02-8703-65-SR
Rev. No. 0

FINAL DRAFT
SITE INSPECTION REPORT
EDWIN B. STIMPSON CO., INC.
BAYPORT, NEW YORK

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8703-65
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

FEBRUARY 10, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

EDWARD L. LEONARD
PROJECT MANAGER

MARK ELLIS
SITE MANAGER

REVIEWED/APPROVED BY

RONALD M. NAMAN
FIT OFFICE MANAGER

314687

02-8703-65-SR
Rev. No. 0

Contents

Section	
1.	Site Inspection Report Executive Summary
2.	Environmental Protection Agency Form 2070-13
3.	Maps and Photographs
4.	Bibliography of Information Sources
5.	Press Release Summary
6.	Background Information

SECTION 1

SITE INSPECTION REPORT EXECUTIVE SUMMARY

NUS CORPORATION

02-8703-65-SR
Rev. No. 0

POTENTIAL HAZARDOUS WASTE SITE HAZARD RANKING SYSTEM REPORT EXECUTIVE SUMMARY

Edwin B. Stimpson Co., Inc.
(Alias) Stimpson MFG.
Site Name

NYD052780392
EPA Site ID Number

900 Sylvan Avenue
Bayport, New York 11705
Address

02-8703-65
TDD Number

SITE DESCRIPTION

Edwin B. Stimpson Co., Inc. is an active, privately owned producer of metal fasteners and attaching equipment located on 22 acres of property in Bayport, Suffolk County, New York. The company is located in a suburban setting with moderate industry surrounding it. Since operation began in 1970, metal plating and finishing operations have generated a variety of wastes including spent plating baths, waste oil, and waste paint. These wastes are currently manifested to a licensed waste scavenger for disposal. The company closed its aluminum chromating and cadmium plating operations in 1984. A SPDES permit has been maintained since 1981 and encompasses current disposal of treated wastewater into two on-site recharge basins. For a period of approximately 5 months in 1984, discharge in violation of this permit occurred in the two on-site recharge basins just outside the plant. The contaminants of concern were aluminum, cadmium, copper, and iron. Little is known about waste disposal procedures prior to 1980.

A site inspection was conducted on April 2-3, 1987, by NUS Corporation, Region 2 FIT personnel. During this investigation, four groundwater samples were collected from upgradient and downgradient on-site monitoring wells. Three soil samples were also collected. Analysis of soil samples showed elevated levels of contaminants including nickel, zinc, cyanide, magnesium, 2-butanone, and bis(2-ethylhexyl)phthalate. Analysis of groundwater samples showed no significant concentrations of contaminants.

Prepared by: Mark Ellis **Date:** 2/10/89
of NUS Corporation

SECTION 2

ENVIRONMENTAL PROTECTION AGENCY FORM 2070-13

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

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)
Edwin B. Stimpson Co., Inc.

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
900 Sylvan Avenue

03 CITY
Bayport

04 STATE: NY
05 ZIP CODE: 11705
06 COUNTY: Suffolk
07 COUNTY CODE: 103
08 CONG DIST.: 02

09 COORDINATES
LATITUDE: 40° 45' 55". N
LONGITUDE: 073° 03' 00". W

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

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 4 / 2-3/ 87 (MONTH DAY YEAR)

02 SITE STATUS: X ACTIVE _ INACTIVE

03 YEARS OF OPERATION: 1970 (BEGINNING YEAR) /still active (ENDING YEAR) _ UNKNOWN

AGENCY PERFORMING INSPECTION (Check all that apply)
_ A. EPA X B. EPA CONTRACTOR NUS Corporation (Name of firm)
_ C. MUNICIPAL _ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
_ E. STATE _ F. STATE CONTRACTOR _____ (Name of firm)
_ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Ross A. Dimmick	Geologist	NUS Corporation	(201) 225-6160
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO.**
Alan Cherepon	Geologist	NUS Corporation	(201) 225-6160
Gerry Gilliland	Geologist	NUS Corporation	(201) 225-6160
Michael Bauman	Geologist	NUS Corporation	(201) 225-6160
Michael Gentils	Geologist	NUS Corporation	(201) 225-6160
Claire Marcussen	Enviornmental Scientist	NUS Corporation	(201) 225-6160

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
James E. Cuenin	Vice-President	Edwin B. Stimpson Co., Inc. 900 Sylvan Avenue Bayport, NY 11705	(516) 472-2000
Chip Rau		Edwin B. Stimpson Co., Inc. 900 Sylvan Avenue Bayport, NY 11705	(516) 472-2000
Gary J. Miller		H2M Corporation 125 Baylis Road Melville, NY 11747	(516) 752-9060

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION		19 WEATHER CONDITIONS
X PERMISSION	4/2/87	0810	4/2/87 - Partly cloudy, 45°-55°F, winds southerly 10-20 mph.
_ WARRANT	4/3/87	0810	4/3/87 - Sunny, 55°F, winds variable, 3-5 mph.

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Amy Brochu	U.S. EPA, Edison, NJ	(201) 906-6802

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Mark Ellis	U.S. EPA	NUS Corporation	(201) 225-6160	2/10/89 (MONTH DAY YEAR)

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

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

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
- X F. LIQUID
- _ G. GAS

02 WASTE QUANTITY AT SITE

(Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS
NO. OF DRUMS 85,534 (or 4,276, 720 gallons)

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			For a period of time from March 9, 1984 to July 27, 1984, Edwin B. Stimpson Co., Inc. was in violation of its SPDES permit concerning levels of aluminum, cadmium, copper, and iron. Soil sample analyses from the NUS FIT site inspection showed elevated levels of the following contaminants: nickel, zinc, cyanide, magnesium, 2-butanone, and bis(2-ethylhexyl) phthalate.
OLW	OILY WASTE			
SOL	SOLVENTS	See Comments		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	See Comment		
IOC	INORGANIC CHEMICALS	See Comments		
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	See Comments		

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

CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Zinc	7440-66-6	recharge basin	120E	mg/kg
IOC	Aluminum	7429-90-5	Unknown	8910E	mg/Kg
IOC	Copper	7440-50-8	recharge basin	43E	mg/Kg
IOC	Cyanide	151-50-8	recharge basin	1.5E	mg/Kg
MES	Iron	1309-37-1	Unknown	9080	mg/kg
MES	Nickel	7440-02-0	recharge basin	52	mg/kg
MES	Magnesium	7439-95-4	Unknown	885	mg/kg
SOL	2-Butanone	78-93-3	recharge basin	14	ug/kg
OCC	Bis(2-Ethylhexyl) Phthalate	117-81-7	recharge basin	150J	ug/kg

E - Value estimated due to laboratory interference.

J - Compound present below contract-specified detection limits, but above instrument detection limits.

V. FEEDSTOCKS (See Appendix for CAS Numbers)

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

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

Sax, N.I. Dangerous properties of industrial materials. 6th ed. New York, Van Nostrand Reinhold Co., 1984.
U.S. EPA Contract Laboratory Program, Laboratory Analyses from NUS Region 2 FIT site inspection conducted on April 2-3, 1987.
NUS Field Notebook No. 0051, Edwin B. Stimpson Co., Inc. TDD No. 02-8703-65, NUS Corp. Region 2 FIT Site Inspection conducted on April 2-3, 1987.

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

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION approximately 02 OBSERVED (DATE:) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 200,000 04 NARRATIVE DESCRIPTION

The potential exists because of the high permeability of the unsaturated zone (10^{-3} cm/sec) and an unconfined aquifer. Since the recharge basins are unlined both the SPDES violations and FIT sample analyses indicate a potential for contamination of the groundwater, affecting approximately 200,000 people.

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

No potential exists since there are no surface water migration pathways. Storm water drains into the recharge basins.

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

No potential exists because no readings above background were detected in the ambient air on the HNu or OVA air monitoring instruments.

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

No potential exists because based on background information and field observations, the conditions on site do not pose this type of threat.

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

There is a potential for direct contact, but it is limited to those with access to the recharge basin area, which is fenced and locked.

01 X F. CONTAMINATION OF SOIL 02 X OBSERVED (DATE: April 2, 1987) _ POTENTIAL _ ALLEGED
03 AREA POTENTIALLY AFFECTED: 2 2 (ACRES) 04 NARRATIVE DESCRIPTION

Soil contamination exists since laboratory analyses of soil samples collected within the recharge basins show elevated levels of some metals.

01. X G. DRINKING WATER CONTAMINATION approx. 02 OBSERVED (DATE:) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 200,000 04 NARRATIVE DESCRIPTION

Six well fields within a 3-mile radius of the site are part of a municipal water supply serving much of Suffolk County.

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

The potential is limited to those employees allowed access to the fenced-in recharge basin area.

01 X I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE:) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 200,000 04 NARRATIVE DESCRIPTION

The potential exists for the general population to be affected if contamination of groundwater occurs due to negligence regarding the regulatory measures of the SPDES permit.

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

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

The potential exists for damage to flora since the contaminants on site were determined to be bioaccumulative.

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

The potential exists for damage to fauna because of the bioaccumulative characteristics of the on-site contaminants.

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

No potential exists since there is no surface migration route for contaminants, and local fauna are not used for food supply.

01 X M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 _ OBSERVED (DATE: _____) X POTENTIAL _ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 200,000 — 04 NARRATIVE DESCRIPTION

The recharge basins are unlined, and the waste liquids disposed of in them leach directly into the underlying aquifer system. Therefore, there is potential for approximately 200,000 people within a 3 mile radius to be affected.

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

The potential exists for damage to off-site wells from contaminant migration within the underlying aquifers.

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

The potential exists for the contamination of storm drains on site which lead directly into the recharge basins.

01 X P. ILLEGAL/UNAUTHORIZED DUMPING — 02 X OBSERVED (DATE: 3/84 - 7/84) _ POTENTIAL _ ALLEGED
04 NARRATIVE DESCRIPTION

Discharge in violation of SPDES permit NY0075884 was noted. A total of 79 violations were cited with respect to copper, iron, cadmium, and aluminum.

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

None

III. TOTAL POPULATION POTENTIALLY AFFECTED: approximately 200,000

IV. COMMENTS

None

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

Letter from A. R. Yerman (NYSDEC) to J. E. Cuenin of E. B. Stimpson Co., Inc. dated 1/11/85.
Krulikas, R.K. Hydrogeologic data from selected wells and test holes in Suffolk County, Long Island, New York, 1972-80.
Soren, J., Results of subsurface exploration in the mid-island area of western Suffolk County, Long Island, New York. Long Island Water Resources Bulletin Number 1, prepared by U.S. Geological Survey in cooperation with Suffolk County Legislature Suffolk County Water Authority, published by Suffolk County Water Authority.
McClymonds, N.E. and O.L. Franke. Water-transmitting properties of aquifers on Long Island, New York.
Jensen, H.M. and J. Soren. Hydrogeology of Suffolk County, Long Island, New York. Prepared in cooperation with the Suffolk County Water Authority and the Suffolk County Department of Environmental Control.
Report prepared by Holynacher, McLendon and Murrell, P.C. in response to U.S. EPA's questions concerning Stimpson Co., Inc., EPA ID No. NYD052780392.
Three-Mile Vicinity Map based on U.S. Geological Survey Map, 7.5 minute series, "Patchogue, NY, 1956; Bellport, NY, 1956; Sayreville, NY, 1955, revised, 1967.
U.S. EPA Contract Laboratory Program, Laboratory Analyses from NUS Region 2 FIT site inspection conducted April 2-3, 1987.
NUS Field Notebook No. 0051, Edwin B. Stimpson Co., Inc. TDD No. 02-8703-65, NUS Corp. Region 2 FIT site inspection conducted April 2-3, 1987.
Sax, N.I. Dangerous properties of industrial materials. 6th ed. New York, Van Nostrand Reinhold Co., 1984.
Telecon Note: Conversation between Karen Randazzo of Suffolk County Water Authority and Ross A. Dimmick of NUS Corporation, 11/13/87, Re: Well fields within 3 miles of site, and aquifer distinction.
Project Note: From Mark Ellis to File, Subject: Accessibility with respect to the recharge basin area, January 16, 1989.

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

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

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				
X G. STATE (Specify) SPDES	NY0075884	8/1/81	8/1/86	
_ H. LOCAL (Specify)				
_ I. OTHER (Specify)				
_ J. NONE				

III. SITE DESCRIPTION

01 Storage/Disposal (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
_ A. SURFACE IMPOUNDMENT			_ A. INCINERATION	X A. BUILDINGS ON SITE
_ B. PILES			_ B. UNDERGROUND INJECTION	
_ C. DRUMS, ABOVE GROUND			X C. CHEMICAL/PHYSICAL	
_ D. TANK, ABOVE GROUND			_ D. BIOLOGICAL	06 AREA OF SITE
_ E. TANK, BELOW GROUND			_ E. WASTE OIL PROCESSING	
_ F. LANDFILL			_ F. SOLVENT RECOVERY	
_ G. LANDFARM			_ G. OTHER RECYCLING/RECOVERY	22.0 (Acres)
_ H. OPEN DUMP			_ H. OTHER (Specify)	
X I. OTHER Recharge Basins (Specify)	*4,276,720	gallons		

*4,276,720 gallons or 85,534 drums is based on approximately 98 work days in violation of Stimpson's SPDES permit, with an average discharge during this period of 43,640 gallons per day.

07 COMMENTS

For consecutive monitoring periods from March 9, 1984 to July 27, 1984, Edwin B. Stimpson Co., Inc. discharged concentrations of aluminum, cadmium, copper, and iron in excess of those allowed in its SPDES permit.
U.S. EPA Contract Laboratory Program analyses showed elevated levels of nickel, zinc, cyanide, 2-butanone, and bis(2-ethylhexyl)phthalate.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

_ A. ADEQUATE, SECURE _ B. MODERATE X C. INADEQUATE, POOR _ D. INSECURE, UNSOUND, DANGEROUS

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

Treated waste is discharged into sandy recharge basins, from which contaminants enter the groundwater due to the fact that these recharge basins are unlined.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: _YES XNO

02 COMMENTS

Waste is not easily accessible. The recharge basins are securely fenced and locked.

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

Field Notebook No. 0051, Edwin B. Stimpson Co., Inc. TDD No. 02-8703-65, NUS Corp. Region 2 FIT site inspection conducted on April 2-3,1987.
Report prepared by Holymacher, McLendon and Murrell, P.C. in response to U.S. EPA's questions concerning Stimpson Co., Inc., EPA ID No. NYD052780392.
Hazardous waste interim standards plan prepared for E.B. Stimpson Co., Inc., by ERC/Lancy, November 12, 1981.

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL	02 STATUS ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. _	B. X	A. _	B. _	C. X	A. 0.9 (mi)
NON-COMMUNITY	C. _	D. _	D. _	E. _	F. _	B. _ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

X 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: approx. 200,000

03 DISTANCE TO NEAREST DRINKING WATER WELL: 0.9 (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
27.1 (ft)	South	27.1 (ft)	Unknown (gpd)	X YES _ NO

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

The Church St., Lakeview Ave., and Waterworks Rd. well fields are all located between 0.9 and 1.2 miles from the site. All of these well fields contribute to the Suffolk County municipal water supply system which serves approximately 200,000 people. Most of these wells are between 100 and 164 feet deep.

10 RECHARGE AREA

X YES
_ NO

COMMENTS There are many recharge basins in Suffolk County. They are used to recharge groundwater reservoirs with storm water runoff.

11. DISCHARGE AREA

_ YES
NO

COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one) Not Applicable

_ 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
No surface water migration routes		(mi)
		(mi)
		(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 6,742 NO. OF PERSONS	B. 38,416 NO. OF PERSONS	C. 73,430 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION: 0.25 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE: 12,867

04 DISTANCE TO NEAREST OFF-SITE BUILDING: adjacent (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 area around the site is a mixture of light industry, residential areas, and undeveloped land. Within 0.5 mile of the site is primarily undeveloped land with a few warehouses. The area 0.5 mile to the south of the site, toward the ocean, is primarily a residential area.

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

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

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 X D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

X 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: 1600 (ft)
04 DEPTH OF CONTAMINATED SOIL ZONE: 10.0 (ft)
05 SOIL pH: 5.6-8.8

06 NET PRECIPITATION: 14 (in)
07 ONE YEAR 24 HOUR RAINFALL: 2.5 (in)
08 SLOPE
SITE SLOPE: Not applicable %
DIRECTION OF SITE SLOPE: South
TERRAIN AVERAGE SLOPE: Not applicable %

09 FLOOD POTENTIAL
SITE IS IN Unknown YEAR FLOODPLAIN _ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

10

11 DISTANCE TO WETLANDS (5 acre minimum)
ESTUARINE: A. > 2.0 (mi)
OTHER: B. > 1.0 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species): > 1.0 (mi)
ENDANGERED SPECIES: Not applicable

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL: A. adjacent (mi)
RESIDENTIAL AREAS: NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES: B. 0.6 Wildlife Reserve (mi)
AGRICULTURAL LANDS: PRIME AG LAND: C. 0 (mi)
AGRICULTURAL LANDS: AG LAND: D. 0 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

This part of Long Island is relatively flat with average slopes of less than 1 percent toward the south. The area within 0.5 mile of the site is exceptionally flat with an average terrain slope of less than 0.6 percent.

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

Water-Transmitting Properties of Aquifers on Long Island, New York; U.S. Govt. Printing Office, 1972.
Three-Mile Vicinity Map based on U.S. Geological Survey Map, 7.5 minute series, "Patchogue, NY, 1956; Bellport, NY, 1956; Sayville, NY, 1955, revised, 1967.
Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1984.
Telecon Note: Conversation between Pat Dugan of Suffolk County Water Authority and Diane Trube of NUS Corporation 3/24/87, Re: Locations and numbers of public supply wells, maps included.
General Sciences Corporation, Graphical Exposure Modeling Systems, (GEMS). Landover, Maryland, 1986.
NYSDEC Significant Habitat Overlay, Division of Fish and Wildlife, Prepared by Habitat Inventory Unit, 3/81, revised 11/6/85.
Aronson, D.A. and G.E. Seaburn. Catalog of Recharge Basins on Long Island, New York in 1969.
U.S. EPA Contract Laboratory Program, Laboratory Analyses from NUS Region 2 FIT site inspection conducted on April 2-3, 1987.
U.S. Department of the Interior, U.S. Fish and Wildlife Service, Atlantic Coast Ecological Inventory, New York (N.Y.-Conn.-N.J.), 1980.
Field Notebook No. 0051, Edwin B. Stimpson Co., Inc. TDD No. 02-8703-65, NUS Corp. Region 2 FIT site inspection conducted April 2-3, 1987.
U.S. Department of Agriculture, Soil Conservation Service, Important Farmlands of Suffolk County, New York, 1975.
Monitor well system at Stimpson Company, Bayport, New York prepared for ERC/Lancy Company, by Dr. C. Welti, P.E.

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

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO		03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	4	Organics:	Ecology and Environment 4285 Genesee Street Buffalo, NY 14225	4/8/87
SURFACE WATER				
WASTE				
AIR				
RUNOFF		Inorganic:	Cambridge Analytical Assoc. 1106 Commonwealth Avenue Boston, MA 02215	5/7/87
SPILL				
SOIL	3			
VEGETATION				
OTHER - Blank	2			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Air Monitoring	The HNu photoionization and the OVA flame ionization detectors indicated no concentrations above background in the ambient air.
Groundwater	Water level measurements were taken at each of the wells sampled.

IV. PHOTOGRAPHS AND MAPS

01 TYPE X GROUND X AERIAL

02 IN CUSTODY OF NUS Corporation, Edison, NJ
(Name of organization or individual)

03 MAPS
X YES
_ NO

04 LOCATION OF MAPS
NUS Corporation, Edison, NJ

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

NUS Field Notebook No. 0051 - Filed under TDD No. 02-8703-65

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

Field Notebook No. 0051, Edwin B. Stimpson Co., Inc. TDD No. 02-8703-65, NUS Corp. Region 2 FIT site inspection conducted April 2-3, 1987.

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

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

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

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
Edwin B. Stimpson Co., Inc.		Not Applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
900 Sylvan Avenue			
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE
Bayport / NY	11705		

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE

01 NAME	02 D + B NUMBER	08 NAME	09 D + B NUMBER
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	12 CITY / 13 STATE	14 ZIP CODE

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

01 NAME	02 D + B NUMBER	01 NAME	02 D + B NUMBER
Not Applicable		Not Applicable	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	05 CITY / 06 STATE	07 ZIP CODE

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

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

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

Potential Hazardous Waste Site Preliminary Assessment, EPA ID No. NYD052780392. Prepared by Carol Price, U.S. EPA, Environmental Services Division, September 17, 1986.

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

1. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

I. CURRENT OPERATOR(S)

01 NAME		02 D + B Number	OPERATOR'S PARENT COMPANY (If applicable) 10 NAME	Not Applicable	11 D + B NUMBER
Same as owner					
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				

II. PREVIOUS OPERATOR(S) (List most recent first: Provide only if different from owner)

01 NAME	Not Applicable	02 D + B Number	PREVIOUS OPERATOR'S PARENT COMPANIES (If applicable) 10 NAME	Not Applicable	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				
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				
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				

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

Potential Hazardous Waste Site Preliminary Assessment, EPA ID No. NYD052780392. Prepared by Carol Price, U.S. EPA, Environmental Services Division, September 17, 1986.

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

II ON-SITE GENERATOR

01 NAME | 02 D + B NUMBER

Same as owner
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 Not Applicable | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER

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

05 CITY | 06 STATE | 07 ZIP CODE | 05 CITY | 06 STATE | 07 ZIP CODE

01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER

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

05 CITY | 06 STATE | 07 ZIP CODE | 05 CITY | 06 STATE | 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER

RGM Liquid Waste Removal Corporation
03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE | 03 STREET ADDRESS (P.O. Box, RFD#, etc.) | 04 SIC CODE

972 Nicolls Road
05 CITY | 06 STATE | 07 ZIP CODE | 05 CITY | 06 STATE | 07 ZIP CODE

Deer Park | NY | 11729

01 NAME | 02 D + B NUMBER | 01 NAME | 02 D + B NUMBER

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

05 CITY | 06 STATE | 07 ZIP CODE | 05 CITY | 06 STATE | 07 ZIP CODE

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

Potential Hazardous Waste Site Preliminary Assessment, EPA ID No. NYD052780392. Prepared by Carol Price, U.S. EPA, Environmental Services Division, September 17, 1986.

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

II. PAST RESPONSE ACTIVITIES

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

No previous history.

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

No previous history.

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

No previous history.

01 X D. SPILLED MATERIAL REMOVED — 02 DATE: 1/15/87 — 03 AGENCY: Suffolk County Dept. of Health Services
04 DESCRIPTION

A spill of approximately 30 gallons of sulfuric acid from a leaking pipe fitting was removed.

01 X E. CONTAMINATED SOIL REMOVED — 02 DATE: 1/15/87 — 03 AGENCY: Suffolk County Dept. of Health Services
04 DESCRIPTION

At least three drums of sulfuric acid -contaminated soil were removed from the site of the above spill.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

01 L. ENCAPSULATION — 02 DATE: — 03 AGENCY:
04 DESCRIPTION

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D052780392

II. PAST RESPONSE ACTIVITIES

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

No previous history.

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

None.

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

Suffolk County Department of Health Services Uniform Complaint Field Report dated January 15, 1987.

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION X YES _ NO

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

In February 1985, a $135,000 penalty was levied against Edwin B. Stimpson Co., Inc., for 79 SPDES permit violations between March 14, 1984 and July 31, 1984. All but $10,000 of this penalty was suspended provided specified improvements of effluent treatment facilities were made.

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

Letter from Andrew R. Yerman (NYSDEC) to J. E. Cuenin of E. B. Stimpson Co., Inc. dated February 8, 1985

SECTION 3

MAPS AND PHOTOGRAPHS

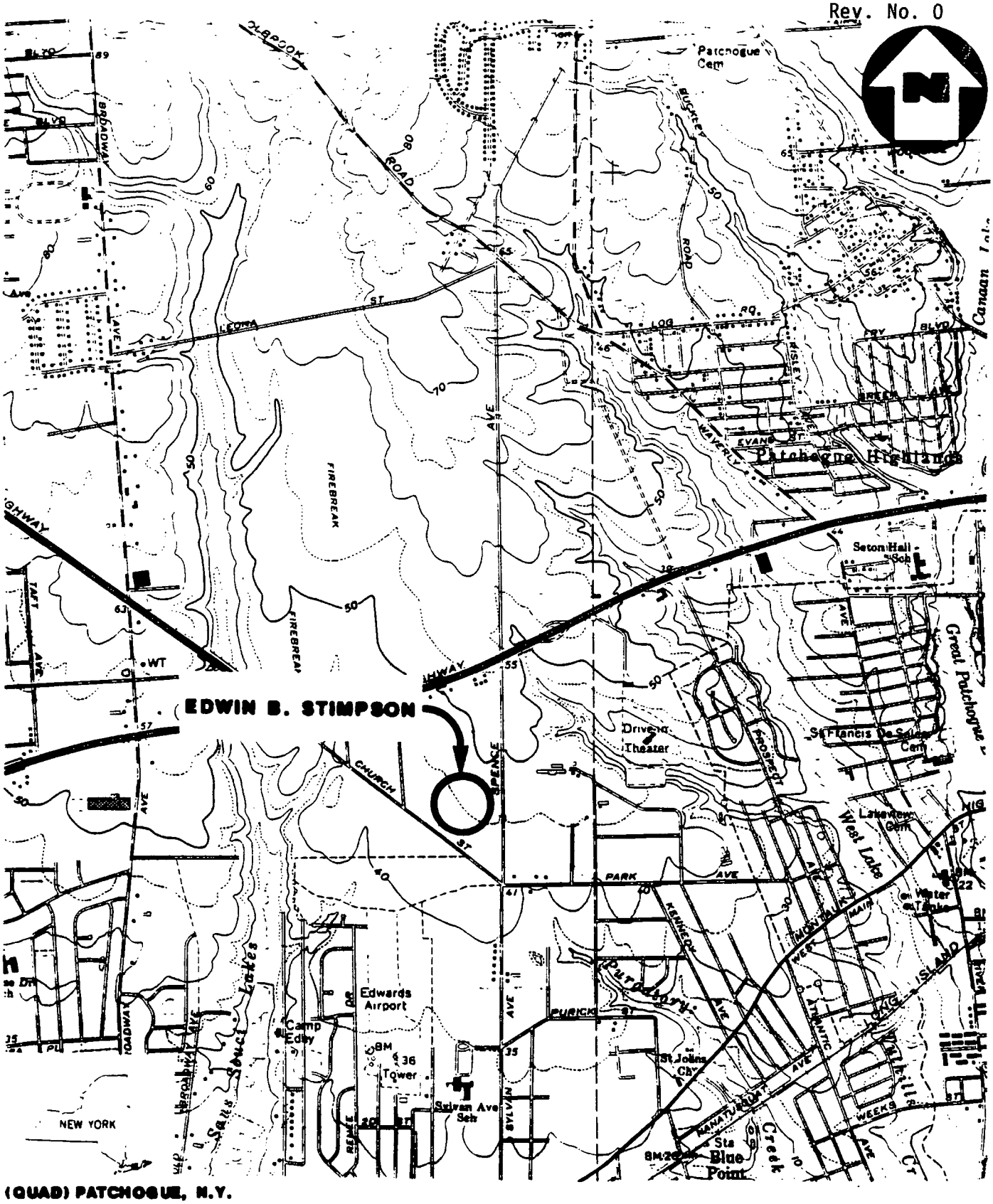
EDWIN B. STIMPSON CO., INC.
BAYPORT, NEW YORK

CONTENTS

Figure 1: Site Location Map

Figure 2: Sample Location Map

Exhibit A: Photograph Log



(QUAD) PATCHOGUE, N.Y.

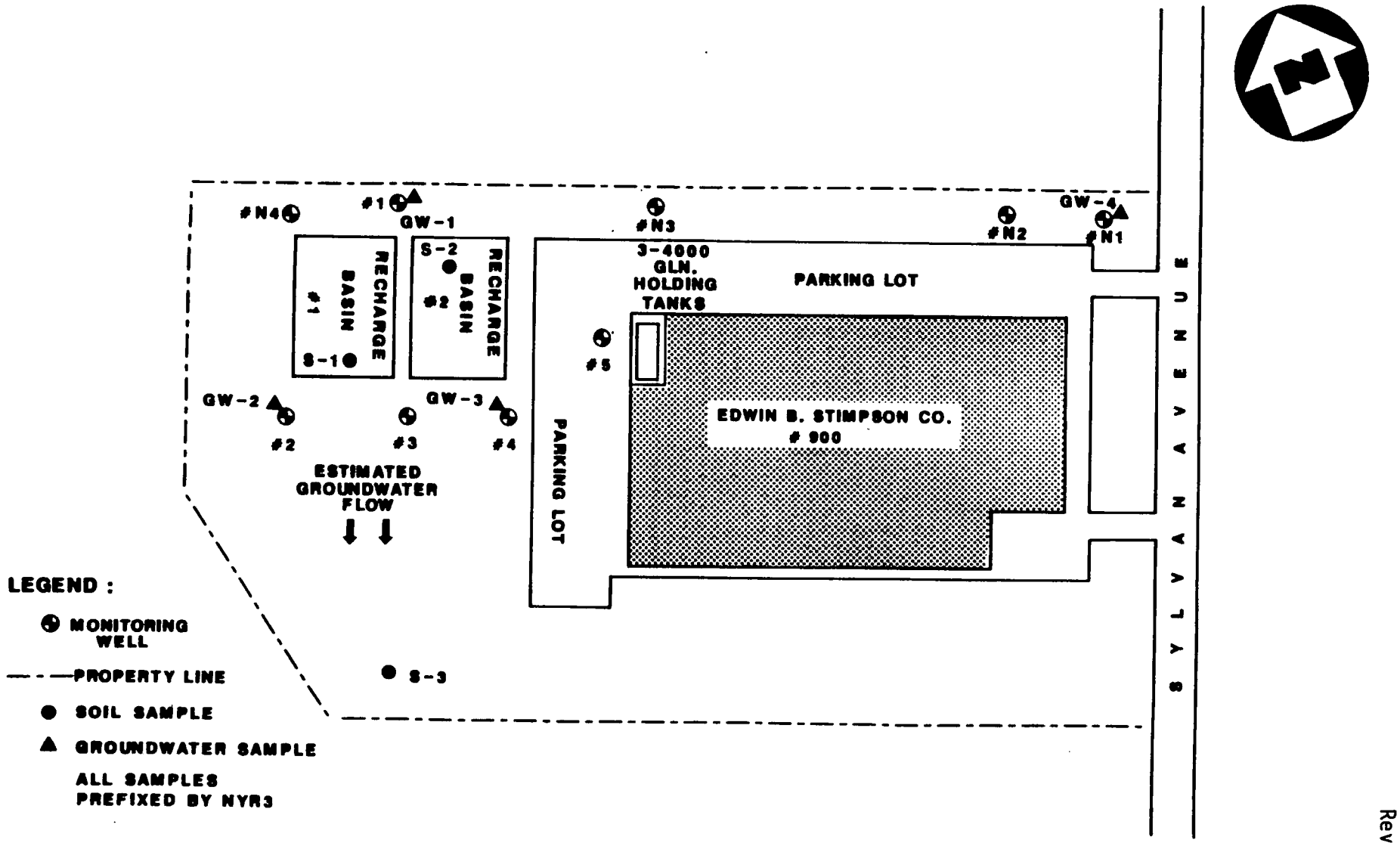
FIGURE 1

SITE LOCATION MAP

EDWIN B. STIMPSON, BAYPORT, N.Y.

SCALE: 1" = 2000'

NUS CORPORATION



SAMPLE LOCATION MAP

EDWIN B. STIMPSON, BAYPORT, N.Y.

NOT TO SCALE

FIGURE 2

NUS CORPORATION
A Halliburton Company

02-8703-65-SR
Rev. No. 0

EXHIBIT A

PHOTOGRAPH LOG

EDWIN B. STIMPSON CO., INC.
BAYPORT, NEW YORK

SITE INSPECTION: APRIL 2-3, 1987

EDWIN B. STIMPSON CO., INC.
BAYPORT, NEW YORK

PHOTOGRAPH INDEX

Photo Number	Description	Time
1P-1	April 2, 1987 Scene facing north along road on the western edge of property, paralleling power line.	0957
1P-2	April 2, 1987 Scene facing south along road on the western edge of property, paralleling power line.	0958
1P-3	April 2, 1987 Photo taken from southeast corner of recharge basin No. 2 facing toward recharge basin No. 1.	1041
1P-4	April 2, 1987 Photo taken from southeast corner of recharge basin No. 1.	1119
1P-5	April 2, 1987 Claire Marcussen collecting NYR3-S2 composite soil sample from northwest corner of recharge basin No. 2.	1218
1P-6	April 2, 1987 Claire Marcussen collecting NYR3-S1 composite soil sample from southeast corner of recharge basin No. 1.	1230
1P-7	April 2, 1987 Claire Marcussen and Mike Gentils collecting NYR3-GW3 from well No. 4 near southeast corner of recharge basin No. 2.	1413
1P-8	April 2, 1987 Mike Gentils collecting NYR3-S3 composite soil sample from southwestern end of site.	1550
1P-9	April 2, 1987 Claire Marcussen and Mike Bauman collecting NYR3-GW2 from well No. 2 near southwest corner of recharge basin No. 1.	1604
1P-10	April 3, 1987 Mike Gentils collecting NYR3-GW4 from well N1 near northeast corner of the site.	1013
1P-11	April 3, 1987 Claire Marcussen and Mike Bauman collecting NYR3-GW1 from well No. 1 near northeast corner of recharge basin No. 1.	1031
1P-12	April 3, 1987 Fencing and entrance gate to recharge basins.	1055
1P-13	April 3, 1987 Drum storage and settling tank areas.	1103
1P-14	April 3, 1987 Location of well N1.	1140

All photographs taken by Ross Dimmick.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-1 April 2, 1987 0957
Scene facing north along road on western edge of property, parelleling power line.

1P-2 April 2, 1987 0958
Scene facing south along road on the western edge of property, parelleling power line.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-3 April 2, 1987 1041
Photo taken from southeast corner of recharge basin NO.2 facing toward recharge basin No.1.

1P-4 April 2, 1987 1119
Photo taken from southeast corner of recharge basin No.1.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-5 April 2, 1987 1218
Claire Marcussen collecting NYR3-S2 composite soil sample from northwest corner of recharge basin No.2.

1P-6 April 2, 1987 1230
Claire Marcussen collecting NYR3-S1 composite soil sample from southeast corner of recharge basin No.1.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-7 April 2, 1987 1413
Claire Marcussen and Mike Gentils collecting NYR3-GW3 from well No.4 near southeast corner of recharge basin No.2.

1P-8 April 2, 1987 1550
Mike Gentils collecting NYR3-S3 composite soil sample from southwestern end of site.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-9 April 2, 1987 1604
Claire Marcussen and Mike Bauman collecting NYR3-GW2 from well No.2 near southwest corner of recharge basin No. 1.

1P-10 April 3, 1987 1013
Mike Gentils collecting NYR3-GW4 from well N1 near northeast corner of site.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-11 April 3, 1987 1031
Claire Marcussen and Mike Bauman collecting NYR3-GW1 from well No.1 near northeast corner of recharge basin No.1.

1P-12 April 3, 1987 1055
Fencing and entrance gate to recharge basins.

EDWIN B. STIMPSON CO., INC., BAYPORT, NEW YORK

1P-13 April 3, 1987 1103
Drum storage and settling tank areas.

1P-14 April 3, 1987 1140
Location of well N1.

SECTION 4

BIBLIOGRAPHY OF INFORMATION SOURCES

BIBLIOGRAPHY OF INFORMATION SOURCES

	SOURCE	LOCATION
1.	Field Notebook No. 0051, Edwin B. Stimpson Co., Inc. TDD No. 02-8703-65, NUS Corp. Region 2 FIT site inspection conducted on April 2-3, 1987.	NUS Corp. Edison, NJ
2.	Krulikas, R.K. Hydrogeologic data from selected wells and test holes in Suffolk County, Long Island, New York, 1972-80.	NUS Corp. Edison, NJ
3.	Soren, J., Results of subsurface exploration in the mid-island area of western Suffolk County, Long Island, New York. Long Island Water Resources Bulletin Number 1, prepared by U.S. Geological Survey in Cooperation with Suffolk County Legislature Suffolk County Water Authority, published by Suffolk County Water Authority.	NUS Corp. Edison, NJ
4.	McClymonds, N.E. and O.L. Franke. Water-transmitting properties of aquifers on Long Island, New York.	NUS Corp. Edison, NJ
5.	Jensen, H.M. and J. Soren. Hydrogeology of Suffolk County, Long Island, New York. Prepared in cooperation with the Suffolk County Water Authority and the Suffolk County Department of Environmental Control.	NUS Corp. Edison, NJ
6.	Three-Mile Vicinity Map based on U.S. Geological Survey Topographic Map, 7.5 minute series, "Patchogue, NY, 1956; Bellport, NY, 1956; Sayville, NY, 1955, revised, 1967.	NUS Corp. Edison, NJ
7.	Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1984.	NUS Corp. Edison, NJ
8.	Report prepared by Holymacher, McLendon and Murrell, P.C. in response to U.S. EPA's questions concerning Stimpson Co., Inc., EPA ID No. NYD052780392.	NUS Corp. Edison, NJ
9.	Hazardous waste interim standards plan prepared for E.B. Stimpson Co., Inc., by ERC/Lancy, November 12, 1981.	NUS Corp. Edison, NJ
10.	Telecon Note: Conversation betwen Pat Dugan of Suffolk County Water Authority and Diane Trube of NUS Corporation 3/24/87, Re: Locations and numbers of public supply wells, maps included.	NUS Corp. Edison, NJ
11.	Telecon Note: Conversation between Karen Randazzo of Suffolk County Water Authority and Ross A. Dimmick of NUS Corporation, 11/13/87, Re: Well fields within 3 miles of site, and aquifer distinction.	NUS Corp. Edison, NJ

BIBLIOGRAPHY OF INFORMATION SOURCES

	SOURCE	LOCATION
12.	Telecon Note: Conversation between Denis Moran of Suffolk County Department of Health Services, Water Quality Division, and Ross A. Dimmick of NUS Corporation, 11/13/87, Re: Private wells in the area of the site, and the uses of nearby surface water.	NUS Corp. Edison, NJ
13.	Telecon Note: Conversation between Dennis Gobbi of Suffolk County Health Department and Mark Ellis of NUS Corporation 1/21/88, Re: Health complaints attributable to direct contact with materials on site.	NUS Corp. Edison, NJ
14.	U.S. EPA Contract Laboratory Program, Ecology and Environment, and Cambridge Analytical Association, Case No. 7052, Laboratory Analyses from NUS Region 2 FIT site inspection conducted April 2-3, 1987.	NUS Corp. Edison, NJ
15.	Sax, N.I. Dangerous properties of industrial materials. 6th ed. New York, Van Nostrand Reinhold Co., 1984.	NUS Corp. Edison, NJ
16.	General Sciences Corporation, Graphical Exposure Modeling Systems, (GEMS). Landover, Maryland, 1986.	NUS Corp. Edison, NJ
17.	Monitor well system at Stimpson Company, Bayport, New York prepared for ERC/Lancy Company, by Dr. C. Welti, P.E., November 1981.	NUS Corp. Edison, NJ
18.	Letter from Andrew R. Yerman of NYSDEC to J.E. Cuenin of E.B. Stimpson Co., Inc., dated February 8, 1985.	NUS Corp. Edison, NJ
19.	Project Note: From Mark Ellis to File, Subject: Accessibility with respect to the recharge basin area, January 16,1989.	NUS Corp. Edison, NJ
20.	U.S. Department of the Interior, U.S. Fish and Wildlife Service, Atlantic Coast Ecological Inventory, New York (N.Y.-Conn.-N.J.), 1980.	NUS Corp. Edison, NJ
21.	Suffolk County Department of Health Services Uniform Complaint Field Report, dated January 15, 1987.	NUS Corp. Edison, NJ
22.	Aronson, D.A. and G.E.Seaburn. Catalog of Recharge Basins on Long Island, New York in 1969.	NUS Corp. Edison, NJ
23.	U.S. Department of Agriculture, Soil Conservation Service, Important Farmlands of Suffolk County, New York, 1975.	NUS Corp. Edison, NJ
24.	Potential Hazardous Waste Site Preliminary Assessment, EPA ID NO. NYD052780392. Prepared by Carol Price, U.S. EPA, Environmental Services Division, September 17, 1986.	NUS Corp. Edison, NJ

SECTION 5

PRESS RELEASE SUMMARY

SUMMARY STATEMENT

The Edwin B. Stimpson Co., Inc. is engaged in manufacturing metal fastener products. It has been in operation since 1970 and is located on a 22-acre site in suburban Bayport, Suffolk County, New York. The company employs approximately 325 workers.

There are a number of processes involved in the production of fasteners. Specifically, the plating processes are of concern because these are the major sources of hazardous waste generated at the plant. Both cyanide-based plating and non-cyanide-based plating are utilized.

Since 1981 Edwin B. Stimpson Co., Inc. has had a State Pollutant Discharge Elimination System (SPDES) permit. For a period of approximately 5 months in 1984, discharge in violation of this permit occurred in the two on-site recharge basins just outside the plant. This discharged wastewater contained excessive amounts of cadmium, copper, iron, and aluminum. These two large recharge basins are unlined, and because the local geology consists mainly of unconsolidated sands, there is potential for contamination of the underlying aquifers

A site inspection was conducted in April 1987, during which four groundwater samples were collected from upgradient and downgradient on-site monitoring wells. Three soil samples were also collected. Analysis of soil samples showed elevated levels of contaminants including zinc, cyanide, nickel, magnesium, 2-butanone, and bis(2-ethylhexyl)phthalate.

SECTION 6

BACKGROUND INFORMATION

REFERENCE 1

0006.F
02-8703-65

NUS CORPORATION

II

0051

02-8703-65 / NYR3 4/2/87

0810 Arrived on-site.

0820 Ross Dimmick and Al Cheropow 4/2/87 Meet with Gary Miller of H2M, and Chip Rau and James Cuenin of Stimpson Co. Inc.

325 people (approx.) work at the facility
They began operation in 1970 w/waste manifested to haulers.

Some material was discharged to leaching pits (site of current recharge basins).

4 new wells have been installed on north side of property. Westernmost had high levels of cadmium in last test.
They would like us to treat photos as confidential.
They asked if we could split samples. We agreed.

10,000 gal. Tank has been replaced by ~~4~~ 3 4,000 gal tanks.

0840 Went w/Chip Rau to get visitors badges

Then went out to scout for place to set up command post.

Weather: Sunny, wind 5-10 mph from South, 45°

0850 decide Southwest corner of parking lot would be good place to set up command post.

Ross Dimmick 4/2/87 Michael Bauman 04/06/87

02-8703-65 / NVR3 4/2/87

0900 Start to set up command post and decon area.

Storm drains along west side of parking lot.

0910 Mike Gentils preparing for level B recon.
Mike Bauman will do rescue.

Gary Miller, Chris Ram, and J. Cuenin are present

0915 Tailgate safety meeting held by Al Cherepon.
personnel present

Ross Dominick	Ross A. Dominick
Mike Gentils	Michael R. Gentils
Gerry Gilliland	Gerald V. Gilliland
Mike Bauman	Michael Bauman
Clare Marcussen	Clare R. Marcussen
Al Cherepon	Al Cherepon

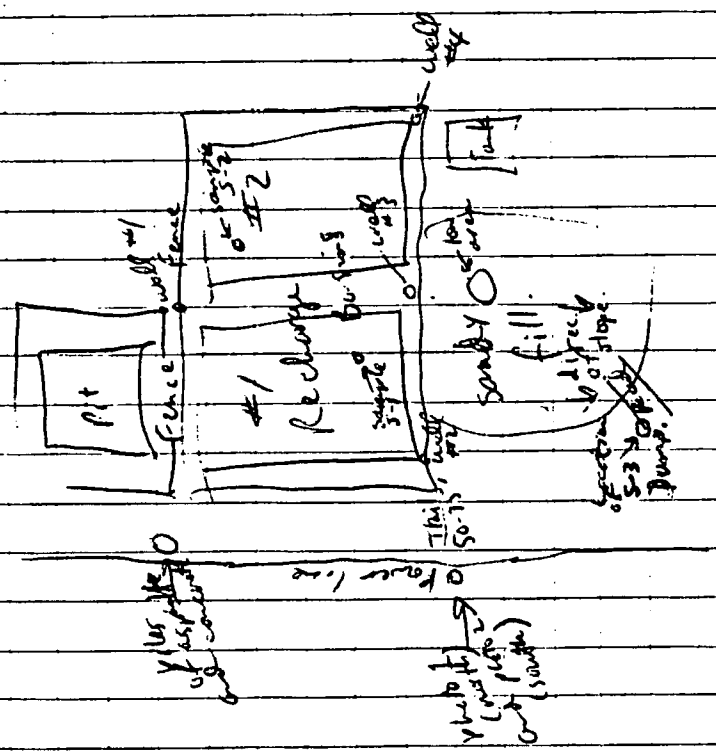
Briefly covered plant operations and suspected waste discharge. Safety procedures were discussed.

0930 Air monitoring inst. checked out and working.
Mike G.

0940 On air @ 0940 SCBA # 307176
Mike B. on standby. SCBA # 307175

Ross A. Dominick 4/2/87 Michael Bauman 04/02/87

02-8703-65 4/2/87



Ross A. [illegible] 4/2/87 Michael Bauman 04/06/87

02-8703-65 4/2/87

0950 Dump area in SW corner of property — ~~bodies~~ Iron scraps, tires, ~~wire~~ lumber. (see map, Page 5).

Dump is at lowest point, although slope of property is rather gentle.

Small puddle near dump.

0955 Recharge basins fenced w/3 barbed wire cyclone fence.

0957 Photo 1 taken facing north along power line road (see map
photo 2 " " south " " " " (see map
(note old trailer).

1000 piles of asphalt + concrete noted (see map).
misc. junk along power line road.

1010 Eastern Recharge basin is about 15 feet deep.
No readings in bottom
Sides are fairly steep but navigable
dimensions of inside approx 50' x 70'
dimensions of outside approx. 100' x 150'

1012 M. Gentils off air.

1015 Change air tanks, discuss further recon.

1030 M. Gentils on air to check water levels

M. Gentils and M. Bauman attempt to remove external cover from well #4.

Rosa A. [illegible] 4/2/87 Michael Bauman 04/06/87

02-8703-65 4/2/87

1035 Cover removed, well has lock.

1036 M. Gentils off air

1037 M. Gentils + M. Bauman remove cover from well #2

1039 M. Gentils + M. Bauman remove cover from well #1

1041 Photo #3 Taken from SE corner of recharge basin #2 facing toward leaching pit #1.

1047 M.G. on air to open well #4

1049 M.G. off air because well cap stuck.

1051 M.G. on air. Cap removed w/hammer. Tape w/pepper dropped to measure well depth + disturb water column.

1053 Well #4 is 44.9' deep.
No readings on air monitoring inst.

1055 M. Gentils off air.

1056 M. Gentils + M. Bauman measure water level at well #4

1100 water level 28.8' Well #4 Grout is loose.
outer casing 20.5" above grnd. inner casing 20.0" above grnd. 1.5" I.D. inner casing
30" I.D. outer casing

1102 M.G. + M.B. decon tape w/acetone + distilled water.

Ross A. [illegible] 4/2/87 Michael Bauman

02-8703-65 4/2/87

1109 M. Centils on air
1110 M. Centils opens well #2
45.0 ft deep
27.7 water level
No air monitoring readings.
22.5" above ground (outer casing)
12.5" ~~inches from~~ ft 1/2/87 ~~ground to top~~ of inner casing.
1114 M. Centils off air

1115 M. Centils changes air tanks

1119 Photo #4 SE corner of leaching pit

1120 M.B. & M.G. decon tape.

1125 M.G. on air to measure well #1
27.1 water level
46.1 TD

1133 HNu readings of 3-5 ppm on well #1

1136 M. Centils off air back at decon area.

1146 M.G. and Al. Chenoson leave decon area to begin bailing well #4.
C.M. and M.B. prepare to do level B sampling of recharge basins.

1154 M.G. begins bailing well #4.

1200 C.M. + M.B. prepare to take soil sample from leaching pit #2.
1208 CuMs on air # 307175 4/1/87
1210 C.M. + M.B. go to sample S-2

Rose Ca[illegible] 4/2/87 Michael Bauman 04/06/87

02-8703-65 4/2/87

1218 Photo #5
Sample S-2 taken in recharge pit #2

1227 C. Marcussen ~~collects~~ augers down to collect sample S-1 from Recharge basin #1.

1230 Photo #6 4/2/87 Claire Marcussen collecting sample S-1.

1230 M.G. Finishes bailing well #4 - 5 gallons evacuated.

1233 M.G. and Al. C. move to well #2 to begin bailing.

1235 C. Marcussen off air.

1245 M.G. is bailing well #2.
Bailer is leaking.
We decide to go back to well #4, take sample, then decon bailer.

1250 Al. C. getting readings of 20ppm on HNu at well #4 (inside well).

1300 Al C. + Ross Dimmick leave to call office

1310 Al C. talks to R. Numan and G. Bilson about whether to sample well #4 on level B. We will start on level B, then test air readings in breathing zone

Ross G. 4/2/87 Michael Bauman 04/02/87

02-8703-65 4/2/87 1

1320 R. Dimmick asks Mike Young about the possibility of staying tomorrow. He said to call him back around 2:30 or 3:00.

1330 At decon area, preparing to sample well #4

1340 M.G. on SCBA #307176
C.M. on SCBA #307175

M.B. will work backup on cartridge resp.

1350 M.G. on air.
1352 C.M. on air.

1353 C.M. + M.G. begin sampling

1355 VOA's taken
No air readings.

1359 C.M. + M.G off air

1402 C.M. + M.G. go thru decon and leave SCBA's at command post

1410 C.M. + M.G. Resume sampling well #4 (GW-3)

1413 Photo #6. 4/2/87 C.M. + M.G sampling well #4 (sample GW-3)

1423 C.M. + M.G continue to sample well #4 (GW-3)
M.B. begins bailing well #2.

Thomas G. [illegible] 4/2/87 Michael Bauman 04/06/87

02-8703-65 4/2/87 1

1425 Casing appears to be gray plastic of some sort.

1427 Noted that their sample bottles appear to be dirty on inside. Particularly, staining inside of cap.

1433 M.B. continues to bail well #2
M.G. + C.M. continue collecting sample GW-3

Over past 4 hours, wind has continued to pick up - probably about 20 knots.

1444 Ross D. called office. M. Young doesn't suspect any problem for day 2 authorization.

1454 M.B. continuing to bail well #2
C.M. + M.G. continue sampling well #4

1504 M.B. continues to bail well #2
C.M. + M.G. continue sampling well #4.
Note that H_2M samples are pre-spiked including VOA's.

1507 C.M. + M.G. finish sampling well #4

1515 M.B. finishes bailing well #2 (5 gallons)

1521 M.B. + C.M. start sampling well #2 (GW-2).

1520 C.M. + M.B. continue sampling well #2 (GW-2).

1539 M.G. prepares to take soil sample.

Ross D. 4/2/87 Michael Bauman 04/06/87

02-8703-65 4/2/87 1

1545 M.G. on air for S-3 # 307176

1550 Photo # 8 4/17/87 M.G. Taking sample S-3
see location map, p. 5

1555 M.G. off air

1559 Returned to decon area.

1602 C.M. + M.B. continue sampling well #2 (GW-2).

1604 Photo # 9 4/3/87 CM + MB collecting sample GW-2.

1610 R. Dimmick calls about motel res.

1620 C.M. + M.B continue sampling well #2

1635 C.M. + M.B. continue sampling well #2

1636 C.M. + M.B. finish sampling well #2 (GW-2)

1642 Return to decon area.

1715 Leave Site.

1725 Deliver coolers to Fed-Ex. Van near site.

1752 Arrive Ramada Inn, LIE + Vet. Hwy.

Ron G. 4/2/87 Michael Bauman 04/06/87

02-8703-65 4/3/87

0715 Had planning meeting over breakfast. Discussed work remaining, and procedures.

0810 Arrive on site.

0812 Crew prepares to ~~work~~ sample by setting up decon area, putting on protective clothing.

0820 R. Dimmick meets w/ Chip Rose of Stimpson Co. to briefly describe sampling for the day and to obtain keys.

0823 Tailgate safety meeting. Present were

Ross A. Dimmick	Ross A. Dimmick
Mike Gentile	Michael N. Gentile
Gerry Gilliland	Gerald V. Gilliland
Claire Marcussen	Claire B. Marcussen
Mike Bauman	Michael Bauman
Al Cheregon	Al Cheregon

Al. Cheregon gave a brief summary of his discourse yesterday. Also said we would do all level B to begin with, with possible downgrade to level D. Watch out for cars in parking lot. Be careful around slope of recharge basins.

0833 Weather - 50°, wind variable 3-5 knots.

Ross A. Dimmick 4/3/87 Michael Bauman 04/06/87

02-8703-65 4/3/87

0840 A.C, R.D. M.B, and M.G. proceed to new well #1 at far NE corner of property.
4/3/87

0847 M.G. on air #307176
M.B. on backup #307175

0848 note that H_2M sample bottles were left unattended at new well #1.

0850 28.3 water level
39.4 depth
for new well #1

0852 No OVA readings on well
No HNu readings on well

0853 M.G. off air.

0854 proceed back to decon area for downgrade to level D.

0900 Back at decon area.

0910 A.C & M.G. leave to sample new well #1. This will be sample GW-4 - note that this is not the same G.W.4 as our presample map.

0915 C.M. + M.B proceed to well #1 for sample #GW-1

0916 Bailer dropped behind hot line.

0917 Bailer brought back to decon area.
M.G. Begins bailing new well #1
Ross G. 4/3/87 Michael Bauman 04/06/87

02-8703-65 4/3/87 1

0925 Bailer decomed.

0930 C.M. on air to begin bailing well #1 #30717
M.B on backup

0935 No air readings on HNu or OVA, new well #1

0936 CM off air

0940 CM + MB return to decon area to downgrade to level D. RD stays w/sample bottles
M.G. Finishes evacuating new well #1 4/3/87 (6 gallons)

0946 CM + MB return to bail well #1
M.G. Starts sampling new well #1 (GW-4).

0955 CM begins bailing well #1
Air readings from inside well and bucket show nothing above background.

1005 Note that new well #1 4/3/87 is 2" I.D. and is white plastic (probably PVC). Inner casing is 8" below outer casing.

1013 Photo #10 4/3/87 (2 exposure on camera #1).
Mike Cantis collecting sample GW-4 4/3/87 from New well #1.

1021 C.M. 4/3/87 + M.B. finish evacuating well #1 (5.5 gallons).

1026 M.B + C.M. Begin sampling well #1 (Sample GW-1)
no air readings above background.

[signature] 4/3/87 Michael Bauman 04/06/87

02-8703-65 4/3/87

1028 M.G. finishes collecting sample GW-4.

1031 Photo #~~10~~ 11 ~~RB~~ 4/3/87
Clare Marcussen and Mike Bauman collecting sample GW-1.

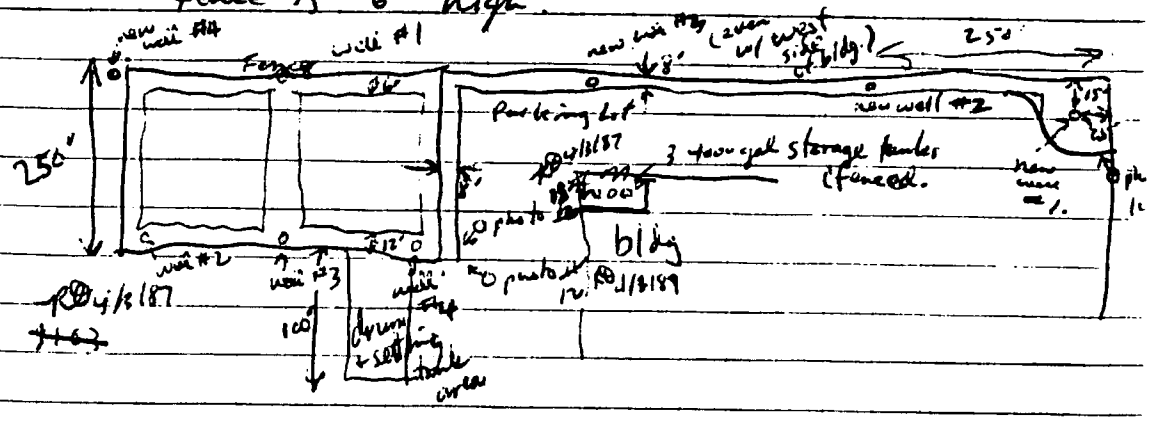
Note that date for photo ~~#10~~ ~~RB~~ 4/3/87 9 (Mike Gentils collecting sample GW-4) placard is wrong – should be ~~4/2~~ ~~RB~~ 4/3/87 4/3/87.

Placards were not changed because ~~RB~~ 4/3/87 ~~4~~ 2 day sampling was not anticipated.

1035 Measured inside diam of well #1 is 1.5". Inside casing 17" ~~below~~ above ~~outside~~ ground. ~~RB~~ 4/3/87 ~~RB~~ 4/3/87 ~~RB~~ 4/3/87 ~~casing~~ ~~RB~~ 4/3/87.
Outer casing 17.5" above collar (or pad).

1045 CM + M.B continue sampling well #1 (GW-1).

1055 Photo ~~11~~ 12 ~~RB~~ 4/3/87 - fencing and gate around recharge basins. Basins are surrounded by a berm approx 5' above surrounding topography.
Fence is 6' high.



Mark A. [illegible] 4/3/87 Michael Bauman 04/06/87

02-8703-65 4/3/87

13 ~~RD~~ 4/3/87

1103 Photo #12 - drum storage area and settling tanks are most drums on concrete pad, a few on coarse gravel. No spills or discoloration noted. See map p. 16

1110 C.M. + M.B. finish collecting sample ~~At~~ GW-1 4/3/87

1119 Talked w/ C. Raw. He would like MSDS on Alconox + acetone + would like names of people in crew. I explained to him that acetone all went into a metal can which we would take off site for disposal.

1122 Well #1 locked

1130 called Fed. Ex. - said they needed 1 hour for pickup.

1140 Photo 14 - location of new well #1

1142 Note construction immediatly north of site.

~~RD~~ 4/3/87
~~10~~ 1146 Leave site

1147 note 1000 Sylvan ave (1 block N of site) is Kelly moving + storage.
Businesses immediatly north of site appear to be warehouse operations. Area north of leaching pits is vacant.

[signature] 4/3/87 Michael Bauman 04/06/87

02-8703-65 4/3/87

1215 Samples delivered to Fed-Ex, van across from Mac Arthur airport.

1450 Arrive NUS.

Ross A. [illegible] 4/3/87 Michael Bauman 04/06/87

Edwin B. Stimpson Co., Inc. 02-8703-65 4/2-3/8

Sample Log

Sample No.	Organic Tr. No.	Inorganic Tr. No.	Description
NY R3-S1	BK209	MBJ 148	Collected in SE corner of basin #1 0"-
NY R3-S2	BK210	MBJ 149	Collected in NW corner of basin #2 0"-
NY R3-S3	BK211	MBJ 150	Collected 500' South of basins 3"-18
NY R3-GW1	BK204	MBJ 143	Collected from downgrad. well #1
NY R3-GW2	BK205	MBJ 144	Collected from downgrad. well #2
NY R3-GW3	BK206	MBJ 145	Collected from downgrad. well #3
NY R3-GW4	BK207	MBJ 146	Collected from MW #N1
NYR3-BIK1	BK203	MBJ 142	aqueous
NYR3-BIK2	BK213	MBJ 162	aqueous

EPA Case No. 7052

Mark Ella 1/22/88

REFERENCE 2

HYDROGEOLOGIC DATA FROM SELECTED WELLS AND TEST HOLES IN SUFFOLK COUNTY, LONG ISLAND, NEW YORK, 1972-80

By Richard K. Krulikas

U.S. GEOLOGICAL SURVEY

Open-File Report 81-500

Prepared in cooperation with

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES

SUFFOLK COUNTY WATER AUTHORITY

Syosset, New York

1981

UNITED STATES
DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Doyle G. Frederick, Acting Director

For additional information write to

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Syosset, New York 11791

CONTENTS

	Page
Conversion factors and abbreviations	iv
Abstract	1
Introduction	1
Acknowledgments	2
Geohydrology	3
Selected references	5

PLATE

(in pocket)

Plate 1. Map showing locations of selected wells and test holes in Suffolk County

ILLUSTRATIONS

Figure 1.	Map of Long Island showing location of Suffolk County	2
2.	Generalized section showing major hydrogeologic units in Suffolk County	3

TABLES

Table 1.	Major hydrogeologic units in Suffolk County	4
2.	Hydrogeologic units and well-completion data from selected wells and test holes in Suffolk County	6

CONVERSION FACTORS AND ABBREVIATIONS

Multiply inch-pound units	By	To obtain metric (SI)[1/] units
inch (in)	25.4	millimeter (mm)
foot (ft)	.348	meters (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.509	square kilometer (km^2)
million gallons per day (Mgal/d)	.04381	cubic meters per second (m^3/s)

[1/] International System of units

HYDROGEOLOGIC DATA FROM WELLS AND TEST HOLES IN SUFFOLK COUNTY, LONG ISLAND, NEW YORK, 1972-80

By

Richard K. Krulikas

ABSTRACT

The population of Suffolk County, New York, an area of 922 square miles, has increased rapidly, from less than 200,000 in 1940 to about 1.3 million in 1978. Ground-water pumpage has increased from an average of 42 million gallons per day in 1950 to about 257 million gallons per day in 1978. To help supply the hydrologic information needed to anticipate and prevent shortages, this report presents hydrogeologic and well-completion data on over 700 wells and test holes.

INTRODUCTION

Suffolk County, in eastern Long Island, N.Y., is about 90 miles long and has a maximum width of about 20 miles (fig. 1). Land area of the county is about 922 square miles and constitutes approximately two-thirds of Long Island's 1,411 square-mile area. The population of Suffolk County has increased sharply from less than 200,000 in 1940 to about 1.3 million in 1978 (Long Island Lighting Company, Population Survey, January 1978). The growth has occurred mostly in the western part of the county; the eastern part has remained mainly rural.

The freshwater supply for the county is obtained solely from the underlying ground-water reservoir. Ground-water pumpage increased from an average of 42 Mgal/d in 1950 to about 257 Mgal/d in 1978 (R. J. O'Reilley, New York State Department of Environmental Conservation, oral commun., March 1980). The major hydrogeologic units in the ground-water reservoir are summarized in table 1; the vertical relationship of these units is depicted in a generalized section in figure 2.

The recent population growth in Suffolk County has given rise to a need for increased ground-water development. To help supply the hydrologic information needed to anticipate and prevent shortages, the U.S. Geological Survey is participating in a cooperative program of water-resources studies with the Suffolk County Water Authority and the Suffolk County Department of Health Services. Several reports have been published as a result of the cooperative program; among them are Jensen and Soren, 1971; Soren, 1971; and Jensen and Soren 1974.

Table 2 presents hydrogeologic units and well-completion data on 700 wells and test holes in Suffolk County; these include most of the pertinent wells and test holes drilled in Suffolk County since 1972 and a few older wells of importance that were not mentioned previously. Locations of wells and test holes are shown on plate 1.

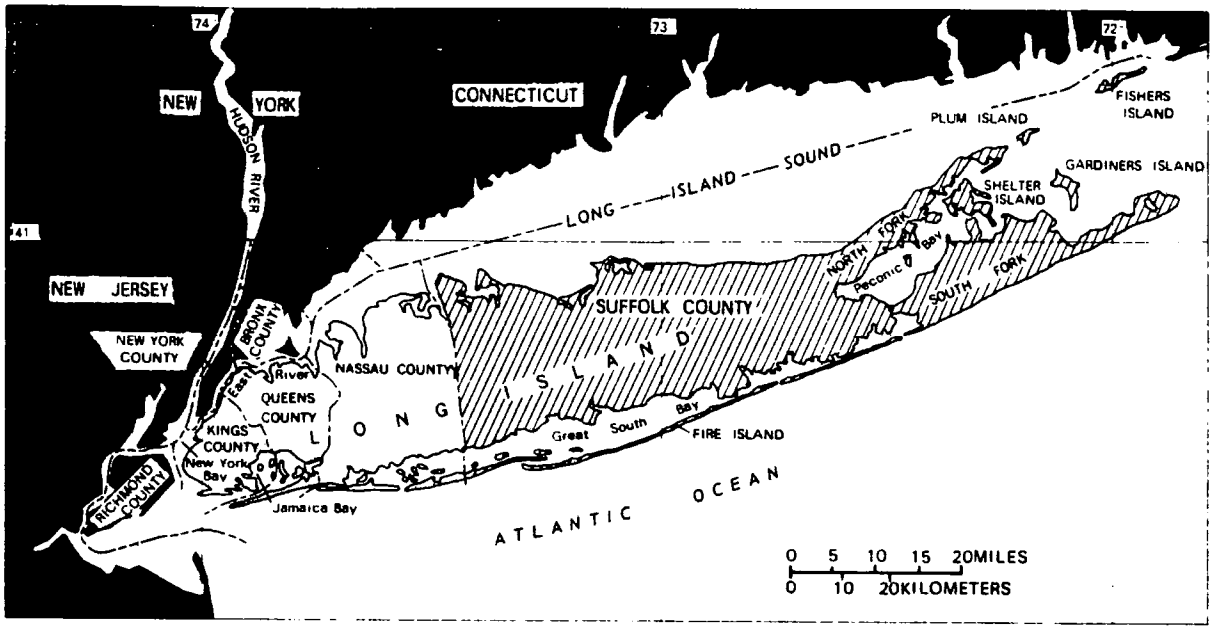

Figure 1.--Map of Long Island showing location of Suffolk County. (Modified from Jensen and Soren, 1971, p. 3.)

Acknowlegments

The author extends thanks to the Suffolk County Water Authority, the Suffolk County Department of Health Services, and the New York State Department of Environmental Conservation, particularly to R. J. O'Reilly, engineering technician, whose cooperation in providing well-completion data was essential for preparation of the report.

The author also thanks the well-drilling companies for providing well information, drill cuttings, and split-spoon core samples used in determining geologic correlations. These companies include Delta Well Company, Inc., Central Islip, N.Y.; East Coast Well Drilling and Supply Company, Inc., Riverhead, N.Y.; Lauman Company, Inc., Farmingdale, N.Y.; Strata Well Corporation, Islip, N.Y.; and Howard McMahon, Inc., Amagansett, N.Y.

GEOHYDROLOGY

Geology and hydrology of Long Island are summarized in numerous reports, notably Veatch and others (1906), Fuller (1914), Suter and others, (1949), Cohen and others (1968), and Jensen and Soren (1974).

The ground-water reservoir on Long Island lies within a thick sequence of unconsolidated deposits underlain by Precambrian (?) basement complex (fig. 2). The unconsolidated materials consist of a southward-dipping wedge of Cretaceous deposits overlain by a relatively thick layer of glacial outwash and morainal deposits of Pleistocene age. Characteristics of the geologic and hydrogeologic units are summarized in table 1.

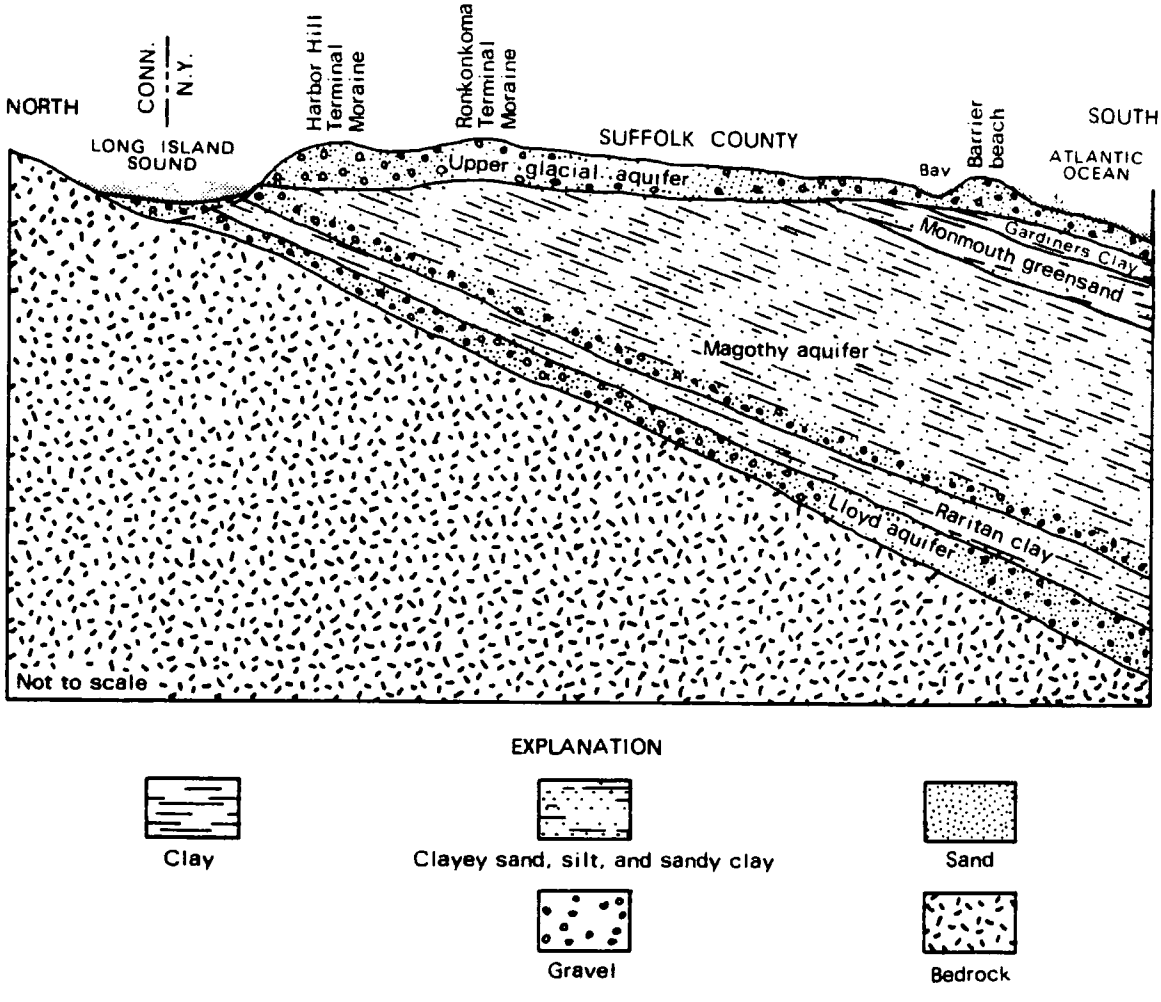

Figure 2.--Generalized section showing major hydrogeologic units in Suffolk County. (From Cohen and others, 1968.)

Table 1.--Major hydrogeologic units in Suffolk County, N.Y.

Hydrogeologic unit[1/]	Geologic name	Approximate thickness (feet)	Description and water-bearing character
Upper glacial aquifer	Holocene and upper Pleistocene deposits, and Mannetto Gravel	0 - 750	Mainly brown and gray sand and gravel of moderate to high hydraulic conductivity; also includes deposits of clayey glacial till and lacustrine clay of low hydraulic conductivity. A major aquifer.
Gardiners Clay	Gardiners Clay	0 - 75	Green and gray clay, silt, clayey and silty sand, and some interbedded clayey and silty gravel; of low hydraulic conductivity. Unit tends to confine water in underlying aquifer.
Monmouth greensand	Monmouth Group, undifferentiated	0 - 200	Interbedded marine deposits of dark-gray, olive-green, dark-greenish-gray, and greenish-black glauconitic and lignitic clay, silt, and clayey and silty sand. Unit has low hydraulic conductivity and tends to confine water in under-lying aquifer.
Magothy aquifer	Matawan Group and Magothy Formation, undifferentiated	0 - 1,100	Gray and white fine to coarse sand of moderate hydraulic conductivity. Generally contains sand and gravel beds of low to high hydraulic conductivity in basal 100 to 200 feet. Contains much interstitial clay and silt, and beds and lenses of clay, of low hydraulic conductivity. A major aquifer.
Raritan Clay	Unnamed clay member of the Raritan Formation	0 - 200	Gray, black, and multicolored clay and some silt and fine sand. Unit has low hydraulic conductivity and tends to confine water in underlying aquifer.
Lloyd aquifer	Lloyd Sand Member of the Raritan Formation	0 - 500	White and gray fine-to-coarse sand and gravel of moderate hydraulic conductivity and some clayey beds of low hydraulic conductivity. Not highly developed as an aquifer.
Bedrock	Undifferentiated crystalline rocks	Not Known	Mainly metamorphic rocks of low hydraulic conductivity; surface generally weathered; considered to be the bottom of the ground-water reservoir. Not a source of water in Suffolk County.

1/ Adapted largely from Cohen and others (1968, p. 18).

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Table 2. Hydrogeologic units and well completion data from selected wells and test holes in Suffolk County, New York.

EXPLANATION OF COLUMNAR DATA AND ABBREVIATIONS

Well Number

Well numbers are assigned by the New York State Department of Environmental Conservation. A prefix letter S, which designates Suffolk County, is omitted from the well number; thus, the official number of well 40161, for example, is S 40161. Wells are listed in numerical order.

Location of Well

Locations of wells are given by map coordinates, based on latitude and longitude, as shown on plate 1. Map coordinates are based on a latitude and longitude grid system established for Long Island (Veatch and others, 1906; Jensen and Soren, 1971). In this system, 5-minute intervals of latitude are lettered consecutively from south to north, and 5-minute intervals of longitude are numbered consecutively from west to east. The grid coordinates for Suffolk County are shown along the margins of plate 1. Thus, a well whose map coordinates are D15 is in the grid square bounded by lat 40°45' and 40°50'N and long 72°55' and 72°50'W.

Wells are also numbered according to the national well-numbering system of the U.S. Geological Survey. This system locates wells to the nearest second of latitude and longitude and gives a sequence number to the well to denote the chronological order in which wells within a 1-second quadrangle were recorded. For example, in well number 404707N0731905.01 (S 18075), the first six numbers indicate latitude 40°47'07" North; the remaining numbers before the period indicate longitude 073°19'05". The 01 after the period is the sequence number. Thus this well was the first one recorded in the 1-second quadrangle defined by the latitude and the longitude.

Well depth

The figures give well depth or total depth of the drilled test hole, in feet below land surface.

Hydrogeologic Unit Penetrated and Elevation of Unit Surface

Elevations of the tops of the hydrogeologic units penetrated by wells are given in feet above or below National Geodetic Vertical Datum of 1929. A minus (-) sign preceding the elevation figure indicates that the elevation is below National Geodetic Vertical Datum of 1929. The number in the "upper glacial aquifer" column is the elevation of the land surface at the well site. Absence of an elevation figure indicates that the test hole did not penetrate the unit.

Table 2.--Explanation (continued)

Year Completed

Year completed refers to the year in which the well was reported to have been completed or accepted by the original well owner. It may not always be the year in which the well was actually drilled.

Elevation of Land-Surface Datum (LSD) (feet above National Geodetic Vertical Datum of 1929)

The elevation of land surface at the well was estimated from U.S. Geological Survey 7-1/2-minute quadrangle topographic maps.

Use of Water

The following abbreviations indicate the primary purpose in 1977 for which the water from the well was reported to be used.

ARCD	air conditioning	IND	industrial
COM	commercial	IRR	irrigation
DOM	domestic	OTHR	other
FRPT	fire protection	P.S.	public supply
INST	institutional		

Use of Well

The following abbreviations indicate the principal use of the well or the purpose for which the well or hole was drilled.

DEST	well destroyed	TEST	test hole
OBS	observation well	UNSD	well unused
RECH	recharge water	WTDR	withdrawal of water

Screen Setting and Total Screen Length

The elevations of the top and bottom of the screened interval are given in feet above or below (-) National Geodetic Vertical Datum of 1929. The total length of screen or perforated pipe in that interval is given in feet. In some wells, screen was set at two or more intervals; in such cases the difference between the elevations of the two screen settings is different from the total screen length.

Diameter of Well

The diameter of the well is the inside diameter of the smallest casing at land surface, in inches.

Table 2.--Explanation (continued)

Water Level (feet below land-surface datum)

The water level given is the reported original static water level, in feet above or below land surface, when the well was completed.

Date of Measurement

The date of water-level measurement is given by month (M), day (D), and year (Y).

Lift Type

The following abbreviations indicate the type of pump or other conveyance known or assumed to have been used in 1977 to bring water to the surface.

CENT	centrifugal	TURB	turbine
JET	jet	NONE	no pump in well
SUBM	submersible	OTHR	some other type of lift

Aquifer Developed

The following abbreviations indicate the hydrogeologic unit that yields water to the well. Where two or more units yield water to the well, the probable principal unit is given.

UPGLAC	Upper glacial aquifer
GARD	Gardiners Clay
MONMOUTH	Monmouth greensand
MAGOTHY	Magothy aquifer
RARITAN	Raritan clay
LLOYD	Lloyd aquifer

Table 2.--Explanation (continued)

Specific Capacity

The value in this column is the number of gallons per minute pumped from the well per foot of drawdown in the well, as reported by drillers.

Abbreviations

COORD	coordinates
D	day
DIAM	diameter
FT	feet
GPM/FT	gallons per minute pumped per foot of drawdown in the well
IN	inches
LSD	land surface datum
M	month
MEAS	measurement
NGVD	National Geodetic Vertical Datum of 1929.
Y	year

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929							
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
38916	E12	405418 0730649.02	845	227			- 27	-563		
39184	E12	405147 0730804.01	700	93						
39185	E12	405147 0730805.02	619	93						
39186	E12	405147 0730803.03	683	93						
39187	E12	405147 0730804.04	698	95						
39333	E11	405208 0731314.01	658	64			-422			
39347	E12	405054 0730509.01	176	128						
39518	E11	405118 0731238.01	725	76			- 64	-684		
39531	D11	404614 0731230.01	289	53			-105			
39535	B11	403819 0731117.01	461	5	- 92	- 98	-313			
39536	E 9	405345 0732038.01	615	173						
39709	C 8	404556 0732522.01	705	85			-268			
40057	E12	405016 0730903.01	623	110			-154			
40161	E14	405335 0725629.02	138	80						
40331	E13	405221 0730212.01	694	87			-408			
40333	E10	405236 0731709.01	525	110						
40407	F19	405636 0723448.01	140	10						
40497	D10	404606 0731746.02	284	74	- 50		- 64			
40498	C 9	404230 0732041.01	748	24	- 54		- 60			
40709	E13	405223 0730219.01	485	90						
40710	E11	405207 0731314.01	463	70			-295			
40711	E11	405209 0731314.01	273	70						
40818	D12	404610 0730507.01	754	55	-101		-113			
40837	F13	405510 0730453.02	810	195			- 81	-573		
40838	F13	405510 0730453.02	294	195			- 81			
40980	E12	405418 0730649.01	578	225			1			
40981	D12	404820 0730735.01	694	100			-124			
41341	D14	404807 0725907.01	703	73			-127			
41342	E12	405021 0730624.01	663	130			-384			
41343	E13	405217 0730116.01	650	110			-186			
41344	D11	404919 0731428.01	693	79			- 47			
41345	E10	405249 0731928.01	807	237						
41358	B10	403817 0731633.02	290	10	- 73		-280			
41513	E12	405120 0730824.01	719	108			-149			
42053	E11	405032 0731407.01	713	50			- 56			
42054	E11	405043 0731229.01	723	40			-240			
42225	E 9	405015 0732342.01	790	110						
42226	E12	405015 0730902.01	270	110						
42227	E12	405016 0730903.01	253	110						
42270	E11	405119 0731237.00	649	76			- 64			
42473	E11	405119 0731237.02	649	76			- 64			
42504	E13	405215 0730115.01	223	110						
42505	E13	405213 0720113.02	233	110						
42760	E12	405054 0730509.02	173	130						
42761	D13	404756 0730255.01	333	75			-115			
42762	C10	404305 0731614.01	714	26	- 56		- 64			
42827	D11	404511 0731123.01	663	35	- 62		- 92			
43001	E 8	405113 0732609.01	590	230				-337		
43010	D16	404804 0724838.01	700	20	- 76	- 94	-144			
43088	D10	404640 0731521.01	902	90			- 80	-772		
43101	E13	405140 0730240.01	703	40			-116			
43117	E13	405256 0730456.03	552	102			-305			
43516	D13	404618 0730356.01	803	55			-101			
43808	C 8	404323 0732534.01	59	66						
43810	C 9	404124 0732416.02	76	30						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
38916	1971	227	UNSD	TEST							MAGOTHY	
39184	1971	93	ARCD	RECH	-507 TO -607	100	10				UPGLAC	
39185	1971	93	ARCD	RECH	-426 TO -526	100	10				UPGLAC	
39186	1971	93	ARCD	RECH	-490 TO -590	100	10				UPGLAC	
39187	1971	95	ARCD	RECH	-503 TO -603	100	10				UPGLAC	
39333	1971	64	UNSD	TEST	-546 TO -568	22	16	33	04-09-71		MAGOTHY	
39347	1971	128	P.S.	WTDR	- 8 TO - 48	40	10	69	07-06-71		UPGLAC	109
39518	1971	76	UNSD	TEST	-514 TO -614	100	8	47			MAGOTHY	
39531	1971	53	P.S.	WTDR	-149 TO -219	70	20	23	10-01-71	TURB	MAGOTHY	37
39535	1971	5	P.S.	WTDR	-313 TO -456	143	12	FLOWING	12-20-72	TURB	MAGOTHY	
39536	1971	173	P.S.	WTDR	-362 TO -442	80	20	155	09-01-71	TURB	UPGLAC	30
39709	1971	85	P.S.	WTDR	-565 TO -620	55	20	36	07-21-71	TURB	MAGOTHY	3
40057	1971	110	UNSD	TEST							MAGOTHY	
40161	1971	80	P.S.	WTDR	- 14 TO - 54	40	20	43	07-28-71	TURB	UPGLAC	35
40331	1971	87	P.S.	WTDR							UPGLAC	
40333	1972	110	UNSD	WTDR	-405 TO -415	10	6	74	08-27-72	SUBM	UPGLAC	7
40407	1971	10	FRPT	WTDR	-109 TO -129	20	16	4	09-13-71		UPGLAC	
40497	1971	74	P.S.	WTDR	-150 TO -210	60	10	32		TURB	MAGOTHY	44
40498	1972	24	P.S.	WTDR	-648 TO 718	70	20	4	05-10-72	TURB	MAGOTHY	54
40709	1971	90	P.S.	WTDR	-330 TO -390	60	20	37	10-12-71		UPGLAC	87
40710	1971	70	P.S.	WTDR	-297 TO -387	90	20	33	10-28-71		MAGOTHY	126
40711	1971	70	P.S.	WTDR	-153 TO -203	50	20	37	09-08-71		UPGLAC	80
40818	1971	55	UNSD	TEST			6				MAGOTHY	
40837	1972	195	P.S.	WTDR	- 38 TO - 92	54	20	160	01-10-72	TURB	MAGOTHY	9
40838	1972	195	P.S.	WTDR	- 44 TO - 99	55	20	162	04-04-72	TURB	UPGLAC	10
40980	1972	225	P.S.	WTDR	-279 TO -348	69	20	191	02-10-72	SUBM	MAGOTHY	30
40981	1971	100	UNSD	TEST	-555 TO -575	20	8	58	11-02-71		MAGOTHY	7
41341	1972	73	UNSD	TEST							MAGOTHY	
41342	1972	130	UNSD	TEST							MAGOTHY	
41343	1971	110	UNSD	TEST							MAGOTHY	
41344	1971	79	UNSD	TEST							MAGOTHY	
41345	1972	237	UNSD	TEST							UPGLAC	
41358	1972	10	UNSD	UNSD							MAGOTHY	
41513	1972	108	UNSD	TEST			14				MAGOTHY	
42053	1972	50	UNSD	TEST							MAGOTHY	
42054	1972	40	UNSD	TEST			18				MAGOTHY	
42225	1972	110	P.S.	WTDR	-580 TO -680	100	20	114	04-21-72	SUBM	MAGOTHY	48
42226	1972	110	P.S.	WTDR	- 95 TO -157	62	20	65	04-10-72		UPGLAC	73
42227	1972	110	P.S.	WTDR	- 78 TO -140	62	20	65	01-31-72		UPGLAC	54
42270	1972	76	UNSD	UNSD	-499 TO -573	74	20	47	01-31-72		MAGOTHY	23
42473	1972	76	UNSD	UNSD	-503 TO -573	70	20	45	02-08-72	TURB	MAGOTHY	24
42504	1972	110	P.S.	WTDR	- 51 TO -117	66	20	53	06-28-72		UPGLAC	
42505	1972	110	P.S.	WTDR	- 63 TO -123	60	60	68	06-26-72		UPGLAC	
42760	1972	130	P.S.	WTDR	- 7 TO - 43	36	20	72	08-28-72	TURB	UPGLAC	102
42761	1972	75	P.S.	WTDR	- 91 TO -258	167	20	50	05-23-72	TURB	MAGOTHY	46
42762	1972	26	P.S.	WTDR	-624 TO -684	60	20	8	04-10-72		MAGOTHY	43
42827	1972	35	P.S.	WTDR	-563 TO -625	62	20			TURB	MAGOTHY	
43001	1972	230	P.S.	WTDR	-216 TO -296	80	20	189	09-07-72	TURB	UPGLAC	95
43010	1972	20	UNSD	TEST	-660 TO -680	20				SUBM	MAGOTHY	
43088	1972	90	UNSD	TEST							MAGOTHY	
43101	1972	40	UNSD	TEST							MAGOTHY	
43117	1972	102	P.S.	WTDR	-366 TO -451	85	20	49	05-08-72	TURB	MAGOTHY	55
43516	1972	55	UNSD	TEST							MAGOTHY	
43808	1972	66	UNSD	OBS	22 TO 12	10	6	5			UPGLAC	
43810	1972	30	UNSD	OBS	- 31 TO - 41	10	6				UPGLAC	

Table 2.--Hydrologic units and well-completion data

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929						
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
43811	D 9	404530 0732411.01	90	102						
43813	C 9	404158 0732258.02	78	35						
43814	C 9	404455 0732150.01	50	60						
43816	C 9	404237 0732206.02	80	40						
43817	D 9	404618 0732050.01	56	70						
43819	C 9	404250 0732023.02	78	30						
43820	D10	404649 0731840.01	98	110						
43822	C10	404302 0731855.02	74	20						
44032	E12	405147 0730649.01	753	118			-136			
44137	C10	404432 0731513.01	720	39	- 46		- 75			
44186	E13	405004 0730227.01	673	180			- 88			
44378	E 9	405322 0732114.01	467	27						
44467	E15	405122 0725407.00	713	105			-107			
44640	F14	405710 0725713.01	205	155						
44774	D11	404920 0731428.01	293	79						
44775	E13	405407 0730009.01	755	150						
44914	E 9	405254 0732142.01	25	30						
44918	D13	404812 0730412.01	85	85						
45053	E 9	405330 0732424.01	125	185						
45207	E10	405132 0731814.01	146	165						
45208	E 9	405005 0732337.01	137	150						
45210	D10	404943 0731745.01	109	125						
45212	E10	405356 0731920.01	114	120						
45220	C12	404305 0730853.00	724	10	- 76	-104	-202			
45347	D10	404726 0731626.01	643	130			-200			
45348	D10	404729 0731628.01	650	130			-200			
45402	E10	405259 0731622.01	170	180						
45446	C10	404400 0731544.02	41	38						
45447	D12	404606 0730500.01	82	52						
45594	D10	404920 0731509.01	85	105						
45610	E 9	405322 0732114.04	313	15						
45637	D12	404508 0730809.01	82	13						
45638	D 9	404804 0732037.01	725	170						
45639	D 9	404804 0732037.02	740	170						
45717	D10	404618 0731645.01	75	93						
45719	D11	404635 0731016.01	82	26						
45720	D11	404716 0731316.02	81	90						
45722	D11	404516 0731228.01	91	37						
45808	E15	405201 0725442.00	707	93			-105			
45839	D11	404503 0731312.01	726	40			-105			
45935	D10	404851 0731851.01	605	285			-344			
46165	F11	405521 0731005.01	481	15						
46235	C10	404432 0731513.01	713	39	- 46		- 75			
46281	E 8	405237 0732505.00	51	34						
46283	D 9	404823 0732118.00	239	275						
46284	D12	404848 0730734.01	108	110						
46286	D11	404836 0731109.01	107	120						
46400	E13	405002 0730226.00	266	180			- 84			
46509	C12	404317 0730859.01	315	15	- 75	-115	-201			
46712	D16	404803 0724840.01	100	20						
46713	D16	404804 0724941.01	444	20	- 76	- 95	-144			
46830	D10	404606 0731746.01	655	76	- 46		- 60			
46871	E 8	405041 0732515.01	836	196				-428		
46911	D16	404920 0724845.02	34	41						
46912	D16	404919 0724845.01	32	42						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
43811	1972	102	UNSD	OBS	27 TO 17	10	6				UPGLAC	
43813	1972	35	UNSD	OBS	- 28 TO - 38	10	6				UPGLAC	
43814	1972	60	UNSD	OBS	25 TO 15	10	6				UPGLAC	
43816	1972	40	UNSD	OBS	- 25 TO - 35	10	6				UPGLAC	
43817	1972	70	UNSD	OBS	29 TO 19	10	6				UPGLAC	
43819	1972	30	UNSD	OBS	- 33 TO - 43	10	6				UPGLAC	
43820	1972	110	UNSD	OBS	28 TO 18	10	6				UPGLAC	
43822	1972	20	UNSD	OBS	- 39 TO - 49	10	6				UPGLAC	
44032	1972	118	UNSD	TEST							MAGOTHY	
44137	1972	39	UNSD	TEST				16	07-11-72		MAGOTHY	10
44186	1972	180	UNSD	TEST				117	06-26-72		MAGOTHY	19
44378	1972	27	UNSD	TEST							UPGLAC	
44467	1972	105	UNSD	TEST							UPGLAC	
44640	1973	155	P.S.	WTDR	0 TO - 49	49	16	90	06-06-72	TURB	UPGLAC	75
44774	1972	79	P.S.	WTDR	-119 TO -209	90	36	38	09-20-72	SUBM	UPGLAC	
44775	1972	150	UNSD	TEST							UPGLAC	
44914	1973	30	UNSD	OBS	17 TO 5	12					UPGLAC	
44918	1973	85	UNSD	OBS	12 TO 0	12	6				UPGLAC	
45053	1972	185	UNSD	OBS	80 TO 70	10	6				UPGLAC	
45207	1973	165	UNSD	OBS	31 TO 21	10	6				UPGLAC	
45208	1973	150	UNSD	OBS	25 TO 15	10	6				UPGLAC	
45210	1972	125	UNSD	OBS	28 TO 18	10	6				UPGLAC	
45212	1972	120	UNSD	OBS	18 TO 8	10	6				UPGLAC	
45220	1972	10	UNSD	TEST							MAGOTHY	
45347	1972	130	INST	WTDR	-457 TO -513	56	16	73	10-24-72		MAGOTHY	31
45348	1972	130	INST	WTDR	-460 TO -518	58	16	74	11-01-72		MAGOTHY	52
45402	1972	180	UNSD	OBS	22 TO 12	10	6				UPGLAC	
45446	1972	38	UNSD	OBS	9 TO - 1	10	6				UPGLAC	
45447	1972	52	UNSD	OBS	- 19 TO - 29	10	6				UPGLAC	
45594	1972	105	UNSD	OBS	32 TO 22	10	6				UPGLAC	
45610	1972	15	P.S.	WTDR	-244 TO -294	50	20			SUBM	UPGLAC	
45637	1972	13	UNSD	OBS	- 58 TO - 68	10	6				UPGLAC	
45638	1973	170	P.S.	WTDR	-478 TO -555	77	20	97	02-01-73	TURB	UPGLAC	29
45639	1973	170	P.S.	WTDR	-490 TO -565	75	20	90	07-03-73	SUBM	UPGLAC	24
45717	1972	93	UNSD	OBS	30 TO 18	12	6				UPGLAC	
45719	1972	26	UNSD	OBS	- 43 TO - 53	10	6				UPGLAC	
45720	1972	90	UNSD	OBS	22 TO 12	10	6				UPGLAC	
45722	1972	37	UNSD	OBS	- 41 TO - 51	10	6				UPGLAC	
45808	1972	93	UNSD	TEST							MAGOTHY	
45839	1973	40	P.S.	WTDR	-610 TO -680	70	20	13	02-20-73	TURB	MAGOTHY	
45935	1974	285	P.S.	WTDR	-254 TO -314	60	48	218	05-29-74		UPGLAC	44
46165	1973	15	UNSD	DEST							UPGLAC	
46235	1973	39	P.S.	WTDR	-610 TO -671	61	20	19	02-27-73	TURB	MAGOTHY	38
46281	1973	34	UNSD	OBS	- 4 TO - 16	12	6				UPGLAC	
46283	1973	275	UNSD	OBS	48 TO 38	10	6				UPGLAC	
46284	1972	110	UNSD	OBS	15 TO 5	10	6				UPGLAC	
46286	1972	120	UNSD	OBS	26 TO 16	10	6				UPGLAC	
46400	1973	180	P.S.	WTDR	- 20 TO - 80	60	20	117	03-01-73	TURB	UPGLAC	
46509	1973	15	P.S.	WTDR	-246 TO -308	62	48			TURB	MAGOTHY	
46712	1973	20	P.S.	WTDR	- 53 TO - 80	27	10	19	03-05-73	TURB	UPGLAC	30
46713	1973	20	P.S.	WTDR	-295 TO -423	128	20	14	03-07-73	TURB	MAGOTHY	27
46830	1973	76	P.S.	WTDR	-474 TO -575	101	20	70	10-16-73		MAGOTHY	56
46871	1973	196	UNSD	TEST							MAGOTHY	
46911	1973	41	UNSD	OBS	21 TO 16	5	6				UPGLAC	
46912	1973	42	UNSD	OBS	24 TO 19	5	6				UPGLAC	

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929							
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
46928	E13	405455 0730258.01	654	166			- 35			
46963	E12	405226 0730957.01	133	147						
46964	E10	405225 0731522.00	114	123						
46965	E10	405230 0731644.00	152	166						
46966	D16	404952 0724705.01	86	89						
47002	E19	405300 0723052.01	163	90						
47024	D17	404628 0724308.04	377	10		-210	-321			
47157	D11	404933 0731342.01	25	105						
47218	E14	405335 0725629.00	703	71			-307			
47222	C10	404200 0731636.01	28	75						
47223	C12	404351 0730541.01	30	55						
47224	D15	404817 0725325.00	33	20						
47225	E14	405218 0725611.01	31	51						
47227	E16	405240 0724914.01	100	40						
47228	E16	405306 0724827.01	101	40						
47231	F18	405541 0723753.00	40	40						
47233	Q20	410348 0722729.00	51	11						
47234	G21	410213 0722327.00	27	7						
47235	G23	410037 0721451.01	22	5						
47236	G23	410156 0721336.01	60	35						
47281	E17	405349 0724415.02	275	140	- 78		- 90			
47282	E17	405849 0724415.03	283	140	- 87		- 95			
47436	E15	405124 0725408.01	196	105						
47437	E15	405124 0725408.02	179	105						
47438	E15	405124 0725408.03	269	105			-103			
47439	D14	404739 0725627.02	707	71			-114			
47453	D12	404804 0730513.00	443	100	- 86		-102			
47672	D11	404810 0731132.00	734	100			-341			
47673	E11	405142 0731058.01	279	109						
47675	E12	405111 0730658.01	90	80						
47698	E12	405307 0730609.01	104	133						
47711	C 9	404119 0732219.01	221	25	- 47		- 68			
47718	D12	404941 0730654.01	51	68						
47741	E 8	405211 0732507.00	559	70						
47743	D13	404642 0730058.01	100	35						
47745	E14	405417 0725727.01	32	62						
47746	D14	404847 0725713.00	84	90						
47747	D15	404740 0725452.00	35	31						
47748	F15	405638 0725147.00	36	110						
47750	E15	405004 0725154.00	95	95						
47752	D14	404607 0725947.01	100	23						
47755	E16	405136 0724645.00	58	63						
47756	D14	404922 0725950.01	69	89						
47757	E13	405008 0730255.01	138	160						
47758	D12	404852 0730504.01	102	121						
47886	C 9	404204 0732420.01	509	43			- 47			
47887	C 8	404046 0732521.02	648	26	- 56		- 64			
47945	F14	405648 0725551.01	142	143						
47973	F12	405604 0730643.01	90	94						
47974	F13	405532 0730257.01	150	149						
47975	E14	405050 0725953.01	129	153						
47976	F14	405605 0725915.01	138	150						
47977	D15	404711 0725150.00	55	38						
48014	E12	405203 0730855.01	343	124			-109			
48193	D 9	404515 0732255.02	534	80						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
46928	1973	166	P.S.	WTDR	-424 TO -484	60	20	121	07-27-73		MAGOTHY	38
46963	1973	147	UNSD	OBS	26 TO 16	10	6				UPGLAC	
46964	1973	123	UNSD	OBS	21 TO 11	10	6				UPGLAC	
46965	1973	166	UNSD	OBS	28 TO 18	10	6				UPGLAC	
46966	1973	89	UNSD	OBS	15 TO 5	10	6				UPGLAC	
47002	1972	90	UNSD	TEST	- 68 TO - 73	5	4	81	11-12-72		UPGLAC	
47024	1973	10	P.S.	WTDR	-323 TO -358	35	16	2	06-07-73	SUBM	MAGOTHY	3
47157	1973	105	UNSD	OBS	93 TO 83	10	6				UPGLAC	
47218	1973	71	UNSD	TEST				22	06-01-73		MAGOTHY	10
47222	1973	75	UNSD	OBS	59 TO 49	10	6				UPGLAC	
47223	1973	55	UNSD	OBS	37 TO 27	10	6				UPGLAC	
47224	1973	20	UNSD	OBS	- 1 TO - 11	10	6				UPGLAC	
47225	1973	51	UNSD	OBS	32 TO 22	10	6				UPGLAC	
47227	1973	40	UNSD	OBS	- 48 TO - 58	10	6				UPGLAC	
47228	1973	40	UNSD	OBS	- 47 TO - 57	10	6				UPGLAC	
47231	1973	40	UNSD	OBS	15 TO 5	10	6				UPGLAC	
47233	1973	11	UNSD	OBS	- 28 TO - 38	10	4				UPGLAC	
47234	1973	7	UNSD	OBS	- 8 TO - 18	10	4				UPGLAC	
47235	1973	5	UNSD	OBS	- 7 TO - 17	10	4				UPGLAC	
47236	1973	35	UNSD	OBS	- 12 TO - 22	10	4				UPGLAC	
47281	1973	140	INST	WTDR	- 90 TO -135	45	10	116	05-09-73	TURB	MAGOTHY	24
47282	1973	140	INST	WTDR	- 98 TO -143	45	10	115	05-14-73	TURB	MAGOTHY	25
47436	1973	105	P.S.	WTDR	-144 TO -183	39	10				UPGLAC	37
47437	1973	105	P.S.	WTDR	- 17 TO - 72	55	20				UPGLAC	
47438	1973	105	P.S.	WTDR	-109 TO -160	51	20	52	09-20-73		MAGOTHY	36
47439	1973	71	P.S.	WTDR							MAGOTHY	
47453	1973	100	P.S.	WTDR	-280 TO -340	60	20	57	05-24-73	TURB	MAGOTHY	42
47672	1973	100	UNSD	TEST							MAGOTHY	
47673	1973	109	P.S.	WTDR	-106 TO -167	61	20	85	08-06-73	TURB	UPGLAC	125
47675	1973	80	UNSD	OBS	2 TO - 8	10	6				UPGLAC	
47698	1973	133	UNSD	OBS	41 TO 31	10	6				UPGLAC	
47711	1974	25	IND	WTDR	-183 TO -196	13	8	9	05-01-73	SUBM	MAGOTHY	20
47718	1973	68	UNSD	OBS	29 TO 19	10	6				UPGLAC	
47741	1973	70	UNSD	TEST	-469 TO -489	20	6				UPGLAC	
47743	1973	35	UNSD	OBS	- 53 TO - 63	10	6				UPGLAC	
47745	1973	62	UNSD	OBS	42 TO 32	10	6				UPGLAC	
47746	1973	90	UNSD	OBS	18 TO 8	10	6				UPGLAC	
47747	1973	31	UNSD	OBS	8 TO - 2	10	6				UPGLAC	
47748	1973	110	UNSD	OBS	86 TO 76	10	6				UPGLAC	
47750	1973	95	UNSD	OBS	12 TO 2	10	6				UPGLAC	
47752	1973	23	UNSD	OBS	- 65 TO - 75	10	6				UPGLAC	
47755	1973	63	UNSD	OBS	17 TO 7	10	6				UPGLAC	
47756	1973	89	UNSD	OBS	32 TO 22	10	6				UPGLAC	
47757	1973	160	UNSD	OBS	34 TO 24	10	6				UPGLAC	
47758	1973	121	UNSD	OBS	31 TO 21	10	6				UPGLAC	
47886	1973	43	P.S.	WTDR	-408 TO -458	50	20	18	08-13-73		MAGOTHY	28
47887	1973	26	P.S.	WTDR	-513 TO -614	101	20	6	06-13-73		MAGOTHY	
47945	1973	143	UNSD	OBS	13 TO 3	10	6				UPGLAC	
47973	1973	94	UNSD	OBS	16 TO 6	10	6				UPGLAC	
47974	1973	149	UNSD	OBS	14 TO 4	10	6				UPGLAC	
47975	1973	153	UNSD	OBS	35 TO 25	10	6				UPGLAC	
47976	1973	150	UNSD	OBS	27 TO 17	17	6				UPGLAC	
47977	1973	38	UNSD	OBS	- 5 TO - 15	10	6				UPGLAC	
48014	1973	124	P.S.	WTDR	-158 TO -219	61	20	84	10-03-73		MAGOTHY	30
48193	1974	80	P.S.	WTDR	-375 TO -446	71	20	29	12-21-73		UPGLAC	43

Table 2.--Hydrologic units and well-completion data

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929							
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
48422	D12	404948 0730848.01	735	95			-165			
48423	F13	405609 0730213.00	687	133						
48424	D14	404904 0725700.02	810	102			-180			
48425	F21	405606 0722027.01	44	35						
48426	F22	405740 0721900.01	121	117						
48427	F22	405618 0721805.01	52	38						
48428	F27	405704 0721659.01	71	63						
48429	F23	405807 0721210.01	66	50						
48430	F21	405501 0722155.01	43	22						
48432	F21	405606 0722357.01	63	52						
48433	F21	405644 0722201.01	135	78						
48434	E18	405227 0723523.01	187	170						
48435	E18	405051 0723531.01	59	170						
48436	E17	405229 0724156.01	105	112						
48437	F22	405831 0721712.01	72	65						
48438	F22	405844 0721916.01	82	114						
48439	E20	405325 0722627.02	51	31						
48441	E21	405349 0722348.01	61	47						
48442	D17	404941 0724148.01	55	44						
48517	F22	405838 0721540.01	71	36						
48518	F23	405650 0721452.01	71	37						
48519	G22	410243 0715601.01	82	80						
48520	F23	405918 0721321.01	62	50						
48521	F22	405940 0721647.01	75	48						
48522	F24	405858 0720624.01	92	20						
48577	G22	410149 0715832.01	109	180						
48578	F21	405928 0721104.01	32	90						
48579	G22	410316 0715355.01	66	28						
48580	G21	410124 0721032.01	46	40						
48581	E19	405808 0723222.01	76	60						
48582	E18	405225 0723701.01	105	80						
48583	E18	405139 0723850.01	139	87						
48719	E 9	405319 0732336.01	349	101						
48759	D13	404641 0730054.02	35	28						
48946	E16	405121 0724906.01	45	40						
49018	D14	404739 0725627.01	516	71			-116			
49439	E10	405353 0731822.01	707	120						
49477	E16	405006 0724900.01	279	70			-110			
49542	C 9	404206 0732458.02	560	45	- 29		- 53			
49543	E13	405410 0730101.01	706	125						
49606	E14	405335 0725629.03	703	75			-300			
50222	F15	405738 0725420.01	212	100						
50399	F18	405723 0723754.03	346	48						
50546	C10	404432 0731513.03	668	39	- 42		- 71			
50630	C12	404226 0730733.04	243	20	- 85		-120			
50970	E19	405305 0723230.01	208	90						
51169	G21	410349 0722222.01	54	35						
51170	G21	410311 0722155.01	43	10						
51171	G21	410410 0722147.01	53	27						
51173	H21	410510 0722123.01	49	45						
51174	G21	410437 0722056.01	61	45						
51175	G21	410416 0722501.01	48	39						
51177	G22	410316 0721921.01	27	18						
51178	G22	410344 0721932.01	47	28						
51179	G22	410424 0721928.01	55	18						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
48422	1974	95	UNSD	TEST							MAGOTHY	
48423	1973	133	UNSD	TEST							UPGLAC	
48424	1974	102	UNSD	TEST							MAGOTHY	
48425	1973	35	UNSD	OBS	1 TO - 9	10	6				UPGLAC	
48426	1973	117	UNSD	OBS	8 TO - 2	10	6				UPGLAC	
48427	1973	38	UNSD	OBS	- 1 TO - 11	10	4				UPGLAC	
48428	1973	63	UNSD	OBS	4 TO - 6	10	6				UPGLAC	
48429	1973	50	UNSD	OBS	- 4 TO - 14	10	4				UPGLAC	
48430	1973	22	UNSD	OBS	- 7 TO - 17	10	4				UPGLAC	
48432	1973	52	UNSD	OBS	- 1 TO - 11	10	6				UPGLAC	
48433	1973	78	UNSD	OBS	- 44 TO - 54	10	6				UPGLAC	
48434	1973	170	UNSD	OBS	- 5 TO - 15	10	6				UPGLAC	
48435	1973	170	UNSD	OBS	126 TO 112	14	6				UPGLAC	
48436	1973	112	UNSD	OBS	20 TO 10	10	6				UPGLAC	
48437	1973	65	UNSD	OBS	6 TO - 4	10	6				UPGLAC	
48438	1973	114	UNSD	OBS	45 TO 35	10	6				UPGLAC	
48439	1973	31	UNSD	OBS	- 6 TO - 16	10	6				UPGLAC	
48441	1973	47	UNSD	OBS	0 TO - 10	10	6				UPGLAC	
48442	1973	44	UNSD	OBS	2 TO - 8	10	6				UPGLAC	
48517	1973	36	UNSD	OBS	- 21 TO - 31	10	6				UPGLAC	
48518	1973	37	UNSD	OBS	- 20 TO - 30	10	4				UPGLAC	
48519	1973	80	UNSD	OBS	11 TO 1	10	6				UPGLAC	
48520	1973	50	UNSD	OBS	1 TO - 9	10	6				UPGLAC	
48521	1973	48	UNSD	OBS	- 14 TO - 24	10	4				UPGLAC	
48522	1973	20	UNSD	OBS	- 59 TO - 69	10	6				UPGLAC	
48577	1973	180	UNSD	OBS	6 TO - 4	10	6				UPGLAC	
48578	1973	90	UNSD	OBS	71 TO 61	10	4				UPGLAC	
48579	1973	28	UNSD	OBS	- 25 TO - 35	10	6				UPGLAC	
48580	1973	40	UNSD	OBS	6 TO - 4	10	6				UPGLAC	
48581	1973	60	UNSD	OBS	- 4 TO - 18	14	6				UPGLAC	
48582	1973	80	UNSD	OBS	- 12 TO - 22	10	6				UPGLAC	
48583	1973	87	UNSD	OBS	- 39 TO - 49	10	6				UPGLAC	
48719	1973	101	P.S.	WTDR	-182 TO -242	60	20	90	10-03-73		UPGLAC	52
48759	1973	28	UNSD	OBS	5 TO - 5	10	6				UPGLAC	
48946	1973	40	UNSD	OBS	7 TO - 3	10	6				UPGLAC	
49018	1973	71	P.S.	WTDR	-382 TO -442	60	20	44	09-21-73		MAGOTHY	37
49439	1973	120	UNSD	TEST							UPGLAC	
49477	1974	70	IRR	WTDR	-179 TO -209	30	12	40	05-03-74		MAGOTHY	13
49542	1973	45	UNSD	TEST	-495 TO -515	20	6				MAGOTHY	
49543	1973	125	UNSD	TEST							UPGLAC	
49606	1973	75	UNSD	TEST							MAGOTHY	
50222	1974	100	P.S.	WTDR	- 17 TO - 52	35	16	44	02-11-74		UPGLAC	11
50399	1973	48	UNSD	TEST				36	11-28-73		UPGLAC	
50546	1974	39	P.S.	WTDR	-565 TO -626	61	20	21	01-05-74		MAGOTHY	50
50630	1974	20	P.S.	WTDR	-150 TO -220	70	20	7	02-06-74		MAGOTHY	20
50970	1973	90	P.S.	WTDR	- 98 TO -118	20	14	87	08-12-73	TURB	UPGLAC	5
51169	1974	35	UNSD	TEST	- 9 TO - 19	10	6				UPGLAC	
51170	1974	10	UNSD	TEST	- 23 TO - 33	10	4				UPGLAC	
51171	1974	27	UNSD	TEST	- 16 TO - 26	10	6				UPGLAC	
51173	1974	45	UNSD	TEST	6 TO - 4	10	4				UPGLAC	
51174	1974	45	UNSD	TEST	- 6 TO - 16	10	6				UPGLAC	
51175	1974	39	UNSD	TEST	1 TO - 9	10	6				UPGLAC	
51177	1974	18	UNSD	TEST	1 TO - 9	10	4				UPGLAC	
51178	1974	28	UNSD	TEST	3 TO - 7	10	6				UPGLAC	
51179	1974	18	UNSD	TEST	- 27 TO - 37	10	4				UPGLAC	

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929							
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
51180	G21	410452 0722002.01	39	4						
51181	H22	410534 0721946.01	62	49						
51182	H22	410602 0721958.01	64	61						
51183	G22	410334 0721727.01	39	41						
51184	G22	410147 0721841.01	32	18						
51185	G22	410132 0721846.01	33	10						
51186	G22	410047 0721847.01	42	22						
51214	C 8	404210 0732502.01	395	45	- 38		- 53			
51274	G26	410253 0715708.01	55	20						
51275	G26	410212 0715744.01	178	124						
51322	F18	405717 0723748.02	200	33						
51336	F17	405808 0724213.01	200	120						
51461	C14	404119 0725935.01	467	5	-119	-150	-311			
51519	D11	404808 0731133.01	408	100						
51566	F17	405716 0724133.01	89	74						
51567	F17	405653 0724225.01	92	81						
51568	F18	405808 0723854.01	70	65						
51571	F17	405805 0724037.01	108	86						
51573	F18	405512 0723952.01	90	25						
51575	F17	405544 0724118.01	34	37						
51576	F17	405559 0724252.01	69	60						
51577	F17	405630 0724420.01	95	80						
51578	F16	405721 0724537.01	126	85						
51579	F16	405542 0724630.01	87	78						
51580	F16	405714 0724709.01	135	80						
51581	F19	405722 0723420.01	45	32						
51582	F18	405953 0723539.01	84	62						
51583	F16	405500 0724952.01	51	68						
51584	F16	405757 0724918.01	142	105						
51586	F16	405642 0724919.01	100	103						
51587	F18	405809 0723709.01	80	61						
51588	F18	405634 0723805.01	60	38						
51589	F18	405704 0723614.01	44	31						
51591	E16	405418 0724706.01	30	35						
51592	E16	405349 0724941.01	42	56						
51609	D12	404820 0730734.03	729	99			-117			
51828	F16	405745 0724557.01	149	85						
51953	F13	405607 0730213.01	316	133						
52050	G21	410400 0722020.01	348	44			-297			
52084	H21	410516 0722009.01	74	29						
52162	C15	404357 0725157.01	1695	8	-108	-144	-277	-1336	-1542	
52236	D 9	404504 0732219.01	98	80			-185			
52383	F17	405542 0724453.01	64	63						
52434	E11	405426 0731216.01	73	15						
52449	F18	405512 0723952.02	41	58						
52490	E13	405354 0730212.02	554	137			-223			
52886	F15	405513 0725054.01	57	45						
52943	D15	404558 0725210.01	310	23	- 89	-115	-217			
52944	D14	404905 0725655.01	204	102						
53274	D11	404758 0731277.01	800	109			- 97			
53291	E13	405002 0730226.02	265	180						
53322	G21	410057 0723155.01	100	53						
53323	H21	410702 0722216.01	52	30						
53324	G19	410104 0723033.01	62	42						
53325	G19	410007 0723319.01	68	41						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
51180	1974	41	UNSD	TEST	12 TO 2	10	6				UPGLAC	
51181	1974	49	UNSD	TEST	- 3 TO - 13	10	6				UPGLAC	
51182	1974	61	UNSD	TEST	7 TO - 3	10	6				UPGLAC	
51183	1974	41	UNSD	TEST	12 TO 2	10	6				UPGLAC	
51184	1973	18	UNSD	OBS	- 2 TO - 12	10	4				UPGLAC	
51185	1973	10	UNSD	OBS	- 10 TO - 20	10	4				UPGLAC	
51186	[illegible]	22	UNSD	OBS	- 8 TO - 18	10	4				UPGLAC	
51214	[illegible]	45	P.S.	WTDR	- 285 TO - 345	60		18	03-12-74		MAGOTHY	35
51274	[illegible]	20	P.S.	WTDR	- 17 TO - 34	17	8	4	03-26-74	TURB	UPGLAC	15
51275	1974	124	P.S.	WTDR	- 31 TO - 51	20	10	120	03-18-74	SUBM	UPGLAC	33
51322	1974	33	ARCD	WTDR	- 136 TO - 167	31	10	40	05-14-74	TURB	UPGLAC	34
51336	1974	120	IRR	WTDR	- 65 TO - 80	15		158	03-18-74	TURB	UPGLAC	1
51461	1974	5	P.S.	WTDR	- 425 TO - 435	30	6	14	05-30-74	SUBM	MAGOTHY	26
51519	1974	100	P.S.	WTDR	- 225 TO - 305	80	20	70			UPGLAC	33
51566	1974	74	UNSD	OBS	- 3 TO - 13	10	6				UPGLAC	
51567	1974	81	UNSD	OBS	1 TO - 9	10	6				UPGLAC	
51568	1974	65	UNSD	OBS	7 TO - 3	10	6				UPGLAC	
51571	1974	86	UNSD	OBS	- 10 TO - 20	10	6				UPGLAC	
51573	1974	25	UNSD	OBS	- 53 TO - 63	10	6				UPGLAC	
51575	1974	37	UNSD	OBS	15 TO 5	10	6				UPGLAC	
51576	1974	60	UNSD	OBS	3 TO - 7	10	6				UPGLAC	
51577	1974	80	UNSD	OBS	- 3 TO - 13	10	6				UPGLAC	
51578	1974	85	UNSD	OBS	- 29 TO - 39	10	6				UPGLAC	
51579	1974	78	UNSD	OBS	3 TO - 7	10	6				UPGLAC	
51580	1975	80	UNSD	OBS	- 42 TO - 52	10	6				UPGLAC	
51581	1974	32	UNSD	OBS	- 1 TO - 11	10	6				UPGLAC	
51582	1974	62	UNSD	OBS	- 10 TO - 20	10	6				UPGLAC	
51583	1974	68	UNSD	OBS	29 TO 19	10	6				UPGLAC	
51584	1974	105	UNSD	OBS	- 22 TO - 37	15	6				UPGLAC	
51586	1974	103	UNSD	OBS	15 TO 5	10	6				UPGLAC	
51587	1974	61	UNSD	OBS	- 8 TO - 18	10	6				UPGLAC	
51588	1974	38	UNSD	OBS	- 10 TO - 20	10	6				UPGLAC	
51589	1974	31	UNSD	OBS	0 TO - 10	10	6				UPGLAC	
51591	1974	35	UNSD	OBS	21 TO 11	10	6				UPGLAC	
51592	1974	56	UNSD	OBS	27 TO 17	10	6				UPGLAC	
51609	1974	99	P.S.	WTDR	- 572 TO - 627	55	20	63	08-15-74	TURB	MAGOTHY	34
51828	1974	85	UNSD	OBS	- 44 TO - 64	20	6				UPGLAC	
51953	1975	133	P.S.	WTDR	- 102 TO - 162	60	42	102	10-01-74	TURB	UPGLAC	73
52050	1974	44	UNSD	TEST							MAGOTHY	
52084	1974	29	UNSD	TEST	- 33 TO - 43	10	6				UPGLAC	
52162	1974	8	UNSD	OBS	-1662 TO -1682	20	4				LLOYD	
52236	1974	80	DOM	WTDR	- 14 TO - 18	4	4			SUBM	UPGLAC	
52383	1974	63	UNSD	OBS	12 TO 2	10	6				UPGLAC	
52434	1974	15	DOM	WTDR	- 52 TO - 57	5	5			SUBM	UPGLAC	
52449	1974	58	UNSD	OBS	29 TO 19	10	6				UPGLAC	
52490	1974	137	P.S.	WTDR	- 343 TO - 417	74	48	94	10-10-74		MAGOTHY	33
52886	1974	45	UNSD	OBS	3 TO - 12	15	6				UPGLAC	
52943	1974	23	UNSD	TEST	- 66 TO - 92	26	8	21	09-11-74		UPGLAC	11
52944	1974	102	P.S.	WTDR	- 44 TO - 99	55	20	65	10-29-74		UPGLAC	87
53274	1974	109	UNSD	TEST							MAGOTHY	
53291	1975	180	P.S.	WTDR	- 22 TO - 82	60	20	123	05-29-75	TURB	UPGLAC	77
53322	1974	53	UNSD	OBS	- 26 TO - 46	20	8				UPGLAC	
53323	1974	30	UNSD	OBS	- 9 TO - 19	10	4				UPGLAC	
53324	1974	42	UNSD	OBS	- 7 TO - 17	10	4				UPGLAC	
53325	1974	41	UNSD	OBS	- 12 TO - 22	10	4				UPGLAC	

Table 2.--Hydrologic units and well-completion data

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929						
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
53326	G20	410229 0722957.01	92	60						
53327	G20	410022 0722936.01	44	24						
53328	G21	410234 0722436.01	41	20						
53329	G20	410140 0722816.01	71	30						
53330	H21	410706 0722032.01	52	15						
53331	H21	410753 0722055.01	70	47						
53332	F19	405843 0723243.01	45	25						
53333	F19	405924 0723423.01	74	51						
53334	F19	405939 0723039.01	53	32						
53335	G20	410304 0722627.01	37	16						
53336	G19	410017 0723155.01	42	18						
53337	H22	410906 0721713.01	52	20						
53338	G20	410412 0722613.01	65	39						
53339	G20	404722 0730305.01	798	50	-122		-140			
53360	E10	405032 0731628.02	703	141			- 88			
53361	E10	405133 0731559.01	521	148			- 75			
53497	D12	404950 0730850.01	173	90						
53498	D12	404950 0730850.02	721	90			-180			
53522	E17	405230 0724300.01	137	167	- 69		- 81			
53593	E18	405124 0723536.03	161	47						
53747	E10	405140 0731910.01	453	171			-117			
53851	E17	405230 0724300.02	291	167	- 69		- 81			
54099	E13	405029 0730321.01	703	170			- 90			
54155	C10	404326 0731735.01	721	38			- 97			
54162	E10	405359 0731828.01	543	151						
54305	D12	404805 0730515.02	313	100	- 78		- 96			
54308	D11	404759 0731225.01	797	109			-106			
54377	B12	403936 0730525.01	630	5			-329			
54473	E13	405030 0730321.03	312	170	- 69		-130			
54478	F18	405906 0723528.01	125	65			-481			
54479	F18	405857 0723538.01	467	65			-481			
54568	C 8	404210 0732502.02	423	45	- 38		- 53			
54731	B10	403822 0731550.01	750	8			-117			
54957	D11	404618 0731233.01	378	50			- 74			
55028	E25	405332 0722420.01	161	50			-158			
55076	F18	405856 0723540.01	343	68						
55094	E 9	405122 0732327.01	180	185						
55733	C10	404326 0731741.01	233	38			- 97			
56133	E10	405434 0731942.02	333	70						
56423	C10	404418 0731718.01	800	50	- 50		- 75			
56508	D13	404542 0730133.01	709	6	-116	-135	-184			
56674	D13	404950 0730015.01	179	107	- 71					
56980	F18	405935 0723548.01	1104	35			-285	-715	-875	-1015
57008	D10	404658 0731642.01	635	111			-160			
57354	E 8	405126 0732737.01	257	50						
57357	G26	410249 0715545.01	93	32		-110				
57666	D 9	404604 0732458.01	270	105						
57723	C13	404322 0730450.01	807	38			-152			
57748	F 8	405520 0732939.01	418	82				-282	-300	
57979	F12	405614 0730515.01	582	100			- 55			
57980	F13	405510 0730452.01	703	187			- 98	-573		
58708	D10	404936 0731525.01	423	132			- 16			
58755	E13	405052 0730205.01	252	240						
58761	E13	405342 0730307.01	723	130			-165			
58921	G25	410040 0720025.01	75	48						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

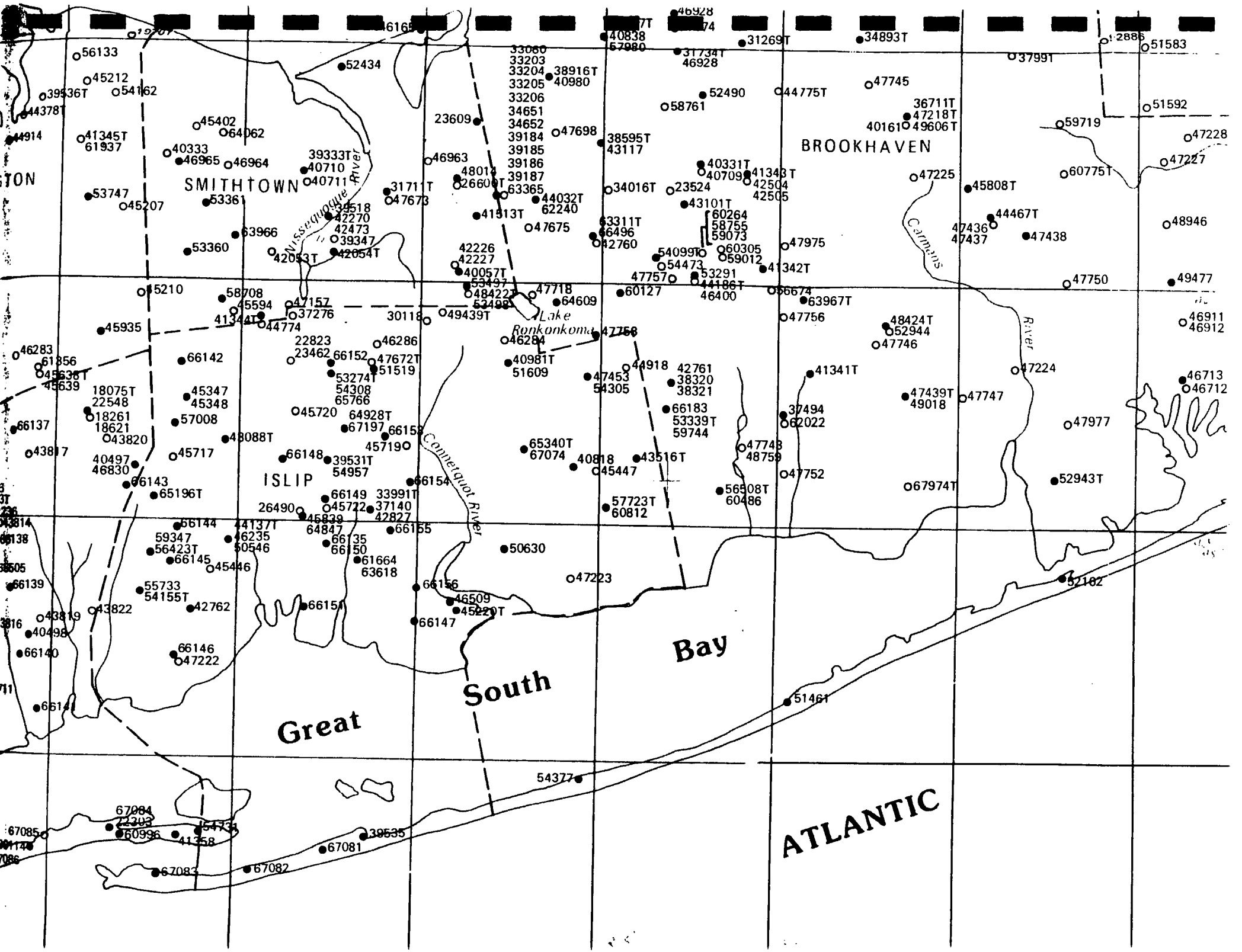
Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
53326	1974	60	UNSD	OBS	- 19 TO - 29	10	4				UPGLAC	
53327	1974	24	UNSD	OBS	- 8 TO - 18	10	4				UPGLAC	
53328	1974	20	UNSD	OBS	- 9 TO - 19	10	4				UPGLAC	
53329	1975	30	UNSD	OBS	- 26 TO - 41	15	8				UPGLAC	
53330	1975	15	UNSD	OBS	- 17 TO - 37	20	4				UPGLAC	
53331	1974	47	UNSD	OBS	- 11 TO - 21	10	4				UPGLAC	
53332	1974	25	UNSD	OBS	- 8 TO - 18	10	4				UPGLAC	
53333	1974	51	UNSD	OBS	- 11 TO - 21	10	4				UPGLAC	
53334	1974	32	UNSD	OBS	- 9 TO - 19	10	4				UPGLAC	
53335	1974	16	UNSD	OBS	- 9 TO - 19	10	4				UPGLAC	
53336	1974	18	UNSD	OBS	- 12 TO - 22	10	4				UPGLAC	
53337	1975	20	UNSD	OBS	- 12 TO - 32	20	4				UPGLAC	
53338	1974	39	UNSD	OBS	- 14 TO - 24	10	4				UPGLAC	
53339	1974	50	UNSD	TEST							MAGOTHY	
53360	1975	141	P.S.	WTDR	-407 TO -526	119	20	80	02-27-75	TURB	MAGOTHY	76
53361	1975	148	P.S.	WTDR	-289 TO -369	80	20	111	05-15-75	TURB	MAGOTHY	61
53497	1975	90	P.S.	WTDR	- 25 TO - 80	55	42			TURB	UPGLAC	
53498	1975	90	P.S.	WTDR	-573 TO -628	55	42			TURB	MAGOTHY	
53522	1976	167	P.S.	WTDR						TURB	MAGOTHY	
53593	1974	47	P.S.	WTDR	- 71 TO -111	40	20	38	12-17-74		UPGLAC	
53747	1975	171	P.S.	WTDR	-199 TO -277	78	20	111	10-03-75	TURB	MAGOTHY	51
53851	1975	167	P.S.	WTDR						TURB	MAGOTHY	
54099	1975	170	UNSD	TEST				114	02-27-75		MAGOTHY	
54155	1975	38	UNSD	TEST							MAGOTHY	
54162	1975	151	P.S.	WTDR	-304 TO -374	70	20	130	03-18-75		UPGLAC	82
54305	1975	100	P.S.	WTDR	-149 TO -210	61	20	55	06-02-75		MAGOTHY	26
54308	1975	109	P.S.	WTDR	-613 TO -683	70	20	72	05-06-75	TURB	MAGOTHY	50
54377	1975	5	P.S.	WTDR	-575 TO -625	50	12	10	04-03-75	TURB	MAGOTHY	20
54473	1975	170	P.S.	WTDR	- 78 TO -139	61	20	115	07-16-75	TURB	MAGOTHY	44
54478	1975	65	UNSD	TEST	- 29 TO - 60	31	12	56	03-31-75		MAGOTHY	66
54479	1975	65	UNSD	OBS	-392 TO -402	10	6				MAGOTHY	
54568	1975	45	P.S.	WTDR	-293 TO -376	83	20	23	05-12-75	TURB	MAGOTHY	41
54731	1975	8	P.S.	WTDR	-691 TO -742	51	14	4	07-21-75		MAGOTHY	21
54957	1976	50	P.S.	WTDR	-268 TO -323	55	20	19			MAGOTHY	10
55028	1975	50	P.S.	WTDR	- 75 TO -110	35	10	43	08-01-75		UPGLAC	175
55076	1975	68	UNSD	UNSD							UPGLAC	
55094	1975	185	UNSD	UNSD							UPGLAC	
55733	1975	38	P.S.	WTDR	-142 TO -192	50	20	14	09-25-75	TURB	MAGOTHY	56
56133	1976	70	UNSD	TEST	-157 TO -261	104	20	23	05-12-76		UPGLAC	108
56423	1975	50	UNSD	TEST		0		21			MAGOTHY	13
56508	1976	6	UNSD	TEST		0					MAGOTHY	
56674	1975	107	P.S.	WTDR	- 15 TO - 65	50	20	56	12-26-75		UPGLAC	88
56980	1976	35	UNSD	TEST							LLOYD	
57008	1976	111	P.S.	WTDR	-418 TO -521	103	20	62	02-23-76	TURB	MAGOTHY	50
57354	1976	50	P.S.	WTDR	-163 TO -204	41	12	19	04-29-76	TURB	UPGLAC	48
57357	1976	32	UNSD	UNSD	- 26 TO - 57	31	10	29	03-18-76		UPGLAC	152
57666	1976	105	ARCD	WTDR	-135 TO -165	30	8	43	08-10-76	TURB	UPGLAC	13
57723	1976	38	UNSD	TEST			16				MAGOTHY	
57748	1977	82	DOM	WTDR	-331 TO -336	5	4	78	05-15-76	SUBM	LLOYD	2
57979	1976	100	P.S.	WTDR	-389 TO -479	90	20	59	05-26-76	TURB	MAGOTHY	56
57980	1977	187	P.S.	WTDR	-443 TO -513	70	20	144	01-03-77	TURB	MAGOTHY	24
58708	1976	132	P.S.	WTDR	-197 TO -257	60	20	81	09-28-76	TURB	MAGOTHY	50
58755	1976	240	DOM	WTDR	- 6 TO - 12	6	4			SUBM	UPGLAC	
58761	1977	130	UNSD	UNSD	-522 TO -593	71	20	82	02-15-77		MAGOTHY	22
58921	1976	48	UNSD	OBS	- 19 TO - 24	5	4				UPGLAC	

Location of well				HYDROLOGIC UNIT PENETRATED AND ELEVATION OF UNIT SURFACE, IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929							
Well number	Map coord	Latitude and Longitude	Well depth (ft)	Upper glacial aquifer	Gardiners Clay	Monmouth greensand	Magothy aquifer	Raritan clay	Lloyd aquifer	Bedrock
58922	G22	410356 0715442.01	62	48						
58923	G26	410401 0715702.02	76	57						
58924	F24	405934 0720932.01	139	110						
58925	F23	405948 0721240.01	92	72						
58956	F20	405556 0722512.01	43	5						
58957	F21	405608 0722307.01	203	189						
58958	F21	405737 0722158.01	210	190						
58959	F22	405816 0721628.01	203	187						
58960	F22	405827 0721905.01	164	164						
58961	F22	405831 0721639.01	131	131						
59012	E13	405040 0730134.01	259	240						
59073	E13	405045 0730206.01	250	240						
59347	C10	404419 0731715.01	463	51	- 53		- 79			
59711	G23	410123 0721303.01	394	65						
59719	E15	405323 0725213.01	150	63						
59744	D13	404722 0730305.02	301	80	-110		-125			
59793	F22	405615 0721823.01	580	34	- 81		-172			
59794	E21	405208 0722418.01	153	8						
59795	G22	410121 0721907.01	130	15	-109					
59992	F21	405642 0722400.01	292	24			-164			
60123	F23	405559 0721459.01	330	12			-155			
60124	F24	405922 0720634.01	195	27						
60125	G26	410330 0715638.01	315	87			-211			
60126	G24	410239 0720915.01	179	23						
60127	D13	404947 0730426.01	489	132	- 63		-374			
60177	F21	405857 0722137.01	840	99			-275			
60264	E13	405040 0730210.01	241	245						
60305	E13	405048 0730147.01	291	245						
60486	D13	404542 0730133.02	363	6	-116	-135	-184			
60775	E15	405223 0725202.01	140	63						
60812	D13	404524 0730448.01	489	38			-152			
60897	G26	410202 0715629.01	142	78	25		- 6			
60996	B10	403820 0731805.01	305	10	- 73	-120	-190			
61015	H20	410444 0722605.01	143	40						
61124	G25	410109 0720103.01	410	58						
61160	E19	404936 0723145.01	1040	15	- 40	-121	-251	-995		
61356	D 9	404804 0732038.01	752	170						
61664	U11	404415 0731140.01	763	28	- 66		- 85			
61937	E10	405249 0731928.02	594	237						
62022	D14	404717 0725956.02	313	60						
62101	F22	405801 0721804.01	286	74	- 66		-134			
62102	F24	405918 0720825.01	180	50		-120				
62240	E12	405147 0730648.01	652	118			-136			
62855	F22	405919 0721705.01	171	85	- 81					
63205	C 9	404202 0732427.01	417	40			- 50			
63311	E12	405059 0730507.01	802	130	- 56		- 65			
63365	E12	405147 0730811.01	835	100			-715			
63426	D 8	404638 0732511.01	295	120						
63618	C11	404416 0731137.01	553	20	- 83		- 92			
63794	E12	405154 0732546.01	650	170						
63966	E10	405053 0731509.01	653	79			- 36			
63967	D14	404948 0725917.01	804	110			-130			
64023	F14	405643 0725859.01	835	160			-603	-632		
64062	E11	405302 0731534.01	639	169			-228	-359		
64609	D12	404932 0730608.01	373	143						

from selected wells and test holes in Suffolk County, New York.

WELL-COMPLETION DATA

Well Number	Year Com-pleted	Elevation of LSD (ft above or below NGVD)	Use of Water	Use of Well	Screen Setting (ft above or below NGVD)	Total Screen Length (ft)	Diam of Well (in)	Water level (ft below LSD)	Date of Meas. (M-D-Y)	Lift Type	Aquifer Devel-oped	Specific Capacity (GPM/ft)
58922	1976	48	UNSD	OBS	- 3 TO - 8	5	4				UPGLAC	
58923	1976	57	UNSD	OBS	- 8 TO - 13	5	4				UPGLAC	
58924	1976	110	UNSD	OBS	- 22 TO - 27	5	4				UPGLAC	
58925	1976	72	UNSD	OBS	- 13 TO - 18	5	4				UPGLAC	
58956	1976	5	UNSD	OBS	- 30 TO - 35	5	4				UPGLAC	
58957	1976	189	UNSD	OBS	- 7 TO - 12	5	4				UPGLAC	
58958	1976	190	UNSD	OBS	- 13 TO - 18	5	4				UPGLAC	
58959	1976	187	UNSD	OBS	- 8 TO - 13	5	4				UPGLAC	
58960	1976	164	UNSD	OBS	14 TO 9	5	4				UPGLAC	
58961	1976	131	UNSD	OBS	6 TO 1	5	4				UPGLAC	
59012	1976	240	DOM	WTDR	22 TO 16	6	4			SUBM	UPGLAC	
59073	1976	240	DOM	WTDR	- 4 TO - 10	6	4			SUBM	UPGLAC	
59347	1976	51	P.S.	WTDR	-337 TO -407	70	20	21	10-13-76	TURB	MAGOTHY	37
59711	1976	65	UNSD	OBS	- 97 TO -107	10	4				UPGLAC	
59719	1977	63	UNSD	TEST				20	09-24-76		UPGLAC	
59744	1976	80	P.S.	WTDR	-156 TO -216	60	20	47	11-12-76	TURB	MAGOTHY	36
59793	1977	34	UNSD	OBS	-478 TO -488	10	3				MAGOTHY	
59794	1977	8	UNSD	OBS	-107 TO -112	5	4				UPGLAC	
59795	1976	15	UNSD	OBS	- 93 TO - 98	5	4				UPGLAC	
59992	1976	24	UNSD	OBS	-244 TO -254	10	4				MAGOTHY	
60123	1976	12	UNSD	OBS	-258 TO -268	10	4				MAGOTHY	
60124	1976	27	UNSD	OBS	-137 TO -147	10	4				UPGLAC	
60125	1976	87	UNSD	OBS	-187 TO -197	10	4				MAGOTHY	
60126	1976	23	UNSD	OBS	-115 TO -125	10	4				UPGLAC	
60127	1977	132	P.S.	WTDR	-243 TO -353	110	20	88	03-16-77		MAGOTHY	240
60177	1976	99	UNSD	OBS							MAGOTHY	
60264	1976	245	DOM	WTDR	9 TO 4	5	4			SUBM	UPGLAC	
60305	1976	245	DOM	WTDR	- 40 TO - 46	6	4				UPGLAC	
60486	1977	6	P.S.	WTDR	-275 TO -358	83	36				MAGOTHY	
60775	1977	63	UNSD	OBS	- 36 TO - 76	40	8	46	01-28-77		UPGLAC	41
60812	1977	38	P.S.	WTDR	-366 TO -446	80	20	15	05-06-77	TURB	MAGOTHY	37
60897	1978	78	UNSD	UNSD	- 30 TO - 63	33	10	76	08-19-78		MAGOTHY	9
60996	1977	10	UNSD	UNSD	-285 TO -295	10	6	12	03-11-75		MAGOTHY	11
61015	1977	40	P.S.	WTDR	-103 TO -113	10					UPGLAC	
61124	1976	58	UNSD	OBS	-139 TO -149	10	4				UPGLAC	
61160	1977	15	UNSD	TEST							MAGOTHY	
61356	1977	170	P.S.	WTDR	-448 TO -508	60	24				UPGLAC	
61664	1977	28	UNSD	TEST							MAGOTHY	
61937	1978	237	P.S.	WTDR	-293 TO -354	61	20	195	08-24-78		UPGLAC	39
62022	1977	60	P.S.	WTDR	-190 TO -251	61	20	33	11-30-77		UPGLAC	69
62101	1977	74	DOM	WTDR	-192 TO -212	20	4			SUBM	MAGOTHY	
62102	1977	50	DOM	WTDR	-110 TO -130	20	4				UPGLAC	
62240	1978	118	P.S.	WTDR	-461 TO -521	60	20	61.92	04-07-78	TURB	MAGOTHY	43
62855	1977	85	P.S.	WTDR							UPGLAC	
63205	1978	40	P.S.	WTDR						TURB	MAGOTHY	
63311	1978	130	UNSD	TEST							MAGOTHY	
63365	1977	100	UNSD	TEST							UPGLAC	
63426	1977	120	UNSD	UNSD	-134 TO -175	41	12	43	12-21-77	TURB	UPGLAC	21
63618	1978	20	P.S.	WTDR	-470 TO -530	60	20	4	04-27-78	TURB	MAGOTHY	18
63794	1978	170	UNSD	UNSD							UPGLAC	
63966	1978	79	P.S.	WTDR	-481 TO -571	90	20	32	08-15-78		MAGOTHY	65
63967	1978	110	UNSD	TEST				63	04-06-78		MAGOTHY	15
64023	1978	160	UNSD	TEST							MAGOTHY	
64062	1978	169	P.S.	WTDR	-352 TO -467	115	20	129	10-26-78		MAGOTHY	57
64609	1979	143	P.S.	WTDR	-157 TO -227	70	20	91	02-01-79		UPGLAC	42


SMITHTOWN
BROOKHAVEN
ISLIP
Nissequogue River
Lake Ronkonkoma
Connetquot River
Carmans River
Great South Bay
ATLANTIC

EXPLANATION

● ○ Well or Test Hole

Solid circle indicates well or test hole that is screened in or penetrates Magothy aquifer or underlying hydrogeologic units. Open circle indicates well or test hole in hydrogeologic units above Magothy aquifer. Numbers next to symbols are well numbers assigned by New York State Department of Environmental Conservation(prefix letter S is omitted); letter D or T after number indicates diffusion(recharge) well or test hole, respectively. Multiple numbers indicate different wells at same site

0 5 10 MILES

0 5 10 KILOMETERS

21 20' 22 15' 23 10' 24 05' 25 72° 26 55' 27

50'

45'

40'

40' 71° 50'

RK

REFERENCE 3

LONG ISLAND WATER RESOURCES
BULLETIN NUMBER 1

RESULTS OF SUBSURFACE EXPLORATION IN THE MID-ISLAND AREA OF WESTERN SUFFOLK COUNTY, LONG ISLAND, NEW YORK

BY
JULIAN SOREN
U. S. GEOLOGICAL SURVEY

WITH A SECTION ON
POTENTIAL DEVELOPMENT OF GROUNDWATER
IN THE MID-ISLAND AREA

BY
PHILIP COHEN
U. S. GEOLOGICAL SURVEY

PREPARED BY

U. S. GEOLOGICAL SURVEY

IN COOPERATION WITH

SUFFOLK COUNTY LEGISLATURE
SUFFOLK COUNTY WATER AUTHORITY

PUBLISHED BY

SUFFOLK COUNTY WATER AUTHORITY

1971

the shorelines, the direction of flow is reversed, and ground-water movement is upward from the deeper aquifers toward the surface. Thus, because of the character of the flow system, under natural conditions virtually all the recharge to the Magothy and Lloyd aquifers in western Suffolk County originated in the mid-island area, and all of that recharge ultimately discharged from the ground-water system near the shorelines.

The movement of ground water through Long Island's aquifers in the horizontal direction is generally more rapid than movement in the vertical direction because of the occurrence of interbedded fine- and coarse-grained layers, and because the largest dimensions of unevenly shaped particles in the individual layers tend to be oriented horizontally. Approximate rates of ground-water movement can be computed from hydraulic gradients and estimated coefficients of permeability and porosities of the aquifers. In 1968, water in the upper glacial aquifers in the project area was moving horizontally at rates from less than 0.5 foot per day at points distant from centers of pumping, to hundreds of feet per day near the screens of pumping wells. At the same time, water in the Magothy aquifer was moving horizontally at rates from less than 0.2 foot per day at points distant from pumping, to hundreds of feet per day near the screens of pumping wells.

HYDRAULIC INTERCONNECTION OF AQUIFERS

The aquifers of Long Island are hydraulically interconnected. Layers of clay and silt within an aquifer or between aquifers serve to confine water below them, but they do not completely prevent the vertical movement of water through them. Ground water moves downward readily through coarse outwash deposits in the upper glacial aquifer. Vertical movement of water through the Magothy aquifer is impeded by beds and lenses of clay and silt. Because the clay and silt strata in the Magothy are not continuous, some water may move around lenses of this material in addition to moving slowly through the fine-grained strata.

The contact between the upper glacial and Magothy aquifers is not regular either in attitude or in composition of the contact surfaces. Glacial deposits in buried valleys are in lateral contact with truncated sandy beds in the Magothy. In the buried valleys water can laterally enter the Magothy at great depth directly from the glacial deposits, rather than the water having to move vertically to the same depth through less permeable Magothy beds. In the Huntington buried valley, glacial deposits extend completely through the Magothy aquifer to the underlying Raritan clay. (See plate 4.) In addition to the good hydraulic continuity between the upper glacial and Magothy aquifers in the buried valleys, good hydraulic continuity occurs between the aquifers outside the buried valleys where glacial sand and gravel deposits lie directly on Magothy sand beds. Thus, a fairly good hydraulic connection exists between the upper glacial and Magothy aquifers over large parts of the mid-island area, and the configuration of the piezometric surface of the Magothy aquifer is generally similar to that of the water table. However, in the mid-island area hydraulic heads in the Magothy are lower than those in the upper glacial aquifer because of the downward component of ground-water movement in the area.

The thick areally persistent Raritan clay that lies between the Magothy and Lloyd aquifers impedes but does not prevent downward movement of ground water into the Lloyd aquifer, and water in the Lloyd is tightly confined between the Raritan clay and bedrock. Downward leakage into the bedrock is negligible.

Figures 2 and 3 show hydrographs of wells screened in the upper glacial aquifer and the Magothy aquifer at the test-drilling sites in Brentwood and Hauppauge. At both sites, the heads in the deepest wells in the Magothy aquifer are about 2.5 to 3 feet lower than the heads in the shallowest wells in the upper glacial aquifer. The loss of head downward reflects the downward movement of ground water in the mid-island area. The hydrographs in figures 2 and 3 show that the heads in these two aquifers in the project area decrease at a fairly uniform rate with increasing depth. In addition, water-level fluctuations in the two groups of wells were very similar. Both of these facts, the uniform decrease in head and the similar water-level fluctuations, reflect the high degree of hydraulic interconnection between the upper glacial and Magothy aquifers.

The average vertical permeability of the Magothy aquifer is only poorly known. Estimates range from less than 1 to about 30 gpd per sq ft. Assuming that it averages about 5 gpd per sq ft in the mid-island area, the computed amount of downward ground-water movement through the Magothy aquifer in the vicinity of the ground-water divide in 1968 was about 0.4 mgd (million gallons per day) per square mile, and the estimated velocity of the downward movement was about 0.006 foot per day.

Because of the low permeability of the Raritan clay, the hydraulic-head loss across this unit is very much larger than the head loss across a comparable thickness of the Magothy and upper glacial aquifers. At the easternmost test site in the village of Lake Ronkonkoma, wells were screened near the base of the Magothy and near the top of the Lloyd aquifers (pl. 5, section A-A', S33379-80). In 1968, the head near the base of the Magothy aquifer (about 45.5 feet above sea level) was about 11.5 feet higher than the head in the Lloyd aquifer (about 34 feet above sea level). Head losses across the Raritan clay at localities east and west of the Lake Ronkonkoma area differ considerably. At Upton, about 12 miles east of the mid-island area, the head loss across the clay was about 6 feet in 1968; and at Plainview (in Nassau County), about 3 miles southwest of Melville, the head loss across the clay was about 42 feet. The differences in head loss from place to place are largely a result of differences in the vertical permeability and thickness of the Raritan clay.

The head in the Lloyd aquifer at Lake Ronkonkoma in 1968 (about 34 feet above sea level) was higher than either of the heads in the Lloyd at Upton (about 30.5 feet above sea level) and at the Suffolk-Nassau boundary (about 27.5 feet above sea level). The head in the Lloyd at Terryville, about 7 miles northeast of the Ronkonkoma area was about 21 feet above sea level in 1968, and it was 19 feet above sea level at Fire Island State Park in 1968, about 13 miles to the southwest. These data suggest that water in the Lloyd aquifer is moving radially from the Lake Ronkonkoma area. The estimated rate of horizontal movement of water in the Lloyd aquifer in the project area in 1968, was on the order of 0.1 foot per day.

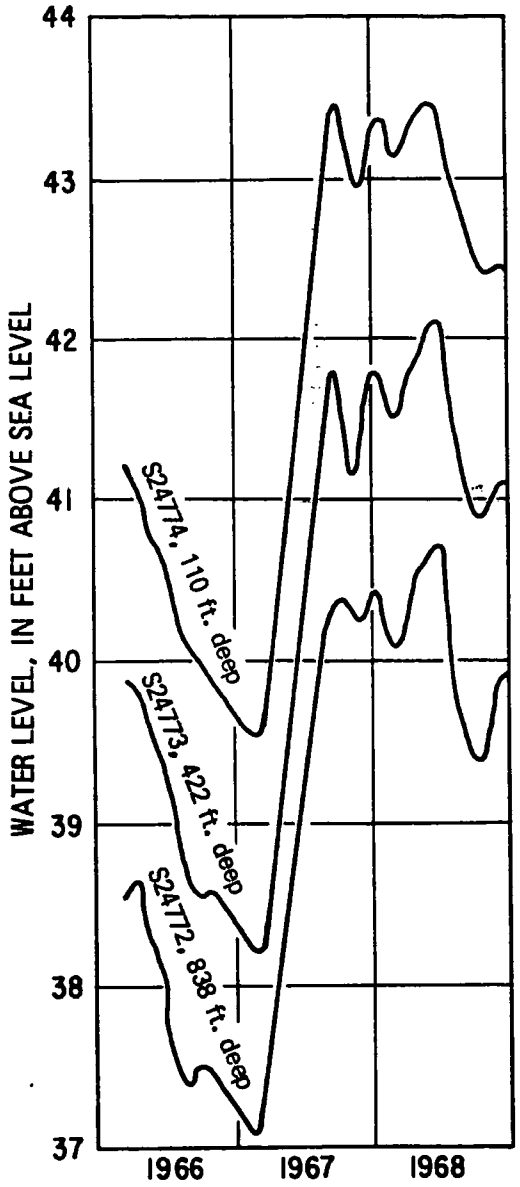


Figure 2.--Fluctuations of water levels in wells screened in the upper glacial aquifer and the Magothy aquifer at Brentwood, N. Y.

FLUCTUATIONS OF GROUND-WATER LEVELS

Fluctuations of water levels in the wells of the mid-island area reflect local variations in recharge to and discharge from the aquifers tapped by the wells. Therefore, changes in ground-water levels afford an insight into many aspects of the ground-water system. Furthermore, the information on water-level fluctuations can be used to help assess the impact of urbanization on the natural hydrologic system.

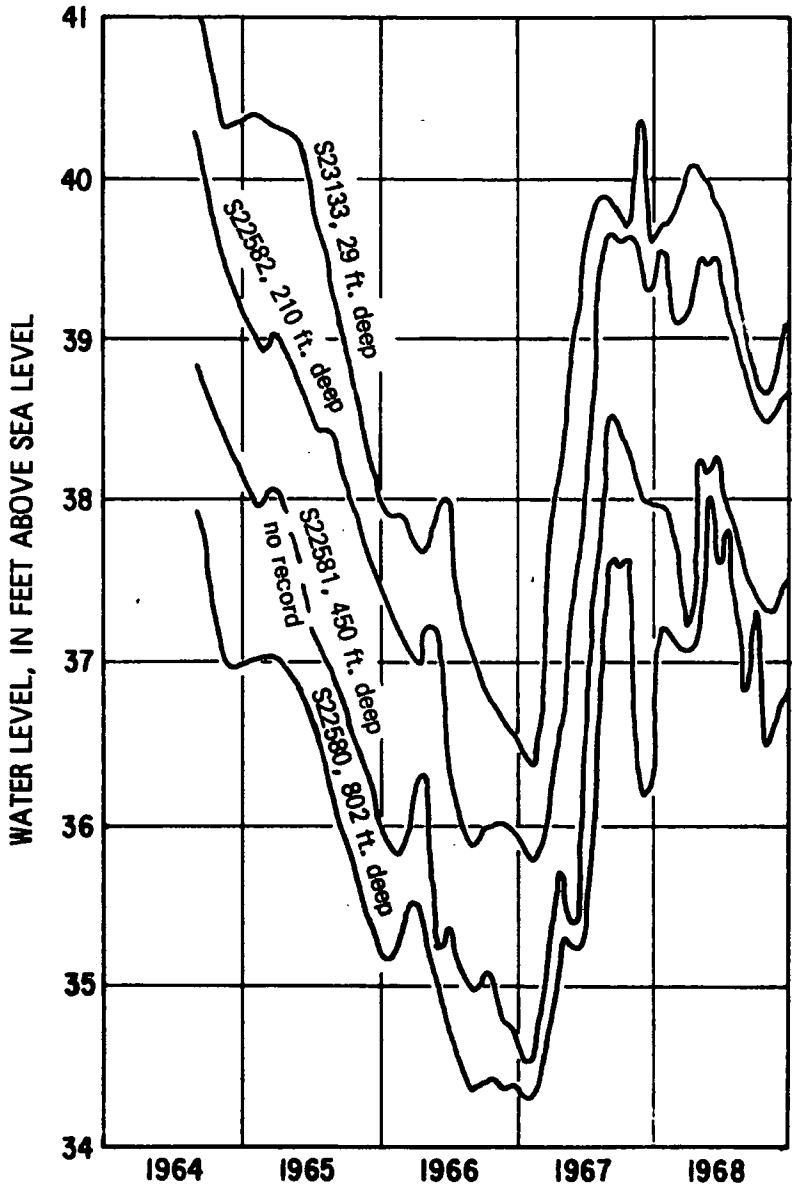


Figure 3.--Fluctuations of water levels in wells screened in the upper glacial aquifer and the Magothy aquifer at Hauppauge, N. Y.

Under natural conditions and in relatively undeveloped areas of Long Island, the water table fluctuates over a range of several feet during the year. Under such conditions, the water table has a rhythmic seasonal pattern; the lowest levels are in late autumn and highest levels are in early spring. This pattern of decline and recovery of the water table reflects the greatest losses of water through evapotranspiration during the growing season and the least such losses between growing seasons. The hydrologic systems in such undeveloped areas are in equilibrium, with inflow balancing outflow. However, if large amounts of water are continually pumped out of a ground-water system, the water table declines until equilibrium is reestablished at a lower level, reflecting a loss of ground water from storage and decreased subsurface and stream outflow from the system.

REFERENCE 4

Water-Transmitting Properties of Aquifers on Long Island, New York

By N. E. McCLYMONDS *and* O. L. FRANKE

HYDROLOGY AND SOME EFFECTS OF URBANIZATION ON LONG ISLAND, NEW YORK

GEOLOGICAL SURVEY PROFESSIONAL PAPER 627-E

Prepared in cooperation with the New York State Department of Conservation, Division of Water Resources; the Nassau County Department of Public Works; the Suffolk County Board of Supervisors; and the Suffolk County Water Authority

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CONTENTS

	Page
Abstract	E1
Introduction	1
Background, purpose, and scope of the water-budget study	1
Purpose and scope of this report	2
Location and general geographic features of the area	2
Physiographic features	2
Acknowledgments	3
Hydrogeologic setting	3
Definition of hydraulic conductivity and transmissivity	6
Previous estimates of hydraulic conductivity and transmissivity of Long Island's aquifers	7
Derivation of hydraulic conductivity and transmissivity values in the present investigation	E10
Theory	10
General procedure	12
Hydraulic conductivity and transmissivity of the principal aquifers	13
Upper glacial aquifer	13
Jameco aquifer	15
Magothy aquifer	19
Lloyd aquifer	20
Comparison of the principal aquifers	22
Conclusions	23
Selected references	24

ILLUSTRATIONS

		Page
PLATE	1. Hydrologic maps of the upper glacial aquifer, Long Island, N. Y.	In pocket
	2. Hydrologic maps of the Magothy aquifer, Long Island	In pocket
	3. Hydrologic maps of the Lloyd aquifer, Long Island	In pocket
FIGURE	1. Map showing location and political boundaries of Long Island	E2
	2. Map showing major physiographic features	3
	3. Generalized geologic section showing relative positions of four principal aquifers	4
	4. Contour map of the bedrock surface	5
	5. Map showing location of wells for which aquifer-test data are available	7
	6. Map showing location of wells for which specific-capacity data are available	8
	7. Graph showing distribution of Q/sL numbers of wells screened in the upper glacial aquifer	13
	8. Graph showing distribution of screen lengths of wells in the upper glacial aquifer	13
	9. Map showing number of wells for which lithologic logs were available for the upper glacial aquifer in the indicated subareas in 1967	14
	10. Graph showing distribution of Q/sL numbers for wells screened in the Jameco aquifer	15
	11. Graph showing distribution of screen lengths of wells in the Jameco aquifer	15
	12–15. Maps showing:	
	12. Number of wells for which lithologic logs were available for the Jameco aquifer in the indicated subareas in 1967	15
	13. Thickness of the Jameco aquifer	16
	14. Estimated average hydraulic conductivity of the Jameco aquifer	17
	15. Estimated transmissivity of the Jameco aquifer	18
	16. Graph showing distribution of Q/sL numbers for wells screened in the Magothy aquifer	19
	17. Graph showing distribution of screen lengths of wells in the Magothy aquifer	20
	18. Map showing number of wells for which lithologic logs were available for the Magothy aquifer in the indicated subareas in 1967	20
	19. Graph showing distribution of Q/sL numbers for wells screened in the Lloyd aquifer	21
	20. Graph showing distribution of screen lengths of wells in the Lloyd aquifer	21
	21. Map showing number of wells for which lithologic logs were available for the Lloyd aquifer in the indicated subareas in 1967	21
	22. Graph showing relation between Q/sL numbers and percentage of total number of wells for the four principal aquifers	23

TABLES

TABLE		Page
1.	Summary of the rock units and their water-bearing properties, Long Island, N.Y.	E5
2.	Estimates of transmissivity and hydraulic conductivity of Long Island's aquifers derived from aquifer tests	8
3.	Estimates of average hydraulic conductivity for parts of Long Island's aquifers derived from specific-capacity data	9
4.	Information recorded for each well	12
5.	Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the upper glacial aquifer	14
6.	Average thickness, hydraulic conductivity, and transmissivity of the upper glacial aquifer in subareas of Long Island	15
7.	Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Jameco aquifer	19
8.	Average thickness, hydraulic conductivity, and transmissivity of the Jameco aquifer in subareas of Long Island	19
9.	Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Magothy aquifer	20
10.	Average thickness, hydraulic conductivity, and transmissivity of the Magothy aquifer in subareas of Long Island	21
11.	Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Lloyd aquifer	22
12.	Average thickness, hydraulic conductivity, and transmissivity of the Lloyd aquifer in subareas of Long Island	22
13.	Average thickness, hydraulic conductivity, and transmissivity of the principal aquifers of Long Island	23

WATER-TRANSMITTING PROPERTIES OF AQUIFERS ON LONG ISLAND, NEW YORK

By N. E. McClymonds and O. L. Franke

ABSTRACT

Data on the aquifers of Long Island, N.Y., have been collected for the past 30 years as part of a series of studies conducted by the U.S. Geological Survey in cooperation with New York State and county agencies. Since 1900, more than 50,000 wells have been constructed on Long Island. For at least 2,500 of these wells, some information was recorded that is of value in interpreting the hydrologic character of one or more of the four principal aquifers—the upper glacial, the Jameco, the Magothy, and the Lloyd. Although the data for the deeper aquifers—the Magothy and Lloyd—are concentrated largely in the western part of Long Island, enough information is available to make a general interpretation of the hydraulic conductivity and the transmissivity of all aquifers throughout most of the island.

Estimates of the average hydraulic conductivity of the screened interval in the aquifers were obtained by multiplying the specific capacity of the well by the inverse of the well-screen length and by a constant which was estimated from the Theis nonequilibrium formula. Based on the estimated average hydraulic conductivities of different lithologies in many screened intervals, a value of hydraulic conductivity was assigned to each lithology in each aquifer. Using these values, an average aquifer hydraulic conductivity was obtained from drillers' logs, and maps of average hydraulic conductivity were developed for each aquifer on Long Island. Maps of total aquifer transmissivity were developed by combining maps of average aquifer hydraulic conductivity and total aquifer thickness.

The estimated average hydraulic conductivity values obtained in this study were about 1,700 gpd per sq ft (gallons per day per square foot), for the upper glacial aquifer, about 1,300 gpd per sq ft for the Jameco, about 420 gpd per sq ft for the Magothy, and about 360 gpd per sq ft for the Lloyd. Average transmissivity values were about 200,000 gpd per ft (gallons per day per foot) for the upper glacial aquifer, about 100,000 gpd per ft for the Jameco, about 240,000 gpd per ft for the Magothy, and about 90,000 gpd per ft for the Lloyd.

INTRODUCTION

BACKGROUND, PURPOSE, AND SCOPE OF THE WATER-BUDGET STUDY

Long Island, which extends from the southeastern part of the mainland of New York State eastward about 120 miles into the Atlantic Ocean, has a total area of about 1,400 square miles (fig. 1). Kings and Queens Counties, which are part of New York City, occupy slightly less than 200 square miles of the western part of the island and have a combined population of about 4.5 million people. Nassau and Suffolk Counties, with areas of about 290 and 920 square miles, respectively, had a population of about 2.5 million people in 1965.

Although Kings and Queens Counties obtain most of their water supply from New York City's system, which is derived from parts of the Delaware and Hudson River basins in upstate New York, Nassau and tapping the underlying ground-water reservoir. Because of present large demands on the local ground-water system and because of the prospect of increased demands as the population of Long Island continues to grow, knowledge about the hydrologic system—with special emphasis on that needed for water conservation and management purposes—is a matter of vital concern now as well as in the future.

Considerable information on the water resources of Long Island is available as a result of more than 30 years of study by the U.S. Geological Survey in cooperation with New York State and county agencies. Although the studies met many of the needs for information on specific problems and areas of Long Island, more quantitative information about the island-wide hydrologic system and the relations between the various components of the system is needed for water-management purposes. To provide that information, a comprehensive water-budget study presently is being made by the Geological Survey in cooperation with the New York State Department of Conservation, Division of Water Resources; the Nassau County Department of Public Works; the Suffolk County Board of Supervisors; and the Suffolk County Water Authority.

The major objectives of the water-budget study are (1) to summarize and interpret pertinent existing in-

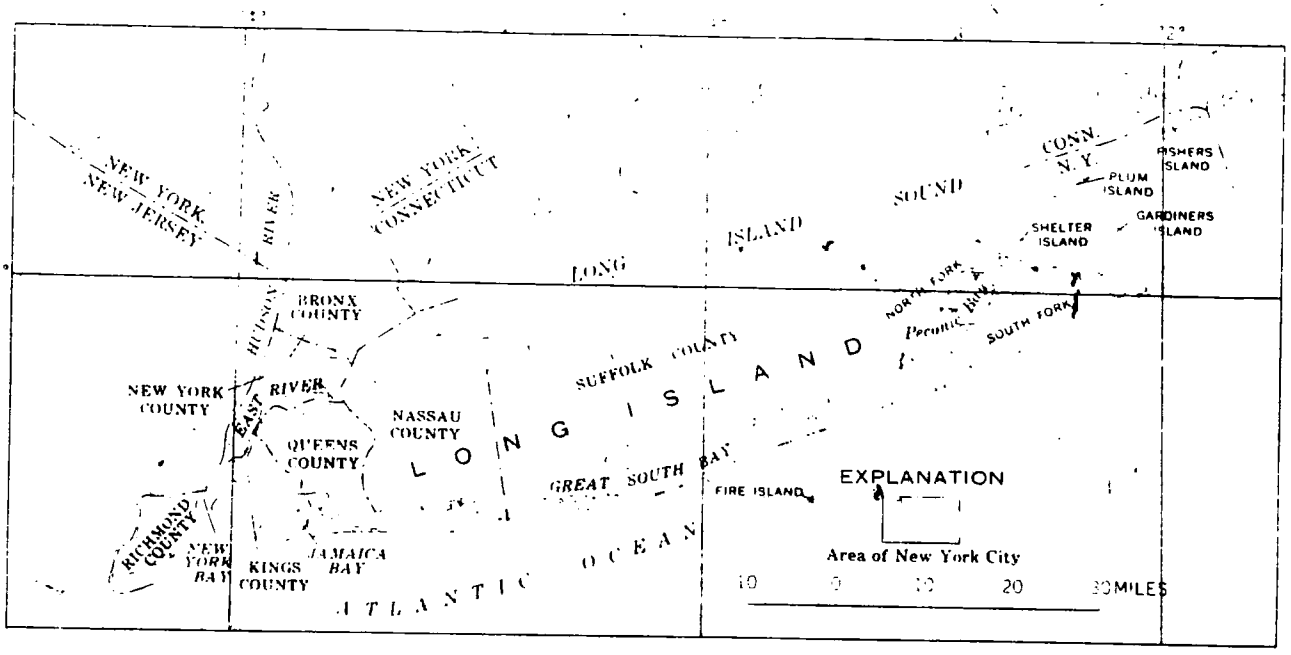

FIGURE 1.—Location and political boundaries of Long Island.

formation about the hydrologic system of Long Island and (2) to fill several gaps in the knowledge of the hydrologic system. The results of these studies are being published in a series of coordinated reports. In some of the reports, including this one, information is developed for all of Long Island; in others the primary area of concern is limited to Nassau and Suffolk Counties.

PURPOSE AND SCOPE OF THIS REPORT

To evaluate, by means of mathematical or physical models, the response of a ground-water flow system to either natural or manmade changes in the hydrologic regimen, a knowledge of the three-dimensional variation in transmissivity is essential. In addition, a knowledge of transmissivity is necessary to calculate the quantities of ground water flowing in the subsurface. Calculating subsurface flow is particularly important on Long Island because a significant percentage of the total natural outflow of water from the hydrologic system occurs as subsurface outflow to the sea.

The purpose of this report is (1) to summarize existing information on the transmissivity and hydraulic conductivity of Long Island's aquifers and (2) to prepare, for the first time, preliminary maps showing the estimated average hydraulic conductivity and transmissivity of each of the principal aquifers.

LOCATION AND GENERAL GEOGRAPHIC FEATURES OF THE AREA

Long Island is bounded on the north by Long Island Sound, on the east and south by the Atlantic Ocean, and on the west by New York Bay and the East River (fig. 1). Several smaller islands are included in the political boundaries of Long Island; the larger of these are Shelter, Gardiners, Fishers, and Plum Islands. The total land area of Long Island is about 1,400 square miles, including the smaller islands within the political boundaries of the island. The four counties—Kings, Queens, Nassau, and Suffolk—have areas of 78 square miles, 115 square miles, 291 square miles, and 922 square miles, respectively.

Several barrier beaches extend along the south shore of Long Island; the longest of these is Fire Island in southern Suffolk County. The northern and eastern coast lines of the island are indented by deep bays that form excellent harbors. Peconic Bay, which is about 30 miles long, divides the eastern end of the island into two long, narrow peninsulas that are locally referred to as the north and south forks.

PHYSIOGRAPHIC FEATURES

Most of the major features of the present-day topography of Long Island (fig. 2) are related to Pleistocene glaciation. The most prominent physiographic features are (1) the east-trending hills in the northern and central parts of the island and their eastward extensions, which form the north and south forks, (2) the gently sloping plain that extends southward from the hills, (3) the deeply eroded headlands along the north shore, and (4) the barrier beaches along the south shore.

The Harbor Hill Moraine forms the northern line of east-trending hills, which extend from Kings County to northern Nassau County and eastward to the north fork. The Ronkonkoma Moraine forms the southern line of

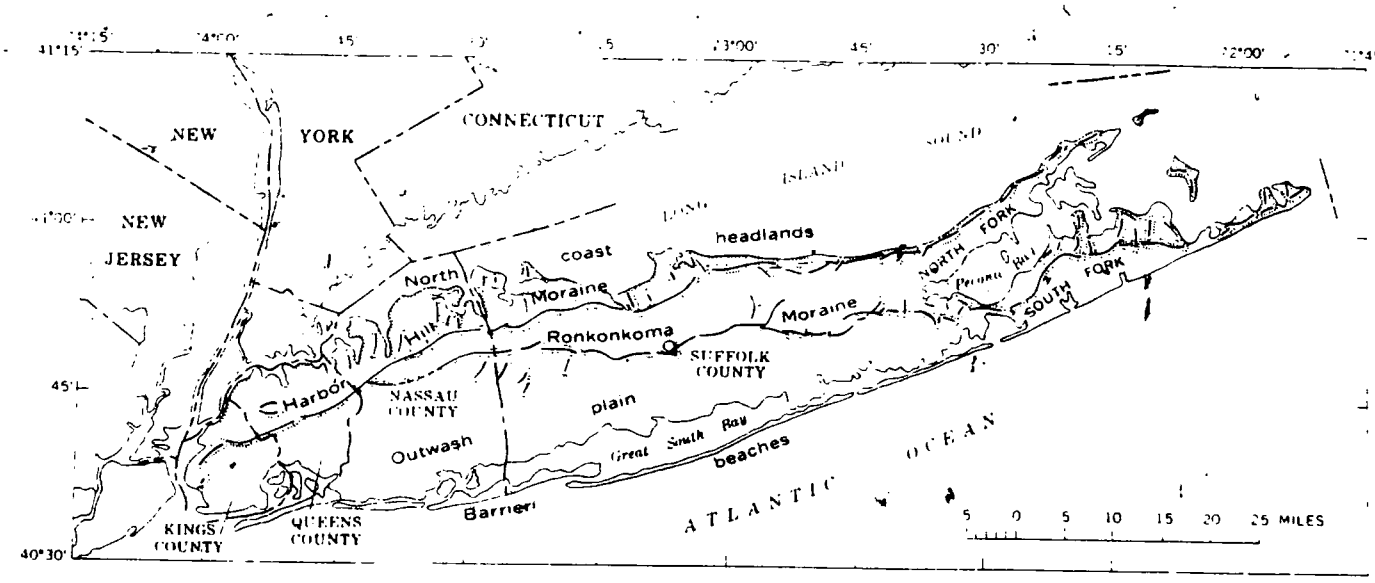

FIGURE 2.—Major physiographic features.

hills and extends from northwestern Nassau County eastward across central Suffolk County to the south fork. These moraines were deposited at the southernmost extension of the glacial ice sheets and have an altitude of about 200 to 300 feet in most of Long Island. The Ronkonkoma Moraine has a maximum altitude of about 400 feet in western Suffolk County.

The moderately even, gently sloping surface that extends southward to the south-shore bays from the Harbor Hill Moraine in Kings and Queens Counties and from the Ronkonkoma Moraine in Nassau and Suffolk Counties is underlain by glacial outwash deposits. This surface has an altitude of about 100 to 150 feet along its inland border and slopes southward at about 20 feet per mile.

The eroded headlands along the north coast are composed mainly of sand, gravel, and clayey till of glacial origin. Wave action has steepened the slopes and cut into the headlands, so that nearly vertical bluffs now exist, some as much as 100 feet high. The bays and harbors of the western part of the north shore were formed during glacial advance and retreat (fig. 2).

Along the south shore, waves and ocean currents formed offshore bars (barrier beaches). Sand and silt, as well as organic deposits, have partly filled and are continuing to fill the shallow bays behind the barrier beaches.

ACKNOWLEDGMENTS

Most of the lithologic and well data in this report were obtained from the files of the New York Water Resources Commission. The authors wish to express their thanks to Walter G. Waterman, associate engineer of the Water Resources Commission, and his colleagues for making these records available.

The report was prepared under the immediate supervision of B. L. Foxworthy, former hydrologist-in-charge, and Philip Cohen, hydrologist-in-charge of the Geological Survey subdistrict office on Long Island; and under the general supervision of Ralph C. Heath and Garald G. Parker, former district chiefs, and Robert J. Dingman, district chief, U.S. Geological Survey, Albany, N.Y.

HYDROGEOLOGIC SETTING

The hydrogeologic setting of Long Island was described in comprehensive reports by several authors (Veatch and others, 1906; Fuller, 1914; Suter and others 1949). In addition, the geology and hydrology of several smaller areas of Long Island were studied in detail by Isbister (1966), Lubke (1964), Lusczynski and Swarzenski (1966), Perlmutter and Geraghty (1963), Pluhowski and Kantrowitz (1964), and Swarzenski (1963). The general hydrologic situation on Long Island was reviewed by Cohen, Franke, and Foxworthy (1968).

Long Island is underlain by consolidated bedrock (fig. 3), which in turn is overlain by a wedge-shaped mass of unconsolidated sedimentary materials. The top of the bedrock, which is at or near the land surface in the northwestern part of the island, slopes to the southeast to a depth of about 2,000 feet below sea level in south-central Suffolk County (fig. 4). The average slope of the bedrock surface is about 65 feet per mile.

The materials that overlie the bedrock and constitute the ground-water reservoir consist of Pleistocene deposits and Cretaceous unconsolidated fluvial and deltaic deposits composed of gravel, sand, silt, clay, and mixtures thereof. The Cretaceous deposits were moderately

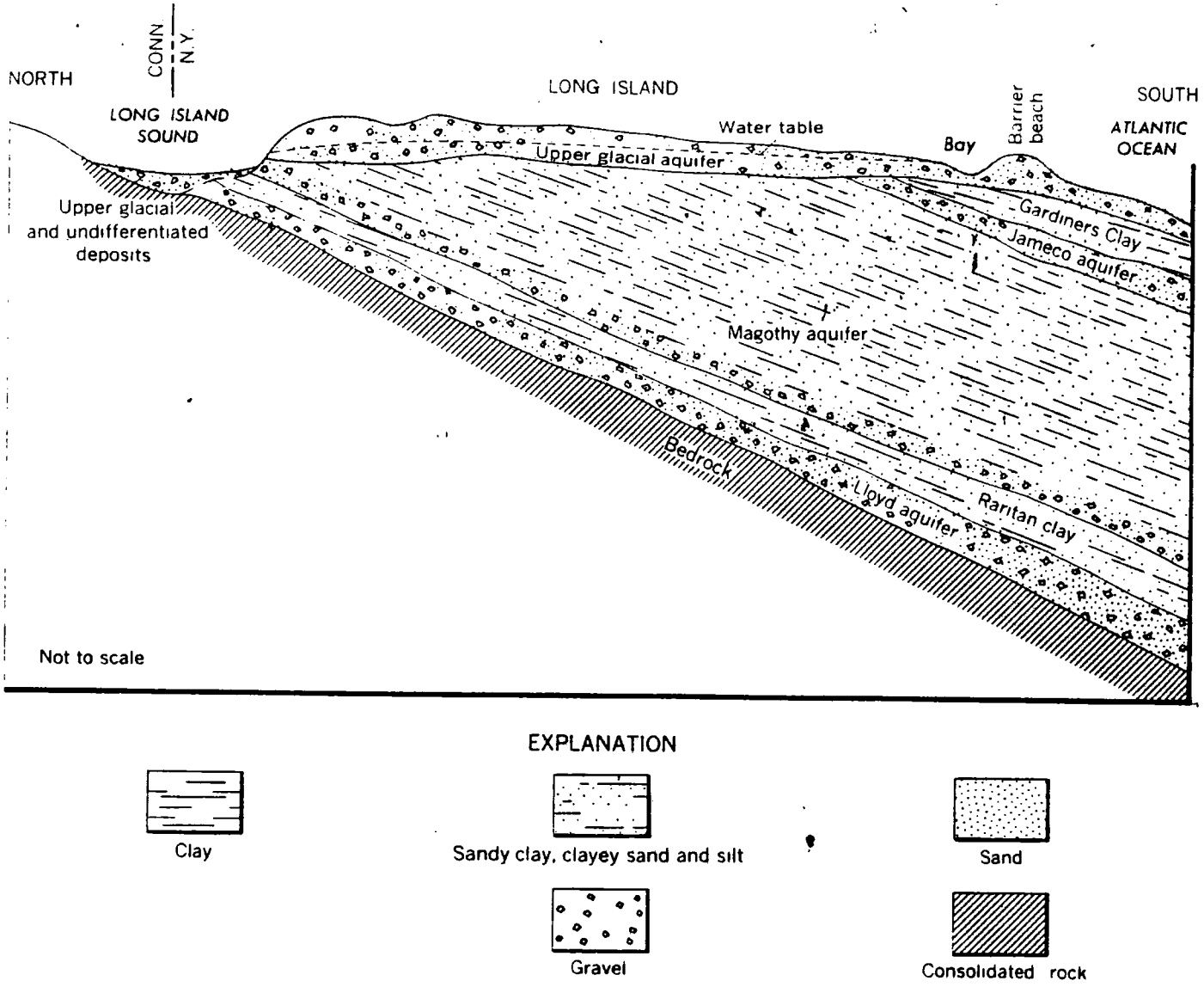

FIGURE 3.—Generalized geologic section showing relative positions of four principal aquifers.

to deeply eroded by streams and glaciers, and therefore, the Pleistocene materials were deposited on an irregular surface that locally was characterized by moderate relief. Data from the numerous wells drilled in Kings, Queens, Nassau, and northwestern Suffolk Counties are sufficient to define the general outlines of the preglacial valleys. In central and eastern Suffolk County, however, the valleys are less well defined.

The upper surface of the Cretaceous deposits generally is below sea level except in several areas in northeastern Nassau and northwestern Suffolk Counties. In all but a few small areas the Pleistocene deposits cover the Cretaceous deposits.

Pertinent information concerning the principal hydrogeologic units of Long Island's ground-water reservoir is summarized in table 1.

Ground water in the uppermost part of the zone of saturation on Long Island, mainly in the upper glacial aquifer but locally also in the Magothy aquifer, is generally under water-table (unconfined) conditions. Artesian (confined) conditions predominate in most of the other parts of the ground-water reservoir of Long Island, where the saturated deposits are overlain by silty and clayey layers of low hydraulic conductivity. Locally, the hydraulic head in the confined aquifers ranges from 30 to 40 feet below the water table in the central part of the island to nearly 20 feet above the water table near the margins of the island. At places along the north and south shores and on the barrier beaches, the head in the Lloyd aquifer is high enough to cause wells that tap the aquifer to flow.

The most significant confining layers in the ground-water reservoir are the Raritan clay, which overlies the Lloyd aquifer; the many discontinuous clay and silt

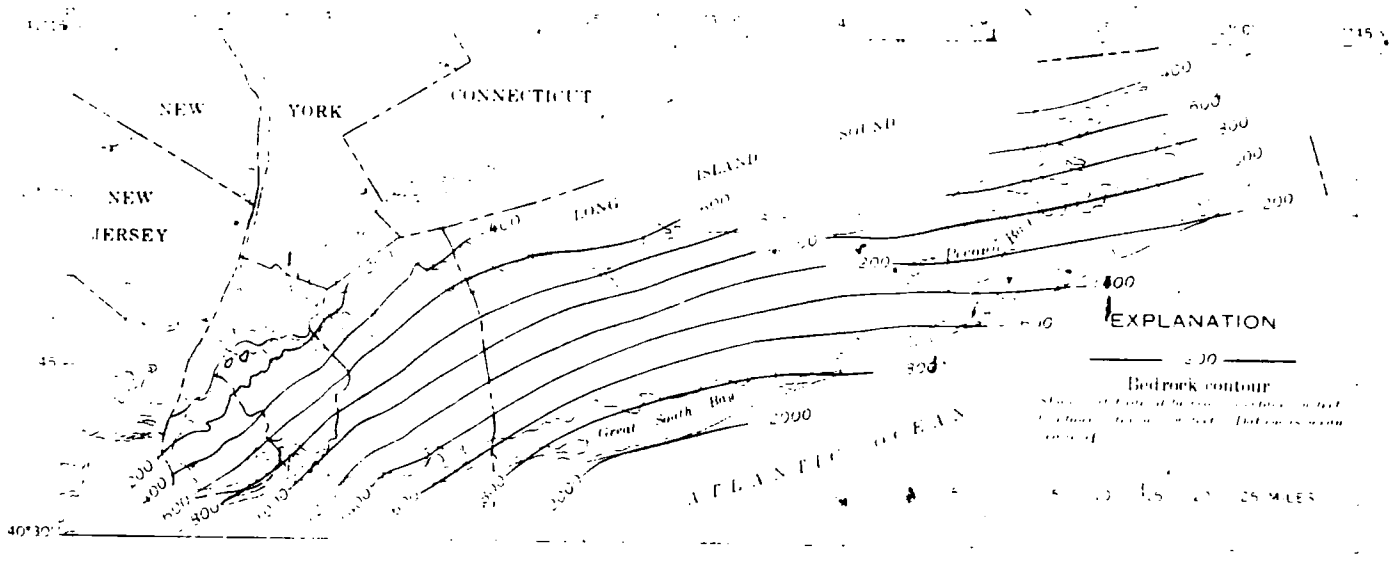

FIGURE 4.—Contour map of the bedrock surface. (Modified from Suter and others, 1949, pls. 8, 9, and 10.)

TABLE 1.—*Summary of the rock units and their water-bearing properties, Long Island*

System	Series	Geologic unit [1]	Hydrogeologic unit	Approximate maximum thickness (feet)	Depth from land surface to top (feet)	Character of deposits	Water-bearing properties
Quaternary	Holocene	Recent deposits: Artificial fill, salt marsh deposits, stream alluvium, and shoreline deposits.	Recent deposits	50	0	Sand, gravel, clay, silt, organic mud, peat, loam, and shells. Colors are gray, brown, green, black, and yellow. Recent artificial-fill deposits of gravel, sand, clay, and rubbish.	Permeable sandy beds beneath barrier beaches yield fresh water at shallow depths, brackish to salty water at greater depth. Clay and silt beneath bays retard salt-water encroachment and confine underlying aquifers. Stream floodplain and marsh deposits may yield small quantities of water but are generally clayey or silty and much less permeable than the underlying upper glacial aquifer.
	Pleistocene	Upper Pleistocene deposits	Upper glacial aquifer	600	0–50	Till (mostly along north shore and in moraines) composed of clay, sand, gravel, and boulders forms Harbor Hill and Ronkonkoma terminal moraines. Outwash deposits (mostly between and south of terminal moraines, but also interlayered with till) consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Glaciolacustrine deposits (mostly in central and eastern Long Island) and marine clay (locally along south shore) consist of silt, clay, and some sand and gravel layers; includes the "20-foot clay" in southern Nassau and Queens Counties. Colors are mainly gray, brown, and yellow; silt and clay locally are grayish green. Contains shells and plant remains, generally in finer grained beds; also contains Foraminifera. Contains chlorite, biotite, muscovite, hornblende, olivine, and feldspar as accessory minerals; "20-foot clay" commonly contains glauconite.	Till is poorly permeable; commonly causes perched-water bodies and impedes downward percolation of water to underlying beds. Outwash deposits are moderately to highly permeable; specific capacities of wells tapping them range from about 10 to more than 200 gpm per ft (gallons per minute per foot) of drawdown. Good to excellent infiltration characteristics. Glaciolacustrine and marine clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel; generally retard downward percolation of ground water. Contains fresh water except near the shore lines. Till and marine deposits locally retard salt-water encroachment.
		Unconformity?					
		Gardiners Clay	Gardiners Clay	300	50–400	Clay, silt, and few layers of sand and gravel. Colors are grayish green and brown. Contains marine shells, Foraminifera, and lignite; also locally contains glauconite. Altitude of top generally is 50–80 feet below mean sea level. Occurs in Kings, Queens, and southern Nassau and Suffolk Counties; similar clay occurs in buried valleys near north shore.	Poorly permeable; constitutes confining layer for underlying Jameco aquifer. Locally, sand layers yield small quantities of water.
		Unconformity?					
		Jameco Gravel	Jameco aquifer	300	50–550	Sand, fine to very coarse, and gravel to large-pebble size; few layers of clay and silt. Gravel is composed of crystalline and sedimentary rocks. Color is mostly dark brown. Contains chlorite, biotite, muscovite, hornblende, and feldspar as accessory minerals. Occurs in Kings, Queens, and southern Nassau Counties; similar deposits occur in buried valleys near north shore.	Moderately to highly permeable; contains mostly fresh water, but brackish water and water with high iron content occurs locally in southeastern Nassau and southern Queens Counties. Specific capacities of wells in the Jameco range from about 20 to 150 gpm per ft of drawdown.

See footnotes at end of table.

TABLE 1.—*Summary of the rock units and their water-bearing properties, Long Island*—Continued

System	Series	Geologic unit [1]	Hydrogeologic unit	Approximate maximum thickness (feet)	Depth from land surface to top (feet)	Character of deposits	Water-bearing properties
		Unconformity					
Tertiary (?)	Pliocene(?)	Mannetto Gravel	(Commonly included with upper glacial aquifer.)	300	0–120	Gravel, fine to coarse, and lenses of sand; scattered clay lenses. Colors are white, yellow, and brown. Occurs only near Nassau-Suffolk County border near center of island.	Highly permeable, but occurs mostly above water table. Excellent infiltration characteristics.
		Unconformity					
Cretaceous	Upper Cretaceous	Magothy(?) Formation [2]	Magothy aquifer	1,100	0–600	Sand, fine to medium, clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal 50–200 feet. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common; contains muscovite, magnetite, rutile, and garnet as accessory minerals. Colors are gray, white, red, brown, and yellow.	Most layers are poorly to moderately permeable; some are highly permeable locally. Specific capacities of wells in the Magothy generally range from 1 to about 30 gpm per ft of drawdown, rarely are as much as 80 gpm per ft of drawdown. Water is unconfined in uppermost parts, elsewhere is confined. Water is generally of excellent quality but has high iron content locally along north and south shores. Constitutes principal aquifer for public-supply wells in western Long Island except Kings County, where it is mostly absent. Has been invaded by salty ground water locally in southwestern Nassau and southern Queens Counties and in small areas along north shore.
		Unconformity					
		Raritan Formation: Clay member	Raritan clay	300	70–1,500	Clay, solid and silty; few lenses and layers of sand; little gravel. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated.	Poorly to very poorly permeable; constitutes confining layer for underlying Lloyd aquifer. Very few wells produce appreciable water from these deposits.
		Raritan Formation: Lloyd Sand Member	Lloyd aquifer	500	200–1,800	Sand, fine to coarse, and gravel, commonly with clayey matrix; some lenses and layers of solid and silty clay; locally contains thin lignite layers and iron concretions. Locally has gradational contact with overlying Raritan clay. Sand and most of gravel are quartzose. Colors are yellow, gray, and white; clay is red locally.	Poorly to moderately permeable. Specific capacities of wells in the Lloyd generally range from 1 to about 25 gpm per ft of drawdown, rarely are as much as 50 gpm per ft of drawdown. Water is confined under artesian pressure by overlying Raritan clay; generally of excellent quality but locally has high iron content. Has been invaded by salty ground water locally in necks near north shore, where aquifer is mostly shallow and overlying clay is discontinuous. Called "deep confined aquifer" in some earlier reports.
		Unconformity					
Precambrian		Bedrock	Bedrock		0–2,700	Crystalline metamorphic and igneous rocks; muscovite-biotite schist, gneiss, and granite. A soft, clayey zone of weathered bedrock locally is more than 100 feet thick.	Poorly permeable to virtually impermeable; constitutes virtually the lower boundary of ground-water reservoir. Some hard, fresh water is contained in joints and fractures but is impractical to develop at most places; however, a few wells near the western edges of Queens and Kings Counties obtain water from the bedrock.

[1] Names are those used in reports by the Geological Survey.
[2] The use of the term "Magothy(?) Formation" has been abandoned. The post-Raritan Cretaceous deposits are divided into the Magothy Formation and Matawan Group undifferentiated and the Monmouth Group undifferentiated.

lenses in the Magothy deposits; and the Gardiners Clay, which overlies the Jameco aquifer and locally overlies the Magothy aquifer. The clayey and silty layers in the Magothy aquifer become increasingly effective as confining layers with depth, particularly in the southern part of Long Island where the Magothy reaches its maximum thickness—about 1,100 feet in southern Suffolk County. Clayey beds in the upper glacial aquifer are found mainly in the northern part of the island and in parts of central Suffolk County; some are interbedded with glacial outwash deposits near the south shore.

DEFINITION OF HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY

The hydraulic conductivity, K, of material comprising an aquifer is a measure of the material's capacity to transmit water. In units of meinzers, commonly used by the Geological Survey, hydraulic conductivity is defined as the rate of flow of water in gallons per day through a cross-sectional area of 1 square foot under a hydraulic gradient of 1 foot per foot at a temperature of 60° F. In field practice the adjustment to the standard temperature of 60° F commonly is ignored, and hydraulic conductivity is then understood to be related to the prevailing water temperature.

The transmissivity of material comprising an aquifer is defined as the number of gallons of water that will move in 1 day through a vertical strip of the aquifer having a width of 1 foot and having the height of the aquifer, when the hydraulic gradient is unity. It is equal to the hydraulic conductivity multiplied by the

thickness of the aquifer in feet, and it is expressed by the following equation:

$$T=Km, \qquad (1)$$

in which T = transmissivity of the aquifer, in gallons per day per foot,
K = hydraulic conductivity of the aquifer, in gallons per day per square foot, and
m = thickness of the aquifer, in feet.

Strictly speaking, the preceding definition of transmissivity applies only to a homogeneous and isotropic aquifer. Under these ideal conditions the transmissivity is constant at all times and places within the aquifer. A generalization of this definition that is useful for defining the transmissivity of multilayered sequences in which both thickness and hydraulic conductivity vary widely in adjacent layers is

$$T=\sum_{i=1}^{n} K_i m_i, \qquad (2)$$

in which T = total transmissivity of i layers, in gallons per day per foot,
K_i = hydraulic conductivity of the ith layer, in gallons per day per square foot, and
m_i = thickness of the ith layer, in feet.

With reference to equations 1 and 2, the average hydraulic conductivity $\overline{K}$ of a sequence of layers may be defined as

$$\overline{K}=\frac{T}{M} \qquad (3)$$

in which $\overline{K}$ = average hydraulic conductivity of a multilayered sequence, in gallons per day per square foot,
T = total transmissivity; in gallons per day per foot, and
M = total thickness of the sequence of layers, in feet.

The definitions of hydraulic conductivity and transmissivity in equations 1, 2, and 3 are strictly valid only for the hydraulic conductivity in the direction parallel to the direction of flow, which, for most of Long Island, is parallel to the bedding or stratification of the aquifers. This direction commonly corresponds to the direction of greatest hydraulic conductivity and transmissivity in nature. Thus, where the bedding is horizontal or almost so, as on Long Island, equations 1, 2, and 3 are used to define the horizontal hydraulic conductivity and transmissivity.

PREVIOUS ESTIMATES OF HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY OF LONG ISLAND'S AQUIFERS

Previous investigators estimated transmissivity and hydraulic conductivity values for parts of individual aquifers on Long Island primarily from data derived from aquifer tests and driller's well-acceptance tests (specific-capacity tests). Pertinent data concerning the aquifer tests for which information is available are listed in table 2, and the locations of the wells that were tested are shown in figure 5. In most of the tests, it was assumed that the thickness of the aquifer tested was equal to the thickness of the material between the first well-defined clay layer below and above the screened interval or the first well-defined clay layer below the screened interval and the water table.

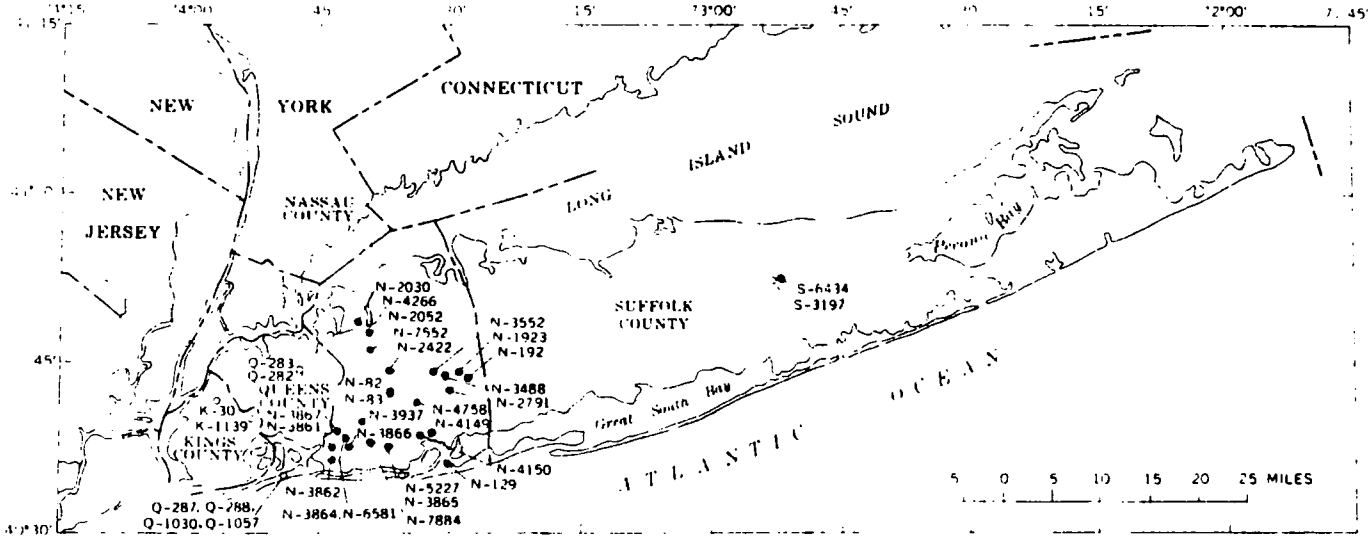

FIGURE 5.—Location of wells for which aquifer-test data are available. Data summarized in table 2.

TABLE 2.—*Estimates of transmissivity and hydraulic conductivity of Long Island's aquifers derived from aquifer tests*

Aquifer	Well	Date of test	Well discharge (gpm)	Drawdown in pumped well (feet)	Screen length (feet)	Estimated thickness of interval tested (feet)	Transmissivity (gpd per ft)	Hydraulic conductivity (gpd per sq ft)	Source of information[1]
Upper glacial	K-30	1947					375,000		U.S.G.S. file.
	S-3197	Dec. 1950	460	50	20	145	190,000	1,300	M. A. Warren and N. Lusczynski.
Jameco	K-1139	June 1941	220			80	110,000	1,400	J. G. Ferris.
Magothy	N-82	Sept. 1935	1,000	28	50	50	140,000	2,800	U.S.G.S. file.
	N-83	Sept. 1935	1,010	34	60	60	140,000	2,300	Do.
	N-129	Nov. 1933	1,220	54	50	50	50,000	1,000	Do.
	N-192	Dec. 1940	530		50	100	350,000	3,500	C. E. Jacob.
	N-1923	Aug. 1943	1,360	70	55	70	60,000	850	Do.
	N-2030	Apr. 1946	540	87	25	32	115,000	3,600	Do.
	N-2052	Aug. 1947	920	39	20	20	30,000	1,500	W. V. Swarzenski.
	N-2422	Oct. 1947	205	40	31	50	240,000	4,800	N. J. Lusczynski.
	N-2791	Sept. 1949	790	20	31	100	240,000	2,400	Do.
	N-3488	July 1950	1,120	35	52	100	150,000	1,500	Do.
	N-3552	Sept. 1950	1,150	24	53	100	360,000	3,600	Do.
	N-3861	Oct. 1952	130	21	11	155	150,000	1,000	Do.
	N-3862	Oct. 1952	82	19	10	45	40,000	900	Do.
	N-3864	Oct. 1952	95	91	11	145	30,000	200	Do.
	N-3865	Oct. 1952	86	91	10	80	24,000	300	Do.
	N-3866	Oct. 1952	113	31	10	60	100,000	1,700	Do.
	N-3867	Dec. 1952	83	10	11	60	80,000	1,300	Do.
	N-3937	Sept. 1952	1,600	60	73	67	140,000	2,100	Do.
	N-4149	Oct. 1953	140	23	16	180	300,000	1,600	Do.
	N-4150	Feb. 1954	120	9	16	70	140,000	2,000	Do.
	N-4758	Dec. 1954	1,300		62	100	220,000	2,200	N. M. Perlmutter and J. J. Geraghty.
	N-6581	Oct. 1958	130	38	10	60	30,000	500	N. J. Lusczynski.
	N-7552	Aug. 1964	1,500	114	95	95	70,000	740	U.S.G.S. file.
	N-7884	Apr. 1967	1,000	32	62	50	60,000	1,200	Do.
	S-6434	Jan. 1949	410	33	20	100	40,000	400	M. A. Warren and N. J. Lusczynski.
Lloyd	Q-282	Jan. 1942				84	50,000	600	C. E. Jacob.
	Q-283	Jan. 1942				85	50,000	600	Do.
	Q-287	Feb. 1940	2,100			100	160,000	1,600	Do.
	Q-288	Feb. 1940	2,100			100	180,000	1,800	Do.
	Q-1030	Feb. 1940	2,100	52	65	100	160,000	1,600	Do.
	Q-1057	Feb. 1940	2,100			100	170,000	1,700	Do.
	N-4266	Sept. 1954	78	41	15	15	10,000	660	N. J. Lusczynski.
	N-5227	June 1955	1,200	50	60	60	30,000	500	N. J. Lusczynski and W. V. Swarzenski.
	S-6434	June 1949	460	185	80	65	12,500	200	M. A. Warren and N. J. Lusczynski.

[1] From original data in the files of the U.S. Geological Survey, Mineola, N.Y.; some interpretive results based on these data were later published.

Estimates of hydraulic conductivity by previous investigators, which were derived from specific-capacity data obtained from drillers' acceptance tests, are listed in table 3, and the locations of the wells that were studied are shown in figure 6. Usually one of two methods was used to calculate the transmissivity of part of the aquifer. The first method was developed by Theis, Brown, and Meyer (1954) for water-table aquifers. The second method, devised by R. R. Meyer (Bentall, 1963), is also based on the method developed by Theis, but it provides a technique for estimating the transmissivity of both artesian and water-table aquifers. The hydraulic conductivity was in turn calculated by dividing the transmissivity by an estimated value of the thickness of aquifer material that was tested at the well site.

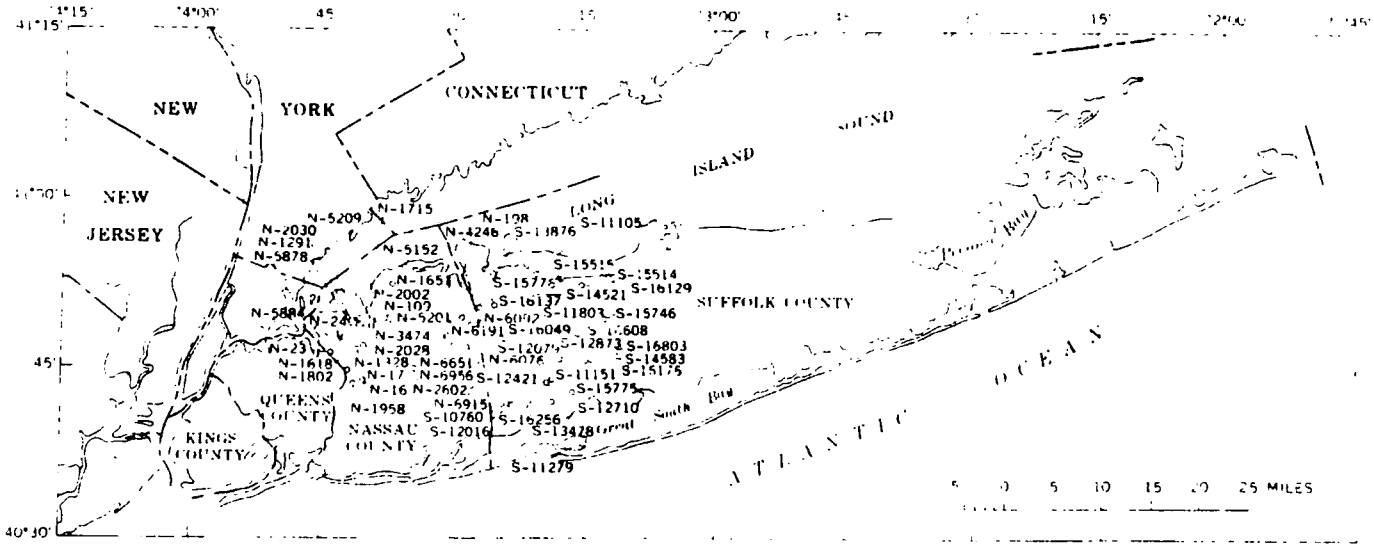

FIGURE 6.—Location of wells for which specific-capacity data are available. Data summarized in table 3.

TABLE 3.—*Estimates of average hydraulic conductivity for parts of Long Island's aquifers derived from specific-capacity data*

Aquifer	Well	Screen length (feet)	Estimated thickness of interval tested (feet)	Estimated average hydraulic conductivity of interval tested (gpd per sq ft)	Source of information
Upper glacial	S-10760	22	73	800	Pluhowski and Kantrowitz (1964, p. 16).
	S-11105	48	48	900	Lubke (1964, p. 19).
	S-11151	11	84	300	Pluhowski and Kantrowitz (1964, p. 16),
	S-11803	53	53	1, 500	Lubke (1964, p. 19).
	S-12016	35	67	2, 200	Pluhowski and Kantrowitz (1964, p. 16).
	S-12421	21	70	1, 000	Do.
	S-12710	30	75	1, 600	Do.
	S-12873	25	91	1, 100	Do.
	S-13478	25	70	900	Do.
	S-15746	41	41	900	Lubke (1964, p. 19).
	S-15776	63	63	1, 200	Do.
	S-16049	62	62	1, 000	Do.
	S-16137	62	62	750	Do.
	S-16176	36	85	1, 200	Pluhowski and Kantrowitz (1964, p. 16).
	S-16608	30	88	1, 200	Do.
	S-16803	5	----------	700	Pluhowski and Kantrowitz (1964, p. 17).
Average				1, 080	
Magothy	N-16	60	150	280	Swarzenski (1963, p. 17).
	N-17	60	80	350	Do.
	N-198	50	70	1, 200	Isbister (1966, p. 24).
	N-2028	60	190	400	Swarzenski (1963, p. 17).
	N-2030	25	80	440	Do.
	N-3474	60	70	1, 000	Isbister (1966, p. 24).
	N-4246	50	100	700	Do.
	N-5209	40	100	540	Swarzenski (1963, p. 17).
	N-5876	70	110	270	Do.
	N-5884	71	110	870	Do.
	N-6076	62	70	1, 200	Isbister (1966, p. 24).
	N-6092	70	110	1, 100	Do.
	N-6191	99	130	600	Do.
	N-6651	50	60	1, 100	Do.
	N-6915	53	90	1, 100	Do.
	N-6956	62	110	800	Do.
	S-11279	30	59	400	Pluhowski and Kantrowitz (1964, p. 18),
	S-12079	72	72	550	Lubke (1964, p. 19).
	S-13876	52	52	450	Do.
	S-14521	62	62	750	Do.
	S-14583	26	89	400	Pluhowski and Kantrowitz (1964, p. 18).
	S-15514	60	60	650	Lubke (1964, p. 19).
	S-15515	40	40	450	Do.
	S-15775	40	88	800	Pluhowski and Kantrowitz (1964, p. 18).
	S-16129	76	76	650	Lubke (1964, p. 19).
	S-16256	52	76	1, 200	Pluhowski and Kantrowitz (1964, p. 18).
Average				700	
Lloyd	N-23	30	140	200	Swarzenski (1963, p. 15).
	N-24	68	150	270	Do.
	N-109	70	128	400	Isbister (1966, p. 20).
	N-1291	25	40	300	Swarzenski (1963, p. 15).
	N-1328	90	210	330	Do.
	N-1618	80	150	380	Do.
	N-1651	80	210	300	Isbister (1966, p. 20).
	N-1715	50	140	210	Swarzenski (1963, p. 15).
	N-1802	50	190	260	Do.
	N-1958	60	150	560	Do.
	N-2002	31	80	370	Do.
	N-2602	40	230	100	Isbister (1966, p. 20).
	N-5152	50	220	100	Do.
	N-5201	70	126	500	Do.
Average				310	

As shown in table 2, only two estimates of transmissivity derived from aquifer tests were available for the upper glacial aquifer. Neither of the two wells tested penetrates the highly permeable outwash deposits that cover most of the southern half of Long Island. The only available estimate of the hydraulic conductivity of the upper glacial aquifer based on aquifer-test data (well S3197, table 2) is from an area where morainal till and lakebed clay deposits are part of the upper glacial aquifer. Therefore, the hydraulic conductivity value obtained from this test is probably less than the average hydraulic conductivity of the aquifer.

Well K1139 in eastern Kings County is the only well tapping the Jameco aquifer for which aquifer-test data were available (table 2). The calculated transmissivity of the Jameco at this well is about 110,000 gpd per ft (gallons per day per foot). If the thickness of the aquifer that was tested is assumed to be 80 feet, the average hydraulic conductivity for that interval would be about 1,400 gpd per sq ft (gallons per day per square foot).

More estimates of transmissivity have been obtained from aquifer tests for the Magothy aquifer than for any other aquifer on Long Island (table 2). However, these estimates are of small thicknesses of the aquifer, and these materials probably include the more permeable parts of the aquifer penetrated by the well. Therefore, the estimates of average hydraulic conductivity obtained from these tests are undoubtedly higher than the average hydraulic conductivity of the whole aquifer. Most of the estimates of transmissivity of the Magothy aquifer based on data from aquifer tests range from 30,000 to more than 300,000 gpd per ft (table 2). Most values of hydraulic conductivity for the materials tested range from about 1,000 to 3,000 gpd per sq ft, and the average hydraulic conductivity is about 1,700 gpd per sq ft.

Average hydraulic conductivities of the intervals tested in the Magothy aquifer, as computed by previous investigators from specific-capacity data (table 3), are considerably less than the hydraulic conductivities calculated from aquifer-test data (table 2). Computed hydraulic conductivities of the aquifer in northern Nassau and western Suffolk Counties range from about 300 to 1,200 gpd per sq ft and average about 700 gpd per sq ft. These hydraulic conductivities were derived from estimated transmissivities divided by estimated thicknesses of the aquifer determined from lithologic logs. Because most of these wells probably were also screened in the most permeable zones, the apparent discrepancy between the average hydraulic conductivity values calculated from specific-capacity data (700 gpd per sq ft) and the values calculated from aquifer-test data (1,700 gpd per sq ft) probably is related to the different methods of evaluation that were used rather than to actual differences in hydraulic conductivity.

Data were available for nine aquifer tests using wells that were screened in the Lloyd aquifer (table 2). Lithologic logs of the Lloyd aquifer suggest that the percentage of clay in the aquifer increases eastward. This, however, does not explain the large difference between the hydraulic conductivities calculated in several wells in Queens County and well S6434 in central Suffolk County. Lusczynski and Swarzenski (1966, p. 19) report that a reevaluation of the test for well Q1030 indicated that the average hydraulic conductivity was probably only about 500 gpd per sq ft. Furthermore, well S6434 possibly was not sufficiently developed to obtain a meaningful value for the transmissivity and hydraulic conductivity of the Lloyd aquifer from an aquifer test. The average hydraulic conductivity of the Lloyd aquifer calculated from specific-capacity data (table 3) was about 300 gpd per sq ft in Nassau County.

DERIVATION OF HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY VALUES IN THE PRESENT INVESTIGATION

One of the major objectives of this investigation was to prepare maps showing the average hydraulic conductivity and transmissivity of Long Island's aquifers. The method used to develop the hydraulic conductivity and transmissivity values mainly involved an analysis of specific-capacity and lithologic data.

THEORY

Theis and others (1954) suggested procedures for using specific-capacity data to estimate transmissivity of aquifers by means of the Theis nonequilibrium equation. A convenient form of that equation for this purpose (expressed in units used by the Geological Survey) is

$$\frac{Q}{s}=\frac{T}{114.6W(u)}, \qquad (4)$$

where Q/s = specific capacity of the well, in gallons per minute per foot of drawdown,

Q = discharge of the pumping well, in gallons per minute,

s = drawdown in the pumping well, in feet,

T = transmissivity of the aquifer, in gallons per day per foot,

$W(u)$ = well function of $u = 1.87\ r^2\ S/Tt$,
r = distance from the pumping well to the point of observation, in feet,
S = coefficient of storage, expressed as a decimal fraction, and
t = time since pumping started, in days.

The assumptions made in deriving this formula and the sensitivity of the various parameters to changes in the magnitude of other parameters are discussed at length by Bredehoeft (1963).

In this report, equation 4 was used in a modified form that was more amenable to the direct use of well data. By substituting $\overline{K}L$ for T and rearranging terms, then

$$\overline{K} = 114.6W(u)\ \frac{Q}{sL}, \qquad (5)$$

where $\overline{K}$ = average hydraulic conductivity of the materials opposite the well screen, in gallons per day per square foot, and
L = length of well screen, in feet.

Implicit in this substitution is the assumption that the length of the well screen is equal to the thickness of aquifer material that contributes all the water to the well.

The factor Q/sL is the specific capacity of the well per foot of well screen. Because this factor takes into account the length of the well screen, its value for different wells commonly can be compared more meaningfully than can specific-capacity values, particularly where the lengths of well screens differ considerably.

Most aquifers are highly anisotropic to fluid flow, and the average hydraulic conductivity of an aquifer parallel to the bedding generally is many times greater than the average hydraulic conductivity perpendicular to the bedding. Therefore, in horizontally bedded deposits, such as those of the Long Island ground-water reservoir, most of the flow into a well commonly is derived from the materials directly opposite the well screen. Thus, the length of well screen, L, generally is a reasonable estimate of the thickness of aquifer that contributes most of the water to the well. However, because of some across-bed flow originating in beds above or below a well screen and because some wells are packed with gravel which forms a conduit for water from above and below the screen, equation 5 may give values of $\overline{K}$ that are somewhat greater than the average hydraulic conductivity of the materials opposite the well screen. In general, the error involved in using equation 5 decreases as the length of the well screen increases. Except for wells with very short screens (for example, less than 15 feet), the error in average hydraulic conductivity determination due to water entering the well from above and below the well screen is generally less than 25 percent.

To apply equation 5, a value for the factor $114.6W(u)$ must also be estimated. By inserting, for the variables in the expression $114.6W(u)$ in equation 4, the most extreme values for conditions that might occur in Long Island's aquifers, this expression was found to range from 1,500 to 2,500 and to average about 2,000. In other words,

$$\overline{K} \approx 2{,}000\ Q/sL \qquad (6)$$

is a valid approximation. Equation 6, therefore, was used to estimate the average hydraulic conductivity of the materials opposite the screened interval of most wells analyzed for this report.

As outlined in the previous paragraphs, the method of pumping-test analysis used in this report differs from the approach of previous investigators, who assumed that the tested thickness of the aquifer comprised the interval between the first "well-defined" clay layers above and below the well screen. The approach by previous investigators was not adopted because only a fraction of the wells on Long Island have geophysical logs, core data, or sufficiently detailed lithologic logs to make such an approach generally feasible on an island-wide basis. In addition, the present method has the advantage that it is quick and requires no judgment regarding the nature and extent of "well-defined" clay layers.

In the simplest case, if the lithology of the entire screened interval of each well was the same and if many wells were screened throughout all the different lithologies in an aquifer, then a compilation of values calculated from equation 6 would give a good estimate of the average hydraulic conductivity for the aquifer. In many areas, however, the screened intervals commonly are comprised of several layers of different lithology and, therefore, of different hydraulic conductivity. Jenkins (1963) developed a technique using multiple-regression analysis to deal with the problem of multiple lithologies in the screened interval. In this investigation, as is described subsequently in the report, a sufficiently large number of screened intervals in each aquifer on Long Island are characterized by a single lithologic type, so that Jenkins' procedure was not used.

The lithologic descriptions of the screened intervals used in this study were derived mainly from drillers' lithologic logs. Therefore, the validity of the procedures described in the following section and the accuracy of the analysis are, at least partly, contingent upon the validity of the assumption that the drillers were consistent in their descriptions of the materials.

GENERAL PROCEDURE

Completion reports were available for about 45,000 wells on Long Island in 1967. However, most of these wells are shallow-driven well points, and no lithologic and very little hydrologic information is available for them. For the purpose of this study, data were recorded according to the format shown in table 4 for about 2,500 wells for which pertinent data were available. These wells include about 70 percent of all the wells that tap the upper glacial and Jameco aquifers for which pertinent hydrologic information is available and more than 80 percent of all known wells that tap the Magothy and Lloyd aquifers. Furthermore, these 2,500 wells included nearly all the large-yield (500 gallons per minute or more) wells on Long Island.

TABLE 4.—*Information recorded for each well*

Information	*Remarks*
Well number	Number assigned by the New York State Water Resources Commission. The initial letter designates the appropriate county—that is, K, Q, N, and S refer to Kings, Queens, Nassau, and Suffolk Counties, respectively. This numbering system has no relation to location.
Date of well-acceptance test	Generally well was drilled several months prior to the test.
Aquifer in which well is screened.	One of four principal aquifers on Long Island—upper glacial, Jameco, Magothy, or Lloyd.
Location of well	An arbitrary numbering system was assigned to the latitude-longitude grid which permitted each well to be located within a 2½ minute rectangle. This rectangle is approximately 2.2 miles by 2.9 miles or nearly 6.4 square miles.
Source of information	The source of information was usually a bulletin of the New York State Department of Conservation, Division of Water Resources, the files of the Division, or the files of the U.S. Geological Survey.
Screen diameter, in inches	Inside diameter.
Screen length, in feet	The "L" of the Q/sL number.
Screened interval, in feet below land-surface datum.	The depths of the top and bottom of the well screen.
Acceptance test data:	
Duration of test, in hours	
Drawdown in pumping well, in feet.	The drawdown is generally measured at the end of the test; the "s" of the Q/sL number.
Discharge of pumping well, in gallons per minute.	Discharge generally maintained as constant as possible throughout the test; the "Q" of the Q/sL number.
Q/sL number, in gallons per minute (per) square foot.	Computed from tabulated data.
Lithologic description(s) of the screened interval.	Complete drillers' description of the screened interval, and unit thicknesses.
Depth of well, in feet	Drilled depth is sometimes considerably greater than bottom of the well screen.
Approximate elevation of land-surface datum at well location, in feet above mean sea level.	Taken mostly from topographic maps; generally accurate to within 5 feet, except where location of well is not known exactly.
Elevation of aquifer boundaries, in feet above or below mean sea level.	Estimated from the drillers' log and regional geologic correlations.

The procedures used in this report to obtain estimated values of transmissivity and average hydraulic conductivity from well data were somewhat similar to those described by Bredehoeft (1963). Although the analytical procedures varied slightly for each of the four major aquifers, hydraulic conductivity and transmissivity maps were prepared for the aquifers in accordance with the following major steps. First, the numerous lithologic descriptions of the screened intervals were grouped into three general classes: (1) Gravel, sand and gravel, and coarse sand, (2) medium to very fine sand, and sand with silt or clay layers, and (3) clay, sandy, clay, and silty clay. Initially, the lithologic descriptions were divided into six classes, but the differences between the median Q/sL numbers of each of these classes were insignificant; therefore, the broader grouping was adopted. Only wells that had sufficient information to calculate Q/sL numbers were used in this phase of the analysis. The median values for the Q/sL numbers were determined for each of the three lithologic classes for each aquifer, as shown in tables 5, 7, 9, and 11.

The second step in the procedure involved assigning hydraulic conductivity values to all the materials encountered by wells that penetrated or nearly penetrated the entire thickness of each major aquifer. In this step, all wells with drillers' logs were used, whether or not Q/sL data were available. Each lithologic type in a well log was grouped into one of the three lithologic classes, each class was assigned a Q/sL number within the range set for each aquifer, and a corresponding approximate hydraulic conductivity value was calculated using equation 6. The range assigned to each lithologic class for all aquifers, except for class 1 of the Magothy and Lloyd aquifers, is purposely less than the median Q/sL values determined from the lithologic analysis of the screened intervals, partly in an effort to reflect the fact that many of the drillers' descriptions seem to overestimate the coarseness and degree of sorting of the materials and partly because the drillers commonly placed the screen in one of the most permeable intervals. Also, the use of a range provided latitude for judgment in interpreting the hydrologic significance of the individual lithologic descriptions in the drillers' logs. Finally, the range applied to each class emphasized Q/sL values from logs with the best available information, in contrast to the computed median values, which did not take into account the quality of the logs.

Inasmuch as virtually no wells were screened in the materials assigned to class 3, Q/sL and hydraulic conductivity values could not be determined for these materials. However, the very fine materials in this class contribute only slightly to the total transmissivity of the aquifers, and accordingly, the hydraulic conductivity of class 3 was assumed to be zero. The error involved in this assumption was considered to be well within the error involved in the overall computations of transmissivity.

In the third step, the average hydraulic conductivity of the materials penetrated by each well (average point hydraulic conductivity) was computed by means of equations 2 and 3. Where a well did not penetrate the entire thickness of the aquifer but did penetrate a substantial part, the computed average hydraulic conductivity was assumed to equal that of the total thickness of the aquifer at the well site.

The average point hydraulic conductivities then were plotted and contoured in the fourth and final step (pls. 1*B*, 2*B*, 3*B*, and fig. 14). Commonly, the point hydraulic conductivities ranged widely, even between nearby wells. Thus, the contour lines were drawn to follow the general trend of the plotted data; however, their positions were also influenced by available information on the areal changes in lithologic character of the aquifers in various parts of Long Island.

Regional transmissivity maps of each aquifer (pls. 1*C*, 2*C*, 3*C*, and fig. 15) were developed from the average hydraulic conductivity and thickness maps by multiplying the aquifer thickness by the average hydraulic conductivity at a network of points and contouring the resulting values.

HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY OF THE PRINCIPAL AQUIFERS

UPPER GLACIAL AQUIFER

The Q/sL numbers of wells screened in the upper glacial aquifer range from less than 0.1 to more than 4.0 gpm per sq ft (gallons per minute per square foot) (fig. 7). About three-fourths of the Q/sL numbers in figure 7 are between 0.5 and 2.5 gpm per sq ft, and the median Q/sL number for all wells tabulated is about 1.3 gpm per sq ft. Q/sL numbers greater than 2.5 gpm per sq ft were commonly determined for wells with short screen lengths (15 feet or less) of which the upper glacial aquifer (fig. 8) has a larger proportion than

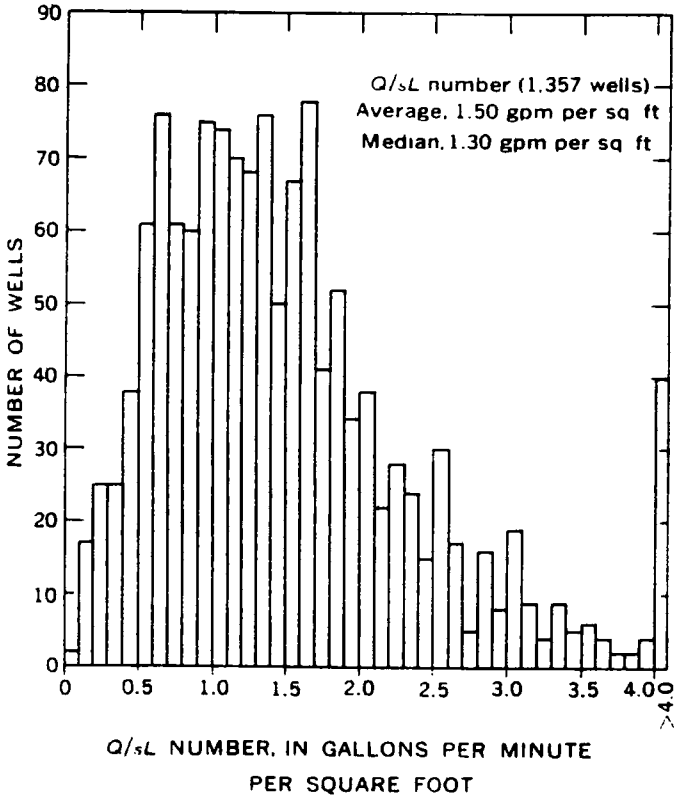

FIGURE 7.—Distribution of Q/sL numbers of wells screened in the upper glacial aquifer. (Average hydraulic conductivity of screened intervals approximates 2.000 Q/sL; see text discussion.)

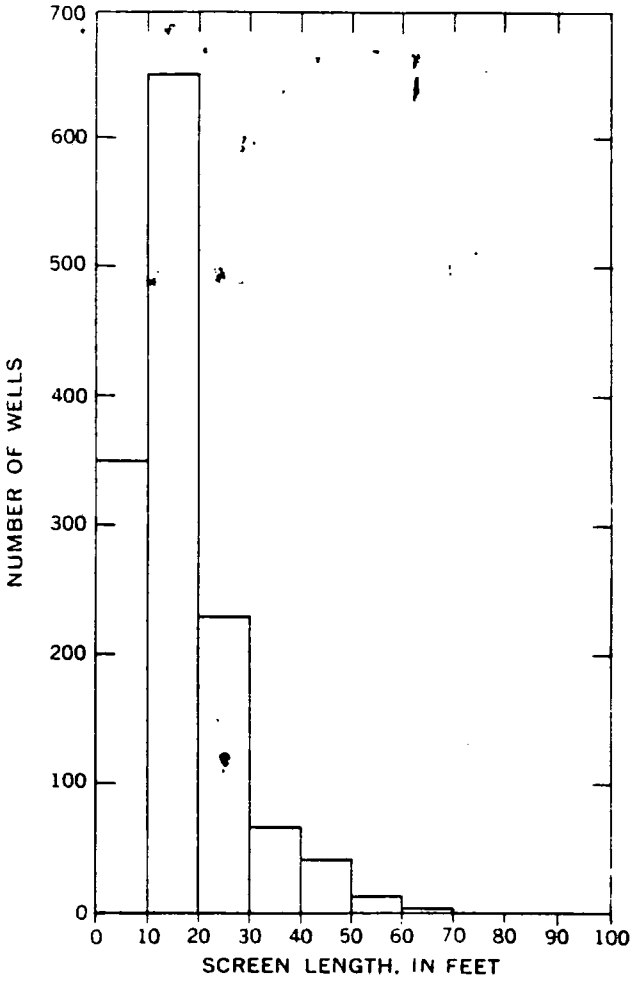

FIGURE 8.—Distribution of screen lengths of wells in the upper glacial aquifer.

any other aquifer on Long Island. (Compare figs. 8, 11, 17, and 20.) Vertical flow components probably account for an appreciable part of the discharge from these wells.

Lithologic descriptions of the screened intervals were available for most wells that were screened in the upper glacial aquifer and for which test data were available. Moreover, most of the screened intervals were either described as one lithology or the different lithologic descriptions belonged to a single lithologic class as defined earlier. The median Q/sL numbers determined for each lithologic class are listed in table 5, along with the range in Q/sL numbers assigned to each litho-

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TABLE 5.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the upper glacial aquifer*

Lithologic class		Number of wells	Median Q/sL number of screened intervals (gpm per sq ft)	Assigned range of Q/sL numbers (gpm per sq ft)	Calculated range of hydraulic conductivity (gpd per sq ft)
No.	Description				
1	Gravel, sand and gravel, and coarse sand	924	1.5	1.0–1.5	2,000–3,000
2	Medium, fine, and very fine sand, and sand with silt or clay layers.	408	1.1	0.2–0.9	400–1,800
3	Clay, sandy clay, and silty clay			[1] 0	0

[1] Assumed; see text discussion.

logic class and the corresponding range of calculated hydraulic conductivity values for each class.

Lithologic logs from about 620 wells penetrating the upper glacial aquifer were analyzed to determine point values of average aquifer hydraulic conductivity. These wells were fairly well distributed in the subareas of Long Island (fig. 9). Although in Kings, Queens, and

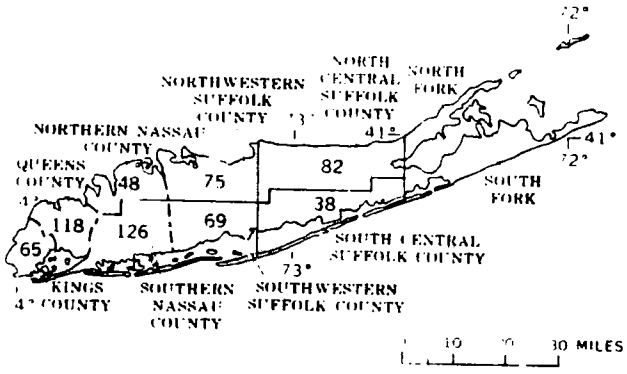


FIGURE 9.—Number of wells for which lithologic logs were available for the upper glacial aquifer in the indicated subareas in 1967.

Nassau Counties most wells that were analyzed completely penetrated the aquifer, progressively fewer wells penetrated the entire aquifer toward eastern Suffolk County.

A map showing thickness of the saturated upper glacial aquifer[1] (pl. 1*A*) was prepared from an unpublished map of the September 1965 water table, from well logs, and from maps and data contained in several reports (Isbister, 1966; Lubke, 1964; Perlmutter and Geraghty, 1963; Pluhowski and Kantrowitz, 1964; Swarzenski, 1963; Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (pl. 1*B*) and equal transmissivity (pl. 1*C*) were constructed according to the procedures outlined previously.

Noteworthy features of the map showing thickness of the saturated upper glacial aquifer (pl. 1*A*) are (1) the areas near the north shore of the island in which the aquifer locally is more than 500 feet thick, and (2) the increasing thickness of the aquifer in eastern Suffolk County. The great thickness near the north shore reflects buried valleys in the underlying Cretaceous deposits. Buried valleys are not as pronounced near the south shore of Long Island.

The distribution of the lines of equal average hydraulic conductivity (pl. 1*B*) reflects to some extent the geologic origin of the glacial material on Long Island. Average hydraulic conductivities of 2,000 gpd per sq ft and higher occur through much of the outwash-plain deposits in southern Queens, Nassau, and Suffolk Counties. Beds of lower average hydraulic conductivity (about 1,000 gpd per sq ft) are found in north-central Nassau and Suffolk Counties, where the glacial deposits contain more silt and clay.

The trends of the lines of equal transmissivity in the upper glacial aquifer (pl. 1*C*) are similar to the trends of the lines of equal saturated thickness (pl. 1*A*). This similarity reflects the fact that the variation in thickness of the aquifer is generally greater than the variation in estimated average hydraulic conductivity (pl. 1*B*). The highest values of transmissivity in plate 1*C* are associated with the greatest aquifer thicknesses, which occur in the buried valleys along the north shore of the island and in central Suffolk County.

The average thickness, hydraulic conductivity, and transmissivity of the upper glacial aquifer in subareas of Long Island, as derived from plate 1*A*, *B*, and *C*, are listed in table 6.

[1] In numerous places on Long Island, deep channels were cut into the Cretaceous deposits and subsequently filled with Pleistocene deposits. Along the north shore, the basal deposits have been included in the Jameco Gravel by some workers (Isbister, 1966; Swarzenski, 1963) and in the upper glacial deposits by others (Lubke, 1964; Julian Soren, oral commun., 1968). In this report, all the deep buried-valley deposits along the north shore have been included in the upper glacial aquifer.

TABLE 6.—*Average thickness, hydraulic conductivity and transmissivity of the upper glacial aquifer in subareas of Long Island*

Subarea	Area (sq mi)	Average total thickness (feet)	Average hydraulic conductivity (gpd per sq ft)	Average transmissibity (gpd per ft)
Kings County	69	130	1,400	180,000
Queens County	97	80	1,600	120,000
Northern Nassau County	72	120	1,700	210,000
Southern Nassau County	138	50	1,900	95,000
Northwestern Suffolk County	135	160	1,400	230,000
Southwestern Suffolk County	110	100	1,900	190,000
North central Suffolk County	254	160	1,500	240,000
South central Suffolk County	141	120	1,900	230,000
Subareas studies	1,016	120	1,700	200,000

JAMECO AQUIFER

About 75 wells are screened in the Jameco aquifer. Q/sL numbers of wells screened in this aquifer range from less than 0.1 to more than 4.0 gpm per sq ft, and the median Q/sL number is about 1.0 gpm per sq ft (fig. 10). About one-third of the well screens in the

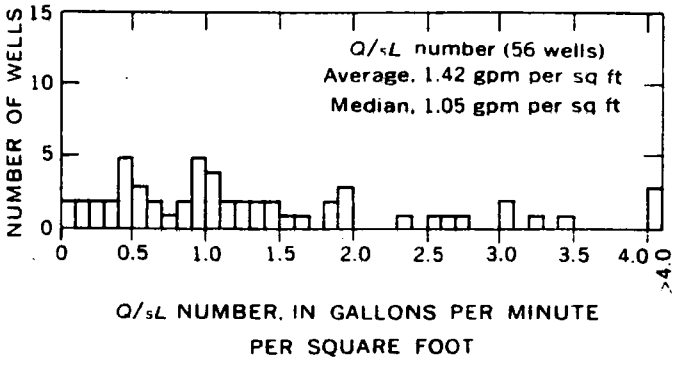


FIGURE 10.—Distribution of Q/sL numbers for wells screened in the Jameco aquifer. (Average hydraulic conductivity of screened intervals approximates 2,000 Q/sL; see text discussion.)

compilation (fig. 11) are short (15 feet or less), which suggests that vertical flow components probably contribute measurably to the discharge of such wells.

Lithologic descriptions of the screened interval were available for 56 of the wells for which test data were available. Generally the material in individual screened intervals belonged to a single lithologic class. The median Q/sL numbers determined for each lithologic class, the range in Q/sL numbers assigned to each class, and the corresponding range of calculated hydraulic conductivity values for each class are listed in table 7.

Lithologic logs describing the Jameco aquifer in 109 wells were analyzed to determine point values of average hydraulic conductivity. These wells were almost evenly distributed in the three counties in which the

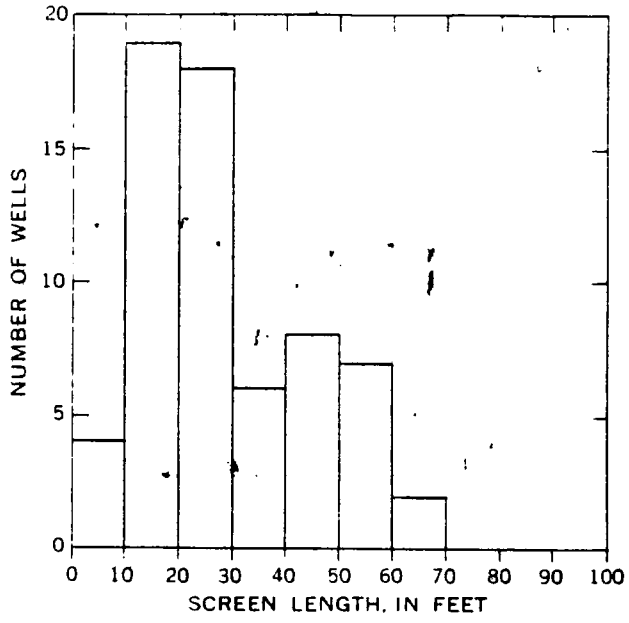


FIGURE 11.—Distribution of screen lengths of wells in the Jameco aquifer.

Jameco occurs and include more than 90 percent of the wells that completely or almost completely penetrate the aquifer. The distribution by subarea is shown in figure 12.

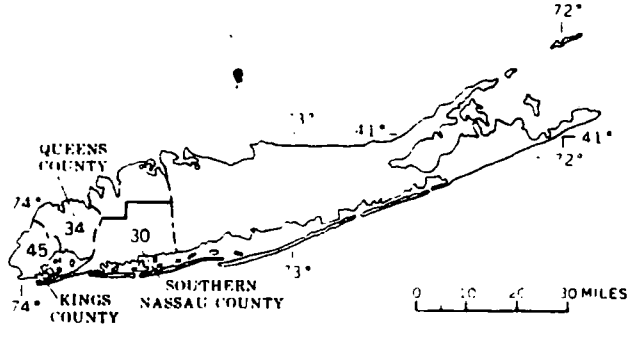
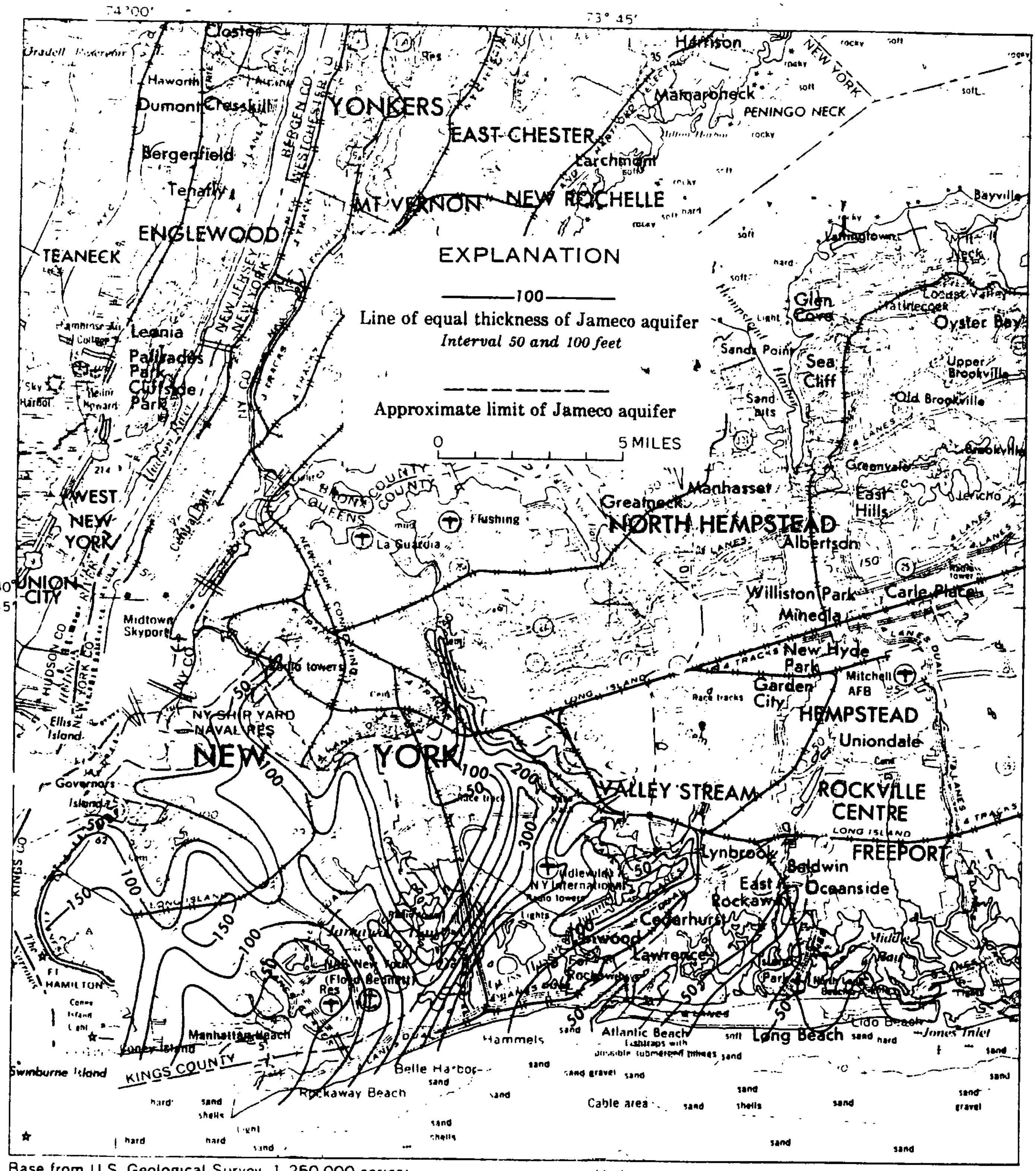


FIGURE 12.—Number of wells for which lithologic logs were available for the Jameco aquifer in the indicated subareas in 1967.

A map showing thickness of the Jameco aquifer (fig. 13) was prepared from well logs and maps and data contained in two reports (Perlmutter and Geraghty, 1963; Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (fig. 14) and equal transmissivity (fig. 15) were constructed according to the procedures outlined previously.

The Jameco aquifer attains its maximum thickness of more than 300 feet in a buried valley cut into the underlying Cretaceous deposits in southwestern Queens County (fig. 13). Generally, the aquifer is thicker in



Base from U.S. Geological Survey, 1:250 000 series: New York, 1957; Newark, 1947

Hydrology by N. E. McClymonds, 1968; in part adapted from John Isbister (written commun., 1968), Perlmutter and Geraghty (1963), and Julian Soren (written commun., 1968)

FIGURE 13.—Thickness of the Jameco aquifer.

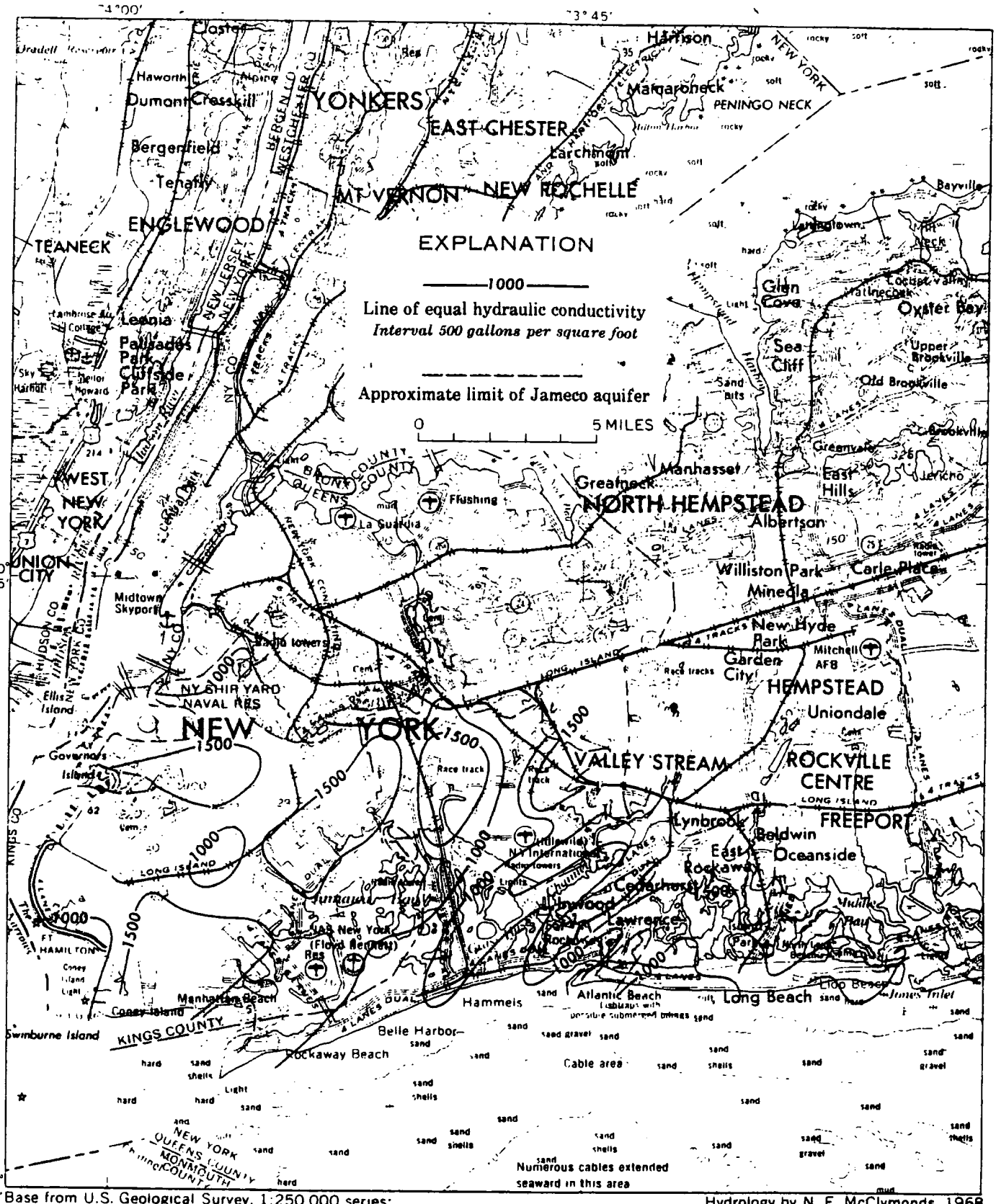


FIGURE 14.—Estimated average hydraulic conductivity of the Jameco aquifer.

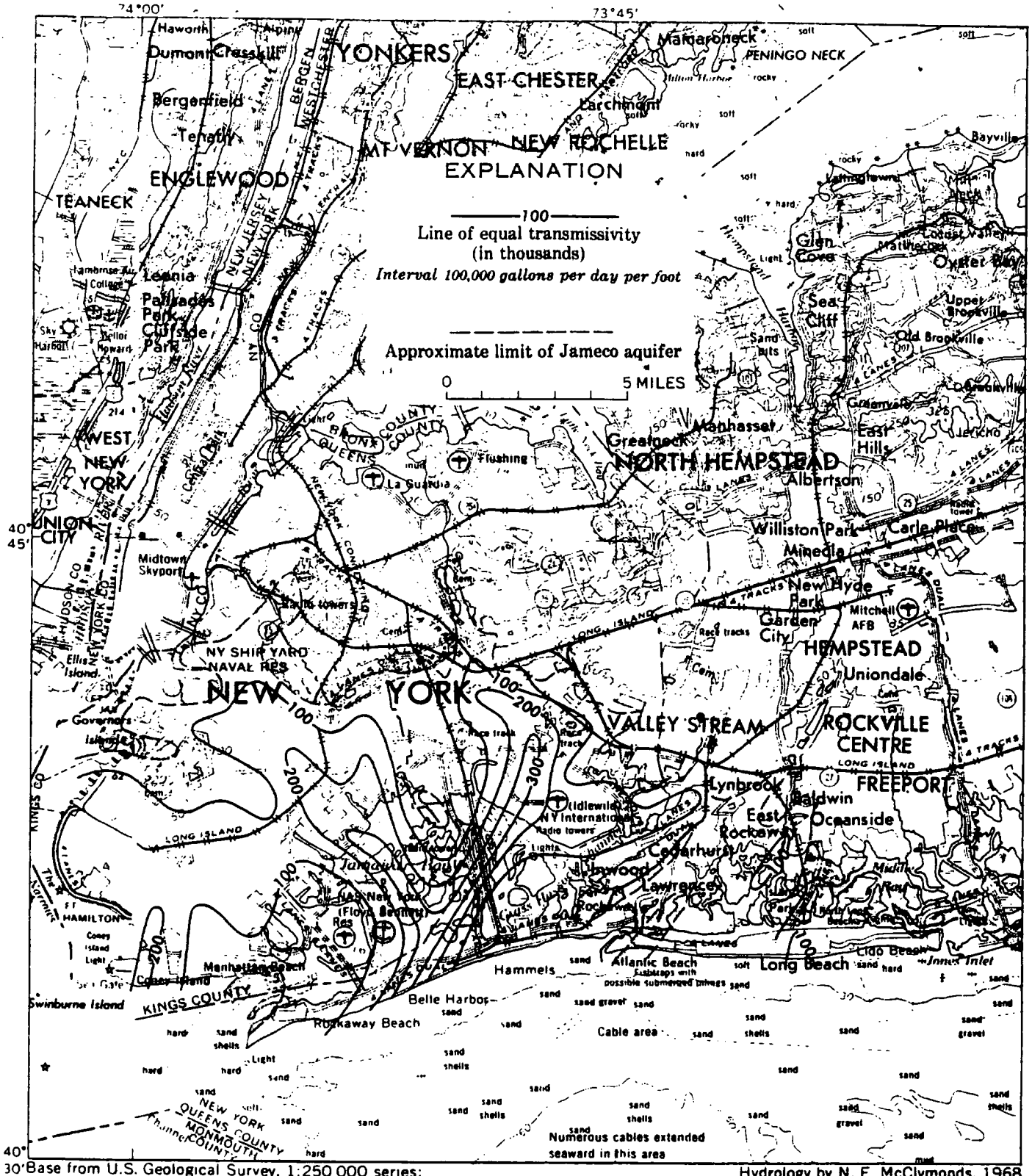


FIGURE 15.—Estimated transmissivity of the Jameco aquifer. Transmissivity lines on this map were developed by combining data from figures 13 and 14. The high degree of detail shown for the transmissivity lines is not meant to imply a high degree of accuracy for transmissivity at any specific location. Rather it largely reflects a fairly high degree of accuracy in the information shown in figure 13 and only a moderate degree of accuracy in the information shown in figure 14.

TABLE 7.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Jameco aquifer*

Lithologic class		Number of wells	Median Q/sL number of screened intervals (gpm per sq ft)	Assigned range of Q/sL numbers (gpm per sq ft)	Calculated range of hydraulic conductivity (gpd per sq ft)
No.	Description				
1	Gravel, sand and gravel, and coarse sand	37	1.1	0.8–1.1	1,600–2,200
2	Medium, fine, and very fine sand, and sand with silt or clay layers.	19	.9	0.1–0.7	200–1,400
3	Clay, sandy clay, and silty clay			[1] 0	0

[1] Assumed; see text discussion.

central and eastern Kings County than in southeastern Queens and southwestern Nassau Counties.

The computed average hydraulic conductivity of the Jameco aquifer (fig. 14) generally is slightly more than 1,000 gpd per sq ft. However, in several small areas near the northern boundary of the aquifer, the average hydraulic conductivity is about 1,500 gpd per sq ft. These areas with more permeable material probably reflect the somewhat coarser materials deposited in the narrower part of the buried valley.

Because the estimated average hydraulic conductivity of the Jameco aquifer shows very little areal variation, the gross pattern of the lines of equal transmissivity (fig. 15) closely reflects the pattern of the thickness map (fig. 13). The maximum transmissivity is about 300,000 gpd per ft and occurs in southwestern Queens County.

The average thickness, hydraulic conductivity, and transmissivity of the Jameco aquifer in subareas of Long Island, derived from figures 13, 14, and 15, are listed in table 8. The greatest average thickness and greatest average transmissivity of the Jameco aquifer occur in Kings County, although the maximum transmissivity occurs in Queens County.

TABLE 8.—*Average thickness, hydraulic conductivity, and transmissivity of the Jameco aquifer in subareas of Long Island*

Subarea	Area (sq mi)	Average total thickness (feet)	Average hydraulic conductivity (gpd per sq ft)	Average transmissivity (gpd per ft)
Kings County	60	95	1,300	120,000
Queens County	28	80	1,200	100,000
Southern Nassau County	14	35	1,400	50,000
Three subareas	102	80	1,300	110,000

MAGOTHY AQUIFER

Q/sL numbers of wells screened in the Magothy aquifer range from less than 0.1 to 3.2 gpm per sq ft (fig. 16). This compilation includes more than 85 percent of all wells screened in the Magothy aquifer for which test data are available. More than 90 percent of the Q/sL numbers are less than 1.7 gpm per sq ft, and the median Q/sL number is 0.6 gpm per sq ft. The screen

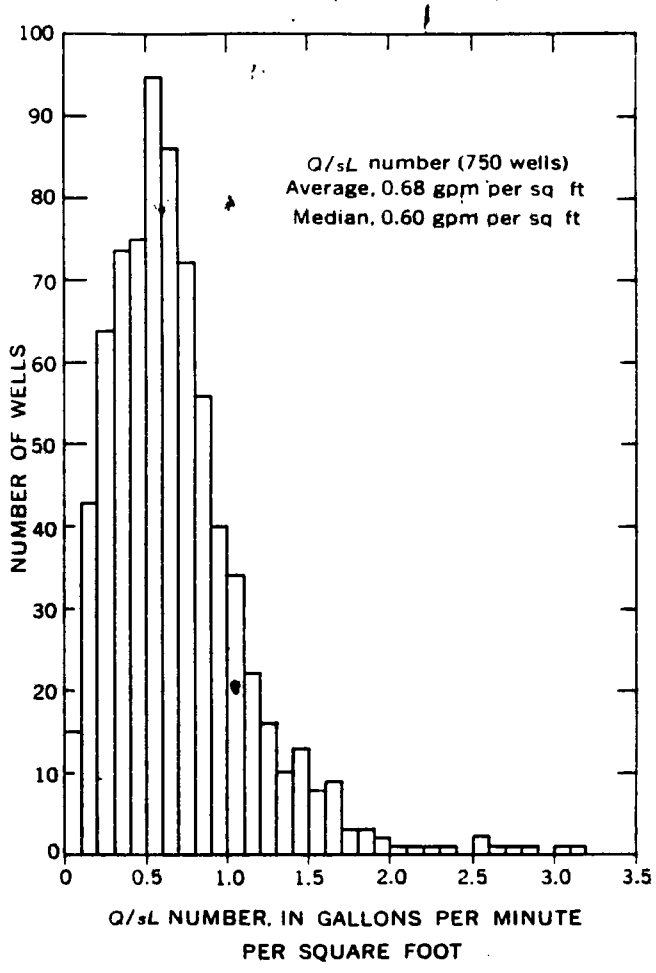


FIGURE 16.—Distribution of Q/sL numbers for wells screened in the Magothy aquifer. (Average hydraulic conductivity of screened intervals approximates 2,000 Q/sL; see text discussion.)

lengths in many of the Magothy wells are greater than 50 feet (fig. 17), and the average screen length is about 40 feet. Therefore, the effects of across-bed flow on the Q/sL numbers of most wells screened in this aquifer are probably less than in the upper glacial aquifer.

Lithologic descriptions of the screened intervals were available for all 750 Magothy wells with test data. More than half of these descriptions consisted of a single lithology, and many of the remaining screened intervals

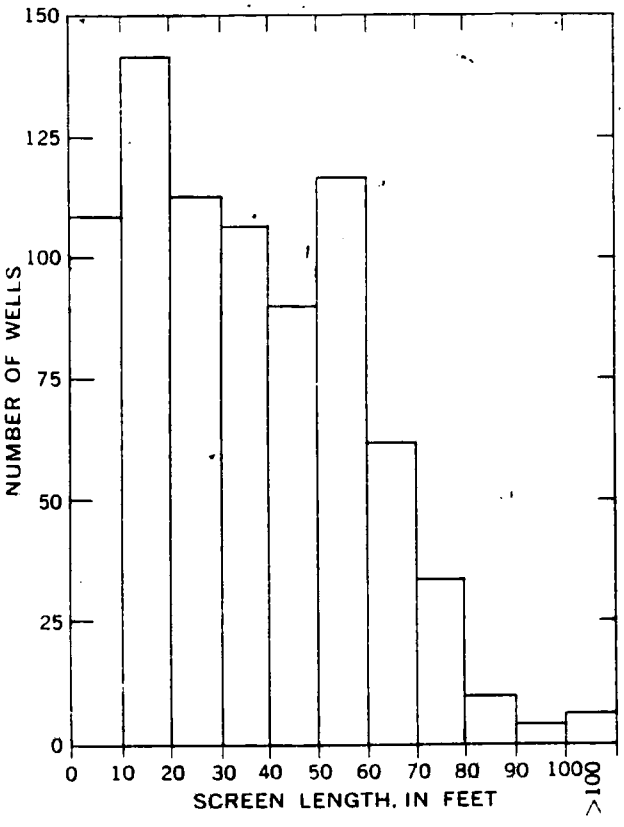


FIGURE 17.—Distribution of screen lengths of wells in the Magothy aquifer.

were described as predominantly one lithology. The median Q/sL numbers determined for each lithologic class from the descriptions of the screened intervals, the range in Q/sL numbers assigned to each lithologic class, and the corresponding range of calculated hydraulic conductivity values for each class are listed in table 9.

Lithologic logs describing the Magothy aquifer in 300 wells were analyzed to determine point values of average hydraulic conductivity. The distribution of these wells (fig. 18) was fairly uniform in Queens, Nassau, and western Suffolk Counties, but the number of wells for which logs were available is much less in central Suffolk County. In addition, the proportion of wells penetrating the entire Magothy aquifer becomes progressively smaller proceeding eastward in Suffolk County.

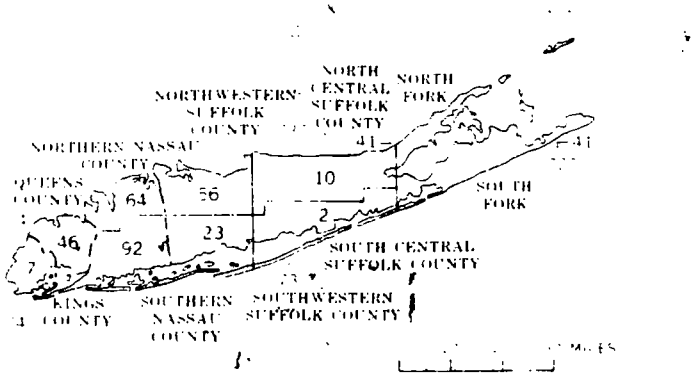


FIGURE 18.—Number of wells for which lithologic logs were available for the Magothy aquifer in the indicated subareas in 1967.

A map showing thickness of the saturated Magothy aquifer (pl. 2*A*) was prepared from an unpublished map of the September 1965 water table, from well logs, and from maps and data contained in several reports (Isbister, 1966; Lubke, 1964; Perlmutter and Geraghty, 1963; Pluhowski and Kantrowitz, 1964; Swarzenski, 1963; Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (pl. 2*B*) and equal transmissivity (pl. 2*C*) were constructed according to the procedures outlined previously.

The Magothy aquifer thickens gradually toward the southeast and attains its maximum recorded thickness of about 1,000 feet beneath the barrier beaches in south-central and southeastern Suffolk County (pl. 2*A*). The aquifer thins markedly and locally is absent in buried valleys along the northern shore and in western Long Island.

The lines designating the highest values of estimated average hydraulic conductivity generally occur in the northern and northwestern parts of the island (pl. 2*B*) where the aquifer is thinnest and where a basal gravel deposit makes up most of the section. The smallest values of average hydraulic conductivity occur in the south-central and southeastern parts of the island, where the aquifer is thickest. The decrease in average hydraulic conductivity towards the southeast is related to an increase in the percentage of fine materials such as silt and clay in the aquifer in those areas.

TABLE 9.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Magothy aquifer*

Lithologic class		Number of wells	Median Q/sL number of screened intervals (gpm per sq ft)	Assigned range of Q/sL numbers (gpm per sq ft)	Calculated range of hydraulic conductivity (gpd per sq ft)
No.	Description				
1	Gravel, sand and gravel, and coarse sand	219	0.7	0.6–0.8	1,200–1,600
2	Medium, fine, and very fine sand, and sand with silt or clay layers.	531	.5	0.1–0.5	200–1,000
3	Clay, sandy clay, and silty clay			[1] 0	0

[1] Assumed; see text discussion.

The transmissivity of the Magothy aquifer (pl. 2*C*) tends to increase towards the south and southeast. Although the estimated average hydraulic conductivity tends to decrease in this direction, the greater percentage increase in aquifer thickness results in an increased transmissivity. The estimated maximum transmissivity of the Magothy aquifer is about 400,000 gpd per ft near the barrier beach in south-central Suffolk County.

Average thickness, hydraulic conductivity, and transmissivity of the Magothy aquifer in subareas of Long Island are derived from plate 2*A*, *B*, and *C* and are listed in table 10. The average hydraulic conductivity for each subarea is lowest in south-central Suffolk County (360 gpd per sq ft) and is highest in Kings County (over 600 gpd per sq ft). The average transmissivity by subarea is highest in south-central Suffolk County (320,000 gpd per ft), where the Magothy aquifer is thickest.

TABLE 10.—*Average thickness, hydraulic conductivity, and transmissivity of the Magothy aquifer in subareas of Long Island*

Subarea	Area (sq mi)	Average total thickness (feet)	Average hydraulic conductivity (gpd per sq ft)	Average transmissivity (gpd per ft)
Kings County	18	140	630	85,000
Queens County	61	170	460	80,000
Northern Nassau County	93	300	450	140,000
Southern Nassau County	154	600	420	250,000
Northwestern Suffolk County	150	430	420	180,000
Southwestern Suffolk County	115	770	410	320,000
North central Suffolk County	254	650	400	260,000
South central Suffolk County	141	900	360	320,000
Subareas studied	986	580	410	240,000

LLOYD AQUIFER

Q/sL numbers of wells screened in the Lloyd aquifer range from less than 0.1 to 2.1 gpm per sq ft (fig. 19). This compilation includes virtually all the wells screened in the Lloyd aquifer for which test data are available. About four-fifths of the *Q/sL* numbers are between 0.1 and 0.6 gpm per sq ft and the median *Q/sL* number for all wells is 0.35 gpm per sq ft. Screens of wells in this aquifer range from less than 10 to 90 feet in length (fig. 20). About one-third of the screens are short (15 feet or less), which suggests that vertical flow components may have materially affected the discharge of some of these wells.

Lithologic descriptions of the screened interval were available for all 94 Lloyd wells with test data. Almost half the screened intervals were described as one lithology, and most of the remaining screened intervals were described as predominantly one lithology. The

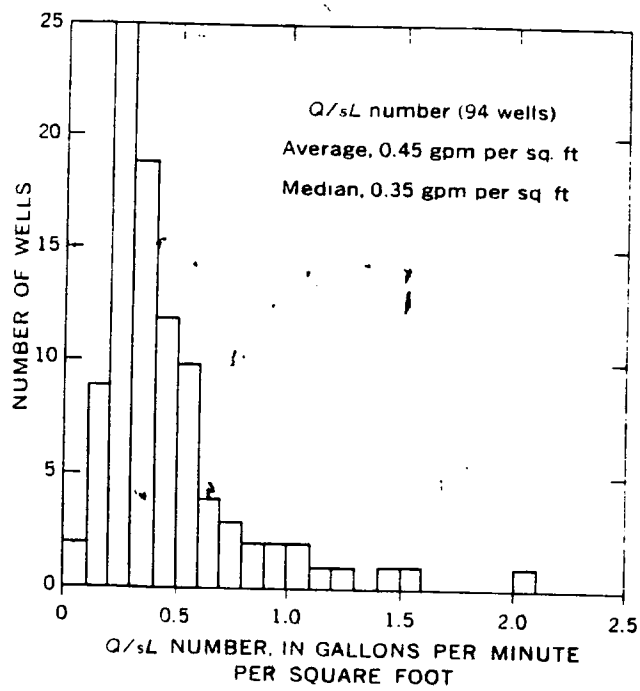


FIGURE 19.—Distribution of *Q/sL* numbers for wells screened in the Lloyd aquifer. (Average hydraulic conductivity of screened intervals approximates 2,000 *Q/sL*; see text discussion.)

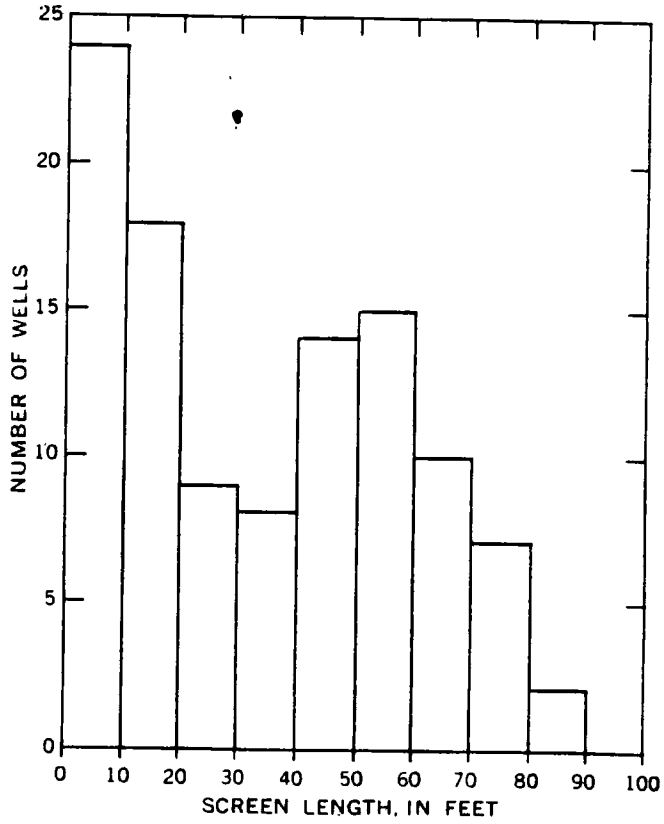


FIGURE 20.—Distribution of screen lengths of wells in the Lloyd aquifer.

TABLE 11.—*Assigned range of Q/sL numbers and calculated hydraulic conductivity values for selected lithologic classes in the Lloyd aquifer*

Lithologic class		Number of wells	Median Q/sL number of screened (gpm per sq ft)	Assigned range of Q/sL numbers intervals (gpm per sq ft)	Calculated range of hydraulic conductivity (gpd per sq ft)
No.	Description				
1	Gravel, sand and gravel, and coarse sand	48	0.35	0.3–0.4	600–800
2	Medium, fine, and very fine sand, and sand with silt or clay layers.	46	.30	0.05–0.2	100–400
3	Clay, sandy clay, and silty clay			[1] 0	0

[1] Assumed; see text discussion.

median Q/sL numbers determined for each lithologic class, the range in Q/sL numbers assigned to each class, and the corresponding range of calculated hydraulic conductivity values for each class are listed in table 11.

Lithologic logs in 132 wells tapping the Lloyd aquifer were analyzed to obtain point values of average hydraulic conductivity, and most of these wells almost completely penetrated the aquifer (fig. 21). Logs from only 10 Lloyd wells are available for all of Suffolk County, and most of these are in the northwestern part of the county. Furthremore the Llyod wells in Nassau County are concentrated near the shorelines.

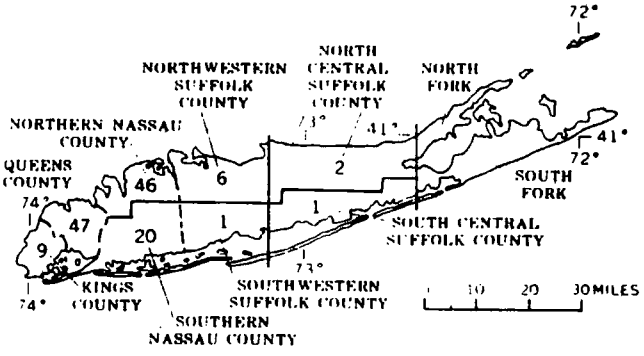


FIGURE 21.—Number of wells for which lithologic logs were available for the Lloyd aquifer in the indicated subareas in 1967.

A thickness map of the Lloyd aquifer (pl. 3*A*) was prepared from well logs and maps and data contained in several reports (Isbister, 1966; Lubke, 1964; Perlmutter and Geraghty, 1963; Pluhowski and Kantrowitz, 1964; Swarzenski, 1963; and Julian Soren, written commun., 1968). Maps showing lines of equal average hydraulic conductivity (pl. 3*B*) and equal transmissivity (pl. 3*C*) were constructed according to the procedures outlined previously.

The Lloyd aquifer thickens gradually to the south and southeast (pl. 3*A*). The maximum recorded thickness of about 450 feet occurs beneath the barrier beaches in southern Nassau County. The irregular pattern of the northern boundary of the aquifer in Queens and Nassau Counties indicates erosion of the aquifer before deposition of the overlying glacial materials.

The lines of estimated equal average hydraulic conductivity indicate that the material in the Lloyd aquifer (pl. 3*B*) is less permeable toward the southeast; however, the position of these lines is based on very little well data.

The lines of equal transmissivity (pl. 3*C*) exhibit the same gross pattern as the lines on the map showing thickness and exhibit increasing values toward the south. This similarity in pattern reflects the fact that the percentage increase in the thickness of the aquifer (pl. 3*A*) is greater than the percentage decrease in estimated average hydraulic conductivity (pl. 3*B*). The maximum estimated transmissivity, 140,000 gpd per ft, occurs where the aquifer is thickest in southern Nassau County.

Average thickness, hydraulic conductivity, and transmissivity of the Lloyd aquifer in subareas of Long Island are derived from plate 3*A*, *B*, and *C* and are listed in table 12. As noted previously, many of the values in table 12 are based on very few well data.

TABLE 12.—*Average thickness, hydraulic conductivity, and transmissivity of the Lloyd aquifer in subareas of Long Island*

Subarea	Area (sq mi)	Average total thickness (feet)	Average hydraulic conductivity (gpd per sq ft)	Average transmissivity (gpd per ft)
Kings County	39	80	420	35,000
Queens County	81	140	430	60,000
Northern Nassau County	106	200	440	90,000
Southern Nassau County	164	300	400	120,000
Northwestern Suffolk County	160	220	410	90,000
Southwestern Suffolk County	115	320	280	90,000
North central Suffolk County	254	240	320	78,000
South central Suffolk County	141	300	270	80,000
Subareas studied	1,060	240	380	90,000

COMPARISON OF THE PRINCIPAL AQUIFERS

The curves representing the distribution of Q/sL numbers of the four principal aquifers (fig. 22) are of roughly comparable slope, but vary in position with respect to the ordinate, owing to the different ranges and distributions of Q/sL numbers in the different

aquifers: Because the Q/sL number is related to the hydraulic conductivity of the deposits near the well screen, the curves in figure 22 provide a visual comparison of the distribution of average hydraulic conductivities of what are, in general, the more permeable zones in the respective aquifers.

CONCLUSIONS

The principal results of this investigation are a series of island-wide maps of estimated average hydraulic conductivity and transmissivity for each of the aquifers on Long Island (figs. 14 and 15, and pls. 1*B*, *C*, 2*B*, *C*, and 3*B*, *C*). Average values, derived from these maps for the mainland of Long Island, of thickness, hydraulic conductivity, and transmissivity for the aquifers are listed in table 13. The Magothy aquifer has the highest average transmissivity (240,000 gpd per ft) and the greatest average thickness (580 feet) of any of Long Island's aquifers, although the upper glacial aquifer has the greatest average hydraulic conductivity (1,700 gpd per sq ft). The Lloyd aquifer has the lowest average hydraulic conductivity (360 gpd per sq ft) and lowest average transmissivity (90,000 gpd per ft) of the four principal aquifers. The possible errors in these values locally may be on the order of plus or minus 50 percent, and in certain areas, such as the deep buried valleys near the north shore of Long Island, the possible error in the estimates may be greater than 50 percent. Despite these possible errors, the mapped values are believed to represent a reasonable initial definition of the average hydraulic conductivity and transmissivity of Long Island's aquifers.

TABLE 13.—*Average thickness, hydraulic conductivity, and transmissivity of the principal aquifers of Long Island*

[Values were determined for the mainland of Long Island excluding the forks]

Aquifer	Average thickness (feet)	Average hydraulic conductivity (gpd per sq ft)	Average transmissivity (gpd per ft)
Upper glacial	120	1,700	200,000
Jameco	80	1,300	100,000
Magothy	580	420	240,000
Lloyd	240	360	90,000

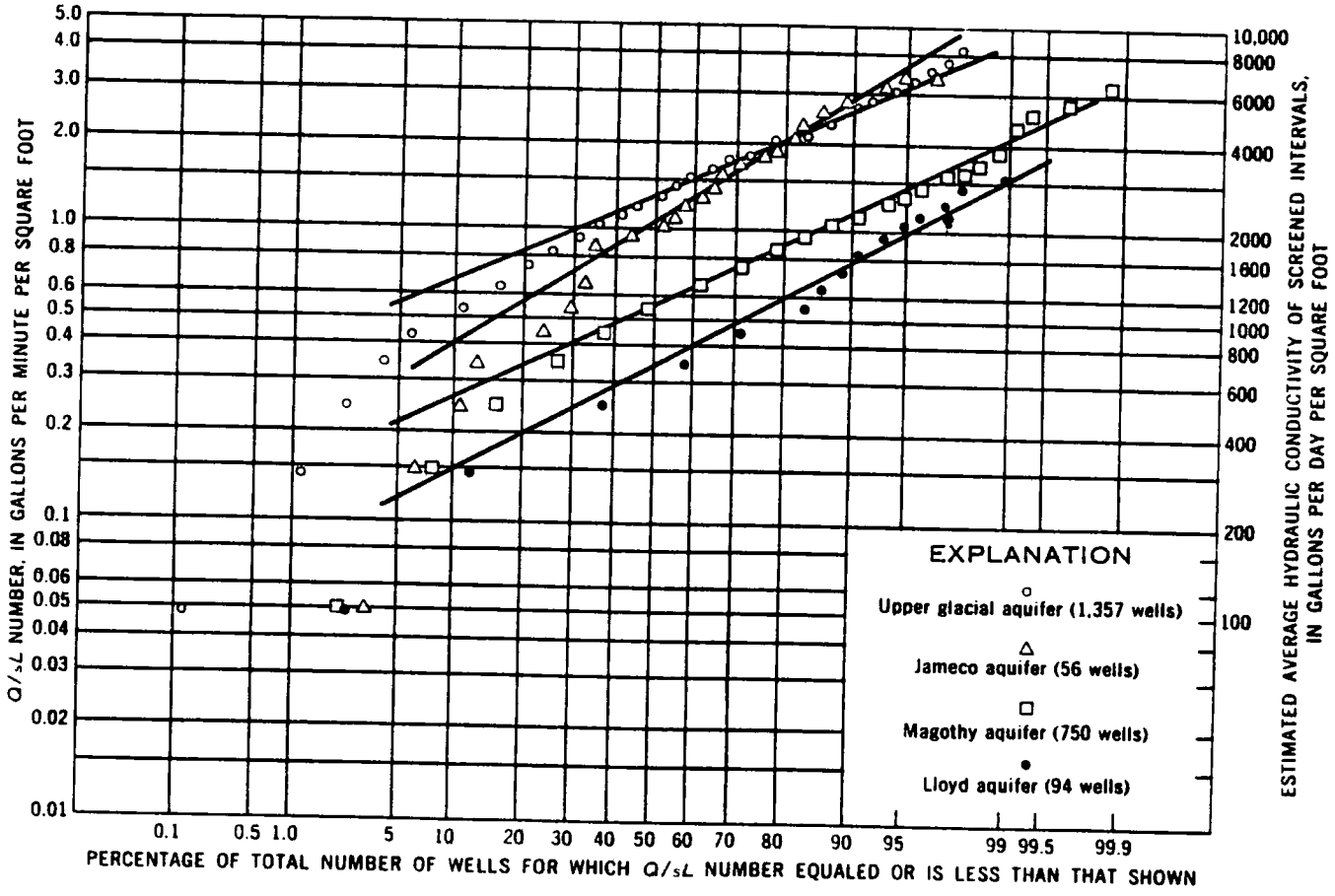


FIGURE 22.—Relation between Q/sL numbers and percentage of total number of wells for the four principal aquifers. (Average hydraulic conductivity of screened intervals approximates 2.000 Q/sL; see text discussion.)

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REFERENCE 5

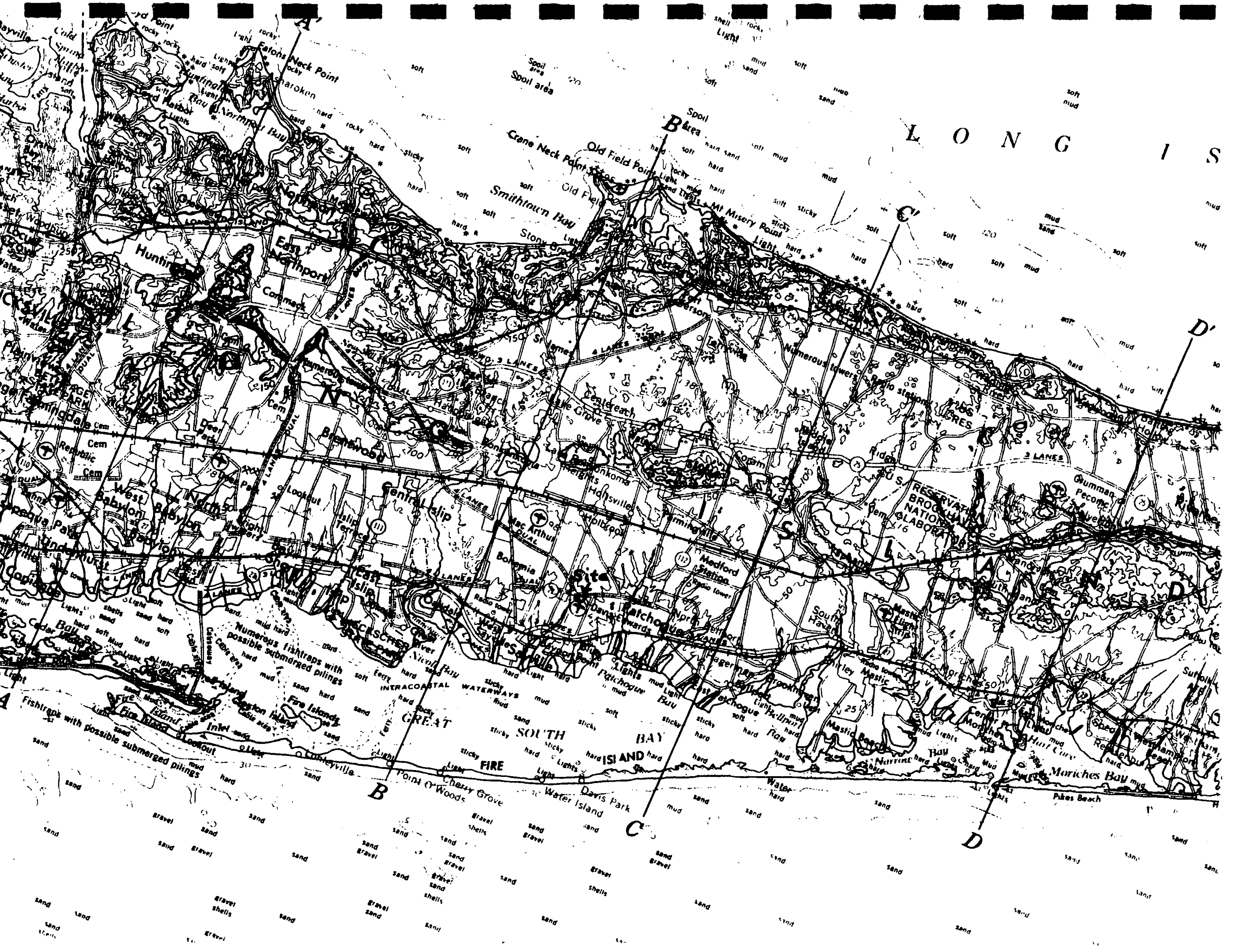
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

HYDROGEOLOGY OF SUFFOLK COUNTY, LONG ISLAND, NEW YORK

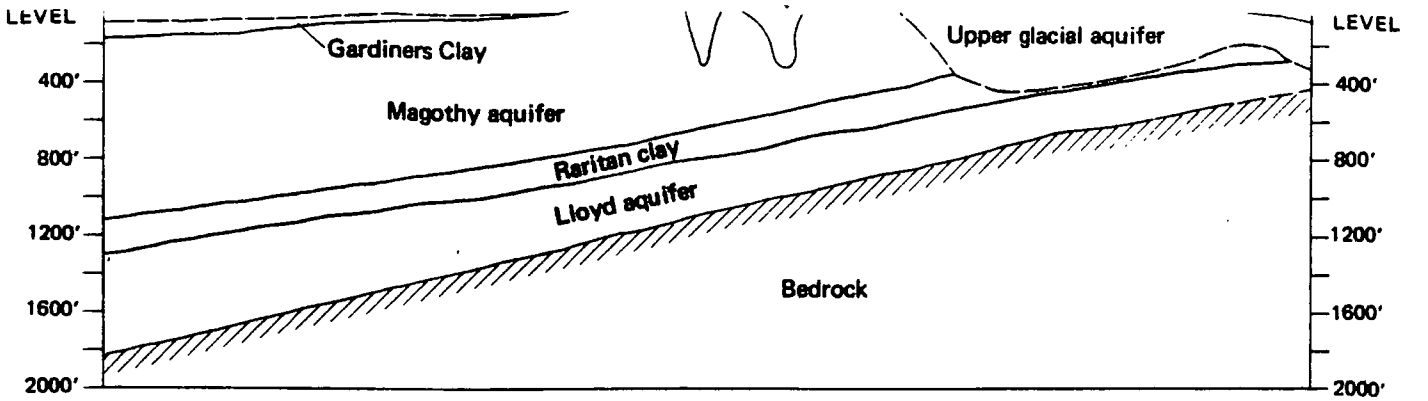
By H.M. Jensen and Julian Soren

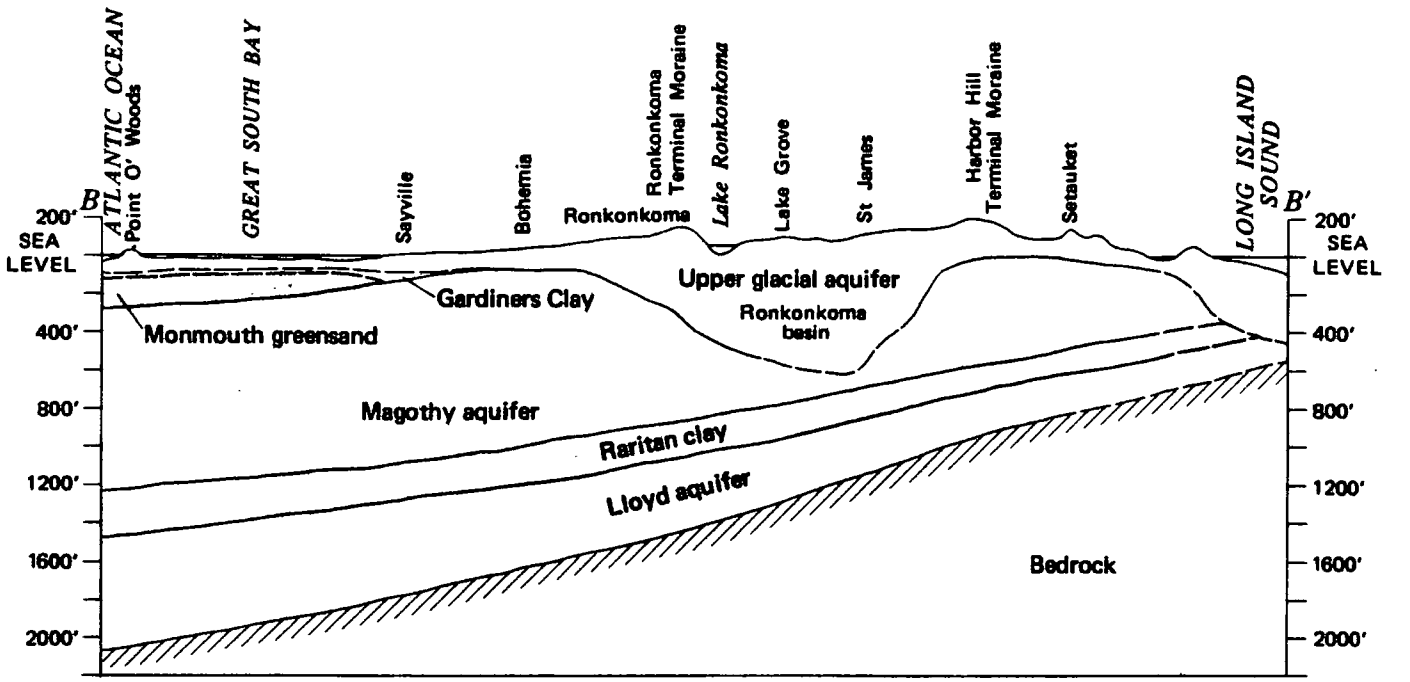
Prepared in cooperation with the
SUFFOLK COUNTY WATER AUTHORITY
SUFFOLK COUNTY DEPARTMENT OF ENVIRONMENTAL CONTROL

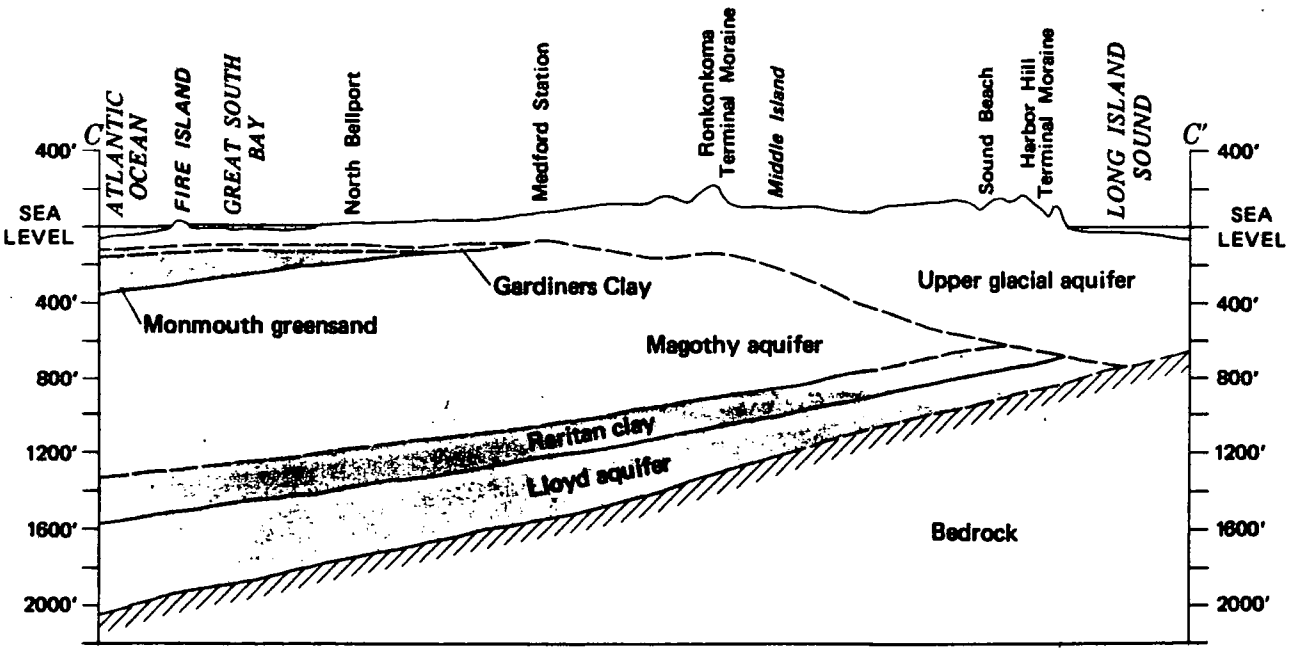
HYDROLOGIC INVESTIGATIONS ATLAS
Published by the U.S. Geological Survey, 1974
Washington, D.C. 20244

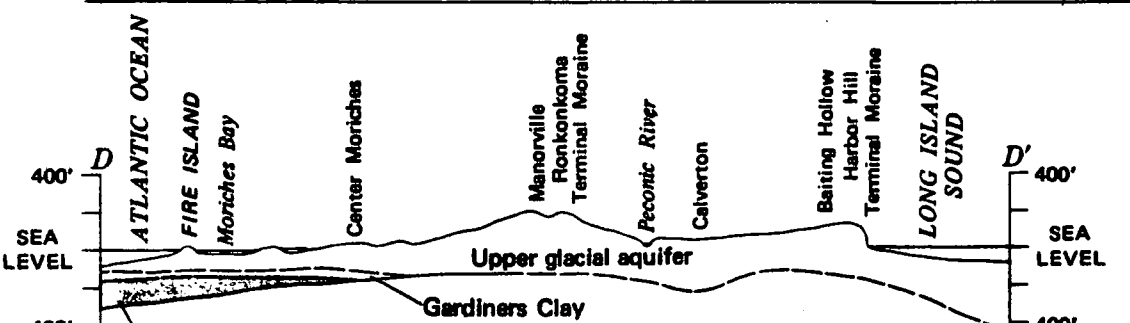


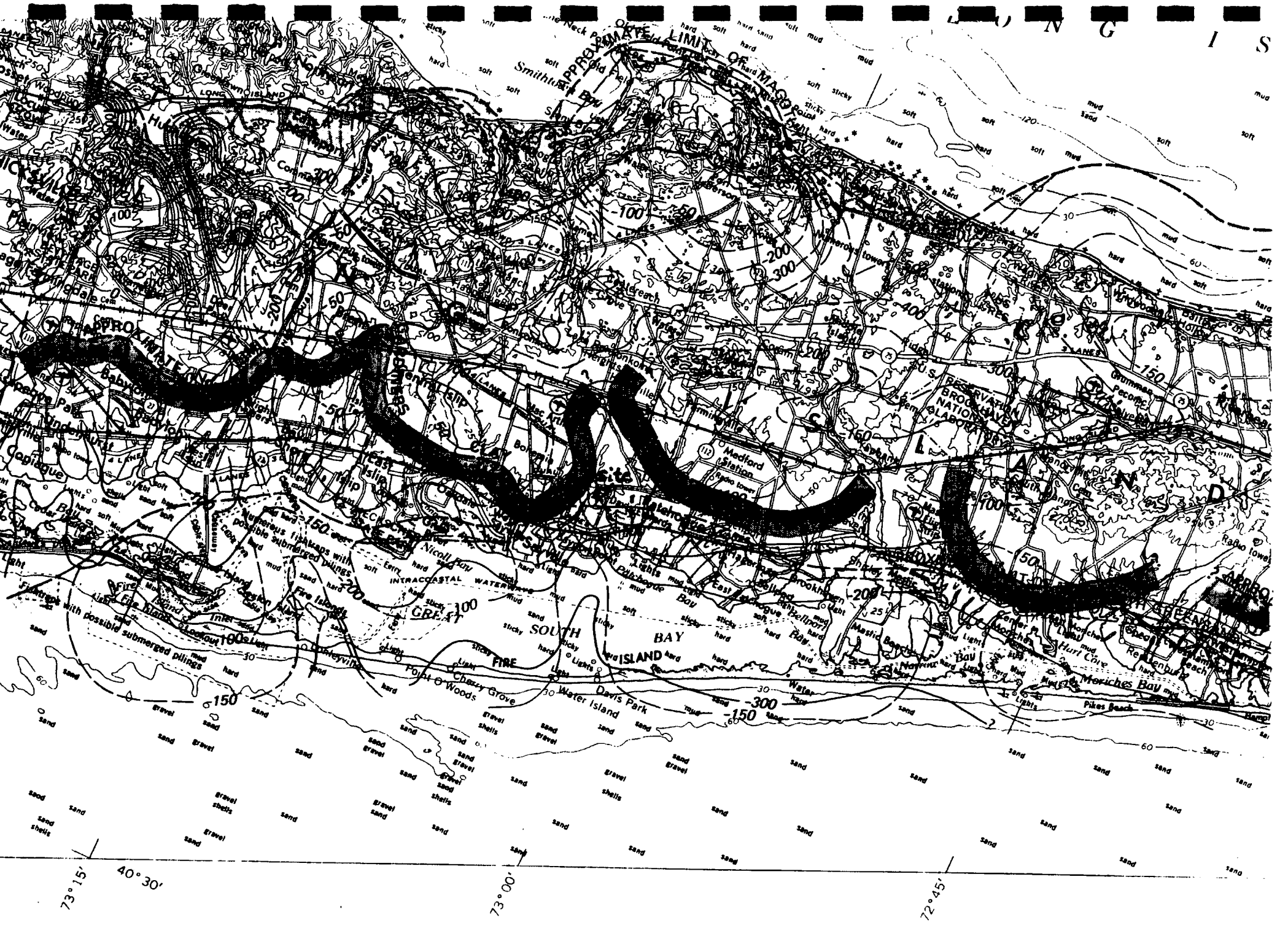
A'
B'
C'
D'
A
B
C
D
L O N G I S
Eatons Neck Point
Spoil area
Crane Neck Point
Old Field Point
Smithtown Bay
Mt Misery Point
East Northport
Commack
Brentwood
Central Islip
Islip Terrace
West Babylon
North Babylon
Lindenhurst
Copiague
Medford Station
Patchogue
Numerous fishtraps with possible submerged pilings
Fishtraps with possible submerged pilings
INTRACOASTAL WATERWAYS
GREAT SOUTH BAY
FIRE ISLAND
Fire Island Inlet
Point O'Woods
Cherry Grove
Water Island
Davis Park
Moriches Bay
Pikes Beach


LEVEL
Gardiners Clay
Upper glacial aquifer
LEVEL
400'
Magothy aquifer
800'
Raritan clay
Lloyd aquifer
1200'
Bedrock
1600'
2000'


B
ATLANTIC OCEAN
Point O' Woods
GREAT SOUTH BAY
Sayville
Bohemia
Ronkonkoma
Ronkonkoma Terminal Moraine
Lake Ronkonkoma
Lake Grove
St James
Harbor Hill Terminal Moraine
Setauket
LONG ISLAND SOUND
B'
200'
SEA LEVEL
Upper glacial aquifer
Gardiners Clay
Ronkonkoma basin
Monmouth greensand
400'
Magothy aquifer
800'
Raritan clay
Lloyd aquifer
1200'
Bedrock
1600'
2000'


C
ATLANTIC OCEAN
FIRE ISLAND
GREAT SOUTH BAY
North Bellport
Medford Station
Ronkonkoma Terminal Moraine
Middle Island
Sound Beach
Harbor Hill Terminal Moraine
LONG ISLAND SOUND
C'
400'
SEA LEVEL
Gardiners Clay
Upper glacial aquifer
Monmouth greensand
Magothy aquifer
800'
Raritan clay
Lloyd aquifer
1200'
Bedrock
1600'
2000'


D
ATLANTIC OCEAN
FIRE ISLAND
Moriches Bay
Center Moriches
Manorville
Ronkonkoma Terminal Moraine
Peconic River
Calverton
Baiting Hollow
Harbor Hill Terminal Moraine
LONG ISLAND SOUND
D'
400'
SEA LEVEL
Upper glacial aquifer
Gardiners Clay



MAP SHOWING ALTITUDE OF TOP OF MAGOTHY AQUIFER AND MONM

REFERENCE 6

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: E.B. Stimpson 02-8703-65 DATE: 1/18/09

FROM: Mark Ellis COPIES:

SUBJECT: Three Mile Vicinity Map

REFERENCE: It has been moved to the back of the report for better fit. Enclosed in plastic.

NUS 443A 56 1182

REFERENCE 7

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

FOREWORD

The method for ranking hazardous substance facilities that is described in this document was developed by The MITRE Corporation under contract to the U.S. Environmental Protection Agency. The method has benefited from extensive review and comment by EPA personnel, state officials, and interested parties in the private sector.

TABLE OF CONTENTS

		Page
LIST OF ILLUSTRATIONS		vi
LIST OF TABLES		vii
1.0	INTRODUCTION	1
2.0	USING THE HAZARD RANKING SYSTEM - GENERAL CONSIDERATIONS	7
3.0	GROUND WATER MIGRATION ROUTE	9
3.1	Observed Release	9
3.2	Route Characteristics	9
3.3	Containment	16
3.4	Waste Characteristics	16
3.5	Targets	24
4.0	SURFACE WATER ROUTE	29
4.1	Observed Release	29
4.2	Route Characteristics	29
4.3	Containment	34
4.4	Waste Characteristics	34
4.5	Targets	34
5.0	AIR ROUTE	39
5.1	Observed Release	39
5.2	Waste Characteristics	39
5.3	Targets	44
6.0	COMPUTING THE MIGRATION HAZARD MODE SCORE, S_M	47
7.0	FIRE AND EXPLOSION	49
7.1	Containment	49
7.2	Waste Characteristics	49
7.3	Targets	52
8.0	DIRECT CONTACT	57
8.1	Observed Incident	57
8.2	Accessibility	57
8.3	Containment	59
8.4	Waste Characteristics	59
8.5	Targets	59

LIST OF ILLUSTRATIONS

Figure Number		Page
1	HRS Cover Sheet	8
2	Ground Water Route Work Sheet	10
3	Depth to Aquifer of Concern	11
4	Mean Annual Lake Evaporation (In Inches)	13
5	Normal Annual Total Precipitation (Inches)	14
6	Distance to Nearest Well	26
7	Surface Water Route Work Sheet	30
8	1-Year 24-Hour Rainfall (Inches)	33
9	Air Route Work Sheet	40
10	Worksheet for Computing S_M	48
11	Fire and Explosion Work Sheet	50
12	Direct Contact Work Sheet	58

LIST OF TABLES

Table Number		Page
1	Comprehensive List to Rating Factors	3
2	Permeability of Geologic Materials	15
3	Containment Value for Ground Water Route	17
4	Waste Characteristics Values for Some Common Chemicals	20
5	Persistence (Biodegradability) of Some Organic Compounds	21
6	Sax Toxicity Ratings	22
7	NFPA Toxicity Ratings	23
8	Values for Facility Slope and Intervening Terrain	31
9	Containment Values for Surface Water Route	35
10	Values for Sensitive Environment (Surface Water)	37
11	NFPA Reactivity Ratings	41
12	Incompatible Materials	43
13	Values for Land Use (Air Route)	46
14	NFPA Ignitability Levels and Assigned Values	51
15	Values for Sensitive Environments (Fire and Explosion)	54

1.0 INTRODUCTION

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) (PL 96-510) requires the President to identify the 400 facilities in the nation warranting the highest priority for remedial action. In order to set the priorities, CERCLA requires that criteria be established based on relative risk or danger, taking into account the population at risk; the hazardous potential of the substances at a facility; the potential for contamination of drinking water supplies, for direct human contact, and for destruction of sensitive ecosystems; and other appropriate factors.

This document describes the Hazard Ranking System (HRS) to be used in evaluating the relative potential of uncontrolled hazardous substance facilities to cause human health or safety problems, or ecological or environmental damage. Detailed instructions for using the HRS are given in the following sections. Uniform application of the ranking system in each State will permit EPA to identify those releases of hazardous substances that pose the greatest hazard to humans or the environment. However, the HRS by itself cannot establish priorities for the allocation of funds for remedial action. The HRS is a means for applying uniform technical judgement regarding the potential hazards presented by a facility relative to other facilities. It does not address the feasibility, desirability, or degree of cleanup required. Neither does it deal

TABLE 1

COMPREHENSIVE LIST TO RATING FACTORS

HAZARD MODE	FACTOR CATEGORY	FACTORS		
		GROUND WATER ROUTE	SURFACE WATER ROUTE	AIR ROUTE
Migration	Route Characteristics	• Depth to Aquifer of Concern • Net Precipitation • Permeability of Unsaturated Zone • Physical State	• Facility Slope and Intervening Terrain • One-Year 24-Hour Rainfall • Distance to Nearest Surface Water • Physical State	
	Containment	• Containment	• Containment	
	Waste Characteristics	• Toxicity/Persistence • Hazardous Waste Quantity	• Toxicity/Persistence • Hazardous Waste Quantity	• Reactivity/Incompatibility • Toxicity • Hazardous Waste Quantity
	Targets	• Ground Water Use • Distance to Nearest Well/ Population Served	• Surface Water Use • Distance to Sensitive Environment • Population Served/Distance to Water Intake Downstream	• Land Use • Population Within 4-Mile Radius • Distance to Sensitive Environment
Fire and Explosion	Containment	• Containment		
	Waste Characteristics	• Direct Evidence • Ignitability • Reactivity • Incompatibility • Hazardous Waste Quantity		
	Targets	• Distance to Nearest Population • Distance to Nearest Building • Distance to Nearest Sensitive Environment • Land Use • Population Within 2-Mile Radius • Number of Buildings Within 2-Mile Radius		
Direct Contact	Observed Incident	• Observed Incident		
	Accessibility	• Accessibility of Hazardous Substances		
	Containment	• Containment		
	Toxicity	• Toxicity		
	Targets	• Population Within 1-Mile Radius • Distance to Critical Habitat		

The ranking of facilities nationally for remedial action will be based primarily on S_M. S_{FE} and S_{DC} may be used to identify facilities requiring emergency attention.

2.0 USING THE HAZARD RANKING SYSTEM - GENERAL CONSIDERATIONS

Use of the HRS requires considerable information about the facility, its surroundings, the hazardous substances present, and the geological character of the area down to the aquifers that may be at risk. Figure 1 illustrates a format for recording general information regarding the facility being evaluated. It can also serve as a cover sheet for the work sheets used in the evaluation.

Where there are no data for a factor, it should be assigned a value of zero. However, if a factor with no data is the only factor in a category (e.g., containment), then the factor is given a score of 1. If data are lacking for more than one factor in connection with the evaluation of either S_{gw}, S_{sw}, S_a, S_{FE} or S_{DC}, that route score is set at zero.

The following sections give detailed instructions and guidance for rating a facility. Each section begins with a work sheet designed to conform to the sequence of steps required to perform the rating. Guidance for evaluating each of the factors then follows. Using the guidance provided, attempt to assign a score for each of the three possible migration routes. Bear in mind that if data are missing for more than one factor in connection with the evaluation of a route, then you must set that route score at 0 (i.e., there is no need to assign scores to factors in a route that will be set at 0).

3.0 GROUND WATER MIGRATION ROUTE

3.1 Observed Release

If there is direct evidence of release of a substance of concern from a facility to ground water, enter a score of 45 on line 1 of the work sheet for the ground water route (Figure 2); then you need not evaluate route characteristics and containment factors (lines 2 and 3). Direct evidence of release must be analytical. If a contaminant is measured (regardless of frequency) in ground water or in a well in the vicinity of the facility at a significantly (in terms of demonstrating that a release has occurred, not in terms of potential effects) higher level than the background level, then quantitative evidence exists, and a release has been observed. Qualitative evidence of release (e.g., an oily or otherwise objectionable taste or smell in well water) constitutes direct evidence only if it can be confirmed that it results from a release at the facility in question. If a release has been observed, proceed to "3.4 Waste Characteristics" to continue scoring. If direct evidence is lacking, enter a value of 0 on line 1 and continue the scoring procedure by evaluating Route Characteristics.

3.2 Route Characteristics

Depth to aquifer of concern is measured vertically from the lowest point of the hazardous substances to the highest seasonal level of the saturated zone of the aquifer of concern (Figure 3). This factor is one indicator of the ease with which a pollutant from the facility could migrate to ground water. Assign a value as follows:

Distance	Assigned Value
>150 feet	0
76 to 150 feet	1
21 to 75 feet	2
0 to 20 feet	3

Net precipitation (precipitation minus evaporation) indicates the potential for leachate generation at the facility. Net seasonal rainfall (seasonal rainfall minus seasonal evaporation) data may be used if available. If net precipitation is not measured in the region in which the facility is located, calculate it by subtracting the mean annual lake evaporation for the region (obtained from Figure 4) from the normal annual precipitation for the region (obtained from Figure 5). EPA Regional Offices will have maps for areas outside the continental U.S. Assign a value as follows:

Net Precipitation	Assigned Value
<-10 inches	0
-10 to +5 inches	1
+5 to +15 inches	2
>+15 inches	3

Permeability of unsaturated zone (or intervening geological formations) is an indicator of the speed at which a contaminant could migrate from a facility. Assign a value from Table 2.

Physical state refers to the state of the hazardous substances at the time of disposal, except that gases generated by the hazardous substances in a disposal area should be considered in rating this factor. Each of the hazardous substances being evaluated is assigned a value as follows:

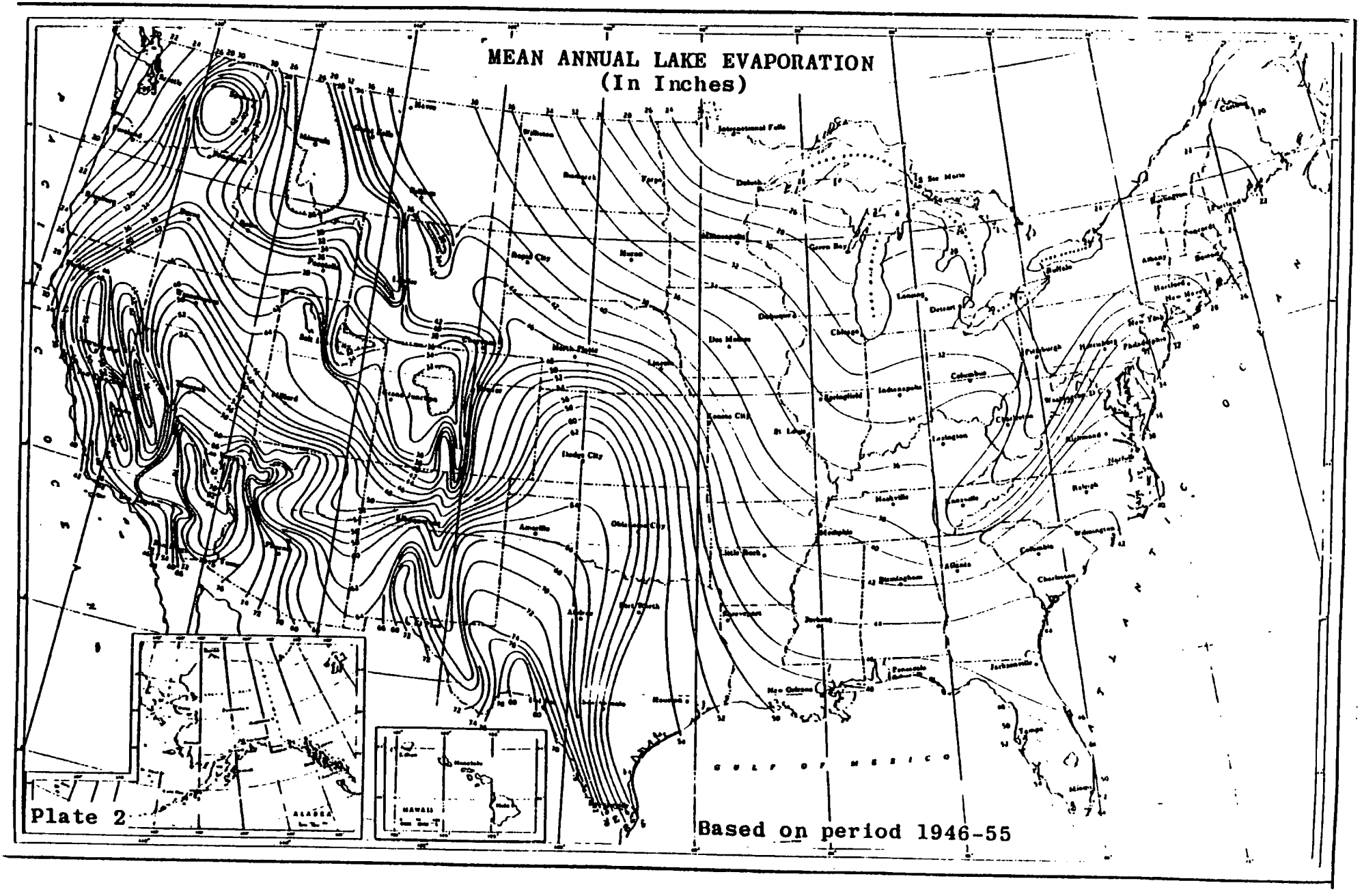

MEAN ANNUAL LAKE EVAPORATION
(In Inches)
Based on period 1946-55
GULF OF MEXICO
ALASKA
HAWAII

Plate 2

NORMAL ANNUAL TOTAL PRECIPITATION (Inches)

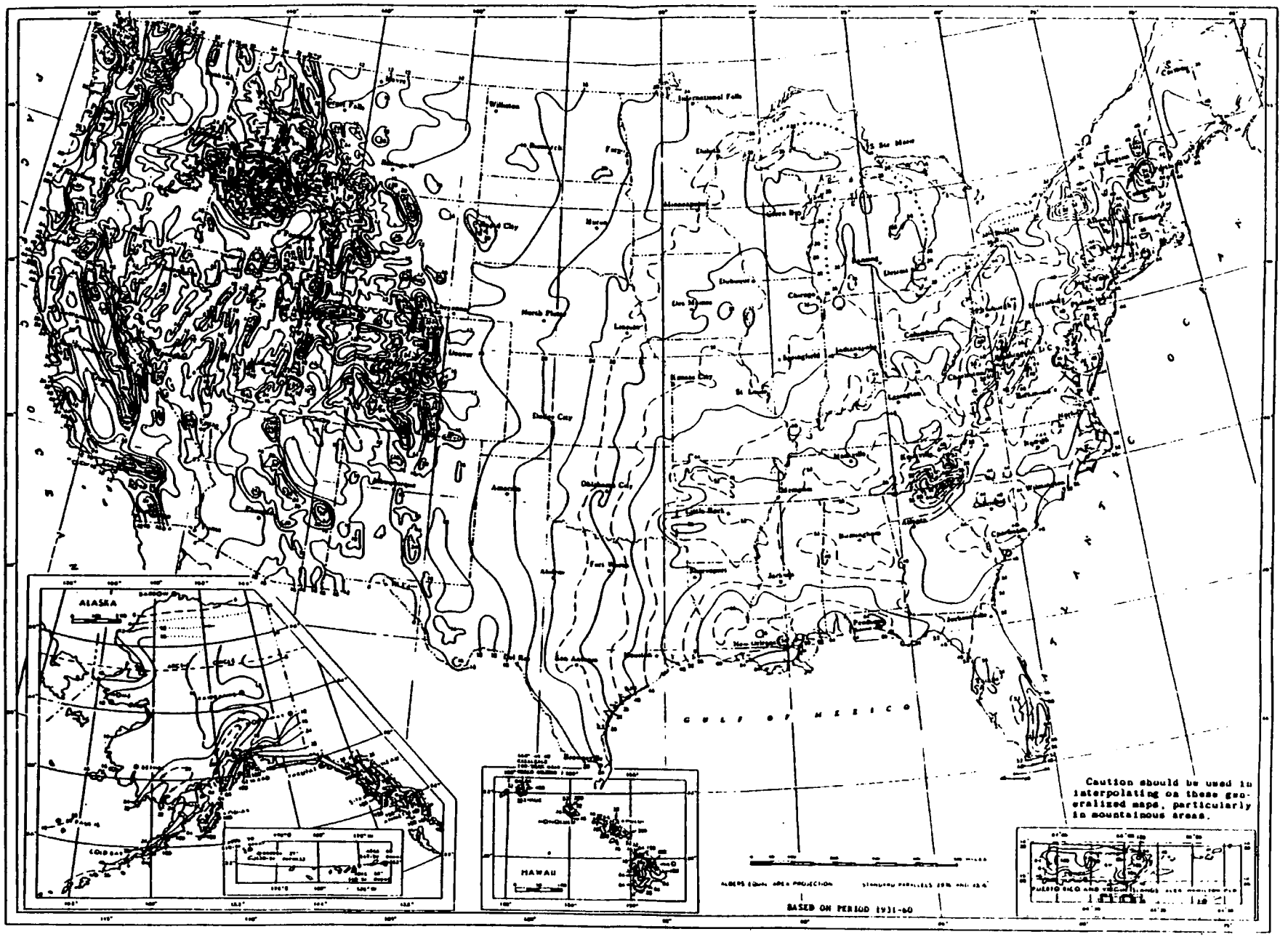


TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

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

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

TABLE 3

CONTAINMENT VALUE FOR GROUND WATER ROUTE

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

A. Surface Impoundment

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

B. Containers

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

C. Piles

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

D. Landfill

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

more specific information is given in Tables 4 and 5.

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

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

Table 4 presents values for some common compounds.

Hazardous waste quantity includes all hazardous substances at a facility (as received) except that with a containment value of 0. Do not include amounts of contaminated soil or water; in such cases, the amount of contaminating hazardous substance may be estimated.

On occasion, it may be necessary to convert data to a common unit to combine them. In such cases, 1 ton = 1 cubic yard = 4 drums and for the purposes of converting bulk storage, 1 drum = 50 gallons. Assign a value as follows:

Tons/Cubic Yards	No. of Drums	Assigned Value
0	0	0
1-10	1-40	1
11-62	41-250	2
63-125	251-500	3
126-250	501-1000	4
251-625	1001-2500	5
626-1250	2501-5000	6
1251-2500	5001-10,000	7
>2500	>10,000	8

TABLE 5

PERSISTENCE (BIODEGRADABILITY) OF SOME ORGANIC COMPOUNDS*

VALUE = 3 HIGHLY PERSISTENT COMPOUNDS

aldrin
benzopyrene
benzothiazole
benzothiophene
benzyl butyl phthalate
bromochlorobenzene
bromoform butanal
bromophenyl phenyl ether
chlordane
chlorohydroxy benzophenone
bis-chloroisopropyl ether
m-chloronitrobenzene
DDE
DDT
dibromobenzene
dibutyl phthalate
1, 4-dichlorobenzene
dichlorodifluoroethane
dieldrin
diethyl phthalate
di(2-ethylhexyl)phthalate
dihexyl phthalate
di-isobutyl phthalate
dimethyl phthalate
4,6-dinitro-2-aminophenol
dipropyl phthalate
endrin
heptachlor
heptachlor epoxide
1,2,3,4,5,7,7-heptachloronorbornene
hexachlorobenzene
hexachloro-1,3-butadiene
hexachlorocyclohexane
hexachloroethane
methyl benzothiazole
pentachlorobiphenyl
pentachlorophenol
1,1,3,3-tetrachloroacetone
tetrachlorobiphenyl
thiomethylbenzothiazole
trichlorobenzene
trichlorobiphenyl
trichlorofluoromethane
2,4,6-trichlorophenol
triphenyl phosphate
bromodichloromethane
bromoform
carbon tetrachloride
chloroform
chlorodibromomethane
dibromodichloroethane
tetrachloroethene
1,1,2-trichloroethane

VALUE = 1 SOMEWHAT PERSISTENT COMPOUNDS

acetylene dichloride
behenic acid, methyl ester
benzene
benzene sulfonic acid
butyl benzene
butyl bromide
e-caprolactam
carbon-disulfide
o-cresol
decane
1,2-dichloroethane
1,2-diethoxy benzene
1,3-dimethyl naphthalene
1,4-dimethyl phenol
dioctyl adipate
n-dodecane
ethyl benzene
2-ethyl-n-hexane
o-ethyltoluene
isodecane
isopropyl benzene
limonene
methyl ester of lignoceric acid
methane
2-methyl-5-ethyl-pyridine
methyl naphthalene
methyl palmitate
methyl phenyl carbinol
methyl stearate
naphthalene
nonane
octane
octyl chloride
pentane
phenyl benzoate
phthalic anhydride
propylbenzene
l-terpinol
toluene
vinyl benzene
xylene

VALUE = 2 PERSISTENT COMPOUNDS

acenaphthylene
atrazine
(diethyl) atrazine
barbital
borneol
bromobenzene
camphor
chlorobenzene
1,2-bis-chloroethoxy ethane
b-chloroethyl methyl ether
chloromethyl ether
chloromethyl ethyl ether
3-chloropyridine
di-t-butyl-p-benzoquinone
dichloroethyl ether
dihydrocarvone
dimethyl sulfoxide
2,6-dinitrotoluene
cis-2-ethyl-4-methyl-1,3-dioxolane
trans-2-ethyl-4-methyl-1,3-dioxolane
guaiacol
2-hydroxyadipontrile
isophorone
indene
isoborneol
isopropenyl-r-isopropyl benzene
2-methoxy biphenyl
methyl biphenyl
methyl chloride
methylindene
methylene chloride
nitroanisole
nitrobenzene
1,1,2-trichloroethylene
trimethyl-trioxo-hexahydro-triazine isomer

VALUE = 0 NONPERSISTENT COMPOUNDS

acetaldehyde
acetic acid
acetone
acetophenone
benzoic acid
di-isobutyl carbinol
docosane
eicosane
ethanol
ethylamine
hexadecane
methanol
methyl benzoate
3-methyl butanol
methyl ethyl ketone
2-methylpropanol
octadecane
pentadecane
pentanol
propanol
propylamine
tetradecane
n-tridecane
n-undecane

TABLE 7

NFPA TOXICITY RATINGS*

0	Materials which on exposure under fire conditions would offer no health hazard beyond that of ordinary combustible material.
1	Materials only slightly hazardous to health. It may be desirable to wear self-contained breathing apparatus.
2	Materials hazardous to health, but areas may be entered freely with self-contained breathing apparatus.
3	Materials extremely hazardous to health, but areas may be entered with extreme care. Full protective clothing, including self-contained breathing apparatus, rubber gloves, boots and bands around legs, arms and waist should be provided. No skin surface should be exposed.
4	A few whiffs of the gas or vapor could cause death, or the gas, vapor, or liquid could be fatal on penetrating the fire fighters' normal full protective clothing which is designed for resistance to heat. For most chemicals having a Health 4 rating, the normal full protective clothing available to the average fire department will not provide adequate protection against skin contact with these materials. Only special protective clothing designed to protect against the specific hazard should be worn.

*National Fire Protection Association. National Fire Codes, Vol. 13, No. 49, 1977.

Value for Population Served	Value for Distance to Nearest Well 0	1	2	3	4
0	0	0	0	0	0
1	0	4	6	8	10
2	0	8	12	16	20
3	0	12	18	24	30
4	0	16	24	32	35
5	0	20	30	35	40

Distance to nearest well is measured from the hazardous substance (not the facility boundary) to the nearest well that draws water from the aquifer of concern. If the actual distance to the nearest well is unknown, use the distance between the hazardous substance and the nearest occupied building not served by a public water supply (e.g., a farmhouse). If a discontinuity in the aquifer occurs between the hazardous substance and all wells, give this factor a score of 0, except where it can be shown that the contaminant is likely to migrate beyond the discontinuity. Figure 6 illustrates how the distance should be measured. Assign a value using the following guidance:

Distance	Assigned Value
>3 miles	0
2 to 3 miles	1
1 to 2 miles	2
2001 feet to 1 mile	3
< 2000 feet	4

6635
1815
4820

Population served by ground water is an indicator of the population at risk, which includes residents as well as others who would regularly use the water such as workers in factories or offices and students. Include employees in restaurants, motels, or campgrounds but exclude customers and travelers passing through the area in autos, buses, or trains. If aerial photography is used, and residents are known to use ground water, assume each dwelling unit has 3.8 residents. Where ground water is used for irrigation, convert to population by assuming 1.5 persons per acre of irrigated land. The well or wells of concern must be within three miles of the hazardous substances, including the area of known aquifer contamination, but the "population served" need not be. Likewise, people within three miles who do not use water from the aquifer of concern are not to be counted. Assign a value as follows:

Population	Assigned Value
0	0
1-100	1
101-1,000	2
1,001-3,000	3
3,001-10,000	4
>10,000	5

4.0 SURFACE WATER ROUTE

4.1 Observed Release

Direct evidence of release to surface water must be quantitative evidence that the facility is releasing contaminants into surface water. Quantitative evidence could be the measurement of levels of contaminants from a facility in surface water, either at the facility or downhill from it, that represents a significant (in terms of demonstrating that a release has occurred, not in terms of potential effects) increase over background levels. If direct evidence of release has been obtained (regardless of frequency), enter a value of 45 on line 1 of the work sheet (Figure 7) and omit the evaluation of the route characteristics and containment factors. If direct evidence of release is lacking, enter a value of 0 on line 1 and continue with the scoring procedure.

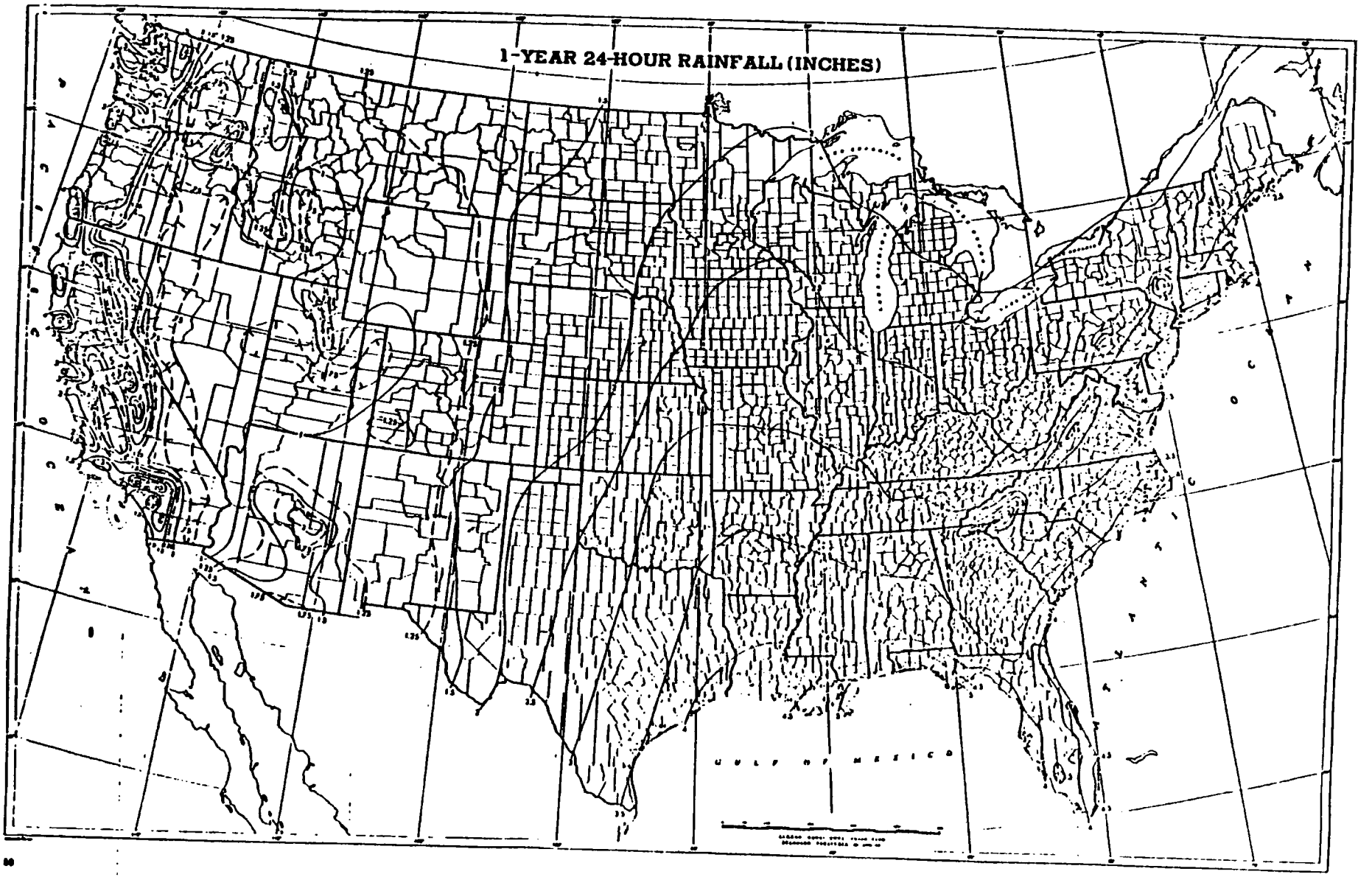
4.2. Route Characteristics

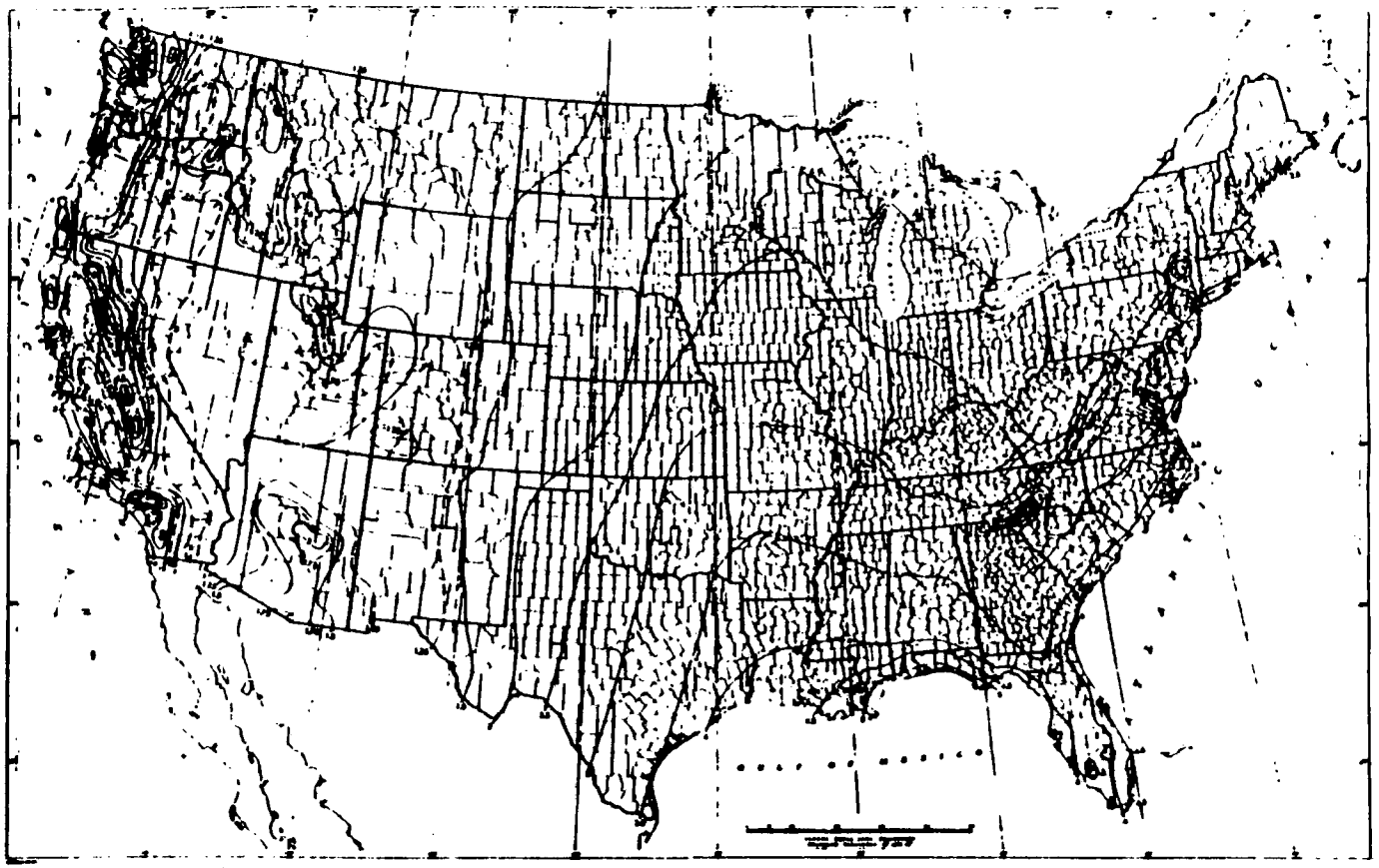
Facility slope and intervening terrain are indicators of the potential for contaminated runoff or spills at a facility to be transported to surface water. The facility slope is an indicator of the potential for runoff or spills to leave the facility. Intervening terrain refers to the average slope of the shortest path which would be followed by runoff between the facility boundary and the nearest downhill surface water. This rating factor can be assessed using topographic maps. Table 8 shows values assigned to various facility conditions.

TABLE 8

VALUES FOR FACILITY SLOPE AND INTERVENING TERRAIN

Facility Slope	Intervening Terrain				
	Terrain Average Slope ≤3%; or Site Separated from Water Body by Areas of Higher Elevation	Terrain Average Slope 3-5%	Terrain Average Slope 5-8%	Terrain Average Slope >8%	Site in Surface Water
Facility is closed basin	0	0	0	0	3
Facility has average slope ≤3%	0	1	1	2	3
Average slope 3-5%	0	1	2	2	3
Average slope 5-8%	0	2	2	3	3
Average slope >8%	0	2	3	3	3


1-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO



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

FIGURE 8
1-YEAR 24-HOUR RAINFALL
(INCHES)

TABLE 9

CONTAINMENT VALUES FOR SURFACE WATER ROUTE

Assign containment a value of 0 if: (1) all the waste at the site is surrounded by diversion structures that are in sound condition and adequate to contain all runoff, spills, or leaks from the waste; or (2) intervening terrain precludes runoff from entering surface water. Otherwise, evaluate the containment for each of the different means of storage or disposal at the site and assign a value as follows:

A. Surface Impoundment

	Assigned Value
Sound diking or diversion structure, adequate freeboard, and no erosion evident	0
Sound diking or diversion structure, but inadequate freeboard	1
Diking not leaking, but potentially unsound	2
Diking unsound, leaking, or in danger of collapse	3

B. Containers

	Assigned Value
Containers sealed, in sound condition, and surrounded by sound diversion or containment system	0
Containers sealed and in sound condition, but not surrounded by sound diversion or containment system	1
Containers leaking and diversion or containment structures potentially unsound	2
Containers leaking, and no diversion or containment structures or diversion structures leaking or in danger of collapse	3

C. Waste Piles

	Assigned Value
Piles are covered and surrounded by sound diversion or containment system	0
Piles covered, wastes unconsolidated, diversion or containment system not adequate	1
Piles not covered, wastes unconsolidated, and diversion or containment system potentially unsound	2
Piles not covered, wastes unconsolidated, and no diversion or containment or diversion system leaking or in danger or collapse	3

D. Landfill

	Assigned Value
Landfill slope precludes runoff, landfill surrounded by sound diversion system, or landfill has adequate cover material	0
Landfill not adequately covered and diversion system sound	1
Landfill not covered and diversion system potentially unsound	2
Landfill not covered and no diversion system present, or diversion system unsound	3

TABLE 10

VALUES FOR SENSITIVE ENVIRONMENT (SURFACE WATER)

ASSIGNED VALUE =	0	1	2	3
DISTANCE TO WETLANDS* (5 acre minimum)				
Coastal	>2 miles	1 - 2 miles	½ - 1 mile	< ½ mile
Fresh Water	>1 mile	¼ - 1 mile	100 feet - ¼ mile	< 100 feet
DISTANCE TO CRITICAL HABITAT (of endangered species)**	>1 mile	½ - 1 mile	¼ - ½ mile	< ¼ mile

*Wetland is defined by EPA in the Code of Federal Regulations 40 CFR Part 230, Appendix A, 1980

**Endangered species are designated by the U.S. Fish and Wildlife Service.

5.0 AIR ROUTE

5.1 Observed Release

The only acceptable evidence of release for the air route is data that show levels of a contaminant at or in the vicinity of the facility that significantly exceed background levels, regardless of the frequency of occurrence. If such evidence exists, enter a value of 45 on line 1 of the work sheet (Figure 9); if not, assign line 1 a 0 value and then $S_a = 0$. Record the date, location, and the sampling protocol for monitoring data on the work sheet. Data based on transitory conditions due to facility disturbance by investigative personnel are not acceptable.

5.2 Waste Characteristics

The hazardous substance that was observed for scoring the release category may be different from the substance used to score waste characteristics.

Reactivity and incompatibility, measures of the potential for sudden releases of concentrated air pollutants, are evaluated independently, and the highest value for either is recorded on the work sheet.

Reactivity provides a measure of the fire/explosion threat at a facility. Assign a value based on the reactivity classification used by NFPA (see Table 11). Reactivity ratings for a number of common compounds are given in Table 4.

TABLE 11

NFPA REACTIVITY RATINGS

NFPA LEVEL		Assigned Value
0	Materials which are normally stable even under fire exposure conditions and which are not reactive with water.	0
1	Materials which in themselves are normally stable but which may become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.	1
2	Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. Includes materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. Also includes those materials which may react violently with water or which may form potentially explosive mixtures with water.	2
3	Materials which in themselves are capable of detonation or of explosive decomposition or of explosive reaction but which requires a strong initiating source or which must be heated under confinement before initiation. Includes materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement.	3
4	Materials which in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at noraml temperatures and pressures. Includes materials which are sensitive to mechanical or localized thermal shock.	3

TABLE 12

INCOMPATIBLE MATERIALS

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A	Group 1-B
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalies	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

Group 2-A	Group 2-B
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Potassium	
Sodium	
Zinc powder	
Other reactive metals and metal hydrides	

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3-A	Group 3-B
Alcohols	Any concentrated waste in Groups 1-A or 1-B
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	SO_2Cl_2, $SOCl_2$, PCl_2, CB_3, $SiCl_3$
	Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acides
Chlorites	Group 2-A wastes
Chromic acid	Group 4-A wastes
Hypochlorites	Other flammable and combustible wastes
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Potential consequences: Fire, explosion, or violent reaction.

Source: Hazardous Waste Management Law, Regulations, and Guidelines for the Handling of Hazardous Waste. California Department of Health, Sacramento, California, February 1975.

damage if hazardous substances were to be released from the facility. Assign a value from Table 10.

Land use indicates the nature and level of human activity in the vicinity of a facility. Assign highest applicable value from Table 13.

6.0 COMPUTING THE MIGRATION HAZARD MODE SCORE, S_M

To compute S_M, complete the work sheet (Figure 10) using the values of S_{gw}, S_{sw} and S_a obtained from the previous sections.

7.0 FIRE AND EXPLOSION

Compute a score for the fire and explosion hazard mode, S_{FE}, when either a state or local fire marshall has certified that the facility presents a significant fire or explosion threat to the public or to sensitive environments or there is a demonstrated fire and explosion threat based on field observations (e.g., combustible gas indicator readings). Document the threat.

7.1 Containment

Containment is an indicator of the measures that have been taken to minimize or prevent hazardous substances at the facility from catching fire or exploding. Normally it will be given a value of 3 on the work sheet (Figure 11). If no hazardous substances that are individually ignitable or explosive are present and those that may be hazardous in combination are segregated and isolated so that they cannot come together to form incompatible mixtures, assign this factor a value of 1.

7.2 Waste Characteristics

Direct evidence of ignitability or explosion potential may exist in the form of measurements with appropriate instruments. If so, assign this factor a value of 3; if not, assign a value of 0.

Ignitability is an indicator of the threat of fire at a facility and the accompanying potential for release of air contaminants. Assign this rating factor a value based on the NFPA classification scheme (Table 14). Table 4 gives values for a number of common compounds. Assign values as follows:

TABLE 14

NFPA IGNITABILITY LEVELS AND ASSIGNED VALUES

NFPA LEVEL	ASSIGNED VALUE
4 Very flammable gases, very volatile flammable liquids, and materials that in the form of dusts or mists readily form explosive mixtures when dispersed in air. 3 Liquids which can be ignited under all normal temperature conditions. Any material that ignites spontaneously at normal temperatures in air.	3
2 Liquids which must be moderately heated before ignition will occur and solids that readily give off flammable vapors.	2
1 Materials that must be preheated before ignition can occur. Most combustible solids have a flammability rating of 1.	1
0 Materials that will not burn.	0

Distance to nearest building is an indicator of the potential for property damage as a result of fire or explosion. Assign a value as follows:

Distance	Assigned Value
>1/2 mile	0
201 feet - 1/2 mile	1
51 - 200 feet	2
0 - 50 feet	3

Distance to nearest sensitive environment is measured from the hazardous substances, not from the facility boundary. It is an indicator of potential harm to a sensitive environment from fire or explosion at the facility. Select the highest value using the guidance provided in Table 15 except assign a value of 3 where fire could be expected to spread to a sensitive environment even though that environment is more than 100 feet from the hazardous substance.

Land Use. Assign values as in Section 5.3.

Population within two-mile radius (measured from the location of the hazardous substance, not from the facility boundary) is a rough indicator of the population at risk in the event of fire or explosion at a facility. The population to be counted includes those residing within the two mile radius as well as people regularly in the vicinity such as workers in factories, offices, or students. It does not include travelers passing through the area. If aerial photography is used in making the count, assume 3.8 individuals per dwelling. Assign values as follows:

Population	Assigned Value
0	0
1 - 100	1
101 - 1,000	2
1,001 - 3,000	3
3,001 - 10,000	4
>10,000	5

Number of buildings within two mile radius (measured from the hazardous substance, not from the facility boundary) is a rough indicator of the property damage that could result from fire and explosion at a facility. Assign values to this factor as follows:

Number of Buildings	Assigned Value
0	0
1 - 26	1
27 - 260	2
261 - 790	3
791 - 2600	4
>2600	5

8.0 DIRECT CONTACT

The direct contact hazard mode refers to the potential for injury by direct contact with hazardous substances at the facility.

8.1 Observed Incident

If there is a confirmed instance in which contact with hazardous substances at a facility has caused injury, illness, or death to humans or domestic or wild animals, enter a value of 45 on line 1 of the work sheet (Figure 12) and proceed to line 4 (toxicity). Document the incident giving the date, location and pertinent details. If no such instance is known, enter "0" on line 1 and proceed to line 2.

8.2 Accessibility

Accessibility to hazardous substance refers to the measures taken to limit access by humans or animals to hazardous substances. Assign a value using the following guidance:

Barrier	Assigned Value
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility;	0
or	
an artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	

Barrier (continued)	Assigned Value
Security guard, but no barrier	1
A barrier, but no separate means to control entry	2
Barriers do not completely surround the facility	3

8.3 Containment

Containment indicates whether the hazardous substance itself is accessible to direct contact. For example, if the hazardous substance at the facility is in surface impoundments, containers (sealed or unsealed), piles, tanks, or landfills with a cover depth of less than 2 feet, or has been spilled on the ground or other surfaces easily contacted (e.g., the bottom of shallow pond or creek), assign this rating factor a value of 15. Otherwise, assign a value of 0.

8.4 Waste Characteristics

Toxicity. Assign a value as in Section 3.4.

8.5 Targets

Population within one-mile radius is a rough indicator of the population that could be involved in direct contact incidents at an uncontrolled facility. Assign a value as follows:

Population	Assigned Value
0	0
1 - 100	1
101 - 1,000	2
1,001 - 3,000	3
3,001 - 10,000	4
>10,000	5

REFERENCE 8

Stimpson Co. Inc.

900 Sylvan Avenue
Bayport, NY 11705-1097

Telephone:
(516) 472-2000

WASHERS • TERMINALS • "C-E" Rivets • HOLE PLUGS • EYELETS • SNAP FASTENERS • Grommets • ATTACHING MACHINES

ESTABLISHED 1852

February 14, 1985

U. S. Environmental Protection Agency
Solid Waste Branch
Region II
26 Federal Plaza - Room 905
New York, NY 10278

Attention: Ms. Kathleen Tobin

Re: EPA ID#NYD052780392

Dear Ms. Tobin:

This letter is being furnished in lieu of the "Certification of Answers to Request for Information," which was not received with the request.

Edwin B. Stimpson Co., Inc. has authorized Holzmacher, McLendon and Murrell, P.C. to prepare, and has reviewed, the attached response.

Very truly yours,

James E. Cuenin
Assistant Vice President

JEC/df

February 14, 1985

DOMINIC J. FIORENZA
NOTARY PUBLIC, State of New York
Qual. in Suffolk Co. - No. 52-6302170
Cert. Filed in Suffolk Co. Register
Term Expires March 30, 1986

RESPONSE TO USEPA'S QUESTIONS

1. a) List of all listed and characteristic hazardous waste entering treatment tank(s) since November 19, 1980, substantiated by records of regular sampling and analysis of liquids, suspended solids and settled sludge.

Since November 19, 1980, no listed hazardous waste entered Stimpson's waste treatment tank(s). The characteristic hazardous waste which entered the treatment tank(s) include wastewaters containing cadmium, chromium and cyanide. Exhibit No. 1 presents analyses of the wastewaters entering the treatment tanks and analyses of the sludge generated by treatment.

1. b) Describe the treatment activity involved with the tank(s).

Stimpson is engaged in the manufacture of metal fastener products. Of the various manufacturing processes involved in the production of fasteners, metal finishing operations and specifically the plating systems are the major source of wastes and wastewaters. Stimpson operates several plating lines. Based on the chemicals used, the plating processes can be classified as (a) cyanide based plating, and (b) non-cyanide based plating systems. The cyanide based plating systems include brass, cadmium,

copper and zinc. The non-cyanide based systems include chromium, nickel and tin. In May 1984, Stimpson discontinued its cadmium plating and aluminum chromating lines, in order to avoid generating/treating E.P. Toxic constituents; namely, cadmium and chromium.

Stimpson's wastewater treatment facility can be divided into four sub-systems; namely, tumbling, plating, floor spill and batch treatment. In order to better understand the various operations involved, two flow schematics, "Process/Wastewater Treatment Systems" (Exhibit No. 2) and "Typical Cyanide Based Plating Line" (Exhibit No. 3) are enclosed herewith. The descriptions of the four sub-systems are provided below.

Batch Treatment System

The batch treatment system primarily treats spent acid bath solutions, which are characteristically corrosive. The treatment is carried out in tanks and involves neutralization by pH adjustment. The treated solutions are discharged into the plating system slurry filter for solids separation.

Floor Spill Treatment System

The floor spill treatment system treats all floor spills, drips, etc. that are collected within the floor spill collection trough and certain spent alkali bath solutions. The floor spill wastewater was characteristically E.P. Toxic due to the presence of cadmium and chromium, characteristically reactive due to the presence of cyanide, and characteristically corrosive due to alkaline solutions. However, since discontinuing the cadmium plating

and aluminum chromating lines, the wastewater no longer exhibits E.P. Toxic or reactive characteristics. The floor spill wastewater is treated for trace amounts of cyanide by alkaline chlorination. The treated, non-hazardous floor spill wastewater from the floor spill treatment system is transferred to the tumbling waste treatment system for solids separation.

Plating Treatment System

As explained earlier, Stimpson operates both cyanide based plating and non-cyanide based plating systems. The operation of the various plating lines, and the management of wastewater generated, are explained below.

Cyanide Based Plating Lines

As shown in Exhibit No. 3, the work load, after being removed from the plating tank, is rinsed in three rinse tanks; namely, dragout rinse, recirculated treated rinse, and final rinse. The final rinse water, being non-hazardous, is transferred to a neutralization tank prior to discharge. The dragout rinse from each of the three cyanide based plating lines (estimated at 30 gpd/line), which is characteristically hazardous due to the presence of cyanide, is transferred to the 2000-gallon capacity recirculation treatment tank, where the level of cyanide is controlled by alkaline chlorination. After treatment, the wastewater is recycled continuously to the recirculated rinse tanks of each plating line. Non-hazardous rinse waters from the three plating lines' recirculated rinse tanks are discharged to the recirculation treatment tank and recycled back to the rinse tanks.

In order to control the level of dissolved solids in the recirculated water, fresh rinse water (estimated at 30 gpd/line) is added into each recirculated rinse tank. In addition, approximately 10 percent is bled off from the recirculation tank each day. This non-hazardous wastewater is mixed with other non-hazardous wastewater in the floor spill treatment tank and then transferred to the tumbling wastewater treatment system for solids separation.

Non-Cyanide Based Plating Lines

At Stimpson, the non-cyanide based plating lines (nickel and tin) are operated similar to cyanide based plating processes, in that, the work load after being plated is rinsed in three rinse tanks; namely, dragout rinse, recirculated treated rinse and final rinse. The final rinse water, being non-hazardous, is transferred to a neutralization tank prior to discharge. The non-hazardous wastewater from the dragout rinse tanks and the recirculated rinse tanks of nickel and tin plating lines are transferred to a nickel/tin recirculation treatment tank, where nickel and tin are precipitated through chemical treatment. After treatment, the wastewater is recycled continuously to the recirculated rinse tanks of the nickel and tin plating lines. In order to control the level of dissolved solids, a small portion of the recirculated water (total estimated at 100 gallons/day) is bled off into the plating system slurry filter.

Tumbling Treatment System

In addition to handling the non-hazardous wastewaters from the floor spill treatment system and the plating system slurry

filter, the tumbler wastewater treatment system also treats wastewaters generated from processes including tumbling, aluminum anodizing, black-oxide, acid dip and acid pickling. The treatment system is comprised of waste equalization, pH adjustment, precipitation, coagulation, settling and filtration. The treated tumbling wastewater is discharged into on-site recharge basins.

2. Describe the specific process that generated the above hazardous waste.

Characteristically hazardous waste containing cadmium and cyanide was generated by a cadmium plating operation. Characteristically hazardous waste containing chromium was generated by the aluminum chromating line. As explained earlier, in May 1984, Stimpson discontinued its cadmium plating and aluminum chromating lines.

Characteristically corrosive wastewaters are generated from processes including aluminum anodizing, acid dip, acid pickling and alkali cleaning. Wastewaters that are alkaline in nature are treated in the floor spill treatment tank, prior to being transferred to the tumbling waste treatment system for solids separation. Acidic wastewaters are treated in the batch treatment system and then transferred to the plating system slurry filter for solids separation.

3. a) **List of all hazardous waste entering recharge basin since November 19, 1980, substantiated by records of regular sampling and analysis of liquids, suspended solids and settled sludge.**

Since November 19, 1980, no hazardous waste entered the recharge basins. Exhibit No. 4 presents two years worth of weekly wastewater monitoring data. No sludge enters the recharge basins.

3. b) **Specify if these wastes are listed or characteristic according to 40 CFR Part 261.**

The wastewaters discharged into the recharge basins are neither listed nor characteristically hazardous wastes.

3. c) **If the hazardous waste entering the treatment tank(s) was a charactristic waste and you are claiming the characteristic hazardous waste no longer met any of the criteria for hazardous waste characteristics when discharged to the recharge basin, submit all analytical data taken to attempt to substantiate this claim. This includes any data that might show that the waste discharged to the basin was still hazardous.**

In response to this question, we present the weekly effluent monitoring data for 1983 and 1984 (Exhibit No. 4). The monitoring data for periods prior to 1983 is not available in the tabular form, as presented herein. Please notify us if you wish to receive copies of the monitoring data for any period preceding 1983.

4. **Include any groundwater monitoring results obtained from November 1980 to the present.**

The groundwater monitoring data obtained during 1982 is presented herewith. See Exhibit No. 5.

5. **Report of analysis of any sludge remaining in recharge basin.**

As Stimpson does not discharge any sludge into the recharge basin, no sludge remains in the recharge basins.

6. **Copy of the State Pollution Discharge Elimination System Permit.**

A copy of Stimpson's SPDES permit is attached herewith. See Exhibit No. 6.

EXHIBIT NO. 1

LANCY LABORATORIES
Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zelienople, Pennsylvania 16063

ANALYSIS REPORT

E. B. Stimpson Company, Inc.
900 Sylvan Avenue
Bayport, NY 11705

Attention: Al Leonardis

Report Date 10/11/83

Collected 9/8/83 by EBS
Received 9/13/83 by LS
Analyzed 9/13 to 9/27/83 by Staff
No. of Samples 1
P.O. # Verbal

Tumbling Waste

Lab Reference #	05013 (mg/L)
Parameter	
pH (SU)	10.4
Solids, Total	8000
Solids, Total Dissolved	7600
Cyanide, Amenable	<0.01
Cyanide, Total	1.06
Arsenic	0.05
Cadmium	0.04
Chromium, Hexavalent	0.43
Chromium, Total	0.75
Copper	45
Iron	31
Lead	<0.5
Mercury	<0.001
Nickel	0.30
Zinc	23

C. John Ritzert Jr.

C. John Ritzert, Manager-Analytical Services

ANALYSIS REPORT

LANCY LABORATORIES
Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zellenople, Pennsylvania 16063

E. B. Stimpson Co., Inc.
900 Sylvan Avenue
Bayport, New York 11705

Attention: Mr. Al Leonardis

Report Date 1/31/84

Collected 1/84 by EBS
Received 1/12/84 by LS
Analyzed 1/12 to 1/31/84 by Staff
No. of Samples 2
P.O. # Verbal/Leonardis

Sample	Floor Spill	Raw Tumbling
Lab Reference#	06294	06218
Parameter	(mg/L)	(mg/L)
pH (SU)	11.8	8.5
Cyanide, Amenable	1.8	<0.01
Cyanide, Total	33	0.95
Solids, Total Suspended	1000	145
Solids, Total Dissolved	19000	13000
Aluminum	17	4.4
Arsenic	0.10	<0.05
Barium	2.2	2.0
Cadmium	43	1.8
Chromium, Hexavalent	3.1	0.27
Chromium, Total	26	2.4
Copper	375	72
Gold	<0.01	0.08
Lead	1.9	<0.1
Mercury	0.004	0.003
Nickel	34	26
Selenium	<0.05	<0.05
Silver	0.81	0.34
Zinc	200	42

C. John Ritzert, Manager-Analytical Services

ANALYSIS REPORT

LANCY LABORATORIES
Division, Lancy International, Inc.
525 W. New Castle St., P.O. Box 490
Zelienople, Pennsylvania 16063

Report Date 2/7/84

E. B. Stimpson Company, Inc.
900 Sylvan Avenue
Bayport, New York 11705

Attention: Al Leonardis

Collected 12/29/83 by EBS
Received 1/4/84 by LS
Analyzed 1/4 to 2/2/84 by Staff
No. of Samples 1
P.O. # Verbal/Leonardis

Analysis of Wastewater Treatment Sludge and EP Toxicity Leachate

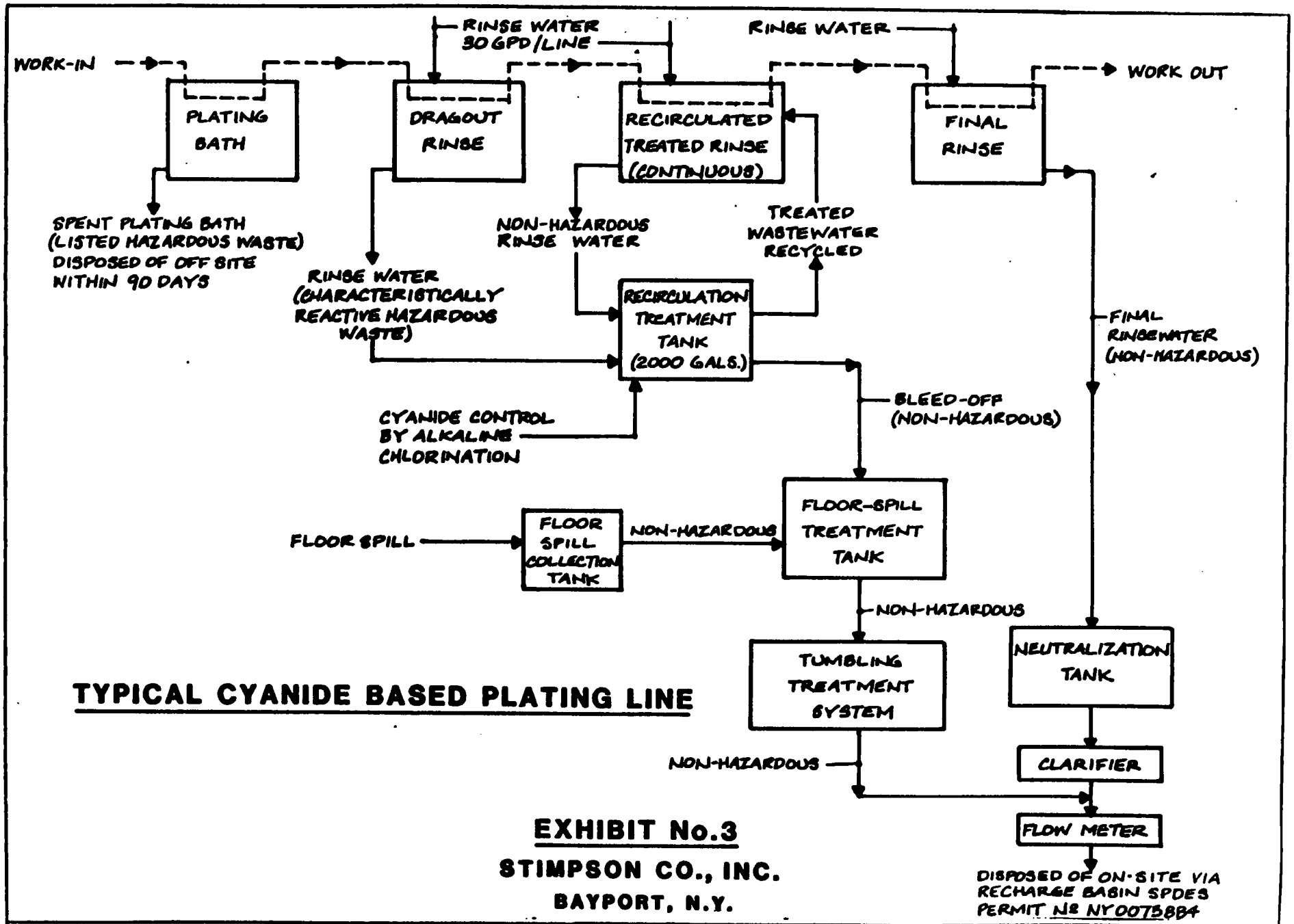
Sample Lab Reference #	Sludge 06217 (g/Kg)	EPTOX 06217E (mg/L)
Parameter		
pH (SU)	7.4	—
Cyanide, Amenable	0.005	<0.01*
Cyanide, Total	0.005	<0.01*
Solids, Total	147	—
Aluminum	2.9	3.6
Arsenic	<0.005	<0.05
Barium	0.45	4.0
Cadmium	0.098	1.5
Chromium, Hexavalent	<0.001	<0.01
Chromium, Total	0.27	0.40
Copper	41.9	0.65
Gold	<0.001	<0.01
Lead	<0.006	0.75
Mercury	<0.0001	<0.002
Nickel	1.9	7.8
Selenium	<0.005	<0.05
Silver	0.009	<0.01
Zinc	2.0	28

* - Analyzed from DI Water Leachate

C. John Ritzert, Manager-Analytical Services

EXHIBIT NO. 2

EXHIBIT NO. 3



TYPICAL CYANIDE BASED PLATING LINE

EXHIBIT No.3

STIMPSON CO., INC.

BAYPORT, N.Y.

H2M **HOLZMACHER, McLENDON & MURRELL, P.C.**
CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS and PLANNERS

MELVILLE, N.Y.
FARMINGDALE, N.Y.
RIVERHEAD, N.Y.

EXHIBIT NO. 4

1

* MAX. LIMITS
* OVER LIMITS

WEEKLY EFFLUENT MONITORING 1983

	DATE	FLOW AVERAGE G.P.D	G.P.M	P.H. 6.5-8.5	ALUM-T 2-Mg/L	CADM-T .02-Mg/L	CHROME, HEX .1-Mg/L	CHROME-T 1-Mg/L	COPPER-T 1-Mg/L	CYANIDE .4-Mg/L	GELD-T .1-Mg/L	IRON-T .6-Mg/L	NICKEL 2-Mg/L	SILVER .1-Mg/L	ZINC-T 5-Mg/L	MBAS 1-Mg/L
1	1/7	47,040	9.8	8.7	2.4	0.03	< 0.01	0.11	1.85	< 0.01	< 0.01	1.62	0.79	< 0.01	1.20	0.60
2	1/14	67,488	14.0	8.7	1.6	0.01	< 0.01	0.06	1.02	< 0.01	< 0.01	2.3	0.53	< 0.01	0.9	0.08
3	1/21	98,016	20.4	8.7	2.8	0.01	< 0.01	0.14	0.84	< 0.01	< 0.01	2.6	0.46	< 0.01	2.20	0.49
4	1/28	44,160	9.2	8.6	0.7	0.01	< 0.01	0.7	0.81	< 0.01	< 0.01	1.31	1.06	< 0.01	1.31	0.15
5	2/4	49,632	10.3	8.7	1.5	0.03		0.17	1.33	< 0.01	< 0.01	1.13	0.63	< 0.01	1.29	0.21
6	2/11	37,440	7.8	8.6	0.8	< 0.01	< 0.01	< 0.01	0.56	0.06	< 0.01	0.90	0.29	< 0.01	0.95	0.52
7	2/18	50,880	10.6	8.5	0.9	0.01	< 0.01	0.25	0.89	0.02	< 0.01	1.79	0.96	< 0.01	0.82	0.29
8	2/25	50,880	10.6	8.7	0.9	< 0.01	< 0.01	0.09	0.76	< 0.01	< 0.01	1.78	0.19	< 0.01	1.05	0.94
9	3/4	51,552	10.7	8.6	2.9	< 0.01	0.03	0.20	0.77	< 0.01	< 0.01	1.67	0.42	< 0.01	0.82	0.07
10	3/11	75,760	15.7	8.7	1.6	0.02	< 0.01	0.20	0.66	< 0.01	< 0.01	2.09	1.32	< 0.01	1.27	0.18
11	3/18	53,440	11.1	8.6	2.8	0.04	< 0.01	0.04	0.74	< 0.01	< 0.01	1.89	1.21	< 0.01	1.49	0.24
12	3/25	31,872	6.6	8.5	2.2	0.03	< 0.01	0.01	0.90	< 0.01	< 0.01	1.35	0.17	< 0.01	1.03	0.12
13	3/31	45,720	9.5	8.8	3.2	0.27	0.02	0.08	0.71	< 0.01	< 0.01	1.15	2.00	< 0.01	0.82	0.19
14	4/8	50,400	10.5	8.6	1.8	0.02	< 0.01	0.06	0.85	< 0.01	< 0.01	1.53	0.40	< 0.01	0.54	0.19
15	4/15	41,856	8.7	8.2	2.2	0.02	< 0.01	0.05	0.53	< 0.01	< 0.01	0.89	0.94	< 0.01	0.35	0.18
16	4/22	45,120	9.4	8.3	0.8	0.05	< 0.01	0.02	0.68	< 0.01	< 0.01	1.34	0.75	< 0.01	0.50	0.13
17	4/29	59,424	12.3	8.0	2.4	0.04	< 0.01	0.04	1.04	< 0.01	< 0.01	1.11	0.44	< 0.01	0.53	0.14
18	5/6	39,648	8.3	8.2	2.0	0.04	< 0.01	0.12	1.05	< 0.01	< 0.01	1.88	0.59	< 0.01	0.72	0.64
19	5/13	61,536	12.8	8.3	1.6	0.04	0.05	0.04	0.71	< 0.01	< 0.01	1.00	1.29	0.02	1.16	0.20
20	5/20	58,368	12.1	8.2	1.2	0.05	< 0.01	< 0.05	1.29	< 0.01	< 0.01	1.52	1.52	0.01	1.09	0.20
21	5/27	51,456	10.7	8.0	1.6	0.03	< 0.01	< 0.05	0.53	< 0.01	< 0.01	0.54	0.53	< 0.01	1.03	0.13
22	6/3	46,200	9.6	7.7	2.3	0.12	< 0.01	0.12	1.74	0.05	< 0.01	2.00	1.28	< 0.01	1.84	0.68
23	6/10	48,384	10.0	8.0	1.0	0.05	< 0.01	< 0.05	0.52	0.04	0.01	0.49	0.54	0.01	0.85	0.05
24	6/17	72,000	15.0	7.8	0.6	0.02	< 0.01	< 0.05	0.73	0.09	< 0.01	0.54	0.54	0.01	1.00	0.08
25	6/24	79,200	16.5	7.6	0.9	0.01	< 0.01	0.04	0.86	0.04	< 0.01	1.30	0.68	< 0.01	1.23	0.20
26	7/1	68,688	14.1	7.6	1.0	0.03	< 0.01	0.08	1.46	< 0.01	< 0.01	1.23	0.72	< 0.01	1.94	0.18
27	7/22	53,088	11.0	7.6	2.1	0.06	< 0.01	< 0.05	0.65	< 0.01	< 0.01	0.56	0.29	< 0.01	0.83	0.09
28	7/29	51,936	10.8	7.8	0.7	0.02	< 0.01	0.07	0.60	< 0.01	< 0.01	1.26	0.42	< 0.01	1.08	0.13
29	8/5	84,672	17.6	7.4	0.8	< 0.01	< 0.01	< 0.05	0.55	< 0.01	< 0.01	0.63	0.22	< 0.01	0.65	0.52
30	8/12	84,768	17.6	7.6	3.8	0.05	< 0.01	0.12	0.93	< 0.01	< 0.01	2.00	0.45	< 0.01	1.20	0.05
31	8/19	78,240	16.3	7.7	1.4	0.02	< 0.01	0.10	1.01	< 0.01	< 0.01	0.70	0.27	< 0.01	0.69	0.12
32	8/26	54,624	11.3	7.5	1.8	< 0.01	< 0.01	0.12	1.72	< 0.01	< 0.01	1.54	0.75	< 0.01	4.00	0.23
33	9/9	76,800	16.0	7.5	0.6	0.02	< 0.01	0.05	0.88	< 0.01	< 0.01	1.05	0.20	< 0.01	1.35	0.21
34	9/16	60,288	12.5	7.8	0.4	0.02	< 0.01	0.05	2.80	0.02	< 0.01	1.00	0.24	< 0.01	0.94	0.12
35	9/23	70,560	14.7	7.7	1.1	0.12	< 0.01	0.10	1.50	< 0.01	< 0.01	1.23	0.25	< 0.01	1.20	0.10
36	9/30	59,904	12.5	7.5	0.8	0.06	< 0.01	0.15	1.76	< 0.01	< 0.01	0.76	0.25	0.03	0.95	0.12
37	10/7	43,080	8.9	7.2	0.4	0.03	0.03	0.12	0.81	< 0.01	< 0.01	0.67	0.64	0.01	1.03	0.16
38	10/7	77,376	16.1	7.4	2.2	0.05	< 0.01	< 0.05	1.02	< 0.01	< 0.01	0.75	0.34	< 0.01	1.01	0.10
39	10/14	86,280	17.9	7.2	< 0.5	0.03	< 0.01	< 0.05	0.65	< 0.01	< 0.01	2.30	0.54	< 0.01	0.95	0.13
40	10/21	70,560	14.7	7.0	1.1	0.07	< 0.01	0.20	0.82	< 0.01	< 0.01	1.81	0.56	0.01	1.76	0.18
41	10/28	65,760	13.7	7.1	1.0	0.02	< 0.01	0.09	0.81	< 0.01	< 0.01	0.87	0.26	< 0.01	1.53	0.15

WEEKLY MONITORING 1983

	Date	Flow Average G.P.D	GPM	P.H 6.5-8.5	Alum-T 2 Mg/L	Cad-T .02 Mg/L	Chrome, Hex .1 Mg/L	Chrome, T 1 Mg/L	Copper-T 1 Mg/L	Cyanide .4 Mg/L	Gold-T .1 Mg/L	Iron-T .6 Mg/L	Nickel-T 2 Mg/L	Silver-T .1 Mg/L	Zinc-T 5 Mg/L	MBAS 1 Mg/L
1	11/4	70272	146	7.2	0.7	0.2	0.05	<0.05	0.83	<0.011	<0.01	0.96	0.35	0.01	0.99	0.93
2	11/11	50208	104	7.3	1.4	0.3	<0.01	0.10	0.75	0.04	<0.011	0.84	0.52	<0.01	1.01	0.43
3	11/18	50592	105	7.5	2.5	0.4	0.0	0.25	0.64	<0.01	<0.05	0.94	3.00	0.01	1.10	0.53
4	11/25	46200	96	7.8	2.5	0.0	<0.01	0.15	0.82	<0.011	<0.01	1.31	1.55	0.01	0.97	0.34
5	12/2	42528	88	8.5	2.2	0.0	<0.01	0.20	0.50	<0.01	<0.01	0.94	0.38	<0.01	0.75	0.13
6	12/9	37152	77	8.2	1.2	0.4	0.17	1.40	0.79	<0.01	<0.01	1.28	0.52	<0.01	0.96	0.17
7	12/16	46000	95	8.2	3.2	0.4	<0.01	0.36	0.50	<0.01	<0.01	1.05	1.34	<0.011	0.67	0.51
8	12/22	32160	67	7.8	2.2	0.4	<0.01	0.13	1.19	<0.01	<0.01	0.85	1.26	<0.01	0.72	0.13
9	12/30	34560	74	7.9	1.0	0.4	0.08	0.40	0.41	<0.01	<0.01	1.02	0.62	<0.01	1.16	0.16
		28992														

3

WEEKLY EFFLUENT MONITORING 1983

DATE	TDS 1000-Mg/L	TSS 50-Mg/L	SULFATE 500-Mg/L	NITROGEN 10-Mg/L	OIL GREASE 15-Mg/L
1/7	1806	19.0	710	6.2	< 0.1
1/14	1520	7.2	623	9.8	< 0.1
1/21	1382	9.4	487	12.2	0.1
1/28	2284	12.8	650	12.6	< 0.1
2/4	944	13.0	220	5.6	3.8
2/11	214	12.0	36	2.5	2.6
2/18	848	17.6	386	6.5	5.6
2/25	246	18.0	71	0.3	< 0.1
3/4	670	16.4	238	3.8	3.6
3/11	1850	28.0	727	18.5	1.5
3/18	3098	25.2	1680	13.0	7.0
3/25	2484	25.4	1070	9.6	1.0
3/31	3038	29.2	1020	16.0	2.8
4/8	2100	25.0	1290	5.7	0.5
4/15	3376	17.6	1750	11.7	< 0.1
4/22	2350	18.6	1040	22.5	0.6
4/29	1820	30.4	749	14.5	1.5
5/6	1920	22.4	1090	11.0	0.5
5/13	2678	15.6	1540	12.0	< 0.1
5/20	2114	29.4	600	8.6	1.8
5/27	2410	16.4	450	12.6	< 0.1
6/3	1800	14.6	390	10.0	1.0
6/10	1526	8.8	545	9.5	< 0.1
6/17	1664	8.8	556	15.0	< 0.1
6/24	1630	14.0	580	11.0	< 0.1
7/1	1800	13.0	600	27.0	< 0.1
7/28	1460	5.6	318	4.6	< 0.1
7/29	2290	15.0	772	22.0	0.9
8/5	1840	18.4	545	19.8	0.4
8/12	1420	57.0	386	21.0	1.4
8/19	1550	03.4	477	12.6	1.4
8/26	4200	14.8	1640	11.2	< 0.1
9/9	1084	10.0	727	8.8	0.8
9/16	1980	8.6	523	12.8	1.0
9/23	1020	16.8	358	21.0	0.5
9/30	1410	10.4	632	20.0	< 0.1
9/1	2370	10.4	1090	16.0	< 0.1
10/7	1320	12.4	370	18.4	< 0.1
10/14	1326	12.8	487	10.8	< 0.1
10/21	1210	11.2	458	6.6	0.7
10/28	414	13.2	133	8.4	1.0

4

WEEKLY MONITORING - 1983

DATE	TDS 1000 MG/L	TSS 50 MG/L	SULFATE 500 MG/L	NITROGEN 10 MG/L	OIL-GREASE 15 MG/L
11/4	874	8.4	292	15.5	1.2
11/11	1180	14.8	258	7.6	0.7
11/18	3140	10.4	1140	14.4	2.6
11/25	1200	13.4	360	7.2	< 0.2
12/2	1400	13.4	610	9.6	1.7
12/9	2500	12.8	630	16.4	1.5
12/16	2100	31.2	750	11.6	3.7
12/22	1670	9.8	605	11.2	2.7
12/30	1800	13.6	532	13.6	2.5

Weekly Effluent Monitoring 1984

* Max. Limits
* Over Limits

Date	Flow Average G.P.D	G.P.M	P.H 6.5-8.5	Alum. T 2 Mg/L	Cad. T .02 Mg/L	Chrome T 1 Mg/L	Chrome Hex .1 Mg/L	Copper T 1 Mg/L	Cyanide .4 Mg/L	Gold T .1 Mg/L	Iron T .6 Mg/L	Nickel T 2 Mg/L	Silver T .1 Mg/L	Zinc T 5 Mg/L	MBAS 1 Mg/L
1/6	48640	10.1	8.0	1.2	0.03	< 0.05	< 0.01	0.84	< 0.01	< 0.01	1.32	0.52	< 0.01	1.90	0.43
1/13	63360	13.2	7.4	1.4	0.02	0.20	0.05	0.88	< 0.01	< 0.01	1.01	1.03	< 0.01	1.59	0.13
1/20	62400	13.0	7.2	1.0	0.03	0.25	0.02	1.40	0.02	< 0.01	0.92	0.63	< 0.01	0.90	0.12
1/27	74784	15.5	7.7	2.0	0.05	0.20	< 0.01	1.40	< 0.01	0.02	1.90	1.00	< 0.01	1.40	0.06
2/3	31920	6.6	7.4	1.0	0.02	0.25	< 0.01	1.10	< 0.01	< 0.01	0.91	1.10	0.01	0.85	0.05
2/10	57408	11.9	7.6	1.2	0.03	0.15	< 0.01	0.95	< 0.01	< 0.02	0.60	0.56	< 0.01	0.79	0.09
2/17	56720	11.8	8.0	1.2	0.04	0.15	< 0.01	1.00	< 0.01	< 0.02	0.10	1.10	0.01	1.30	0.61
2/24	64560	13.4	8.0	0.8	0.06	0.05	< 0.01	0.94	< 0.01	< 0.02	4.77	0.99	< 0.01	1.60	0.13
3/2	38592	8.0	8.0	1.2	0.02	< 0.05	< 0.01	0.39	< 0.01	< 0.01	0.52	0.55	< 0.01	0.70	0.22
3/9	29520	6.1	7.9	0.9	0.03	0.15	< 0.01	0.37	< 0.01	< 0.01	0.90	0.63	< 0.01	0.81	0.08
3/16	23616	4.9	7.8	0.9	0.03	0.10	< 0.01	0.59	< 0.01	< 0.02	0.54	0.61	< 0.01	0.42	0.01
3/23	57312	11.9	8.0	2.3	0.03	0.12	< 0.01	0.82	< 0.01	< 0.02	0.97	0.51	< 0.01	0.77	< 0.01
3/30	43872	9.1	8.1	2.2	0.05	0.10	< 0.01	1.05	< 0.01	< 0.01	0.74	0.77	< 0.01	0.72	0.18
4/6	33600	7.0	8.1	1.8	0.04	0.10	< 0.01	0.12	< 0.01	< 0.02	1.40	0.63	< 0.01	1.00	0.39
4/13	44560	9.2	7.7	1.2	0.05	< 0.05	< 0.01	1.01	< 0.01	< 0.02	1.30	0.73	< 0.01	0.85	0.15
4/20	46560	9.7	8.1	3.4	0.04	< 0.08	< 0.01	1.50	< 0.01	< 0.02	1.10	0.69	< 0.01	0.65	0.09
4/27	36000	7.5	8.0	1.2	0.03	0.15	< 0.01	0.54	< 0.01	< 0.02	0.67	0.72	< 0.01	0.80	0.11
5/4	39456	8.2	8.0	1.2	0.04	0.15	< 0.01	1.40	< 0.01	< 0.01	1.30	1.30	< 0.01	1.30	0.68
5/11	48096	10.0	8.1	1.7	0.02	0.35	< 0.01	5.30	< 0.01	< 0.02	2.10	1.10	< 0.01	2.30	0.13
5/18	44160	9.2	8.1	1.4	0.02	0.60	< 0.01	1.30	< 0.01	< 0.02	0.86	0.70	0.03	1.63	0.08
5/25	41088	8.5	7.7	1.0	0.03	0.10	< 0.01	1.60	< 0.01	< 0.02	0.65	1.20	< 0.01	1.10	0.10
6/1	45360	9.4	8.1	1.6	0.04	0.15	0.03	1.40	< 0.01	< 0.02	1.00	0.50	< 0.01	1.20	0.12
6/8	34640	7.2	8.0	0.3	0.03	< 0.05	0.02	1.60	< 0.01	< 0.01	0.53	0.61	< 0.01	1.59	0.09
6/15	58640	12.2	7.7	0.7	0.02	< 0.05	< 0.01	1.50	< 0.01	< 0.01	0.76	0.76	< 0.01	1.40	0.62
6/22	36560	7.6	8.5	0.6	0.01	0.24	< 0.01	1.90	< 0.01	< 0.02	1.20	0.65	< 0.01	2.20	0.08
6/29	63840	13.3	8.3	0.5	0.03	0.12	< 0.01	2.00	< 0.01	< 0.01	1.20	0.72	< 0.01	1.60	0.35
7/20	50880	10.6	7.8	< 0.1	< 0.05	< 0.05	< 0.01	1.50	< 0.01	< 0.05	0.83	0.50	< 0.01	0.68	0.12
7/27	51456	10.7	8.6	0.7	< 0.01	0.10	< 0.01	1.30	0.16	< 0.05	1.20	0.89	< 0.01	1.20	0.22
8/3	36576	7.6	8.0	2.3	0.01	0.05	< 0.01	0.98	< 0.01	< 0.05	1.80	0.73	< 0.01	1.40	0.32
8/10	30528	6.3	8.3	4.3	0.03	0.05	< 0.01	1.60	< 0.01	< 0.02	0.87	1.10	< 0.01	1.40	1.10
8/17	29664	6.1	8.0	2.9	0.03	< 0.05	< 0.01	1.90	< 0.01	< 0.01	1.30	0.64	< 0.01	1.00	0.47
8/24	36000	7.5	8.5	3.6	0.02	< 0.05	< 0.01	1.20	0.13	< 0.02	1.70	0.70	< 0.01	1.10	0.37
8/31	39264	8.1	9.0	3.1	0.02	< 0.05	< 0.01	1.40	< 0.01	< 0.02	1.80	0.68	< 0.01	1.20	0.33
9/7	70680	14.7	8.5	0.5	0.02	< 0.05	< 0.01	1.20	0.11	< 0.01	1.00	0.92	< 0.01	0.78	0.25
9/14	45600	9.5	7.7	1.1	0.03	< 0.05	< 0.01	1.60	0.08	< 0.01	1.20	0.83	< 0.01	1.40	0.62
9/21	46848	9.7	8.4	1.9	0.02	< 0.05	< 0.01	1.40	0.09	< 0.02	2.00	1.20	< 0.01	1.40	1.60
9/28	39856	6.2	8.2	2.0	< 0.01	< 0.05	< 0.01	1.10	0.03	< 0.02	1.40	1.00	< 0.01	0.91	1.20
10/5	41088	8.5	8.3	0.9	0.05	< 0.05	< 0.01	3.90	0.08	< 0.02	1.60	0.6	< 0.01	1.50	< 0.01
10/12	29400	6.1	8.2	0.9	< 0.01	< 0.05	< 0.01	1.10	< 0.01	< 0.02	1.10	1.30	< 0.01	0.86	0.04
10/19	36720	7.6	8.3	1.2	0.02	< 0.05	< 0.01	2.00	< 0.01	< 0.02	1.40	0.45	< 0.01	0.76	0.33
10/26	48080	10.0	8.2	2.1	0.02	< 0.05	< 0.01	1.50	0.19	< 0.02	2.00	1.20	< 0.01	1.49	0.41

WEEKLY EFFLUENT MONITORING 1984

DATE	FLOW AVERAGE, G.P.D.	G.P.M.	P.H. 6.5-8.5	ALUM. T 2-Mg/L	CAD. T .02-Mg/L	CHROME T 1-Mg/L	CHROME HEX .1-Mg/L	COPPER T 1-Mg/L	CYANIDE .4 Mg/L	GOLD T .1-Mg/L	IRON T .6-Mg/L	NICKEL T 2-Mg/L	SILVER T .1-Mg/L	ZINC T 5-Mg/L	MBAS 1-Mg/L
11/2	50800	10.5	8.3	0.8	0.05	<0.05	<0.01	1.30	0.04	<0.02	1.20	0.94	<0.01	1.50	0.42
11/9	55650	11.5	8.3	5.8	<0.01	<0.05	<0.01	1.50	0.07	<0.02	0.80	1.10	<0.01	1.10	1.20
11/16	45216	9.4	8.3	1.1	<0.01	<0.05	<0.01	0.99	0.06	<0.02	0.78	0.97	<0.01	1.10	<0.01
11/23	43920	9.1	8.4	0.8	<0.01	<0.05	<0.01	0.59	0.02	<0.02	1.40	0.10	<0.01	1.00	0.01
11/30	29280	6.1	8.5	0.9	0.02	<0.05	<0.01	1.40	<0.01	<0.02	0.66	0.44	<0.01	0.80	0.22
12/7	24720(6)	4.1	8.3	1.2	<0.01	<0.05	<0.01	1.20	<0.01	<0.02	0.94	1.80	<0.01	0.73	0.43
12/14	34752	7.2	8.4	1.2	<0.01	<0.05	<0.01	0.54	0.05	<0.02	1.60	1.90	<0.01	1.00	0.12
12/21	47996(6)	9.9	8.4	1.5	<0.01	<0.05	<0.01	0.84	<0.01	<0.02	0.48	1.10	<0.01	0.53	0.23
12/28	No -	Sample													

7

Weekly Effluent Monitoring 1984

Date	TDS 1000 Mg/L	TSS 50 Mg/L	Sulfate 500 Mg/L	Nitrogen 10 Mg/L	Oil & Grease 15 Mg/L
1/6	946	10.2	543	11.3	3.9
1/13	1400	8.8	480	9.0	2.3
1/20	915	16.0	325	14.0	2.1
1/27	1800	59.0	695	5.0	2.8
2/3	2100	6.8	840	13.0	2.6
2/10	1400	5.6	510	7.2	1.9
2/17	1600	10.4	543	16.0	2.8
2/24	1900	7.2	150	16.4	1.5
3/2	1470	10.0	575	16.0	0.5
3/9	1560	16.0	530	12.4	2.9
3/16	1330	13.0	585	7.8	2.0
3/23	1000	26.0	350	7.8	2.3
3/30	3000	14.0	1300	15.0	1.1
4/6	2100	26.0	780	16.0	3.9
4/13	1500	24.8	590	10.0	2.1
4/20	2020	14.0	770	12.0	4.3
4/27	1640	9.8	630	16.0	10.0
5/4	2780	13.2	910	12.0	1.3
5/11	1780	23.6	590	10.0	3.0
5/18	1200	19.0	500	6.4	5.8
5/25	1390	11.2	613	10.2	3.1
6/1	1600	10.0	522	11.0	6.5
6/8	1300	16.0	365	7.8	11.0
6/15	1600	13.0	730	5.7	12.0
6/22	1800	14.0	940	12.0	20.0
6/29	1500	11.0	700	8.2	3.6
7/20	1130	14.0	410	7.6	2.8
7/27	1500	19.0	480	7.2	2.6
8/3	1500	9.6	720	3.60	4.8
8/10	1700	14.0	734	6.4	4.7
8/17	1300	18.0	600	8.0	< 0.1
8/24	1500	22.0	620	11.6	4.0
8/31	1900	22.0	860	14.0	1.0
9/7	1300	18.0	1670	7.6	1.8
9/14	1200	[illegible]	550	8.4	4.4
9/21	1700	28.0	590	6.4	4.7
9/28	1200	25.0	400	5.4	2.5
10/5	1300	15.0	600	7.4	0.4
10/12	1500	18.0	660	12.0	8.8
10/19	1100	16.0	270	6.4	4.0
10/26	1700	36.0	590	14.0	4.4

8

WEEKLY EFFLUENT MONITORING 1984

	DATE	TDS 1000 Mg/L	TSS 50 Mg/L	SULFATE 500 Mg/L	NITROGEN 10 Mg/L	OIL & GREASE 15 Mg/L
1	11/2	11.00	9.6	310	6.0	1.20
2	11/9	21.00	12.0	550	7.0	0.46
3	11/16	970	16.0	330	6.5	3.20
4	11/23	1500	9.0	150	9.8	1.60
5	11/30	870	6.0	350	5.5	2.90
6	12/7	1600	12.0	550	5.6	2.00
7	12/14	1500	13.0	490	4.9	1.40
8	12/21	1460	17.0	460	11.0	2.9
9	12/28					

EXHIBIT NO. 5

525 West New Castle St., P.O. Box 490, Zelienople, PA 16063 • (412) 452-9360

LANCY LABORATORIES
Division, Lancy International, Inc.

March 2, 1983

Mr. Al Leonardis
E. B. Stimpson Company, Inc.
900 Sylvan Avenue
Bayport, NY 11705

Dear Mr. Leonardis:

Please find enclosed the Groundwater Monitoring report including statistical evaluation of data for your review and distribution to the state and other authorities.

If you have any problems or questions, please contact either Mark LeMoine in our Hamden, CT office or myself.

Respectfully submitted,

C. John Ritzert
Manager-Analytical Services

CJR:csb
Enclosure
cc: M. LeMoine - Lancy Laboratories

LANCY LABORATORIES
525 West New Castle S
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 2/11/83
Collected: 1982 by Stimps
Received: 1982 by Lancy
Analyzed: 1982 by Staff
No. of Samples: 16
PO #: Letter Dated 1/18/82

Statistical analysis of data from four quarters of Groundwater Monitoring as required by RCRA. A one-tailed Student-t test was performed for TOX, TOC, and Specific Conductance. A two-tailed Student-t test was performed for pH.

	Well #1	Well #2	Well #3	Well #4
Total Organic Halogen				
TOX (ug/L)				
Mean	21.7	23.7	89.4	67.7
Standard Deviation	17.8	20.9	27.0	46.6
Error	11.6	24.8	32.1	55.4
Limit	33.3	48.5	121.5	123.1
Total Organic Carbon				
TOC (mg/L)				
Mean	3.3	5.1	10.3	11.8
Standard Deviation	0.55	1.55	6.6	17.5
Error	0.4	1.8	7.8	20.8
Limit	3.7	6.9	18.1	32.6
Specific Conductance				
(umhos)				
Mean	99.8	116.8	1583	1565
Standard Deviation	17.2	19.7	205	529
Error	11.2	23.4	244	628
Limit	111	140.2	1827	2193
pH (SU)				
Mean	6.2	6.1	6.7	6.6
Standard Deviation	0.3	0.3	0.2	0.2
Error	0.2	0.4	0.3	0.4
Limit	6.0 to 6.4	5.7 to 6.5	6.4 to 7.0	6.2 to 7.0

cc: Mark LeMoine, Lancy Laboratories

C. John Ritzert, Manager-Analytical Services

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Co., Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 1/28/83
Collected: 12/11/82 by AL
Received: 12/16/82 by LS
Analyzed: 12/16 to 1/14/83 by Staff
No. of Samples: 4
PO #: Letter Dated 1/18/82

Fourth Quarter Groundwater Monitoring

Well #	1	2	3	4
Lab Reference #	12-2974	12-2975	12-2976	12-2977
Depth of Water (ft.)	17.5	16.0	15.5	15.5
	Drinking Water Suitability (mg/L)			
Arsenic	<0.01	<0.01	<0.01	<0.01
Barium	<0.5	<0.5	<0.5	<0.5
Cadmium	<0.01	<0.01	<0.01	<0.01
Chromium	0.01	<0.01	0.04	<0.01
Fluoride	0.12	<0.10	0.29	1.55
Lead	<0.01	<0.01	<0.01	<0.01
Mercury	<0.001	<0.001	<0.001	<0.001
Nitrate (as N)	0.38	0.16	12.1	4.1
Selenium	<0.01	<0.01	<0.01	<0.01
Silver	<0.01	<0.01	<0.01	<0.01
Endrine	<0.0002	<0.0002	<0.0002	<0.0002
Lindane	<0.002	<0.002	<0.002	<0.002
Methoxychlor	<0.002	<0.002	<0.002	<0.002
Toxaphene	<0.002	<0.002	<0.002	<0.002
2,4-D	<0.002	<0.002	<0.002	<0.002
2,4,5-TP Silvex	<0.002	<0.002	<0.002	<0.002
Radium (pCi/L)	<5	<5	<5	<5
Gross Alpha (pCi/L)	<5	<5	<5	<5
Gross Beta (pCi/L)	1.6±0.4	3.8±0.5	3.2±0.6	3.0±0.6
Coliform Bacteria (100)	<1	<1	<1	<1

cc: Mark LeMoine-Lancy Laboratories

C. John Pitzent, Manager-Analytical Services

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Co., Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 1/28/83
Collected: 12/11/82 by AL
Received: 12/16/82 by LS
Analyzed: 12/16 to 1/14/83 by Staff
No. of Samples: 4
PO #: Letter Dated 1/18/82

Fourth Quarter Groundwater Monitoring

Well #		1	2	3	4
Lab Reference #		12-2974	12-2975	12-2976	12-2977
		Ground Water Quality (mg/L)			
Chloride		17	23	234	270
Iron		0.86	3.2	0.78	0.15
Manganese		0.03	0.10	0.53	0.42
Phenol		<0.001	0.019	0.007	0.004
Sodium		15.6	15.9	385	395
Sulfate		7.3	8.1	347	397
		Ground Water Contamination			
pH (SU)	1	6.8	6.5	7.0	6.5
	2	6.6	6.5	6.9	6.5
	3	6.7	6.7	7.1	6.7
	4	6.8	6.7	7.1	6.8
Specific Conductance (micromhos)	1	112	120	1800	2050
	2	112	--	--	--
	3	112	--	--	--
	4	112	--	--	--
Total Organic Carbon (mg/L)	1	3.6	2.4	9.5	<1
	2	2.8	--	--	--
	3	3.0	--	--	--
	4	3.0	--	--	--
Total Organic Halide (ug/L)	1	<10	11	63	68
	2	18	--	--	--
	3	13	--	--	--
	4	<10	--	--	--

cc: Mark LeMoine-Lancy Laboratories

C. John Ritzert, Manager-Analytical Services

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 10/11/82
Collected: 8/14/82 by AL
Received: 8/18/82 by LS
Analyzed: 8/18 to 9/13/82 by Staff
No. of Samples: 4
PO #: LL 20422

Third Quarter Groundwater Monitoring
Lab Reference #08-2135 - Well #1 Upgradient
Lab Reference #08-2136 - Well #2 South West
Lab Reference #08-2137 - Well #3 South Center
Lab Reference #08-2138 - Well #4 South East

	08-2135	08-2136	08-2137	08-2138
Depth of Water (ft.)	19.0	18.0	17.0	17.5
	Drinking Water Suitability (mg/L)			
Arsenic	<0.01	<0.01	<0.01	<0.01
Barium	<0.5	<0.5	<0.5	<0.5
Cadmium	0.01	<0.01	0.02	0.01
Chromium	<0.01	<0.01	<0.01	<0.01
Fluoride	0.35	0.44	1.20	0.74
Lead	0.01	<0.01	<0.01	<0.01
Mercury	<0.001	<0.001	<0.001	<0.001
Nitrate (as N)	0.24	0.09	0.37	3.00
Selenium	<0.005	<0.005	<0.005	<0.005
Silver	0.11	<0.01	<0.01	<0.01
Endrine	<0.0002	<0.0002	<0.0002	<0.0002
Lindane	<0.002	<0.002	<0.002	<0.002
Methoxychlor	<0.002	<0.002	<0.002	<0.002
Toxaphene	<0.002	<0.002	<0.002	<0.002
2,4-D	<0.002	<0.002	<0.002	<0.002
2,4,5-TP Silvex	<0.002	<0.002	<0.002	<0.002
Radium (pCi/L)	<0.5	<0.5	<0.5	<0.5
Gross Alpha (pCi/L)	<0.42	0.54±0.43	<0.37	<0.40
Gross Beta (pCi/L)	0.98±0.35	0.87±0.34	2.59±0.57	3.99±0.65
Coliform Bacteria (/100)	<1	<1	<1	<1

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 10/11/82
Collected: 8/14/82 by AL
Received: 8/18/82 by LS
Analyzed: 8/18 to 9/13/82 by Staff
No. of Samples: 4
PO #: LL 20422

Third Quarter Groundwater Monitoring
Lab Reference #08-2135 - Well #1 Upgradient
Lab Reference #08-2136 - Well #2 South West
Lab Reference #08-2137 - Well #3 South Center
Lab Reference #08-2138 - Well #4 South East

		08-2135	08-2136	08-2137	08-2138
Ground Water Quality (mg/L)					
Chloride		19.5	8.8	210	321
Iron		0.73	0.22	0.13	0.04
Manganese		0.05	0.04	1.21	1.00
Phenol		<0.001	<0.001	<0.001	<0.001
Sodium		11.4	10.1	480	510
Sulfate		48	52	570	680
Ground Water Contamination (Quadruplicate Determination)					
pH (SU)	1	5.9	5.8	6.7	6.3
	2	5.9	5.8	6.7	6.4
	3	6.0	5.8	6.7	6.4
	4	6.0	5.8	6.7	6.4
Specific Conductance (micromhos)	1	99	73	1750	2190
	2	100	--	--	--
	3	99	--	--	--
	4	99	--	--	--
Total Organic Carbon (mg/L)	1	4.7	7.1	25	51
	2	3.8	--	--	--
	3	2.9	--	--	--
	4	3.5	--	--	--
Total Organic Halide (ug/L)	1	21	28	90	129
	2	19	--	--	--
	3	13	--	--	--
	4	21	--	--	--

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Mr. Al Leonardis

Report Date: October 19, 1982
Collected: 8/14/82 by AL
Received: 8/18/82 by LS
Analyzed: 8/18 to 9/13/82 by Staff
No. of Samples: 4
PO #: LL 20422

Third Quarter Groundwater Monitoring
Lab Reference #08-2135 - Well #1 Upgradient
Lab Reference #08-2136 - Well #2 Southwest
Lab Reference #08-2137 - Well #3 South center
Lab Reference #08-2138 - Well #4 Southeast

Parameter*	08-2135 (mg/L)	08-2136 (mg/L)	08-2137 (mg/L)	08-2138 (mg/L)
Cadmium	--	--	0.02	--
Silver	0.11	--	--	--

*Parameters with concentrations exceeding National Drinking Water Standards.

ANALYSIS REPORT

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zellenople, PA 16063

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Lecnardis

Report Date: 7/6/82
Collected: 4/30 & 5/1/82 by AL
Received: 5/5/82 by LS
Analyzed: 5/5 to 5/20/82 by CJR
No. of Samples: 4
PO #: Letter Dated 1/18/82

Lab Reference #05-1319 - Up Gradient Well #1
Lab Reference #05-1320 - Down Gradient Well #2
Lab Reference #05-1321 - Down Gradient Well #3
Lab Reference #05-1322 - Down Gradient Well #4

Parameter*	05-1319	05-1320	05-1321	05-1322
Cadmium	0.09	0.05	0.06	0.09
Lead	--	0.07	--	--
Nitrate (as N)	--	--	35.0	--

*Parameters with concentrations exceeding National Drinking Water Standards

cc: ERC/Lancy - Hamden Office

C. John Ritzert, Manager-Analytical Services

ANALYSIS REPORT

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 6/25/82
Collected: 4/30 & 5/1/82 by AL
Received: 5/5/82 by LS
Analyzed: 5/5 to 5/20/82 by CJR
No. of Samples: 4
PO #: Letter Dated 1/18/82

Lab Reference #05-1319 - Up Gradient Well #1
Lab Reference #05-1320 - Down Gradient Well #2
Lab Reference #05-1321 - Down Gradient Well #3
Lab Reference #05-1322 - Down Gradient Well #4

	-1319	-1320	-1321	-1322
Depth of Water	18.5	18.5	17.0	17.5
	Drinking Water Suitability (mg/L)			
Arsenic	0.005	0.037	0.006	0.012
Barium	<0.5	<0.5	<0.5	<0.5
Cadmium	0.09	0.05	0.06	0.09
Chromium	<0.01	<0.01	<0.01	<0.01
Flouride	0.23	0.17	0.35	0.33
Lead	0.05	0.07	0.01	0.03
Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Nitrate (as N)	0.23	0.15	35.0	7.4
Selenium	<0.01	<0.01	<0.01	<0.01
Silver	<0.01	<0.01	<0.01	<0.01
Endrine	<0.0001	<0.0001	<0.0001	<0.0001
Lindane	<0.0001	<0.0001	<0.0001	<0.0001
Methoxychlor	<0.0003	<0.0003	<0.0003	<0.0003
Toxaphene	<0.0003	<0.0003	<0.0003	<0.0003
2,4-D	<0.0005	<0.0005	<0.0005	<0.0005
2,4,5-TP Silvex	<0.0005	<0.0005	<0.0005	<0.0005
Radium (pCi/L)	<5	<5	<5	<5
Gross Alpha (pCi/L)	3.55 ± 1.1	3.55 ± 1.3	<3	9.5 ± 3.8
Gross Beta (pCi/L)	2.79 ± 0.41	3.80 ± 0.46	3.95 ± 0.57	8.85 ± 0.88
Coliform Bacteria (100)	<1	<1	<1	<1

cc: ERC/Lancy - Hamden Office

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zellenople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 6/25/82
Collected: 4/30 & 5/1/82 by AL
Received: 5/5/82 by LS
Analyzed: 5/5 to 5/20/82 by CJR
No. of Samples: 4
PO #: Letter Dated 1/18/82

Lab Reference #05-1319 - Up Gradient Well #1
Lab Reference #05-1320 - Down Gradient Well #2
Lab Reference #05-1321 - Down Gradient Well #3
Lab Reference #05-1322 - Down Gradient Well #4

		Ground Water Quality (mg/L)			
		-1319	-1320	-1321	-1322
Chloride		18.9	26	72	66
Iron		12	33	5.6	25
Manganese		0.56	0.94	0.34	0.54
Phenol		<0.001	<0.001	<0.001	<0.001
Sodium		1.07	1.11	19	10
Sulfate		72	92	340	188
		Ground Water Contamination (Quadruplicate Determination) (Up Gradient Only)			
pH (SU)	1	6.0	6.1	6.5	6.5
	2	6.0	6.0	6.5	6.5
	3	6.0	6.0	6.4	6.5
	4	6.0	6.1	6.5	6.5
Specific Conductance (umhos/cm)	1	115	120	1850	540
	2	115	--	--	--
	3	115	--	--	--
	4	115	--	--	--
Total Organic Carbon (mg/L)	1	2.7	4.2	9.8	5.0
	2	2.4	--	--	--
	3	3.0	--	--	--
	4	3.3	--	--	--
Total Organic Halide (ug/L)	1	11	20	74	31
	2	13	--	--	--
	3	17	--	--	--
	4	12	--	--	--

cc: ERC/Lancy - Hamden Office

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zellenople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 3/23/82
Collected: 12/12/81 by AL
Received: 12/16/81 by LS
Analyzed: 12/16/81-2/16/82 by CJR
No. of Samples: 4
PO #:

Ground Water Monitoring Sample
Lab Reference #188463 - Well #1 (Up Gradient)
Lab Reference #188464 - Well #2
Lab Reference #188465 - Well #3
Lab Reference #188466 - Well #4

	188463	188464	188465	188466
Depth of Water (ft.)	27.50	26.92	28.17	28.25
	Drinking Water Suitability (mg/L)			
Arsenic	<0.01	<0.01	<0.01	<0.01
Barium	<0.1	<0.1	<0.1	<0.1
Cadmium	0.01	0.03	0.06	0.02
Chromium	<0.01	0.05	0.05	0.03
Fluoride	0.24	0.20	0.40	0.46
Lead	0.04	0.10	0.06	0.03
Mercury	<0.0005	0.0012	0.0012	0.0012
Nitrate (as N)	0.09	<0.01	2.28	1.35
Selenium	<0.001	<0.01	<0.01	<0.01
Silver	<0.01	<0.01	<0.01	<0.01
Endrine	<0.0002	<0.0002	<0.0002	<0.0002
Lindane	<0.002	<0.002	<0.002	<0.002
Methoxychlor	<0.002	<0.002	<0.002	<0.002
Toxaphene	<0.002	<0.002	<0.002	<0.002
2,4-D	<0.002	<0.002	<0.002	<0.002
2,4,5-TP Silvex	<0.002	<0.002	<0.002	<0.002
Radium (pCi/L)	0.17	0.14	0.63	<0.22
Gross Alpha (pCi/L)	<0.18	<0.24	<0.40	<0.41
Gross Beta (pCi/L)	<0.40	0.91	0.79	<0.40
Coliform Bacteria (100)	< 1	< 1	< 1	< 1

cc: J. J. Martin, ERC/Lancy

C. John Ritzert, Manager-Analytical Services

ANALYSIS REPORT

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
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Ground Water Monitoring Sample
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Lab Reference #188464 - Well #2
Lab Reference #188465 - Well #3
Lab Reference #188466 - Well #4

		188463	188464	188465	188466
Ground Water Quality (mg/L)					
Chloride		9.5	18.5	230	213
Iron		2.3	4.9	5.6	5.9
Manganese		0.06	0.11	0.47	0.27
Phenol		0.0054	0.0070	0.0120	0.0068
Sodium		67	59	267	269
Sulfate		56	56	352	372
Ground Water Contamination (Quadruplicate Determination)					
pH (SU)	1	6.0	6.0	6,5	7.0
	2	6.1	6.0	6.5	6.9
	3	6.0	6.0	6.4	6.9
	4	6.0	6.0	6.5	7.1
Specific Conductance (micromhos)	1	75	125	1420	1550
	2	69	131	1420	1540
	3	76	124	1420	1540
	4	72	125	1420	1550
Total Organic Carbon (mg/L)	1	3.8	5.9	6.9	6.6
	2	3.7	5.3	6.8	6.4
	3	3.4	5.4	7.0	6.7
	4	3.2	5.8	7.0	6.8
Total Organic Halide (ug/L)	1	55	60	120	28
	2	65	37	125	22
	3	32			
	4	37			

cc: J. J. Martin, ERC/Lancy

C. John Ritzert, Manager-Analytical Services

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

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Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
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Report Date: 3/23/82
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No. of Samples: 4
PO #:

Ground Water Monitoring Sample
Lab Reference #188463 - Well #1 (Up Gradient)
Lab Reference #188464 - Well #2
Lab Reference #188465 - Well #3
Lab Reference #188466 - Well #4

Report of parameters whose observed value exceed maximum contaminate levels listed in EPA interim Primary Drinking Water Standards as appended to 40 CFR Part 265.

Parameter	188463 (mg/L)	188464 (mg/L)	188465 (mg/L)	188466 (mg/L)
Cadmium	--	0.03	0.06	0.02
Lead	0.04	0.10	0.06	0.03

cc: J. J. Martin, ERC/Lancy

C. John Ritzert, Manager-Analytical Services

EXHIBIT NO. 6

Attch: Part II-General Conditions (12/80)

(Renewal)(W)

Copies: SPDES File
Region #1
Suffolk Co. DHS
Mr. Crandall - BPC
Mr. Adamczyk - BIP

Facility ID No. : NY- 007 5884

Effective Date (EDP) : August 1, 1981

Expiration Date (ExDP) : August 1, 1986

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Special Conditions
(Part I)

This SPDES permit is issued in compliance with Title 8 of Article 17 the Environmental Conservation Law of New York State and in compliance with the ean Water Act, as amended, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as he Act").

E B Stimpson Co., Inc.
900 Sylvan Lane
Bayport, New York 11705
Attn: Mr. Ralph E. Rau, Jr. Vice President

authorized to discharge from the facility described below:

E. B. Stimpson Co., Inc.
900 Sylvan Lane
Islip (T), Suffolk Co.
Bayport, New York 11705

to receiving waters known as:

Groundwaters .

accordance with the effluent limitations, monitoring requirements and other conditions t forth in this permit.

This permit and the authorization to discharge shall expire on midnight the expiration date shown above and the permittee shall not discharge after the piration date unless this permit has been renewed, or written authorization is given the Department. In order to receive authorization to discharge beyond the expiration te, the permittee shall submit such information, forms, and fees as are required by e Department of Environmental Conservation no later than 180 days prior to the piration date.

Authority of George K. Hansen, P.E., Chief, P.D.E.S. Permit Section
Designated Representative of Commissioner of the
Department of Environmental Conservation

JUN 22 1981
Date

George K. Hansen
Signature

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning August 1, 1981 and lasting until August 1, 1986 the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number	Effluent Parameter	Discharge Limitations: kg/day (lbs/day) Daily Avg.	kg/day (lbs/day) Daily Max.	Other Units (Specify) Daily Avg.	Other Units (Specify) Daily Max.	Monitoring Reqmts. Measurement Frequency	Monitoring Reqmts. Sample Type
001	Flow				120,000 GPD	Continuous	Recorde
	Aluminum				2 mg/l	Weekly	Composi
	Cadmium				.02 mg/l	"	"
	Chromium - Hexavalent				.1 mg/l	"	"
	Chromium - Total				1 mg/l	"	"
	Copper				1 mg/l	"	"
	Cyanide				.4 mg/l	"	"
	Gold				.1 mg/l	"	"
	Iron **				.6 mg/l	"	"
	Nickel				2 mg/l	"	"
	Silver				.1 mg/l	"	"
	Zinc				5 mg/l	"	"
	MBAS				1 mg/l	"	"
	Total Dissolved Solids				1,000 mg/l	"	"
	Total Suspended Solids				50 mg/l	"	"
	Sulfate				500 mg/l	"	"
	Total Nitrogen				10 mg/l	"	"
	Oil & Grease				15 mg/l	"	Grab

* Composite samples shall consist of flow proportioned hourly samples taken over the course of an actual operating day and combined once a week for analysis.

** The effluent limit for Iron shall be relaxed to a daily average limit of 2.0 mg/l and a daily maximum of 4 mg/l. The limit shall remain in effect until February 1, 1982 and shall then change to a .6 mg/l daily maximum limit.

The pH shall not be less than 6.5 standard units nor greater than 8.5 standard units and shall be monitored as follows: Continuous recorded

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate unit as specified herein, during any calendar day.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Continued

During the period beginning August 1, 1981 and lasting until August 1, 1986 the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number	Effluent Parameter	Discharge Limitations: kg/day (lbs/day) Daily Avg.	Daily Max.	Other Units (Specify) Daily Avg.	Daily Max.	Monitoring Reqmts.: Measurement Frequency	Sample Type
002	All industrial waste shall be collected in a sealed leak-proof holding tank in a spill prevention protective area. No discharge from the tank to surface water or groundwater or onto the surface of the ground shall be allowed. Wastes shall be removed by a licensed industrial scavenger only. Records shall be maintained as to the type and amount of waste removed. the name of the licensed industrial scavenger, time, date and method of removal and the final disposal site. Records of accidental spills shall also be maintained.						
003	No monitoring required. Sanitary wastes only, no industrial wastes shall be allowed.						
004	No monitoring required. Sanitary wastes and storm water drainage only, no industrial wastes shall be allowed.						

The pH shall not be less than standard units nor greater than standard units and shall be monitored as follows:

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when the measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

MONITORING, RECORDING AND REPORTING

a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.

b) The monitoring information required by this permit shall be summarized and reported by submitting a completed and signed Discharge Monitoring Report form once every 1 months to the Department of Environmental Conservation and other appropriate regulatory agencies at the offices specified below. The first report will be due no later than September 28, 1981 Thereafter, reports shall be submitted no later than the 28th of the following month(s): each month

Chief, Waste Source Monitoring Section
New York State Department of Environmental Conservation
Room 300 - 50 Wolf Road - Albany, New York 12233

Regional Engineer - Region #1
New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, NY 11794

Suffolk Co. Dept. of Health Services
65 Jetson Lane
Hauppauge, NY 11787

c) If so directed by this permit or by previous request, Monthly Wastewater Treatment Plant Operator's Reports shall be submitted to the DEC Regional Office and county health department or county environmental control agency specified above.

d) Each submitted Discharge Monitoring Report shall be signed as follows:

1. If submitted by a corporation, by a principal executive officer of at least the level of vice president, or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the Discharge Monitoring Report originates;

2. If submitted by a partnership, by a general partner;

3. If submitted by a sole proprietor, by the proprietor;

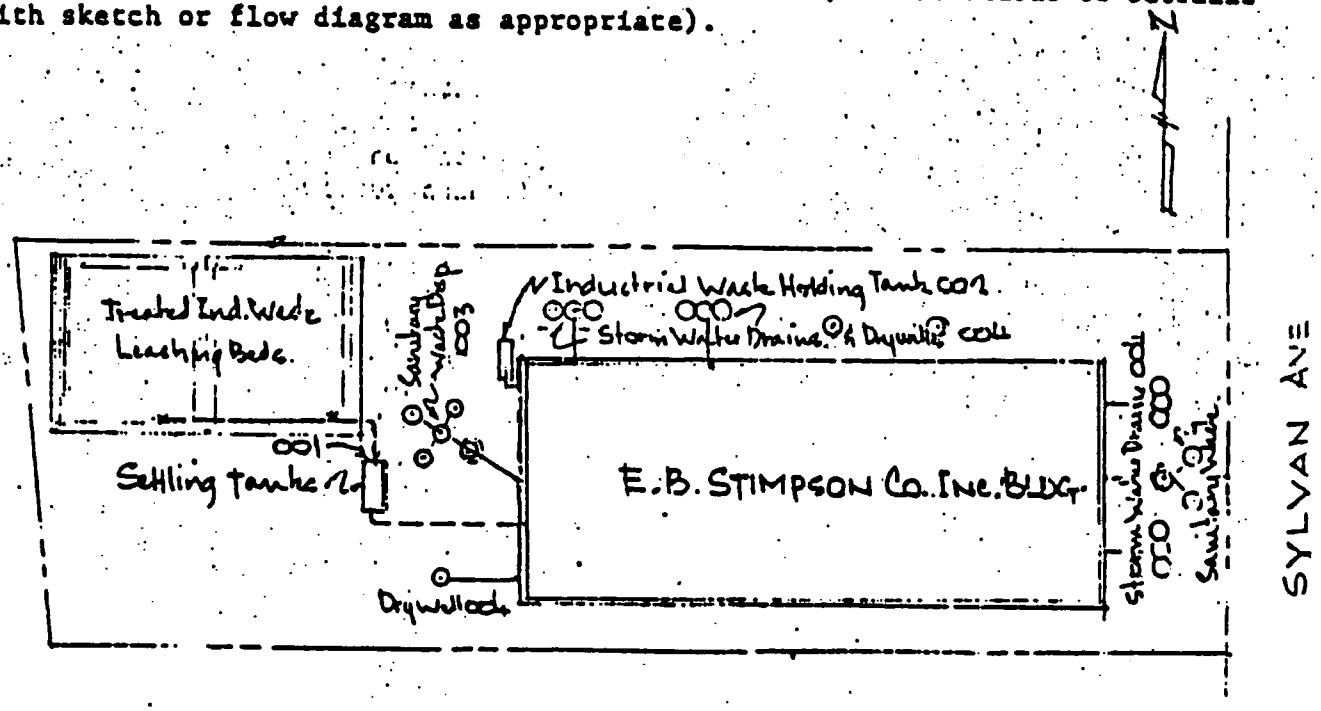
4. If submitted by a municipality, State or Federal agency, or other public entity; by a principal executive officer, ranking elected official, commanding officer, or other duly authorized employee.

e) Unless otherwise specified, all information submitted on the Discharge Monitoring Form shall be based upon measurements and sampling carried out during the most recently completed reporting period.

f) Blank Discharge Monitoring Report Forms are available at the above addresses.

Monitoring Locations

Permittee shall take samples and measurements to meet the monitoring requirements at the location(s) indicated below: (Show locations of outfalls with sketch or flow diagram as appropriate).



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

GENERAL CONDITIONS
(PART II)

SECTION		PAGE
1.	General Provisions	1
2.	Prohibitions	1-2
3.	Exclusions	2
4.	Modification, Suspension, Revocation	2-3
5.	Reporting Noncompliance	3-4
6.	Inspections	4-5
7.	Transfer of Ownership	5
8.	Permit Renewal	5
9.	Special Provisions - New or Modified Disposal Systems	5
10.	Monitoring, Recording and Reporting	6-8
10.1	General	6
10.2	Monitoring Locations	6
10.3	Recording of Monitoring Activities and Results	7
10.4	Analytical Methods	7-8
10.5	Application for Alternate Test Procedures	8
10.6	Confidential Information	8
11.	Disposal System Operation and Quality Control	9-10
11.1	General	9-10
11.2	Prohibition of Bypass	9-10
11.3	Special Condition-Disposal Systems with Septic Tanks	10
11.4	Disposal of Collected Solids	10
12.	Conditions Applicable to a Publicly Owned Treatment Works (POTW) And Users of a POTW	11-12
12.1	General	11
12.2	National Pretreatment Standards: Prohibited Discharges	11-12

PART II - GENERAL CONDITIONS

1. GENERAL PROVISIONS

a. A determination has been made on the basis of a submitted application, plans, or other available information, that compliance with the specified permit provisions will reasonably assure compliance with applicable water quality standards. Satisfaction of permit provisions notwithstanding, if operation pursuant to the permit causes or contributes to a condition in contravention of State water quality standards, or if the Department determines, on the basis of notice provided by the permittee and any related investigation, inspection or sampling, that a modification of the permit is necessary to assure maintenance of water quality standards or compliance with other provisions of ECL Article 17, or the Act, the Department may require such a modification and may require abatement action to be taken by the permittee and may also prohibit the noticed act until the permit has been modified.

b. All discharges authorized by this permit shall be consistent with the terms and conditions of this permit; facility expansions, production increases, or process modifications which result in new or increased discharges of pollutants must be reported by submission of a new SPDES application or, if such new or increased discharge does not violate the effluent limitations specified in this permit, by submission to the permit issuing authority of notice of such new or increased discharges of pollutants (in which case the permit may be modified to specify effluent limitations for any pollutants not identified and limited herein); the discharge of any pollutant not identified and authorized or the discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

c. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

d. If the discharge(s) permitted herein originate within the jurisdiction of an interstate water pollution control agency, then the permitted discharge(s) must also comply with any applicable effluent standards or water quality standards promulgated by that interstate agency.

2. PROHIBITIONS

a. The following discharges into the waters of the State are hereby prohibited:

(1) The discharge of any radiological, chemical or biological warfare agent or high-level radioactive waste, such as terms are defined by the Act or pursuant thereto;

(2) Any discharge which the Secretary of the Army acting through the Chief of Engineers finds would substantially impair anchorage and navigation;

(3) Any discharge to which the Regional Administrator has objected in writing pursuant to any right to object provided the Administrator in Section 402(d) of the Act; and

(4) Any discharge from a point source which is in conflict with a plan or amendment thereto approved pursuant to section 208(b) of the Act, or any other discharge not permitted by this article, article 17 of the ECL, other rules and regulations adopted or applicable pursuant thereto, the Act, or the provisions of a SPDES permit.

3. EXCLUSIONS

a. The issuance of this permit by the Department and the receipt thereof by the Applicant does not supersede, revoke or rescind an order or modification thereof on consent or determination by the Commissioner issued heretofore by the Department or any of the terms, conditions or requirements contained in such order or modification thereof.

b. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations; nor does it obviate the necessity of obtaining other assent required by law for the discharge authorized.

c. This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

4. MODIFICATION, SUSPENSION, REVOCATION

a. If the permittee fails or refuses to comply with an interim or final requirement in a SPDES permit, such noncompliance shall constitute a violation of the permit for which the Commissioner may modify, suspend, or revoke the permit or take direct enforcement action pursuant to law. When, at any time during or prior to a period for compliance, the permittee announces or otherwise lets it be

l not make the requisite efforts to achieve compliance with an interim inal requirement, the Commissioner may modify, suspend or revoke the permit and ke direct enforcement action pursuant to law, without waiting for expiration of e period for compliance with such requirements.

After notice and opportunity for a hearing, this permit may be modified, suspended, revoked in whole or in part during its term for cause including, but not limited , the following:

1. Violation of any terms or conditions of this permit; or;

2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts, or false or inaccurate statements or information in the application; or;

3. A change in any physical circumstances, requirements or criteria applicable to discharges that requires either a temporary or permanent reduction or elimination of the authorized discharges, such as:

(i) standards for construction or operation of the discharging facility,

(ii) the characteristics of the waters into which such discharge is made,

(iii) the water quality standards applicable to such waters,

(iv) the classification of such waters, or

(v) effluent limitations or other requirements applicable pursuant to the Act or State Law.

Notwithstanding (b) above, if a toxic effluent standard or prohibition (including schedule of compliance specified in Section 17-0813 of the Environmental Conservation or Section 307(a) of the Act) is established for a toxic pollutant which is present the discharge authorized herein and such standard or prohibition is more stringent n any limitation upon such pollutant in this permit, or if this permit contains no itations on such pollutants, this permit shall be revised or modified in accordance n the toxic effluent standards or prohibition and the permittee shall be so notified.

s permit shall be modified, or alternatively, revoked and reissued, to comply with any licable effluent standard or limitation issued or approved under sections 301(b)(2) (C) (D), 304(b)(2) and 307(a)(2) of the Clean Water Act, if the effluent standard or itation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent itations in the permit; or
(2) Controls any pollutant not limited in the permit.

he permit as modified or reissued under this paragraph shall also contain any other uirements of the Act then applicable.

ORTING NONCOMPLIANCE

If for any reason the permittee does not comply with or will be unable to comply with daily maximum effluent limitation specified in this permit or should any unusual or aordinary discharge of wastes occur for the permitted facilities, the permittee shall ediately notify the Department of Environmental Conservation Regional Office by telephone provide the following information

(1) Cause of noncompliance;

(2) A description of the noncomplying discharge including its impact upon the receiving waters;

(3) Anticipated time the condition of noncompliance is expected to continue, or if such condition has been corrected, the duration of the period of noncompliance;

(4) Steps taken by the permittee to reduce and eliminate the noncomplying discharge; and

(5) Steps to be taken by the permittee to prevent recurrence of the condition of noncompliance.

b. Permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitation specified in this permit, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the non-complying discharge.

c. Except as provided herein under Prohibition of Bypass of Treatment Works, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

d. It is recognized that equipment malfunction, acts of God or other circumstances beyond the control of the Permittee may sometimes result in effluent concentrations exceeding the permit limitations despite the exercise of appropriate care and maintenance measures and corrective measures by the Permittee. The Permittee may come forward to demonstrate to the Department that such circumstances exist in any case where effluent concentrations exceed those set forth in this permit. The Department, however, is not bound to wait for or solicit such demonstrations prior to the initiation of any enforcement proceeding; nor must it accept as valid on its face the statements made in any such demonstration. Nevertheless, if the Department seeks to enforce in an administrative or judicial proceeding any provision of any permit issued to the Permittee by any permitting agency, the Permittee may raise at that time the issue of whether under the Constitution, statute, or decisional law it is entitled to a defense that its conduct was caused by circumstances beyond its control.

INSPECTIONS

a. The permittee shall allow the Commissioner of the Department of Environmental Conservation, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials and other documents as may be required by law:

1. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

2. To have access to and copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

3. To inspect any monitoring equipment or practices being maintained pursuant to this permit; or

4. To have access to and sample any discharge of pollutants to waters of the State or to publicly owned treatment works resulting directly or indirectly from activities or operations of the owner or operator of the premises in which the effluent source or outlet is located.

7. TRANSFER OF OWNERSHIP

a. Any permittee who intends to transfer a SPDES permit is required to notify the the Department in advance of the transfer. In the case of a change of ownership only, notice to the Department is required prior to change; in the case of an ownership change accompanied by a change or proposed change in wastewater characteristics, a minimum of 180 days prior notice to the Department is required.

b. The terms and conditions of this permit are binding on the successors or assigns in interest of the original permittee.

8. PERMIT RENEWAL

a. Any permittee who wishes to continue to discharge after the expiration date of a permit shall apply for renewal of its permit no later than 180 days prior to the permit's expiration date (unless permission for a later date has been granted by the Department) by submitting any forms, fees, or supplemental information which may be required by the Department. Upon request, the Department shall provide the permittee with specific information concerning the forms, fees, and supplemental information required.

b. When a permittee has made timely and sufficient application for the renewal of a permit or a new permit with reference to any activity of a continuing nature, the existing permit does not expire until the application has been finally determined by the Department, and, in case the application is denied or the terms of the new permit limited, until the last day for seeking review of the Department order or a later date fixed by order of the reviewing court, provided that this subdivision shall not affect any valid Department action then in effect summarily suspending such permit.

9. SPECIAL PROVISIONS - NEW OR MODIFIED DISPOSAL SYSTEMS

a. Prior to construction of any new waste disposal system or modification which would materially alter the volume of, or the method or effect of treating or disposing of the sewage, industrial waste or other wastes, from an existing waste disposal system, the Permittee shall submit to the Department or its designated field office for review, an approvable engineering report, plans, and specifications which have been prepared by a person or firm licensed to practice Professional Engineering in the State of New York.

b. The construction of the above new or modified disposal system shall not start until the Permittee receives written approval from the Department or its designated field office.

c. The construction of the above new or modified disposal system shall be under the general supervision of a person or firm licensed to practice Professional Engineering in New York State, and upon completion of construction that person or firm shall certify to the Department or its designated field office that the system has been fully completed in accordance with the approved engineering report, plans and specifications, permit and letter of approval.

d. The Department and its designated field offices review wastewater disposal system reports, plans, and specifications for treatment process capability only, and approval by either office does not constitute approval of the system's structural integrity.

10. MONITORING RECORDING AND REPORTING

10.1 General

a. The permittee shall comply with all recording, reporting, monitoring and sampling requirements herein and such other additional terms, provisions, requirements or conditions that the Department may deem to be reasonably necessary to achieve the purposes of the Environmental Conservation Law, Article 17, the Act, or rules and regulations adopted pursuant thereto.

b. Samples and measurements taken to meet the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge. Composite samples should be "flow-proportioned" if necessary to obtain a representative sample.

c. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation to insure accuracy of measurements.

10.2 Monitoring Locations

a. Permittee shall take samples and measurements to meet the monitoring requirements at the locations specified.

b. Unless specified otherwise, samples of the effluent shall be taken at the point of combined flow into the outfall sewer.

c. Unless specified otherwise, samples of the influent wastewater shall be taken at the point of plant inflow.

10.3 Recording of Monitoring Activities and Results

a. The permittee shall make and maintain records of all information resulting from the monitoring activities required by this permit.

b. The permittee shall record for each measurement or sample taken pursuant to the requirements of this permit the following information: (1) The date, exact place, and time of sampling; (2) The dates analyses were performed; (3) Who performed the analyses; (4) The analytical techniques or methods used; and, (5) The results of all required analyses.

c. If the permittee monitors any pollutant more frequently than is required by this permit, he shall include the results of such monitoring in the calculation and reporting of the values required in the Discharge Monitoring Report form. Such increased frequency shall be indicated on the Discharge Monitoring Report form.

d. The permittee shall retain for a minimum of three (3) years all records of monitoring activities and results including all records of calibration and maintenance of instrumentation and original strip chart recordings from continuous monitoring instrumentation. This period of retention shall be extended during the course of any unresolved litigation or other proceedings regarding the discharge of pollutants by the permittee or when requested by the Commissioner of the Department of Environmental Conservation or the EPA Regional Administrator.

10.4 Analytical Methods

Following promulgation of guidelines establishing test procedures for the analysis of pollutants, published pursuant to Section 304(g) of the Federal Water Pollution Control Act, as amended, all sampling and analytical methods used to meet the monitoring requirements specified above shall conform to such guidelines. If the Section 304(g) guidelines do not specify test procedures for any pollutants required to be monitored by this permit and until such guidelines are promulgated, sampling and analytical methods used to meet the monitoring requirements specified in this permit shall, unless otherwise specified by the Commissioner, conform to the latest edition of the following references or to any alternate or special methods already approved pursuant to Section 10.5, below:

1. Standard Methods for the Examination of Water and Waste-Waters, 14th Edition, 1976, American Public Health Association, New York, New York 10019.

2. A. S. T. M. Standards. Part 31. Water; Atmospheric

3. Methods for Chemical Analysis of Water and Wastes, March, 1979, Environmental Protection Agency Water Quality Office, Analytical Quality Control Laboratory, NECR, Cincinnati, Ohio 45268.

10.5 Application for Alternate Test Procedures

a. The applicant shall submit his application to the Director of the Bureau of Permits and Compliance, Division of Water, N.Y.S.D.E.C., 50 Wolf Road, Albany, New York 12233.

b. Unless and until printed application forms are made available, an application for an alternate test procedure may be made by letter in triplicate. Any application for an alternate test procedure shall:

(1) Provide the name and address of the responsible person or firm making the discharge (if not the applicant) and the applicable ID number of the existing or pending permit, issuing agency, and type of permit for which the alternate test procedure is requested, and the discharge serial number.

(2) Identify the pollutant or parameter for which approval of an alternate testing procedure is being requested.

(3) Provide justification for using testing procedures other than those specified in Table I, FEDERAL REGISTER, 52781, Vol. 41, No. 232, Wed., Dec. 1, 1976, or as amended.

(4) Provide a detailed description of the proposed alternate test procedure, together with references to published studies of the applicability of the alternate test procedure to the effluents in question.

10.6 Confidential Information

a. Except for data determined to be confidential under Section 17-0805 of the Environmental Conservation Law or Section 308 of the Act, all such reports shall be available for public inspection at the offices of the Department of Environmental Conservation and the Regional Administrator of EPA Region II. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 71-1933 of the Environmental Conservation Law or Section 309 of the Act.

11. DISPOSAL SYSTEM OPERATION AND QUALITY CONTROL

11.1 General

a. The disposal system shall not receive on be committed to receive wastes beyond its design capacity as to volume and character of wastes treated, nor shall the system be materially altered as to: type, degree, or capacity of treatment provided; disposal of treated effluent; or treatment and disposal of separated scum, liquids, solids or combinations thereof resulting from the treatment process without prior written approval of the Department of Environmental Conservation or its designated field office.

b. The permittee shall at all times maintain in good working order and operate as efficiently as reasonably possible any disposal system or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

c. Any maintenance of the disposal system that may cause a degradation of effluent quality shall be scheduled during non-critical water quality periods and shall be carried out in a manner approved by the New York State Department of Environmental Conservation.

d. When required under Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6NYCRR650), sufficient personnel meeting qualifications for operators of sewage treatment works as required therein shall be employed to satisfactorily operate and maintain the treatment works.

e. The permittee shall not discharge floating solids or visible foam, unless specifically authorized by this permit.

11.2 Prohibition of Bypass of Treatment Works

a. Bypass or diversion of wastes from any portion of the treatment facilities is prohibited except:

(1) Where unavoidable to prevent loss of life, serious injury or severe property damage. Severe property damage includes substantial physical damage to property; damage to the treatment facilities which would cause them to become inoperable; or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. It does not include economic loss caused by delays in production; and

(2) Where there are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime; and

(3) Where the permittee promptly but in no event later than 24 hours after the permittee learns of the bypass, submits notice of the bypass or an anticipated need for bypass to the Department containing the information required by Section 5 of this Part.

Where the permittee knows in advance of the need for the bypass, this notification shall be submitted for approval to the Department before the date of bypass. Bypass shall be either:

(i) Prohibited by the Department in consideration of the adverse effects of the bypass and the factors set out above, or

(ii) Allowed under conditions determined to be necessary by the Department to minimize any adverse effects.

11.3 Special Condition - Disposal Systems with Septic Tanks

If a septic tank is installed as part of the disposal system, it shall be inspected by the permittee or his agent for scum and sludge accumulation at intervals not to exceed one year's duration, and such accumulation will be removed before the depth of either exceeds one-fourth (¼) of the liquid depth so that no settleable solids or scum will leave in the septic tank effluent. Such accumulation shall be disposed of in an approved manner.

11.4 Sludge Disposal

a. The storage or disposal of collected screenings, sludges, other solids, or precipitates separated from the permitted discharges and/or intake or supply water by the permittee shall be done in such a manner as to prevent creation of nuisance conditions or entry of such materials into classified waters or their tributaries, and in a manner approved by the Department. Any live fish, shellfish, or other animals collected or trapped as a result of intake water screening or treatment may be returned to their water body habitat. The permittee shall maintain records of disposal on all effluent screenings, sludges and other solids associated with the discharge(s) herein described. The following data shall be compiled and reported to the Department or its designated field office upon request:

1. The sources of the materials to be disposed of;

2. The approximate volumes and weights;

3. The method by which they were removed and transported;

4. Their final disposal locations.

12. CONDITIONS APPLICABLE TO A PUBLICLY OWNED TREATMENT WORKS (POTW) AND USERS OF A POTW

12.1 GENERAL

a. Notice shall be given the Department of Environmental Conservation of any new introduction of pollutants into the POTW from a source which would be a new source as defined in Section 306 of the Act if such source was discharging pollutants; and, except as to such categories and classes of sources specified by the Commissioner, any new introduction of pollutants which exceed 10,000 gallons on any one day into the POTW from a source which would be subject to Section 301 of the Act if such source was discharging pollutants; and any substantial change in volume or character of pollutants being introduced into the POTW at the time of issuance of the permit. Such notice shall include information on the quality and quantity of effluent to be introduced into the POTW; and an anticipated impact of such change in the quantity or quality of effluent to be discharged from the POTW.

b. The permittee shall require any industrial user of the POTW to comply with the requirements of Section 204(b), 307, and 308 of the Act. Any industrial user subject to the requirements of Section 307 of the Act shall be required by the permittee to prepare and transmit to the New York State Department of Environmental Conservation periodic notice (over intervals not to exceed 9 months) of progress toward full compliance with Section 307 requirements. The permittee, upon receipt of such reports shall transmit a copy promptly to the Department.

c. For discharges from publicly owned treatment works, appropriate measures will be established by the permittee to insure compliance by industrial users with any system of user charges and recovery of construction costs required under the provisions of the Act.

d. Persons discharging industrial waste to a publicly owned treatment works shall comply with toxic effluent standards and pretreatment standards and with monitoring, reporting, recording, sampling and entry requirements provided by the Act or the Environmental Conservation Law, Article 17 or adopted pursuant to the Act or the Environmental Conservation Law, Article 17.

12.2 NATIONAL PRETREATMENT STANDARDS: PROHIBITED DISCHARGES

(Note: The following Section was published in the Federal Register, Vol. 43, No. 123 - Monday June 26, 1978. The effective date of the regulation (Part 403) was August 25, 1978)

§403.5 National Pretreatment Standards: Prohibited Discharges.

(a) Pollutants introduced into POTW's by any source of a nondomestic discharge shall not inhibit or Interfere with the operation or performance of the works. These general prohibitions apply to all such users of a POTW whether or not the user is subject to other National Pretreatment Standards or any National, State, or local Pretreatment Requirements.

(b) The following pollutants may not be introduced into a POTW:

(1) Pollutants which create a fire or explosion hazard in the POTW;

(2) Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0 unless the works is specifically designed to accommodate such discharges;

(3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in sewers, or other Interference with the operation of the POTW;

(4) Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge of such volume or strength as to cause Interference in the POTW.

(5) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference but in no case heat in such quantities that the temperature at the treatment works influent exceeds 40°C(104°F) unless the works is designed to accommodate such heat.

(c) POTW's developing POTW Pretreatment Programs pursuant to §403.8 shall be required to develop and enforce specific limits for discharges of the pollutants listed in §403.5(b)(1)-(5). In addition, any POTW in violation of an NPDES Permit requirement as a result of Interference by a pollutant listed in §403.5(b)(1)-(5) shall be required by the EPA or NPDES state to develop and enforce such specific limits.

(d) Where specific prohibitions or limits on the pollutants or pollutant parameters listed in §403.5(b)(1)-(5) are developed by a POTW, either as a requirement of an Approved POTW Pretreatment Program pursuant to §403.8 or an NPDES Permit, such limits shall be incorporated in the NPDES Permit issued to the POTW and shall replace and be enforceable in lieu of the general prohibitions set forth in this section.

(e) Compliance with the provisions of this section is required beginning on the effective date of this regulation, except for paragraph (b)(5) of this section which must be complied with within 3 years of the effective date of this regulation.

REFERENCE 9

HAZARDOUS WASTE INTERIM STANDARDS PLAN

FOR

E. B. STIMPSON COMPANY, INC.

SYLVAN AVENUE

BAYPORT, LONG ISLAND

NEW YORK 11705

Prepared by: ERC/LANCY
A Dart & Kraft Co.
60 Connolly Parkway
Hamden, Connecticut 06514
203-281-3278

Engineer: John J. Martin, Jr. P.E.

Date: November 12, 1981

TABLE OF CONTENTS

Preamble

General Facility Standards

Ground Water Monitoring

Groundwater Sampling Instructions

Closure and Post-Closure

Financial Requirements

PREAMBLE

Only hazardous wastes as defined by the Federal Environmental Protection Agency (EPA) are considered in this report. EPA on November 10, 1980 suspended applicable hazardous waste regulations to operators of wastes water treatment tanks that receive, store, and treat wastewaters that are hazardous, or that generate, store, or treat a waste-water treatment sludge which is a hazardous waste where such wastewaters are subject to regulation under the Clean Water Act. New York Department of Environmental Control is empowered to implement the clean Water Permit program and in turn regulates this facility.

There are, however, two areas which do not qualify for this suspension. One, the open sand seepage pits and the other, a buried sludge collection tank for metal hydroxides.

The buried sludge collection tank has a capacity of 10,500 gals. Though the monthly sludge accumulation is more than 1000 kilograms, the sludge is removed approximately every 6 weeks. EPA has excluded facilities that store sludge for less than 90 days from classification as a storage site. Thus, Interim standards do not apply to this container.

The open sand leaching pits, however, have the potential of containing some metal hydroxide sludge carryover from the treatment system. All treated waste waters are leached into the ground. Therefore, they are subject to regulation as a disposal site.

GENERAL FACILITY STANDARDS

The plating and tumbling waste water treatment systems precipitate metals as metal hydroxides. The metal hydroxides settle as sludges in the reactor tanks and clarifiers and are periodically removed and thickened in gravity-type sludge thickeners. The thickened sludges are pumped to a sludge collection tank for removal by commercial waste removal services. The treated effluent is discharged to one of two open sand pits which act as seepage ponds.

General Waste Analysis

Since treatment and clarification are not ever 100% efficient of metals, or metal hydroxides, in the waste water to enter the sand pits and consequently be exposed to the environment. EPA has classified these metal hydroxides as hazardous waste.

As required by the New York Department of Environmental Control, the effluent is 8-hour composited and analyzed monthly and is indicative of the character of the waste. Waste sample bottles are provided and analyses made in accordance with EPA's required procedures.

Waste sludges were analyzed initially but, unless a change in character occurs, are not subsequently analyzed before removal. The manifest system is used on all sludge removal from site. About 60,000 gals. per year are removed in increments about every six weeks.

The open sand seepage pits are classified by EPA as disposal sites. They consist of two pits approximately 180 ft. x 140 ft. x 10' deep. They were constructed by bulldozing the excavation and distributing the burden on the surrounding sides.

The soil characteristic is coarse sand and excellent leaching rates are obtained. The influent enters almost tangent to the bottom and in 10 years the entire bottom has been rarely covered. Once per year, in the summertime, the bottom is raked to break-up a slight crust formation. Once, in 10 years, a bull-dozer was used to reestablish the contour of the pits. Sludge is not visible on the bottom and there has been no necessity to remove any sludge.

Security

The sand pits are not secured. It is possible for unauthorized persons to enter the pits. However, the sludge, and surface waste water is not corrosive, does not fume, and is in general inoffensive.

There are no live stock in the area that might drink the small surface accumulation and it would not be palatable for human consumption.

However, since the meter hydroxides are considered hazardous waste the entire area must be fenced and locked. On each side a sign must be posted with the legend. "Danger - Unauthorized Personnel Keep Out" The signs must be legible from a distance of at least 25 ft. (While normally there is no accumulation of surface water in the pits, it is possible with heavy rain, or freezing conditions, to have a liquid level of several inches. This would be a potential drowning danger to small children)

Inspections

Visual inspection of the sand pits should be made once per week and the observation noted in a bound log book with date and name of the inspector. The percentage of the area covered by surface water, general color, or characteristic of the surface water, sludge accumulation, condition of the pits should be noted. Any repairs, or other remedial action must be noted. The log shall be kept for at least 3 years from the date of the inspection.

Personnel Training

The treatment system is under the control of a waste treatment operator. Back-up consists of the Assistant Plating Room Foreman and the Plating Room Supervisor. About three months of on-the-job training under the Plating Room Supervisor's control qualifies an operator to run the treatment system. By this time he can make the inspections of the disposal site and interpret the results. The Plating Room Supervisor is on call in case of emergency.

The Assistant Plating Room Foreman is required to take over the treatment operation at least twice per year. Thus, insuring adequate knowledge for control.

Written instructions are available to operate the system.

The following documents and records must be maintained at the waste treatment facility:

1. Job titles and names of employees
2. Written description of the positions

3. Written description of the type and amount of instruction and continuing training.

4. Records documenting the training or job experience required.

Preparedness and Prevention

There is no possibility of a fire or explosion with this effluent entering the sand pits. Hazardous waste constituents could be carried by the effluent with a breakdown of the treatment system, or operation. However, this is under the control of the waste treatment operator and the general regulation of the N.Y. Department of Environmental Control.

Further, it is noted that only treated rinse waters, with a very low before-treatment contamination, enter the sand pits. It is suggested that even weeks of poor effluent would have little effect on the aquifer water, or the air.

In view of the characteristics of the waste it has not been deemed appropriate to make any arrangements with local authorities.

Contingency Plan & Emergency Procedures

It is noted that only the sand pit disposal site is considered. The treatment system is regulated by the N.Y. Dept. of Environmental Control.

Only one sand pit, or seepage lagoon, is used at a time. In the unlikely event that a large quantity of sludge accumulated in one pit, the discharge could be switched to the other one. The sludge could then be removed from the first pit by a licensed waste hauler under the manifest program.

It is always possible in the event of an unplanned sudden, or non-sudden, hazardous waste release to secure the water supply to the finishing operations. This effectively secures the discharge to the sand pits.

Manifest System

It is not intended that hazardous waste be received from off-site sources.

The following must be recorded, or available in the operating record file.

For this site, the location of the sand pit seepage ponds is indicated on the site plan. Any new locations must be recorded.

Waste analyses records as required by N.Y. DEC must be kept until closure.

Any summary reports of incidents implementing the contingency plan.

Inspection records (for 3 years only)

A single copy of an annual report must be submitted to Regional Administrator by March 1st of each year covering facility activities for the previous calandar year. The report to include:

1. EPA identification number.
2. The calandar year covered
3. Description and quantity of hazardous waste received. (if any should accumulate in sludge pits)
4. Method of disposal.
5. Certification signed by the owner or operator or his authorized representative

(See report form and instructions appendix II - EPA Forms 8700-13 (4-80) - page 33229 Vol. 45, No. 98, Monday May 19, 1980)

GROUND WATER MONITORING

The sand seepage pits are located over the ground water table and it is assumed that the leachate enters the ground water. The ground water in this area flows South. Therefore, one monitoring well has been located North of the seepage pits and three South.

Sampling and Analysis

A copy of the standard procedure for sample collection is appended.

Separate samples from each well are collected in polyethylene bottles labeled as to position. Sample bottles are shipped in insulated containers to a certified laboratory for analysis in accordance with approved EPA procedures.

The results are to be kept in chronological order for the life of the disposal unit and the past closure period.

The parameters for monitoring cover three areas as follows:

1. Characterizing the suitability of the ground water as a drinking water supply. (EPA Interim Drinking Water Standard)

2. Establishing ground water quality (chloride, iron, manganese, phenols, sodium, sulfate)

3. Indication of ground water contamination. This requires four replicate measurements. (ph, specific conductances, total organic carbon, total organic halogen)

The first year all wells are sampled quarterly and the results submitted to the Regional Administrator within 15 days of completing the analyses. Thereafter, ground water quality (2), is sampled annually. Ground water contamination (3) is sampled semi-annually and submitted as part of the annual report.

Elevation of the ground water at each monitoring well is determined each time a sample is taken.

Sampling is under the jurisdiction of the waste treatment supervisor.

Preparation, Evaluation and Response

In addition to the above sampling program, analysis for the heavy metals listed on the New York SPDES permit could be made. This would indicate if the metals have entered the ground water.

If detected, the frequency of sampling could be increased to determine rate of contamination. Additional wells could be installed to determine the extent of migration.

For pH, specific conductance, total organic carbon and total organic halogen the arithmetic mean and variance, based on four replicate measurements for each well are to be compared to the initial arithmetic mean. If a significant increase (decrease for pH) is detected additional samples from the well(s) must be immediately obtained, split in two, and analyzed to determine if the difference was due to laboratory error.

If these latter analyses confirm the significant difference, a written notice to the Regional Administrator must be submitted within 7 days of the confirmation that the facility may be affecting ground water quality.

Within 15 days a specific plan, certified by a qualified geologist, or geotechnical engineer, for a ground water quality assessment program must be submitted. The plan must specify:

1. The number, location and depth of wells
2. Sampling and analytical methods
3. Evaluation procedures
4. Schedule of implementation.

The assessment plan must be implemented and within 15 days after the first determination submit a written report of the assessment. If hazardous waste have entered the ground water subsequent determination on a quarterly basis must be made until final closure of the facility.

GROUNDWATER SAMPLING INSTRUCTIONS

Collection:

There are four monitoring wells around the open sand seepage pits. One well, to the North, is upgradient and three, to the South, are down gradient.

1. Purge each well before sampling by removing four sampler volumes and discarding same.

2. Collect samples at each well in accordance with the laboratory instructions. Note some analyses require glass bottles for holding samples and some polyethylene. Some bottles will be stabilized for subsequent analysis and some will not.

3. Forward samples within 24 hours by UPS, or equivalent, to laboratory.

Water table

1. Establish height of water table by lowering a weighted tape with two feet of the end chalked.

Analyses

1. Each sample is to be analyzed for parameters of EPA Interim Drinking Water Standards.

2. Each sample is to be analyzed for chloride, iron, manganese, phenols, sodium, sulfate.

3. Each sample is to be analyzed for pH, specific conductance, total organic carbon, total organic carbon, total organic halogen.

CLOSURE AND POST-CLOSURE

It is noted that only the open sand seepage ponds are considered as disposal sites and subject to the hazardous waste regulations. Based on the past 10 years of use little, if any, accumulation of sludge is anticipated. Should sludge build-up in the bottom of the ponds, by the nature of the sludge, it would create an impervious barrier and seepage would be adversely affected. Such sludge would require removal to restore the required seepage.

The seepage into the ground is the only available option for disposal of treated waste waters at this site. Sometime in the future, estimated at 10 years, municipal sewers may be available and it is anticipated that the authorities will direct that the discharge be made to such sewers.

It is estimated that the disposal site will be closed in 10 years. It is anticipated that when the discharge to the seepage ponds is eliminated, the ponds will dry and there will be no surface water. About three months are anticipated to insure that the ponds will be dry.

It is then proposed to cover the bottom of the ponds with one inch of limestone. The pits will then be filled by bull-dozing the surrounding soil over the limestone. Grading will result in a cover over the pits about three to six inches higher than the surrounding grade. The anticipated completion of closure is November 1991.

The monitoring wells will remain in place to provide past-closure monitoring for the 30 years required by EPA. However, it is anticipated that a petition will be submitted to the Regional Administrator to discontinue some, or all, of the requirements for post-closure.

The closure and post-closure plan must be submitted to the Regional Administrator 180 days before closure for approval. When closure is complete, certification as to compliance to the approved closure plan must be made by the owner and an independent professional engineer to the Regional Administrator.

Notice to local land authority

Withn-in 90 days after closure the owner must submit to the local land authority and the Regional Administrator a survey plan indicating location and dimensions of the disposal area with respect to permanently surveyed bench marks. The plot must be prepared and certified by a professional land surveyor.

The plot must contain a note, prominently displayed that states the owners obligation to restrict distrubance of the site unless relieved of this obligation by the Regional Administrator.

In addition the owner must record a notation on the deed to the facility property that the land has been used to manage hazardous waste and that its use may be restricted.

FINANCIAL REQUIREMENTS

Closure and post-closure costs would be for covering the bottom of the pits with limestone, filling by bull-dozing, and post-closure monitoring once per year for suitability as a water supply ground water quality, and contamination.

Limestone

Area of bottoms of two pits, 120' x 160' x 2 = 19,200 sq. ft.

Volume of 1" of limestone, 19200 x 1 ÷ 12 = 1600 cu. ft.

Pounds per cu. ft. 147, 1600 x 147 = 235,200 lbs.

Limestone at 5¢/lb, 235200 x 0.05 = $11,760

Labor

Spreading limestone, 8 manhours @ 20.00/hr = $160.00

Bull-dozing to fill pits, 40 hrs. @ 20.00/hr = $800.00

Professional Land Surveyor

2 days @ $300/day ----------$600.00

Bull Dozer

5 days @ $200/day----------$1000.00

Total for closure----------$14,320.00

Post-Closure Monitoring

Total of 41 analyses @ 20.00 average=$810/yr

For 30 years $810.00 x 30----------$24,300.00

Total $38,620.00

REFERENCE 10

0025-C
02-8703.54

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
$475N4Q9$1	3/24/87	1100

DISTRIBUTION:
file
E Leonard
R. Dimmick
Mergenthaler Linotype

BETWEEN:	OF:	PHONE:
Pat Dugan	Suffolk Co. Water Authority (SCWA)	(516) 589-5200

AND:
Diane Trube.

DISCUSSION:
SCWA has public supply wells + distribution maps. For private well info, check S.C. Health Services or local water districts. SCWA also has sample results of some wells. wells tap Magothy + Glacial aquifers

All of Suffolk County is on public or private groundwater supplies

For Bohemia site: 2 of 3 wells (Public supply) across the street have been closed due to volatile thalogenated hydrocarbon contamination. Wells were closed in anticipation of new EPA regs due 6/9/87. Third well is still in use. There are 2 other well fields within 1 mile.

ACTION ITEMS:
For Bayport site: There are 3 well fields within 1 mile.
Send info request to: Pat Dugan c/o SCWA
Sunrise Hwy.
Oakdale, NY 11769
Directions - Southern State Hwy to Sunrise Hwy (exit 44 East)
Go through 2 lights (about 2 miles). past Toyota/Mitsubishi Building. SCWA is in brick building on right

NUS 067 REVISED 0685

Station + Well	NYS Number	Depth	Aquifer	OUT OF SERVICE
1) Montauk Hwy.				
Well #1	S-03813	89.00	112GLCLU	
Well #2	S-03815	83.00	112GLCLU	
Well #3	S-03814	96.00	112GLCLU	
Well #4	S-37963	292.00	211MGTY	
Well #5	S-50630	245.00	211MGTY	
2) Easton St.				
Well #1	S-40982	150.00	112GLCLU	
Well #2	S-43641	706.00	211MGTY	
Well #3	S-51609	730.00	211MGTY	
3) Lincoln Ave.				
Well #1	S-38701	202.00	112GLCLU	ORGANICS
Well #2	S-47453	444.00	211MGTY	
Well #3	S-54305	313.00	211MGTY	
4) Church St (HOL)				
Well #1	S-27259	164.00	112GLCLU	
Well #2	S-31913	160.00	112GLCLU	
Well #3	S-47035	~~580.00~~ 508.00	112GLCLU	

Station + Well	NYS Number	Depth	Aquifer
5) Lakeview Ave.			
Well #1	S-00872	107.00	112GLCLU
Well #2	S-00871	110.00	112GLCLU
Well #3	S-09893	103.00	112GLCLU
Well #4	S-28408	341.00	211 MGTY
6) China Rd.			
Well #1	S-60812	489.00	211MGTY
Well #2	S-73492	480.00	211MGTY
7) Greenbelt Pkwy.			
Well #1	S-54730	259.00	211MGTY
Well #2	S-59744	302.00	211MGTY
Well #3	S-66183	532.00	211 MGTY
Well #4	S-66184	384.00	211MGTY
8) Blue Point Rd.			
Well #1	S-38320	172.00	112GLCLU
Well #2	S-38321	303.00	211MGTY
Well #3	S-42761	334.00	211MGTY
Well #4	S-53074	169.00	112GLCLU

Station + Well	NYS Number	Depth	OUT OF SERVICE	Aquifer
9) Barton Ave.				
Well #1	S-21247	145.00		112GLCLU
Well #2	S-28767	139.00		211MGTY
Well #3	S-37494	313.00		211MGTY
Well #4	S-62022	313.00		112GLCLU
10) Waterworks Rd.				
Well #1	S-60486	363.00		211MGTY
11) Locust Ave.				
Well #1	S-20045	140.00		112GLCLU
Well #2	S-22711	140.00	ORGANICS	112GLCLU
Well #3	S-34522	149.00		112GLCLU
Well #4	S-67074	830.00		211MGTY
Well #5	S-68690	824.00		211MGTY
12) Church St (BOH)				
Well #1	S-52126	156.00	ORGANICS	112GLCLU
Well #2	S-57871	158.00		112GLCLU
Well #3	S-68552	838.00		211MGTY

FOR ADJOINING AREA SEE MAP NO. 9
FOR ADJOINING AREA SEE
12
13
14
15
16
5
11779
#2
#3
BROOKHAVEN
ISLIP
HOLBROOK
11741
CONNETQUOT
I
P
#11
RIVER
STATE PARK
11716
SOUTH
HOLBROOK
#7
#4
#2
16
11716
OAKDALE
Site
ISLIP
BROOKHAVEN
#1
#6
11769
CONNETQUOT
RIVER
11796
WEST
SAYVILLE
NICOLL
BAY
BAYPORT
ISLIP
BROOKHAVEN
Q

FOR ADJOINING AREA SEE MAP NO. 14
BROOKHAVEN
ISLIP
HOLTSVILLE
MEDFORD
HOLBROOK
NORTH PATCHOGUE
SOUTH HOLBROOK
BAST HOLBROOK
BOHEMIA
BAYPORT
EAST PATCHOGUE
Site
PATCHOGUE BAY
ISLIP
BROOKHAVEN
#3
#4
#6
#7
#8
#9
#10
11741
11742
11763
11716

REFERENCE 11

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
	11/13/87	1405

DISTRIBUTION:
Edwin B. Stimpson Co., Inc.

BETWEEN:	OF:	PHONE:
Karen Randazzo	Suffolk Co. Water Authority	(516) 589-5200

AND:
Ross A. Dimmick

DISCUSSION:
Asked about the seven wellfields within 3 miles of my site — Church St (Holbrook + Bohemia), Lakeview Ave., China Rd., Greenbelt Pkwy., Blue Pt. Rd., + Waterworks Rd. She says that all of these are in the same pressure zone so they are interconnected. That pressure zone has approx. 53,000 hookups.

I also asked about aquifer designations on information received from Pat Dugan 11/13/87. Aquifer 112GLCU is the upper glacial aquifer, 211MGTY is the Magothy. Well #3 on Church St. (Holbrook) should be 508' deep not 580', but she had no way to double-check the aquifer (it says GLCU instead of MGTY).

She referred me to Suffolk Co. Dept. of Health Services for info. on Private wells and surface water.

ACTION ITEMS:

Ross A. Dimmick
11/13/87

NUS 067 REVISED 0685

REFERENCE 12

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE: 11/13/87	TIME: 1450

DISTRIBUTION: Edwin B. Stimpson Co., Inc

BETWEEN:	OF:	PHONE:
Dennis Moran	Suffolk Co. Dept. of Health Serv. - Water Quality Division	(516) 348-2776

AND: Ross A. Dimmick

DISCUSSION:

I asked about private wells in the Bayport area. He said there are probably quite a few. However, the only way to find them is to look at water main maps to see which areas are not served, but this would not tell you which homes have access to a public supply but have not hooked up to it.

He says there is no irrigation of farmland in that area except for a few nurseries.

There is not surface water used for drinking; drinking water is exclusively groundwater in Suffolk County.

I asked if Sans Souci Lakes might be used for recreation. He said that if it was used for swimming, a notice should be on file in his office, but there was none.

He suggested I check with NYSDEC about use of the lake for fishing

ACTION ITEMS:

Ross A. Dimmick
11/13/87

NUS 087 REVISED 0685

REFERENCE 13

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
02-8703-65	1/21/88	15:15

DISTRIBUTION:
Edwin B. Stimpson Co., Inc. (Cor.)

BETWEEN:	OF:	PHONE:
Dennis Gobbi	Suffolk county Health Dept.	(516) 451-4633

AND:
Mark Ellis NUS Corp.

DISCUSSION:
I phoned this Health Dept. to verify wether or not there were any records of any health complaints or injuries attributable to direct contact with the waste generated at this plant. Mr. Gobbi told me he had no ~~such~~ records of such, and had never heard of any incidents. He seemed quite surprised that we had even found a need to conduct a site inspection.

Mark Ellis 1/21/88

ACTION ITEMS:

NUS 067 REVISED 0686

REFERENCE 14

TABLE 1

SAMPLE DESCRIPTIONS
EDWIN B. STIMPSON CO., INC.
CASE #7052

Sample ID Number	Organic Traffic Report #	Inorganic Traffic Report #	Date	Time (Hours)	Sample Type	Sample Location
NYR3-S2	BK210	MBJ149	4/2/87	1218	Soil	The sample was collected from a darkened area near the northwest corner of recharge basin #2 (easternmost basin). A composite sample was collected between the depths of 0 and 18".
NYR3-S1	BK209	MBJ148	4/2/87	1230	Soil	The sample was collected from a dampened area on the southeast perimeter of the discharge pool in recharge basin #1 (westernmost basin). A composite sample was collected between the depths of 0 and 18".
NYR3-GW3	BK206	MBJ145	4/2/87	1413	Groundwater	The sample was collected from downgradient well #3 on the southeastern corner of the berm surrounding recharge basin #2.
NYR3-S3	BK211	MBJ150	4/2/87	1550	Soil	The sample was collected about 500' south of the recharge basins (downslope) near an area of standing water. A composite sample was collected between the depths of 3" and 18".
NYR3-GW2	BK205	MBJ144	4/2/87	1604	Groundwater	The sample was collected from downgradient well #2 on the southwestern corner of the berm surrounding recharge

TABLE 1 (cont'd)

SAMPLE DESCRIPTIONS
EDWIN B. STIMPSON CO., INC.
CASE #7052

Sample ID Number	Organic Traffic Report #	Inorganic Traffic Report #	Date	Time (Hours)	Sample Type	Sample Location
NYR3-Blank 1	BK203	MBJ142			Aqueous	EPA, Edison, N.J. shipped with samples collected 4/2/87.
NYR3-GW4	BK207	MBJ146	4/3/87	1013	Groundwater	The sample was collected from monitoring well #N1 on the northeast corner of the site approximately 25' west of Sylvan Avenue 15' south of the property line.
NYR3-GW1	BK204	MBJ143	4/3/87	1031	Groundwater	This sample was collected from well #1, approximately 15' north of the northern berm crest, and equidistant from recharge basins #1 and #2.
NYR3-Blank 2	BK213	MBJ162			Aqeuous	EPA, Edison, N.J. shipped with samples collected 4/3/87.

ANALYTICAL DATA
NAME: EDWIN B. STIMPSON CO., INC.
SAMPLING DATE: APRIL 2-3, 1987
CASE NUMBER: 7052

PESTICIDES/PCBs									
SAMPLE NUMBER	NYR3-GW1	NYR3-GW2	NYR3-GW3	NYR3-GW4	NYR3-S1	NYR3-S2	NYR3-S3	NYR3-BLK1	NYR3-BLK2
TRAFFIC REPORT NUMBER	BK204	BK205	BK206	BK207	BK209	BK210	BK211	BK203	BK213
MATRIX	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	WATER	WATER
UNITS	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L
Alpha-BHC									
Beta-BHC									
Delta-BHC									
Gamma-BHC (Lindane)									
Heptachlor									
Aldrin									
Heptachlor Epoxide									
Endosulfan I									
Dieldrin									
4,4'-DDE									
Endrin									
Endosulfan II									
4,4'-DDD									
Endosulfan sulfate									
4,4'-DDT									
Methoxychlor									
Endrin Ketone									
Chlordane									
Toxaphene									
Aroclor-1016									
Aroclor-1221									
Aroclor-1232									
Aroclor-1242									
Aroclor-1248									
Aroclor-1254									
Aroclor-1260									

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below contract-specified detection limits, but above instrument detection limits
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR - analysis not required

ANALYTICAL DATA
NAME: EDWIN B. STIMPSON CO., INC.
SAMPLING DATE: APRIL 2-3, 1987
CASE NUMBER: 7052

VOLATILES									
SAMPLE NUMBER	NYR3-GW1	NYR3-GW2	NYR3-GW3	NYR3-GW4	NYR3-S1	NYR3-S2	NYR3-S3	NYR3-BLK1	NYR3-BLK2
TRAFFIC REPORT NUMBER	BK204	BK205	BK206	BK207	BK209	BK210	BK211	BK203	BK213
MATRIX	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	WATER	WATER
UNITS	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L
Chloromethane									
Bromomethane									
Vinyl Chloride									
Chloroethane									
Methylene Chloride	Q	Q		Q			Q	Q	Q
Acetone	Q	Q	Q		Q	Q	Q	Q	Q
Carbon Disulfide									
1,1-Dichloroethene									
1,1-Dichloroethane									
Trans-1,2-Dichloroethene									
Chloroform									
1,2-Dichloroethane									
2-Butanone					14		14		
1,1,1-Trichloroethane									
Carbon Tetrachloride									
Vinyl Acetate									
Bromodichloromethane									
1,2-Dichloropropane									
Trans-1,3-Dichloropropene									
Trichloroethene									
Dibromochloromethane									
1,1,2-Trichloroethane									
Benzene									
Cis-1,3-Dichloropropene									
2-Chloroethylvinylether									
Bromoform									
2-Hexanone									
4-Methyl-2-Pentanone									
Tetrachloroethene									
1,1,2,2-Tetrachloroethane									
Toluene									
Chlorobenzene									
Ethylbenzene									
Styrene									
Total Xylenes									

NOTES TO ORGANICS DATA:

Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below contract-specified detection limits, but above instrument detection limits
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR - analysis not required

ANALYTICAL DATA
NAME: EDWIN B. STIMPSON CO., INC.
SAMPLING DATE: APRIL 2-3, 1987
CASE NUMBER: 7052

SEMIVOLATILES									
SAMPLE NUMBER	NYR3-GW1	NYR3-GW2	NYR3-GW3	NYR3-GW4	NYR3-S1	NYR3-S2	NYR3-S3	NYR3-BLK1	NYR3-BLK2
TRAFFIC REPORT NUMBER	BK204	BK205	BK206	BK207	BK209	BK210	BK211	BK203	BK213
MATRIX	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	WATER	WATER
UNITS	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L
Phenol									
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									
Naphthalene									
4-Chloroaniline									
Hexachlorobutadiene									
4-Chloro-3-Methylphenol									
2-Methylnaphthalene									
Hexachlorocyclopentadiene									
2,4,6-Trichlorophenol									
2,4,5-Trichlorophenol									
2-Chloronaphthalene									
2-Nitroaniline									
Dimethyl Phthalate									
Acenaphthylene									
3-Nitroaniline									
Acenaphthene									
2,4-Dinitrophenol									
4-Nitrophenol									
Dibenzofuran									
2,4-Dinitrotoluene									
2,6-Dinitrotoluene									
Diethylphthalate									
4-Chlorophenylphenyl ether									
Fluorene									
4-Nitroaniline									
4,6-Dinitro-2-Methylphenol									
N-Nitrosodiphenylamine									
4-Bromophenylphenyl ether									

ANALYTICAL DATA
NAME: EDWIN B. STIMPSON CO., INC.
SAMPLING DATE: APRIL 2-3, 1987
CASE NUMBER: 7052

SEMIVOLATILES

SAMPLE NUMBER	NYR3-GW1	NYR3-GW2	NYR3-GW3	NYR3-GW4	NYR3-S1	NYR3-S2	NYR3-S3	NYR3-BLK1	NYR3-BLK2
TRAFFIC REPORT NUMBER	BK204	BK205	BK206	BK207	BK209	BK210	BK211	BK203	BK213
MATRIX	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	WATER	WATER
UNITS	ug/L	ug/L	ug/L	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L
Hexachlorobenzene									
Pentachlorophenol									
Phenanthrene									
Anthracene									
Di-n-Butylphthalate	Q	Q	Q	Q				Q	
Fluoranthene									
Pyrene									
Butylbenzylphthalate									
3,3'-Dichlorobenzidine									
Benzo(a)Anthracene									
Bis(2-Ethylhexyl)Phthalate					150 J	82 J	150 J		
Chrysene									
Di-n-Octyl Phthalate	Q								
Benzo(b)Fluoranthene									
Benzo(k)Fluoranthene									
Benzo(a)Pyrene									
Indeno(1,2,3-cd)Pyrene									
Dibenzo(a,h)Anthracene									
Benzo(ghi)Perylene									

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below contract-specified detection limits, but above instrument detection limits
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR - analysis not required

ANALYTICAL DATA
NAME: EDWIN B. STIMPSON CO., INC.
SAMPLING DATE: APRIL 2-3, 1987
CASE NUMBER: 7052

INORGANICS									
SAMPLE NUMBER	NYR3-GW1	NYR3-GW2	NYR3-GW3	NYR3-GW4	NYR3-S1	NYR3-S2	NYR3-S3	NYR3-BLK1	NYR3-BLK2
TRAFFIC REPORT NUMBER	MBJ143	MBJ144	MBJ145	MBJ146	MBJ148	MBJ149	MBJ150	MBJ142	MBJ162
MATRIX	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	WATER	WATER
UNITS	ug/L	ug/L	ug/L	ug/L	mg/Kg	mg/Kg	mg/Kg	ug/L	ug/L
Aluminum	633	2,900 E	1,580 E	45,300	690 E	694 E	8,910 E		
Antimony									
Arsenic				23			2.6		
Barium				[85]			[14]		
Beryllium									
Cadmium					1.3	1.9			
Calcium	[3,140]	[3,240]	11,400 E	[4,400]	[453]	[446]			
Chromium	Q			Q	4.0	2.8	5.0		Q
Cobalt									
Copper	[17]		70 E	57	43 E	28 E	[4.4]		
Cyanide						1.5 E			
Iron	1,070	3,170 E	1,860 E	68,800	1,150	1,150	9,080		
Lead	5.0	54 E	[4.9]	61	3.8	5.0	5.9		
Magnesium	[1,020]	[1,920]	[757]	[3,040]	[190]	[93]	[885]		
Manganese	45	72 E	248 E	4,810	26	37	38		
Mercury									
Nickel			[36]		52	50	[6.6]		
Potassium	[640]	[1,040]	[1,220]	[3,560]			[279]		
Selenium									
Silver			29 E						
Sodium	7,190	16,700 E	51,100 E	[2,330]			[298]		
Thallium									
Vanadium				84			[8.4]		
Zinc	68	213 E	100 E	130	94 E	120 E	43 E	32 E	

NOTES TO INORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
[]- compound present below contract-specified detection limits, but above instrument detection limits
B - compound found in laboratory blank as well as the sample and indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR- analysis not required

Sample Number
BK204

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc
Case No: 7052
Lab Sample ID No: 2536
QC Report No:
Sample Matrix: WATER
Contract No: 68-01-7158
Data Release Authorized By: [signature]
Date Sample Received: 4-4-87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 4-8-87
Date Analyzed: 4-9-87
Conc./Dil Factor: 1 pH -
Percent Moisture: (Not Decanted) -

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	~~3~~	~~J~~
67-64-1	Acetone	~~78~~	~~B~~
75-15-0	Carbon Disulfide	5	U
75-35-4	1, 1-Dichloroethene	5	U
75-34-3	1, 1-Dichloroethane	5	U
156-60-5	Trans-1, 2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1, 2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1, 1, 1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1, 1, 2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	cis-1, 3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Laboratory Name ecology and environment, inc.

Case No. 7052

Sample Number BK 204

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 5-8-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) -

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1 3-Dichlorobenzene	10	U
106-46-7	1. 4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1. 2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2. 4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(-2-Chloroethoxy)Methane	10	U
120-83-2	2. 4-Dichlorophenol	10	U
120-82-1	1. 2. 4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2. 4. 6-Trichlorophenol	10	U
95-95-4	2. 4. 5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	50	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	10	U
51-28-5	2. 4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2 4-Dinitrotoluene	10	U
606-20-2	2. 6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4. 6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	5	BJ
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3. 3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	5	BJ
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1 2. 3-cd)Pyrene	10	U
53-70-3	Dibenz(a h)Anthracene	10	U
191-24-2	Benzo(g h. i)Perylene	10	U

(1)-Cannot be separated from diphenylamine

Laboratory Name ECOLOGY AND ENVIRONMENT, INC.
Case No 7052

Sample Number
BK-204

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 4-6-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted) _____

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☑Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 U
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.10 U
72-55-9	4, 4'-DDE	0.10 U
72-20-8	Endrin	0.10 U
33213-65-9	Endosulfan II	0.10 U
72-54-8	4, 4'-DDD	0.10 U
1031-07-8	Endosulfan Sulfate	0.10 U
50-29-3	4 4'-DDT	0.10 U
72-43-5	Methoxychlor	0.50 U
53494-70-5	Endrin Ketone	0.10 U
57-74-9	Chlordane	0.50 U
8001-35-2	Toxaphene	1.0 U
12674-11-2	Aroclor-1016	0.50 U
11104-28-2	Aroclor-1221	0.50 U
11141-16-5	Aroclor-1232	0.50 U
53469-21-9	Aroclor-1242	0.50 U
12672-29-6	Aroclor-1248	0.50 U
11097-69-1	Aroclor-1254	1.0 U
11096-82-5	Aroclor-1260	1.0 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1,000 or W_s _____ V_t 10,000 V_i 4

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Form I A

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBJ 143

Date: 05/07/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates
SOW NO.: 785
LAB SAMPLE ID. NO.: 8704862-01

CASE NO. CASE 7852

QC REPORT NO. 8704862

Elements Identified and Measured

Concentration: Low ____X_____ Medium _____
Matrix: Water ____X___ Soil _____ Sludge _____ Other _____

ug/L

1	Aluminum	633*	P	13	Magnesium	[1,020]	P
2	Antimony	60U	F	14	Manganese	45	P
3	Arsenic	10U	F	15	Mercury	0.10U J	
4	Barium	30U	P	16	Nickel	20U	P
5	Beryllium	2.1UN	P	17	Potassium	[640]	P
6	Cadmium	5.0U	F	18	Selenium	5.0U	F
7	Calcium	[3,140]	P	19	Silver	7.7UN	P
8	Chromium	~~[illegible]~~	P	20	Sodium	7,190	P
9	Cobalt	30U	P	21	Thallium	10U	F
10	Copper	[17]	P	22	Vanadium	23U	P
11	Iron	1,870	P	23	Zinc	60	P
12	Lead	5.0N	F	24			

Cyanide 10U J Percent solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Description: Colorless, clear.

Lab Manager Joan M. Lacava

Sample Number
BK205

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc. Case No: 7052

Lab Sample ID No: 2537 QC Report No:

Sample Matrix: WATER Contract No: 68-01-7158

Data Release Authorized By: [signature] Date Sample Received: 4-4-87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-8-87

Date Analyzed: 4-8-87

Conc./Dil Factor: 1 pH -

Percent Moisture: (Not Decanted) -

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	~~15~~	B
67-64-1	Acetone	~~14~~	B ~~5~~
75-15-0	Carbon Disulfide	5	U
75-35-4	1, 1-Dichloroethene	5	U
75-34-3	1, 1-Dichloroethane	5	U
156-60-5	Trans-1, 2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1, 2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1, 1, 1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1, 1, 2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	cis-1, 3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Laboratory Name ecology and environment, inc.

Case No. 7052

Sample Number BK 205

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 5-8-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) -

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1 3-Dichlorobenzene	10	U
106-46-7	1. 4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1. 2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2. 4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(-2-Chloroethoxy)Methane	10	U
120-83-2	2. 4-Dichlorophenol	10	U
120-82-1	1. 2. 4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2. 4 6-Trichlorophenol	10	U
95-95-4	2. 4. 5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	50	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	10	U
51-28-5	2. 4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2 4-Dinitrotoluene	10	U
606-20-2	2. 6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4. 6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	65	
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3. 3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1 2. 3-cd)Pyrene	10	U
53-70-3	Dibenzo(a h)Anthracene	10	U
191-24-2	Benzo(g h. i)Perylene	10	U

(1)-Cannot be separated from diphenylamine

Form I

7 85

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ecology and environment

Laboratory Name ECOLOGY AND ENVIRONMENT, INC.
Case No 7052

Sample Number
BK-205

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)
Date Extracted/Prepared: 4-6-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted) _____

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☑Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 U
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.10 U
72-55-9	4, 4'-DDE	0.10 U
72-20-8	Endrin	0.10 U
33213-65-9	Endosulfan II	0.10 U
72-54-8	4, 4'-DDD	0.10 U
1031-07-8	Endosulfan Sulfate	0.10 U
50-29-3	4 4'-DDT	0.10 U
72-43-5	Methoxychlor	0.50 U
53494-70-5	Endrin Ketone	0.10 U
57-74-9	Chlordane	0.50 U
8001-35-2	Toxaphene	1.0 U
12674-11-2	Aroclor-1016	0.50 U
11104-28-2	Aroclor-1221	0.50 U
11141-16-5	Aroclor-1232	0.50 U
53469-21-9	Aroclor-1242	0.50 U
12672-29-6	Aroclor-1248	0.50 U
11097-69-1	Aroclor-1254	1.0 U
11096-82-5	Aroclor-1260	1.0 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1,000 or W_s _____ V_t 10,000 V_i 4

recycled paper

Form I B

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MB 144

Date: 05/24/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRidge Analytical Associates
SOW NO.: 785
LAB SAMPLE ID. NO.: 8704031-02

CASE NO. Case 7052

QC REPORT NO. 8704031

Elements Identified and Measured

Concentration: Low ____X____ Medium _____
Matrix: Water ____X___ Soil _____ Sludge _____ Other _____

µg/L

1	Aluminum	2,900 J	P	13	Magnesium	[1,920] J	P
2	Antimony	60U J	F	14	Manganese	72 J	P
3	Arsenic	10U J	F	15	Mercury	0.18U J	
4	Barium	30U J	P	16	Nickel	28U J	P
5	Beryllium	2.1U J	F	17	Potassium	[1,240] J	P
6	Cadmium	5.0U J	F	18	Selenium	5.0U J	F
7	Calcium	[3,240] J	P	19	Silver	7.7UN J	P
8	Chromium	9.4U J	P	20	Sodium	16,700 J	P
9	Cobalt	30U J	P	21	Thallium	10U J	F
10	Copper	16U J	P	22	Vanadium	23U J	P
11	Iron	3,170 J	P	23	Zinc	213* J	P
12	Lead	~~[illegible]~~ 54 J	F	24			

Cyanide 10U J Percent solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Sample description: pale gold, clear, silt.

Lab Manager Joan M. Lacey

Sample Number
BK 206

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc. Case No: 7052

Lab Sample ID No: 2500 QC Report No:

Sample Matrix: WATER Contract No: 68-01-7158

Data Release Authorized By: [signature] Date Sample Received: 4-3-87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-10-87

Date Analyzed: 4-10-87

Conc./Dil Factor: 1 pH –

Percent Moisture: (Not Decanted) –

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	~~5~~	B ~~5~~
75-15-0	Carbon Disulfide	5	U
75-35-4	1, 1-Dichloroethene	5	U
75-34-3	1, 1-Dichloroethane	5	U
156-60-5	Trans-1, 2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1, 2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1, 1, 1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1, 1, 2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	cis-1, 3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Laboratory Name ecology and environment, inc.

Case No. 7052

Sample Number BK206

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 5-8-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) -

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1 3-Dichlorobenzene	10	U
106-46-7	1. 4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1. 2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2. 4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2. 4-Dichlorophenol	10	U
120-82-1	1. 2. 4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2. 4 6-Trichlorophenol	10	U
95-95-4	2. 4. 5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	50	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	10	U
51-28-5	2. 4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2 4-Dinitrotoluene	10	U
606-20-2	2. 6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4. 6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	~~10~~ 25	
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3. 3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1 2. 3-cd)Pyrene	10	U
53-70-3	Dibenz(a h)Anthracene	10	U
191-24-2	Benzo(g h. i)Perylene	10	U

(1)-Cannot be separated from diphenylamine

Laboratory Name Ecology and Environment, Inc.
Case No 7052

Sample Number
BK-206

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)
Date Extracted/Prepared: 4-6-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted) _____

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☑Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 U
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.10 U
72-55-9	4, 4'-DDE	0.10 U
72-20-8	Endrin	0.10 U
33213-65-9	Endosulfan II	0.10 U
72-54-8	4, 4'-DDD	0.10 U
1031-07-8	Endosulfan Sulfate	0.10 U
50-29-3	4 4'-DDT	0.10 U
72-43-5	Methoxychlor	0.50 U
53494-70-5	Endrin Ketone	0.10 U
57-74-9	Chlordane	0.50 U
8001-35-2	Toxaphene	1.0 U
12674-11-2	Aroclor-1016	0.50 U
11104-28-2	Aroclor-1221	0.50 U
11141-16-5	Aroclor-1232	0.50 U
53469-21-9	Aroclor-1242	0.50 U
12672-29-6	Aroclor-1248	0.50 U
11097-69-1	Aroclor-1254	1.0 U
11096-82-5	Aroclor-1260	1.0 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1,000 or W_s _____ V_t 10,000 V_i 4

Form I-I

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.: MBJ 1[illegible]

Date: 05/04/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates
SDW NO.: 795
LAB SAMPLE ID. NO.: 8704031-03

CASE NO. Case 7052

QC REPORT NO. 8704031

Elements Identified and Measured

Concentration: Low ___X___ Medium _____
Matrix: Water ____X___ Soil _____ Sludge _____ Other _____

ug/L

1	Aluminum	1,580	J	P	13	Magnesium	[757]	J	P
2	Antimony	60U	J	F	14	Manganese	24S	J	P
3	Arsenic	10U	J	F	15	Mercury	0.18U	J	
4	Barium	30U	J	P	16	Nickel	[36]	J	P
5	Beryllium	2.1U	J	P	17	Potassium	[1,220]	J	P
6	Cadmium	5.0U	J	F	18	Selenium	5.0U	J	F
7	Calcium	11,420	J	P	19	Silver	29N	J	P
8	Chromium	9.4U	J	P	20	Sodium	51,100	J	P
9	Cobalt	38U	J	P	21	Thallium	10U	J	F
10	Copper	70	J	P	22	Vanadium	23U	J	P
11	Iron	1,860	J	P	23	Zinc	100*	J	P
12	Lead	[4.9]	J	F	24				

Cyanide 10 J Percent solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: sample description: pale yellow, clear, silt.

Lab Manager Joan M. Lacaux

Sample Number
BK 207

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc. Case No: 7052

Lab Sample ID No: 2538 QC Report No:

Sample Matrix: WATER Contract No: 68-01-7158

Data Release Authorized By: [signature] Date Sample Received: 4-4-87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-8-87

Date Analyzed: 4-8-87

Conc./Dil Factor: 1 pH -

Percent Moisture: (Not Decanted) -

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride		
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1, 1-Dichloroethene	5	U
75-34-3	1, 1-Dichloroethane	5	U
156-60-5	Trans-1, 2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1, 2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1, 1, 1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1, 1, 2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	cis-1, 3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/µl in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

112

ecology and environment, inc.

Laboratory Name 7052

Case No.

Sample Number BK207

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 5-8-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) –

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	10	U
111-44-4	bis(-2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1 3-Dichlorobenzene	10	U
106-46-7	1. 4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1. 2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2. 4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(-2-Chloroethoxy)Methane	10	U
120-83-2	2. 4-Dichlorophenol	10	U
120-82-1	1. 2. 4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2. 4 6-Trichlorophenol	10	U
95-95-4	2. 4. 5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	50	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	10	U
51-28-5	2. 4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2 4-Dinitrotoluene	10	U
606-20-2	2. 6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4. 6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	65	
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3. 3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1 2. 3-cd)Pyrene	10	U
53-70-3	Dibenzo(a h)Anthracene	10	U
191-24-2	Benzo(g h i)Perylene	10	U

(1)-Cannot be separated from diphenylamine

Laboratory Name ECOLOGY AND ENVIRONMENT, INC.
Case No. 7052

Sample Number
BK-207

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 4-6-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted) _____

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☑Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 U
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.10 U
72-55-9	4, 4'-DDE	0.10 U
72-20-8	Endrin	0.10 U
33213-65-9	Endosulfan II	0.10 U
72-54-8	4, 4'-DDD	0.10 U
1031-07-8	Endosulfan Sulfate	0.10 U
50-29-3	4 4'-DDT	0.10 U
72-43-5	Methoxychlor	0.50 U
53494-70-5	Endrin Ketone	0.10 U
57-74-9	Chlordane	0.50 U
8001-35-2	Toxaphene	1.0 U
12674-11-2	Aroclor-1016	0.50 U
11104-28-2	Aroclor-1221	0.50 U
11141-16-5	Aroclor-1232	0.50 U
53469-21-9	Aroclor-1242	0.50 U
12672-29-6	Aroclor-1248	0.50 U
11097-69-1	Aroclor-1254	1.0 U
11096-82-5	Aroclor-1260	1.0 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1,000 or W_s _____ V_t 10,000 V_i 4

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Form I B

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBJ 146

Date: 05/07/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates CASE NO. CASE 7052
SOW NO.: 785
LAB SAMPLE ID. NO.: 8704062-02 QC REPORT NO. 8704062

Elements Identified and Measured

Concentration: Low ___X___ Medium _____
Matrix: Water ___X___ Soil _____ Sludge _____ Other _____

ug/L

1	Aluminum	45,300*	P	13	Magnesium	[3,040]	P
2	Antimony	60U	F	14	Manganese	4,810	P
3	Arsenic	23	F	15	Mercury	0.10U J	
4	Barium	[85]	P	16	Nickel	20U	P
5	Beryllium	2.1UN	P	17	Potassium	[3,560]	P
6	Cadmium	5.0U	F	18	Selenium	5.0U	F
7	Calcium	[4,400]	P	19	Silver	7.7UN	P
8	Chromium	~~37*~~	P	20	Sodium	[2,330]	P
9	Cobalt	30U	P	21	Thallium	10U	F
10	Copper	57	P	22	Vanadium	84	P
11	Iron	68,800	P	23	Zinc	130	P
12	Lead	6.1N ~~693N*~~	F	24			

Cyanide 10U J Percent solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Description: Brown Cloudy.

Lab Manager Joan M. Lacava

Sample Number
BK209

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc.
Case No: 7052
Lab Sample ID No: 2540
QC Report No:
Sample Matrix: SOIL
Contract No: 68-01-7158
Data Release Authorized By: [signature]
Date Sample Received: 4-4-87

Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 4-9-87
Date Analyzed: 4-9-87
Conc/Dil Factor: 1.25 pH 8.8
Percent Moisture: (Not Decanted) 8

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	7	U
67-64-1	Acetone	~~7~~	B
75-15-0	Carbon Disulfide	7	U
75-35-4	1, 1-Dichloroethene	7	U
75-34-3	1, 1-Dichloroethane	7	U
156-60-5	Trans-1, 2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
107-06-2	1, 2-Dichloroethane	7	U
78-93-3	2-Butanone	14	
71-55-6	1, 1, 1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	14	U
75-27-4	Bromodichloromethane	7	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	7	U
10061-02-6	Trans-1, 3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1, 1, 2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-01-5	cis-1, 3-Dichloropropene	7	U
110-75-8	2-Chloroethylvinylether	14	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	7	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
	Total Xylenes	7	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

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Laboratory Name ECOLOGY & ENVIRONMENT INC.

Case No. 7052

Sample Number BK 209

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-7-87

Date Analyzed: 4-16-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) 8

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl Alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
39638-32-9	bis(2-chloroisopropyl)Ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	1700	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethyl Phthalate	360	U
208-96-8	Acenaphthylene	360	U
99-09-2	3-Nitroaniline	1700	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-Methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	720	U
56-55-3	Benzo(a)Anthracene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	150	J
218-01-9	Chrysene	360	U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenzo(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

(1)-Cannot be separated from diphenylamine

Laboratory Name Ecology and Environment, Inc.
Case No 7052

Sample Number
BK-209

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)
Date Extracted/Prepared: 4-7-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 5
Percent Moisture (decanted) 8

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☐Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	43 U
319-85-7	Beta-BHC	43 U
319-86-8	Delta-BHC	43 U
58-89-9	Gamma-BHC (Lindane)	43 U
76-44-8	Heptachlor	43 U
309-00-2	Aldrin	43 U
1024-57-3	Heptachlor Epoxide	43 U
959-98-8	Endosulfan I	43 U
60-57-1	Dieldrin	87 U
72-55-9	4, 4'-DDE	87 U
72-20-8	Endrin	87 U
33213-65-9	Endosulfan II	87 U
72-54-8	4, 4'-DDD	87 U
1031-07-8	Endosulfan Sulfate	87 U
50-29-3	4 4'-DDT	87 U
72-43-5	Methoxychlor	430 U
53494-70-5	Endrin Ketone	87 U
57-74-9	Chlordane	430 U
8001-35-2	Toxaphene	870 U
12674-11-2	Aroclor-1016	430 U
11104-28-2	Aroclor-1221	430 U
11141-16-5	Aroclor-1232	430 U
53469-21-9	Aroclor-1242	430 U
12672-29-6	Aroclor-1248	430 U
11097-69-1	Aroclor-1254	870 U
11096-82-5	Aroclor-1260	870 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s _____ or W_s 30 V_t 1,000 V_i 4

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Form I C

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBI 149

Date: 05/04/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates
SOW NO.: 785
LAB SAMPLE ID. NO.: 8724031-04

CASE NO. Case 7282

QC REPORT NO. 8724031

Elements Icentified and Measured

Concentration: Low ___X___ Medium _____
Matrix: Water _____ Soil ___X___ Sludge _____ Other _____

mg/Kg dry weight

1	Aluminum	690 J	P	13	Magnesium	[190]	P
2	Antimony	12U	F	14	Manganese	26	P
3	Arsenic	2.0U	F	15	Mercury	0.080U J	
4	Barium	5.2U	P	16	Nickel	52	P
5	Beryllium	0.43U	P	17	Potassium	120U	P
6	Cadmium	1.0	F	18	Selenium	[illegible]	F
7	Calcium	[4531]	P	19	Silver	1.6U	P
8	Chromium	4.0	P	20	Sodium	216U	P
9	Cobalt	7.9U	P	21	Thallium	2.0U	F
10	Copper	43 J	P	22	Vanadium	4.7U	P
11	Iron	1,150	P	23	Zinc	94 J	F
12	Lead	3.8	F	24			

Cyanide 0.79U J Percent solids (%) 94

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: *Sample description: light beige, coarse, pebbles.*

Lab Manager *James M. Lacaire*

Sample Number
BK 210

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc.
Case No: 7052
Lab Sample ID No: 2541
QC Report No:
Sample Matrix: SOIL
Contract No: 68-01-7158
Data Release Authorized By: [signature]
Date Sample Received: 4-4-87

Volatile Compounds

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 4-9-87
Date Analyzed: 4-9-87
Conc/Dil Factor: 1.25 pH 7.9
Percent Moisture: (Not Decanted) 3

CAS Number		ug/l or ug/Kg (Circle One)
74-87-3	Chloromethane	13 U
74-83-9	Bromomethane	13 U
75-01-4	Vinyl Chloride	13 U
75-00-3	Chloroethane	13 U
75-09-2	Methylene Chloride	6 U
67-64-1	Acetone	~~4~~ B ~~3~~
75-15-0	Carbon Disulfide	6 U
75-35-4	1, 1-Dichloroethene	6 U
75-34-3	1, 1-Dichloroethane	6 U
156-60-5	Trans-1, 2-Dichloroethene	6 U
67-66-3	Chloroform	6 U
107-06-2	1, 2-Dichloroethane	6 U
78-93-3	2-Butanone	13 U
71-55-6	1, 1, 1-Trichloroethane	6 U
56-23-5	Carbon Tetrachloride	6 U
108-05-4	Vinyl Acetate	13 U
75-27-4	Bromodichloromethane	6 U

CAS Number		ug/l or ug/Kg (Circle One)
78-87-5	1, 2-Dichloropropane	6 U
10061-02-6	Trans-1, 3-Dichloropropene	6 U
79-01-6	Trichloroethene	6 U
124-48-1	Dibromochloromethane	6 U
79-00-5	1, 1, 2-Trichloroethane	6 U
71-43-2	Benzene	6 U
10061-01-5	cis-1, 3-Dichloropropene	6 U
110-75-8	2-Chloroethylvinylether	13 U
75-25-2	Bromoform	6 U
108-10-1	4-Methyl-2-Pentanone	13 U
591-78-6	2-Hexanone	13 U
127-18-4	Tetrachloroethene	6 U
79-34-5	1, 1, 2, 2-Tetrachloroethane	6 U
108-88-3	Toluene	6 U
108-90-7	Chlorobenzene	6 U
100-41-4	Ethylbenzene	6 U
100-42-5	Styrene	6 U
	Total Xylenes	6 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Laboratory Name ECOLOGY & ENVIRONMENT INC.

Case No. 7052

Sample Number BK 210

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 4-7-87

Date Analyzed: 4-16-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) 3

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	340	U
111-44-4	bis(-2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1 3-Dichlorobenzene	340	U
106-46-7	1 4-Dichlorobenzene	340	U
100-51-6	Benzyl Alcohol	340	U
95-50-1	1 2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
39638-32-9	bis(2-chloroisopropyl)Ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2, 4-Dimethylphenol	340	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(-2-Chloroethoxy)Methane	340	U
120-83-2	2, 4-Dichlorophenol	340	U
120-82-1	1, 2, 4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2 4 6-Trichlorophenol	340	U
95-95-4	2, 4, 5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	1600	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	340	U
51-28-5	2, 4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	340	U
121-14-2	2 4-Dinitrotoluene	340	U
606-20-2	2, 6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4, 6-Dinitro-2-Methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3, 3'-Dichlorobenzidine	680	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	82	J
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1 2, 3-cd)Pyrene	340	U
53-70-3	Dibenz(a h)Anthracene	340	U
191-24-2	Benzo(g, h, i)Perylene	340	U

(1)-Cannot be separated from diphenylamine

Laboratory Name Ecology and Environment, Inc.
Case No 7052

Sample Number
BK-210

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)
Date Extracted/Prepared: 4-7-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 2x
Percent Moisture (decanted) 3

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☐Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or (ug/Kg) (Circle One)	
319-84-6	Alpha-BHC	17	U
319-85-7	Beta-BHC	17	U
319-86-8	Delta-BHC	17	U
58-89-9	Gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor Epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	33	U
72-55-9	4, 4'-DDE	33	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4, 4'-DDD	33	U
1031-07-8	Endosulfan Sulfate	33	U
50-29-3	4 4'-DDT	33	U
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin Ketone	33	U
57-74-9	Chlordane	170	U
8001-35-2	Toxaphene	330	U
12674-11-2	Aroclor-1016	170	U
11104-28-2	Aroclor-1221	170	U
11141-16-5	Aroclor-1232	170	U
53469-21-9	Aroclor-1242	170	U
12672-29-6	Aroclor-1248	170	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s _____ or W_s 30 V_t 1,000 V_i 4

recycled paper

Form I B

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703 557-2490 FTS: 8-557-2490

EPA Sample No.
MBJ 149

Date: 05/04/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates
SOW NO.: 785
LAB SAMPLE ID. NO.: 8704031-05

CASE NO. Case 7052

QC REPORT NO. 8704031

Elements Identified and Measured

Concentration: Low ____X_____ Medium _____
Matrix: Water _____ Soil ____X___ Sludge _____ Other _____

mg/Kg dry weight

1	Aluminum	694 J	P	13	Magnesium	[93]		P
2	Antimony	11U	F	14	Manganese	37		P
3	Arsenic	1.9U	F	15	Mercury	0.090U	J	
4	Barium	6.0U	P	16	Nickel	50		P
5	Beryllium	0.41U	P	17	Potassium	115U		P
6	Cadmium	1.9	F	18	Selenium	~~0.22~~ 0.44U		F
7	Calcium	[4461]	F	19	Silver	1.5U		P
8	Chromium	2.8	P	20	Sodium	207U		P
9	Cobalt	7.6U	P	21	Thallium	1.9U		F
10	Copper	25 J	P	22	Vanadium	4.4U		P
11	Iron	1,150	P	23	Zinc	120 J		P
12	Lead	5.0	F	24				

Cyanide 1.5 J Percent solids (%) 96

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Sample Description: light beige, coarse, pebbles

Lab Manager Jean M. Lacaire

Sample Number
BK211

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc.
Case No: 7052
Lab Sample ID No: 2542
QC Report No:
Sample Matrix: Soil
Contract No: 68-01-7158
Data Release Authorized By:
Date Sample Received: 4-4-87

Volatile Compounds

Concentration: (Low) Medium (Circle One)
Date Extracted/Prepared: 4-9-87
Date Analyzed: 4-9-87
Conc/Dil Factor: 1.25 pH 5.6
Percent Moisture: (Not Decanted) 10

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	~~[illegible]~~	
67-64-1	Acetone	~~[illegible]~~	B
75-15-0	Carbon Disulfide	7	U
75-35-4	1, 1-Dichloroethene	7	U
75-34-3	1, 1-Dichloroethane	7	U
156-60-5	Trans-1, 2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
107-06-2	1, 2-Dichloroethane	7	U
78-93-3	2-Butanone	14	
71-55-6	1, 1, 1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	14	U
75-27-4	Bromodichloromethane	7	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	7	U
10061-02-6	Trans-1, 3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1, 1, 2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-01-5	cis-1, 3-Dichloropropene	7	U
110-75-8	2-Chloroethylvinylether	14	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	7	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
	Total Xylenes	7	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report

Laboratory Name ECOLOGY & ENVIRONMENT INC.

Case No: 7052

Sample Number BK211

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: (Low) Medium (Circle One)

Date Extracted/Prepared: 4-7-87

Date Analyzed: 4-16-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) 10

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or (ug/Kg) (Circle One)	
108-95-2	Phenol	370	U
111-44-4	bis(-2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1 3-Dichlorobenzene	370	U
106-46-7	1 4-Dichlorobenzene	370	U
100-51-6	Benzyl Alcohol	370	U
95-50-1	1 2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
39638-32-9	bis(2-chloroisopropyl)Ether	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2. 4-Dimethylphenol	370	U
65-85-0	Benzoic Acid	1800	U
111-91-1	bis(-2-Chloroethoxy)Methane	370	U
120-83-2	2. 4-Dichlorophenol	370	U
120-82-1	1. 2. 4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2 4 6-Trichlorophenol	370	U
95-95-4	2. 4 5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethyl Phthalate	370	U
208-96-8	Acenaphthylene	370	U
99-09-2	3-Nitroaniline	1800	U

CAS Number		ug/l or (ug/Kg) (Circle One)	
83-32-9	Acenaphthene	370	U
51-28-5	2. 4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	370	U
121-14-2	2 4-Dinitrotoluene	370	U
606-20-2	2. 6-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4. 6-Dinitro-2-Methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3. 3'-Dichlorobenzidine	730	U
56-55-3	Benzo(a)Anthracene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	150	J
218-01-9	Chrysene	370	U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1 2. 3-cd)Pyrene	370	U
53-70-3	Dibenzo(a h)Anthracene	370	U
191-24-2	Benzo(g h i)Perylene	370	U

(1)-Cannot be separated from diphenylamine

Laboratory Name ECOLOGY AND ENVIRONMENT, INC.

Case No 7052

Sample Number BK-211

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-7-87

Date Analyzed: 5-6-87

Conc/Dil Factor: 1

Percent Moisture (decanted) 10

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☐Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
319-84-6	Alpha-BHC	8.9	U
319-85-7	Beta-BHC	8.9	U
319-86-8	Delta-BHC	8.9	U
58-89-9	Gamma-BHC (Lindane)	8.9	U
76-44-8	Heptachlor	8.9	U
309-00-2	Aldrin	8.9	U
1024-57-3	Heptachlor Epoxide	8.9	U
959-98-8	Endosulfan I	8.9	U
60-57-1	Dieldrin	18	U
72-55-9	4, 4'-DDE	18	U
72-20-8	Endrin	18	U
33213-65-9	Endosulfan II	18	U
72-54-8	4, 4'-DDD	18	U
1031-07-8	Endosulfan Sulfate	18	U
50-29-3	4, 4'-DDT	18	U
72-43-5	Methoxychlor	89	U
53494-70-5	Endrin Ketone	18	U
57-74-9	Chlordane	89	U
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	89	U
11104-28-2	Aroclor-1221	89	U
11141-16-5	Aroclor-1232	89	U
53469-21-9	Aroclor-1242	89	U
12672-29-6	Aroclor-1248	89	U
11097-69-1	Aroclor-1254	180	U
11096-82-5	Aroclor-1260	180	U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s _____ or W_s 30 V_t 1,000 V_i 4

recycled paper

Form I P

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
150 150

Date: 05/04/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates
SOW NO.: 785
LAB SAMPLE ID. NO.: 8704031-06

CASE NO. Case 7050

QC REPORT NO. 8704201

Elements Identified and Measured

Concentration: Low _____X_____ Medium _____
Matrix: Water _____ Soil ____X___ Sludge _____ Other _____

mg/Kg dry weight

1	Aluminum	8,910 J	P	13	Magnesium	[885]	P
2	Antimony	13U	F	14	Manganese	38	P
3	Arsenic	2.6	F	15	Mercury	0.10U J	
4	Barium	[14]	P	16	Nickel	[6.6]	P
5	Beryllium	0.43U	P	17	Potassium	[279]	P
6	Cadmium	1.1U	F	18	Selenium	~~[0.05]~~ 1.1U	F
7	Calcium	129U	P	19	Silver	1.6U	P
8	Chromium	5.0	P	20	Sodium	[298]	P
9	Cobalt	7.9U	P	21	Thallium	2.2U	F
10	Copper	[4.4] J	P	22	Vanadium	[8.4]	P
11	Iron	9,080	P	23	Zinc	43 J	P
12	Lead	5.9	F	24			

Cyanide 0.76U J Percent solids (%) 58

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: sample description: beigg fine/medium, pebbles,

Lab Manager Joan M. Lecaus

Sample Number
BK203

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc Case No: 7052

Lab Sample ID No: 2499 QC Report No:

Sample Matrix: WATER Contract No: 68-01-7158

Data Release Authorized By: [signature] Date Sample Received: 4-3-87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-8-87

Date Analyzed: 4-8-87

Conc./Dil Factor: 1 pH -

Percent Moisture: (Not Decanted)

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	~~[illegible]~~	BX
67-64-1	Acetone	~~[illegible]~~	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1, 1-Dichloroethene	5	U
75-34-3	1, 1-Dichloroethane	5	U
156-60-5	Trans-1, 2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1, 2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1, 1, 1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1, 1, 2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	cis-1, 3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Laboratory Name ecology and environment, inc.

Case No. 7052

Sample Number BK203

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 5-8-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) —

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	50	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	~~10~~ 83	
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1)-Cannot be separated from diphenylamine

Laboratory Name ECOLOGY AND ENVIRONMENT, INC
Case No 7052

Sample Number
BK-203

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)
Date Extracted/Prepared: 4-6-87
Date Analyzed: 5-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted)

GPC Cleanup ☐Yes ☑No
Separatory Funnel Extraction ☑Yes
Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 U
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.10 U
72-55-9	4, 4'-DDE	0.10 U
72-20-8	Endrin	0.10 U
33213-65-9	Endosulfan II	0.10 U
72-54-8	4, 4'-DDD	0.10 U
1031-07-8	Endosulfan Sulfate	0.10 U
50-29-3	4 4'-DDT	0.10 U
72-43-5	Methoxychlor	0.50 U
53494-70-5	Endrin Ketone	0.10 U
57-74-9	Chlordane	0.50 U
8001-35-2	Toxaphene	1.0 U
12674-11-2	Aroclor-1016	0.50 U
11104-28-2	Aroclor-1221	0.50 U
11141-16-5	Aroclor-1232	0.50 U
53469-21-9	Aroclor-1242	0.50 U
12672-29-6	Aroclor-1248	0.50 U
11097-69-1	Aroclor-1254	1.0 U
11096-82-5	Aroclor-1260	1.0 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1,000 or W_s _____ V_t 10,000 V_i 4

recycled paper

Form I -

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBU 142

Date: 05/24/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates CASE NO. Case 7052
SDW NO.: 788
LAB SAMPLE ID. NO.: 8724031-01 QC REPORT NO. 8724031

Elements Identified and Measured

Concentration: Low ___X___ Medium _____
Matrix: Water ___X___ Soil _____ Sludge _____ Other _____

ug/L

1	Aluminum	143U	P	13	Magnesium	117U	P
2	Antimony	60U	F	14	Manganese	6.5U	P
3	Arsenic	10U	F	15	Mercury	0.16U	
4	Barium	30U	P	16	Nickel	28U	P
5	Beryllium	0.1U	P	17	Potassium	584U	P
6	Cadmium	5.0U	F	18	Selenium	5.0U	F
7	Calcium	629U	P	19	Silver	7.7UN	P
8	Chromium	9.4U	P	20	Sodium	1,050U	P
9	Cobalt	39U	P	21	Thallium	10U	F
10	Copper	16U	P	22	Vanadium	23U	P
11	Iron	45U	P	23	Zinc	32*	P
12	Lead	5.0U	F	24			

Cyanide 10U Percent solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Sample Description: Colorless, clear.

Lab Manager Joan M. Lacey

Sample Number
BK 213

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: Ecology & Environment Inc Case No: 7052

Lab Sample ID No: 2539 QC Report No:

Sample Matrix: WATER Contract No: 68-01-7158

Data Release Authorized By: [signature] Date Sample Received: 4-4-87

Volatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-8-87

Date Analyzed: 4-8-87

Conc./Dil Factor: 1 pH -

Percent Moisture: (Not Decanted)

CAS Number		ug/l or ug/Kg (Circle One)	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	~~28~~	B
67-64-1	Acetone	~~72~~	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1, 1-Dichloroethene	5	U
75-34-3	1, 1-Dichloroethane	5	U
156-60-5	Trans-1, 2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1, 2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1, 1, 1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U

CAS Number		ug/l or ug/Kg (Circle One)	
78-87-5	1, 2-Dichloropropane	5	U
10061-02-6	Trans-1, 3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1, 1, 2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	cis-1, 3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1, 1, 2, 2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g., 10J). If limit of detection is 10 µg/l and a concentration of 3 µg/l is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

196

Laboratory Name ecology and environment, inc.

Case No. 7052

Sample Number BK213

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 4-16-87

Conc/Dil Factor: 2

Percent Moisture (Decanted) —

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
99-09-2	3-Nitroaniline	50	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
218-01-9	Chrysene	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1)-Cannot be separated from diphenylamine

Laboratory Name ECOLOGY AND ENVIRONMENT, INC.

Case No 7052

Sample Number BK-213

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared: 4-6-87

Date Analyzed: 5-6-87

Conc/Dil Factor: 1

Percent Moisture (decanted) _____

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.05 U
319-85-7	Beta-BHC	0.05 U
319-86-8	Delta-BHC	0.05 U
58-89-9	Gamma-BHC (Lindane)	0.05 U
76-44-8	Heptachlor	0.05 U
309-00-2	Aldrin	0.05 U
1024-57-3	Heptachlor Epoxide	0.05 U
959-98-8	Endosulfan I	0.05 U
60-57-1	Dieldrin	0.10 U
72-55-9	4, 4'-DDE	0.10 U
72-20-8	Endrin	0.10 U
33213-65-9	Endosulfan II	0.10 U
72-54-8	4, 4'-DDD	0.10 U
1031-07-8	Endosulfan Sulfate	0.10 U
50-29-3	4 4'-DDT	0.10 U
72-43-5	Methoxychlor	0.50 U
53494-70-5	Endrin Ketone	0.10 U
57-74-9	Chlordane	0.50 U
8001-35-2	Toxaphene	1.0 U
12674-11-2	Aroclor-1016	0.50 U
11104-28-2	Aroclor-1221	0.50 U
11141-16-5	Aroclor-1232	0.50 U
53469-21-9	Aroclor-1242	0.50 U
12672-29-6	Aroclor-1248	0.50 U
11097-69-1	Aroclor-1254	1.0 U
11096-82-5	Aroclor-1260	1.0 U

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1,000 or W_s _____ V_t 10,000 V_i 4

recycled paper

Form I C

U. S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MBJ 162

Date: 05/07/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME: CAMBRIdge Analytical Associates CASE NO. CASE 7052
SOW NO.: 785
LAB SAMPLE ID. NO.: 8704062-03 QC REPORT NO. 8704062

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L

1	Aluminum	143U*	P	13	Magnesium	117U	P
2	Antimony	60U	F	14	Manganese	6.5U	P
3	Arsenic	10U	F	15	Mercury	0.18U J	
4	Barium	30U	P	16	Nickel	20U	P
5	Beryllium	2.1UN	P	17	Potassium	584U	P
6	Cadmium	5.0U	F	18	Selenium	5.0U	F
7	Calcium	629U	P	19	Silver	7.7UN	P
8	Chromium	~~9.4U*~~	P	20	Sodium	1,050U	P
9	Cobalt	30U	P	21	Thallium	10U	F
10	Copper	16U	P	22	Vanadium	23U	P
11	Iron	45U	P	23	Zinc	20U	P
12	Lead	5.0UN	F	24			

Cyanide 10U J Percent solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Description: colorless, clear

Lab Manager Joan M. Lacava

REFERENCE 15

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

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

VAN NOSTRAND REINHOLD COMPANY

NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

TOXICITY DATA: 2 CODEN:
orl-rat LD50:550 mg/kg AIHAAP 23,95,62
ihl-rat LCLo:8000 ppm/4H AIHAAP 23,95,62

THR: MOD via oral and inhal routes.
Fire Hazard: Dangerous; see ethers.
To Fight Fire: Water may be ineffective. Use alcohol foam, dry chemical, mist.
Disaster Hazard: When heated to decomp it yields acrid, irr fumes. Becomes shock and heat sensitive on storage.

ALMOND OIL

Fixed, non-drying oil; oily liquid. Composition: oleic, linoleic, myristic, palmitic acids. d: 0.910-0.915 @ 25°/25°.

SYNS:
ALMOND OIL EXPRESSED
ALMOND OIL SWEET

THR: A weak sensitizer. Contact dermatitis may result from local contact.
Fire Hazard: Slight, when exposed to heat or flame.
To Fight Fire: Use alcohol foam, dry chemical, water, mist.

ALMOND OIL, BITTER

Composition: Chief known constituents are benzaldehyde, hydrocyanic acid, benzaldehyde cyanhydrin. bp: 179°; d: 1.045-1.070 @ 15°

THR: Unknown. Depends upon purity of sample. An allergen. Can be quite toxic if it has not been separated from its hydrogen cyanide. Weak sensitizer; may cause contact dermatitis.
Fire Hazard: Slight, when exposed to heat or flame.
Disaster Hazard: Dangerous; see cyanides.

ALPRENOL HYDROCHLORIDE

CAS RN: 13707885 NIOSH #: UA 5425000
mf: $C_{15}H_{23}NO_2 \cdot ClH$; mw: 285.85

SYNS:
1-(O-ALLYLPHENOXY)-3-(ISOPROPYLAMINO)-2-PROPANOL HYDROCHLORIDE
OXPRENOLOL

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:103 mg/kg APTOA6 27,453,69
orl-man TDLo:571 ug/kg BLD KIZSB8 6(4),209,75
orl-mus LD50:184 mg/kg AIPTAK 202,79,73

THR: Causes BLD in man. HIGH orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of HCl and NO_x.

ALPRENOLOL

CAS RN: 13655522 NIOSH #: UA 5350000
mf: $C_{15}H_{23}NO_2$; mw: 249.39

SYNS:
1-(O-ALLYLPHENOXY)-3-(ISOPROPYLAMINO)-2-PROPANOL
ALFEPROL (RUSSIAN)

TOXICITY DATA: 3 CODEN:
ivn-mus LD50:20 mg/kg ARZNAD 27,1022,77
orl-mam LD50:184 mg/kg PCJOAU 8,137,74
ipr-mam LD50:102 mg/kg PCJOAU 8,137,74

THR: HIGH ivn, orl, ipr.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

ALTERNARIOL-9-METHYL ETHER

CAS RN: 23452053 NIOSH #: HP 8755000
mf: $C_{15}H_{12}O_5$; mw: 272.27

SYNS:
ALTERNARIOL MONOMETHYL ETHER
3,7-DIHYDROXY-9-METHOXY-1-METHYL-6H-DIBENZO(B,D) PYRAN-6-ONE

TOXICITY DATA: 3 CODEN:
mmo-sat 500 ug/plate MUREAV 78,33,80
ipr-ham TDLo:200 mg/kg TOXID9 1,35,81

THR: MUT data. HIGH ipr. An exper TER.
Disaster Hazard: When heated to decomp it emits smoke and acrid fumes.

ALUMINON

CAS RN: 569584 NIOSH #: GU 4800000
mf: $C_{22}H_{23}N_3O_9$; mw: 473.48

SYNS:
AMMONIUM AURINTRICARBOXYLATE
AURINTRICARBOXYLIC ACID AMMONIUM SALT

TOXICITY DATA: 3 CODEN:
ivn-mus LD50:4 mg/kg 12VXA5 8,42,68

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ivn.
Disaster Hazard: When heated to decomp it emits tox fumes such as NO_x.

ALUMINUM

CAS RN: 7429905 NIOSH #: BD 03300000
mf: Al; mw: 26.98

A silvery ductile metal. mp: 660°, bp: 2450°, d: 2.702, vap. press 1 mm @ 1284°. Sol in HCl, H_2SO_4 and alkalies.

SYNS:
ALAUN (GERMAN)
ALUMINA FIBRE
ALUMINIUM FLAKE
ALUMINUM DEHYDRATED
ALUMINUM, METALLIC, POWDER (DOT)
ALUMINUM POWDER
C.I. 77000

TOXICITY DATA: CODEN:
Toxicology Review: FOREAE 7,313,42; PEXTAR 12,102,69; AMTODM 3,209,77. DOT: Flammable Solid, Label: Flammable Solid FEREAC 41,57018,76. "NIOSH Manual of Analytical Methods" VOL 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: Aluminum is not generally regarded as an industrial poison. Inhal of finely divided aluminum powder has been reported as a cause of pulmonary fibrosis. May be implicated in Alzheimers disease.
Fire Hazard of Dust: Mod, when exposed to heat or flame or by chemical reaction.
Spontaneous Heating: No.
Explosion Hazard of Dust: Mod, when exposed to heat or flame or on contact with powerful oxidizers such

as chlorates, bromates, iodates, peroxides, perchlorates, nitrates, nitrites, oxides, performates, persulfates, halogens, NO_x, melted sulfates, SO_2, (trichloroethylene + HCl), (Na_2O_2 + CO_2), SCl_2, $COCl_2$, PCl_3, AgCl, O_2 compressed or liquid, (Pd + Δ), NOCl, (Nb oxide + S), chloro and/or fluoro methanes and ethanes, ICl, (Mn + air), CH_3Br, CH_3Cl, (fluoro-chloro lubricants + pressure), (Mg + $KClO_4$), propylene dichloride, Na_2C_2, Na_2CO_3, NaOH.

To Fight Fire: Special mixtures of dry chemical.

Incomp: Halocarbons, mercury (amalgam), Cl_2, I, (Fe + SiO_2 + Al), (Al foil + Hg), (Al + $BaNO_3$ + KNO_3 + S + organic matter) can explode.

For further information see Vol. 1, No. 4 of *DPIM Report.*

ALUMINUM AMMONIUM SULFATE

mf: $Al_2(SO_4)_3(NH_4)_2SO_4 \cdot 24H_2O$; mw: 906

Colorless crystals, odorless, sol in water, glycerine; insol in alc. d: 1.645; mp: 94.5°; bp: loses 20 H_2O @ 120°.

THR: A mild astringent used as a general-purpose food additive. Irr if inhal or ingested. See also aluminum compounds and sulfates.

Disaster Hazard: Dangerous; see sulfates.

ALUMINUM BOROHYDRIDE

mf: AlB_3H_{12}; mw: 71.53

Liquid. bp: 44.5°; mp: −64.5°; vap. press: 400 mm @ 28.1°.

SYN: ALUMINUM TETRAHYDROBORATE

THR: Unknown. See also hydrides and boron compounds.

Fire Hazard: Dangerous by spont chemical reaction; ignites spont in air, particularly in moist air.

Explosive Hazard: Explodes in O_2 at temperatures as low as 20°. An explosive range of 5% to 90%.

Incomp: Water, steam, oxidizing materials, acid or acid fumes.

Disaster Hazard: Mod dangerous; will react with water or steam to produce heat, H_2 or tox fumes.

To Fight Fire: CO_2, dry chemical.

ALUMINUM BROMIDE

CAS RN: 7727153 NIOSH #: BD 0350000
mf: $AlBr_3$; mw: 266.71

White to yellow-red lumps. mp: 97.5°; bp: 263.3° @ 748 mm; d: 3.2; vap. press: 1 mm @ 81.3°.

SYNS:

ALUMINUM BROMIDE (ANHYDROUS)
ALUMINUM TRIBROMIDE
TRIBROMOALUMINUM

TOXICITY DATA: CODEN:

DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76.

Reported in EPA TSCA Inventory, 1980.

THR: A tox, corrosive material. See also bromides. Mixtures with Na or K explode violently upon impact.

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

Incomp: Do not add H_2O to anhyd material. Hydrolysis can be violent.

ALUMINUM BROMIDE HYDROXIDE

CAS RN: 12794922 NIOSH #: BD 0360000

SYNS:

ALUMINUM BROMHYDROXIDE
ALUMINUM HYDROXYBROMIDE
ALUMINUM BROMOHYDROL

TOXICITY DATA: CODEN:

skn-hmn 90 mg/3D-I MLD 85DKA8 -,127,77

THR: A hmn skn irr. See also bromides.

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

ALUMINUM CARBIDE

mf: Al_4C_3; mw: 143.91

Yellow crystal or powder, hygroscopic. mp: 2100°; bp: decomp @ 2200°; d: 2.36.

THR: Decomp by water. Incandesces in contact with $KMnO_4$ or PbO_2. Dust can cause pulmonary irr. See also aluminum compounds.

ALUMINUM CHLORATE

mf: $Al(ClO_3)_3$; mw: 277.4

Colorless, deliquescent crystals. mp: decomp.

THR: Unknown. See chlorates.

Fire Hazard: Mod, by spont chemical reaction; a powerful oxidizer; may ignite upon contact with combustibles.

Explosion Hazard: Mod, when shocked, exposed to heat or by spont chemical reaction with reducing agents. When contaminated, may become sensitized.

Disaster Hazard: Dangerous; shock or heat will explode it. See chlorides and chlorates.

Incomp: Evaporation, emits ClO_2.

ALUMINUM CHLORIDE

CAS RN: 7446700 NIOSH #: BD 0525000
mf: $AlCl_3$; mw: 133.33

White hex deliquescent crystals. d: 2.44; mp: 194° @ 5.2 atm; bp: subl @ 181°; vap. press: 1 mm @ 100.0°. Violently sol in water, sol in alc and ether.

SYNS:

ALLUMINIO(CLORURO DI) (ITALIAN)
ALUMINIUMCHLORID (GERMAN)
ALUMINUM CHLORIDE (1:3)
ALUMINUM TRICHLORIDE
CHLORURE D'ALUMINIUM (FRENCH)
TRICHLOROALUMINUM

TOXICITY DATA: 2 CODEN:

ori-mus TDLo:425 mg/kg (MGN)	BJIMAG 23,305,66
ori-mus LD50:770 mg/kg	TJADAB 9,A14,74
cyt-mus-ipr 100 mmol/L	NULSAK 15,180,72
ori-rat LD50:3700 mg/kg	12VXA5 8,43,68
ori-mus LD50:3805 mg/kg	BJIMAG 23,305,66

TOXICITY DATA:
Currently tested by NTP for carcinogenesis by standard bioassay protocol as of December 1980.
THR: No data. Under CARC test.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

CADMIUM

CAS RN: 7440439 NIOSH #: EU 9800000
mf: Cd; mw: 112.40

Hexagonal crystals, silver-white malleable metal. mp: 320.9°, bp: 767 ± 2°, d: 8.642, vap. press: 1 mm @ 394°.

SYNS:
C.I. 77180 KADMIUM (GERMAN)

TOXICITY DATA:	3	CODEN:
ivn-rat TDLo:1250 ug/kg/(9D preg):TER		EVHPAZ 28,245,79
ipr-mus TDLo:2248 ug/kg/(8D preg):TER		TJADAB 13,33A,76
ivn-ham TDLo:2 mg/kg/(8D preg):TER		EXPEAM 25,56,69
ims-rat TDLo:45 mg/kg/4W-I:NEO		NCIUS* PH-43-64-886,SEPT,71
ims-rat TD:70 mg/kg:ETA		BJCAAI 18,124,64
ims-rat TD:63 mg/kg:ETA		NATUAS 193,592,62
ihl-man TCLo:88 ug/m3/8.6Y:SYS		AEHLAU 28,147,74
ihl-hmn LCLo:39 mg/m3/20M		AIHAAP 31,180,70
unk-man LDLo:15 mg/kg		85DCAI 2,73,70
orl-rat LD50:225 mg/kg		TXAPA9 41,667,77
ipr-rat LD50:4 mg/kg		TXAPA9 41,667,77
scu-rat LD50:9 mg/kg		TXAPA9 41,667,77
ivn-rat LD50:3 mg/kg		TXAPA9 41,667,77
unk-rat LD50:712 mg/kg		GTPZAB 22(5),6,78
unk-mus LD50:636 mg/kg		GTPZAB 22(5),6,78
orl-rbt LDLo:70 mg/kg		AMPMAR 34,127,73
scu-rbt LDLo:6 mg/kg		PROTA* -,-,55
ims-ham LDLo:25 mg/kg		NCIUS* PH-43-64-886
cyt-ham:ovr 1 umol/L		CGCGBR 26,251,80
ipr-rat TDLo:1124 ug/kg (1D male)		TXAPA9 41,194,77
scu-rat TDLo:250 ug/kg (19D preg)		APTOD9 19,A122,80
orl-mus TDLo:448 mg/kg (MGN)		AEHLAU 23,102,71

Carcinogenic Determination: Animal Positive IARC** 2,74,73.
TLV: Air: 0.05 mg/m3 DTLVS* 4,59,80; TRBMAV 33(1),85,75; JDSCAE 58(12),1767,75; JFDSAZ 39,321,74; AMBOCX 3(2),55,74; QURBAW 7(1), 75,74; AEMBAP 40,239,73; NTIS** PB-221,198; KOTTAM 11(11),1300,75; FOREAE 7,313,42; STEVA8 2(4),341,74; FCTXAV 9,105,71; AJMEAZ 38,409,65; ENVRAL 4,71,71; 85CVA2 5,63,70; PEXTAR 12,102,69; PDTNBH 6,204,77; BNYMAM 54,413,78; AMTODM 3,209,77; GSAMAQ 123, 109,71. OSHA Standard: Air: TWA 200 ug/m3; CL 600 (SCP-W) FEPEAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 191,223,224, VOL 3 S312, S313, VOL 5 173#. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper TER, NEO, ETA, CARC. A human SYS. HIGH hmn ihl, unk. HIGH orl, ipr, scu, ivn, ims. MOD unk. See also cadmium compounds.
Fire Hazard: Mod, in the form of dust when exposed to heat or flame or by chemical reaction with oxidizing agents, metals, HN_3, Zn, Se and Te.
Explosion Hazard: Mod, in the form of dust when exposed to flame.
Disaster Hazard: Dangerous; cadmium dust can react vigorously with oxidizing materials.
For further information see Vol. 1, No. 1 and Vol. 3, No. 5 of *DPIM Report.*

CADMIUM (II) ACETATE

CAS RN: 543908 NIOSH #: EU 9810000
mf: $C_2H_4O_2 \cdot 1/2Cd$; mw: 116.25

Monoclinic colorless crystals, odor of acetic acid. mp: 256°, bp: decomp, d: 2.341.

SYNS:
BIS(ACETOXY)CADMIUM C.I. 77185
CADMIUM DIACETATE

TOXICITY DATA:	3	CODEN:
otr-ham:emb 1 umol/L		CNREA8 39,193,79
dnd-ham:emb 1 umol/L		CNREA8 39,193,79
ipr-mus LD50:14 mg/kg		TXAPA9 49,41,79
cyt-hmn:lym 10 nmol/L		MUREAV 85,236,81
ipr-rat TDLo:2371 ug/kg (14D preg)		BECTA6 20,206,78
ipr-rat TDLo:1 mg/kg (14D preg)		BECTA6 23,25,79
ipr-rat TDLo:2 mg/kg (20D preg)		BECTA6 23,25,79

Reported in EPA TSCA Inventory, 1980.
THR: MUT data. HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of Cd.

CADMIUM BIS(2-ETHYLHEXYL) PHOSPHITE

CAS RN: 7495934 NIOSH #: TG 6475000
mf: $C_{32}H_{68}O_6P_2 \cdot Cd$; mw: 723.34

SYN: PHOSPHORUS ACID, BIS(2-ETHYLHEXYL) ESTER, CADMIUM SALT

TOXICITY DATA:	3	CODEN:
ipr-mus LDLo:250 mg/kg		CBCCT* 7,790,55

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.
THR: HIGH ipr. See also cadmium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of PO_x and Cd.

CADMIUM CAPRYLATE

CAS RN: 2191108 NIOSH #: RH 0370000
mf: $C_{16}H_{30}O_4 \cdot Cd$; mw: 398.86

SYN: OCTANOIC ACID, CADMIUM SALT (2:1)

TOXICITY DATA:	3-2	CODEN:
orl-rat LD50:950 mg/kg		JHEMA2 18,144,74
itr-rat LDLo:10 mg/kg		JHEMA2 18,144,74
orl-mus LD50:300 mg/kg		JHEMA2 18,144,74

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

CHROMIC ACID (MIXTURE)

NIOSH #: GB 2650000

mf: CrO_3; mw: 100.01

mp: 196°; d: 2.70; dark red cryst; decomp @ 250° to $Cr_2O_3 + O_2$; a powerful oxidizer. Water sol.

SYNS:
CHROMIUM TRIOXIDE
CHROMIC ANHYDRIDE

TOXICITY DATA: CODEN:
DOT: Oxidizer, Label: Oxidizer FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.

THR: A poison. See also chromium compounds and chromates. A powerful irr of skn, eyes and mu mem; can cause a dermatitis, bronchoasthma, "chrome holes," damage to the eyes.

Disaster Hazard: May explode in a fire.

Incomp: Acetic acid; acetic anhydride; tetrahydronaphthalene; acetone; alcohols; alkali metals; ammonia; arsenic; bromine penta fluoride; butyric acid; n,n-dimethylformamide; hydrogen sulfide; peroxyformic acid; phosphorus; potassium hexacyanoferrate; pyridine; selenium; sodium; sulfur.

CHROMIC ACID (SOLUTION)

NIOSH #: GB 2670000

SYN: CHROMIC ACID SOLUTION (DOT)

TOXICITY DATA: 3 CODEN:
DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.

THR: See chromic acid, dry. See also chromium compounds.

CHROMIC CHLORIDE STEARATE

CAS RN: 15242963 NIOSH #: GB 7280000

mf: $C_{18}H_{36}Cl_4Cr_2O_3$; mw: 546.34

SYNS:
TETRACHLORO-MU-HYDROXY-(MU-OCTADECANOATO-O:O') DI-CHROMIUM
TETRACHLORO-MU-HYDROXY-(MU-STEARATO)DI-CHROMIUM
NCI-C60800
STEARATO-CHROMIC CHLORIDE COMPLEX

TOXICITY DATA: 3 CODEN:
ivn-mus LD50:180 mg/kg CSLNX* NX#03305

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also chromium compounds.

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

CHROMIC CHROMATE

CAS RN: 24613896 NIOSH #: GB 2850000

mf: $Cr_3O_{12} \cdot 2Cr$; mw: 452.00

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2)
CHROMIUM CHROMATE

TOXICITY DATA: 3 CODEN:
imp-rat TDLo:112 mg/kg:NEO AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 NIOSH #: GB 4000000

mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE
CHROMITE ORE
IRON CHROMITE

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Indefinite IARC** 23,-205,80.

THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 NIOSH #: GB 4200000

Af: Cr; Aw: 52.0

SYN: CHROME

TOXICITY DATA: CODEN:
ivn-rat TDLo:2160 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rat TDLo:1200 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rbt TDLo:75 mg/kg:ETA ZEKBAI 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV-TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review:* 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FOREAE 7,313,42; MIBUBI 9(4),321,75; FCTXAV 9,105,71; PEXTAR 12,102,69; 85DHAX Cr,22,74; BNYMAM 54,413,78; NTIS** Conf-691001. OSHA Standard: Air: TWA 1 mg/m3 (SCP-0) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 152,182, VOL 3; S323,352, VOL 5 173#. NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.

THR: An exper ETA, CARC.

Disaster Hazard: Powder will explode spont in air.

Incomp: Oxidants.

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

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 NIOSH #: AG 3000000

mf: $C_4H_6CrO_4 \cdot H_2O$; mw: 188.12

Red crystals.

TOXICITY DATA: 3 CODEN:

DOT: Flammable Liquid, Label: Flammable Liquid FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.

Fire Hazard: Very dangerous, when exposed to heat or flame.

To Fight Fire: Alcohol foam.

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

COLTSFOOT

NIOSH #: GJ 9880000

It is herb of the tribe Senecione and from family Compositae (GANNA2 67,125,76)

SYNS:

KAN-TO-KA (JAPANESE) TUSSILAGO FARFARA L

TOXICITY DATA: 3	CODEN:
orl-rat TDLo:4800 gm/kg/77W-C:CARC	GANNA2 67,125,76

THR: An exper CARC to rats via orl.

COMPOUND 69/183

CAS RN: 27114110 NIOSH #: UQ 4810000

mf: $C_{22}H_{25}FN_2O \cdot 2ClH$; mw: 425.41

SYN: 3-(GAMMA-(P-FLUOROBENZOYL)PROPYL)-2,3,4,4a,5,6-HEXAHYDRO-1(H)-PYRAZINO(1,2A)QUINOLINE HCl

TOXICITY DATA: 3-2	CODEN:
orl-rat LD50:800 mg/kg	DRFUD4 4,185,79
ipr-rat LD50:161 mg/kg	ARZNAD 28,1641,78
orl-mus LD50:1 gm/kg	DRFUD4 4,185,79
ipr-mus LD50:300 mg/kg	JMCMAR 13,516,70
ivn-mus LD50:95 mg/kg	ARZNAD 28,1641,78

THR: HIGH ipr, ivn, orl.

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

CONIUM MACULATUM

NIOSH #: GL 1223600

Colorless, oily liquid with mousy odor; bp: 166.5°, fp: −2.5°, d: 0.844-0.848 @ 20°/4°. Lupine Plant whose toxic agent is Coniine, fed as green or dried plant (CTOXAO 12,49,78)

TOXICITY DATA: 3	CODEN:
orl-ctl TDLo:29 gm/kg/(45-75D) preg):TER	CTOXAO 12,49,78

THR: Tox principle of poison hemlock. Ingestion causes weakness, drowsiness, nausea, vomiting, labored respiration, paralysis, asphyxia, death from paralysis of the nervous system. In small doses it is a sedative. Poisoning is treated by evacuating the stomach and administering tannic acid.

Fire Hazard: Slight, when heated.

COPPER

CAS RN: 7440508 NIOSH #: GL 5325000

Af: Cu; Aw: 63.54

A metal with a distinct reddish color. mp: 1083°, bp: 2324°, d: 8.92, vap. press: 1 mm @ 1628°.

SYNS:

BRONZE POWDER COPPER BRONZE
C.I. 77400 GOLD BRONZE

TOXICITY DATA: 3	CODEN:
orl-rat TDLo:152 mg/kg (22W pre)	GISAAA 45(3),8,80
orl-rat TDLo:1520 ug/kg (22W pre)	GISAAA 45(3),8,80
orl-rat TDLo:1210 ug/kg (35W pre)	GISAAA 42(8),30,77
ipl-rat TDLo:100 mg/kg TFX:ETA	AIHAAP 41,836,80
orl-hmn TDLo:120 ug/kg:GIT	PHRPA6 73,910,58

TLV: Air: 0.2 mg/m3 (fume) DTLVS* 4,104,80; air: 1 mg/m3 (dust mist) DTLVS* 4,104,80. *Toxicology Review:* TRBMAV 33(1),85,75; QURBAW 7(1),75,74; JAVMA4 164(3),277,74; IJMDAI 10(4),416,74; KOTTAM 11(11),1300,75; FOREAE 7,313,42; MIBUBI 9(4),321,75; PEXTAR 12,102,69; 85DHAX Cu,41,74; AMTODM 3,209,77. "NIOSH Manual of Analytical Methods" VOL 5 173#. Reported in EPA TSCA Inventory, 1980.

THR: HIGH hmn via orl. See copper compounds.

Fire and Explosion Hazard: Reacts violently with C_2H_2, NH_4NO_3, bromates, chlorates, iodates, Cl_2, ClF_3, (Cl_2 + OF_2), ethylene oxide, F_2, H_2O_2, hydrazine mononitrate, hydrazoic acid, H_2S, $Pb(N_3)_2$, K_2O_2, NaN_3, Na_2O_2.

Incomp: 1-bromo-2-propyne.

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

COPPER ACETATE

CAS RN: 142712 NIOSH #: AG 3480000

mf: $C_4H_6O_4 \cdot Cu$; mw: 181.64

Greenish blue powd or small crystals.

SYNS:

ACETIC ACID, CUPRIC SALT CRYSTALS OF VENUS
COPPER(2+) ACETATE CUPRIC ACETATE
COPPER(II) ACETATE CUPRIC DIACETATE
COPPER DIACETATE NEUTRAL VERDIGRIS
COPPER(2+) DIACETATE OCTAN MEDNATY (CZECH)
CRYSTALLIZED VERDIGRIS

TOXICITY DATA: 2	CODEN:
scu-rat TDLo:40 mg/kg (7-10D preg)	CRSBAW 166,1237,72
orl-rat LD50:595 mg/kg	MarJV# 29MAR77

Reported in EPA TSCA Inventory, 1980.

THR: MOD orl.

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

COPPER(II) ACETYLIDE

mf: C_2Cu; mw: 87.56

Sensitive to impact, friction and heat.

For human use, it is a sterile dark brown colloidal solvent, water-sol. Approximate molecular weight is 180,000 (IARC** 2,161,72)

SYNS:

DEXTRAN IRON COMPLEX
EISENDEXTRAN (GERMAN)
IMFERON
IRON DEXTRAN INJECTION
IRONORM INJECTION
URSOFERRAN

TOXICITY DATA: 3	CODEN:
ivn-rat TDLo:2580 gm/kg (17-20D preg)	TXCVAC 5,147,75
ims-wmn TDLo:20 mg/kg/3Y-I:NEO	BMJOAE 2,277,73
scu-rat TDLo:104 gm/kg/26W-I:ETA	JNCIAM 24,109,60
ims-rat TDLo:1150 mg/kg/17W-I:NEO	BJCAAI 15,838,61
scu-mus TDLo:104 gm/kg/13W-I:ETA	JNCIAM 24,109,60
ims-mus TDLo:2 gm(Fe)/kg/9W-I:ETA	BJCAAI 21,448,67
ims-rbt TDLo:28 gm/kg/27W-I:ETA	BMJOAE 1,1593,64
scu-ham TDLo:40 gm/kg/10W-I:ETA	JNCIAM 24,109,60
scu-mus TD:1120 mg(Fe)/kg/28W-I:ETA	BMJOAE 1,1800,62
ims-rat TD:3760 mg(Fe)/kg/47W-I:NEO	BMJOAE 1,947,59
ipr-rat LDLo:2500 mg(Fe)/kg	TXAPA9 18,185,71
ivn-mus LD50:1000 mg(Fe)/kg	12VXA5 8,335,68

Carcinogenic Determination: Human Suspected IARC** 2,161,73. *Toxicology Review:* FCTXAV 9,105,71; BMJOAE 1(6114),683,78; PEXTAR 12,102,69.

THR: An exper NEO via ims in wmn. A susp hmn CARC. An exper NEO, ETA. MOD acute ipr, ivn.

IRON DEXTRAN GLYCEROL GLYCOSIDE

NIOSH #: NO 6000000

TOXICITY DATA: 3	CODEN:
scu-rat TDLo:2500 mg(Fe)/kg/24W-I:NEO	BJCAAI 22,521,68

Toxicology Review: FCTXAV 9,105,71; PEXTAR 12,102,69

THR: An exper NEO.

IRON-DEXTRIN COMPLEX

CAS RN: 9004517 NIOSH #: NO 6210000

For human use, it is a clear, brown colloidal solvent. Approximately molecular weight is 230,000 (IARC** 2,161,72)

SYNS:

ASTRAFER
DEXTRIFERRON
DEXTRIFERRON INJECTION
FERRIGEN
IRON CARBOHYDRATE COMPLEX
IRON DEXTRIN INJECTION

TOXICITY DATA: 3	CODEN:
ims-rat TDLo:1150 mg/kg/17W-I:NEO	BJCAAI 15,838,61
scu-mus TDLo:1200 mg(Fe)/kg/27W-I:ETA	BMJOAE 1,1800,62
ivn-mus LD50:446 mg(Fe)/kg	TXAPA9 23,537,72

Carcinogenic Determination: Animal Positive IARC** 2,161,73. *Toxicology Review:* FCTXAV 9,105,71; PEXTAR 12,102,69.

THR: An exper NEO, ETA. HIGH-MOD ivn.

IRON DISULFIDE

CAS RN: 12068858 NIOSH #: NO 6835000
mf: FeS_2; mw: 119.97

SYNS:

IRON PYRITES
IRON SULFIDE

TOXICITY DATA: 3

Aquatic Toxicity Rating: TLm96:over 1000 ppm WQCHM* 3,-,74. Reported in EPA TSCA Inventory, 1980.

THR: See also sulfides and H_2S.

Disaster Hazard: When heated to decomp it emits very tox fumes due to contact with acids, acid fumes, high temp.

Incomp: Water, pyrites (powd). Heats up spont and ignites with combustibles.

IRON DUST

NIOSH #: NO 6851000

Fe, at wt: 55.8. Silvery-white, tenacious, lustrous, ductile metal. mp: 1535°, bp: 3000°, d: 7.86, vap. press: 1 mm @ 1787°. Iron dust from open hearth furnace; dust contained 52% iron (85AGAF -,480,76)

TOXICITY DATA: 3	CODEN:
itr-rat TDLo:506 mg/kg/15W-I:NEO	85AGAF -,480,76

Toxicology Review: 85CVA2 5,63,70.

THR: HIGH via ip route. Iron dust can cause conjunctivitis, choroiditis, retinitis and siderosis of tissues if iron remains in these tissues. Iron ore dust can cause palpebral conjunctivitis, massive pulmonary fibrosis and an increased incidence of lung cancer. An iron oxide fume is generated in welding operations and continued exposure to conc above 30 mg/m³ of air can cause chronic bronchitis. Fresh iron oxide fume can cause metal fume fever. Iron compounds are susp carc of the lung, liver, connective tissue and reticuloendothelial tissue.

Fire Hazard: Mod, in the form of dust when exposed to heat or flame. See also powdered metals. Reacts violently with Cl_2, ClF_3, F_2, H_2O_2, NO_2, P, Na_2C_2, H_2SO_4, air, water, polystyrene.

Explosion Hazard: Mod in the form of dust when exposed to heat or flame. See also powdered metals.

To Fight Fire: Special mixtures of dry chemical.

IRON(II) EDTA COMPLEX

CAS RN: 21393599 NIOSH #: LJ 8100000
mf: $C_{10}H_{12}FeN_2O_8 \cdot 2H$; mw: 346.11

TOXICITY DATA: 3	CODEN:
ipr-mus LD50:40 mg(Fe)/kg	PABIAQ 11,853,63

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ipr.

Mixture of 95% dimethylaminopropinonitrile and 5% bis-dimethylaminoethyl ether (DCTODJ 2,223,79)

TOXICITY DATA:	2	CODEN:
ipr-rat LDLo:2000 mg/kg		JEPTDQ 4(2-3),555,80
orl-rat LD50:2460 mg/kg		DCTODJ 2,223,79
skn-rbt LD50:445 mg/kg		DCTODJ 2,223,79

THR: MOD orl, skn. See also ethers.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

NIAX POLYOL L-56

NIOSH #: QR 4325000

TOXICITY DATA:	2	CODEN:
skn-rbt 500 mg open MLD		UCDS** 7/11/67

THR: MLD skn irr.

NIAX POLYOL LG-168

NIOSH #: QR 4375000

TOXICITY DATA:	2	CODEN:
skn-rbt 500 mg open MLD		UCDS** 1/7/71
orl-rat LD50:2830 mg/kg		UCDS** 1/7/71

THR: MOD orl. MLD skn irr.

NIAX POLYOL LHT-42

NIOSH #: QR 4400000

TOXICITY DATA:	1	CODEN:
skn-rbt 500 mg open MLD		UCDS** 4/29/69
orl-rat LD50:20 gm/kg		UCDS** 4/29/69

THR: LOW orl. MLD skn irr.

NIAX RO 350

CAS RN: 55840169 NIOSH #: QR 4420000

SYN: NIAX POLYOL RO-350

TOXICITY DATA:	1	CODEN:
skn-rbt 500 mg open MLD		UCDS** 4/1/65
orl-rat LD50:30 gm/kg		UCDS** 4/1/65

THR: LOW orl. MLD skn irr.

NIAX TRIOL 700

NIOSH #: QR 4450000

TOXICITY DATA:	1	CODEN:
skn-rbt 500 mg open MLD		UCDS** 6/15/71
orl-rat LD50:5660 mg/kg		UCDS** 6/15/71

THR: LOW orl. MLD skn irr.

NIAX TRIOL 3000

NIOSH #: QR 4575000

TOXICITY DATA:	2	CODEN:
skn-rbt 500 mg open MLD		UCDS** 6/15/71

THR: MLD skn irr.

NIAX TRIOL 6000

NIOSH #: QR 4600000

TOXICITY DATA:	1	CODEN:
skn-rbt 500 mg open MLD		UCDS** 6/15/71
orl-rat LD50:57 gm/kg		UCDS** 6/15/71

THR: LOW orl. MLD skn irr.

NIAZOL

CAS RN: 550992 NIOSH #: NJ 4375000
mf: $C_{14}H_{14}N_2 \cdot ClH$; mw: 246.76

SYNS:
2-(1-NAPHTHYLMETHYL)IMIDAZOLINE HYDROCHLORIDE
2-(1-NAPHTHYLMETHYL)-2-IMIDAZOLINE HYDROCHLORIDE

TOXICITY DATA:	3-2	CODEN:
ipr-rat LD50:50 mg/kg		JPETAB 86,284,46
scu-rat LD50:325 mg/kg		JPETAB 86,284,46
scu-mus LD50:170 mg/kg		JPETAB 86,280,46
scu-rbt LD50:950 mg/kg		JPETAB 86,284,46
ivn-rbt LD50:800 ug/kg		JPETAB 86,284,46
ims-rbt LD50:950 ug/kg		JPETAB 86,284,46

THR: HIGH ipr, scu, ivn, ims. MOD scu.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and HCl.

NICKEL

CAS RN: 7440020 NIOSH #: QR 5950000
af: Ni; aw: 58.71

A silvery-white, hard, malleable and ductile metal. d: 8.90 @ 25°, vap. press: 1 mm @ 1810°. Crystallizes as metallic cubes; mp: 1455°; bp: 2730°; Stable in air @ room temp.

SYNS:
C.I. 77775
NICKEL CATALYST, WET (DOT)
NICHEL (ITALIAN)
NICKEL SPONGE
PULVERIZED NICKEL
RANEY ALLOY
RANEY NICKEL

TOXICITY DATA:	3	CODEN:
otr-ham:emb 5 umol/L		TOXID9 1,132,81
orl-rat TDLo:158 mg/kg (MGN)		AEHLAU 23,102,71
scu-rat TDLo:3000 mg/kg/6W-I:ETA		JNCIAM 16,55,55
ims-rat TDLo:1000 mg/kg/17W-I:CAR		PAACA3 9,28,68
ipl-rat TDLo:1250 mg/kg/17W-I:ETA		TRBMAV 10,167,52
par-rat TDLo:40 mg/kg/52W-I:ETA		AEHLAU 5,445,62
imp-rat TDLo:250 mg/kg:CAR		JNCIAM 16,55,55
ims-mus TDLo:200 mg/kg:NEO		NCIUS* PH 43-64-886, SEPT,70
imp-rbt TDLo:165 mg/kg/2Y-I:NEO		JNCIAM 16,55,55
ihl-gpg TCLo:15 mg/m3/91W-I:ETA		AMPLAO 65,600,58
ims-ham TDLo:200 mg/kg/21W-I:ETA		PWPSA8 14,68,71
ims-rat TD:58 mg/kg:ETA		PAACA3 17,11,76
imp-rat TD:23 mg/kg:ETA		JNCIAM 16,55,55
ims-rat TD:125 mg/kg/13W-I:NEO		NCIUS* PH 43-64-886, JUL,68
ims-mus TD:800 mg/kg/13W-I:NEO		NCIUS* PH 43-64-886, JUL,68
ims-rat TD:90 mg/kg/18W-I:ETA		NCIUS* PH 43-64-886, AUG,69

ims-rat TD:889 ug/kg:ETA	JPTLAS 97,375,69
ims-rat TD:200 mg/kg/21W-I:NEO	PWPSA8 14,68,71
itr-rat LDLo:12 mg/kg	NTIS** AEC-TR-6710
ivn-mus LDLo:50 mg/kg	FATOAO 23,549,60
ivn-dog LDLo:10 mg/kg	14CYAT 2,1120,63
orl-gpg LDLo:5 mg/kg	AMPMAR 25,247,64
scu-gpg LDLo:500 mg/kg	MELAAD 37,140,46

Carcinogenic Determination: Animal Positive IARC** 11,75,76.

TLV: Air: 1.0 mg/m3 DTLVS* 4,295,80. *Toxicology Review:* ACLSCP 3(3),156,73; KOTTAM 11(11),1300,75; MIBUBI 9(4),321,75; FCTXAV 9,105,71; 85DHAX Ni,168,75; 85CVA2 5,63,70; 31BYAP -,93,74; NTIS** CONF-691001; GSAMAQ 123,109,71; PEXTAR 12,102,69; DICHAK 54,527,68; AMTODM 3,209,77. OSHA Standard: Air: TWA 1 mg/m3 (skin) (SCP-N) FEREAC 39,23540,74. DOT: Flammable Solid, Label: Flammable Solid FEREAC 41,57018,76. Occupational Exposure to Inorganic Nickel recm std: Air: TWA 15 ug(Ni)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 3 S206, VOL 5 173#, 298#. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No: 09880246—File closed as of April, 1979.

THR: An exper CARC, ETA, NEO; HIGH acute itr, ivn, orl. Reacts violently with F_2, NH_4NO_3, hydrazine, NH_3, (H_2 + dioxane), performic acid, P, Se, S, (Ti + $KClO_3$).

Incomp: Aluminium; aluminium trichloride, ethylene; p-dioxan; hydrogen; methanol; non-metals; oxidants; sulfur compounds.

Caution: May cause dermatitis in sensitive individuals. Ingestion of sol salts causes nausea, vomiting, diarrhea.

For further information see Vol. 1, No. 1 and Vol. 3, No. 3 of *DPIM Report.*

NICKEL(II) ACETATE (1:2)

CAS RN: 373024 NIOSH #: QR 6125000
mf: $C_4H_6O_4 \cdot Ni$; mw: 176.81

Green prisms. mp: decomp, d: 1.798.

SYNS:
ACETIC ACID, NICKEL(2+) SALT NICKELOUS ACETATE

TOXICITY DATA: 3	CODEN:
ims-rat TDLo:420 mg/kg/47W-I:NEO	NCIUS* PH 43-64-886,JUL,68
imp-rat TDLo:95 mg/kg/78W-C:ETA	PAACA3 5,50,64
ipr-mus TDLo:360 mg/kg/8W-I:NEO	CNREA8 36,1744,76
ims-rat TD:225 mg/kg/46W-I:ETA	NCIUS* PH 43-64-886,AUG,69
orl-rat LD50:350 mg/kg	PWPSA8 11,39,68
ipr-rat LD50:23 mg/kg	PWPSA8 11,39,68
orl-mus LD50:410 mg/kg	PWPSA8 11,39,68
ipr-mus LD50:32 mg/kg	PWPSA8 11,39,68
scu-gpg LDLo:20 mg/kg	JOHYAY 8,565,08

Toxicology Review: ADTEAS 5,51,72; 85DHAX Ni,168,75; ACLSCP 3(3),156,73. OSHA Standard: Air: TWA 1 mg(Ni)/m3 (SCP-N) FEREAC 39,23540,74. Occupational Exposure to Inorganic Nickel recm std: Air: TWA 15 ug(Ni)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: An exper NEO, ETA. See also nickel. HIGH orl, ipr, scu.

Disaster Hazard: When heated to decomp it emits irr fumes.

NICKEL ACETATE TETRAHYDRATE

CAS RN: 6018899 NIOSH #: QR 6126000
mf: $C_4H_6O_4 \cdot Ni \cdot 4H_2O$; mw: 248.89

TOXICITY DATA:	CODEN:
cyt-mus:mmr 100 umol/L	MUREAV 68,337,79

THR: MUT data. See also nickel compounds.

NICKEL ALLOY, Ni,Be

CAS RN: 37227615 NIOSH #: QR 1260000

SYN: BERYLLIUM-NICKEL ALLOY

TOXICITY DATA: 3 CODEN:

Carcinogenic Determination: Indefinite IARC** 23, 143,80.

THR: An exper ± CARC. See also nickel compounds, beryllium compounds, A ± CARC.

NICKEL(II) CARBONATE (1:1)

CAS RN: 3333673 NIOSH #: QR 6200000
mf: $CNiO_3$; mw: 118.72

Rhombic, light green crystals. mp: decomp.

SYNS:

BASIC NICKEL CARBONATE	C.I. 77779
CARBONIC ACID, NICKEL SALT (1:1)	NICKELOUS CARBONATE

TOXICITY DATA: 3	CODEN:
imp-rat TDLo:95 mg/kg/78W-C:ETA	PAACA3 5,50,64
scu-gpg LDLo:32 mg/kg	JOHYAY 8,565,08

Carcinogenic Determination: Animal Positive IARC** 11,75,76.

Toxicology Review: ACLSCP 3(3),156,73; FCTXAV 9,105,71; 85DHAX Ni,168,75. Occupational Exposure to Inorganic Nickel recm std: Air: TWA 15 ug(Ni)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: An exper CARC, ETA. HIGH scu.

NICKEL CARBONYL

CAS RN: 13463393 NIOSH #: QR 6300000
mf: C_4NiO_4; mw: 170.75

Colorless, volatile liquid or needles. bp: 43°, lel = 2% @ 20°, d: 1.3185 @ 17°, vap. press: 400 mm @ 25.8°, flash p: <−4°. Oxidizes in air; explodes @ about 60°; mp: −19.3°. Sol in alc, benzene, chloroform, acetone, carbon tetrachloride.

REFERENCE 16

GO

Lat 404555 Long 730300

Data List of Dataset: NYN3 Number of Records = 6

REC #	POP	HOUSE	DISTANCE	SECTOR
1	0	0	0.400000	1
2	2602	913	0.810000	1
3	4122	1465	1.60000	1
4	31692	10489	3.20000	1
5	35014	11682	4.80000	1
6	27496	8637	6.40000	1

Press RETURN to page forward, enter Pnnn to position the starting record of the next page, enter BACK to reselect variables, or enter END to stop

Distance (Mi.)	total Population	# Buildings (Houses)
1	6724	2378
2	38,416	12,867
3	73,430	24,549
4	100,926	33,186

REFERENCE 17

MONITOR WELL SYSTEM

AT

STIMPSON COMPANY

Bayport, N.Y.

for

ERC/LANCY COMPANY

By: DR. C. WELTI, P.E.

November 1981

I. INTRODUCTION

The site of the monitor wells is generally in an area of flat gradients. The proximity of the shore line appears to make southerly flow the predominant direction of flow. Mounding will, of course, create localized flows in all directions. However, because of the high permeability, mounding is probably not significant.

Five (5) wells were placed, of which four (4) are for monitoring the leaching pits. The fifth well is for monitoring any possible leaching of the system near the holding tank.

The location of the wells and boring data are included in the appendix.

II. WELL DESCRIPTION

The wells are constructed as follows:

A. Holes are drilled with hollow-stem augers. No water is placed into the hole.

B. 1 1/2" PVC with 5 feet of screen (having nylon filter cloth heated to the PVC) is placed in the bore hole and the augers are removed to the water table.

C. Bentonite balls (1/2" D.) are placed for a depth of 2 feet to preclude surface water from seeping along the pipe.

D. The augers are removed and a concrete seal with the protector pipe is placed at the top of the well.

The wells are about 15 to 18 feet into the water table.

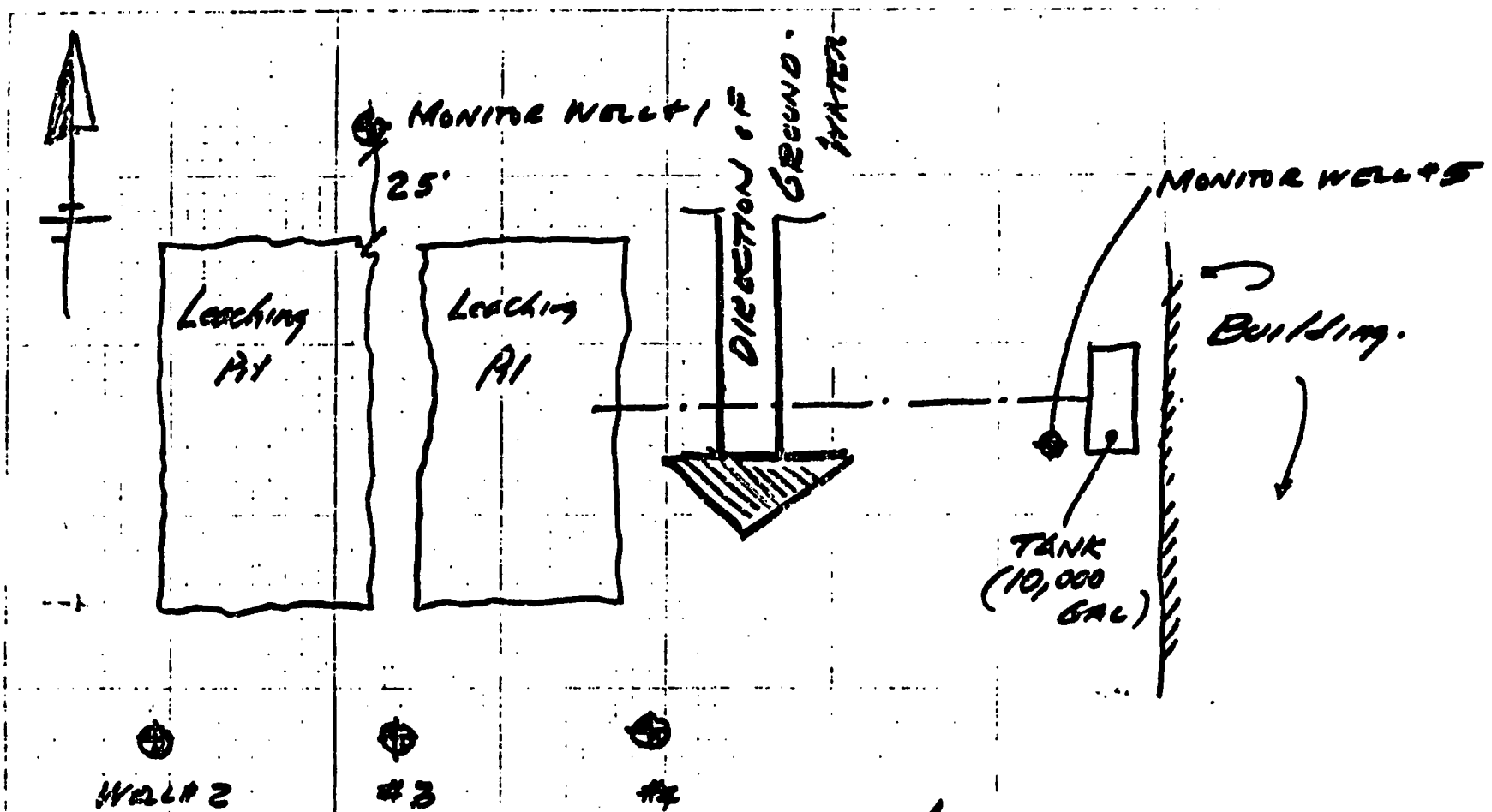
APPENDIX

1. Monitor Well Location

2. Boring Data

CLARENCE WELTI ASSOCIATES, INC.
GLASTONBURY, CONNECTICUT 06033 • (203) 633-4623

CLIENT EPC-LUKY
PROJECT STIMPSON CO. BAYPORT, N.
SUBJECT GROUNDWATER MONITORING
BY C. WELTI DATE 11/19/81 SHEET NO. 1



LOCATION OF TEST WELLS

CLARENCE WELTI ASSOC., INC.
P.O.BOX 397
GLASTONBURY, CONN. 06033

"BORING LOG"

Bayport, NY

PROJ.

CLIENT EDC/LANCY

BORING NO. B-1

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER	B
4.5	blk.fine sand		
8.0	orange/br.fine-med. sand,little fine gravel		
	br.fine sand		
45.0			

BORING NO.

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER	B
	BOTTOM OF BORING 45.0 WATER AT 27.5 after 12 hrs. WELL POINT @ 44'		
	Materials 5' screen w/cloth 41' 1 1/2" riser 1 metal protector w/ lock 1/2 bag cement 1/2 box bentonite balls		
	DATE: 11/12/81 DRILLER: URSIN		

1. COL. A Strata depth
2. COL. B
3. HAMMER = 140#; FALL 30"
4. SAMPLER = O.D. SPLIT SPOON
5. GWT = GROUND WATER

AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

Trio Printers # 1127

CLARENCE WELTI ASSOC., INC.
P.O.BOX 397
GLASTONBURY, CONN. 06033

"BORING LOG"

PROJ. Stimpson Co. Bayport, NY

CLIENT ERC/LANCY

BORING NO. B-2

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER____	B
2.0	blk.fine sand		
	orange/br.fine-med sand,little fine gravel		
15.0			
	light br.fine sand		
45.0			

BORING NO.

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER____	B
	BOTTOM OF BORING 45.0 WATER AT 28.5 after	1 hr.	
	WELL POINT @ 44' Materials 5' screen w/cloth		
	40' 1 1/2" riser 1 metal protector w/ lock 1/2 bag cement 1/3 box bentonite		
	DATE; 11/13/81 DRILLER: URSIN		

1. COL. A strata depth
2. COL. B
3. HAMMER = 140#; FALL 30"
4. SAMPLER = ____ O.D. SPLIT SPOON
5. GWT = GROUND WATER

AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

Trio Printers # 1127

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN. 06033

"BORING LOG"

PROJ. Stimpson Co. Bayport, NY

CLIENT ERC/LANCY

BORING NO. B-3

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER ___	B
4.0	drk.br.fine-med. sand		
10.0	br,fine-med.sand, little fine gravel		
14.0	br.fine sand,tr. fine gravel		
	light br.fine sand		
45.0			

BORING NO.

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER ___	B
	BOTTOM OF BORING 45. WATER AT 28.5 after WELL POINT @ 45'	0 1/2 hr.	
	Materials 5' screen w/cloth 41' 1 1/2" riser		
	1 metal protector w/ lock 1/2 bag cement 1/3 box bentonite		
	DATE: 11/13/81 DRILLER: URSIN		

1. COL. A strata depth
2. COL. B
3. HAMMER = 140#; FALL 30"
4. SAMPLER = ___ O.D. SPLIT SPOON
5. GWT = GROUND WATER

AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

Trio Printers # 1127

CLARENCE WELTI ASSOC., INC.
P.O. BOX 337
GLASTONBURY, CONN. 06033

"BORING LOG"

PROJ. Stimpson Co. Bayport, NY

CLIENT ERC/LANCY

BORING NO. B-4

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER ____	B
2.0	blk.fine sand		
3.5	br.fine sand		
	br.fine sand, little fine gravel		
13.0			
	light br.fine sand		
45.0			

BORING NO.

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER ____	B
	BOTTOM OF BORING 45.0 WATER AT 28.5 after	1/2 hr.	
	WELL POINT @ 45' Materials 5' screen w/cloth 41' 1 1/2" riser 1 metal protector w/lock 1/2 bag cement 1/3 box bentonite		
	DATE: 11/13/81 DRILLER: URSIN		

Trio Printers # 112

1. COL. A strata depth
2. COL. B
3. HAMMER = 140#; FALL 30"
4. SAMPLER = ____ O.D. SPLIT SPOON
5. GWT = GROUND WATER

AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN. 06033

"BORING LOG"

PROJ. Stimpson Co. Bayport, NY

CLIENT ERC/LANCY

BORING NO. B-4A

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER 6"	B
	blk.fine sand		
3.5			
	br.fine sand		
7.0			
	br.fine sand, little fine gravel	29-16-12	
12.5			
	light br.fine sand		
		7-12-10	
29.0			
	br.fine-med.sand	16-18-19	
45.0			

BORING NO.

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER	B
	BOTTOM OF BORING 45.0		
	HOLE MOVED TO DIFFERENT LOCATION		
	NO WELL		
	DATE: 11/12/81		
	DRILLER: URSIN		

1. COL. A strata depth
2. COL. B
3. HAMMER = 140#; FALL 30"
4. SAMPLER = O.D. SPLIT SPOON
5. GWT = GROUND WATER

AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

Trio Printers # 1127

CLARENCE WELTI ASSOC., INC.
P.O. BOX 397
GLASTONBURY, CONN. 06033

"BORING LOG"

PROJ. Stimpson Co. Bayport, NY

CLIENT ERC/LANCY

BORING NO. B-5

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER 6"	B
0.2	asphalt		
0.5	br. fine sand		
7.0	light br. very fine sand		
		3-5-8	
12.5	light br. fine sand, some fine gravel		
14.0	light br. fine sand		
		7-12-14	
		10-10-11	
		3-4-10*	*lost sample
45.0			

BORING NO.

LINE & STA.
OFFSET
GR. ELEV.

A	STRATUM DESCRIPTION	BLOWS PER	B
	**traprock & gr. fine sand		
	~~BOTTOM OF BORING 45.0'~~ WATER @ 26' after 12 hrs.		
	WELL POINT @ 40'		
	Materials		
	5' screen w/cloth		
	35' 1 1/2" riser		
	~~1 metal protector flush w/asphalt~~		
	1/2 bag sand mix cement		
	1/2 box bentonite balls		
	~~DATE: 11/12/81~~ DRILLER: URSIN		

1. COL. A strata depth
2. COL. B
3. HAMMER = 140#; FALL 30"
4. SAMPLER = O.D. SPLIT SPOON
5. GWT = GROUND WATER

AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

Trio Printers # 1127

REFERENCE 18

Building #40 SUNY
Stony Brook, NY 11794

Henry G. Williams
Commissioner

February 8, 1985

Industrial

James E. Cuenin - Vice President
E.E. [illegible] Co., Inc.
900 Sylvan Avenue
Bayport, NY 11705

Re: SPDES No. NY0075884

Dear Mr. Cuenin:

Pursuant to our February 7, 1985 meeting, attached is a revised copy of the discussed Consent Order.

The revisions include a reduction of the total proposed penalty to $135,000, $125,000 of which would be suspended and returned to you upon strict compliance with the terms of Schedule A of the Consent Order. The net result is a reduction in the absolute penalty from $25,000 to $10,000. The suspended portion is to assure satisfactory completion of the outstanding work, and is believed to be consistent with its magnitude.

If the Consent Order is agreed to by you, please have it signed, notarized, and forwarded to me with a check for $10,000 along with a letter of credit or other secured undertaking for $125,000, both made out to this Department by March 11, 1985. We will return a copy of the Consent Order to you when executed.

If you cannot agree on the terms of the Consent Order, please let me know as soon as possible.

Sincerely yours,

Andrew R. Yerman

Andrew R. Yerman, P.E.
Associate Sanitary Engineer

ARY:sp
Enclosure
cc: W. Roberts
P. Barbato
T. Snyder
J. Scherb

Rec'd 2/14/85

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Alleged Violation of Article 17 of the New York State Environmental Conservation Law, by E.B. STIMPSON CO. INC. (Suffolk County) Respondent	ORDER ON CONSENT SPDES NO. NY 0075884

WHEREAS, Section 17-0803 of the New York State Environmental Conservation Law prohibits discharging pollutants to the waters of the state from any outlet or point source in a manner other than as prescribed by the Respondent's SPDES Permit No. NY-0075884.

WHEREAS, this Department has documented instances of the Respondent having failed to meet effluent limitations prescribed by Respondent's SPDES Permit; and

WHEREAS, this Department has documented instances of Respondent failing to submit non-compliance reports as required by Part II of its SPDES Permit;

WHEREAS, Respondent has affirmatively waived its right to a public hearing in this matter in the manner provided by law and having consented to the issuing and entering of this Order pursuant to the provisions of the Environmental Conservation Law, agrees to be bound by the terms and conditions contained therein;

NOW, having considered this matter and being duly advised, it is

ORDERED, that with respect to the aforesaid violations, there is hereby imposed upon the Respondent a penalty in the sum of One Hundred Thirty Five Thousand ($135,000) Dollars, which shall become due and payable upon execution of this order, of which One Hundred Twenty Five Thousand ($125,000) Dollars, shall be made payable to the Department in the form of a letter of credit or other secured undetaking, said $125,000 to be suspended provided Respondent strictly adheres to terms and conditions outlined in Schedule A, the compliance schedule attached hereto and made a part hereof; and it is further

ORDERED, that the provisions, terms and conditions of this Order shall be deemed to bind Respondent, its successors and assigns and all persons, firms and corporations acting under or for it, including, but not limited to those who may carry on any or all of the operations now being conducted by Respondent, whether at the present location or at any other in this State; and it is further

ORDERED, that in those instances in which the Respondent desires that any of the provisions, terms or conditions of this Order be changed, it shall make written application, setting forth the grounds for the relief sought, to the Commissioner, c/o Joan B. Scherb, Regional Attorney, Building 40, State University of New York, Stony Brook, New York 11794; and it is further

SCHEDULE A

SCHEDULE OF COMPLIANCE FOR EFFLUENT LIMITATIONS

(a) Respondent shall achieve compliance with the effluent limitations specified in the SPDES Permit No. NY0075884 for the permitted discharge(s) in accordance with the following schedule: (EDCO = Effective date of Consent Order)

Action Code	Outfall Number(s)	Compliance Action	Due Date
01	001	Respondent shall have submitted an approvable engineering report:	EDCO + 6 months
02	001	Respondent shall have submitted approvable final plans:	EDCO + 11 months
04	001	Respondent shall have commenced construction:	EDCO + 14 months
05	001	Respondent shall have submitted first construction progress report:	EDCO + 17 months
06	001	Respondent shall have submitted second construction progress report:	EDCO + 20 months
08	001	Respondent shall have completed construction:	EDCO + 23 months
09	001	Respondent shall have attained operational levels (final effluent limitations)	EDCO + 24 months

Department review of engineering report and final plans shall not exceed 60 days for each. If the 60 day review is exceeded, Respondent's schedule shall be extended by the time exceeded for review.

(b) Respondent shall submit to the Department of Environmental Conservation the required document(s) where a specified action is required in (a) above to be taken by a certain date, and a written notice of compliance or noncompliance with each of the above schedule dates, postmarked no later than 14 days following each elapsed date. Each notice of noncompliance shall include the following information:

1. A short description of the noncompliance
2. A description of any actions taken or proposed by Respondent to comply with the elapsed schedule requirement without further delay;
3. A description of any factors which tend to explain or mitigate the noncompliance; and
4. An estimate of the date Respondent will comply with the elapsed schedule requirement and an assessment of the probability that Respondent will meet the next scheduled requirement on time.

[illegible] written application of the [illegible]
or upon the Commissioner's own findings.

Dated: Albany, New York
1984

HENRY G. WILLIAMS
Commissioner of Environmental Conservation

By _____
HAROLD D. BERGER
Regional Director

TO: E.B. Stimpson Co., Inc.
900 Sylvan Ave.
Bayport, New York 11705
Att: Mr. James E. Cuenin, Vice President

CONSENT BY RESPONDENT

Respondent acknowledges the authority and jurisdiction of the Commissioner of Environmental Conservation of the State of New York to issue the foregoing Order, waives public hearing or other proceedings in this matter, accepts the terms and conditions set forth in the Order and consents to the issuance thereof.

E.B. STIMPSON CO. INC.

By _____

STATE OF NEW YORK)
ss:
COUNTY OF SUFFOLK)

On the day of ,before me personally came to me known, who being duly sworn, deposed and said that he is the of Respondent Corporation and that he signed his name for and on behalf of said Corporation with full authority so to do.

_____
NOTARY PUBLIC

SCHEDULE A

(e) INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the EDCO
and lasting until EDCO + 24 months
the discharges from the permitted facility shall be limited and monitored by the Respondent as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations Daily Avg.	Daily Max.	Units	Measurement Frequency	Sample Type
001 Flow		120,000	GPD	Continuous	Recorded
Aluminum		3.5	mg/l	Weekly	Composite
Cadmium		0.05	mg/l	Weekly	Composite
chromium - Hexavalent		.1	mg/l	Weekly	Composite
Chromium - Total		1	mg/l	Weekly	Composite
Copper		5.5	mg/l	Weekly	Composite
Cyanide		.4	mg/l	Weekly	Composite
Gold		.1	mg/l	Weekly	Composite
Iron		2.5	mg/l	Weekly	Composite
Nickel		2	mg/l	Weekly	Composite
Silver		.1	mg/l	Weekly	Composite
Zinc		5	mg/l	Weekly	Composite
MBAS		1	mg/l	Weekly	Composite
Total Nitrogen		20	mg/l	Weekly	Composite
Oil & Grease		20	mg/l	Weekly	Grab

SCHEDULE A (Cont'd)

(f) Monitoring, Recording and Reporting

Monitoring, recording and reporting requirements shall be as required by Respondent's SPDES Permit.

(g) Reporting Noncompliance

(1) If for any reason Respondent does not comply with or will be unable to comply with any effluent limitation specified in this schedule or should any unusual or extraordinary discharge of wastes occur for the permitted facilities, Respondent shall immediately notify the Department of Environmental Conservation Regional Office by telephone, and provide the following information in writing within five days of such notification:

(a) Cause of noncompliance;

(b) A description of the noncomplying discharge including its impact upon the receiving waters;

(c) Anticipated time the condition of noncompliance is expected to continue, or if such condition has been corrected, the duration of the period of noncompliance.

(d) Steps taken by Respondent to reduce and eliminate the non-complying discharge; and

(e) Steps to be taken by Respondent to prevent recurrence of the condition of noncompliance.

(2) Such information shall be provided to:

Chief, Compliance Section, Bureau of Wastewater Facilities Operation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

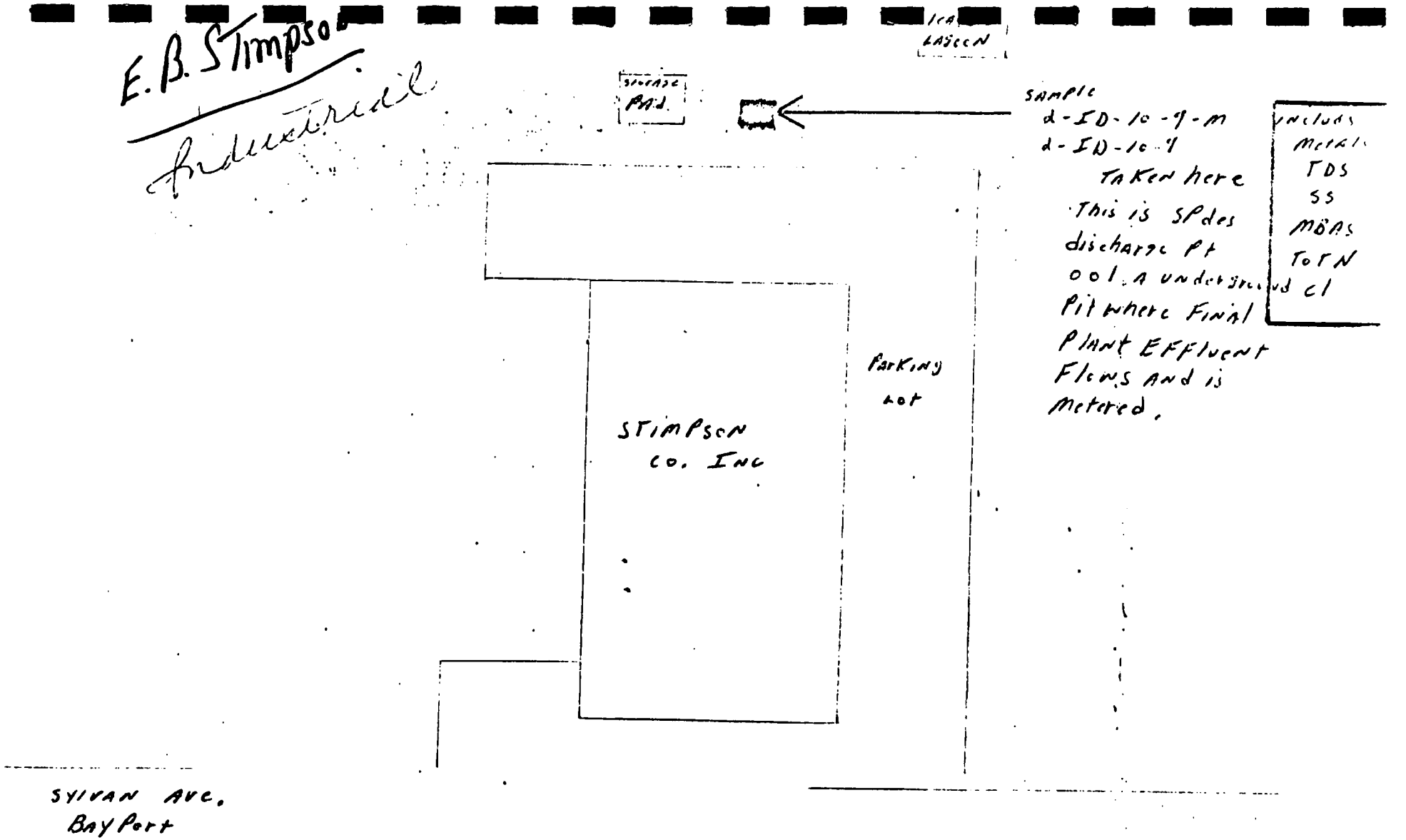
Regional Engineer
New York State Department of Environmental Conservation
Building #40 SUNY
Stony Brook, New York 11794

Suffolk County Department of Health, attn: William Roberts
15 Horseblock Place
Farmingville, New York 11738

(3) Respondent shall take all reasonable steps to minimize any adverse impact to receiving waters resulting from noncompliance with any effluent limitation specified in this permit, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the non-complying discharge.

E. B. Stimpson

Industrial



10/7/85 - ID -
+ TDS SS MBAS
Cl Taken Fr
Co. Inc. Fl
Pt. 001.

☐ New ☒ Renewal ☐ Modification No. NY-0075584 | Effective Date 2-20-75 | Expiration Date 2-20-80

OWNER'S NAME (Corporate, Partnership or Individual)
E. B. STIMPSON CO., INC.

TYPE OF OWNERSHIP
☒ Corporate ☐ Individual ☐ Partnership ☐ Public

OWNER'S MAILING ADDRESS (Street, City, State, Zip Code)
900 SYLVAN AVE., BAYPORT, LONG ISLAND, NEW YORK

REFER ALL CORRESPONDENCE TO: (Name, Title and Address)
RALPH E. RAU, JR., VICE PRESIDENT

TELEPHONE NO. (Include Area Code)
516 | 472-2000

FACILITY NAME
E. B. STIMPSON CO., INC.

FACILITY LOCATION (Street or Road)
900 SYLVAN AVE.

CITY, TOWN OR VILLAGE
BAYPORT, L.I., N.Y.

COUNTY
SUFFOLK

GIVE EXPLICIT DIRECTIONS TO LOCATION, If Necessary

NATURE OF BUSINESS OR TYPE OF FACILITY
FASTENERS

NO. OF EMPLOYEES: 366

NO. OF SHIFTS: 1

2. IF ALL YOUR WASTE IS DISCHARGED TO A PUBLICLY OWNED WASTE TREATMENT FACILITY AND/OR A LICENSED WASTE SCAVENGER AND TO THE BEST OF YOUR KNOWLEDGE YOU ARE NOT REQUIRED TO OBTAIN AN SPDES PERMIT, COMPLETE THIS SECTION ONLY, SIGN APPLICATION AND RETURN.

NAME AND ADDRESS OF MUNICIPALITY RESPONSIBLE FOR RECEIVING WASTE

AND/OR

NAME AND ADDRESS OF LICENSED WASTE SCAVENGER

RECEIVED
SEP 10 1979
S.C. DEPT. OF HEALTH SERVICES

3. PRODUCTION DATA (Use additional forms, if necessary)

PRINCIPAL TYPES OF PROCESSING DONE AT THIS FACILITY

PLATING & TUMBLING

PRINCIPAL PRODUCTS AND AMOUNTS PRODUCED PER TIME UNIT	RAW MATERIALS AND AMOUNTS CONSUMED PER TIME UNIT
1. FASTENERS - VARIES	1. VARIES
2.	2.
3.	3.
4.	4.
5.	5.

4. DOES ANY OF YOUR DISCHARGES CONTAIN OR IS IT POSSIBLE FOR ANY DISCHARGE TO CONTAIN ONE OR MORE OF THE FOLLOWING SUBSTANCES ADDED A A RESULT OF YOUR OPERATIONS, ACTIVITIES OR PROCESSES?

☒ Aluminum ☐ Arsenic ☐ Boron ☒ Chromium ☐ Flourides ☐ Lead ☒ Nickel ☐ Selenium ☐ Tin
☐ Ammonia ☐ Barium ☒ Cadmium ☒ Copper ☒ Gold ☐ Manganese ☒ Oil & Grease ☒ Silver ☒ Zinc
☐ Antimony ☐ Beryllium ☒ Chlorine ☒ Cyanide ☒ Iron ☐ Mercury ☐ Phenols ☐ Sulfides

☐ Corrosion control chemicals (specify)
☐ Halogenated organics or halogenated hydrocarbons (e.g. chlorinated, flourinated or brominated) (specify)
☐ Herbicides or pesticides (specify)
☐ Radioactivity (specify)
☐ Slimicides, biocides or algaecides (specify)
☐ Substituted aromatics (e.g. derivatives of benzene, pyridene, biphenyl, napthalene, coal or petroleum tar; etc.) (specify)
☐ Surfactants (specify)
☐ None of the above

Specify the trade names and manufacturer of any chemicals used at this facility which are not listed above and whose specific constituents are not known to you.

JAN 4 1980
S.C. DEPT. OF HEALTH SERVICES

Explanation of above: (Attach additional sheets, if necessary)

1-19-2 (1/77)

DISCHARGE DATA (Continued) (See Instructions) ATTACH SKETCH SHOWING OUTFALL LOCATIONS

OUTFALL NO.	Proposed / Replacement / Existing / Expansion	TYPE OF WASTE	TYPE OF TREATMENT (If none, so state)
001	X Existing	INDUSTRIAL	BEST PRACTICAL

DESIGN FLOW	ACTUAL FLOW	FREQUENCY OF DISCHARGE	IS FLOW EQUALIZATION PROVIDED?
20,000 Gal/Day	60,000 Gal/Day	X Continuous ☐ Intermittent ☐ Batch	☐ Yes X No If "Yes", describe in comments

PERIOD OF DISCHARGE: 12 Months per year | 5 Days per week | 8 Hours per day

SURFACE DISCHARGE	If "Yes", Name of Receiving Waters	Classification	Waters Index No.
☐ Yes ☐ No			

SUBSURFACE DISCHARGE	If "Yes", Name of nearest Surface Water	Distance	SOIL TYPE	Depth to Water Table
X Yes ☐ No	ATLANTIC OCEAN	20000 Ft.	COARSE TO FINE SAND	20 ft. +

OUTFALL NO.	Proposed / Replacement / Existing / Expansion	TYPE OF WASTE	TYPE OF TREATMENT (If none, so state)
002	X Existing	INDUSTRIAL WASTE HOLDING	NO DISCHARGE

DESIGN FLOW	ACTUAL FLOW	FREQUENCY OF DISCHARGE	IS FLOW EQUALIZATION PROVIDED?
Gal/Day	Gal/Day	☐ Continuous ☐ Intermittent ☐ Batch	☐ Yes ☐ No If "Yes", describe in comments

PERIOD OF DISCHARGE: Months per year | Days per week | Hours per day

SURFACE DISCHARGE	If "Yes", Name of Receiving Waters	Classification	Waters Index No.
☐ Yes ☐ No			

SUBSURFACE DISCHARGE	If "Yes", Name of nearest Surface Water	Distance	SOIL TYPE	Depth to Water Table
☐ Yes ☐ No		Ft.		

OUTFALL NO.	Proposed / Replacement / Existing / Expansion	TYPE OF WASTE	TYPE OF TREATMENT (If none, so state)
003	X Existing	SANITARY	LEACHING FIELDS

DESIGN FLOW	ACTUAL FLOW	FREQUENCY OF DISCHARGE	IS FLOW EQUALIZATION PROVIDED?
Gal/Day	11,000 Gal/Day	☐ Continuous ☐ Intermittent ☐ Batch	☐ Yes ☐ No If "Yes", describe in comments

PERIOD OF DISCHARGE: Months per year | Days per week | Hours per day

SURFACE DISCHARGE	If "Yes", Name of Receiving Waters	Classification	Waters Index No.
☐ Yes ☐ No			

SUBSURFACE DISCHARGE	If "Yes", Name of nearest Surface Water	Distance	SOIL TYPE	Depth to Water Table
☐ Yes ☐ No		Ft.		

OUTFALL NO.	Proposed / Replacement / Existing / Expansion	TYPE OF WASTE	TYPE OF TREATMENT (If none, so state)
004	X Existing	SANITARY	LEACHING FIELDS

DESIGN FLOW	ACTUAL FLOW	FREQUENCY OF DISCHARGE	IS FLOW EQUALIZATION PROVIDED?
Gal/Day	11,000 Gal/Day	☐ Continuous ☐ Intermittent ☐ Batch	☐ Yes ☐ No If "Yes", describe in comments

PERIOD OF DISCHARGE: Months per year | Days per week | Hours per day

SURFACE DISCHARGE	If "Yes", Name of Receiving Waters	Classification	Waters Index No.
☐ Yes ☐ No			

SUBSURFACE DISCHARGE	If "Yes", Name of nearest Surface Water	Distance	SOIL TYPE	Depth to Water Table
☐ Yes ☐ No		Ft.		

7. COMMENTS: REQUEST MODIFICATION OF EFFLUENT CHARACTERISTICS AS FOLLOWS:

Copper	from	0.4	to	2.0 mg/l	max.	
Cadmium	"	0.02	to	0.02 mg/l	max.	
Zinc	"	0.6	to	5.00 mg/l	max.	
Nickel	"	1.0	to	2.00 mg/l	max.	
TDS	"	1000	to	2000 mg/l	max.	
SO4		50		100 mg/l	max.	

JAN 4 1980
S.C. DEPT. OF HEALTH SERVICES
SEE ATTACHED SUPPLEMENT #1

8. I hereby affirm under penalty of perjury that information provided on this form and any attached supplemental forms is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

APPLICANT'S SIGNATURE (See Instructions)	Date	Printed Name	Title
Ralph E. Rau	9/4/79	RALPH E. RAU, JR	V.P.

OTHER # _____ DATE ISSUED 12/6/84

OTHER # _____ DATE DUE 12/21/84

OTHER # _____ DEC # 10-84-1398

PURPOSE FOR NOTIFICATION/REVIEW AUTHORITY: APPLICATION FOR PART 360 PERMIT TO CONSTR a SUMF (haz)

APPLICANT: E.B. STIMPSON CO.

PROJECT NAME/DESCRIPTION: construction of temporary storage area/facility for wastes generated on site prior to off-site disposal

PROJECT LOCATION: 900 Sylvan Ave

City/Village Bayport Town: Islip

County: Suffolk USGS Quad: _____

(Attach a location map)

REMARKS: _____

DISTRIBUTION: *J. MIDDELKOOP, BHWT
P. AKRAS, SCDHS ✓ Plans submitted w/ 10/17/84 ltr
R BARBATO, RSWE
HZM

* Please respond thru P. Barbato

no comments ☐ comments attached ☐

RESPONDING UNIT: _____

BY: _____
(name/unit/date)

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

November 7, 1984

Mr. Don McCarty
E.B. Stimpson Co., Inc.
900 Sylvan Avenue
Bayport, NY 11705

Re: SPDES Effluent Limit Violations

Dear Sir:

Below is a summary of your wastewater discharge indicating effluent limitation violations. These violations were determined by a review of your discharge monitoring report(s) by the New York State Department of Environmental Conservation.

This department requests that you review the data and notify us, in writing, as to the cause of the violation(s) and the corrective action that will be implemented.

If the violation is the result of a major problem with the treatment facility, again, contact this office so that we may discuss a schedule of compliance for repair or upgrading of your wastewater unit.

Reporting Period End Date 8-31-84

Outfall	Parameter	Permit Value	Reported Value
001	tot.nitrogen	10 mg/l	36
001	sulfate	500	060
001	cadmium	0.02	0.03
001	copper	1.0	1.9
001	aluminum	2.0	4.3
001	iron	0.6	1.8
001	diss.solids	1000	1900

Very truly yours,

Gordon J. Watt

Gordon J. Watt
Associate Sanitarian
GJW:he
cc: J. Finkenberg ___
J. Gladysz ___
D. Gobbi x
T. Snyder, P.E x
W. Lavery ___

15 HORSEBLOCK PLACE • FARMINGVILLE NEW YORK 11738 • (516)451-4648

PC 1

[illegible] COUNTY DEPARTMENT OF HEALTH SERVICES
[illegible] LIQUID STORAGE REGISTRATION FORM

Official Use Only

Fac. Ref. No. 1* 0 5 0 1 8

Receipt No. 737933
Amt. of Fee [illegible]

Principal Property Tax Code
14* District [illegible] *15*Section 29. *16* Block 4. *17* Lot 3.

Facility Name	*3* No.	*4* Street	*5* Comm.	*6* State	*7* Zip	Phone No.
[illegible]	900	[illegible]	[illegible]	[illegible]		
Facility Owner	*33*No.	*34*Street	*35*Comm.	*36*State	*37*Zip	Phone No.
Facility Operator	*43*No.	*44*Street	*45*Comm.	*46*State	*47*Zip	Phone No.
Land Owner	*53*No.	*54*Street	*55*Comm.	*56*State	*57*Zip	Phone No.
Tank Owner	*63*No.	*64*Street	*65*Comm.	*66*State	*67*Zip	Phone No.

[illegible] chemical drums or containers stored at this site? Yes X No ____
[illegible] Empty Drums ____ *72*Full or Part Full ____ *73*Waste Material X *74*New Material ____ *75*Average No. Being Stored 50
[illegible] of Materials: New Oil Products ____ Waste Oil ____ Organic Solvents X Other ____

703 INDOORS	703 OUTDOORS	706 CAPACITY (GALLONS)	707 GASOLINE	707 NO. 2 FUEL OIL	707 NO. 6 FUEL OIL	707 KEROSENE	707 WASTE OIL	707 OTHER OIL	707 ORGANIC SOLVENTS	707 INDUSTRIAL WASTES	715 OTHER MATERIALS (SPECIFY) Hm84-82	716 YEAR INSTALLED AT THIS LOCATION	717 INSTALLED NEW YES	717 INSTALLED NEW NO	718 PLAIN STEEL	718 FIBERGLASS	718 BUFFHIDE	718 STIP-3	718 DOUBLE WALLED	718 OTHER	719 IN USE	719 ABANDONED	720 DISPENSER SUBMERSIBLE	720 DISPENSER SUCTION	720 DISPENSER GRAVITY	720 DISPENSER OTHER	721 FILL PUMPED	721 FILL GRAVITY	721 FILL OTHER	701 OFFICAL USE
	X	1500							[illegible]	X		[illegible]		[illegible]	X						X			X				X		81
	X	1200									[illegible]	74	X		X						X					X	X			82
	X	[illegible]									[illegible]	[illegible]	X		X						X			X			X			82
	X	7000									[illegible]	[illegible]	X			X					X					X	X			82
	X	1400									[illegible]	[illegible]	X			X					X					X	X			82
	X	[illegible]									[illegible]	[illegible]	X								X									84

[illegible] information on this application and all attachments have been reviewed and that, based on my inquiry of those persons immediately responsible for obtaining the [illegible] contained in this application, I believe that the information is true, accurate, and complete. I understand that false statements made herein are punishable as a [illegible] demeanor pursuant to Section 210.45 of the Penal Law.

Print Name	Signature	Title
[illegible]	[illegible]	

REFERENCE 19

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Edwin B. Stimpson Co., Inc. 02-8703-65 DATE: 1/16/89

FROM: Mark Ellis COPIES:

SUBJECT: Accessibility with respect to Direct Contact section.

REFERENCE: Michael Bauman, who was a sampler during this site inspection has confirmed the fact that there were locks on the gates for the fences surrounding the recharge basins.

REFERENCE 20

AQUATIC ORGANISMS

Due to scale limitations, only representative estuarine and [illegible]rine systems are shown.

Species that can be found from the shoreline to the three-mile limit depicted on the New York sheet include:

110g, 113g, 58cdf, 59de, 65abcdf, 111g, 113g, 115g, 117cd, 129cdfg, 130cdf, 138acdf, 139d, 140d, 142adf, 147bcdf, 149cdf, 157f, 160cdf, 173cdf, 177cdf, 178f, 183f, 185f, 186cdf.

Generally includes the following species:

116g, 59abcdef, 111g, 112cdf, 113g, 115g, 117cd, 128cfg, 129cdfg, 130f, 138abcdf, 139d, 140d, 142f, 147bcdf, 149bcdf, 157f, 160cdf, 177cdf, 178df.

Generally includes the following species:

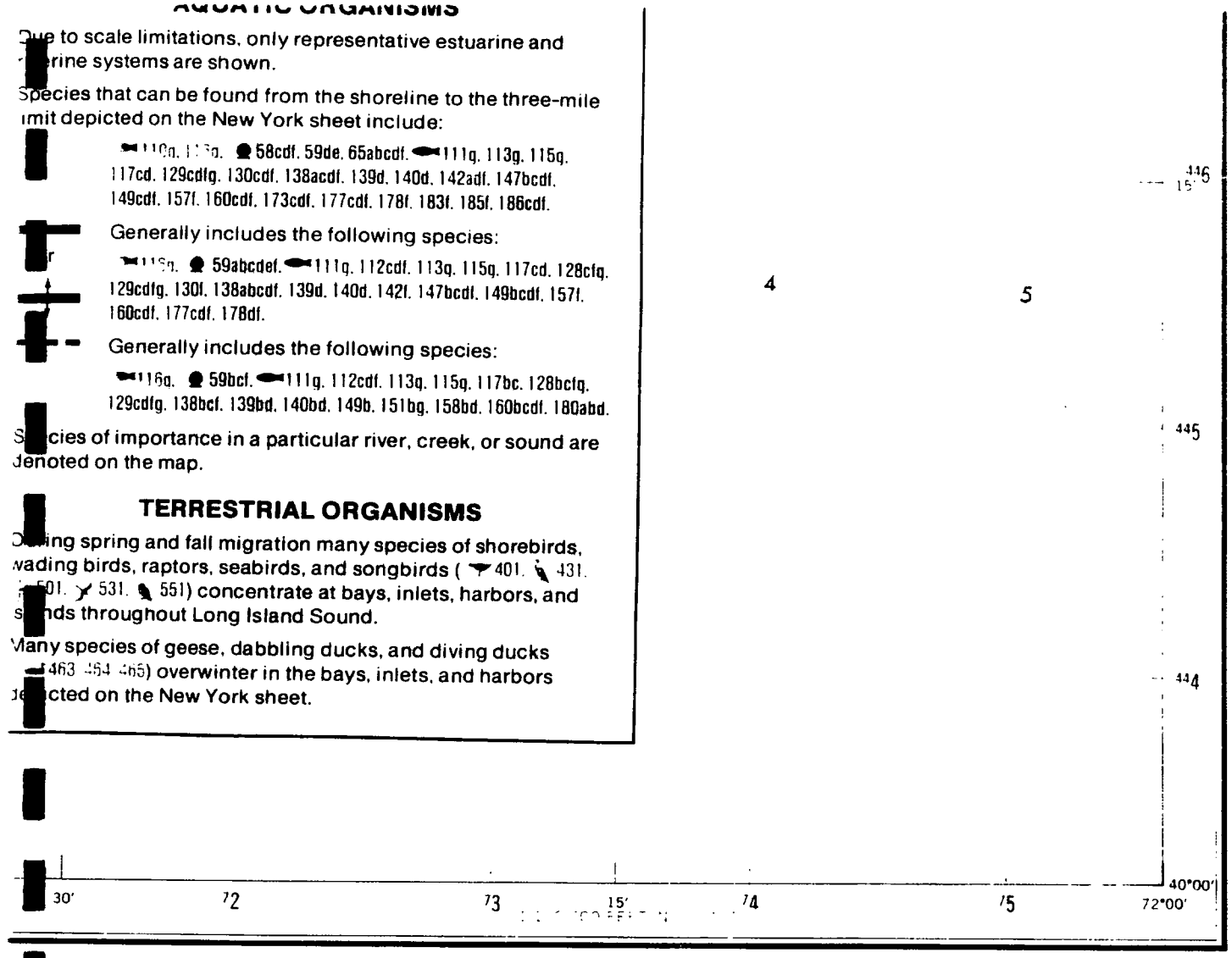
116g, 59bcf, 111g, 112cdf, 113g, 115g, 117bc, 128bcfg, 129cdfg, 138bcf, 139bd, 140bd, 149b, 151bg, 158bd, 160bcdf, 180abd.

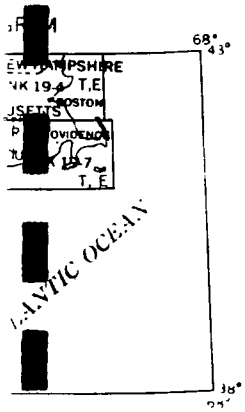
Species of importance in a particular river, creek, or sound are denoted on the map.

TERRESTRIAL ORGANISMS

During spring and fall migration many species of shorebirds, wading birds, raptors, seabirds, and songbirds (401, 431, 501, 531, 551) concentrate at bays, inlets, harbors, and sounds throughout Long Island Sound.

Many species of geese, dabbling ducks, and diving ducks (463, 464, 465) overwinter in the bays, inlets, and harbors depicted on the New York sheet.





LAND USE–LAND COVER SYMBOLS

Study area (coastal zone boundary to three-mile limit)

Special land use areas, including refuges and wildlife management areas, parks and seashores; may be used in lieu of habitat boundary

Subdivision of a special land use area into more than one designation

Swamp

Marsh

Beach/Dunes

Seagrass

Reef

POINT AND AREA FEATURE SYMBOLS

(shown in RED for species with special status; shown in BLUE for aquatic organisms; and shown in BROWN for terrestrial organisms)

Localized concentration of species 600h

General habitat boundary for indicated species; may be superceded by special land use boundary 100d

A STANDARD REFERENCE ON [illegible] NEAREST 1000 METERS

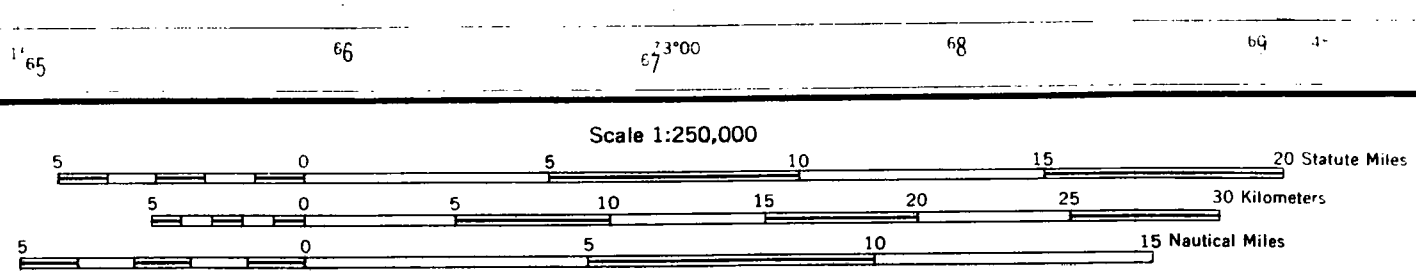
[illegible]VILLE

[illegible]tifying 100,000 meter [illegible] the point lies:	XA
[illegible] grid line to LEFT of [illegible] figure labeling the [illegible] bottom margin, or	9
[illegible]m grid line to point:	3
[illegible]NTAL grid line BELOW [illegible]RGE figure labeling the [illegible] right margin, or	3
[illegible] line to point:	8
	XA9338
18° in any direction, [illegible]on, as:	18TXA9338

ATLANTIC COAST ECOLOGICAL INVENTORY

NEW YORK, N. Y.–CONN.–N. J.

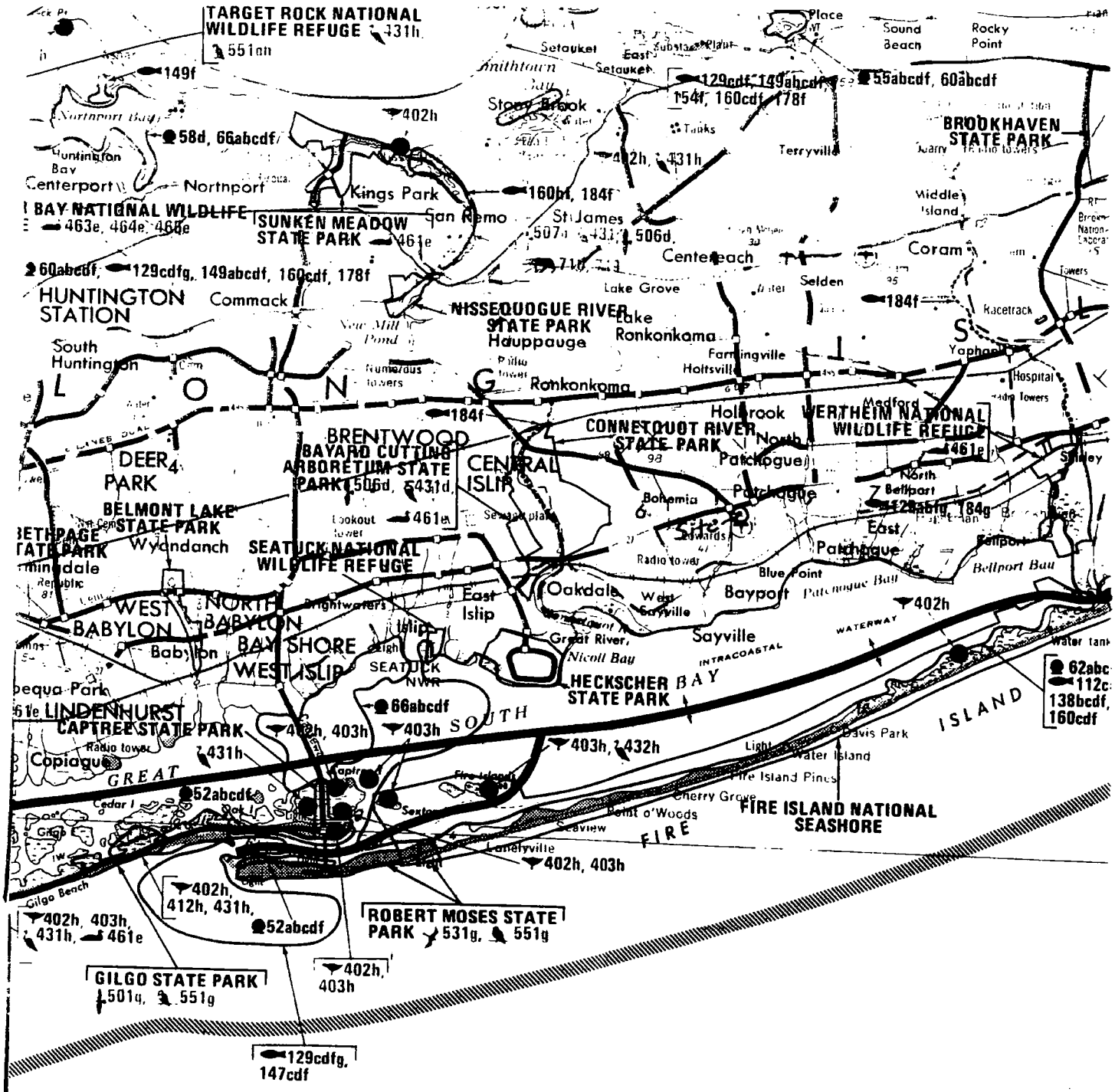
1980



TRANSVERSE MERCATOR PROJECTION

BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 18

FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092, OR DENVER, COLORADO 80225


TARGET ROCK NATIONAL WILDLIFE REFUGE
431h
551gh
149f
Setauket
Smithtown Bay
Stony Brook
129cdf, 149abcdf, 154f, 160cdf, 178f
55abcdf, 60abcdf
Place
Sound Beach
Rocky Point
Northport Bay
402h
58d, 66abcdf
Huntington Bay
Centerport
Northport
Kings Park
160bf, 184f
BROOKHAVEN STATE PARK
Terryville
402h, 431h
BAY NATIONAL WILDLIFE
463e, 464e, 466e
SUNKEN MEADOW STATE PARK
461e
San Remo
St James
506d
Middle Island
Coram
Centereach
60abcdf, 129cdfg, 149abcdf, 160cdf, 178f
HUNTINGTON STATION
Commack
Lake Grove
Selden
184f
NISSEQUOGUE RIVER STATE PARK
Lake Ronkonkoma
Hauppauge
Racetrack
South Huntington
Farmingville
Holtsville
Yaphank
Ronkonkoma
Hospital
184f
Holbrook
WERTHEIM NATIONAL WILDLIFE REFUGE
CONNETQUOT RIVER STATE PARK
North Patchogue
461e
BRENTWOOD
BAYARD CUTTING ARBORETUM STATE PARK
506d, 431d
CENTRAL ISLIP
DEER PARK
Bohemia
Patchogue
North Bellport
BELMONT LAKE STATE PARK
461e
Lookout tower
Sewage plant
Site
East Patchogue
Bellport
Wyandanch
SEATUCK NATIONAL WILDLIFE REFUGE
Radio tower
Blue Point
Bellport Bay
Oakdale
Bayport
Patchogue Bay
WEST BABYLON
NORTH BABYLON
East Islip
Brightwaters
Islip
402h
Babylon
BAY SHORE
WEST ISLIP
Great River
Nicoll Bay
Sayville
INTRACOASTAL WATERWAY
SEATUCK NWR
HECKSCHER STATE PARK
62abc
112c
138bcdf, 160cdf
LINDENHURST
66abcdf
CAPTREE STATE PARK
402h, 403h
403h
SOUTH BAY
ISLAND
Davis Park
Copiague
431h
403h, 432h
Light
Water Island
GREAT
Fire Island Pines
52abcdf
Cherry Grove
Point o'Woods
FIRE ISLAND NATIONAL SEASHORE
Seaview
FIRE
Lanelyville
402h, 403h
Gilgo Beach
402h, 412h, 431h,
52abcdf
ROBERT MOSES STATE PARK
531g, 551g
402h, 403h, 431h, 461e
GILGO STATE PARK
501g, 551g
402h, 403h
129cdfg, 147cdf

T I C

REFERENCE 21

(FRI 1/16/87)

SUFFOLK COUNTY DEPT. OF HEALTH SERVICES
UNIFORM COMPLAINT FIELD REPORT

Air Pollution ☐
Hazardous Material & Industrial Waste ☒
Internal Ventilation ☐
Sewage Treatment ☐
Assigned to Zone No. ☐

SCDHS No. _____ Letter ☐
SPILL No. 1987-25 Telephone ☒
DOT No. _____ Person ☐
Date 1/15/87 Time 4:00 P.M.

Referred by: GARY MILLER H_2M Phone 752-9060
Complainant
Address (T.V.H.) Phone

Complaint Against E.B. STIMPSON (J-CUENIN)
Address 900 SYLVAN AVE (T.V.H.) BAYPORT Phone 472-2000

Nature of Request SPILL OF SULFURIC ACID FROM PIPE FITTING ABOVE 30 GAL. SOIL CONTAMINATED TO DEPTH OF 4 FT. CONTACT G. MILLER OR J. CUENIN (STIMPSON) TO ARRANGE INSPECTION
RCV'D by V. Frisina Assigned to D. GOBBI Date 1/15/87

Persons Interviewed	Address	Phone
MR. JAMES CUENIN (V.P.)	E.B. Stimpson	472-2000
GARY MILLER (ENGINEER)	H_2M	

Information Obtained from Interviewed Individuals:
1/16/87 (GC) MR. MILLER STATED THAT A LEAK IN A PIPE FITTING FROM A SULFURIC ACID TANK WAS FIRST NOTICED 2 DAYS AGO. IT WAS A STEADY DRIP, AND INVENTORY/USAGE RECORDS INDICATE THAT ~ 30 GALLONS WAS LOST TO THE SOIL BELOW THE TANK. EMPLOYEES HAD ALREADY REMOVED 3 DRUMS OF CONTAMINATED SOIL FOR DISPOSAL BY AN INDUSTRIAL SCAVENGER.

INDW-1

18-528: 9/84

Inspector's Observations 1/16/87 @ THE SULFURIC ACID TANK IS LOCATED BEHIND THE BLDG IN A PARTIALLY COMPLETED ART. 12 BERMED AREA. THE CONCRETE FOOTING HAS NOT YET BEEN POURED, AND AS A RESULT SULFURIC ACID DID ENTER THE GROUND.

H&M's GARY MILLER WAS ONE OF THE ONES WHO DETECTED THE LEAK AND SUGGESTED THAT THE SOIL BE EXCAVATED AND PUT INTO DRUMS.

I CALLED NYSDEC, WATER PARISHES UNIT, AND THEY INFORMED ME THAT THE SOIL COULD REMAIN SO LONG AS A NEUTRALIZING AGENT WAS USED. HOWEVER, THE COMPANY ELECTS TO HAUL THE SOIL AWAY

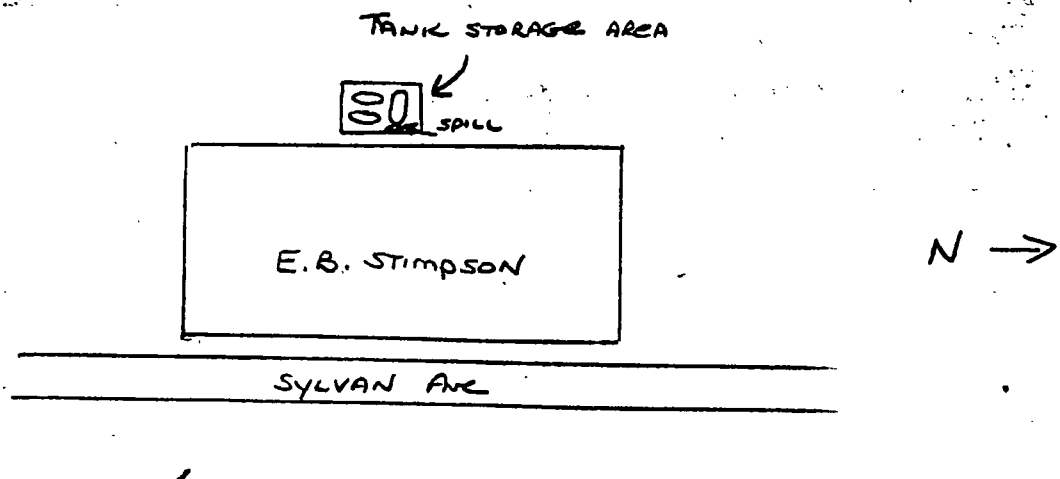
NOTE: LEAK HAS BEEN REPAIRED

Name of Responsible Individuals	Address	Tel. No.
E.B. Stimpson		

Inspector's Recommendation to Persons Concerned I TOLD MR. MILLER TO ADD LIME OR SOME OTHER CAUSTIC MATERIAL (SODA ASH) TO THE SURROUNDING AREA BEFORE ANY BACKFILLING IS STARTED.

Information Related by Inspector to Complainant —

Sketch:



Inspectors Signature [signature] Date 1/16/87

18-525: 9/84

Recon

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

NY0075884

NAME OF FACILITY	E. B. Simpson Co. Inc.	OWNER/ OFFICER	James Cuenin V.P.
PAGE ___ OF ___			
COMPANY NAME		CONTACT	
TEL. 472-2000			
PLANT ADDRESS	900 Sylvan Ave	VILLAGE Bayport	TOWN Islip
ZIP 11750			
MAILING ADDRESS			

DATE	TIME	ORIG.	PERIODIC	RE	WASTE	NO WASTE	H&H	SEWAGE SYSTEM	PUBLIC	PRIVATE
1/16/87	1130			(RE)						(PRIVATE)

8/18/86 ID - Reinspection of metal treatment room noted that the overflow discharges to the floor drain have been capped off. Also organic and metal sample taken from discharge pt. from this room

1/16/87 (R) Company plans to modify treatment system in the near future. H.M. is handling the design. Waste water will still be discharged to SPDES outfall 001. Currently no modifications to industrial processes have been implemented.
There are still several above and below ground storage tanks that have yet to be registered. Hazardous registration packet was dropped off.

18-234: 8/84

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

NY 0075884

E. B. SIMPSON INC.
900 SYLVAN AVE.
BAY PORT.

8/18/86 - ID - Reinspection of Metal Treatment Room noted that the over flow discharges to the floor drain have been capped off and now cannot over flow. Also organic + metal sample taken from discharge pt. from this room.

REFERENCE 22

Catalog of Recharge Basins on Long Island, New York, in 1969

by
G. E. Seaburn and D. A. Aronson
U.S. Geological Survey

BULLETIN 70
1973

New York State Department of Environmental Conservation

RECHARGE BASINS

Most of the recharge basins on Long Island are unlined open pits that dispose of storm runoff from residential, commercial, and industrial areas, and from highways (Seaburn, 1970). About 30 basins solely dispose of effluent from sewage-treatment plants. Those basins were not included in the study and are not considered in this report. The area of basins that dispose of storm runoff generally ranges from 0.1 to 30 acres and averages 1.5 acres. The average depth below land surface is 10 feet, but the depth of a few is as much as 40 feet. Storm runoff to recharge basins flows by gutters to street inlets. The street inlets are interconnected by sewers that carry storm water into the basins, where it infiltrates moderately to highly permeable sand and gravel deposits above the ground-water reservoir. Figure 2 shows the location of all the inventoried recharge basins that received storm runoff on Long Island in 1969.

Design and construction of recharge basins on Long Island is regulated and approved by the local governments. Available information on completed basins varies greatly in detail. None of the departments of local government maintains an up-to-date catalog of the type of data presented here.

SOURCES OF DATA

Data were compiled from several sources. These included engineering drawings of proposed land developments; maps of topography, water-table contours, geology, and soils; and aerial photographs.

Most of the data were obtained from engineering drawings of land developments filed with the local government's department responsible for regulating and approving construction designs. In general, the drawings contain the following information: A basin's location, date of construction, design capacity, actual capacity, dimensions, use, bottom altitude, overflow altitude, and land-surface altitude.

U.S. Geological Survey topographic maps were used to verify basin locations and land-surface altitudes of many basins. Aerial photographs were also used to verify basin locations.

The recharge basins were plotted on base maps from which the nearest street intersection as well as the latitude and longitude of each basin were determined.

A water-table contour map developed by Kimmel (1971) was used to estimate water-table altitudes below each basin. Geologic maps (Fuller, 1914; Perlmutter and Geraghty, 1963; Swarzenski, 1963; Lubke, 1964; Isbister, 1966; and Soren, 1970) and soil maps (Lounsbury and others, 1928; and Warner, 1969) were used to determine geologic and soil environment at each basin.

REFERENCE 23

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SUFFOLK COUNTY, NEW YORK
IMPORTANT FARMLANDS

LEGEND

Prime farmland
Total acres 69,180

Prime and unique farmland in vegetable crops
Total acres 51,013

Additional farmland of statewide importance
Total acres 54,071

Additional farmland of local importance
Total acres–none reported

Other land

Water areas

Approximate urban and built-up areas

Areas represented are greater than 10 acres in size

Because of the limitations of map scale, some delineations may contain inclusions of soils that do not meet the definition of that category.

451
175
37'30"
450
50 000 FEET
62
2 150 000 F

Patchogue
Blue Pt
Brown Pt
Green Pt
SCALE 1:50 000
MILES
FEET
KILOMETERS

REFERENCE 24

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08817

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

Site Name: Edwin B. Stimpson

Address: 900 Sylvan Avenue, Bayport, NY 11709

County: Suffolk

EPA I.D. No.: NYD052780392

Summary:

Edwin B. Stimpson is an active producer of metal fasteners and attaching equipment. Operations which generate hazardous waste include metal plating and finishing. Wastes generated currently include cyanide based plating baths, non-cyanide based plating baths, waste oil, and waste paints. Waste paints, oil, wastewater treatment sludge, and spent plating baths are currently manifested to a licensed waste scavenger for disposal. Treated process wastewater is discharged to the groundwater via two sand leaching fields.

Stimpson has installed four monitoring wells to meet RCRA requirements. Samples from these wells have revealed levels of cadmium, lead, nitrate, and silver above the National Drinking Water Standards. This contamination may have been caused by alleged former lagoons used for the disposal of metal hydroxide sludge and cleaning solutions. In addition, Stimpson has exceeded their groundwater discharge permit levels for copper, aluminum, cadmium, total nitrogen, sulfate, iron, and total dissolved solids on occasion.

Priority for Inspection: High ___
Medium X
Low ___
None ___

Recommendations:

Because of Suffolk County's dependency on groundwater for a drinking supply the site is given a medium priority.

Sampling areas should include soil from the alleged former lagoons area, soil from the current leaching fields, the on-site monitoring wells, and nearby wells. Samples should be analyzed for metals and organics.

Prepared by: Carol Price, Environmental Scientist
U.S. EPA, Environmental Services Division

Date: September 17, 1986

EPA

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

I. IDENTIFICATION

01 STATE: NY | 02 SITE NUMBER: D052780392

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): Edwin B. Stimpson

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: 900 Sylvan Avenue

03 CITY: Bayport | 04 STATE: NY | 05 ZIP CODE: 11708 | 06 COUNTY: Suffolk | 07 COUNTY CODE: 103 | 08 CONG DIST: 1

09 COORDINATES LATITUDE: 40 43 50._ | LONGITUDE: _73 03 00._

10 DIRECTIONS TO SITE (Starting from nearest public road):

Take the Sunrise Highway east to Church Street. Make a right onto Church Street. Follow Church Street to Sylvan Avenue. Make left onto Sylvan Avenue and follow to 900.

III. RESPONSIBLE PARTIES

01 OWNER (If known): Not known

02 STREET (Business, mailing, residential):

03 CITY: | 04 STATE: | 05 ZIP CODE: | 06 TELEPHONE NUMBER: ( )

07 OPERATOR (If known and different from owner): Leonardis Albert

08 STREET (Business, mailing, residential): 900 Sylvan Avenue

09 CITY: Bayport | 10 STATE: NY | 11 ZIP CODE: 11709 | 12 TELEPHONE NUMBER: (516) 472-2000

13 TYPE OF OWNERSHIP (Check one):

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply):

☒ A. RCRA 3001 DATE RECEIVED: 11 / 14 / 80 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __ / __ / __ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION: ☒ YES DATE 9 / 7 / 83 (MONTH DAY YEAR) ☐ NO

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

CONTRACTOR NAME(S): Ertec

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

03 YEARS OF OPERATION: 1970 (BEGINNING YEAR) | Active (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED:

The facility generates waste sludge containing metal hydroxides and various spent plating baths containing cyanide,tin, chromium, nickel, cadmium, and copper. Waste paint thinners and mineral oils are also generated.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION:

Cadmium, lead, nitrate, and silver have been found in varying levels in the groundwater beneath the site. More extensive soil and groundwater contamination may be possible from alleged former lagoons used for sludge and plating bath solution disposal and from current leaching pits used to discharge wastewater effluent to grour water

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents):

☐ A. HIGH (Inspection required promptly) ☒ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Diana Messina	EPA/ESD/SMB/Superfund Support Section	(201) 321-6776

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Carol Price	EPA	ESD/SMB/Super.	(201) 321-6714	8 / 29 / 86 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D052780392

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

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

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

TONS _____
CUBIC YARDS _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

(per month)

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	6,000	Gallons	Metal hydroxide sludge from WW treat
OLW	OILY WASTE	500	Gallons	Waste oil
SOL	SOLVENTS	~~100~~	~~Gallons~~	~~Paint thinner & mineral spirits~~
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS	100	Gallons	Spent plating baths cont. cyanide
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	100	Gallons	Spent plating baths cont. 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
SLU	Metal hydroxide sludge		Manifested to scavenger	Unknown	N/A
SOL	Paint thinner,min. spir.		"	"	"
IOC	Spent plating baths w/		"	"	"
	cyanide				
MES	Spent plating baths				
	containing:				
	Nickel		"	"	"
	Chromium		"	"	"
	Tin		"	"	"
	Cadmium		"	"	"
	Copper		"	"	"

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	See attached pages.		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

USGS Geological Survey Quadrangle Maps, Patchogue, NY Quad.
USEPA RCRA 3001 Notification
USEPA RCRA Permits files
New York State Dept. of Env. Conservation files (Region 1)
Suffolk County Dept. of Health files

EPA

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

I. IDENTIFICATION
01 STATE: NY
02 SITE NUMBER: D052780392

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 [ ] OBSERVED (DATE: ~~12/12/81~~) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Groundwater contamination may have been caused by former alleged lagoons used for metal hydroxide sludge & cleaning solution disposal. Lead, nitrate, cadmium, and silver have been found in monitoring well samples at levels above the National Drinking Water Standards (analysis sheets are attached).

01 [X] B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
There is a small potential for surface water contamination. The site is located approximately 1 mile from the Sans Souci lakes.

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

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

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

01 [X] F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: Not known
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Soil contamination from former alleged lagoons used for metal hydroxide sludge and cleaning solution disposal is possible. Soil contamination may also be present around current leaching fields.

01 [X] G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: Not known
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Suffolk County depends on groundwater as a drinking water supply. A Suffolk County well field is located approximately 5500 ft. northwest of the site on Church Street in Holbrook. This well field consists of three wells, two of which pump 1000 gpm and one which pumps 1400 gpm. The well field's total pumpage in June 1986 was 43,337,000 gal.

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

01 [X] I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: 65,559
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Surface and groundwater contamination could affect the 65,559 people who live within four miles of the site.

EPA

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

I. IDENTIFICATION
01 STATE: NY
02 SITE NUMBER: D052780392

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

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

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

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

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

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

The potential for damage to off-site wells exists.

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

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

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: 65,559 people live within four miles of the site

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports) (cont. from p.2)

Suffolk County Water Authority Water Distribution maps

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Mr. Al Leonardis

Report Date: October 19, 1982
Collected: 8/14/82 by AL
Received: 8/18/82 by LS
Analyzed: 8/18 to 9/13/82 by Staff
No. of Samples: 4
PO #: LL 20422

Third Quarter Groundwater Monitoring
Lab Reference #08-2135 - Well #1 Upgradient
Lab Reference #08-2136 - Well #2 Southwest
Lab Reference #08-2137 - Well #3 South center
Lab Reference #08-2138 - Well #4 Southeast

Parameter*	08-2135 (mg/L)	08-2136 (mg/L)	08-2137 (mg/L)	08-2138 (mg/L)
Cadmium	--	--	0.02	--
Silver	0.11	--	--	--

*Parameters with concentrations exceeding National Drinking Water Standards.

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zelienople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 7/6/82
Collected: 4/30 & 5/1/82 by AL
Received: 5/5/82 by LS
Analyzed: 5/5 to 5/20/82 by CJR
No. of Samples: 4
PO #: Letter Dated 1/18/82

Lab Reference #05-1319 - Up Gradient Well #1 2nd
Lab Reference #05-1320 - Down Gradient Well #2
Lab Reference #05-1321 - Down Gradient Well #3
Lab Reference #05-1322 - Down Gradient Well #4

Parameter*	05-1319	05-1320	05-1321	05-1322
Cadmium	0.09	0.05	0.06	0.09
Lead	--	0.07	--	--
Nitrate (as N)	--	--	35.0	--

*Parameters with concentrations exceeding National Drinking Water Standards

cc: ERC/Lancy - Hamden Office

LANCY LABORATORIES
A DART & KRAFT COMPANY
525 West New Castle Street
P.O. Box 490
Zellenople, PA 16063

ANALYSIS REPORT

Company: E. B. Stimpson Company, Inc.
Address: 900 Sylvan Avenue
Bayport, NY 11705
Attention: Al Leonardis

Report Date: 3/23/82
Collected: 12/12/81 by AL
Received: 12/16/81 by LS
Analyzed: 12/16/81-2/16/82 by CJR
No. of Samples: 4
PO #:

Ground Water Monitoring Sample
Lab Reference #188463 - Well #1 (Up Gradient)
Lab Reference #188464 - Well #2
Lab Reference #188465 - Well #3
Lab Reference #188466 - Well #4

1st

Report of parameters whose observed value exceed maximum contaminate levels listed in EPA interim Primary Drinking Water Standards as appended to 40 CFR Part 265.

Parameter	188463 (mg/L)	188464 (mg/L)	188465 (mg/L)	188466 (mg/L)
Cadmium	--	0.03	0.06	0.02
Lead	0.04	0.10	0.06	0.03

cc: J. J. Martin, ERC/Lancy

C. John Ritzert, Manager-Analytical Services

INDUSTRIAL WASTE PROCESS

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHAI TO
1	Shipping + Receiving	None	—	
2	Press room	Water Sol Oil	Spent oils	Hold T
3	Tumbling Washing Dept	Water + Soaps, rinses	Wash water	Treatm
4	Chrom + Phosphate Metal Treat	Alkal cleaner, chromacid, other acids, phosphate sol, rinse	waste rinses	Treatm
5	Indoor Drum Storage	~50 Drums, Acids, Bases, Cleaners, Cyanide Solutions	—	
6	Nickel, copper, Tin, Brass, Cadmium, Zinc, silver gold.	Alkaline cleaner	Spent sludge	Hold t
	Black nickel, Plating	All rinses, chem Treatments	waste waters	Treat
7	Annodizing, Black ox, acid dip, caustic etch, Pickling	All rinses, Spent chemicals	waste waters	Treat
		Floor Drippings	waste waters	Spent Treat
8	Indoor Paint Storage locker (bermed)	10 Drums, >100 5 gal + 1 gal Cans (Winners of Paint)	Use in Process	
9	Paint Dept	Paint, Thinners, mineral SP, reducers	waste paint solvent	Ht
10	Treatment room	Cyanide, Nickel, Chrome copper (closed loops)	Bleed off	Treat
11	batch Treatment	Cyanide, Chrome copper	treated batches	Filter
12	Gravity Filter	Sludge, Penetrant	sludge Penetrant	[illegible]

AIR POLLUTION SOURCES

18-155:

NO.	PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.	TYPI EMIS
	No New EPs since Bob Olsens inspection 1982						

PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISC
rinse Treatment (waste rinses)	PH adjust (acid, base)	treatment rinses	C/B
Clair Fier	Settled rinses	Sludge Effluent	[illegible] [illegible]
outdoor Drum Storage	4-Drums waste Paint, 38-Solvent thinners	—	
outdoor Above ground Storage tank 2000 gal	Solvent (mineral Spirits)	use in Process	
Tumbling Waste Treatment	H_2SO_4, Lime, Sodium Sulfite, Alumin Sulfate Flocculant,	Treat waste water	Coll
Tube Clair Fier	Spent waste water	Sludge	[illegible]
		effluent	[illegible]
2 - gravity Filter	Clair Fier Slurry	Sludge EFF	Ho back
10,000 gal underground hold Tank	Spent Sludge	Sludge	Scav.
1-3200 gal Above ground Tank	H_2SO_4	—	
1-1200 gal Above ground Tank	HNO_3	—	
1-7000 gal Above ground Tank	NaOH	—	
1-1700 gal Above ground Tank	Sodium HYPO chlorite	—	

AIR POLLUTION SOURCES

PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.	TY EI

INDUSTRIAL WASTE PROCESS

PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHARGE TO
Indoor Drum Storage	~150-55gal Drums of Acids, bases	—	
	Plating chemicals, Cleaning Soaps		

AIR POLLUTION SOURCES

PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.	TYPE O EMISSIO

NUS CORPORATION

TITLE: THREE MILE VICINITY MAP

SITE:

EDWIN B. STIMPSON CO., INC.,
BAYPORT, N.Y.

DATE: 11/9/87

TDD: 02-8703-65

QUAD: PATCHOGUE, N.Y.

FIGURE NUMBER:

SCALE: 1" = 2000'