans and Mauer Trucking, Inc.
OPERATOR DURING USE: Feitshans and Mauer Trucking, Inc.
OPERATOR ADDRESS unknown
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1971 To present

SITE DESCRIPTION:

The site is an active campground located on the north side of Siehl Road in the Town of Newstead, New York. Sleepy Hollow Lake, which is located along the eastern site boundary, drains into a swampy area in the northern portion of the site. In the early 1970s, Feitshans disposed of numerous drums of waste solvents, adhesives and oils generated by F. N. Burt, Inc. of Buffalo, New York. Approximately 50 to 60 drums of wastes were removed in 1981. An additional 17 drums of wastes were observed during an inspection by the NYSDEC in May 1985. Waste sampling conducted by NYSDEC in 1985 detected methylene chloride, trichloroethylene, toluene, chlorobenzene and other volatile organic compounds at relatively high concentrations. In November 1986, 17 drums of wastes and 13 drums of contaminated soil were removed from the site. Ten drums of wastes currently remain on-site. A Phase I Investigation was conducted at this site in 1988-89.

HAZARDOUS WASTE DISPOSED: Confirmed X Suspected _

TYPE	QUANTITY (units)
Waste solvents, adhesives, oils, and other liquids and sludges	77 drums of waste material (+13 drums of contaminated soil removed from site).

SITE CODE: 915136

ANALYTICAL DATA AVAILABLE:

Air _ Surface Water _ Groundwater _ Soil _ Sediment _ None _
*Waste sampling conducted

CONTRAVENTION OF STANDARDS:

Groundwater _ Drinking Water _ Surface Water _ Air _

LEGAL ACTION:

TYPE: Order on Consent in 1986 State X Federal _
STATUS: In Progress _ Completed X

REMEDIAL ACTION:

Proposed _ Under Design _ In Progress _ Completed X
NATURE OF ACTION: Drums containing wastes & contaminated soil were removed under Consent Order.

GEOTECHNICAL INFORMATION:
SOIL TYPE: Pa (Palms Muck); Pu (gravel); AmA & AmB, & others (silty loam to fine gravelly loam)
GROUNDWATER DEPTH: approx. 5 feet.

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Site has potential to impact groundwater and surface water (including Sleepy Hollow Lake and unnamed tributaries of Ellicott Creek).

ASSESSMENT OF HEALTH PROBLEMS:

Medium	Contaminants Available	Migration Potential	Potentially Exposed Population	Need For Investigation
Air				
Surface Soil				
Groundwater				
Surface Water				

Health Department Site Inspection Date: _____

Municipal Waste ID: _____

ICS ID: _____

SPEDES ID: _____

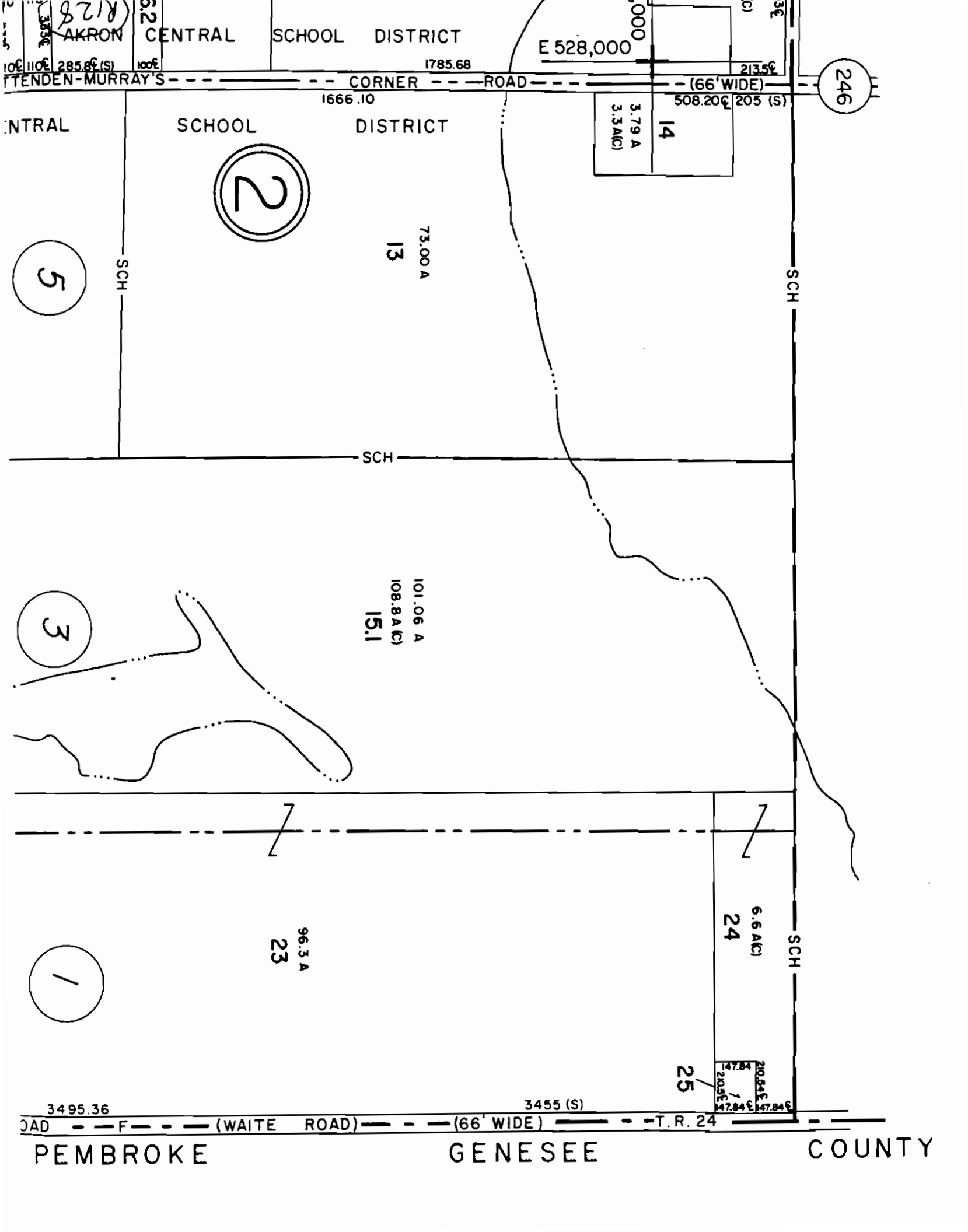
APPENDIX B

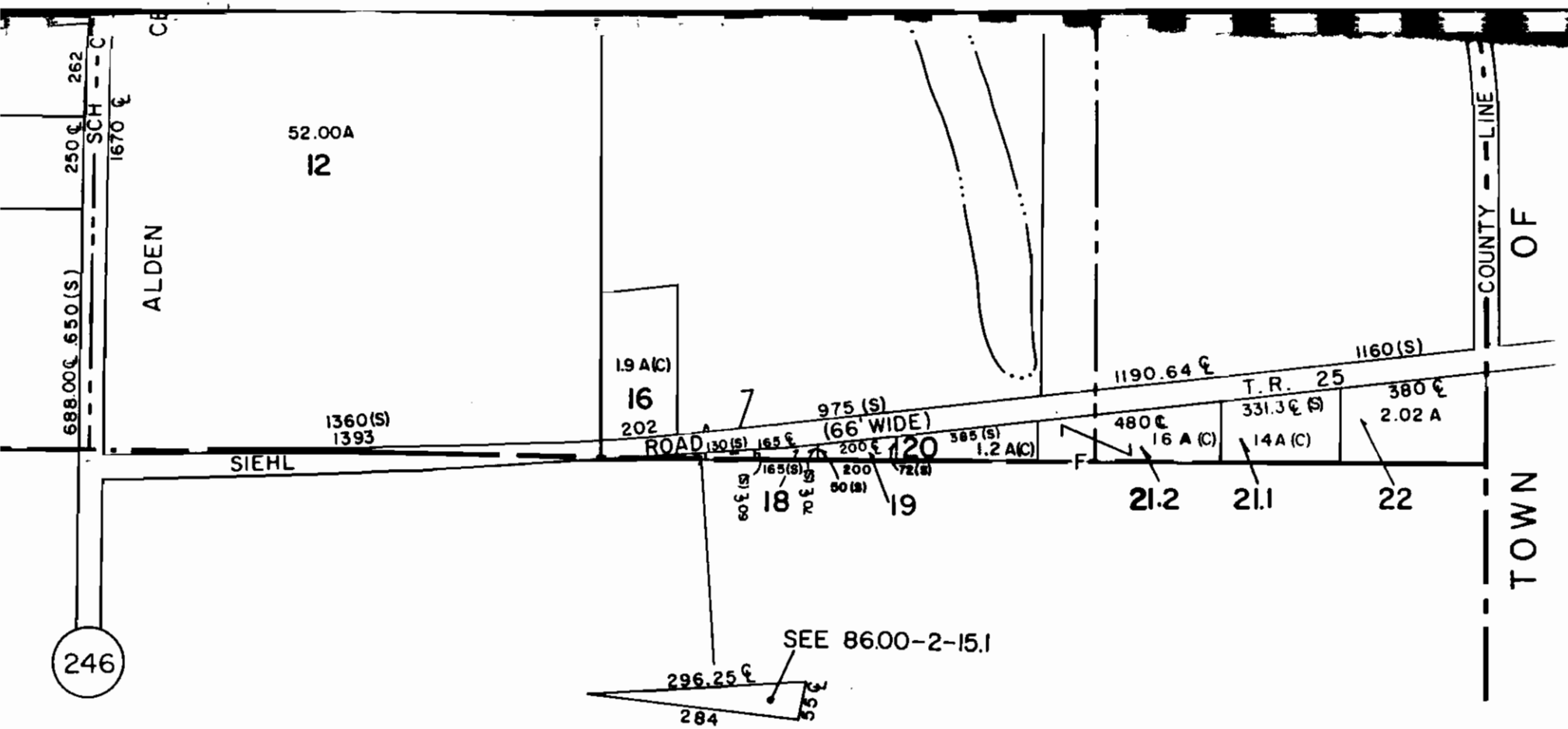
DATA SOURCES AND REFERENCES

DATA SOURCES AND REFERENCES (continued)

DATA SOURCES AND REFERENCES (continued)

REFERENCE 28


AKRON CENTRAL SCHOOL DISTRICT
E 528,000
1785.68
TTENDEN-MURRAY'S CORNER ROAD (66' WIDE)
1666.10
508.20
205 (S)
246
NTRAL SCHOOL DISTRICT
14
3.79 A
3.3 A(C)
2
13
73.00 A
5
SCH
SCH
SCH
3
15.1
101.06 A
108.8 A (C)
1
23
96.3 A
24
6.6 A(C)
25
47.84
210.54
210.5
147.84
3495.36
3455 (S)
OAD F (WAITE ROAD) (66' WIDE) T. R. 24
PEMBROKE
GENESEE
COUNTY


262
250 ℄
SCH -- C
1670 ℄
52.00A
12
ALDEN
688.00℄ 650(S)
1360(S)
1393
1.9 A(C)
16
202
7
975 (S)
(66' WIDE)
ROAD
130(S) 165 ℄
165(S)
200 ℄
200
50(S)
72(S)
120
385(S)
1.2 A(C)
SIEHL
309
309
18
19
1190.64 ℄
1160(S)
T.R. 25
480 ℄
16 A (C)
331.3 ℄ (S)
14 A (C)
380 ℄
2.02 A
21.2
21.1
22
COUNTY -- LINE
OF
TOWN
246
SEE 86.00-2-15.1
296.25 ℄
284
55 ℄
SCALE 1" = 200

R129

1" = 400'

```
================================================================================
    **Nxt Sbl 1*Log 2*Menu 5*Xref 8*Nxt Splt 9*Split 11*Resend 12*Logoff 13**
L


          TAX  MAPPING  PROPERTY  INFORMATION  TOWN    OF NEWSTEAD
  13785       SIEHL RD
  SBL 86.00-2-15.1                          PRIOR SBL 86.00-2-15
  PROPERTY CLASS 582      STREET SIDE N   TOWNSHIP  RANGE  SECTION  FARMLOT
  CO-ORDINATES EAST 530084 NORTH  78684      12       5        1         3 (1)
  SUB-DIVISION-1                                                        (2)
  SUB-DIVISION-2                            STATUS A   FLAG             (3)



  ================================  DIMENSIONS  ================================
  ACRES(DEED)     101.10        LOT DESC
  ACRES(MEAS)     108.80        FRNTG(TXMP)                  FRNTG(ARLM)     975.00
  ACRES(ARLM)     102.00        DEPTH(TXMP)                  DEPTH(ARLM)
  ================================  DEED  DATA  ================================
          --OWNER--              --DATE--   LIBER  PAGE     --DATE--   LIBER  PAGE

  L V & L RESORT CORP          1976/05/28  8394   541


================================================================================
    **Nxt Sbl 1*Log 2*Menu 5*Xref 8*Nxt Splt 9*Split 11*Resend 12*Logoff 13**
L
```

R130

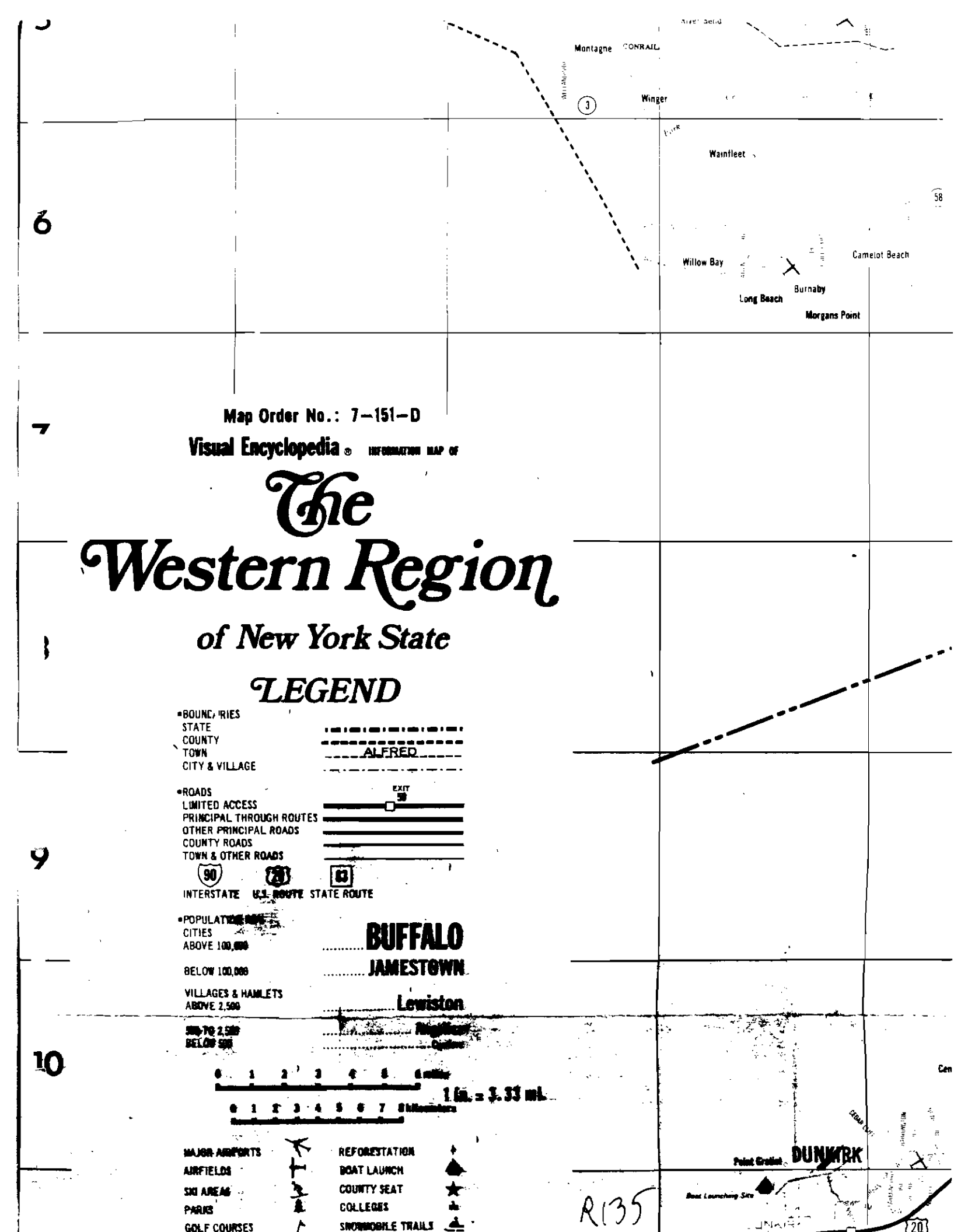
REFERENCE 29

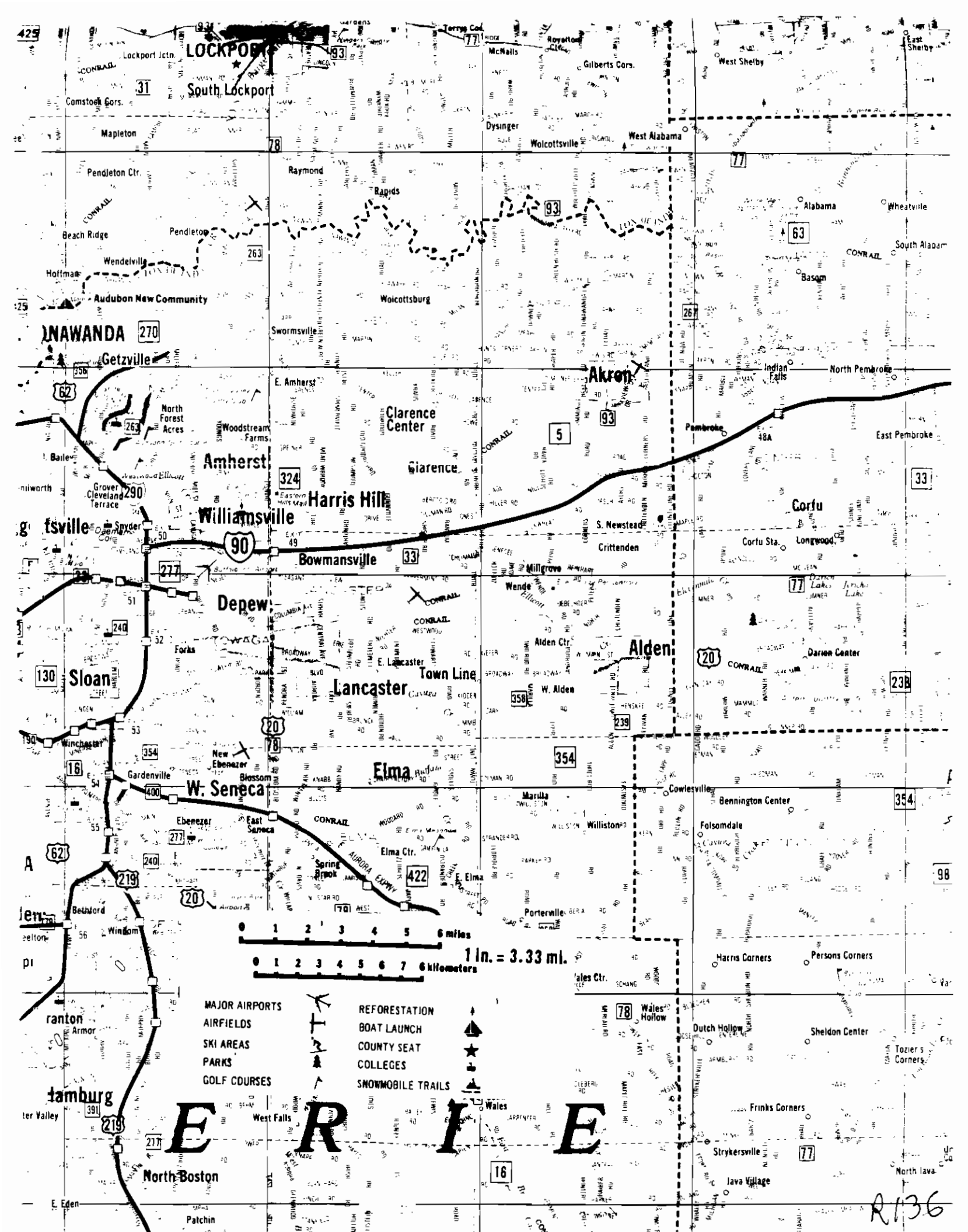
R132


SLEEPY HOLLOW
CAMPGROUNDS
SITE
GENESEE CO.
1978
R133
N


SLEEPY HOLLOW
CAMPGROUNDS
SITE
1985
R134
N

REFERENCE 30


Montagne
CONRAIL
Winger
Wainfleet
58
Willow Bay
Camelot Beach
Burnaby
Long Beach
Morgans Point
Map Order No.: 7–151–D
Visual Encyclopedia ® INFORMATION MAP OF
The Western Region
of New York State
LEGEND
•BOUNDARIES
STATE
COUNTY
TOWN
ALFRED
CITY & VILLAGE
•ROADS
EXIT 58
LIMITED ACCESS
PRINCIPAL THROUGH ROUTES
OTHER PRINCIPAL ROADS
COUNTY ROADS
TOWN & OTHER ROADS
90
INTERSTATE
U.S. ROUTE
STATE ROUTE
•POPULATION
CITIES
ABOVE 100,000
BUFFALO
BELOW 100,000
JAMESTOWN
VILLAGES & HAMLETS
ABOVE 2,500
Lewiston
500 TO 2,500
BELOW 500
1 in. = 3.33 mi.
MAJOR AIRPORTS
AIRFIELDS
SKI AREAS
PARKS
GOLF COURSES
REFORESTATION
BOAT LAUNCH
COUNTY SEAT
COLLEGES
SNOWMOBILE TRAILS
Point Gratiot
DUNKIRK
Boat Launching Site
R135
20

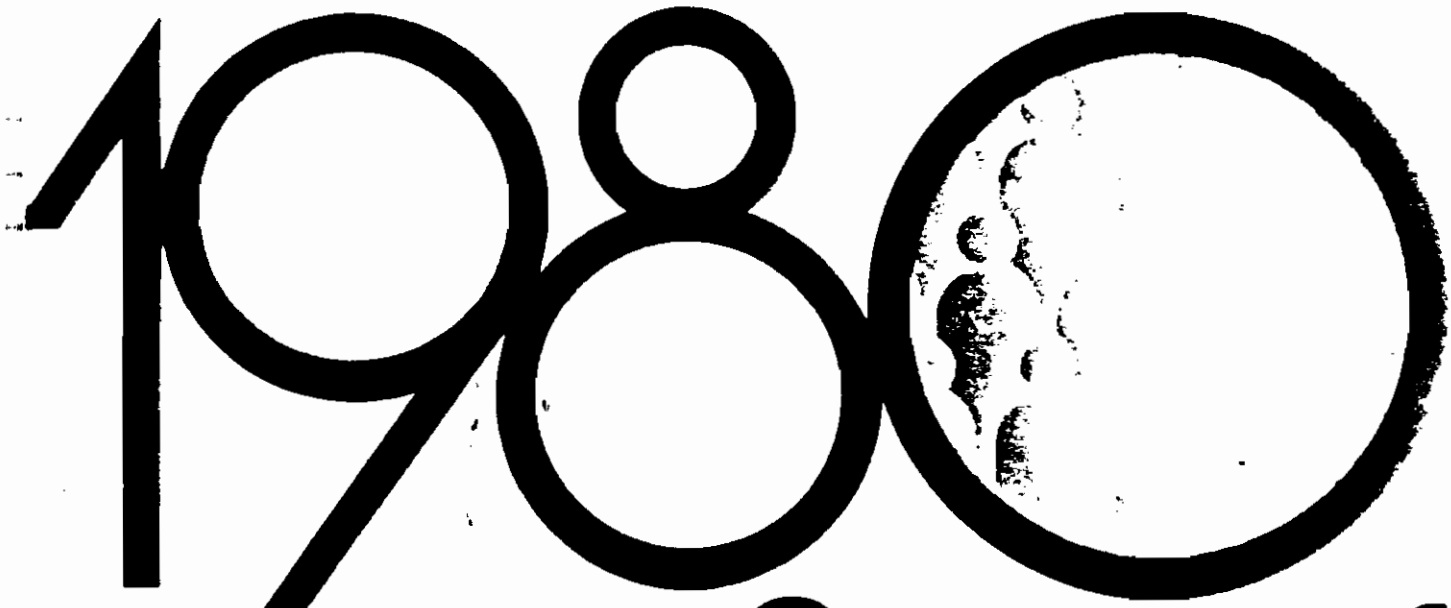

LOCKPORT
South Lockport
Lockport Jctn.
Comstock Cors.
Mapleton
Pendleton Ctr.
Pendleton
Beach Ridge
Wendelville
Hoffman
Audubon New Community
Raymond
Rapids
Dysinger
Wolcottsville
West Alabama
McNalls
Royalton Ctr.
Gilberts Cors.
West Shelby
East Shelby
Alabama
Wheatville
South Alabama
Basom
Woicottsburg
Swormsville
ONAWANDA
Getzville
North Forest Acres
Woodstream Farms
E. Amherst
Clarence Center
Clarence
Amherst
Harris Hill
Williamsville
Grover Cleveland Terrace
Eastern Hills Mall
Akron
Indian Falls
North Pembroke
Pembroke
East Pembroke
Corfu
S. Newstead
Crittenden
Corfu Sta.
Longwood
Bowmansville
Millgrove
Wende
Depew
Alden Ctr.
Alden
Darien Center
E. Lancaster
Town Line
Lancaster
W. Alden
Sloan
Forks
Winchester
New Ebenezer
Gardenville
Blossom
Elma
W. Seneca
Ebenezer
East Seneca
Elma Ctr.
Spring Brook
Bethford
Windom
Marilla
Cowlesville
Bennington Center
Folsomdale
Williston
Porterville
Harris Corners
Persons Corners
Wales Ctr.
Wales Hollow
Dutch Hollow
Sheldon Center
Tozier's Corners
Frinks Corners
Strykersville
Java Village
North Java
West Falls
Wales
North Boston
E. Eden
Patchin
ranton
Armor
tamburg
ter Valley
0 1 2 3 4 5 6 miles
0 1 2 3 4 5 6 7 8 kilometers
1 in. = 3.33 mi.
MAJOR AIRPORTS
AIRFIELDS
SKI AREAS
PARKS
GOLF COURSES
REFORESTATION
BOAT LAUNCH
COUNTY SEAT
COLLEGES
SNOWMOBILE TRAILS
E R I E
R136

REFERENCE 31

CHARACTERISTICS OF THE POPULATION

Number of Inhabitants

NEW YORK



Census of Population

U.S. Department of Commerce
BUREAU OF THE CENSUS

Table 5. **Population of Places: 1960 to 1980**

(For changes in boundaries of incorporated places since 1970, see table 4. For meaning of symbols, see introduction)

Incorporated Places Census Designated Places	Counties	1980	1970	1960
Adams village	Jefferson	1 701	1 951	1 914
Adams Center (CDP)	Jefferson	1 519	...	...
Addison village	Steuben	2 028	2 104	2 185
Afton village	Chenango	982	1 064	956
Akron village	Erie	2 971	2 863	2 841
Albany city	Albany	101 727	115 781	129 726
Albertson (CDP)	Nassau	5 561	6 825	...
Albion village	Orleans	4 897	5 122	5 182
Alden village	Erie	2 488	2 651	2 042
Alexander village	Genesee	483	474	335
Alexandria Bay village	Jefferson	1 265	1 440	1 583
Alfred village	Allegany	4 967	3 804	2 807
Allegany village	Cattaraugus	2 078	2 050	2 064
Almond village	Total	568	658	696
	Allegany (pt. in)	529	627	665
	Steuben (pt. in)	39	31	31
Altamont village	Albany	1 292	1 561	1 365
Altmar village	Oswego	347	448	277
Amagansett (CDP)	Suffolk	2 188	...	...
Amenia (CDP)	Dutchess	1 183	1 157	...
Ames village	Montgomery	224	198	162
Amityville village	Suffolk	9 076	9 794	8 318
Amsterdam city	Montgomery	21 872	25 524	28 772
Anden village	Delaware	372	353	399
Andover village	Allegany	1 120	1 214	1 247
Angelica village	Allegany	982	948	898
Angola village	Erie	2 292	2 676	2 499
Angola on the Lake (CDP)	Erie	1 907	1 573	...
Antwerp village	Jefferson	749	872	881
Apalachin (CDP)	Tioga	1 227	1 233	...
Arcade village	Wyoming	2 052	1 972	1 930
Ardsley village	Westchester	4 183	4 470	3 991
Argyle village	Washington	320	392	355
Arkport village	Steuben	811	984	837
Arlington (CDP)	Dutchess	11 305	11 203	8 317
Armonk (CDP)	Westchester	2 238	...	...
Asharoken village	Suffolk	635	540	253
Athens village	Greene	1 738	1 718	1 754
Atlantic Beach village	Nassau	1 775	1 640	...
Attica village	Total	2 659	2 911	2 758
	Genesee (pt. in)	16	2	-
	Wyoming (pt. in)	2 643	2 909	2 758
Auburn city	Cayuga	32 548	34 599	35 249
Aurora village	Cayuga	926	1 072	834
Averill Park (CDP)	Rensselaer	1 337	1 471	...
Avoca village	Steuben	1 144	1 153	1 086
Avon village	Livingston	3 006	3 260	2 772
Babylon village	Suffolk	12 388	12 897	11 062
Bainbridge village	Chenango	1 603	1 674	1 712
Baldwin (CDP)	Nassau	31 630	34 525	30 204
Baldwinsville village	Onondaga	6 446	6 298	5 985
Ballston Spa village	Saratoga	4 711	4 968	4 991
Balmville (CDP)	Orange	2 919	3 214	1 538
Barker village	Niagara	535	567	528
Barneveld village	Oneida	396	423	363
Batavia city	Genesee	16 703	17 338	18 210
Bath village	Steuben	6 042	6 053	6 166
Baxter Estates village	Nassau	911	1 026	932
Bayberry–Lynelle Meadows (CDP)	Onondaga	14 813	...	...
Bayport (CDP)	Suffolk	9 282	8 232	...
Bay Shore (CDP)	Suffolk	10 784	11 119	...
Bayville village	Nassau	7 034	6 147	3 962
Beacon city	Dutchess	12 937	13 255	13 922
Beaverdam Lake (CDP)	Orange	1 324	...	...
Bedford (CDP)	Westchester	1 633	...	...
Bellerose village	Nassau	1 187	1 136	1 083
Bella Terre village	Suffolk	826	678	295
Bellmore (CDP)	Nassau	18 106	18 431	12 784
Bellport village	Suffolk	2 809	3 046	2 461
Belmont village	Allegany	1 024	1 102	1 146
Bemus Point village	Chautauqua	444	487	443
Bergen village	Genesee	976	1 018	964
Berkshire (CDP)	Fulton	1 095	...	...
Bethpage (CDP)	Nassau	16 840	18 555	...
Big Flats (CDP)	Chemung	2 892	2 509	...
Billington Heights (CDP)	Erie	1 782	1 278	...
Binghamton city	Broome	55 860	64 123	75 941
Black River village	Jefferson	1 384	1 307	1 237
Blasdell village	Erie	3 288	3 910	3 909
Bloomingburg village	Sullivan	338	323	303
Bloomingdale village	Essex	608	536	490
Blooming Grove (CDP)	Orange	1 151	...	...
Bloomington–Hickory Bush (CDP)	Ulster	1 002	...	...
Bohemia (CDP)	Suffolk	9 308	8 926	...
Bolivar village	Allegany	1 345	1 379	1 405
Boonville village	Oneida	2 344	2 488	2 403
Boysen Bay (CDP)	Onondaga	1 160	1 191	...
Brasher Falls–Winthrop (CDP)	St. Lawrence	1 454	...	...
Brentwood (CDP)	Suffolk	44 321	28 327	15 387
Brewerton (CDP)	Total	2 472	1 985	...
	Onondaga (pt. in)	1 586	1 201	...
	Oswego (pt. in)	886	784	...
Brewster village	Putnam	1 650	1 638	1 714
Brewster Heights (CDP)	Putnam	1 054	1 265	...
Brewster Hill (CDP)	Putnam	2 371	1 745	...
Briarcliff Manor village	Westchester	7 115	6 521	5 105
Bridgehampton (CDP)	Suffolk	1 941	...	...
Bridgewater village	Oneida	578	601	373
Brighton (CDP)	Monroe	35 776	...	...
Brightwaters village	Suffolk	3 286	3 808	3 193
Brinckerhoff (CDP)	Dutchess	3 030	2 094	...
Broadalbin village	Fulton	1 415	1 452	1 438
Brockport village	Monroe	9 776	7 878	5 256
Brockway (CDP)	Dutchess	1 301	...	...
Brocton village	Chautauqua	1 416	1 370	1 416
Bronxville village	Westchester	6 267	6 674	6 744
Brookville village	Nassau	3 290	3 212	1 468
Brownville village	Jefferson	1 099	1 187	1 082
Brushton village	Franklin	577	547	553
Buchanan village	Westchester	2 041	2 110	2 019
Buffalo city	Erie	357 870	462 768	532 759
Burdett village	Schuyler	410	454	420
Burke village	Franklin	226	237	273
Cairo (CDP)	Greene	1 281	...	...
Caledonia village	Livingston	2 188	2 127	1 917
Calverton–Roanoke (CDP)	Suffolk	4 952	...	...
Cambridge village	Washington	1 820	1 769	1 748
Camden village	Oneida	2 667	2 936	2 694
Camillus village	Onondaga	1 298	1 534	1 416
Canajoharie village	Montgomery	2 412	2 686	2 681
Canandaigua city	Ontario	10 419	10 488	9 370
Canaseraga village	Allegany	700	750	730
Canastota village	Madison	4 773	5 033	4 996
Candor village	Tioga	917	939	956
Canisteo village	Steuben	2 679	2 772	2 731
Canton village	St. Lawrence	7 055	6 398	5 046
Cape Vincent village	Jefferson	785	820	770
Carle Place (CDP)	Nassau	5 470	6 326	...
Carthage village	Jefferson	3 643	3 889	4 216
Cassadaga village	Chautauqua	821	905	820
Castile village	Wyoming	1 135	1 330	1 146
Castleton-on-Hudson village	Rensselaer	1 627	1 730	1 752
Castorland village	Lewis	277	327	321
Cato village	Cayuga	475	601	476
Catskill village	Greene	4 718	5 317	5 825
Cattaraugus village	Cattaraugus	1 200	1 200	1 258
Cayuga village	Cayuga	604	693	621
Cayuga Heights village	Tompkins	3 170	3 130	2 788
Cazenovia village	Madison	2 599	3 031	2 584
Cedarhurst village	Nassau	6 162	6 941	6 954
Celoron village	Chautauqua	1 405	1 456	1 507
Centereach (CDP)	Suffolk	30 136	9 427	8 524
Center Moriches (CDP)	Suffolk	5 703	3 802	2 521
Centerport (CDP)	Suffolk	6 576	...	...
Central Islip (CDP)	Suffolk	19 734	36 191	...
Central Square village	Oswego	1 418	1 298	935
Central Valley (CDP)	Orange	1 705	...	...
Centre Island village	Nassau	378	374	270
Champlain village	Clinton	1 410	1 426	1 549
Champlain Park (CDP)	Clinton	1 051	1 207	...
Chateaugay village	Franklin	869	976	1 097
Chatham village	Columbia	2 001	2 239	2 426
Chaumont village	Jefferson	620	567	523
Cheektowaga (CDP)	Erie	92 145	...	...
Cherry Creek village	Chautauqua	677	658	649
Cherry Valley village	Otsego	684	661	668
Chester village	Orange	1 910	1 627	1 492
Chittenango village	Madison	4 290	3 605	3 180
Churchville village	Monroe	1 399	1 065	1 003
Clarence Center (CDP)	Erie	1 300	1 332	...
Clark Mills (CDP)	Oneida	1 412	1 206	1 148
Claverack–Red Mills (CDP)	Columbia	1 217	...	...
Clayton village	Jefferson	1 816	1 970	1 996
Clayville village	Oneida	478	535	686
Cleveland village	Oswego	855	821	732
Clifton Knolls (CDP)	Saratoga	5 636	5 771	...
Clifton Springs village	Ontario	2 039	2 058	1 953
Clinton village	Oneida	2 107	2 271	1 855
Clintondale (CDP)	Ulster	1 193	...	...
Clyde village	Wayne	2 491	2 828	2 593
Cobleskill village	Schoharie	5 272	4 368	3 471
Cohocton village	Steuben	902	897	929
Cohoes city	Albany	18 144	18 653	20 129
Cold Brook village	Herkimer	402	413	372
Coldenham (CDP)	Orange	1 064	...	...
Colden Hill (CDP)	Orange	1 741	1 688	...
Cold Spring village	Putnam	2 161	2 083	2 083
Cold Spring Harbor (CDP)	Suffolk	5 336	5 450	1 705
Colonie village	Albany	8 869	8 701	6 992
Commack (CDP)	Suffolk	34 719	24 138	9 613
Congers (CDP)	Rockland	7 123	5 928	...
Constableville village	Lewis	330	347	439
Constantia (CDP)	Oswego	1 254	...	...
Cooperstown village	Otsego	2 342	2 403	2 553
Copenhagen village	Lewis	656	734	673
Copiague (CDP)	Suffolk	20 132	19 632	14 081
Coram (CDP)	Suffolk	24 752	...	...
Corfu village	Genesee	689	722	616
Corinth village	Saratoga	2 702	3 267	3 193
Corning city	Steuben	12 953	15 792	17 085
Cornwall on Hudson village	Orange	3 164	3 131	2 785
Cortland city	Cortland	20 138	19 621	19 181
Cortland West (CDP)	Cortland	1 149	...	...

NUMBER OF INHABITANTS

0138

REFERENCE 32

PART 663

FRESHWATER WETLANDS PERMIT REQUIREMENTS

(Statutory authority: Environmental Conservation Law, §§ 3-0301, 24-1301)

Historical Note

Part (§§ 663.1-663.11) filed May 20, 1980; for effective date see § 663.11.

Section 663.1 Purposes. (a) It is the public policy of the State, as set forth in the Freshwater Wetlands Act, to preserve, protect and conserve freshwater wetlands and the benefits derived therefrom, to prevent the despoliation and destruction of freshwater wetlands, and to regulate use and development of such wetlands to secure the natural benefits of wetlands, consistent with the general welfare and beneficial economic, social and agricultural development of the State. It is the purpose of this Part to implement that policy by establishing regulations that:

(1) define the procedural requirements to be followed in undertaking different activities in wetlands and in areas adjacent to wetlands;

(2) establish standards governing the issuance of permits by the department pursuant to the act; and

(3) govern the department's implementation of the act.

(b) The system of wetlands classification upon which this Part is based is presented in Part 664 of this Title. That Part, which is administered by the department, describes the benefits of wetlands cited in the act and the characteristics associated with them.

(c) The statewide minimum land-use regulations for freshwater wetlands are contained in section 665.7(g) of this Title. They are set forth in section 663.4(d) of this Part for the convenience of permit applicants, and will be referenced in this Part where appropriate.

Historical Note

Sec. filed May 20, 1980; amd. filed Sept. 9, 1985 eff. Sept. 9, 1985. Added (c).

663.2 Definitions. (a) *Act* means the Freshwater Wetlands Act (article 24 and title 23 of article 71 of the Environmental Conservation Law).

(b) *Adjacent area* means those areas of land or water that are outside a wetland and within 100 feet (approximately 30 meters), measured horizontally, of the boundary of the wetland. However, the department may establish an adjacent area broader than 100 feet (approximately 30 meters) where necessary to protect and preserve a wetland, as set forth in subdivision 24-0701.2 of the Act and pursuant to Part 664 of this Title.

(c) *Agricultural activity* means:

(1) the activity of an individual farmer or other landowner in:

(i) grazing and watering livestock;

(ii) making reasonable use of water resources for agricultural purposes;

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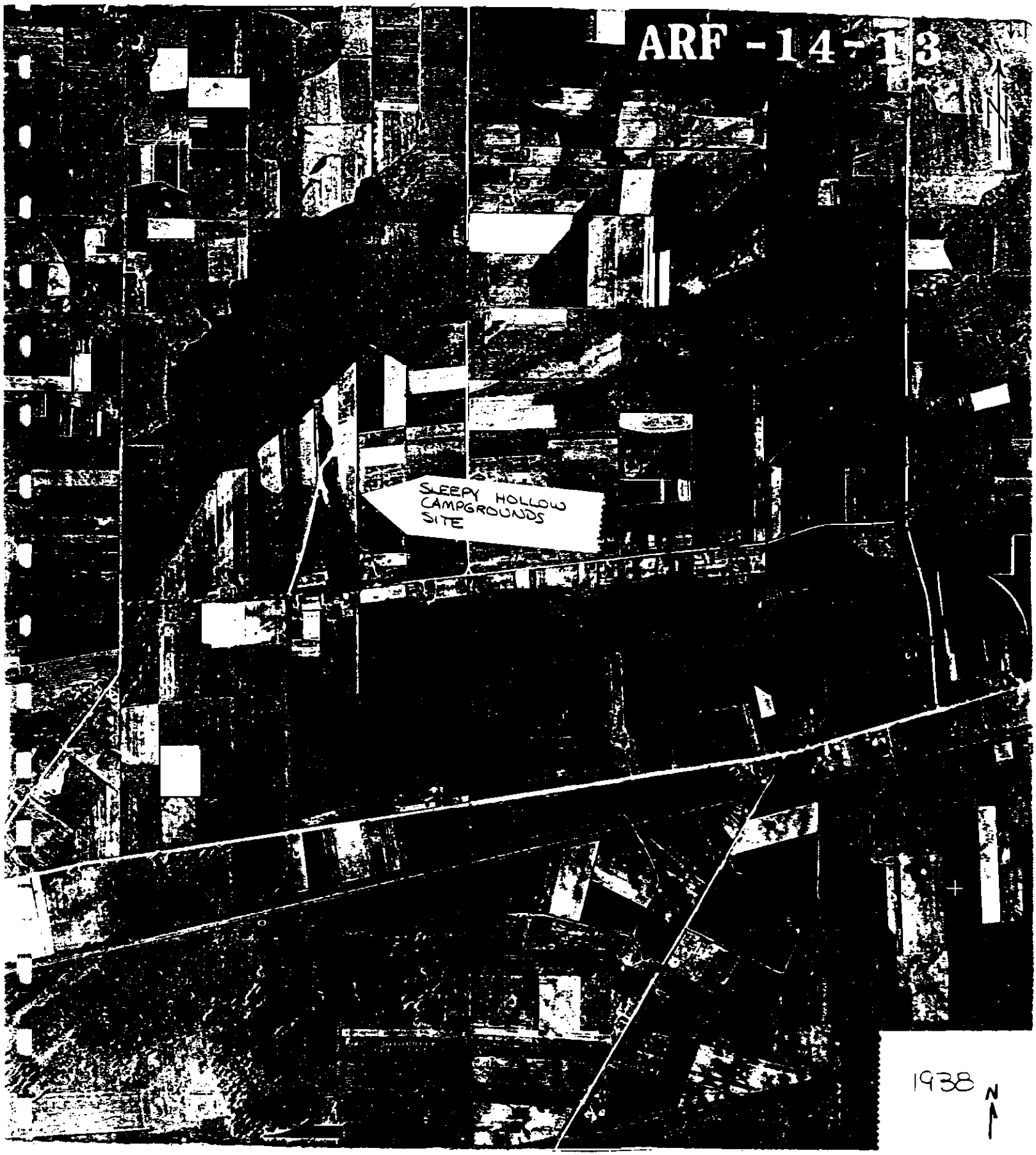


R131

mits and letters of permission. (a) A person re ires a permit or letter of permission, as , ist meet the standards for permit issuance ission prior to commencing that activity. The vity will comply with the policies and provisions he pplicant.

ed nly if the commissioner has determined that lly alter or impair the functions or benefits of a as "LP" in section 665.7(g) of this Title, the ns or freshwater wetlands, and as "L" in the ar g a letter of permission, the commissioner ity complies with the limits of the activities as e regulations contained in Part 665 of this Title.

ig permit, the commissioner shall apply the i l subdivision (e) of this section in conjunction /etland as indicated on the official freshwater and as established in Part 664 of this Title. In dic r will consider the effects of the proposed s.

on (e) of this section, a determination of compati- enefits lost are the criteria for decisionmaking. be sed for all activities listed in the minimum o is Part that carry a compatibility category this Title and in section 663.4(d). Activities and d use regulations or in the procedures table in st the three-part compatibility test. Activities /e en determined under the minimum land use their compatibility or weighing analysis need be permission as defined in section 663.2(r). Activi- o not require either a permit or letter of permis- ction 663.4(d) to assist the department and oc ures.

lbility given in the chart in subdivision (e) of this ar rds need apply, regardless of the wetland's itl it conditions, may be issued for the proposed e part test, the statewide minimum land use hem that has been duly adopted according to the he basis for determinations of compatibility.

r et all three tests of compatibility or if it is for a permit to be issued, the activity must meet in the chart in subdivision (e) of this section for ou be affected by the proposed activity.

n quest for a letter of permission exceeds the ed in sections 665.7(g) and 663.4(d), a letter of the proposed action must be tested for compati- v on (e) of this section and a permit application a l this Part. If there is question or doubt as to re iewed for compatibility with the three-part three parts of the test, the action must be treated ighed according to the standards identified in

(e) *Standards for Permit Issuance*

(1) *Compatibility.* These three tests are to be used to determine the compatibility of all activities identified as P(C) or P(N) in section 663.4(d) of this Part or for any actions not listed in section 663.4(d). If all three of the following tests of compatibility are met, no other weighing standards need be met, regardless of the wetland class. A permit, with or without conditions, may be issued for a proposed activity on a wetland of any class or in a wetland's adjacent area if it is determined that the activity (i) would be compatible with preservation, protection and conservation of the wetland and its benefits, and (ii) would result in no more than insubstantial degradation to, or loss of, any part of the wetland, and (iii) would be compatible with the public health and welfare.

(2) *Weighing.* These weighing standards must be applied to all activities identified as P(X) in section 663.(d) of this Part, and to all those activities listed as P(C) of (N) in section 663.4(d) or not listed in section 663.4(d) that do not meet the three tests of compatibility listed in section 663.5(e)(1). If the proposed activity is listed as (X) or cannot meet the three tests for compatibility, then a permit may be issued only if the proposed activity meets each of the standards below for the class of wetland affected:

For wetland Classes I, II, III and IV, the proposed activity must be compatible with the public health and welfare, be the only practicable alternative that could accomplish the applicant's objectives and have no practicable alternative on a site that is not a freshwater wetland or adjacent area.

For wetland Classes I, II and III, the proposed activity must minimize degradation to, or loss of, any part of the wetland or is adjacent area and must minimize any adverse impacts on the functions and benefits that the wetland provides.

For wetland Class IV, the proposed activity must make a reasonable effort to minimize degradation to, or loss of, any part of the wetland or its adjacent area.

Class I wetlands

Class I wetlands provide the most critical of the State's wetland benefits, reduction of which is acceptable only in the most unusual circumstances. A permit shall be issued only if it is determined that the proposed activity satisfies a compelling economic or social need that clearly outweighs the loss of or detriment to the benefit(s) of the Class I wetland.

Class II wetlands

Class II wetlands provide important wetland benefits, the loss of which is acceptable only in very limited circumstances. A permit shall be issued only if it is determined that the proposed activity satisfies a pressing economic or social need that clearly outweighs the loss of or detriment to the benefit(s) of the Class II wetland.

Class III wetlands

Class III wetlands supply wetland benefits, the loss of which is acceptable only after the exercise of caution and discernment. A permit shall be issued only if it is determined that the proposed activity satisfies an economic or social need that outweighs the loss of or detriment to the benefit(s) of the Class III wetland.

Class IV Wetlands

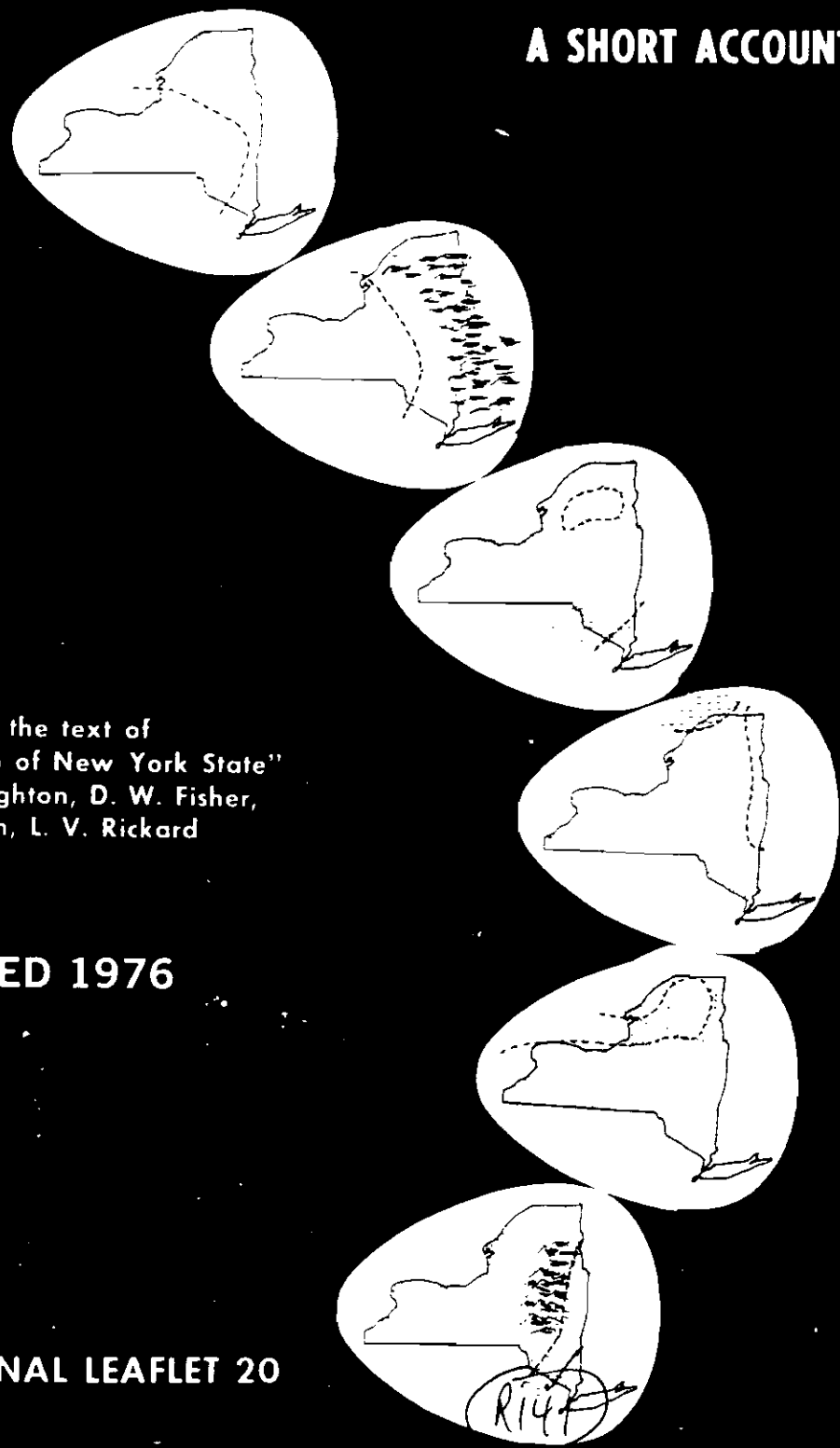
Class IV wetlands provide some wildlife and open space benefits and may provide other benefits cited in the act. Therefore, wanton or uncontrolled degradation or loss of Class IV wetlands is unacceptable. A permit shall be issued for a proposed activity in a Class IV wetland only if it is determined that the activity would be the only practicable alternative which could accomplish the applicant's objectives.

R140

REFERENCE 33

Geology of New York

A SHORT ACCOUNT



adapted from the text of
"Geologic Map of New York State"
by J. G. Broughton, D. W. Fisher,
Y. W. Isachsen, L. V. Rickard

REPRINTED 1976

EDUCATIONAL LEAFLET 20

THE UNIVERSITY OF THE STATE OF NEW YORK / THE STATE EDUCATION DEPARTMENT
NEW YORK STATE MUSEUM AND SCIENCE SERVICE / ALBANY 19

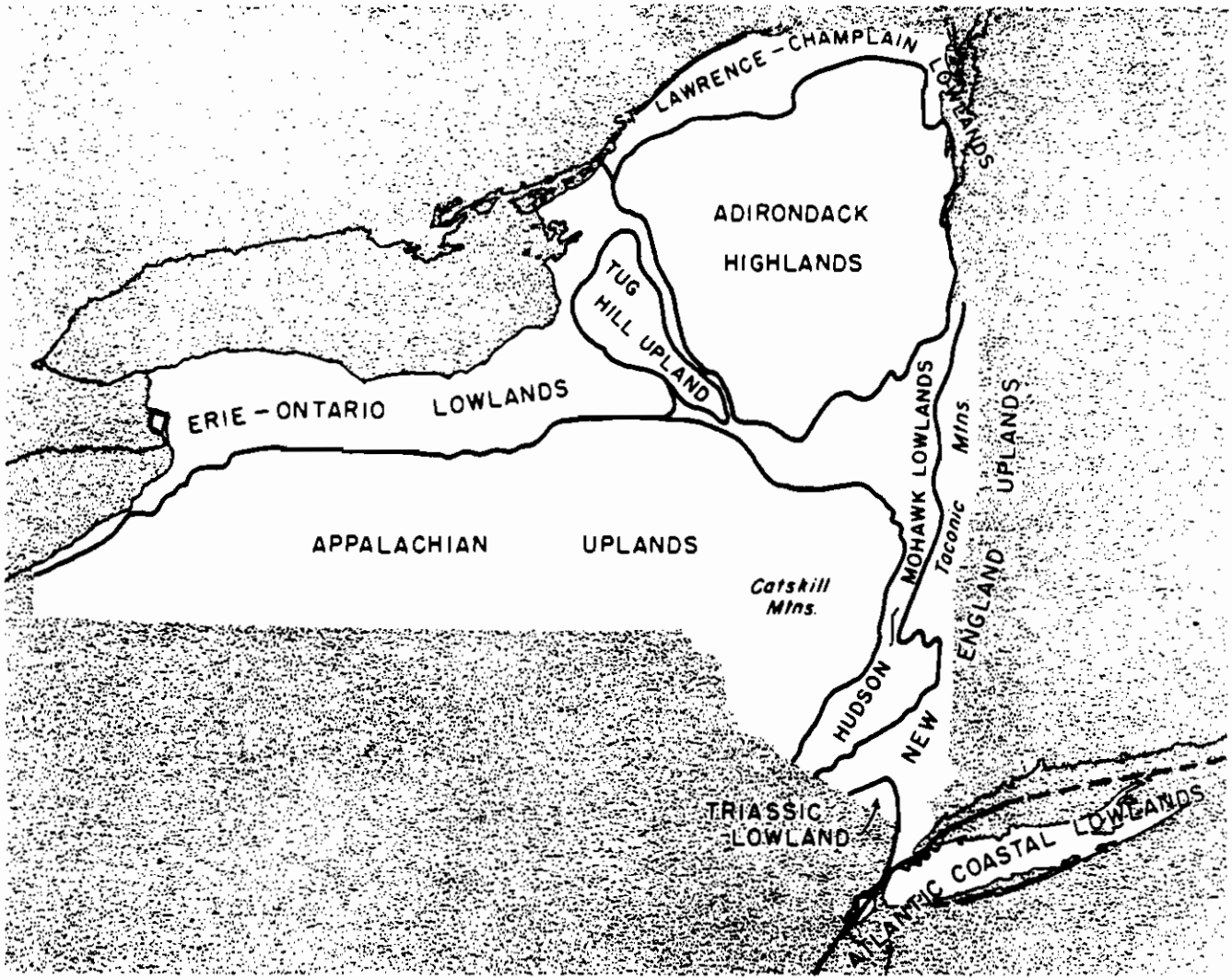


FIGURE 19. Physiographic provinces of New York, based on relief and geology (Modified after G. B. Cressey, 1952)

Cenozoic Era

PHYSIOGRAPHIC PROVINCES AND TERTIARY HISTORY

The physiographic provinces of New York are shown in figure 19. Modern landscapes of the State were shaped largely during the Cenozoic Era, the most recent 65 million years of geologic history. Although the overall features later would be modified and blurred by glaciation, the broad outlines of modern mountain, valley, and plain first were carved by the unrelenting rush of water to the earlier Cenozoic seas.

The long sequence of erosion presumably began with the arching of the Jurassic Fall Zone erosion surface in mid-Cretaceous time. As its eastern flank dipped beneath the encroaching Atlantic Ocean to receive Coastal Plain deposits, the axis domed sufficiently to initiate the sculpture of the Appalachians and Adirondacks. Few, if any of today's land forms can be traced so far back, however. Most researchers believe that all the exposed remnants of the dissected Fall Zone surface were obliterated by subsequent erosion.

South of New York, at least a partial record of Tertiary geology persists in the Coastal Plain deposits. In addition to a sedimentary record, datable igneous intrusions cut rocks of varying degrees of deformation in the western states. But in New York, no such tangible evidence of Cenozoic events exists. The Coastal Plains sediments derived from the long-continued degradation of New York and New England now rest on the Continental

R142

Shelf, beneath many fathoms of water. Because of a relatively recent tilting of the coastline about a northwest-southeast axis near New York City, the Coastal Plain has been raised south of New York; east and north of the city, all but the Long Island Cretaceous has been depressed below sea level.

Since exposed Tertiary sedimentary deposits are absent in New York, its geological history must be reconstructed from the only data available, the present physiographic features of the State. In an area as small as New York, where climate does not vary significantly, land forms have been determined primarily by geology. Characteristic differences between the physiographic provinces have resulted from the ways in which rocks of differing lithologies and structures have reacted to the erosional force of the Cenozoic. Thus, while many authorities have classified New York's physiographic provinces in various ways, all are more or less in agreement as to the outlines of the major provinces; they differ mainly in the names applied to the provinces. Those used here were proposed by George B. Cressey (1952, personal communication, J.G. B.). From north to south, the physiographic provinces of New York are:

St. Lawrence-Champlain Lowlands

New York's northernmost province includes the St. Lawrence River Valley (northeast of the Thousand Islands), the low hills south of the river valley, and the Lake Champlain Valley (figure 19). The underlying rocks —Cambrian and Ordovician sandstones, dolomites, and limestones—dip gently away from the Adirondacks. Relief is approximately 100 feet. Streams draining the northern and eastern slopes of the Adirondacks flow across the province. The shoreline of Lake Champlain is largely controlled by north-south and east-west faults which have chopped the Paleozoic sandstones and carbonates into large blocks.

Adirondack Highlands

The highest mountains in New York occur in the Adirondack Highlands, especially in the High Peaks region; the High Peaks, in the east-central part of the province, are underlain by anorthosite, which is highly resistant to erosion. Two peaks—Mt. Marcy and Mt. Algonquin—are over 5,000 feet in elevation, and many exceed 4,000 feet. Average relief in the Adirondack Highlands is 2,000 feet. North, west, and south of the High Peaks area, elevations decrease gradually; east to the Champlain Lowland, the slope is more abrupt.

The Adirondacks are transected by long, northeast-southwest lineaments, representing shear zones or major faults. The lineaments frequently control drainage and the shape of land forms. Many lakes follow geologic contacts, or are confined to valleys along weak metasedimentary rocks. Because glacial deposits have clogged the normal radial drainage, lower areas are dotted with lakes, ponds, and swamps.

Tug Hill Upland

The Tug Hill, an isolated upland in the eastern part of the Erie-Ontario Lowlands, is probably the most desolate area of the State. Elevation is 1,800 to 2,000 feet, and relief is very low. The Tug Hill results from a resistant cap rock of Oswego Sandstone (an Ordovician sedimentary quartzite), resting on a thick series of sandy shales. These, in turn, overlie Trenton and Black River limestones, which form a flight of rock terraces along the west side of the Black River Valley. The low slope of the cap rock and the thin cover of glacial deposits have caused poor drainage and many swamps.

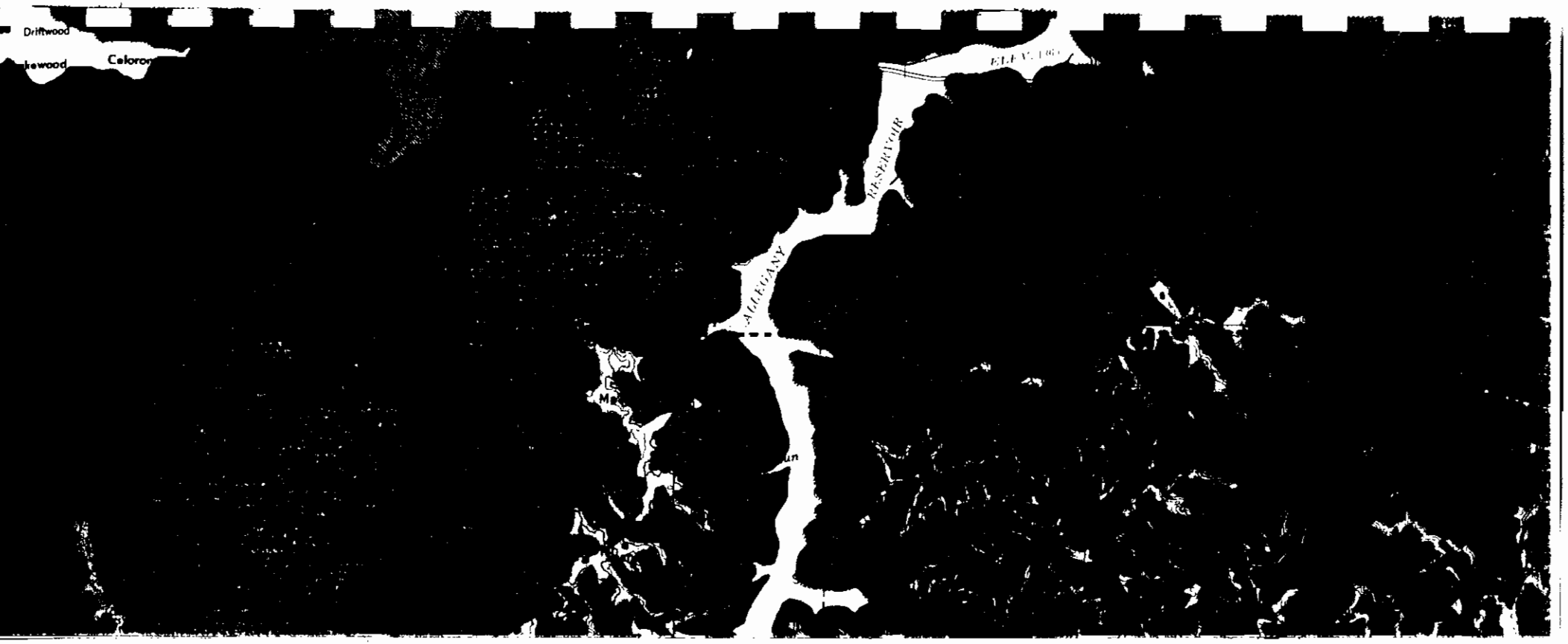
Erie-Ontario Lowlands

This province encompasses the relatively low, flat areas lying south of Lake Erie and Lake Ontario and extending up the Black River Valley. From the lake levels of 570 feet and 244 feet, respectively, the land rises gently eastward and southward. The maximum elevation (1,000-1,500 feet) occurs along the Portage Escarpment, the boundary with the Appalachian Uplands to the south. Particularly in the Ontario Lowland, east-west escarpments are formed by the Onondaga Limestone and Lockport Dolomite. (The Lockport is the cap rock of Niagara Falls and the falls of the Genesee River at Rochester.) The simple erosional topography has been modified substantially by glacial deposition of drumlin fields, recessional moraines, and shoreline deposits.

Hudson-Mohawk Lowlands

The general topography of the Hudson-Mohawk Lowlands resulted from erosion along outcrop belts of weak rocks. In the Mohawk Lowlands, the outcrop belts lie between the Adirondacks and the Helderberg Escarpment; for the Hudson, they lie between the Catskills and the metamorphosed shale hills of the Taconics. Most of the province has low elevation and relief. It is underlain primarily by Ordovician shales which have been exposed by the southward and westward stripping off of Silurian and Devonian limestones.

REFERENCE 34



GEOLOGIC MAP OF NEW YORK

1970

Niagara Sheet

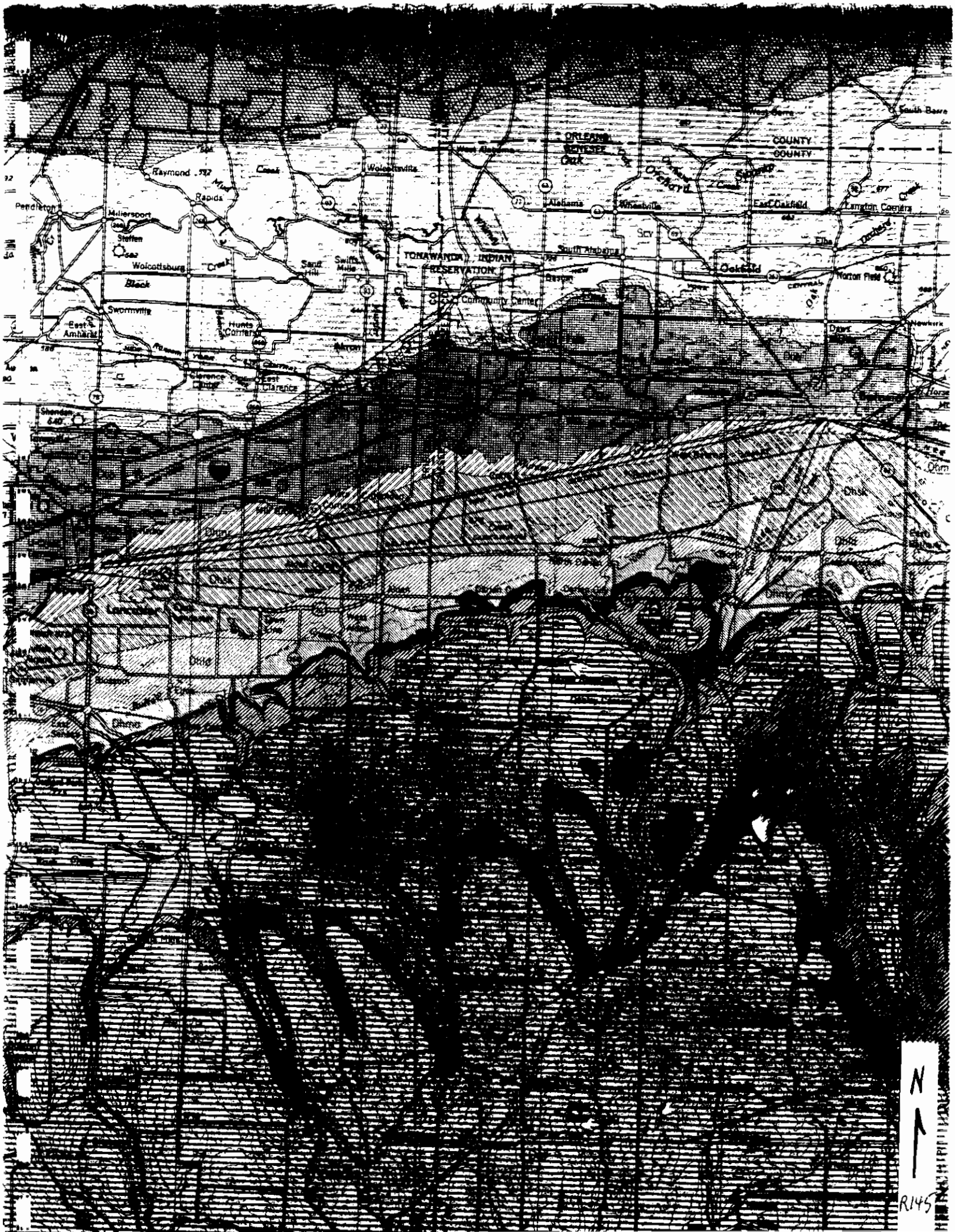
Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

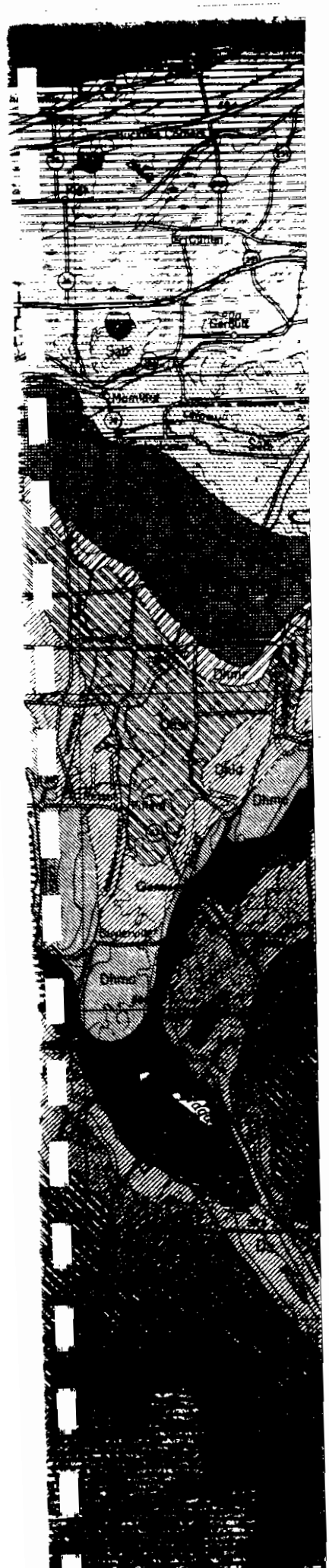
CONTOUR INTERVAL 100 FEET

R 1147


ORLEANS
GENESEE
COUNTY
COUNTY
Raymond
Rapids
Pendleton
Millersport
Steffen
Wolcottsburg
Swormville
East Amherst
Hunts Corners
Clarence Center
East Clarence
Wolcottsville
Alabama
Millersville
East Oakfield
Oakfield
South Alabama
TONAWANDA INDIAN RESERVATION
Community Center
Norton Field
Elba
Scv
Sand Hill
Swifts Mills
Lancaster
Bloomfield
Shelridan
Newstead
Akron
Yates
Orchard
Black
Oak
Dirla
Okm

N

R145



PALEOZOIC

Upper Devonian

Middle Devonian

Lower Devonian

Upper Silurian

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

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

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

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

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

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

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

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

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

Ds — Cashaqua and Middlesex Shales.

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

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

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

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

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

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

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

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

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

Sl — Guelph, Oak Orchard, Eramosa, and Goat Island

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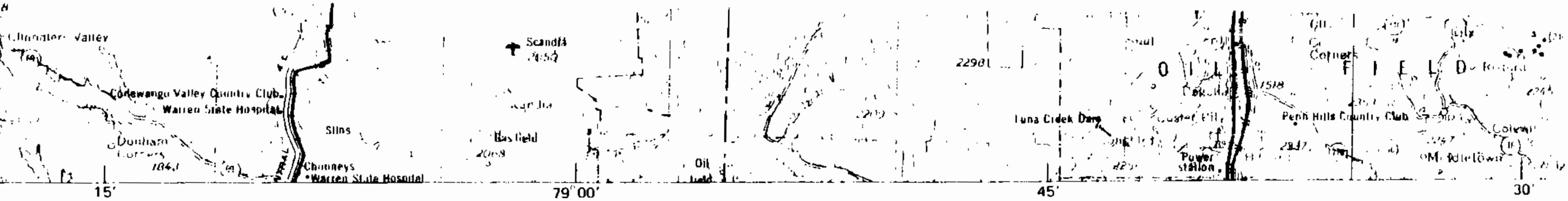
REFERENCE 35



SURFICIAL GEOLOGIC MAP OF NEW YORK

NIAGARA SHEET

Compiled and Edited by Donald H. Cadwell

1988

Scale 1:250,000

20 Statute Miles

30 Kilometers

15 Nautical Miles

CONTOUR INTERVAL 100 FEET

1948 MAGNETIC DECLINATION FOR THIS SHEET VARIES FROM 10°45' WESTERLY FOR THE CENTER OF THE WEST EDGE TO 13°00' WESTERLY FOR THE CENTER OF THE EAST EDGE
MEAN ANNUAL CHANGE IS NEGLIGIBLE.

Niagara Mohawk P.
Orange and Ricklai.
Rochester Gas and E

R147


LOCKPORT
AMHERST
Medina
Middleport
Shelby Center
Wheatville
Oakfield
East Amherst
Sheridan
Clarence
South Newstead
Williamsville
Great Buffalo
Bennington
Attica Center
Sheldon Corners
Halls Cor
Strykersville
TV tower
TV tower
Holland Racetrack
RIVER

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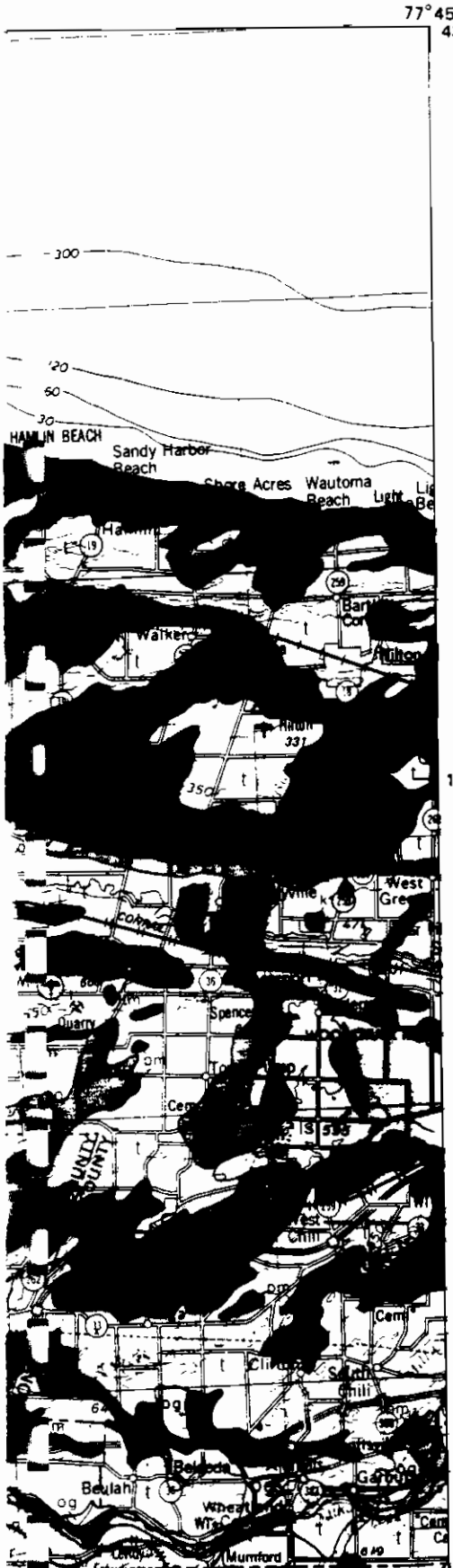
ГMENT



EXPLANATION

al — Recent deposits
Generally confined to floodplains within a valley,
oxidized, non-calcareous, fine sand to gravel,
in larger valleys may be overlain by silt,
subject to frequent flooding, thickness 1-10 meters.

alf — Alluvial fan
Fan shaped accumulations,
poorly stratified silt, sand and boulders,
at the foot of steep slopes,
generally permeable.

co — Colluvium
Mixture of sediments,
deposited by mass wasting,
thickness generally 1-5 meters.

cof — Colluvial fan
Fan shaped accumulation,
mixture of sediments,
at mouths of gullies,
thickness generally 1-5 meters.

cd — Colluvial diamicton
Mixture of sediments,
unique to region beyond Wisconsinan glacial limit,
rebedded saprolite and glacial debris,
may be old (Illinoian) drift,
homogenized by varying degrees of colluviation,
bedrock may sporadically crop out or be within 1-3 meters of the surface.

pm — Swamp deposits
Peat-muck, organic silt and sand in poorly drained areas,
un-oxidized,
may overlay marl and lake silts,
potential land instability,
thickness generally 2-20 meters.

lb — Lacustrine beach
Generally well sorted sand and gravel,
stratified, permeable and well drained,
deposited at a lake shoreline,
generally non-calcareous,
may have wave-winnowed lag gravel,
thickness variable (1-5 meters).

ld — Lacustrine delta
Coarse to fine gravel and sand,
stratified, generally well sorted,
deposited at a lake shoreline,
thickness variable (3-15 meters).

lsc — Lacustrine silt and clay
Generally laminated silt and clay,
deposited in proglacial lakes,
generally calcareous,
potential land instability,
thickness variable (up to 100 meters);

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deposited at a lake shoreline,
thickness variable (3–15 meters).

lsc — Lacustrine silt and clay
Generally laminated silt and clay,
deposited in proglacial lakes,
generally calcareous,
potential land instability,
thickness variable (up to 100 meters);
stipple overprint where bedrock is within 1–3 meters of the surface.

ls — Lacustrine sand
Sand deposits associated with large bodies of water,
generally a near-shore deposit or near a sand source,
well sorted, stratified,
generally quartz sand,
thickness variable (2–20 meters).

og — Outwash sand and gravel
Coarse to fine gravel with sand,
proglacial fluvial deposition,
well rounded and stratified,
generally finer texture away from ice border,
may be calcreted beyond Wisconsinan glacial limit,
thickness variable (2–20 meters).

fg — Fluvial gravel
Same as outwash sand and gravel,
except deposition farther from glacier,
age uncertain.

k — Kame deposits
Includes kames, eskers, kame terraces, kame deltas,
coarse to fine gravel and/or sand,
deposition adjacent to ice (if at ice margin, relief is below elevation of associated outwa
lateral variability in sorting, coarseness and thickness,
may be calcreted beyond Wisconsinan glacial limit,
thickness variable (10–30 meters).

usda — Undifferentiated stratified drift assemblage
Dominantly clay, silt and sand,
limited gravel and diamicton,
stratification includes undisturbed and deformed laminations,
ice contact structures,
lenticular, discontinuous bodies of gravel and flow till,
may represent dead-ice, disintegration and local ice-contact lake deposits in ice-margin
environments,
thickness variable (3–30 meters).

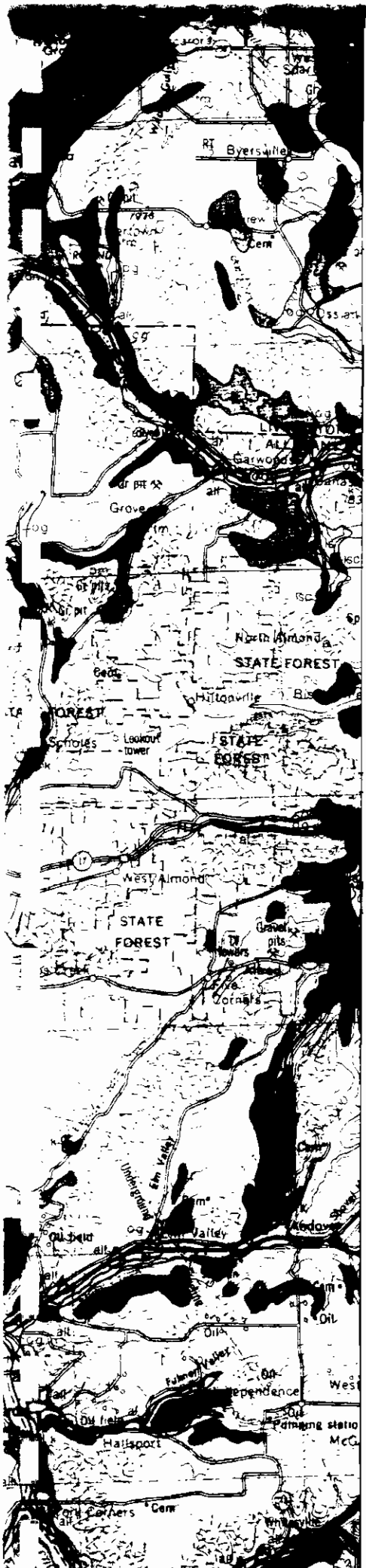
km — Kame moraine
Variable texture (size and sorting) from boulders to sand,
deposition at an ice margin during deglaciation,
relief is above elevation of associated outwash,
locally cemented with calcareous cement,
thickness variable (10–30 meters).

tm — Till moraine
More variably sorted than till,
generally more permeable than till,
deposition adjacent to ice,
more variably drained,
may include ablation till,
thickness variable (10–30 meters).

t — Till
Variable texture (e.g. clay, silt-clay, boulder clay),
usually poorly sorted diamict,
deposition beneath glacier ice,
relatively impermeable (loamy matrix),
variable clast content — ranging from abundant well-rounded diverse lithologies
relatively angular, more limited lithologies in upland tills, tends to be sandy in areas
or sandstone,
potential land instability on steep slopes,
thickness variable (1–50 meters).

r — Bedrock
Exposed or generally within 1 meter of the surface.

R150



above elevation of associated outwash,
locally cemented with calcareous cement,
thickness variable (10–30 meters).

tm — Till moraine
More variably sorted than till,
generally more permeable than till,
deposition adjacent to ice,
more variably drained,
may include ablation till,
thickness variable (10–30 meters).

t — Till
Variable texture (e.g. clay, silt-clay, boulder clay),
usually poorly sorted diamict,
deposition beneath glacier ice,
relatively impermeable (loamy matrix),
variable clast content — ranging from abundant well-rounded diverse lithologies in valley r
relatively angular, more limited lithologies in upland tills, tends to be sandy in areas underlain by
or sandstone,
potential land instability on steep slopes,
thickness variable (1–50 meters).

r — Bedrock
Exposed or generally within 1 meter of the surface.

Bedrock stipple overprint
Bedrock may be within 1–3 meters of the surface,
may sporadically crop out,
variable mantle of rock debris and glacial till.

MAP SYMBOLS

Contact

Glacial meltwater channel

.6 Dated radiocarbon locality

Esker

R151

REFERENCE 36

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

CLASSIFICATION CODE: 2a REGION: 9 SITE CODE: 915136
EPA ID:

NAME OF SITE : Sleepy Hollow Campgrounds (Feitshans)
STREET ADDRESS: Siehl Road

TOWN/CITY:	COUNTY:	ZIP:
Newstead	Erie	14001

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

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: Marie and Anthony Latello
CURRENT OWNER ADDRESS.: 146 Sheldon Avenue, Lancaster, NY
OWNER(S) DURING USE...: Feitshan Family
OPERATOR DURING USE...:
OPERATOR ADDRESS.....:
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From Prior To 1976

SITE DESCRIPTION:
Over 160 drums were discovered in a swampy area in a private campground in 1981. Sixty-eight (68) drums contained material, some originating from F.N. Burt Company of Buffalo. Wastes included glues, adhesives, and solvents. Due to the deteriorated condition of the drums, substantial quantities of wastes may have entered the groundwater through the swamp.

HAZARDOUS WASTE DISPOSED: TYPE	Confirmed-X	Suspected- QUANTITY (units)
Glues, adhesives, and solvents (toluene, ethyl benzene, xylene)		Unknown

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SITE CODE: 915136

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

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

LEGAL ACTION:

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

REMEDIAL ACTION:

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

GEOTECHNICAL INFORMATION:
SOIL TYPE:
GROUNDWATER DEPTH:

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Possible groundwater contamination.

ASSESSMENT OF HEALTH PROBLEMS:

Medium	Contaminants Available	Migration Potential	Potentially Exposed Population	Need for Investigation
Air				
Surface Soil				
Groundwater				
Surface Water				

Health Department Site Inspection Date :

MUNICIPAL WASTE ID:

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REFERENCE 37

DEC
PUBLICATION

"COMMUNITY RIGHT-TO-KNOW"

VOLUME III

PAST HAZARDOUS WASTE DISPOSAL PRACTICES

January 1952 - December 1981

Appendices I - P

APRIL 1, 1985

New York State/Department of Environmental Conservation

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SITE DESCRIPTION: DOW INDUSTRIAL SERVICE,3313 WALDEN AVE,DEPEW,NY — SITE CODE: 9-15-513 T

WASTE DESCRIPTION	QUANTITY	U	L	S	D	GENERATOR NAME	ID
BOILER CLEANING SOLUTION			X	-	-	ROCHESTER GAS & ELECTRIC(RUSSELL	G0813429

SITE DESCRIPTION: EAST AURORA GARBAGE DUMPS — SITE CODE: 9-15-514 T

WASTE DESCRIPTION	QUANTITY	U	L	S	D	GENERATOR NAME	ID
TETRACHLOROETHYLENE	1.00	T	-	X	-	MR. C CLEANERS	G0914509

SITE DESCRIPTION: ENVIROTEK, LTD.,4000 RIVER ROAD,TONAWANDA,NY 14150 — SITE CODE: 9-15-515 T

WASTE DESCRIPTION	QUANTITY	U	L	S	D	GENERATOR NAME	ID
KENSOL SOLVENT	5.70	T	X	-	X	CHEMICAL PROCESS & SUPPLY CO.	G0914119
UNKNOWN			X	X	-	TRICO PRODUCTS CORP.(WASHINGTON S	G0915153
40% WATER AND 60% ETHYL ACETATE	14.81	T	X	-	-	LABELON CORPORATION	GX800438

SITE DESCRIPTION: FEITSHANS, ALDEN NY — SITE CODE: 9-15-516 T

WASTE DESCRIPTION	QUANTITY	U	L	S	D	GENERATOR NAME	ID
WASTE SOLVENTS - COATER WASTE, INK WASH UP			-	-	-	F.N.BURT CO.INC.	G0915296

SITE DESCRIPTION: FORD MOTOR CO,S-3663 LAKESHORE RD,BUFFALO,NY,14219 — SITE CODE: 9-15-517 P

WASTE DESCRIPTION	QUANTITY	U	L	S	D	GENERATOR NAME	ID
SPENT HEAT TREATMENT MATERIAL CONTAINING CYANIDE	105.00	G	X	-	X	FORD MOTOR CO.(BUFFALO STAMPING P	G0915387

SITE DESCRIPTION: FRONTIER DISPOSAL,BUFFALO NY (RECLAMATION) — SITE CODE: 9-15-518 T

WASTE DESCRIPTION	QUANTITY	U	L	S	D	GENERATOR NAME	ID

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