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SUPPORTING DOCUMENTS FOR ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

Winsmith Division - UMC Corp. Site No. 915058

Village of Springville Erie County

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., *Director*

By:

DUNN ENGINEERING COMPANY

in association with

TAMS CONSULTANTS, INC.

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N.Y.S. DEPT. OF
ENVIRONMENTAL CONSERVATION
REGION 9

PRELIMINARY SITE ASSESSMENT
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A-1

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

WINSMITH DIVISION-UMC CORP.
NYS SITE NUMBER 915058
CITY OF SPRINGVILLE
ERIE COUNTY
NEW YORK STATE

Prepared For

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

Prepared By

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

In Association With

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2996 BELGIUM ROAD
BALDWINSVILLE, NEW YORK 13027

DATE OF SUBMITTAL: January 1989

GEOLOGY

OF

ERIE COUNTY

New York

By

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and

Irving H. Tesmer

Professor of Geology

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BUFFALO SOCIETY OF NATURAL SCIENCES

BULLETIN

Vol. 21. No. 3 Buffalo, 1963

Cephalopods

Agoniatites vanuxemi (Hall)
Michelinoceras (?) *subulatum* (Hall)
Goniatites sp.

Pelecypods

Aviculopecten exacutus Hall
Modiomorpha subalata (Conrad)
Gosseletia triquetra (Conrad)
Nuculites nyssa Hall
Leptodesma marcellense Hall
Orthonota (?) *parvula* Hall
Lunulicardium curtum Hall
Panenka lincklaeni Hall
L. fragilis (Hall)

Cricoconarida

Styliolina fissurella (Hall)
Tentaculites gracilistriatus Hall

ARTHROPODS

Isochilina (?) *fabacea* Jones
Primitiopsis punctulifera (Hall)

Trilobites

Greenops boothi (Green)
Phacops rana (Green)

INCERTAE SEDIS

Coleolus tenuicinctum Hall

SKANEATELES FORMATION

TYPE REFERENCE: Vanuxem (1840, p. 380).

TYPE LOCALITY: Skaneateles Lake, Onondaga County, New York; Skaneateles quadrangle.

TERMINOLOGY: See Cooper (1930). In Erie County, the Skaneateles is represented by two members: the Stafford Limestone Member (older) and the Levanna Shale Member.

AGE: Middle Devonian (Erian).

THICKNESS: 60 - 90 feet.

LITHOLOGY: In western New York, the Skaneateles Formation consists of gray limestone overlain by fissile gray to black shale.

PROMINENT OUTCROPS: Lake Erie shore between Bayview and Hamburg Town Park; Cazenovia Creek west of Ebenezer; Buffalo Creek between Gardenville and Blossom; Cayuga Creek at entrance to Como Lake Park; Plumbottom Creek in Lancaster.

CONTACTS: The lower contact is transitional with the older Oatka Creek Shale Member of the Marcellus Formation. The upper contact, at the base of the Centerfield Limestone Member of the Ludlowville Formation, cannot be seen in Erie County.

PALEONTOLOGY: The Skaneateles Formation has a varied fauna including coelenterates, bryozoans, brachiopods, gastropods, pelecypods, cephalopods, and arthropods.

Stafford Limestone Member

TYPE REFERENCE: Clarke (1894, p. 342).

TYPE LOCALITY: Stafford township, Genesee County, New York; Batavia quadrangle.

TERMINOLOGY: See Clarke (1901), Wood (1901) and Cooper (1930).

AGE AND CORRELATION: According to Cooper (1930), the Stafford is the oldest member of the Skaneateles Formation. However, Cooper *et al.* (1942, p. 1788) included the Stafford as the uppermost member of the Marcellus Formation. The Stafford correlates with the Mottville of central New York.

THICKNESS: According to Wood (1901), the Stafford is 8.5 feet thick at Lancaster and 15 feet thick at Lake Erie. Cooper (1930) suggests that the lower 6.5 feet of Wood's Stafford at Lancaster should be assigned to the Marcellus Formation.

LITHOLOGY: The Stafford is a gray limestone which weathers chocolate brown. Bedding varies from massive to shaly.

PROMINENT OUTCROPS: Buffalo Creek near junction of Mineral Springs Road and Indian Church Road; Cayuga Creek at entrance to Como Lake Park; Plumbottom Creek in Lancaster.

CONTACTS: The lower contact with the Oatka Creek Shale Member of the Marcellus Formation is often transitional in Erie County. The contact with the overlying Levanna Shale Member is usually fairly distinct.

PALEONTOLOGY: This faunal list has been modified from Wood (1901, pp. 139-181):

COELENTERATES

Aulopora sp.
Aulocystis dichotoma (Grabau)
A. jacksoni (Grabau)
Favosites placenta Rominger
Stereolasma rectum (Hall)

BRYOZOANS

Fistulipora sp.
Hederella canadensis (Nicholson)
H. cirrhosa Hall
Orthoptera tortalinea (Hall and Simpson)
Reptaria stolonifera Rolle
Stictopora sp.

BRACHIOPODS

Ambocoelia nana Grabau
Atrypa spinosa Hall
Camarotoechia horsfordi Hall
C. pauciplicata Wood
C. prolifica (?) (Hall)
C. sappho Hall
Chonetes lepidus Hall
C. mucronatus Hall
C. scitulus Hall
Crania recta Wood
Cryptonella planirostra (Hall)
C. rectirostra (Hall)
Douvillina inaequistriata (Conrad)
Elytha fimbriata (Conrad)
Emanuella subumbona (Hall)
Leiorhynchus limitare (Vanuxem)
Meristella barrisi Hall
M. meta Hall
Mucrospirifer mucronatus (Conrad)
Nucleospira concinna (Hall)

Productella dumosa Hall
Protoleptostrophia perplana (Conrad)
Rhipidomella vanuxemi Hall
Schizobolus concentricus (Vanuxem)
Schuchertella arctostriata (Hall)
Spinulicosta spinulicosta Hall
Trematospira gibbosa Hall
Tropidoleptus carinatus Conrad
Truncalosia truncata Hall

ANNELID (?)

Spirorbis sp.

MOLLUSKS

Gastropods

Bembexia capillaria rustica (Conrad)
Loxonema sp.
Mourlonia itys (Hall)
M. lucina (Hall)
Platyceras (Orthonychia) attenuatum Hall
Pleurotomaria sp.

Cephalopods

Michelinoceras (?) *eriense* (Hall)
M. (?) *exile* (Hall)
Nephriticeras bucinum (Hall)
Protokionoceras fenestrulatum (Clarke)
Spyroceras cegea (Hall)
Striacoceras typum (Saemann)

Pelecypods

Actinopteria muricata Hall
Cypricardinia indenta Conrad
Leptodesma marcellense Hall
Palaeaneilo sp.
Panenka lincklaeni Hall
P. mollis Hall
Pterinopecten exfoliatus Hall
Pterochaenia fragilis (Hall)

Cricoconarida

Styliolina fissurella (Hall)
Tentaculites gracilistriatus Hall

ARTHROPODS

Onychochilus nitidulus (?) Clarke
Primitiopsis punctulifera (Hall)

Trilobites

Greenops boothi (Green)
Otarion craspidota (Hall and Clarke)
Phacops rana (Green)

Levanna Shale Member

TYPE REFERENCE: Cooper (1930, p. 217).

TYPE LOCALITY: Near Levanna, east shore of Cayuga Lake, Cayuga County, New York; Auburn quadrangle.

TERMINOLOGY: See Cooper (1930). Wood (1901, pp. 153-154) referred to approximately three feet of shale and shaly limestone above the Stafford as Marcellus. Grabau (1898, pp. 65-66) used the term Upper Marcellus and Houghton (1914, pp. 21-23) applied the name Cardiff to beds now called Levanna. Luther (1914, pp. 14-16) also used the term Cardiff Shale but for only the lower beds of the Levanna. He called the upper beds of the Levanna the Skaneateles Shale.

AGE AND CORRELATION: Middle Devonian (Erian). The Levanna correlates with the Delphi Station, Pompey and Butternut Members of the Skaneateles Formation in central New York.

THICKNESS: The Levanna thickens eastward from about 45 feet at Lake Erie to 80 feet at the eastern edge of the county.

LITHOLOGY: The Levanna is a fissile shale, dark gray or black near the bottom, and lighter olive gray near the top. There are some calcareous beds and some pyritiferous concretions.

PROMINENT OUTCROPS: Lake Erie shore between Bayview and Hamburg Town Park; Cazenovia Creek west of Ebenezer; Buffalo Creek between Gardenville and Blossom.

CONTACTS: The contact with the underlying Stafford Limestone Member is usually fairly sharp. The upper contact with the Centerfield Limestone Member of the Ludlowville Formation cannot be seen in Erie County.

PALEONTOLOGY: Most of the following species were listed by Grabau (1898) and Wood (1901, pp. 139-181) from beds termed "Upper Marcellus" by them and now recognized as Levanna:

PLANTS

various spores

COELENTERATES

Aulocystis dichotoma (Grabau)

BRACHIOPODS

Ambocoelia umbonata (Conrad)
Atrypa reticularis (Linnaeus)
Chonetes lepidus Hall
C. mucronatus Hall
C. setigerus (Hall)
Leiorhynchus limitare (Vanuxem)
Meristella barrisi Hall
Mucrospirifer mucronatus (Conrad)
Spinulicosta spinulicosta Hall
Truncalosia truncata (Hall)

MOLLUSKS

Gastropods

Paracyclas lirata (Conrad)
Serpulospira laxus (Hall)

Cephalopods

Centroceras marcellense (Vanuxem)
Protokionoceras fenestrulatum (Clarke)
Spyroceras aegea (Hall)

Pelecypods

Lunulicardium curtum Hall
Nuculites triqueter Conrad
Pterochaenia fragilis (Hall)

Cricoconarida

Styliolina fissurella (Hall)
Tentaculites gracilistriatus (Hall)

ARTHROPOD

Trilobite

Phacops rana (Green)

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A-3

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

Prepared for the
Erie-Niagara Basin Regional Water Resources
Planning Board

by

A. M. La Sala, Jr.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
in cooperation with
THE NEW YORK STATE CONSERVATION DEPARTMENT
DIVISION OF WATER RESOURCES

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

Basin Planning Report ENB-3
1968

Table 5.--Development of ground water for public water supplies in the Erie-Niagara basin

Community	Source 1/	Average use (gallons per day)
Alden	253-829-3, 254-829-1, -2, -3	200,000
Arcade (includes Sandusky)	229-822-1, -2 231-825-2 232-825-1	700,000
Batavia	259-809-2, -6	1,000,000
Cattaraugus	Four areas of springs, 3 mi south to southeast of village and 219-851-1	200,000
Chaffee	233-828-1	15,000
Collins	229-856-1 230-856-1	50,000
Collins Center	229-849-1, -2	25,000
Corfu	257-824-1	60,000
Delevan	Numerous springs, 1 mi southwest of village, including 228-829-1Sp, -2Sp	50,000
East Aurora	246-836-1, -2, -3, -4	750,000
Gowanda	227-856-1	100,000
Holland	238-832-1, -2	80,000
Lawtons	Several springs including 232-855-1Sp	10,000
Machias	Springs south of village	50,000
North Collins	234-856-1, -3, -4, -5	250,000
North Java	Infiltration galleries and well 240-819-1	15,000
Otto	Infiltration gallery about 1 mi south of village	5,000
Springville	230-840-2, -3	400,000
Varysburg	Springs 1 mi east of village and 246-818-1	25,000
West Valley	Infiltration galleries including 223-836-1, -2	35,000

1/ Well or spring number is given for those sources that were inventoried during the study and are listed in tables 6 and 7.

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

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

Year completed:
- a - about
- b - before

Type of well:
- Drl - drilled
- Drv - driven

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

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

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

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

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

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

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

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

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

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

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

-1	do.	do.	[illegible]	Drl	[illegible]	[illegible]	--	[illegible]	900	[illegible]	[illegible]				
258-813-1	do.	H. Loveland	--	Drl	11.7	1	--	Shale	900	8.1	6-26-63	--	--		
-2	do.	do.	--	Drl	11	6	--	do.	900	17.1	6-26-63	Sw	--	[illegible]	Anal, iron, temp 49.0

Well number	County	Owner	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level: Below land surface (feet)	Water level: Date	Method of lift	Estimated pumpage or flow (gallons per day)	Use	Remarks
258-815-1	Genesee	F. Pack	--	Drl	31	6	--	Shale	920	8.1	6-26-63	Sw	50	D	Anal; iron; temp 49.0; yield 17 gpm (r).
258-822-1	do.	E. Lewis	1964	Drl	41.6	6	41.6	Sand	870	9.1	8-19-64	Sw	400	Ag	Anal; H_2S; yield 11 gpm (r).
258-827-1	do.	E. Powanski	1952	Drl	36.5	6	a34	Limestone	835	31.3	8-19-64	Jet	250	D	H_2S; yield 7 gpm (r).
258-833-1	Erie	B. Fields	1960	Drl	62.6	6	a13	do.	775	p22.7	8-18-64	Sub	300	D	Anal.
258-837-1	do.	A. Bowman	1956	Drl	76.2	6	a22	do.	740	19.4	8-18-64	Jet	300	D	Do.
258-843-1	do.	W. Voss	--	Drl	62	8	--	Camillus Shale	615	Flow	--	--	5,000	A	Anal; H_2S; temp 50.8, 8-14-64, flows about 5 gpm at LS.
258-853-1	do.	Linde Div., Union Carbide Corp.	1944	Drl	r375	8	87	Camillus Shale and Lockport Dolomite	600	r,p115	1944	Tur	--	U	H_2S; drilled to 130-ft depth in 1943 and deepened in 1944; "black" water entering from Lockport Dolomite after deepening made well unusable, yield 3,000 gpm (r); pumping test, 1,090 gpm, dd 53 ft.
-2	do.	do.	1944	Drl	r375	8	86	do.	600	r,p82	1944	Tur	--	U	H_2S; drilled to 157-ft depth in 1943 and deepened in 1944; water obtained at 90 ft from a gypsiferous zone in Camillus Shale and "black" water at 317 ft from the Lockport Dolomite which was first penetrated at 268 ft; yield from upper water-bearing zone 90 gpm, dd 22 ft; lower zone was not tested.
258-855-1	do.	Dunlop Tire & Rubber Co.	1943	Drl	r132	12	69	Camillus Shale	590	p36	10-27-52	Tur	--	I	H_2S; pumping rate 1,000 gpm (r), pumping test 500 gpm, swl 36 ft, dd 17 ft; this well and well 258-855-2 yield a combined total of 600,000 gpd.
-2	do.	do.	1943	Drl	r139.7	--	71	do.	590	p54.3	7-16-64	Tur	--	I	H_2S; pumping rate about 1,000 gpm (r); pumping test 1,000 gpm, swl 36 ft, dd 26 ft; this well and well 258-855-1 yield a combined total of 600,000 gpd.
-3	do.	do.	1952	Drl	r120	--	--	do.	592	p39	10-27-52	Tur	--	I	H_2S; pumping test 1,500 gpm, swl 39 ft, dd 18 ft.
259-809-1	Genesee	O-AT-KA Milk Products Cooperative, Inc.	1963	Drl	r60	20, 16	--	Sand and gravel	890	r15	4-27-62	Tur	1,000,000	I	Anal; screen, 13 1/8-inch diameter, 10 ft of 60-slot, 10 ft of 125-slot, from 40-60 ft; pumping rate about 1,200 gpm (r); pumping test 600 gpm, swl 15 ft, dd 1.5 ft (r).
-2	do.	City of Batavia	1963	Drl	r69	16	--	do.	890	14.0	5- 8-63	Tur	--	PS	Anal; H_2S; screen, 16-inch telescope, 125-slot, 52.9-69 ft; pumping rate 1,000 gpm.
-3	do.	do.	1962	Drl	54.1	8	--	do.	890	11.7	5- 6-63	--	--	T	Depth 61 ft (r); screen, 6-inch diameter, 100-slot, from 51-61 ft; pumping test 235 gpm, swl 18.3 ft, dd 0.5 ft (r); DW.
-4	do.	O-AT-KA Milk Products Cooperative, Inc.	1963	Drl	52.2	8	--	do.	890	p13.0	5- 7-63	--	--	I	
-5	do.	City of Batavia	1962	Drl	60.2	8	--	do.	890	13.7	5- 8-63	--	400,000	I	Depth 70 ft (r); screen, 6-inch diameter, 100-slot, from 60-70 ft; pumping test (r), 235-259 gpm, swl 18.5 ft, dd 0.5 ft after 24 hours discharge.
-6	do.	do.	1963	Drl	r75	16	--	do.	895	r14.2	5-27-63	Tur	--	PS	Screen, 16-inch diameter; test pumped at 1,000 gpm
-7	do.	do.	1963	Drl	r60	8	--	do.	890	r13.7	2-15-62	--	400,000	X, T	H_2S (r); pumping test 200 gpm, swl 13.7 ft, dd 4.4 ft after 24 hours discharge.
259-817-1	do.	D. Beals	1960	Drl	r33	--	--	do.	865	r3	1960	Sw	100	D	Anal; H_2S; yield 4 gpm (r).
259-818-1	do.	Bitterman Bros., Inc.	--	Drl	18.3	12, 6	--	do.	--	6.6	9-17-63	Sw	--	C, D	
259-820-1	do.	A. Winters	1960	Drl	22.6	6	--	Limestone	880	7.4	9-17-63	Sw	500	C, D	
259-822-1	do.	J. Daley	1956	Drl	70	6	--	Sand	900	27.1	8-19-64	Jet	200	D	Anal; H_2S.

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

Well number	County	Owner	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level: Below land surface (feet)	Water level: Date	Method of lift	Estimated pumpage or flow (gallons per day)	Use	Remarks
230-838-1	Erie	B. Mooney	--	Drv	14.1	1 1/4	--	Sand and gravel	1,380	3.8	5- 6-64	--	--	A	OW.
230-840-1	do.	Village of Springville	1931	Drl	r139	18, 6	--	do.	1,350	16	7-31	--	--	A, PS	Originally finished with shutter screen, 12-inch diameter from 121-135 ft; pumping test 830 gpm, dd 25 ft; gravel packed liner with 6-inch diameter screen from 119.5-135 ft, then installed to reduce amount of sand pumped from well; abandoned about 1944 because of sand pumping.
-2	do.	do.	1944	Drl	r137	18, 12	--	do.	1,350	pr27	1-29-63	Tur	200,000	PS	H_2S; pumping rate 630 gpm; screen, 12-inch diameter from 122-137 ft; gravel packed; pumping test on 8-5-44, 672 gpm, swl 27.4 ft, dd 16.4 ft after 8 hours pumping (swl at this time probably was affected by pumping from wells 230-840-1 and -3).
-3	do.	do.	1942	Drl	r159	18, 10	--	do.	1,350	p31.5	1-29-63	Tur	200,000	PS	H_2S; pumped at 600 gpm; screen, 10-inch diameter, 100-slot from 144-149 ft; 80-slot from 149-159 ft; gravel packed; pumping test 5-14-42, 513 gpm, swl 37.7 ft, dd 20.6 ft (swl probably affected by pumping of well 230-840-1).
230-842-1	do.	G. Kroll	1962	Drl	125	6	19	Shale	1,335	p46	7-28-64	Jet	200	D	Anal; iron; yield 1 gpm (r).
230-843-1	do.	C. Hunt	1964	Drl	r330	6, 4	--	Sand	1,385	199	8-11-64	--	--	D	Yield 5 gpm (r); casing backfilled with washed gravel to 310 ft.
230-845-1	do.	F. Schue	1961	Drl	37.9	6	--	Gravel	1,390	20.6	8-28-64	Sw	200	D	Yield 5 gpm.
230-856-1	do.	Town of Collins, Water Districts Nos. 1 & 2	1948	Drl	r42	18, 10	--	do.	835	r17	1948	Tur	--	PS	Pumping rate 150 gpm; construction details are reported to be similar to those of well 229-856-1.
-2	do.	Dan Gernatt Gravel Products, Inc.	a1956	Drl	r36	--	--	Sand and gravel	830	--	--	Tur	100,000	I	Anal; supplies gravel plant, use is seasonal; yield 400 gpm.
-3	do.	do.	1962	Drl	30.3	18	--	do.	840	3.7	8-12-64	Tur	2,000	I	Anal; supplies cleaner at asphalt plant, use is seasonal; casing perforated from 26-30 ft; pumping test, 150 gpm, swl 4 ft, dd 7 ft.
231-825-1	Wyoming	Village of Arcade	1962	Drl	r50	12	--	Gravel	1,490	r16	3-26-62	--	--	T	Screen and gravel pack, 38-48 ft; pumping test, 150 gpm, swl 16 ft, dd 3.
-2	do.	do.	1962	Drl	r49	20, 12	--	Sand and gravel	1,490	r17	11-28-62	Tur	--	PS	Screen, 12-inch diameter, 100-slot, 39-49 ft; gravel packed; pumping test 500 gpm, swl 17 ft, dd 7.1 ft after 24 hours pumping.
231-830-1	Cattaraugus	M. Schaper	1956	Drl	200	6	--	do.	1,355	10.5	8- 7-64	Jet	300	D	On same property two wells, 60 ft deep, penetrated clay and were dry; a well 400 ft deep flowed but yielded sulfurous water and was destroyed.
-2	do.	C. Kims	1959	Drl	450	6	454	do.	1,375	Flow	8- 7-64	Sub	3,000	F	
231-831-1	Erie	W. Schlener	1962	Drv	r22	1 1/4	--	do.	1,410	--	--	Sw	400	D	
231-833-1	do.	A. Zisser	1964	Drl	280	6, 4	--	Sand	1,390	8.1	8- 5-64	Sub	--	D	Yield 2 1/2 gpm (r).
-2	do.	J. Rung	1959	Drl	59.3	6	--	Gravel	1,430	39.7	8- 5-64	Jet	350	D	Anal; yield about 25 gpm bailer test.
-3	do.	C. Butler	1962	Drl	94.4	6	--	do.	1,430	p47.2	8- 5-64	Jet	3,000	F	Iron; cased to 150 ft (r, driller); yield 25 gpm bailer test when drilled; yield was inadequate in summer 1964; well may be partly filled in with sand entering at bottom of casing.
231-835-1	do.	P. Schuster	1958	Drl	99.7	6	--	Sand and gravel	1,445	p90.8	8- 6-64	Sub	100	D	Anal.
231-838-1	do.	G. Loncasty	--	Drv	17.6	1 1/4	--	do.	1,400	3.5	5-12-64	--	--	A, Ag	Screened from 14.9-17.6 ft; OW.
231-839-1	do.	K. Ploetz	1956	Drl	29.0	6	--	do.	1,400	18.8	5- 6-64	Jet	200	D	

A-4

DUNN GEOSCIENCE CORP

SEPTEMBER 6, 1990

AREANAME	AREADESC	POP90	
RTE 242/RTE 16, MACHIAS, NY	Ring: 1 mile(s): 42.4078 78.4842	139	
RTE 242/RTE 16, MACHIAS, NY	Ring: 2 mile(s): 42.4078 78.4842	2004	
RTE 242/RTE 16, MACHIAS, NY	Ring: 3 mile(s): 42.4078 78.4842	2004	
STRINGHAM RD S OF RTE 55, LAGRANGE, NY	Ring: 1 mile(s): 41.6633 73.7972	0	
STRINGHAM RD S OF RTE 55, LAGRANGE, NY	Ring: 2 mile(s): 41.6633 73.7972	4758	
STRINGHAM RD S OF RTE 55, LAGRANGE, NY	Ring: 3 mile(s): 41.6633 73.7972	12222	
CRICKET HILL RD EAST OF RT 22, DOVER, NY	Ring: 1 mile(s): 41.6756 73.5711	2068	
CRICKET HILL RD EAST OF RT 22, DOVER, NY	Ring: 2 mile(s): 41.6756 73.5711	4137	
CRICKET HILL RD EAST OF RT 22, DOVER, NY	Ring: 3 mile(s): 41.6756 73.5711	7161	
PINE HILL RD/RTE 44, PLEASANT VALLEY, NY	Ring: 1 mile(s): 41.7506 73.8078	2469	
PINE HILL RD/RTE 44, PLEASANT VALLEY, NY	Ring: 2 mile(s): 41.7506 73.8078	2469	
PINE HILL RD/RTE 44, PLEASANT VALLEY, NY	Ring: 3 mile(s): 41.7506 73.8078	6366	
S ROBERTS RD/NEW RD, DUNKIRK, NY	Ring: 1 mile(s): 42.4736 79.3056	1987	
S ROBERTS RD/NEW RD, DUNKIRK, NY	Ring: 2 mile(s): 42.4736 79.3056	14905	
S ROBERTS RD/NEW RD, DUNKIRK, NY	Ring: 3 mile(s): 42.4736 79.3056	24419	
WASHINGTON AVE/18TH ST, JAMESTOWN, NY	Ring: 1 mile(s): 42.1081 79.2456	11132	
WASHINGTON AVE/18TH ST, JAMESTOWN, NY	Ring: 2 mile(s): 42.1081 79.2456	33672	
WASHINGTON AVE/18TH ST, JAMESTOWN, NY	Ring: 3 mile(s): 42.1081 79.2456	40054	
NE OF OBI RD/RTE 417, LITTLE GENESEE, NY	Ring: 1 mile(s): 42.0361 78.1931	0	
NE OF OBI RD/RTE 417, LITTLE GENESEE, NY	Ring: 2 mile(s): 42.0361 78.1931	703	
NE OF OBI RD/RTE 417, LITTLE GENESEE, NY	Ring: 3 mile(s): 42.0361 78.1931	2078	
E NIAGARA ST/WALES AVE, TONAWANDA, NY	Ring: 1 mile(s): 43.0221 78.8595	16569	
E NIAGARA ST/WALES AVE, TONAWANDA, NY	Ring: 2 mile(s): 43.0221 78.8595	45789	
E NIAGARA ST/WALES AVE, TONAWANDA, NY	Ring: 3 mile(s): 43.0221 78.8595	94917	
WALES AVE/FILLMORE AVE, TONAWANDA, NY	Ring: 1 mile(s): 43.0153 78.8595	15379	
WALES AVE/FILLMORE AVE, TONAWANDA, NY	Ring: 2 mile(s): 43.0153 78.8595	51604	
WALES AVE/FILLMORE AVE, TONAWANDA, NY	Ring: 3 mile(s): 43.0153 78.8595	100517	
MILITARY RD/SAYRE AVE, BUFFALO, NY	Ring: 1 mile(s): 42.9473 78.8909	23669	
MILITARY RD/SAYRE AVE, BUFFALO, NY	Ring: 2 mile(s): 42.9473 78.8909	74062	ANACONDA
MILITARY RD/SAYRE AVE, BUFFALO, NY	Ring: 3 mile(s): 42.9473 78.8909	157259	
MILITARY RD/WHEELER ST, TONAWANDA, NY	Ring: 1 mile(s): 43.0025 78.8814	15508	
MILITARY RD/WHEELER ST, TONAWANDA, NY	Ring: 2 mile(s): 43.0025 78.8814	44353	Spaulding
MILITARY RD/WHEELER ST, TONAWANDA, NY	Ring: 3 mile(s): 43.0025 78.8814	97769	
2250 MILITARY RD, TONAWANDA, NY	Ring: 1 mile(s): 42.9984 78.8822	14257	
2250 MILITARY RD, TONAWANDA, NY	Ring: 2 mile(s): 42.9984 78.8822	46922	
2250 MILITARY RD, TONAWANDA, NY	Ring: 3 mile(s): 42.9984 78.8822	106180	
KENMORE AVE/I-190, TONAWANDA, NY	Ring: 1 mile(s): 42.9753 78.9108	2176	
KENMORE AVE/I-190, TONAWANDA, NY	Ring: 2 mile(s): 42.9753 78.9108	30012	
KENMORE AVE/I-190, TONAWANDA, NY	Ring: 3 mile(s): 42.9753 78.9108	81425	
MILITARY RD/HAMPTON PKWY, TONAWANDA, NY	Ring: 1 mile(s): 42.9786 78.8856	14991	ALUM - MTCNRLATE

AREANAME : AREANAME
AREADESC : AREADESC
POP90 : CUR EST TOTAL POPULATION

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DUNN GEOSCIENCE CORP

SEPTEMBER 6, 1990

AREANAME	AREADESC			POP90
MILITARY RD/HAMPTON PKWY, TONAWANDA, NY	Ring: 2 mile(s):	42.9786	78.8856	59560
MILITARY RD/HAMPTON PKWY, TONAWANDA, NY	Ring: 3 mile(s):	42.9786	78.8856	128481
172 EATON ST, SPRINGVILLE, NY	Ring: 1 mile(s):	42.5144	78.6604	4568
172 EATON ST, SPRINGVILLE, NY	Ring: 2 mile(s):	42.5144	78.6604	5005
172 EATON ST, SPRINGVILLE, NY	Ring: 3 mile(s):	42.5144	78.6604	6991
HOPKINS ST/MARILLA ST, BUFFALO, NY	Ring: 1 mile(s):	42.8360	78.8326	12461
HOPKINS ST/MARILLA ST, BUFFALO, NY	Ring: 2 mile(s):	42.8360	78.8326	55717
HOPKINS ST/MARILLA ST, BUFFALO, NY	Ring: 3 mile(s):	42.8360	78.8326	91920

AREANAME : AREANAME
AREADESC : AREADESC
POP90 : CUR EST TOTAL POPULATION

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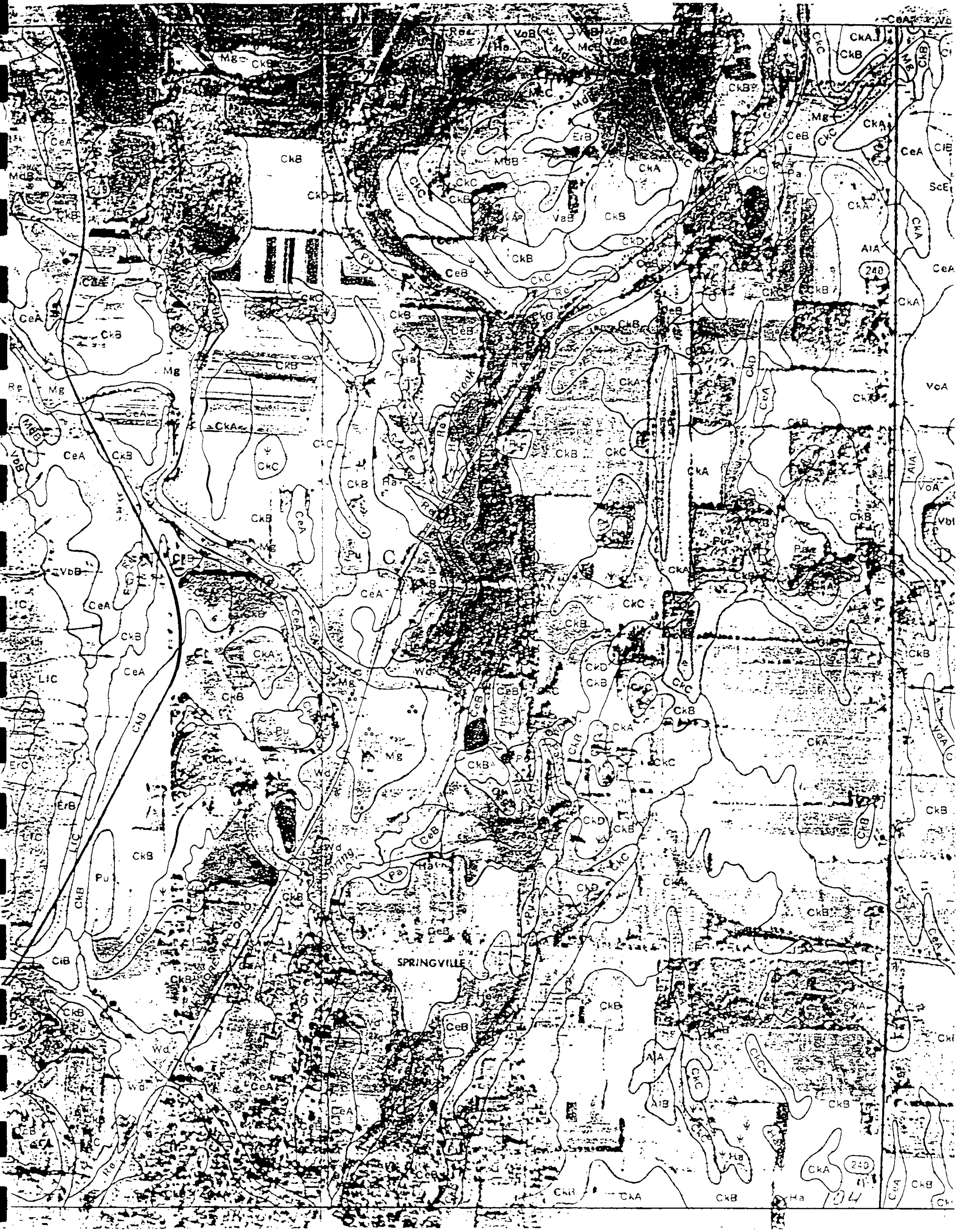
United States
Department of
Agriculture

Soil
Conservation
Service

in Cooperation with
the Cornell University
Agricultural
Experiment Station

Soil Survey of Erie County, New York


SPRINGVILLE
Brook
Spring
240
219

A-6

KEY TO MAP

500-Year Flood Boundary	ZONE B
100-Year Flood Boundary	
Zone Designations*	
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
MAY 17, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
JUNE 4, 1976

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

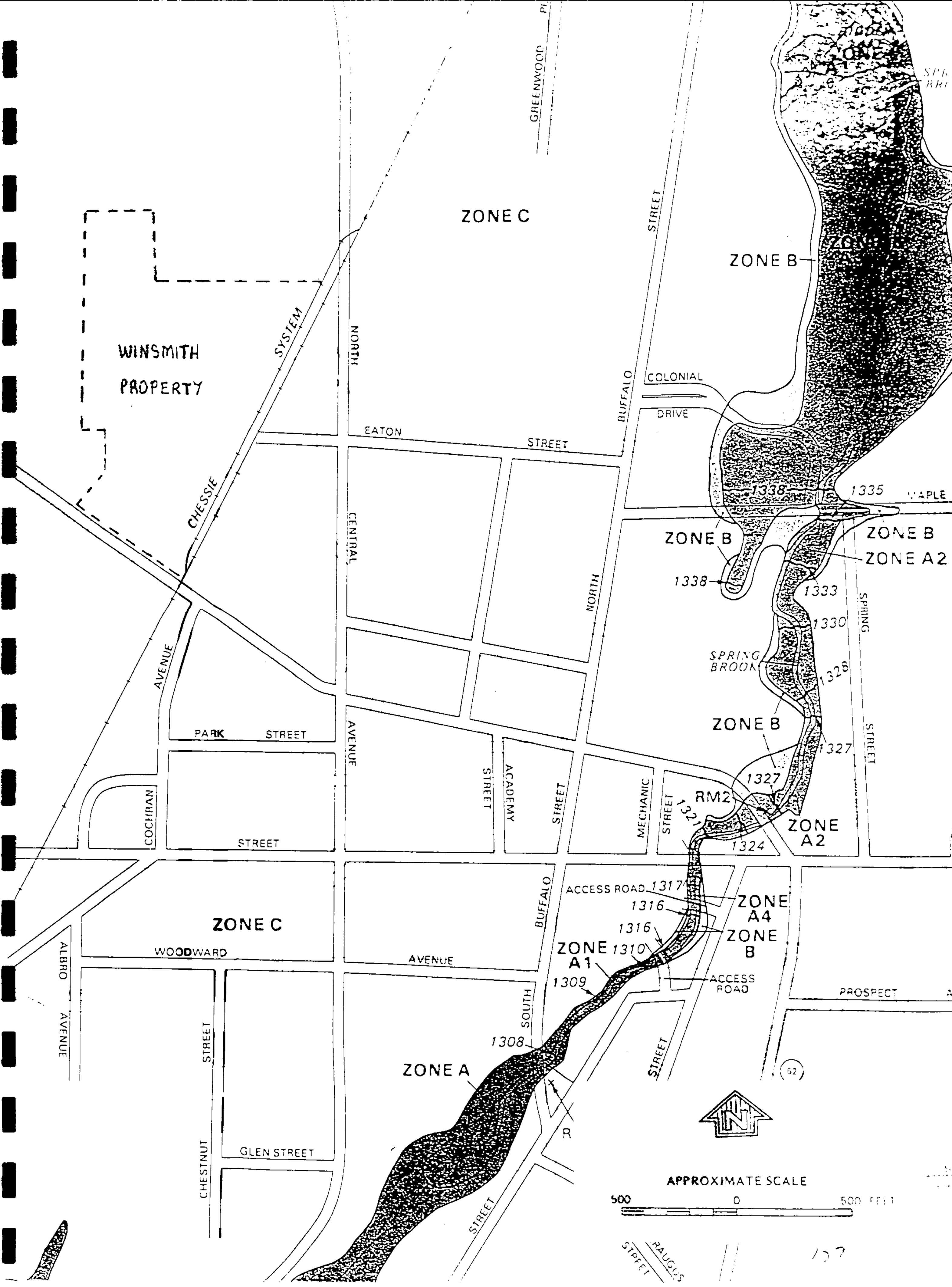
VILLAGE OF
SPRINGVILLE, NEW YORK
ERIE COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
360258 0001 C

MAP REVISED:
JULY 17, 1986

Federal Emergency Management Agency



ZONE C
WINSMITH PROPERTY
CHESSIE SYSTEM
NORTH CENTRAL AVENUE
BUFFALO STREET
GREENWOOD
COLONIAL DRIVE
EATON STREET
MAPLE
ZONE B
ZONE A2
ZONE B
ZONE B
1338
1335
1338
1333
1330
SPRING BROOK
1328
1327
1327
SPRING STREET
ZONE B
RM2
ZONE A2
1321
1324
PARK STREET
AVENUE
COCHRAN
STREET
ACADEMY
STREET
NORTH
STREET
MECHANIC
STREET
ACCESS ROAD
1317
ZONE A4
1316
1316
ZONE B
ZONE A1
1310
ZONE C
WOODWARD AVENUE
BUFFALO
ALBRO AVENUE
1309
ACCESS ROAD
PROSPECT
SOUTH
1308
ZONE A
STREET
CHESTNUT STREET
GLEN STREET
STREET
APPROXIMATE SCALE
500 0 500 FEET
62
N

A-7

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

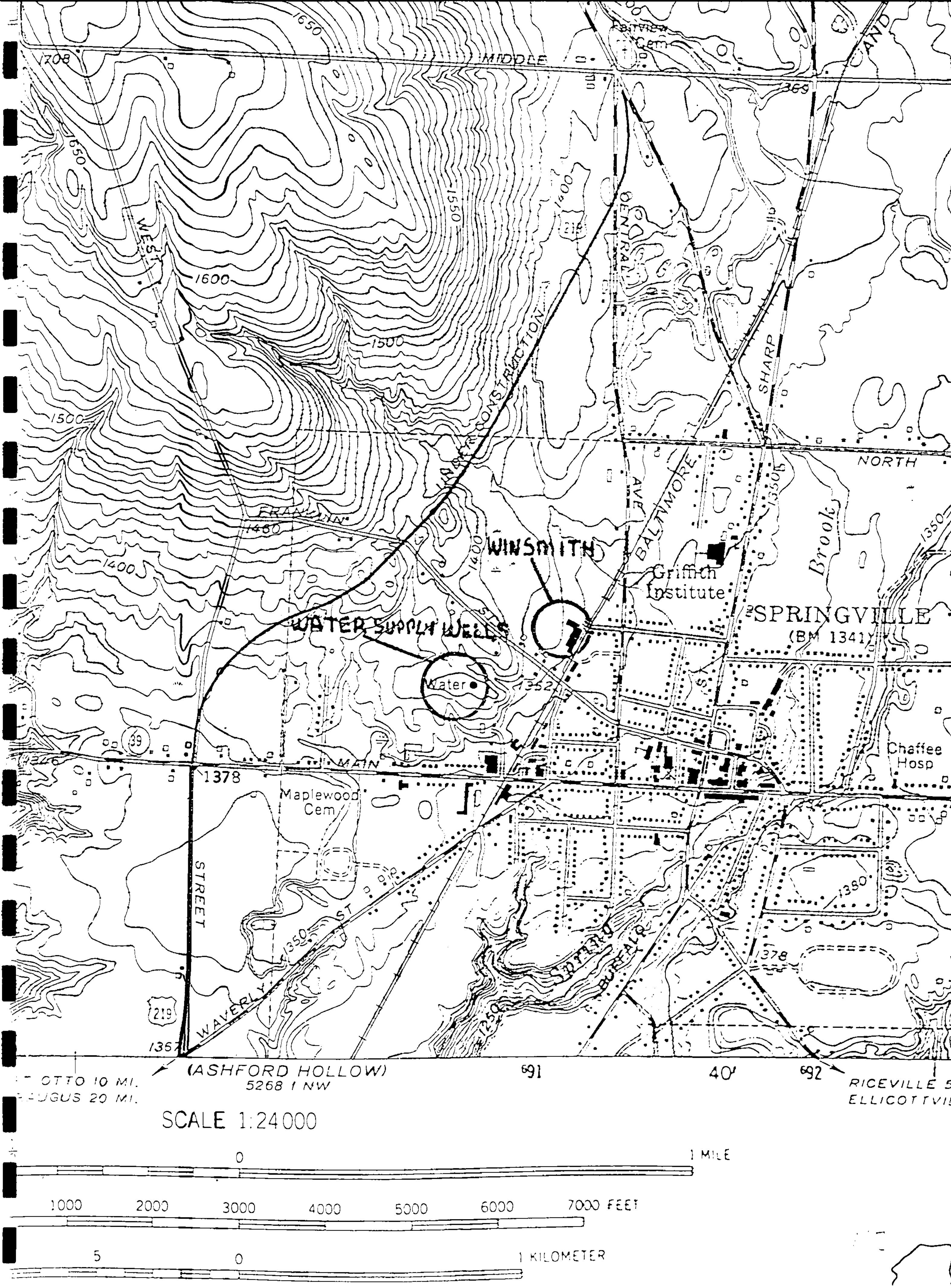
NIAGARA COUNTY

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

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982

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

ERIE and NIAGARA COUNTIES



Fairview Cem
MIDDLE
1708
1650
1600
1550
1500
1460
1400
1350
WEST
FRANKLIN
CENTRAL
AVE
BALTIMORE
SHARP
NORTH
Brook
WINSMITH
Griffith Institute
SPRINGVILLE
(BM 1341)
WATER SUPPLY WELLS
Water
1352
MAIN
1378
Maplewood Cem
Chaffee Hosp
STREET
WAVERLY
ST
BUFFALO
219
39
1367
1380
(ASHFORD HOLLOW)
5268 I NW
691
40'
692
OTTO 10 MI.
RICEVILLE 5
ELLICOTTVIL
SCALE 1:24000
1 MILE
0
1000
2000
3000
4000
5000
6000
7000 FEET
5
1 KILOMETER

A-8

GEOLOGIC MAP OF NEW YORK

1970

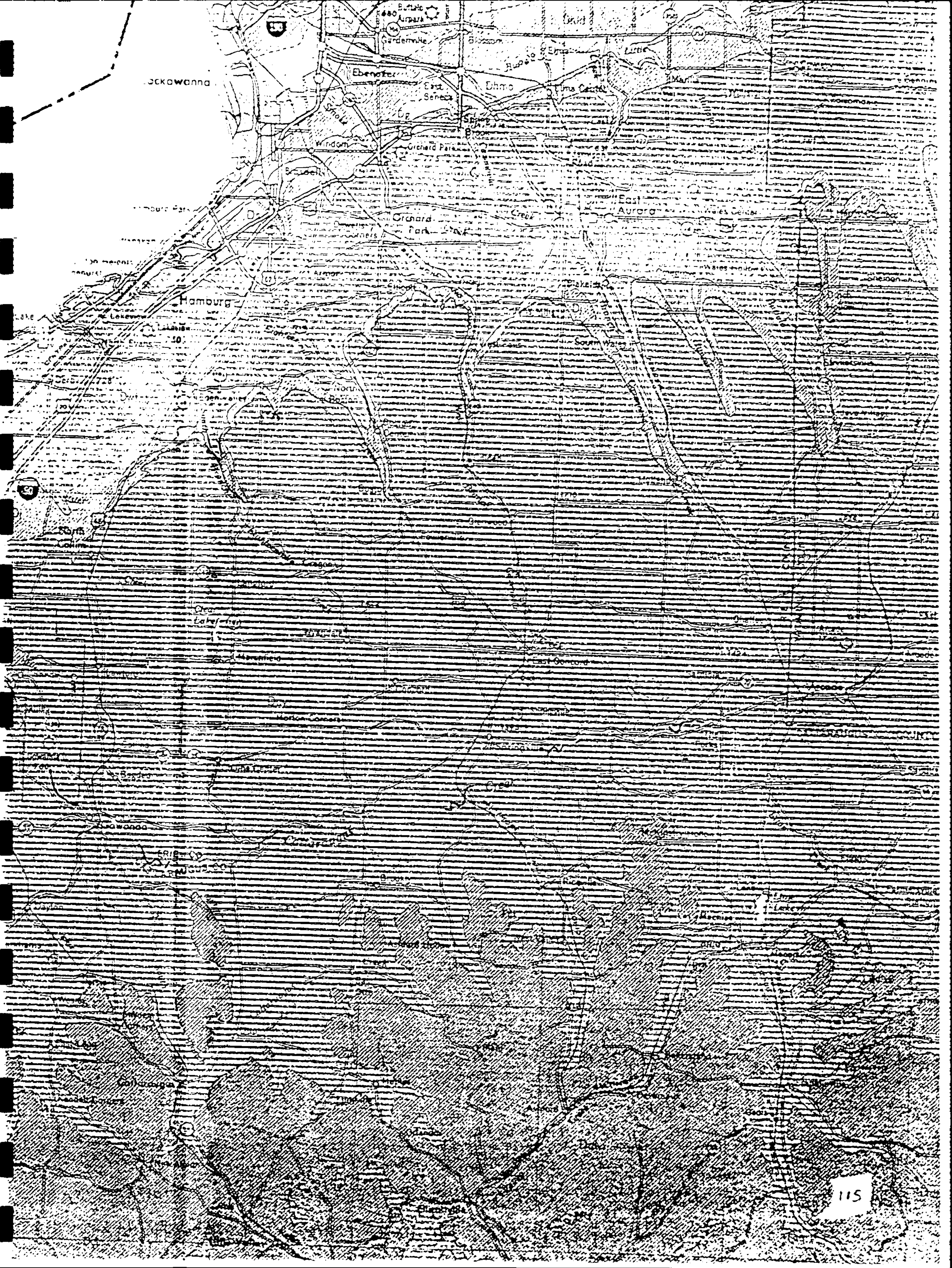
Niagara Sheet

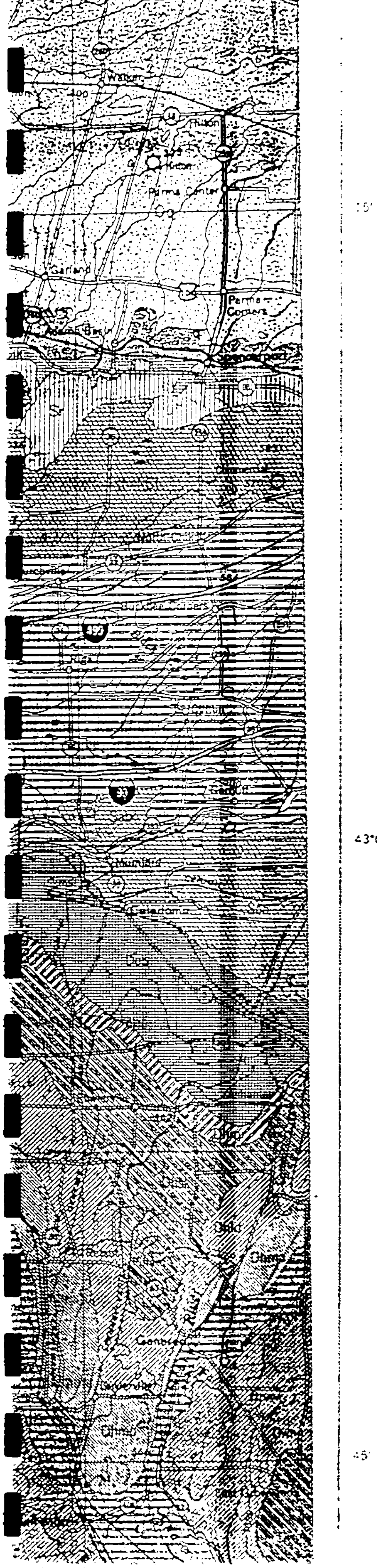
Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET


Hamburg
Orchard Park
East Aurora
Ebenezer
Windom
South Wales
East Concord
Morton Corners



PALEOZOIC

Lower Pennsylvanian

POTTSVILLE GROUP

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

Lower Mississippian

POCONO GROUP

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

Upper Devonian

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

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

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

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

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

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

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

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

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

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

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

- **Ds** — Cashaqua and Middlesex Shales.

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

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

Middle Devonian

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

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

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ONONDAGA AND BOIS BLANC LIMESTONES

A-9

Tech/5322/4.2.19

02-8603-32A-SI

FINAL DRAFT
SITE INSPECTION REPORT
AND HAZARD RANKING SYSTEM MODEL
UMC aka PEERLESS WINSMITH

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8603-32A
CONTRACT NO. 68-01-6699

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 17, 1986

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

Joseph Mayo
JOSEPH MAYO
PROJECT MANAGER

REVIEWED/APPROVED BY

Ronald M. Naman
RONALD M. NAMAN
REGIONAL PROJECT MANAGER

119

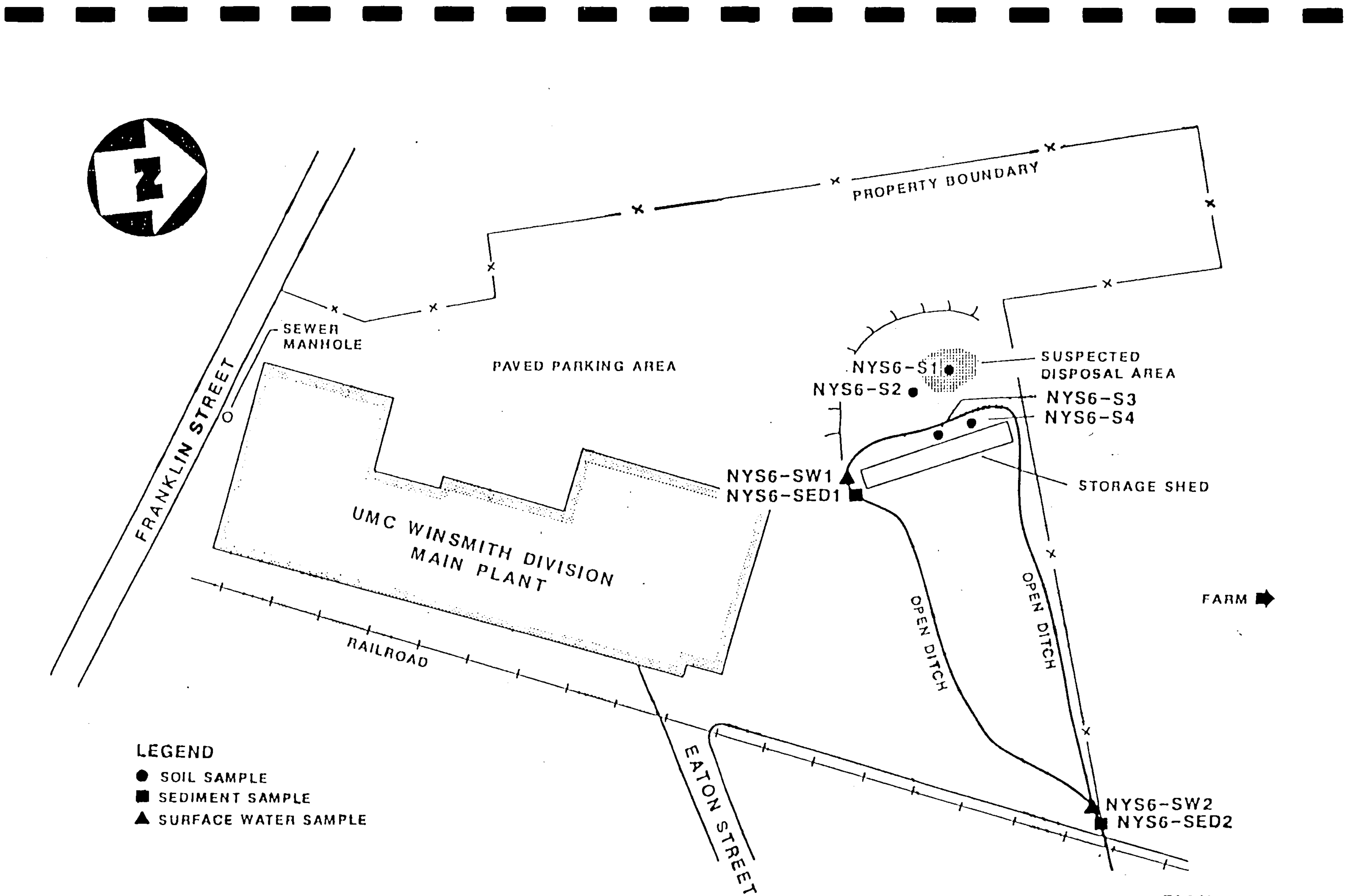


FIGURE 3

SAMPLE LOCATION MAP

UMC aka PEERLESS WINSMITH, SPRINGVILLE, N.Y.

(NOT TO SCALE)

NUS CORPORATION
A Halliburton Company

ANALYTICAL DATA
NAME: UMC a.k.a.PEERLESS WINSMITH
SAMPLING DATE: 6/10/86
CASE: 6064

VOLATILES

SAMPLE NUMBER MATRIX UNITS	NYS6-SW1 WATER UG/L	NYS6-SED1 SEDIMENT UG/KG	NYS6-SW2 WATER UG/L	NYS6-SED2 SEDIMENT UG/KG	NYS6-S1 SOIL UG/KG	NYS6-S2 SOIL UG/KG	NYS6-S3 SOIL UG/KG	NYS6-S4 SOIL UG/KG	NYS6-BL1 BLANK UG/L
Chloromethane									
Bromomethane									
Vinyl Chloride									
Chloroethane									
Methylene Chloride		E		57	J	J	J	E	J
Acetone		E		162	47	8530	13	26	
Carbon Disulfide									
1,1-Dichloroethene									
1,1-Dichloroethane									
Trans-1,2-Dichloroethene									
Chloroform									
1,2-Dichlorpethane									
2-Butanone				J	J				
1,1,1-Trichloroethane									
Carbon Tetrachloride									
Vinyl Acetate									
Bromodichloromethane						J			
1,1,2,2-Tetrachloroethane							J		
1,2-Dichloropropane									
Trans-1,3-Dichloropropene						J			
Trichloroethene						J			
Dibromochloromethane						J			
1,1,2-Trichloroethane						J			
Benzene						J			
Cis-1,3-Dichloropropene									
2-Chloroethylvinylether									
Bromoform						J			
2-Hexanone			J			J			
4-Methyl-2-Pentanone					J	J		J	
Tetrachloroethene						J			
Toluene				J		J			
Chlorobenzene									
Ethylbenzene				J					
Styrene									
Total Xylenes						195000			

NOTES:
Blank space - compound analyzed for but not detected
E - analysis did not pass QA/QC requirements
J - compound present below the specified detection limit
B - compound found in laboratory blank as well as the sample, indicates possible/probable blank contamination

ANALYTICAL DATA
NAME: UNC a.k.a.PEERLESS WINSMITH
SAMPLING DATE: 6/10/86
CASE: 6064

SEMI-VOLATILES									
SAMPLE NUMBER	NYS6-SW1	NYS6-SED1	NYS6-SW2	NYS6-SED2	NYS6-S1	NYS6-S2	NYS6-S3	NYS6-S4	NYS6-BL1
MATRIX	WATER	SEDIMENT	WATER	SEDIMENT	SOIL	SOIL	SOIL	SOIL	BLANK
UNITS	UG/L	UG/KG	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L
N-Nitrosodimethylamine									
Phenol									
Aniline									
Bis(2-Chloroethyl)Ether									
2-Chlorophenol									
1,3-Dichlorobenzene									
1,4-Dichlorobenzene									
Benzyl Alcohol									
1,2-Dichlorobenzene									
2-Methylphenol									
Bis(2-Chloroisopropyl)Ether									
4-Methylphenol									
N-Nitroso-Di-n-Propylamine									
Hexachloroethane									
Nitrobenzene									
Isophorone									
2-Nitrophenol									
2,4-Dimethylphenol									
Benzoic Acid									
Bis(2-Chloroethoxy)Methane									
2,4-Dichlorophenol									
1,2,4-Trichlorobenzene						J			
Naphthalene						J			
4-Chloroaniline									
Hexachlorobutadiene									
4-Chloro-3-Methylphenol						J			
2-Methylnaphthalene									
Hexachlorocyclopentadiene									
2,4,6-Trichlorophenol									
2,4,5-Trichlorophenol									
2-Chloronaphthalene									
2-Nitroaniline									
Dimethyl Phthalate									
Acenaphthylene									
3-Nitroaniline									
Acenaphthene						J			
2,4-Dinitrophenol									
4-Nitrophenol									
Dibenzofuran									
2,4-Dinitrotoluene									
2,6-Dinitrotoluene									
Diethylphthalate							J		
4-Chlorophenylphenyl ether									
Fluorene									
4-Nitroaniline									

ANALYTICAL DATA
NAME: UMC a.k.a.PEERLESS WINSMITH
SAMPLING DATE: 6/10/86
CASE: 6064

SEMI-VOLATILES

SAMPLE NUMBER MATRIX UNITS	NYS6-SW1 WATER UG/L	NYS6-SED1 SEDIMENT UG/KG	NYS6-SW2 WATER UG/L	NYS6-SED2 SEDIMENT UG/KG	NYS6-S1 SOIL UG/KG	NYS6-S2 SOIL UG/KG	NYS6-S3 SOIL UG/KG	NYS6-S4 SOIL UG/KG	NYS6-BL1 BLANK UG/L
4,6-Dinitro-2-Methylphenol									
N-Nitrosodiphenylamine									
4-Bromophenylphenyl ether									
Hexachlorobenzene									
Pentachlorophenol									
Phenanthrene									
Anthracene									
Di-n-Butylphthalate									
Fluoranthene							B	B	
Benzidine									
Pyrene									
Butylbenzylphthalate									
3,3'-Dichlorobenzidine									
Benzo(a)Anthracene									
Bis(2-Ethylhexyl)Phthalate									
Chrysene									
Di-n-Octyl Phthalate									
Benzo(b)Fluoranthene									
Benzo(K)Fluoranthene									
Benzo(a)Pyrene									
Indeno(1,2,3-cd)Pyrene									
Dibenzo(a,h)Anthracene									
Benzo(ghi)Perylene									

NOTES:
Blank space - compound analyzed for but not detected
E - analysis did not pass QA/QC requirements
J - compound present below the specified detection limit
B - compound found in laboratory blank as well as the sample, indicates possible/probable blank contamination

ANALYTICAL DATA
NAME: UMC a.k.a.PEERLESS WINSMITH
SAMPLING DATE: 6/10/86
CASE: 6064

PESTICIDES/PCBs

SAMPLE NUMBER MATRIX UNITS	NYS6-SW1 WATER UG/L	NYS6-SED1 SEDIMENT UG/KG	NYS6-SW2 WATER UG/L	NYS6-SED2 SEDIMENT UG/KG	NYS6-S1 SOIL UG/KG	NYS6-S2 SOIL UG/KG	NYS6-S3 SOIL UG/KG	NYS6-S4 SOIL UG/KG	NYS6-BL1 BLANK UG/L
Alpha-BHC	E	E	E	E	E				E
Beta-BHC	E	E	E	E	E				E
Delta-BHC	E	E	E	E	E				E
Gamma-BHC (Lindane)	E	E	E	E	E				E
Heptachlor	E	E	E	E	E				E
Aldrin	E	E	E	E	E				E
Heptachlor Epoxide	E	E	E	E	E				E
Endosulfan I	E	E	E	E	E				E
Dieldrin	E	E	E	E	E				E
4,4'-DDE	E	E	E	E	E				E
Endrin	E	E	E	E	E				E
Endosulfan II	E	E	E	E	E				E
4,4'-DDD	E	E	E	E	E				E
Endosulfan sulfate	E	E	E	E	E				E
Endrin Aldehyde	E	E	E	E	E				E
4,4'-DDT	E	E	E	E	E				E
Methoxychlor	E	E	E	E	E				E
Endrin Ketone	E	E	E	E	E				E
Chlordane	E	E	E	E	E				E
Toxaphene	E	E	E	E	E				E
Aroclor-1016	E	E	E	E	E				E
Aroclor-1221	E	E	E	E	E				E
Aroclor-1232	E	E	E	E	E				E
Aroclor-1242	E	E	E	E	E				E
Aroclor-1248	E	E	E	E	E				E
Aroclor-1254	E	E	E	E	E				E
Aroclor-1260	E	E	E	E	E	J	J		E

NOTES:
Blank space - compound analyzed for but not detected
E - analysis did not pass QA/QC requirements
J - compound present below the specified detection limit
B - compound found in laboratory blank as well as the sample, indicates possible/probable blank contamination

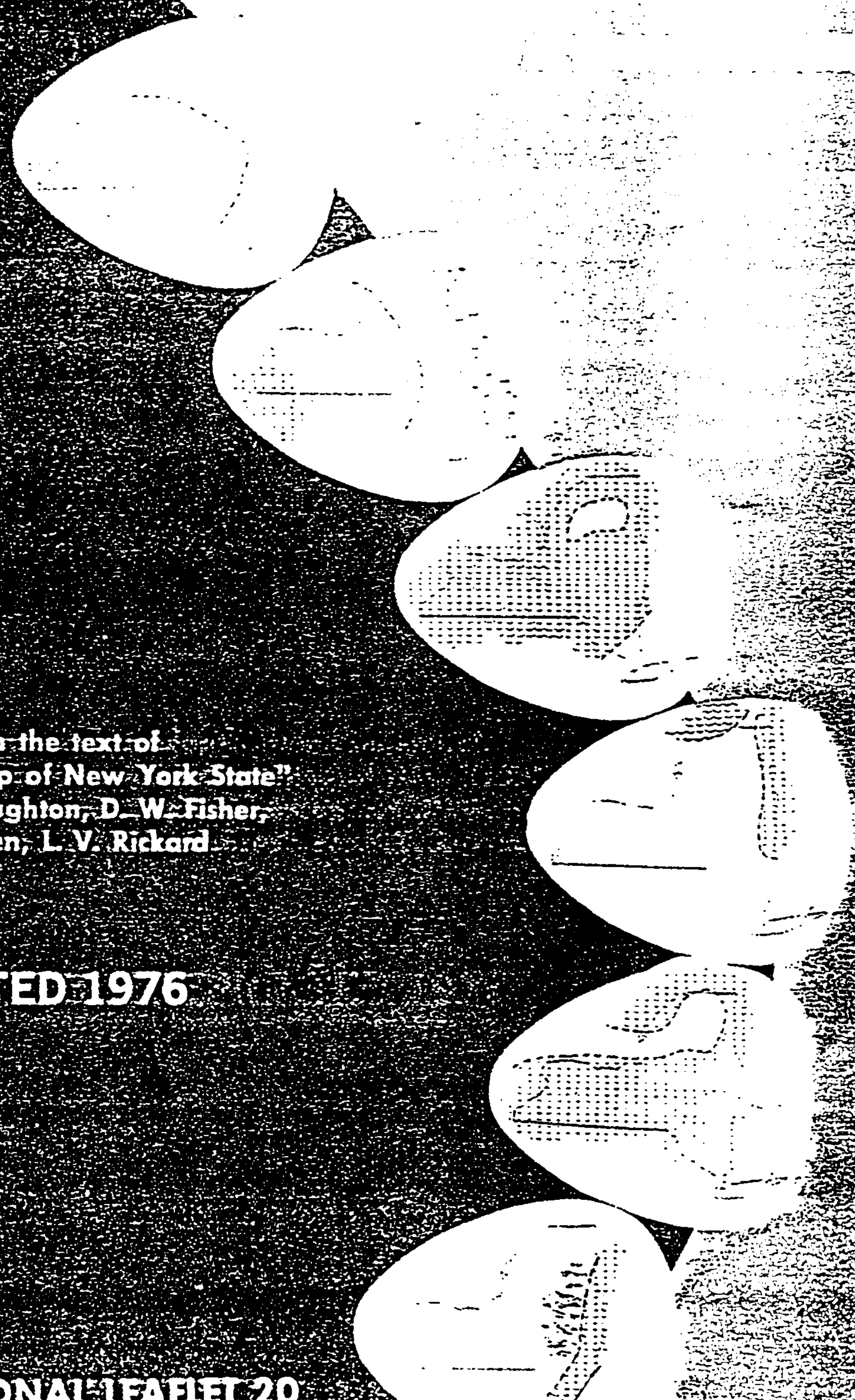
ANALYTICAL DATA
NAME: UMC a.k.a.PEERLESS WINSMITH
SAMPLING DATE: 6/10/86
CASE: 6064

INORGANICS

SAMPLE NUMBER MATRIX UNITS	NYS6-SW1 WATER UG/L	NYS6-SED1 SEDIMENT MG/KG	NYS6-SW2 WATER UG/L	NYS6-SED2 SEDIMENT MG/KG	NYS6-S1 SOIL MG/KG	NYS6-S2 SOIL MG/KG	NYS6-S3 SOIL MG/KG	NYS6-S4 SOIL MG/KG	NYS6-BL1 BLANK UG/L
Aluminum	995	1980	3200	10300	9520	8240	10700	9930	
Antimony		J		J	J	J	J	J	
Arsenic					8	15	8	8.4	
Barium	J		J	J	J	J	J	J	
Beryllium									
Cadmium	E		E				14		
Calcium	49300	130000	60700	9440	7440	6110	2160	2220	290
Chromium		J		E	E	E	E	E	
Cobalt					J	J	J	J	
Copper		J		J	41	96	50	24	
Iron	E	4450	E	19400	26100	51300	24800	22900	424
Lead		17		38	27	27	53	33	
Magnesium	7710	2670	9810	3220	4960	3700	3550	2700	E
Manganese	99	187	197	323	643	850	849	865	
Mercury	0.3		1.2	J		0.1			
Nickel	J	J	J	J	44	130	44	30	J
Potassium	E	E	E	J	J	J	J	J	J
Selenium		J		J	J	J	J	J	
Silver									
Sodium	E	E	E	E	E	E	E	E	E
Thallium									
Tin	J	J	J			J	J	J	
Vanadium	J	J		27	J	J	J	J	
Zinc	E	90	E	602	155	200	174	183	J
Cyanide			J						

NOTES:
Blank space - compound analyzed for but not detected
E - analysis did not pass QA/QC requirements
J - compound present below the specified detection limit
B - compound found in laboratory blank as well as the sample, indicates possible/probable blank contamination

Geology of New York



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

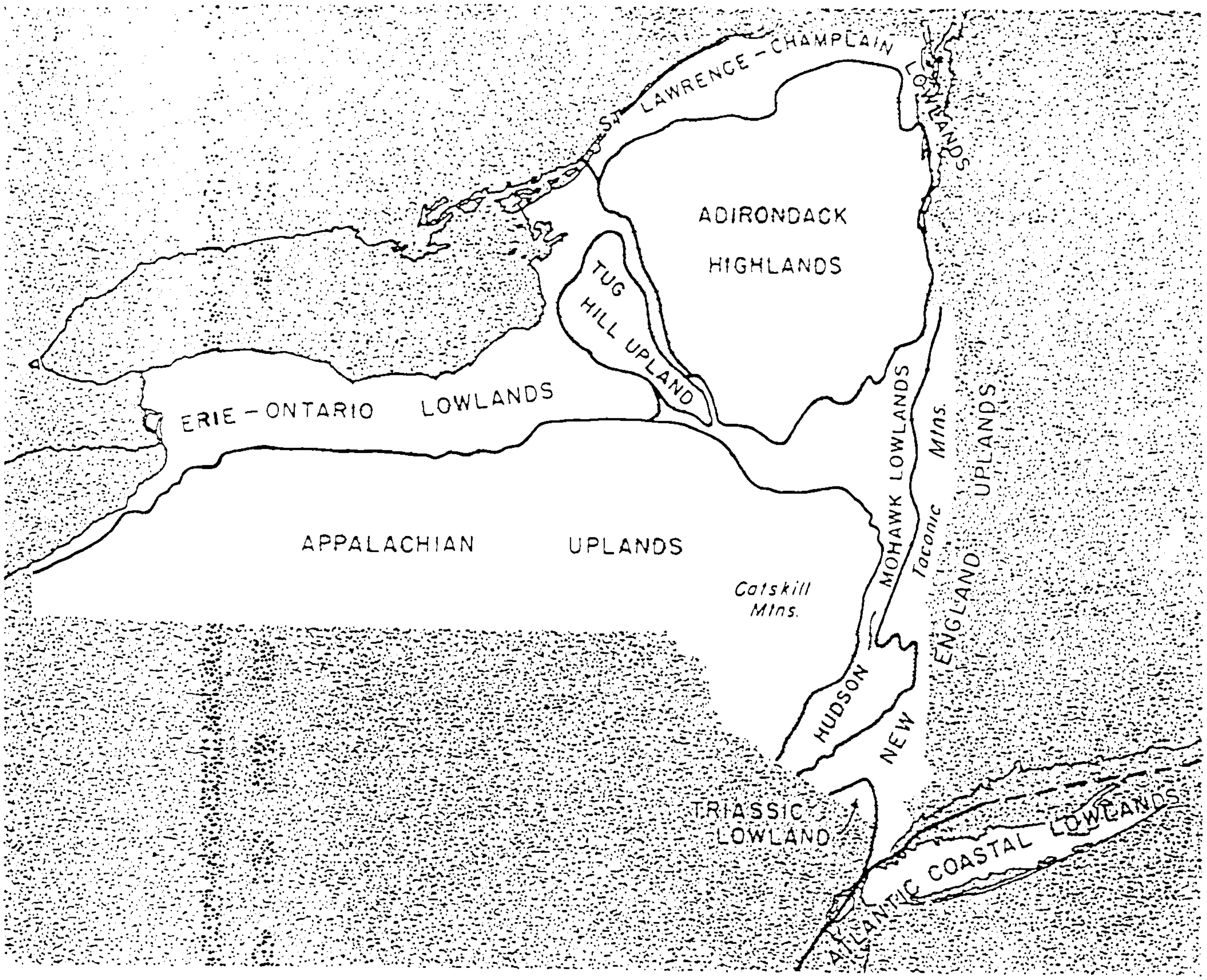


FIGURE 19. **Physiographic provinces of New York, based on relief and geology** (Modified after C. B. Cressey, 1952)

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

Appalachian Uplands

The Appalachian Uplands (the northern extreme of the Appalachian Plateau) were formed by dissection of the uplifted but flat lying sandstones and shales of the Middle and Upper Devonian Catskill Delta (figure 17). The southeastern border of the province, between Kingston and Port Jervis, is formed by the Silurian Shawangunk Conglomerate. Relief is high to moderate. Maximum dissection is in the Catskill Mountain area, where only the mountain peaks approximate the original plateau surface. (Slide Mountain, at 4,202 feet, is the highest peak.) Farther west, the plateau surface is represented by flat-topped divides. Except for Cattaraugus Creek, the Genesee River, the Finger Lakes, and minor streams along the Catskill front, drainage generally is southwest into the Allegheny, Susquehanna, and Delaware River systems.

The northern edge of the province is cut by the Finger Lake troughs, which are glacially modified valleys of preglacial rivers (figure 20). At least two of the lakes (Cayuga and Seneca) have bedrock floors below sea level. Glacial cover generally is thin, although deposits in some north-south valleys are so thick that they are completely buried. The major eastwest drainage divide of central New York, the Valley Heads Moraine, is a recessional moraine south of the present Finger Lakes. Only the Alleghany State Park area has escaped glaciation (figure 21).

New England Uplands

Another diverse and geologically complex province is the New England Uplands. To the south it includes the Hudson Highlands and the area underlain by the New York City Group; farther north it encompasses the hilly country (Taconic Mountains) between the Hudson River and the Connecticut, Massachusetts, and Vermont borders. Rocks in the New England Uplands are either metamorphic or igneous, and land forms are closely related to their durability.

Maximum relief is in the Hudson Highlands, where elevations range from 800 feet below sea level (bedrock of the Hudson River Valley) to more than 1,500 feet. Strong topographic linearity characterizes the Hudson Highlands; most of the ridges and valleys follow the northeast-southwest strike of the metamorphosed rocks.

Although the rocks of the New York City Group do not show a similar regularity of trend, here, too, the geology and topography are closely related.

The general north-south trend of the Taconic Mountains depends on the strike of the schist (which forms the hills) and the limestone in the valleys. The Rensselaer Plateau, which is held up by the resistant Rensselaer

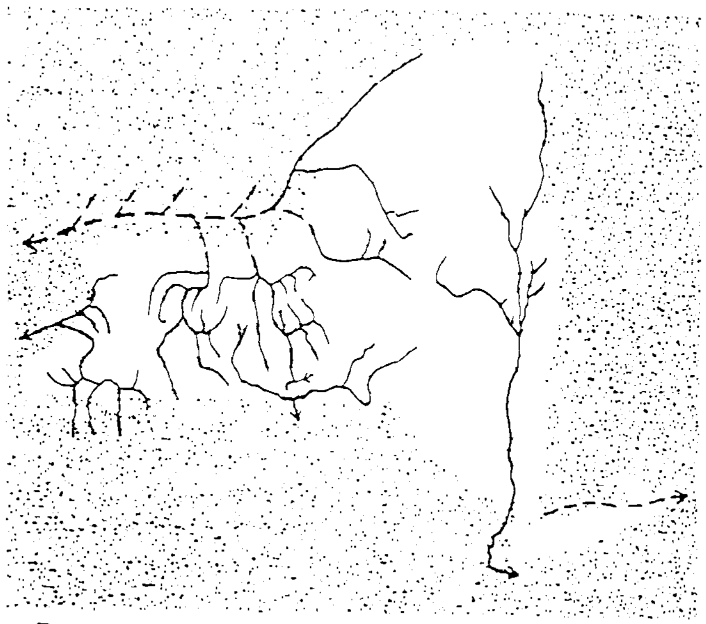


FIGURE 20. Hypothetical Tertiary drainage systems

Graywacke, is an exception. Its rolling surface, with a relief of about 500 feet, is approximately 20 miles long (north-south) by 9 miles wide (east-west). The Taconic Mountains generally are considered to be bounded on the west by the Chatham thrust and on the east by the limestone valley lying just west of the Green Mountains and the Berkshires.

The entire province has been glaciated.

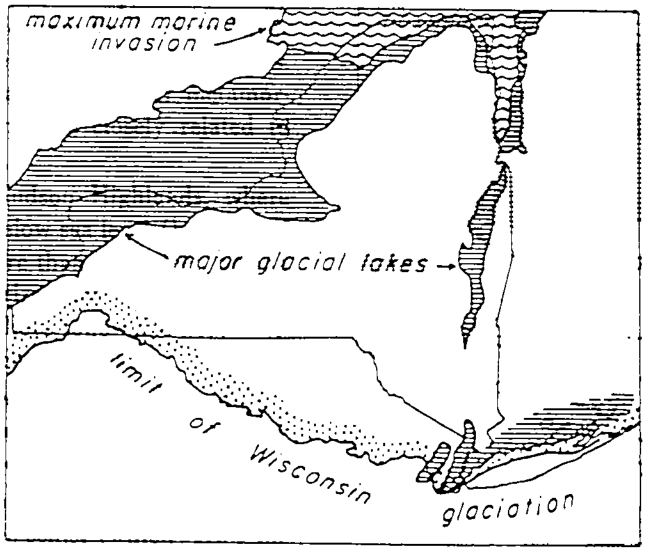
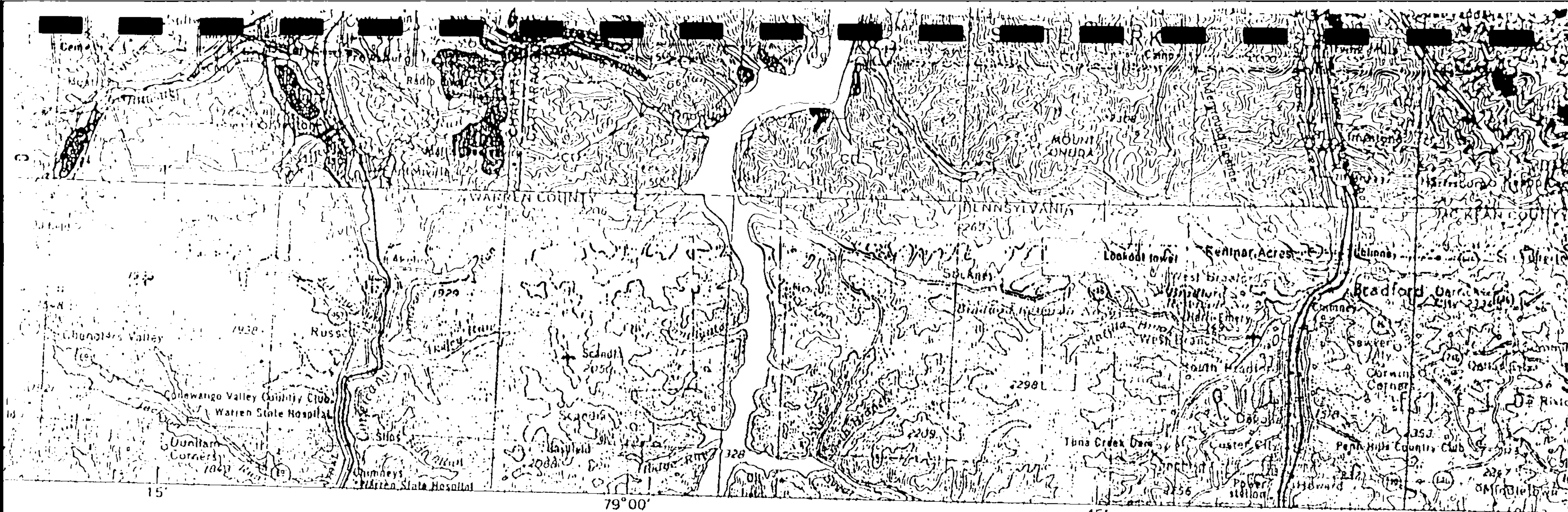


FIGURE 21. Pleistocene features, including maximum extent of Wisconsin glaciation, areas inundated by major lakes and by marine invasions

A-11

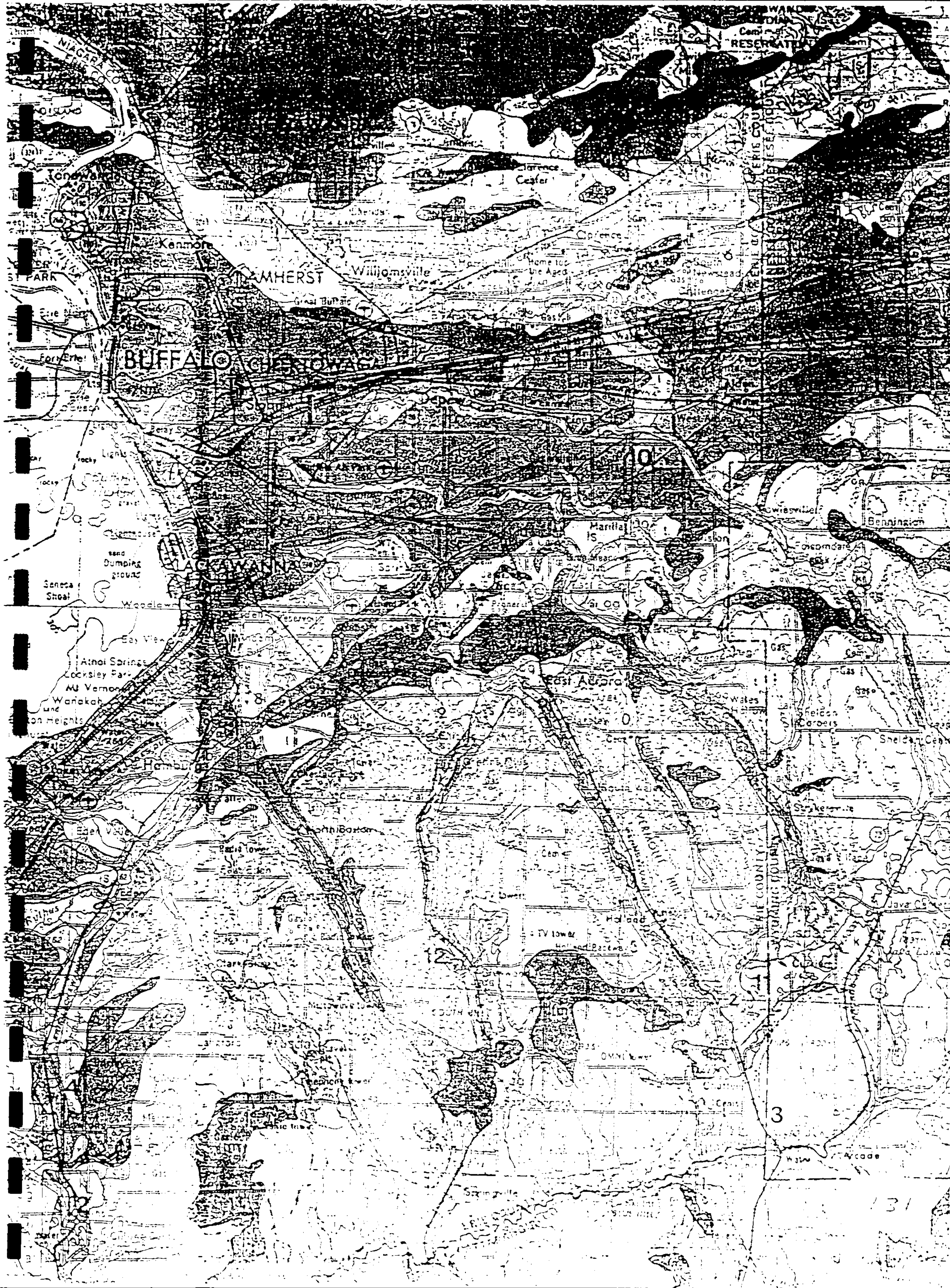


SURFICIAL GEOLOGIC MAP OF NEW YORK

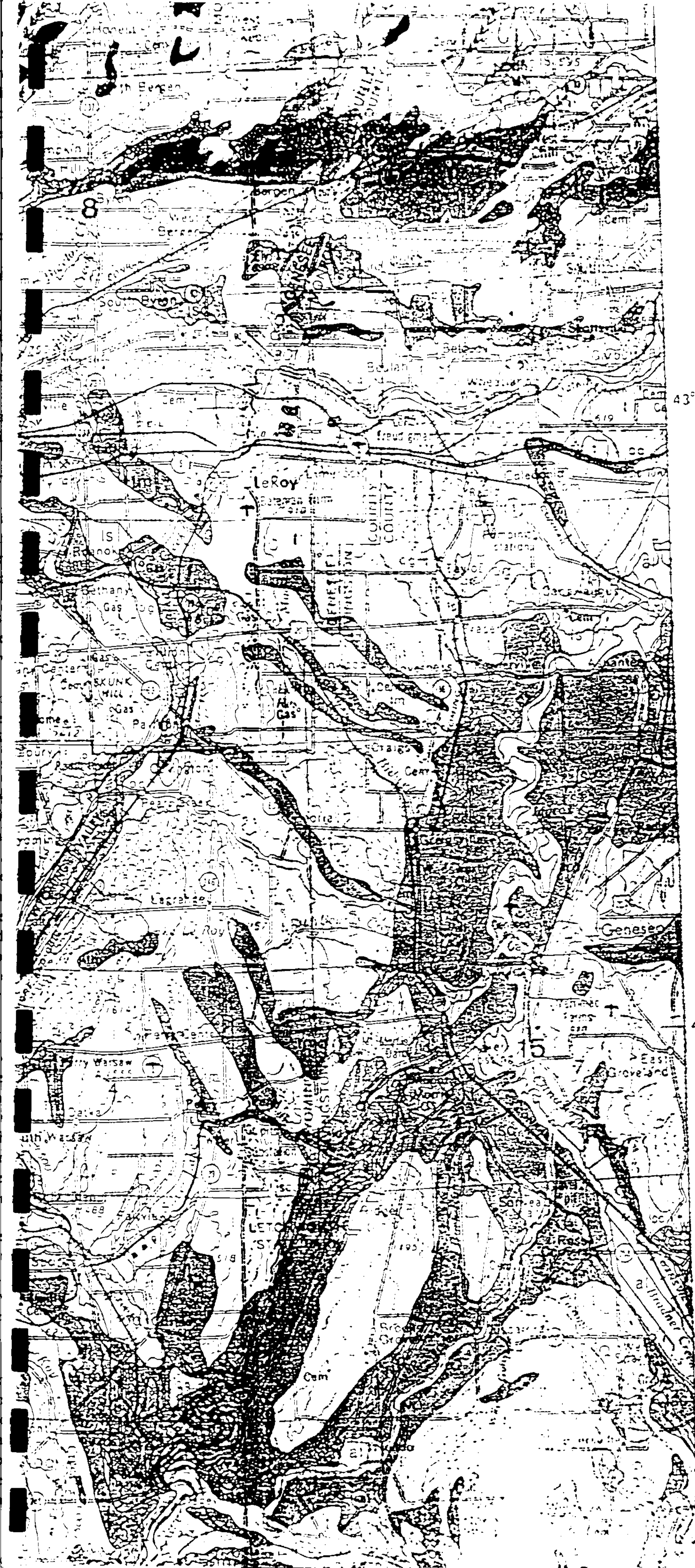
NIAGARA SHEET

Compiled and Edited by Donald H. Cadwell

1988



Tonawanda
Kenmore
AMHERST
Williamsville
Clarence Center
BUFFALO
LACKAWANNA
Marilla
Cowlesville
Bennington
Seneca Shoal
Dumping ground
Woodlawn
Bay View
Athol Springs
Mt Vernon
East Aurora
Wales
Sheldon Center
Hamburg
North Boston
Eden Valley
Holland
Java Center
Arcade
Springville



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, thickne[illegible] [illegible]able (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-

ls — Lacustrine sand
Sand deposits associated with large bodies (
generally a near-shore deposit or near a san
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 borde
may be calcreted beyond Wisconsinan glac
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, kar
coarse to fine gravel and/or sand,
deposition adjacent to ice (if at ice margin
lateral variability in sorting, coarseness an
may be calcreted beyond Wisconsinan glac
thickness variable (10-30 meters).

usda — Undifferentiated stratified drift as
Dominantly clay, silt and sand,
limited gravel and diamicton,
stratification includes undisturbed and def
ice contact structures,
lenticular, discontinuous bodies of gravel
may represent dead-ice, disintegration and
environments,
thickness variable (3-30 meters).

km — Kame moraine
Variable texture (size **and sorting**) from b
deposition at an ice **margin during** deglac
relief is above elevation of associated out
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).

132

t — Till
Variable texture (e.g. clay, silt-clay, boul

Section 2

Documents Cited

DOCUMENTATION

B-1 *Interagency Task Force on Hazardous Wastes*, Draft Report, March, 1979

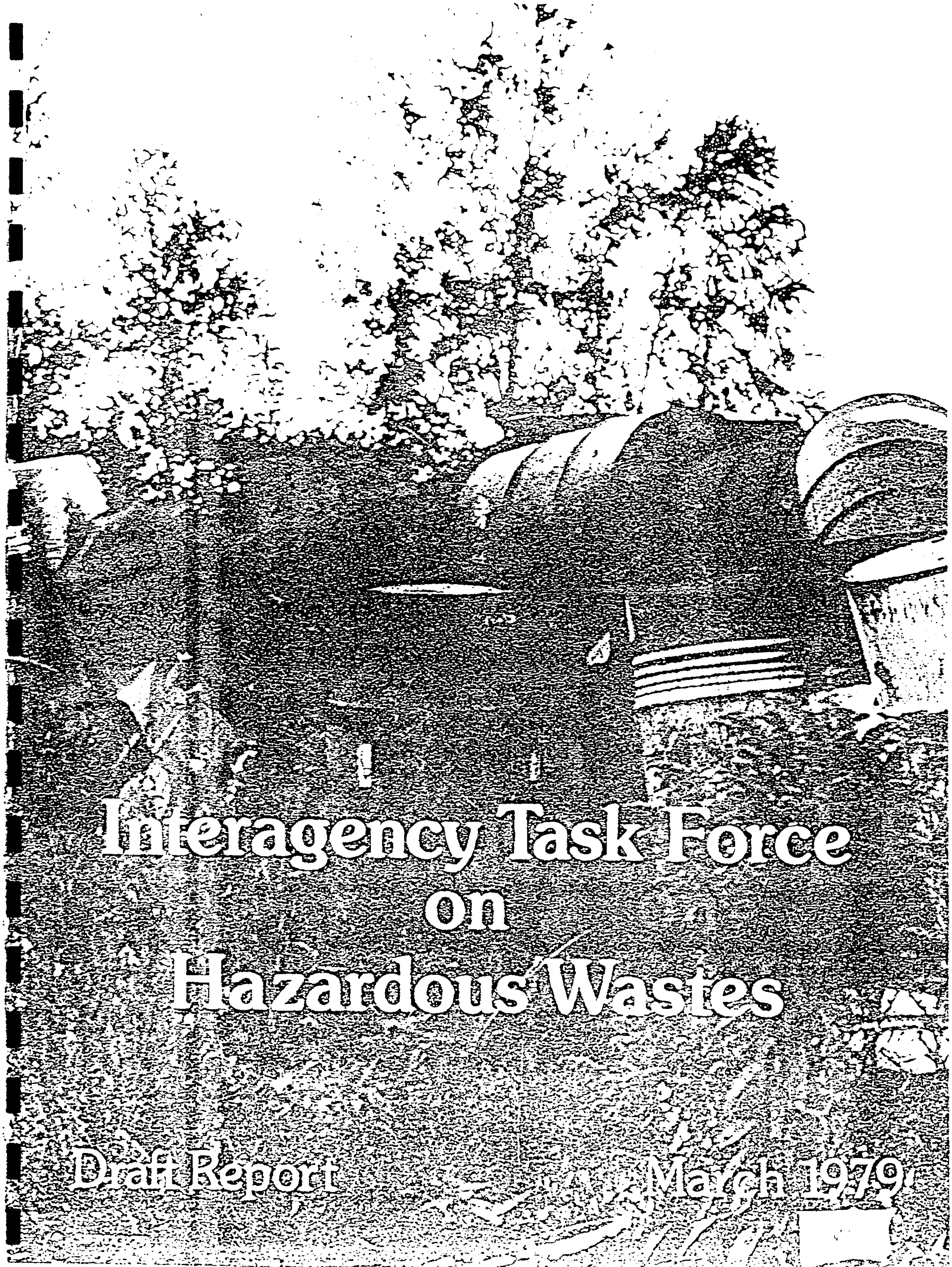
B-2 Process Waste and Landfill Investigations, December 4, 1978, Calspan Advanced Technology Center

B-3 Telephone interview of Mike McMurray, NYSDEC Region 9, by Engineering Science, January 3, 1980.

B-4 Telephone interview of Greg G. Ecker, NYSDEC Region 9, by Leslie Gracz, DUNN, March 6, 1991.

B-5 UMC Corporation, Winsmith Division, DEC #915058, Erie County Department of Environment and Planning, October, 1983.

B-1



Interagency Task Force on Hazardous Wastes

Draft Report

March 1979

WINSMITH
Division of UMC Industries, Inc.
172 Eaton Street
Springville

Winsmith was founded and incorporated in New York in 1901. It began operations in Erie County in the same year and has since been known under several names! Essex and Smith Co. (1901 to 1924), Winfield H. Smith, Inc. (1924 to 1946), Winsmith, Inc. (1946 to 1963) and under its present name since 1963.

Winsmith produces speed reducers and gears. Processes used at this plant are heat treatment, salt bath carbonizing, machining (boring, cutting and facing), degreasing and painting.

The company generates the following waste products:

1. Steel fines, grinding fines (98 percent) mixed with waste coolant oil and water (2 percent).

2. Kolene heat treatment spillage ("Marquench #296", a salt material containing sodium cyanide).

3. Hydrochloric acid neutralized with sodium hydroxide. Some iron is present in this solution.

4. Machine, cutting and cooling oils.

5. Dried paint filters.

6. General industrial wastes.

From 1956 to 1976, all of the wastes identified above (except waste oils) were disposed of at the Chaffee Landfill. In 1976, 3750 gallons of Kolene heat treatment spillage, 600 gallons of hydrochloric acid and 462 square feet of paint filters and unknown amounts of the other wastes were disposed of at Chaffee.

Since 1976, Southtown Sanitation has hauled Winsmith's waste to either the Lancaster Sanitary Landfill or the Chaffee Landfill.

The company has also indicated that it dumped Kolene heat treatment spillage, neutralized hydrochloric acid and sodium hydroxide on a small hill on plant premises.

B-2

3/29/82

COMMERCIAL
CONFIDENTIAL

CALSPAN ADVANCED TECHNOLOGY CENTER

PROCESS WASTE AND LANDFILL INVESTIGATIONS

Calspan Report No. 6419-M-1

by

Richard P. Leonard
Environmental Sciences Department
December 4, 1978

Prepared For:

Winsmith Division
UMC Industries Inc.
172 Eaton Street
Springville, New York 14141

Purchase Order No. P33921

A DIVISION OF CALSPAN CORPORATION
AN ARVIN COMPANY P.O. BOX 400 BUFFALO, NEW YORK 14225

TABLE OF CONTENTS

SUMMARY

A number of process solid and liquid wastes from the Winsmith plant, Springville, New York were sampled and analyzed for selected constituents including cyanide, oil and grease, and chlorinated hydrocarbons. Present waste treatment and disposal practices have been evaluated. Recommendations for improved treatment and disposal practices have been made. Disposal of cyanide salt bath wastes in secured chemical landfill (or cyanide destruction if not accepted in chemical landfill) is included. Other recommendations include segregation of other wastes from waste and tramp oil, and discharge of O.D. coolant water and neutralized acid and alkaline wastes to sanitary sewers rather than storm sewers.

Storm drainage from the manufacturing and abandoned landfill areas did not have significant concentrations of cyanide (<1 ppm) or chlorinated hydrocarbons (<1 ppb). Storm drainage from the plant area was slightly elevated in oil and grease content.

Soil borings taken in the vicinity of the abandoned on-site landfill show that the landfilled material was restricted to a pit with measurements of ~20' x 15' x 10' deep. Samples of water and solids taken from the pit did not contain measurable cyanide. Some oil and grease were present. It was concluded that the abandoned landfill did not present ground or surface water contamination problems.

TASK I

WASTE CHARACTERIZATION AND INTERPRETATION

On October 2, 1978 Richard Leonard and George Zigrossi of Calspan obtained samples of the following process solid and liquid wastes from the Winsmith plant.

Sample #1 - cyanide salt bath waste (solid)
Sample 2 - neutral pot skimmings (solid)
Sample 3 - quench pot skimmings (solid)
Sample 4A - cooling water from metal salt bath treatments
Sample 4B - cooling water tank sludge
Sample 5 - waste and tramp oils
Sample 6 - coolant from O.D. grinders
Sample 12 - Roto-Brite Cleaner

The purpose of sampling these wastes was to chemically analyze them for selected constituents (i.e., cyanide, chlorinated hydrocarbons) which may necessitate special care in disposal. Results of chemical analyses of the above samples are given in Table 1.

The solubility of the cyanides in the cyanide salt bath waste (Sample #1) and the neutral pot skimmings (Sample #2) was ascertained by leaching one gram samples with 250 ml deionized water at a pH of approximately 5.0 and measuring soluble cyanide concentration. Concentrations of cyanide in the leach solution for the cyanide salt bath and the neutral pot skimmings were 520 ppm and 8.4 ppm respectively.

<u>Recommendations For Process Waste Treatment and Disposal</u>

<u>Cyanide Bath Wastes</u>. The elevated levels of total cyanide present in the cyanide salt bath waste, and to a lesser extent the neutral pot skim, result from the use of sodium cyanide salts in the metal heat treatment processes. The quench pot skimmings had no measurable cyanide (<0.001%). Because of the

TABLE 1

CHEMICAL ANALYSES OF PROCESS WASTE SAMPLES

Sample Number and Description	Cyanide (CN)	Chlorinated* Hydrocarbons
1. Cyanide salt bath	5.5%	-
2. Neutral pot skimmings	0.1%	-
3. Quench pot skim	<0.001%	-
4A. Cooling water	2.75 ppm	-
4B. Cooling water sludge	<0.04 ppm	-
5. Waste tramp oil	15.0 ppm	23,000 ppb
6. Coolant O.D. grinders	<0.02 ppm	17 ppb
12. ROTO-BRITE Cleaner	<0.02 ppm	9 ppb

- not analyzed and not believed present

* Specific chlorinated compounds not identified. Chlorinated hydrocarbons reported as lindane standard although lindane not present.

danger of cyanide release as HCN if acids come in contact with cyanide salt bath or neutral pot skim in the disposal environment, and appreciable water solubility, it is recommended that these wastes be put into secured chemical landfills. In secured chemical landfills they would be put in drums isolated from any acids, and covered with lime. In the event that the cyanide wastes cannot be accepted by a licensed secured chemical landfill, methods of cyanide destruction (i.e., alkaline chlorination) should be investigated. If cyanides can be destroyed then disposal in a municipal landfill appears acceptable.

It may be expected that cooling water and cooling water sludge from the metal treating processes may have small amounts of cyanide. Discharge of these wastes to storm sewers could be eliminated by collection and recycle of overflow and periodic disposal of sludge to chemical landfill.

The source of the somewhat elevated cyanide level (15 ppm) in the waste and tramp oil is difficult to identify. Further sampling and analysis is recommended to confirm if it is often present in waste oils.

Waste and Tramp Oils. Waste tramp oil was found to contain elevated levels of chlorinated hydrocarbons. O.D. grinder coolant and Roto-Brite Cleaner were also found to contain significant concentrations of chlorinated hydrocarbons.

The source of chlorinated hydrocarbons in the above process wastes appears to be TRIM SOL which is used as a cutting additive. TRIM SOL is reported to have chlorinated paraffin wax as a major constituent* (i.e., greater than 10%). Data is presented by the manufacturer indicating that TRIM SOL is non-toxic and non-hazardous.*

The presence of cyanides and chlorinated hydrocarbons in waste and tramp oils suggests that care should be taken to exclude these contaminants if the oil is to be collected and spread on roads for dust cover. Any runoff of cyanide or chlorinated hydrocarbons from road surfaces to ditches is undesirable.

*Letter from W.A. Sluhan to Mr. Earl Bartley dated 30 April, 1976 Confidential

It is cautioned that the gas chromatographic method of analyses used for chlorinated hydrocarbon analyses does not identify specific chlorinated hydrocarbon compounds and only gives strong evidence of chlorinated hydrocarbon presence (specific identification of chlorinated hydrocarbons generally requires analyses by gas chromatography-mass spectrometer and is costly, approximately $350 per sample).

It may be possible to ascertain if the chlorinated hydrocarbons found in the oil, O.D. grinder coolant and Roto-Brite Cleaner are the same as those in the TRIM-SOL by analyzing a sample of the TRIM-SOL in the gas chromatograph.

O.D. Grinder Coolant. The water soluble coolant is an approximately 1% solution of a water soluble coolant known as Cimplus. Presently five to six barrels/month (approximately 330 gal) of spent coolant are discharged to the storm drain. Major constituents of cimplus according to the manufacturers are sodium nitrite ($NaNO_2$) and amines. The product does not contain oil or chlorinated hydrocarbon.

The sample of spent coolant analyzed by Calspan was found to contain a small but undesirable concentration of chlorinated hydrocarbons (17 ppb) which may have been contaminated by the TRIM-SOL product.

It appears that the most environmentally sound method of disposing of this waste would be bleed into the sanitary sewer system. The Springville sewage treatment plant is a biological trickling filter handling about 500,000 gallons/day. An estimate of sanitary sewage discharge from the Winsmith plant based on 60 gpd/employee is approximately 30,000 gpd. It appears that bleed of 25 to 50 gal/day of spent O.D. grinder coolant would not upset the biological treatment plant and would result in high removal of organics from this waste.

Acid and Alkaline Cleaners. The acid and alkaline cleaners used by Winsmith are manufactured by Oakite. Major constituents are:

Oakite 32 - 30% HCl

Oakite 443 - 15% sodium silicate (Na_2SiO_2) 5% nitrite salts

Oakite Formula C - 10% alkanolamine, 0.5% organic phosphorus

Oakite Dynadet - 50%, NaOH, 6% inorganic phosphate

At present acid and alkaline cleaner wastes are neutralized by mixing together and disposed of in the storm sewer. It is estimated that 100-200 gal/week of this waste are discharged.

It appears that neutralization of the above wastes within a pH range of 7.0 to 8.5, followed by discharge to the sanitary sewer, is a more environmentally sound method of pretreatment and disposal. Bleed of this neutralized waste should not upset the biological treatment system.

Roto-Brite Cleaner. Since only approximately 5 gallons/day of this ceramic media cleaner is used/day, discharge to the sanitary sewer would be negligible.

Paint Spray Booth Residue. Discharge to sanitary or storm sewers is undesirable because of volatility and flammability. Present method of spreading on ground appears good. Periodic tillage of ground will encourage biodegradation.

TASK II

DRAINAGE AND WATER EFFLUENT ANALYSIS

On October 2, 1978 Calspan sampled a number of water discharge points from the Winsmith plant for chemical analyses at Calspan chemical laboratories. These included:

Sample #7 - upstream storm drainage

Sample # 8 - drainage ditch downstream from plant storm drainage (Franklin Street)

Sample # 9 - subsurface drain into ditch on northern property boundary (east of storage building)

Sample #10 - surface drainage into swale at S.E. corner of hill with landfill

Sample #11 - drainage ditch at culvert under northern road entrance to plant

In addition to the above discharge points, a drainage ditch on Route 219, northwest of the plant, was sampled in order to compare water quality of storm water entering the plant area (Sampe #7) to that leaving the plant area (Sample #8).

The above samples were analyzed for cyanide (CN), oil and grease, and chlorinated hydrocarbons. Results of analyses are given in Table 2.

The analysis for cyanides indicate that there are negligible to no cyanide discharges from the plant area or seepage containing cyanide from the hill containing the abandoned landfill. It may be noted that storm drainage entering the plant area (Sample #7) had higher measured cyanide than storm drainage leaving the plant area.

Analyses of water samples indicate that there are no discharges of chlorinated hydrocarbons greater than 1 ppb. Slightly elevated levels of oil and grease in the downstream storm drainage (Sample #8) indicates some discharge of oil and grease through plant storm drains. This discharge may

TABLE 2

Sample Number	Cyanide (ppm) (CN)	Chemical Analyses Oil & Grease (ppm)	Chlorinated* Hydrocarbons (ppb)
# 7 (upstream storm drainage)	0.19	3	<1
8 (downstream storm drainage)	0.05	11	<1
9 (subsurface drain to ditch northern boundary)	<0.02	3	<1
10 (surface drainage to swale, S.E. corner of hill)	<0.02	1	<1
11 (drainage ditch, northern road entrance)	<0.02	4	<1

* Specific chlorinated compounds not identified. Chlorinated hydrocarbons reported as lindane standard although lindane not present.

be minimized by good housekeeping practices to prevent oils and greases from reaching storm drains. The limitations of one time grab sampling must be recognized in interpretation of data.

TASK III

LANDFILL CHARACTERIZATION AND RECOMMENDATIONS

On October 10, 1978 the Earth Dimensions Inc. conducted test borings at the location which had been used at one time by Winsmith for landfill of process wastes. The placement of bore holes was directed by Mr. Richard Leonard, Principal Environmental Engineer, Calspan Corporation. The purpose of the borings was to ascertain the extent of landfilled material and to sample the wastes for chemical tests. Samples of landfilled material were chemically analyzed by Calspan for pH, conductivity, cyanide content, and oil and grease content.

Figure 1 shows the location of bore holes relative to the location of a small water filled pit in which process wastes were believed to have been disposed a number of years ago (i.e., greater than 10 years ago). Official logs of these borings contained as Enclosure 1 show that no process wastes were encountered in soil borings. Except for hole #1 and the pond itself, the sequence of layers consisted of 10-12 feet of silt loam soil carried in from other areas (soil removed during construction of parking lots and plant expansion) over the natural soil layers. The natural soils encountered in all bore holes consist of sand, silt, and gravel deposits typical of glacial outwash soils. The natural soils at hole #1 had not been covered by soil fill.

It is apparent from the borings that landfilling was confined to the small (20' x 15') ponded area. A boring was made in the ponded area to obtain samples for laboratory testing and to ascertain how deep the pit was dug prior to depositing process wastes. The boring showed that the depth of the original pit was approximately 10'. Samples of landfilled material obtained for laboratory testing were:

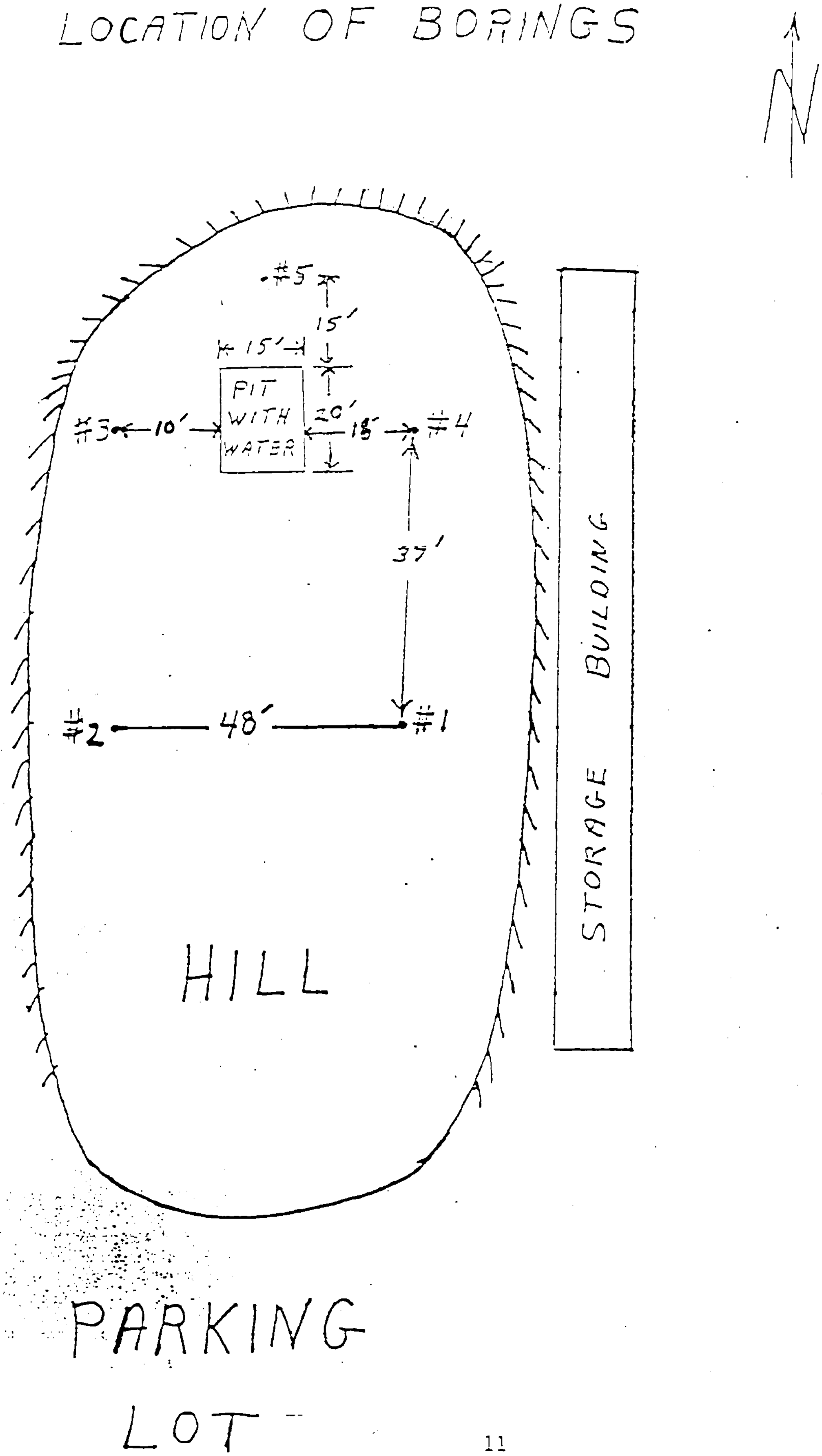
Sample #13,14 - water from the top of the pit

Sample 15 - soft slag-like material probably salt residues from heat treatment, taken at approximately 2' depth

Sample 16 - mixed sediments, fine slag-like material, oily smell, taken at approximately 7' depth

FIG. 1

LOCATION OF BORINGS



The above samples were analyzed for cyanide, and oil and grease. Results are given in Table 3. Based on the sample analyses, and considering the small volume of landfilled material (~3,000 ft^3), the abandoned landfill is not considered to pose any danger of ground or surface water contamination.

TABLE 3

Sample Number	Chemical Analyses (ppm) CN (ppm)	Oil and Grease (ppm)	pH
13,14 (water from top of pit)	<0.02	13	7.35
15 (soft slag-like material)	<0.02	-	-
16 (mixed sediments, fine slag-like material)	<0.02	1500	-

- not analyzed

APPENDIX A

October 15, 1978

SOILS REPORT

WINSMITH DIVISION

Springville, New York

Five soil borings were augered northwest of the existing industrial buildings in the Village of Springville, October 10, 1978 to define the extent of a small industrial waste landfill. These five borings were placed around a small pond, the suspected center of the landfill. The placement of the individual bore sites of this soil investigation were under the direction of Mr. Richard F. Leonard, Principal Engineer - Environmental Sciences Department, of Calspan Corporation.

The area of investigation was on top of a kame, the nearby hill formed through glacial action. The original soil consisted of a permeable, well drained stratified gravelly soil over stone-free silty glacial lake sediment. This contrast in sediments is quite evident in the exposed vertical soil exposure along the east side of this hill.

Typically, this soil is not considered suitable for pond construction as water would readily flow outward from the pond through the permeable stratified gravelly sediments. The present existing pond is the result of extensive land filling of impervious soil as indicated in the soil logs. Only soil description #1 indicated an industrial soil.

The above soil report and included soil logs were based on split spoon sampling that were advanced through hollow stem augers into critical soil zones.

Continued on page 2.....

Soil samples were secured below the landfill pond for special laboratory analysis at Calspan Corporation. The properties or characteristics of the industrial waste material were not recorded.

Soil Report Prepared by:

Don Owens

Donald W. Owens
Soil Scientist

DWO/dew
2078

CC: Mr. Richard P. Leonard ✓
Principal Engineer
Environmental Sciences Dept.
Calspan Corporation

EARTH DIMENSIONS, INC.

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

HOLE NO. [illegible] | SURF. ELEV. ______

PROJECT [illegible] | LOCATION [illegible] South of bore hole [illegible]

CLIENT [illegible] | DATE STARTED [illegible] COMPLETED [illegible]

DEPTH	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
							Moist black gravelly loam (SANDY-SILT) topsoil, very friable	
		[illegible]	[illegible]	[illegible]		[illegible]	Moist to wet dark brown gravelly heavy loam (SANDY-SILT-CLAY) with 15 to 25% rounded mixed lithology gravel, friable.	Distinct seepage into bore hole at (SANDY-SILT-CLAY) and (CLAYEY-SILT) contact
5.0'		3	2	4		6	Extremely moist gray heavy silt loam (CLAYEY-SILT) with 5% fine rounded gravels, firm, slightly sticky, slightly plastic.	
		4	12	8	9	17		
8.0'							Boring completed at 8.0 feet	Water table at 5.0 feet below surface at completion.
10								Water sorted sand, gravel and silt to 5.0 feet over silty lake sediment to end of boring.

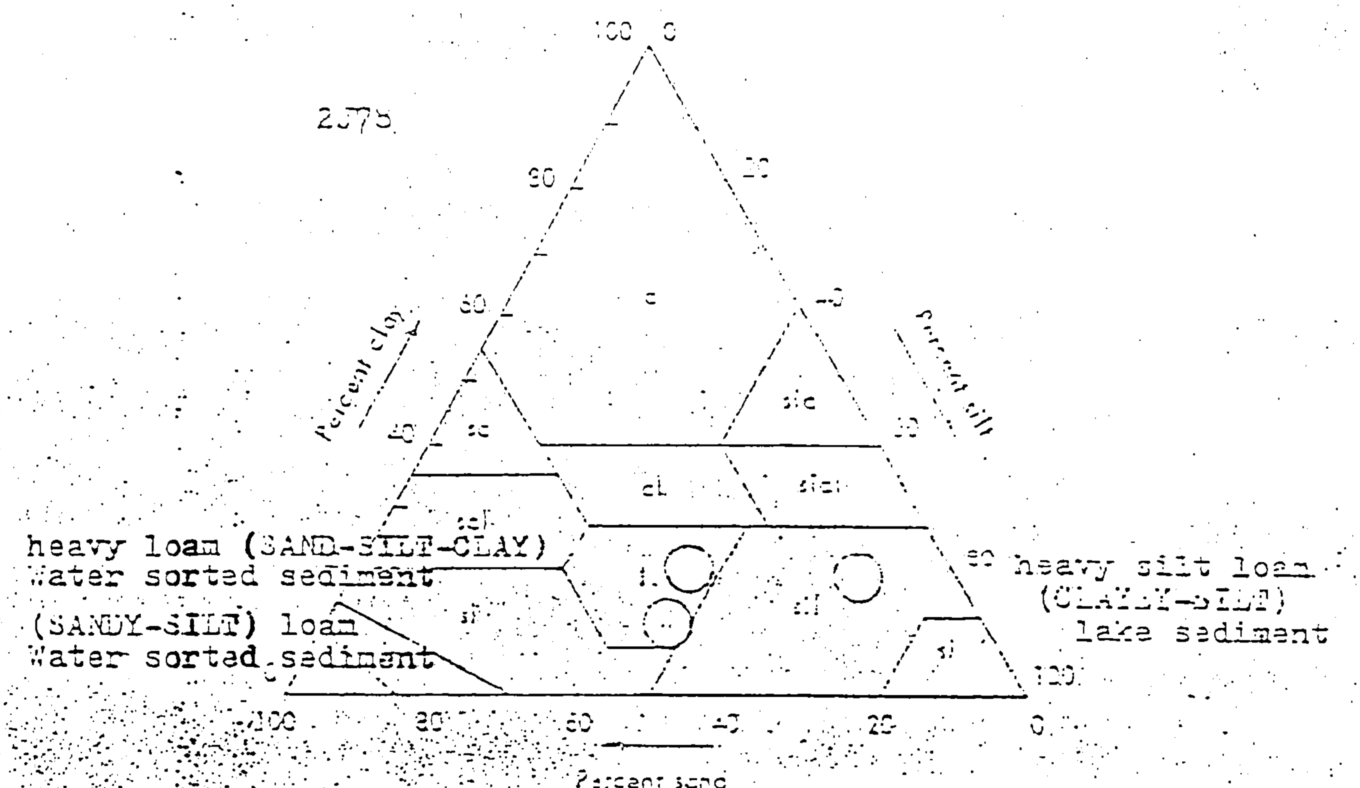
N = NUMBER OF BLOWS TO DRIVE [illegible] " SPOON [illegible] " WITH [illegible] lb WT. FALLING ______ " PER BLOW

LOGGED BY [illegible] Smith

SHEET 1 OF 1

HOLE #1

2575



c	Clay	scl	[illegible]
si	Silt	sicl	[illegible]
s	Sand	cl	[illegible]
l	Loam	sil	[illegible]
sc	Sandy clay	sl	[illegible]
sic	Silty clay	ls	[illegible]

Textural triangle showing the percentages of clay [illegible] (0.05-2.0 mm) in the basic soil textural classes (adapted from [illegible])

EARTH DIMENSIONS, INC.

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

HOLE NO. [illegible] SURF. ELEV. ______

PROJECT ~~Landfill Investigation~~ ~~[illegible], New York~~ LOCATION ~~[illegible] feet west of bore hole Number 1~~

CLIENT [illegible] Division DATE STARTED [illegible]/78 COMPLETED [illegible]

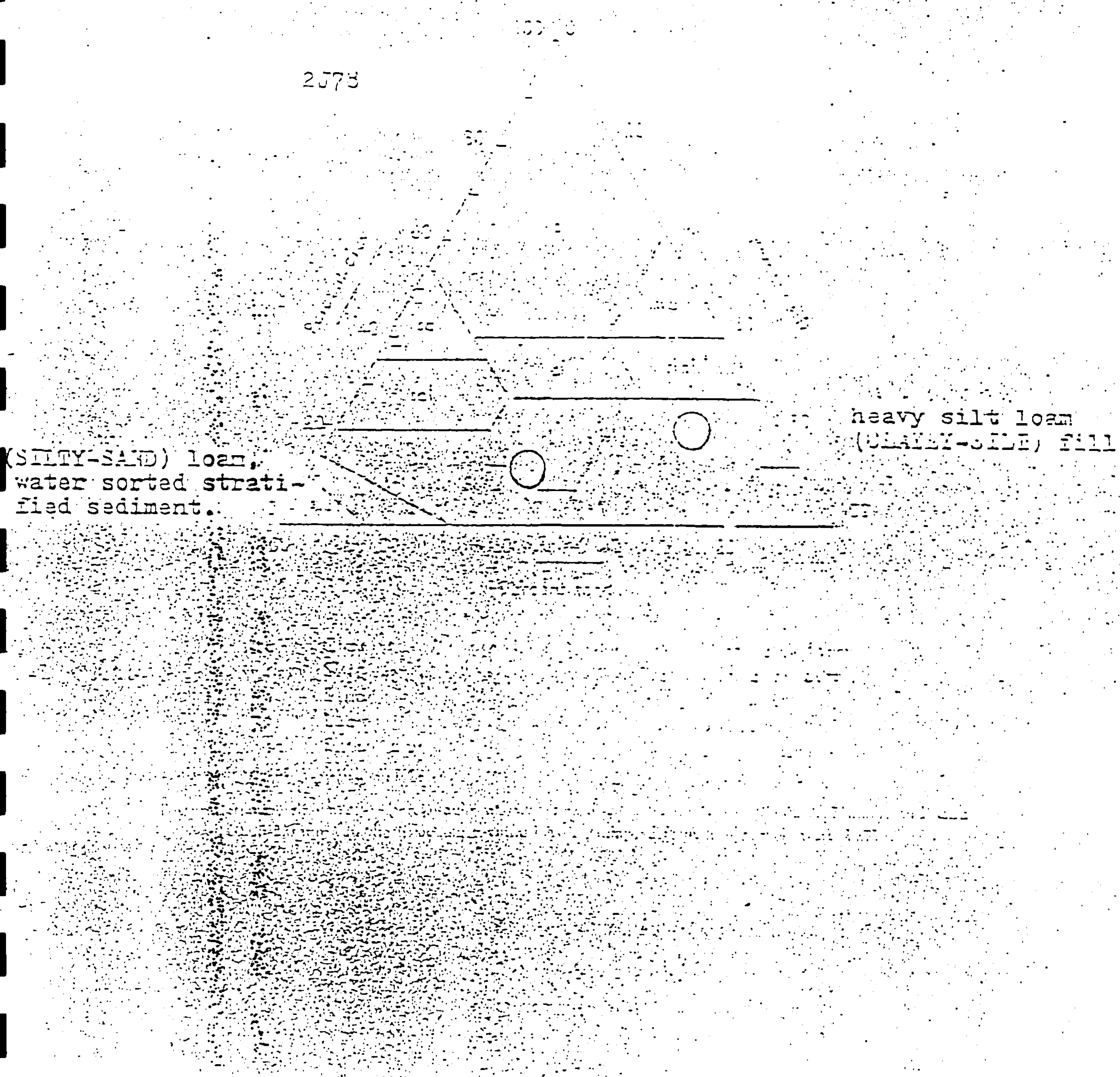
DEPTH (Feet)	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		[illegible]		[illegible]		[illegible]	Moist light brown gravelly heavy silt loam (CLAYEY-SILT) with 15 to 25% rounded mixed lithology gravel, firm, slightly plastic, slightly sticky	2.0'
5		17	23	3[illegible]		6[illegible]	Moist light brown heavy silt loam (CLAYEY-SILT) with 10 to 15% sub-angular mixed lithology gravel, very firm, slightly plastic, slightly sticky	No water at completi[on]
		16	22	1[illegible]	[illegible]	3[illegible]		
		17	18	18	24	4[illegible]		9.0'
10		14	13	1[illegible]	[illegible]	2[illegible]	Moist brown gravelly loam (SILTY-SAND) with 15 to 25% rounded mixed lithology gravel, friable	12.0'
							Boring completed at 12.0 feet	Fill to end of boring Fill to 9.0 feet over water sorted strati-fied sand, gravel and silt to end of boring

N = NUMBER OF BLOWS TO DRIVE 2" [illegible] 12" [illegible] 140 lb. WT. FALLING 30" [illegible]

LOGGED BY Owens & Smith

SHEET 1 OF 1

HOLE #2:


heavy silt loam
(CLAYEY-SILT) fill
(SILTY-SAND) loam,
water sorted strati-
fied sediment.

EARTH DIMENSIONS, INC.

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

HOLE NO. 3 SURF. ELEV. ______

PROJECT Landfill Investigation [illegible] LOCATION [illegible] feet west of small pon[illegible]

Springville, New York [illegible]

CLIENT [illegible]

DATE STARTED [illegible] COMPLETED [illegible]

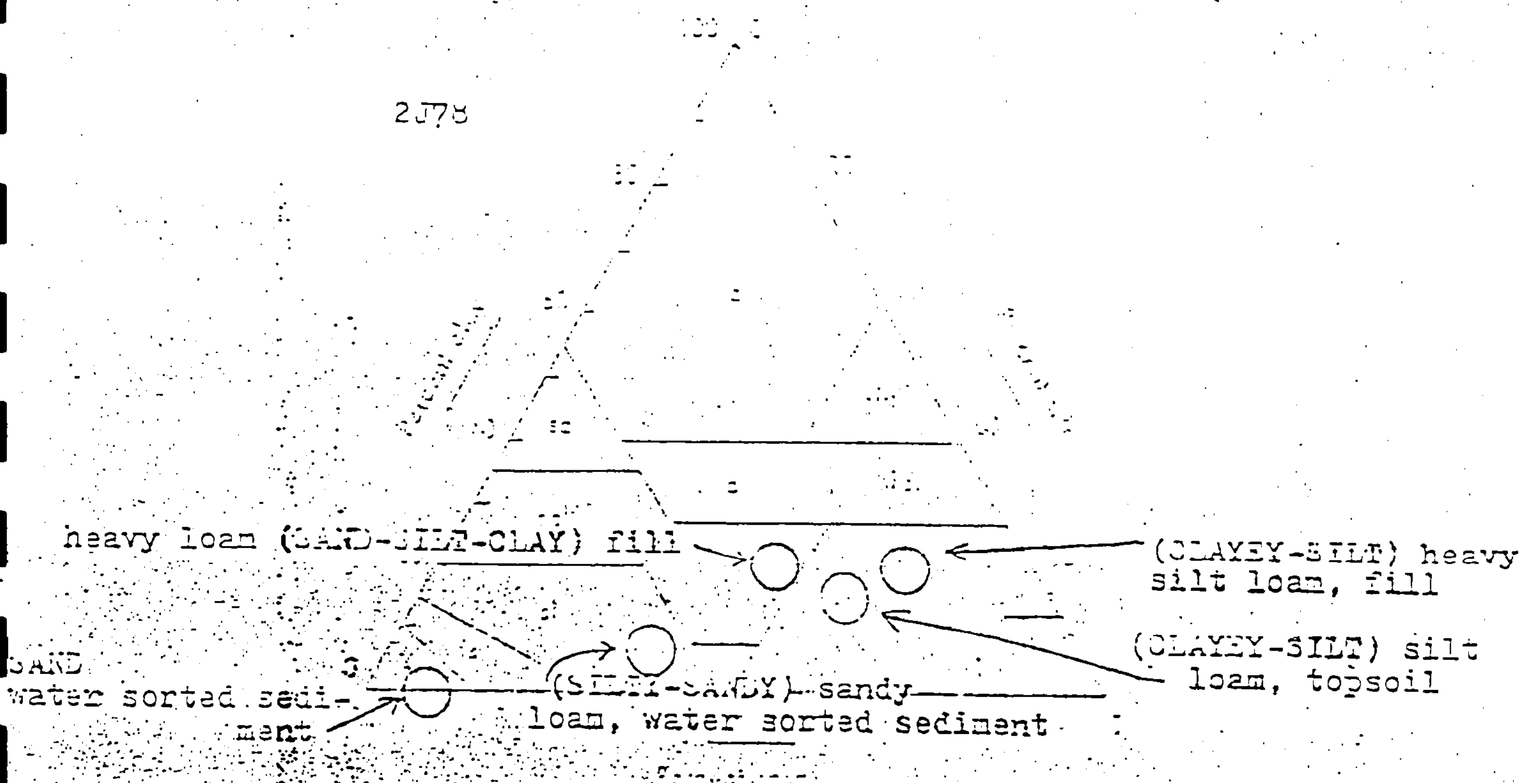
DEPTH	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		[illegible]	[illegible]	[illegible]		[illegible]	Moist dark brown silt loam (CLAYEY-SILT) with 5 to 10% rounded fine gravel, friable	0.5'
		18	[illegible]	[illegible]		[illegible]	Moist brown gravelly heavy loam (SAND-SILT-CLAY) with 20 to 30% round mixed lithology gravel, friable	[illegible].0'
5							Moist dark brown heavy silt loam (CLAYEY-SILT) with 10 to 15% sub-angular mixed lithology gravel, very firm, slightly plastic, slightly sticky.	Fill to 10.5 feet over water sorted stratified sand, gravel with some silt to end of boring.
		[illegible]		[illegible]		[illegible]		10.5'
		[illegible]		[illegible]		23	Moist brown very gravelly sandy loam (SILTY-SAND) with 30 to 40% rounded mixed lithology gravels, stratified, friable.	
		([illegible] recovery)						
		1[illegible]	17	[illegible]		35		Sand layer extends from 17.0 to 17.5 feet with abrupt boundary to next layer.
15		5	7	8		[illegible]		
		[illegible]	7	6		20		17.0'
							Moist light brown medium and coarse SAND, loose	17.5'

Cont. on page 2

[illegible] = NUMBER OF BLOWS TO DRIVE [illegible]

LOGGED BY [illegible]

HOLE [illegible]:



2J78
heavy loam (SAND-SILT-CLAY) fill
(CLAYEY-SILT) heavy silt loam, fill
(CLAYEY-SILT) silt loam, topsoil
SAND water sorted sediment
(SILTY-SANDY) sandy loam, water sorted sediment

EARTH DIMENSIONS, INC.

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

2-175 HOLE NO. [illegible] continued SURF. ELEV. ______

PROJECT Landfill Investigation [illegible] LOCATION [illegible] feet west of small pond

CLIENT [illegible] DATE STARTED [illegible] COMPLETED [illegible]

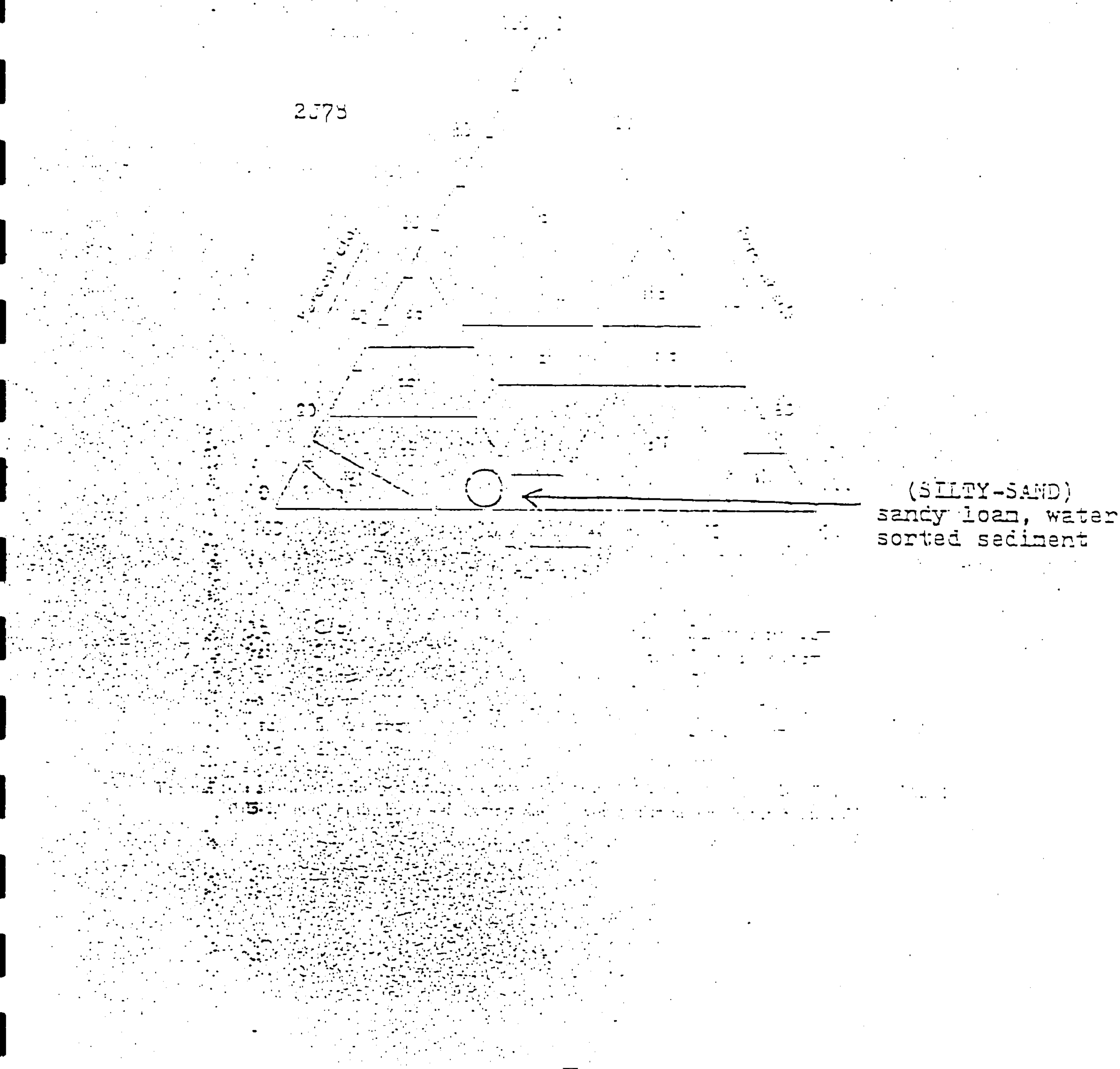
DEPTH	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		7	4	5	5	10	moist to extremely moist brown very gravelly sandy loam ([illegible]-SAND) with 30 to 40% rounded mixed lithology gravels, stratified, very friable	
		7	6	7	[illegible]	21		
								22.0'
							Boring completed at 22.0 feet	No water at completion.

N = NUMBER OF BLOWS TO DRIVE ______ " SPOON ______ WITH ______ LB. WT. FALLING ______ " PER BLOW

LOGGED BY ______ [illegible] & Smith

SHEET 2 OF 2

HOLE #[illegible], continued:



EARTH DIMENSIONS, INC.

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

[illegible]75

HOLE NO. [illegible]

SURF. ELEV. ______

PROJECT Landfill Investigation
[illegible] New York

LOCATION [illegible] feet east of pond

CLIENT [illegible]insmith Division

DATE STARTED [illegible]/7[illegible] COMPLETED [illegible]

DEPTH (feet)	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
							Moist brown gravelly clay loam ([illegible]-CLAY) with 15 to 25 mostly rounded mixed lithology gravels, firm, slightly plastic, slightly sticky.	
								4.0'
5							Extremely moist gray gravelly clay loam (SAND-SILT-CLAY) with 15 to 25% mostly rounded mixed lithology gravels, firm, slightly plastic, slightly sticky.	Fill to 10.0 feet over water sorted stratified sand, gravel and some silt to end of boring.
10	[illegible]					[illegible]		10.0'
		[illegible]	[illegible]			20	Moist brown gravelly loam ([illegible]-SAND) with 15 to 25% rounded mixed lithology gravels, stratified, friable	No water at completion.
								12.5'
15							Boring completed at 12.5 feet	

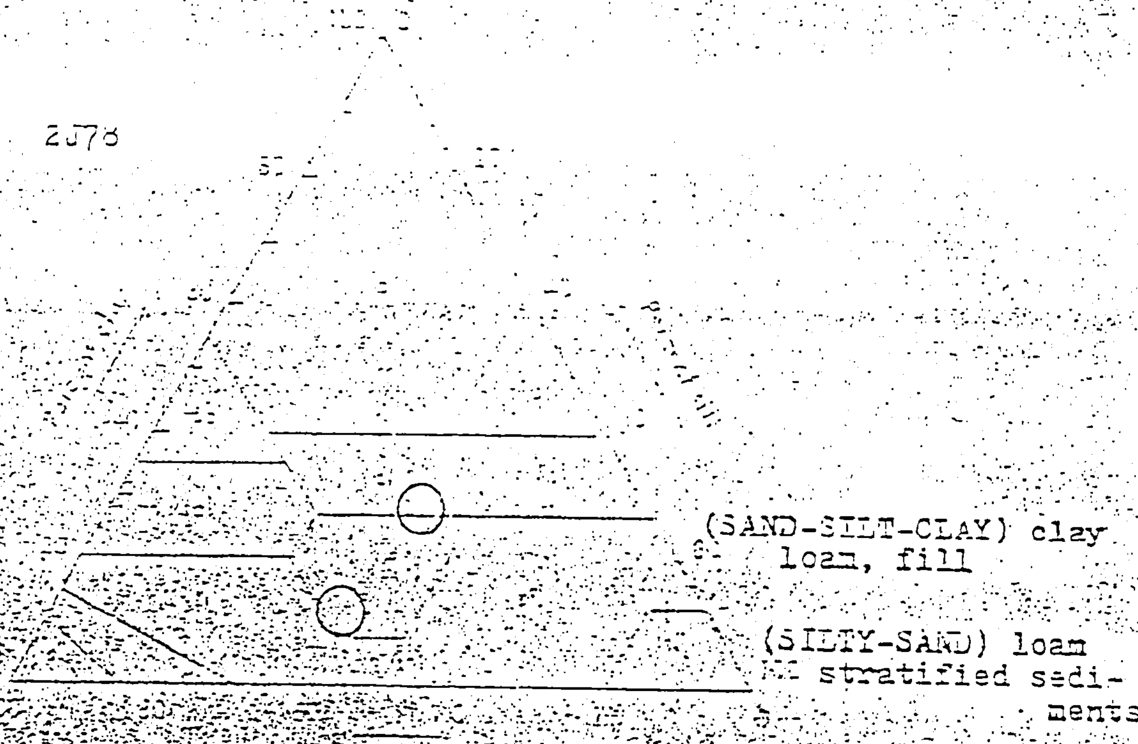
N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 1[illegible] lb. WT. FALLING [illegible] " PER BLOW

LOGGED BY [illegible]

24

SHEET [illegible] OF 1

HOLE 4:


2078
(SAND-SILT-CLAY) clay loam, fill
(SILTY-SAND) loam stratified sediments

EARTH DIMENSIONS, INC.

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

78 HOLE NO. 5 SURF. ELEV. ________

PROJECT ~~Landfill Investigation~~
~~Springville, New York~~ LOCATION ~~12 feet north of pond~~

CLIENT ~~Winsmith Division~~ DATE STARTED ~~10/10/78~~ COMPLETED ~~10/10/~~

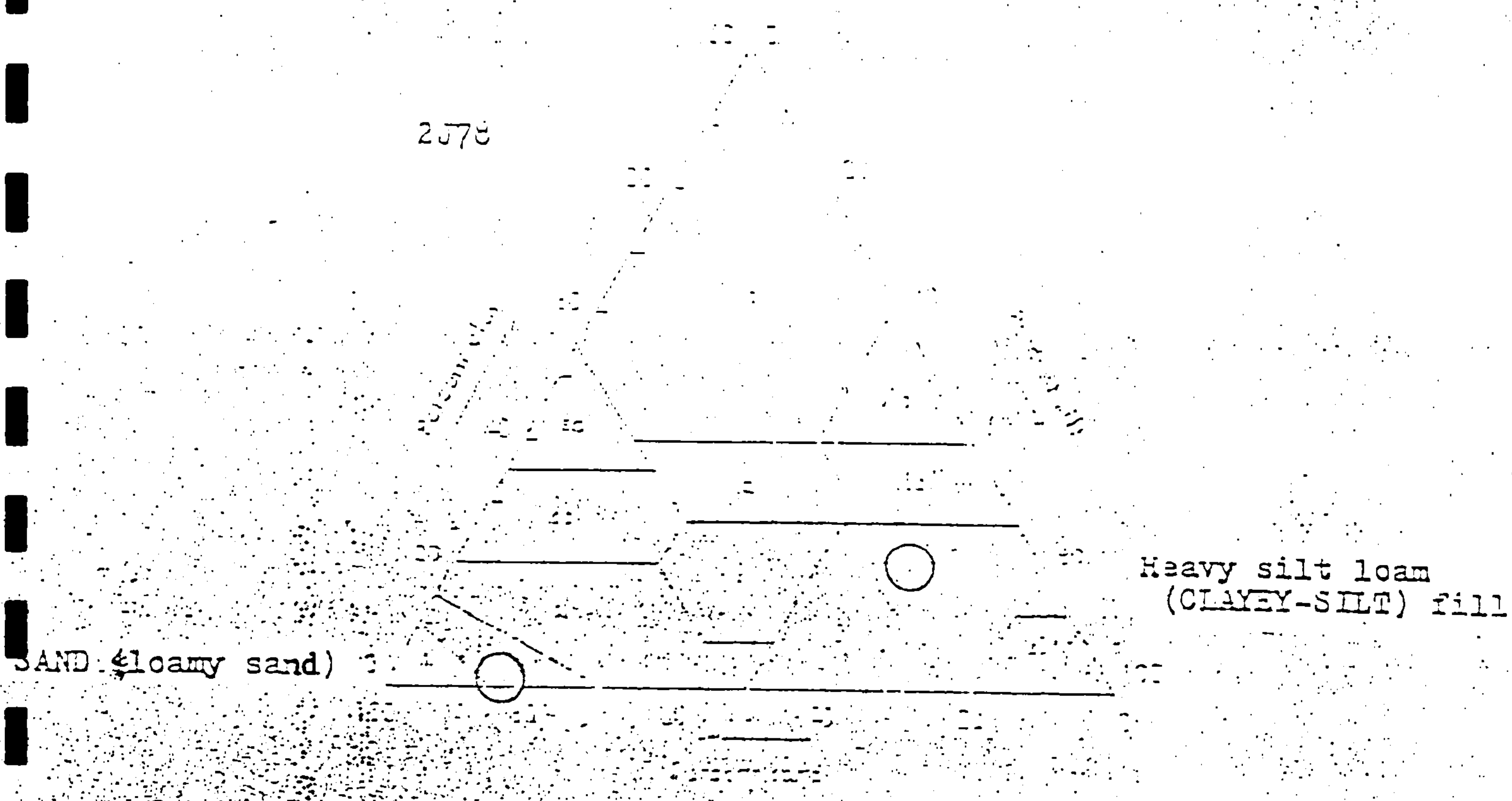
DEPTH (feet)	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0–5.0							Moist dark brown heavy silt loam (CLAYEY-SILT) with 5 to 10% mostly rounded mixed lithology gravel, firm, slightly sticky, slightly plastic	5.0'
5		4	6	8	8	16	Moist black and gray heavy silt loam (CLAYEY-SILT) with 5 to 15% mostly rounded mixed lithology gravel, firm, slightly sticky, slightly plastic,	Fill to 13.5 feet over water sorted stratified sand and gravel to end of boring.
10		8	12	13	10	23	This zone contained layers higher in organic content	
		6	7	11	13	24		13.5'
		17	18	10	9	10	Moist brown very gravelly loamy sand (SAND), stratified, loose	
15								15.5'
							Boring completed at 15.5 feet	No water at completion.

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON [illegible] " WITH [illegible] # WT FALLING [illegible] " PER BLOW

LOGGED BY Owens & Smith

SHEET 1 OF 1

HOLE #5:



October 11, 1978

Mr. George Mangiarelli
Winsmith Division
Springville, New York 14141

Dear Mr. Mangiarelli:

Enclosed are the soil reports of our soils investigation in Springville, October 10, 1978, conducted under the guidance of Mr. Richard F. Leonard, Principal Engineer - Environmental Sciences Department, of Calspan Corporation.

Please contact Mr. Leonard or myself if you have any questions concerning the enclosed.

We thank you for choosing Earth Dimensions, Inc. for this investigation. Hopefully, we can be of service to you in the future.

Sincerely yours,

Donald W. Owens
Soil Scientist

DWO/dew
2J78
Enclosures

CC: Mr. Richard F. Leonard ✓
Principal Engineer
Environmental Sciences Department
Calspan Corporation

B-3

ES ENGINEERING-SCIENCE

INTERVIEW FORM

Interviewee/Code Mike McMurry /

Title-Position Environmental Analyst

Address 600 Delaware Ave.

City Buffalo State New York Zip 14202

Phone (716) 847-4551 Residence Period to

Location DEC Regulatory Affairs Interviewer NYE - DIM

Date/Time 1/3/86 / Buffalo

Subject: Wetlands & Flood Info - Region 9

Remarks: Met with Mike who gave me access to both Wetland and Floodway maps for the local region.

*Also left site locations for the Identification of wildlife critical habitat & National Wildlife Refuces.

Winsmith Div - Umc Corp site

1) Fresh water wetland 0.6 miles NE of site (designated as SP - 11)

2) There is no critical habitat of an endangered species or national wild life refuge within 1 mile of site.

I agree with the above summary of the interview:

Signature: /s/Michael J. McMurray, Environmental Analyst

Comments:

SOURCE; ENGINEERING-SCIENCE, PHASE I INVESTIGATION WINSMITH DIVISION-UMC. JANUARY 1989

B-4

SITE INTERVIEW FORM

SITE: WINSMITH - UMC PROJECT NUMBER: 00296 - 01698

DATE: 3.6.91 TIME: PM

INTERVIEWER (DUNN/TAMS): LESLIE E GRACZ (DUNN)

INTERVIEWEE (OF SITE): GREG G ECKER (NYSDEC)

NO. OF YEARS WORKING AT THE SITE: NA

DATES FROM: NA TO: NA

JOB RESPONSIBILITIES AT SITE: NA

INTERVIEW:

MR. ECKER IS A WILDLIFE REPRESENTATIVE FOR NYSDEC. MR ECKER ASSISTED MS GRACZ IN IDENTIFYING SIGNIFICANT WILDLIFE AND WETLAND AREAS WITH IN A THREE MILE RADIUS. THERE ARE FOUR SIGNIFICANT WILDLIFE AREAS WITH IN A THREE MILE RADIUS OF WINSMITH - UMC; IDENTIFICATION NUMBERS SW15-005, SW 15-508, 07-504 AND 05-500; THERE IS ONE SIGNIFICANT PLANT AREA, SP15-012 AND ONE AREA POTENTIALLY SIGNIFICANT FOR WILDLIFE, PW15-006. THERE IS ALSO A DEER CONCENTRATION DC-15-113 WITH IN A THREE MILE RADIUS OF WINSMITH - UMC. THERE ARE SEVERAL WETLAND REGULATED AREAS WITH IN A THREE MILE RADIUS: SP-2, SP-6, SP-7, SP-5, SP-4, SP-8, SP-11 AND AH-1.

MR. KEN ZOBLEE ALSO A REPRESENTATIVE OF NYSDEC STATED THAT REGULATED WETLANDS ARE THOSE LARGER THAN 12.4 ACRES. WETLAND AREAS SMALLER THAN 12.4 ACRES ARE STILL A CONCERN EVEN THOUGH THEY ARE NOT REGULATED.

SIGNATURES:

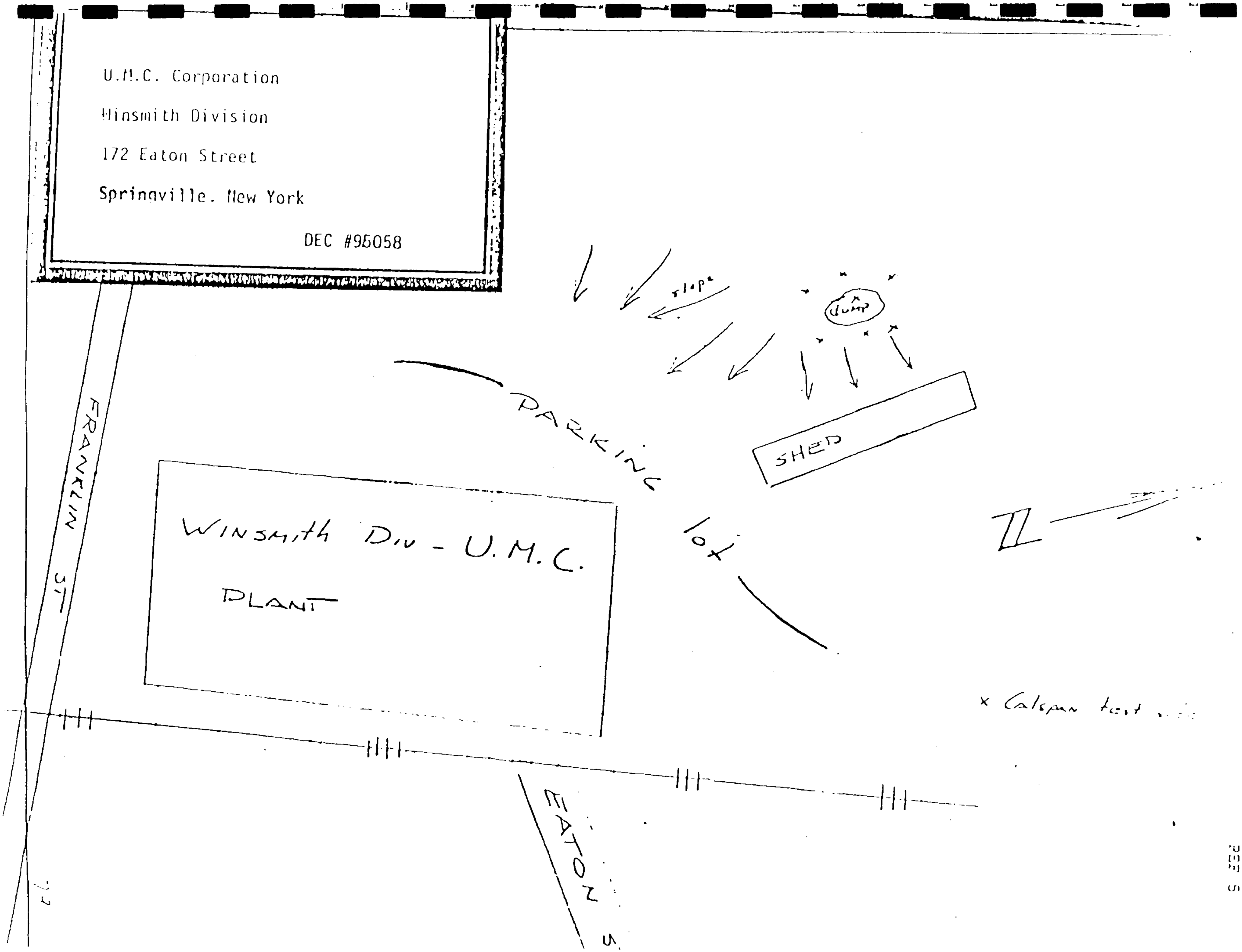
INTERVIEWEE: Greg G Ecker DATE: 3/27/91

INTERVIEWER: Leslie Gracz DATE: 3-21-91

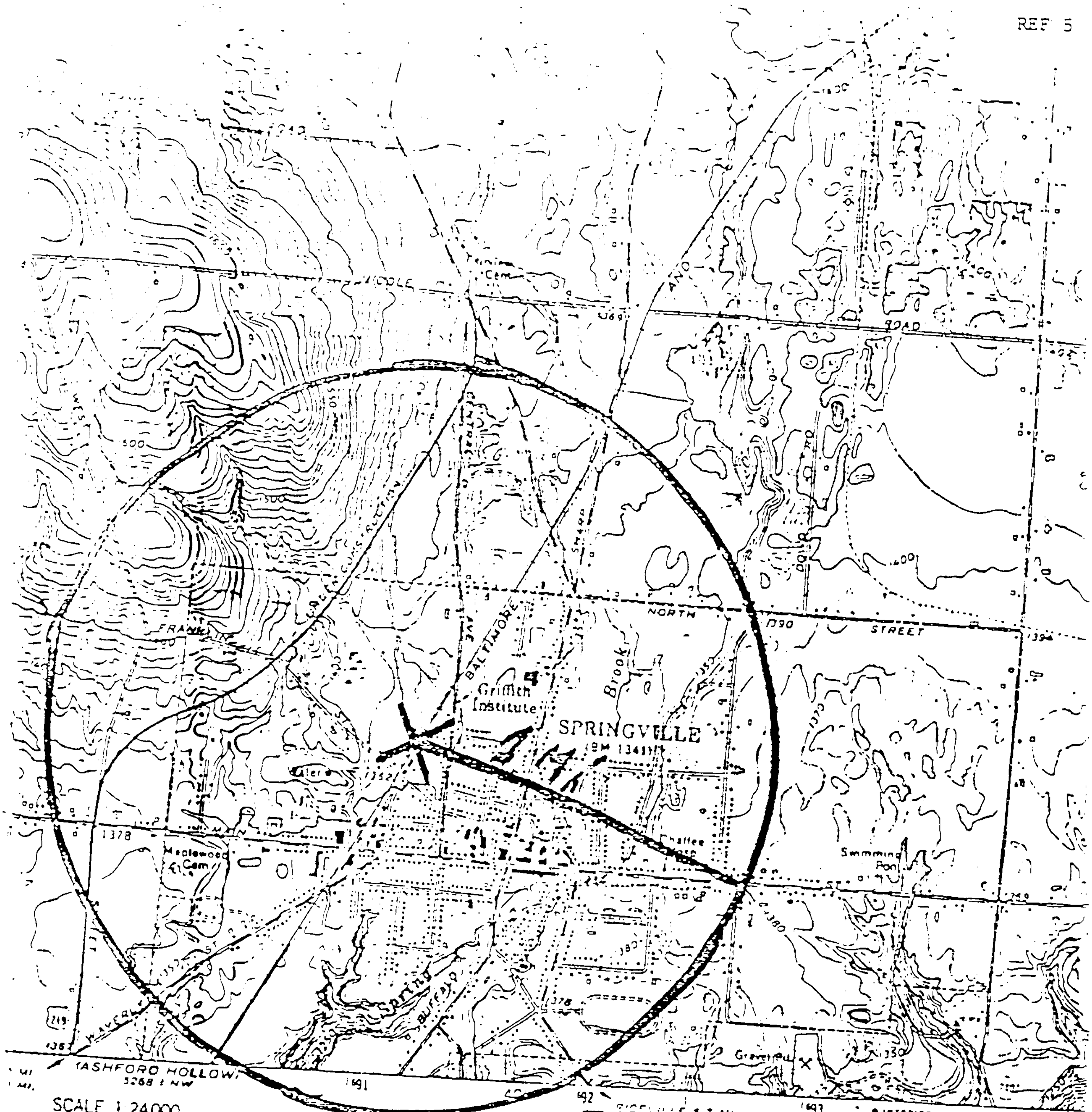
B-5

UMC CORPORATION
WINSMITH DIVISION
172 EATON STREET
SPRINGVILLE, NEW YORK
DEC #915058

Prepared By
Erie County Department of
Environment and Planning
October 1983


U.M.C. Corporation
Winsmith Division
172 Eaton Street
Springville, New York
DEC #96058
slope
dump
PARKING lot
SHED
WINSMITH DIV - U.M.C.
PLANT
FRANKLIN ST
EATON
N
x Calspan test

REF 5



SCALE 1:24000

0 — 1 MILE

2000 3000 4000 5000 6000 7000 FEET

0 — 1 KILOMETER

ONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

S WITH NATIONAL MAP ACCURACY STANDARDS
EOLOGICAL SURVEY, WASHINGTON, D. C. 20242
GRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

U.M.C. Corporation

Winsmith Division

172 Eaton Street

Springville, New York

DEC #95058

GENERAL BACKGROUND

U.M.C. Industries, Winsmith Division, is located on Eaton Street in the Village of Springville. This plant produces speed reduction equipment and gears. The facility produces the following wastes: cyanides, oil & grease, acids, scrap metals, water soluble coolants, and painting wastes. At one time the plant maintained a small on-site disposal pit.

DATA REVIEW

Following the 1978 IATF report this firm contracted with a consultant to evaluate its waste streams. As a portion of the consultants study the area of on-site disposal was also evaluated. The consultant's work included soil boring and sample analysis to determine the extent of the problem created by on-site waste disposal. It became apparent that the landfilling was confined to a small (20' x 15') area. Borings indicated that the disposal pit was approximately 10 feet deep. It was concluded that 3000 ft^3 of material was disposed of on-site. Samples were taken of water ponded over the disposal area, soil was taken from the 2 foot level, and from the 7 foot level. The samples were analyzed for cyanide, and oil and grease. Contaminated soil (1500 ppm oil and grease) was reported for the 7 foot deep sample. The cyanide concentration of <0.02 ppm was reported following analysis of water and soil. The groundwater standard for cyanide is .2 mg/l.

CONCLUSION AND RECOMMENDATION

The firm has discontinued use of the site and now utilizes a private hauler for off-site disposal. Past disposal was limited to a small area. Analysis of soil and water samples taken from the area of disposal does not indicate that the site poses a serious environmental threat. We would recommend that the site be removed from the list of sites suspected of posing a hazard.

RECEIVED

FEB 2 4 1994

N.Y.S. DEPT. OF
ENVIRONMENTAL CONSERVATION
REGION 9