VIDAN AUTO SALVAGE
NYD986961167
2.0 PUBLIC/CONGRESSIONAL INVOLVEMENT

NFRAP

No. 1

V
2

695460

VIDAN AUTO SALVAGE
NYD986961167 NFRAP
2.0 PUBLIC/CONGRESSIONAL INVOLVEMENT
2.4 EPA Correspondence
No. 1
0000064448

UNITED S[illegible]ES ENVIRONMENTAL PROTECTIC[illegible]AGENCY
REGION II

DATE: SEP 20 1991

SUBJECT: Vidan Auto Salvage Data Report, Project #107

FROM: John Birri, Chief
Inorganic Chemistry Section

TO: Richard Spear, Chief
Surveillance & Monitoring Branch

THRU: Gerard F. McKenna, Chief
Technical Support Branch

Attached is a copy of the data report for Vidan Auto Salvage, Project #107. Please note that all NVOA hits in samples 97119 and 97120 were qualified with a "J" code due to high surrogate spike recoveries, attributable to matrix interference in both samples. Also, sample 97121, submitted for VOA analysis, contained headspace.

Attachment

RECEIVED
SEP 20 1991
S & M BRANCH

Dennis: FYI. If there are any issues that you may need to be aware of as a result of SI let me know, ask ARCS contractor (or Ben) to touch base with prior to conducting SI. Thanks

Petruzzello

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

DATE: SEP 26 1991

SUBJECT: Vidan Auto Salvage

FROM: John Witkowski, Chief
Technical Support Section

TO: James F. Doyle, Attorney
Office of Regional Counsel

John Witkowski

COPY TO SITE FILE NYD 986961167

Vidan Auto Salvage was formerly a junkyard located on Bond Street in Brooklyn, New York. Due to activities with stolen vehicles at this location, the U.S. Department of Justice (DOJ) seized the property, auctioned its contents and then returned the property to the owner under the stipulation that the property could not be used as a junkyard.

As a result of the disassembling of vehicles at the property and the subsequent release of their fluids, the DOJ requested that the United States Environmental Protection Agency (EPA) conduct an investigation to determine if these releases posed a threat to the public and/or the environment. The Removal Action Branch conducted this investigation.

The On-Scene Coordinator (OSC), accompanied by the U.S. Marshall Service, conducted site visits on June 25, 1991 and July 10, 1991. On June 25th, the EPA Field Investigation Team (FIT) was also present conducting a Preliminary Assessment. On July 10th, representatives from the EPA Environmental Services Division (ESD) were present at the site, at the request of the OSC, to collect samples for analysis.

Samples were collected from a drain, a drum and two soil locations (see attachment for analytical results). The drain, which is located where the racks used to be, contained a heavy sheen. Petroleum hydrocarbons were present at 37.4 ppm in the sample collected from this point. A sample from the drum was analyzed for volatile organics and was found not to contain any. Its pH was equal to 11.

One of the soil samples was collected as a composite from a heavily stained area at the center of the property. This area was reportedly used for disassembling the vehicles. Elevated levels of volatile organics (VOAs), polyaromatic hydrocarbons (PAHs) and several heavy metals (cadmium, copper, nickel, lead and zinc) were detected. Another soil sample was collected as a grab from a small hole in the concrete on the west side of the property. The soil at this location was found to be saturated with what appeared to be a petroleum material. The level of contamination was considerably greater at this point with regards to the PAHs.

There has been a release of hazardous substances at a facility. Based on the sampling, it appears that the highest levels of contamination are below the surface, much of which is paved. The facility is located in a mostly industrial area and is fenced, thus limiting access to the site. Ground water in this area is not used as a drinking water source. Based on these items, Vidan Auto Salvage is not removal eligible at this time.

Based on the findings of the FIT Team, the site scored sufficiently high to warrant a Site Inspection (SI) sometime in the future.

Although the Removal Program can not address the contamination at the site, it may be an issue that another Division within the Agency, the New York State Department of Environmental Conservation or the New York City Department of Environmental Protection may be able to address.

Should you have any questions, please do not hesitate to call me at FTS 340-6739 or Nick Magriples at FTS 340-6930.

Attachment

cc: R. Salkie, ERR-ADREPP
G. Zachos, ERR-RAB
V. Pitruzzello, ERR-PS
R. Spear, ES-SM

VIDAN AUTO SALVAGE
NYD986961167
12.0 OTHER REPORTS

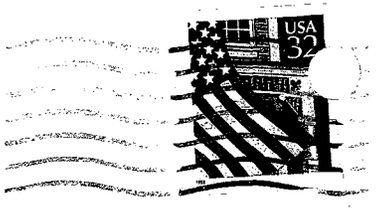
NFRAP

No. 1

V
1
2

VIDAN AUTO SALVAGE
NYD986961167 NFRAP
12.0 OTHER REPORTS
12.1 Other Reports
Access No. 1
0000064456

SLATER & SGARLATO, P.C.
Attorneys at Law
1298 VICTORY BOULEVARD • STATEN ISLAND, NEW YORK 10301



United States Environmental Protection Agency
Region 2
290 Broadway
New York, New York 10007-1866
Attn: Michael A. Mintzer

CONSENT FOR ACCESS TO PROPERTY

Name: Daniel Tinneny

Description of Property:

Facility located at 327-321 Bond Street, Kings County, New York City, New York

The undersigned, owner of the property referred to above, consents to officers, employees and authorized representatives of the United States Environmental Protection Agency ("EPA") entering and having access to the above-described property for the following purposes:

performing a site reconnaissance of the property to ascertain potential sampling locations and to screen the site for health and safety considerations;

performing a site inspection of the property including the taking of such soil, water and air samples as may be determined to be necessary and the sampling or taking of any solids or liquids stored or disposed of on the property; and

taking other actions of inspection and sampling relating to the investigation of surface or subsurface contamination on or from the property.

I understand that these actions by EPA are to be undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9600 et seq. (the "Superfund Law").

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

6/22/96
Date

Daniel Tinneny
(signature)

June 10, 1996

Louis Badalato, Esq.
Slater & Scarlato
1298 Victory Boulevard
Staten Island, NY 10301

Re: Facility located at 327-321 Bond Street, Kings County, New York City, New York

Dear Mr. Badalato:

Pursuant to our telephone conversation of last week, I am enclosing a "CONSENT TO ACCESS" to the above captioned property which is owned by your client Mr. Daniel Tinneny.

As you know, EPA intends to conduct site investigation activities at the property under authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. § 9601 et seq., and is seeking your client's consent to access for this purpose.

The specific activities for which entry or access is required would include a site reconnaissance to enable EPA to determine appropriate locations and means to sample site media (site media may include surface water, ground water, soil and/or air) and to screen the site for health and safety considerations. Thereafter, based on the information obtained in the site reconnaissance, EPA would conduct sampling of site media.

EPA anticipates that activities at the property would be undertaken by its contractor Roy F. Weston, Inc. As we discussed in our telephone conversation of last week (between the undersigned and Juan Davila of EPA and you), EPA will request that its contractor contact your client through your offices to set mutually convenient times and dates for these activities.

Following signature by your client, please return the Consent to Access form to me.

Very truly yours,

Michael A. Mintzer
Assistant Regional Counsel
Office of Regional Counsel

CONSENT FOR ACCESS TO PROPERTY

Name: Daniel Tinneny

Description of Property:

Facility located at 327-321 Bond Street, Kings County, New York City, New York

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performing a site reconnaissance of the property to ascertain potential sampling locations and to screen the site for health and safety considerations;

performing a site inspection of the property including the taking of such soil, water and air samples as may be determined to be necessary and the sampling or taking of any solids or liquids stored or disposed of on the property; and

taking other actions of inspection and sampling relating to the investigation of surface or subsurface contamination on or from the property.

I understand that these actions by EPA are to be undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9600 et seq. (the "Superfund Law").

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

_____ _____

Date Daniel Tinneny
(signature)

April 29, 1996

Louis Badalato, Esq.
Slater & Scarlato
1298 Victory Boulevard
Staten Island, NY 10301

Re: Facility located at 327-321 Bond Street, Kings County, New York City, New York

Dear Mr. Badalato:

I am writing pursuant to our telephone conversation of April 26, 1996 concerning the above-captioned facility which is owned by your client Daniel Tinneny.

The Environmental Protection Agency is requesting your client's consent to EPA access to the facility so that EPA may conduct a site investigation at the facility pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9600 et seq. (the "Superfund Law").

As you requested, enclosed is a report of a sampling event conducted in 1991 at the above-captioned facility.

Very truly yours,

Michael A. Mintzer
Assistant Regional Counsel
Office of Regional Counsel

bcc: Juan Davila, EPA ERRD

2ND RECORD of Level 1 printed in FULL format.

*** THIS DATA IS FOR INFORMATION PURPOSES ONLY ***

PROPERTY RECORD FOR KINGS COUNTY, NY

ESTIMATED ROLL CERTIFICATION DATE MARCH 1, 1995

Owner: DANIEL TINNENY

Mailing Address: C/O TINNENY DANIEL, 448 STOBE AVE, STATEN ISLAND, NY 10306

Property Address: 327-31 BOND ST, BROOKLYN, NY 11231

********** ASSESSMENT INFORMATION **********

Assessor's Parcel Number: 445-8

Legal Description: LOT: 8; BLOCK: 445

Market Value Year: 1995

Market Land Value: $ 45,000

Market Improvement Value: $ 82,000

Total Market Value: $ 127,000

Land Use: MISC GARAGE OR GAS STN; Zoning: M2-1

Assessment Year: 1995

Assessed Land Value: $ 20,250

Assessed Improvement Value: $ 36,900

Total Assessed Value: $ 57,150

********** PROPERTY CHARACTERISTICS **********

Year Built:	1962	No. of Buildings:	1
Stories:	1	Style:	
Units:		Air Conditioning:	
Bedrooms:		Heating:	

Baths:	Construction:
Partial Baths:	Basement:
Total Rooms:	Exterior Walls:
Fireplace:	Foundation:
Garage Type:	Roof:
Garage Size:	Elevator:
Pool/Spa:	Lot Size: 4500
SF	
	Building Area:

TAPE PRODUCED BY COUNTY: 10/1995

PRINT DOC REQUESTED: APRIL 26, 1996 1002MT

2 DOCUMENTS PRINTED
3 PRINTED PAGES

SEND TO: MINTZER, MICHAEL
ENVIRONMENTAL PROTECTION AGENCY-NEW YORK
290 BROADWAY, 17TH FLOOR

VIDAN AUTO SALVAGE
NYD986961167 NFRAP
12.0 OTHER REPORTS
12.1 Other Reports
Sampling & Monitoring No. 1
0000064455

LAB DATA MANAGEMENT SYSTEM - REGION II
COMPLETED PROJECT APPROVAL

REPORT DATE 91/09/16

PROJECT NUMBER	PROJECT DATE	PROJECT NAME
107	91/07/10	VIDAN AUTO SALVAGE

APPROVED

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

EXPLANATIONS OF REMARK CODES

REMARK CODE	EXPLANATION
B	RESULTS BASED UPON COLONY COUNTS OUTSIDE ACCEPTABLE RANGE
J	ESTIMATED VALUE
K	ACTUAL VALUE KNOWN TO BE LESS THAN VALUE GIVEN
L	ACTUAL VALUE KNOWN TO BE GREATER THAN VALUE GIVEN
M	PRESENCE OF MATERIAL VERIFIED BUT NOT QUANTIFIED
N	NO OBSERVABLE EFFECT CONCENTRATION < 0.3%
O	SAMPLED BUT NOT ANALYZED DUE TO LAB ACCIDENT
T	REPORTED VALUE LESS THAN CRITERIA OF DETECTION
U	REPORTING LIMIT

QA/QC REMARK CODES

CODE	EXPLANATION
QD	ACCURACY CHECK SAMPLE ABOVE UPPER ACCEPTANCE LIMIT
QE	ACCURACY CHECK SAMPLE BELOW LOWER ACCEPTANCE LIMIT
QF	PRECISION OF CALIBRATION CURVE LESS THAN ACCEPTANCE CRITERIA
QG	CONTINUING CALIBRATION CHECK DOES NOT MEET ACCEPTANCE CRITERIA
QS	SPIKE RECOVERIES ABOVE UPPER ACCPETANCE LIMIT
QR	SPIKE RECOVERIES BELOW LOWER ACCPETANCE LIMIT
QP	SAMPLE REPLICATE PRECISION DOES NOT MEET ACCEPTANCE CRITERIA
QH	RECOMMENDED HOLDING TIMES EXCEEDED
QT	TENTATIVELY IDENTIFIED COMPOUND
QB	BLANK CONTAMINATED BY ANALYTE IN EXCESS OF ACCEPTANCE CRITERIA
QQ	SAMPLE IMPROPERLY PRESERVED

LOCATION CODES FOR IDENTIFICATION OF SAMPLING POINTS AT INDUSTRIAL / SANITARY FACILITIES, LANDFILLS, HAZARDOUS WASTE SITES.

CODE NUMBERS	SAMPLING POINTS
1001 - 1050	EFFLUENT PIPE NUMBER 001 TO 050
1051 - 1099	OTHER EFFLUENTS SUCH AS COOLING TOWER DISCHARGE, DISCHARGE FROM HOLDING PONDS, ETC...
1100 - 1249	IN PLANT SAMPLES
1435 - 1454	SEPARATE INFLUENT POINTS/WATER SOURCES
15XX	INFLUENT ASSOCIATED WITH EFFLUENT 10XX
2000	BLANK FOR VOLATILE ORGANICS
3000 - 3099	GROUND WATER FROM WELL 01 TO 99
3100 - 3199	SEDIMENT SAMPLE (WATER BOTTOM)
3200 - 3299	SOIL SAMPLE
3300 - 3399	STREAM WATER SAMPLE
3400 - 3499	LAGOON SAMPLE
3500 - 3599	STORAGE TANK SAMPLE
3600 - 3699	LEACHATE SAMPLE
3700 - 3799	OTHER TYPE SAMPLE

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
NONE	91/07/10	1018							
DEPTH: 0000 SUBSTRATE: AQUEOUS									
DESCRIPTION: WATER DRAIN									
			097118	45501	PETRO.HYDROCARBONS IR	MG/L	TOT REC	37.4	
				34586	2-CHLOROPHENOL	UG/L		11.1	U
				34591	2-NITROPHENOL	UG/L		11.1	U
				34694	PHENOL	UG/L		1.4	J
				34606	2,4-DIMETHYLPHENOL	UG/L		7.4	J
				34601	2,4-DICHLOROPHENOL	UG/L		11.1	U
				34621	2,4,6-TRICHLOROPHENOL	UG/L		11.1	U
				34452	P-CHLORO-M-CRESOL	UG/L		11.1	U
				34616	2,4-DINITROPHENOL	UG/L		27.8	U
				34657	4,6-DINITRO-O-CRESOL	UG/L		27.8	U
				39032	PENTACHLOROPHENOL	UG/L		27.8	U
				34646	4-NITROPHENOL	UG/L		27.8	U
				34566	1,3-DICHLOROBENZENE	UG/L		11.1	U
				34571	1,4-DICHLOROBENZENE	UG/L		11.1	U
				34536	1,2-DICHLOROBENZENE	UG/L		11.1	U
				34396	HEXACHLOROETHANE	UG/L		11.1	U
				39702	HEXACHLOROBUTADIENE	UG/L		11.1	U
				34551	1,2,4-TRICHLOROBENZENE	UG/L		11.1	U
				34696	NAPHTHALENE	UG/L		11.1	U
				34273	BIS(2-CHLOROETHYL) ET.	UG/L		11.1	U
				34278	BIS(2-CHLOROETHOXY) METH.	UG/L		11.1	U
				34408	ISOPHORONE	UG/L		11.1	U
				34447	NITROBENZENE	UG/L		11.1	U
				34428	N-NITROSODI-N-PROPYLAMINE	UG/L		11.1	U
				34433	N-NITROSODIPHENYLAMINE	UG/L		11.1	U
				34283	BIS(2-CHLOROISOPROPYL) ET.	UG/L		11.1	U
				34386	HEXACHLOROCYCLOPENTADIENE	UG/L		11.1	U
				34581	2-CHLORONAPHTHALENE	UG/L		11.1	U
				34200	ACENAPHTHYLENE	UG/L		11.1	U
				34205	ACENAPHTHENE	UG/L		0.5	J
				34381	FLUORENE	UG/L		0.5	J
				39700	HEXACHLOROBENZENE	UG/L		11.1	U
				34636	4-BROMOPHENYL PHENYL ET.	UG/L		11.1	U
				34461	PHENANTHRENE	UG/L		11.1	U
				34220	ANTHRACENE	UG/L		11.1	U
				99999	CARBAZOLE	UG/L		11.1	U
				34341	DIMETHYL PHTHALATE	UG/L		11.1	U
				34336	DIETHYL PHTHALATE	UG/L		11.1	U
				39110	DI-N-BUTYLPHTHALATE	UG/L		11.1	U
				34292	BUTYL BENZYL PHTHALATE	UG/L		11.1	U
				34596	DI-N-OCTYL PHTHALATE	UG/L		5.6	J

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097118	39100	BIS(2-ETHYLHEXYL) PHTHAL.	UG/L		6.3 J	
				34376	FLUORANTHENE	UG/L		11.1 U	
				34469	PYRENE	UG/L		0.4 J	
				34320	CHRYSENE	UG/L		0.4 J	
				34526	1,2-BENZANTHRACENE	UG/L		11.1 U	
				34641	4-CHLOROPHENYL PHENYL ET.	UG/L		11.1 U	
				34403	INDENO(1,2,3-C,D) PYRENE	UG/L		11.1 U	
				34247	BENZO(A)PYRENE	UG/L		11.1 U	
				34521	1,12-BENZOPERYLENE	UG/L		11.1 U	
				34556	1,2:5,6-DIBENZANTHRACENE	UG/L		11.1 U	
				34631	3,3'-DICHLOROBENZIDENE	UG/L		11.1 U	
				34626	2,6-DINITROTOLUENE	UG/L		11.1 U	
				34611	2,4-DINITROTOLUENE	UG/L		11.1 U	
				34230	3,4-BENZOFLUORANTHENE	UG/L		11.1 U	
				34242	11,12-BENZOFLUORANTHENE	UG/L		11.1 U	
				99999	2-METHYL PHENOL	UG/L		11.1 U	
				99999	4-METHYL PHENOL	UG/L		12 U	
				99999	4-CHLOROANILINE	UG/L		11.1 U	
				99999	ANILINE	UG/L		11.1 U	
				99999	2-METHYL NAPHTHALENE	UG/L		3.9 J	
				88894	2,4,5-TRICHLOROPHENOL	UG/L		27.8 U	
				99999	2-NITROANILINE	UG/L		27.8 U	
				99999	3-NITROANILINE	UG/L		27.8 U	
				99999	DIBENZOFURAN	UG/L		11.1 U	
				99999	4-NITROANILINE	UG/L		27.8 U	
				99999	BENZOIC ACID	UG/L		7.4 J	QG
				99999	BENZYL ALCOHOL	UG/L		0.9 J	
				99999	DIHYDRO-1H-INDENE	UG/L		9.7 J	QT
				99999	METHYLPROPYLBENZENE	UG/L		11.0 J	QT
				99999	DIMETHYLETHYLBENZENE	UG/L		27.0 J	QT
				99999	TETRAMETHYLBENZENE	UG/L		28.0 J	QT
				99999	DIHYDROMETHYL-1H-INDENE	UG/L		25.0 J	QT
				99999	ETHYL PHENOL	UG/L		6.40 J	QT
				99999	DIHYDRODIMETHYL-1H-INDENE	UG/L		8.90 J	QT
				99999	BENZOTHIAZOLE	UG/L		12.00 J	QT
				99999	DIMETHYL NAPHTHALENE	UG/L		5.40 J	QT
				99999	BENZOYLCHLORIDE,4METHYL	UG/L		5.00 J	QT
				99920	XYLENES (TOTAL)	UG/L		63.0 J	QT
				99999	ETHYLMETHYLBENZENE	UG/L		120.0 J	QT

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
NONE	91/07/10	1027							
DEPTH: 0000 SUBSTRATE: SEDIMENT									
DESCRIPTION: SOIL 1 COMPOSITE									
			097119	34421	METHYL CHLORIDE	UG/KG		1100 U	
				34416	METHYL BROMIDE	UG/KG		1100 U	
				34495	VINYL CHLORIDE	UG/KG		1100 U	
				34314	CHLOROETHANE	UG/KG		1100 U	
				34426	METHYLENE CHLORIDE	UG/KG		1100 U	
				99930	ACETONE	UG/KG		1100 U	
				99999	CARBON DISULFIDE	UG/KG		1100 U	
				34504	1,1-DICHLOROETHYLENE	UG/KG		1100 U	
				34499	1,1-DICHLOROETHANE	UG/KG		1100 U	
				34549	TRANS 1,2 DICHLOROETHYLENE	UG/KG		1100 U	
				34318	CHLOROFORM	UG/KG		1100 U	
				34534	1,2-DICHLOROETHANE	UG/KG		1100 U	
				99999	2-BUTANONE	UG/KG		1100 U	
				34509	1,1,1-TRICHLOROETHANE	UG/KG		1100 U	
				34299	CARBON TETRACHLORIDE	UG/KG		1100 U	
				34330	DICHLOROBROMOMETHANE	UG/KG		1100 U	
				34544	1,2-DICHLOROPROPANE	UG/KG		1100 U	
				34564	1,3-DICHLOROPROPYLENE	UG/KG		1100 U	
				34487	TRICHLOROETHYLENE	UG/KG		1100 U	
				34237	BENZENE	UG/KG		1100 U	
				99999	CIS-1,3-DICHLOROPROPENE	UG/KG		1100 U	
				34309	CHLORODIBROMOMETHANE	UG/KG		1100 U	
				34514	1,1,2-TRICHLOROETHANE	UG/KG		1100 U	
				34290	BROMOFORM	UG/KG		1100 U	
				34519	1,1,2,2-TETRACHLOROETHANE	UG/KG		1100 U	
				34478	TETRACHLOROETHYLENE	UG/KG		1100 U	
				34483	TOLUENE	UG/KG		1600	
				34304	CHLOROBENZENE	UG/KG		1100 U	
				34374	ETHYLBENZENE	UG/KG		810 J	
				99904	STYRENE	UG/KG		1100 U	
				99999	XYLENES (TOTAL)	UG/KG		4900	
				34589	2-CHLOROPHENOL	UG/KG		350000 U	
				34594	2-NITROPHENOL	UG/KG		350000 U	
				34695	PHENOL	UG/KG		350000 U	
				34609	2,4-DIMETHYLPHENOL	UG/KG		350000 U	
				34604	2,4-DICHLOROPHENOL	UG/KG		350000 U	
				34624	2,4,6-TRICHLOROPHENOL	UG/KG		350000 U	
				99999	P-CHLORO-M-CRESOL	UG/KG		350000 U	
				34619	2,4-DINITROPHENOL	UG/KG		850000 U	
				34660	4,6-DINITRO-O-CRESOL	UG/KG		850000 U	
				99999	PENTACHLOROPHENOL	UG/KG		850000 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097119	99999	4-NITROPHENOL	UG/KG		850000 U	
				34569	1,3-DICHLOROBENZENE	UG/KG		350000 U	
				34574	1,4-DICHLOROBENZENE	UG/KG		350000 U	
				34539	1,2-DICHLOROBENZENE	UG/KG		350000 U	
				34399	HEXACHLOROETHANE	UG/KG		350000 U	
				34394	HEXACHLOROBUTADIENE	UG/KG		350000 U	
				34554	1,2,4-TRICHLOROBENZENE	UG/KG		350000 U	
				34445	NAPHTHALENE	UG/KG		3500 J	
				34276	BIS(2-CHLOROETHYL) ET.	UG/KG		350000 U	
				34281	BIS(2-CHLOROETHOXY) METH.	UG/KG		350000 U	
				34411	ISOPHORONE	UG/KG		350000 U	
				34450	NITROBENZENE	UG/KG		350000 U	
				34431	N-NITROSODI-N-PROPYLAMINE	UG/KG		350000 U	
				34436	N-NITROSODIPHENYLAMINE	UG/KG		8600 J	
				34286	BIS(2-CHLOROISOPROPYL) ETH	UG/KG		350000 U	
				34389	HEXACHLOROCYCLOPENTADIENE	UG/KG		350000 U	
				34584	2-CHLORONAPHTHALENE	UG/KG		350000 U	
				34203	ACENAPHTHYLENE	UG/KG		430 J	
				34208	ACENAPHTHENE	UG/KG		500 J	
				34384	FLUORENE	UG/KG		4700 J	
				39701	HEXACHLOROBENZENE	UG/KG		350000 U	
				34639	4-BROMOPHENYL PHENYL ET.	UG/KG		350000 U	
				34464	PHENANTHRENE	UG/KG		83000 J	
				34223	ANTHRACENE	UG/KG		350000 U	
				34344	DIMETHYL PHTHALATE	UG/KG		350000 U	
				34339	DIETHYL PHTHALATE	UG/KG		350000 U	
				39112	DI-N-BUTYLPPHTHALATE	UG/KG		350000 U	
				34295	BUTYL BENZYL PHTHALATE	UG/KG		190000 J	
				34599	DI-N-OCTYL PHTHALATE	UG/KG		350000 U	
				39102	BIS(2-ETHYLHEXYL) PHTHAL.	UG/KG		350000 U	
				34379	FLUORANTHENE	UG/KG		86000 J	QR
				34472	PYRENE	UG/KG		88000 J	
				34323	CHRYSENE	UG/KG		350000 U	
				34529	1,2-BENZANTHRACENE	UG/KG		350000 U	
				34644	4-CHLOROPHENYL PHENYL ET.	UG/KG		350000 U	
				34406	INDENO(1,2,3-C,D) PYRENE	UG/KG		3100 J	
				34250	BENZO(A)PYRENE	UG/KG		9900 J	
				34524	1,12-BENZOPERYLENE	UG/KG		3300 J	
				34559	1,2:5,6-DIBENZANTHRACENE	UG/KG		350000 U	
				34634	3,3'-DICHLOROBENZIDENE	UG/KG		350000 U	
				34629	2,6-DINITROTOLUENE	UG/KG		350000 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK		QA/QC REMARK
			097119	34614	2,4-DINITROTOLUENE	UG/KG		350000	U	
				34349	1,2-DIPHENYLHYDRAZINE	UG/KG		350000	U	
				34233	3,4-BENZOFLUORANTHENE	UG/KG		6700	J	
				34245	11,12-BENZOFLUORANTHENE	UG/KG		5500	J	
				99999	BENZYL ALCOHOL	UG/KG		350000	U	
				99999	2-METHYL PHENOL	UG/KG		350000	U	
				99999	4-METHYL PHENOL	UG/KG		1300	J	
				77722	4-CHLOROANILINE	UG/KG		850000	U	
				99999	BENZOIC ACID	UG/KG		350000	U	
				99999	ANILINE	UG/KG		350000	U	
				99999	2-METHYL NAPHTHALENE	UG/KG		3900	J	
				77733	2,4,5-TRICHLOROPHENOL	UG/KG		850000	U	
				99999	2-NITROANILINE	UG/KG		850000	U	
				99999	3-NITROANILINE	UG/KG		850000	U	
				99999	DIBENZOFURAN	UG/KG		290	J	QG
				99999	4-NITROANILINE	UG/KG		350000	U	
				99999	DIMETHYLETHYLBENZENE	UG/KG		2500	J	QT
				99999	DIMETHYL NAPHTHALENE	UG/KG		15000	J	QT
				99999	ETHYLMETHYLBENZENE	UG/KG		3000	J	QT
				99999	DIMETHYLBENZENE	UG/KG		6700	J	QT
				99922	PCB-1016	UG/KG		180	U	
				99923	PCB-1221	UG/KG		360	U	
				99924	PCB-1232	UG/KG		180	U	
				99925	PCB-1242	UG/KG		180	U	
				99926	PCB-1248	UG/KG		180	U	
				99927	PCB-1254	UG/KG		180	U	
				99928	PCB-1260	UG/KG		180	U	
				01078	SILVER	MG/KG		2.9	J	QP
				01108	ALUMINUM	MG/KG		6120		
				01003	ARSENIC	MG/KG		4.8	J	QR
				01008	BARIUM	MG/KG		537	J	QP
				01013	BERYLLIUM	MG/KG		0.6	U	
				00917	CALCIUM	MG/KG		17500		
				01028	CADMIUM	MG/KG		35.1		
				01038	COBALT	MG/KG		7		
				01029	CHROMIUM	MG/KG		38		
				01043	COPPER	MG/KG		525		
				01170	IRON	MG/KG		32700		
				71921	MERCURY	MG/KG		0.16	J	QR
				99999	POTASSIUM	MG/KG		640		
				00924	MAGNESIUM	MG/KG		3370		

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097119	01053	MANGANESE	MG/KG		270	
				00934	SODIUM	MG/KG		565 U	
				01068	NICKEL	MG/KG		108	
				01052	LEAD	MG/KG		901	
				01098	ANTIMONY	MG/KG		26	
				01148	SELENIUM	MG/KG		0.56 U	QR
				34480	THALLIUM	MG/KG		0.88 U	
				01088	VANADIUM	MG/KG		17	
				01093	ZINC	MG/KG		1020	
NONE	91/07/10	1037							
DEPTH: 0000 SUBSTRATE: SEDIMENT									
DESCRIPTION: SOIL 2 GRAB									
			097120	34421	METHYL CHLORIDE	UG/KG		1500 U	
				34416	METHYL BROMIDE	UG/KG		1500 U	
				34495	VINYL CHLORIDE	UG/KG		1500 U	
				34314	CHLOROETHANE	UG/KG		1500 U	
				34426	METHYLENE CHLORIDE	UG/KG		1500 U	
				99930	ACETONE	UG/KG		1500 U	
				99999	CARBON DISULFIDE	UG/KG		1500 U	
				34504	1,1-DICHLOROETHYLENE	UG/KG		1500 U	
				34499	1,1-DICHLOROETHANE	UG/KG		1500 U	
				34549	TRANS 1,2 DICHLOROETHYLENE	UG/KG		1500 U	
				34318	CHLOROFORM	UG/KG		1500 U	
				34534	1,2-DICHLOROETHANE	UG/KG		1500 U	
				99999	2-BUTANONE	UG/KG		1500 U	
				34509	1,1,1-TRICHLOROETHANE	UG/KG		1500 U	
				34299	CARBON TETRACHLORIDE	UG/KG		1500 U	
				34330	DICHLOROBROMOMETHANE	UG/KG		1500 U	
				34544	1,2-DICHLOROPROPANE	UG/KG		1500 U	
				34564	1,3-DICHLOROPROPYLENE	UG/KG		1500 U	
				34487	TRICHLOROETHYLENE	UG/KG		90 J	
				34237	BENZENE	UG/KG		1500 U	
				99999	CIS-1,3-DICHLOROPROPENE	UG/KG		1500 U	
				34309	CHLORODIBROMOMETHANE	UG/KG		1500 U	
				34514	1,1,2-TRICHLOROETHANE	UG/KG		1500 U	
				34290	BROMOFORM	UG/KG		1500 U	
				34519	1,1,2,2-TETRACHLOROETHANE	UG/KG		1500 U	
				34478	TETRACHLOROETHYLENE	UG/KG		1500 U	
				34483	TOLUENE	UG/KG		1500 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097120	34304	CHLOROBENZENE	UG/KG		1500 U	
				34374	ETHYLBENZENE	UG/KG		1500 U	
				99904	STYRENE	UG/KG		230 J	
				99999	XYLENES (TOTAL)	UG/KG		1500 U	
				34589	2-CHLOROPHENOL	UG/KG		1900000 U	
				34594	2-NITROPHENOL	UG/KG		1900000 U	
				34695	PHENOL	UG/KG		2600 J	
				34609	2,4-DIMETHYLPHENOL	UG/KG		2100 J	QG
				34604	2,4-DICHLOROPHENOL	UG/KG		1900000 U	
				34624	2,4,6-TRICHLOROPHENOL	UG/KG		1900000 U	
				99999	P-CHLORO-M-CRESOL	UG/KG		1900000 U	
				34619	2,4-DINITROPHENOL	UG/KG		4700000 U	
				34660	4,6-DINITRO-O-CRESOL	UG/KG		4700000 U	
				99999	PENTACHLOROPHENOL	UG/KG		4700000 U	
				99999	4-NITROPHENOL	UG/KG		4700000 U	
				34569	1,3-DICHLOROBENZENE	UG/KG		1900000 U	
				34574	1,4-DICHLOROBENZENE	UG/KG		1900000 U	
				34539	1,2-DICHLOROBENZENE	UG/KG		1900000 U	
				34399	HEXACHLOROETHANE	UG/KG		1900000 U	
				34394	HEXACHLOROBUTADIENE	UG/KG		1900000 U	
				34554	1,2,4-TRICHLOROBENZENE	UG/KG		1900000 U	
				34445	NAPHTHALENE	UG/KG		17000 J	
				34276	BIS(2-CHLOROETHYL) ET.	UG/KG		1900000 U	
				34281	BIS(2-CHLOROETHOXY) METH.	UG/KG		1900000 U	
				34411	ISOPHORONE	UG/KG		1900000 U	
				34450	NITROBENZENE	UG/KG		1900000 U	
				34431	N-NITROSODI-N-PROPYLAMINE	UG/KG		1900000 U	
				34436	N-NITROSODIPHENYLAMINE	UG/KG		1900000 U	
				34286	BIS(2-CHLOROISOPROPYL) ETH	UG/KG		1900000 U	
				34389	HEXACHLOROCYCLOPENTADIENE	UG/KG		1900000 U	
				34584	2-CHLORONAPHTHALENE	UG/KG		1900000 U	
				34203	ACENAPHTHYLENE	UG/KG		16000 J	
				34208	ACENAPHTHENE	UG/KG		21000 J	
				34384	FLUORENE	UG/KG		21000 J	
				39701	HEXACHLOROBENZENE	UG/KG		1900000 U	
				34639	4-BROMOPHENYL PHENYL ET.	UG/KG		1900000 U	
				34464	PHENANTHRENE	UG/KG		240000 J	
				34223	ANTHRACENE	UG/KG		73000 J	
				34344	DIMETHYL PHTHALATE	UG/KG		1900000 U	
				34339	DIETHYL PHTHALATE	UG/KG		1900000 U	
				39112	DI-N-BUTYLPPHTHALATE	UG/KG		1900000 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097120	34295	BUTYL BENZYL PHTHALATE	UG/KG		1900000 U	
				34599	DI-N-OCTYL PHTHALATE	UG/KG		6900 J	
				39102	BIS(2-ETHYLHEXYL) PHTHAL.	UG/KG		59000 J	
				34379	FLUORANTHENE	UG/KG		400000 J	QR
				34472	PYRENE	UG/KG		370000 J	
				34323	CHRYSENE	UG/KG		200000 J	
				34529	1,2-BENZANTHRACENE	UG/KG		1900000 U	
				34644	4-CHLOROPHENYL PHENYL ET.	UG/KG		1900000 U	
				34406	INDENO(1,2,3-C,D) PYRENE	UG/KG		98000 J	
				34250	BENZO(A)PYRENE	UG/KG		180000 J	
				34524	1,12-BENZOPERYLENE	UG/KG		21000 J	
				34559	1,2:5,6-DIBENZANTHRACENE	UG/KG		22000 J	
				34634	3,3'-DICHLOROBENZIDENE	UG/KG		1900000 U	
				34629	2,6-DINITROTOLUENE	UG/KG		1900000 U	
				34614	2,4-DINITROTOLUENE	UG/KG		1900000 U	
				34349	1,2-DIPHENYLHYDRAZINE	UG/KG		1900000 U	
				34233	3,4-BENZOFLUORANTHENE	UG/KG		280000 J	
				34245	11,12-BENZOFLUORANTHENE	UG/KG		1900000 U	
				99999	BENZYL ALCOHOL	UG/KG		1900000 U	
				99999	2-METHYL PHENOL	UG/KG		1900000 U	
				77722	4-CHLOROANILINE	UG/KG		4700000 U	
				99999	BENZOIC ACID	UG/KG		1900000 U	
				77722	4-CHLOROANILINE	UG/KG		4700000 U	
				99999	ANILINE	UG/KG		1900000 U	
				99999	2-METHYL NAPHTHALENE	UG/KG		1900000 U	
				77733	2,4,5-TRICHLOROPHENOL	UG/KG		4700000 U	
				99999	2-NITROANILINE	UG/KG		4700000 U	
				99999	3-NITROANILINE	UG/KG		4700000 U	
				99999	DIBENZOFURAN	UG/KG		1900000 U	
				99999	4-NITROANILINE	UG/KG		1900000 U	
				99999	2,6-B1,1DIMETHYLETHYL4METHPH	UG/KG		96000 J	QT
				99999	DIBENZOTHIOPHENE	UG/KG		46000 J	QT
				99999	9H-CARBAZOLE	UG/KG		58000 J	QT
				99999	4-METHYLPHENANTHRENE	UG/KG		150000 J	QT
				99922	PCB-1016	UG/KG		470 U	
				99923	PCB-1221	UG/KG		950 U	
				99924	PCB-1232	UG/KG		470 U	
				99925	PCB-1242	UG/KG		470 U	
				99926	PCB-1248	UG/KG		470 U	
				99927	PCB-1254	UG/KG		470 U	
				99928	PCB-1260	UG/KG		470 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097120	01078	SILVER	MG/KG		32.5 J	QP
				01108	ALUMINUM	MG/KG		12100	
				01003	ARSENIC	MG/KG		6.9 J	QR
				01008	BARIUM	MG/KG		291 J	QP
				01013	BERYLLIUM	MG/KG		4.9	
				00917	CALCIUM	MG/KG		21200	
				01028	CADMIUM	MG/KG		62.7	
				01038	COBALT	MG/KG		21	
				01029	CHROMIUM	MG/KG		96	
				01043	COPPER	MG/KG		777	
				01170	IRON	MG/KG		28700	
				71921	MERCURY	MG/KG		0.17 J	QR
				99999	POTASSIUM	MG/KG		1990	
				00924	MAGNESIUM	MG/KG		10200	
				01053	MANGANESE	MG/KG		377	
				00934	SODIUM	MG/KG		786 U	
				01068	NICKEL	MG/KG		601	
				01052	LEAD	MG/KG		456	
				01098	ANTIMONY	MG/KG		27	
				01148	SELENIUM	MG/KG		5.7 J	QR
				34480	THALLIUM	MG/KG		0.64 U	
				01088	VANADIUM	MG/KG		47	
				01093	ZINC	MG/KG		933	
NONE	91/07/10	1105							
DEPTH: 0000 SUBSTRATE: OIL									
DESCRIPTION: DRUM									
			097121	34421	METHYL CHLORIDE	UG/KG		4000 U	QQ
				34416	METHYL BROMIDE	UG/KG		4000 U	QQ
				34495	VINYL CHLORIDE	UG/KG		4000 U	QQ
				34314	CHLOROETHANE	UG/KG		4000 U	QQ
				34426	METHYLENE CHLORIDE	UG/KG		4000 U	QQ
				99930	ACETONE	UG/KG		4000 U	QQ
				99999	CARBON DISULFIDE	UG/KG		4000 U	QQ
				34491	TRICHLOROFLUOROMETHANE	UG/KG		4000 U	QQ
				34504	1,1-DICHLOROETHYLENE	UG/KG		4000 U	QQ
				34499	1,1-DICHLOROETHANE	UG/KG		4000 U	QQ
				34549	TRANS 1,2 DICHLOROETHYLENE	UG/KG		4000 U	QQ
				34318	CHLOROFORM	UG/KG		4000 U	QQ
				34534	1,2-DICHLOROETHANE	UG/KG		4000 U	QQ

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097121	99999	2-BUTANONE	UG/KG		4000 U	QQ
				34509	1,1,1-TRICHLOROETHANE	UG/KG		4000 U	QQ
				34299	CARBON TETRACHLORIDE	UG/KG		4000 U	QQ
				34330	DICHLOROBROMOMETHANE	UG/KG		4000 U	QQ
				99999	VINYL ACETATE	UG/KG		4000 U	QQ
				34544	1,2-DICHLOROPROPANE	UG/KG		4000 U	QQ
				34564	1,3-DICHLOROPROPYLENE	UG/KG		4000 U	QQ
				34487	TRICHLOROETHYLENE	UG/KG		4000 U	QQ
				34309	CHLORODIBROMOMETHANE	UG/KG		4000 U	QQ
				34514	1,1,2-TRICHLOROETHANE	UG/KG		4000 U	QQ
				34237	BENZENE	UG/KG		4000 U	QQ
				99999	CIS-1,3-DICHLOROPROPENE	UG/KG		4000 U	QQ
				34290	BROMOFORM	UG/KG		4000 U	QQ
				99999	4-METHYL-2-PENTANONE	UG/KG		4000 U	QQ
				99999	2-HEXANONE	UG/KG		4000 U	QQ
				34478	TETRACHLOROETHYLENE	UG/KG		4000 U	QQ
				34519	1,1,2,2-TETRACHLOROETHANE	UG/KG		4000 U	QQ
				34483	TOLUENE	UG/KG		4000 U	QQ
				34304	CHLOROBENZENE	UG/KG		4000 U	QQ
				34374	ETHYLBENZENE	UG/KG		4000 U	QQ
				99904	STYRENE	UG/KG		4000 U	QQ
				99999	XYLENES (TOTAL)	UG/KG		4000 U	QQ

***** END OF PROJECT *****

(*) Jean: Research & assign Numbers.

follows:

NYD 000 764 936 X 00 RS1, F, ACT START 3/6/91 ACT COMP 5/3/91

Roehr Chemical
52-20 37th Street
Long Island City, NY 11101 County: Queens

NJD 986 611 838 00 RS1, F, 6/13/91 —

Chronar Corporation
330 Lawrence Station Road
Lawrence Township, NJ 08648 County: Mercer

NYD 986 961 167 00 RS1, F, 6/25/91 —

Vidan Auto Salvage
President and Bond Street
Brooklyn, NY 11231 County: Kings

Should you have any questions, please give me a call at FTS 342-4341. Thanx,

Mark

7/23/91

VIDAN AUTO SALVAGE
NYD986961167
4.0 PRELIMINARY ASSESSMENT (PA)

NFRAP

No. 1

CONFIDENTIAL

VIDAN AUTO SALVAGE
NYD986961167 **Confidential** NFRAP
4.0 PRELIMINARY ASSESSMENT (PA)
4.1 PA Reports
Forms No. 1
0000064457

PRELIMINARY ASSESSMENT REVIEW FORM

SITE NAME: Vidar Auto Salvage

ALIASES: none

CERCLIS I.D.# NYD986961167

CITY: Brooklyn

COUNTY: Kings

STATE: NY

TYPE: (CERCLIS) PETITION EPI/RCRA FEDERAL FACILITY

on-site recon. done by FIT.

FISCAL YEAR & QUARTER FOR SCAP: FY'91 - 4th Q

CONTRACTOR RECOMMENDATION: Site Inspection

EPA RECOMMENDATION: Site Inspection

PA METHOD SCORE: 69

COMMENTS:

Site was used for auto salvage until seized by the U.S. Marshall in spring of 1991 due to potentially illegal activities. Contaminants on-site include waste oils, lead & PCBs (low levels found in soil). No DW sources w/in 4 mi (GW) or 15 mi. (SW). SW pathway to be concern due to proximity of fisheries & sensitive environ (endangered species, wildlife refuge, Statue of Liberty). FIT recommends sampling of Hudson R. estuary system during SI; however, attribution to site may be difficult due to other potential sources along Gowanus Canal (Note - Removal Branch sampled drains, soils, & drum on 7/10/91; data not yet available as of FIT report - 9/4/91.)

Recommend SW sampling — SI.

REVIEWER: Amy J. Brooks

DATE: 11/25/91

SECTION CHIEF APPROVAL: _____

VIDAN AUTO SALVAGE
NYD986961167 **Confidential** NFRAP
4.0 PRELIMINARY ASSESSMENT (PA)
4.2 PA Scoresheets
No. 1
0000064451

DRAFT

NOV 0 6 1990

PA Scoresheets

PRELIMINARY ASSESSMENT

DRAFT NOV 06 1990

CERCLIS IDENTIFICATION NUMBER	
STATE: NY	SITE NUMBER: ~~New~~ NYD986961167

SITE LOCATION

SITE NAME: Legal, common or descriptive name of site
Vidan Auto Salvage

STREET ADDRESS, ROUTE or SPECIFIC LOCATION IDENTIFIER
327-331 Bond Street

CITY	STATE	ZIP CODE	TELEPHONE
Brooklyn	NY	11231	( ) unknown

COORDINATES: LATITUDE and LONGITUDE: 40°40'47" N 73°59'55" W

TOWNSHIP, RANGE, and SECTION:

OWNER/OPERATOR IDENTIFICATION

OWNER	OWNER ADDRESS	CITY	STATE	ZIP CODE	TELEPHONE
Daniel Tinneny	448 Stobe Ave	Staten Island	NY	10306	( ) unknown

OPERATOR	OPERATOR ADDRESS	CITY	STATE	ZIP CODE	TELEPHONE
Daniel Tinneny	327-331 Bond Street	Brooklyn	NY	11231	(718) 852-2798

TYPE OF OWNERSHIP

- [X] PRIVATE
- [ ] FEDERAL: Agency name _____
- [ ] STATE
- [ ] COUNTY
- [ ] MUNICIPAL
- [ ] OTHER: _____
- [ ] NOT SPECIFIED

OWNER/OPERATOR NOTIFICATION ON FILE

- [X] NONE
- [ ] CERCLA 103 C, UNCONTROLLED WASTE SITE DATE: _____
- [ ] RCRA 3001 DATE: _____

SITE STATUS

- [X] ACTIVE
- [ ] INACTIVE
- [ ] UNKNOWN

YEARS OF OPERATION

BEGINNING YEAR: _____

ENDING YEAR: _____

- [X] UNKNOWN * reported to have been operated as Vidan Auto Salvage for at least the last 15 years.

APPROXIMATE SIZE OF SITE

The site is approximately 1.71 acres in size

SITE EVALUATION

AGENCY / ORGANIZATION	HALLIBURTON NUS Environmental Corporation Region 2 FIT
INVESTIGATOR	Susan S. Hodgkiss
CONTACT	Amy Brochu
ADDRESS	U.S. EPA, Region 2, Edison, New Jersey
TELEPHONE	(908) 906-6802
DATE	September 3, 1991

DRAFT

NOV 06 1990

Site Name: Vidan Auto Salvage 2

Date: September 3, 1991

GENERAL INFORMATION

Site Description and Operational History:

Probable Contaminants of Concern:

(Previous investigations; analytical data)

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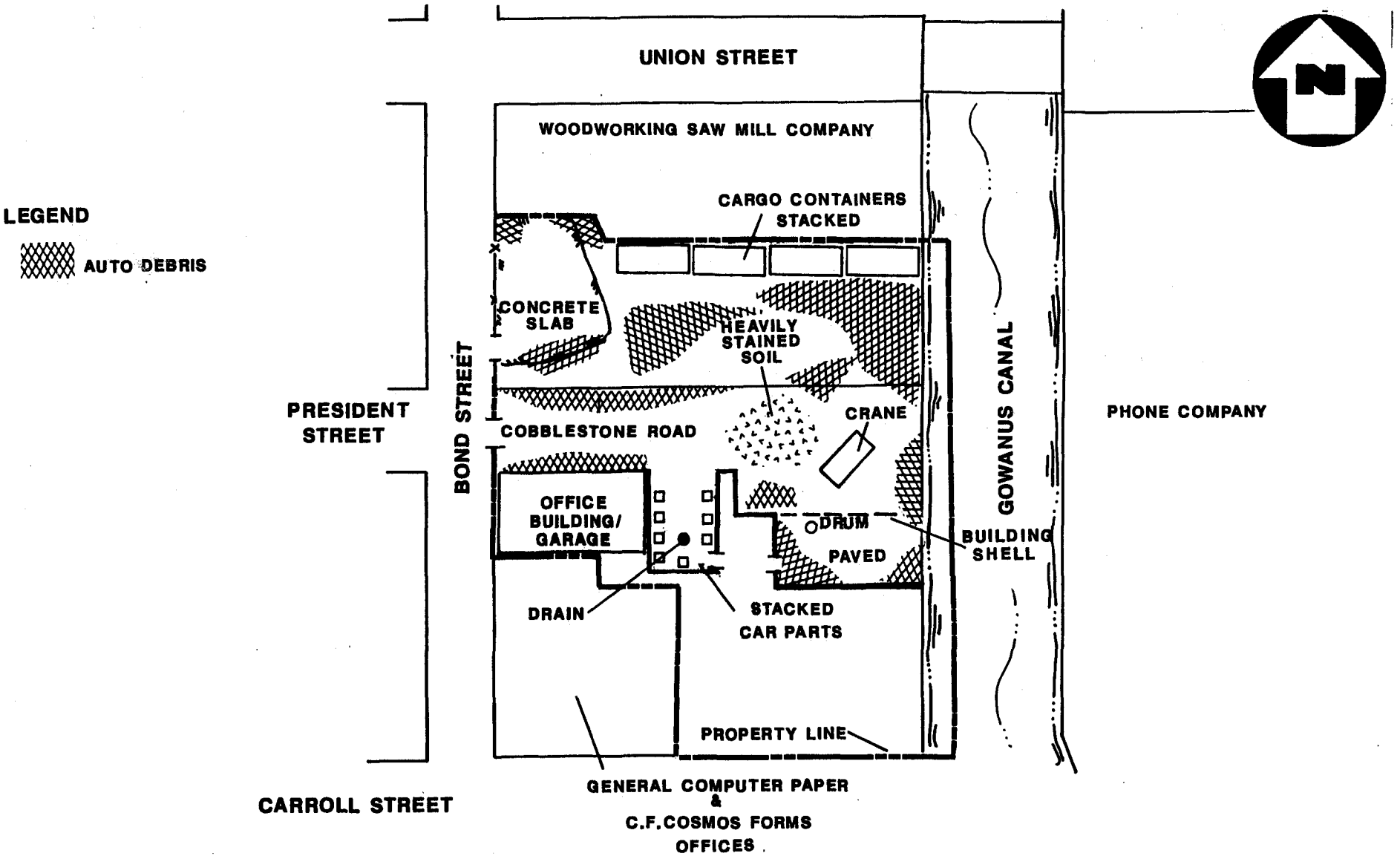
Site Name: Vidan Auto Salvage 3
Date: September 3, 1991

GENERAL INFORMATION (continued)

Site Sketch:

(Show all pertinent features; indicate sources and closest targets)

See attached sheet



SITE MAP

VIDAN AUTO SALVAGE, BROOKLYN, N.Y.

NOT TO SCALE

FIGURE 2

NUS CORPORATION

02-9106-01-PA
Rev. No. 0

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Site Name: Vidan Auto Salvage
Date: September 3, 1991

GENERAL INFORMATION (continued)

Source Descriptions:

1. Soil: During the NUS onsite Reconnaissance two areas of stained soil were observed. One area approximately 60'x 100' was noted on President St. The other area approximately 2'x2' was noted in the area of stacked car parts

2. Drums/Carboys: Approximate 3 to 4 35-gallon polyethythene drums, 2 rusted closed drums, and approximately 4 to 5 10 gallon carboys. The contents of these containers, if any, of these containers is unknown. The total hazardous waste quanity contained in drums and carboys is assumed to be 325 gallons

Waste Characteristics (WC) Calculations:
(See PA Table 1, page 5)

1. Areas of Stained Soil approximately 6,000 ft^2 and 4 ft^2 were observed on site during the NUS on-site Reconnaissance

ft^2 / 34,000 = WQ1
6,004 / 34,000 = 0.18

2. Hazardous Waste assumed in Containers = 325 gallons

gallons / 500 = WQ2
325 / 500 = 0.65

WQ1 + WQ2 = WQT
0.18 + 0.65 = 0.83

WQT	WC Score
0.83 =	18

WC = 18

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Site Name: Vidan Auto Salvage
Date: September 3, 1991

PA TABLE 1: WASTE CHARACTERISTICS (WC) SCORES

PA Table 1a: WC Scores for Single Source Sites and Formulas for Multiple Source Sites

TIER	SOURCE TYPE	SINGLE SOURCE SITES (assigned WC scores)			MULTIPLE SOURCE SITES
		WC = 18	*WC = 32*	*WC = 100*	Formula for Assigning Source WQ Values
CONSTITUENT	N/A	≤100 lbs	>100 to 10,000 lbs	>10,000 lbs	*lbs ÷ 1*
WASTESTREAM	N/A	≤500,000 lbs	>500,000 to 50 million lbs	>50 million lbs	*lbs ÷ 5,000*
VOLUME	Landfill	≤6.75 million ft³ ≤250,000 yd³	>6.75 million ft³ to 675 million ft³ >250,000 to 25 million yd³	>675 million ft³ >25 million yd³	*ft³ ÷ 67,500* *yd³ ÷ 2,500*
	Surface impoundment	≤6,750 ft³ ≤250 yd³	>6,750 ft³ to 675,000 ft³ >250 to 25,000 yd³	>675,000 ft³ >25,000 yd³	*ft³ ÷ 67.5* *yd³ ÷ 2.5*
	Drums	≤1,000 drums	>1,000 to 100,000 drums	>100,000 drums	*drums ÷ 10*
	Tanks and non-drum containers	≤50,000 gallons	>50,000 to 5 million gallons	>5 million gallons	*gallons ÷ 500*
	Contaminated soil	≤6.75 million ft³ ≤250,000 yd³	>6.75 million ft³ to 675 million ft³ >250,000 to 25 million yd³	>675 million ft³ >25 million yd³	*ft³ ÷ 67,500* *yd³ ÷ 2,500*
	Pile	≤6,750 ft³ ≤250 yd³	>6,750 ft³ to 675,000 ft³ >250 to 25,000 yd³	>675,000 ft³ >25,000 yd³	*ft³ ÷ 67.5* *yd³ ÷ 2.5*
AREA	Landfill	≤340,000 ft² ≤7.8 acres	>340,000 to 34 million ft² >7.8 to 780 acres	>34 million ft² >780 acres	*ft² ÷ 3,400* *acres ÷ 0.078*
	Surface impoundment	≤1,300 ft² ≤0.029 acres	>1,300 to 130,000 ft² >0.029 to 2.9 acres	>130,000 ft² >2.9 acres	*ft² ÷ 13* *acres ÷ 0.00029*
	Contaminated soil	≤3.4 million ft² ≤78 acres	>3.4 million to 340 million ft² >78 to 7,800 acres	>340 million ft² >7,800 acres	*ft² ÷ 34,000* *acres ÷ 0.78*
	Pile*	≤1,300 ft² ≤0.029 acres	>1,300 to 130,000 ft² >0.029 to 2.9 acres	>130,000 ft² >2.9 acres	*ft² ÷ 13* *acres ÷ 0.00029*
	Land treatment	≤27,000 ft² ≤0.62 acres	>27,000 to 2.7 million ft² >0.62 to 62 acres	>2.7 million ft² >62 acres	*ft² ÷ 270* *acres ÷ 0.0062*

1 ton = 2,000 lbs = 1 yd³ = 4 drums = 200 gallons

* Use area of land surface under pile, not surface area of pile.

PA Table 1b: WC Scores for Multiple Source Sites

WQ Total	*WC Score*
>0 to 100	18
>100 to 10,000	32
>10,000	100

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Site Name: Vidan Auto Salvage
Date: September 3, 1991

GROUND WATER PATHWAY
GROUND WATER USE DESCRIPTION

Describe Ground Water Use Within 4-miles of the Site:
(Provide generalized stratigraphy; information on aquifers, municipal, and or private wells)

Show calculations of ground water drinking water populations:

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GROUND WATER PATHWAY CRITERIA LIST

Site Name: Vidan Auto Salvage
Date: September 3, 1991

This chart provides guidelines to assist you in hypothesizing the presence of a suspected release and identifying primary targets. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize a suspected release or to identify primary targets. This chart will record your professional judgment in evaluating these factors.

The "Suspected Release" section of the chart guides you through evaluation of some site, source, and pathway conditions to help hypothesize whether a release from the site is likely. If a release is suspected, use the "Primary Targets" section to guide you through evaluation of some conditions that will help identify targets likely to be exposed to hazardous substances. You may use this section of the chart more than once, depending on the number of targets you feel may be considered "primary." In the "Primary Targets" section on this sheet, record the responses for the well that you feel has the highest probability of being exposed to hazardous substances.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question. If you check the "Suspected Release" box as "yes", make sure that you assign a Likelihood of Release value of 550 for the pathway.

GROUND WATER PATHWAY

SUSPECTED RELEASE

Yes	No	Unknown	
☑	☐	☐	Are sources poorly contained?
☑	☐	☐	Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)?
☐	☑	☐	Is waste quantity particularly large?
☐	☐	☑	Is precipitation heavy and infiltration rate high?
☐	☑	☐	Is the site located in an area of karst terrain?
☐	☐	☑	Is the subsurface highly permeable or conductive?
☐	☑	☐	Is drinking water drawn from a shallow aquifer?
☐	☐	☑	Are suspected contaminants highly mobile in ground water?
☐	☑	☐	Does any circumstantial evidence of ground water or drinking water contamination exist?
☐	☑		Other criteria? _____
☑	☐		**SUSPECTED RELEASE?**

PRIMARY TARGETS

Yes	No	Unknown	
☐	☑	☐	Is any drinking-water well nearby?
☐	☑	☐	Is any nearby drinking-water well closed?
☐	☑	☐	Has foul-tasting or foul-smelling water been reported by any nearby drinking-water users?
☐	☐	☑	Do any nearby wells have a large drawdown or high production rate?
☐	☑	☐	Are drinking-water wells located between the site and other wells that are suspected to be exposed to hazardous substances?
☐	☑	☐	Does any circumstantial evidence of ground water or drinking water contamination exist?
☐	☑	☐	Does any drinking-water well warrant sampling?
☐	☑		Other criteria? _____
☐	☑		**PRIMARY TARGET(S) IDENTIFIED?**

Summarize the rationale for suspected release (attach an additional page if necessary):
It has been speculated that crankcase oil, transmission fluid, and operating oil was allowed to drain directly onto the groundsurface without any means of containment. Soil samples were collected along President st and revealed the presence of high levels of Hydrocarbon oil and low levels of lead and PCBs. Stained soil was observed in the area of a man made drain.

Summarize the rationale for Primary Targets (attach an additional page if necessary):
There are no groundwater wells used for potable purposes within 4 miles of the site.

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Site Name: Vidan Auto Salvage 8

Date: September 3, 1991

GROUND WATER PATHWAY SCORESHEET

Pathway Characteristics		
Do you suspect a release (see Ground Water Pathway Criteria List, page 7)?	Yes ✓	No ___
Is the site located in karst terrain?	Yes ___	No ✓
Depth to aquifer:	38 ft	
Distance to the nearest drinking-water well:	NA ft	

	A *Suspected Release*	B *No Suspected Release*	*References*
LIKELIHOOD OF RELEASE			
1. SUSPECTED RELEASE: If you suspect a release to ground water (see page 7), assign a score of 550, and use only column A for this pathway.	550		1,2,3,4,7
2. NO SUSPECTED RELEASE: If you do not suspect a release to ground water, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Use only column B for this pathway.			___
LR =	550		
TARGETS			
3. PRIMARY TARGET POPULATION: Determine the number of people served by drinking water from wells that you suspect have been exposed to hazardous substances from the site (see Ground Water Pathway Criteria List, page 7). ___0___ people x 10 =	0		13,14,21,2
4. SECONDARY TARGET POPULATION: Determine the number of people served by drinking water from wells that you do NOT suspect have been exposed to hazardous substances from the site, and assign the total population score from PA Table 2. Are any wells part of a blended system? Yes ___ No ___ If yes, attach a page to show apportionment calculations.	0		13,14,21,29
5. NEAREST WELL: If you have identified any Primary Targets for ground water, assign a score of 50; otherwise, assign the highest Nearest Well score from PA Table 2. If no drinking-water wells exist within 4 miles, assign a score of zero.	0		13,14,21,29
6. WELLHEAD PROTECTION AREA (WHPA): Assign a score of 20 if any portion of a designated WHPA is within ¼ mile of the site; assign 5 if from ¼ to 4 miles.	0		___
7. RESOURCES: A score of 5 is assigned.	5	5	
T =	5		
WASTE CHARACTERISTICS			
8. A. If you have identified any Primary Targets for ground water, assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.			
B. If you have NOT identified any Primary Targets for ground water, assign the waste characteristics score calculated on page 4.	18		
WC =	18		

GROUND WATER PATHWAY SCORE: $\dfrac{LR \times T \times WC}{82{,}500}$ = 1

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Site Name:
Date:

PA TABLE 2: VALUES FOR SECONDARY GROUND WATER TARGET POPULATIONS

PA Table 2a: Non-Karst Aquifers

Distance from Site	Population	Nearest Well (choose highest)	Population Served by Wells Within Distance Category: 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	Population Value
0 to ¼ mile	_____	20	1	2	5	16	52	163	521	1,633	5,214	16,325	_____
> ¼ to ½ mile	_____	18	1	1	3	10	32	101	323	1,012	3,233	10,121	_____
> ½ to 1 mile	_____	9	1	1	2	5	17	52	167	522	1,668	5,224	_____
> 1 to 2 miles	_____	5	1	1	1	3	9	29	94	294	939	2,938	_____
> 2 to 3 miles	_____	3	1	1	1	2	7	21	68	212	678	2,122	_____
> 3 to 4 miles	_____	2	1	1	1	1	4	13	42	131	417	1,[illegible]06	_____

Nearest Well = _____ Score = _____

PA Table 2b: Karst Aquifers

Distance from Site	Population	Nearest Well (use 20 for karst)	Population Served by Wells Within Distance Category: 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	Population Value
0 to ¼ mile	_____	20	1	2	5	16	52	163	521	1,633	5,214	16,325	_____
> ¼ to ½ mile	_____	20	1	1	3	10	32	101	323	1,012	3,233	10,121	_____
> ½ to 1 mile	_____	20	1	1	3	8	26	82	261	816	2,607	8,162	_____
> 1 to 2 miles	_____	20	1	1	3	8	26	82	261	816	2,607	8,162	_____
> 2 to 3 miles	_____	20	1	1	3	8	26	82	261	816	2,607	8,162	_____
> 3 to 4 miles	_____	20	1	1	3	8	26	82	261	816	2,607	8,162	_____

Nearest Well = _____ Score = _____

Vision Auto Salvage
September 3, 1991

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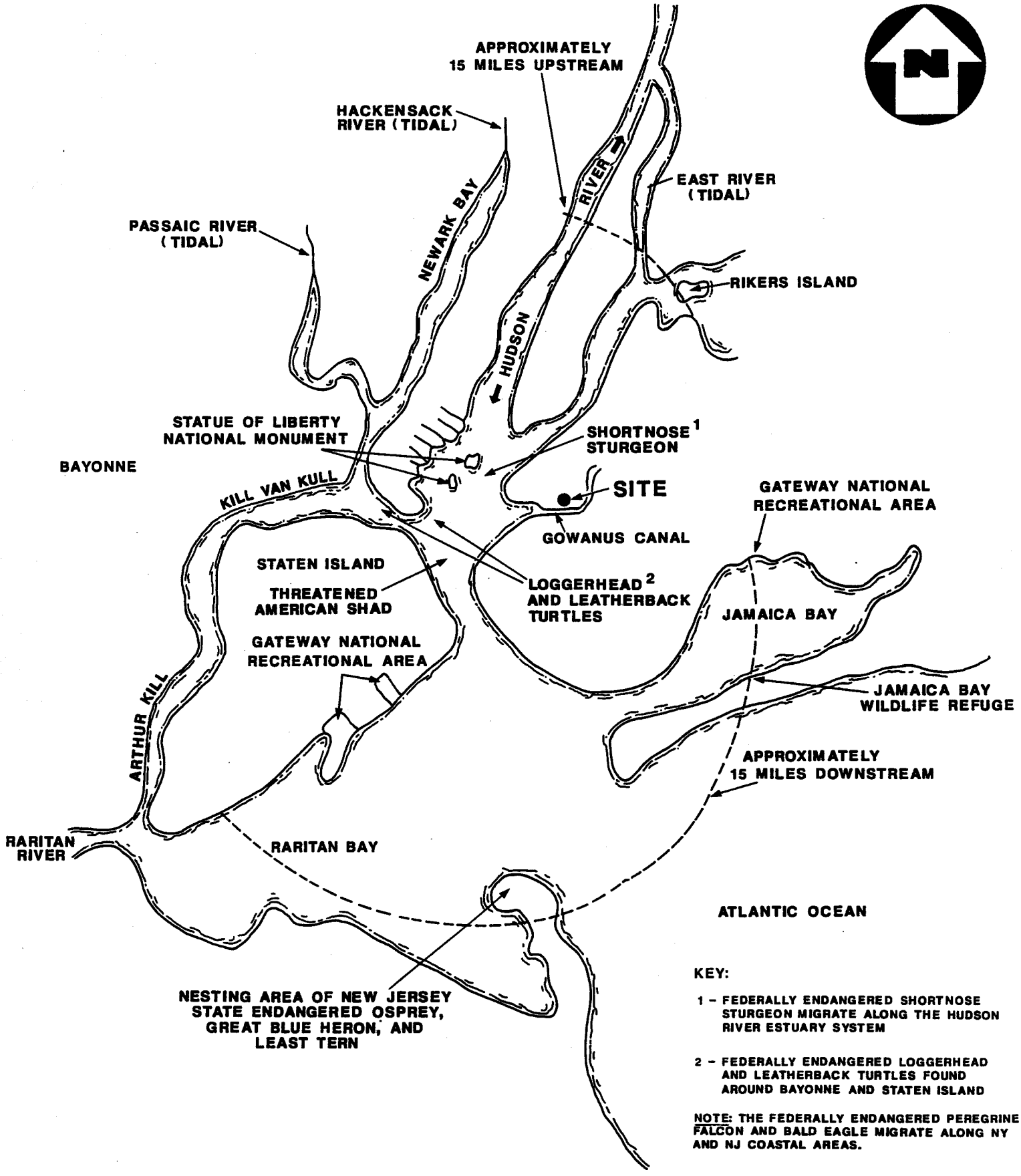
Site Name: Vidan Auto Salvage 10
Date: September 3, 1991

SURFACE WATER PATHWAY
MIGRATION ROUTE SKETCH

Provide a Sketch of the Surface Water Migration Route:
(include runoff route, probable point of entry, 15-mile target distance limit, intakes, fisheries, and sensitive environments)

See attached Map.



KEY:

1 - FEDERALLY ENDANGERED SHORTNOSE STURGEON MIGRATE ALONG THE HUDSON RIVER ESTUARY SYSTEM

2 - FEDERALLY ENDANGERED LOGGERHEAD AND LEATHERBACK TURTLES FOUND AROUND BAYONNE AND STATEN ISLAND

NOTE: THE FEDERALLY ENDANGERED PEREGRINE FALCON AND BALD EAGLE MIGRATE ALONG NY AND NJ COASTAL AREAS.

15 MILE SURFACE WATER PATHWAY
VIDAN AUTO SALVAGE, BROOKLYN, N.Y.

NOT TO SCALE

FIGURE 3

NUS CORPORATION

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SURFACE WATER PATHWAY CRITERIA LIST

Site Name: Vidan Auto Salvage
Date: September 5, 1991

This chart provides guidelines to assist you in hypothesizing the presence of a suspected release and identifying primary targets. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize a suspected release or to identify primary targets. This chart will record your professional judgment in evaluating these factors.

The "Suspected Release" section of the chart guides you through evaluation of some site, source, and pathway conditions to help hypothesize whether a release from the site is likely. If a release is suspected, use the "Primary Targets" section to guide you through evaluation of some conditions that will help identify targets likely to be exposed to hazardous substances. You may use this section of the chart more than once, depending on the number of targets you feel may be considered "primary." In the "Primary Targets" section on this sheet, record the responses for the target that you feel has the highest probability of being exposed to hazardous substances.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question. If you check the "Suspected Release" box as "yes", make sure that you assign a Likelihood of Release value of 550 for the pathway.

SURFACE WATER PATHWAY

SUSPECTED RELEASE

Yes	No	Unknown	
☑	☐	☐	Is surface water nearby?
☐	☑	☐	Is waste quantity particularly large?
☑	☐	☐	Is the drainage area large?
☐	☑	☐	Is precipitation heavy or infiltration rate low?
☑	☐	☐	Are sources poorly contained or prone to runoff or flooding?
☐	☑	☐	Is a runoff route well defined (e.g., ditch or channel leading to surface water)?
☐	☑	☐	Is vegetation stressed along the probable runoff path?
☑	☐	☐	Are suspected contaminants highly persistent in surface water?
☑	☐	☐	Are sediments/water unnaturally discolored?
☐	☑	☐	Is wildlife unnaturally absent?
☐	☐	☑	Has deposition of waste into surface water been observed?
☐	☐	☑	Is ground water discharge to surface water likely?
☑	☐	☐	Is there any circumstantial evidence of surface water contamination?
☐	☑		Other criteria? _____
☑	☐		**SUSPECTED RELEASE?**

PRIMARY TARGETS

Yes	No	Unknown	
☑	☐	☐	Is any target nearby? If yes:
			☐ Drinking-water intake
			☑ Fishery
			☑ Sensitive environment
☐	☐	☑	Has an intake, fishery, or recreational area been closed?
☑	☐	☐	Is there any circumstantial evidence of surface water contamination at or downstream of a target?
☑	☐	☐	Does any target warrant sampling? If yes:
			☐ Drinking-water intake
			☑ Fishery
			☑ Sensitive environment
☐	☑		Other criteria? _____
☐	☑		**PRIMARY INTAKE(S) IDENTIFIED?**
☑	☐		**PRIMARY FISHERY IDENTIFIED?**
☑	☐		**PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED?**

Summarize the rationale for suspected release (attach an additional page if necessary): It has been speculated that Crankcase oil, Transmission fluid, and a lubricating oil was allowed to drain directly onto the ground surface without any means of containment, Large areas of stained soil was observed on site, Sample analysis revealed the presence of high levels of hydrocarbon oil, and low levels of lead and PCBs.

Summarize the rationale for Primary Targets (attach an additional page if necessary): The Gowanus Canal is located on the eastern border of the site and during periods of rain route flow into the canal. The Gowanus Canal leads to the Hudson River Estuary System and Upper Bay Area including Natural Resources, Fisheries

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Site Name: Vidan Auto Salvage
Date: September 3, 1991

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Surface Water Pathway Criteria List, page 11)?	Yes ✓ No
Distance to surface water:	Ø Adjacent to site
Flood Frequency:	>200 yrs
What is the downstream distance to the nearest drinking-water intake?	NA miles
nearest fishery? 2 miles	nearest sensitive environment? 2 1/2 miles

	A	B	References
LIKELIHOOD OF RELEASE	*Suspected Release*	*No Suspected Release*	
1. SUSPECTED RELEASE: If you suspect a release to surface water (see page 11), assign a score of 550, and use only column A for this pathway.	(550) 550		1, 2, 3, 5, 6, 7, 9
2. NO SUSPECTED RELEASE: If you do not suspect a release to surface water, and the distance to surface water is 2,500 feet or less, assign a score of 500; otherwise, assign a score from the table below. Use only column B for this pathway.		(500, 400, 300 or 100)	
LR =	(550) 550	(500, 400, 300 or 100)	

Floodplain	*Score*
Site in annual or 10-yr floodplain	500
Site in 100-yr floodplain	400
Site in 500-yr floodplain	300
Site outside 500-yr floodplain	100

DRINKING WATER THREAT TARGETS

3. Determine the water body types, flows (if applicable), and number of people served by all drinking-water intakes within the 15-mile target distance limit. If there are no drinking-water intakes within the target distance limit, assign a total Targets score of 5 at the bottom of this page (Resources only) and proceed to page 14.

Intake Name	*Water Body Type*	*Flow*	*People Served*
		cfs	
		cfs	
		cfs	

4. PRIMARY TARGET POPULATION: If you suspect any drinking-water intake listed above has been exposed to hazardous substances from the site (see Surface Water Pathway Criteria List, page 11), list the intake name(s) and calculate the factor score based on the number of people served.

_____, _____,

_____ people x 10 = 0

5. SECONDARY TARGET POPULATION: Determine the Secondary Target Population score from PA Table 3 based on the populations using drinking-water from intakes that you do NOT suspect have been exposed to hazardous substances from the site.

Are any intakes part of a blended system? Yes ___ No ___
If yes, attach a page to show apportionment calculations.

0

6. NEAREST INTAKE: If you have identified any Primary Targets for the drinking water threat (Factor 4), assign a score of 50; otherwise, assign the Nearest Intake score from PA Table 3. If no drinking-water intake exists within the 15-mile target distance limit, assign a score of zero.

(50, 20, 10, 2, 1, or 0) 0 | (20, 10, 2, 1, or 0) | 5, 13, 14, 2

7. RESOURCES: A score of 5 is assigned.

(5) 5 | (5) 5

5

Site Name:
Date:

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PA TABLE 3: VALUES FOR SECONDARY SURFACE WATER TARGET POPULATIONS

Surface Water Body Flow Characteristics (see PA Table 4)	*Population*	*Nearest Intake (choose highest)*	*Population Served by Intakes Within Flow Category*											*Population Value*
			1 to 30	*31 to 100*	*101 to 300*	*301 to 1,000*	*1,001 to 3,000*	*3,001 to 10,000*	*10,001 to 30,000*	*30,001 to 100,000*	*100,001 to 300,000*	*300,001 to 1,000,000*	*1,000,001 to 3,000,000*	
<10 cfs	_____	20	2	5	16	52	163	521	1,633	5,214	16,325	52,136	163,246	_____
10 to 100 cfs	_____	2	1	1	2	5	16	52	163	521	1,633	5,214	16,325	_____
>100 to 1,000 cfs	_____	1	0	0	1	1	2	5	16	52	163	521	1,633	_____
>1,000 to 10,000 cfs	_____	0	0	0	0	0	1	1	2	5	16	52	163	_____
>10,000 cfs or Great Lakes	_____	0	0	0	0	0	0	0	1	1	2	5	16	_____
3-mile Mixing Zone	_____	10	1	3	8	26	82	261	816	2,607	8,162	26,068	81,663	_____
Nearest Intake =													**Score =**	

PA TABLE 4: SURFACE WATER TYPE / FLOW CHARACTERISTICS WITH DILUTION WEIGHTS FOR SECONDARY SURFACE WATER SENSITIVE ENVIRONMENTS

Type of Surface Water Body			*Dilution Weight*
Water Body Type	*OR*	*Flow Characteristics*	
minimal stream		flow less than 10 cfs	*1*
small to moderate stream		flow 10 to 100 cfs	*0.1*
moderate to large stream		flow greater than 100 to 1,000 cfs	*N/A*
large stream to river		flow greater than 1,000 to 10,000 cfs	*N/A*
large river		flow greater than 10,000 cfs	*N/A*
3-mile mixing zone of quiet flowing streams or rivers		flow 10 cfs or greater	*N/A*
coastal tidal water (harbors, sounds, bays, etc.), ocean, or Great Lakes		N/A	*N/A*

Vidas Auto Salvage
September 7, 1990

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Site Name: Vidan Auto Salvage
Date: September 3, 1991

SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT SCORESHEET

LIKELIHOOD OF RELEASE	A Suspected Release	B No Suspected Release	References
Enter the Surface Water Likelihood of Release score from page 12. LR =	(550) 550	(500,400,300 or 100)	

HUMAN FOOD CHAIN THREAT TARGETS

8. Determine the water body types and flows (if applicable) for all fisheries within the 15-mile target distance limit. If there are no fisheries within the target distance limit, assign a Targets score of 0 at the bottom of this page and proceed to page 15.

Fishery Name	Water Body Type	Flow	References
Hudson River	Large River	1,000 to 10,000 cfs	
Raritan Bay	Bay	NA cfs	
East River	Large River	1,000 to 10,000 cfs	
Raritan River	Large River	1,000 to 10,000 cfs	5, 7, 15, 16, 2
* Passaic River	Large River	1,000 to 10,000 cfs	23, 25, 27, 29
* Hackensack River	Large River	1,000 to 10,000	

9. PRIMARY FISHERIES: If you suspect any fishery listed above has been exposed to hazardous substances from the site (see Surface Water Criteria List, page 11), assign a score of 300 and do not evaluate Factor 10. List the Primary Fisheries:

Hudson River, _____,
_____, _____.

	A	B	References
	(300 or 0) 300		5, 8

10. SECONDARY FISHERIES: If you have not identified any Primary Fisheries, assign a Secondary Fisheries score from the table below using the LOWEST flow at any fishery within the 15-mile target distance limit.

Lowest Flow	Secondary Fisheries Score
< 10 cfs	210
10 to 100 cfs	30
> 100 cfs, coastal tidal waters, oceans, or Great Lakes	12

	A	B
	(210,30,12 or 0)	(210,30,12, or 0)
T =	(300,210,30,12 or 0) 300	(210,30,12 or 0)

* Newark Bay	Bay	NA
* Arthur Kill	Large River	1,000 to 10,000
* Kill Van Kull	Large River	1,000 to 10,000
Upper New York Bay	Bay	NA
Lower New York Bay	Bay	NA

* there is currently a ban on certain Species of fish in these waters.

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Site Name: Vidan Auto Salvage
Date: September 3, 1991

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SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT SCORESHEET

LIKELIHOOD OF RELEASE	A Suspected Release	B No Suspected Release	References
Enter the Surface Water Likelihood of Release score from page 12. LR =	[550] 550	[500, 400, 300 or 100]	

ENVIRONMENTAL THREAT TARGETS

11. Determine the water body types and flows (if applicable) for all surface water sensitive environments within the 15-mile target distance limit (see PA Tables 4 and 5). If there are no sensitive environments within the 15-mile target distance limit, assign a Targets score of 0 at the bottom of this page, and proceed to page 17.

Environment Name	Water Body Type	Flow
Raritan Bay / Habitat of Federally endangered species	~~Lake~~ Bay	NA cfs
Upper NY Bay / National Monument	Bay	NA cfs
Raritan Bay / National Seashore Recreational Area	Bay	NA cfs
Sandy Hook Bay / State wildlife Refuge	Bay	NA cfs
Upper NY Bay / Habitat of state designated endangered	Bay	NA cfs

5, 8

12. PRIMARY SENSITIVE ENVIRONMENTS: If you suspect any sensitive environment listed above has been exposed to hazardous substances from the site (see Surface Water Criteria List, page 11), assign a score of 300 and do not evaluate Factor 13. List the Primary Sensitive Environments:

Upper NY Bay / National Monument, _____, _____, _____, _____

[300 or 0] 300

5, 8

13. SECONDARY SENSITIVE ENVIRONMENTS:

A. For Secondary Sensitive Environments on surface water bodies with flows of 100 cfs or less, assign scores as follows, and do not evaluate part B of this factor:

Flow	Dilution Weight (PA Table 4)		Environment Type and Value (PA Tables 5 and 6)		Total
cfs		x		=	
cfs		x		=	
cfs		x		=	
cfs		x		=	
cfs		x		=	

Sum =

B. If NO Secondary Sensitive Environments are located on surface water bodies with flows of 100 cfs or less, assign a score of 10.

[10 or 0] [10 or 0]

T = 300

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Site Name: Vidan Auto Sal
Date: September 3, 19

PA TABLE 5: SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

Sensitive Environment	Assigned Value
Critical habitat for Federally designated endangered or threatened species	100
Marine Sanctuary	
National Park	
Designated Federal Wilderness Area	
Ecologically important areas identified under the Coastal Zone Wilderness Act	
Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act	
Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes)	
National Monument	
National Seashore Recreation Area	
National Lakeshore Recreation Area	
Habitat known to be used by Federally designated or proposed endangered or threatened species	75
National Preserve	
National or State Wildlife Refuge	
Unit of Coastal Barrier Resources System	
Federal land designated for the protection of natural ecosystems	
Administratively Proposed Federal Wilderness Area	
Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay or estuary	
Migratory pathways and feeding areas critical for the maintenance of anadromous fish species in a river system	
Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding	
National river reach designated as recreational	
Habitat known to be used by State designated endangered or threatened species	50
Habitat known to be used by a species under review as to its Federal endangered or threatened status	
Coastal Barrier (partially developed)	
Federally designated Scenic or Wild River	
State land designated for wildlife or game management	25
State designated Scenic or Wild River	
State designated Natural Area	
Particular areas, relatively small in size, important to maintenance of unique biotic communities	
State designated areas for the protection/maintenance of aquatic life under the Clean Water Act	5
Wetlands	See PA Table 6 (Surface Water Pathway) or PA Table 9 (Air Pathway)

PA TABLE 6: SURFACE WATER WETLANDS FRONTAGE VALUES

Total Length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

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Site Name: Vidas Auto Salvage 17
Date: September 3, 1991

SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS	A *Suspected Release*	B *No Suspected Release*
14. A. If you have identified ANY Primary Targets for surface water (pages 12, 14, or 15), assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	(100 or 32) 32	
B. If you have NOT identified any Primary Targets for surface water, assign the waste characteristics score calculated on page 4.	(100,32, or 18)	(100,32, or 18)
WC =	32	

SURFACE WATER PATHWAY THREAT SCORES

Threat	*Likelihood of Release (LR) Score (from page 12)*	*Targets (T) Score*	*Pathway Waste Characteristics (WC) Score (determined above)*	*Threat Score LR x T x WC / 82,500*
Drinking Water	550	~~5~~ ~~0~~ AQB	32	(subject to a maximum of 100) AQB ~~0~~ 1
Human Food Chain	550	300	32	(subject to a maximum of 100) 64
Environmental	550	300	32	(subject to a maximum of 60) 64

SURFACE WATER PATHWAY SCORE
(Drinking Water Threat + Human Food Chain Threat + Environmental Threat)

(subject to a maximum of 100) 100

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SOIL EXPOSURE PATHWAY CRITERIA LIST

Site Name: Vidan Auto Salvage
Date: September 3, 1991

This chart provides guidelines to assist you in hypothesizing the presence of a resident population. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize resident populations. This chart will record your professional judgment in evaluating this factor.

Use the resident population section to guide you through evaluation of some site and source conditions that will help identify targets likely to be exposed to hazardous substances. You may use this section of the chart more than once, depending on the number of nearby people you feel may be considered part of a resident population. Record the responses for the resident population target that you feel has the highest probability of being exposed to hazardous substances.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question.

SOIL EXPOSURE PATHWAY				
SUSPECTED CONTAMINATION	***RESIDENT POPULATION***			
	Yes	No	Unknown	
Surficial contamination is assumed.	☑	☐	☐	Are there residences, schools, or day care facilities on or within 200 feet of areas of suspected contamination?
	☐	☑	☐	Are residences, schools, or day care facilities located on adjacent land previously owned or leased by the site owner/operator?
	☐	☑	☐	Is there an overland migration route that might spread hazardous substances near residences, schools, or day care facilities?
	☐	☑	☐	Are there any reports of adverse health effects from onsite or adjacent residents or students, exclusive of apparent drinking water or air contamination problems?
	☐	☑	☐	Does any offsite property warrant sampling?
	☐	☐		Other criteria? _____
	☑	☐		**RESIDENT POPULATION IDENTIFIED?**

Summarize the rationale for resident population (attach an additional page if necessary):

During periods of rain surface water may runoff to neighboring facility. However, is unlikely to reach residents located across a paved road or neighboring companies.

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Site Name: Vidan Auto Salvage 19
Date: September 3, 1991

SOIL EXPOSURE PATHWAY SCORESHEET

Pathway Characteristics	
Do any people live on or within 200 ft of areas of suspected contamination?	Yes ✓ No ___
Do any people attend school or day care on or within 200 ft of areas of suspected contamination?	Yes ___ No ✓
Is the facility active? Yes ✓ No ___ If yes, estimate the number of workers: 15	

	A Suspected Contamination	B No Suspected Contamination	References
LIKELIHOOD OF EXPOSURE			
1. SUSPECTED CONTAMINATION: Surficial contamination is assumed. A score of 550 is assigned. LE =	(550) 550		
RESIDENT POPULATION THREAT TARGETS			
2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on or within 200 feet of areas of suspected contamination (see Soil Exposure Pathway Criteria List, page 18). 50 people x 10 =	500		7
3. RESIDENT INDIVIDUAL: If you have identified any Resident Population (Factor 2), assign a score of 50; otherwise, assign a score of 0.	(50 or 0) 50		7
4. WORKERS: Assign a score from the following table based on the total number of workers at the facility and nearby facilities with suspected contamination:	(15, 10, 5, or 0) 5		7
5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value from PA Table 7 for each terrestrial sensitive environment that is located on an area of suspected contamination:			
Sum =	–		5
6. RESOURCES: A score of 5 is assigned.	(5) 5		
T =	560		
WASTE CHARACTERISTICS			
7. Assign the waste characteristics score calculated on page 4. WC =	(100, 32, or 18) 18		

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
>1,000	15

Terrestrial Sensitive Environment Type	Value

RESIDENT POPULATION THREAT SCORE: $\frac{LE \times T \times WC}{82{,}500}$ = (adjust to a maximum of 100) 69

NEARBY POPULATION THREAT SCORE:
Assign a score of 2 = 2

SOIL EXPOSURE PATHWAY SCORE:
Resident Population Threat + Nearby Population Threat = (adjust to a maximum of 100) 69

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Site Name: Vidan Auto Salvage 20
Date: September 3, 1991

PA TABLE 7: SOIL EXPOSURE PATHWAY
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

Terrestrial Sensitive Environment	*Assigned Value*
Terrestrial critical habitat for Federally designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federally designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federally designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

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AIR PATHWAY CRITERIA LIST

Site Name: Vidan Auto Salvage
Date: September 3, 1991

This chart provides guidelines to assist you in hypothesizing the presence of a suspected release. It is expected that not all of this information will be available during the PA. Also, these criteria are not all-inclusive; list any other criteria you use to hypothesize a suspected release. This chart will record your professional judgment in evaluating this factor.

The "Suspected Release" section of the chart guides you through evaluation of some conditions to help hypothesize whether a release from the site is likely. For the Air Pathway, if a release is suspected, "Primary Targets" are any residents, workers, students, or sensitive environments within ¼ mile of the site.

Check the boxes to indicate a "yes", "no", or "unknown" answer to each question. If you check the "Suspected Release" box as "yes", make sure that you assign a Likelihood of Release value of 550 for the pathway.

AIR PATHWAY				
SUSPECTED RELEASE				***PRIMARY TARGETS***
Yes	No	Unknown		
☐	☑	☐	Have odors been reported?	*If you suspect a release to air, evaluate all populations and sensitive environments within ¼ mile (including those onsite) as Primary Targets.*
☐	☑	☐	Has a release of hazardous substances to the air been directly observed?	
☐	☑	☐	Are there any reports of adverse health effects (e.g., headaches, nausea, dizziness) potentially resulting from migration of hazardous substances through the air?	
☐	☑	☐	Is there any circumstantial evidence of an air release?	
☐	☑		Other criteria? _____ _____	
☐	☑		**SUSPECTED RELEASE?**	

Summarize the rationale for suspected release (attach an additional page if necessary):

There is no observed or suspected release to air. Hazardous materials that may have been stored in closed drums and/or containers would be unlikely to volatilize. Soils contaminated as a result of automobile fluids draining directly onto the ground are unlikely become dry enough for contaminated particulates to become air borne during dry and windy conditions.

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Site Name: Vidan Auto Salvage 2
Date: September 3, 1991

AIR PATHWAY SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Air Pathway Criteria List, page 21)?	Yes ___ No ✓
Distance to the nearest individual:	On Site ft

	A Suspected Release	B No Suspected Release	References
LIKELIHOOD OF RELEASE			
1. SUSPECTED RELEASE: If you suspect a release to air (see page 21), assign a score of 550, and use only column A for this pathway.	(550)		
2. NO SUSPECTED RELEASE: If you do not suspect a release to air, assign a score of 500, and use only column B for this pathway.		(500) 500	7
LR =		500	
TARGETS			
3. PRIMARY TARGET POPULATION: Determine the number of people subject to exposure from a release of hazardous substances through the air (see Air Pathway Criteria List, page 21). ___ people x 10 =			
4. SECONDARY TARGET POPULATION: Determine the number of people within the 4-mile target distance limit, and assign the total population score from PA Table 8.		579	18
5. NEAREST INDIVIDUAL: If you have identified any Primary Targets for the air pathway, assign a score of 50; otherwise, assign the highest Nearest Individual score from PA Table 8.	(50, 20, 7, 2, 1, or 0)	(20, 7, 2, 1, or 0) 20	18
6. PRIMARY SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (PA Table 5) and wetland acreage values (PA Table 9) for environments subject to exposure from air hazardous substances (see Air Pathway Criteria List, page 21).			
Sum =			
7. SECONDARY SENSITIVE ENVIRONMENTS: Use PA Table 10 to determine the score for secondary sensitive environments.		0	578
8. RESOURCES: A score of 5 is assigned.	(5) 5	(5) 5	
T =		604	
WASTE CHARACTERISTICS			
9. A. If you have identified any Primary Targets for the air pathway, assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	(100 or 32)		
B. If you have NOT identified any Primary Targets for the air pathway, assign the waste characteristics score calculated on page 4.	(100, 32, or 18)	(100, 32, or 18) 18	
WC =		18	

AIR PATHWAY SCORE: $\frac{LR \times T \times WC}{82{,}500}$ (subject to a maximum of 100) = 66

Site Name:
Date:

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PA TABLE 8: VALUES FOR SECONDARY AIR TARGET POPULATIONS

Distance from Site	Population	Nearest Individual (choose highest)	Population Within Distance Category: 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,001 to 3,000,000	Population Value
Onsite	15	(20)	1	(2)	6	16	52	163	521	1,633	5,214	16,325	52,136	163,246	2
>0 to ¼ mile	8,992	20	1	1	1	4	13	41	(130)	408	1,303	4,081	13,034	40,811	130
>¼ to ½ mile	25,284	2	0	0	1	1	3	9	28	(88)	282	882	2,815	8,815	88
>½ to 1 mile	51,293	1	0	0	0	1	1	3	8	26	(83)	261	834	2,612	83
>1 to 2 miles	167,753	0	0	0	0	0	1	1	3	8	27	(83)	266	833	83
>2 to 3 miles	452,592	0	0	0	0	0	1	1	1	4	12	38	(120)	376	120
>3 to 4 miles	674,700	0	0	0	0	0	0	1	1	2	7	23	(73)	229	73
Nearest Individual =		20												Score =	579

PA TABLE 9: AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
Less than 1 acre	0
1 to 50 acres	25
Greater than 50 to 100 acres	75
Greater than 100 to 150 acres	125
Greater than 150 to 200 acres	175
Greater than 200 to 300 acres	250
Greater than 300 to 400 acres	350
Greater than 400 to 500 acres	450
Greater than 500 acres	500

PA TABLE 10: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY SECONDARY SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from PA Table 8 or 9)	Product
Onsite	0.10	x	
		x	
0-1/4 mi	0.025	x	
		x	
		x	
1/4-1/2mi	0.0054	x	
		x	
		x	
		x	
		Total Environments Score =	

Vidon Quad Dalton
September 9, 1991

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Site Name: Vidan Auto Salvage 24
Date: September 3, 1991

SITE SCORE CALCULATION

	S	S^2
GROUND WATER PATHWAY SCORE (S_{gw}):	1	1
SURFACE WATER PATHWAY SCORE (S_{sw}):	100	10,000
SOIL EXPOSURE PATHWAY SCORE (S_{se}):	69	4761
AIR PATHWAY SCORE (S_a):	66	4,356
SITE SCORE: $\sqrt{\frac{S_{gw}^2+S_{sw}^2+S_{se}^2+S_a^2}{4}}$ =		69

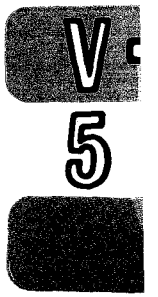
RECOMMENDATION

Due to the suspected release to surface water, and the close proximity of fisheries and other sensitive environments a SITE INSPECTION is recommended for the Vidan Auto Salvage Site.

SUMMARY

	YES	NO
1. Is there a high possibility of a threat to nearby drinking water wells by migration of hazardous substances in ground water?	☐	☑
A. If yes, identify the wells recommended for sampling during the SI.		
B. If yes, how many people are served by these threatened wells?		
2. Are any of the following suspected to have been exposed to hazardous substances through surface water migration from the site?		
A. Drinking water intake	☐	☑
B. Fishery	☑	☐
C. Sensitive environment: wetland, critical habitat, others	☑	☐
D. If yes, identify the targets recommended for sampling during the SI. Hudson River Estuary System - Upper NY Bay.		
3. Do people reside or attend school or day care on or within 200 ft of any area of suspected contamination?	☑	☐
4. Are there public health concerns at this site that are not addressed by PA scoring considerations? If yes, explain:	☐	☑

VIDAN AUTO SALVAGE
NYD986961167 **Confidential**
5.0 SITE INSPECTION (SI)



VIDAN AUTO SALVAGE
NYD986961167 **Confidential** NFRAP
5.0 SITE INSPECTION (SI)
5.2 SI Scoresheets

No. 1

0000096373

Releasable - 10/2010
B. Carr, ORC

Document Control No: START-02-F-03183

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SITE SUMMARY AND RECOMMENDATION

The Vidan Auto Salvage site is located at 327-331 Bond Street, Brooklyn, Kings County, New York. The geographic coordinates of the site are $40^0 40'47"$ latitude and $73^0 59'20"$ longitude. The site setting is predominantly industrial along the Gowanus Canal.

The site is approximately 1.72 acres in size and is a privately owned former automobile salvage yard. Due to activities involving stolen vehicles, the U.S. Department of Justice (DOJ) seized the property and auctioned the contents. The property was then returned to the owner under the stipulation that the property was not to be used as a junkyard. The current use of the site is divided among three businesses; Grecco's Towing, John Creech Design & Production, and Two Dan's Enterprises, Limited (Two Dan's). The area (approximately 18,000 square ft (ft^2)) of the site utilized by Grecco's Towing is used for the storage of towed cars. This portion of the site is covered with a concrete pad (approximately 3,000 ft^2), recycled crushed concrete (approximately 2,000 ft^2) and grass and soil (approximately 13,000 ft^2). The John Creech Design & Production business occupies only the office building (approximately 4,500 ft^2) found at 327 Bond Street. The area outside and around the office building is used for wrecked car storage by Two Dan's. Two Dan's is comprised of a wrecked car storage business component and an auto body shop. The remains of a demolished building (approximately 900 ft^2) are located next to the auto body shop (approximately 900 ft^2).

As a result of the past disassembling of vehicles on site, and the subsequent release of automobile fluids, site soil was suspected to be contaminated. Sampling performed by the U.S. EPA Environmental Services Division in July 1991 confirmed the release of hazardous substances on site. Surface runoff collected from a drain on site revealed the presence of petroleum hydrocarbons at a concentration of 37.4 ppm. A composite soil sample taken from the area reportedly used for disassembling vehicles, revealed elevated levels of volatile organic compounds (toluene and xylene), polyaromatic hydrocarbons, and several heavy metals (cadmium, copper, nickel, lead, and zinc).

Although soil contamination is documented, groundwater in this area is not used as drinking water and the site is fenced; therefore, potential human exposure is minimal.

The Region II Superfund Technical Assessment and Response Team (START) conducted an on-site reconnaissance at the Vidan Auto Salvage site on 13 October 1998. During the site reconnaissance, a number of cars were observed on site. At the section of the site used for Grecco's Towing and Storage, cars were observed to be parked in an orderly fashion. The ground surface is covered with crushed concrete and a cement pad is located near the front of the property bordering Bond Street. There is no evidence of stained soil. There are wrecked cars located in the section of the site utilized by Two Dans Enterprises. There is a section of stained soil along President Street where President Street intersects the site. The staining appears to be petroleum and crank oils that have drained from the wrecked cars. Strong gasoline odors were noted in this area; however, there were no observed readings on the organic vapor analyzer (OVA) during the

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SITE SUMMARY AND RECOMMENDATION (CONT'D)

site reconnaissance. A high OVA reading was recorded south of the area of stained soil between a row of parked wrecked cars on the Two Dans section of the site.

The site is located near residential property. The closest residence is approximately 25 feet west and upslope of the site, across Bond Street. There are approximately 2,463 residents within 0.25 mile of the site. There are approximately 1,651,245 residents and 25 acres of wetlands within 4 miles of the site. The Samuel Mills Sprole Elementary School is located on President Street approximately 0.1 mile west of the site. There are no day care centers within 200 feet of the site.

A PREScore evaluation (PREScore 4.1) of the Vidan Auto Salvage Site resulted in an overall HRS score of 1.77. The analysis included the assumption that potentially contaminated soil is present at depths less than 2 feet over the entire site area of approximately 75,178 square feet, although there is no evidence to support that assumption. It should be noted that a sensitivity analysis with a projected release to the Gowanus Canal did not raise the overall score above the 28.5 cutoff required for a further action recommendation. Based on this evaluation, a recommendation of **NO FURTHER REMDIAL ACTION PLANNED (NFRAP)** is given for the Vidan Auto Salvage site.

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PREScore 4.1
HRS DOCUMENTATION RECORD
Vidan Auto Salvage - 10/27/98

1. Site Name: Vidan Auto Salvage
   (as entered in CERCLIS)

2. Site CERCLIS Number: NYD986961167

3. Site Reviewer: Sharron DaCosta

4. Date: 10/7/98

5. Site Location: Brooklyn, Kings County, New York
   (City/County,State)

6. Congressional District: 10

7. Site Coordinates: Multiple

   Latitude: 40°40'33.0" Longitude: 073°59'22.0"

	Score
Ground Water Migration Pathway Score (Sgw)	0.42
Surface Water Migration Pathway Score (Ssw)	0.00
Soil Exposure Pathway Score (Ss)	0.60
Air Migration Pathway Score (Sa)	3.46

Site Score	1.77

NOTE

Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

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PREScore 4.1
HRS DOCUMENTATION RECORD
Vidan Auto Salvage - 10/27/98

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PREScore 4.1
WASTE QUANTITY
Vidan Auto Salvage - 10/27/98

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Contaminated Soil

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

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PREScore 4.1
WASTE QUANTITY
Vidan Auto Salvage - 10/27/98

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID		Contaminated Soil	
b. Source Type		Contaminated Soil	
c. Secondary Source Type		N.A.	
d. Source Vol.(yd3/gal)	Source Area (ft2)	0.00	75178.00
e. Source Volume/Area Value		2.21E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)		0.00E+00	
g. Data Complete?		NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)		0.00E+00	
i. Data Complete?		NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)		2.21E+00	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Cadmium	< 2	NO	0.0E+00	ppm
Copper	< 2	NO	0.0E+00	ppm
Lead	< 2	NO	0.0E+00	ppm
Nickel	< 2	NO	0.0E+00	ppm
Zinc	< 2	NO	0.0E+00	ppm

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PREScore 4.1
WASTE QUANTITY
Vidan Auto Salvage - 10/27/98

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Contaminated Soil	GW-SW-SE-A	2.21E+00	0.00E+00	2.21E+00

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PREScore 4.1
WASTE QUANTITY
Vidan Auto Salvage - 10/27/98

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	2.00E+01	10	3
SW: Overland Flow, DW	Tox./Persistence	1.00E+04	10	18
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	5.00E+07	10	100
SW: Overland Flow, Env	Etox./Persis./Bioacc.	5.00E+06	10	56
SW: GW to SW, DW	Tox./Persistence	2.00E+01	10	3
SW: GW to SW, HFC	Tox./Persis./Bioacc.	1.00E+05	10	32
SW: GW to SW, Env	Etox./Persis./Bioacc.	5.00E+04	10	18
Soil Exposure:Resident	Toxicity	1.00E+04	10	18
Soil Exposure: Nearby	Toxicity	1.00E+04	10	18
Air	Toxicity/Mobility	2.00E+00	10	2

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

PREScore 4.1
WASTE QUANTITY
Vidan Auto Salvage - 10/27/98

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Upper Glacial Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	10
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	500
3. Likelihood of Release	550	500
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E+01
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	3
Targets		
7. Nearest Well	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	2.30E+01
8d. Population (lines 8a+8b+8c)	**	2.30E+01
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	2.30E+01
12. Targets (including overlaying aquifers)	**	2.30E+01
13. Aquifer Score	100	0.42
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	0.42

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Vidan Auto Salvage - 10/27/98

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	10
2b. Runoff	25	0
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	250
3. Potential to Release by Flood		
3a. Containment (Flood)	10	10
3b. Flood Frequency	50	7
3c. Potential to Release by Flood (lines 3a x 3b)	500	70
4. Potential to Release (lines 2d+3c)	500	320
5. Likelihood of Release	550	320
Waste Characteristics		
6. Toxicity/Persistence	*	1.00E+04
7. Hazardous Waste Quantity	*	10
8. Waste Characteristics	100	18
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	0.00E+00
10d. Population (lines 10a+10b+10c)	**	0.00E+00
11. Resources	5	0.00E+00
12. Targets (lines 9+10d+11)	**	0.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Vidan Auto Salvage - 10/27/98

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	320
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+07
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	1000	100
Targets		
18. Food Chain Individual	50	0.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	3.60E-06
19d. Population (lines 19a+19b+19c)	**	3.60E-06
20. Targets (lines 18+19d)	**	3.60E-06
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Vidan Auto Salvage - 10/27/98

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	320
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc. 24. Hazardous Waste Quantity 25. Waste Characteristics	* * 1000	5.00E+06 10 56
Targets		
26. Sensitive Environments 26a. Level I Concentrations 26b. Level II Concentrations 26c. Potential Contamination 26d. Sensitive Environments (lines 26a+26b+26c) 27. Targets (line 26d)	 ** ** ** ** **	 0.00E+00 0.00E+00 5.00E-03 5.00E-03 5.00E-03
28. ENVIRONMENTAL THREAT SCORE	60	0.00
29. WATERSHED SCORE	100	0.00
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Vidan Auto Salvage - 10/27/98

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release to Aquifer Aquifer: Upper Glacial Aquife		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	10
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	500
3. Likelihood of Release	550	500
Waste Characteristics		
4. Toxicity/Mobility/Persistence	*	2.00E+01
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	3
Targets		
7. Nearest Intake	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	0.00E+00
8d. Population (lines 8a+8b+8c)	**	0.00E+00
9. Resources	5	0.00E+00
10. Targets (lines 7+8d+9)	**	0.00E+00
11. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Vidan Auto Salvage - 10/27/98

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
12. Likelihood of Release (same as line 3)	550	500
Waste Characteristics		
13. Toxicity/Mobility/Persistence/Bioacc.	*	1.00E+05
14. Hazardous Waste Quantity	*	10
15. Waste Characteristics	1000	32
Targets		
16. Food Chain Individual	50	0.00E+00
17. Population		
17a. Level I Concentrations	**	0.00E+00
17b. Level II Concentrations	**	0.00E+00
17c. Pot. Human Food Chain Contamination	**	0.00E+00
17d. Population (lines 17a+17b+17c)	**	0.00E+00
18. Targets (lines 16+17d)	**	0.00E+00
19. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Vidan Auto Salvage - 10/27/98

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
20. Likelihood of Release (same as line 3)	550	500
Waste Characteristics		
21. Ecosystem Tox./Mobility/Persist./Bioacc. 22. Hazardous Waste Quantity 23. Waste Characteristics	* * 1000	5.00E+04 10 18
Targets		
24. Sensitive Environments 24a. Level I Concentrations 24b. Level II Concentrations 24c. Potential Contamination 24d. Sensitive Environments (lines 24a+24b+24c) 25. Targets (line 24d)	 ** ** ** ** **	 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00
26. ENVIRONMENTAL THREAT SCORE	60	0.00
27. WATERSHED SCORE	100	0.00
28. SW: GW to SW COMPONENT SCORE (Sgs)	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
SOIL EXPOSURE PATHWAY SCORESHEET
Vidan Auto Salvage - 10/27/98

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10
4. Waste Characteristics	100	18
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	0.00E+00
10. Targets (lines 5+6c+7+8+9)	**	5.00E+00
11. RESIDENT POPULATION THREAT SCORE	**	4.95E+04

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

PREScore 4.1
SOIL EXPOSURE PATHWAY SCORESHEET
Vidan Auto Salvage - 10/27/98

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	5.00E+00
13. Area of Contamination	100	0.00E+00
14. Likelihood of Exposure	500	0.00E+00
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10
17. Waste Characteristics	100	18
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mile	**	5.70E+01
20. Targets (lines 18+19)	**	5.80E+01
21. NEARBY POPULATION THREAT SCORE	**	0.00E+00
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	0.60

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

PREScore 4.1
AIR PATHWAY SCORESHEET
Vidan Auto Salvage - 10/27/98

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	0
2b. Particulate Potential to Release	500	280
2c. Potential to Release	500	280
3. Likelihood of Release	550	280
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E+00
5. Hazardous Waste Quantity	*	10
6. Waste Characteristics	100	2
Targets		
7. Nearest Individual	50	2.00E+01
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	4.89E+02
8d. Population (lines 8a+8b+8c)	**	4.89E+02
9. Resources	5	0.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	0.00E+00
10c. Sens. Environments(lines 10a+10b)	***	0.00E+00
11. Targets (lines 7+8d+9+10c)	**	5.09E+02
AIR MIGRATION PATHWAY SCORE (Sa)	100	3.46E+00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

VIDAN AUTO SALVAGE
NYD986961167 **Confidential** NFRAP
5.0 SITE INSPECTION (SI)
5.1 SI Reports
Remedial Site Assessment No. 1
0000116296

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION II

EPA ID: NYD986961167 **Site Name:** VIDAN AUTO SALVAGE **State ID:**

Alias Site Names:

City: BROOKLYN **County or Parish:** KINGS **State:** NY

Refer to Report Dated: 12/29/1998 **Report Type:** SITE INSPECTION 001

Report Developed by: START

DECISION:

- [X] **1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**
  - [X] **1a. Site does not qualify for further remedial site assessment under CERCLA (No Further Remedial Action Planned - NFRAP)**
  - [ ] **1b. Site may qualify for action, but is deferred to:**
- [ ] **2. Further Assessment Needed Under CERCLA:**
  - **2a. Priority:** [ ] **Higher** [ ] **Lower**
  - **2b. Other: (recommended action)** NFRAP (No Futher Remedial Action Planned

DISCUSSION/RATIONALE:

DECISION: This site does not qualify for further site assessment under CERCLA. The NFRAP decision is based on the following: 1) The site PA score is 1.77 which is below the 28.5 cutoff score. 2) A sensitivity analysis shows that it is unlikely that any of the evaluated scenarios would rise the site score above 28.5.

SITE DESCRIPTION: The site is a privately owned former automobile salvage yard. The current use of the site is divided among three businesses. The area of Grecco's Towing is used for the storage of towed cars. The John Creech Design & Production business occupies only an office building. The Two Dan's area is used for wrecked car storage. As a result of the past disassembling of vehicles on site, site soil was suspected to be contaminated.

SITE SCORES: A composite soil sample taken from an area of concern revealed elevated levels of VOCs (toluene and xylene), PAHs, and several heavy metals. Groundwater in this area is not used as drinking water and the site is fenced; therefore, potential human exposure is minimal. Growndwater migration pathway score is 0.42; Surface water migration pathway score is 0.00; Soil exposure pathway score is 0.60, and, Air migration pathway score is 3.46.

Site Decision Made by: ALEX KOSTIC

Signature: Alex Kostic CW **Date:** 12/29/1998

EPA Form # 9100-3

VIDAN AUTO SALVAGE
NYD986961167 NFRAP
4.0 PRELIMINARY ASSESSMENT (PA)

No. 1

VIDAN AUTO SALVAGE
NYD986961167 NFRAP
4.0 PRELIMINARY ASSESSMENT (PA)
4.1 PA Reports

No. 1

0000064450

NUS CORPORATION
A Halliburton Company

FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION
SUPERFUND DIVISION

RCD: 12/6/91
RECOMMENDED FOR SITE INSP. (HPFA)
ENTERED TO WASTELAN BY L. MARTINEZ

02-9106-01-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT REPORT
VIDAN AUTO SALVAGE
BROOKLYN, NEW YORK

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-9106-01
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

SEPTEMBER 13, 1991

HALLIBURTON NUS ENVIRONMENTAL CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

P. D. Hastings

PATRICIA D. HASTINGS
PROJECT MANAGER

Susan S. Hodgkiss

SUSAN S. HODGKISS
SITE MANAGER

REVIEWED/APPROVED BY:

Ronald M. Naman

RONALD M. NAMAN
FIT OFFICE MANAGER

SITE SUMMARY AND RECOMMENDATION

The Vidan Auto Salvage Site (Vidan) is located in a primarily industrial area of Brooklyn in Kings County, New York. The site is approximately 1.71 acres in size; it includes a junkyard and is bisected by what was previously President Street (Ref. No. 7). The site is bordered on the north and south by industrial facilities, to the west by residential homes, and to east by the Gowanus Canal. The Gowanus Canal leads to the Hudson River Estuary System approximately two miles downstream. Figures 1 and 2 provides a Site Location and Site Map, respectively.

The Vidan Auto Salvage property is owned by Daniel Tinneny and has been operated as a salvage yard for at least the last 15 years. Operations temporarily ceased in the spring of 1991 upon seizeure of the property by the U. S. Marshall's office related to illegal activities (Ref.Nos. 1, 2, 3, 7). Limited information regarding site operations at Vidan is available. Based on posted advertisements on site, it is assumed that operations included the buying and selling of used, junk, wrecked, and late model cars and parts (Attachment 2, Photographs).

The U.S. Marshall's Office reported that although Vidan operated a "standard junkyard", the site showed extensive soil staining and ponding of oil probably resulting from the cutting of automotive engines during salvage operations (Ref.Nos. 7, 12). It is speculated that cars were brought on site through President Street, disassembled and the individual car parts stacked and stored on site. It is probable that fluids normally contained within automobiles including crank case oils, transmission fluid, and lubricating oils, would have then drained directly onto the ground. Consequently, the New York City Department of Environmental Protection collected soil samples from two areas on President Street, at the request of the U.S. Marshall's office, to determine the extent of oil contamination at the property (Ref. No. 3). Soil samples were reportedly analyzed for identification, percentage of oil, lead content, polychlorinated biphenyls (PCBs), and ignitability (Ref. No. 2). Soil was identified as containing high level of hydrocarbon oil and low levels of lead and PCBs. PCBs were detected in both samples at less than 40 ppm and 10 ppm, respectively (Ref. No. 1). Subsequently, the U.S. Environmental Protection Agency (EPA) Region II Superfund and Removal Action Branches jointly conducted an on-site reconnaissance on June 24, 1991 (Ref. Nos. 7, 12).

The HALLIBURTON NUS Environmental Corporation (formerly NUS Corporation) Region 2 Field Investigation Team (FIT) conducted the reconnaissance for the Superfund Branch (Ref. No. 7). Region 2 FIT observed areas of stained soil on President Street and in the area of the stacked car parts near a man- made drain. Due to the coverage of large expanses of the site with debris, a visual inspection of much of the ground surface was not possible at the time of the reconnaissance. However, a public auction of goods left on site was in progress at the time of the reconnaissance and many items were in the process of being removed. Region 2 FIT reported the presence of several drums and carboys in the building shell and surrounding area The contents, if any, of these containers are unknown

SITE SUMMARY AND RECOMMENDATION

Finally, the U.S. EPA Removal Action Branch returned to the site on July 10, 1991 to perform sampling (Ref. No. 33). The results of analyses are not yet available. There have been no other reports of hazardous materials activities or related incidents associated with this site (Ref. No. 12).

A release to groundwater and surface water of fluids contaminated with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances is suspected from this site (Ref. No.4). It has been speculated that fluids contained within automobiles were allowed to drain directly on the ground surface without any means of containment allowing potential contamination of the nearby surface water, groundwater, and soil (Ref. Nos. 1, 2, 3). Groundwater is not used as a potable water sources within 4 miles of the site (Ref. Nos. 13, 14, 21, 29). However, surface water runoff flows directly to the Gowanus Canal which abuts the eastern border of the site and leads into the Hudson River Estuary System approximately 2 miles downstream. The New York State Division of Water has identified the Gowanus Canal on the Priority Water Problem List; the canal is designated as having a severe water pollution problem with the probable source indicated as combined sewer overflows. Confirmation of contamination attribution to the Vidan Auto Salvage Site will be difficult as there are several other active facilities bordering the Gowanus Canal. Regardless, potential contamination of surface water is a concern as there are several tidally-affected sensitive environments within 15 miles downstream and upstream of the site. These include a habitat of federal endangered species, a national monument, national seashore recreation areas, and a state wildlife refuge. Figure 3 provides a 15-mile surface water pathway from the Vidan Property Ref. Nos. 5, 6, 15, 16, 22, 13, 25, 27, 28, 29). Due to the suspected release to surface water and the close proximity of fisheries and other sensitive environments, a **SITE INSPECTION** is recommended for the Vidan Auto Salvage Site to determine the presence and extent of CERCLA-eligible hazardous substance contamination of the site and nearby surface water.

SITE ASSESSMENT REPORT: PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. **Site Name** Vidan Auto Salvage **Alias** None

   Street 319 to 331 Bond Street

   City Brooklyn **State** New York **Zip** 11231

2. **County** Kings **County Code** 47 **Cong. Dist.** 13

3 **CERCLIS ID No.** NYD986961167

4. **Block No.** 438, 444, 445 **Lot No.** 3, 39, 8-11-20, respectively

5. **Latitude** 40° 41' 47" N **Longitude** 73° 59' 55" W

   USGS Quad. Brooklyn, New York

6. **Approximate size of site** 1.71 Acres

7. **Owner** Daniel Tinneny **Tel. No.** Unknown

   Street 448 Stobe Avenue

   City Staten Island **State** New York **Zip** 10306

8. **Operator** Daniel Tinneny **Tel. No.** (718) 852-2798

   Street 319 to 331 Bond Street

   City Brooklyn **State** New York **Zip** 11231

9. **Type of Ownership**

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other _____

10. **Owner/Operator Notification on File**

    ☐ RCRA 3001 **Date** _____ ☐ CERCLA 103C **Date** _____
    ☒ None ☐ Unknown

11. **Permit Information**

Permit	Permit No.	Date Issued	Expiration Date	Comments
None				

12. Site Status

☒ Active* ☐ Inactive ☐ Unknown

13. Years of Operation Unknown*

* Exact years of operation are unknown. However, it was provided during an on-site reconnaissance that the site had been owned for at least the last 15 years by the current owners. It is assumed that site operations as a junkyard were initiated at that time. Operations have continued until recently when the U.S. Marshall's office reportedly siezed the property in March 1991. The property was to be returned to the owners sometime after June 1991.

14. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit
1	Contaminated Soil	Contaminated Soil
2	Containers	Drums, carboys

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

There has been no known dumping on site.

Ref Nos. 1, 2, 3, 11, 12; Attachment 2, Photographs; 34

15. Information available from

Contact Amy Brochu Agency U.S. EPA Region 2 Tel. No. (908) 906-6802

Preparer Susan S. Hodgkiss Agency HALLIBURTON NUS Environmental Corp., Region 2 FIT

Date September 13, 1991

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 1 - Contaminated Soil

Source Type

____	Landfill	____	Land Treatment
____	Surface Impoundment	____	Chemical Waste Pile
____	Drums	____	Scrap Metal or Junk Pile
____	Tanks/Containers	____	Tailings Pile
X	Contaminated Soil	____	Trash Pile
____	Pile	____	Other

Description:

The Vidan Auto Salvage Site is a junkyard,approximately 1.71 acres in size, used for the salvaging of car parts. It is speculated that cars were brought on site through President Street, disassembled, and the parts stored on racks located on the southern border of the site. The U.S. Marshall's Office reported extensive soil staining and the ponding of oil potentially attributable to the cutting of automotive engines during salvage operations. At the time of an on-site reconnaissance conducted by Region 2 FIT on June 24, 1991, large areas of debris covered most of the site. In addition an area of stained soil was present on President Street on the eastern border of the site. Another area of stained soil was also noted in the area of the stacked car parts.

Hazardous Waste Quantity

An area of stained soil approximately 6,000 square feet (ft^2) was observed at the end of President Street during the Region 2 FIT on-site reconnaissance. The second reported area of stained soil was less than 4 ft^2 in area. No other areas are suspected to exhibit soil contamination. The total quantity of contaminated soil on site is assumed to be 6,004 ft^2.

Hazardous Substances/Physical State.

Stained soil is believed to have resulted from the drainage of used crankcase oil, lubrication oil, and transmission fluid during the salvaging of automobiles. Surface soil samples taken by the New York City Department of Environmental Protection revealed high levels of hydrocarbon oil and low levels of lead and PCBs. For the purposes of this assessment, the used crankcase oil, potentially containing heavy metals listed hazardous substances, has been considered eligible under the Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) (Ref. No. 4).

Ref. No 1, 2, 3, 4, 7, 30

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 2 - Drums, Carboys

Source Type

____	Landfill	____	Land Treatment
____	Surface Impoundment	____	Chemical Waste Pile
X	Drums	____	Scrap Metal or Junk Pile
____	Tanks/Containers	____	Tailings Pile
____	Contaminated Soil	____	Trash Pile
____	Pile	X	Other- Carboys

Description:

The Vidan Auto Salvage Site is a junkyard, approximately 1.71 acres in size, used for salvaging car parts. It is speculated that cars were brought on site through President Street, disassembled, and the parts stored on racks located on the southern border of the site. During a on-site reconnaissance conducted on June 24,1991, Region FIT reported the presence of numerous drums and carboys within the building shell located on the eastern border of the site. The area within the building shell was reported to be paved and in better condition compared to the rest of the site.

Hazardous Waste Quantity

Region 2 FIT reported the presence of approximately three to four 35-gallon polyethythene drums, two rusted closed head drums, approximately 12 empty open top drums, and aproximately four to five 10-gallon carboys. The contents, if any, of these containers are unknown. The total hazardous waste quantity contained in drums and carboys is assumed to be 325 gallons.

Hazardous Substances/Physical State.

The contents , if any, of the drums and carboys on site are unknown. However, based on container type, it is possible that liquid caustics may be contained in the carboys and polyethylene drums.

PART III:

EXISTING ANALYTICAL DATA

On April 2, 1991, the New York City Department of Environmental Protection, Division of Hazardous Materials Programs collected two soil samples at the Vidan Auto Salvage Property at the request of the United States Marshalls Office to determine the extent of oil contamination. The soil samples were collected on President Street approximately 100 feet infront of the building and 50 feet further down the street from the previous sample location. Soil samples were reportedly analyzed for identification, percentage of oil, lead content, PCBs, and ignitability. Soil was identified as containing high levels of hydrocarbon oils, and low levels of lead and PCBs. PCBs were detected in both samples at less than 40 ppm and 10 ppm, respectivley (Ref. Nos. 1, 2, 3, 7).

On June 24, 1991, Region 2 FIT conducted an on-site reconnaissance at Vidan. No sampling was conducted (Ref. No. 7).

On July 10, 1991, the U.S. EPA RAB conducted sampling of areas of concern on site at Vidan including contaminatd soil, one drum, a drain, and a hole in the concrete. Analyses are not yet available (Ref. No. 33).

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

A release to groundwater is suspected as waste crankcase oil, transmission fluid and lubrication oil are speculated to have drained directly on the ground surface without any means of containment during the disassembling of cars; contaminants spilled or drained onto on the ground would eventually percolate into the groundwater. Soil samples collected by the New York City Department of Environmental Protection on April 2, 1991 revealed high levels of hydrocarbon oil and low levels of lead and PCBs. During an on-site reconnaissance conducted by Region 2 FIT on June 24, 1991, areas of stained soil were observed on President Street and near a man-made drain located in the stacked car parts area. The discharge location of this drain is unknown. Several drums and carboys without any means of containment were also observed during the reconnaissance. The contents of these containers, if any, is unknown.

Ref. Nos. 1, 2, 3, 4, 7

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

Three water-bearing units have been identified in the vicinity of the site. They are glacial deposits, the Magothy Formation, and the Raritan Formation. The glacial deposits have a maximum thickness of 600 feet and with a permeability of 10^{-7} cm/sec are composed of till containing boulders, gravel, sand, and clay. This aquifer is encountered at depths ranging from 50 to 150 feet below the ground surface in Kings County and is overlain by permeable soil and surficial deposits. The glacial aquifer is hydraulically connected to the Magothy Formation.

The Magothy Formation has a maximum thickness of 1,100 feet and is composed of fine- to medium-grain sand interbedded with lenses and layers of coarse sand, sandy clay, and solid clay, and has a permeability of 10^{-5} to 10^{-7} cm/sec. The Magothy is underlain by the Raritan Formation, which is subdivided into two members; The Raritan Clay and the Lloyd Sand. The Raritan Clay has a maximum thickness of 300 feet and is composed primarily of clay and silty clay. It has few lenses and layers of sand and little gravel and the permeability is poor at less than 10^{-7} cm/sec.

The Raritan Clay overlies the Lloyd Sand, which has a maximum thickness of 500 feet, and is composed of fine- to coarse-grain sand and gravel. This aquifer commonly has a clayey matrix and contains some layers and lenses of solid and silty-clay. The permeability of the Lloyd Sand ranges from 10^{-5} to 10^{-7} to cm/sec.

Groundwater is generally contained under artesian pressure by the overlying Raritan Clay and flow is genrally to the southwest, towards The Narrows. Based on well log data, the water table varies from approximately 24 to 38 feet.

Ref. Nos. 20, 26

3. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The depth from the lowest point of waste, ground surface to the highest seasonal level of the saturated zone of the aquifer of concern is approximately 38 feet.

Ref. Nos 20, 26

4. **Identify and determine the distance to and depth of the nearest well that is currently used for drinking purposes?**

   There are no wells within 4 miles of the site used for drinking purposes.

   Ref. Nos. 13, 14, 21, 29

5. **If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contamination boundary of the release.**

   There are no wells within 4 miles of the site used for potable water purposes.

   Ref. Nos. 13, 14, 21, 29

6. **Identify the population served by wells that are not expected to be contaminated located within 4 miles of the site that draw from the aquifer of concern.**

Distance	Population
0 - $\frac{1}{4}$ mi	0
> $\frac{1}{4}$ - $\frac{1}{2}$ mi	0
> $\frac{1}{2}$ - 1 mi	0
>1 - 2 mi	0
>2 - 3 mi	0
>3 - 4 mi	0

   State whether groundwater is blended with surface water, groundwater, or both before distribution.

   There are no groundwater wells used for potable water purposes within 4 miles of the site.

   Ref. Nos. 13, 14, 21, 29

7. **Identify uses of groundwater within 4 miles of the site (i.e. private drinking source, municipal source, municipal and private, commercial, irrigation, unuseable).**

   There are no operational groundwater wells within 4 miles of the site used for any purposes except observation.

   Ref. Nos. 13, 14, 21, 29

SURFACE WATER ROUTE

8. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

   A release to surface water is suspected as used crank case oil, lubrication oil, and transmission fluids were allowed to spill directly onto the ground surface without any means of containment. Areas of stained soil were observed in the areas of the stacked car parts and on President Street during a Region 2 FIT reconnaissance conducted on June 24, 1991.

Soil samples collected by the New York Department of Environmental Protection revealed high levels of hydrocarbon oil, and low levels of lead and PCBs, possibly from transmission fluid and lubricating oil. The Gowanus Canal is located on the eastern border of the site and leads to the Hudson River Estuary System. An oil sheen was observed on the surface water in the canal during the reconnaissance. The New York State Division of Water has identified the Gowanus Canal as having a severe water pollution problem with the probable source indicated as combined sewer outflows. Confirmation of contamination attribution to the Vidan Auto Salvage Site will be difficult as there are several other active facilities bordering the Gowanus Canal.

Ref. Nos. 5, 6, 7, 9

9. Identify the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.

The Gowanus Canal is located on the eastern border of the site and flows into the Hudson River approximately 2 miles downstream. The Hudson River and its tributaries in the area of the site are tidally affected. The property is relatively flat, therefore substances spilled would tend to pool on site as there is no barrier to contain runoff. However, during periods of rain, runoff may transport contaminants into the Gowanus Canal.

Ref. Nos. 5, 6

10. What is the distance in feet to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.

The Gowanus Canal is located adjacent to the eastern border of the site. The distance along a course that runoff can be expected to follow is zero feet.

Ref. Nos. 5, 6

11. Determine the type of floodplain that the site is located within.

The Vidan Site is not located in a floodplain area.

Ref. No. 34

12. Identify drinking water intakes in surface waters within 15 miles downstream of the point of surface water entry. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.

Intake	Distance	Population Served	Flow (cfs)

There are no surface water intakes wihtin 15 upstream or downstream of the site.

Ref. Nos. 5, 13, 14, 23, 29

13. **Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:**

Fishery Name	Water Body Type	Flow (cfs)	Saline/ Fresh/ Brackish
Hudson River	Large Stream to River	1,000 to 10,000	Brackish
East River	Large Stream to River	1,000 to 10,000	Brackish
Upper New York Bay	Bay	NA	Saline
Lower New York Bay	Bay	NA	Saline
*Newark Bay	Bay	NA	Brackish
*Hackensack River	Large Stream to River	1,000 to 10,000	Brackish
*Passaic River	Large River	1,000 to 10,000	Brackish
Jamaica Bay	Bay	NA	Brackish
Raritan Bay	Large Stream to River	NA	Saline
*Arthur Kill	Large Stream to River	1,000 to 10,000	Brackish
*Kill VanKull	Large Stream to River	1,000 to 10,000	Brackish

* Currently there is a ban of the consumption of certain species of fish in these waters due to high levels of PCBs and dioxins found in the fish.

Ref. Nos. 5, 6, 15, 16, 22, 23, 25, 27, 28, 29

14. **Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:**

Sensitive Environment	Water BodyType	Flow (cfs)	Wetland Frontage (miles)
Raritan Bay/Habitat of Federal Endangered Species Shortnosed Sturgeon, Loggerhead and Leatherback turtle	Bay	NA	NA
Upper New York Bay/National Monument Statue of Liberty	Bay	NA	NA
Raritan Bay/National Seashore Recreation Area Gateway National Recreation Area	Bay	NA	NA
Jamaica Bay/State Wildlife Refuge Jamaica Wildlife Refuge	Bay	NA	NA

Ref. Nos. 5, 8

15. **If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 12-14 that are or may be located within the contamination boundary of the release.**

Intakes: None

Fisheries: Hudson River

Sensitive Environments: Upper New York Bay/National Monument, Raritan Bay/Habitat of Federal Endangered Species

Ref. Nos. 5, 8

SOIL EXPOSURE PATHWAY

16. **Determine the number of people that occupy residences or attend school or day care on or within 200 feet of the site property.**

Based on visual observation during the Region 2 FIT on-site reconnaissance of several townhouses and row homes, it is estimated that there are approximately 50 residents within 200 feet of the site property.

Ref. No 7

17. **Determine the number of people that regularly work on or within 200 feet of the site property.**

Based on visual observation of the site and surrounding business, as including a saw mill plant to the north and two smaller companies to the south, during the Region 2 FIT on-site reconnaissance, it is estimated that 15 people regularly work on or within 200 feet of the site property.

Ref. No. 7

18. **Identify terrestrial sensitive environments on or within 200 feet of the site property.**

There are no terrestrial sensitive environments on or within 200 feet of the site property.

Ref. Nos. 5, 7, 8

AIR ROUTE

19. **Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.**

There is no observed or suspected release of contaminants to the air. Hazardous substance that may have been contained in closed drums and/ or carboys would be unlikely to volatize. Soils contaminated as a result of automobile fluids draining directly onto the ground, are unlikely to become dry enough for contaminated particulates to become airborne during dry and windy conditions.

Ref. No. 7

20. **Determine populations that reside within 4 miles of the site.**

Distance	Population
0 - $\frac{1}{4}$ mi	8,992
> $\frac{1}{4}$ - $\frac{1}{2}$ mi	25,284
> $\frac{1}{2}$ - 1 mi	51,293
>1 - 2 mi	167,753
>2 - 3 mi	452, 592
>3 - 4 mi	674, 700

Ref. No. 18

21. **Identify sensitive environments, including wetlands and associated wetlands acreage, within $\frac{1}{2}$ mile of the site.**

0-$\frac{1}{4}$ Mile Sensitive Environments/Wetland Acreage	$\frac{1}{4}$ - $\frac{1}{2}$ Mile SensitiveEnvironments/Wetland Acreage

There are no sensitive environments within a 1/2 mile of the site.

Ref. Nos. 7, 8

22. **If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.**

There is no observed or suspected release of contaminants to the air.

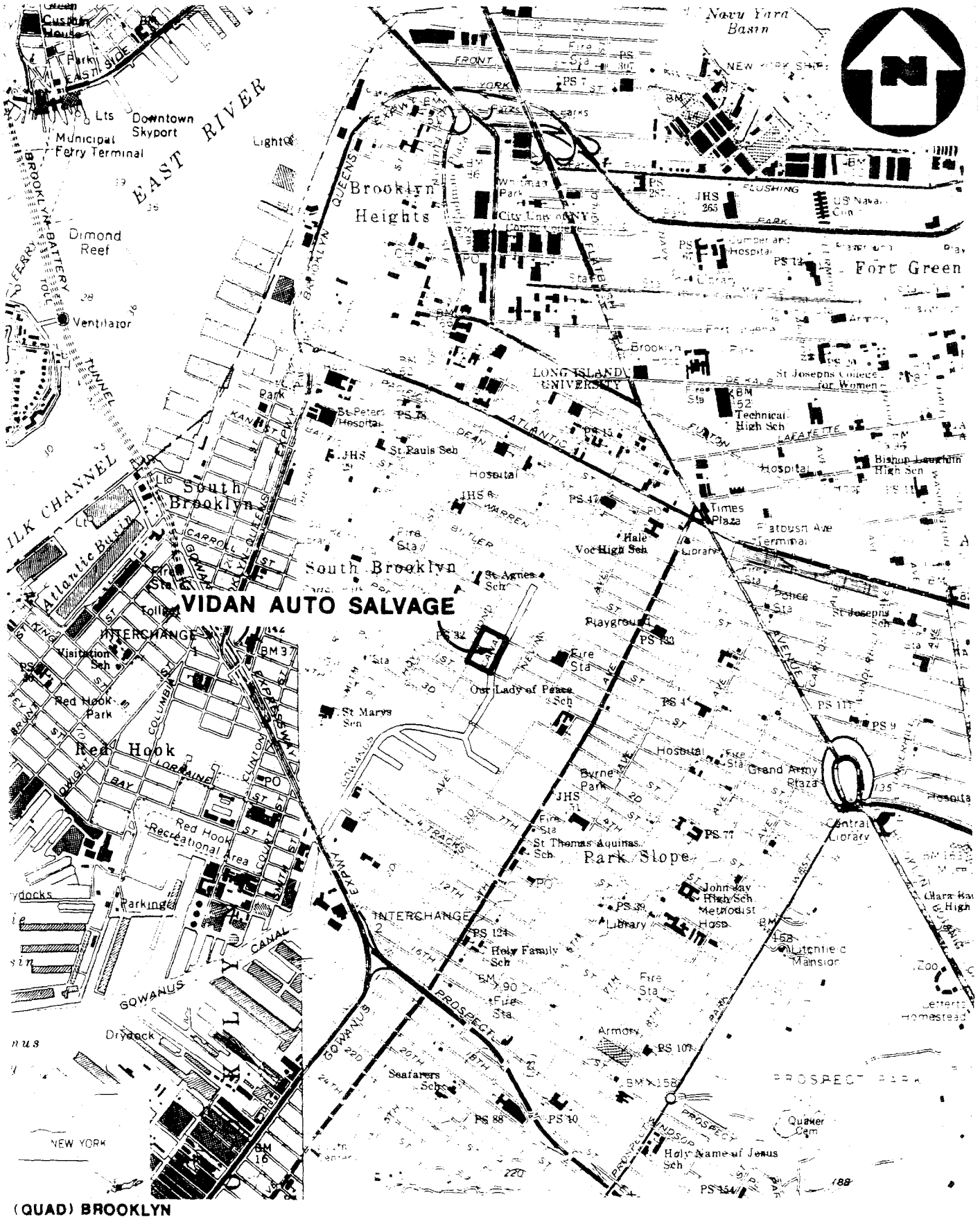
Ref. No. 7

23. **If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 21, that are or may be located within the area of air contamination from the release.**

There is no observed or suspected release of contaminants to the air.

Ref. No. 7

ATTACHMENT 1



(QUAD) BROOKLYN

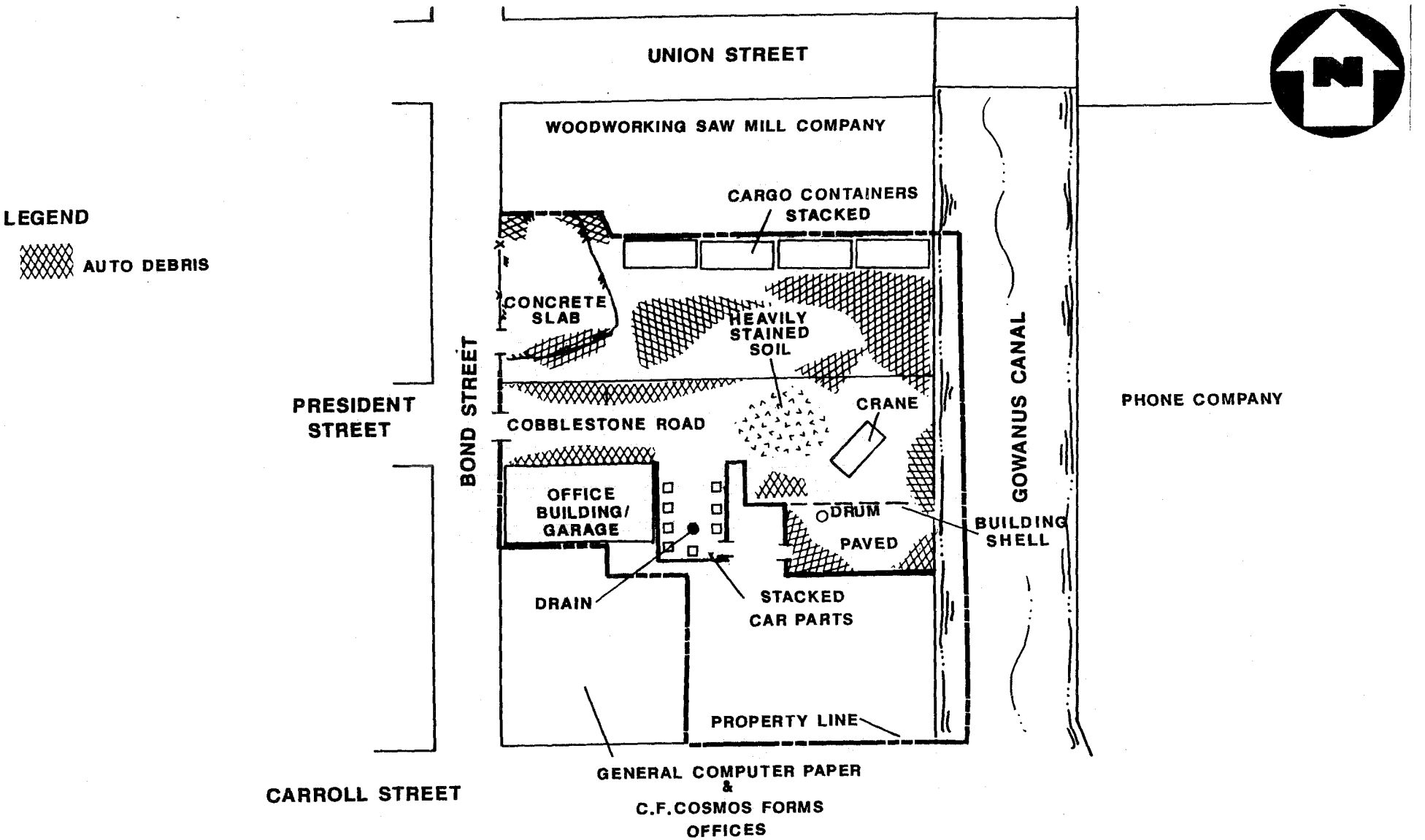
SITE LOCATION MAP

VIDAN AUTO SALVAGE, BROOKLYN, N.Y.

SCALE 1"=2000'

FIGURE 1

NUS CORPORATION



SITE MAP

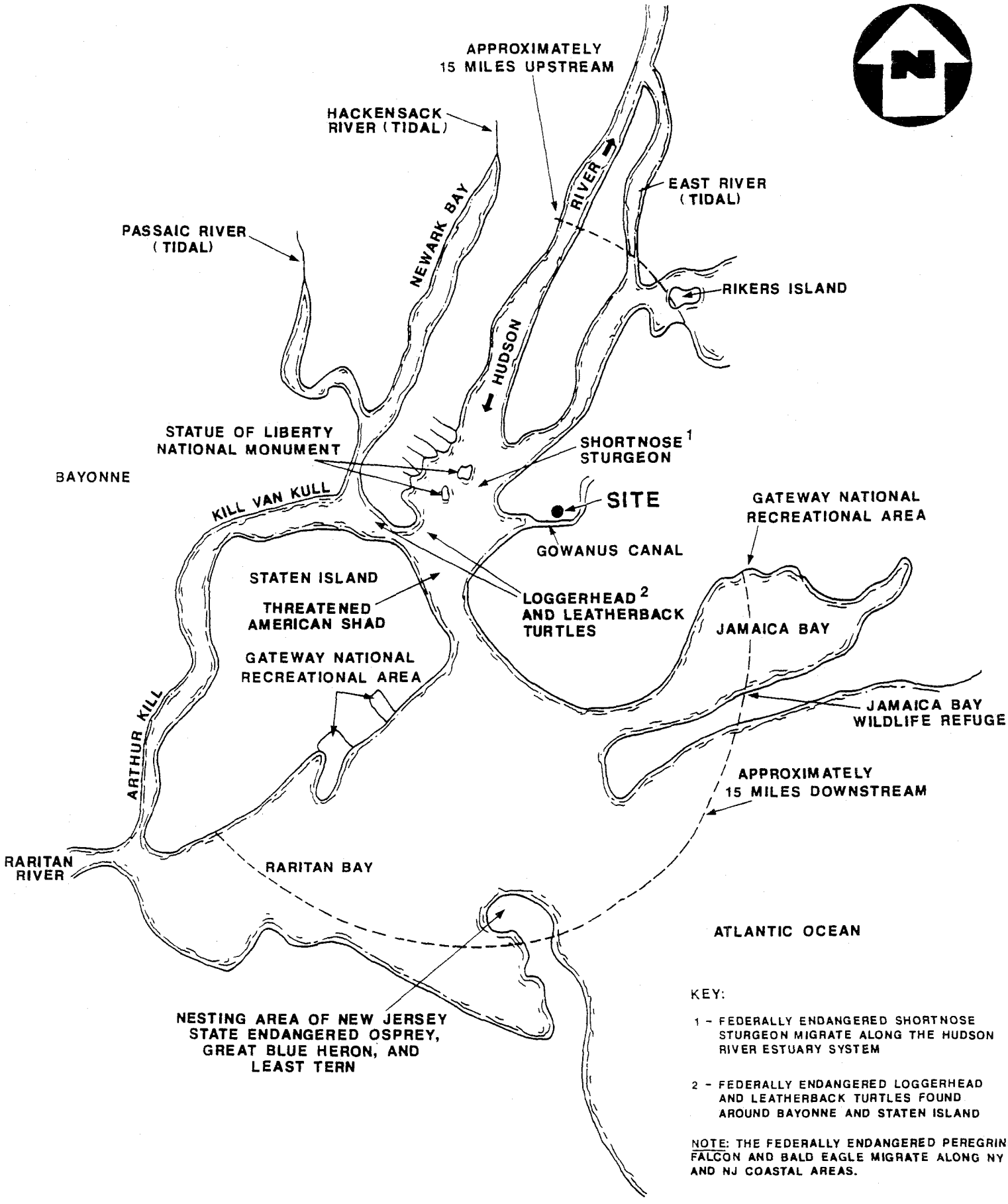
VIDAN AUTO SALVAGE, BROOKLYN, N.Y.

NOT TO SCALE

FIGURE 2

NUS CORPORATION

02-9106-01-PA
Rev. No. 0



KEY:

1 - FEDERALLY ENDANGERED SHORTNOSE STURGEON MIGRATE ALONG THE HUDSON RIVER ESTUARY SYSTEM

2 - FEDERALLY ENDANGERED LOGGERHEAD AND LEATHERBACK TURTLES FOUND AROUND BAYONNE AND STATEN ISLAND

NOTE: THE FEDERALLY ENDANGERED PEREGRINE FALCON AND BALD EAGLE MIGRATE ALONG NY AND NJ COASTAL AREAS.

15 MILE SURFACE WATER PATHWAY
VIDAN AUTO SALVAGE, BROOKLYN, N.Y.

NOT TO SCALE

FIGURE 3

NUS CORPORATION

EXHIBIT A

PHOTOGRAPH INDEX

VIDAN AUTO SALVAGE
BROOKLYN, NEW YORK

ON-SITE RECONNAISSANCE: JUNE 25, 1991

VIDAN AUTO SALVAGE
BROOKLYN, NEW YORK
JUNE 25, 1991

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS WERE TAKEN BY PATRICIA HASTINGS

Photo Number	Description	Time
1P-1	Photo of backview of Vidan Auto Salvage, showing rear boundary on Gowanis Canal; taken facing southwest from eastern side of Union Street.	0932
1P-2	Photo of oil sheen on surface of Gowanis Canal at the rear boundary of Vidan; facing southwest from the Union Street Bridge.	0940
1P-3	Photo facing east of front of Vidan building at the corner of President and Bond Streets.	1010
1P-4	Photo of oil sheen on Gowanis at edge of Vidan's southeast boundary on the canal; facing northeast.	1035
1P-5	Photo of building shell on southwest corner of Vidan property plus piles of junk, cars, and stained soil in center.	1035
1P-6	Photo facing west down President Street of area of extensive stained soil.	1039
1P-7	Photo of stained soil and drain in the area of stacked car parts storage.	1045
1P-8	Photo of car parts storage area; facing south (Note: drain in center background).	1050
1P-9,10	Panoramic view of north side of yard, shows cars, parts, overground conditions; facing north on President Street.	1100
1P-11	Photo of west side of the site, showing cars, parts, site conditions; nearest residence on Bond Street in background.	1100
1P-12	Photo of the interior of the building shell on the southeast corner of the Vidan property. Note: Black poly drum in left foreground, black poly carboy in right background, and piles of rusted scrap metal throughout.	1101
1P-13	Photo of the exterior of the building shell; facing southwest.	1101
1P-14	Photo of northwest quadrant of Vidan property showing concrete pad, cars, and soil stains in center.	1105

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-1

June 25, 1991 0932
Photo of backview of Vidan Auto Salvage, showing rear boundary on Gowanis Canal; taken facing southwest from eastern side of Union Street.

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-2

June 25, 1991
Photo of oil sheen on surface of Gowanis Canal at the rear boundary of Vidan; facing southwest from the Union Street Bridge.

0940

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-3

June 25, 1991 1010
Photo facing east of front of Vidan building at the corner of President and Bond Street.

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-4

June 25, 1991
Photo of oil sheen on Gowanis at edge of Vidan's southeast boundary on the canal; facing northeast.

1035

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-5

June 25, 1991
Photo of building shell on southwest corner of Vidan property plus piles of junk, cars, and stained soil in center.

1035

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-6

June 25, 1991
Photo facing west down President Street of area of extensive stained soil.

1039

1P-7

June 25, 1991
Photo of stained soil and drain in the area of stacked car parts storage.

1045

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-8

June 25, 1991
Photo of car parts storage area; facing south
(Note: drain in center background).

1050

NUS CORPORATION

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1100

1P-9,10

June 25, 1991
Panoramic view of north side of yard, shows cars, parts, overground conditions; facing north on President Street.

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-11 June 25, 1991 1100
Photo of west side of the site, showing cars, parts, site conditions; nearest residence on Bond Street in background.

1P-12 June 25, 1991 1101
Photo of the interior of the building shell on the southeast corner of the Vidan property. Note: Black poly drum in left foreground, black poly carboy in right background, and piles of rusted scrap metal throughout.

VIDAN AUTO SALVAGE, BROOKLYN, NEW YORK

1P-13 June 25, 1991 1101
Photo of the exterior of the building shell; facing southwest.

1P-14 June 25, 1991 1105
Photo of northwest quadrant of Vidan property showing concrete pad, cars, and soil stains in center.

ATTACHMENT 2

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REFERENCE NO. 1

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01	6/12/91	1045

DISTRIBUTION: V. I. DAN AUTO SALVAGE

BETWEEN:	OF:	PHONE:
ENZO CATANZARO HAZ MAT Specialist	New York City Department of Environmental Protection	(212) 669 2254

AND: D.D. HASTINGS (NUS)

DISCUSSION:

Mr. Catanzaro was present at the site visit of V.I. DAN conducted by the NYC DEP as requested by the U.S. Marshall's office. As the only concern was the oil spilled and stained soil throughout the site, said samples were conducted. Ms. Catanzaro stated that analysis for metals, PCBs etc did not indicate the presence of anything but oil. He stated that results indicated some very low levels of lead and PCBs. (PCBs were detected in 2 areas at less than 40 and 10 ppm respectively. He said that the DEP did not have concerns other than the oil and that the area near the driveway was especially stained. Finally he said that results were forwarded to the U.S. marshalls office and no other work have been completed regarding this site

ACTION ITEMS:

REFERENCE NO. 2

City of New York
Department of
Environmental Protection

2358 Municipal Building, New York 10007 (212) 669-8200

ALBERT F. APPLETON
Commissioner

CV-91-0183

May 2, 1991

Mr. Richard Veits
Supervisory Deputy Marshall
United States Marshall Service
225 Cadman Plaza East
Brooklyn, New York 11201

Dear Mr. Veits:

On April 2, 1991, the New York City Department of Environmental Protection (DEP), Division of Hazardous Materials Programs (DHMP), conducted soil sampling at the above location at the request of the United States Marshall's Office. The soil samples were taken to determine the extent of oil contamination on the above mentioned property. The soil samples were analyzed for identification, percentage of oil, lead content, polychlorinated biphenyls (PCB), and ignitability.

The soil was identified as containing high levels of hydrocarbon oil, possibly fuel oil and lubricating oil. The flash point of the soil was found to be greater than 140 degrees Fahrenheit, and therefore not ignitable.

If you need any more assistance please let me know.

Sincerely yours,

Cyprian Cox, Director

pc: S. Matos
I. Catanzaro

IC/ic

Save Water

This is 100% recycled paper.

REFERENCE NO. 3

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01	June 27, 1991	1:15

DISTRIBUTION:

Vidan Auto Salvage

BETWEEN:	OF:	PHONE:
ENZO Catanzaro	NY DEP Haz. Mat. Specialist	(212) 669-2254

AND:

Susan S. Hodgkiss (NUS)

DISCUSSION:

I spoke with Mr. Catanzaro regarding the sampling they did at the Vidan Auto Salvage site. Mr. Catanzaro informed me that it wasn't an official sampling event. They did it as a favor to the U.S. Marshals office. He had no real documentation of the sampling. He said they went into the gate and took a sample approximately 100 feet in front of the building. Then took an other sample approximately 50 feet to the left of the previous sample. They forwarded the information and data to the U.S. Marshals office.

ACTION ITEMS:

SH 6/27/91

NUS 067 REVISED 0685

REFERENCE NO. 4

Superfund Handbook

A Guide to Managing Responses to Toxic Releases Under Superfund

September 1989 **Third Edition**

ENSR™
ENSR Corporation
(Formerly ERT)

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Law Offices

$45.00

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This Handbook is intended to be an information document that generally outlines the broad elements of the legal, regulatory, and technical framework of CERCLA/SARA and the Superfund program in effect in April 1989. As such, it is not within the scope of this Handbook to analyze specific legal, policy, or technical issues that may arise in the Superfund program. Rather, it is the purpose of the authors to identify significant issues that may be faced in the Superfund area. Specific questions about particular matters should be addressed in the context of the facts that underlie them and the policies and law in effect at the time. In furnishing this Handbook, ENSR and Sidley & Austin do not make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or utility of the information contained in this document; nor do ENSR or Sidley & Austin assume any liability of any kind whatsoever resulting from the use of or reliance upon any information, procedure, conclusion, or opinion contained in this Handbook.

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In addition, you will forfeit your right to limitations on liability and to any defense against liability under Superfund (Section 107). There are no civil penalties for violating facility notification requirements.

Criminal penalties for violating spill reporting and record retention requirements are more stringent. It is considered a violation of the spill reporting requirement if you (1) fail to report a release you know of, or (2) report false or misleading information, or (3) fail to retain records or make records unavailable. If convicted of violating spill reporting or record retention requirements, you may face:

- imprisonment of up to 3 years for a first conviction and up to 5 years for a subsequent conviction (under the original Act the maximum prison sentence was 1 year); and/or
- as an individual, a maximum fine of $250,000; or
- as a corporation, a maximum fine of $500,000.

To help enforce these sanctions, SARA has added a new provision awarding up to $10,000 to anyone who provides information leading to the arrest and conviction of a person for a criminal violation of CERCLA.

In addition to criminal sanctions for violating spill reporting and record retention requirements, you face civil sanctions in administrative or judicial proceedings. PRPs can expect EPA to use administrative proceedings more often for its own convenience. The civil penalties are a maximum of $25,000 per violation or per day for each day during which violation continues, with a maximum penalty of $75,000 for a second or subsequent violation.

You can appeal an administrative penalty in federal court. The court is likely to review only the administrative record, so it is important for you to participate in developing that record. The administrative record consists of the information EPA uses to reach its decision and to assess a penalty against you.

Petroleum Exclusion

What is the petroleum exclusion?

Superfund excludes petroleum (including crude oil or any fraction of petroleum not listed as a hazardous substance under CERCLA/SARA) from the definition of hazardous substance, pollutant, or contaminant. Substances within the petroleum exclusion are not covered by CERCLA requirements. The major problem in interpreting the exclusion is that some listed hazardous substances, such as benzene and toluene, are present in most if not all petroleum products. Additionally, hazardous substances or heavy metals such as lead may be added during the refining process.

EPA has attempted to clarify the scope of the petroleum exclusion to dispel uncertainty about spill reporting requirements under CERCLA and whether it will use CERCLA or other environmental laws. In a 1987 memo-

randum, EPA interpreted the exclusion to encompass petroleum and petroleum fractions that occur naturally, even though the fractions contain listed hazardous substances. EPA has not established detailed rules governing petroleum additives. The agency's position is that hazardous substances normally added during refining are within the exclusion if they are normally mixed with or added to petroleum products during refining and if the levels of the mixed or added hazardous substances do not exceed those normally found in refined petroleum fractions. EPA has published no guidance on the exact meaning of "normal."

Both EPA and a recent court decision have interpreted the exclusion to encompass unleaded gasoline, even though it includes increased levels of benzene from the refining process. EPA also includes within the petroleum exclusion leaded gasoline, a petroleum product containing the hazardous substance lead. Another court has held cutting oils (unused) to be within the exclusion; however, used crankcase oil, containing heavy metals listed as hazardous substances, was held by a different court not to be within the exclusion.

EPA appears to be dealing on a case-by-case basis with difficult questions about when the exclusion applies. If you are uncertain about whether a substance is excluded, you can call EPA. (See Reference Section for documents providing guidance on the petroleum exclusion.)

Is waste oil excluded?

EPA has specifically stated that hazardous substances added to waste oil are not within the exclusion, although waste oil itself is excluded from regulation. Since hazardous substances are typically added to the oil during use, EPA may use CERCLA to respond to a release of contaminated waste oil. Practically speaking, not only must the hazardous substances be cleaned up, but so must the oil.

Are pesticides covered by the petroleum exclusion?

EPA has stated that there is no exception for pesticides, even though the active ingredients may be mixed with a petroleum distillate.

Are there other environmental laws for responding to a spill of petroleum products?

With regulations recently promulgated governing underground storage tanks under the Resource Conservation and Recovery Act (RCRA), Superfund may not often be the first choice for cleanup of leaks from underground storage tanks (USTs) containing petroleum products. EPA recently estimated that there may be more than 100,000 leaks of leaded gasoline from retail gas stations alone. However, the agency has also argued that Superfund, with its finite resources, is not the proper vehicle for cleaning up these leaks. Instead, EPA believes that UST regulations under RCRA

REFERENCE NO. 5

NUS CORPORATION

TITLE: FOUR MILE VICINITY MAP

SITE: VIDAN AUTO SALVAGE
BROOKLYN, N.Y.

DATE: 6/24/1991

TDD: 02-9106-01

REFERENCE NO. 6

NUS CORPORATION — TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-8611-63 NY53 SI	10/03/88	1500

DISTRIBUTION: Hudson River Psych. Center

BETWEEN:	OF:	PHONE:
Kathy Hattala	NYSDEC	(914) 255-

AND: A. Culmone (NUS)

DISCUSSION:

Hudson River - tidal at Poughkeepsie?
yes, tidal to Albany - 3.1'
2' per sec current velocity

Hudson River - fisheries info for this area
Endangered - Shortnosed sturgeon
wintering area
Commercial fisheries - Shad - Spring
Drift gill net - Spring
for Atlantic sturgeon

Sport fishery for Striped bass
Blue Crabs - Haverstraw area can
migrate as far as Poughkeepsie.

ACTION ITEMS:

REFERENCE NO. 7

NUS CORPORATION

II

0806

[redacted]

sample locations. Note landmarks, indicate north, and if possible include an approximate scale. Include as many sketches and maps as necessary.

8. Record any other relevant information which would be difficult to generate at a later date.

VIDAN AUTO SALVAGE
02-9106-01
TDD MANAGER - S. HODGKISS
LOGBOOK #0806
JUNE 13, 1991

Vidan Auto Salvage 02-9106-01

Custody of this Logbook is being Transferred from Susan Hodges to Pat Hastings on June 24, 1991

Susan L. Hodges 6/24/9
C. S. Hastings 6/24/9

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F.S. Hastings 6/25/91 Karen Schmidt 7/1/91

02-9106-01
JUNE 24, 1991

VIDAN AUTO SALVAGE
BROOKLYN, KINGS COUNTY, NEW YORK

KICKOFF MEETING

NUS PERSONNEL:
S. HODGKISS – SM
K. SCHMIDT – SSO
D. MINSAVAGE – SURVEILLANCE
P. HASTINGS – SM ONSITE

A MEETING WAS HELD AT 1315 TO DISCUSS THE VIDAN AUTO SALVAGE SITE. SITE HISTORY AND AREAS OF CONCERN WERE DESCRIBED. ADDITIONALLY, AREAS TO NOTE DURING THE RECONNAISSANCE SUCH AS RUNOFF PATH TO THE GOWANIS CANAL, STORM DRAINS, CLOSEST RESIDENT, NEARBY PUBLIC SCHOOL AND PARK, AND ANY OTHER NOTABLE AREAS WERE DESCRIBED. IT WAS ALSO DISCUSSED THAT ANY AVAILABLE INFORMATION FROM THE U.S. MARSHALL'S OFFICE BE COLLECTED, INCLUDING OWNER'S CURRENT ADDRESS AND YEARS OF OPERATION.

WE WILL MEET AT THE OFFICE TO FINALIZE PREPARATIONS AT LEAVE NO LATER THAN 0800 IN ORDER THAT WE CAN MEET WITH REMOVAL ACTION BRANCH (RAB) ON SCENE COORDINATOR (OSC) NICK MAGRIPLES AND RICH VIETZ OF THE U.S. MARSHALL OFFICE AT 1000 AT THE SITE ENTRANCE ON BOND ST.

ONSITE PROCEDURES WERE DISCUSSED. THE RECON WILL BE CONDUCTED IN LEVEL D WITH YELLOW BOOTS, LATEX GLOVES AND A DRYBAG DECON. STAFF WERE BRIEFED TO UPGRADE TO LEVEL C IF READINGS WERE OBTAINED ON THE OVA OR HNU

VIDAN AUTO SALVAGE
BROOKLYN, KINGS COUNTY, NEW YORK

ON-SITE RECONNAISSANCE

NUS PERSONNEL & / DUTIES

P. HASTINGS - S.M.
K. SCHMIDT - SSO
D. MINSAVAGE - SURVEILLANCE

THE ABOVE PERSONNEL HAVE READ AND UNDERSTOOD THE WORK PLAN AND QA/QC PROCEDURES

Equipment Numbers:

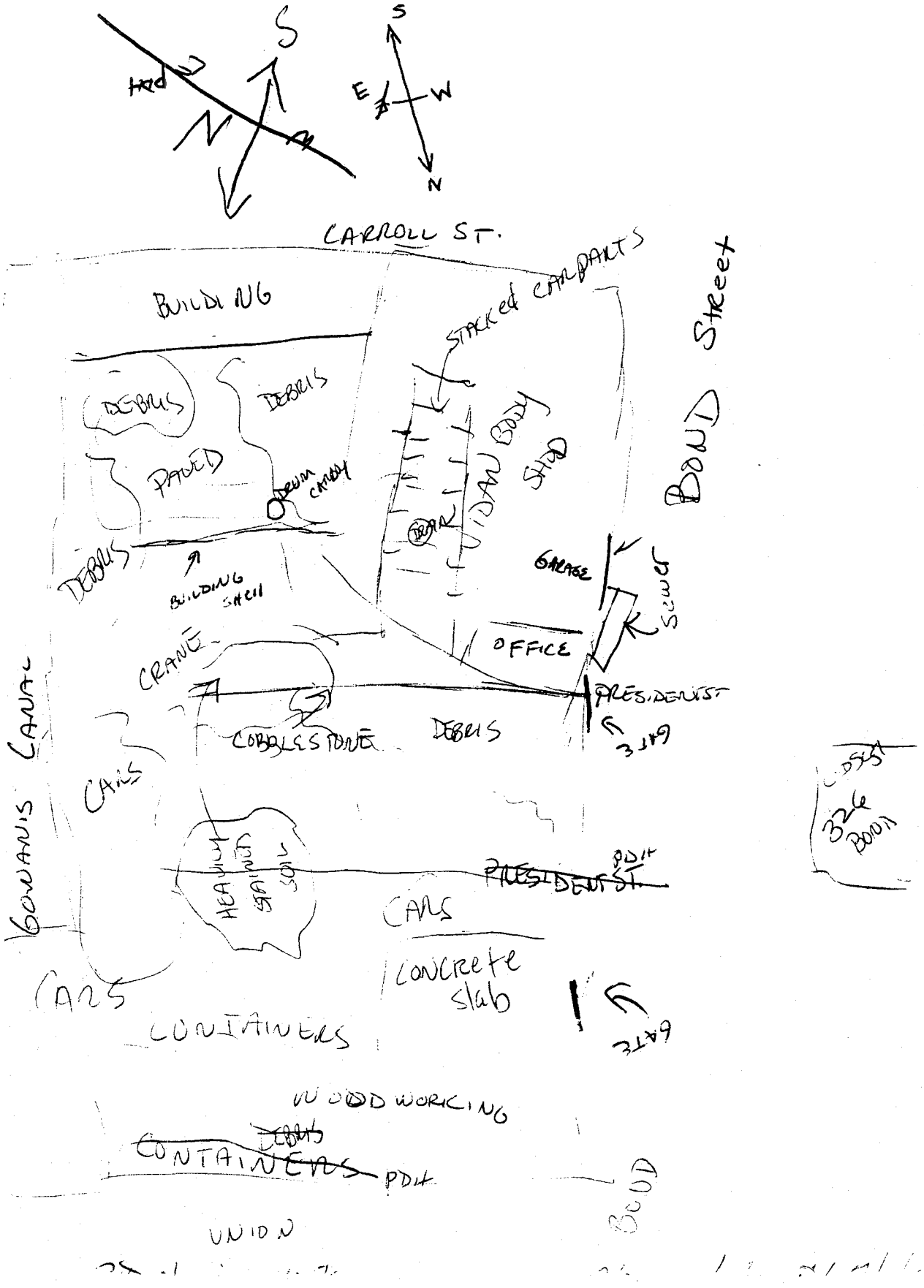
CAMERA - (SLIDES) 307128.
CAMERA - (PHOTOS) 731692
MINI RAD - 469786
HNU - 307144
OVA - 307134

WEATHER CONDITIONS:

HOT, PARTLY CLOUDY, BLUE SKIES, HUMID, 79°

BACKGROUND LEVELS:

OVA 0 ppm
HNU 0.6 ppm
MINI RAD 12 cpm



0930

0932

0940

0950

G.D. Hastings
6/25/91

02-9106-01
6/25/91

VIDAN AUTO SALVAGE

0930 ARRIVE AT SITE. WALK PERIMETER OF SITE HEADING ~~SOUTH~~ NORTH EAST ON UNION ST.; CROSS CANAL BRIDGE TO VIEW BACK SIDE OF SITE. SITE DIRECTLY ABUTS THE CANAL.

0932 P, S, BACK VIEW OF VIDAN AUTO SALVAGE ON GOWANUS CANAL, FACING ~~NORTH~~ SOUTHWEST

CANAL VIEW SHOWS INCOMPLETE RETAINING WALL, MOUNDS OF CARS SOME CRUSHED & STACKED ON TOP. THE EMBANKMENT IS ERODED AWAY. WATER OF GOWANUS CANAL IS MURKY, VERY STILL, SOME OIL SHEEN ON SURFACE. SURROUNDING AREA IS MOSTLY INDUSTRIAL WITH MIXED RESIDENTIAL

0940 P_2-2 OIL SHEEN ON GOWANUS CANAL FACING ~~NORTH~~ SOUTHWEST TOWARD VIDAN. VIDAN IS IN BACKGROUND TO LEFT OF FRAME

WALKING RETURNING TO VIDAN. PROPERTY DIRECTLY ABUTTING SHOWS PARKING LOT FRESHLY PAVED MACADAM; THIS SAW MILL/ WOOD WORKING COMPANY IS VERY ACTIVE. THE NORTHWEST FACE OF THE SITE PERIMETER IS FENCED WITH ALUMINUM SCREENING, BARBED WIRE & LOCKED GATES. THE FRONT FACE OF PROPERTY IS ENTIRELY FENCED.

0950 MET WITH MEL LADNER Special Deputy OF U.S. MARSHALL'S OFFICE, HE REQUESTED DISCRETION IN PERFORMANCE OF RECON - KEN DOYLE, U.S. MARSHALL FURNISHED LATEST DATA FROM EPA INVESTIGATION DATED 5/2/91. HE INSTRUCTED ME TO CONTACT RICHARDS FOR OWNERSHIP & OPERATIONAL INFORMATION

P.D. Hastings 6/25/91

02-9106-01
6/25/91

VIDAN AUTO SALVAGE

1000 KEN DOYLE PROVIDED THAT CARS WERE BEING BROUGHT IN & CHOPPED. PDH ~~CARS~~ SOIL SAMPLES BY DEP WERE TAKEN ALONG PRESIDENT ST. IT HAS BEEN OWNED BY THE CURRENT OWNER FOR APPROXIMATELY 15 YEARS. THEY NOTED THAT PRESIDENT ST. WAS CLOSED; PERHAPS BY OWNER; THE SITE OVERRUNS PRESIDENT ST. THERE IS A GATE ENTRANCE HER

1005 NICK Magriples OSC RAB; ARRIVES ON SITE & INTRODUCES SELF TO MESSRS DOYLE & LADNER.

1010 P3S3 TAKING FRONT FACE OF VIDAN AT CORNER OF BOND & PRESIDENT ST. SHOWS OFFICE ON Left; SHOP ON RIGHT; 2 SEWERS

~~1010~~

1029 PREP FOR ENTRY; SSO PREPS HNU, OVA, MINIRAI Level D DRESSOUT: BLUE Tyvek, gloves, BOOTIES TLD BADGES.

1029 ENTRY W/ N. MAGRIPLES, Ken Doyle, & MEL LADNER, NUS PERSONNEL IN Level D ENTER THROUGH NORTH LOCKED GATES.

1029 Ken Doyle exits SITE. ENTER ONTO CONCRETE SLAB. WALK THROUGH FIRST; MEL SHOWING expanse of SITE; WALKING N TO SOUTH. See MUCH METAL / JUNK CAR DEBRIS. PEOPLE MILLING ABOUT REMOVING CARS. ≅ FOR AUCTION SALE, LOTS OF TRAFFIC.

1035 P4S4 OIL SHEEN ON GOWANIS; NO CONTAINME PRESENT. OVA SHOWS 1ppm HELD OVER SURFACE OF CANAL. NO READING ON HNU. NO SLOPE TO CANAL

P5S5 FAR SOUTH [illegible] SHELL [illegible] CARS PILED UP, MUCH STAINED SOIL [illegible] & JUNK Everywhere

[illegible]
6/25/91

[redacted]

02-9106-01
6/25/91

VIDAN AUTO SALVAGE

1039 P_6S_6 PRESIDENT ST FACING WEST. AREA OF MOST GROSSLY STAINED SOIL. SHOT SHOWS PEOPLE REMOVING ARTICLES FOR AUCTION. THIS AREA LOOKS TO BE APPROXIMATELY 60' X 100' NO READINGS ON HNU AT SOIL SURFACE OVA OR BREATHING ZONE

8/13/91 AREA THOUGHT BY MELLADNER TO BE AREA WHERE CARS BLOCKS were previously cracked; sampling previously conducted by city. [illegible]

WALKED INTO CAR PARTS STORAGE (OUTSIDE) STACKED 2 STORY HIGH; MUCH STAINED SOIL

1045 P_7S_7 STAINED SOIL AREA LEADING TO DRAIN; TAKEN FACING SOUTH MEL DOES NOT KNOW WHERE DRAIN LEADS; NO READINGS NEAR DRAIN. MEL LEADS US TO A LOCKED DOOR LEADING TO THE OTHER JUNK YARD. WE HAVE SEEN THIS FROM THE OTHER SIDE; IT'S THE SOUTHERN MOST BUILDING SHELL TAKEN AT P_5S_5.

1050 P_8S_8 LONG SHOT OF THE CARPARTS AREA, FACING ~~NORTH~~ SOUTH ~~SOUTH~~ COULD NOT ENTER THRU CONFINED SPACE. NICK RETURNS & NOTES THAT THERE ARE "≅ 3/4 55 GALLON POLYS. 2 RUSTED CLOSED HEAD; ≅ 12 EMPTIES OPEN TOP. ; ≅ 4/5 10 gallon carboys looked empty." NICK ALSO REPORTS THAT AREA IS "PAVED & IN BETTER SHAPE THAN THE REST OF THE YARD"

[illegible] 6/25/91

Karen Schmidt 7/1/91

UIDAN AUTO SALVAGE 02-9106-01 6/25/91 8

1100 PANORAMA OF YARD; EAST TO WEST; FACING NORTH.

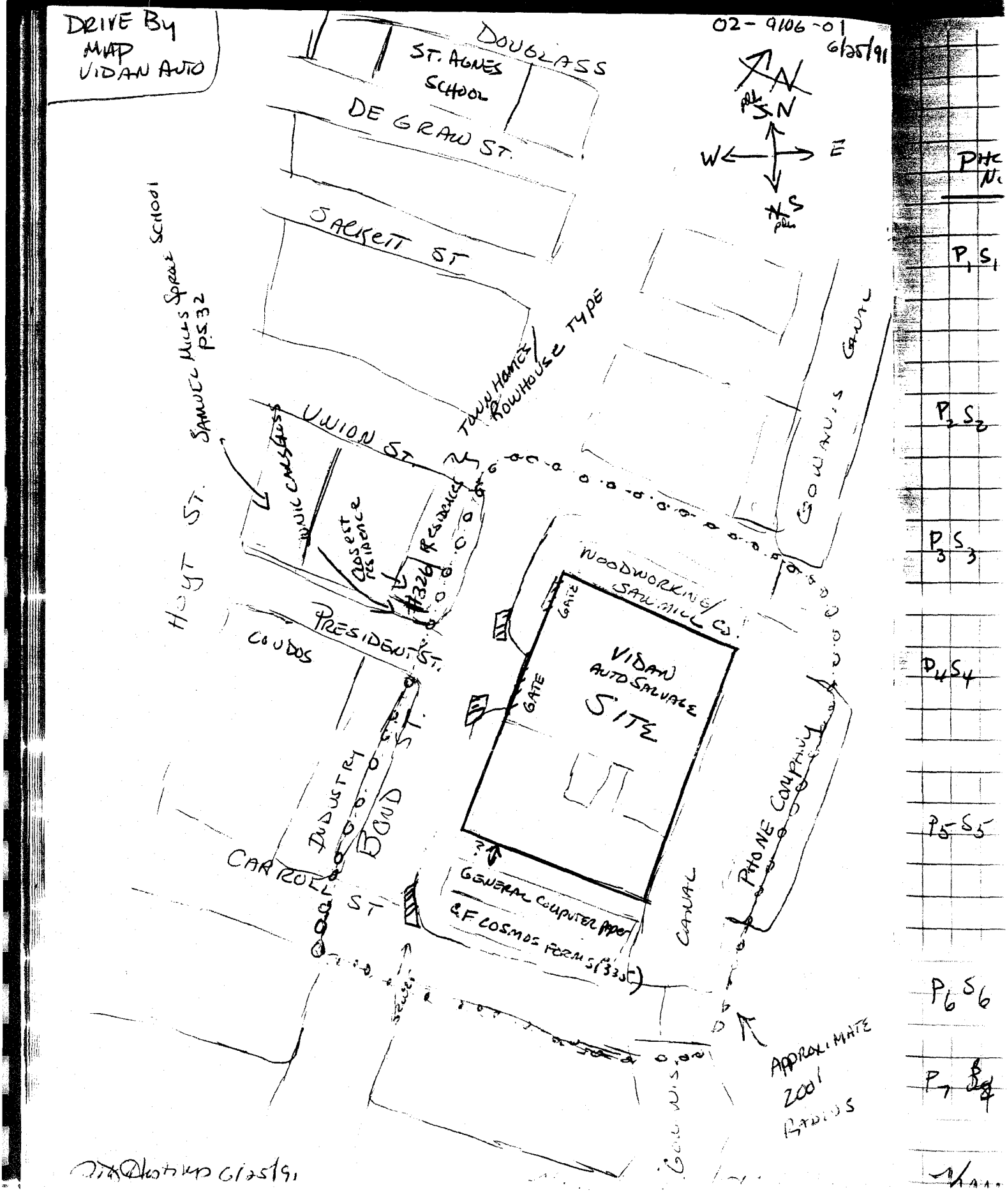
$P_9 - P_{10} - P_{11}$
$S_9 - S_{10} - S_{11}$ } PANORAMA SHOWS CARS PILED, DEBRIS & OVERGROWN CONDITIONS.

RETURNED TO BUILDING SHELL AT
1101 SOUTHERNMOST EDGE OF SITE.
P_{12} S_{12} — FACING SOUTH, PICTURE OF 1 DRUM (BLACK POLY) & 1 SMALL black carboy; MUCH DEBRIS, THIS AREA
P_{13} S_{13} 1101 LOOKS TO BE THE SHELL OF A FORMER BUILDING
SHOT OF AREA NICK SCOPED OUT WITH DRUMS. CAN NOT proceed FURTHER safely.
OVERSLOPE FACILITY SLOPE IS very FLAT; MOST OF THE AREA IS DIRT covered WITH SMASHED JUNK COVERING THE FLOOR SO THAT you can't see if it's paved

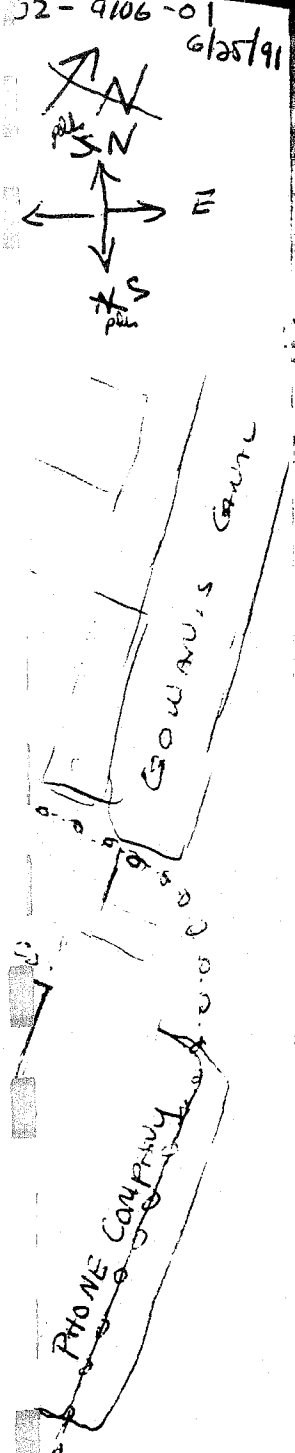
1105 P_{14} S_{14} SHOT of concrete slab area. MUCH LESS DEBRIS & STAINING. FACING CANAL DUE EAST.

1105 All exiting site; DRY BAG SECON & EQUIPMENT BREAK DOWN COMPLETED.

[illegible] 6/25/91 [illegible] 7/1/91


DRIVE BY MAP VIDAN AUTO
02-9106-01
6/25/91
DOUGLASS
ST. AGNES SCHOOL
DE GRAW ST.
SARKETT ST
SAMUEL MILLS SPRUE SCHOOL P.S. 32
TOWN HOMES/ ROWHOUSE TYPE
UNION ST.
HOYT ST.
CLOSEST RESIDENCE
#326 RESIDENCE
PRESIDENT ST.
CONDOS
WOODWORKING/ SAWMILL CO.
GATE
GATE
VIDAN AUTO SALVAGE SITE
GOWANUS CANAL
PHONE COMPANY
INDUSTRY
BOND ST.
CARROLL ST
GENERAL COMPUTER PAPER
C.F. COSMOS FORMS (335)
CANAL
APPROXIMATE 200' RADIUS
GOWANUS
N
S
W
E
P1 S1
P2 S2
P3 S3
P4 S4
P5 S5
P6 S6
P7 S7
6/25/91

02-9106-01
6/25/91



VIDAN AUTO SALVAGE

PHOTO. NO.	TIME	DESCRIPTION
$P_1 S_1$	0932	BACK VIEW OF VIDAN AUTO SALVAGE, SHOWING REAR BOUNDARY ON GOWANUS CANAL; TAKEN FACING SOUTHWEST from eastern side of UNION ST.
$P_2 S_2$	0940	OIL SHEEN ON surface of GOWANUS CANAL AT THE REAR BOUNDARY OF VIDAN; FACING SOUTHWEST FROM THE UNION ST. BRIDGE.
$P_3 S_3$	1010	FRONT FACADE OF VIDAN AUTOSALVAGE BUILDING AT THE CORNER OF PRESIDENT AND BOND STS; FACING EAST. SHOWS OFFICE ON LEFT and SHOP ON RIGHT.
$P_4 S_4$	1035	OIL SHEEN ON GOWANUS AT EDGE OF VIDAN'S SOUTHEAST BOUNDARY ON THE CANAL; FACING NORTHEAST.
$P_5 S_5$	1035	BUILDING SHELL ON SOUTH~~EAST~~WEST CORNER OF VIDAN PROPERTY PLUS PILES OF JUNK AND CARS AND STAINED SOIL IN CENTER; FACING SOUTH.
$P_6 S_6$	1039	AREA OF EXTENSIVE STAINED SOIL; FACING WEST DOWN PRESIDENT ST.
P_7 ~~S_7~~	1045	STAINED SOIL AND DRAIN IN THE AREA OF STACKED CAR PARTS STORAGE; FACING SOUTH.

8/28/91

02-9106-01
6/25/91

VIDAN AUTO SALVAGE

PHOTO NO.	TIME	DESCRIPTION
$P_8 S_8$	1050	LONGSHOT OF CAR PARTS STORAGE AREA (NOTE DRAIN IN CENTER BACKGROUND); FACING SOUTH.
$P_9 S_9$ $P_{10} S_{10}$	1100	PANORAMIC VIEW OF NORTH SIDE OF YARD, SHOWS CARS, PARTS, OVERGROWN CONDITIONS; FACING NORTH ON PRESIDENT ST., EAST TO WEST.
$P_{11} S_{11}$	1100	WEST FACE OF SITE, SHOWING CARS, PARTS, SITE CONDITIONS; NEAREST RESIDENCE ON BOND ST. IS IN BACKGROUND.
$P_{12} S_{12}$	1101	INTERIOR VIEW OF THE BUILDING SHELL ON THE SOUTHEAST CORNER OF VIDAN PROPERTY. NOTE BLACK POLY DRUM IN LEFT FOREGROUND, BLACK POLY CARBOY IN RIGHT BACKGROUND, AND PILES OF RUSTED SCRAP METAL THROUGHOUT; FACING SOUTH.
$P_{13} S_{13}$	1101	EXTERIOR VIEW OF BUILDING SHELL; FACING SOUTHWEST.
$P_{14} S_{14}$	1105	NORTHWEST QUADRANT OF VIDAN SHOWING CONCRETE PAD, CARS, SOIL STAINS IN CENTER, FACING EAST FROM BOND ST. GATE [illegible]

REFERENCE NO. 8

40072-A1-EI-250

New York

N. Y.—CONN.—N. J.

1:250 000-scale map of

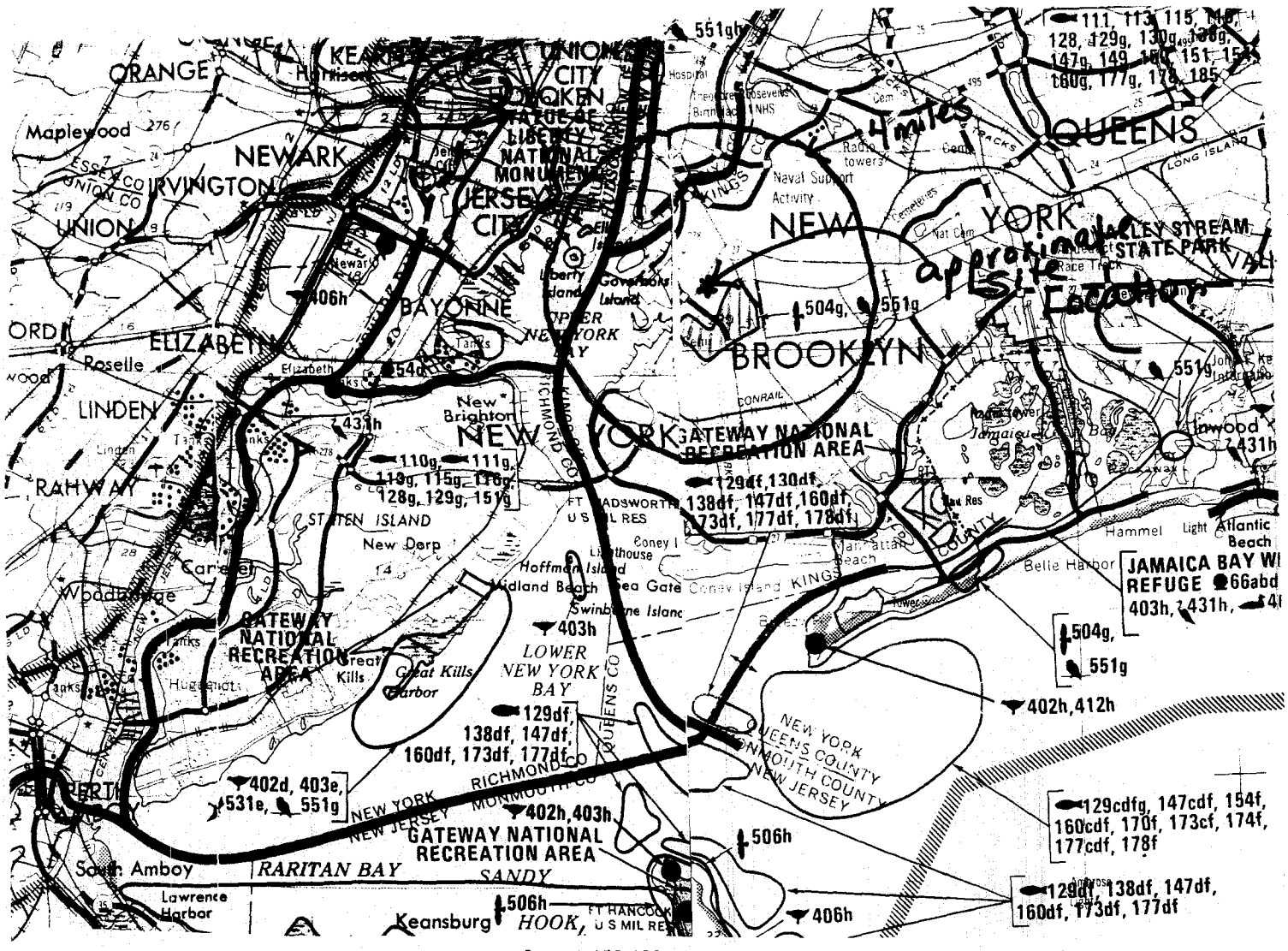
Atlantic Coast Ecological Inventory

NUS CORP.

*County Maps Must Be Signed Out

*DONOT Take Map if it is the Last One Left for that County (SEE DRAFTING SUPERVISOR)

Produced by
U. S. FISH AND WILDLIFE SERVICE
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

Tenafly
HACKENSACK
LODI
ENGLEWOOD
TEANECK
GARFIELD
CLIFTON
PASSAIC
MONTCLAIR
NUTLEY
BLOOMFIELD
BELLEVILLE
EAST ORANGE
ORANGE
KEARNY
NEWARK
IRVINGTON
UNION CITY
HOBOKEN
STATUE OF LIBERTY NATIONAL MONUMENT
JERSEY CITY
BAYONNE
ELIZABETH
LINDEN
FORT LEE
MANHATTAN
BRONX
QUEENS
BROOKLYN
NEW YORK
VALLEY STREAM STATE PARK
UPPER NEW YORK BAY
LOWER NEW YORK BAY
RARITAN BAY
SANDY HOOK BAY
STATEN ISLAND
New Brighton
New Dorp
Great Kills Harbor
Coney Island
Belle Harbor
JAMAICA BAY WILDLIFE REFUGE
GATEWAY NATIONAL RECREATION AREA
South Amboy
Keansburg
East Keansburg
Port Monmouth
Atlantic Highlands
Union Beach
Keyport
Matawan
Middletown
Belford
Navesink
Spermaceti Cove
NEW YORK QUEENS COUNTY
MONMOUTH COUNTY NEW JERSEY
110g, 111g, 112df, 113cdfg, 115cdfg, 116cdfg, 117cdf, 128cdfg, 129cdfg, 138bd, 150cdg, 151dfg, 160df, 180bd
403h, 431h
551gh
504g, 551g
110g, 111g, 113g, 115g, 116g, 128g, 129g, 151g
129df, 130df, 138df, 147df, 160df, 173df, 177df, 178df
129df, 138df, 147df, 160df, 173df, 177df
403h
406h
402h, 412h
402d, 403e, 531e
402h, 403h
506h
406h
437h
66abcdf, 67abcdf
129cdfg, 147cdf, 154f, 160cdf, 170f, 173cf, 174f, 177cdf, 178f
129df, 138df, 147df, 160df, 173df, 177df
Approximately 15 miles
Scale 1:250,000
20 Statute Miles
30 Kilometers
15 Nautical Miles

40074-A1-EI-250

Newark

N. J.—N. Y.—PA.

1:250 000-scale map of

Atlantic Coast Ecological Inventory

NUS CORP.

** REFERENCE MATERIAL **
DO NOT FOLD, DRAW ON, MUTILATE IN ANY WAY. COPIES CAN BE MADE IN DRAFTING.
DATE: 6/22/89

Produced by
U. S. FISH AND WILDLIFE SERVICE
1980

TERRESTRIAL ORGANISMS

Shown in BROWN: species with special status shown in RED-(F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL — SPECIES

PLANTS (301–350)
- 301 Eastern hemlock
- 302 Spleenwort (S)
- 303 Spider lily (S)
- 304 Pond bush (S)
- 305 Watermilfoil (S)
- 306 Hooded pitcher plant (S)
- 307 Tree
- 308 Prickly pear cactus (S)
- 309 Trailing arbutus (S)
- 310 Eastern bumelia
- 311 Pitcher plant
- 312 Baldcypress
- 313 Redbay
- 314 Seaside alder
- 315 Box huckleberry
- 316 Purple fringeless orchid
- 317 Pink lady's slipper
- 318 Ebony spleenwort (S)
- 319 Orchids (S)
- 320 Golden club (S)
- 321 Florida beargrass
- 322 East-coast coontie
- 323 Fall-flowering ixia
- 324 Jackson-vine
- 325 Spoon-flower
- 326 Curtiss milkweed
- 327 Sea lavender
- 328 Hand fern
- 329 Needle palm
- 330 Yellow squirrel-banana
- 331 Beach creeper
- 332 Florida coontie
- 333 Four-petal pawpaw
- 334 Bird's nest spleenwort
- 335 Burrowing four-o clock
- 336 Beach star
- 337 Silver palm
- 338 Dancing lady orchid
- 339 Tamarindillo
- 340 Fuch's bromeliad
- 341 Everglades peperomia
- 342 Buccaneer palm
- 343 Slender spleenwort
- 344 Pineland jacquemontia
- 345 Mahogany mistletoe
- 346 Florida thatch
- 347 Twisted air plant
- 348 Long's bittercress
- 349 Venus's flytrap

INVERTEBRATES (351–400)
- 351 Monarch butterfly
- 352 Zebra butterfly

BIRDS (401–600)

SHOREBIRDS (401–430)
- 401 Shorebirds
- 402 Terns
- 403 Gulls
- 404 Forster's tern
- 405 Arctic tern
- 406 Least tern (S)
- 407 Roseate tern (S)
- 408 Common tern
- 409 Great black-backed gull
- 410 Herring gull
- 411 Laughing gull
- 412 Black skimmer (S)
- 413 Turnstones
- 414 Plovers
- 415 Piping plover
- 416 American oystercatcher (S)

WADING BIRDS (431–460)
- 431 Wading birds
- 432 Herons
- 433 Egrets
- 434 Rails
- 435 Ibises
- 436 Bitterns
- 437 Great blue heron (S)
- 438 Wood ibis (S)
- 439 Anhinga
- 440 Little blue heron (S)
- 441 Yellow-crowned night heron (S)
- 442 Black-crowned night heron
- 443 Florida sandhill crane (S)
- 444 Louisiana heron (S)
- 445 Limpkin (S)
- 446 Roseate spoonbill (S)
- 447 Snowy egret (S)
- 448 Magnificent frigate-bird (S)
- 449 Reddish egret (S)
- 450 Clapper rail
- 451 King rail
- 452 Virginia rail
- 453 Sora rail

WATERFOWL (461–500)
- 461 Waterfowl
- 462 Swans
- 463 Geese
- 464 Dabbling ducks
- 465 Diving ducks
- 466 Common eider
- 467 Harlequin duck
- 468 Wood duck
- 469 Fulvous tree duck
- 470 Loons

AQUATIC ORGANISMS

Shown in BLUE: species with special status shown in RED-(F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL — SPECIES

PLANTS (1–50)
- 1 Irish moss
- 2 Rockweed

INVERTEBRATES (51–100)
- 51 Crabs
- 52 Mussels
- 53 Oysters
- 54 Scallops
- 55 Clams
- 56 Worms
- 57 Shrimp
- 58 American lobster
- 59 Blue crab
- 60 Eastern oyster
- 61 European oyster
- 62 Bay scallop
- 63 Deep-sea scallop
- 64 Calico scallop
- 65 Surf clam
- 66 Hard clam
- 67 Soft shell clam

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536 Black guillemot
537 Leach's petrel
538 Razorbill
539 Common puffin
540 Double-crested cormorant
541 Gannet
542 Wilson's petrel
543 Northern phalarope
544 Audubon's shearwater
545 Greater shearwater
546 Shearwaters
547 Petrels
548 Jaegers
549 White pelican

SONGBIRDS AND OTHERS (551–600)

551 Songbirds and others
552 Red-cockaded woodpecker (F)
553 Chachalaca
554 Bachman's warbler (F)
555 Wild turkey
556 American woodcock
557 Pileated woodpecker
558 Swainson's warbler
559 Ruffed grouse
560 Bobwhite
561 Mourning dove
562 Warblers
563 Ring-necked pheasant
564 Bank swallow
565 Dusky seaside sparrow (F)
566 White-crowned pigeon (S)

REPTILES AND AMPHIBIANS (601–700)

601 Eastern narrow-mouthed toad (S)
602 Eastern indigo snake (F)
603 American alligator (F)
604 Northern diamondback terrapin
605 Amphibians
606 Greater siren
607 Bog turtle (S)
608 Gopher tortoise (S)
609 Eastern tiger salamander (S)
610 Northern fence lizard
611 Five-lined skink
612 Map turtle
613 Plymouth red-bellied turtle (F)
614 Eastern diamondback rattlesnake
615 Carolina gopher frog
616 Florida gopher frog (S)
617 Atlantic salt marsh watersnake (F)
618 American crocodile (F)
619 Florida Keys mole skink (S)
620 Florida black-headed snake (S)
621 Pine barrens tree frog (S)
622 Northern pine snake (S)
623 Corn snake (S)
624 Timber rattlesnake (S)
625 Southern gray tree frog (S)

MAMMALS (701–800)

701 Beaver
702 Whitetail deer
703 European fallow deer
704 Blackbeard island deer
705 Opossum
706 Marsh rabbit
707 Rice rat
708 Raccoon
709 St. Simon Island raccoon
710 Mink
711 River otter (F)
712 Feral hog
713 Feral cow
714 Cumberland Island pocket gopher
715 Anastasia Island cotton mouse
716 Aquatic furbearers
717 Black bear (S)
718 Bobcat
719 Eastern gray squirrel
720 Eastern fox squirrel
721 Eastern cottontail
722 Delmarva fox squirrel (F)
723 Muskrat
724 Red fox
725 Bats
726 Gray fox
727 Striped skunk
728 Nutria
729 Longtail weasel
730 Colonial pocket gopher (S)
731 Wild ponies
732 Sika deer
733 Beach meadow vole
734 Block Island meadow vole
735 Pallid beach mouse (S)
736 Sherman's fox squirrel (S)
737 Florida mouse (S)
738 Florida panther (F)
739 Goff's pocket gopher (S)
740 Key Largo wood rat (S)
741 Lower keys cotton rat (S)
742 Key Largo cotton mouse (S)

HABITAT USE

Shown in RED for species with special status, BLUE for aquatic organisms and BROWN for terrestrial organisms

a Spawning ground
b Nursery
c Commercial harvesting area
d Adult concentration
e Overwintering area
f Sport fishing/hunting area
g Migratory area
h Nesting area
i Unusual distribution or specimen

112 American eel
113 Blueback herring
114 Hickory shad
115 Alewife
116 American shad (S)
117 Atlantic menhaden
118 Atlantic herring
119 Gizzard shad
120 Tarpon
121 Atlantic salmon
122 White catfish
123 Channel catfish
124 Yellow bullhead
125 Brown bullhead
126 Flat bullhead
127 Sea catfish
128 White perch
129 Striped bass
130 Black sea bass
131 Redbreast sunfish
132 Warmouth
133 Bluegill
134 Largemouth bass
135 Black crappie
136 Sheepshead
137 Spotted seatrout
138 Weakfish
139 Spot
140 Atlantic croaker
141 Southern kingfish
142 Northern kingfish
143 Gulf kingfish
144 Red drum
145 Star drum
146 Black drum
147 Summer flounder
148 Southern flounder
149 Winter flounder
150 Rainbow smelt
151 Atlantic tomcod
152 Threadfin shad
153 Carp
154 Atlantic mackerel
155 Chain pickerel
156 White bass
157 Northern putter
158 Silver perch
159 Florida pompano
160 Bluefish
161 Spanish mackerel
162 Cobia
163 Mullet
164 White crappie
165 Redear sunfish
166 Smallmouth bass
167 Yellow perch
168 Pumpkinseed
169 Atlantic halibut
170 Atlantic cod
171 Pollock
172 Haddock
173 Hake
174 Bluefin tuna
175 Walleye
176 Northern pike
177 Scup
178 Tautog
179 Atlantic spadefish
180 Bay anchovy
181 Butterfish
182 Little tunny
183 Atlantic bonito
184 Brown trout
185 Cunner
186 Yellowtail flounder
187 Gulf flounder
188 Pinfish
189 King mackerel
190 Pigfish
191 White grunt
192 Tripletail
193 Ladyfish
194 Snook
195 Jack
196 Snapper
197 Grouper
198 Sailfish
199 Great barracuda
200 Maryland darter (F)

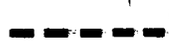
REPTILES AND AMPHIBIANS (201–250)

201 Green sea turtle (F)
202 Loggerhead sea turtle (F)
203 Hawksbill turtle (F)
204 Atlantic ridley turtle (F)
205 Leatherback turtle (F)

MAMMALS (251–300)

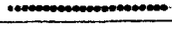
251 Florida manatee (F)
252 Atlantic bottlenose dolphin
253 Pigmy sperm whale
254 Short-finned pilot whale
255 Harbor seal
256 Gray seal
257 Right whale (F)
258 Atlantic spotted dolphin

High salinity estuarine habitat (generally 16.5 to 30 parts per thousand); arrows used for wide estuaries.



Mid salinity estuarine habitat (generally 5 to 16.5 parts per thousand).

Low salinity estuarine habitat (generally 0.5 to 5 parts per thousand) and tidal freshwater.



Non-tidal freshwater riverine and creek habitat.

450 Clapper rail
451 King rail
452 Virginia rail
453 Sora rail

WATERFOWL (461–500)
461 Waterfowl
462 Swans
463 Geese
464 Dabbling ducks
465 Diving ducks
466 Common eider
467 Harlequin duck
468 Wood duck
469 Fulvous tree duck
470 Loons
471 Grebes
472 Brant geese
473 Snow goose
474 Gadwall
475 Black duck

RAPTORS (501–530)
501 Raptors
502 Owls
503 Kites
504 Hawks
505 Bald eagle (F)
506 Osprey (S)
507 Peregrine falcon (F)
508 Cooper's hawk (S)
509 Swallow-tailed kite
510 Marsh hawk (S)
511 Southeastern American kestrel (S)
512 Florida burrowing owl (S)

SEABIRDS (531–550)
531 Seabirds
532 Petrels, shearwaters, and albatroses
533 Pelican and allies
534 Alcids
535 Brown pelican (F)
536 Black guillemot
537 Leach's petrel
538 Razorbill
539 Common puffin
540 Double-crested cormorant
541 Gannet
542 Wilson's petrel
543 Northern phalarope
544 Audubon's shearwater
545 Greater shearwater
546 Shearwaters
547 Petrels
548 Jaegers
549 White pelican

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551 Songbirds and others
552 Red-cockaded woodpecker (F)
553 Chachalaca
554 Bachman's warbler (F)
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556 American woodcock
557 Pileated woodpecker
558 Swainson's warbler
559 Ruffed grouse
560 Bobwhite
561 Mourning dove
562 Warblers
563 Ring-necked pheasant
564 Bank swallow
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566 White-crowned pigeon (S)

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709 St. Simon Island raccoon
710 Mink
711 River otter (F)
712 Feral hog
713 Feral cow
714 Cumberland Island pocket gopher
715 Anastasia Island cotton mouse
716 Aquatic furbearers
717 Black bear (S)

52 Mussels
53 Oysters
54 Scallops
55 Clams
56 Worms
57 Shrimp
58 American lobster
59 Blue crab
60 Eastern oyster
61 European oyster
62 Bay scallop
63 Deep-sea scallop
64 Calico scallop
65 Surf clam
66 Hard clam
67 Soft shell clam
68 Brackish-water clam
69 Bloodworm
70 Sandworm
71 White shrimp
72 Brown shrimp
73 Northern shrimp
74 Rock crab
75 Jonah crab
76 Whelk
77 Ocean quahog
78 Pink shrimp
79 Stone crab
80 Spiny lobster

FISH (101–200)
101 Sharks, skates, rays
102 Herring
103 Salmon and trout
104 Catfish
105 Cod
106 Sunfish and bass
107 Drum
108 Flatfish
109 Longnose gar
110 Shortnose sturgeon (F)
111 Atlantic sturgeon (S)
112 American eel
113 Blueback herring
114 Hickory shad
115 Alewife
116 American shad (S)
117 Atlantic menhaden
118 Atlantic herring
119 Gizzard shad
120 Tarpon
121 Atlantic salmon
122 White catfish
123 Channel catfish
124 Yellow bullhead
125 Brown bullhead
126 Flat bullhead
127 Sea catfish
128 White perch
129 Striped bass
130 Black sea bass
131 Redbreast sunfish
132 Warmouth
133 Bluegill
134 Largemouth bass
135 Black crappie
136 Sheepshead
137 Spotted seatrout
138 Weakfish
139 Spot
140 Atlantic croaker
141 Southern kingfish
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144 Red drum
145 Star drum
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147 Summer flounder
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149 Winter flounder
150 Rainbow smelt
151 Atlantic tomcod
152 Threadfin shad
153 Carp
154 Atlantic mackerel
155 Chain pickerel
156 White bass
157 Northern puffer
158 Silver perch
159 Florida pompano
160 Bluefish
161 Spanish mackerel
162 Cobia
163 Mullet
164 White crappie
165 Redear sunfish
166 Smallmouth bass
167 Yellow perch
168 Pumpkinseed
169 Atlantic halibut
170 Atlantic cod
171 Pollock
172 Haddock
173 Hake
174 Bluefin tuna
175 Walleye
176 Northern pike
177 Scup
178 Tautog
179 Atlantic spadefish
180 Bay anchovy
181 Butterfish
182 Little tunny
183 Atlantic bonito
184 Brown trout
185 Cunner
186 Yellowtail flounder
187 Gulf flounder

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NOTES

SPECIES WITH SPECIAL STATUS

Shortnose sturgeon (110) is found in coastal waters depicted on the New York sheet and migrates up the Hudson River.

American shad (116) is threatened in New Jersey.

Bald eagle and peregrine falcon (505, 507) migrate along coastal areas depicted on the New York sheet.

AQUATIC ORGANISMS

Due to scale limitations, only representative estuarine and riverine systems are shown.

Species that can be found from the shoreline to the three-mile limit depicted on the New York sheet include:

110g, 116g, 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:

or

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 islands 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.

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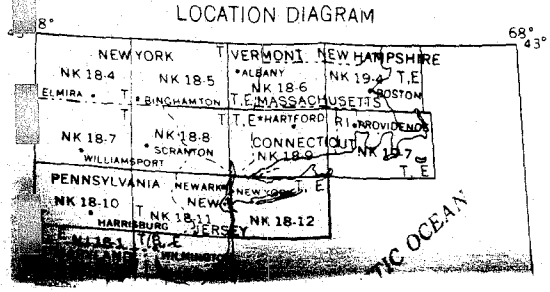
LOCATION DIAGRAM

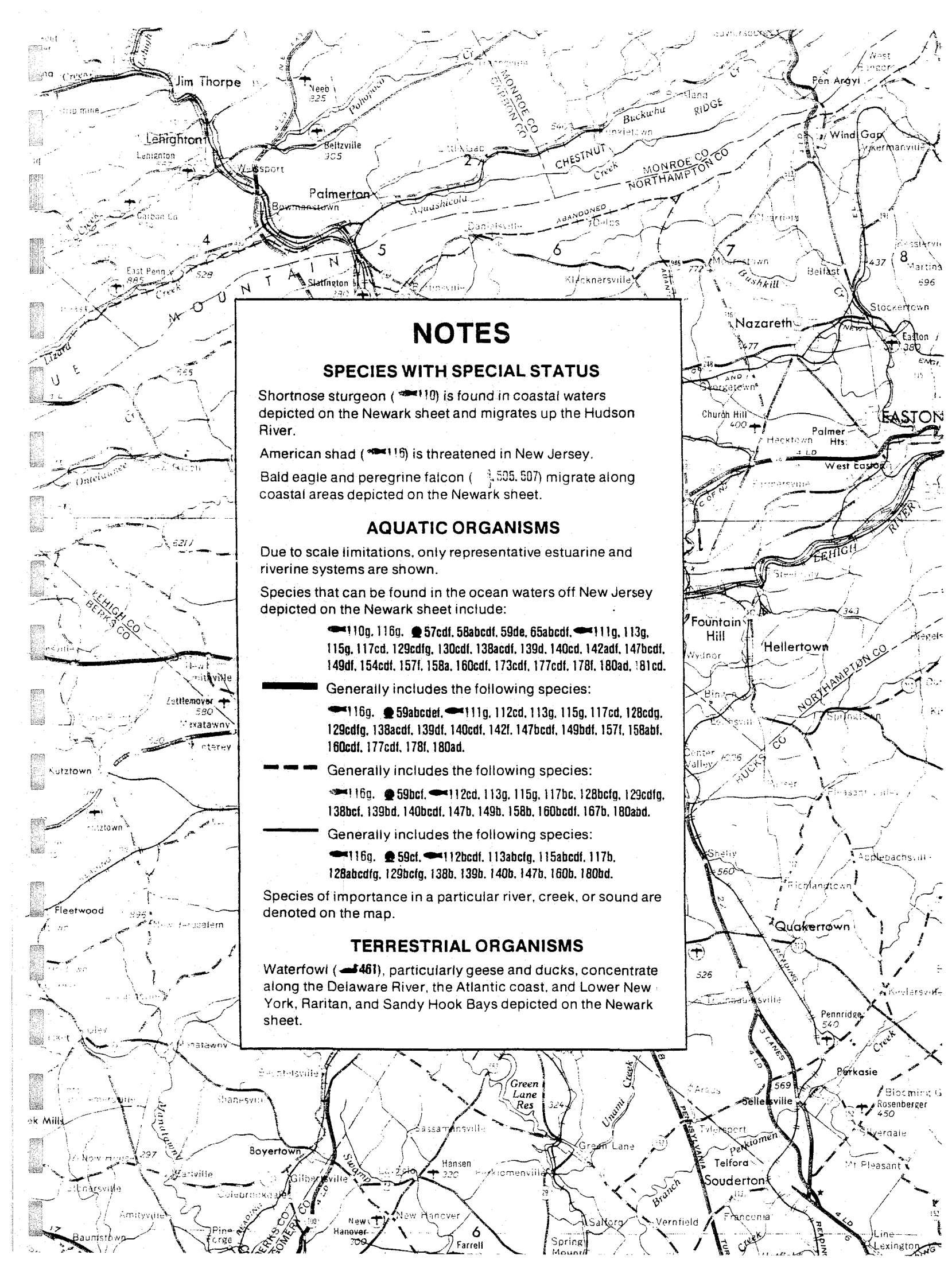


LAND USI

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 .....



NOTES

SPECIES WITH SPECIAL STATUS

Shortnose sturgeon (110) is found in coastal waters depicted on the Newark sheet and migrates up the Hudson River.

American shad (116) is threatened in New Jersey.

Bald eagle and peregrine falcon (505, 507) migrate along coastal areas depicted on the Newark sheet.

AQUATIC ORGANISMS

Due to scale limitations, only representative estuarine and riverine systems are shown.

Species that can be found in the ocean waters off New Jersey depicted on the Newark sheet include:

110g, 116g, 57cdf, 58abcdf, 59de, 65abcdf, 111g, 113g, 115g, 117cd, 129cdfg, 130cdf, 138acdf, 139d, 140cd, 142adf, 147bcdf, 149df, 154cdf, 157f, 158a, 160cdf, 173cdf, 177cdf, 178f, 180ad, 181cd.

Generally includes the following species:

116g, 59abcdef, 111g, 112cd, 113g, 115g, 117cd, 128cdg, 129cdfg, 138acdf, 139df, 140cdf, 142f, 147bcdf, 149bdf, 157f, 158abf, 160cdf, 177cdf, 178f, 180ad.

Generally includes the following species:

116g, 59bcf, 112cd, 113g, 115g, 117bc, 128bcfg, 129cdfg, 138bcf, 139bd, 140bcdf, 147b, 149b, 158b, 160bcdf, 167b, 180abd.

Generally includes the following species:

116g, 59cf, 112bcdf, 113abcfg, 115abcdf, 117b, 128abcdfg, 129bcfg, 138b, 139b, 140b, 147b, 160b, 180bd.

Species of importance in a particular river, creek, or sound are denoted on the map.

TERRESTRIAL ORGANISMS

Waterfowl (461), particularly geese and ducks, concentrate along the Delaware River, the Atlantic coast, and Lower New York, Raritan, and Sandy Hook Bays depicted on the Newark sheet.

REFERENCE NO. 9

Division of Water
Bureau of Monitoring and Assessment

New York State Water Quality 1990

Submitted Pursuant to Section 305(b) of the Federal Clean Water Act Amendments of 1977 (PL95-217)

April 1990

		less than 2400 per 100 ml of sample and the monthly logarithmic average fecal coliform concentration to be less than 200 per 100 ml of sample to be suitable for bathing. The median coliform value in waters suitable for shellfish harvesting may not exceed 70 per 100 ml of sample.
Combined Sewer Overflows (CSO)	-	Most of the larger cities in New York and some of the smaller cities have combined sewer systems that collect sanitary sewage and stormwater in the same system of pipes. The treatment facilities and pumping stations that are part of these systems are usually designed to accommodate a certain maximum flow, which is normally two to three times the average dry weather flow. Therefore, during rainstorms and snow melts when that flow is exceeded in the system, there will be untreated discharges (overflows) of a mixture of sanitary sewage and stormwater. This combined sewage which is not treated, contains bacteria, suspended solids, etc., and may also contain some untreated or pretreated industrial wastes. These discharges can and do have a severe impact on water quality, particularly near large urbanized areas such as New York City.
Conductivity	-	A method of measuring the dissolved salts in a water sample by passing an electrical current through it and measuring the strength of the current.
Dissolved Oxygen (DO)	-	A measure of the amount of oxygen gas dissolved in water. Fish and other desirable aquatic organisms need dissolved oxygen to survive and propagate. A minimum concentration of 4 mg/l is generally necessary for survival of warmwater fish species, and cold water species require a minimum of 5 mg/l. High surface concentrations are necessary though to insure successful propagation.
EPA	-	The United States Environmental Protection Agency
Effluent Limiting Segments	-	A designated portion of a water body that will meet applicable water quality standards with the application of technology-based treatment requirements by industries and secondary treatment by municipalities.
Eutrophication	-	The enrichment of water by natural or anthropogenic causes.

1988 Priority Water Problem List

BASIN : Atlantic-Long Island Sound
SUB-BASIN : Atlantic Ocean
BASIN CODE : 17-01

SEGMENT	ID#	COUNTY	SEGMENT TYPE	SEGMENT SIZE	CLASS	USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY PROBLEM SOURCE
Arthur Kill	72	Richmond	Estuary	15.0 mi	SD	Fish Passage	Moderate	Organic enrichment/DO	Municipal Point Source
Atlantic Ocean	48	Kings	Ocean	26623 A	SA	Shellfishing	Moderate	Pathogens	CSOs
Belmont Lake	30	Suffolk	Lake	26 A	C	Fishing	Severe	Nutrients	Urban Runoff
Bergen Basin	73	Kings	Estuary	1.5 mi	I	Aesthetic	Moderate	Aesthetics	CSOs
Brightwaters Pond	43	Suffolk	Lake	5 A	C	Fishing	Moderate	Nutrients	Urban Runoff
Canaan Lake	31	Suffolk	Lake	26 A	B(T)	Fish Propagation	Moderate	Nutrients	Landfills
Champlins Creek	33	Suffolk	River	2.5 mi	C(T)	Fish Propagation	Moderate	Unknown toxicity	Source Unknown
Coney Island Cr.	59	Kings	Estuary	1.5 mi	I	Fishing	Severe	Organic enrichment/DO	CSOs
Flanders Bay	3	Suffolk	Bay	1444 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Freeport Reserv.	4	Nassau	Lake(R)	17 A	A	Fishing	Severe	Priority organics	Urban Runoff
Fresh Creek	63	Kings	Estuary	1.5 mi	I	Fishing	Moderate	Aesthetics	CSOs
Fresh Kills	64	Richmond	Estuary	3.0 mi	SC	Fishing	Severe	Aesthetics	Landfills
→ Gowanus Canal	65	Kings	Estuary	1.5 mi	SD	Fish Passage	Severe	Organic enrichment/DO	CSOs
Gr. South Bay (C)	6	Suffolk	Bay	1793 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Gr. South Bay (E)	7	Suffolk	Bay	3445 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Halls Pond	34	Nassau	Lake	2 A	C	Fishing	Severe	Priority organics	Urban Runoff
Hawtree Basin	74	Queens	Estuary	1.0 mi	I	Fishing	Moderate	Aesthetics	On-site systems
Hempstead Bay	9	Nassau	Bay	10770 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Hempstead Lake	35	Nassau	Lake	237 A	D	Fishing	Moderate	Nutrients	Urban Runoff
Hendrix Creek	75	Kings	Estuary	1.5 mi	I	Aesthetic	Moderate	Aesthetics	CSOs
Jamaica Bay	52	Kings	Bay	12235 A	SB	Bathing	Severe	Pathogens	CSOs
Lake Ronkonkoma	36	Suffolk	Lake	243 A	B	Bathing	Moderate	Pathogens	Urban Runoff
Lofts Pond	44	Nassau	Lake	4 A	D	Fishing	Moderate	Priority organics	Urban Runoff
Lower NY Bay (N)	54	New York	Bay	31400 A	SB	Bathing	Severe	Pathogens	CSOs
Massapequa Reserv	37	Nassau	Lake(R)	20 A	A	Fishing	Moderate	Priority organics	Urban Runoff
Mattituck Inlet	14	Suffolk	Bay	125 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Mecox Bay	15	Suffolk	Bay	1045 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Montauk Harbor	16	Suffolk	Bay	205 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
North Sea Harbor	20	Suffolk	Bay	18 A	SA	Shellfishing	Severe	Pathogens	Boat pollution
Paerdegat Basin	69	Queens	Bay	68 A	I	Fishing	Severe	Aesthetics	CSOs
Quantuck Bay	23	Suffolk	Bay	730 A	SA	Shellfishing	Severe	Pathogens	On-site systems
Raritan Bay	55	Richmond	Bay	12410 A	SA	Shellfishing	Severe	Pathogens	Municipal Point Source
Roosevelt Pond	39	Nassau	Lake	15 A	C	Fishing	Moderate	Priority organics	Urban Runoff

SEGMENT	ID#	COUNTY	SEGMENT TYPE	SEGMENT SIZE	CLASS	USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY PROBLEM SOURCE
BASIN : Atlantic-Long Island Sound									
SUB-BASIN : Atlantic Ocean									
BASIN CODE : 17-01									
Sag Harbor &Coves	24	Suffolk	Bay	208 A	SA	Shellfishing	Severe	Pathogens	Storm Sewers
Santapogue Creek	46	Suffolk	River	2.0 mi	C	Fishing	Moderate	Unknown toxicity	Source Unknown
Shellbank Basin	70	Kings	Bay	24 A	I	Fish Propagation	Severe	Organic enrichment/DO	CSOs
Shinnecock Bay	26	Suffolk	Bay	165 A	SA	Shellfishing	Severe	Pathogens	Storm Sewers
Smith Pond	40	Nassau	Lake	20 A	C	Fishing	Moderate	Priority organics	Urban Runoff
South Oyster Bay	28	Nassau	Bay	6215 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Spring Lake	41	Suffolk	Lake	2 A	B	Fishing	Moderate	Priority organics	Urban Runoff
Three Mile Harbor	29	Suffolk	Bay	355 A	SA	Shellfishing	Severe	Pathogens	Storm Sewers
West Mill Pond	47	Suffolk	Lake	20 A	D	Fishing	Moderate	Organic enrichment/DO	Duck farm runoff
SUB-BASIN : Long Island Sound									
BASIN CODE : 17-02									
Alley Creek	57	Queens	Estuary	3.0 mi	SB	Fishing	Moderate	Aesthetics	CSOs
Bronx River	58	The Bronx	River	8.0 mi	I	Aesthetic	Moderate	Aesthetics	CSOs
Cold Spring Har.	1	Suffolk	Bay	310 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Dosoris Pond	2	Nassau	Bay	105 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
East River -Lower	60	Kings	Estuary	8.0 mi	I	Fish Propagation	Moderate	Organic enrichment/DO	CSOs
East River-Upper1	49	Queens	Estuary	5.0 mi	I	Fish Propagation	Moderate	Pathogens	CSOs
East River-Upper2	780	Queens	Estuary	2.0 mi	SB	Bathing	Moderate	Pathogens	CSOs
Eastchester Bay	61	The Bronx	Bay	3 A	SB	Bathing	Moderate	Pathogens	CSOs
Flushing Cr./Bay	62	Queens	Estuary	2.5 mi	I	Fishing	Severe	Aesthetics	CSOs
Goldsmiths Inlet	5	Suffolk	Bay	20 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Harlem River	66	New York	Estuary	5.0 mi	I	Fishing	Moderate	Aesthetics	CSOs
Hashamomuck Pond	8	Suffolk	Bay	170 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Hempstead Harbor	10	Nassau	Bay	3465 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Huntington Bay	11	Suffolk	Bay	881 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Hutchinson River	67	The Bronx	Estuary	2.5 mi	SB	Bathing	Severe	Pathogens	CSOs
Little Neck Bay	646	Queens	Bay	1600 A	SB	Bathing	Severe	Pathogens	On-site systems
Long Is.Sound (W)	12	Nassau	Bay	26650 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Long Is.Sound NYC	53	The Bronx	Bay	11960 A	SB	Shellfishing	Severe	Pathogens	CSOs
Long Island Sound	83	Westchester	Bay	15520 A	SB	Shellfishing	Severe	Pathogens	Municipal Point Source
Manhasset Bay	13	Nassau	Bay	2275 A	SA	Shellfishing	Severe	Pathogens	CSOs
Meadow Lake	699	Queens	Lake	84 A	B	Aesthetics	Severe	Nutrients	Sediment nutrients
Millers Pond	38	Suffolk	Lake	35 A	C	Fishing	Moderate	Organic enrichment/DO	Urban Runoff

Figure A-18

Atlantic Ocean - Long Island Sound Drainage Basin

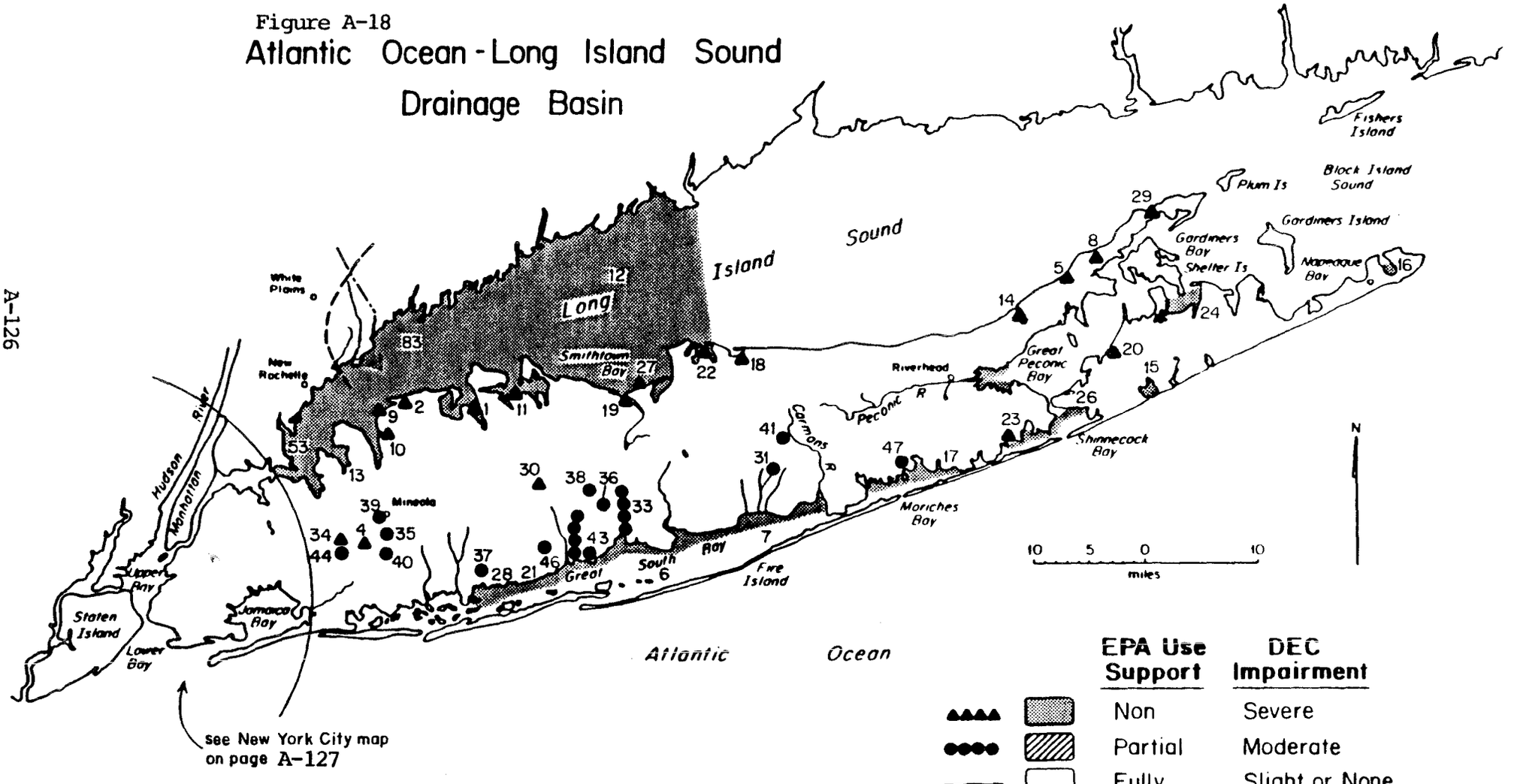
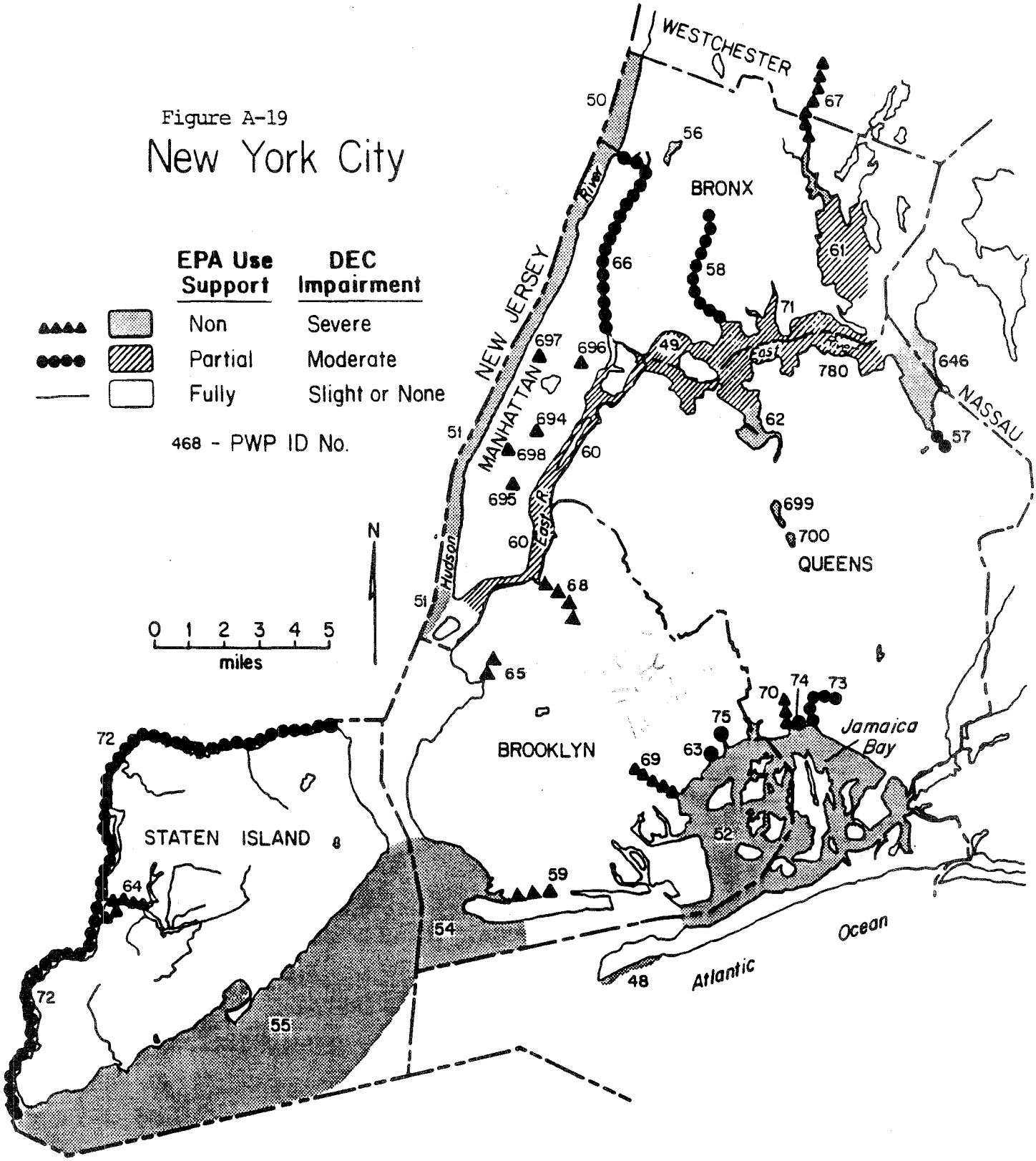


Figure A-19

New York City



REFERENCE NO. 10

BEDROCK AND ENGINEERING-GEOLOGIC MAPS OF NEW YORK COUNTY AND PARTS OF KINGS AND QUEENS COUNTIES, NEW YORK, AND PARTS OF BERGEN AND HUDSON COUNTIES

Base from U.S. Geological Survey
Brooklyn, 1966 (photorevised 1976),
Central Park, 1966 (photorevised 1979),
Jersey City, Weehawken, 1967, Yonkers, 1966
(photorevised 1979)

DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

By Charles A. Baskerville

Geology Mapped by Charles A. Baskerville
1981-1987. Assisted by J.A. Harris, 1981-1983;
Fernando Martinez, G.R. Roberts, 1981;
Fernando Martinez, R.L. Vincent 1982.

DISCUSSION

This report consists of three maps showing recent geologic mapping within the City of New York and some adjacent parts of the State of New Jersey. The mapped area includes all of New York County and parts of Kings and Queens Counties, New York, and parts of Bergen and Hudson Counties, New Jersey. Sheet 1 shows the general geology and geologic profiles; sheets 2 and 3 show specific engineering geologic data.

All available and accessible rock outcrops within the field area were examined during the course of study. Some structural measurements shown on these maps and used in geologic interpretation were taken in excavations and tunnels no longer accessible.

The informal members of the Manhattan Schist follow the usage of Hall (1968); for those of the Fordham Gneiss see Baskerville (1989). The Newark Basin rocks have been deposited unconformably on generally downfaulted Paleozoic and Late Proterozoic rocks (see Lyttle and Epstein, 1987).

These maps basically consider bedrock; detailed engineering characteristics of surficial materials in the map area are not presented in this format. A general discussion of the surficial materials will be found in the text of these maps on sheet 3.

DESCRIPTION OF MAP UNITS

Newark Basin Rocks

NOTE: The lithologic descriptions of the Newark Basin rocks follow the usage and nomenclature of Lyttle and Epstein (1987) and Puffer (1989)

Jd — Palisades Diabase (Lower Jurassic) - Dark-gray to black, fine- to coarse-grained (very fine to fine-grained near chilled borders) diabase composed largely of calcic plagioclase and augite. Shales and siltstones surrounding the diabase have been thermally metamorphosed to a purplish-red, light-gray, and dark gray, indurated, brittle, and fine-grained hornfels containing plagioclase, sericite, biotite, cordierite, epidote, chlorite, magnetite, hornblende, pyroxene, tourmaline, nepheline, cancrinite, and zeolite in a zone averaging about 610 m (2,000 ft) wide. The width of this zone depends on the thickness of the diabase, its topographic expression, and its inclination. The sill is as thick as 520 m (1,700 ft)

JTrp — Passaic Formation of Olsen (1980) (Lower Jurassic and Upper Triassic) Predominantly grayish-red to reddish-brown, evenly to irregularly bedded, thin- to thick-bedded shale; siltstone; very fine to coarse-grained sandstone; and red-matrix conglomerate. Generally coarser in the northeastern half of the basin in New Jersey. Mud cracks, ripple marks, and crossbeds are common. Dinosaur footprints, burrows, and plant impressions are present. Lies conformably on the Lockatong Formation

Trl — Lockatong Formation (Upper Triassic) - Predominantly laminated to thick-bedded, gray and black siltstone and shale; rich in fossils, including plants, reptiles, fish, and diagnostic spores and pollen. Unit composed of alternating detrital and chemical lacustrine cycles. Detrital cycles: lower part laminated, medium-dark-gray to black, calcareous, pyritic siltstone and shale overlain by platy to massive, disrupted (mud cracked and burrowed), dark-gray, calcareous siltstone; ripple-bedded siltstone; and fine-grained sandstone. More common in the lower Lockatong. Averages about 5.2 m (17.1 ft) in thickness. Chemical cycles: Lower part platy, medium-dark-gray to black, dolomitic siltstone and marlstone with shrinkage cracks and lenses of pyritic limestone, overlain by massive, gray or red, analcime-and carbonate-rich, disrupted siltstone. Average thickness about 3.2 m (10.5 ft). The contact with the underlying Stockton Formation is conformable

Trs — Stockton Formation (Upper Triassic) - Light- to medium-gray and light-yellowish-gray to pale-reddish-brown, thin- to thick-bedded, fine- to coarse-grained sandstone, arkose and arkosic conglomerate with pebbles of quartz, quartzite, feldspar, shale, limestone, and metamorphic rocks, locally more than 8 cm (3 in) long; grayish-red to moderate-reddish-brown, and light- to medium-gray siltstone and shale, bioturbated by roots and burrows; and grayish-red to reddish-brown, thin- to thick-bedded, very fine to medium-grained, arkosic sandstone, generally fining upward with abrupt lateral lithic changes. The sedimentary structures in these rocks include channels, ripple marks, mud cracks, crossbeds, pinch-and-swell structures, and minor burrows. Purplish siltstone near the middle and top. This unit has a conglomeratic basal portion resting unconformably on the Paleozoic and Late Proterozoic rocks

Paleozoic and Late Proterozoic Rocks

NOTE: The rank order of the minerals usage in these descriptions is after Winkler (1979)

AUTOCHTHONOUS UNITS

Oma — Manhattan Schist, member A - Fissile, fine- to medium-grained, gray, plagioclase-garnet-muscovite-biotite-quartz schist. This unit overlies the Inwood Marble unconformably

O€i — Inwood Marble - Composed of (1) coarse-grained white calcitic dolomite marble; (2) alternating medium-grained blue-gray, and white fine-grained calcite and dolomite marble; (3) white and blue-gray, predominantly fine-grained calcite marble with scattered dolomite and phlogopite crystals; and (4) fine-grained white dolomite marble with subordinate calcite and minor phlogopite. This unit overlies the Fordham Gneiss unconformably

Yfc — Fordham Gneiss, member C - Fine-grained, medium-gray, quartz-biotite-plagioclase-muscovite schist interlayered with gray biotite-muscovite-quartz granofels. The two units of Fordham Gneiss are in normal conformable stratigraphic contact with each other

Yfb — Fordham Gneiss, member B - Complex black and white banded gneiss. The black bands consist of quartz-plagioclase-biotite and the white bands garnet-quartz-plagioclase-muscovite-microcline. The unit contains quartz-feldspar veins; boudinage structures with almandine and grossular garnet, quartz, and biotite; and coarse siliceous dolomite

ALLOCHTHONOUS UNITS

€mc — Manhattan Schist, member C - Medium- to coarse-grained gray, layered sillimamite-muscovite-biotite-kyanite and tourmaline-garnet-plagioclase-biotite-quartz schist and gneiss with black amphibolite layers. A major thrust fault separates the Manhattan C from the underlying Manhattan A

Os — Serpentinite - Ranges in color from a very dark green through green to a light-green. The darker variety generally has magnetic properties, containing iron, chromite, actinolite, and traces of olivine. The lighter variety is generally the weathered near-surface art of the mass and contains alteration minerals such as magnesite, talc, and varieties of asbestos. The serpentinite may be massive or highly fractured. The serpentinite appears to be intrusive into and is everywhere associated with the surrounding Hartland schists. This intrusive relationship probably occurred prior to thrusting

O€h — Hartland Formation - Composed of: (1) Gray and gray-weathering, fine-grained quartz-feldspar kyanite granulite with minor biotite and garnet; (2) Fine- to course-grained, gray- to tan-weathering, quartzofeldspathic, muscovite-biotite-garnet schist; the muscovite flakes are commonly large and may give outcrops a "spangled" or shiny metallic look; some outcrops will display knotty kyanite surfaces; (3) Dark greenish-black quartz-biotite-hornblende amphibolite, weathers black or rusty along fractures. These units are interbedded with each other; the schist and granulite units often displaying magnetic properties The Hartland Formation is in conformable contact with the Ravenswood Granodiorite. Both the Hartland and Ravenswood are in thrust contact with the underlying autochthonous units and the allochthonous Manhattan C

O€r — Ravenswood Granodiorite - Gray to dark-gray sillimanite-garnet pink microcline-plagioclase biotite-muscovite-quartz and/or biotite-hornblende-orthoclase granodiorite and banded gneiss

OPEN-FILE REPORT 89-462

SHEET 1 OF 3

INTRUSIVES

am — Amphibolite - Black and dark-greenish-black, quartz-magnetite-biotite-plagioclase-hornblende amphibolite

g — Granite pegmatite or granitoid - grayish-white to white, medium- to coarse-grained, biotite-muscovite-microcline-quartz granite and megacrystic pegmatite

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Hall, L.M., 1968, Geology in the Glenville area, southwesternmost Connecticut and southeastern New York, Trip D-6, in Guidebook for field trips in Connecticut--New England Intercollegiate Geological Conference, 60th Annual Meeting, New Haven, Conn., 1968: Connecticut Geological and Natural History Survey Guidebook 2, 12 p.

Lyttle, P.T. and Epstein, J.B., 1987, Geologic map of the Newark 1° x 2° quadrangle, New Jersey, Pennsylvania, and New York: Geological Survey Miscellaneous Investigations map I-1715, scale 1:250,000, 2 sheets.

Olsen, P.E., 1980, The latest Triassic and Early Jurassic Formations of the Newark Basin (eastern North America, Newark Supergroup)--Stratigraphy, structure and correlation: New Jersey Academy of Science, The Bulletin, v. 25, p. 25-51.

Puffer, J.H., 1989, Geology of Northeastern New Jersey: in Geology and Engineering Geology of the New York Metropolitan Area, Baskerville, C.A., ed. Field Trip Guidebook T361, 28th International Geological Congress, July 20-25, 1989, American Geophysical Union, Wash., D.C., p. 26-39.

Winkler, H.G.F., 1979, Petrogenesis of metamorphic rocks: Springer-Verlag, 5th ed. 348 p., (See especially p. 340-344).

EXPLANATION OF MAP SYMBOLS

Contact - Dashed where approximately located; dotted where under water except solid where located under water by test borings and tunnel data; queried where uncertain underground

Fault, showing dip - Dashed where approximately located; dotted where under water; D, downthrown side, U, upthrown side - Arrows show relative horizontal movement; in section: a - movement away from observer, t - movement toward observer

Thrust fault - Sawteeth on upper plate; dotted under water

Coincident thrust faults - Cameron's Line/Inwood Hill [Hartland Formation overlies Manhattan Schist, member C separated by Cameron's Line; base of member C is Inwood Hill thrust]

Antiform - Shows trace of axial surface and direction of plunge, where known. May be overturned. Dashed where approximately located; dotted where under water

Synform - Shows trace of axial surface and direction of plunge, where known. May be overturned. Dashed where approximately located; dotted where under water

Uncertain axial trace

Strike and dip of axial surface of folds; arrow shows bearing and plunge of axis

Anticline or antiform, minor - Shows bearing of plunge

Syncline or Synform, minor - Shows bearing of plunge

Minor fold deforming earlier foliation

Strike and dip of foliation (open symbols are at tunnel level):

Inclined

Vertical

Horizontal

Strike and dip of joints:

Inclined

Vertical

Horizontal

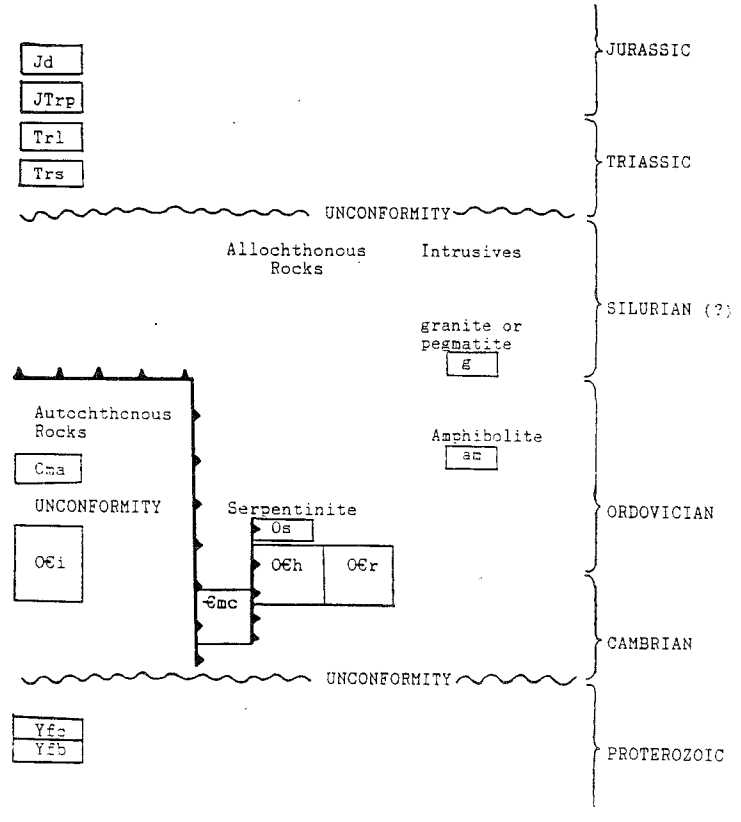
Bearing and plunge of lineation - may be combined with foliation symbol

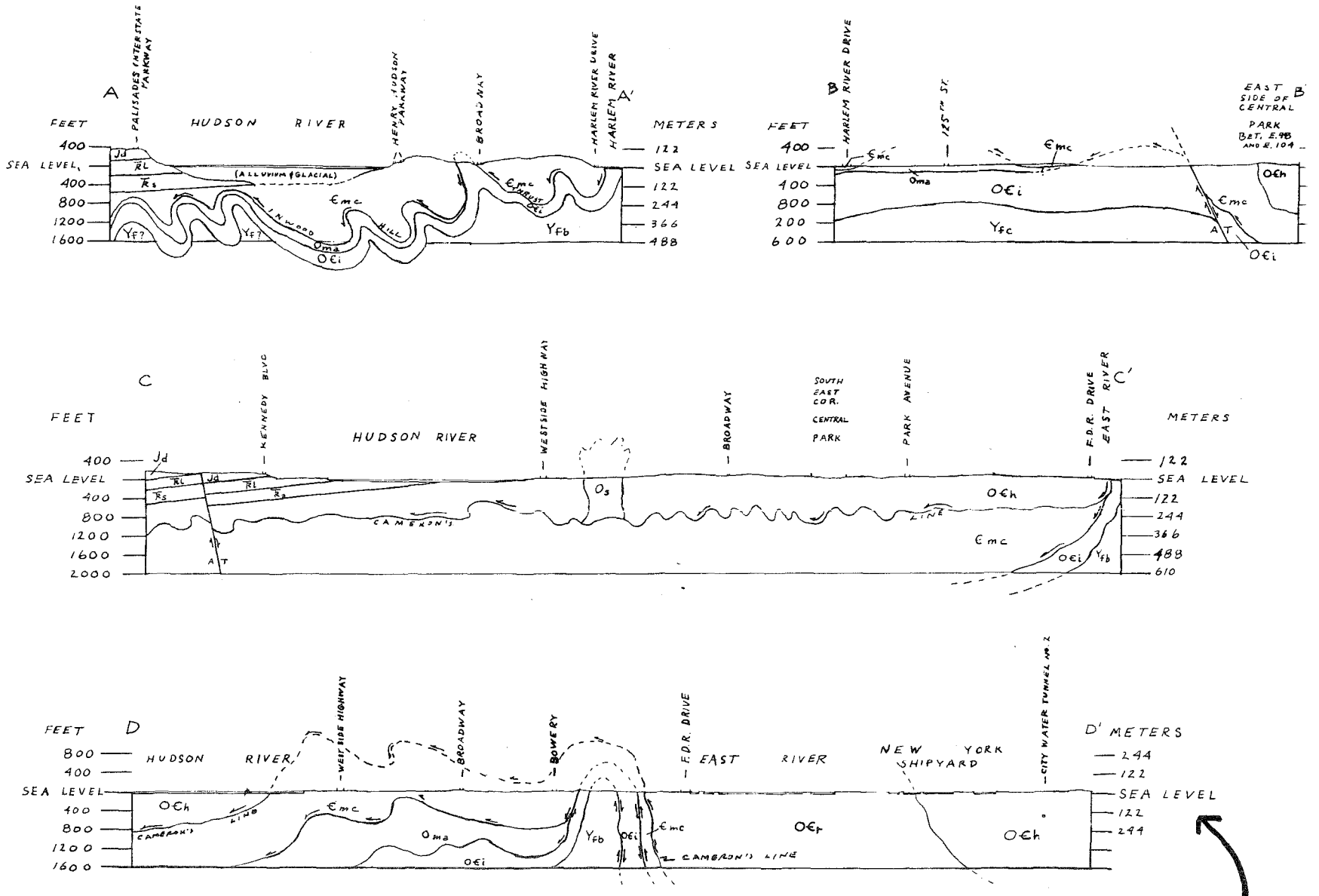
Bearing of glacial groove or striation - Point of observation at tip of arrow

Locations of borings used to define stratigraphic contact

Tunnel or other subsurface engineering structure used to locate stratigraphic contacts - Water tunnels average 168 m (550 ft) below sea level; Utility tunnels 30-60 m (200 ft) below sea level. Contacts at tunnel level are projected up dip to the surface

CORRELATION OF MAP UNITS





Closest to site

REFERENCE NO. 11

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Vidan Auto Salvage file DATE: June 30, 1991

FROM: Susan S Hodgiss COPIES:

SUBJECT: Vidan Auto Salvage - ~~Approx~~ Calculation of size of property

REFERENCE: Tax Map from U.S. Marshalls Office

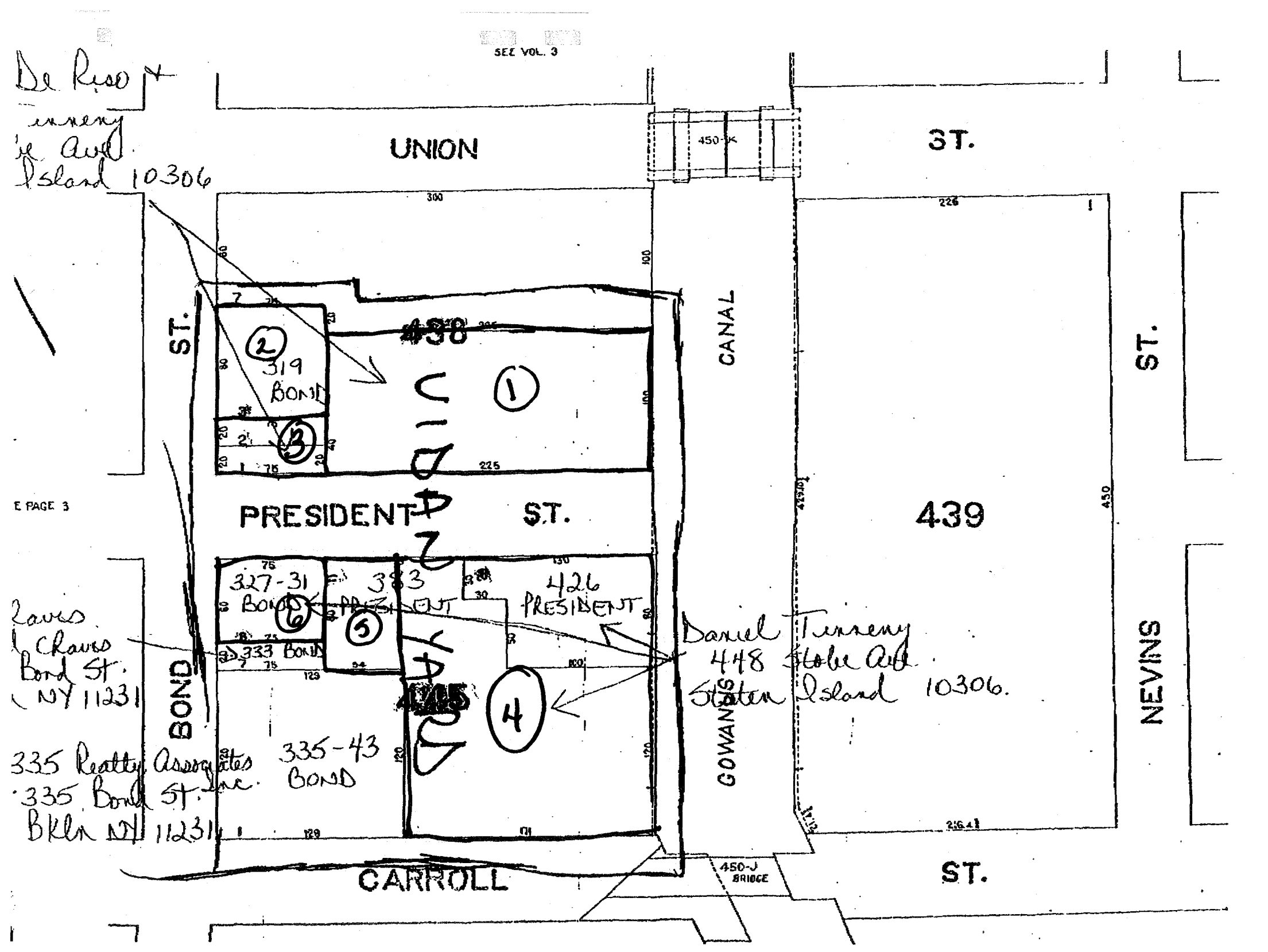
The approximate size of the site was determined from measurements obtained off the local tax Map (attached) and are as follows:

Area	Size
1	22,000 ft^2
2	6,000 ft^2
3	3,000 ft^2
4	34,200 ft^2
5	4,320 ft^2
6	4,500 ft^2
total =	74,520 f^2 =

1 acre = 43,560 ft

total 1.71 acres

Susan S Hodgiss 7/1/91


SEE VOL. 3
De Riso +
Tinneny
Ave
Island 10306
UNION
ST.
450-K
300
226
438
CANAL
ST.
319
BOND
1
2
3
225
PRESIDENT
ST.
439
450
E PAGE 3
327-31
BOND
6
383
PRESIDENT
5
426
PRESIDENT
333 BOND
Daniel Tinneny
448 Stobe Ave
Staten Island 10306.
Chavis
Chavis
Bond St.
NY 11231
BOND
4
GOWANUS
NEVINS
335 Realty Associates Inc.
335 Bond St.
Bkln NY 11231
335-43
BOND
CARROLL
450-J
BRIDGE
ST.

REFERENCE NO. 12

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01	6/12/91	1015

DISTRIBUTION: ~~VIDAN~~ AUTO SALVAGE

p 1 of 3

BETWEEN:	OF:	PHONE:
RICH VIETZ, CRIMINAL INVESTIGATOR	U.S. MARSHALL'S OFFICE	(718) 330 7118

AND: P.D. HASTINGS (NUS)

DISCUSSION:

MR. VIETZ DESCRIBED EVENTS SURROUNDING THE VIDAN AUTO SALVAGE SITE. Apparently the U.S. Attorney's Office had requested through the Regional Administrator that the EPA become involved in this site. U.S. Marshalls had seized the junkyard approximately 3 months ago related to the operation of ~~a~~ stolen car activities.

The property is owned by Daniel TINNENY according to the deed. It is located at Bond St. and President St in Brooklyn. The site is approximately 1 by 1 1/2 blocks in size and includes what was previously President St. It is also bounded by the Gowanis Canal and Carroll and Union Sts. A Title search has revealed that several block & lot numbers are associated with the site including Block 438, lot 3; block 444, lot 39; block 445, lot 8; block 445, lot 11; and block 445, lot 20. Mr. Vietz did not have an estimate of the number of acres. He described the site as a "standard junkyard" without any unusual activities, other than the stolen car operation, associated with it.

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01	6/12/91	1015

DISTRIBUTION: V. DAN AUTO SALVAGE p 2 of 3

BETWEEN:	OF:	PHONE:
R. Vietz	U.S. Marshall's	( )

AND: P. Hastings (NUS)

DISCUSSION:

Ms Vietz indicated that the junkyard does not have any indication of hazardous materials or related incidents associated with the site. Originally, the DEP (of New York City) was requested to take samples at the site as there was a great deal of ponded oil throughout. It is speculated that this is the result of cutting engines with resulting transmission fluids, oils draining directly onto the ground unrestrained. Ms Vietz said that they received a letter from the DEP stating that post sampling had not indicated that the "ground was combustible" and immediate involvement of the DEP was not necessary. The DEP contact is Enzo CATANZARO 212 669-2254

ACTION ITEMS:

Ms Cox (supervisor) 212 669-8930.

Ms. Vietz also stated that the property was seized approximately 3 months ago and must be returned shortly to the owner. An agreement had been made whereby ~~the property~~ the an auction of goods left at the junkyard would be held

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01	6/18/91	1015

DISTRIBUTION: Widow Auto Salvage — p3 of 3

BETWEEN:	OF:	PHONE:
Rich Vietz	US Marshall's Office	(718) 330 7118

AND: [illegible] (NUS)

DISCUSSION:

- with profits to go to the government. The auction is scheduled for June 18, 19 & 20. Ms. Vietz speculates that people will be picking up their goods throughout the following week. I asked to schedule the reconnaissance for a time other than when the public would be present. Specifically, we targetted June 17 or 21, 1991 for a date. I.T. is to call & confirm a date one decided. I gave Ms. Vietz Susan Hodgkiss' name as a contact from I.T.

Finally, Ms Vietz said that an extension of the property seizure may be granted. But Paul Weinstein would have more details on this matter.

ACTION ITEMS:

REFERENCE NO. 13

New York State Atlas of Community Water System Sources 1982

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

The majority of New York City residents receive their drinking water from the New York City Aqueduct System. Only a portion of the borough of Queens is supplied by a separate groundwater system, the Jamaica Water Supply.

The New York City Aqueduct System consists of the Croton, Delaware, and Catskill branches. It is supplied by reservoirs and lakes in Westchester, Putnam, Ulster, Schoharie, Delaware, and Sullivan Counties. The reservoirs and lakes supplying the respective aqueduct branches are designated in those counties.

CROTON SYSTEM - The Croton supply is the oldest system which has a safe yield of about 240 MGD*. The Croton System embodies 12 reservoirs and 4 controlled lakes, situated in Westchester and Putnam Counties, which impound about 95 billion gallons of water from 375 square miles of the Croton River drainage area. The principal structures in the present Croton System are the New Croton Dam and the New Croton Aqueduct which supplemented the Old Croton Aqueduct now out of service. Croton water is delivered via the New Croton Aqueduct to the Jerome Park Reservoir in the Bronx and then via aqueduct and conduits to the Central Park Reservoir in Manhattan. The delivery capacity of the Aqueduct from the New Croton Reservoir to the Jerome Park Reservoir is 275 MGD.

CATSKILL SYSTEM - The Catskill supply is the second major system which has a safe yield of about 470 MGD. Its principal structures are the Schoharie, Ashokan, Kensico, and Hill View Reservoirs.

The Ashokan Reservoir impounds 128 billion gallons of available storage, at Elevation 590 in the West Basin and at Elevation 587 in the East Basin, from 257 square miles of drainge area in the Catskill Mountains west of Kingston. The Ashokan Reservoir feeds directly into the Catskill Aqueduct.

The Schoharie Reservoir, placed in service in 1924, impounds 19.6 billion gallons of available storage, at Elevation 1130, from 314 square miles of drainage area.

The Catskill Aqueduct is 92 miles long overall, extending 75 miles from the Ashokan Reservoir to the upstream influent chamber of the Kensico Reservoir, with a 2-mile bypass, then continuing 15 miles from the Kensico Reservoir effluent chamber to the Hill View Distributing Reservoir in Yonkers.

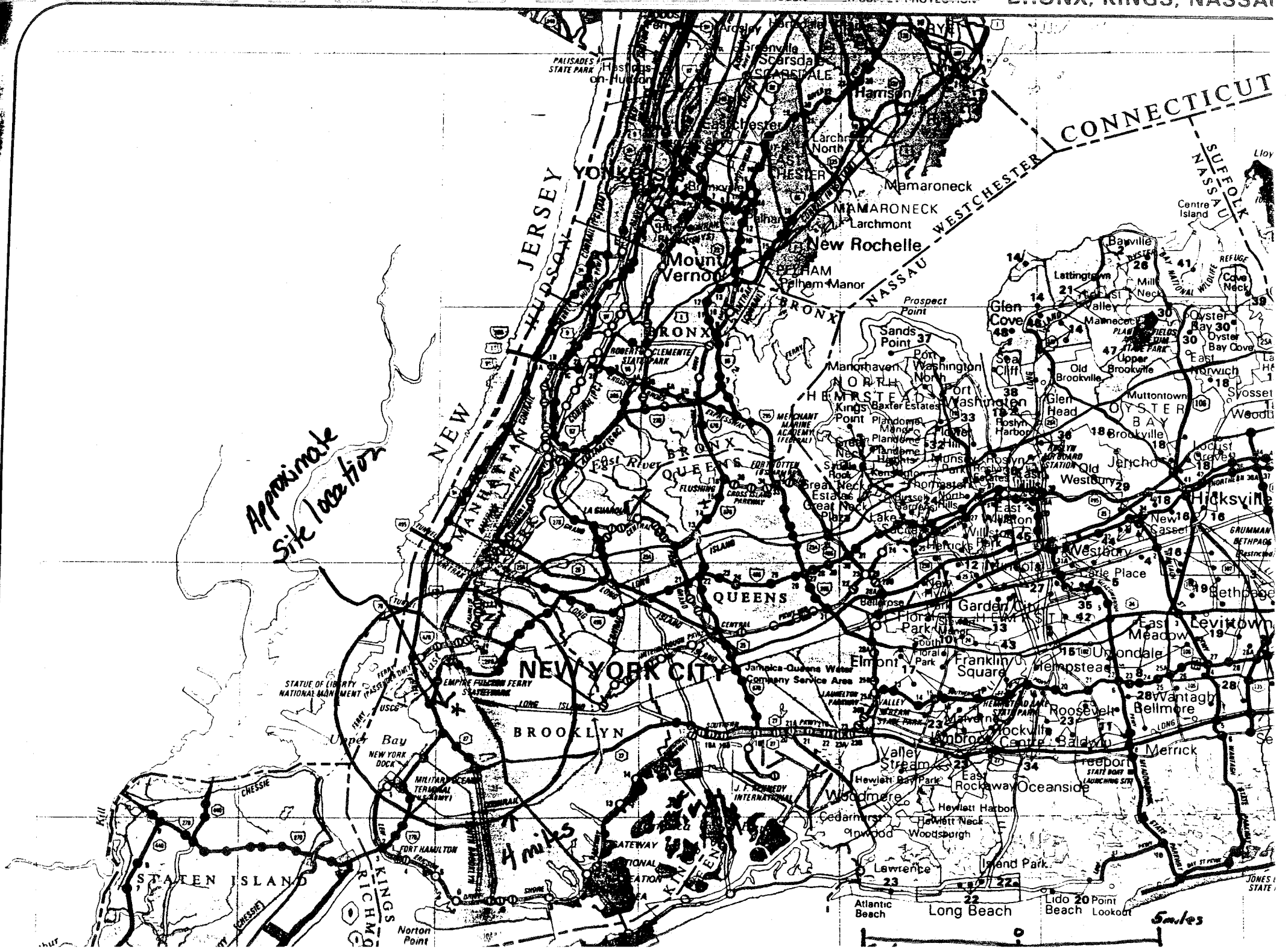
The Kensico Reservoir was originally constructed as an equalizing basin on the Catskill Aqueduct. The reservoir, having a safe yield of 5 MGD from its own drainage area, is formed by the Kensico Dam.

DELAWARE SYSTEM - The Delaware supply is the latest system which has a safe yield of about 580 MGD. The supply from the Delaware watershed, which is stored in the Neversink, Pepacton, and Cannonsville Reservoirs, has a safe yield of about 480 MGD. The Rondout Reservoir, serving as a collecting reservoir for these three reservoirs, has a safe yield of about 100 MGD from its own drainage area of 95 square miles which is part of the Hudson watershed. This reservoir impounds 50 billion gallons of available storage at the flow line, Elevation 840.

The Delaware Aqueduct is a pressure tunnel deep in bed rock for its entire length of 85 miles.

JAMAICA WATER SUPPLY - The Jamaica-Queens Water Company serves the Jamaica section of the borough of Queens. This system utilizes 76 wells located in 46 separate well fields. A map depicting the Jamaica-Queens service area is included on Page 77.

* Millions of Gallons per Day


CONNECTICUT
WESTCHESTER
NASSAU
SUFFOLK
JERSEY
NEW YORK
HUDSON
BRONX
QUEENS
NEW YORK CITY
BROOKLYN
STATEN ISLAND
KINGS
RICHMOND
Approximate Site location
3 miles
5 miles
Yonkers
Mount Vernon
New Rochelle
Mamaroneck
Harrison
Scarsdale
Hastings-on-Hudson
Glen Cove
Oyster Bay
Hicksville
Jericho
Levittown
Bethpage
Garden City
Elmont
Valley Stream
Long Beach
Lido Beach
Point Lookout
Atlantic Beach
Island Park
Lawrence
Woodmere
Cedarhurst
Inwood
Hewlett
Rockville Centre
Freeport
Merrick
Bellmore
Wantagh
Seaford
Massapequa
Norton Point
Upper Bay
Jamaica-Queens Water Company Service Area
Franklin Square
Roosevelt
Uniondale
Westbury
Old Westbury
Roslyn
Port Washington
Manhasset
Great Neck
Flushing
Whitestone
Bayville
Centre Island
Lattingtown
Locust Grove
Muttontown
Brookville
Glen Head
Sea Cliff
Old Brookville
Upper Brookville
Oyster Bay Cove
East Norwich
Syosset
Woodbury
Plainview
Old Bethpage
Farmingdale
Amityville
Babylon
Lindenhurst
Copiague
Baldwin
East Rockaway
Oceanside
Hewlett Bay Park
Hewlett Harbor
Hewlett Neck
Woodsburgh
Valley Stream
Floral Park
Bellerose
Queens Village
Jamaica
Kew Gardens
Forest Hills
Rego Park
Corona
Astoria
Long Island City
Sunnyside
Woodside
Maspeth
Ridgewood
Glendale
Middle Village
Ozone Park
Howard Beach
Jamaica Bay
Rockaway Peninsula
Rockaway Beach
Far Rockaway
Arverne
Edgemere
Breezy Point
Belle Harbor
Neponsit
Roxbury
Dix Hills
Huntington
Northport
Centerport
Greenlawn
Commack
Smithtown
Kings Park
Nissequogue
St. James
Stony Brook
Port Jefferson
Setauket
Miller Place
Mount Sinai
Rocky Point
Shoreham
Wading River
Riverhead
Calverton
Manorville
Eastport
Quogue
Westhampton
Hampton Bays
Southampton
Bridgehampton
Sag Harbor
East Hampton
Amagansett
Montauk
Greenport
Orient
Cutchogue
Mattituck
Southold
Peconic
Shelter Island
Fishers Island
Orient Point
Plum Island
Gardiners Island
Gardiners Bay
Peconic Bay
Shinnecock Bay
Moriches Bay
Great South Bay
Fire Island
Fire Island National Seashore
Fire Island Lighthouse
Robert Moses State Park
Jones Beach State Park
Hempstead Lake State Park
Valley Stream State Park
Caumsett State Park
Sunken Meadow State Park
Nissequogue River State Park
Connetquot River State Park
Belmont Lake State Park
Heckscher State Park
Cedar Beach
Wildwood State Park
Hallock State Park
Orient Beach State Park
Indian Island County Park
Cedar Point County Park
Meschutt Beach County Park
Robert Moses Causeway
Ocean Parkway
Southern State Parkway
Northern State Parkway
Long Island Expressway
Grand Central Parkway
Belt Parkway
Cross Island Parkway
Van Wyck Expressway
Whitestone Expressway
Throgs Neck Bridge
Bronx-Whitestone Bridge
Triborough Bridge
Robert F. Kennedy Bridge
Verrazano-Narrows Bridge
Henry Hudson Bridge
George Washington Bridge
Lincoln Tunnel
Holland Tunnel
Queens Midtown Tunnel
Brooklyn-Battery Tunnel
Hutchinson River Parkway
Saw Mill River Parkway
Taconic State Parkway
Merritt Parkway
Wilbur Cross Parkway
Connecticut Turnpike
New England Thruway
New York Thruway
Garden State Parkway
New Jersey Turnpike
Palisades Interstate Parkway
Palisades State Park
Tappan Zee Bridge
Newburgh-Beacon Bridge
Bear Mountain Bridge
Harriman State Park
Bear Mountain State Park
Hook Mountain State Park
Nyack Beach State Park
Tallman Mountain State Park
Rockland Lake State Park
Clarkstown State Park
Kakiat County Park
Blauvelt State Park
Hook Mountain
Nyack
Piermont
Grandview
Nanuet
New City
Spring Valley
Suffern
Monsey
Pomona
Stony Point
Haverstraw
Tomkins Cove
Sloatsburg
Ramapo
Mahwah
Oakland
Wyckoff
Franklin Lakes
Ringwood
Wanaque
Pompton Lakes
Pompton Plains
Riverdale
Yonkers
Tuckahoe
Eastchester
Pelham
Pelham Manor
Larchmont
Mamaroneck
Port Chester
Rye
Rye Neck
Harrison
Scarsdale
Greenville
Ardsley
Irvington
Dobbs Ferry
Hastings-on-Hudson
Glenwood Landing
Roslyn Harbor
Roslyn Heights
Roslyn Estates
Roslyn Park
Roslyn Country Club
Roslyn Water District
Roslyn Sewer District
Roslyn Fire Department
Roslyn Police Department
Roslyn Public Library
Roslyn Cemetery
Roslyn Golf Course
Roslyn Tennis Club
Roslyn Swimming Pool
Roslyn Yacht Club
Roslyn Boat Club
Roslyn Rowing Club
Roslyn Sailing Club
Roslyn Water Ski Club
Roslyn Ski Club
Roslyn Skating Club
Roslyn Hockey Club
Roslyn Soccer Club
Roslyn Baseball Club
Roslyn Basketball Club
Roslyn Football Club
Roslyn Lacrosse Club
Roslyn Volleyball Club
Roslyn Tennis Club
Roslyn Golf Club
Roslyn Country Club
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Roslyn Soccer Club
Roslyn Baseball Club
Roslyn Basketball Club
Roslyn Football Club
Roslyn Lacrosse Club
Roslyn Volleyball Club

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
1	Albertson Water District.	13500. . .	Wells
2	Bayville Village.	.7500. . .	Wells
3	Bethpage Water District.	.32000. . .	Wells
4	Bowling Green Water District. . . .	12000. . .	Wells
5	Carle Place Water District.	11000. . .	Wells
6	Citizens Water Supply Company. . . .	.30000. . .	Wells
7	Deforest Drive Association.	. .25. . .	Wells
8	East Meadow Water District.	52000. . .	Wells
9	Farmingdale Village.	7946. . .	Wells
10	Franklin Square Water District. . .	20000. . .	Wells
11	Freeport Village.	38272. . .	Wells
12	Garden City Park Water District. . .	.22596. . .	Wells
13	Garden City Village.	.22927. . .	Wells
14	Glen Cove City.	24618. . .	Wells
15	Hempstead Village.	.40404. . .	Wells
16	Hicksville Water District.	.58000	Wells
17	Jamaica Water Supply Company. . . .	.128448. . .	Wells
18	Jericho Water District.	64000. . .	Wells
19	Levittown Water District.	50000. . .	Wells
20	Lido-Point Lookout Water District. .	.10000. . .	Wells
21	Locust Valley Water District. . . .	.8500. . .	Wells
22	Long Beach City.	.34073. . .	Wells
23	Long Island Water Corporation. . .	258936. . .	Wells
24	Manhasset-Lakeville Water District.	44730. . .	Wells
25	Massapequa Water District.	.52000. . .	Wells
26	Mill Neck Estates Water Supply. . . .	240. . .	Wells
27	Mineola Village.	.20600. . .	Wells
28	New York Water Service.	.172180. . .	Wells
29	Old Westbury Village.	.3100. . .	Wells
30	Oyster Bay Water District.	.10225. . .	Wells
31	Plainview Water District.	40000. . .	Wells
32	Plandome Village.	.2616. . .	Wells
33	Port Washington Water District. . .	35000. . .	Wells
34	Rockville Centre Village.	25405. . .	Wells
35	Roosevelt Field Water District. . .	.1640. . .	Wells
36	Roslyn Water District.	.27500. . .	Wells
37	Sands Point Village.	3002. . .	Wells
38	Sea Cliff Water Company.	.17850. . .	Wells
39	Sel-Bra Acres Water Supply.	. .80. . .	Wells
40	South Farmingdale Water District. .	49900. . .	Wells
41	Split Rock Water Supply.	. 25. . .	Wells
42	Uniondale Water District.	25000. . .	Wells
43	West Hempstead-Hempstead Garden Water District.	32000. . .	Wells
44	Westbury Water District.	.20050. . .	Wells
45	Williston Park Village.	.8216. . .	Wells
Non-Municipal Community			
46	Community Hospital at Glen Cove. . .	1350. . .	Wells
47	Planting Fields Arboretum.	90. . .	Wells
48	Stuart, Walker, Zimmer Water Supply. .	41. . .	Wells

REFERENCE NO. 14

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
	5/12/88	1100

DISTRIBUTION: Charles Mudt + Sons file

BETWEEN:	OF:	PHONE:
Javiver Delvio	engineer for ~~Delr~~ Jersey City	(201) 547-4456

AND: Brian Pedersen — NUS Corp.

DISCUSSION:

I called to find the source of water used by the city of Jersey City. Mr. Delvio said that Jersey City gets its water supply from the Boonton and Split Rock Reserviors located in Morris County.

Jersey City has no water supply wells ~~to his knowledge~~. BP

or any other wells to his knowledge.

There are no water supply ~~wells~~ intakes in Jersey City.

ACTION ITEMS:

REFERENCE NO. 15

Surface Water Quality Standards

SURFACE WATER QUALITY STANDARDS

N.J.A.C. 7:9-4.1 et seq.

May 1985

New Jersey Department Of Environmental Protection/Division of Water Resources

once-through basis for the duration of the test, in accordance with N.J.A.C. 7:18.

"Fresh water(s)" means all nontidal and tidal waters generally having a salinity, due to natural sources, of less than or equal to 3.5 parts per thousand at mean high tide.

"FW" means the general surface water classification applied to fresh waters.

"FW1" means those fresh waters that originate in and are wholly within Federal or State parks, forests, fish and wildlife lands, and other special holdings, that are to be maintained in their natural state of quality (set aside for posterity) and not subjected to any man-made wastewater discharges, as designated in Index A incorporated into this subchapter.

* "FW2" means the general surface water classification applied to those fresh waters that are not designated as FW1 or Pinelands Waters.

"Heat dissipation area" means a mixing zone, as may be designated by the Department, into which thermal effluents may be discharged for the purpose of mixing, dispersing, or dissipating such effluents without creating nuisances, hazardous conditions, or violating the provisions of this subchapter.

"Hypolimnion" means the lower region of a stratified waterbody that extends from the thermocline to the bottom of the waterbody, and is isolated from circulation with the upper waters, thereby receiving little or no oxygen from the atmosphere.

"Important species" means species that are commercially valuable (e.g., within the top ten species landed, by dollar value); recreationally valuable; threatened or endangered; critical to the organization and/or maintenance of the ecosystem; or other species necessary in the food web for the well-being of the species identified in this definition.

"Industrial water supply" means water used for processing or cooling.

"Intermittent stream" means a stream with a MA7CD10 flow of less than one-tenth (0.1) cubic foot per second.

"Lake, pond, or reservoir" means any impoundment, whether naturally occurring or created in whole or in part by the building of structures for the retention of surface water, excluding sedimentation control and stormwater retention/detention basins.

"LC50" means the median lethal concentration of a toxic substance, expressed as a statistical estimate of the concentration that kills 50 percent of the test organisms under

specified test conditions, based on the results of an acute bioassay.

"Limiting nutrient" means a nutrient whose absence or scarcity exerts a restraining influence upon an aquatic biological population.

"MA7CD10" means the minimum average 7 consecutive day flow with a statistical recurrence interval of 10 years.

"Measurable changes" means changes measured or determined by a biological, chemical, physical analytical method, conducted in accordance with USEPA approved methods as identified in 40 C.F.R. 136 or other analytical methods (for example, mathematical models, ecological indices, etc.) approved by the Department, that might adversely impact a water use (including, but not limited to aesthetics).

"Mixing zones" means localized areas of surface waters, as may be designated by the Department, into which wastewater effluents may be discharged for the purpose of mixing, dispersing, or dissipating such effluents without creating nuisances or hazardous conditions, or violating the provisions of this subchapter.

"Natural flow" means the water flow that would exist in a waterway without the addition of flow of artificial origin.

"Natural water quality" means the water quality that would exist in a waterway or a waterbody without the addition of water or waterborne substances from artificial origin.

"NJPDES" means New Jersey Pollutant Discharge Elimination System.

"NOEC" means the "no observable effect concentration", which is the highest concentration of a toxic substance that has no adverse effect(s) on survival, growth, or reproduction of species based upon the results of chronic toxicity testing.

"Nondegradation waters" means those waters set aside for posterity because of their clarity, color, scenic setting, other characteristic of aesthetic value, unique ecological significance, exceptional recreational significance, or exceptional water supply significance. These waters include all waters designated as FW1 in this subchapter.

"Nonpersistent" means degrading relatively quickly, generally having a half-life of less than 96 hours.

* "Nontrout waters" means fresh waters that have not been designated in this subchapter as trout production or trout maintenance. These waters are generally not suitable for trout because of their physical, chemical, or biological

characteristics, but are suitable for a wide variety of other fish species.

"NPDES" means National Pollutant Discharge Elimination System.

"NT" means nontrout waters.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the growth and development of organisms.

"Outstanding National Resource Waters" means high quality waters that constitute an outstanding national resource (for example, waters of National/State Parks and Wildlife Refuges and waters of exceptional recreational or ecological significance) as designated in Index G incorporated into this subchapter.

"Persistent" means relatively resistant to degradation, generally having a half life of over 96 hours.

"Pinelands waters" means all waters within the boundaries of the Pineland Area, except those waters designated as FW1 in this subchapter, as established in the Pinelands Protection Act N.J.S.A. 13:18A-1 et seq. and shown on Plate 1 of the "Comprehensive Management Plan" adopted by the New Jersey Pinelands Commission in November 1980.

"PL" means the general surface water classification applied to Pinelands Waters.

"Primary contact recreation" means recreational activities that involve significant ingestion risks and includes, but is not limited to, wading, swimming, diving, surfing, and water skiing.

"Public hearing" means a legislative type hearing before a representative or representatives of the Department providing the opportunity for public comment, but does not include cross-examination.

"River mile" means the distance, measured in statute miles, between two locations on a stream, with the first location designated as mile zero. Mile zero for the Delaware River is located at the intersection of the centerline of the navigation channel and a line between the Cape May Light, New Jersey, and the tip of Cape Henlopen, Delaware.

"Saline waters" means waters having salinities generally greater than 3.5 parts per thousand at mean high tide.

"SC" means the general surface water classification applied to coastal saline waters.

"SE" means the general surface water classification applied to saline waters of estuaries.

"Secondary contact recreation" means recreational activities where the probability of water ingestion is minimal and includes, but is not limited to, boating and fishing.

"Shellfish" means those mollusks commonly known as clams, oysters, or mussels.

"Shellfish waters" means waters classified as Approved, Seasonally Approved, Special Restricted, Seasonally Special Restricted or Condemned that support or possess the potential to support shellfish which are within the Coastal Area Facility Review Act (C.A.F.R.A.) zone as delineated in 1973, (excluding: 1 - The Cohansey River upstream of Brown's Run; 2 - The Maurice River upstream of Route 548; 3 - The Great Egg Harbor River upstream of Powell Creek; 4 - The Tuckahoe River upstream of Route 50; 5 - The Mullica River upstream of the Garden State Parkway) plus the adjacent areas between Route 35 (from its juncture with the C.A.F.R.A. zone just north of Red Bank to its juncture with the C.A.F.R.A. zone just south of Keyport) and the C.A.F.R.A. zone and the area from the C.A.F.R.A. zone on the south northwesterly along Route 35 to the northern shore of the Raritan River, then easterly along the northern shore of the Raritan River to the southeast point of Perth Amboy, the due east to the New Jersey jurisdictional limit, and seaward along the jurisdictional limit to the Atlantic Ocean.

"Stream temperature" means the temperature of a stream outside of a designated heat dissipation area.

"Surface water classifications" means names assigned by the Department in this subchapter to waters having the same designated uses and water quality criteria (e.g. FW1, PL, FW2-NT, SE1, SC, Zone 1C).

"Thermal alterations" means the increase or decrease in the temperature of surface waters, above or below the natural, that may be caused by the activities of man.

"Thermocline" means the plane of maximum rate of change in temperature with respect to depth.

"Tidal waters" means fresh or saline water under tidal influence, up to the head of tide.

"TM" means trout maintenance.

"TP" means trout production.

"Total residual chlorine" means the sum of the free and combined chlorine fractions that can be detected by methods approved under N.J.A.C. 7:18.

"Toxic substances" means those substances, or combination of substances, which upon exposure, ingestion, inhalation or

propagation of fish, shellfish, and wildlife, and recreation in and on the water, which are not included in the designated uses listed in this subchapter are attainable.

(f) A reclassification for more restrictive uses may be made when:

1. It is demonstrated to the satisfaction of the Department that the waters should be set aside to represent the natural aquatic environment and its associated biota; or

2. It is demonstrated to the satisfaction of the Department that a more restrictive use is necessary to protect a unique ecological system or threatened/endangered species.

(g) In those cases in which a thermal discharge is involved, the procedures for reclassifying segments for more restrictive uses shall be consistent with section 316 of the Federal Clean Water Act.

*7:9-4.12 Designated uses of FW1, PL, FW2, SE1, SE2, SE3, and SC Waters

(a) In all FW1 waters the designated uses are:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established aquatic biota; and

4. Any other reasonable uses.

(b) In all PL waters the designated uses are:

1. Cranberry bog water supply and other agricultural uses;

2. Maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system;

3. Public potable water supply after such treatment as required by law or regulations;

4. Primary and secondary contact recreation; and

5. Any other reasonable uses.

*(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

*(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

*(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

Index D-
Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

July 1985

State of New Jersey Department of Environmental Protection/Division of Water Resources

INDEX D - Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

ARTHUR KILL	
(Perth Amboy) - The Kill and its saline New Jersey tributaries between the Outerbridge Crossing and a line connecting Ferry Pt., Perth Amboy to Wards Pt., Staten Island, N.Y.	SE2
(Elizabeth) - From an east-west line connecting Elizabethport with Bergen Pt., Bayonne to the Outerbridge Crossing	SE3
(Woodbridge) - All freshwater tributaries	FW2-NT
BEAR SWAMP BROOK (Mahwah) - Entire length	FW2-TP(C1)
BEAR SWAMP LAKE (Ringwood)	FW2-NT(C1)
BEAVER BROOK (Meriden) - Entire length	FW2-NT
BELCHER CREEK (W. Milford) - Entire length	FW2-NT
BERRYS CREEK (Secaucus) - Entire length	FW2-NT/SE2
BLACK BROOK	
(Meyersville) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment and tributaries within the Great Swamp National Wildlife Refuge	FW2-NT(C1)
BLUE MINE BROOK	
(Wanaque) - Entire length, except segment described below	FW2-TM
(Norvin Green State Forest) - That portion of the stream and any tributaries within Norvin Green State Forest	FW2-TM(C1)
BRUSHWOOD POND (Ringwood)	FW2-NT(C1)
BUCKABEAR POND (Newfoundland) - Pond, its tributaries and connecting stream to Clinton Reservoir	FW2-NT(C1)
CANISTEAR RESERVOIR (Vernon)	FW2-TM
CANISTEAR RESERVOIR TRIBUTARY (Vernon) - The southern branch of the eastern tributary to the Reservoir	FW1
CANOE BROOK (Chatham) - Entire length	FW2-NT
CEDAR POND (Clinton) - Pond and all tributaries	FW1
CHARLOTTEBURG RESERVOIR (Charlotteburg)	FW2-TM
CHERRY RIDGE BROOK	
(Vernon) - Entire length, except segments described below	FW2-NT
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of Wawayanda State Park and the Newark Watershed lands	FW1
CLINTON BROOK	
(Mossmans Brook) (W. Milford) - Source to, but not including, Clinton Reservoir	FW2-NT(C1)
(Newfoundland) - Clinton Reservoir dam to Pequannock River	FW2-TP(C1)
CLINTON RESERVOIR (W. Milford)	FW2-TM(C1)
CLOVE BROOK - See STAG BROOK	

COOLEY BROOK	
(W. Milford) - Entire length, except segments described below	FW2-TP(C1)
(Hewitt) - Segments of the brook and all tributaries located entirely within Hewitt State Forest	FW1 [tp]
CORYS BROOK (Warren) - Entire length	FW2-NT
CRESSKILL BROOK	
(Alpine) - Source to Duck Pond Rd. bridge, Demarest	FW2-TP(C1)
(Demarest) - Duck Pond Rd. bridge to Tenakill Brook	FW2-NT
CUPSAW BROOK	
(Skylands) - Source to Cupsaw Lake dam, except segment described below	FW2-NT
(Skylands) - That segment of Cupsaw Brook above the dam and within the boundaries of Ringwood State Park	FW2-NT(C1)
(Skylands) - Cupsaw Lake dam to mouth	FW2-TM
DEAD RIVER (Liberty Corners) - Entire length	FW2-NT
DEN BROOK (Denville) - Entire length	FW2-NT
DUCK POND (Ringwood)	FW2-NT(C1)
ELIZABETH RIVER	
(Elizabeth) - Source to Broad St. bridge, Elizabeth and all freshwater tributaries	FW2-NT
(Elizabeth) - Broad St. bridge to mouth	SE3
FOX BROOK (Mahwah) - Entire length	FW2-NT
GLASMERE POND (Ringwood)	FW2-NT(C1)
GOFFLE BROOK (Hawthorne) - Entire length	FW2-NT
GRANNIS BROOK (Morris Plains) - Entire length	FW2-NT
GREAT BROOK	
(Chatham) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment within the boundaries of the Great Swamp National Wildlife Refuge	FW2-NT(C1)
GREEN BROOK	
(W. Milford) - Entire length, except those segments described below	FW2-TP(C1)
(Hewitt) - Those segments located entirely within the Hewitt State Forest boundaries	FW1 [tp]
GREEN POND (Rockaway)	FW2-TM
GREEN POND BROOK (Picatinny Arsenal) - Green Pond outlet to Rockaway River	FW2-NT
GREENWOOD LAKE (W. Milford)	FW2-TM
HACKENSACK RIVER	
(Oradell) - Source to Oradell dam	FW2-NT
(Oradell) - Main stem and saline tributaries from Oradell dam to the confluence with Overpeck Creek	SE1
(Little Ferry) - Main stem and saline tributaries from Overpeck Creek to confluence with Berrys Creek	SE2
(Secaucus) - Main stem from Berrys Creek to Route 1 & 9 crossing	SE2
(Kearny Point) - Main stem downstream from Route 1 & 9 crossing	SE3

TRIBUTARIES	
(Oradell) - Tributaries joining the main stem between Oradell dam and the confluence with Overpeck Creek	FW2-NT/SE1
(Little Ferry) - Tributaries joining the main stem downstream of Overpeck Creek	FW2-NT/SE2
HANKS POND (Clinton) - Pond and all tributaries	FW1
HARMONY BROOK (Brookside) - Entire length	FW2-TP(C1)
HARRISONS BROOK (Bernards) - Entire length	FW2-NT
HAVEMEYER BROOK (Mahwah) - Entire length	FW2-TP(C1)
HEWITT BROOK (W. Milford) - Entire length	FW2-TP(C1)
HIBERNIA BROOK	
(Hibernia) - Entire length, except tributary described separately below	FW2-TM
(Rockaway) - Entire length of tributary at Rockaway	FW2-TP(C1)
HIGH MOUNTAIN BROOK (Ringwood) - Source to, but not including, Skyline Lake	FW2-TP(C1)
HOHOKUS BROOK (Hohokus) - Entire length	FW2-NT/SE2
→ HUDSON RIVER	
(Rockleigh) - River and saline portions of New Jersey tributaries from the N.J.-N.Y. boundary line in the north to its confluence with the Harlem River, N.Y.	SE1
(Englewood Cliffs) - River and saline portions of New Jersey tributaries from the confluence with the Harlem River, N.Y. to a north-south line connecting Constable Hook (Bayonne) to St. George (Staten Island, N.Y.)	SE2
TRIBUTARIES	
(Rockleigh) - Freshwater portions of tributaries to the Hudson River in New Jersey	FW2-NT
INDIAN GROVE BROOK (Somersetin) - Entire length	FW2-TM
JACKSON BROOK	
(Mine Hill) - Source to the boundary of Hurd Park, Dover	FW2-TP(C1)
(Dover) - Hurd Park to Rockaway River	FW2-NT
JENNINGS CREEK (W. Milford) - State line to Wanaque River	FW2-TP(C1)
JERSEY CITY RESERVOIR (Boonton)	FW2-TM
KANOUSE BROOK (Newfoundland) - Entire length	FW2-TP(C1)
KIKEOUT BROOK (Butler) - Entire length	FW2-NT
→ KILL VAN KULL (Bayonne) - Westerly from a north-south line connecting Constable Hook (Bayonne) to St. George (Staten Island, N.Y.)	SE3
LAKE RICKONDA OUTLET STREAM (Monks) - That segment of the outlet stream from Lake Rickonda within Ringwood State Park	FW2-TM(C1)
LAKE STOCKHOLM BROOK	
(Stockholm) - Entire length, except tributaries described separately below	FW2-TM
(Stockholm) - Westerly tributary located entirely within the boundaries of the Newark Watershed	FW1 [tm]

(Stockholm) - Brook between Hamburg Turnpike and Williamsville-Stockholm Rd. to its confluence with Lake Stockholm Brook, north of Rt. 23	FW1 [tm]
LITTLE POND BROOK (Oakland) - Entire length	FW2-TP(C1)
LOANTAKA BROOK	
(Green Village) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Brook and all tributaries within the boundaries of Great Swamp National Wildlife Refuge	FW2-NT(C1)
LUD-DAY BROOK	
(Camp Garfield) - Source to confluence with a tributary from Camp Garfield	FW1
MACOPIN RIVER	
(Newfoundland) - Source to Echo Lake dam	FW2-NT
(Newfoundland) - Echo Lake dam to Pequannock River	FW2-TM
MEADOW BROOK (Wanaque) - Skyline Lake to Wanaque River	FW2-NT
MILL BROOK	
(Randolph) - Source to Rt. 10 bridge	FW2-TP(C1)
(Randolph) - Rt. 10 bridge to Rockaway River	FW2-NT
MORSES CREEK - Entire length	FW2-NT/SE3
MOSSMAN'S BROOK - See CLINTON BROOK	
MT. TABOR BROOK (Morris Plains) - Entire length	FW2-NT
NEWARK BAY (Newark) - North of an east-west line connecting Elizabethport with Bergen Pt., Bayonne up to the mouths of the Passaic and Hackensack Rivers	SE3
NOSENZO POND (Upper Macopin)	FW2-NT(C1)
OAK RIDGE RESERVOIR (Oak Ridge)	FW2-TM
OAK RIDGE RESERVOIR (Oak Ridge) - Northwestern tributary to Reservoir	FW1 [tm]
OVERPECK CREEK (Palisades Park) - Entire length	FW2-NT/SE2
PECKMAN RIVER (Verona) - Entire length	FW2-NT
PACACK BROOK	
(Stockholm) - Source to Pequannock River, excluding Canistear Reservoir, except segments described separately below	FW2-NT
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of the Newark Watershed	FW1
→ PASSAIC RIVER	
(Mendham) - Source to Rt. 202 bridge (Van Doren's Mill), except tributaries described separately below	FW2-TM
(Paterson) - Rt. 202 bridge to Dundee Lake dam	FW2-NT
(Little Falls) - Dundee Lake dam to confluence with Second River	FW2-NT/SE2
(Newark) - Confluence with Second River to mouth	SE3

TRIBUTARIES	
(Fairfield) - Tributaries within Great Piece Meadows	FW2-NT(C1)
PECKMAN RIVER (Verona) - Entire length	FW2-NT
PEQUANNOCK RIVER	
MAIN STEM	
(Vernon) - Source to confluence with Pacack Brook	FW1 [tp]
(Newfoundland) - Pacack Brook to Hamburg Turnpike, (Bench Mark 257) in Bloomingdale except tributaries described separately below	FW2-TM
(Riverdale) - Hamburg Turnpike bridge to Pompton River	FW2-NT
TRIBUTARIES	
(Copperas Mtn.) - Entire length	FW2-TP(C1)
(Smoke Rise) - Entire length	FW2-TP(C1)
(Green Pond Junction) - Tributary at Green Pond Junction	FW1 [tm]
(Jefferson) - Tributary joining the main stem about 3500± feet southeast of the Sussex-Passaic County line, near Jefferson	FW1 [tm]
(Lake Kampfe) - Tributary originating south and west of Torne Mtn. in Norvin Green State Forest and flowing through Lake Kampfe	FW2-TM(C1)
PILES CREEK - Entire length	SE3
POMPTON LAKE (Pompton Lakes)	FW2-NT
POMPTON RIVER (Wayne) - Entire length	FW2-NT
POND BROOK (Oakland) - Entire length	FW2-NT
POSTS BROOK	
(Bloomingdale) - Source to Wanaque Reservoir, except segment described below	FW2-TM
(Norvin Green State Forest) - That segment of the stream and all tributaries within the boundaries of Norvin Green State Forest	FW2-TM(C1)
(Haskell) - Wanaque Reservoir dam to Wanaque River	FW2-NT
PREAKNESS [SINGAC] BROOK	
(Wayne) - Source to, but not including, Barbours Pond	FW2-TP(C1)
(Barbours Pond) - Pond to Passaic River	FW2-NT
PRIMROSE BROOK	
(Harding) - Source to Rt. 202 bridge	FW2-TM
(Harding) - Rt. 202 bridge to Great Swamp National Wildlife Refuge boundary	FW2-NT
(Great Swamp) - Wildlife Refuge boundary to Great Brook	FW2-NT(C1)
RAHWAY RIVER	
SOUTH BRANCH	
(Rahway) - Source to Hazelwood Ave., Rahway	FW2-NT
(Rahway) - Hazelwood Ave. to mouth	SE2
MAIN STEM	
(Rahway) - Upstream of Pennsylvania Railroad bridge	FW2-NT

(Linden) - Penn. Railroad bridge to Route 1&9 crossing	SE2
(Carteret) - Route 1-9 crossing to mouth	SE3
RAMAPO LAKE (Ramapo) - Lake and all outlet streams and tributaries within the boundaries of Ramapo Mtn. State Forest	FW2-NT(C1)
RAMAPO RIVER (Oakland) - State line to Pompton River	FW2-NT
RINGWOOD CREEK	
(Ringwood) - Entire length, except segment described below	FW2-TM
(Sloatsburg) - Creek within Ringwood State Park	FW2-TM(C1)
RINGWOOD MILL POND (Ringwood)	FW2-NT(C1)
ROCKAWAY RIVER	
(Dover) - Source to Passaic River, excluding the Jersey City Reservoir and the segment described below	FW2-NT
(Berkshire Valley) - That segment within the boundaries of the Berkshire Valley Wildlife Management Area	FW2-NT(C1)
RUSSIA BROOK	
(Sparta) - Source to Lake Hartung dam	FW2-NT
(Milton) - Lake Hartung dam to, but not including, Lake Swannanoa	FW2-TM
SADDLE RIVER	
(Upper Saddle River) - State line to Bergen County Rt. 2 bridge	FW2-TP(C1)
(Saddle River) - Bergen County Rt. 2 bridge to Allendale Rd. bridge	FW2-TM
(Lodi) - Allendale Rd. bridge to Passaic River	FW2-NT/SE3
SAWMILL CREEK (Pompton Plains) - Entire length	FW2-NT
SHEPPARD LAKE (Ringwood)	FW2-TM(C1)
SINGAC BROOK - See PREAKNESS BROOK	
SLOUGH BROOK (Livingston) - Entire length	FW2-NT
SMITH CREEK - Entire length	FW2-NT/SE2
SPLIT ROCK RESERVOIR (Rockaway)	FW2-TM
SPLIT ROCK RESERVOIR TRIBUTARIES (Farny State Park) - Three tributaries within Farny State Park	FW2-NT(C1)
SPRING GARDEN BROOK (Florham) - Entire length	FW2-NT
STAG [CLOVE] BROOK (Mahwah) - Entire length	FW2-TP(C1)
STEPHENS BROOK	
(Roxbury) - Entire length, except segment described separately, below	FW2-NT
(Berkshire Valley) - That segment north of the boundaries of the Berkshire Valley Tract	FW1
STONE HOUSE BROOK (Kinnelon) - Entire length	FW2-NT
STONY BROOK (Boonton) - Entire length	FW2-NT
SUPRISE LAKE (Hewitt)	FW1
SWAN POND (Ringwood)	FW2-NT(C1)
TENAKILL BROOK (Demarest) - Entire length	FW2-NT
TERRACE POND (Wawayanda)	FW2-NT(C1)
TIMBER BROOK (Charlotteburg) - Headwater segment of tributary to Timber Brook within Farny State Park	FW2-TM(C1)
TROY BROOK (Troy Hills) - Entire length	FW2-NT
WANAQUE RESERVOIR	FW2-TM

WANAQUE RIVER	
MAIN STEM	
(Hewitt) - Greenwood Lake outlet, through Wanaque Wildlife Management Area to the boundary of the State Park and Forest land at Monks, except tributary described separately below	FW2-TM(C1)
(Hewitt) - Entire length of tributary south of Jennings Creek	FW2-TP(C1)
(Monks) - Parkland boundary to Wanaque Reservoir	FW2-TM
(Pompton Lakes) - Wanaque Reservoir dam to Pompton River	FW2-NT
WEST BROOK (W. Milford) - Entire length	FW2-TP(C1)
WEST POND (Hewitt)	FW1
WEYBLE POND (Ringwood)	FW2-NT(C1)
WHIPPANY RIVER	
(Brookside) - Source to Whitehead Rd. bridge	FW2-TP(C1)
(Morristown) - Whitehead Rd. bridge to Passaic River	FW2-NT
WONDER LAKE (West Milford)	FW2-NT(C1)
WOODBRIDGE RIVER - Entire length	FW2-NT/SE3

Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

Index E-

Surface Water Classifications of the Raritan River and Raritan Bay Basin

May 1985

State of New Jersey Department of Environmental Protection/Division of Water Resources

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

Surface Water Quality Standards

Adopted:	April 29, 1985 by Robert E. Hughey, Commissioner, Department of Environmental Protection
Authority:	N.J.S.A. 13:1D-1 et seq., 58:10A-1 et seq., and 58:11A-1 et seq.
Effective Date:	May 20, 1985
Expiration Date pursuant to Executive Order No.66 (1978):	May 20, 1990

DATE 4/29/85

Robert P. Hughey

ROBERT E. HUGHEY, Commissioner
Department of Environmental Protection

INDEX E - Surface Water Classifications of the Raritan River and Raritan Bay Basin

ALLERTON CREEK (Allerton) - Entire length	FW2-NT
AMBROSE BROOK (Piscataway) - Entire length	FW2-NT
AMWELL LAKE (Snydertown)	FW2-NT(C1)
ASSISCONG CREEK (Flemington) - Entire length	FW2-NT
BACK BROOK (Vanliew's Corners) - Entire length	FW2-NT
BALDWINS CREEK	
(Pennington) - Entire length, except segment described separately below	FW2-NT
(Baldwin) - Segment within the boundaries of Baldwin Lake Wildlife Management Area	FW2-NT(C1)
BARCLAY BROOK (Redshaw Corners) - Entire length	FW2-NT
BEAVER BROOK	
(Cokesbury) - Source to Reformatory Road bridge	FW2-TP(C1)
(Annandale) - Reformatory Rd. bridge to Raritan River, South Branch	FW2-TM
BEDEN BROOK (Montgomery) - Entire length	FW2-NT
BIG BEAR BROOK (West Windsor) - Entire length	FW2-NT
BIG BROOK (Vanderberg) - Entire length	FW2-NT
BLACK BROOK (Polktown) - Entire length	FW2-TP(C1)
BLACK RIVER - See LAMINGTON RIVER	
BLACKBERRY CREEK	
(Oceanport) - Source to a line beginning on the easternmost extent of Gooseneck Point and bearing approximately 162 degrees True North to its terminus on the westernmost extent of an unnamed point of land in the vicinity of the western extent of Cayuga Ave. in Oceanport	SE1
(Oceanport) - Creek below the line described above	SE1
BLUE BROOK (Mountainside) - Entire length	FW2-NT
BOULDER HILL BROOK (Tewksbury) - Entire length	FW2-TP(C1)
BOUND BROOK (Dunellen) - Entire length	FW2-NT
BRANCHPORT CREEK	
(Long Branch) - Source to a line beginning on the northernmost extent of an unnamed point of land lying north of Pocano Ave. in Oceanport and bearing approximately 055 degrees True North to its terminus on the westernmost extent of the northern bulkhead at the lagoon located between France Rd. and Lori Rd. in Monmouth Beach	FW2-NT/SE1
(Monmouth Beach) - Creek below line described above	SE1(C1)
BUDD LAKE (Mt. Olive)	FW2-NT(C1)
BURNETT BROOK (Ralston) - Entire length	FW2-TP(C1)
CAPOOLONG CREEK (Sydney) - Entire length	FW2-TP(C1)
CEDAR BROOK (Spotswood) - Entire length	FW2-NT
CHAMBERS BROOK (Whitehouse) - Entire length	FW2-NT
CHEESEQUAKE STATE PARK WATERS (S. Amboy) - Fresh waters within the park upstream of the limits of tidal influence	FW2-NT(C1)

CLAYPIT CREEK	
(Navesink) - Source to widening of the Creek near Linden Ave. and just north of the Locust Ave. bridge in Navesink	FW2-NT/SE1
(Navesink) - Widening of Creek to Navesink River	SE1(C1)
COLD BROOK (Oldwick) - Entire length	FW2-TP(C1)
CRAMERS CREEK (Hamden) - Entire length	FW2-NT
CRANBURY BROOK (Old Church) - Entire length	FW2-NT
CRUSER BROOK (Montgomery) - Entire length	FW2-NT
CUCKELS BROOK (Bridgewater) - Entire length	FW2-NT
DAWSONS BROOK (Ironia) - Entire length	FW2-TP(C1)
DEEP RUN (Old Bridge) - Entire length	FW2-NT
DEVILS BROOK (Schalks) - Entire length	FW2-NT
DRAKES BROOK (Flanders) - Entire length	FW2-NT(C1)
DUCK POND RUN (Port Mercer) - Entire length	FW2-NT
DUKES BROOK (Somerville) - Entire length	FW2-NT
ELECTRIC BROOK (Schooley's Mtn.) - Entire length	FW2-TP(C1)
FLANDER'S BROOK (Flanders) - Entire length	FW2-TP(C1)
FLANDERS CANAL (Flanders) - Entire length	FW2-NT(C1)
FROG HOLLOW BROOK (Califon) - Entire length	FW2-TP(C1)
GANDER BROOK (Manalapan) - Entire length	FW2-NT
GLADSTONE BROOK (St. Bernards School) - Entire length	FW2-TP(C1)
GREAT DITCH (S. Brunswick) - That portion of Great Ditch and its tributaries within Pigeon Swamp State Park	FW2-NT(C1)
GREEN BROOK	
(Watchung) - Source to Rt. 22 bridge	FW2-TM
(Plainfield) - Rt. 22 bridge to Bound Brook	FW2-NT
GUINEA HOLLOW BROOK (Tewksbury)	FW2-TP(C1)
HACKLEBARNEY BROOK (Hacklebarney) - Entire length	FW2-TP(C1)
HEATHCOTE BROOK (Kingston) - Entire length	FW2-NT
HERZOG BROOK (Pottersville) - Entire length	FW2-TP(C1)
HICKORY RUN (Califon) - Entire length	FW2-TP(C1)
HOCKHOCKSON BROOK (Colts Neck) - Entire length	FW2-TM
HOLLAND BROOK (Readington) - Entire length	FW2-NT
HOLLOW BROOK (Pottersville) - Entire length	FW2-TP(C1)
HOOKS CREEK LAKE (Cheesequake State Park)	FW2-NT(C1)
HOOPSTICK BROOK (Bedminster) - Entire length	FW2-NT
INDIA BROOK [NORTH BRANCH, RARITAN RIVER] (Randolph) - Entire length	FW2-TP(C1)
IRELAND BROOK (Paulus Corners) - Entire length	FW2-NT
IRESICK BROOK (Spotswood) - Entire length	FW2-NT
LAMINGTON RIVER [BLACK RIVER]	
(Succasunna) - Source to Rt. 206 bridge	FW2-NT(C1)
(Milltown) - Rt. 206 bridge to confluence with Rinehart Brook	FW2-TM(C1)
(Pottersville) - Confluence with Rinehart Brook to Camp Brady bridge, Bedminster	FW2-TP(C1)
(Vliettown) - Camp Brady bridge to Rt. 523 bridge	FW2-TM
(Burnt Mills) - Rt. 523 to North Branch, Raritan River	FW2-NT

LAWRENCE BROOK	
(Deans) - Source to the intake of the New Brunswick Water Department at Weston's Mill Dam	FW2-NT
(New Brunswick) - Weston's Mill Dam to Raritan River	SE1
LEDGEWOOD BROOK (Ledgewood) - Entire length	FW2-TP(C1)
LITTLE BROOK (Califon) - Entire length	FW2-TP(C1)
LITTLE SILVER CREEK	
(Shreswbury) - Source to a line beginning on the eastern bank of that unnamed lagoon located between Wardell Ave. and Oakes Rd. in Rumson and bearing approximately 171 degrees T (True North) to its terminus on the south shore of Little Silver Creek	FW2-NT/SE1
(Rumson) - Creek below line described above	SE1(C1)
LOMERSON BROOK - See HERZOG BROOK	
MANALAPAN BROOK	
(Jamesburg) - Source to Duhernal Lake dam, except tributary described separately below	FW2-NT
(Tennent) - That portion of the tributary at Tennent along the boundary of Monmouth Battlefield State Park	FW2-NT(C1)
MATCHAPONIX BROOK [WEAMACONK CREEK]	
(Mount Mills) - Entire length, except segments described below	FW2-NT
(Freehold) - The brook and tributaries within the boundaries of Monmouth Battlefield State Park	FW2-NT(C1)
MCGELLAIRDS BROOK	
(Englishtown) - Entire length, except tributary described separately below	FW2-NT
(Freehold) - Tributary within Monmouth Battlefield State Park	FW2-NT(C1)
MCVICKERS BROOK (Mendham) - Entire length	FW2-TM(C1)
MIDDLE BROOK (Greater Cross Roads) - Entire length	FW2-NT
MIDDLE BROOK	
EAST BRANCH	
(Springdale) - Entire length	FW2-TM
WEST BRANCH	
(Martinsville) - Entire length	FW2-NT
MAIN STEM	
(Bound Brook) - Confluence of East and West branches to Raritan River	FW2-NT
MILFORD BROOK (Lafayette Mills) - Entire length	FW2-NT
MILLSTONE RIVER (Hightstown) - Entire length	FW2-NT
MINE BROOK (Mine Brook) - Entire length	FW2-NT
MINE BROOK (Colts Neck) - Entire length	FW2-NT
MULHOCKAWAY CREEK (Pattenburg) - Entire length	FW2-TP(C1)

NAVESINK RIVER	
(Red Bank) - Source to a line starting at a point at the northeast end of Blossom Cove, bearing approximately 142 degrees T (True North), through navigational aid C23 to the south bank near Riverview Hospital	SE1
(Rumson) - River southeast of the line described above, except segment described below	SE1(C1)
(Monmouth Beach) - All waters south and east of a line beginning on the northwesternmost point of land on Racoon Island (in the vicinity of the western extent of Highland Ave.) in Monmouth Beach, and bearing approximately 056 degrees T (True North) to the southernmost point of a small unnamed island, and then bearing approximately 091 degrees T to its terminus on the northernmost point of land located at the northern extent of Monmouth Parkway in Monmouth Beach and all waters south of a line beginning on the western shoreline (just east of Monmouth Parkway in Monmouth Beach) and bearing approximately 081 degrees T, intersecting Channel Marker Flashing Red 4 and Channel Marker Flashing Red 2 and terminating on the eastern shoreline of the Galilee section of Monmouth Beach.	SE1
NESHANIC RIVER (Reaville) - Entire length	FW2-NT
NORTON BROOK (Norton) - Entire length	FW2-TP(C1)
OAKDALE CREEK (Chester) - Entire length	FW2-TP(C1)
OAKEYS BROOK (Deans) - Entire length	FW2-NT
OCEANPORT CREEK	
(Fort Monmouth) - Source to a line beginning on the easternmost extent of Horseneck Point and bearing approximately 140 degrees True North to its terminus on the westernmost extent of an unnamed point of land located at the westernmost extent of Monmouth Boulevard in Oceanport	FW2-NT/SE1
(Oceanport) - Creek downstream of line described above	SE1(C1)
PARKERS CREEK	
(Fort Monmouth) - Source to a line beginning on the easternmost extent of Horseneck Point and bearing apprixmately 000 degrees True North to its terminus on Breezy Point on the Little Silver side (north) side of the creek.	FW2-NT/SE1
(Fort Monmouth) - Creek downstream of line described above	SE1(C1)
PEAPACK BROOK (Gladstone) - Entire length	FW2-TP(C1)
PETERS BROOK (Somerville) - Entire length	FW2-NT

PIGEON SWAMP (S. Brunswick) - All waters within the boundaries of Pigeon Swamp State Park	FW2-NT(C1)
PIKE RUN (Belle Meade) - Entire length	FW2-NT
PINE BROOK (Clarks Mills) - Entire length	FW2-NT
PINE BROOK (Cooks Mill) - Entire length	FW2-TM
PLEASANT RUN (Readington) - Entire length	FW2-NT
PRESCOTT BROOK (Stanton Station) - Entire length	FW2-TM
RAMANESSIN [HOP] BROOK (Holmdel) - Entire length	FW2-TM
RARITAN BAY - Entire Drainage	FW2-NT/SE1
RARITAN RIVER	
NORTH BRANCH (Also see INDIA BROOK)	
(Pleasant Valley) - Source to, but not including, Ravine Lake	FW2-TP(C1)
(Far Hills) - Ravine Lake dam to Rt. 512 bridge	FW2-TM
(Bedminster) - Rt. 512 bridge to confluence with South Branch, Raritan River	FW2-NT
SOUTH BRANCH RARITAN RIVER	
(Mt. Olive) - Source to the dam that is 390 feet upstream of the Flanders-Drakestown Road bridge	FW2-NT(C1)
(Mt. Olive) - Dam to confluence with Turkey Brook	FW2-TM(C1)
(Naughright) - Confluence with Turkey Brook to confluence with Electric Brook	FW2-TP(C1)
(Clinton) - Confluence with Electric Brook to downstream end of Packers Island, except segment described separately, below	FW2-TM
(Ken Lockwood Gorge) - River and tributaries within Ken Lockwood Gorge Wildlife Management Area	FW2-TM(C1)
(Neshanic Sta.) - Downstream end of Packers Island to confluence with North Branch, Raritan River	FW2-NT
MAIN STEM RARITAN RIVER	
(Bound Brook) - From confluence of North and South Branches to Landing Lane bridge in New Brunswick and all freshwater tributaries downstream of Landing Lane bridge.	FW2-NT
(Sayreville) - Landing Lane bridge to Raritan Bay and all saline water tributaries	SE1
RINEHART BROOK (Hacklebarney) - Entire length	FW2-TP(C1)
ROCK BROOK (Montgomery) - Entire length	FW2-NT
ROCKAWAY CREEK	
NORTH BRANCH	
(Mountainville) - Source to Rt. 523 bridge	FW2-TP(C1)
(Whitehouse) - Rt. 523 bridge to confluence with South Branch	FW2-TM

SOUTH BRANCH	
(Whitehouse) - Entire length	FW2-TM
MAIN STEM	
(Whitehouse) - Confluence of North and South Branches to Lamington River	FW2-NT
ROUND VALLEY RESERVOIR (Clinton)	FW2-TM
ROYCE BROOK (Manville) - Entire length	FW2-NT
SHREWSBURY RIVER	
(Little Silver) - Source to Rt. 36 highway bridge	SE1(C1)
(Highlands) - Rt. 36 bridge to Sandy Hook bay	SE1
SIMONSON BROOK (Griggstown) - Entire length	FW2-NT
SIX MILE RUN	
(Franklin Church) - Entire length, except segment described below	FW2-NT
(Hillsborough) - Segment within the boundaries of Six Mile Run State Park	FW2-NT(C1)
SOUTH RIVER	
(Old Bridge) - Duhernal Lake to intake of the Sayreville Water Department	FW2-NT
(Sayreville) - Below the intake of the Sayreville Water Department	SE1
SPOOKY BROOK (Bound Brook)	FW2-NT
SPRUCE RUN	
(Glen Gardner) - Source to, but not including, Spruce Run Reservoir	FW2-TP(C1)
(Clinton) - Spruce Run Reservoir dam to Raritan River, South Branch	FW2-TM
SPRUCE RUN RESERVOIR (Union) - Reservoir and tributaries	FW2-TM(C1)
STONY BROOK (Washington) - Entire length	FW2-TP(C1)
STONY BROOK	
(Hopewell) - Entire length, except that segment described below	FW2-NT
(Snydertown) - Brook and tributaries within Amwell Lake Wildlife Management Area	FW2-NT(C1)
STONY BROOK (Watchung) - Entire length	FW2-NT
SUN VALLEY BROOK (Mt. Olive) - Entire length	FW2-TP(C1)
SWIMMING RIVER	
(Red Bank) - Source to the intake of the Monmouth Consolidated Water Company at the Swimming River Reservoir dam	FW2-NT
(Red Bank) - Below the Swimming River Reservoir dam to the Navesink River	FW2-NT/SE1
TANNERS BROOK (Washington) - Entire length	FW2-NT(C1)
TEETERTOWN BROOK (Lebanon) - Entire length	FW2-TP(C1)
TEN MILE RUN (Franklin) - Entire length	FW2-NT
TENNENT BROOK (Old Bridge) - Entire length	FW2-NT
TOWN NECK CREEK	
(Little Silver) - Source to a line beginning on the easternmost extent of the unnamed point of land located just east of Paag Circle on the south bank of	FW2-NT/SE1

Town Neck Creek and bearing approximately 095 degrees True North and terminating on Silver Point	
(Little Silver) - Creek below line described below	SE1(C1)
TEPEHEMUS BROOK (Manalapan) - Entire length	FW2-NT
TROUT BROOK (Hacklebarney) - Entire length	FW2-TP(C1)
TURKEY BROOK (Mt. Olive) - Entire length	FW2-TP(C1)
WALNUT BROOK (Flemington) - Entire length	FW2-TM
WEAMACONK CREEK - See MATCHAPONIX BROOK	
WEMROCK BROOK	
(Millhurst) - Entire length, except that segment described below	FW2-NT
(Monmouth Battlefield State Park) - Those segments of the brook and its tributaries within the boundaries of Monmouth Battlefield State Park	FW2-NT(C1)
WEMROCK POND (Monmouth Battlefield State Park)	FW2-NT(C1)
WILLOUGHBY BROOK (Buffalo Hollow) - Entire length	FW2-TP(C1)
WILLOW BROOK (Holmdel) - Entire length	FW2-NT
YELLOW BROOK (Colts Neck) - Entire length	FW2-NT

REFERENCE NO. 16

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9001-15	February 9, 1990	9:00 Am

DISTRIBUTION:

Sampson Tank Cleaning Company

BETWEEN:	OF:	PHONE:
Stan Gorski	National Marine Fishery Service Sandy Hook, NJ	(201) 872-3000

AND:

Susan S. Hodgkiss (NUS)

DISCUSSION:

I Spoke to Mr. Gorski to confirm some information about endangered and threatened species. He informed me that the Short-nose Sturgeon is part of the Hudson River estuary. The sturgeon spawns upriver in the freshwater areas and the adults will migrate down river for feeding. The short-nose Sturgeon could be found in any of the connecting waterways. He also informed me that the Loggerhead and Leatherback turtle can be found around Staten Island/Bayonne area. The Atlantic Ridley turtle has been seen in the Long Island Sound and maybe in any of the connecting waterways.

ACTION ITEMS:

REFERENCE NO. 17

[WH FRL 2511-2]

Aquifers Underlying Kings and Queens Counties, New York Determination

AGENCY: Environmental Protection Agency, Region II.

ACTION: Notice of determination: aquifers underlying Kings and Queens Counties, New York.

SUMMARY: Notice is hereby given that pursuant to section 1424(e) of the Safe Drinking Water Act (Pub. L. 93-523) the Administrator of the Environmental Protection Agency has determined that the aquifer underlying Kings and Queens Counties, New York, is the sole or principal source of drinking water for the southeastern portion of Queens County, New York, and which, if contaminated, would create a significant hazard to public health.

ADDRESS: The data on which these findings are based are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Water Supply Branch, 26 Federal Plaza, New York, New York 10278.

FOR FURTHER INFORMATION CONTACT: Damian J. Duda, U.S. Environmental Protection Agency, Water Supply Branch, 26 Federal Plaza, New York, New York 10278—Tel. (212) 264-1800.

SUPPLEMENTARY INFORMATION: The Safe Drinking Water Act was enacted on

December 16, 1974. Section 1424(e) of the Act states:

If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of the determination in the Federal Register. After the publication of any notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health but a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

Background

On June 18, 1979, the Jamaica Water Supply Company, Lake Success, New York, petitioned the Administrator to amend the Long Island (Nassua/Suffolk) designation of June 21, 1978, 43 FR 26811 to include the aquifers underlying Kings and Queens Counties, New York, as a sole source aquifer under the provisions of section 1424(e) of the Safe Drinking Water Act.

Public Participation

A notice of receipt of this petition, together with a request for comments was published in the Federal Register August 29, 1979, 44 FR 50649. In response to the Notice and request for comments, written comments were received from a State, and a local governmental agency. Both commenters claimed that the designation would be premature since there is an absence of final rules and regulations on the sole or principle source aquifer program under Section 1424(e). The letters further stated that New York State will be developing a ground-water management program and that the EPA should await the outcome of these studies before considering designation of the aquifer. The agency does not agree with the letters requesting further delay since the ground water management studies referred to are not directly related to the sole source designation request. In addition, EPA had sufficient information to write a background document which serves as the basis for designation.

On October 4, 1979, the Environmental Protection Agency (EPA) held a public hearing in Queens County, New York City, New York to hear the views of persons interested in the Kings and Queens Aquifer issue. Two groups presented testimony at the public hearing. The first group represented the petitioner, Jamaica Water Supply Company and the second represented the New York State Department of Health, Bureau of Public Water Supply. There were no representatives of the public present at the public hearing.

Basis for the determination

On the basis of the information which is available to this Agency the Administrator has made the following findings, which are the basis for the determination noted above:

(1) The Kings and Queens aquifers which underly the southeastern portion of Queens County are the sole or principal source of drinking water for approximately 650,000 people in such area, which is the service area of the Jamaica Water Supply Company. In 1979, the aquifers supplied approximately 60 million gallons per day (mgd) of water from 65 wells located in or near the water supply franchise area of the Jamaica Water Supply Company. Current water supply treatment practice for public supplies is generally limited to disinfection for drinking purposes. There is no alternative source of drinking water supply which could replace these aquifers if they were contaminated.

While the Kings and Queens aquifers are not utilized as the sole or principal source of drinking water for the Borough of Kings or for any other portion of Queens County, the geographic boundaries of Kings and Queens Counties are the recharge zone for the aquifers underlying the southeastern portion of Queens County. The recharge zone also encompasses parts of Nassau County, New York. Aquifers underlying Nassau and Suffolk Counties, New York have already been designated as a sole or principal source aquifer under Section 1424(e) of the Safe Drinking Water Act.

(2) The aquifers underlying Kings and Queens Counties are vulnerable to contamination through their recharge zone, particularly from leaking sewer pipes. Other sources such as past farming practices and present fertilization of lawns and gardens may also be significant. The area contains leaking fuel tanks and leachate from open dumps and improperly operated landfill sites all of which add to the contamination of the ground water. In addition, EPA analysis shows that further and continued withdrawal of water over and above the aquifers sustained yield would cause the salt-fresh water interface to move into the aquifers recharge zone thereby threatening the ground water quality by increasing the chloride content in the water. Since ground water contamination can be difficult or impossible to reverse, and because this aquifer is relied upon for drinking purposes by many people, contamination of the aquifer would pose a significant hazard to public health.

(3) When an aquifer has been designated as the sole or principal source of drinking water, the area in which projects may be reviewed is the area encompassed by: (1) the boundary of the designated aquifer's recharge zone, and (2) its stream-flow source zone.

The Administrator has determined that the recharge zone and stream-flow source zone for the aquifers underlying southeastern Queens County are defined by the outside boundary of Kings County (Borough of Brooklyn) and Queens County (Borough of Queens) in the city of New York and parts of Nassau County. Since the parts of Nassau County within the recharge and streamflow source zones of the aquifers underlying southeastern Queens County are already under sole or principal source protection as the result of the Agency's prior designation of the aquifers underlying Nassau/Suffolk Counties, today's designation will extend the area for project review to encompass projects undertaken in the Boroughs of Brooklyn and Queens in the city of New York.

Information Utilized in This Determination

The petition, written and verbal comments submitted by the public, a detailed map of the area and independent analysis by EPA are available to the public and may be inspected during normal business hours at the office of the Environmental Protection Agency, Region II, Water Supply Branch, 26 Federal Plaza, Room 24–130, New York, New York 10278.

A copy of the above documentation is also available at the U.S. Environmental Protection Agency, Waterside Mall, Public Information and Reference Unit, Room 2922, 401 M. Street SW., Washington, DC 20460.

Project Review

EPA proposed national regulations for implementing Section 1424(e) of the Safe Drinking Water Act on September 29, 1977, at 42 FR 51620. The proposed regulations contain procedures for review of Federal financially assisted projects which could contaminate "sole or principal source" aquifers through the recharge zone so as to create a significant hazard to public health. They are being used as interim guidance until promulgation of final regulations. Questions and comments concerning the possible effect of the regulations on

Federally assisted projects in the designated Kings/Queens Aquifer should be directed to the Water Supply Branch, U.S. Environmental Protection Agency, Region II, 26 Federal Plaza, New York, New York 10278.

EPA Region II is working with the Federal agencies, which may sponsor projects in the area of concern, to develop interagency procedures whereby EPA will be notified of proposed commitments for projects which could contaminate the designated aquifer. EPA will evaluate such projects and, where necessary, conduct an in-depth review, including soliciting public comments where appropriate.

Although the project review process cannot be delegated, the Regional Administrator in Region II will rely, to the maximum extent possible, upon close coordination with State and local agencies to ensure consistency with their program objectives. Their in-put will be given full consideration and the Federal review process will function so as to complement and support State and local protection programs.

Federal funding may be withheld from any project which, upon review, may contaminate the aquifer through a recharge zone so as to create a significant hazard to public health.

Economic and Regulatory Impact

Pursuant to the provisions of the Regulatory Flexibility Act (RFA), 5 U.S.C. 605(b), I hereby certify that the attached rule will not have a significant impact on a substantial number of small entities. For purposes of this Certification the "small entity" shall have the same meaning as given in Section 601 of the RFA. This action is only applicable to the Kings-Queens Area.

The only affected entitites will be those area-based business, organizations or governmental jurisdictions that request Federal financial assistance for projects which have the potential for contaminating the aquifer so as to create a significant hazard to public health. EPA does not expect to be reviewing small isolated commitments of financial assistance on an individual basis, unless a cumulative impact on the aquifer is anticipated; accordingly, the number of affected small entities will be minimal.

For those small entities which are subject to review, the impact of today's action will not be significant. Most projects subject to this review will be preceded by a ground water impact assessment required pursuant to other Federal laws, such as the National Environmental Policy Act, as amended (NEPA), 42 U.S.C. 4321, et seq. Integration of those related review procedures with sole source aquifer review will allow EPA and other Federal agencies to avoid delay or duplication of effort in approving financial assistance, thus minimizing any adverse effect on those small entities which are affected. Finally, today's action does not prevent grants of Federal financial assistance which may be available to any affected small entity in order to pay for the redesign of the project to assure protection of the aquifer.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not "major" because it will not have an annual effect of $100 million or more on the economy, will not cause any major increase in costs or prices, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States enterprises to compete in domestic or export markets. Today's action only affects the designated area. It provides an additional review of ground water protection measures, incorporating State and local measures whenever possible, for only those projects which request Federal financial assistance. Accordingly, a Regulatory Impact Analysis will not be required.

Dated: January 12, 1983

William D. Ruckelshaus,

Administrator.

[FR Doc. 84-1886 Filed 1-23-84; 8:45 am]

BILLING CODE 6560-50-M

REFERENCE NO. 18

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

GEMS> I

VIDAN AUTO SALVAGE
LATITUDE 40:40:47 LONGITUDE 73:59:55 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	8992	25284	51293	167753	452592	674700	1380614
RING TOTALS	8992	25284	51293	167753	452592	674700	1380614

GEMS> I

VIDAN AUTO SALVAGE
LATITUDE 40:40:47 LONGITUDE 73:59:55 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	3593	9570	20287	69298	164334	272593	539675
RING TOTALS	3593	9570	20287	69298	164334	272593	539675

REFERENCE NO. 19

Water Resources Data New York Water Year 1988

Volume 1. Eastern New York excluding Long Island

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT NY-88-1
Prepared in cooperation with the State of New York
and with other agencies

HUDSON RIVER BASIN

01375000 CROTON RIVER AT NEW CROTON DAM, NEAR CROTON-ON-HUDSON, NY

LOCATION.--Lat 41°13'32", long 73°51'32", Westchester County, Hydrologic Unit 02030101, on left bank 1,000 ft downstream from New Croton Dam, and 1.8 mi northeast of Croton-On-Hudson.

DRAINAGE AREA.--378 mi^2.

PERIOD OF RECORD.--August 1933 to current year. Prior to Oct. 1, 1941, published as "at Quaker Bridge," (low-flow records at this site are not equivalent owing to well pumpage upstream). Fragmentary records published during August 1933 to September 1941 for "at Cornell Dam near Croton" and "at New Croton near Croton" are equivalent. Oct. 1, 1941 to Sept. 30, 1955 published as "at New Croton Dam near Croton".

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 50 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 1, 1941, supplementary water-stage recorder and concrete control at site 1.1 mi downstream at Quaker Bridge.

REMARKS.--Records good above 200 ft^3/s and poor below. Entire flow, except for periods of spilling and releases to augment Croton-on-Hudson water supply, diverted from New Croton Reservoir for municipal supply of City of New York. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,400 ft^3/s, Oct. 16, 1955, gage height, 18.44 ft, from floodmarks, from rating curve extended above 9,700 ft^3/s, on basis of slope-area measurements of peak flow; minimum daily discharge, 0.1 ft^3/s, Mar. 14, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,690 ft^3/s, May 20, gage height, 4.16 ft; minimum daily, 11 ft^3/s, Aug. 5-17, Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	185	169	657	170	228	496	425	297	321	23	23	14
2	163	150	510	188	509	453	396	267	280	23	21	14
3	185	138	438	175	1000	465	369	241	186	23	21	14
4	652	129	466	203	917	778	368	209	181	23	15	14
5	620	122	500	184	801	1260	383	199	161	23	11	14
6	370	120	411	155	665	965	350	301	160	23	11	14
7	334	134	358	139	543	842	339	340	116	23	11	14
8	282	146	311	153	463	828	335	273	94	23	11	14
9	224	159	288	160	409	799	333	228	112	23	11	14
10	196	259	280	133	364	873	300	221	107	23	11	13
11	207	531	298	114	335	837	228	243	90	23	11	13
12	210	478	307	106	538	774	176	267	86	23	11	13
13	195	394	304	108	654	757	169	235	71	23	11	25
14	169	431	283	e100	541	757	159	279	59	23	11	40
15	167	441	322	e94	477	712	165	231	37	23	11	34
16	166	400	523	e90	633	664	186	188	26	23	11	23
17	161	369	496	e98	705	618	165	289	26	23	11	19
18	162	412	369	e120	649	566	155	643	21	22	12	19
19	157	409	301	e210	631	524	173	1440	21	22	12	21
20	139	361	366	326	1210	478	154	1570	21	22	12	23
21	155	337	444	478	1360	420	139	1170	22	22	12	30
22	152	274	396	475	963	373	125	877	22	22	12	25
23	136	220	344	382	876	338	120	823	22	23	12	16
24	126	220	314	329	961	326	123	817	22	25	13	12
25	119	229	310	348	824	342	117	914	23	24	12	15
26	115	234	338	448	689	485	106	1010	23	23	12	11
27	128	229	305	344	637	830	98	755	23	22	12	12
28	876	194	279	262	596	721	259	621	23	23	12	15
29	614	230	292	212	539	613	325	527	23	30	13	15
30	333	553	253	191	---	538	323	440	23	28	14	12
31	223	---	185	192	---	484	---	367	---	23	14	---
TOTAL	7921	8472	11248	6687	19717	19916	7063	16282	2402	722	397	532
MEAN	256	282	363	216	680	642	235	525	80.1	23.3	12.8	17.7
MAX	876	553	657	478	1360	1260	425	1570	321	30	23	40
MIN	115	120	185	90	228	326	98	188	21	22	11	11

CAL YR 1987 TOTAL 189107 MEAN 518 MAX 10000 MIN 19
WTR YR 1988 TOTAL 101359 MEAN 277 MAX 1570 MIN 11

e Estimated

REFERENCE NO. 20

COPY

STATE OF NEW YORK

DEPARTMENT OF CONSERVATION

WATER POWER AND CONTROL COMMISSION

GROUND WATER IN BRONX, NEW YORK, AND RICHMOND COUNTIES WITH SUMMARY DATA ON KINGS AND QUEENS COUNTIES NEW YORK CITY, NEW YORK

By

Nathaniel M. Perlmutter and Theodore Arnow

Geologists, U. S. Geological Survey

Prepared by the

U. S. GEOLOGICAL SURVEY IN COOPERATION WITH THE WATER POWER AND CONTROL COMMISSION

BULLETIN GW-32

ALBANY, N. Y.

1953

STATE OF NEW YORK

DEPARTMENT OF CONSERVATION

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GROUND WATER IN BRONX, NEW YORK, AND RICHMOND COUNTIES WITH SUMMARY DATA ON KINGS AND QUEENS COUNTIES NEW YORK CITY, NEW YORK

By

NATHANIEL M. PERLMUTTER AND THEODORE ARNOW

ABSTRACT

This reconnaissance report deals primarily with ground water in three of the five Counties in New York City (Bronx, New York, and Richmond Counties). It contains also some references to ground-water conditions in the city as a whole, and summary data for Kings and Queens Counties on Long Island.

New York City is at the mouth of the Hudson River in the southeastern part of New York State. It is built in part on the mainland and in part on three islands, Long Island, Manhattan Island, and Staten Island. Physiographically, the city is partly in the Atlantic Coastal Plain and partly in the Piedmont province.

The consolidated rocks of New York City are pre-Cambrian gneiss, schist, marble, and serpentine, and sandstone, shale, and diabase of Triassic age. The unconsolidated deposits overlying them consist of beds of sand, clay, and gravel of Cretaceous and Quaternary age, ranging in thickness up to about 1,150 feet. Ground-water supplies are closely related to the varied geologic conditions found throughout the city.

Precipitation, which averages 43 inches per year, is the primary source of ground water. The principal aquifers are the glacial deposits which occur in many parts of the city and may yield as much as 1,500 gallons per minute through individual wells of large diameter. The Cretaceous deposits are important as aquifers only in Queens and Richmond Counties. The consolidated rocks supply some ground water in New York and Bronx Counties where in places they represent the only available source of ground-water supply. In 1949, a year of low rainfall and high consumption, about 158 million gallons per day of ground water was consumed in New York City. This was about 13 percent of the total average consumption from all sources of approximately 1.2 billion gallons per day.

Analyses of 69 representative water samples show the wide range in the chemical quality of ground water in New York City. Records of high chloride content in wells in many parts of the city indicate that excessive pumping has lowered ground-water levels apparently sufficiently to permit infiltration of sea water into New York, Richmond, Kings, and Queens Counties. Thus, it is only in a few selected parts of the city, under carefully controlled conditions, that additional large-scale developments for industrial or public supplies can be made without seriously lowering the water levels and enlarging the area affected by salt-water encroachment.

INTRODUCTION

PURPOSE AND SCOPE OF INVESTIGATION

The present report is part of an investigation of the quantity, quality, and occurrence of ground water in the State of New York being made by the United States Geological Survey in cooperation with the New York State Water Power and Control Commission. The objective is to establish the facts on which to base the optimum utilization and conservation of the water resources of the State. Results of the investigation have been released periodically as typewritten manuscripts or published by the Water Power and Control Commission in a series of ground-water bulletins. Most of these bulletins have been prepared cooperatively by personnel of the Survey and of the Commission, although some have been prepared by employees of either of the two agencies working independently. The areas in which investigations have been completed, or in which work is now in progress, are shown in figure 1. Titles of published bulletins are printed on the back cover of the report.

Reconnaissance examinations made by the Geological Survey for the War Production Board during World War II indicated that some ground-water reservoirs in upstate New York were being pumped heavily by industrial and public-supply wells and there was danger of financial loss and public inconvenience because of overpumping in some areas. Consequently, in 1945 the Geological Survey, chiefly in cooperation with the New York Water Power and Control Commission, began a State-wide appraisal of ground-water conditions on a county-by-county basis. It being impracticable to carry on simultaneous investigations in all areas of the State, the first investigations were made in Counties of known heavy ground-water consumption, mainly those containing large cities. The only work done in New York City was in Kings and Queens Counties in connection with the Long Island investigations which had begun on a continuing basis in 1932. No immediate work was planned for Bronx, New York, and Richmond Counties, the part of New York City not on Long Island, because it was felt that the city's surface-water supply available to those Counties obviated the necessity for full utilization of the ground water, and consequently there was no urgent need at that time for information about ground-water conditions. However, in the fall of 1949, owing to a serious decline in storage in the New York City surface reservoirs, many persons considered the possibility of constructing privately owned wells whose supply would not be subject to drought or municipal regulation of consumption. It was felt advisable, therefore, to make a survey of Bronx, New York and Richmond Counties to collect and publish readily available information on the occurrence of ground water in those Counties. The results of this survey are presented herewith.

This report is essentially a reconnaissance report based primarily on well data. Records for about 240 wells and test borings, and chemical analyses of water from 100 wells were collected during 1950-52 in Bronx, New York, and Richmond Counties. The data were obtained from only a few major sources, such as municipal agencies and well drillers, and no attempt was made to canvass these and other wells individually. Accordingly, the information and logs in tables 6 and 7 by no means represent all the wells in the area. Many of the wells are old, and some of them may now have different owners. Information on geologic conditions was derived chiefly from published reports, and from logs of wells and test borings.

The geologic and hydrologic conditions, and the amounts of ground water pumped in Bronx, New York, and Richmond Counties, are different in many respects from those in Kings and Queens Counties. Yet they are all integral parts of New York City. Accordingly, for purpose of comparison, some published and some previously unpublished data on Kings and Queens Counties are included in this report, scattered throughout the text, tables, and illustrations.

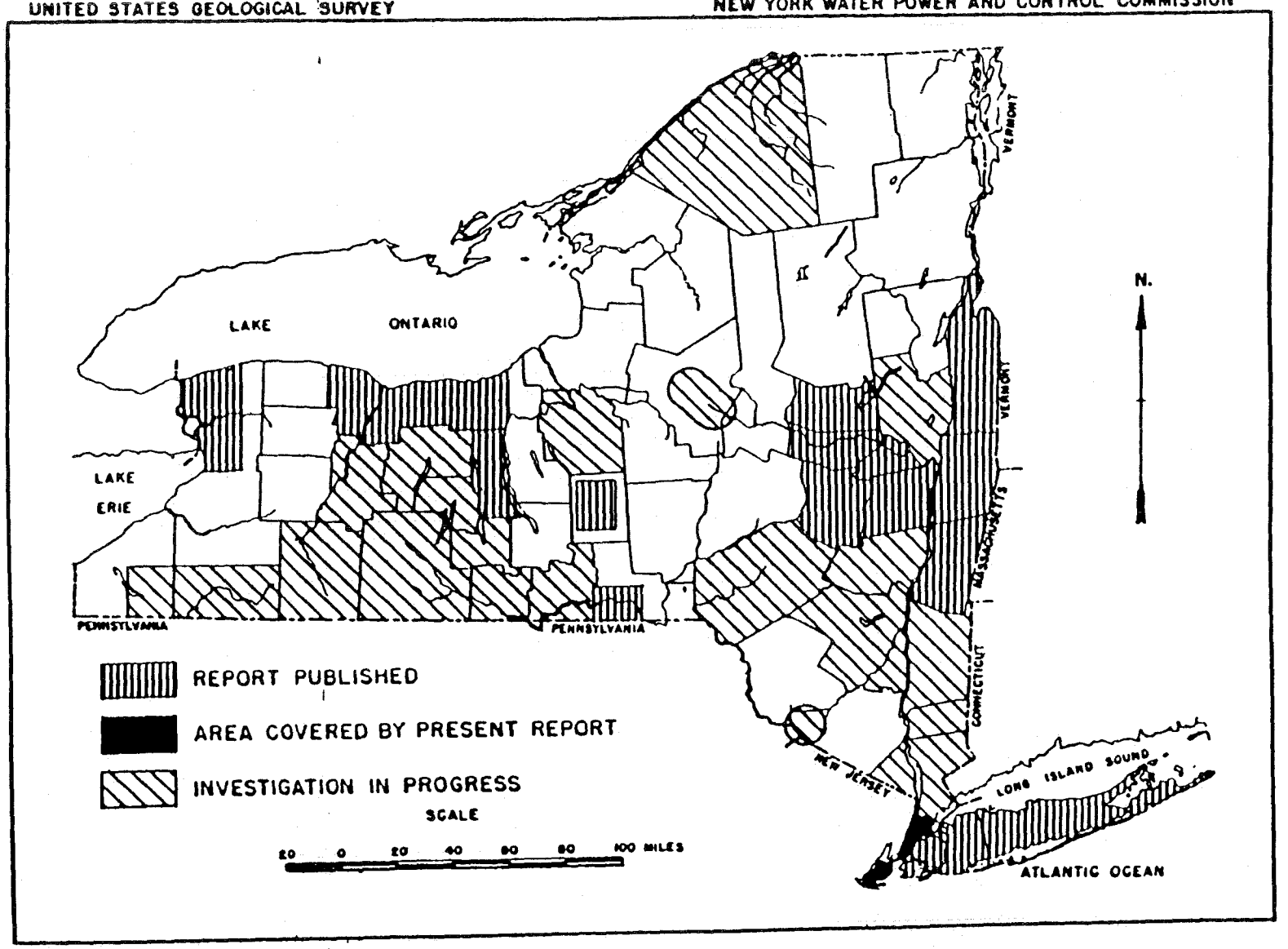

Figure 1.—Map of New York State showing areas of cooperative ground-water studies.

PERSONNEL AND ACKNOWLEDGMENTS

The report was prepared under the general direction of A. N. Sayre, Chief of the Ground Water Branch of the Water Resources Division of the U. S. Geological Survey, and M. L. Brashears, Jr., and J. E. Upson, successive district geologists for New York and New England. L. M. Page, Jr., formerly of the Geological Survey, collected many of the well records here presented. Personnel of the U. S. Geological Survey and the New York State Water Power and Control Commission drafted the maps and cross sections. The following New York City agencies generously contributed information: the Department of Water Supply, Gas and Electricity (Bureau of Water Supply), the Department of Public Works (Subsurface Exploration Section), and the Department of Health (Sanitary Engineering Section). Appreciation is expressed also to local well drillers for making information in their files available for this report.

LOCATION AND DIVISIONS OF THE AREA

New York City is on the east coast of the United States at the mouth of the Hudson River. It comprises two islands, part of a third, and a portion of the mainland. Figure 2 gives the locations of the five component Counties (or Boroughs)[1] and their geographic position with respect to each other. Bronx County is on the mainland, separated from New York County (Manhattan) by the Harlem River. Richmond County includes all of Staten Island, and Kings and Queens Counties are on Long Island. Except for the northern boundary of Bronx County and eastern boundary of Queens County, the city is surrounded by brackish or salty tidewater. According to table 1, Bronx, New York, and Richmond Counties occupy about 38 percent of the total area of New York City and contain about 46 percent of the city's population.

Table 1.—Geographic data for the political subdivisions of New York City

Political subdivision		Geographic location	Population (1950)	Area (square miles)
(State) County	(City) Borough			
Bronx	Bronx	Mainland	1,444,403	41.4
Kings	Brooklyn	Long Island	2,720,238	81.0
New York	Manhattan	Manhattan Island	1,938,551	22.3
Queens	Queens	Long Island	1,546,316	118.6
Richmond	Richmond	Staten Island	191,015	57.0
		Totals	7,840,523	320.3

New York City has 578 miles of waterfront and 5,723 miles of streets. The assessed valuation of taxable real estate for the fiscal year 1948-49, including franchises, was more than 17.5 billion dollars. New York City is one of the leading manufacturing, transportation, and shipping centers, and also one of the cultural centers, of the world.

[1] State and municipal designations of the subdivisions of New York City are used interchangeably in this report. However, in most places the State names are used. (See table 1.)

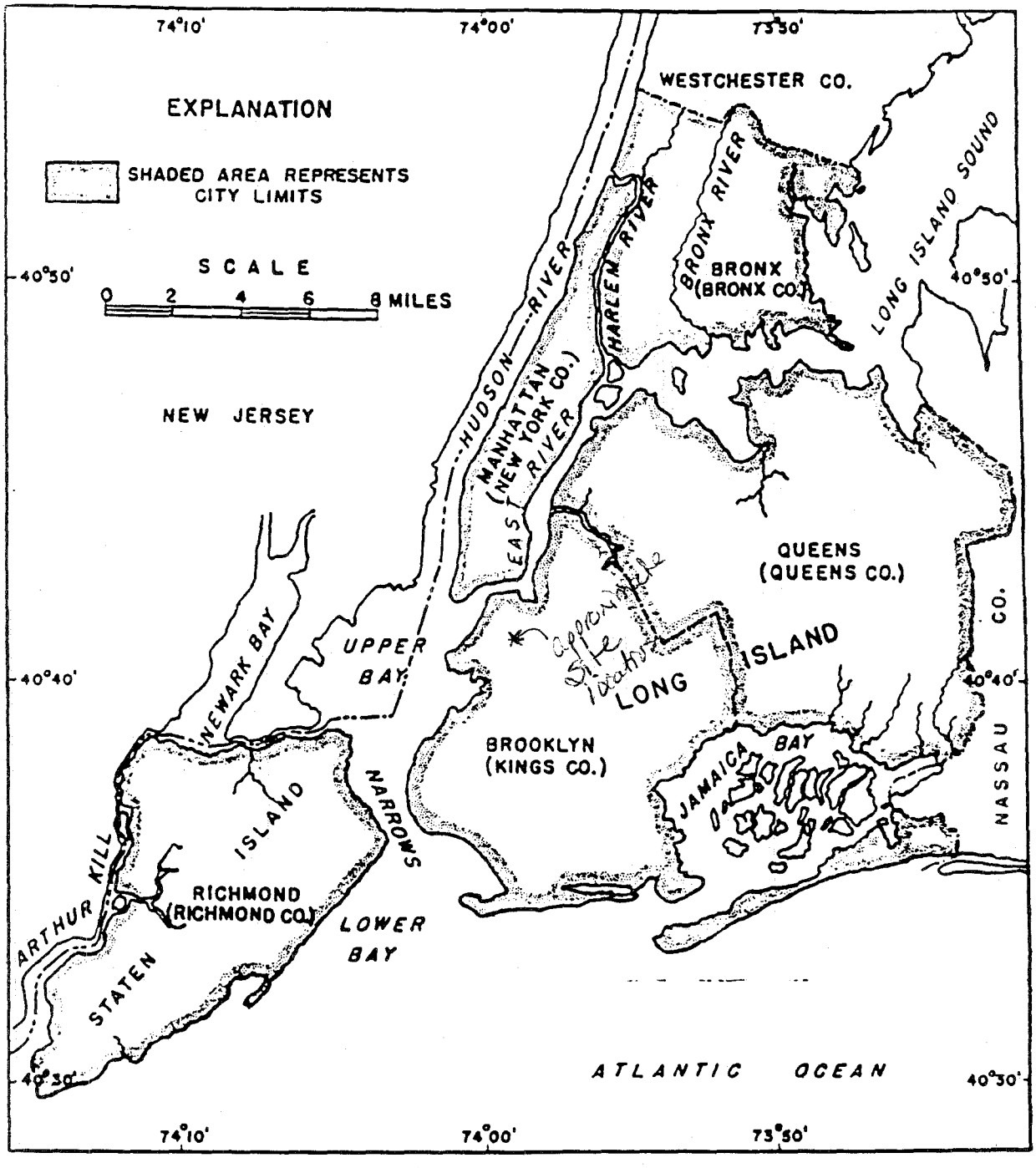

Figure 2.—Map of New York City showing political subdivisions.

TOPOGRAPHY AND DRAINAGE

Ignoring the subdivisions made by the rivers and bays, New York City consists essentially of three physiographically different areas. (See plate 2.) From north to south these are: (1) the area of New York and Bronx Counties, essentially an extension of the upland area that occupies a large part of New England; (2) the northern half of Queens and Kings Counties and nearly all of Richmond County, consisting of the terminal moraine and the hilly till-covered

area north of the terminal moraine; and (3) the southern half of Queens and Kings Counties and a small area in the southeastern part of Richmond County comprising the glacial outwash plain.

The northern area, including all of New York and Bronx Counties, is in the glaciated and eroded southern portion of a more extensive upland. The topography in this area is largely a product of preglacial stream erosion, modified somewhat by glacial erosion and deposition. The upland rises gently from sea level and reaches altitudes of 276 feet in northern Manhattan and 284 feet in western Bronx. It is mainly characterized by parallel, linear ridges and valleys having a northeasterly trend. Bronx County, the only part of the city having an extensive natural drainage system, is drained by the Bronx River, Westchester Creek, the Hutchinson River, and Tibbit Brook, all of which flow southward in narrow, approximately parallel channels. Manhattan was formerly drained by about a dozen shallow creeks which emptied into the Hudson, Harlem, and East Rivers. Most of these creeks now have been filled in and are covered by buildings and streets, but the location of the old channels may have some influence on the occurrence and movement of ground water in the County.

The second or central topographic division of New York Cty includes the terminal moraine and the dissected, rolling area north of the moraine on Staten and Long Islands. In the northern half of Staten Island the topography is irregular with several places reaching altitudes of 300 feet or more above sea level. Todt Hill, a high area composed of serpentine bedrock and partly covered by the terminal moraine, is in this division. It is 409 feet above sea level, one of the highest points on the Atlantic Coast south of Maine. The northwestern shore of Staten Island is formed by low-lying land which in places is tidal marsh. On Long Island, north of the moraine, the land surface is rolling and slopes toward the East River and Long Island Sound. The shoreline is indented by the valleys of several small north-flowing creeks. The highest altitude in this area is actually on the terminal moraine in northeastern Queens where the land surface is as much as 280 feet above sea level.

The southern of the three areas is the glacial outwash plain which lies south and southeast of the terminal moraine. On Staten Island it is about 1 mile wide and on Long Island it is 2 to 9 miles wide. This plain, on both islands, slopes gently toward the Atlantic Ocean and merges into tidal marshes, shallow bays, and barrier beaches at the shore. Altitudes on the outwash plain range from sea level to as much as 40 feet above in Richmond County (Staten Island) and as much as 100 feet above in Queens County. No streams of appreciable size have developed on the outwash plain in Richmond, Kings, or Queens Counties because of the permeable nature of the deposits beneath the plain. The few existing streams are small and occupy shallow, narrow valleys which intersect the water table.

CLIMATE

The U. S. Weather Bureau has been collecting meteorological records in New York City since 1870. There are also additional data, mainly precipitation, collected by other agencies since 1826. The following discussion of the climate of New York City is abstracted from the Weather Bureau's Annual Meteorological Summary and is based chiefly on meteorological observations at the Battery Park station in southern Manhattan.

Despite the nearness of New York City to the Atlantic Ocean and numerous bays and rivers, its climate resembles the continental type more closely than the maritime type. This is because weather conditions affecting the city usually approach from the west, not from the ocean on the east. However, the oceanic influence is not entirely absent. During the summer

months local sea breezes often moderate the afternoon heat, and during the winter coastal storms accompanied by easterly winds may bring considerable amounts of rain or snow.

The mean annual temperature at New York City is 52.6° F. Subfreezing temperatures occur on the average of 92 days of the year; subzero weather may be expected only on two days in every three winters. During an average summer, the mercury reaches the nineties on 7 days. A temperature of 100° F. or higher has been registered about seven times since 1871. During the hot summer afternoons, relative humidity seldom exceeds 60 percent, but some uncomfortable days may be expected each year with a combination of temperature in the eighties and humidity of more than 70 percent.

Precipitation is moderate and is distributed evenly throughout the year. The normal annual precipitation is 42.92 inches, about 25 inches of rain usually falling during the growing season (April through October). A prolonged dry period may be expected every two or three years, usually in September or October. Most of the rain that falls from June to September is derived from thunderstorms. Hence precipitation during the warmer half of the year is usually brief and relatively intense. From October to April, however, precipitation is generally associated with widespread storm areas, so that day-long rain or snow is common. The average yearly snowfall totals about 31 inches, and on the average snow (trace or more) falls on about 35 days from November through April.

GEOLOGY

For a detailed discussion of the geology and geologic history of New York City the reader is referred to U. S. Geological Survey Folio 83 (Merrill and others, 1902) and New York State Water Power and Control Commission Bulletin GW-18 (Suter, deLaguna, and Perlmutter, 1949). The latter report includes data for the Long Island portion of the city only. Both reports contain maps of the surficial and subsurface geology of the city as well as cross sections showing the relationships of the geologic formations.

A generalized stratigraphic column for New York City, summarizing the geologic formations and their hydrologic properties, is shown in table 2. With respect to water-bearing properties, the geologic formations may be divided into two groups, consolidated rocks which contain little water, and unconsolidated deposits which contain large quantities of ground water and generally yield water readily to properly constructed wells. The descriptions of the consolidated rocks are based chiefly on data in Folio 83; the descriptions of the unconsolidated deposits are based in part on data in Bulletin GW-18. Most of the detailed information on the geology of the unconsolidated deposits in New York City is from Kings and Queens Counties where thousands of well records and other data have led to a relatively complete understanding of the geology and hydrology of these deposits. (See references.) Not enough geologic information is available on the unconsolidated deposits in Bronx, New York, and Richmond Counties to correlate them with all the geologic subdivisions recognized in Kings and Queens Counties, but tentative correlations of the major subdivisions have been made.

CONSOLIDATED ROCKS

The consolidated rocks in New York City are of igneous, sedimentary, and metamorphic origin and are pre-Cambrian to Triassic in age. The igneous rocks consist of granite, pegmatite, grandiorite, diabase, and basic dikes. The sedimentary rocks are composed of shale and sandstone of Triassic age which occur only in Staten Island, and the metamorphic rocks consist chiefly of gneiss, schist, and marble. Plate 1, a generalized geologic map of New York City, shows the distribution of the consolidated formations underlying the Pleistocene (glacial) depos-

Table 2.—Geologic formations in New York City and their water-bearing properties

System	Series	Geologic unit	Character of material	Water-bearing properties
Quaternary	Recent	Recent deposits	Thin deposits of alluvial clay, silt, sand, and gravel in the fresh-water channels, but thicker deposits in the tidal channels. Thin deposits of eolian sand, beach sand, and peat. Maximum thickness is at least 100 feet, but the average is much less. Identified in all Counties.	Relatively unimportant owing to thinness of the deposits and their susceptibility to salt-water infiltration.
	Pleistocene	Upper Pleistocene deposits	Till—heterogeneous mixture of unstratified material ranging in grain size from clay to boulders. Varies from place to place and at some places grades into sorted material. Deposited directly by the glaciers. Maximum thickness in terminal-moraine deposits is about 150 feet.	Unimportant as an aquifer in New York City. Yields small supplies of water sufficient for domestic use to wells of large diameter.
			Outwash—sorted and stratified sediments ranging in grain size from clay to coarse gravel. Commonly cross-bedded. Deposited by glacial melt waters. Maximum thickness is about 200 feet. Identified in all Counties.	Most important aquifer in the city. A reliable source of large supplies of water. Water-table conditions prevail. The maximum yield per well reported from the two Long Island Counties is greater than 1,500 gpm. The maximum yield reported in the other three Counties is 500 gpm. The range in yields is affected largely by the location and construction of the wells. Readily subject to contamination by salt water in areas of overpumping near tidal waters. High hardness is an unfavorable characteristic of the water in some areas such as Kings County.
		Gardiners clay	A dark-gray or greenish gray silt and solid clay containing marine microfossils and plant material. May consist of fine sand, sandy clay and scattered discontinuous lenses of coarse sand. The sand consists of quartz, biotite, chlorite, muscovite, amphibole, and pyroxene. Maximum thickness is about 150 feet. Identified in Kings and Queens Counties only. May occur in Richmond County.	Poor aquifer owing to relative impermeability. Acts as a confining layer to create artesian conditions in the underlying Jameco gravel. No wells tap this formation.
		Jameco gravel	Dark-brown to dark-gray or multicolored beds of coarse sand and gravel containing some cobbles, boulders, and scattered layers of silt and clay. Composed chiefly of fragments of quartz, granite, diabase, gneiss, schist, sandstone, shale, and pegmatite. Maximum thickness is about 150 feet. Identified in Kings and Queens only.	Excellent aquifer where present in Kings and Queens Counties. Both water-table and artesian conditions exist. The maximum yield reported is greater than 2,000 gpm. Readily subject to contamination by salt water and now generally yields water of high chloride content.
Cretaceous	Upper Cretaceous	Magothy (?) formation	Fine clayey sand, fine sand, silt, layers of clay, and several zones of coarse sand and gravel. Colors are light and dark gray, brown, buff, yellow, and occasionally red and pink. Consists almost entirely of angular clear quartz but contains lignite, pyrite, chert, kaolin, muscovite, and dark heavy minerals. Maximum thickness is about 400 feet. Occurs in Kings and Queens only.	Zones of coarse sediments constitute excellent aquifers in Queens. Artesian conditions exist. The maximum yield reported is greater than 1,100 gpm. Less easily subject to infiltration of salt water than overlying deposits. Water generally of good quality.
		Raritan formation: Clay member	Laminated silt and clay and subordinate sandy layers. Clay is predominantly light and dark gray, but may be red, white, yellow, or mottled. Layers of lignite and pyrite interbedded with carbonaceous clay are common. Maximum thickness is about 300 feet. Occurs in Kings, Queens, and Richmond Counties.	Poor aquifer owing to relative impermeability. Acts as a confining layer for the underlying Lloyd sand member.
		Raritan formation: Lloyd sand member	Medium to coarse sand and fine to medium gravel which contain beds of fine sandy clay, clayey sand, and relatively thin layers of clay. The amount of clay differs considerably from place to place; the clay may fill the pore spaces between the coarser particles. Sand and gravel consist almost entirely of quartz. Maximum thickness is about 300 feet. Identified in Kings and Queens, and probably occurs in Richmond County also.	Zones of coarse sediments that do not contain much clay constitute excellent aquifers in Kings and Queens. Artesian conditions prevail. The maximum yield reported is about 2,000 gpm. Less easily subject to infiltration of salt water than any of the overlying aquifers. Water may require treatment for removal of iron.

Table 2.—Geologic formations in New York City and their water-bearing properties (Continued)

Triasaic	Upper Triassic	Palisade diabase	Predominantly a medium- to coarse-grained dark-gray rock of intrusive origin consisting chiefly of the minerals plagioclase, augite, and hypersthene. Occurs as intrusive bodies in Newark group in Richmond.	Unimportant as an aquifer. Minor faults and joints are numerous. Few well records. Records of wells in the diabase elsewhere in the State show an average yield of less than 10 gpm.
		Newark group, undivided	Alternating beds of comparatively soft, brownish-red sandstone and shale. The sandstones are cross-bedded in places and bear evidence of shallow fresh-water deposition. Identified in northwestern Richmond only.	Unimportant as an aquifer. Few well records. Records of wells in nearby areas in New Jersey and Rockland County, N. Y. show an average yield of about 75 gpm and a range in yield from less than 1 to 700 gpm.
Pre-Cambrian (?)		Staten Island serpentine of Merrill (1898)	Serpentine that ranges widely in color and texture. Generally compact and light green but may be dull red owing to the presence of iron. Probably derived from basic intrusives. Underlies a large area in central and northeastern Richmond.	Unimportant as an aquifer because of low permeability. Records of 5 wells shown an average yield of 5 gpm and an average depth of 300 feet.
Pre-Cambrian		Igneous intrusives	Pegmatite, injection granite, granodiorite, gneissoid granite, and basic dikes and injections.	Unimportant as aquifers because of low permeability and small area of outcrop. No well records.
		Manhattan schist	Coarsely crystalline mica schist which has been severely crumpled and folded and shows a marked foliation. A recrystallized sediment which has lost its sedimentary character through severe metamorphism. Maximum thickness is about 3,000 feet. Crops out in New York and Bronx counties.	Unimportant as an aquifer because of relative impermeability. Records of 15 wells show an average yield of 40 gpm and an average depth of 320 feet.
		Inwood limestone	Coarsely crystalline and distinctly bedded marble. Subject to solutional action and consequently forms topographic lows which may be covered by deposits of stratified drift. Maximum thickness is about 700 feet. Identified in New York and Bronx Counties but may underlie a small area in northwestern Queens County.	Relatively unimportant as an aquifer because of small area of outcrop and fairly low permeability. Records of 18 wells, in Bronx County, show an average yield of 75 gpm and a range in yield from 1 to 300 gpm. The average well depth is 340 feet. Ground water in the Inwood is the hardest in the city, averaging about 375 ppm.
		Fordham gneiss	A gray thin-bedded gneiss. Some of the bands are highly quartzose, some are composed largely of biotite, and some consist of pegmatite or granite which seems to have been injected parallel to regular banding of the gneiss. Considered as partly sedimentary and partly igneous in origin? Maximum thickness is unknown. Occurs mainly in Bronx County.	Unimportant as an aquifer because of relative impermeability. Records of only 2 wells obtained. Yields are 5 and 35 gpm and depths range from 98 to 250 feet.

its. The consolidated rocks are exposed or are close to the land surface in much of northern New York and Bronx Counties. In Richmond County, the serpentine bedrock in the central part of the County is exposed in a few places but is generally covered by unstratified glacial drift or other deposits. In Kings and Queens Counties the surface of the bedrock slopes about 80 feet per mile to the southeast and is buried under Cretaceous and Pleistocene deposits aggregating as much as 1,150 feet in thickness. Bedrock is exposed in Long Island only in a small area near Astoria in northwestern Queens County. Only a few wells now take water from the bedrock in western Long Island.

The igneous and metamorphic rocks in New York City are crystalline and contain practically no pore spaces. They do, however, contain joints, openings along cleavage planes, and other fractures through which small amounts of ground water may move. Larger quantities of water occur in the Inwood limestone, a metamorphic rock, in which the openings have been enlarged by solution. The sedimentary rocks yield water chiefly from joints, and openings along bedding and fault planes. Some water may be held in the pore spaces between the grains of which the rocks are composed. The volume of water held in this manner is generally small but varies depending upon the kind and amount of cementation of the rock, and the size of the pores.

UNCONSOLIDATED DEPOSITS

The unconsolidated deposits which overlie the consolidated bedrock of New York City consist of beds of gravel, sand, silt, and clay. The deposits range in geologic age from Cretaceous to Recent and are divided into two groups: deposits of Cretaceous age, and deposits of Quaternary (Pleistocene and Recent) age. The distribution of the deposits is shown in plates 1 and 2. As the Pleistocene and Recent deposits are difficult to differentiate, both are usually mapped as a single unit. The unconsolidated deposits are thickest in Kings and Queens Counties (up to 1,150 feet) and have a considerable range in thickness in the other Counties, reaching a maximum thickness of about 400 feet in Richmond County.

Deposits of Cretaceous Age

The deposits of Cretaceous age are important or potentially important as sources of ground water only in Richmond and the Long Island Counties. They are entirely absent in Bronx and New York Counties. The deposits originated mainly as stream deposits of the flood-plain and deltaic varieties and consequently show marked variations in texture and sorting both vertically and horizontally. The sediments range from solid clays to relatively clay-free beds of fine to coarse sand and gravel. Between these extremes are mixed textural types such as clayey sand, sandy clay, and clayey gravel. These materials, in general, occur in discontinuous lenses which may or may not be traceable from one well to another. Wells screened in Cretaceous deposits require more development than wells screened in glacial deposits because of the high percentage of clay and silt. Nevertheless, modern development techniques have produced many wells yielding large quantities of water from Cretaceous beds.

Geologists have divided the Cretaceous beds of Long Island into three major units (see table 2), from bottom to top the Lloyd sand member of the Raritan formation, the clay member of the Raritan formation, and the Magothy (?) formation. These deposits range in combined thickness from a featheredge at their northwestern limit to about 1,000 feet in southeastern Queens County. Data collected indicate that the Raritan formation underlies the southeastern part of Richmond County also, but not enough well logs and samples were obtained to subdivide

the formation (except to say that the upper or clay member is almost certainly present and also sandy zones perhaps equivalent to the Lloyd sand member.) No younger Cretaceous formations were recognized.

Deposits of Pleistocene and Recent Age

Much of the surface of Richmond, New York, and Kings and Queens Counties is immediately underlain by unconsolidated deposits of Pleistocene and Recent age. In Bronx County the deposits are thinner and more outcrops of rock are evident than in other parts of the city, but these are too small to be shown individually on plate 2. The deposits consist of four units: (1) unstratified drift forming the Harbor Hill terminal moraine; (2) unstratified drift forming ground moraine; (3) stratified sediments, largely outwash sand and gravel deposited by streams from melting glaciers during several stages of ice advance, but locally including beds of clay which may be the equivalent of the Gardiners clay (the lowermost portion of these deposits may represent the Jameco gravel described in table 2 and beyond); and (4) alluvium of Recent age. On the map, plate 2, only the Harbor Hill terminal moraine, the ground moraine, and the uppermost (youngest) outwash deposits are shown as both the Gardiners clay and the Jameco gravel do not crop out.

The terminal moraine, the Harbor Hill moraine, forms a conspicuous hummocky ridge which, within the city, extends from northeastern Queens to the Fort Hamilton area in southwestern Brooklyn, where it is cut by the Narrows, and reappears on Staten Island to the southwest. The morainal ridge is composed of relatively impermeable unstratified till which ranges in thickness from about 25 to 150 feet. Huge boulders, generally characteristic of these deposits, make drilling through the moraine a slow and difficult process.

The ground moraine consists of brown, unstratified clay, boulders, and sand. It occurs as the uppermost deposit in the area north of the terminal moraine where it forms a relatively thin veneer (generally about 2 to 35 feet thick but as much as 85 feet thick in a few places) over the underlying bedrock or deposits of outwash. The ground moraine is of low permeability and in most places is a poor source of water. However, in some parts of the city, as in northern Richmond, Kings, and Queens Counties, (see pl. 2), it locally overlies outwash sand and gravel which is excellent water-bearing material.

The outwash sand and gravel deposits contain abundant ground-water supplies in southeastern Richmond and southern New York Counties and most of Kings and Queens Counties. These well-sorted sediments were deposited in flood plains, deltas, and fans in front of the glaciers by melt-water streams. They are porous and highly permeable. Outwash deposits in Kings and Queens Counties, comprise two distinct units separated by the interglacial Gardiners clay. The older, lower, unit is called the Jameco gravel; the upper unit is part of the post-Gardiners deposits referred to on Long Island, as the upper Pleistocene deposits (Suter, and others, 1949, p. 24). The Jameco gravel and the Gardiners clay have not been positively identified in Bronx, New York, and Richmond Counties, and most of the glacial deposits in those Counties probably are the equivalent of the upper Pleistocene deposits of Long Island. However, some of the deeper valley-fill deposits in Richmond and Manhattan may be the equivalent of the Jameco gravel.

As determined from studies on Long Island, the Gardiners clay, separating the Jameco gravel and the upper Pleistocene deposits, was laid down probably in tidal estuaries and embayments during an interglacial stage when sea level was about 50 feet lower than the present level and the ice had melted completely away from this area. Upon readvance of the ice the younger, upper Pleistocene outwash was deposited on the marine clay. There is some evidence

that locally, as in Kings County, the clay was not deposited or was cut through by streams before the deposition of the younger outwash which therefore in places may rest directly on the Jameco gravel. Thus, the geologic and hydrologic conditions in the Pleistocene deposits in Kings and Queens Counties are complex. Similar conditions may occur in the other Counties where corresponding erosional and depositional events may have taken place.

The alluvium of Recent age is of little importance as a source of ground water in New York City. Few wells are constructed in these deposits as they are generally contaminated by sea water. The deposits, ranging in thickness from several feet to as much as 100 feet, consist of white to gray sand and gravel, usually containing broken shell fragments, and layers of dark gray organic clay and silt. The clay and silt help to seal the fresh-water aquifers against salt-water intrusion. Some thin deposits of Recent age may occur in the valleys of the streams draining Bronx County, but most of the deposits occur beneath the beaches, offshore bars, tidal channels, and embayments bordering the city.

GROUND WATER

OCCURRENCE AND AVAILABILITY

The primary source of ground water in New York City is precipitation (rain and snow) on the land surface, which averages about 43 inches per year. Part of this is disposed of by direct surface runoff into streams and lakes; evaporation from the land surface, wetted vegetation, or structures of man; transpiration by plants; and drainage into sewers in areas where the streets are paved and buildings have been erected. The remainder of the precipitation percolates downward and becomes part of the ground water. It is estimated that probably less than 50 percent of the total precipitation enters the ground-water reservoirs in Kings, Queens, and Richmond Counties. In Manhattan and Bronx which are covered almost entirely by buildings and paved streets, and are underlain also by relatively impermeable rock, recharge from precipitation is probably much less than 50 percent. Other, secondary, sources of ground-water recharge in the city are leakage from sewer and water lines, infiltration of surface water, and movement of water into the city from adjacent areas. These sources are discussed more fully for each County in the following pages.

Most of the ground water in New York City is held in the pore spaces of the unconsolidated deposits of Cretaceous and Pleistocene age. In some of these deposits, especially the Cretaceous deposits, water is held under artesian pressure in permeable beds confined beneath clay layers. Water occurs also in the consolidated rocks in joints or other fractures which make relatively large openings. In much of northern Richmond, Bronx, and Manhattan, these openings in the bedrock are the only source of ground water.

Bronx County

CHARACTERISTICS OF THE WATER-BEARING FORMATIONS

Bronx County is underlain by consolidated pre-Cambrian rocks. The three most extensive formations are, from oldest to youngest, the Fordham gneiss, the Inwood limestone, and the Manhattan schist. The pre-Cambrian Lowerre quartzite and Yonkers granite crop out in several small areas, but, owing to their limited areal distribution and relatively impermeable nature, those formations are of little importance to this investigation and are not shown on plate 1; no records of wells penetrating them were obtained.

The strata of the three principal formations are tightly folded, and both the folding and subsequent erosion have produced a belted outcrop pattern and also a series of northeast-

trending ridges and valleys. The eastern two-thirds of Bronx County is underlain by the Manhattan schist; the western third by the Fordham gneiss and narrow bands of infolded Inwood limestone (pl. 1). The limestone typically underlies the low areas, forming long, narrow valleys. Figure 3 gives a generalized geologic section across the southern part of Bronx County illustrating the structural relationships of the formations.

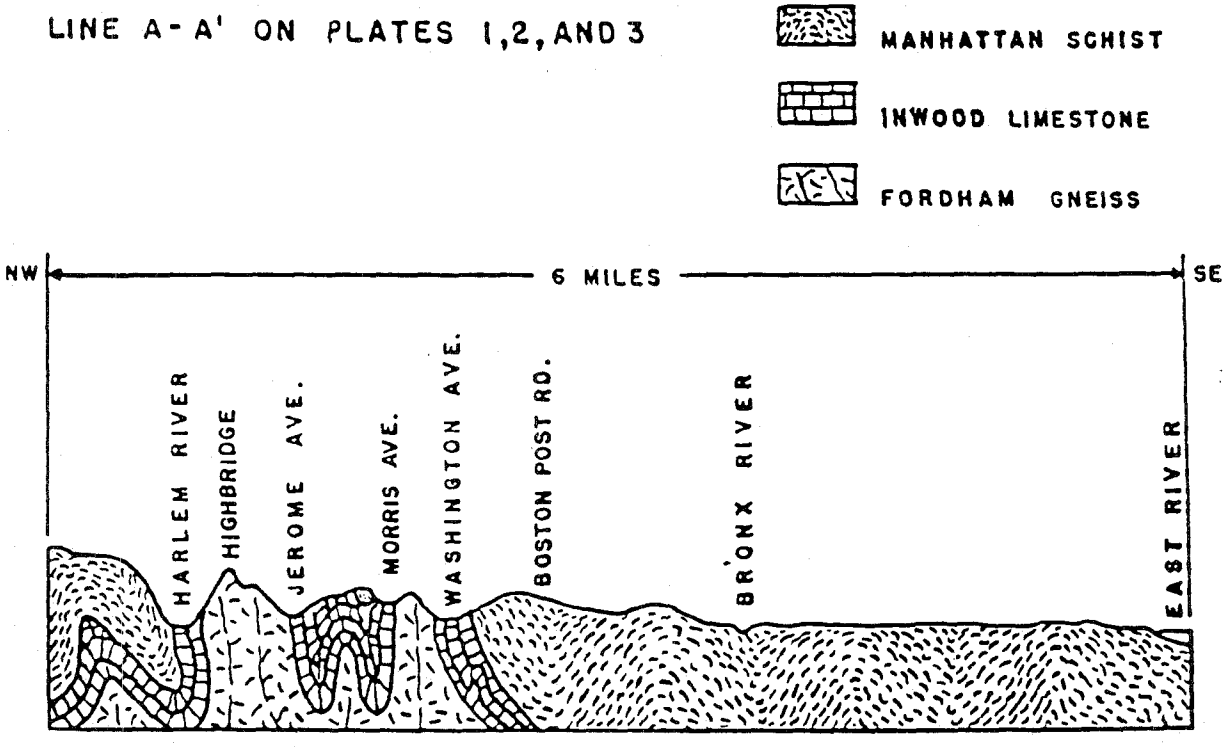

Figure 3.—Northwest-southeast generalized geologic section in Bronx County.

During the Pleistocene epoch a relatively thin covering of glacial deposits, consisting chiefly of till, was laid down upon the pre-Cambrian rocks, and some stratified drift was deposited in the valleys underlain by the Inwood limestone. Most of the ground-water supplies in the County are obtained from the stratified drift and the underlying limestone—thus most of the wells for which records were obtained are in areas underlain by these materials. (See pls. 2 and 3.)

Ground water in the consolidated rocks.—The Inwood limestone is the most productive source of ground water among the pre-Cambrian rocks in Bronx County. The distribution of the formation is shown in plate 1. It crops out or is near the surface only in western Bronx and adjacent northern Manhattan. The formation is typically a gray to white coarsely crystalline, distinctly bedded limestone and dolomite which has been somewhat metamorphosed. The rock commonly disintegrates into a coarse calcareous sand. It is soluble in slightly acid water, thus making the formation less resistant to erosion than the other consolidated rocks. Widening of the joints and other fractures in the Inwood limestone by solution may result in the development of underground channels. Thus, because the formation is weak, it underlies low ground almost everywhere, and many of the navigable channels around Manhattan and Bronx are submerged valleys formed by the erosion in the rock. During the Pleistocene epoch, glacial melt-water streams occupied these low areas, and in part filled them with permeable stratified deposits, whereas the surrounding uplands were covered by relatively impermeable

till. The increased permeability due to solutional activities, and the presence of a permeable overburden that readily allows recharge, are the two factors that account for higher yields from the Inwood limestone than from the other consolidated rocks in the city.

Records were obtained for 18 wells in the Inwood limestone. The data are given in table 7, and the locations of the wells are shown on plate 3. The yields from these wells average 75 gallons per minute (gpm) and range from 1 to 300 gpm. The average depth of the wells is 340 feet and the range in depth is 70 to 1,800 feet. Although it is the most productive bedrock formation, in general the depth of wells are greater and yields smaller in the Inwood limestone than in the stratified glacial deposits of the County. Thus, for maximum yield, wells should be screened in the glacial deposits, where they are present. In a few places drillers have constructed wells which draw water simultaneously from both the stratified drift and the limestone. Yields of two wells constructed in this manner are 65 and 230 gpm, respectively. The quality of water obtained from the Inwood limestone is satisfactory for most industrial purposes although for some the water is too hard and alkaline. The average hardness and alkalinity in four analyses are 416 and 259 ppm, respectively.

The crystalline rocks in the County other than the Inwood limestone are relatively impermeable and yield only small quantities of water to wells. Although such yields are sufficient for domestic purposes, and are so used in other areas, they are of little value in New York City, where wells are used almost exclusively for industrial or public-supply purposes. The Manhattan schist, a hard dark-green to black micaceous rock underlying the entire eastern two-thirds of Bronx County, is considerably less productive than the Inwood limestone. Yields range from about 9 to 200 gpm, most reported yields being less than 50 gpm. Depths of wells penetrating the formation range from about 100 to 900 feet. The iron content in water from the Manhattan schist is generally somewhat higher than that in water from the Inwood limestone, but alkalinity and hardness are much lower. (See table 5.) Almost the entire supply of ground water in the rock is held in fractures which decrease in size and number with depth. Drilling to depths greater than about 300 feet is usually not advisable, if water has not been obtained at shallower depths.

The Fordham gneiss, a massive, coarsely crystalline black- and white-banded rock, underlies the areas of high relief in the western third of Bronx County. Records of only two wells penetrating the gneiss were collected for this report. These yield 5 and 35 gpm, respectively. No chemical analyses of water from this formation were obtained, but the quality probably is similar to that of water in the Manhattan schist.

Although most of the ground water in the County is from precipitation, a small amount of water is derived from other sources. For example, some ground water probably moves into northern Bronx County from Westchester County as underflow in the glacial deposits filling the northeast-trending valleys in the Inwood limestone, and some water may move into the County via solution channels in the limestone itself. However, most of the Bronx-Westchester boundary is underlain by relatively impermeable crystalline rocks (Fordham gneiss and Manhattan schist).

Another possible source of recharge of unknown amount is leakage from sewer and water lines. According to the annual report for 1950 of the Chief Engineer, the New York City Bureau of Water Supply stopped leaks from water mains in Bronx County which totaled about 14.4 mgd. This is about seven times the estimated pumpage of ground water for industrial use in the County. The leakage from sewers was not estimated.

Ground water in the unconsolidated deposits.—The unconsolidated deposits in Bronx County consist of upper Pleistocene deposits and Recent alluvium. It is believed that Cretaceous deposits were once present in the Bronx but have been removed by erosion. The glacial

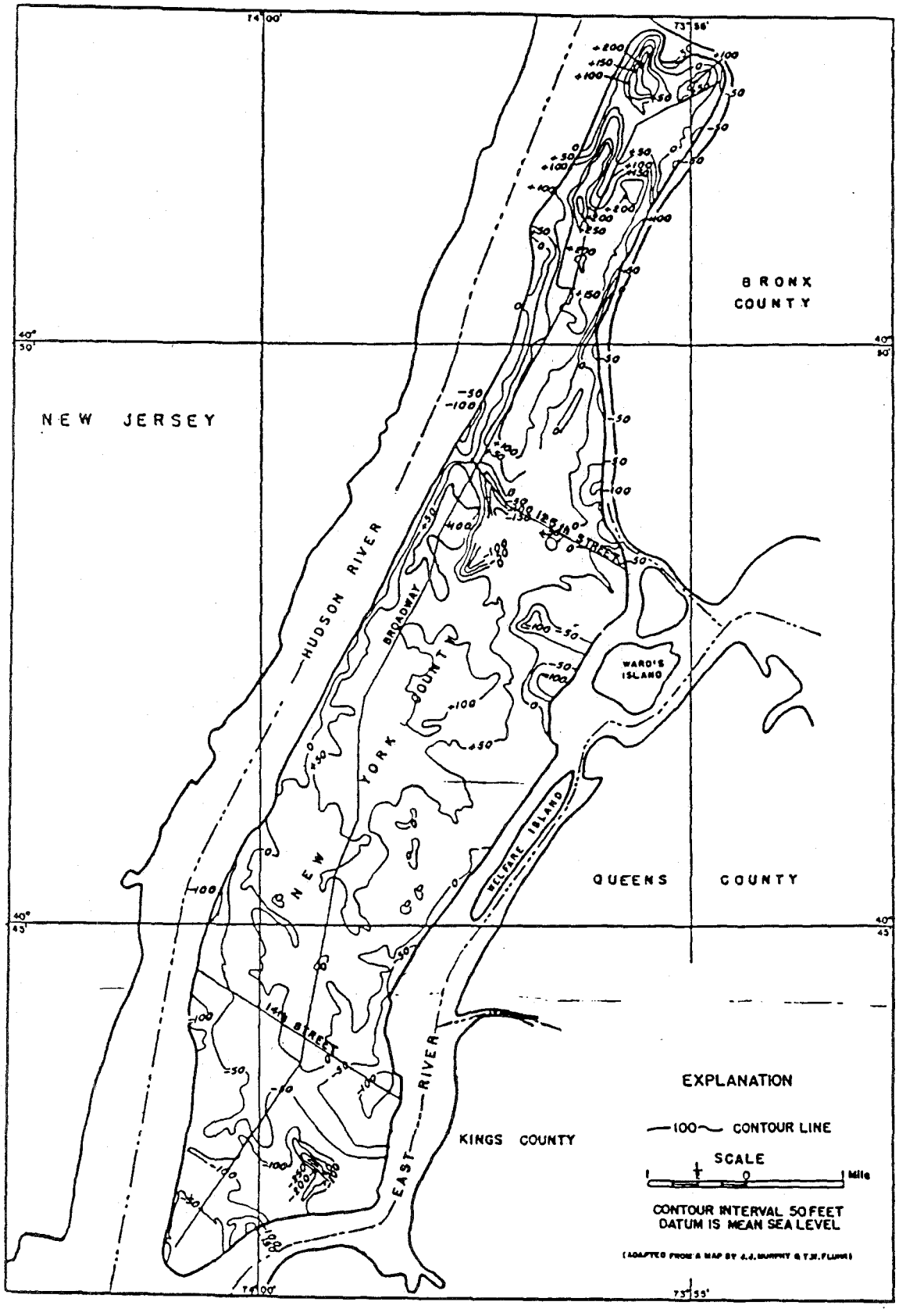

Figure 4.—Contours on the surface of the bedrock in New York County (Manhattan).

tains some joints, irregular fractures, and faults along which ground water moves, but in some places chemical weathering has filled these openings with clay, an end product of rock weathering. The formation is not considered to be an important source of ground water in Manhattan, as the data from drilling indicate that the schist generally does not yield enough water for industrial use. The average yield of 3 wells penetrating the formation is only 35 gpm, and the average depth is 370 feet. At a few places where the rock is intensely fractured and is overlain by water-bearing glacial deposits somewhat higher yields may be obtained. For example, at well Ny137, a yield of 70 gpm was obtained for air conditioning; however, the drawdown in the well was 305 feet.

The Manhattan schist underlies more than three-fourths of Manhattan and makes a varied topography, as indicated by the contour map, figure 4. Although not compiled by the Geological Survey, the map was included mainly to permit estimating the depth to bedrock in different parts of the County and is believed to be the best map available for that purpose. However, the authors of this report do not necessarily agree with all the details of the contouring. No attempt was made to modify the bedrock contours for this reconnaissance report. In another bedrock map compiled by Hobbs (1905), based on fewer data, the configuration of the bedrock surface differs considerably from figure 4, particularly in the delineation of the prominent depressions.

The depressions in the rock surface in southern Manhattan (bottom at about —250 feet), and in the north-central part of the island (bottom at about —175 feet) are filled with glacial deposits that contain most of the available ground water in the County. Their origin is not definitely known, but the depressions may have resulted from one, or combinations of several processes such as faulting, solution of limestone, and glacial erosion.

The northern depression, which according to figure 4 actually consists of several depressions having different depths, is apparently situated along a major fault zone which trends northwest across Manhattan from 96th Street and the East River to about 125th Street and the Hudson River.

Erosion of decayed and shattered rock along the fault zone may in part account for the depression. Also, much of the bedrock in the area of the northern depressions is the Inwood limestone, a rock in which solution channels, sinkholes, and caverns may develop. It is not unreasonable, therefore to suggest that solution of the limestone may have been a factor in producing the depressions. This suggestion is substantiated to some extent by the fact that isolated-residual high-areas within the general area of the northern depressions are underlain by crystalline rocks other than the Inwood limestone. Finally, scouring, overdeepening of decayed zones, and plucking of joint blocks by the ice presumably further modified the existing depressions which were later filled by stratified deposits of melt-water streams. A similar combination of processes may have produced the depressions in southern Manhattan but there is no evidence of a major fault in that area. Berkey (1910, p. 282) suggests that the depressions in southern Manhattan may be related to the preglacial channel of the East River. He points out that below 23rd Street the river is displaced to the east of the former channel and now flows over a relatively thin cover of drift above the rock floor. (See upper cross section, fig. 5.)

Because few wells take water from the Fordham gneiss or Inwood limestone in Manhattan, the water-bearing characteristics of those formations are discussed in more detail in the preceding section describing the geology of Bronx County, where more data are available. In Manhattan the characteristics of the rocks are probably about the same, and the Inwood limestone, particularly, might yield water for industrial purposes. Well Ny139, an 8-inch well 310 feet deep in the extreme northern part of Manhattan, yielded 50 gpm.

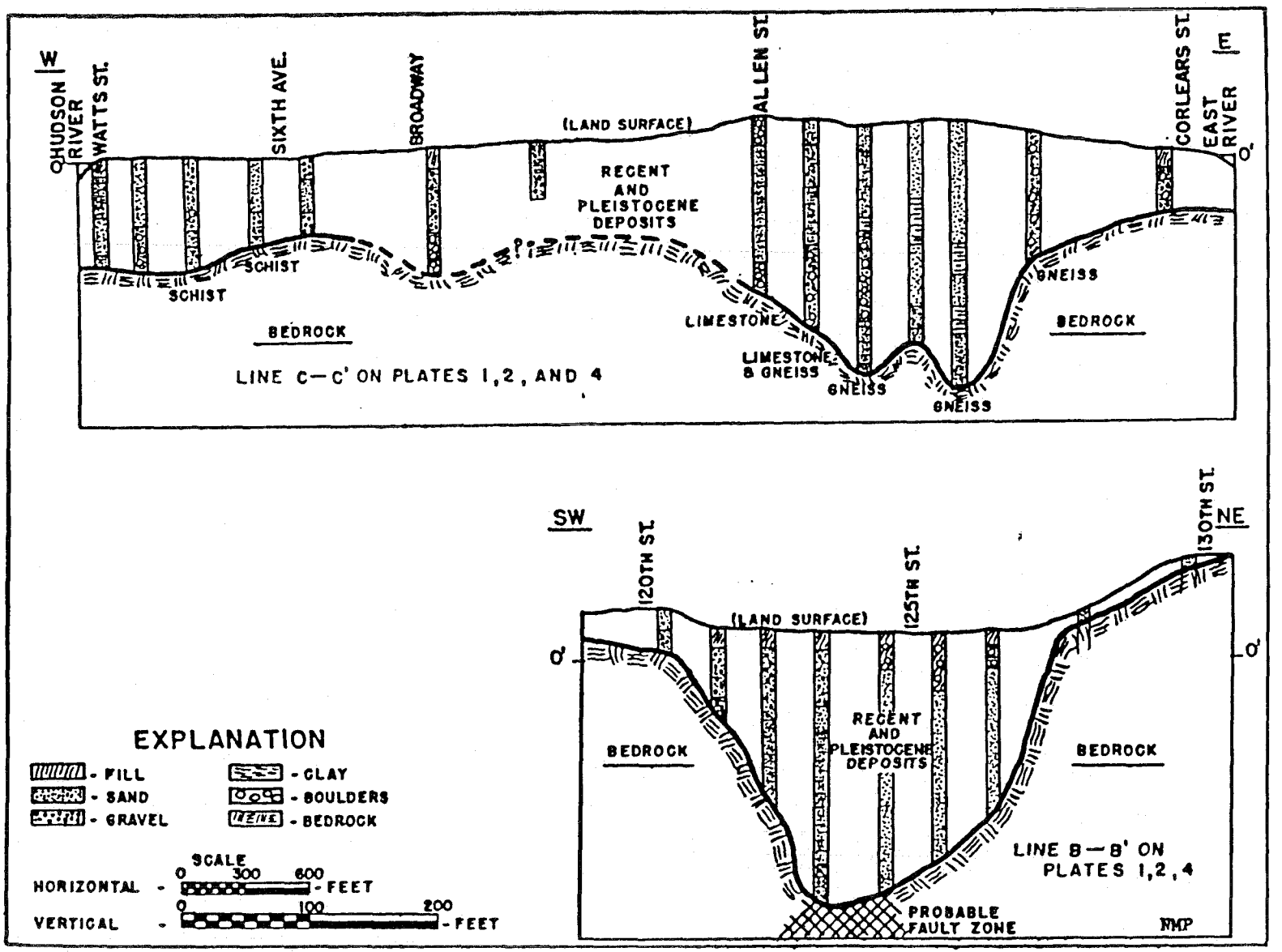

Figure 5.—Geologic sections in New York County.

Ground water in the unconsolidated deposits.—The unconsolidated deposits in Manhattan consist almost entirely of upper Pleistocene deposits. There are a few small deposits of Recent age in northern Manhattan and in the tidal channels bordering the County, but they have no practical value as sources of ground water.

As elsewhere, the Pleistocene deposits consist of till and stratified drift. The till was deposited as ground moraine, is less than 25 feet thick in most places, and is discontinuous. Because of its thinness and low permeability the till yields little water to wells, and as in Bronx County, is not a productive aquifer. However, two large bodies of stratified drift in Manhattan contain and yield considerable ground water. These bodies which are associated with the prominent depressions in the bedrock surface, are shown on plate 2, and their presence is indicated also on plate 4 by the concentration of wells at the southern end of the island and in the vicinity of 125th Street.

The smaller body is in the northern part of Manhattan and occupies a depressed area in the bedrock extending from 96th Street and the East River to about 145th Street and the Hudson River. The stratified drift in this area ranges in thickness from about 25 feet on the perimeter of the depressed area to as much as 175 feet in the deeper parts. It consists of sand, gravel, and clay; the lower cross section in figure 5 illustrates the varied lithology of the deposits in the northern depression. Records of seven wells screened in these deposits show an average well depth of 50 feet and an average yield, based on data from three wells, of about 60 gpm. Five of the wells have a chloride content of less than 50 ppm. However, heavy pumping in this area may result in contamination of the deposits, as they are open at both ends to salty tidal channels.

The second body of stratified drift in Manhattan that contains large amounts of ground water covers all the island south of 14th Street. The deposit consists mostly of sand, although beds of gravel and clay also are present. (See upper cross section in fig. 5.) The thickness of the stratified material averages about 100 feet and may be as much as 250 feet. Records of 58 wells tapping this body show an average depth of 57 feet and a range in depth from 18 to 160 feet. Of these wells, 47 have an average yield of 150 gpm; they range in yield from less than 10 to 500 gpm. Chemical analyses of water obtained at 34 wells in this area show a range in chloride content from less than 20 to more than 10,000 ppm. More than half the 34 wells yield water that has more than 100 ppm of chloride, thus suggesting that salt water has invaded the deposits.

The chemical analyses were made on samples collected over a period of 35 years, however, and many of them have little value in determining the present position of the fresh water-salt water boundary. As periodic analyses are available for only a few wells, it cannot be ascertained definitely whether the area of salt-water contamination is becoming more widespread, but the small amount of available evidence suggests increasing contamination, presumably from the tidal channels.

Chloride concentrations in southern Manhattan are highest in wells near the shoreline but some of the wells in the center of the island also show above-average concentrations. In 1949 ground-water pumpage in lower Manhattan reached a seasonal peak of almost 5 mgd. This pumpage is probably more than in earlier years. Also, recharge to the underground aquifers is limited to leakage from water mains (in 1950 the Bureau of Water Supply stopped leaks totaling about 6.4 mgd), of which a part must reach the edge of the island and seep out, and thus is not available to wells; to leakage from sewers (not estimated); and to the scant amount of rainfall that can infiltrate through the few parks and other open areas in the County. Therefore, the relatively high chloride contents are probably from infiltration of salt water resulting from excess of draft over replenishment.

In summary, more than 90 percent of the wells for which records were obtained in Man-

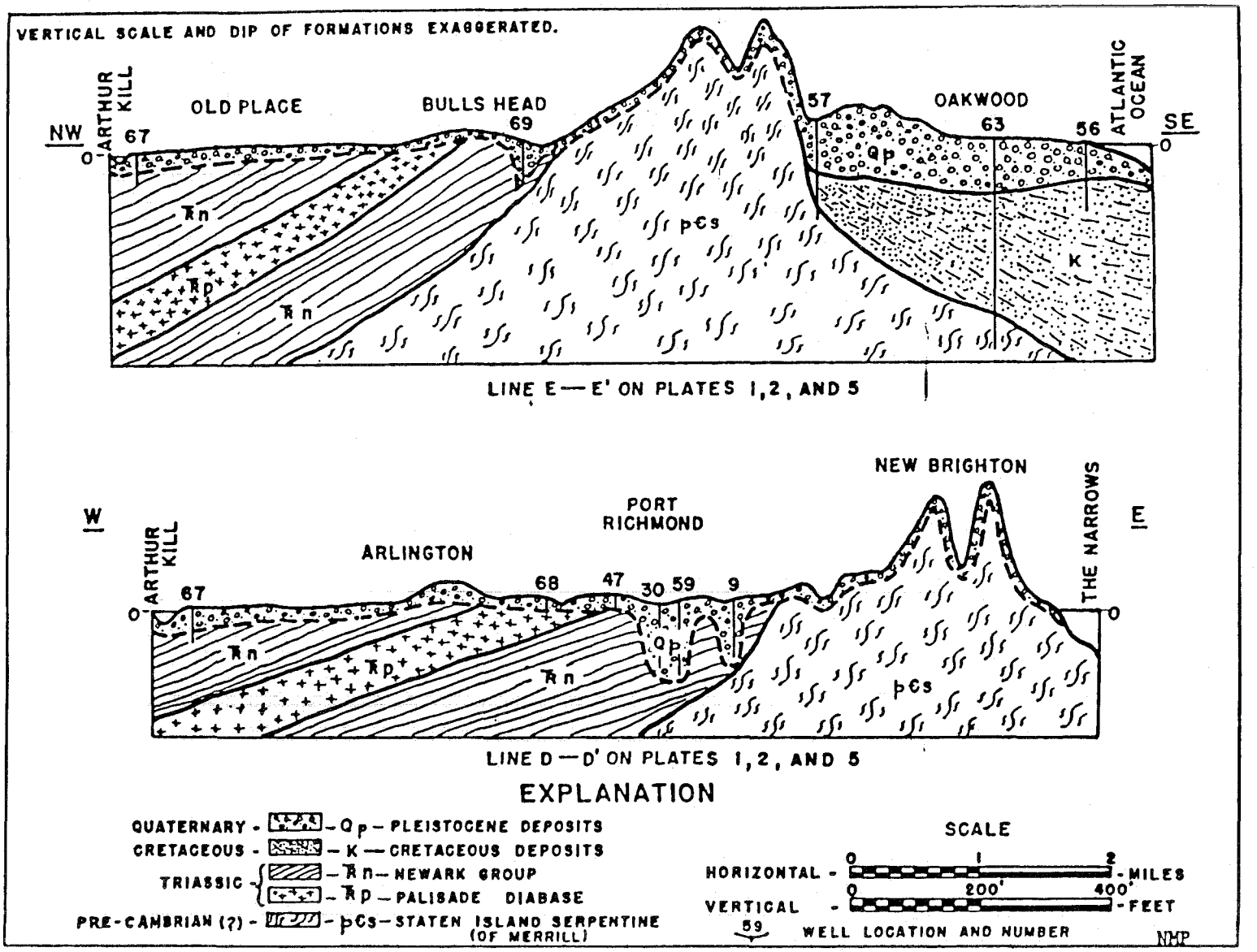

Figure 6.—Geologic sections in Richmond County.

hattan are concentrated in the two areas of stratified drift described above, and these are essentially the only areas on the island from which reliable supplies of ground water large enough for industrial or commercial purposes can be obtained. It should be borne in mind that continued or increased pumping will draw in salt water from the tidal channels, so long as an unfavorable balance exists between pumpage and replenishment.

Richmond County (Staten Island)

Characteristics of the Water-Bearing Formations

The basement rocks of Richmond County are pre-Cambrian metamorphic rocks. There are few records of wells penetrating the rocks, and they are regarded as essentially non-water-bearing. However, they are flanked on the northwest by consolidated sedimentary and igneous rocks of Triassic age which dip northwest, and on the southeast and south by unconsolidated Coastal Plain sediments of Cretaceous age which dip toward the southeast and in part are water bearing. During Pleistocene time these formations were covered by glacial deposits. Figure 6 shows generalized geologic sections which illustrate diagrammatically the subsurface relation between these formations. With respect to the occurrence of ground water, the formations of Staten Island are divided into consolidated rocks which include serpentine, schist, gneiss, sandstone, shale, and diabase, and unconsolidated deposits which consist of gravel, sand, silt, and clay. Plate 5 shows the location of wells and test borings in Richmond County, and tables 6 and 7 give the data available for each well.

Ground water in the consolidated rocks.—Igneous and sedimentary rocks of Triassic age underlie the glacial deposits in the northern and northwestern parts of Richmond and, on the basis of information from New Jersey, probably dip about 10° to 18° to the northwest. The sedimentary rocks, known as the Newark group (pl. 1), consist of reddish-brown medium to coarse sandstone, and shale. The igneous rocks consist of a thick sill of diabase, within the sedimentary series. It apparently is an extension of the rock that forms the Palisades cliffs along the west shore of the Hudson River in New Jersey but is not a conspicuous topographic feature in Richmond.

The yields of wells penetrating the consolidated rocks generally are small. However, where permeable glacial deposits overlie the bedrock, the yield from rock wells is much greater. The rocks of Triassic age yield water from openings along bedding, joint, and fault planes. The water-bearing fractures decrease in number and size with depth, and therefore it generally has been found that no appreciable increase in yield results from drilling wells to a depth greater than about 300 feet. Drilling experience in adjacent areas indicates that the Palisade diabase is not a good aquifer, but in some places it may provide enough water for domestic needs. The record of well R47 (pl. 5) in Richmond indicates that a yield of only ½ gpm was obtained from the diabase before the well was abandoned. A low yield (less than 2 gpm) was obtained at R48, a well that taps the sandstone. These few data are not necessarily representative of the potential yield of the Triassic rocks. Wells that draw water from the Newark group in New Jersey and Rockland County, N. Y., have an average yield of about 75 gpm and individually as much as 700 gpm. Whether comparable yields can be obtained from the equivalent rocks in northern Richmond is not known. However, the limited area of recharge and the thinness of the glacial overburden makes it unlikely that large withdrawals of ground water can be made from the Triassic rocks in Richmond County.

The Staten Island serpentine of Merrill (1898, pp. 21-31) underlies the high areas in the northeast and central parts of the County and crops out in a few places. The serpentine is a dense, waxy-looking rock, ranging from dark green to mottled brown depending upon the degree of weathering. In many outcrops the rock contains numerous fractures and crumbles

readily. Records of five wells that penetrate the serpentine were obtained. The range in yield is ½ to 14 gpm and the average yield is 5 gpm. The depth of these wells ranges from 148 to 600 feet, and averages about 300 feet. According to Ellison (1949, p. 90), 17 out of 20 ground- and surface-water samples from areas associated with the serpentine showed high concentrations of magnesium and of silica.

Schist and gneiss have been penetrated in at least two places on Staten Island according to the logs of test borings and examinations of the material by geologists. Records for these borings (R42 and R57) are given in tables 6 and 7. Gratacap (1904, p. 171) reports also that schist was encountered during blasting for ferry slips at St. George. No ground-water significance is attached to the occurrence of these rocks. Yields from wells penetrating them probably would be no greater than yields obtained from the serpentine.

Ground water in the unconsolidated deposits.—The two principal groups of unconsolidated deposits in Richmond County are the deposits of Cretaceous and Pleistocene age. The beds of Cretaceous age are thought to represent the Raritan formation which crops out to the southwest in the type area in New Jersey. In Long Island the Raritan formation has been identified mainly on the basis of plant fossils and lithology and has been divided into the basal Lloyd sand member and the clay member. Because few drillers' logs and samples from wells completely penetrating the Cretaceous beds of Staten Island were obtained, it was not considered feasible to attempt a similar subdivision in Staten Island. Outcrops of Cretaceous beds are few and are confined to southwestern Richmond. Gratacap (1904, pp. 175-180) describes a clay deposit at Kreisherville containing lignite, pyrite, and leaf impressions. Cretaceous formations younger than the Raritan formation may be present in Staten Island but no direct supporting evidence is available. In this report, therefore, all the beds of Cretaceous age on Staten Island are referred to by their general age designation.

The Cretaceous deposits in Richmond consist of layers of clay, silt, sandy clay, sand, and gravel. Colors are white, gray, brown, red, and black. The sand consists chiefly of angular grains of quartz, clear, milky, or rusty in color, plus a small percentage of muscovite, kaolin, chert, and dark heavy minerals. Water-bearing zones occur at several depths, but insufficient data are available to determine whether they have any extensive lateral continuity. At some places, according to the well records, the Cretaceous deposits contain sandy zones up to 50 feet thick. Elsewhere two or three water-bearing zones 10 to 20 feet thick each are present. In still other areas the Cretaceous beds are predominantly clayey and completely lacking in water-bearing zones of significant thickness. Table 6 (Richmond County) gives detailed descriptions of the Cretaceous beds penetrated by several wells. The maximum thickness of the deposits is about 300 feet. The beds dip southeast and lie unconformably on a southeasterly sloping platform of impermeable bedrock, which according to the meager data has a gradient of more than 100 feet per mile.

The water-bearing zones of the Cretaceous deposits contain water under artesian pressure. In areas where the water table is above the piezometric levels of the deeper aquifers recharge takes place by downward percolation of water through the Pleistocene deposits, which almost completely blanket the Cretaceous beds. Yields from wells screened in the Cretaceous deposits range from about 50 to 300 gpm and average about 150 gpm. Except for a high iron content, water from the Cretaceous beds is of good quality. Similarly, the water from the Lloyd sand member of the Raritan formation in Long Island has a relatively high iron content.

The recharge area of the Cretaceous beds on Staten Island is of limited extent—no larger and, in effect, probably somewhat smaller than the area shown on plate 1—and there is a potential danger of salt-water intrusion if the beds are overpumped. However, higher yields might be obtained from these deposits by greater utilization of modern methods of well drilling and development.

The deposits of Pleistocene age in Richmond comprise four different types: ground moraine, terminal moraine, outwash-plain deposits, and valley fill. The outwash-plain deposits are the chief source of ground water. Plate 2 gives the distribution of the ground moraine, terminal moraine, and outwash-plain deposits. The valley-fill deposits, which occur in small areas in northern Richmond, are covered by the ground moraine and are identified solely from well logs.

The ground moraine is composed of reddish-brown clayey till derived chiefly from the shale and sandstone of Triassic age. It overlies almost the entire area north and west of the terminal moraine, including part of the highland formed by serpentine and most of the area of Triassic rocks. In some areas it covers stratified outwash deposits. The thickness ranges from about 10 to 85 feet and averages about 35 feet. The ground moraine is poorly sorted material having substantial amounts of clay and hence has a low permeability. It rarely yields more than 3 or 4 gpm to large-diameter dug wells.

The terminal moraine forms an irregular ridge extending from Stapleton on the northeast to Tottenville on the southwest. It continues into New Jersey beyond the Arthur Kill. It is similar in composition to the till deposits of the ground moraine but is usually thicker, and its irregular surface has higher relief. The terminal moraine is composed chiefly of a reddish-brown mixture of clay and sand, with boulders of sandstone, trap-rock (diabase and basalt), granite, and gneiss. It has a known maximum thickness of about 75 feet but probably averages much less. In a few places in the terminal moraine lenses of water-bearing sand and gravel up to 15 feet thick contain perched water bodies. Water from the terminal moraine deposits is best obtained by means of large-diameter dug wells but none of the wells have large yields. The quality of the water is generally satisfactory but danger of bacteriological contamination is great unless proper sanitary precautions are taken.

Outwash deposits, consisting chiefly of permeable beds of sand and gravel, form a gently sloping plain extending from the terminal moraine to the shoreline in the southeastern part of the island. The deposits are reddish brown to gray and are composed of particles of iron-stained quartz, brown sandstone, shale, arkose, diabase schist, granite gneiss, serpentine, biotite, and a variety of dark heavy minerals. A few well records indicate that some outwash material is present beneath the terminal moraine. This suggests either partial overriding of a newly formed outwash plain by advancing glaciers during the Wisconsin stage, or the presence of an earlier outwash deposit such as the Manhasset formation in Long Island (Fuller, 1914, p. 115). Although the outwash deposits consist chiefly of coarse-grained materials, in a few places in the northeastern part of the outwast plain layers of sandy clay and solid clay ranging in thickness from 2 to 12 feet are present. The clay layers are generally underlain by beds of coarse sand and gravel, the whole sequence being somewhat similar to the Gardiners clay and Jameco gravel in Kings and Queens Counties. However, pending further collection of data and examination of samples, the sequence has not been differentiated and is included with the outwash deposits in this report. The outwash deposits have a known maximum thickness of about 90 feet.

Water-table conditions prevail throughout the outwash deposits except perhaps locally beneath some of the clay layers mentioned above. Most of the public-supply wells in the municipal well fields (table 3) appear to be screened entirely in the outwash-plain deposits. In several of the wells, where clay layers are present, screens have been installed at two depths, one section above and the other section below the clay layers. When first tested in 1912, the wells in the Hylan Boulevard fields (pl. 5) had individual yields ranging from 40 to 700 gpm. As the wells in each field now discharge into common suction lines, only data for combined yields from each well field can be obtained (table 3). In 1950, Hylan Boulevard (Auxiliary) well fields 1, 3, and 4 and the Grant City well field (pl. 5) were shut down owing to an increase in

chloride content. Boulevard well field 2 operated throughout the year with no unusual rise in chloride content, and more than 2 mgd has been pumped from the Bulls Head well field with no significant change in chloride content.

There is a small area of outwash in northwestern Richmond also, but not much is known about these deposits. Records from two test borings (R67 and R83) indicate that they consist of beds of fine sand, silt, and gravel, and are as much as 48 feet thick.

Valley-fill deposits are present in several parts of northern Staten Island such as the Bulls Head and Port Richmond areas, where layers of sand and gravel were deposited by glacial melt-water streams in preglacial valleys cut into bedrock by north-flowing streams. At well R59 (pl. 5) in northern Staten Island the valley fill is at least 105 feet thick and consists of stratified deposits of clay, silt, sand, and gravel. In this well the coarse-grained material is at the bottom. The buried valleys are potential sources of ground water in the Port Richmond area, and if the log of well R59 is representative the deepest parts of the valleys may contain productive deposits. Figure 6 shows the location and cross sections of two buried valleys in northern Staten Island. Additional data are needed to determine the full extent and depth of these and other valleys. The average yield of wells in the Port Richmond valley is about 250 gpm. It should be borne in mind that the buried valleys in the Port Richmond-West New Brighton area, which are bordered on the north by Kill Van Kull, are readily accessible to salt-water intrusion; and a public-supply well field at West Brighton was abandoned more than 30 years ago apparently because of salt-water contamination.

Although the Cretaceous beds in southwestern Richmond may be continuous with beds of the same age in New Jersey (pl. 1), no evidence exists of substantial movement of fresh ground water between the two areas. If the sediments beneath Arthur Kill, a tidal channel separating Richmond from New Jersey, are permeable, ground water presumably moves toward the Kill both from New Jersey and from Richmond and there leaks vertically upward. Such leakage would mean that there could be no movement of fresh water across the State line in either direction, at least in the beds affected by it. It is conceivable that southeastward movement could occur beneath Arthur Kill in the deepest Cretaceous beds, while water leaked into the Kill from the upper beds on both sides of the Kill. No evidence is available in this regard, however, and the safest assumption is that developments in Richmond must depend entirely on local recharge. Too, even if southeastward movement beneath the Kill occurs under natural conditions, there is the possibility that heavy pumping in the Cretaceous beds near Arthur Kill may cause salt-water intrusion, as has already occurred locally to the west in New Jersey. The same danger exists so far as the Pleistocene strata are concerned, of course.

The buried valley of the Hudson River probably separates the deposits of Cretaceous age in eastern Richmond from those in Long Island. With respect to the movement of ground

Table 3.—Data on municipal well fields in Richmond County, 1950
(All wells tap upper Pleistocene deposits)

Well field	Number of wells	Range in depth of wells (ft.)	Average pumpage [1] in 1950 (mgd)
Bulls Head	30	50-80	0.6
Grant City	17	50-100	.0
Boulevard No. 1[2]	14	75	1.1
Boulevard No. 2	14	75-100 (?)	2.3
Boulevard No. 3	14	75-100 (?)	.6
Boulevard No. 4	14	75-100 (?)	1.7

[1] Wells owned by New York City are generally operated several months a year.
[2] Boulevard well fields referred to also as Auxiliary 1, 2, etc.

water, the basic questions are, first, whether this buried valley trenches the Cretaceous deposits, in which case of course it would cut through any younger water-bearing formations, and second, whether the fill in the valley, regardless of geologic age, is permeable enough to transmit water.

By projecting bedrock contours between Richmond (Veatch, 1904, pl. 1) and Kings Counties (deLaguna and Brashears, 1948, pl. 1) it can be seen that the bedrock surface probably lies between 100 and 400 feet below sea level beneath the Hudson River where it passes between the two Counties at the Narrows. This is sufficiently shallow so that the buried valley probably cuts through all or most of the Cretaceous deposits and any overlying beds that were deposited before the buried valley was formed; and at least in the northern part of the Narrows it may notch the bedrock itself. This supposition is based in part on data from test borings, and in part on the theory, advanced by many geologists, that sea level was perhaps 250 to 350 feet below present sea level during part of the Pleistocene epoch. For example, some test borings for a tunnel across the Hudson River opposite 32d Street, Manhattan (Berkey, 1933, pl. 8), penetrated to a depth of about 300 feet below sea level, near the center of the present channel, without encountering bedrock. As this locality is about 10 miles upstream from the Narrows, a slight southward gradient of the valley would place the bedrock surface at the Narrows appreciably deeper than 300 feet below sea level. Thus, depending on the permeability of the post-valley fill, ground water in the Cretaceous aquifers may escape into the river from both Richmond and Kings.

There is little information on the nature and age of the fill in the buried valley of the Hudson River. The valley must have been formed before the latest glacial stages, and probably prior to the deposition of the Jameco gravel, but direct evidence is lacking. According to a cross section provided by the New York City Transit Authority, based on test borings for a tunnel between Richmond and Brooklyn, the maximum depth of water at the Narrows is about 100 feet and the underlying deposits are chiefly fine sand, silt, and clay, containing shells, presumably of late Pleistocene and Recent age. These deposits extend to a depth of at least 30 feet below the river bottom. The deepest boring shown on the cross section penetrated only to about 130 feet below sea level. Near the Staten Island shore the deposits consist almost entirely of sand and gravel. In contrast, near the Brooklyn shore, the deposits are mainly clay.

A more detailed cross section of the valley fill at the site of the 32d Street tunnel between Manhattan and Weehawken, New Jersey probably provides a clue to the type of material that may occur at depth in the Narrows. At that site the material to a depth of 150 feet below sea level consists of mud, clay, and silt, mostly of Recent but perhaps in part of late Pleistocene age; beneath this are beds of blue clay, silt, and sand, 50 to 125 feet thick; and at the bottom, directly on bedrock, is 25 to 50 feet of gravel and coarse sand. The blue clay underlain by sand and gravel suggest the Gardiners clay and Jameco gravel sequence described in Kings and Queens Counties by Veatch (1906), Fuller (1914), and others.

Although most of the deposits overlying the lowermost beds of gravel in the channel at this section are relatively impermeable, they consist in part of silt and sand, and the clay beds may be discontinuous. Thus, doubtless leakage through them can take place in the vertical direction. In addition, lateral movement may occur in the lower beds of gravel. Therefore, if the buried channel in the Narrows is filled with sediments similar to those found farther north, it would provide a potential zone for ground-water movement; the direction of movement depending on head relationships. If the piezometric surfaces of the aquifers in Richmond and Kings Counties slope toward the channel, fresh ground water can escape by discharging into the lower gravel deposits and then moving slowly upward through the overlying silt and clay; or by flowing laterally in the gravel to a place where vertical leakage can occur. However, if the hydraulic gradients are reversed by heavy pumping near the shoreline in either County, the salty water of the bay could move into the aquifers.

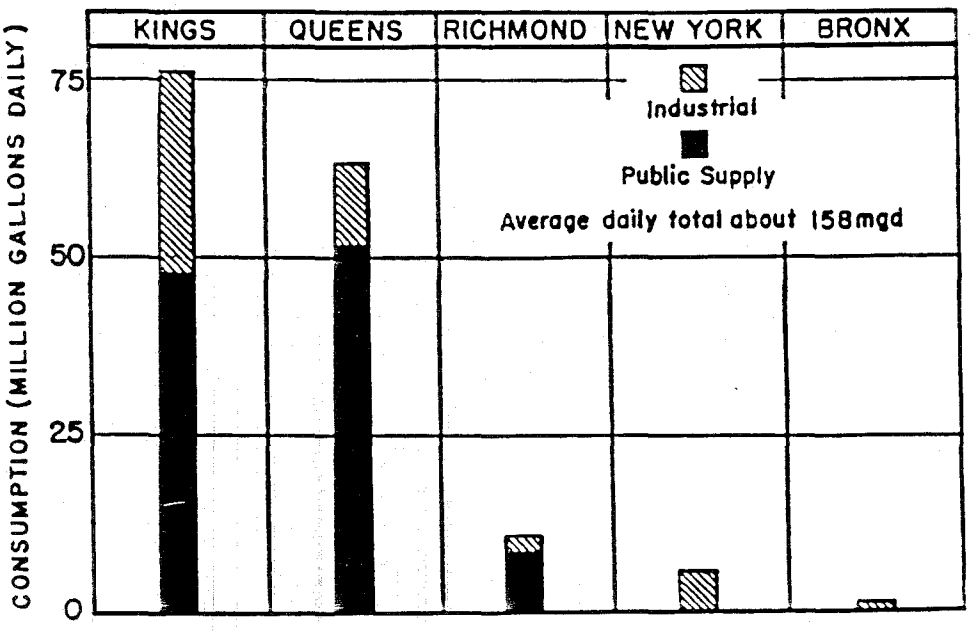

Figure 7A.—Average daily consumption of ground water in New York City, 1949.

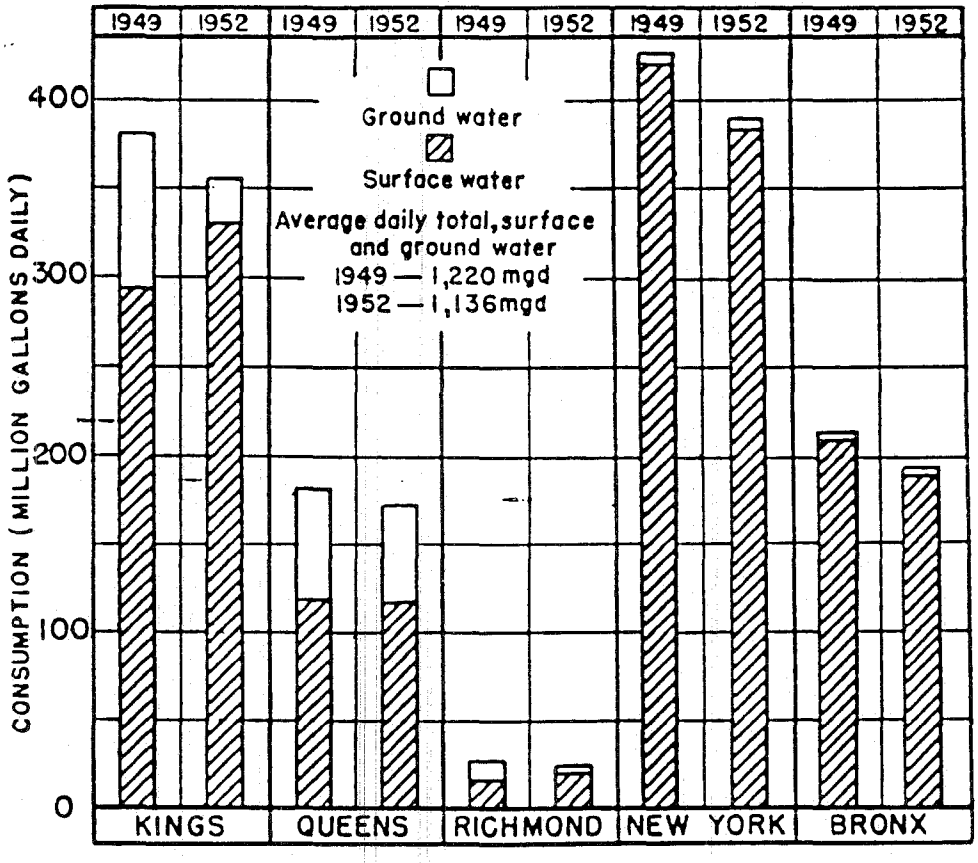

Figure 7B.—Average daily consumption of ground and surface water in New York City in 1949 and 1952.

The sea-bottom expression of the Hudson channel has been mapped in great detail (Veatch and Smith, 1939) from the vicinity of Sandy Hook, N. J. southeastward for about 115 miles to the edge of the continental shelf where it apparently terminates in a spectacular gorge or canyon the bottom of which is about 7,000 feet below sea level. For a discussion of the origin of the gorge the reader is referred to Johnson (1939), Shepard (1948, chap. 5), and Kuenen (1950, chap. 7).

With respect to future ground-water developments, probably the only part of Richmond from which additional substantial amounts of ground water for industrial or public-supply uses can be obtained is in an area of about 30 square miles in southern Richmond, roughly bounded by Arthur Kill and Richmond Roads on the northwest and the shoreline on the southeast. The geologic conditions in that area appear to be favorable for artificial recharge of ground water, as the area is underlain by several hundred feet of relatively permeable Cretaceous and Pleistocene deposits, which could be recharged by means of wells, basins, ponds or ditches. Water for such a purpose might be available from municipal surface-water sources, particularly when the upstate reservoirs are full.

UTILIZATION

The water from most of the wells in New York City is used by industrial plants or commercial establishments. Public-supply wells are relatively few in number but the pumpage from them generally is about 50 percent of all ground water pumped in New York City. A few wells furnish water for domestic use in all Counties except New York, but the total pumpage from these wells is insignificant. The amount of ground water consumed for industrial or public-supply use differs considerably in each of the Counties (fig. 7A). It also varies from year to year, depending to some extent on the amount of precipitation which affects the quantity of water in storage in the city's upstate reservoirs. Consequently, when surface supplies are low, the deficiency is overcome in part by increased ground-water pumpage. The comparison of consumption between dry and wet years is given in figure 7B which shows the metered and estimated average daily consumption (surface and ground water) for a year of low rainfall (1949—34.70 inches) and a year of high rainfall (1952—46.71 inches). It should be understood that not all of the ground water consumed in Kings and Queens actually is pumped from aquifers in those Counties. During certain years part of the public supply in the two Counties is obtained from ground-water ponds and wells in Nassau County owned by New York City. Furthermore, in constructing the graphs for 1952 (fig. 7B), it was assumed that the industrial ground-water pumpage in Bronx, Richmond, and New York Counties had not changed appreciably from 1949 to 1952. This seemed reasonable as the decline in the use of ground water from the period of high consumption (1949-50) was probably largely balanced by the pumpage from new wells constructed since that time.

Descriptions of the regulation, history, and use of ground-water for industrial and public-supply purposes in each of the Counties are given in the sections that follow.

Regulation of Ground-Water Withdrawal and Use

The withdrawal and use of water from wells in New York City are subject to some regulation by the New York City Department of Health and the New York State Water Power and Control Commission but the regulations do not apply uniformly throughout the city. The Sanitary Code of the Department of Health prohibits the use of water from wells, except by a city agency, in all the Counties for any purpose, on any premises, without a permit. Water from wells in Manhattan cannot be used for drinking purposes, but a permit may be issued for wells supplying water for other than drinking purposes. In the other four Counties well water may

be used for all purposes after a permit is obtained, an analysis of the water has been made by the Department of Health, and sanitary requirements have been met.

The Water Power and Control Commission has jurisdiction over the taking of sources (both surface and ground water) for public water supply throughout the State. Also, on Long Island, the Commission is authorized to regulate well drilling and withdrawal of ground water for industrial, commercial, and air-conditioning use. Well drillers do not have to secure permits or licenses from the Commission to operate in Bronx, New York, and Richmond Counties, but in Kings and Queens Counties, on Long Island, a driller must be licensed, must have a permit to drill, and must make certain reports to the Commission upon completion of a well.

Industrial Pumpage

The withdrawal of ground water from privately owned wells for industrial purposes increased during the last quarter of a century and is now at a maximum. The continuance of this practice, in spite of the availability of public supplies, is because (1) industrial plants require large quantities of water, and over a period of years the cost of constructing and operating a well may be much less than that of purchasing water from a public supply, and (2) for cooling or air conditioning, ground water, with its constant temperature, is more satisfactory than surface water with its variable temperature which in summer is higher than that of ground water.

The industrial ground-water pumpage and recharge (see beyond) in New York City in 1949 is summarized by Counties in Table 4.

Table 4.—Industrial pumpage, in millions of gallons per day in New York City, 1949

County	Bronx	New York	Richmond	Kings	Queens	Total
Number of plants	11	65	23	254	140	493
Industrial pumpage (mgd)	1.7	6.5	2.2	31	12	53.4
Number of recharge wells	a	a	a	192	142	334 +
Industrial pumpage recharged (mgd)	a	a	a	9.9	4.9	14.8+

a. Data not available, probably negligible.

In Kings and Queens Counties, where drillers are required to submit detailed well-completion reports to the New York State Water Power and Control Commission, almost complete coverage of industrial pumpage data was obtained. The figures for industrial pumpage and recharge are annual means; they include both meter records and estimates based on pump capacity and numbers of hours of operation. The figures for Bronx, New York, and Richmond Counties are estimated peak seasonal means and therefore, the totals may seem to be too high. However, these data do not represent full coverage, as time did not permit a complete well or pumpage inventory in these Counties. It is estimated also that there may be an additional peak pumpage of at least 2 mgd in the three Counties. Thus, although the total pumpage figures given in table 4 may be thought to be too high, the error due to this assumption is probably small, presumably being balanced by the incompleteness of the pumpage inventory.

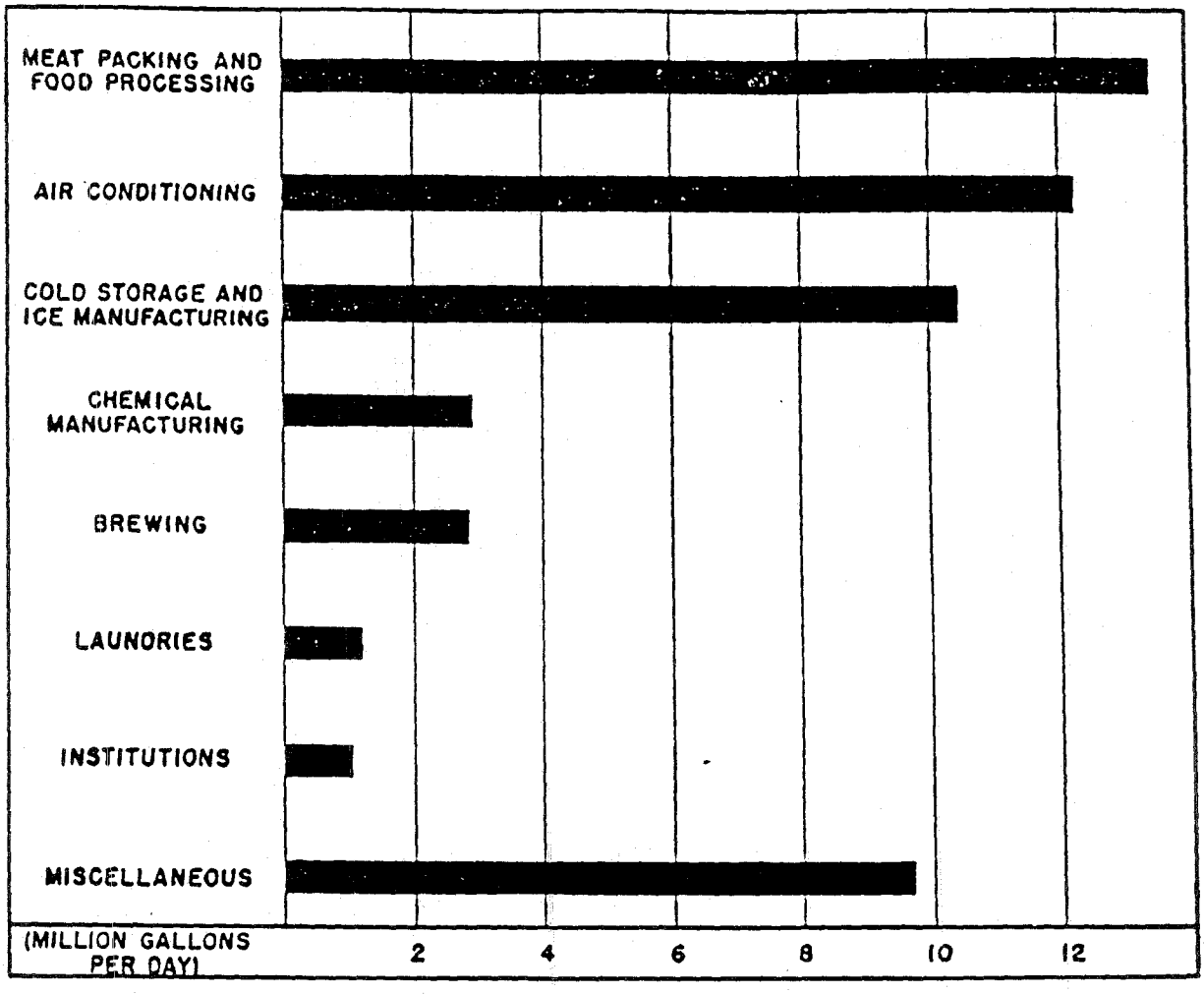

Figure 8.—Use of ground water by industries in New York City, 1949.

Figure 8 shows graphically the industrial pumpage in New York City by type of industry and use. It must be kept in mind that this breakdown is based on incomplete data for Bronx, New York, and Richmond Counties. Data for Kings and Queens were supplied by the Water Power and Control Commission.

One of the largest uses of ground water in New York City is for air conditioning. Because much of the ground water pumped for air-conditioning or cooling purposes moves through a closed system and, except for a variation in temperature, is generally not changed chemically or contaminated, it can be used to recharge artificially the aquifer from which it is pumped. Recharge can be accomplished by means of pits, basins, or wells. Experience in Kings and Queens Counties, where the Water Power Control Commission requires that water pumped from new cooling or air-conditioning wells having a capacity of more than 45 gpm be returned to the aquifer from which it is drawn, has shown this to be a practical method of maintaining water levels. In accordance with the requirement, an average of 14.8 mgd was recharged in 1949 by industries in Kings and Queens Counties. This amount is substantial; it is half again as much as the estimated combined industrial pumpage in the other three Counties (see table 4). As a similar requirement does not exist in those Counties, no recharge data were obtained for them, but there are probably a few recharge wells in each County. More widespread use of

recharge methods, wherever feasible, by industries in Manhattan, Richmond, and Bronx may aid substantially in preventing excessive lowering of water levels and subsequent salt-water intrusion.

Public Water Supplies

History of the Public Water-Supply Systems in New York City

Water from wells and springs has been used as a source of supply since the time of the first settlements in New York City. The withdrawal of ground water from privately owned wells for domestic purposes, however, gradually diminished as the area served by public systems increased. Today the entire city is served by the municipal system from surface- and ground-water sources, except for areas in Queens supplied by two privately owned public-supply systems using wells. Only a few privately owned wells now furnish water for domestic uses in parts of Richmond, Bronx, Kings, and Queen Counties.

The first public water supply in New York City was from ground water and since that time at least a small part of the city supply has been from ground-water sources. However, whereas these sources were important in the early history of the city, in 1949, a year of low rainfall, they furnished about 9 percent of the total consumption from public-supply systems. In 1952, only about 4 percent of the total public supply was from ground-water sources (see figs. 7A and B).

The first public well in New York City was dug in front of the old fort at Bowling Green in southern Manhattan, about 1677. Additional public wells were drilled in the streets from time to time as required, the city bearing part of the expense and the property benefited bearing part. The first truly municipal supply was constructed in 1799 when the population of the city was 60,000 (Merchants Assoc. 1900, p. 108). The source was a dug well, 30 feet in diameter, in Centre Street, Manhattan. The water was pumped to a storage tank on Chambers Street, from which it was distributed through pipes made of bored logs. From this time on the municipal supply in New York City barely managed to keep one jump ahead of the rapidly increasing population. By 1835 the city had constructed several additional wells and in addition, was importing water from the surrounding communities. At that time it was decided that ground-water sources alone would not be sufficient to supply the city, and a plan to procure water from the Croton River in Westchester County was adopted. By 1842 the city was being supplied through the Croton Aqueduct. In 1905 the entire practicable yield of the Croton watershed was being used by the city and, in addition, water was being taken from the Bronx and Byram Rivers as well as a considerable quantity from wells and local ponds. By 1917 the Catskill system was in use, and in 1944 water was brought into the city from the Rondout watershed in upstate New York, a distance of about 85 miles.

Prior to 1898 the development of public water supplies in Bronx and Richmond Counties, as well as in Kings and Queens, proceeded independently from that for Manhattan. In 1859 a municipal system taking water from ponds and streams on the south shore of Long Island provided the first public supply in Kings County (formerly the City of Brooklyn). The yield of surface water was later supplemented by water obtained from wells, the whole assembly being known as the Ridgewood system. In addition, several private companies in Kings County furnished water drawn from wells. Public supplies in Bronx and Richmond Counties, as well as Queens, were privately owned except for parts of the Bronx that were supplied by city water; and the water was obtained almost exclusively from wells. After consolidation of the city into five boroughs in 1898, the private companies were gradually acquired by the city, and

today only two private water companies exist in the city, in Queens County. These two companies (Jamaica Water Supply Co. and New York Water Service Corp.) pumped about 39.9 mgd in the southern half of Queens County in 1952.

The public water supply of New York City at the present time is obtained from the Croton watershed, the Bronx and Byram watersheds, the Schoharie and Esopus watersheds (Catskill system), and the Rondout watershed; from city-owned wells in Richmond, Queens, and Nassau Counties; and from privately owned wells in Queens County, the aggregate safe yield being about 1,120 mgd according to the New York City Board of Water Supply. Additional detailed information on these systems is given in U. S. Geol. Survey Circular 283 (see Lohr, and others, 1952, p. 8). Water will be obtained also from facilities in the Neversink watershed by 1954 and the East Branch watershed by 1956, these being in the Delaware system now under construction. The total estimated yield of the New York City municipal supply after this part of the Delaware system is completed is about 1,545 mgd. This includes about 85 mgd from ground-water sources in Long Island and Richmond. In addition, for use until the projects now under construction on the Delaware system are completed and put into operation, the city has emergency facilities for taking 100 million gallons per day from the Hudson River at Chelsea, about 10 miles below Poughkeepsie. This emergency source must be discontinued by January 1, 1957, unless the city has applied to and secured the approval of the New York State Water Power and Control Commission for an extension of that date.

Pumpage for Public Supply

There is no withdrawal of ground water for public supply in Bronx County at the present time and there are no records indicating that any appreciable amount was ever pumped. Bronx is now supplied entirely with surface water from upstate sources. Similarly, no ground water has been pumped for public supply in Manhattan since 1842 when Croton water was first made available. Since that time the public water supply for Manhattan also has consisted entirely of surface water supplied from the upstate sources of the municipal system.

Only in Richmond, Kings, and Queens Counties has ground-water pumpage represented an appreciable portion of the total amount of water pumped for public supply in recent decades. Figure 9 is a comparison of the average daily withdrawals in these Counties from 1905 to 1952. The curves are based on the total withdrawals from both municipal and private systems. The marked decline in ground-water pumpage in all Counties in 1917 and for several years afterward is attributable to the introduction of water from upstate surface sources (Catskill system), and the almost complete shutdown of the municipal ground-water facilities.

Pumping by private companies in Richmond County ceased completely in 1917 when the city acquired the last of the private water companies (South Shore Water Works Co.). Since that time pumping by the New York City system in Richmond has been sporadic. Between 1924 and 1948 the pumpage averaged less than 8 mgd, except in 1931. In 1949 an extra burden was placed on the Richmond wells owing to the water shortage in the upstate surface-water systems, and for the first time in 25 years the pumpage exceeded 8 mgd. At present Richmond is supplied with water from upstate surface sources and some ground water from the municipal well fields in the County. In 1949, for example, about 8.3 mgd or 33 percent of the average consumption of 25 mgd was from ground-water sources in Richmond. In contrast, during 1952, a year of high rainfall, only about 4 percent (0.9 mgd) of the pumpage for public supply was from wells.

The city-owned wells in both Richmond and Long Island are operated only when need arises. In general the wells are pumped when the storage in the upstate reservoirs falls below 70 percent of capacity.

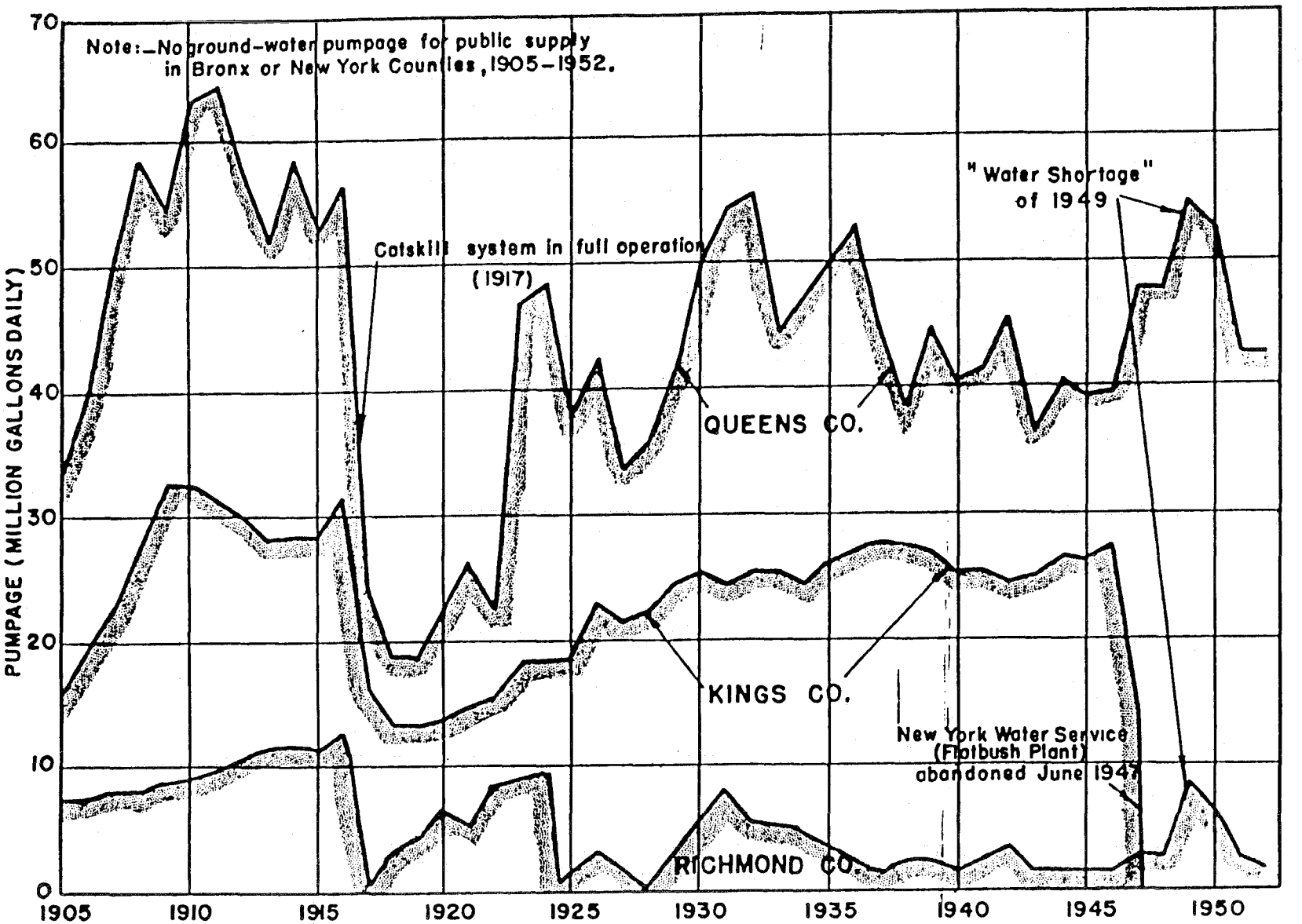

Figure 9.—Comparison of average daily withdrawal of ground water for public supply, by Counties, 1905-52.

As the pumpage from private systems in Richmond declined in the early 1900's and ceased in 1917, pumpage from the municipal system increased to some extent. In contrast, pumpage from private ground-water systems in Kings County, after surpassing the output from the municipal system in 1912, reached a peak of about 28 mgd in 1937 and then declined to zero in 1947 when the city required the cessation of further withdrawals by the New York Water Service Corp. After 1917, pumpage from the municipal system in Kings County was negligible. Since June, 1947, there have been no withdrawals of ground water in Kings County for public supply, as both the municipal and private systems have been completely dismantled. The County is now supplied with surface water from upstate sources, and some ground water from wells in Queens and ground-water ponds and wells in Nassau, (see fig. 7A).

In Queens County ground-water pumping by New York City has decreased since 1917, and pumping by two private water companies increased to about 39.9 mgd in 1952. The County is now supplied with surface water from upstate sources, and with ground water from wells in Queens and wells and ponds in Nassau County.

The so-called water shortage of 1949 and 1950 was caused by high consumption and a large deficiency in rainfall in the second half of 1949. In that year the consumption of water from all public-supply sources (both surface and ground water) reached a record high of about 1,167 mgd. In addition, the municipal system supplied about 36.3 mgd to communities outside the city. However, a successful conservation campaign by municipal authorities aimed at reducing consumption for air conditioning, cooling, car washing, and losses due to leaky faucets and mains helped to alleviate the shortage and brought about the appreciable drop in consumption to about 953 mgd in 1950. For comparison it may be pointed out that a minimum of 4 billion gallons per day of salt water is pumped from the tidal channels in New York City by power and industrial plants for use in cooling equipment.

CHEMICAL QUALITY

The general chemical characteristics of the ground water in New York City are shown by the water analyses in table 5. The locations of wells for which complete analyses were obtained are shown in figure 10. No water samples were collected in the field; only readily available records of analyses were used for this report. Some of the records are old and may not represent conditions exactly as they exist at present. The analyses are divided into those representing normal ground water and those showing contamination by sea water. In preparing table 5, a chloride content of 100 ppm was selected arbitrarily as the dividing point between contaminated and uncontaminated water, as a chloride content greater than 100 ppm in this region is considered to be a fairly certain indication of salt-water encroachment, provided there are no other sources of contamination, such as sewage. The analyses were selected to show the considerable range in chemical content of New York City's ground water, according to the geologic formation penetrated and the geographic location of wells. These variations are a function of the interrelation of many complex factors such as type of minerals in the sediments and rocks, dissolving power of the ground water, location of the area with respect to sources of salt-water encroachment (Atlantic Ocean and Hudson and East Rivers), and ground-water levels and pumpage. In some areas of the city the water is not considered potable because the chloride content is too high, or the water may contain concentrations of other constituents which exceed tolerances for certain industrial uses. Because of their importance, some of these constituents, such as chloride, iron, dissolved solids, and hardness, warrant further discussion.

Table 5.—Chemical analyses of water from selected wells in New York City

(Analyses by the New York City Bureau of Water Supply, unless indicated otherwise. Dissolved constituents given in parts per million)

Well number	Depth (feet)	Geologic unit	Date of analysis	Dissolved solids	Iron (Fe)	Nitrate (NO_3)	Bicarbonate (HCO_3)	Chloride (Cl)	Total hardness (as $CaCO_3$)	Total alkalinity (as $CaCO_3$)	pH	Remarks
Wells uncontaminated by sea water												
BRONX COUNTY												
B4	300	Inwood limestone	5-25-39	668	0.1	11	322	60	420	264	..	
B9	140	Manhattan schist	6-12-36	308	.1	1.6	81	20	135	66	..	
B10	600	Inwood limestone	4-27-33	606	.1	7.4	322	32	390	264	..	
B16	125	Manhattan schist	2- 6-40	..	6	0	124	25	210	102	..	
B21	225	Inwood limestone	2-16-37	630	.2	5.6	267	24	365	219	..	
B56[a]	215	do.	5- 9-39	646	.1	7.2	..	33	490	290	..	
KINGS COUNTY												
K176[a]	140	Upper Pleistocene deposits	5-15-39	310	.1	8.8	117	22	190	96	7.4	
K305	77	do.	1942	..	.6	10	102	37	220	84	..	
K324	103	do.	6-14-39	290	.1	6.6	112	23	180	92	..	
K464[b]	494	Lloyd sand member of Raritan formation	7-25-50	88	3	..	41	6	26	34	6.6	
K507	100	Upper Pleistocene deposits	1943	606	.03	15	235	43	391	193	..	
K517	212	Jameco gravel	1944	234	.06	.5	127	39	184	104	..	
K1759	135	Upper Pleistocene deposits	6- 9-50	..	.1	6	266	42	324	218	..	
K1980[c]	50	do.	9-21-50	586	..	.2	..	72	392	325	7.5	Sulphates as SO_4, 120 ppm; SiO_2, 19 ppm; Ca, 26 ppm; Mg, 76 ppm.
K1981[c]	100	do.	7-23-50	286	..	2.4	..	17	162	127	7.8	Sulphates as SO_4, 56; SiO_2, 14 ppm; Ca, 51 ppm; Mg, 11 ppm.
K1982[c]	125	do.	7-26-50	657	..	15	..	51	384	178	7.7	Sulphates as SO_4, 180 ppm; SiO_2, 14 ppm; Ca, 84 ppm; Mg, 36 ppm.
K1986[c]	111	do.	9- 8-50	266	..	1.1	..	12	190	94	8.1	Sulphates as SO_4, 37 ppm; SiO_2, 6.4 ppm, Ca, 38 ppm; Mg, 14 ppm.
NEW YORK COUNTY												
Ny53	37	Upper Pleistocene deposits	10-31-38	358	.1	13	159	31	155	130	..	
Ny57	65	do.	11-27-36	530	.1	13	142	61	240	116	..	
Ny70	75	do.	2-19-42	..	.2	15	261	88	300	214	..	
Ny74	30	do.	2- 2-42	..	.1	10	159	32	245	130	..	
Ny89	35	do.	4-27-37	300	.4	5.6	120	25	130	98	..	
Ny139[a]	310	Inwood limestone	5-17-50	..	.5	..	155	98	213	127	7.4	
QUEENS COUNTY												
Q54	78	Upper Pleistocene deposits	4-18-42	..	.1	..	400	63	560	328	..	
Q111[b]	1016	Lloyd sand member of Raritan formation	7-25-50	77	6	..	11	20	14	9	5.6	
Q303	100	Upper Pleistocene deposits	6-27-50	404	.05	11	122	16	220	100	7.2	
Q311	260	Jameco gravel	6-27-50	125	.4	.2	110	4	90	90	7.9	
Q318	250	Magothy (?) formation	1943	114	.03	.5	66	7	70	54	..	
Q367	90	Upper Pleistocene deposits	11- 4-38	422	.4	.2	249	29	210	204	..	
Q559	214	Jameco gravel	1944	239	.75	.2	120	45	166	98	7.6	
Q564	282	Magothy (?) formation	6-27-50	82	.05	3	11	11	27	9	6.5	
Q569	62	Upper Pleistocene deposits	1942	274	.1	.0	44	28	129	36	..	
Q581[b]	690	Lloyd sand member of Raritan formation	7-25-50	36	.2	..	16	4	12	13	6.1	
Q1264	105	Upper Pleistocene deposits	3-16-50	412	.0	16	219	28	288	180	7.7	
Q1479	123	do.	9- 1-50	..	.1	..	56	12	116	46	..	
Q1719[a]	97	do.	1-18-52	161	.06	1.2	67	8	81	55	6.7	
Q1729[c]	49	do.	8-11-50	387	..	.2	..	59	172	94	7.1	Sulphates as SO_4, 86 ppm; SiO_2, 27 ppm; Ca, 65 ppm; Mg, 20 ppm.
Q1730[c]	259	Jameco gravel (?)	8-11-50	222	..	.2	..	47	94	168	8.1	Sulphates as SO_4, 15 ppm; SiO_2, 16 ppm; Ca, 31 ppm; Mg, 13 ppm.

Table 5.—Chemical analyses of water from selected wells in New York City (Continued)

Well number	Depth (feet)	Geologic unit	Date of analysis	Dissolved solids	Iron (Fe)	Nitrate (NO_3)	Bicarbonate (HCO_3)	Chloride (Cl)	Total hardness (as $CaCO_3$)	Total alkalinity (as $CaCO_3$)	pH	Remarks
						RICHMOND COUNTY						
R7	50	Upper Pleistocene deposits	4- 8-42	..	.15	7	285	24	440	234	..	
R14	22	do.	4- 8-42	..	.8	.1	156	20	270	128	..	
R17	74	do.	4- 7-42	..	.1	2.5	151	14	..	124	..	
R29	93	do.	4- 7-42	..	.1	5	105	20	175	86	..	
R35	53	do.	4-11-42	..	.60	2.8	110	21	150	90	..	
R41	135	Cretaceous deposits	4-11-42	..	.25	.5	81	10	85	66	..	
R54	230	do.	4-11-42	..	5.4	.1	41	2	50	34	..	
R63	77	Upper Pleistocene deposits	1-13-50	285	.0	.2	162	38	204	133	..	Composite well field sample
R64	78	do.	10-19-50	..	.05	3.5	180	11	206	148	8.0	do.
R65	79	do.	1-18-50	242	.1	3.6	122	17	169	100	7.1	do.
R66	96	do.	1-18-50	240	.1	2.8	167	17	251	137	7.3	do.
R69	95	do.	3-21-50	220	.4	.8	85	8	108	70	7.6	do.
R88	50-100	do.	4- 4-50	..	..	3.1	178	70	264	146	..	do.
					Wells contaminated by sea water							
						BRONX COUNTY						
B46	200	Inwood limestone	8-30-50	..	.2	1.2	173	2,400	1,040	142	..	
						KINGS COUNTY						
K272	89	Upper Pleistocene deposits	8-17-42	..	.0	1.8	425	3,400	2,200	348	..	
K356	50	do.	6-12-39	5,530	1.0	.0	315	2,450	1,330	258	..	
K510	120	do.	1-31-46	..	.0	6.4	212	530	837	174	..	
K521	430	Lloyd sand member of Raritan formation	1942	1,130	.86	.2	72	497	373	59	..	
K522	300	Jameco gravel	1942	840	.58	3.2	137	326	484	112	..	
K1985[c]	73	Upper Pleistocene deposits	9-11-50	578	1.0	1.2	..	132	162	59	8.0	Sulphates as SO_4, 78 ppm; SiO_2, 8 ppm; Ca, 53 ppm; Mg, 34 ppm.
						NEW YORK COUNTY						
Ny3	47	Upper Pleistocene deposits	9- 4-25	7,030	.15	1.6	1,010	2,710	1,850	830	..	
Ny21	57	do.	2- 3-42	..	2.70	9	320	233	500	262	..	
Ny23[a]	35	do.	3-23-50	..	.35	..	..	3,360	794	..	7.2	
Ny56[a]	83	do.	6-11-52	16,800	.35	..	..	4,720	330	..	..	
Ny61	70	do.	2- 6-42	..	.8	.1	534	10,150	4,000	438	..	
Ny62	90	do.	2-11-42	..	2.75	7	278	440	290	228	..	
Ny81	30	do.	1-30-39	1,220	37	.8	78	350	260	64	..	
Ny96[a]	30	do.	1-23-50	680	.80	3.2	132	196	258	108	..	
Ny101[a]	51	do.	5- 2-50	710	.30	..	195	270	220	160	8.6	
						QUEENS COUNTY						
Q1374[b]	255	Lloyd sand member of Raritan formation	7-25-50	3,780	30	..	32	1,900	800	26	5.3	
						RICHMOND COUNTY						
R19	180	Sand (Cretaceous or Pleistocene)	5-21-45	..	7.5	.2	378	1,550	761	310	..	

[a] Analysis by private laboratory.
[b] Analysis by New York State Department of Health.
[c] Analysis by New York City Transit Authority.

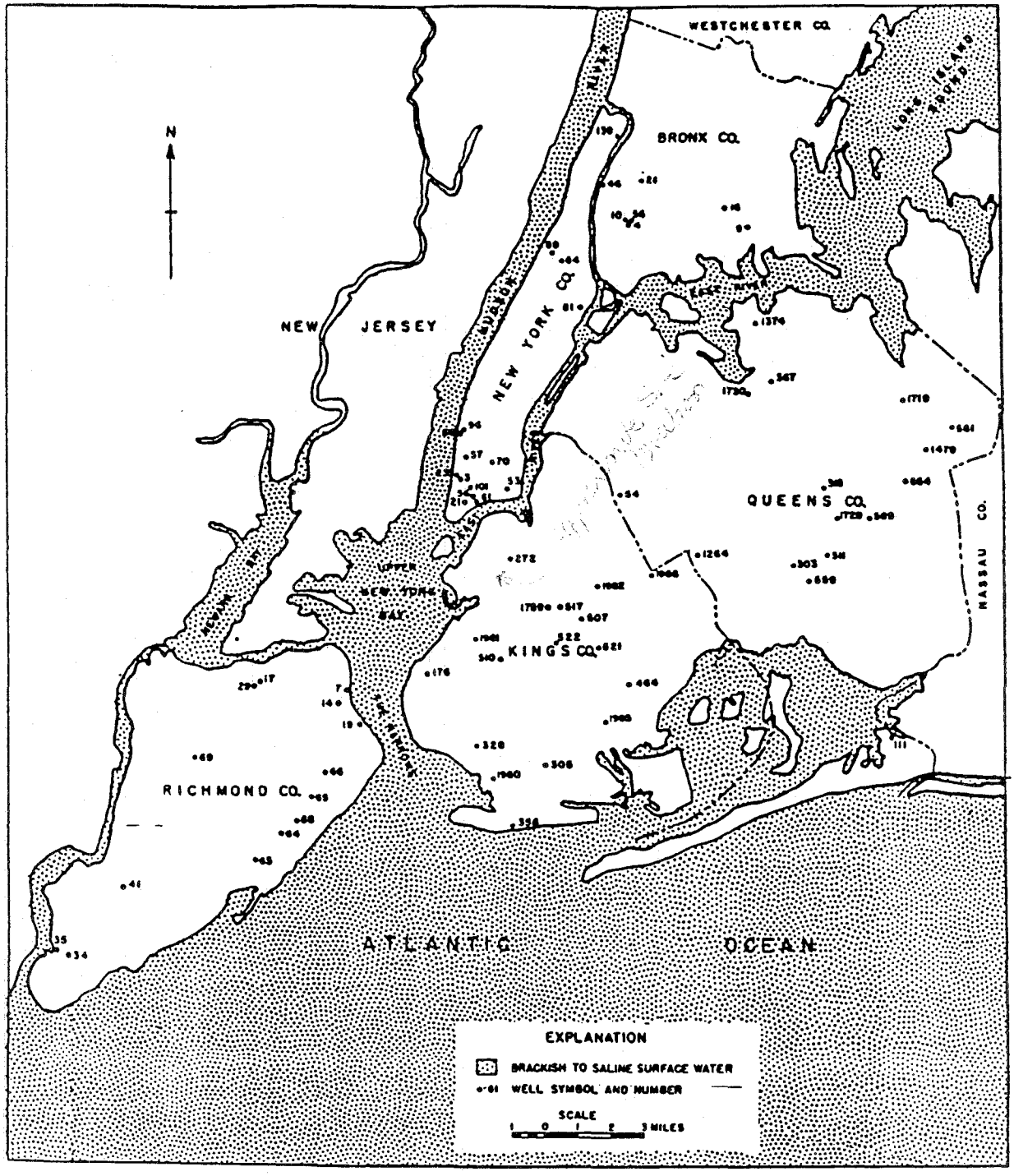

Figure 10.—Location of wells in New York City for which chemical analyses are given in table 5.

According to table 5, none of the aquifers in New York City, unless contaminated by sea water, yields water having a chloride content that is excessive for most industrial uses. The chloride content of uncontaminated water ranges from low values of about 4 ppm in the Magothy (?) formation and Lloyd sand member of the Raritan formation in Queens County to something less than 100 ppm. It is as much as 15,000 ppm in the contaminated upper Pleistocene

deposits of northern and southern Kings County, and is also very high in comparable deposits in southern Manhattan. That the high chloride content in these areas results from encroachment of sea water is substantiated in part by analyses of sea water in New York harbor and several tidal channels in New York City. These show chloride concentrations ranging from about 2,000 ppm to 16,000 ppm (Burr, Hering, and Freeman, 1903, pp. 517-522). The wide range in chloride content is apparently due to tidal and seasonal effects, location of the sampling point, and fresh water discharge of streams flowing into the tidal channels. The normal chloride content of sea water off the coast opposite New York City is about 18,500 ppm. In addition to the chloride concentrations listed in table 5, other figures are given in table 7, for individual wells in Bronx, New York, and Richmond Counties.

The iron content of uncontaminated ground water in both consolidated rocks and unconsolidated sediments in Bronx, New York, and Richmond Counties is generally less than 0.3 ppm, with the exception of water from the Cretaceous deposits in Richmond and some upper Pleistocene deposits which contain water having as much as 6 ppm of iron. In Kings and Queens Counties the iron content varies with the formation, ranging from 0.03 ppm in some upper Pleistocene deposits to 6 ppm in the Lloyd sand member of the Raritan formation. Generally, the iron content exceeds 0.3 ppm in both the Jameco gravel and the Lloyd sand member. Most of the analyses of contaminated ground water in all Counties indicate a high iron content. For example, the iron content in well Q1374 in northern Queens County, a well screened in the Lloyd sand member, is about 30 ppm. It is likely that the high iron is related to the corrosiveness of the saline water.

All the analyses of uncontaminated water listed in table 5 show less than 700 ppm of dissolved solids. The Inwood limestone in Bronx County yields water having the highest content of dissolved solids (average of four analyses is 639 ppm) of all the uncontaminated waters. Water from the Lloyd sand member in Kings and Queens Counties has the lowest content of dissolved solids in the city (average of three analyses is only 67 ppm). Contamination by sea water has increased the content of dissolved solids to at least 18,000 ppm in parts of southern Manhattan and perhaps as much as 25,000 ppm in parts of Brooklyn. Water having more than 1,000 ppm of dissolved solids is likely to contain enough of certain constituents to produce a noticeable taste or otherwise to make the water unsuitable for industrial purposes. However, these waters without treatment are used successfully for purposes such as industrial cooling and air conditioning.

The Inwood limestone yields the hardest uncontaminated water in the city, samples from 5 representative wells averaging about 375 ppm. Water of the lowest hardness in the city (generally less than 50 ppm), occurs in the Magothy (?) formation and Lloyd sand member of the Raritan formation in Queens County and comparable formations in Richmond County. Analyses of 22 water samples from the upper Pleistocene deposits in Richmond, New York, and western Queens Counties show an average hardness of about 250 ppm which is considered somewhat objectionable for many domestic and industrial uses, unless reduced by treatment. As shown in table 5, contamination by sea water materially increases the hardness of ground water in all the aquifers in the city; this is due mainly to the magnesium content of sea water.

TEMPERATURE

In general, the temperature of water used for industrial cooling and air conditioning is more important than its chemical quality, which is fortunate in view of the wide range in chemical content of the ground water described in the foregoing pages, and of the fact that most of the industrial use of ground water is for cooling. Ground-water temperatures are relatively stable throughout the year as contrasted with surface-water temperatures, and where

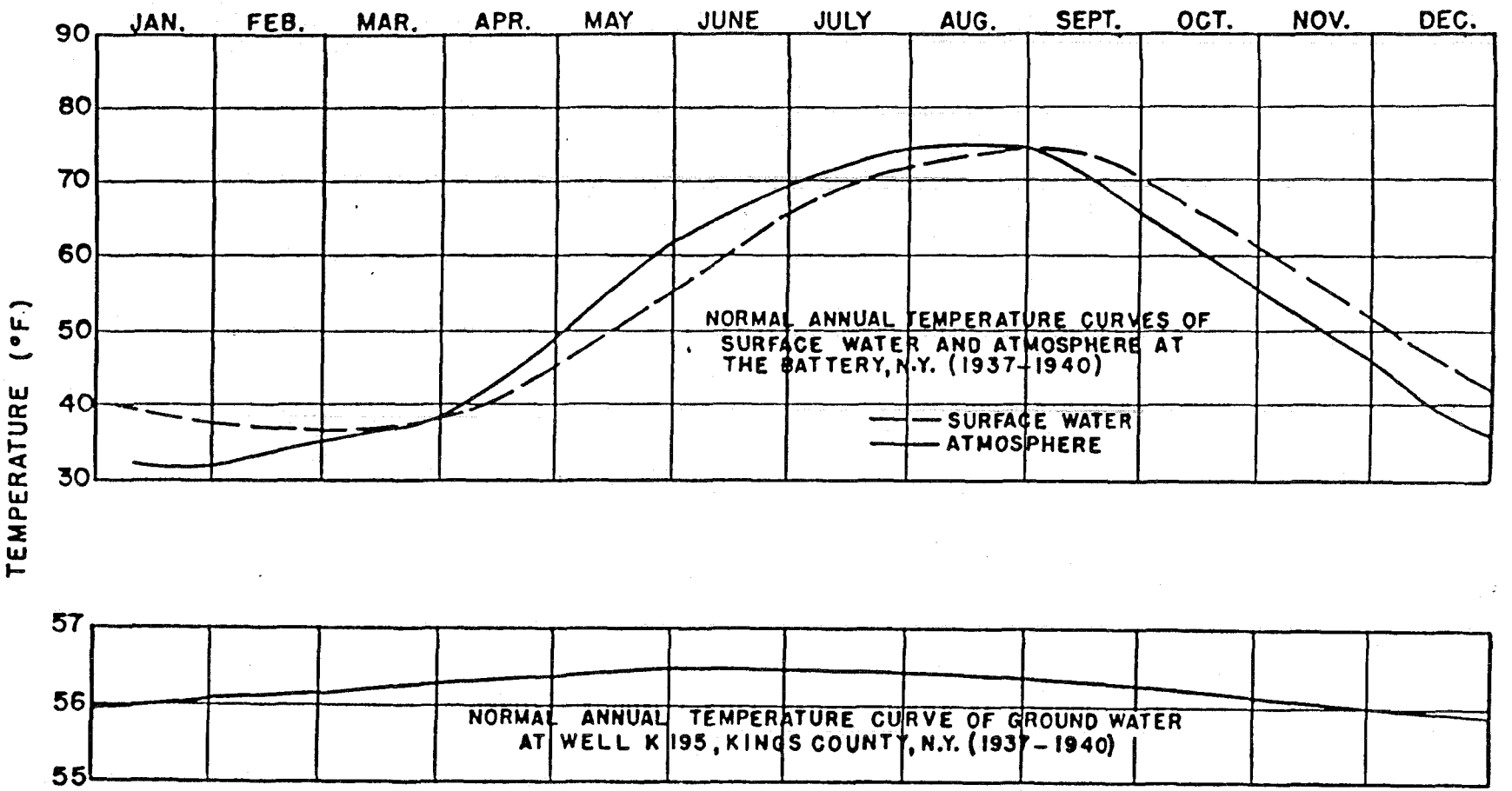

Figure 11.—Annual temperature curves for atmosphere, surface water and ground water, New York City.

it is available in sufficient quantities ground water is usually more economical to use during the cooling season. Figure 11 gives annual temperature curves for the atmosphere and surface water at the Battery in southern Manhattan, and for ground water in an observation well in northern Kings County, all for the years 1937-40. The atmospheric and surface-water curves are based on average monthly readings by the U. S. Weather Bureau and the U. S. Coast and Geodetic Survey, respectively; the ground-water curve is based on average monthly readings by the U. S. Geological Survey. In 1950, the temperature of tap water from the city's Catskill supply at a sampling point in Brooklyn ranged from 36° in March to 66° F. in September and averaged 51° F. for the year, according to readings taken by the Mt. Prospect Laboratory of the Bureau of Water Supply. These readings correspond closely with the temperature curve for surface water shown in figure 11.

The mean annual air temperature in New York City is about 52° F. Where the water table is not too close to land surface, yet is not more than a few hundred feet deep, natural ground-water temperatures are usually within a few degrees of the average annual air temperature. This was substantiated for the Long Island Counties by Brashears (1941, p. 820), who found that the natural ground-water temperature in Kings and Queens Counties ranged from about 52° to 56° F. The few temperature readings collected for this report indicate about the same temperature range for Bronx and Richmond Counties. However, in southern Manhattan substantially higher ground-water temperatures were obtained (averaging about 67° F.) at four wells. The higher temperature may be caused by the many buried steam and sewer pipes which carry fluids having a higher temperature than the ground, the presence of many heated buildings covering the ground, and the induced infiltration of river water, and perhaps in part by the return of warm water to the ground by recharge wells. The latter possibility is probably of minor significance, as there is no evidence of large-scale recharge activities in Manhattan at present. However, in Kings and Queens Counties it was found that the return of warm water (2° to 20° F. higher than normal ground-water temperatures) by recharging wells may cause a gradual rise in average ground-water temperatures (Brashears, 1941, 1946). Nevertheless, except for some parts of northwestern Kings County and a few other isolated places, ground-water temperatures in Brooklyn and Queens have not changed appreciably during the past 10 years in spite of widespread recharging activities.

SUMMARY—

Since pre-Revolutionary war days, ground water has played a small but vital role in supplying New York's water-hungry millions. As described in the foregoing pages, ground water is used to a greater or lesser extent in each of the five Counties comprising the city. The amount of ground water consumed in each County varies with the need and availability of such a supply. The latter is dependent, of course, on the geologic and hydrologic conditions which vary greatly throughout the city. These have been summarized for each of the Counties with special emphasis on Bronx, New York, and Richmond.

During times of deficient rainfall, the ground-water supplies have been particularly valuable, being used to augment the public as well as industrial supplies. Thus in 1949, during a period of "water shortage," about 13% of the total consumption of the city was from ground-water sources. Whereas, in 1952, when the city's surface-water supplies were normal, only about 8 percent of the total consumption was from ground-water supplies.

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Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties

Detailed logs of selected wells in Bronx, New York, and Richmond Counties are given in this table. Records for wells in Kings and Queens Counties have been published in other reports. (See references.) The letter and number at the beginning of each well description is the official Water Power and Control Commission designation—for example, B39. The letters and numbers in parentheses, (C-2), are the map coordinates of the wells shown on the well-location maps (pls. 3, 4, and 5). Altitude of land surface is estimated from a topographic map.

BRONX COUNTY

B5; Fanny Farmer Candy Corp., 3825 Corlear Ave. (B-2). Drilled by C. W. Lauman & Co., Inc., 1945. Altitude of land surface about 15 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill, broken rock, clay, and sand	20	20
Sand, coarse, dirty, and rocks	4	24
Sand, fine, and mud	15	39
Sand, coarse, dirty, and gravel	3	42
Sand, gray, and clay	19	61
Clay, sticky, gray	26	87
Sand, dirty, gray, and gravel	6	93
Boulders and black sandy clay	4	97
* Clay, gray	4	101
Clay, sandy, gray, and stones	3	104
Clay, sandy, brown	68	172
Clay, sandy, brown, boulders, and gravel	42	214
Clay, sandy, brown	5	219
Pre-Cambrian (Inwood limestone)		
Rock, hard	13	232
Sandstone, brown	75	307
Sandstone, gray	143	450

Casing: 185 feet of 12-inch
Static water level: 24 feet
Yield: 33 gpm

* The deposits from 97 to 219 feet may include some weathered bedrock but contact is uncertain.

B11; Up-to-Date Candy Manufacturing Co., InC., 1668 Webster Ave. (B-2). Drilled by C. W. Lauman & Co., Inc., January, 1940. Altitude of land surface about 35 feet above sea level. Log begins about 4 feet below land surface. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	3	3
Boulders, small, with gravel	9	12
Sand, medium, sharp	8	20
Sand and grits	7	27
Gravel, small, and coarse sand	4	31
Sand and gravel, coarse, hard	3	34

(Continued on next page)

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

B11; (Continued)

Sand, brown, coarse	7	41
Clay, sandy, white, hard, no water	6	47
Stones, water bearing	7	54
Pre-Cambrian (Inwood limestone)		
Sandstone, brown	203	257
Clay, white and blue, not hard	3	260
Sandstone, white	19	279
Sandstone, white	86	365
Sandstone, gray, very hard and sharp	22	387

Casing: 54 feet of 10-inch.
Screen: Set from 29 to 39 feet and 49 to 54 feet.
Open hole from 54 to 387 feet.
Pumping test: Duration: 4½ hours
May 12, 1949 Static water level: 10 feet
Drawdown: 75 feet
Yield: 231 gpm

B26; Allied Maintenance Co., Yankee Stadium, East 161 St. (A-1). Drilled by Sweeney & Gray Co., Inc., February, 1950. Altitude of land surface about 20 feet above sea level. Log begins at land surface. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	30	30
Clay	5	35
Sand, fine, gray	3	38
Sand, coarse, gray	4	42
Sand, fine, brown	5	47
Sand, coarse, brown	18	65
Sand, fine	at	65

Casing: 10 inch.
Screen: 10 feet of 10 inch with bottom at 65 feet.
Static water level: 28 feet below top of casing.
Yield: 300 gpm.

B34; Mayers Restaurant, 612 East 233 St. (B-2). Drilled by Samuel Bargnesian, 1949. Altitude of land surface about 100 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Soil, brown, and boulders	60	60
Pre-Cambrian (Inwood limestone)		
Limestone	570	630

Casing: 6-inch
Screen: None
Static water level: 15 feet (datum unknown)
Yield: 35 gpm

B39; Test boring #2, Triborough Bridge Authority, centerline of Bronx-Whitestone Bridge, about 1,650 feet northwest of Old Ferry Point. (A-2). Altitude of land surface about 2 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Mud and meadow mat	2	2
Clay, black, and sand	6	8
Sand, coarse, brown, and boulders	23	31
Sand, brown	10	41
Clay, black, and sand	2	43
Sand, gray	2	45
Sand, brown	8	53
Sand, brown, gravel, and boulders	5	58
Sand, medium, gray	4	62
Sand, coarse, gray	3	65
Pre-Cambrian (Manhattan schist)		
Mica schist, disintegrated	27	92

B53; French-American Reeds Mfg. Co., Inc., 3040 Webster Ave. (B-3). Drilled by C. W. Lauman & Co., Inc., 1947. Altitude of land surface about 70 feet above sea level. Log begins 10 feet below land surface. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Clay, sandy, and boulders	25	25
Gravel, boulders, some clay	20	45
Clay, sandy, yellow	35	80
Sand, medium to coarse, yellow (tested at 10 gpm with 17 ft. drawdown)	12	92
Clay, hard, yellow	15	107
Sand, coarse, grits, and gravel (tested at 3 gpm with 28 ft. drawdown)	12	119
Pre-Cambrian (Inwood limestone)		
Rock, decayed, red	81	200
Clay, tough, yellow	20	220
Rock, decayed, red (water)	20	240
Rock, decayed, yellow (dry)	45	285
Sandstone, soft, brown	25	310
Sandstone, hard, brown	50	360

Casing: 168 ft. of 12-inch with bottom at 148 and 145 feet of 8 inch with bottom at 293.
Static water level: About 8 ft. below street level
Drawdown: 100 ft.
Yield: 70 gpm

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

B65; Police Department Stable, test boring #3, Canal Place and 135th Street. (A-1). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1951. Altitude of land surface about 5 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill, sand, and gravel	10	10
Sand, fine to medium brown, little silt	16	26
Sand, fine to coarse, brown, some gravel, and a little silt	4	30
Pre-Cambrian (Inwood limestone)		
Rock, decomposed	13	43
Limestone, chloritic, fine to medium, gray	6	49

Depth to water 8 feet on 10/22/51.

B69; Hunts Point Sewage Treatment Works, test boring #23, U. S. Bulkhead line on Bronx River, about 1,500 feet west of Patterson and Bronx River Aves. (A-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1944. Altitude of land surface about sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Water	6	6
Silt, soft, black	23	29
Silt and fine sand, gray, and shells	28	57
Sand, fine, silty, gray	5	62
Sand, clay, gravel and boulders	9	71
Pre-Cambrian (Manhattan schist)		
Schist	5	76

B70; Unionport Bridge, test boring #60, Brush Ave. and Bruckner Blvd. (A-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1945. Altitude of land surface about 13 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill, trace of peat in lower foot	19	19
Silt and clay, gray, with shells	32	51
Sand, fine, gray, and gravel	4	55
Sand, fine, gray	15	70
Sand, fine to coarse, gray, and gravel	4	74
Sand, fine, brown	9	83

NEW YORK COUNTY (MANHATTAN)

Ny23; Greenwich Refrigerating Co., Inc., 402 Greenwich St. (A-1). Drilled by C. W. Lauman & Co., Inc., June, 1937. Altitude of land surface about 10 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill and concrete	3	3
Sand, black	1	4
Clay, blue	5	9
Sand, medium to coarse, and large amount of fine sand	12	21

(Continued on next page)

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Ny23; (Continued)

Sand, coarse, gray, some clay	7	28
Sand, coarse, clean	4	32

Casing: 6 inch to 3 inch.
Screen: 5½ feet of 4 inch with bottom at 35 feet.
Static water level: About 20 feet below land surface.
Yield: 65 gpm.
Chemical analysis: March 23, 1950

pH	7.2
Hardness in parts per million as $CaCo_3$	794
Chlorides as NaCl	3360
Iron as Fe in parts per million	0.4

Ny34; Court Square Building Corp. (Scleifers), 2 Lafayette St. (A-1). Drilled by C. W. Lauman & Co., Inc., May 4, 1938. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	12	12
Sand, coarse, and grits	11	23
Sand, coarse, and grits, little clay	6	29
Sand, coarse, and grits	26	55
Sand, fine	8	63
Sand, medium, brown	5	68
Sand, coarse and grits	5	73
Sand and gravel, very coarse	22	95

Casing: 8 inch.
Screen: 16 feet of 6 inch with bottom at 87 feet.
Static water level: 13 feet below reference point which is about 16 feet below land surface.
Yield: 190 gallons per minute.

Analysis of water sample by Bureau of Water Supply, City of New York, collected May 9, 1939. (Parts per million)

Chloride	1400	Nitrite	.07
Iron	2.0	Nitrate	16.0
Hardness as $CaCO_3$	660	Alkalinity	236
		Total solids	3290

Ny40; Baker, Williams Warehouse Corp., 98 Morton Street. (A-1). Drilled by Sweeney & Gray Co., Inc. Altitude of land surface about 10 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Hardpan	12	12
Sand and gravel	6	18
Sand, fine	2	20

(Continued on next page)

Ny40; (Continued)

Sand with clay	18	38
Sand	14	52

Casing: 8 inch.
Screen: 16 feet of 3 inch number 20 slot, Cook strainer.
Static water level: 5½ feet below cellar floor which is about 13 feet below land surface.
Yield: 50 gallons per minute.

Analysis of water sample by Bureau of Water Supply, City of New York, collected February 11, 1942. (Parts per million)

Chloride	140	Nitrite	.02
Iron	3.3	Nitrate	7.0
Hardness as $CaCO_3$	350	Alkalinity	202

Well reported to have dried up July 26, 1944.

Ny41; Downtown Bowling Academy, Inc., 23 Park Row. (A-1). Drilled by C. W. Lauman & Co., Inc., March, 1941. Altitude of land surface about 30 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	10	10
Sand and stones, coarse, brown	26	36
Sand and grits, some stones, coarse	3	39
Sand and grit, coarse	3	42
Sand, medium, brown, some clay	5	47
Sand, coarse, brown	3	50
Sand, very fine, reddish	5	55
Sand, very fine, dirty, reddish	5	60
Sand, fine, clayey	16	76
Pre-Cambrian		
Rock (Manhattan schist)	at	76

Casing: 8 inch.
Screen: 11 feet of 8 inch with bottom at 55 feet, number 50 slot.
Static water level: 33 feet below top of 8 inch coupling which is about 9½ feet below land surface.
Yield: 158 gallons per minute.
Temperature reported to range from 63° to 64.5° F.

Analysis of water sample by the Bureau of Water Supply, City of New York, collected March 4, 1942. (Parts per million)

Chloride	38	Nitrite	.02
Iron	.20	Nitrate	5.0
Hardness as $CaCo_3$	230	Alkalinity	220

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Ny53; Standard Laundry Service, Inc., 11 Sheriff Street. (A-2). Drilled by C. W. Lauman & Co., Inc., July, 1938. Altitude of land surface about 30 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	3	3
Sand and gravel, small stones, coarse	4	7
Sand, coarse	4	11
Sand and gravel, coarse	9	20
Sand, medium to coarse	14	34
Sand and gravel, coarse	14	48

Casing: 10 inch.
Screen: 11 feet of 10 inch with bottom at 48 feet.
Static water level: 12 feet below pump base on July 11, 1938.

Ny79; E. Greenbaum Co., 328-30 East 103 Street. (B-2). Drilled in 1940. Altitude of land surface about 10 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Ashes	8	8
Clay, gray, and brown	3	11
Sand and clay, gray	3	14
Bog	1	15
Sand, fine, gray, and mud	5	20
Clay, gray	5	25
Sand and gray clay	3	28
Sand and clay, hard	4	32
Sand, brown, water-bearing	5	37
Clay, gray, and stones	1	38
Clay, red, and red sand	1	39

Casing: 8 inch to 6 inch.
Screen: 6 feet of 6 inch Cook, red brass.
Analysis of water sample by the Bureau of Water Supply, City of New York, collected May 13, 1942. (Parts per million)

Chloride	1600
Iron	9
Nitrate	1.5
Nitrite	.1

Ny105; J. Minders, 111 Barclay Street. (A-1). Drilled by C. W. Lauman & Co., Inc., August, 1943. Altitude of land surface about 5 feet above sea level. Log begins 4 feet below land surface. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	13	13
Sand, gray, fine to coarse, grits	3	16
Clay, red, solid	3	19
Clay, red, sand and stones	3	22

(Continued on next page)

Ny105; (Continued)

Clay, sandy, reddish-brown	8	30
Sand, clayey, fine, brown	16	46
Sand, coarse, brown, grits, dirty	12	58
Sand, coarse, brown, uniform, clean	9	67

Casing: 12 inch.
Screen: 16 feet of 8 inch with bottom at 67 feet, number 60 slot.
Static water level: 14 feet below reference point which is about 4 feet below street level.
Yield: 198 gallons per minute.
Drawdown: 15 feet.

Ny108; Libby Baths, Christie and Delancey Streets. (A-2). Drilled by Sweeney & Gray Co., Inc. Altitude of land surface about 45 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Sand	50	50
Sand and clay	10	60
Sand, red	30	90
Clay and sand	50	140
Sand and gravel	10	150
Pre-Cambrian		
Rock	at	150
	(penetrated to 402 feet)	

(Test boring near Ny108)

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Sand, fill	10	10
Sand, coarse	5	15
Sand, coarse and boulders	16	31
Sand, coarse, water-bearing	24	55
Sand, fine	10	65
Clay	7	7 2
Sand, medium, trace of clay	34	106
Sand and clay	7	113

Ny110; A. Peltz & Son, 220 Greenwich Street. (A-1). Drilled by C. W. Lauman & Co., Inc., April, 1950. Altitude of land surface about 10 feet above sea level. Log begins 4 feet below land surface. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	4	4
Sand, coarse, brown, and large gravel	7	11
Clay, gray, sandy	2	13
Silt and clay, fine, and trace of gravel	2	15
Clay, red	16	31
Silt, red	16	47
Sand, red, fine to medium	9	56
Silt, red, fine	5	61

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Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Ny110; (Continued)

Casing: 6 inch.
Screen: 11 feet of 6 inch with bottom at 56 feet.
Static water level: 16 feet below basement floor which is about 4 feet below land surface.
Yield: 30 gallons per minute.
Drawdown: 8 feet.
Temperature: 69° F.

Ny111; Windsor Cafeteria, 45 John Street. (A-1). Drilled by C. W. Lauman & Co., Inc., June, 1950. Altitude of land surface about 25 feet above sea level. Log begins 14 feet below land surface. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Concrete, cinders, etc.	2	2
Fill	3	5
Sand and gravel, medium to coarse, red-brown	19	24
Clay, red-brown	29	53
Clay, red-brown, and grits	2	55
Sand, medium to fine, red and clay	2	57
Clay, gray, and grits	1	58
Sand, medium to fine, red, and traces of gravel	8	66
Silt, red	at	66

Casing: 8 inch.
Screen: 10 feet of 8 inch with bottom at 65 feet.
Static water level: 24 feet.
Yield: 70 gallons per minute.

Ny112; The National City Bank, 262 1st Avenue. (A-2). Drilled by C. W. Lauman & Co., Inc., May, 1950. Altitude of land surface about 20 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill and brick	22	22
Sand, fine, brown	11	33
Sand, coarse, brown	3	36
Sand, sharp, light, dead	6	42
Sand, fine, gray, some life	12	44
Sand, very fine, brown and mica, life	9	53
Sand, coarse and brown, mica	2	55
Sand, very fine, brown	26	81
Sand, coarse, brown, and some grits	3	84
Clay, gray	1	85
Gravel	5	90

Casing: 6 inch.
Screen: 5 feet of 6 inch with bottom at 90 feet, slot number 30.
Static water level: 25 feet.
Yield: 40 gallons per minute.
Geologist's log by T. Arnow

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Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Ny112; (Continued)

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	22	22
Sand, coarse, reddish-brown	10	32
Sand, fine to coarse, reddish-brown	10	42
Sand, medium to coarse, purplish-brown	11	53
Sand, fine, brown, and some clay	28	81
Sand, medium to very coarse, and fine gravel, gray	3	84
Sand, very fine, purplish-gray	1	85
Gravel, fine to coarse, and dark, medium to very coarse sand	1	86
Sand, very coarse, and fine gravel, gray	4	90

Ny114; John Wanamaker, 150 Broadway. (A-1). Drilled by C. W. Lauman & Co., Inc., 1944. Altitude of land surface about 30 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Sand, fine, white	14	14
Clay, brown	3	17
Clay, brown, and sand, some water (22′ to 24′)	7	24
Clay, brown	25	49
Sand, silty, gray, and water	6	55
Clay, light brown	8	63
Clay, brown, and sand	3	66
Sand, very fine, multi-colored, grits, water	7	73
Clay, sandy, fine	1	74
Sand and gravel, coarse	3	77
Pre-Cambrian (Manhattan schist)		
Mica rock	at	77

Casing: 6 inch.
Yield: About 12 gallons per minute.
Static water level: Reported as ranging from 20 to 27 feet below cellar floor or about 40 feet below land surface.
Temperature: 76° F.
Well abandoned May 24, 1944 due to insufficient water. Needed 150 to 200 gallons per minute.

Ny117; New York Savings Bank, 8th Avenue and 14th Street. (A-1). Drilled by C. W. Lauman & Co., Inc., April, 1949. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	4	4
Boulders, large, sand, coarse	6	10
Sand and stones, coarse	11	21
Sand, fine to medium, trace of gravel	8	29
Sand, fine to medium, lumps of clay	3	32
Clay and grits, brown, sticky	6	38

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Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Ny117; (Continued)

Pre-Cambrian (Manhattan schist)		
Rock	at	39

Casing: 8 inch.
Screen: 18 feet of 8 inch with bottom at 39 feet.
Static water level: 29 feet.
Yield: 50 gallons per minute.
Well abandoned, supply inadequate.

Ny133; Heermance Storage and Refrigerating Co., 313 Greenwich Street. (A-1). Drilled by Sweeney & Gray, 1941. Altitude of land surface about 15 feet above sea level. Driller's log.

Recent and Pleisticene	Thickness (feet)	Depth (feet)
Sand, coarse, water-bearing	30	30
Sand, muddy	32	62
Sand, coarse	30	92

Casing: 12 inch to 8 inch.
Screen: 16 feet of 8 inch with bottom at 78 feet, number 32 slot.
Yield: 75 gallons per minute.

Ny138; National Exhibition Club, Polo Grounds. (B-2). Drilled by Artesian Well & Equipment Co., 1950. Altitude of land surface about 20 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill, sand and loam	45	45
Pre-Cambrian (Manhattan schist)		
Rock	312	357

Casing: 45 feet of 6 inch.
Screen: None
Yield: 25 gallons per minute.
Drawdown: 219 feet.

Ny141; Phil Silvershein Corp., 78 Ridge Street. (A-2). Drilled by C. W. Lauman & Co., Inc., 1947. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	2	2
Sand, very fine, brown, clay and mica	23	25
Clay, brown, sandy	9	34
Clay, brown, solid	8	42
Sand, coarse, brown, gravel, large stones	3	45
Sand, medium, brown, some gravel, stones	5	50
Sand, fine to medium, brown	3	53
Sand, coarse, brown, grits and gravel	7	60
Clay, sandy, gray, and gravel	?	?

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Ny141; (Continued)

Casing: 10 inch.
Screen: 16 feet of 6 inch with bottom at 61 feet.
Static water level: About 15 feet.
Yield: 109 gallons per minute.
Temperature: 57° F.

Ny146; Laundercar System, 555 Grand Street. (A-2). Drilled by C. W. Lauman & Co., Inc., 1950. Altitude of land surface about 40 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Open hole	18	18
Rocks and gravel, mixed	12	30
Sand and gravel, coarse, brown	18	48

Casing: 6 inch.
Screen: 6 feet of 6 inch with bottom at 48 feet, number 40 slot.
Static water level: 18 feet (January 9, 1950).
Yield: 65 gallons per minute.
Temperature: 59° F.

Chemical Analysis, April 5, 1950 (Parts per million).

Chloride	43
Iron	0.2
Hardness (as $CaCO_3$)	79
pH	7.4

Ny154; Cornell Iron Foundry, 25th St. between 10th and 11th Avenues. (A-1). Drilled by Phillips and Worthington. Altitude of land surface about 10 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	10	10
Sand and gravel	2	12
Sand, fine, brown	3	15
Sand, fine, black	3	18
Mud	6	24
Sand, medium, brown	19	43
Sand, coarse, gravel	4	47
Sand, medium	11	58
Sand, coarse	5	63
Pre-Cambrian		
Rock	at	63

Ny160; East Harlem General Hospital, test boring #62, E. 99th Street, 210 feet east of First Ave. (B-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1945. Altitude of land surface about 3 feet above sea level. Driller's log.

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Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Ny160; (Continued)

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill, cinders, and gravel	10	10
Silt, and clay	19	29
Sand, fine, silty, brown	21	50
Sand, fine, silty, brown, and trace of clay	33	83
Silt, red and gray, interbedded with clay, and some fine sand layers	37	120
Sand, fine to coarse gray, and gravel	22	142
Pre-Cambrian (Inwood limestone)		
Limestone, hard	7	149

Ny161; Appellate Division, Court Building, test boring #1, Madison Ave., 50 feet north of E. 25th St. (A-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1951. Altitude of land surface about 30 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill, sand, gravel, masonry	5	5
Sand, fine to coarse, brown, with trace of silt and gravel	9	14
Pre-Cambrian (Manhattan schist)		
Rock, hard	9	23

Ny162; Harlem Retail Market, test boring #2, northwest corner of 8th Ave. and W. 142nd St. (B-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1950. Altitude of land surface about 20 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	7	7
Sand, fine to coarse, brown, and trace of gravel	19	26
Sand, fine to medium, brown	11	37
Sand, fine brown, and silt, in layers	17	54
Silt, brown, some layers of clay	22	76
Clay, gray and brown, varved, stiff	24	100
Sand, fine to coarse, brown, and gravel	5	105
Pre-Cambrian (Inwood limestone)		
Limestone, hard, seamy	7	112

Ny163; Inwood Branch Library Building, test #1B, Broadway, about 300 feet north of Dyckman St. (C-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1947. Altitude of land surface about 20 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill, sand, clay, and gravel	13	13
Silt, red, stiff	4	17
Sand and gravel, trace of clay and boulders	24	41
Pre-Cambrian (Inwood limestone)		
Limestone, hard	1	42
Clay, rock, stiff decomposed limestone	31	73

Ny164; Nightingale Hospital, test boring #8, about 70 feet west of Fort Washington Ave. and 200 feet north of W. 163rd Street. (C-2). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1941. Altitude of land surface about 140 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Sand, fine, brown	13	13
Sand and silt, very fine, gray and yellow	3	16
Sand, gravel, clay, and boulders	10	26
Pre-Cambrian (Manhattan schist)		
Rock, seamy and weathered, quality improves with depth	22	48

Ny165; Broadway Bridge, test boring #SA4, east side of Broadway at Harlem River. (C-3). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1951. Altitude of land surface about 5 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	8	8
Silt, black, with peat	4	12
Sand, fine, brown, and layers of silt	13	25
Silt, red and brown, with some thin streaks of gray clay	22	47
Sand, coarse, and gravel	4	51
Pre-Cambrian (Inwood limestone)		
Limestone, decomposed, yellow-white	2	53
Limestone, fine to coarse, gray	6	59

RICHMOND COUNTY

R7; New Method Service Co., Inc., 465 Bay Street. (C-4). Drilled by C. W. Lauman & Co., Inc., February, 1941. Altitude of land surface about 10 feet above sea level. Drillers log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	4	4
Clay and sand, gray	19	23
Clay, brown	4	27
Sand and gravel, coarse, and brown clay	11	38
Sand and gravel, clean, coarse	12	50

Casing: 10 inch.
Screen: 11 feet of 8 inch with bottom at 50 feet.
Yield: 200 gallons per minute.
Temperature: 57° F.

R10; Clay Smith Co., Inc., 789 Henderson Avenue. (C-3). Drilled by C. W. Lauman & Co., Inc., January, 1938. Altitude of land surface about 18 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	1	1

(Continued on next page)

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

R10; (Continued)

Clay	29	30
Clay and boulders	7	37
Clay	2	39
Sand and clay	26	65
Sand and gravel	14	79
Sand, clean	8	87

Casing: 8 inch.
Screen: 13 feet of 6 inch with bottom at 87 feet.
Yield: 270 gallons per minute.
Drawdown 9 feet.

R14; Park Lanes, Inc., 164-70 Canal Street. (C-4). Drilled by C. W. Lauman & Co., Inc., 1941. Altitude of land surface about 30 feet above sea level. Log starts 5 feet below land surface. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	2	2
Sand, coarse, small gravel, red clay	4	6
Sand, coarse, brown, broken stones, some water	23	29
Sand, coarse, brown, grits, small gravel	9	38
Same as above with clay	5	43

Casing: 6 inch.
Screen: 6 feet of 6 inch with bottom at 42 feet.
Static water level: 7 feet below top of casing.
Yield: 40 gallons per minute.
Temperature: 57° F.

R17; Blue White Laundry, Inc., 685 Cary Avenue. (C-3). Drilled by C. W. Lauman & Co., Inc., August, 1939. Altitude of land surface about 30 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Clay, sand and stones	9	9
Clay, sand, stones and rocks	55	14
Clay, gray	14	28
Clay, some grits	6	34
Clay, boulders	5	39
Sand, coarse, some clay	4	43
Gravel, little clay	4	47
Sand, medium to coarse	6	53
Sand and grits	3	56
Sand and gravel, clean, coarse	19	75

Casing: 8 inch.
Screen: 16 foot of 6 inch with bottom at 74 feet.
Static water level: 29 feet.
Yield: 350 gallons per minute.
Temperature: 54° F.

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

R18; Ansbacher Siegle Corp., 92 Chestnut Street. (C-4). Drilled by C. W. Lauman & Co., Inc., March, 1937. Altitude of land surface about 45 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Loam, hard, red, niggerheads, and boulders	46	46
Clay, hard, red, 10% fine sand	11	57
Clay, hard, red, and niggerheads	3	60
Clay, hard, red, large stones, and niggerheads	10	70
Sand, fine, large stones, 10% small gravel and 40% red clay	7	77
Sand, medium to coarse, brown, small gravel and 10% red clay	11	88
Same as above with large stones	4	92
Sand, clean, coarse, heavy gravel, large stones	9	101
Sand, clean, coarse, brown, heavy gravel	17	118
Sand, coarse, brown, small gravel, some red clay	5	123
Sand, clean, coarse, greenish	8	131
Sand, medium to coarse, clean, brown	8	139
Sand, fine, brown	3	142

Casing: 12 inch.
Screen: 31 feet of 11 inch with bottom at 139 feet.
Static water level: 47 feet.
Yield: 370 gallons per minute.

R42; People's Pulpit Association, Radio Station WBBR, 1111 Woodrow Road. (B-2). Drilled by H. L. Parkhurst, April, 1931. Altitude of land surface about 150 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Clay	29	29
Clay, sand and gravel	11	40
Sand, coarse and gravel	16	56
Sand, gravel and clay, no water	30	86
Sand, yellow	4	90
Cretaceous (Raritan formation)		
Sand, gray and clay mixed	34	124
Sand, gray, water struck at 124 feet and lost at 136 feet	12	136
Sand and clay	2	138
Clay	7	145
Clay, blue	3	148
Sand, medium, gray, and clay, mixed	10	158
Clay and fine sand, water struck at 158 feet and lost at 166 feet	12	170
Sand, fine and white clay	11	181
Sand, fine and gray clay	6	187
Clay, blue	18	205
Clay, blue and gray mixed	45	250
Clay, blue, heavy	32	282
Clay	16	298
Clay and sand	5	303

(Continued on next page)

R42; (Continued)

Pre-Cambrian		
Mica schist	at	360

Two wells in Cretaceous strata 135 feet and 165 feet deep, reported on this property. The log given above may be for a test well at this site. See tables 5 and 6 for additional data.

Casing: 8 inches.

R54; Beinerts Ice Co., Inc., 50 Murray Street. (B-2). Drilled by Artesian Well & Equipment Co., Inc., June, 1936. Altitude of land surface about 20 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Clay	26	26
Sand	1	27
Sand and clay	16	43
Clay, light	4	47
Sand and gravel	8	55
Cretaceous (Raritan formation)		
Clay, gray	35	90
Clay	87	177
Sand	5	182
Sand	46	228

Casing: 6 inch.
Screen: 20 feet of 6 inch with bottom at 228 feet.
Static water level: 37 feet (June, 1936)
Drawdown: 53 feet.
Yield: 200 gallons per minute.
Specific capacity: 4

R55; Board of Transportation, City of New York, Castleton Avenue and Rector Street. (C-3). Drilled by C. W. Lauman & Co., Inc., August, 1950. Altitude of land surface about 18 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	15	15
Clay, red and stones	10	25
Clay, light, red	11	36
Sand, reddish-brown, and some clay	9	45
Sand, brown, and stones	36	81

Casing: 12 inch.
Screen: 21 feet of 12 inch with bottom at 81 feet.
Static water level: 5 feet (August, 1950).
Yield: 310 gallons per minute.
Drawdown: 9 feet.
Specific capacity: 34

(Continued on next page)

R55; (Continued)

Geologist's log based on examination of samples by T. Arnow.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
No sample	15	15
Clay and silt, brown, and fine to coarse sand	10	25
Clay, silt, brown, and fine gravel	11	36
Sand, medium to very coarse, brown, and fine gravel	9	45
Sand, medium to very coarse, brown, and fine to medium gravel	36	81

R56; Test boring #1, Oakwood Beach. (B-3). Drilled by the Subsurface Exploration Section, Department of Public Works, City of New York, 1949. Altitude of land surface about 2 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Topsoil	2	2
Sand, fine to medium, dark red, trace of silt, a little fine to coarse gravel	8	10
Sand, fine to medium, compact, traces of silt, and fine gravel	20	30
Sand, fine to coarse, brown, trace of silt, and fine to medium gravel	24	54
Cretaceous (Raritan formation)		
Silt and clay, light gray, compact, in layers, some layers of pink clay	9	63
Sand, fine to medium, yellow and gray, silt, compact, some layers of pink clay	7	70
Sand and silt, fine, light gray, compact in alternating layers, some layers of pink clay	26	96
Sand, fine to medium, multi-colored, in layers, trace of silt and clay	6	102

Correlation based on examination of samples by N. M. Perlmutter.

R57; Richmond Health Substation, test boring, Center Street, about 60 feet west of St. Patrick's Place. (B-3). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1941. Altitude of land surface about 30 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Sand and gravel, red, with silt and clay	16	16
Sand, fine to medium, brown, some silt	12	28
Sand and gravel, red, compact, some silt and clay	32	60
Sand and gravel, red, compact	12	72
Cretaceous (Raritan formation)		
Clay, stiff, dark gray, some silt and carbonized wood	54	126
Pre-Cambrian		
Gneiss, decomposed	55	181

R58; Seaview Hospital, Rockland and Brielle Avenues. (C-3). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1950. Altitude of land surface about 295 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Sand, fine to coarse, reddish-brown, pebble to medium gravel, some clay	27	27
Gravel, pebble to large, red shale, some stiff clay, and fine to coarse sand	10	37
Sand, fine to medium, red, pebble gravel, some red clay	3	40
Pre-Cambrian (Staten Island serpentine of Merrill)		
Serpentine, soft, weathered, green and speckled	7	47

R59; Test boring #1PS, 280 feet west of Bodine Street and 600 feet north of Richmond Terrace. (C-3). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York, 1944. Altitude of land surface about 2 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	12	12
Silt, soft	16	28
Silt, fine, gray and sand, trace of gravel and peat	9	37
Silt, clay, and fine sand, loose	6	43
Sand, fine, brown, compact	9	52
Sand, clay, and gravel, compact	13	65
Sand, fine to medium, brown, compact	30	95
Sand, coarse, gravel and boulders	7	102
Sand, fine, compact	3	105

R60; Marine Unloading Plant, test boring #2A, East shore of Great Fresh Kills Creek. (B-2). Drilled by Subsurface Exploration, Department of Public Works, City of New York, 1946. Altitude of land surface about 1 foot above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Sand, fine to medium, brown	11	11
Silt and clay, stiff, red, and gravel	5	16
Sand and gravel, red, poorly sorted, trace of clay	16	32
Sand, medium to coarse, compact, some dark gray silt	3	35
Cretaceous (Raritan formation)		
Silt, stiff, dark gray, some clay, fine sand, fragments of carbonized wood	6	41
Sand, coarse, white	2	43
Clay, stiff, blue-green, silt and sand	5	48
Triassic (Newark group)		
shale, gray, very stiff	5	53
Pre-Cambrian		
Rock decomposed, serpentine	23	76

R61; Atlantic Terracotta Co., Tottenville. (B-2). Drilled by W. Stothoff Co., Inc. Altitude of land surface about 5 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Clay, red, and gravel	2	2
Sand, brown	1	3
Sand, yellow	27	30
Clay and gravel	30	60
Sand, brown, water	3	63
Sand, coarse, and clay	6	69
Sand, light brown, water	3	72
Sand, coarse, and clay	1	73
Cretaceous (Raritan formation)		
Clay, light	5	78
Clay, blue and sand	38	116
Sand, fine, light	1	117
Clay, pink	11	128
Clay, black	2	130
Sand, light, water	4	134
Sand, light, and clay mixed	13	147
Sand, light, water	4	151
Sand, coarse, white, water	3	154
Sand, light	9	163

Casing: 6 inch.
Yield: Reported to vary from 50 to 140 gallons per minute.

R62; Great Kills Library, test boring #1, Margaret Street, 110 feet west of Giffords Lane. (B-3). Drilled by Subsurface Exploration Section, Department of Public Works, City of New York. Altitude of land surface about 65 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Loam, sand and gravel	12	12
Sand, clay and gravel	5	17
Sand and gravel, reddish-brown, trace of clay	34	51

R63; Boulevard Station #1, Well No. 7, Department of Water Supply, Gas and Electricity, City of New York, Emmett Avenue and Hylan Boulevard. (B-3). Drilled by Phoenix Construction Co., 1912. Altitude of land surface about 10 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Topsoil	5	5
Clay, sand, gravel and boulders	3	8
Sand, red	12	20
Sand, fine, brown	6	26
Sand, coarse, brown	7	33
Sand, fine	6	39

(Continued on next page)

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

R63; (Continued)

Sand, coarse, and gravel	11	50
Sand, coarse, brown, and gravel	5	55
Clay, white	1	56
Sand, beach, and some gravel	3	59
Sand, beach, light brown	3	62
Sand, beach, light brown	3	65
Sand, coarse, brown	7	72
Sand, coarse, brown, and gravel	3	75
Cretaceous (Raritan formation)		
Clay, white, and gravel	2	77
Clay, white	23	100
Sand, beach, light brown	10	110
Clay, blue	11	121
Clay, white	1	122
Clay, blue	27	149
Clay, blue and hardpan	2	151
Clay, blue	41	192
Clay, gray, trace of hardpan	14	206
Clay, gray	4	210
Clay, red, blue and gray in streaks	4	214
Clay, gray, trace of hardpan	4	218
Clay, dark red, mixed with gray clay	11	229
Clay, light red, mixed with sand	9	238
Clay, red, blue and gray	4	242
Sand, beach, white	4	246
Clay, gray, traces of lignite	4	250
Clay, blue, red and gray, some mica	20	270
Pre-Cambrian		
Bedrock, soapstone with mica	49	319

Casing: 6 inch.
Screen: 6 inch diameter set from 45 to 55 feet and 65 to 75 feet.
Yield: 120 gallons per minute.
One of 14 wells discharging into a common suction line.

R64; Boulevard Station #2, Well No. 9, Department of Water Supply, Gas and Electricity, City of New York, Hylan Boulevard, about 450 feet south of New Dorp Lane. (B-3). Drilled by Phoenix Construction Co., 1912. Altitude of land surface about 10 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Sand, and loam	12	12
Sand, fine, and clay	9	21
Sand, fine, brown	13	34
Sand, coarse, brown, and gravel	17	51

(Continued on next page)

R64; (Continued)

Gravel, fine	12	63
Gravel	15	78
Cretaceous (Raritan formation)		
Clay, white	17	95
Sand, very fine, yellow	6	101
Clay, white	2	103
Sand, very fine, white	2	105
Sand, very fine, gray, mica	6	111
Clay, blue	23	134
Sand, fine, brown, traces of mica	1	135

Casing: 6 inch.
Screen: 23 feet of 6 inch with bottom at 72 feet.
One of 14 wells discharging into a common suction line.

R65; Boulevard Station #3, well No. 12, Department of Water Supply, Gas and Electricity, City of New York, Hylan Boulevard and Buel Avenue. (C-3). Altitude of land surface about 10 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Loam and sand	11	11
Sand, fine, red	22	32
Sand, coarse, and gravel	11	43
Sand, fine, gray	1	44
Clay, blue	10	54
Gravel, fine to coarse	31	85
Cretaceous (Raritan formation)		
Clay, blue and white	2	87

Casing: 6 inch
Screen: 12 feet of 6 inch with bottom at 44 and 12 feet of 6 inch with bottom at 79.
Yield: 126 gallons per minute.

R66; Boulevard Station #4, well No. 9, Department of Water Supply, Gas and Electricity, City of New York, Hylan and Evergreen Avenue. (C-3). Drilled by Phoenix Construction Company, 1912. Altitude of land surface about 12 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Sand, coarse, brown	18	18
Quicksand	12	30
Sand, fine, brown	24	54
Sand, coarse brown	3	57
Gravel	1	58
Sand, coarse, white	9	67
Clay, gray	3	70
Gravel, coarse	18	88

(Continued on next page)

R66; (Continued)

Gravel	3	91
Gravel, fine	5	96
Cretaceous (Raritan formation)		
Clay	3	99

Casing: 6 inch.
Screen: 12 feet of 6 inch with bottom at 67 feet and 24 feet of 6 inch with bottom at 96 feet.
Yield: 700 gallons per minute.

R67; Test boring, Goethals Bridge, Port of New York Authority, 170 feet east of Arthur Kill & Goethals Bridge, 1927. (C-2). Altitude of land surface about 3 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Soil	1	1
Silt	27	28
Sand	4	32
Gravel	6	38
Triassic (Newark group)		
shale, red	13	51

R68; Test boring, Bayonne Bridge, Port of New York Authority, Newark Avenue and Innis Street, 1929. (C-3). Altitude of land surface about 35 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Topsoil and red clay	6	6
Clay, stiff, red	5	11
Clay, hard, red, very little sand and gravel	9	20
Sand, gravel and boulders	14	34
Triassic (Palisade diabase)		
Trap rock	9	43

R69; Bulls Head Pumping Station, Department of Water Supply, Gas and Electricity, City of New York. (C-3). Altitude of land surface about 20 feet above sea level. Driller's log, supplied by M. E. Johnson.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Bog, black, some sand	8	8
Clay, red and yellow	19	27
Hardpan, gray	3	30
Sand, fine, brown, water bearing	10	40
Sand, coarse, brown, water bearing	25	65
Clay, red	5	70
Sand, coarse, brown, some gravel	15	85
Clay, red	2	87
Sand, dark, coarse, some gravel	8	95

R70; Nassau Smelting and Refining Co., Inc., 1 Nassau Place. (B-2). Drilled by Artesian Well & Equipment Co., 1948. Altitude of land surface about 15 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Fill	18	18
Hardpan, sand and a little red clay	55	73
Sand and gravel, water bearing	11	84
Cretaceous (Raritan formation)		
Clay, gray, and a little red clay	76	160
Clay, gray, with a little sand	37	197
Clay, gray	20	217
Clay, red	58	275
Hardpan, sand and clay, mixed	26	301
Clay, hard, pieces of red sandstone	7	308
Clay, hard	45	353
Bedrock (Age?)	at	353

Well abandoned.

R71; Test boring, Raritan Bay Bridge, about 1 mile north of Seguine Point at Prince's Bay. (B-2). Altitude about 30 feet above sea level. Driller's log supplied by M. E. Johnson.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Sand	16	16
Sand, coarse, and gravel	15	31
Mud	25	56
Sand, coarse and gravel	14	70
Cretaceous (Raritan formation)		
Mud	50	120
Sand, fine	1	121
Hardpan and gravel	3	124
Sand, fine, white	23	147

R72; Harry Chassey, near ferry slip at Tottenville. (B-1). Drilled about 1911. Altitude of land surface about 20 feet above sea level. Driller's log supplied by M. E. Johnson.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Clay, red, hard	20	20
Clay, softer, some fine sand	40	60
Gravel, coarse	10	70
Cretaceous (Raritan formation)		
Clay, hard	80	150
Sand, coarse, water bearing	23	173

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

R73; Rubsam and Horrmann Brewery, test well, 191 Canal Street. (C-4). Drilled by S. J. Breen, 1946. Altitude of land surface about 50 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Fill	10	10
Clay	26	36
Sand, stones, some clay	4	40
Clay, brown	3	43
Stones, sand, and clay	20	63
Clay, green	17	80
Pre-Cambrian		
Serpentine	at	80

Casing: 8 inch.
Screen: 10 feet with bottom at 58 feet.
Yield: 10 gallons per minute.

R74; Test well, Department of Water Supply, Gas and Electricity, City of New York, Cortlandt Street and Haughwout Avenue. (C-3). Altitude of land surface about 20 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Clay, red, and gravel	2	2
Clay, red, and loam	2	4
Clay, red, sand, and gravel	2	6
Gravel, sand, clay and boulders	9	15
Serpentine (?) and sand	3	18
Gravel	2	20
Sand, fine, and gravel	3	23
Sand, fine, and boulders	3	26
Clay, stiff	2	28
Sand, fine, and clay	3	31
Sand, red	1	32
Sand and gravel	5	37
Sand, brown	2	39
Sand, brown, and gravel	12	51
Gravel, coarse	4	55
Sand and coarse gravel	5	60
Gravel, very coarse	10	70
Sand and gravel, heavy	5	75
Sand and coarse gravel	5	80

R75; Test boring, City of New York, Narrows Tunnel Project, Forest Avenue, 300 feet east of Clove Road. (C-3). Drilled in 1922. Altitude of land surface about 85 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Clay, red, fine, sand, and gravel	25	25

(Continued on next page)

R75; (Continued)

	Thickness (feet)	Depth (feet)
Clay, red and gray, gravel, pebbles and sand	24	49
Boulders, granite	1	50
Sand, coarse, and gravel	19	69
Pre-Cambrian		
Serpentine, decomposed	6	75
Serpentine, hard	10	85

R76; Test boring, City of New York, Narrows Tunnel Project, Broadway and Forest Avenue. (C-3). Drilled in 1922. Altitude of land surface about 115 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Clay, red, sand and large gravel (till)	11	11
Clay, red, sand, and small gravel, water-bearing	16	27
Clay, red, and gravel	13	40
Clay, red, red and green pebbles	13	53
Sand and red clay, water-bearing	14	67
Pre-Cambrian		
Serpentine (bedrock)	22	89

R77; Test boring, City of New York, Narrows Tunnel Project, Bement Avenue, about 390 feet north of Forest Avenue. (C-3). Drilled in 1922. Altitude of land surface about 120 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Clay, sand and gravel (till)	16	16
Pre-Cambrian		
Serpentine (bedrock)	at	16

R78; Test boring, City of New York, Narrows Tunnel Project, Forest and Davis Avenues. (C-3). Drilled in 1922. Altitude of land surface about 130 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Clay, yellow, and sand	19	19
Clay, red, sand and gravel	10	29
Sand, coarse, and a little red clay	17	46
Sand, fine, red, and red clay	13	59
Sand	8	67
Sand and gravel	9	76
Sand, fine, red	12	88
Clay, red	3	91
Pre-Cambrian		
Serpentine (bedrock)	at	91

R79; Test boring, City of New York, Narrows Tunnel Project, Van Tuyl and York Avenues. (C-3). Drilled in 1922. Altitude of land surface about 120 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Loam	4	4
Shale, soft, red	6	10
Pre-Cambrian		
Serpentine (bedrock)	34	44

R80; Test boring, City of New York, Narrows Tunnel Project, St. Mark's Place and Hyatt Street. (C-4). Drilled in 1922. Altitude of land surface about 110 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Loam	4	4
Pre-Cambrian		
Serpentine, weathered (bedrock)	11	15
Serpentine	22	37

R81; Test boring, City of New York, Narrows Tunnel Project, Borough Place and Bay Street. (C-4). Drilled in 1922. Altitude of land surface about 40 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent and Pleistocene		
Loam, sand, clay, stones	10	10
Clay, red, gray sand, stones, and gravel	24	34
Pre-Cambrian		
Serpentine (bedrock)	15	49

R82; Quarantine Station, Hoffman Island, Lower New York Bay. (B-4). Reprinted from U. S. G. S. Prof. Paper 44. Drilled by E. Gregory. Altitude of land surface about 5 feet above sea level. Driller's log.

	Thickness (feet)	Depth (feet)
Recent, Pleistocene and Cretaceous (?)		
Sand, clay and gravel with salt water	450	450
Pre-Cambrian		
Rock with salt water	300	750
Rock with fresh water	250	1000

Sample at 210 feet reported by A. C. Veatch to be a dark blue-gray sand, apparently glacial.

Casing: 8 inch.
Yield: 33 gallons per minute.

R83; Test boring, Goethals Bridge, Port of New York Authority, about 800 feet west of Western Avenue, 30 feet south of Washington Avenue. (C-2). Altitude of land surface about 3 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Silt	15	15
Sand, coarse, red	16	31
Sand, fine, red	17	48

R89; Test boring #3, Narrows Project, New York City Transit Authority, Bay Street, Ormond Place and Butler Place. (C-4). Drilled by the Giles Drilling Corp., 1931. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene (?)	Thickness (feet)	Depth (feet)
Sand and gravel	14	14
Sand, clay, and gravel	21	35
Clay and gravel	1	36

R91; Test boring #4, Narrows Project, New York City Transit Authority, Clifton Avenue and Rosebank Place. (C-4). Drilled by the Giles Drilling Corp., 1931. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene (?)	Thickness (feet)	Depth (feet)
Clay and gravel	12	12
Sand and clay	8	20
Sand, clay, and gravel	20	40

R93; Test boring #6, Narrows Project, New York City Transit Authority, Maryland Avenue and White Street. (C-4). Drilled by the Giles Drilling Corp., 1931. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene (?)	Thickness (feet)	Depth (feet)
Clay	19	19
Mud	3	22
Clay and gravel	30	52

R94; Test boring #8, Narrows Project, New York City Transit Authority, St. John Avenue and White Street. (C-4). Drilled by the Giles Drilling Corp., 1931. Altitude of land surface about 25 feet above sea level. Driller's log.

Recent and Pleistocene (?)	Thickness (feet)	Depth (feet)
Mud	38	38
Clay and gravel	18	56
Sand, clay, and gravel	3	59

Table 6.—Logs of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

R95; Test boring #9, Narrows Project, New York City Transit Authority, Hope Avenue, about 220 feet west of Bay Street. (C-4). Drilled by the Giles Drilling Corp., 1931. Altitude of land surface about 35 feet above sea level. Driller's log.

Recent and Pleistocene (?)	Thickness (feet)	Depth (feet)
Mud and clay	36	36
Clay and gravel	32	68

R98; Test boring #1, Narrows Project, New York City Transit Authority, Wadsworth Road and Seagate Road. (C-4). Drilled by the Giles Drilling Corp., 1931. Altitude of land surface about 55 feet above sea level. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Clay, sand, and gravel	15	15
Clay, gravel, and boulders	128	143

R99; Test boring #NR 18, Narrows Project, New York City Transit Authority, in Hudson River, about 150 feet east of shore near Seagate Road. (C-4). Drilled by the Giles Drilling Corp., 1931. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Water	16	16
Gravel and boulders	10	26
Sand, coarse, and gravel	7	33
Sand and gravel	14	47
Sand, fine	13	60
Sand and gravel	26	86
Sand	25	111
Sand and gravel	3	114

R100; Test boring #NR 12, Narrows Project, New York City Transit Authority, in Hudson River, about 1,800 feet from shore near Seagate Road. (C-4). Drilled by the Giles Drilling Corp., 1931. Driller's log.

Recent and Pleistocene	Thickness (feet)	Depth (feet)
Water	90	90
Silt and sand	8	98
Sand, fine	9	107
Sand and shells	15	122

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties

Location: From records, not checked in the field.
Map coordinates: Consist of a letter and number identifying the 5-minute grid square in which the well is located in plates 3, 4 and 5.
Owner: From original records. In the case of old wells, ownership may have been changed.
Altitude: Approximate elevation of land surface above mean sea level. Estimated from a topographic map.

Type of well: Drl, drilled; Drv, driven.
Method of lift: A, air-lift; E, electric; J, jet; R, reciprocating; S, suction; St, steam; T, turbine. Source of power is electricity unless indicated otherwise.
Use: AC, air conditioning; C cooling or condensing; D, domestic; F, flushing or washing; I, irrigation; L, laundry; P, processing; PS, public supply; S, swimming pool.

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
							BRONX COUNTY							
B1	3974 Boston Rd.	B-3	Holler Ice Manufacturing Co., Inc.	20	Drl	600	12	Manhattan schist	T	200	200	C	60 11- 7-44	Depth to bedrock, 20 feet. Well operated from June to September.
B2	625 Brook Ave.	A-2	Swift & Co., Inc.	15	Dug	12	10	Pleistocene sand	S	150	..	..	..	Well not used, has been dry. Near B3.
B3	643 Brook Ave.	A-2	Ridgefield Refrigeration Service, Inc.	15	Drl	55	10	do.	T	300	250	C	125 6-24-41	B2, nearby. Screen set from 43 to 55 feet.
B4	979 Brook Ave.	A-2	The Borden Co.	15	Drl	300	8	Inwood limestone	T	350	300	C	51 7-30-42	Depth to bedrock, probably 120 feet. For chemical analysis see table 5. Static level about 28 feet.
B5	3825 Corlear Ave.	B-2	Fanny Farmer Candy Corp.	15	Drl	450	12-6	do.	T	100	70	C	370 7- 9-48	Depth to bedrock, uncertain. For log see table 6.
B6	281 E. 132d St.	A-1	Arctic Hygeia Ice Co.	10	Drl	36	8	Pleistocene sand ?	..	..	150	C	..	Well not in use. Two other wells on property also abandoned.
B9	2338 Hermany Ave.	A-2	Karsten Dairies, Inc. (Hermany Farms)	15	Drl	140	6	Manhattan schist	T	50	50	C	40 7-11-41	Depth to bedrock, unknown. For Chemical analysis see table 5.
B10	1045 Webster Ave.	A-2	Sheffield Farms Co., Inc.	15	Drl	600	6	Inwood limestone	T	..	110	C	29 7-11-41	Depth to bedrock, 145 feet. For Chemical analysis see table 5.
B11	1668 Webster Ave.	B-2	Up-to-Date Candy Manufacturing Co., Inc.	35	Drl	387	10 and 8	Pleistocene sand and Inwood limestone	T	250	230	C	35 7- 6-42	Temperature of water, 57° F. For log see table 6. Screen set from 29 to 39 feet and 39 to 49 feet.
B12	520 Westchester Ave.	A-2	Bronx Refrigeration Co., Inc.	15	Drl	222	8	do.	T	200	65	C	185 7-11-41	Depth to bedrock, probably 130 feet. Three other wells, nearby.
B16	2128 Westchester Ave.	B-2	Atlantic Asbestos Corp.	30	Drl	125	8	Manhattan schist	R	60	60	C	23 7-11-41	Depth to bedrock, probably 10 feet. Iron content, 5 parts per million on 7-11-41.
B17	1160 Worthen St.	A-2	Frank Tursellino & Co., Inc.	15	Drl	230	8	do.	T	60	60	C	..	Depth to bedrock, unknown.
B19	431 E. 165th St.	A-2	Coca-Cola Bottling Co. of N. Y., Inc.	20	Drl	1800	9	Inwood limestone	T	250	150	C	..	Pumping level, 278 feet. Well abandoned. B20, nearby.
B20	do.	A-2	do.	20	Drl	800	8	do.	T	250	150	C	..	Pumping level, 290 feet. Well abandoned.
B21	421 E. 174th St.	B-2	Manchester Cream Co., Inc.	35	Drl	225	8	do.	T	150	50	C	29 6- 5-42	Depth to bedrock, 25 feet. For chemical analysis see table 5.
B26	Yankee Stadium	A-1	Allied Maintenance Co.	20	Drl	65	10	Pleistocene sand	J	300	125	I,C	50 9-29-50	Intermittent seasonal operation. Drawdown reported to be 15 feet after pumping 8 hours at 125 gallons per minute. For log see table 6.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
B28	Locust Ave. and 134th St.	A-2	Great Atlantic & Pacific Tea Co.	15	Drl	250	6	Inwood limestone	T	..	30	C	..	Well not in use. Depth to bedrock, probably 30 feet. Drawdown reported to be 75 feet after pumping 8 hours at 30 gallons per minute.
B29	1400 Ferris Pl.	B-2	F. M. Schildwachter & Sons, Inc.	15	Drl	70	12	Pleistocene sand	..	..	400	C	..	Well not in use. Drawdown reported to be 58 feet after pumping 12 hours at 400 gallons per minute.
B32	1150 Webster Ave.	A-2	Danherb Garage	20	Drl	195	6	Inwood limestone	T	..	40	F	..	Intermittent operation. Depth to bedrock, 65 feet.
B33	4234 Bronx Blvd.	B-2	Caldwell Products, Inc.	100	Drl	460	8-6	do.	T	..	50	AC	33 2- 9-51	Depth to bedrock, 25 feet. Static level reported to be about 70 feet.
B34	612 E. 233d St.	B-2	Mayer's Restaurant	100	Drl	630	6	do.	..	..	35	AC	..	Depth to bedrock, 60 feet. For log see table 6.
B35	1 E. 168th St.	B-1	Jerome Swimming Pool	60	Drl	363	..	do.	..	..	1	..	..	Well abandoned. Depth to bedrock, 22 feet.
B36	517 E. 132d St.	A-1	Crystal Spring Water Co.	20	Drl	452	6	do.	..	..	35	..	..	Depth to bedrock, unknown.
B37	2136 Blackrock Ave.	A-2	George Gowan	40	Drl	100	6	Manhattan schist	..	..	9	..	..	do.
B38	2431 Webster Ave.	B-2	E. Gitto	40	Drl	105	..	Inwood limestone (?)	..	..	30	..	..	Depth to bedrock, about 25 feet.
B39	Center line of Bronx-Whitestone Bridge, about 1,650 feet west of Old Ferry Point	A-2	Triborough Bridge Authority	2	..	92	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 65 feet.
B40	780 E. 133d St.	A-2	Greis Reproducer Corp.	15	Drl	900	8	Manhattan schist	J	..	30	C	1,100 1950	Drawdown reported to be 192 feet after pumping 8 hours at 30 gallons per minute.
B41	1900 Hennessey Pl.	B-2	Joseph Fera	100	Drl	98	6	Fordham gneiss	S	..	5	..	..	Depth to bedrock, 4 feet. Static water level, 20 feet.
B42	1430 Unionport Rd.	B-2	Park Abbey Funeral Chapel, Inc.	30	Drl	140	6	Manhattan schist	T	..	10	AC	69 1- 4-51	Depth to bedrock, 25 (?) feet.
B43	2550 Boston Rd.	B-2	Miller Bros. Service Station	130	Drl	218	8-6	do.	..	..	30	F	..	Depth to bedrock, 33 feet.
B44	2221 Boston Rd.	B-2	Pelham Minute Auto Laundry	100	Drl	250	8-6	do.	..	..	12	F	..	Depth to bedrock, 27 feet.
B45	1275 Jerome Ave.	B-1	Smiling Jack's Auto Laundry	60	Drl	70	6	Inwood limestone	J	18	18	F	..	
B46	Highbridge R.R. yards, nr. Sedgwick Ave.	B-1	New York Central R.R.	10	Drl	200(?)	14	Inwood limestone (?)	T	250	250	F	2,400 8- 3-50	Depth to bedrock, 72 feet. Data uncertain. Abandoned, high chloride content.
B47	2008 Westchester Ave.	A-2	Newbold Garage, Inc.	20	Drl	210	6	Manhattan schist	T	15	15	F	37 1- 4-51	
B48	2534 E. 177th St.	A-2	Finkel Umbrella Frame Co., Inc.	10	Dug	12	60	Pleistocene sand	S	..	50	F	24 1- 9-45	

deposits consist chiefly of till, deposited as ground moraine. The till is relatively thin and in places only incompletely blankets the bedrock. Because of its thinness (about 2 to 35 feet) and low permeability the till yields very little water to wells, and consequently it is of no practical importance as an aquifer in Bronx County.

Several deposits of stratified drift occur in the County, but only one is large enough to contain ground water in sufficient quantity for industrial or commercial use. This is a long, narrow body that extends south-southwestward across the County in the western part. (See easternmost of two outwash-filled valleys on pl. 2.) This deposit is roughly a quarter of a mile wide. It occupies a narrow valley that was formed in pre-Pleistocene time on the outcrop of the Inwood limestone. Upon the melting of the last glacier that covered the area, the valley was filled with stratified deposits.

The stratified drift consists mainly of sand and gravel and attains a maximum recorded thickness of 145 feet at well B10 [1] shown in plate 3. Records were obtained for a few wells penetrating the drift only, but of the 18 wells tapping the Inwood limestone for which records were obtained 12 are in areas overlain by thick stratified drift. The average yield from these 12 wells is 100 gpm, whereas the average yield of the other six wells tapping the limestone and covered by till or thin stratified drift is only 30 gpm. The permeable drift serves as a temporary reservoir and also readily allows the transmission of water to the underlying rock, whereas the relatively impermeable till that covers other areas impedes the downward movement of water to the rock beneath.

Recent alluvium is confined to the flood plains of the Bronx River and several other small streams. The alluvium is thin, limited in areal extent, and of no importance as an aquifer.

No records of wells or springs used for domestic purposes were obtained for this report in Bronx County. However, according to a compilation by Smith (1938) there were at least 300 such wells and springs in Manhattan and Bronx at the end of the 19th century. Most of these are now covered by streets and buildings or otherwise abandoned.

New York County (Manhattan)

Characteristics of the Water-Bearing Formations

Manhattan Island is underlain by pre-Cambrian metamorphic rocks which have been tightly folded, and subsequently eroded to form northeast-trending low hills and valleys which are most prominent in the northern half of Manhattan. (See pl. 1.) Northwest-trending major faults cross the island in the vicinity of 125th Street and of Dyckman Street in northern Manhattan. The rock beneath most of the County is the Manhattan schist. The Inwood limestone underlies two small areas in the northern half of the County and the surrounding tidal channels. In addition, a narrow belt of limestone also extends across the southeastern portion of the County near the East River. The Fordham gneiss crops out in a few places in the northern half of Manhattan, and it underlies several islands in the East River between Manhattan and Queens (not shown on pl. 1). At most places the pre-Cambrian rocks are overlain by a thin covering of Pleistocene deposits consisting chiefly of till. However, in at least two sizable areas (see pl. 2), significant thicknesses of stratified glacial deposits have accumulated in depressions on the bedrock.

Ground water in the consolidated rocks.—The Manhattan schist is a dark-gray to black micaceous rock composed of biotite, muscovite, quartz, feldspar, and smaller amounts of accessory minerals, and locally containing dikes and veins of pegmatitic material. The rock con-

[1] Wells in this report are identified by a letter and number. The numbers are repeated in each County. For example, wells R1, Ny1, and B1, are in Richmond, New York, and Bronx Counties, respectively. See tables 6 and 7 for data on these wells.

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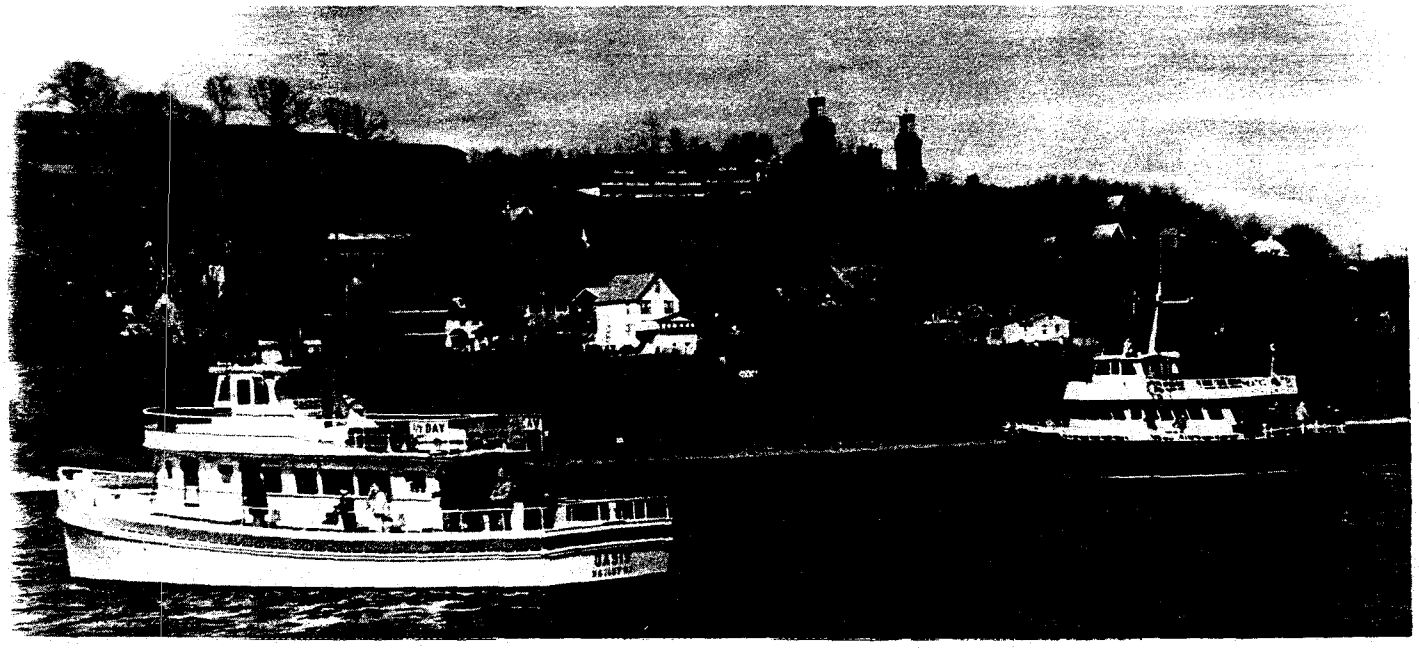

New Jersey's
Recreational and Commercial Fishing
Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay
and
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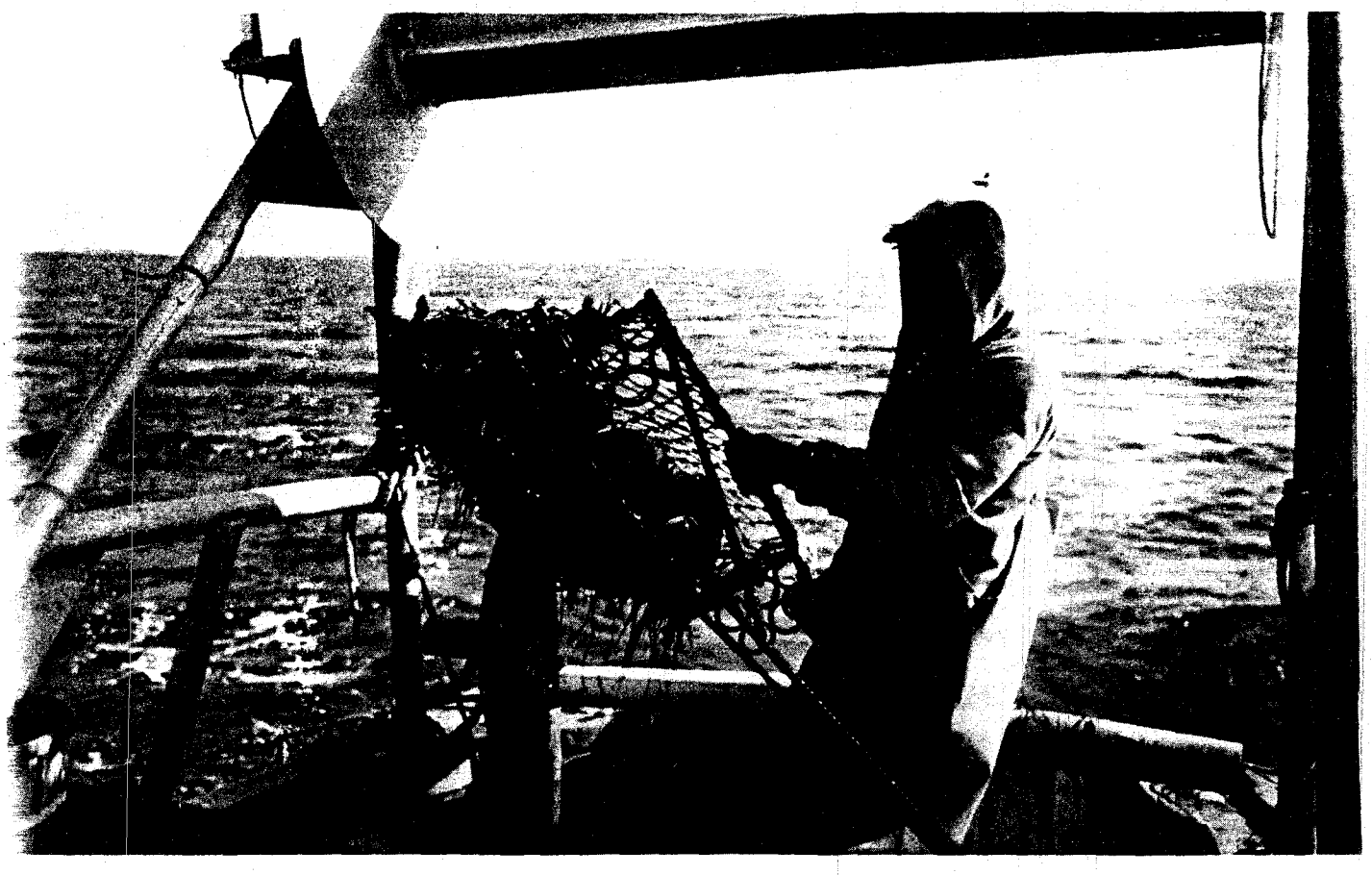

New Jersey Department of Environmental Protection
Division of Fish, Game and Wildlife
Marine Fisheries Administration
Bureau of Marine Fisheries
Bureau of Shellfisheries

October, 1988

New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay

by William Figley

and

The Shellfish Resources of Raritan Bay and Sandy Hook Bay

by Thomas McCloy

Charts by Barry Preim

New Jersey Department of Environmental Protection
Division of Fish, Game and Wildlife
Marine Fisheries Administration

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Technical Series 88-1

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New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay

INTRODUCTION

New Jersey's two largest embayments, Raritan Bay and Sandy Hook Bay in the north and Delaware Bay at the southern end of the state, contain important fishing grounds for a large number of recreational and commercial fishermen. In addition to providing important fisheries, there are other uses of the resources of these bays. Shipping requires the maintenance of deepwater channels and the disposal of massive quantities of dredge spoil. The mining industry has an interest in sand deposits for fill material and building aggregates. Various industries and municipalities use the bay water for treatment and dilution of wastes and for cooling water. Unfortunately, many of these uses often adversely affect the fish and shellfish resources, commonly referred to as the living marine resources, by degrading their living space and thereby reducing their populations. Also, because of our carelessness in disposing of toxic chemicals, we contaminate many seafood species. These and other uses of our coastal waters can directly affect fishermen by disrupting or preventing fishing operations.

Unfortunately, during the past, exploitation of the physical resources of these large embayments has been done with little thought given to the fishery resources or the fishermen who depend upon them. Now, however, all proposed resource development activities are subject to the process of environmental review. This process has greatly reduced many of the negative effects.

Information regarding the location of fishing grounds is needed to protect both fish and shellfish resources and the fishermen that derive their recreation or livelihood from them. The recreational and commercial fishing grounds of New Jersey's ocean waters were described in "New Jersey's Recreational and Commercial Ocean Fishing Grounds" (Technical Series 81-1). This report is a continuation of our mapping efforts and presents the fishing grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay.

METHODS

The fishing grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay were determined through a survey of commercial and recreational fishermen from New Jersey and Delaware. Although some fishermen were contacted in person, most were mailed survey forms and charts. Our list of commercial fishermen was derived from commercial fishing licenses. Party and charter boat captains were selected from our statewide list. Names of other recreational fishermen were obtained from fishing clubs, bait shops and the suggestions of other anglers.

Fishermen were requested to delineate specific areas they fished during the past five years by each type of fishing gear, in the case of commercial fishermen, and by species, in the case of recreational fishermen. The completed charts were then analyzed in two ways. First, the irregular outlines of delineated fishing grounds were transferred to master charts, one for each species or gear type. When completed, these charts depicted the entire area fished by species or gear type for all the fishermen surveyed. Survey charts were then analyzed quantitatively by overlaying each chart with a grid and tallying each grid block that was covered by any portion of a delineated fishing ground. The grid size was 1.25 minutes square (latitude) for Raritan Bay and Sandy Hook Bay and 2.5 minutes square (latitude) for Delaware Bay. Separate tallies were kept for each type of gear and species. The highest scoring grid blocks were designated as primary fishing grounds for each particular gear or species, and the lower scoring blocks were designated secondary fishing grounds. However, in preparing the final composite charts, only the irregularly-shaped outlines obtained from the first transfer were plotted. This was to insure that only that portion of a grid block that was actually fished was plotted.

It should be noted that these charts show the fishing grounds and not the distribution of each species. Fishing grounds represent only a portion of the geographic range of a species. Their extent is often limited by factors such as the density of fish, the suitability of an area for fishing, depth, regulations, pollution and distance from port. Furthermore, the charts depict only primary and secondary fishing grounds, areas where the majority of recreational and commercial fishing occurs; they do not include areas where rare or infrequent catches are made or where a species is taken as a bycatch of another species. In addition, fishing ground

boundaries are not permanent. Fishing effort adapts to changes in fish distribution and the location of grounds can vary from year to year. The information contained on these charts must therefore be considered in the context of time. Also, it must be recognized that although the survey included a large and diverse sample of New Jersey's recreational and commercial fishermen, not all fishermen were interviewed. Therefore, some actively fished areas may have been omitted.

The charts of Raritan Bay and Sandy Hook Bay indicate the fishing grounds of only New Jersey fishermen. The charts of Delaware Bay depict the fishing grounds of fishermen from both New Jersey and Delaware. Commercial fishing activities in Delaware Bay are greatly influenced by the state boundary line, which generally follows the shipping channel near the middle of the bay. Commercial fishermen are, for the most part, restricted by licenses and regulations to their respective sides of the bay. Thus, the commercial fishing grounds of New Jersey and Delaware fishermen depicted on the charts are exclusive. In the case of recreational fisheries, there are no area restrictions and anglers from both states mix over much of the fishing grounds. The areas on the charts labelled "Delaware Only" are fished only by Delaware anglers, because they lie too far across the bay for New Jersey anglers to reach.

PHYSICAL CHARACTERISTICS OF THE BAYS

Raritan Bay and Sandy Hook Bay

Raritan Bay and Sandy Hook Bay is a triangular-shaped embayment measuring nine by twelve miles and has a surface area of 109 square miles. It receives freshwater inflow from several drainage systems including the Hudson, Passaic and Hackensack Rivers to the north, the Raritan River to the west and the Navesink River to the south. The Bay system is divided between New York and New Jersey. Two shipping channels lead into the bays. Starting at the seaward edge, Ambrose Channel cuts northward under the Verazano Narrows Bridge to New York Harbor and the Hudson River. Sandy Hook Channel enters at the tip of Sandy Hook and proceeds westward to Perth Amboy, the Arthur Kill and Raritan River. Chapel Hill Channel joins these two main channels in a north-south direction. Except for the shipping channels, most of Raritan Bay and Sandy Hook Bay is relatively shallow, usually less than 20 feet in depth. Tides enter and leave the bay in a counter-clockwise gyre. Flood tides bring higher salinity ocean water in through Ambrose Channel that flows along the New York shores. Ebb tides drain less saline waters from the New Jersey shore out to the ocean through Sandy Hook channel. The volume of the tidal prism is 9.2 billion cubic feet and the mean tidal range is 5.5 feet.

The shores of Raritan Bay and Sandy Hook Bay and the numerous rivers, streams and tidal creeks that flow into them are the most highly industrialized and urbanized in New Jersey. Industrial and sewage effluents and storm-water run-off have resulted in severe water pollution and fish contamination, particularly in the northern drainage systems. Fortunately, public efforts and laws to reduce pollution are leading to improved water quality. As a result, blue crabs, striped bass, bluefish and other marine organisms are returning to many areas, such as Newark Bay and the Hackensack River, where they have been absent for decades.

Delaware Bay

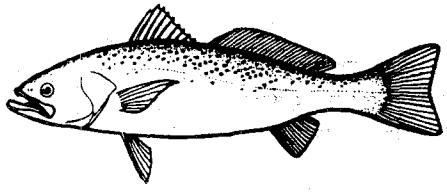
Delaware Bay is 46.7 miles long and has an average width of 15.3 miles. It has a surface area of 720 square miles and a volume of 4.7 trillion gallons. Although the major source of freshwater is the Delaware River, scores of tributaries, from narrow tidal creeks to small rivers, enter from both the Delaware and New Jersey shores. Each day, an average of 13 billion gallons of freshwater reach the bay from the Delaware River and the various tributaries. Tidal influence is much greater, however, with over a trillion gallons of seawater entering the bay daily. Tidal circulation follows a counter-clockwise pattern. Entering seawater tends to follow the New Jersey shore and tidal water mixed with freshwater tends to exit along the Delaware shore. For this reason, the Delaware side exhibits much greater variations in salinity. Tides extend from the mouth of the bay, where the mean range is 4.1 feet, to as far upstream as Trenton Falls, where the mean range is 6.8 feet.

About 80 percent of Delaware Bay is less than 30 feet deep. The shipping channel, with depths of 40 to 60 feet, runs close to the center of the bay and is bordered on each side by shoals only 6 to 20 feet deep. A deep-water area on the Delaware side of the channel near the mouth of the bay serves as a ship anchorage, with depths of 60 feet and more. Wide shoals less than 12 feet in depth border both the New Jersey and Delaware shores. One large shoal extends from Egg Island Point to Cape May Point. Another set of shoals, called The Rips, extends out from Cape May Point partially across the mouth of the Bay.

Vast stretches of tidal marsh border Delaware Bay in sharp contrast to the urbanized shores of Raritan Bay and Sandy Hook Bay. Unlike the northern part of the state, there has been much less industrial or residential development along Delaware Bay.

A 1960 study by the University of Delaware indicated that 138 species of fish can be found in the bay. Over 60 of these use the estuary as both a spawning and nursery ground. The Delaware River was once an important migratory pathway and sprawning ground for anadromous species, such as shad, herring and striped bass. Heavy municipal and industrial pollution from Philadelphia and Camden, however, has resulted in seriously low dissolved oxygen levels during the summer. This pollution block had prevented fish in upstream portions of the river from returning to the sea. However, in the last few years, the City of Philadelphia has completed its last sewerage treatment facility and the water quality as well as the dissolved oxygen levels have increased considerably. This has allowed the shad runs to increase after a half century of reduced population levels. Unfortunately, striped bass reproduction in the river continued to remain at a low level.

RECREATIONAL FISHERIES



Weakfish

Season

The weakfish, sometimes called gray sea trout, is the primary target of Delaware Bay anglers. Weakfish enter the Bay, usually in mid-April, to spawn. As they first enter, they do not actively feed. By early May, however, feeding increases as water temperatures rise. The first wave of fish to enter the bay are old, mature fish weighing 6-14 pounds. Many leave after spawning in mid-June and migrate northward along the coast. A second wave, also of mature, but smaller fish (3-6 pounds), arrives as the first wave exits. After spawning, the second wave also departs and is replaced by a third group of immature one-year-old fish that stay until October.

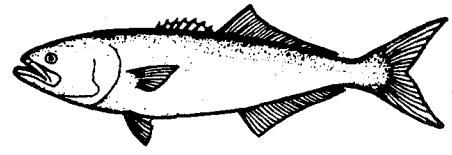
In recent years, the weakfish has increased tremendously in importance in Raritan Bay and Sandy Hook Bay, where it is believed to spawn. The first weakfish are taken by anglers during mid to late June. Large fish are caught in the bay and along the oceanfront by anglers throughout the summer.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds include the areas between Ambrose, Sandy Hook and Chapel Hill Channels, between Sandy Hook and Earle Pier and the oceanfront along Sandy Hook. Secondary grounds extend further into the bay and include a large area bordering Perth Amboy Channel and another area along the west side of Chapel Hill Channel and the Shoals surrounding West Bank Light. Another secondary ground occurs at the mouth of the bay, north and south of Ambrose and Sandy Hook Channels.

Delaware Bay

The primary sportfishing grounds extend from Brandywine Shoal up the bay to Cross Ledge and from Egg Island Point and Deadman Shoal to Blake and Lower Middle Channels. The secondary grounds cover most of the remainder of the bay from Arnold Point Shoal to the shoals at the mouth of the bay.



Bluefish

Season

Bluefish enter New Jersey's major bays in early May. Until their departure in late October, the bluefish population is represented by one or more year classes, from young-of-the-year fish, called snappers, to 15-pound jumbos. Bluefish less than three pounds dominate the population throughout the summer.

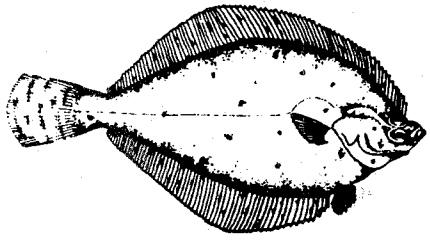
Fishing Grounds
Raritan Bay and Sandy Hook Bay

Although bluefish are caught at one time or another throughout the entire bay, the primary fishing grounds extend from the Verrazano Narrows Bridge to Ambrose Channel, encompass the large area at the mouth of the

bay bordered by Chapel Hill, Sandy Hook and Ambrose Channels, and extend along the oceanfront off Sandy Hook.

Delaware Bay

While bluefish are taken throughout the offshore portion of the bay as far upbay as Ship John Shoal, the primary grounds extend from Brandywine and Deadman Shoal up the north side of the shipping channel to Ben Davis Point Shoal.



Winter Flounder

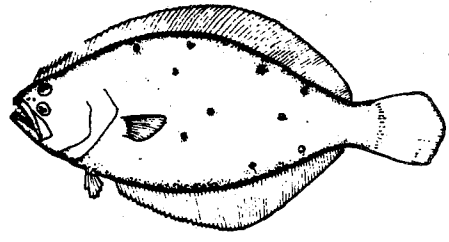
Season

Adult winter flounder enter New Jersey bays in November and remain until late April, when they return to the ocean to spend the summer. Juveniles and some adult fish remain in the bays throughout the year. Although winter flounder enter Delaware Bay, their numbers are relatively small, particularly in recent years, and presently do not support a sportfishery. It is, however, an important species in Raritan Bay and Sandy Hook Bay. Most fishing activity occurs during March and April. With cold water temperatures in January and February, winter flounder do little feeding and thus are rarely caught by anglers.

An angler unhooks a bluefish caught at the mouth of Delaware Bay.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds extend from the Highlands Bridge along Sandy Hook to the channel and around Earle Pier. Secondary grounds include the area from Sandy Hook along the shore to Matawan Creek, the mouth of the Arthur Kill and the area between Perth Amboy Channel and Great Kills Harbor.



Summer Flounder

Season

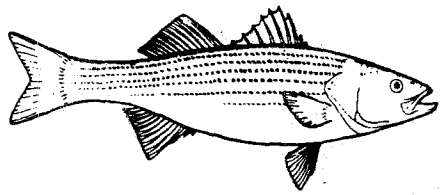
Summer flounder, called fluke in the northern part of the state and flounder in the south, enter New Jersey bays in late April or early May. They spend the summer feeding in the bays and then move into the ocean in early September prior to their offshore migration to wintering grounds offshore as far as the edge of the continental shelf.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds include the area at the mouth of the bay between the three channels and between Sandy Hook and Earle Pier. Secondary grounds include the large area spanning the length of Staten Island and the area to the west of Earle Pier on either side of Perth Amboy Channel.

Delaware Bay

The primary summer flounder fishing grounds extend from Brandywine and Deadman Shoals up both sides of the shipping channel to Cross Ledge. The secondary grounds surround the primary grounds and include the shoals at the mouth of the bay.



Striped Bass

Season

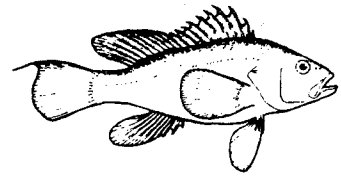
Striped bass, called rock on Delaware Bay, are caught by anglers in Delaware Bay and Raritan Bay and Sandy Hook Bay between mid-April and mid-November. During the early season, stripers are found in the interior parts of the bay. As the season progresses, they seem to move towards the mouth of the bay.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

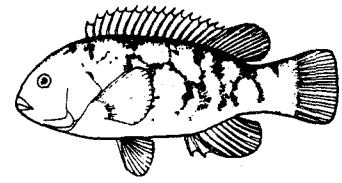
The primary fishing grounds for striped bass include the area bounded by Sandy Hook and Chapel Hill Channels, Rockaway Point, West Bank, the Verazano Narrows Bridge and the beachfront along Sandy Hook. Secondary grounds include the bayfront along Staten Island and the New Jersey shore between Union Beach and Highlands, Earle Pier and the west side of Chapel Hill Channel.

Delaware Bay

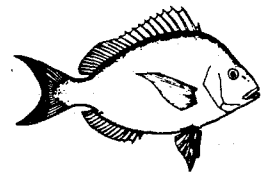
A minimal amount of fishing is directed at striped bass in Delaware Bay. Striped bass are caught at the mouth of the bay on the various shoals, collectively known as The Rips, and up the bay on shoals that border the shipping channel such as Cross Ledge, Ben Davis Point Shoal and Ship John Shoal.



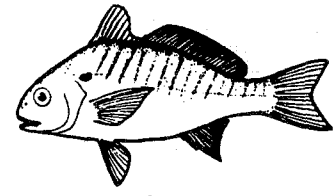
Sea Bass



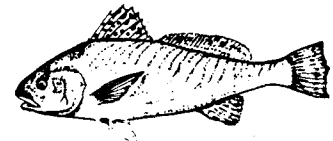
Tautog



Scup



Spot



Croaker

Sea Bass, Tautog, Scup, Spot and Croaker

Season

A variety of bottom fish, including sea bass, scup, spot, croaker and tautog, are caught by anglers between April and October. Spot and croaker inhabit sand, mud and shell bottoms. Sea bass, progy and tautog prefer shell and rock.

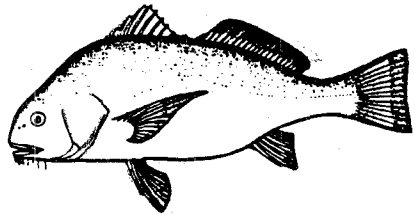
Gaffing a Sandy Hook Bay striper.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

Bottom fish are found throughout the bay around natural and artificial structures such as piers, jetties, fixed channel markers, gravel bars, shellfish beds and debris. The largest areas are the Tin Can Grounds and Romer Shoal at the mouth of the bay and the shellfish beds off Union Beach. Other smaller areas include the Highlands Bridge, Earle Pier, Atlantic Highlands breakwater, the islands around West Bank, the tip of Sandy Hook, Old Orchard Shoal, the deep holes off Perth Amboy and to the west of Chapel Hill Channel.

Delaware Bay

In Delaware Bay, most of the bottom fishing grounds are on sand, mud or oyster shell bottom. The area surrounding Deadman Shoal has been productive for croakers. Spot are caught along the bayshore at Bidwell Creek, Egg Island Point and Fortescue. Sea bass are caught, usually incidentally to the taking of summer flounder, over a wide area, including Egg Island flats and the Punk Grounds on the New Jersey side, and from Fourteen Foot Light to the Shears on the Delaware side. Tautog are caught around artificial rock structures such as Brandywine Light and the Lewes Ferry breakwater.



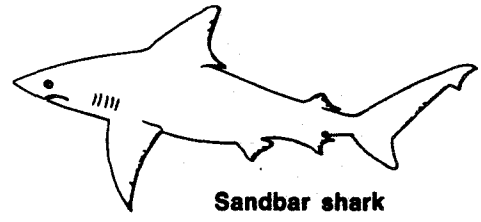
Black Drum

Season

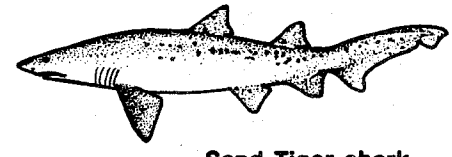
Although black drum historically were caught in the bays throughout New Jersey, they are now almost entirely restricted to Delaware Bay. Drum enter the bay in May to spawn. After spawning, they remain in the bay throughout the summer, but are most actively fished during May and early June.

Fishing Grounds
Delaware Bay

The primary sportfishing ground for black drum is bounded by Bay Shore Channel and Deadman Shoal on the east and Brandywine Shoal and Fourteen Foot Bank on the west. Secondary grounds surround the periphery of the primary grounds and include several areas on the Delaware side near Old Bank Shoal and the Hawknest.



Sandbar shark



Sand Tiger shark

Sharks

Season

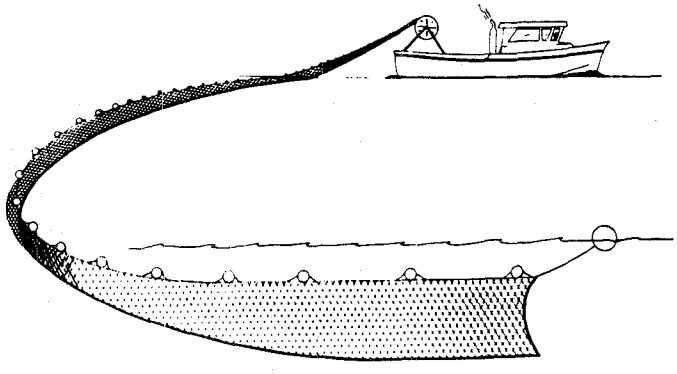
The two most common species of toothed sharks caught in New Jersey bays are the sandbar or brown shark and the sand tiger. In addition, bull sharks have occasionally been taken by sportfishermen in Delaware Bay. Sharks enter the bays in June and stay until water temperatures begin to decline in September or October. Adult female sandbar sharks use Delaware Bay as an important pupping area. They usually do not feed during the time subsequent to giving birth to live young. The adult males remain offshore and thus are not found in the bay.

Sharks have provided a popular sportfishery in Delaware Bay for over 50 years, but little fishing activity has been exerted for them in Raritan Bay and Sandy Hook Bay.

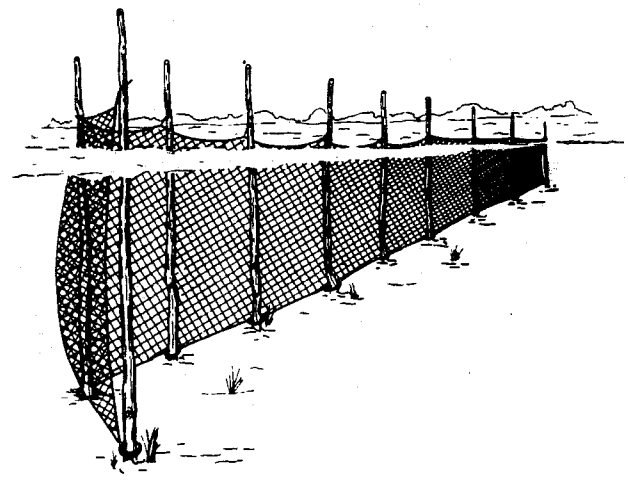
Fishing Grounds
Delaware Bay

The most productive shark fishing areas have been the ends or edges of deep sloughs and channels near the mouth of Delaware Bay. There are two primary shark fishing grounds, one on the New Jersey side of the Shipping Channel to the east of Brandywine Shoal and another on the Delaware side of the channel in the anchorage. Secondary fishing grounds occur along the Shipping Channel as far up the bay as Ben Davis Point Shoal.

COMMERCIAL FISHERIES



Drift gill net



Staked gill net

Gill Net

Description of Gear

Two basic types of gill nets are used in Delaware Bay, the staked or anchored net and the drift net. Staked nets are set between wooden stakes or poles that are either driven or jetted into the bottom. Anchored nets are held in position by a series of anchors. Due to strong tidal currents, staked nets are usually set in coves and shoal areas less than 15 feet deep. To further reduce drag, they are also relatively short, usually less than 180 feet in length. A lead line at the base keeps the net on or near the bottom. A float line along the top rises and falls with the tide and keeps the upper edge of the net at the surface of the water.

Drift nets are allowed to drift with the current and are usually used in water deep enough so that the lead line does not touch bottom. They are much longer than staked nets, ranging from 300 to 1,200 feet in length.

Gill nets are made of monofilament or fine nylon that is relatively invisible in the turbid bay waters. The mesh size used is dependent upon the target species. Stretched mesh of 5″ or larger is used for shad, large weakfish and bluefish. Mesh of 2 3/4″ or larger is used for river herring, menhaden, white perch, and small weakfish.

Only staked gill nets for shad are allowed in Raritan Bay and Sandy Hook Bay and only in a limited area. On the New Jersey side of Delaware Bay both staked and drift nets are permitted. On the Delaware side, staked nets are only permitted on the oyster grounds. Elsewhere, only drift gill nets are permitted.

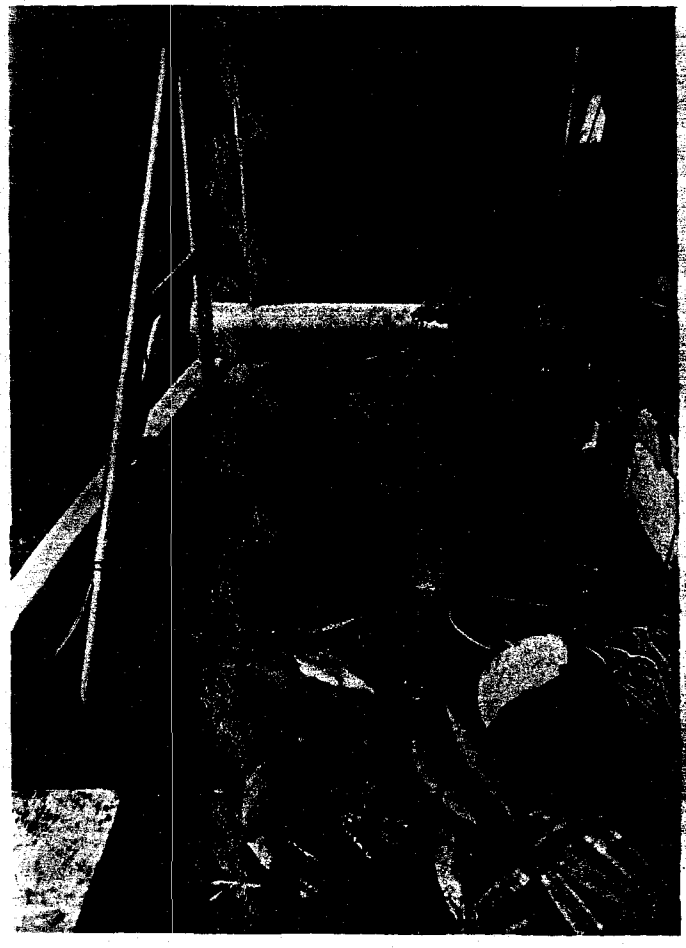
Season

The use of staked or anchored and drift gill nets is confined to particular seasons by law. The prescribed seasons, however, are liberal and the netting period is limited more by the availability of fish than regulation.

Staked gill nets are usually first set in late February or March, to catch shad migrating up the Delaware or Hudson Rivers to spawn. Other early species include river herring, menhaden and white perch. The herring and menhaden are sold for crab bait.

Drift netting begins with the arrival of weakfish and bluefish in mid-April. The weakfish is the moneymaker, having the highest market value of the fish caught in volume in the two bays.

Most staked nets are pulled our during mid-May due to a number of problems, including the invasion of horseshoe crabs, which create extensive net tangles and damage; warm water temperatures, which lead to spoilage of fish; and the fouling of nets with slimy algae and stinging sea nettles. The few staked nets that are fished throughout the summer are primarily intended for menhaden.



Gillnetting shad and weakfish on Delaware Bay.

Drift nets are used throughout the summer and early fall, although the greatest effort is expended during spring and early summer.

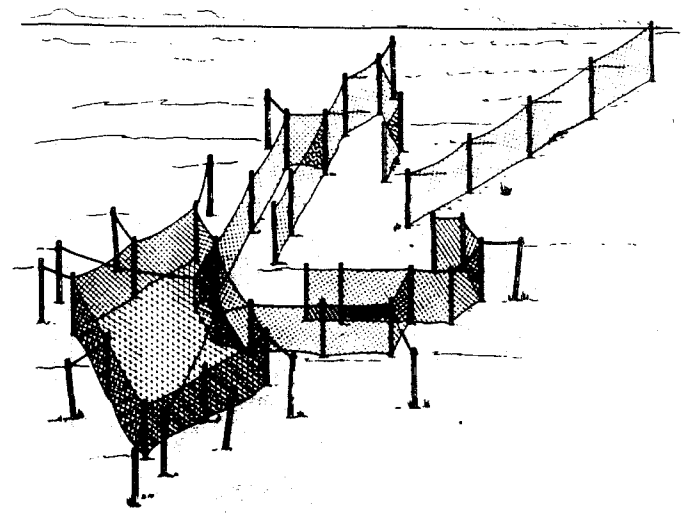
Methods

Staked gill netters operate anywhere from a couple of nets to 40 or more. A small number of nets can be checked by one man, but a large number requires a two-man crew. Weather permitting, nets are checked every day. To check the nets, a boat starts at one end of a row, and is hauled along from pole to pole, via the net lines. As the nets are lifted and pulled across the boat the fish are removed.

A drift net is followed and tended continuously by the fisherman. It is set in a line perpendicular to the flow of the current and may be set many times during the day.

Fishing Grounds

On Delaware Bay, staked gill nets are set in the shallow cove areas on the New Jersey side. The primary drifting gill net grounds here extend from the channel to the bayshore from the Cape May Canal to Egg Island Point. In Raritan Bay and Sandy Hook Bay, staked nets are confined to the nearshore area between Keyport and Port Monmouth and along Sandy Hook.



Pound Net

Description of Gear

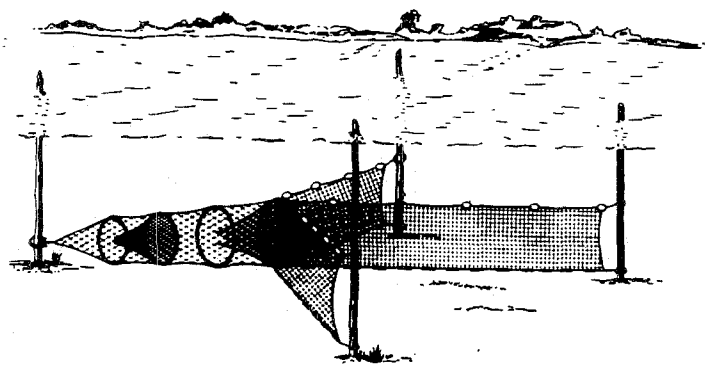
Pound nets are stationary fish traps. In Raritan Bay, they have been in use for over a century. Pound nets are strung on long hardwood poles that are driven or jetted into the bay bottom. They are set perpendicular to the prevailing shore and tidal currents to intercept fish as they travel up and down the bay. When several pounds are set in the same area they are aligned end to end to form a long continuous barrier to fish movements.

The overall length of pound nets is 500 to 750 feet. A long leader (400 to 600 feet in length) consisting of 9 inch stretched mesh netting acts as a barrier to moving fish. The natural tendency of fish encountering the leader is to go around the net by heading offshore to deeper water. As fish move down the net, they enter the first of two heart-shaped funnels. The heart shape tends to always direct the fish further into the interior of the net. Eventually, they pass through the final funnel into the square-shaped pound or holding pocket. The pocket is about 50 feet long on a side and has a net floor.

Season

Although in some years pound nets may be erected as early as late February, the more typical start of operations is sometime during April. The season extends through the summer into October or November. After fishing operations end, the net and poles are removed to prevent their loss when ice locks the bay in winter.

In early spring, the catch consists of shad, herring and menhaden. Menhaden caught in pounds are sold as bait for other commercial and recreational fisheries. Summer catches are dominated by bluefish and weakfish. Other species taken include summer flounder, butterfish, northern puffer, sea bass, sturgeon and blue crab.



Methods

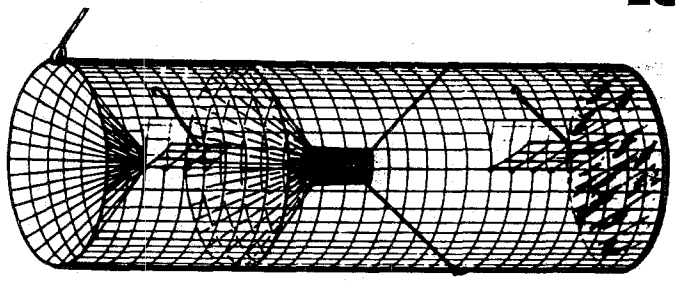
Each day, weather permitting, the nets are checked and emptied of their catch. A pound boat enters the pocket by lowering one edge of the net. The floor of the net is then raised very slowly until the fish inside are restricted to a small section of the pocket. The fishermen then ladle the catch into the boat using a long-handled dip net and a power winch.

Every two or three weeks, the nets must be taken to land for washing and drying. This process removes the algae which grows on and clogs the net. While one net is being cleaned, a fresh one is hung on the poles in its place.

Fishing Grounds

There are two primary pound net grounds in Raritan and Sandy Hook bays. The one in Sandy Hook Bay is located along Sandy Hook just north and west of Horseshoe Cove. The area in Raritan Bay is much larger, extending from Earle Pier to Keyport, although the majority of nets are located to the north of Earle Pier.

Eel Pot



Description of Gear

The typical eel pot is a 3-foot cylinder, 10-12 inches in diameter, made of plastic coated rectangular mesh wire with two net funnels. The funnels divide the pot into two compartments. The external one serves as a bait and entrance chamber, while the internal one is a holding chamber. Pots for catching large eels for sale as food are made with 1/2 inch by 1 inch mesh. Pots for small eels that are either salted for crab bait or held live for sportfish bait are made with 1/2 inch by 1/2 inch mesh.

Season

The eeling season begins in mid-April as eels emerge from their winter dormancy in the mud. Fishing continues until bay waters cool in late October. Eeling activity declines from late June to mid-August, when water tempertatures get very warm and eels become difficult to keep alive in the holding pens.

Methods

Eel pots are set in tidal creeks or along the bayshore either individually or in small strings. They are marked with floats or stakes. Individual eelers may set and tend 50 to 80 pots or more.

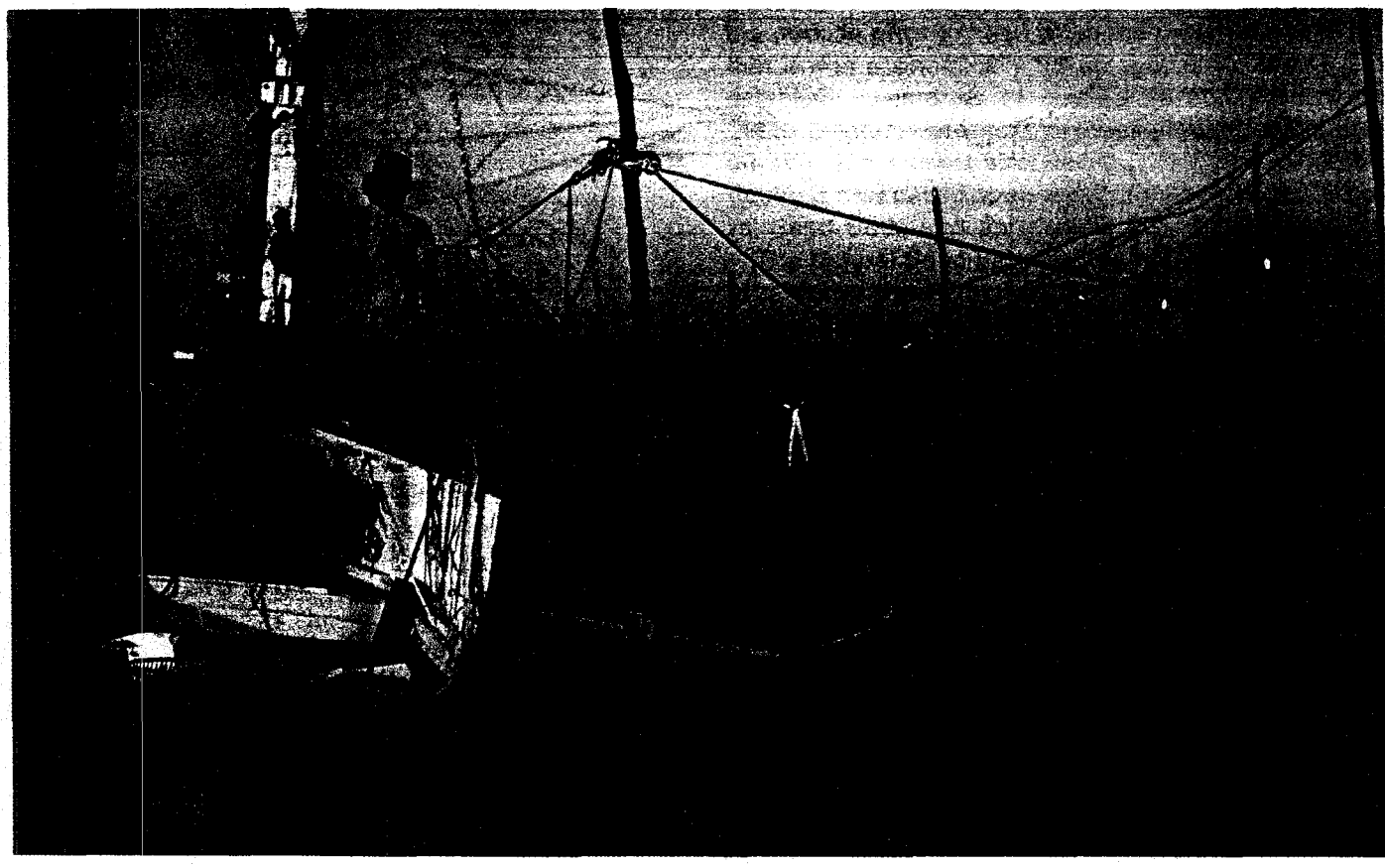
Eels are kept alive in large, floating boxes or pens. In the summer, when dissolved oxygen levels are low, aeration is often needed to keep the eels from suffocating. When a sufficient quantity has been caught, the eels are picked up by dealers who transport them live in tank trucks. The primary markets for eels are in Europe. They are packed on ice in crates and shipped overseas by airplanes.

Although surf clams and fish are used, female horseshoe crabs are the preferred bait for catching eels. Horseshoe crab fisheries have developed to supply bait for the eel fishery. In Delaware Bay, horseshoe crabs are caught in small wire pound nets that are set in shallow water along the beach. In Raritan Bay and Sandy Hook, they are caught mostly by modified crab dredges.

Fishing Grounds

In Raritan Bay and Sandy Hook Bay, eels are caught in the tidal creeks and along the bayshore during the cooler months of spring and fall. During the warm summer months, pots are set along the edge of Perth Amboy Channel.

In Delaware Bay, eels are caught in the tidal creeks and a 1/2 mile wide strip along the entire bayshore; during October, pots are occasionally set as far offshore as 2 miles. Pots are also set along the shipping channel in the upper reaches of the bay during midsummer.

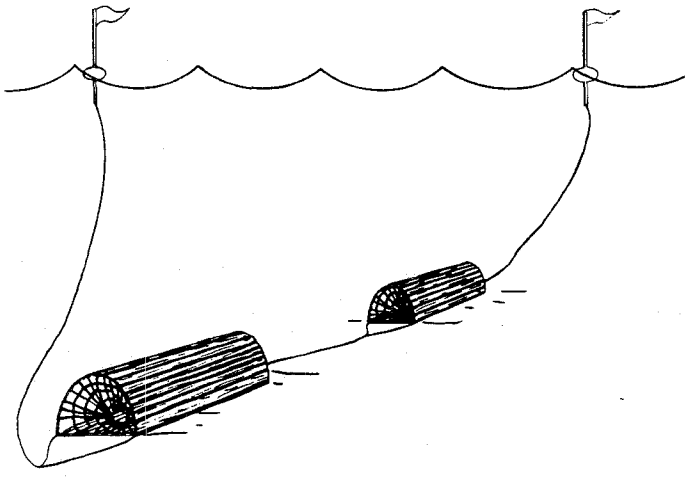


Commercial fishermen tend a pound net in Raritan Bay.

Lobster

Description of Gear

The typical New Jersey lobster pot is a rectangular box made of oak lathe with a pair of net entrance funnels. Depending on the preference of the fisherman, pots either have flat or rounded tops. A lobster pot has two compartments, with a net funnel leading into each. The initial one is for entry and bait and the second is for holding the catch. Wooden doors or flaps permit access to bait and to empty the pot. The pots are tarred to preserve the wood and netting; bricks are secured to the bottom for ballast.



Season

In the bays, lobstering begins in mid-June, extends through the summer and has a final spurt in October before the fishery drops off.

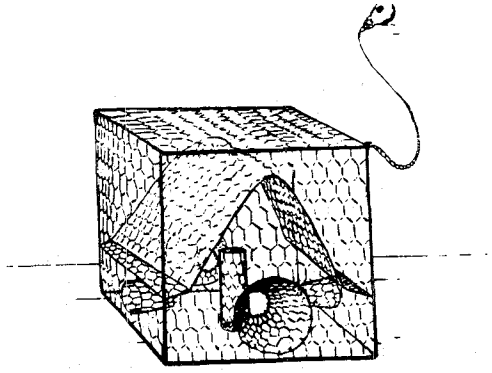
Method

Lobster pots are set in strings of 6 to 25 pots, each connected to a main line. Flag buoys, marking the location of the pot string, are attached to each end of the main line. Pots are baited with menhaden or scraps of fish.

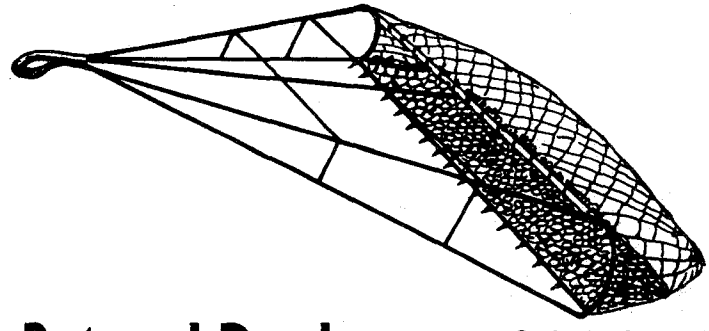
Fishing Grounds

In Raritan Bay and Sandy Hook Bay, lobster pots are set along the edges of Ambrose, Sandy Hook, Chapel Hill, and Perth Amboy Channels and in the deep holes west of Chapel Hill Channel.

In Delaware Bay, lobstering is restricted to Delaware fishermen in the area around the breakwater at Lewes, Delaware.



Commercial style crab pot



Crab dredge

Blue Crab Pot and Dredge

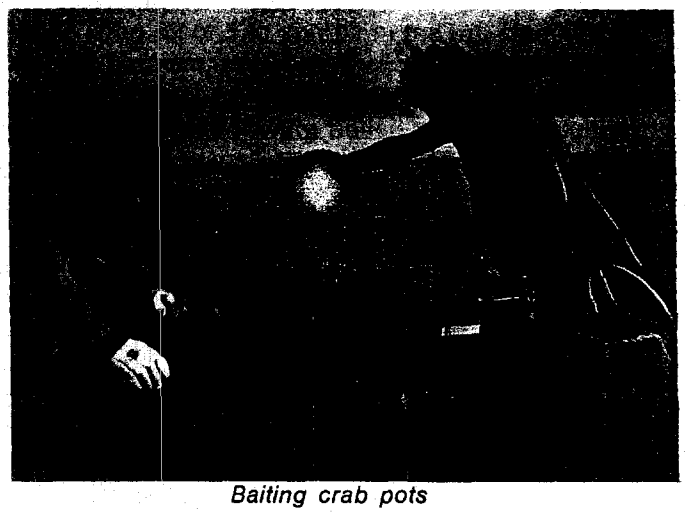
Description of Gear

Blue crabs are harvested commercially with pots in the warmer months and with dredges in the winter. The typical Delaware Bay crab pot is a 2-foot cube constructed of galvanized, hexagonal weave hardware cloth. The pot consists of an upper chamber or parlor for holding crabs and a lower chamber which has 2 to 4 entrance funnels and a bait cylinder. Four paddies of cement or asphalt are attached to the bottom of the pot for weight. Some crabbers tar their pots to inhibit corrosion and add zincs to retard electrolysis. Pots are set individually in lines or circles and are marked with numbered floats. Crab pots are baited with menhaden, herring or other fish scraps.

Crab dredges have steel frames and either chain link, wire or net bags for collecting the catch. The front of the dredge is equipped with teeth that scrape a few inches into the sand or mud bottom and lift out the crabs buried there. Each boat usually drags two to six dredges simultaneously. The larger boats are equipped with hydraulic winches that pull the dredges up to the boat and out of the water. The maximum dredge size permitted in Raritan Bay and Sandy Hook Bay is a 75 inch wide bar with 6 inch teeth.

Season

Blue crabs emerge from their overwinter stay in the mud in April as water temperatures increase. The potting season usually begins in late April or May and lasts until early November when cold water temperatures send the crabs into the mud again. Shedder crabs are mostly caught in June in pots. The dredge fishery extend from December through March.



Baiting crab pots

Methods

In Delaware Bay, individual crabbers operate lines of 100 to 300 pots. Weather permitting, the pots are checked every day. Crab potting is typically a two-man operation. One man operates the boat and pulls, empties, re-baits and re-sets the pots, while the other man sorts and puts the catch into bushel baskets.

The pots are moved periodically to follow the movements of the crabs. The typical seasonal pattern of the blue crab includes a general inshore movement to the bayshore and tidal creeks during the spring and an offshore migration to deeper, saltier waters during late fall.

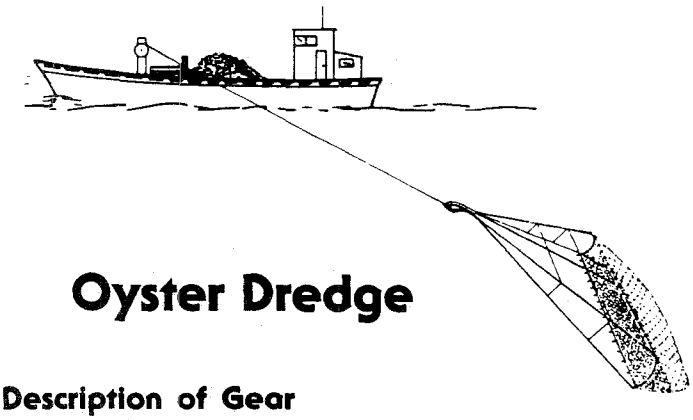
Fishing Grounds

On the New Jersey side of Delaware Bay, the primary potting grounds extend from Fishing Creek on Cape May up the bay to Oldman's Creek. Most fishing activity occurs within a mile or so of the bayshore and in the tidal creeks legally open to crabbing. At times, pots are set further offshore, to the edge of the shipping channel in the upstream portion of the crab grounds.

On the Delaware side, the bayward edge of the crab potting grounds is the Misipillion River. The majority of activity occurs nearshore, but at times pots are set as far as five miles offshore.

The blue crab dredging grounds in Delaware Bay are located in the deeper waters surrounding the shipping channel near the mouth of the bay. Blue crabs prefer mud bottoms in the deeper sections of the bay for overwintering. Crabs avoid oyster shell bottom, which is fortunate for crabbers, since these areas are legally off limits to crab dredging. In years when concentrations of wintering crabs are low, there is little or no dredging effort.

In Raritan Bay and Sandy Hook Bay, the dredging grounds extends from the Raritan River to the mouth of the bay in depths usually exceeding 12 feet. They include the areas on either side of Perth Amboy and Chapel Hill Channels and Sandy Hook Bay.



Oyster Dredge

Description of Gear

Oysters are harvested with large steel-frame dredges, up to 54 inches across the tooth-bar, that are towed across the bottom. A steel, ring-mesh bag on the back of the dredge holds the catch until it is lifted hydraulically and dumped on deck. Although oysters are now harvested under power, most of the boats in the fleet were formerly sailing dredge boats that were converted to power when it became legal in 1945.

Season

Oysters may be legally harvested from all leased grounds between September and June. Since 1975, summer harvest has been permitted on leased areas below the Southwest line. Oyster seed is transplanted from state-owned beds to leased grounds during "Bay Season", in May and June.

Methods

Oyster culture begins with the transplanting of seed from state seed beds to leased ground in late spring. Seed oysters are allowed to grow on leased ground until reaching harvestable size. The peak market and harvest of oysters occurs during the fall holidays, between Thanksgiving and Christmas.

Oysters are scraped from the bottom with dredges. After the catch has been dumped on deck, fishermen cull the live oysters from shell and other debris. Culling was formerly done by hand, but most boats now use mechanical culling devices.

The day's catch is taken to processing houses in Port Norris and Bivalve where the oysters are either packed live in boxes and shipped to market or shucked and further processed. Shucked oysters are either packed fresh in tins or breaded and frozen before being sent to market. All of the shell remaining after processing is stored for eventual return to the oyster beds. Shell material is needed to provide a suitable substrate for oyster larval attachment and thus is valuable for maintaining and increasing production on the seed beds.

Fishing Grounds

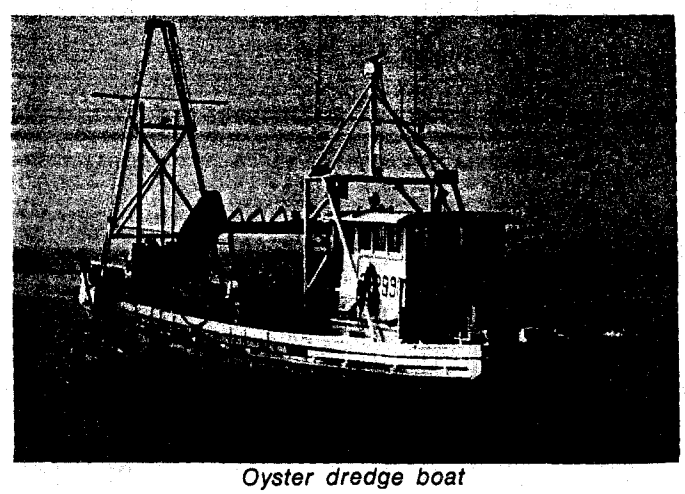
The importance of the oyster beds of Delaware Bay has been recognized since colonial times. Prior to the mid 1800s, the oyster industry primarily subsisted by the direct marketing of oysters from the "Natural Oyster Beds". The complexion of the industry changed during the decade prior to 1850 when the oystermen realized that it was economically advantageous to "plant" and establish inventories of oysters beyond the natural beds. Oysters were held in these planting areas until an optimum market size was reached. The oyster industry is now based upon two principal areas, the Natural Seed Beds and the Leased Planting Grounds.

The Natural Seed Beds, for the most part, occupy an area above the Southwest Line, a line of demarcation which has historically separated the planting grounds from the Natural Seed Beds. There are approximately 12,000 acres of productive seed beds and another 3,000 acres of marginally productive beds between the Southwest Line and Artificial Island. Average salinities for the seed areas range from 21 parts per thousand (ppt) at the Southwest Line to 4 or 5 ppt at Artificial Island. Water depth ranges from 5 to 25 feet.

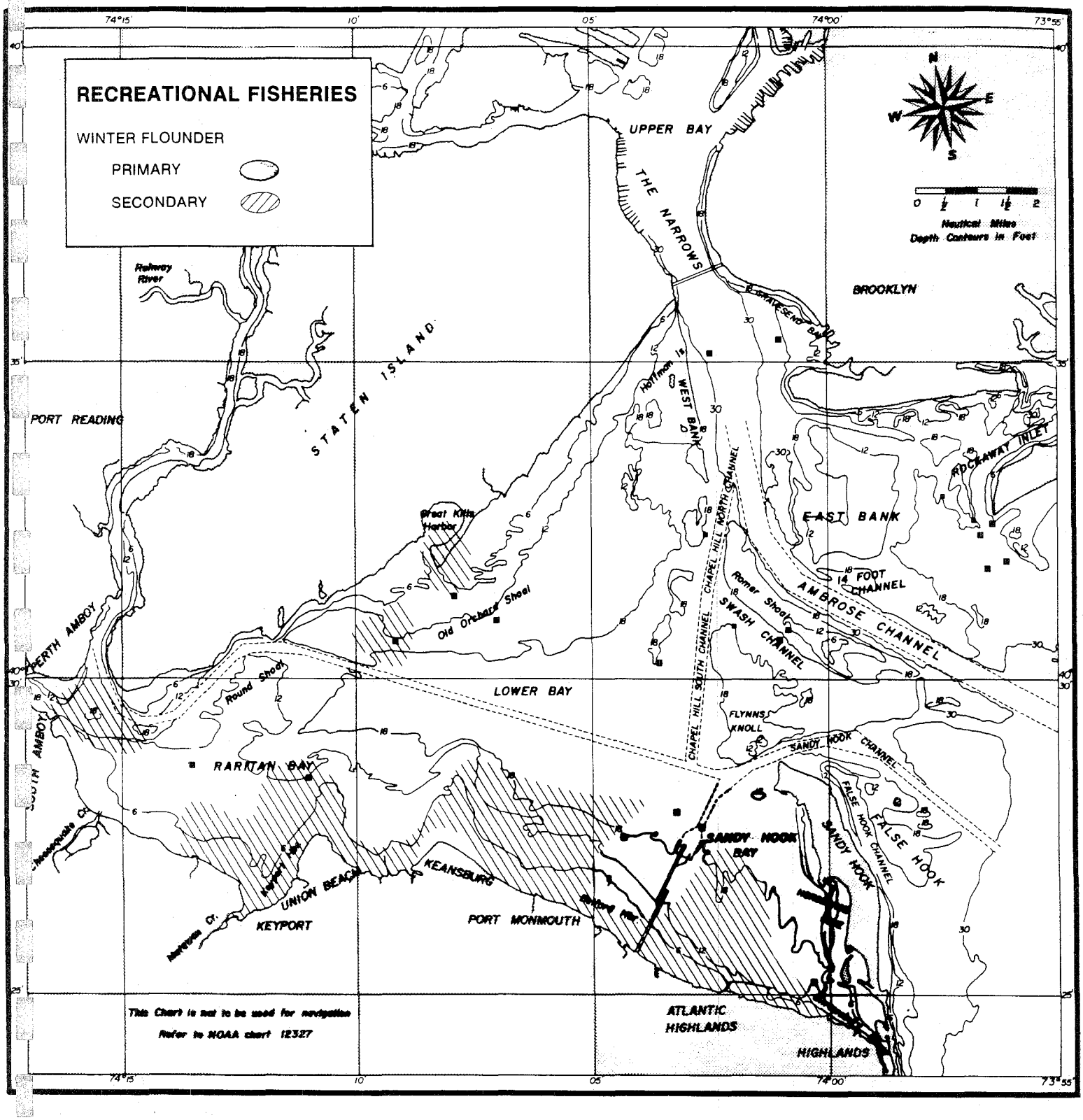
The planting grounds encompass approximately 90,000 acres, of which 29,000 acres are currently leased for planting purposes. Only a small percentage of this leased area is, however, routinely used.

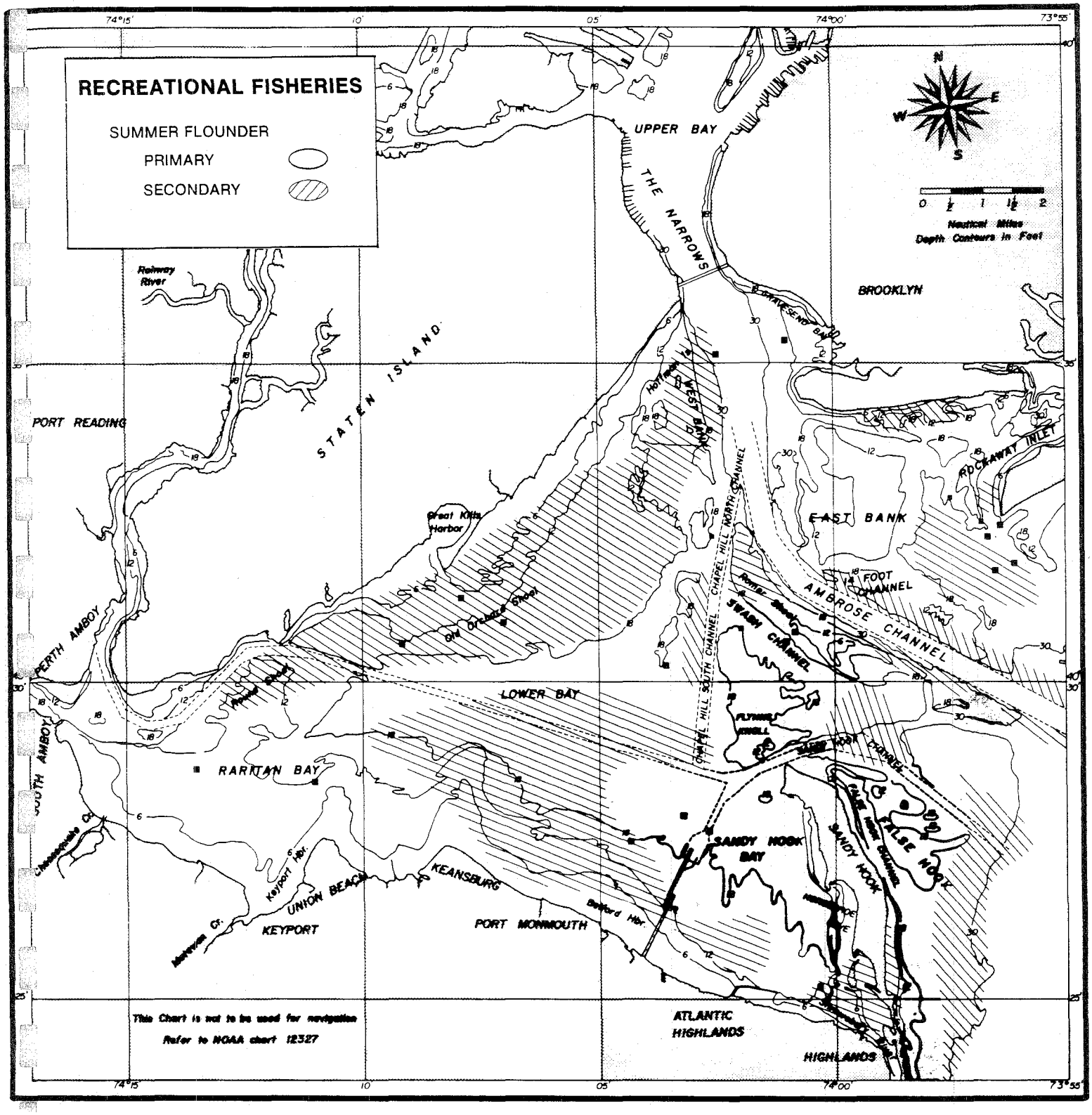
Oyster production has fluctuated, sometimes rather dramatically, throughout the recorded history of the fishery. Early estimates indicated that the annual seed harvests frequently exceeded one million bushels, with occasional higher estimates. These estimates may have been somewhat inflated, however, due to the lack of discrimination between native and imported seed stocks.

During its recent history, the industry was devastated by an epizootic parasite commonly referred to as MSX. This parasite was initially recognized in the late 1950s and was responsible for the death of oysters on the planting and, to a lesser extent, the seed areas of the bay. It was estimated that as much as 95 percent of the market bed oyster stocks were lost within three years after the onset of this oyster disease. As a result of high mortalities in these traditional oyster planting grounds, a new area of approximately 7,000 acres, located above the Southwest Line and adjacent to some of the natural beds, has been made available for planting purposes. This area has lower salinity ranges and is therefore not as affected by MSX.



Oyster dredge boat


RECREATIONAL FISHERIES
WINTER FLOUNDER
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Rahway River
Great Kills Harbor
Old Orchard Shoal
Round Shoal
LOWER BAY
PERTH AMBOY
SOUTH AMBOY
RARITAN BAY
Hoffman Is.
WEST BANK
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
Romer Shoal
SWASH CHANNEL
EAST BANK
14 FOOT CHANNEL
AMBROSE CHANNEL
ROCKAWAY INLET
FLYNNS KNOLL
SANDY HOOK CHANNEL
FALSE HOOK CHANNEL
FALSE HOOK
SANDY HOOK
SANDY HOOK BAY
KEANSBURG
UNION BEACH
KEYPORT
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA chart 12327


RECREATIONAL FISHERIES
SUMMER FLOUNDER
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
PERTH AMBOY
SOUTH AMBOY
Great Kills Harbor
Old Orchard Shoal
WEST BANK
EAST BANK
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SWASH CHANNEL
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Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
B49	236 E. 138th St.	A-1	Peller Corp.	15	Drl	225	8	Inwood limestone	J	..	60	F	..	Depth to bedrock, 35 feet.
B50	7 West Bedford Park Blvd.	B-2	Bedford Auto Laundry	155	Drl	250	6	Fordham gneiss	T	..	35	F	..	Depth to bedrock, 40 (?) feet.
B51	1440 Westchester Ave.	A-2	Spic & Span Auto Laundry, Inc.	10	Drl	350	6	Manhattan schist	..	..	15	F	..	
B52	3896 Park Ave.	B-2	Modern Carpet Cleaning & Storage Corp.	40	Drl	258	8(?)	Inwood limestone	T	250	150	..	..	Location uncertain.
B53	3040 Webster Ave.	B-2	French-American Reeds Mfg. Co., Inc.	70	Drl	360	12-8	do.	T	100	70	AC	..	Temperature of water, 54° F. Well reported to yield 150 gpm during 3 hour test. For log see table 6.
B54	2910 Third Ave.	A-1	Meisels Coats and Dresses	20	Drl	133	8-6	do.	T	..	65	AC	..	Temperature of water, 59° F. For log see table 6.
B55	894 Whittier St.	A-2	Randall Wine Vinegar Co.	10	Drl	210	2(?)	Manhattan schist	T	20	5	C	..	Length of casing, 40 feet.
B56	3339 Park Ave.	A-2	L. Daitch & Co.	20	Drl	215	8	Inwood limestone (?)	T	300	80	AC,C	33 5- 9-39	Static level about 40 feet.
B57	W. 230th and Exterior Sts.	B-2	..	2	Drl	31	2½	Pleistocene deposits	..	..	..	..	..	Test boring No. 2. For log see table 6.
B58	Manida and Ryawa Aves.	A-2	Hunts Point Sewage Treatment Plant	20	Drl	45	2½	Manhattan schist	..	..	..	..	..	Test boring No. A7-2. Depth to bedrock 34 feet.
B59	Ryawa and Halleck Sts.	A-2	do.	8	Drl	88	..	do.	..	..	..	..	..	Test boring, for log see table 6.
B60	Foot of Connor St. and Hutchinson River	A-3	do.	4	Drl	29	..	do.	..	..	..	..	..	Test boring. Depth to bedrock, 13 feet.
B61	Wales Ave. and E. 141st St.	A-2	Lincoln Hospital	42	Drl	33	..	do.	..	..	..	..	..	Test boring. Depth to bedrock, 13 feet.
B62	Morris Park and Seminole Aves.	B-2	East Bronx General Hospital	63	Drl	18	..	do.	..	..	..	..	..	Test boring. Depth to bedrock, 5 feet.
B63	Arthur Ave. and E. 186th St.	B-2	Arthur Ave. Market	73	Drl	38	..	Fordham gneiss	..	..	..	..	..	Test boring. Depth to bedrock, 36 feet.
B64	E. 188th St. and Webster Ave.	B-2	Fordham Riverdale Health Center	50	Drl	44	..	Manhattan schist	..	..	..	..	..	Test boring. 0-39 till; 39-44 bedrock.
B65	Canal Pl and 135th St.	A-1	Police Department Stable	5	Drl	49	..	Inwood limestone	..	..	..	..	..	Test boring, for log see table 6.
B66	Palisade Ave. and 232nd St.	B-1	Seton Hospital	125	Drl	43	..	do.	..	..	..	..	..	Test boring. Depth to bedrock, 29 feet.
B67	Bruckner Blvd. nr. E. Tremont Ave.	B-3	Bruckner Blvd. Underpass	46	Drl	47	..	Manhattan schist	..	..	..	..	..	Test boring. Depth to bedrock, 36 feet.
B68	Gildersleeve and Soundview Aves.	A-2	Hunts Point Sewage Treatment Plant	20	Drl	25	..	do.	..	..	..	..	..	Test boring. Depth to bedrock, 19 feet.
B69	Bronx River about 1500 ft west of Patterson Ave.	A-2	do.	0	Drl	76	..	do.	..	..	..	..	..	Test boring, for log see table 6.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
B70	Brush Ave. and Brackner Blvd.	A-2	Unionport Bridge	13	Drl	83	..	Pleistocene deposits	..	..	..	..	..	Test boring. For log see table 6.
						NEW	YORK	COUNTY						
Ny2	251 Broadway	A-1	Trinity Operating Co.	10	Drl	66	12	Pleistocene sand	T	350	350	AC	..	Used only during the summer months.
Ny3	17 N. Moore St.	A-1	Merchants Refrigerating Co.	10	Drl	47	8	do.	S	600 and 800	..	C	2,100 7- 6-46	Ny3-9 all connected to common pumps. Temperature of water on 7-6-46, 63° F. Combined yield from all wells 800 gallons per minute. For chemical analysis see table 5. Pump capacities uncertain.
Ny4	do.	A-1	do.	10	Drl	46	8	do.	S	600 and 800	..	C	..	
Ny5	do.	A-1	do.	10	Drl	40	8	do.	S	600 and 800	..	C	..	
Ny6	do.	A-1	do.	10	Drl	49	8	do.	S	600 and 800	..	C	..	
Ny7	do.	A-1	do.	10	Drl	44	8	do.	S	600 and 800	..	C	..	
Ny8	do.	A-1	do.	10	Drl	38	10	do.	S	300 and 100	..	C	..	
Ny9	do.	A-1	do.	10	Drl	40	10	do.	T	600	..	C	..	
Ny10	280 Broadway	A-1	The New York Sun, Inc.	35	Drl	52	8	Pleistocene gravel	T	52	52	C	43 2- 5-42	
Ny11	477 Broome St.	A-1	P. Margarella Candy Co.	15	Drl	52	6	Pleistocene sand	T	35	35	C	..	Sealed by Bureau of Foods and Drugs. Ny12, nearby.
Ny12	do.	A-1	do.	15	Drl	52	6	do.	R	70	70	C	49 10- 9-44	Near Ny11.
Ny13	385 Canal St.	A-1	D. Arnold Co.	15	Drl	55	10	do.	R	..	40	C,F	96 2-16-42	Bedrock reported at bottom of well.
Ny16	240 Church St.	A-1	Deering-Millikan Co., Inc.	20	Drl	56	8	do.	T	160	160	AC	107 1-22-40	Used only during the summer months.
Ny17	85 Cliff St.	A-1	J. Chatillon & Sons	25	Drl	42	4	do.	S	50	50	F	67 9-25-40	
Ny18	175 E. Houston St.	A-2	S. Ershowsky & Sons., Inc.	40	Drl	46	8	do.	R	..	75	..	..	Well not in use.
Ny19	37 Essex St.	A-2	Isaac Gellis, Inc.	40	Drl	32	12	do.	S	..	..	..	..	do.
Ny20	166 Essex St.	A-2	Essex St. Auto Car Wash Co., Inc.	30	Drv	43	2	do.	R	15	15	F	58 1-23-50	
Ny21	91 Fulton St.	A-1	150 William St. Corp.	25	Drl	57	8	do.	T	175	220	AC	233 2- 3-42	Used only during the summer months. Iron content, 2.7 parts per million.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
Ny22	372 Greenwich St.	A-1	Max Ams, Inc.	10	Drl	60	3	do.	R,St	60	60	C,F	950 9-24-42	
Ny23	402 Greenwich St.	A-1	Greenwich Refrigerating Co.	10	Drl	35	6	Pleistocene sand and gravel	S	70	70	C	2050 3-23-50	For log see table 6.
Ny24	627 Greenwich St.	A-1	Ciba Co., Inc.	10	Drl	49	6	Pleistocene sand	T	250	95	AC	62 6- 8-42	Used only during the summer months. Ny130, nearby.
Ny26	313 Hudson St.	A-1	Henry Heide, Inc.	10	Dug	80	72	Pleistocene sand	R	1000	..	AC,F	150 6-12-44	Depth to bedrock, probably 80 feet. Four abandoned wells at site.
Ny27	do.	A-1	do.	10	Dug	80	72	do.	R	450	..	AC,F	..	
Ny28	do.	A-1	do.	10	Drl	..	8	do.	R	500	..	..	..	Well is for emergency use.
Ny32	395 Hudson St.	A-1	395 Hudson St. Corp.	15	Drl	70	14	Pleistocene gravel	T	400	400	C	160 1-15-43	
Ny33	85 Jane St.	A-1	Lucy Ricciardi, Inc.	15	Drl	40	6	Pleistocene sand	T	40	25	C	64 3-31-42	
Ny34	2 Lafayette St.	A-1	Court Square Building Corp.	25	Drl	100	5	Pleistocene gravel	T	250	250	AC	5-25-39 1400	Used only during the summer months. For log see table 6.
Ny35	70 Laight St.	A-1	Fairchild Bros. & Foster	10	Drl	39	6	do.	S,St	100	100	C	2800 6-19-16	
Ny36	do.	A-1	do.	10	Drl	38	8	do.	S,St	100	100	C	..	Near Ny35.
Ny37	do.	A-1	do.	10	Drl	61	10	do.	S	..	100	C	..	do.
Ny40	98 Morton St.	A-1	Baker, Williams Warehouse Corp.	10	Drl	52	8	Pleistocene sand	T	150	150	AC	2-11-42 140	Used only during the summer months. For log see table 6.
Ny41	23 Park Row	A-1	Downtown Bowling Academy, Inc.	30	Drl	54	8	do.	R	125	158	AC	38 3- 4-42	Depth to bedrock, 76 feet. For log see table 6.
Ny42	358 Pearl St.	A-1	O. J. Maigne Co.	20	Drl	36	6	do.	R,St	400	400	C,F	150 2- 4-42	Ny43-45, nearby.
Ny43	do.	A-1	do.	20	Drl	36	6	do.	R,St	400	400	C,F	..	Near Ny42.
Ny44	do.	A-1	do.	20	Drl	36	6	do.	R,St	500	500	C,F	..	do.
Ny45	do.	A-1	do.	20	Drl	36	4	do.	R,St	500	500	C,F	..	do.
Ny46	391 Pearl St.	A-1	A. Heller Heat Treating Co.	20	Drl	52	6	do.	T	69	85	C,F	247 4-21-43	Near Ny48.
Ny47	401 Pearl St.	A-1	Brown Derby Garage	20	Drv	18	2	Pleistocene gravel	J	50	..	F	82 4-13-50	do.
Ny48	406 Pearl St.	A-1	Bingham Bros. Co.	20	Drl	46	4	Pleistocene sand	S	111	111	C	360 2- 6-42	Ny46, 47, 49, 50, and 51, nearby.
Ny49	do.	A-1	do.	20	Drl	46	4	do.	S	111	111	C	..	Near Ny48.
Ny50	do.	A-1	do.	20	Drl	46	4	do.	S	..	36(?)	C	..	Well not in use at present. Near Ny48.
Ny51	do.	A-1	do.	20	Drl	46	4	do.	S	..	36(?)	C	..	do.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
Ny52	231 St. Nicholas Ave.	B-2	Fred Hulberg, Inc.	30	Drl	70	4	do.	R	30	30	F	54 7-10-44	
Ny53	11 Sheriff St.	A-2	Standard Laundry Service, Inc.	30	Drl	48	10	Pleistocene gravel	T	200	200	L	31 10-31-38	Well not used. For chemical analysis see table 5. For log see table 6.
Ny54	24 Vandewater St.	A-1	Brooklyn Bridge Freezing & Cold Storage Co.	52	Drl	114	6	Pleistocene sand and gravel	T	125	125	C,F	9500 6- 4-46	Ny55 and 56, nearby.
Ny55	do.	A-1	do.	25	Drl	87	8	do.	T	350	350	C,F	2300 6- 4-46	Near Ny54.
Ny56	do.	A-1	do.	25	Drl	83	8	do.	T	..	..	C,F	5550 6- 4-46	Near Ny54. For chemical analysis see table 5.
Ny57	200 Varick St.	A-1	Parker Kalon Corp.	20	Drl	65	8	Pleistocene sand	T	200	200	C	61 11-27-36	For chemical analysis see table 5.
Ny61	295 Water St.	A-2	Atlantic Coast Fisheries	5	Drl	70	8	do.	T	110	..	C	10,150 3-7-40	Near East River.
Ny62	463 West St.	A-1	Bell Telephone Laboratories	10	Drl	90	..	do.	S	60	50	F	440 2-11-42	
Ny64	23 Wooster St.	A-1	The Bianchi Co.	15	Drv	31	2	do.	S	30	30	C	62 8-12-42	10-inch well, 31 feet deep, same property. Ny65, nearby.
Ny65	do.	A-1	do.	15	Drl	31	4	do.	S	30	30	C	..	Near Ny64.
Ny67	24 First Ave.	A-2	First Ave. Bathing Corp.	35	Drv	22	2	do.	S	15	..	S	99 9-18-41	Two other wells, same property.
Ny70	24 Second Ave.	A-2	Second Ave. Baths Corp.	40	Drl	75	8	do.	T	250	250	S	88 2-19-42	Two other wells, same property, not in use. For chemical analysis see table 5.
Ny74	18 Walker St.	A-2	New York Telephone Co.	15	Drl	160	5	do.	T	250	250	AC	..	
Ny75	636 11th Ave.	B-2	Midtown Industrial Bldg.	20	Drl	175	10	Manhattan schist (?)	A	600	500	..	..	Well not used at present.
Ny76	do.	B-2	do.	20	Drl	125	10	do. (?)	A	400	500	..	..	do.
Ny77	223 E. 2d St.	A-2	11th Ward Baths, Inc.	20	Drv	60	2	Pleistocene sand	S	..	30	S	48 2-19-42	
Ny79	328 E. 103d St.	B-2	E. Greenbaum & Co.	10	Drl	36	4	do.	R,St	60	35	C	1600 6- 5-42	
Ny80	do.	B-2	do.	10	Drl	36	4	do.	R	60	..	C	..	
Ny81	421 E. 107th St.	B-2	Wayne Milk Corp.	10	Drl	30	8	do.	T	100	80	C	76 6- 5-42	Chloride content, 350 parts per million on 1-30-39. Well abandoned in 1946.
Ny82	167 E. 127th St.	B-2	Stahl-Meyer, Inc.	15	Drl	30	6	do.	T	125	125	C,F	84 1952	Four other wells on property reported to have gone dry.
Ny83	633 W. 30th St.	B-1	J. T. Stanley Co.	10	Dug	25	75	Pleistocene gravel	S,St	250	250	C	326 9-21-39	Chloride content on 1-2-42, 2,350 ppm.
Ny84	268 W. 125th St.	B-2	Charles Weisbecker, Inc.	30	Drl	30	6	Pleistocene sand	R	40	40	C,F	32 2- 6-42	For chemical analysis see table 5.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
Ny85	138 W. 124th St.	B-2	Washington Heights Laundry, Inc.	30	Drl	150 (?)	6	do.	T	250	250	L	101 6-11-52	Depth of well, uncertain. Ny25 nearby, 25 feet deep.
Ny86	do.	B-2	do.	30	Drl	..	6	do.	S	250	350	L	..	do.
Ny87	do.	B-2	do.	30	Drl	..	6	do.	S	350	350	L	..	do.
Ny89	527 W. 125th St.	B-2	Muller Dairies, Inc.	35	Drl	35	6	do.	T	100	90	C,F	42 6- 3-43	For chemical analysis see table 5.
Ny90	do.	B-2	do.	35	Drl	35	4	do.	R,St	90	40	C,F	..	
Ny91	430 W. 126th St.	B-2	Purity Bakeries, Inc.	35	Drl	75	6	do.	T	100	100	C,F	40 1952	
Ny93	574 W. 130th St.	B-2	Marchiony Spumoni Corp.	40	Drl	40	6	do.	..	..	..	..	..	Not in use, reported to have gone dry in 1940.
Ny94	5134 Broadway	C-3	Bway. Minit Auto Laundry, Inc.	20	Drl	39	6	do.	T	50	50	F	..	Bedrock penetrated at 44 feet.
Ny95	349 Canal St.	A-1	City Canal Corp.	15	Drv	55	1¼	Pleistocene sand and gravel	T	15	15	F	74 9-19-50	
Ny96	22 Little West 12th St. Nassau	A-1	Ideal Auto Service	10	Drl	33	8	Pleistocene sand	S	10	14	F	196 1-23-50	For chemical analysis see table 5.
Ny97	113 Nassau St.	A-1	Vesuvius Pizzeria, Inc.	30	Drl	65	3	Pleistocene sand	J	60	40	AC	..	Screen set from 61 to 65 feet.
Ny98	23 Thomas St.	A-1	Cannon Mills, Inc.	30	Drl	46	8	do.	T	50	60	C	120 5- 2-50	
Ny99	58 Worth St.	A-1	Southeastern Cottons, Inc.	35	Drl	60	8	do.	T	50	70	C	305 5- 2-50	Near Ny 98.
Ny100	37 Thomas St.	A-1	do.	35	Drl	41	8	do.	T	50	60	C	120 5- 2-50	do.
Ny101	80 Worth St.	A-1	Bates Fabrics, Inc.	35	Drl	51	8	do.	T	50	60	C	270 5- 2-50	Ny152 nearby. For chemical analysis see table 5.
Ny102	403 E. 60th St.	B-2	St. Charles Garage, Inc.	40	Drv	14	1¼	Pleistocene gravel	S	10	5	F	..	
Ny103	561 11th Ave.	B-2	Crown Gas Station, Inc.	10	Drl	148	6	Manhattan schist	S	10	..	F	525 9-19-50	Depth to bedrock, 40 feet.
Ny105	111 Barclay St.	A-1	John Minder & Son	5	Drl	69	12	Pleistocene sand	T	100	200	C	310 1952	Temperature of water, 66° F. For log see table 6. Screen set from 53 to 69 feet.
Ny108	Christie and Delancey Sts.	A-2	Libby Baths, Inc.	45	Drl	402	..	..	..	..	..	..	..	Depth to bedrock, 150 feet. For log see table 6.
Ny109	do.	A-2	do.	45	Drl	177	..	..	..	..	..	..	..	Depth to bedrock, 177 feet. For log see table 6.
Ny110	220 Greenwich St.	A-1	A. Peltz & Son	10	Drl	56	6	Pleistocene sand	..	75	30	C	..	Temperature of water 69° F. For log see table 6.
Ny111	45 John St.	A-1	Windsor Cafeteria	25	Drl	70	8	do.	..	70	70	AC	184 1952	Temperature of water, 71° F. For log see table 6.
Ny112	262 First Ave.	A-2	National City Bank	20	Drl	90	6	Pleistocene sand and gravel	..	40	..	AC	..	do.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
Ny113	150 William St.	A-1	Royal Insurance Co.	25	Drl	57	8	Pleistocene sand	T	..	210	AC	..	Screen set from 37 to 57 feet.
Ny114	150 Broadway	A-1	John Wanamaker	30	Drl	77	6	Pleistocene sand and gravel	..	..	12	..	..	Insufficient yield. Temperature of water 76° F. Depth to bedrock, 77 feet. For log see table 6.
Ny117	6th Ave. and 14th St.	A-1	New York Savings Bank	25	Drl	40	8	Pleistocene sand	..	..	50	AC	..	Well abandoned, insufficient yield.
Ny119	261 Mulberry St.	A-2	Hawley & Hoops Candy Co.	45	Drl	65	6	do.	T	75	85	C,F	..	Well abandoned.
Ny123	632 W. 125th St.	B-2	Sheffield Farms Co., Inc.	15	Drl	55	12	do.	T	150	225	C,F	215 3-31-42	Intermittent operation. Chloride content 10 parts per million on 4-24-36.
Ny124	do.	B-2	do.	15	Drl	55	12	do.	T	150	225	C,F	134 1952	
Ny125	do.	B-2	do.	15	Drl	60	10	do.	T	450	225	C,F	..	
Ny130	644 Greenwich St.	A-1	Vita Food Products, Inc.	10	Drv	35	2	do.	R	..	50	C	126 1-24-50	Ny24, nearby.
Ny131	do.	A-1	do.	10	Drv	35	2	do.	R	..	50	C	22 3-31-42	
Ny132	do.	A-1	do.	10	Drv	35	2	do.	R	..	50	C	..	Intermittent operation.
Ny133	313 Geenwich St.	A-1	Heermance Storage & Refrigerating Co.	15	Drl	78	12-8	do.	..	..	75	C	..	Ny134 and 135, nearby. For log see table 6.
Ny134	do.	A-1	do.	15	Drl	71	10-8	do.	..	..	35	C	..	Near Ny133. Ny134 and 135 on common suction line.
Ny135	do.	A-1	do.	15	Drl	31	8	do.	..	..	35	C	..	do.
Ny137	51st St. and Park Ave.	B-2	Ambassador Hotel	70	Drl	620	6	Manhattan schist	T	..	70	AC	..	Depth to bedrock, 49 feet. Drawdown reported to be 305 feet when pumping at 70 gallons per minute.
Ny138	Polo Grounds	B-2	National Exhibition Club	20	Drl	357	6	do. (?)	T	25	25	I	..	Depth to bedrock, 45 feet. Drawdown reported to be 219 feet after 8 hours of pumping at 25 gallons per minute. For log see table 6.
Ny139	408 W. 207th St.	C-2	Crystal Aquatic Arena	15	Drl	310	8	Inwood limestone	T	50	50	S	98 5-17-50	Depth to bedrock, 67 feet. Drawdown reported to be 215 feet after 8 hours of pumping at 50 gallons per minute.
Ny140	26 Cortlandt St.	A-1	East River Savings Bank	20	Drl	68	8	Pleistocene sand	..	..	..	..	..	Well abandoned. Yield less than 200 gallons per minute.
Ny141	78 Ridge St.	A-2	Phil Silvershein Corp.	25	Drl	60	10	do.	T	..	120	C	..	Temperature of water, 57° F. For log see table 6.
Ny142	53-55 Worth St.	A-1	Pinkham & Egelhoff	20	Drl	50	8	do.	T	30	30	AC	141 9- 6-50	Screen setting 40 to 50 feet.
Ny143	121 Varick St.	A-1	S. F. Whitman & Son	15	Drl	40	4	do.	J	30	15	AC	79 10- 6-50	Screen set from 34 to 40 feet.
Ny145	37-43 Greene St.	A-1	Eastern Doll Corp.	20	Drl	48	6	do.	T	140	60	C	42 7-18-50	Near Ny11. Screen set from 38 to 48 feet.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
Ny146	555 Grand St.	A-2	Launder Car Wash	15	Drl	48	6	do.	..	..	50	F	28 3- 3-50	Jonathan Water Co., probably at same location. Temperature of water, 59° F. For log, see table 6.
Ny147	410 E. 54th St.	B-2	Mammoth Garage	30	Drl	4(?)	6	do.	S	25	15	F	223 2-23-50	
Ny148	89 Chrystie St.	A-2	Chrystie St. Garage	40	Drv	35	2	do.	..	15	8	F	154 5- 1-50	
Ny149	395 Broadway	A-1	Boardwalk Realty Corp.	20	Drl	38	4	do.	J	40	15	AC	202 6-23-50	
Ny150	Third Ave. and 130th St.	B-2	Test boring 3A, Third Ave. Bridge	6	Drl	106	..	Inwood limestone	..	..	..	..	..	Depth to bedrock, 89 feet.
Ny151	1361 Amsterdam Ave.	B-2	Interboro Fur Storage Corp.	35	Drl	40	6	Pleistocene sand	..	220	200	C	65 9- 8-44	Near Ny91.
Ny152	88 Worth St.	A-1	Marshall Field & Co.	35	Drl	50	8	do.	T	60	50	AC	82 9- 6-50	Used 8 hours daily. Screen set from 40 to 50 feet. Near Ny101.
Ny153	585 Water St.	A-2	Benson & Hedges	20	Drl	60	..	do.	T	150	150	C,F	85 2- 7-52	
Ny154	25th St. nr. 10th Ave.	A-1	..	10	Drl	63	..	do.	..	..	..	..	..	Depth to bedrock, 63 feet. For log see table 6.
Ny155	Park Ave. and 42nd St.	B-2	..	55	Drl	420	18-8	Manhattan schist	..	..	30	..	..	Depth to bedrock, 15 feet. Drilled prior to 1901.
Ny156	638 W. 47th St.	B-2	Dales Car Washers	10	Drl	132	6	do.	T	50	27	F	..	
Ny157	2 E. 55th St.	B-2	Hotel St. Regis	60	Drl	100	6	do.	T	30	15	AC	..	Depth to water reported to be about 30 feet.
Ny158	423 W. 126th St.	B-2	Shensey Co.	35	Drl	90	6	Pleistocene deposits	J	30	15	AC,F	37 4- 8-52	Near Ny91.
Ny159	240 Delancey St.	A-2	Coberta Realty Corp.	20	Drl	60	10	do.	S	150	125	C,AC	93 4- 2-52	Test boring. Depth to water reported to be 10 feet.
Ny160	E. 99th St., 200 feet east of 1st Ave.	B-2	East Harlem General Hospital	3	Drl	149	..	Inwood limestone	..	..	..	..	..	Test boring. Depth to bedrock about 142 feet. For log see table 6.
Ny161	Madison Ave., 50 feet north of E. 25th St.	A-2	Appellate Division Court Building	30	Drl	23	..	Manhattan schist	..	..	..	..	..	Test boring. Depth to bedrock about 14 feet. For log see table 6.
Ny162	Northwest cor. of 8th Ave. and W. 142nd St.	A-2	Harlem Retail Market	20	Drl	112	..	Inwood limestone	..	..	..	..	..	Test boring. Depth to bedrock about 105 feet. For log see table 6.
Ny163	Broadway, 300 feet north of Dyckman St.	C-2	Inwood Branch Library	20	Drl	73	..	do.	..	..	..	..	..	Test boring. Depth to bedrock, 41 feet. For log see table 6.
Ny164	Fort Washington Ave., 200 ft. north W. 163rd	C-2	Nightingale Hospital	140	Drl	48	..	Manhattan schist	..	..	..	..	..	Test boring. Depth to bedrock, 26 feet. For log see table 6.
Ny165	Broadway and Harlem River	C-3	Broadway Bridge	5	Drl	59	..	Inwood limestone	..	..	..	..	..	Test boing SA4. For log see table 6.
Ny166	380 W. 12th St.	A-1	Hubert Warehouses	10	Drl	40	6	Pleistocene deposits	T	65	65	AC	..	One other well on property, nearby. Drilled in 1951.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
							RICHMOND COUNTY							
R1	6006 Amboy Rd.	B-2	J. M. Sprague	15	..	35	..	Pleistocene sand	..	..	4	D	16 5-15-42	
R4	Arthur Kill Rd. and Ellis La.	B-2	Socony Vacuum Oil Co., Inc.	10	Dug	8	26	do.	..	..	..	D	42 5-25-45	Intermittent operation. Abandoned in 1952.
R5	109 Arthur Kill Rd.	B-3	Richmond Floral Co., Inc.	5	Drl	50	6	do.	S	50	50	I	..	do.
R6	317 Bay St.	C-4	Automatic Auto Laundry	15	Drl	50	6	Pleistocene sand and gravel	..	40	40	F	81 3-23-50	do.
R7	465 Bay St.	C-4	New Method Service Co.	10	Drl	50	10	do.	T	250	250	L	24 4- 8-42	For chemical analysis see table 5. For log see table 6. Temperature of water 57° F.
R8	560 Bay St.	C-4	Stapar Theatres, Inc.	15	Drl	75	..	Pleistocene sand	T	250	200	AC	14 4-11-42	For chemical analysis see table 5.
R10	789 Henderson Ave.	C-3	Clay Smith Textile Corp.	18	Drl	87	8	Pleistocene sand and gravel	S	200	200	C	15 4- 7-42	Four other wells, same property, ranging in depth from 56 to 92 feet.
R14	164 Canal St.	C-4	Park Lanes, Inc.	30	Drl	42	6	do.	S	35	40	AC	20 4- 8-42	For chemical analysis see table 5. For log see table 6. Temperature of water 57° F.
R15	191 Canal St.	C-4	Rubsam & Horrmann Brewing Co.	50	Drl	800	10	Serpentine	T	300	200	C,F	20 3- 8-50	Depth to bedrock, probably 70 feet. R16 and 73, nearby.
R16	do.	C-4	do.	50	Drl	600	12	do.	T	300	200	C	..	Near R15.
R17	685 Cary Ave.	C-3	Blue White Laundry Co., Inc.	30	Drl	74	8	Pleistocene sand and gravel	T	200	350	L	14 4- 7-42	For chemical analysis see table 5. For log see table 6. Temperature of water 54° F.
R18	92 Chestnut St.	C-4	Ansbacher Siegle Corp.	45	Drl	139	12	do.	T	300	368	P	..	For log see table 6. Temperature of water 56° F.
R19	169 Edgewater St.	C-4	Richmond Ice Co.	10	Drl	180	10-4	Pleistocene or Cretaceous sand ?	T	75	70	C	1550 5-21-45	Two other wells, same property. For chemical analysis see table 5. Screen set from 160 to 180 feet.
R22	187 Edgewater St.	C-4	L. A. Dreyfus Co.	15	Drl	177	8	?	T	52	40	P	1550 9-28-42	Well reported to end in bedrock at 177 feet. Iron content of water 5 parts per million.
R24	23 Gordon St.	C-4	Richmond Ice Co.	60	Drl	32	6	Pleistocene sand	S	..	900	C	..	Four other wells, same property, reported to be about 30 feet deep. Combined yield, 600 gallons per minute. Data uncertain.
R29	54 Greenleaf Ave.	C-3	Stapleton Service Laundry, Inc.	35	Drl	99	14	Pleistocene gravel	T	300	300	L	20 4- 7-42	For chemical analysis see table 5.
R30	1965 Richmond Terrace	C-3	Pontin Litterage & Transportation Corp.	5	Drl	93	4	Pleistocene sand and gravel	S	260	260	C	27 3-24-39	For chemical analysis see table 5.
R35	1 Nassau Place	B-2	Nassau Smelting & Refining Co.	15	Drl	53	8-6	Pleistocene sand	T	110	60	..	21 4-11-42	Three other wells on property, ranging in depth from 42 to 60 feet. R70 nearby.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
R39	330 Tompkins Ave.	C-4	Louis DeJonge & Co.	60	Drl	102	6	Pleistocene gravel	R	..	60	..	19 4- 9-42	One other well on property, 110 feet deep.
R41	1111 Woodrow Rd.	B-2	Watchtower Bible & Tract Society, Inc.	150	Drl	159	8	Cretaceous sand and gravel	T	100	150	I	9 4- 7-52	For chemical analysis see table 5. One other well about 135 feet deep on this property.
R42	do.	B-2	do.	150	Drl	400	8	..	..	..	..	..	..	Deep test well. For log see table 6.
R43	Foot of Lincoln Ave.	B-3	Midland Operating & Amusement Co.	5	Drl	44	10-3	Pleistocene sand	S	400	200	S	20 9-12-44	Seasonal operation. Chloride content of water, 133 parts per million on 6-10-42.
R44	97 Jewett Ave.	C-3	Consolidated Ice Co.	10	Drl	67	8-6	Pleistocene sand and gravel	..	..	250	C	16 6-10-42	Two other wells on property, 52 to 59 feet deep.
R47	28 Grove Ave.	C-3	Speed King Auto Laundry	20	Drl	40	..	Palisade diabase ?	..	..	..	..	..	Well abandoned, low yield. Water reported to be salty. Depth to bedrock, 13 feet.
R48	Forest Ave.	C-3	Forest Lane Ice Cream Co.	20	Drl	166	8	Palisade diabase and Newark group	..	..	2	..	..	Well abandoned, low yield. Depth to diabase bedrock, probably 30 feet.
R51	Seguine Ave.	B-2	S. S. White Dental Co.	5	Drl	41	6	Pleistocene sand and gravel	..	..	80	C	700 4-10-42	Well not used, high chloride content. Two other wells reported on this property.
R54	50 Murray St.	B-2	Beinert's Ice Co., Inc.	20	Drl	229	..	Cretaceous sand	..	..	200	C	2 4-11-42	For chemical analysis see table 5. For log see table 6.
R55	Castleton Ave. and Rector St.	C-3	New York City Board of Transportation	18	Drl	81	12	Pleistocene sand and gravel	T	300	310	F	..	For log see table 6. Specific capacity, 34. Temperature of water 52° F.
R56	Oakwood Beach	B-3	New York City Dept. of Public Works	2	Drl	102	..	..	..	..	..	..	..	Test boring. For log see table 6.
R57	Center St., near St. Patrick's Pl.	B-3	do.	30	Drl	181	..	..	..	..	..	..	..	do.
R58	Rockland and Brielle Aves.	C-3	do.	295	Drl	47	..	..	..	..	..	..	..	do.
R59	Bodine St. and Richmond Terrace	C-3	do	2	Drl	105	..	..	..	..	..	..	..	do.
R60	East shore of Great Fresh Kills	B-2	do.	1	Drl	76	..	..	..	..	..	..	..	do.
R61	West of intersection of Ellis St. and Nassau Pl.	B-2	Atlantic Terracotta Co.	5	Drl	163	6	Cretaceous sand	..	..	140	..	..	For log see table 6.
R62	Margaret St., west of Gilfords La.	B-3	New York City Dept. of Public Works	65	Drl	51	..	..	..	..	..	..	..	Test boring. For log see table 6.
R63	Hylan Blvd. and Emmet Ave.	B-3	New York City Dept. of Water Supply, Gas and Electricity	10	Drl	77	6	Pleistocene sand and gravel	..	..	120	PS	45 5-26-50	Blvd. Sta. No. 1. Well No. 7. Depth to bedrock, 270 feet. For log see table 6. Composite chloride from 14 wells pumping 2 mgd. Wells on common suction. For chemical analysis see table 5.
R64	Hylan Blvd. and New Dorp La.	B-3	do.	10	Drl	78	6	do.	..	..	..	PS	11 5-26-50	Blvd. Sta. No. 2. Composite chloride of 14 wells on Well No. 9. For log see table 6. Common suction.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
R65	Hylan Blvd. and Buel Ave.	C-3	do.	10	Drl	79	4-6	do.	..	..	125	PS	45 5-25-50	Blvd. Sta. No. 3. Composite chloride on 14 wells on Well No. 12. For log see table 6. Common suction.
R66	Hylan Blvd. and Evergreen Ave.	C-3	do.	12	Drl	96	6	do.	..	..	700	PS	15 5-24-50	Blvd. Sta. No. 4. Composite chloride of 14 wells on Well No. 9. For log see table 6. Common suction.
R67	East end of Goethals Bridge	C-2	Port of New York Authority	3	Drl	51	..	..	..	..	..	..	..	Test boring. For log see table 6.
R68	Near south end of Bayonne Bridge	C-3	do.	34	Drl	43	..	..	..	..	..	..	..	do.
R69	Richmond Ave. and Signs Rd.	C-3	Bulls Head well field New York City Dept. of Water Supply, Gas and Electricity	20	Drl	95	6	Pleistocene sand and gravel	..	3500	1500	PS	..	For log see table 6. About 30 wells, all on common suction. Combined capacity estimated at 2 million gallons daily.
R70	1 Nassau Pl.	B-2	Nassau Smelting & Refining Co.	15	Drl	353	..	..	..	..	..	..	..	R35, nearby. For log see table 6.
R71	1 mile north of Seguine Point	B-2	..	30	Drl	147	..	..	..	..	..	..	..	Test boring for bridge. Location uncertain. For log see table 6.
R72	Near ferry slip at Tottenville	B-1	Harry Chassey	20	Drl	173	..	Cretaceous sand	..	..	..	D	..	Location uncertain. For log see table 6.
R73	191 Canal St.	C-4	Rubsam & Horrmann Brewing Co.	50	Drl	80	8	Pleistocene sand and gravel	..	..	10	..	..	Test well. For log see table 6. R15 and 16, nearby.
R74	Cortlandt St. and Haughwout Ave.	C-3	New York City Dept. of Water Supply, Gas and Electricity	20	Drl	80	..	do.	..	..	..	..	..	Test well. For log see table 6. Water reported to be salty.
R75	Forest Ave., 300 feet east of Clove Rd.	C-3	..	85	Drl	85	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 69 feet. For log see table 6.
R76	Forest Ave. and Bway.	C-3	..	115	Drl	89	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 67 feet. For log see table 6.
R77	Bement Ave., 390 feet north of Forest Ave.	C-3	..	120	Drl	16	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 16 feet. For log see table 6.
R78	Forest and Davis Aves.	C-3	..	130	Drl	91	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 97 feet. For log see table 6.
R79	Van Tuyl and York Aves.	C-3	..	120	Drl	44	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 10 feet. For log see table 6.
R80	St. Mark's Pl. and Hyatt St.	C-4	..	110	Drl	37	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 4 feet. For log see table 6.
R81	Borough Pl. and Bay St.	C-4	..	40	Drl	49	..	..	..	..	..	..	..	Test boring. Depth to bedrock, 34 feet. For log see table 6.
R82	Hoffman Island	B-4	New York Quarantine Station	5	Drl	1000	..	..	..	..	..	..	..	Test boring. Depth to bedrock, probably 450 feet. For log see table 6.
R83	Washington Ave., 800 ft. west of Western Ave.	C-2	..	3	Drl	48	..	Pleistocene sand	..	..	..	..	..	Test boring for Goethals Bridge.

Table 7.—Records of selected wells and borings in Bronx, New York, and Richmond Counties (Continued)

Well number	Location	Map coordinates	Owner	Altitude above sea level (feet)	Type of well	Depth (feet)	Diameter (ins.)	Geologic subdivision	Method of lift	Pump cap. (gals. per min.)	Yield (gals. per min.)	Use of water	Chloride (parts per million)	Remarks
R84	564 Lynn St.	B-3	Gaetano Mazzella	10	Drv	45	1¼	do.	S	10	10	D	131 12- 7-51	Static level reported to be about 40 feet.
R85	181 Spring St.	C-3	Fortunato Fecci	130	Drv	82	1¼	do.	S	..	..	D	..	Formerly used for drinking. Now used for gardening only.
R86	17 Eddy St. (?)	C-3	W. Kaupe	320	Drl	371	8	Serpentine	..	..	3.5	D	..	Depth to bedrock, 32 feet.
R87	Southeast side of Silver Lake Reservoir	C-3	Test boring No. 7, C113, Board of Water Supply	217	Drl	100	..	do.	..	..	..	..	..	Depth to bedrock, 77 feet.
R88	Hylan Blvd. and Lincoln Ave.	B-3	Grant City well field, New York City Dept. of Water Supply, Gas and Electricity	15	Drl	50-100	4-8	Pleistocene sand	..	..	..	PS	72 1- 4-50	Composite chloride sample from 17 wells, pumping at rate of 2.3 million gallons daily.
R89	Ormond Pl. and Butler Pl.	C-4	Narrows Project	25	..	36	..	Pleistocene deposits	..	..	..	..	..	Test boring No. 3. Depth to water reported to be about 18 feet in 1931. For log see table 6.
R91	Clifton Ave. and Rosebank Pl.	C-4	do.	25	..	10	..	do.	..	..	..	..	..	Test boring No. 4. Depth to water reported to be about 6 feet in 1931. For log see table 6.
R93	Maryland Ave. and White St.	C-4	do.	25	..	52	..	do.	..	..	..	..	..	Test boring No. 6. Depth to water reported to be about 5 feet in 1931. For log see table 6.
R95	Hope Ave., 220 feet west of Bay St.	C-4	do.	35	..	68	..	do.	..	..	..	..	..	Test boring No. 9. For log see table 6.
R98	Wadsworth Rd. and Seagate Rd.	C-4	do.	55	..	143	..	do.	..	..	..	..	..	Test boring No. 1. Depth to water reported to be about 48 feet in 1931. For log see table 6.
R99	Hudson River, 150 feet east of Seagate Rd.	C-4	do.	0	..	114	..	do.	..	..	..	..	..	Test boring NR No. 18. For log see table 6.
R100	Hudson River, 1800 feet east of Seagate Rd.	C-4	do.	0	..	122	..	do.	..	..	..	..	..	Test boring NR No. 12. For log see table 6.
R101	2071 Clove Rd.	C-3	New York and Richmond Gas Co.	100	Drl	150	4	do.	T	35	35	F,I	..	Depth to water about 80 feet.
R102	66 Marine Way	B-3	Patrick Avino	10	Drl	40	1¼	do.	S	..	..	D	..	Depth to water about 10 feet.
R103	Lynhurst and Tompkins Aves.	C-4	New York City Sanitation Garage	35	Drl	27	2½	do.	..	..	..	..	..	Test boring No. 4.

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REPORTS DEALING WITH GROUND-WATER CONDITIONS IN NEW YORK PUBLISHED BY THE NEW YORK STATE WATER POWER AND CONTROL COMMISSION AND PREPARED IN COOPERATION WITH THE U. S. GEOLOGICAL SURVEY

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*GW- 1. Withdrawal of Ground-Water on Long Island, N. Y. D. G. Thompson and R. M. Leggette. 1936.

GW- 2. Engineering Report on the Water Supplies of Long Island. Russell Suter. 1937.

*GW- 3. Record of Wells in Kings County, N. Y. R. M. Leggette and others. 1937.

*GW- 4. Record of Wells in Suffolk County, N. Y. R. M. Leggette and others. 1938.

*GW- 5. Record of Wells in Nassau County, N. Y. R. M. Leggette and others. 1938.

*GW- 6. Record of Wells in Queens County, N. Y. R. M. Leggette and others. 1938.

*GW- 7. Report on the Geology and Hydrology of Kings and Queens Counties, Long Island. Homer Sanford. 1938.

GW- 8. Record of Wells in Kings County, N. Y., Supplement 1. R. M. Leggette and M. L. Brashears, Jr. 1944.

GW- 9. Record of Wells in Suffolk County, N. Y., Supplement 1. C. M. Roberts and M. L. Brashears, Jr. 1945.

GW-10. Record of Wells in Nassau County, N. Y., Supplement 1. C. M. Roberts and M. L. Brashears, Jr. 1946.

GW-11. Record of Wells in Queens County, N. Y., Supplement 1. C. M. Roberts and Marion C. Jaster. 1947.

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*GW-13. The Configuration of the Rock Floor in Western Long Island, N. Y. Wallace De Laguna and M. L. Brashears, Jr. 1948.

GW-14. Correlation of Ground-Water Levels and Precipitation on Long Island, N. Y. C. E. Jacob. 1945.

*GW-15. Progress Report on Ground-Water Resouces of the Southwestern Part of Broome County, N. Y. R. H. Brown and J. G. Ferris. 1946.

*GW-16. Progress Report on Ground-Water Conditions in the Cortland Quadrangle, N. Y. E. S. Asselstine. 1946.

GW-17. Geologic Correlation of Logs of Wells in Kings County, N. Y. Wallace De Laguna. 1948.

GW-18. Mapping of Geologic Formations and Aquifers of Long Island, N. Y. Russell Suter, Wallace De Laguna and N. M. Perlmutter. 1950.

GW-19. Geologic Atlas of Long Island. 1950.

GW-20. The Ground-Water Resources of Albany County, N. Y. Theodore Arnow. 1949.

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GW-22. The Ground-Water Resources of Schoharie County, N. Y. Jean M. Berdan. 1950.

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GW-25. The Ground-Water Resources of Columbia County, N. Y. Theodore Arnow. 1951.

GW-26. The Ground-Water Resources of Seneca County, N. Y. A. J. Mozola. 1951.

GW-27. The Water Table in Long Island, N. Y., in January, 1951. N. J. Lusczynski and A. H. Johnson. 1952.

GW-28. Withdrawal of Ground Water on Long Island, N. Y. A. H. Johnson and others. 1952.

GW-29. The Ground-Water Resources of Wayne County, N. Y. R. E. Griswold. 1951.

GW-30. The Ground-Water Resources of Schenectady County, N. Y. E. S. Simpson. 1952.

GW-31. Records of Wells in Suffolk County, N. Y., Supplement 2. A. H. Johnson and others. 1952.

GW-32. Ground-Water in Bronx, New York, and Richmond Counties with Summary Data on Kings and Queens Counties, New York City, N. Y. N. M. Perlmutter and Theodore Arnow. 1953.

GW-33. The Ground-Water Resources of Washington County, N. Y. R. V. Cushman. 1953.

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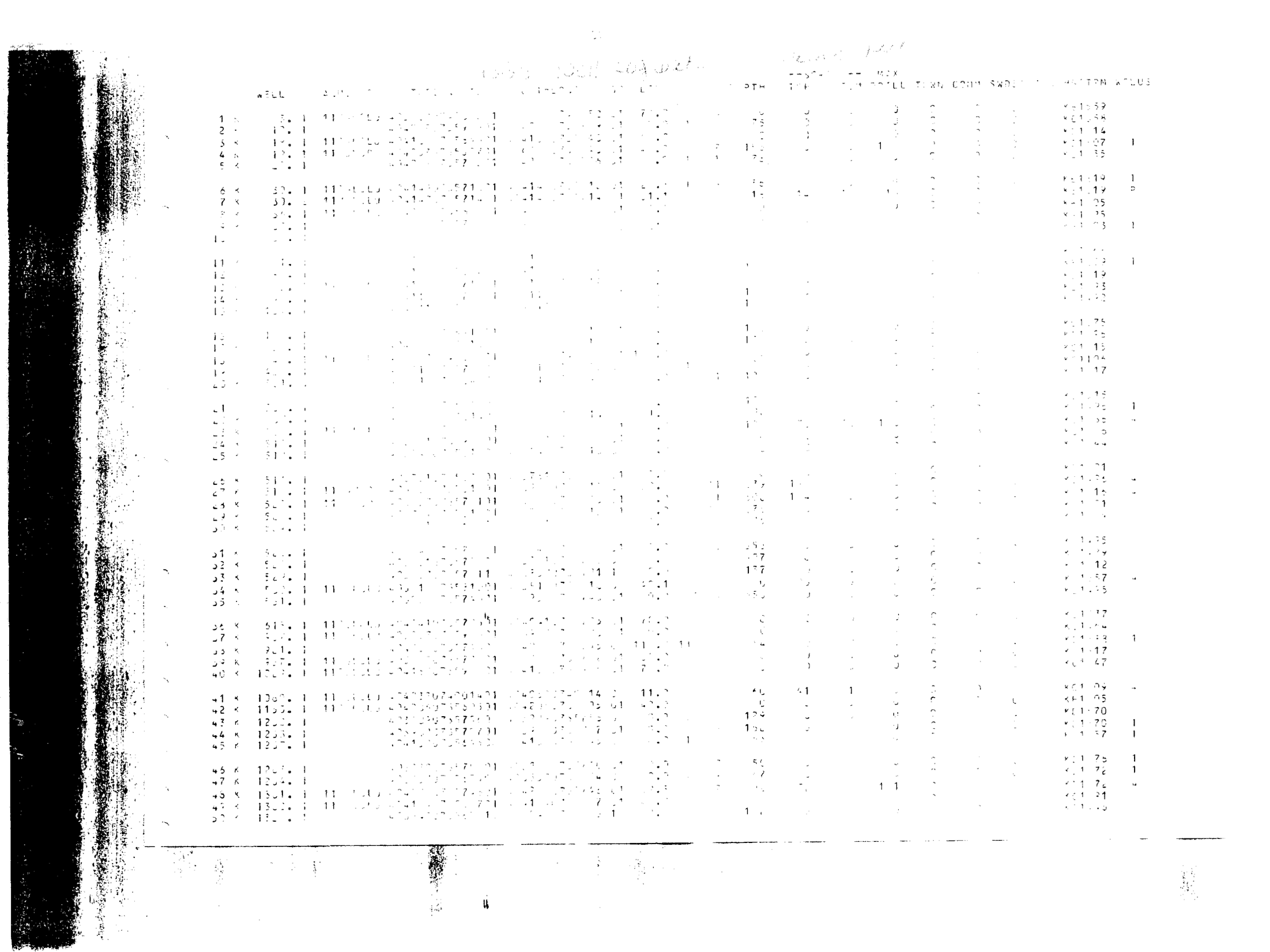

	WELL	AQUIFER	STATION ID	LATELONG			DEPTH	TOP		DRILL	TOWN	COMM	SWDST	HISTRM	WELUS
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52 K	1347. 1	11[illegible]	[illegible]	[illegible]	01	[illegible]	71	[illegible]		0	0	0	0	K1591	[illegible]
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54 K	1362. 1		[illegible]	[illegible]	01	[illegible]	135	0		0	0	0	0	K1571	
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57 K	15[illegible]. 1		[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	K1[illegible]	1
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DESCRIPTION OF HEADER FILE RETRIEVAL INFORMATION

WELL = New York State well identification number (ex. K 2859. 1)

AQUIFER = Code of aquifer in which well is screened (ex. 112GLCLU)

STATION ID = Unique station identification number (U.S.G.S. use only)

LAT-LONG = Latitude and longitude of well

SQ = Sequence number (U.S.G.S. use only)

LSD = Land surface elevation at well, in feet from NGVD of 1929

MP = Measuring point elevation of well, in feet from NGVD of 1929

DEPTH = Total depth of well casing, in feet below land surface

SCREEN TOP = Depth to top of screen, in feet below land surface

SCREEN BOTTOM = Depth to bottom of screen, in feet below land surface

MAX DRILL = Maximum depth well was drilled, in feet below land surface

TOWN = Town code of well

COMM = Community code of well (U.S.G.S. use only)

SWDST = Sewer district code where well is located

ZON = Psysiographic zone code of well

HGSTRM = Hagstrom Atlas coordinate of well

WELUS = Primary and secondary well use code of well

AQUIFER CODES

112GLCLU = Upper Glacial Aquifer

112GRDR = Gardiners Clay

112JMCO = Jameco Aquifer

112PGFG = Port Washington Confining Unit

112PGQF = Port Washington Aquifer

112SMTN = Smithtown Clay

11220CL = 20-Foot Clay

211LLYD = Lloyd Aquifer

211MGTY = Magothy Aquifer

211MMGD = Monmouth Greensand

211RNCF = Raritan Confining Unit

400BCPX = Basement Complex (Bedrock)

999MMMMM = More Than One Unit

WELL USE CODES

1 = Observation

2 = Recharge

3 = Test

4 = Well not used

5 = Withdrawl, unspecified

6 = Destroyed

7 = Public supply

8 = Fire well

9 = Not found last time visited

D = Domestic supply

P = Plugged

COUNTY LETTER CODES
(for N.Y.S. well numbers)
(ex.- K 1234. 1)

S = Suffolk

N = Nassau

Q = Queens

K = Kings

R = Richmond

B = Bronx

M = Manhattan

MODIFYING LETTERS
(for N.Y.S. well numbers)
(ex.- K 1234. 1T)

D = Diffusion (injection) well

T = Test hole

A-Z = Replacement well with new location (except letters D or T)

HAGSTROM ATLAS LOCATION DESCRIPTION

Column 1 = County letter (ex.- ND1462)

Column 2 = Map coordinate letter (ex.- ND1462)

Column 3-4 = Map coordinate number (ex.- ND1462)

Column 5 = Coordinate box subdivision, east-west direction (ex.- ND1462)

Column 6 = Coordinate box subdivision, north-south direction (ex.- ND1462)

Subdivisions run from 0-9, starting from the upper left corner

ZONE CODES

B = Barrier beach

N = North fork

S = South fork

SEWER DISTRICT CODES

NASSAU COUNTY

1 = District #1 (Inwood)

2 = District #2 (Bay Park Plant)

3 = District #3 (Ceder Creek Plant)

SUFFOLK COUNTY

1 = Port Jefferson

2 = Holbrook

3 = Southwest Sewer District

4 = Birchwood/North Shore

5 = Strathmore/Huntington

6 = Kings Park

7 = Medford

8 = Strathmore Ridge

9 = College Park

10 = Stony Brook

11 = Selden

14 = Parkland

15 = Nob Hill

TOWN CODES

1 = Hempstead

2 = North Hempstead

3 = Oyster Bay

4 = Babylon

5 = Brookhaven

6 = East Hampton

7 = Huntington

8 = Islip

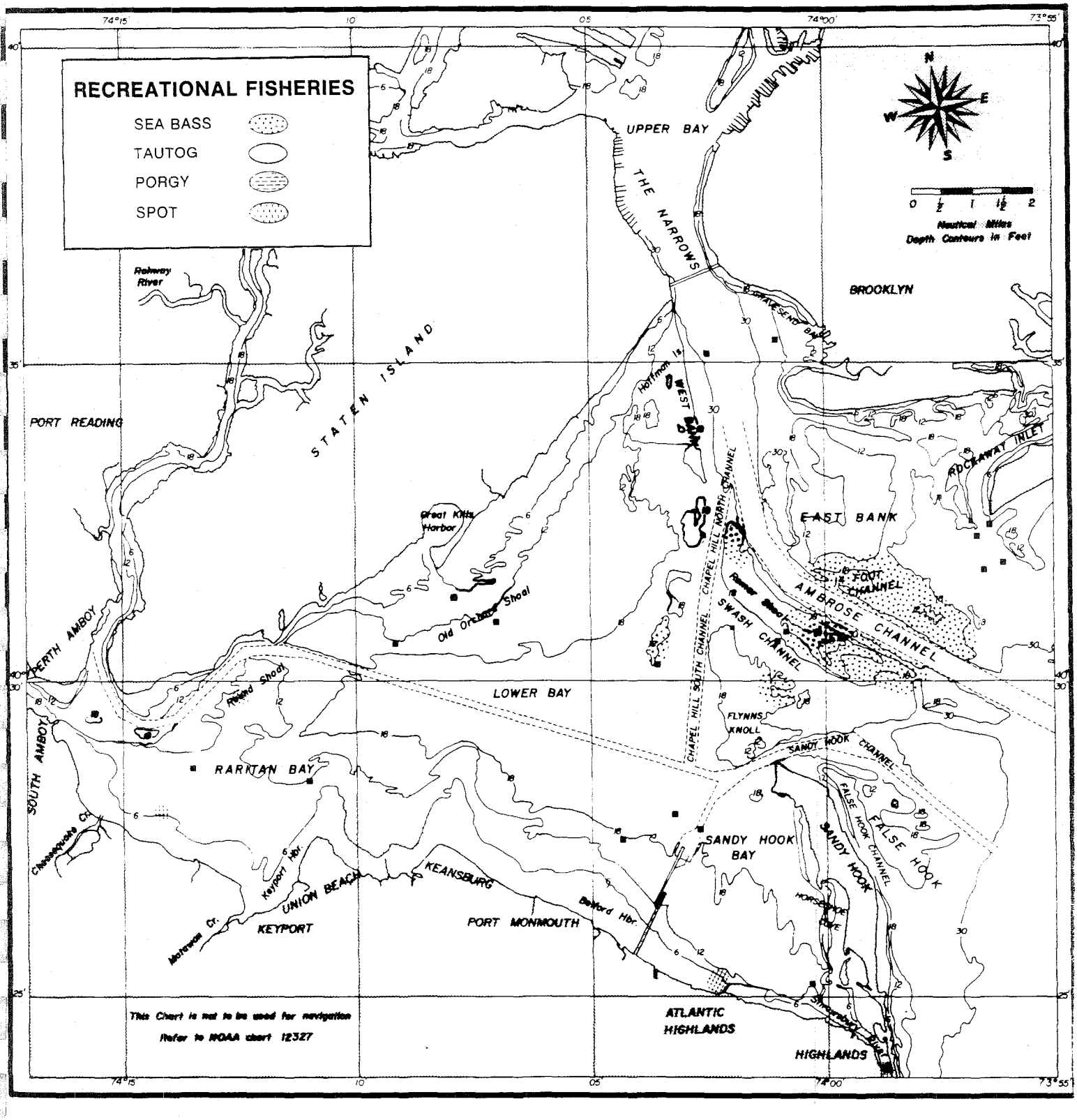
9 = Riverhead

10 = Shelter Island

11 = Smithtown

12 = Southampton

13 = Southold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SEA BASS
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PORGY
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Nautical Miles
Depth Contours in Feet
UPPER BAY
THE NARROWS
BROOKLYN
Rahway River
STATEN ISLAND
PORT READING
Hoffman Is.
WEST BANK
SHEEPSHEAD BAY
ROCKAWAY INLET
EAST BANK
Great Kills Harbor
Old Orchard Shoal
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
SWASH CHANNEL
AMBROSE CHANNEL
40 FOOT CHANNEL
PERTH AMBOY
SOUTH AMBOY
Raritan Shoal
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
RARITAN BAY
FALSE HOOK CHANNEL
FALSE HOOK
SANDY HOOK BAY
SANDY HOOK
Chesequake Cr.
Keyport Hbr.
UNION BEACH
KEANSBURG
KEYPORT
Matawan Cr.
PORT MONMOUTH
Belford Hbr.
ATLANTIC HIGHLANDS
HIGHLANDS
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Refer to NOAA chart 12327
74°15
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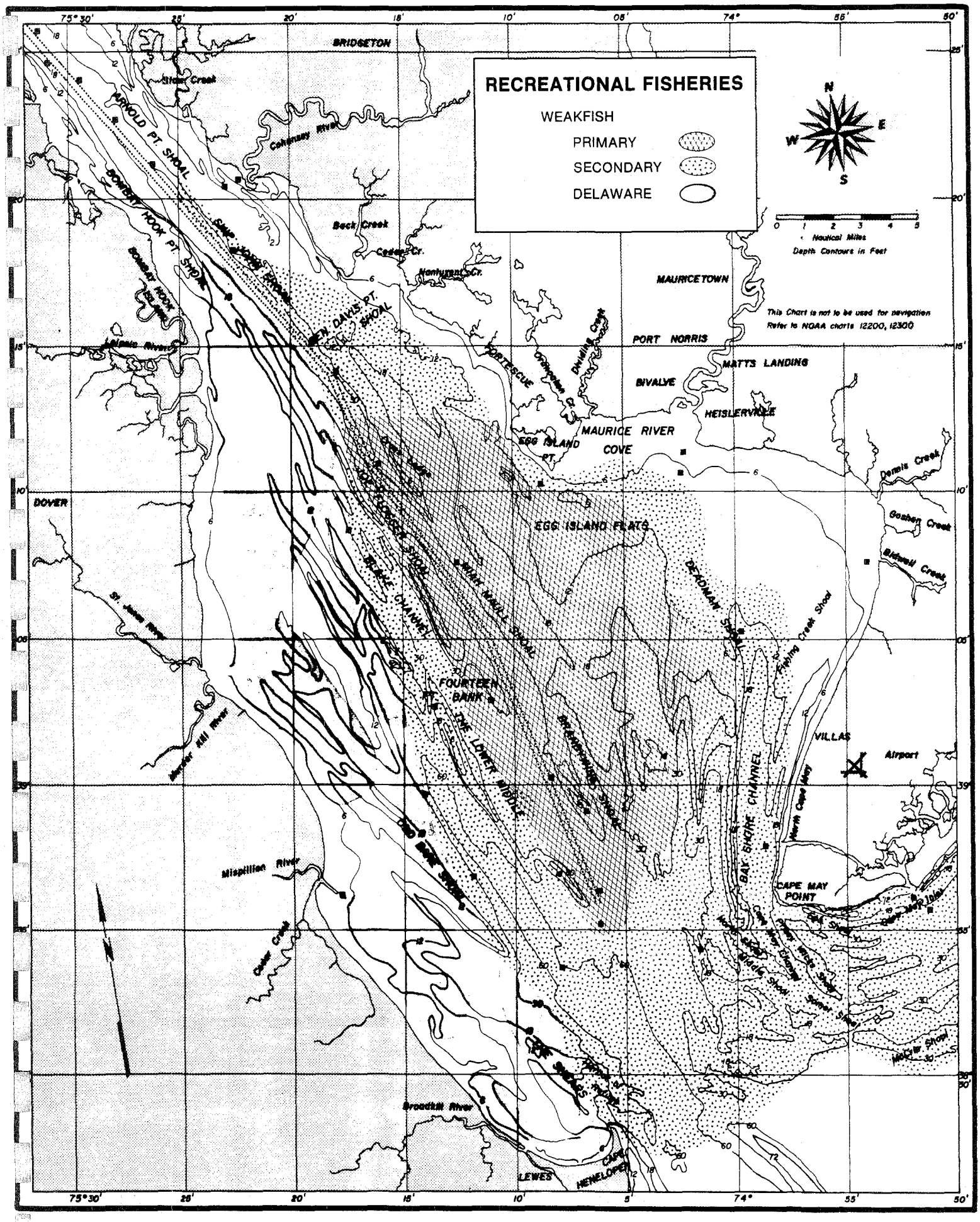
RECREATIONAL FISHERIES
WEAKFISH
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0 1 2 3 4 5
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
Back Creek
Cedar Cr.
Nantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
DOVER
St. Jones River
Murder Kill River
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE HENELOPEN
FOURTEEN BANK
THE LOWER MIDDLE
BLAKE CHANNEL
DEADMAN SHOAL
BAY SHORE CHANNEL
Fishing Creek Shoal
VILLAS
Airport
CAPE MAY POINT
Dennis Creek
Goshen Creek
Bidwell Creek
75°30'
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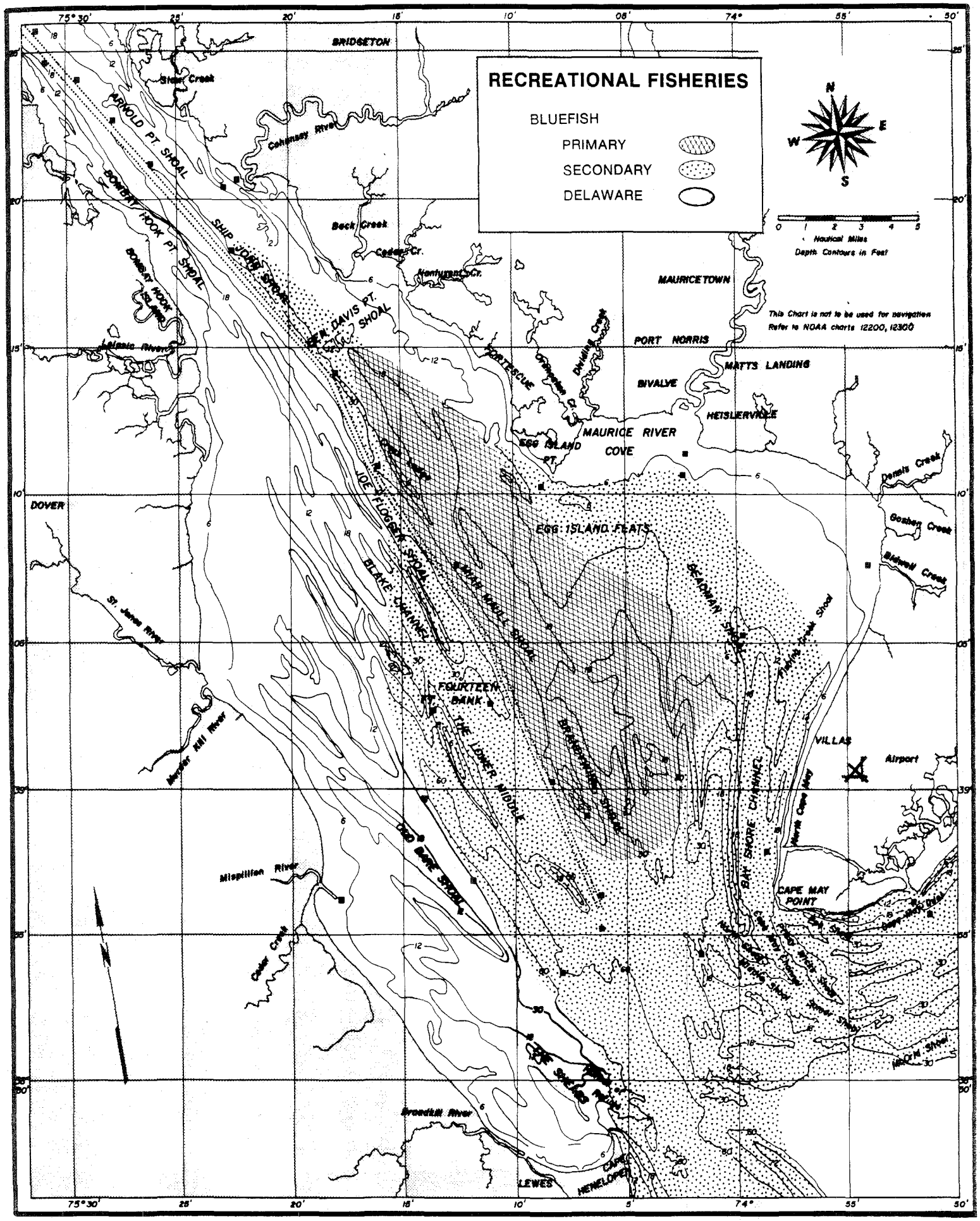
RECREATIONAL FISHERIES
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Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
St. Jones River
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
BEADMAN SHOAL
Fishing Creek Shoal
FOURTEEN FT. BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
VILLAS
Airport
North Cape May
BAY SHORE CHANNEL
CAPE MAY POINT
Mispillion River
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OLD BARE SHOAL
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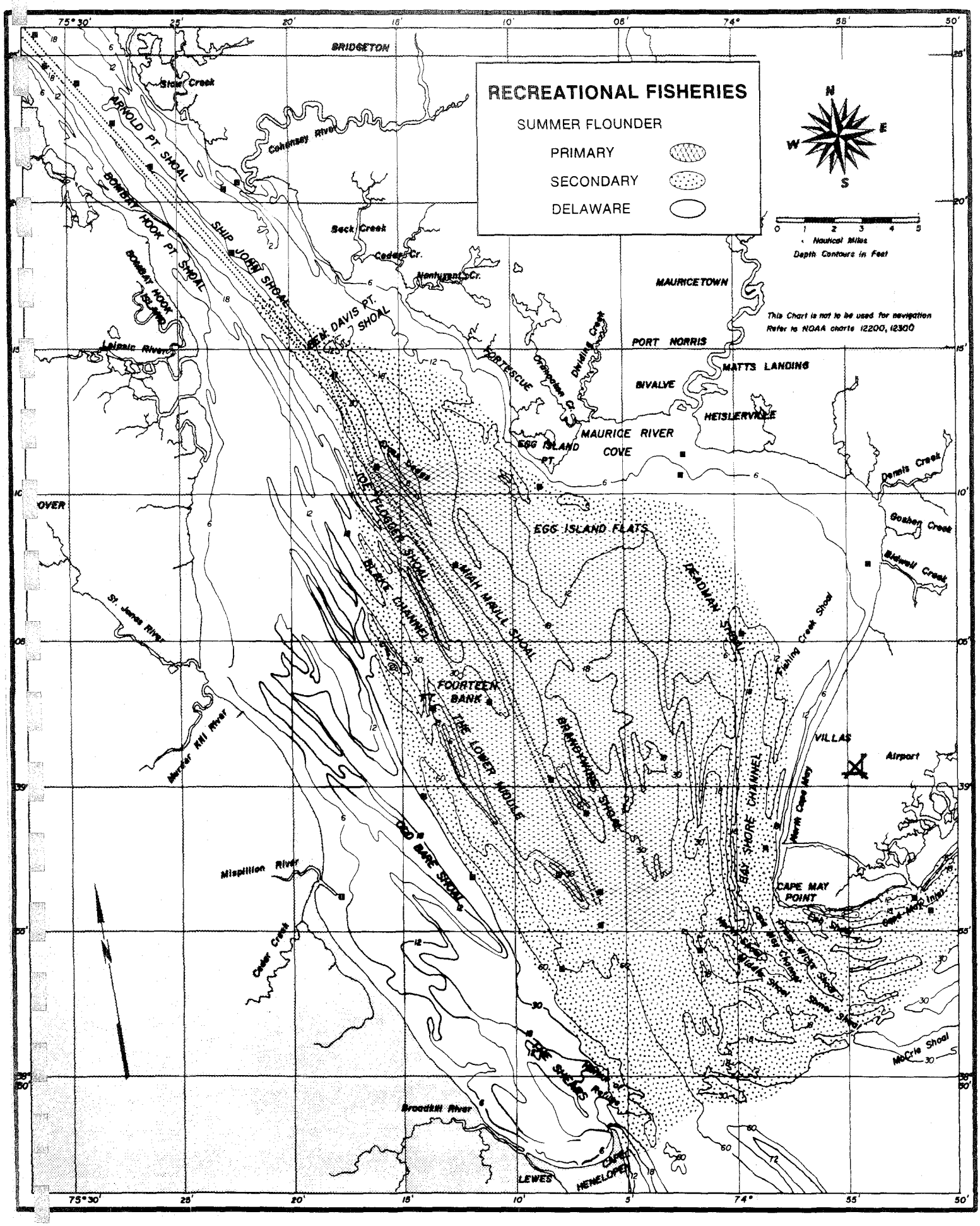
RECREATIONAL FISHERIES
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Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
Leipsic River
Dennis Creek
Goshen Creek
Bidwell Creek
EGG ISLAND FLATS
DEADMAN SHOAL
Fishing Creek Shoal
BLAKE CHANNEL
MIAH MAULL SHOAL
FOURTEEN BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
BAY SHORE CHANNEL
VILLAS
Airport
North Cape May
CAPE MAY POINT
Cape May Inlet
Cape May Channel
Middle Shoal
Somer Shoal
McCrie Shoal
St. James River
Murder Kill River
Mispillion River
Cedar Creek
OLD BARE SHOAL
THE SHEARS
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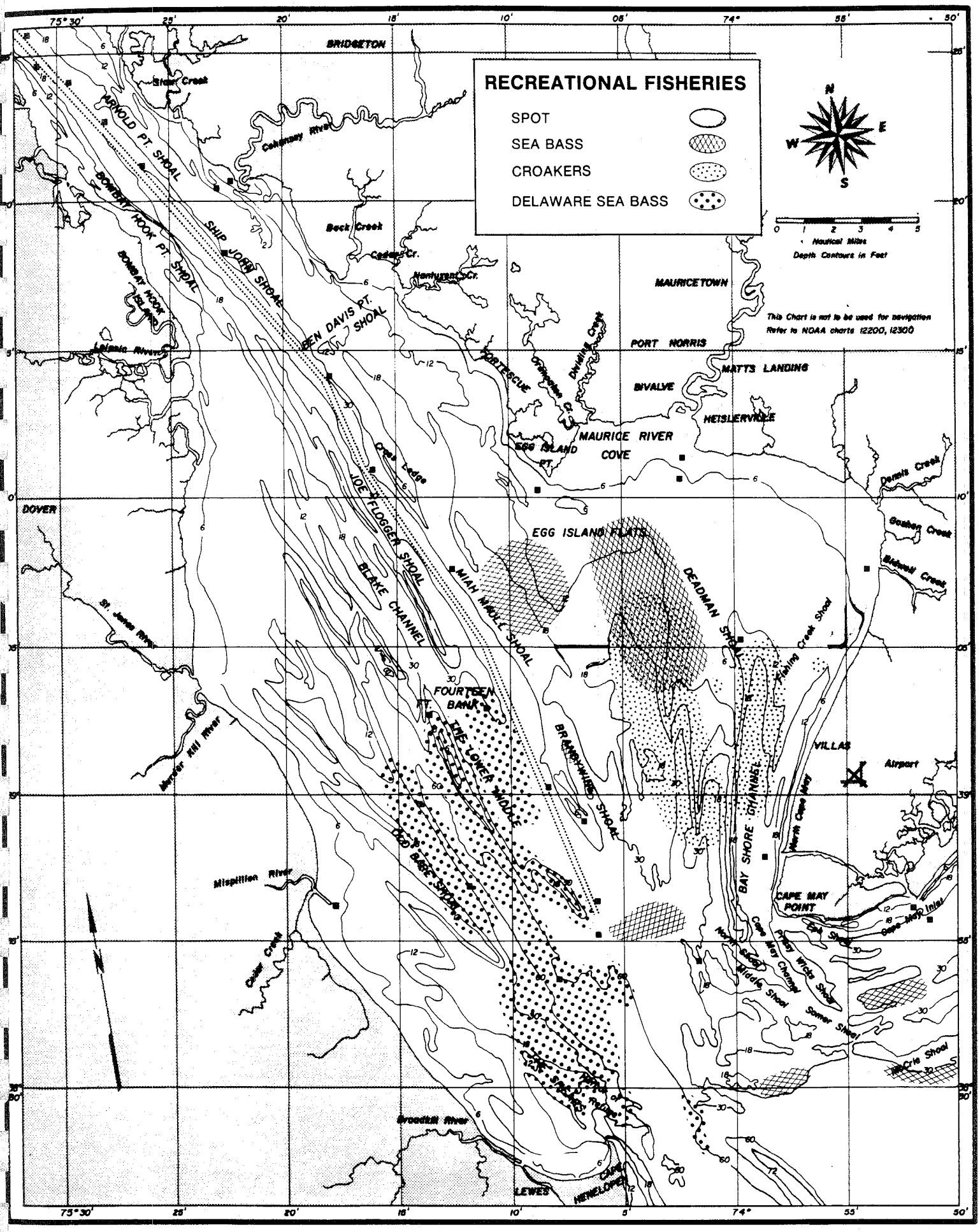
RECREATIONAL FISHERIES
SPOT
SEA BASS
CROAKERS
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Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
SHIP JOHN SHOAL
BOMBAY HOOK ISLAND
Back Creek
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Nantuxent Cr.
BEN DAVIS PT. SHOAL
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
Cross Ledge
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
EGG ISLAND FLATS
DEADMAN SHOAL
Fishing Creek Shoal
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
St. Jones River
Murder Kill River
FOURTEEN FT. BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
OLD BARE SHOAL
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BAY SHORE CHANNEL
North Cape May
CAPE MAY POINT
Cape May Inlet
Eph Shoal
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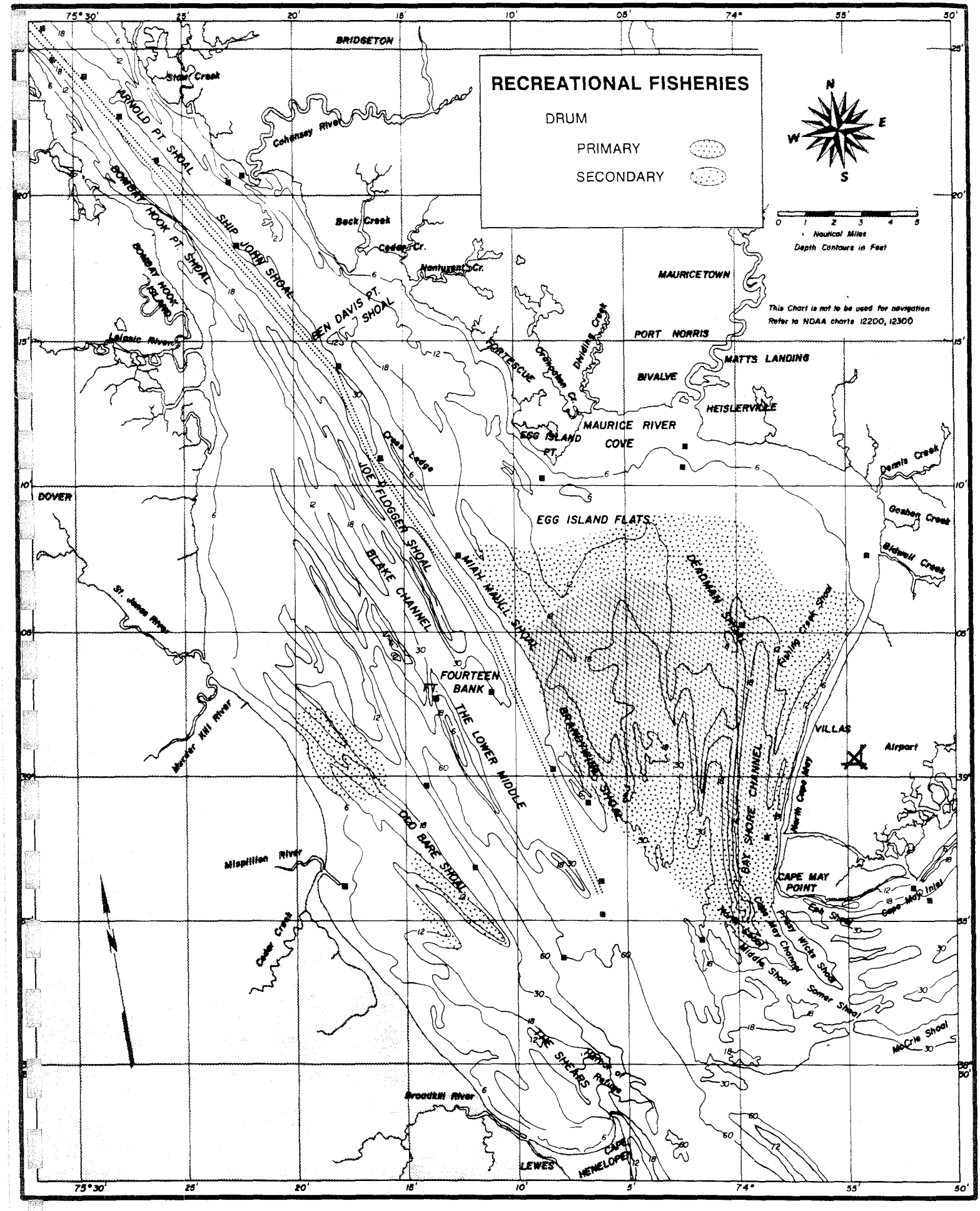
RECREATIONAL FISHERIES
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Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
BEN DAVIS PT. SHOAL
Leipsic River
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
Cross Ledge
JOE FLOGGER SHOAL
EGG ISLAND FLATS
BLAKE CHANNEL
MIAH MAULL SHOAL
DEADMAN SHOAL
Fishing Creek Shoal
St. Jones River
FOURTEEN FT. BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
VILLAS
Airport
Murder Kill River
BAY SHORE CHANNEL
North Cape May
CAPE MAY POINT
Cape May Inlet
Eph Shoal
Cape May Channel
Middle Shoal
Somer Shoal
McCrie Shoal
OGG BARE SHOAL
Mispillion River
Cedar Creek
THE SHEARS
Harbor of Refuge
Broadkill River
LEWES
CAPE HENELOPEN
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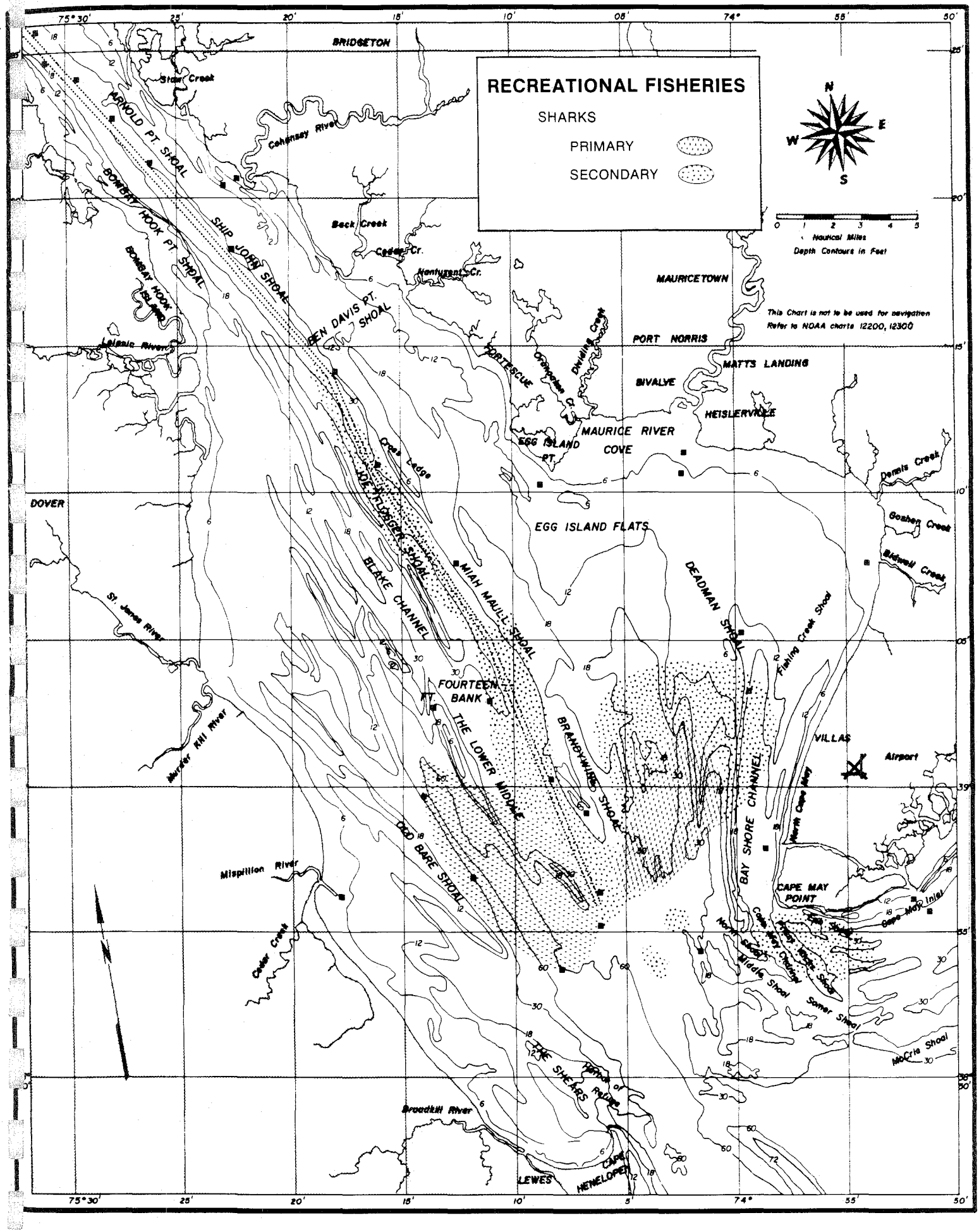
RECREATIONAL FISHERIES
SHARKS
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Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
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BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
SHIP JOHN SHOAL
BOMBAY HOOK ISLAND
Back Creek
Cedar Cr.
Nantuxent Cr.
BEN DAVIS PT. SHOAL
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PORT NORRIS
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BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
Cross Ledge
EGG ISLAND PT.
MAURICE RIVER COVE
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
EGG ISLAND FLATS
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
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Middle Shoal
Somer Shoal
McCrie Shoal
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Broadkill River
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CAPE HENELOPEN
75°30'
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20'
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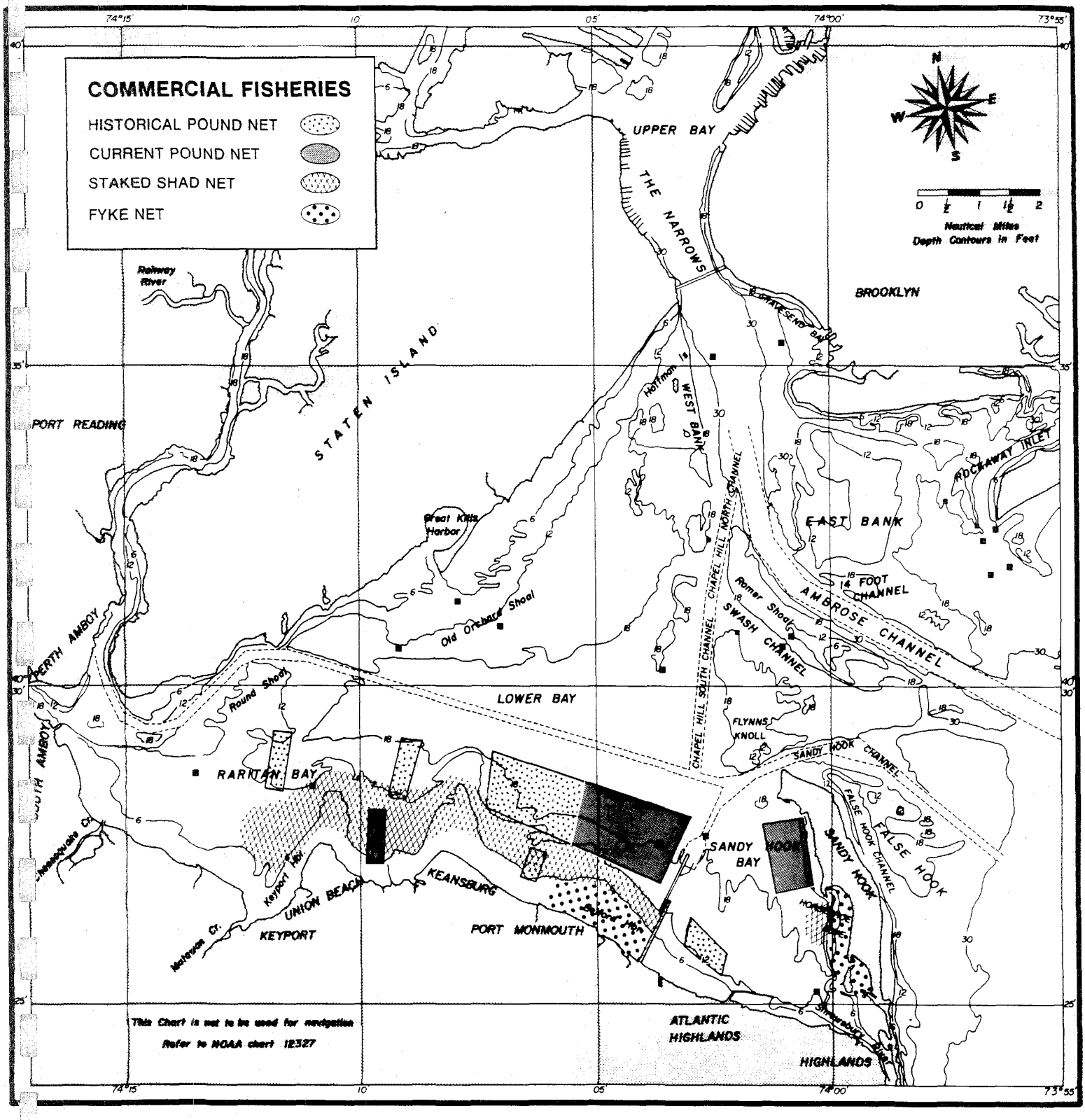
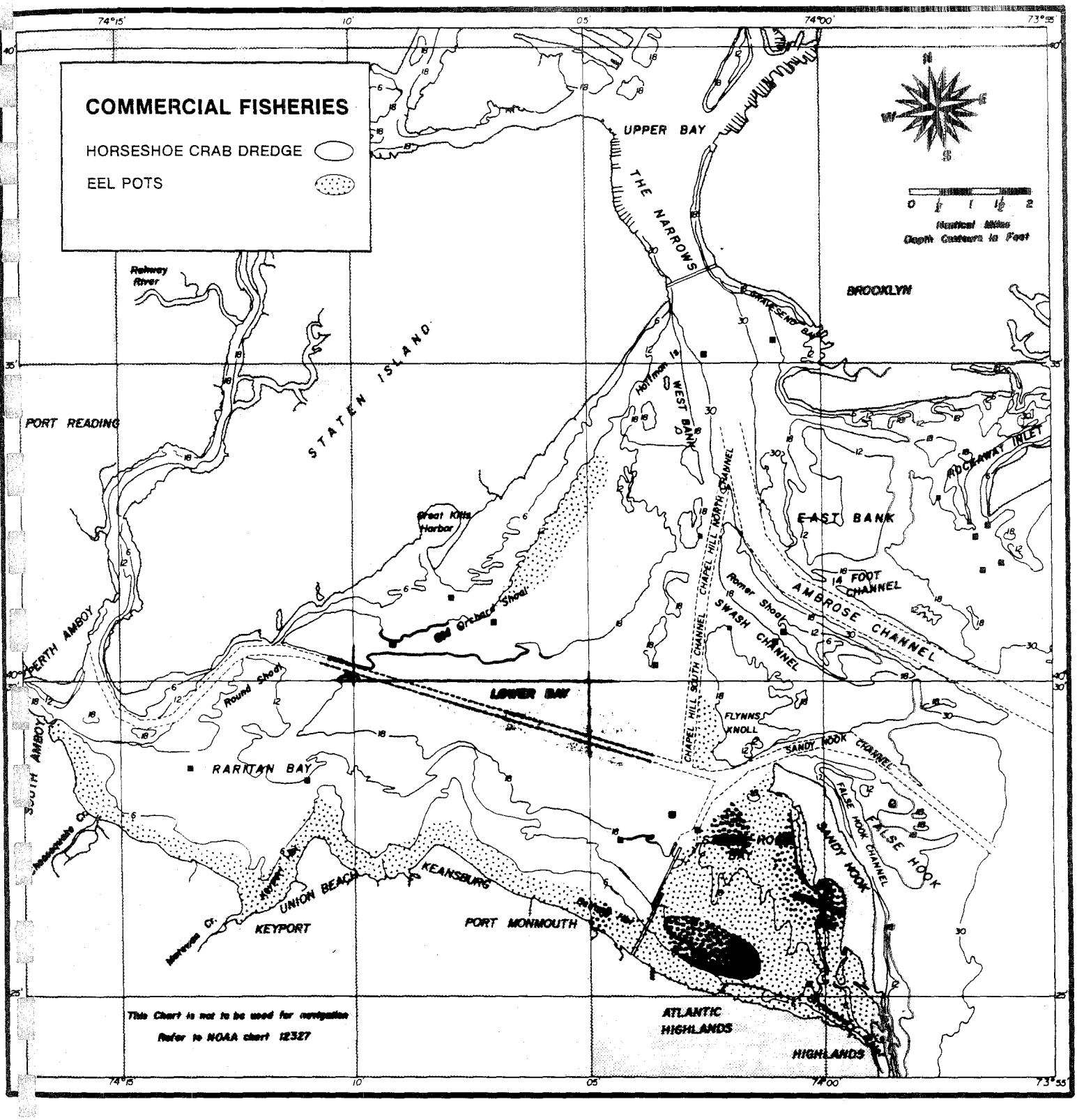
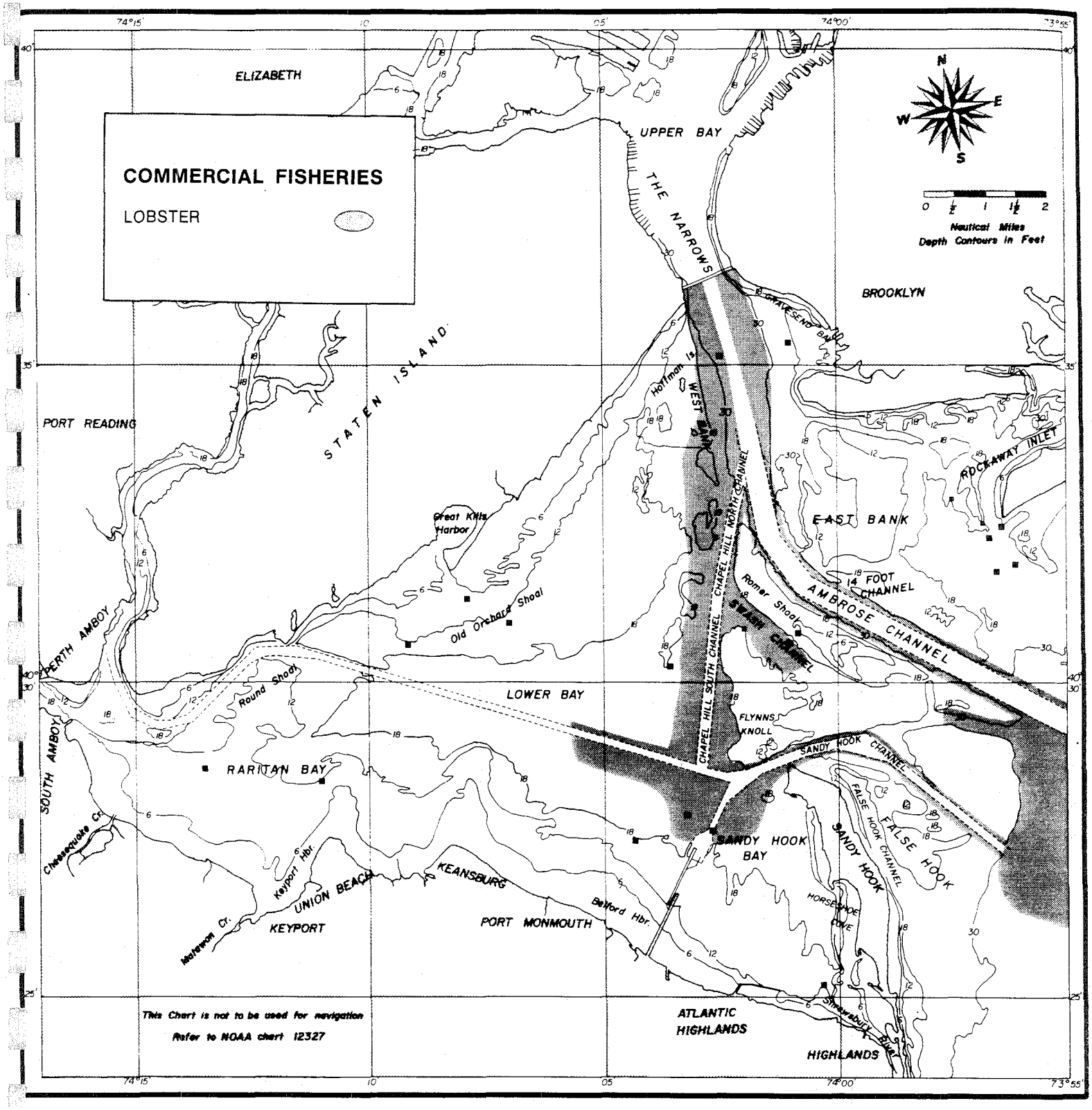
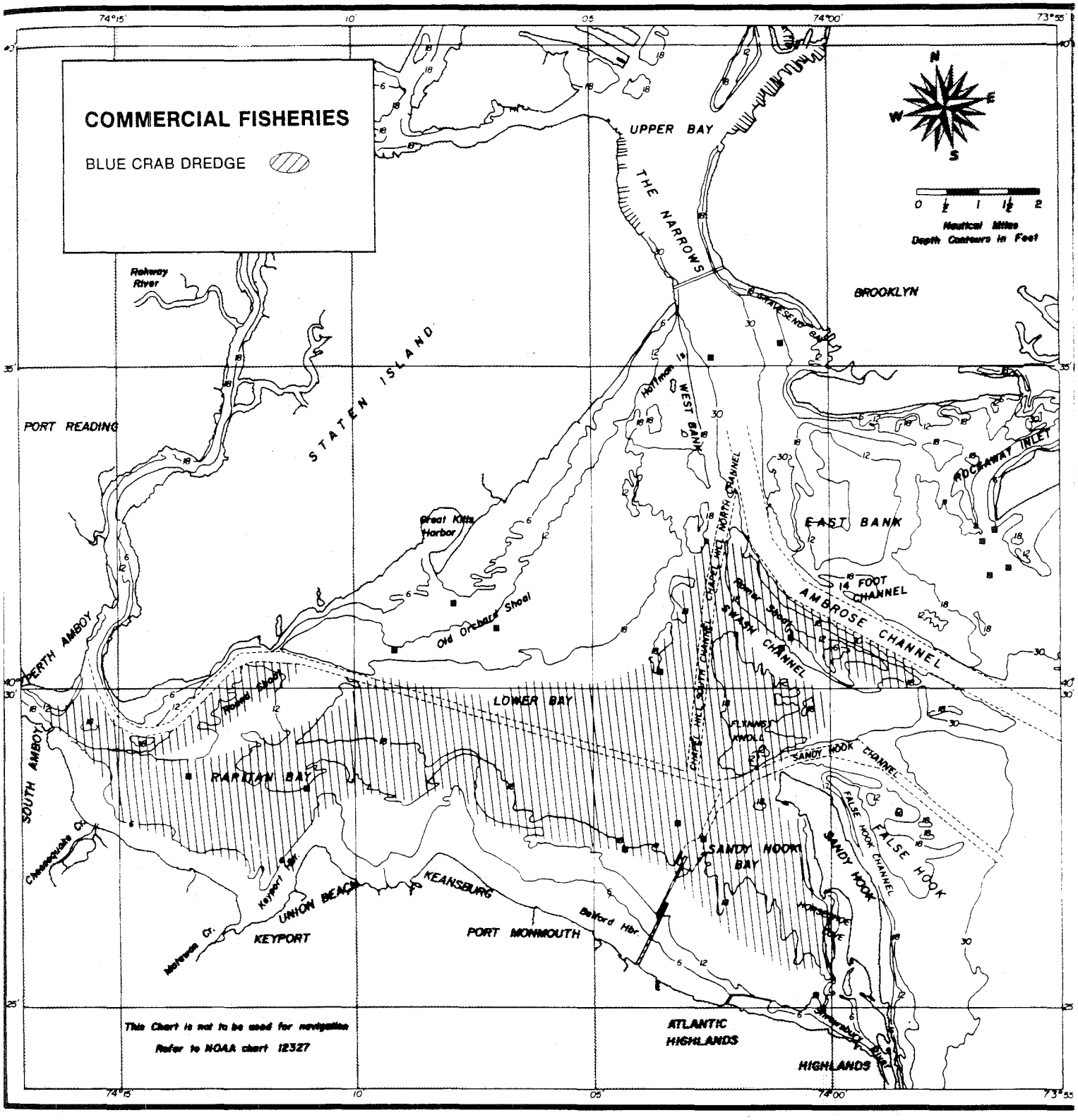
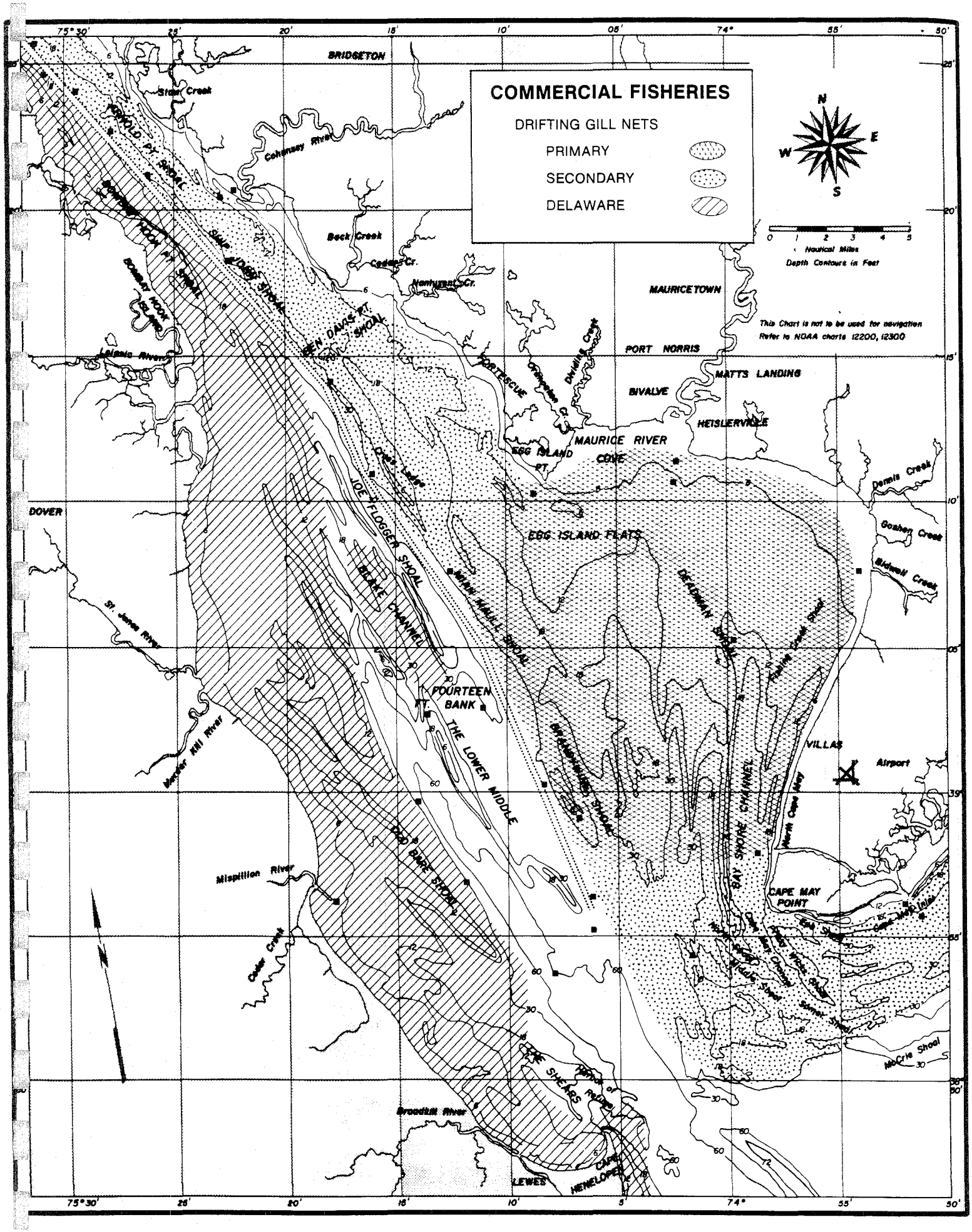
55'
50'

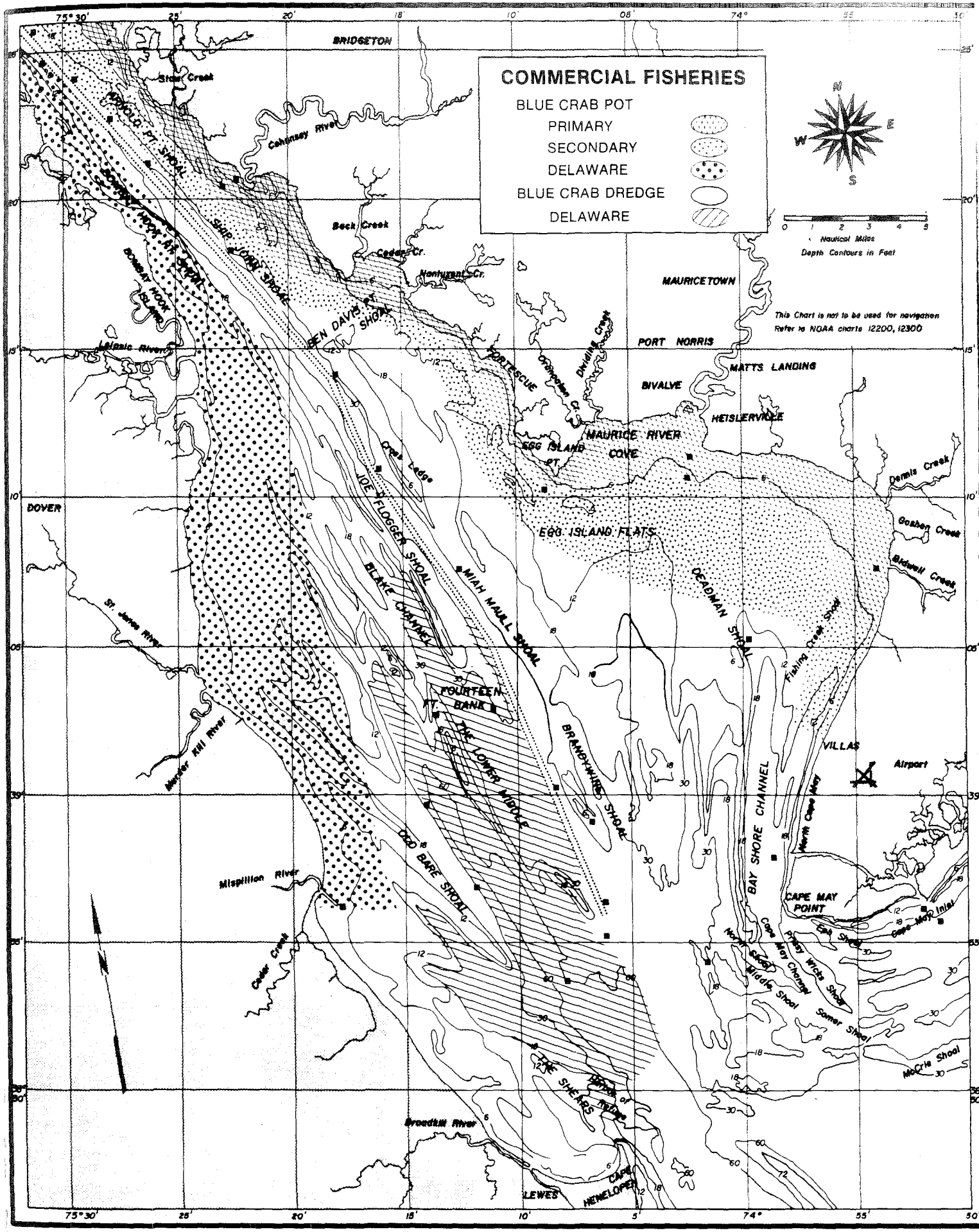

COMMERCIAL FISHERIES
HISTORICAL POUND NET
CURRENT POUND NET
STAKED SHAD NET
FYKE NET
N
W
E
S
0 ½ 1 1½ 2
Nautical Miles
Depth Contours in Feet
UPPER BAY
THE NARROWS
BROOKLYN
Rahway River
STATEN ISLAND
PORT READING
Hoffman Is.
WEST BANK
ROCKAWAY INLET
EAST BANK
Great Kills Harbor
Old Orchard Shoal
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
Romer Shoals
SWASH CHANNEL
14 FOOT CHANNEL
AMBROSE CHANNEL
PERTH AMBOY
SOUTH AMBOY
Round Shoal
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
RARITAN BAY
Keyport Hbr.
UNION BEACH
KEANSBURG
KEYPORT
PORT MONMOUTH
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK CHANNEL
FALSE HOOK
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327
74°15'
10'
05'
74°00'
73°55'
40°
35'
30'
25'

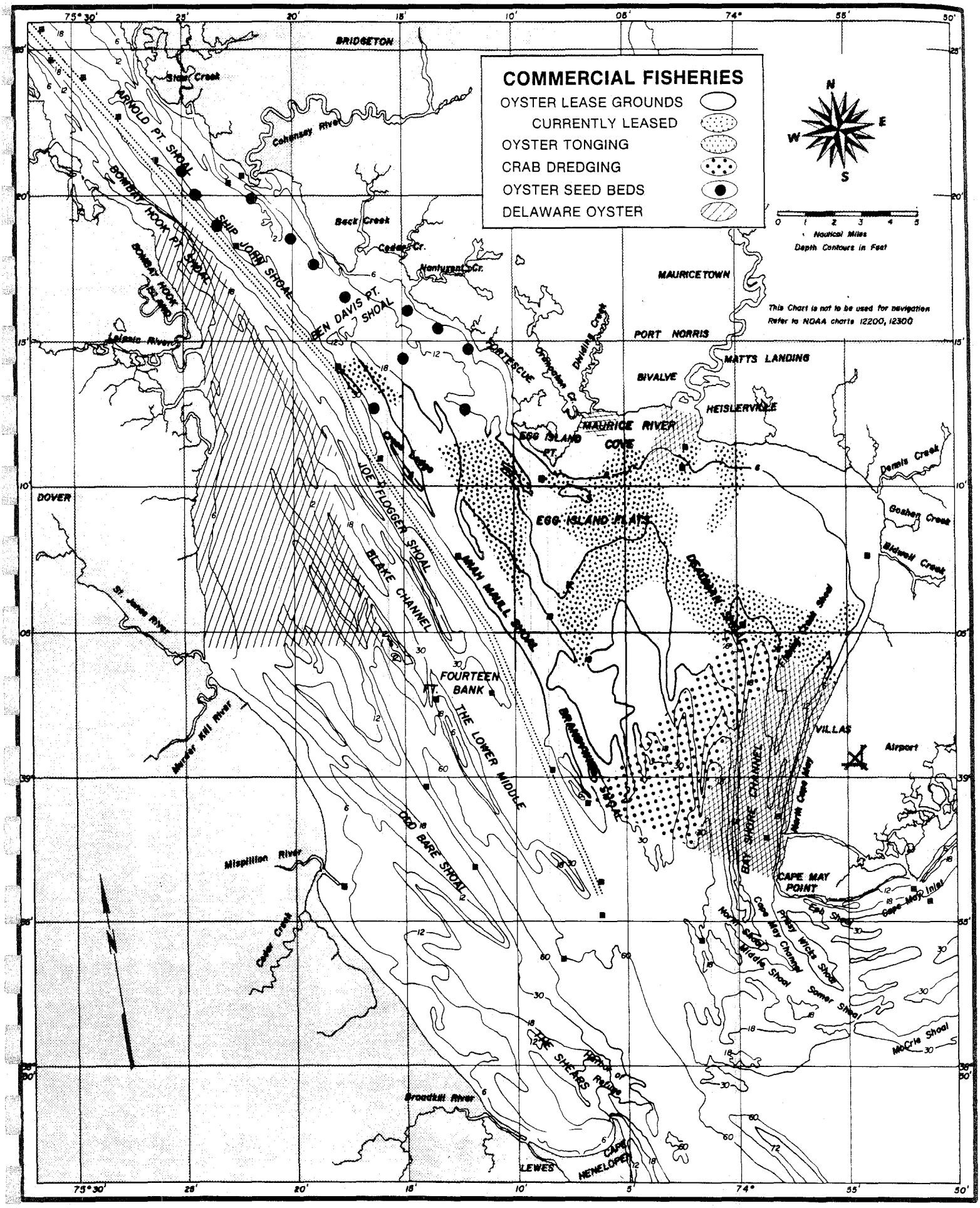

COMMERCIAL FISHERIES
HORSESHOE CRAB DREDGE
EEL POTS
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Rahway River
Great Kills Harbor
Old Orchard Shoal
Hoffman Is.
WEST BANK
EAST BANK
ROCKAWAY INLET
14 FOOT CHANNEL
AMBROSE CHANNEL
Romer Shoal
SWASH CHANNEL
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
FLYNNS KNOLL
SANDY HOOK CHANNEL
FALSE HOOK CHANNEL
FALSE HOOK
SANDY HOOK
LOWER BAY
Round Shoal
PERTH AMBOY
SOUTH AMBOY
RARITAN BAY
UNION BEACH
KEANSBURG
KEYPORT
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327
Nautical Miles
Depth Contours in Feet


COMMERCIAL FISHERIES
LOBSTER
N
E
S
W
0 ½ 1 1½ 2
Nautical Miles
Depth Contours in Feet
ELIZABETH
UPPER BAY
THE NARROWS
BROOKLYN
GRAVESEND BAY
STATEN ISLAND
PORT READING
Hoffman Is.
WEST BANK
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
EAST BANK
ROCKAWAY INLET
Great Kills Harbor
Old Orchard Shoal
Romer Shoal
14 FOOT CHANNEL
AMBROSE CHANNEL
STATEN CHANNEL
PERTH AMBOY
Round Shoal
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
SOUTH AMBOY
RARITAN BAY
Chesequake Cr.
Keyport Hbr.
UNION BEACH
KEANSBURG
KEYPORT
Matawan Cr.
PORT MONMOUTH
Belford Hbr.
SANDY HOOK BAY
FALSE HOOK CHANNEL
FALSE HOOK
SANDY HOOK
HORSESHOE COVE
ATLANTIC HIGHLANDS
Strawberry River
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327
74°15'
10
05
74°00'
73°55'
40°
35'
30'
25'


COMMERCIAL FISHERIES
BLUE CRAB DREDGE
N
S
E
W
0 ½ 1 1½ 2
Nautical Miles
Depth Contours in Feet
UPPER BAY
THE NARROWS
BROOKLYN
Rahway River
STATEN ISLAND
PORT READING
PERTH AMBOY
SOUTH AMBOY
Great Kills Harbor
Old Orchard Shoal
Romer Shoal
WEST BANK
EAST BANK
ROCKAWAY INLET
14 FOOT CHANNEL
AMBROSE CHANNEL
SWASH CHANNEL
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
FALSE HOOK CHANNEL
FALSE HOOK
SANDY HOOK BAY
SANDY HOOK
RARITAN BAY
Chesequake Cr.
Keyport Cr.
Matawan Cr.
UNION BEACH
KEYPORT
KEANSBURG
PORT MONMOUTH
Belford Hbr.
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327


COMMERCIAL FISHERIES
DRIFTING GILL NETS
PRIMARY
SECONDARY
DELAWARE
N
E
S
W
0 1 2 3 4 5
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
Back Creek
Cedar Cr.
Nantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND PT.
EGG ISLAND FLATS
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
St. James River
Murder Kill River
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE HENELOPEN
THE SHEARS
Harbor of Refuge
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAN MAULL SHOAL
FOURTEEN BANK
THE LOWER MIDDLE
OLD BARE SHOAL
BRANDYWINE SHOAL
DEADMAN SHOAL
BAY SHORE CHANNEL
VILLAS
Airport
CAPE MAY POINT
McCrie Shoal
Middle Shoal
Somer Shoal
Cape May Channel
Cape May Inlet
Fishing Creek Shoal
Dividing Creek
Orchestra Cr.
FORTESCUE
BEN DAVIS PT. SHOAL
SHIP JOHN SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
Leipsic River
75°30'
25'
20'
15'
10'
05'
74°
55'
50'


COMMERCIAL FISHERIES
BLUE CRAB POT
PRIMARY
SECONDARY
DELAWARE
BLUE CRAB DREDGE
DELAWARE
N
S
E
W
0 1 2 3 4 5
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK SHOAL
SHIP JOHN SHOAL
BEN DAVIS PT. SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
Bombay Hook Island
Leipsic River
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
Cohansey Cr.
EGG ISLAND PT.
MAURICE RIVER COVE
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
EGG ISLAND FLATS
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
DEADMAN SHOAL
Fishing Creek Shoal
St. Jones River
FOURTEEN FT. BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
VILLAS
Airport
Murder Kill River
DOD BARE SHOAL
BAY SHORE CHANNEL
North Cape May
CAPE MAY POINT
Cape May Inlet
Mispillion River
Cape May Channel
Middle Shoal
Somer Shoal
McCrie Shoal
Cedar Creek
THE SHEARS
Broadkill River
LEWES
CAPE HENLOPEN


COMMERCIAL FISHERIES
OYSTER LEASE GROUNDS
CURRENTLY LEASED
OYSTER TONGING
CRAB DREDGING
OYSTER SEED BEDS
DELAWARE OYSTER
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
BEN DAVIS PT. SHOAL
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
DEADMAN SHOAL
St. Jones River
FOURTEEN FT. BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
VILLAS
Airport
Murder Kill River
BAY SHORE CHANNEL
North Cape May
CAPE MAY POINT
Cape May Inlet
Mispillion River
OLD BARE SHOAL
Cedar Creek
Cape May Channel
Middle Shoal
Somer Shoal
McCrie Shoal
THE SHEARS
Harbor of Refuge
Broadkill River
LEWES
CAPE HENELOPEN

INTRODUCTION

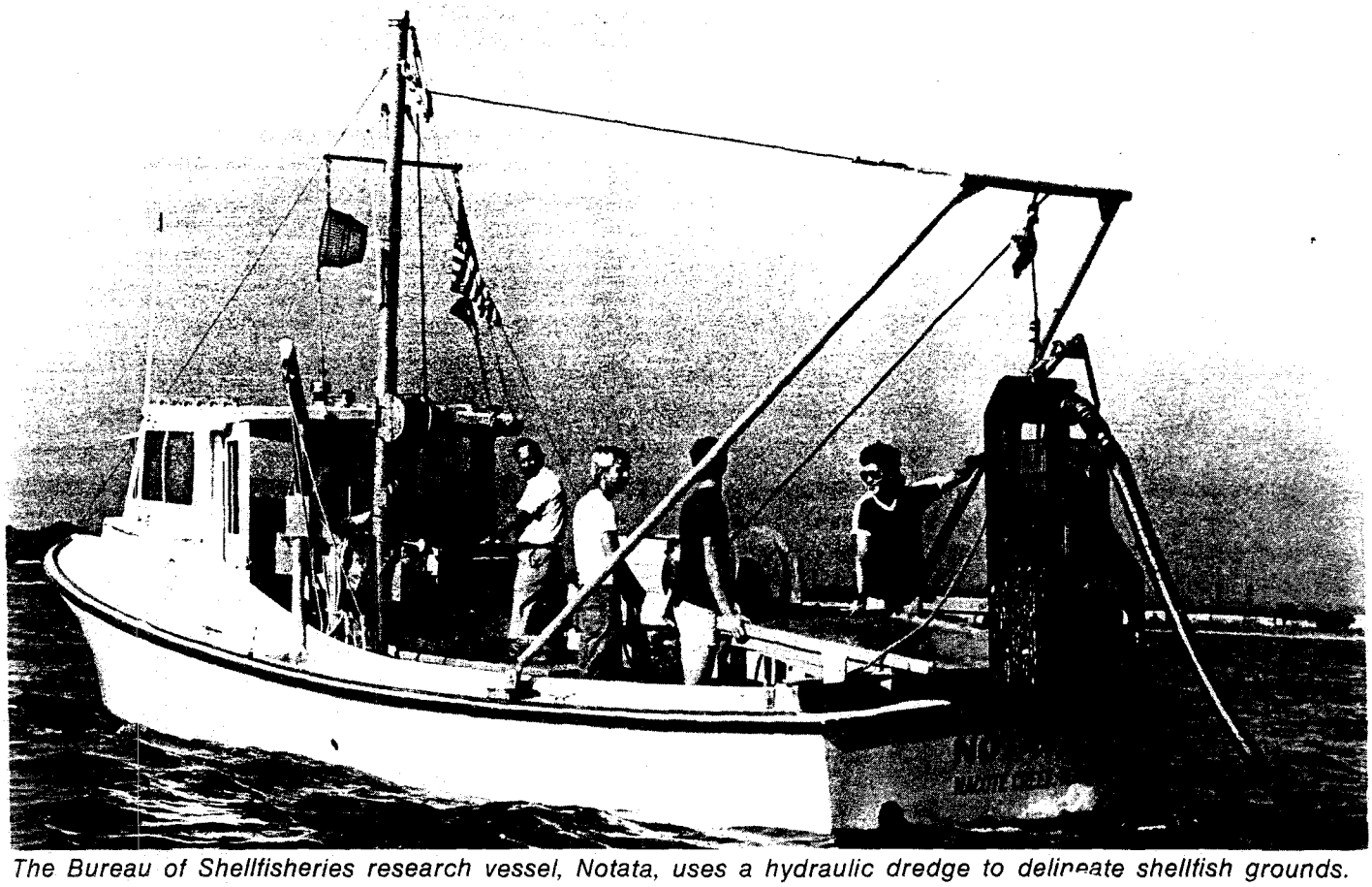
Since the harvest of shellfish has been prohibited in Raritan Bay and Sandy Hook Bay in 1964, it was not possible to delineate current fishing areas through the process of fisherman interview. Instead, the Bureau of Shellfisheries initiated a shellfish inventory of these areas in 1983.

The primary purpose for conducting an inventory was to provide current information on the distribution and abundance of the various shellfish species. The data collected forms the basis on which management programs are developed. Before a resource can be effectively managed information on resource abundance, location and its well-being must be known.

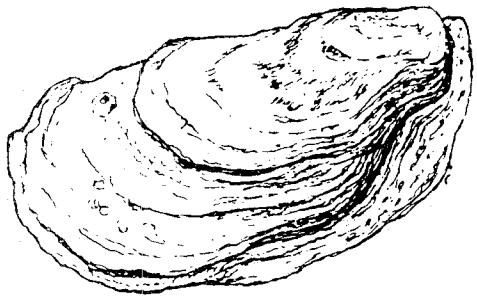
The inventory data also provide an additional benefit when conducting assessments of coastal development projects. Activities such as dredging, spoil disposal, pipeline or cable routing, discharge of sewage effluent, marina construction as well as residential and commercial development along the coast have the potential to adversely affect the shellfish resources by contamination or destruction of shellfish populations, as well as the destruction of its habitat. The information derived from the inventory program is extremely useful in the development review process and serves to protect important shellfish beds from the negative impacts associated with these activities.

The shellfish inventory program was designed primarily to sample hard clam populations because the most current historical information indicated that this species was the most abundant and widely distributed. The sampling technique employed was also capable of collecting other shellfish species such as oysters, soft clams, surf clams and blue mussels.

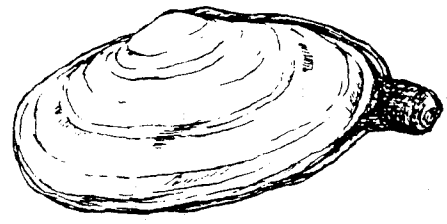
The inventory of Raritan Bay and Sandy Hook Bay has been the first systematic shellfish survey conducted of New Jersey estauries in over twenty years. The Bureau of Shellfisheries is continuing this program throughout all of the state's estauries.



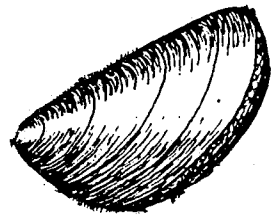
The Bureau of Shellfisheries research vessel, Notata, uses a hydraulic dredge to delineate shellfish grounds.



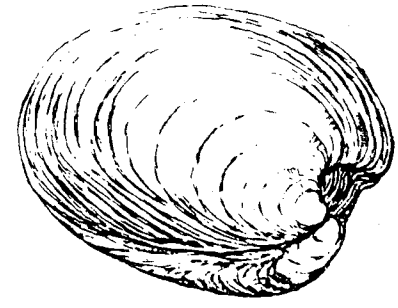
Oyster



Soft Clam



Blue Mussel



Hard Clam

METHODS

The sampling device was a miniature hydraulic clam dredge with a knife width of one foot that was towed from a research vessel. Water is pumped from a pump onboard the vessel down to the dredge manifold which has a series of nozzles. Water pumped through the downward directed nozzles loosens the sediment ahead of the knife while the rear facing nozzles wash sediment from the basket. The dredge basket is designed to retain all hard clams 1-3/16 inches or greater in length.

Sampling stations were established at regular intervals throughout Raritan Bay and Sandy Hook Bay. Over two hundred stations were sampled throughout the course of this program. Two tows of approximately 100 feet each were sampled at each station and the density of hard clams was determined by averaging the catch of the two tows. For the purpose of delineating the general abundance pattern of the hard clam resource four classifications of abundance were established-none, occurrence, moderate density and high density. Adjacent stations within the same density classification were grouped together thus giving the general abundance distributions.

Quantitative results for other shellfish species collected (oysters, soft clams, surf clams, mussels) were not deemed as useful because the sampling gear was not specifically designed for their capture. However, the information collected on these other species was sufficient to permit delineation of the significant beds.

HARVEST METHODS

Soft clams are harvested by a method known as "hoe and net" which is rather unique to New Jersey. All harvesting is conducted in shoal areas with the harvester in the water. The harvester works the hoe up and down creating a depression in the bottom. As the clams are dislodged from the sediment they become buoyant and are scooped up with the net. No mechanical gear is allowed for harvest.

Hard clams are harvested by a variety of methods. However, laws in New Jersey restrict the harvest to hand employed gear only. No mechanical harvest or dredging is permitted. Three commonly used harvest methods in New Jersey include treading, tonging and raking. In treading, the clammer, proceeding backwards, shuffles his feet through the mud. When the hard edge of a clam is encountered, the clammer takes a breath, ducks under and pulls the clam out of the bottom. The equipment required for treading includes an intertube and basket to hold clams and thin rubber boots and gloves to protect feet and hands.

Tonging is done from an anchored boat. The tong handles are opened and closed, forcing the tong's teeth to scrape the upper two or three inches of substrate and pick up loosened clams. The area around the entire boat is worked before the anchor is moved.

In raking, the third method, the boat is allowed to drift while the rake is dragged across the bottom. The handle is worked up and down by hand to insure a smooth and continuous drag. The long teeth of the rake lift the clams out of the bottom and the mesh basket at the back of the rake holds the clams until the rake is lifted into the boat.

FISHERY

All of Raritan Bay and Sandy Hook Bay is moderately polluted and is classified as condemned for the direct market harvest of shellfish. Consequently, there is no recreational fishery and, prior to 1983, only a small commercial soft clam fishery existed. Following the shellfish inventory of 1983 a commercial fishery for hard clams was initiated under closely controlled conditions. At present, the only shellfish species for which a commercial fishery exists are hard and soft clams.

Because the water of these areas is moderately polluted, the shellfish must be cleansed prior to consumption. When polluted clams are placed in a clean water environment they have the ability to flush bacterial and vial contaminants out of their digestive system through a natural cleansing mechanism. This cleansing process is accomplished through three State supervised programs known as soft clam depuration, hard clam depuration and hard clam relay.

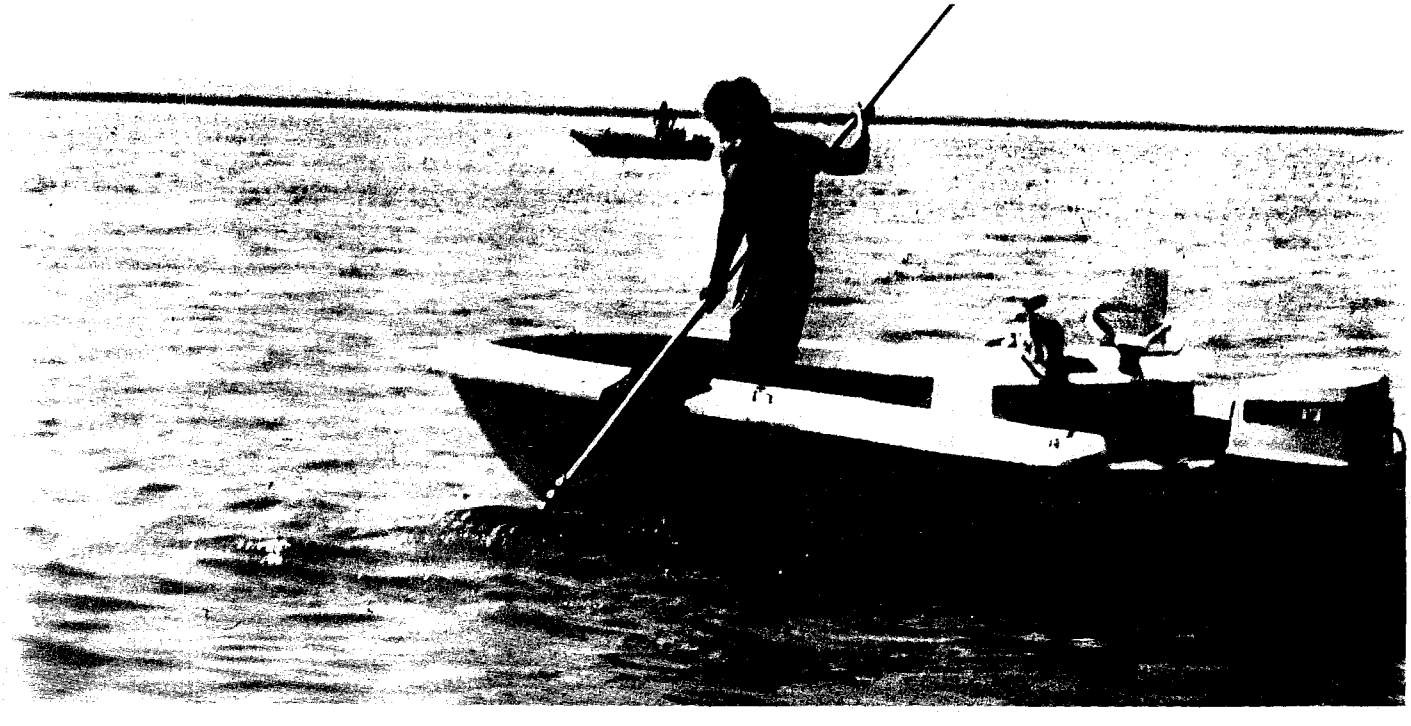
Soft clam and hard clam depuration are similar processes with slightly different operating requirements because of the physiological differences between the two species. Both operations start with the harvest of the clams from moderately polluted areas. The clams are then transported to a depuration plant. Once in the plant the clams are placed in tanks and flooded with purified water for 48 hours. Through their natural feeding activity they eliminate harmful contaminants from their system and are acceptable for marketing and consumption.

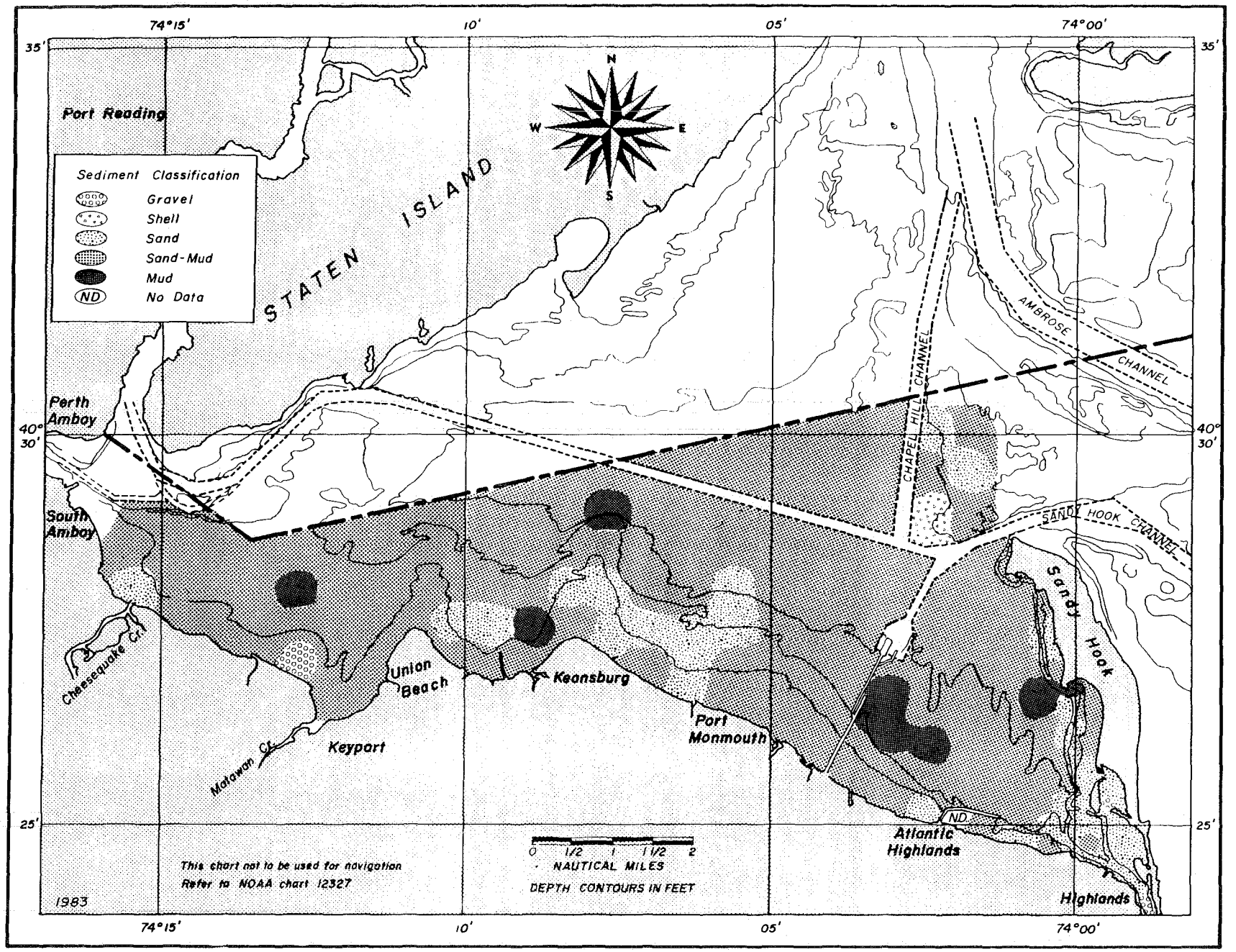
The hard clam relay also begins with the harvest of clams from moderately polluted waters. The clams are then transplanted to "relay lots", leased from the State by shellfishermen, which are in areas of good water quality. Following a thirty day cleansing period the clams are tested and available for harvesting and subsequent marketing.

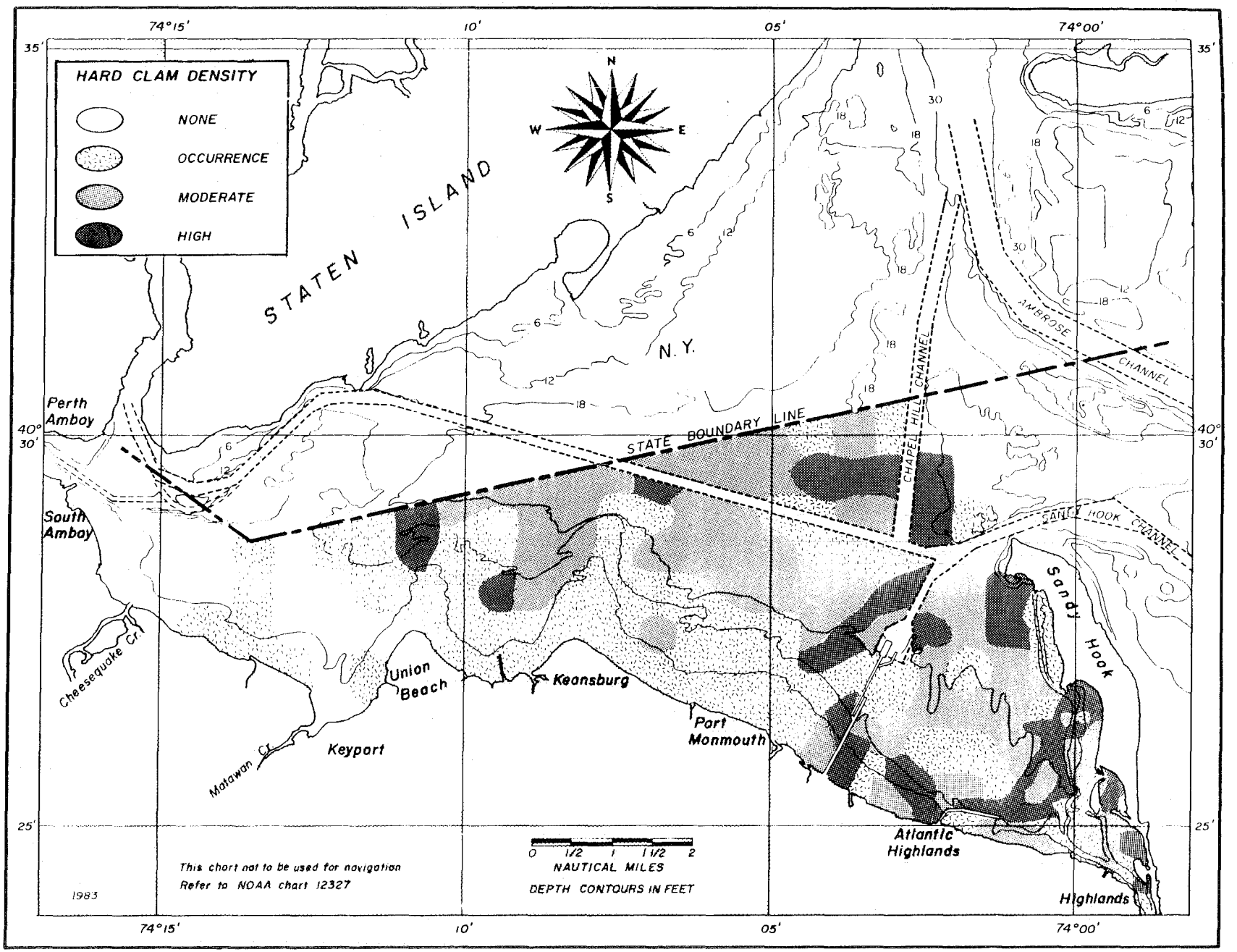
There are no conservation associated seasonal restrictions on the harvest of hard or soft clams. For the most part they are harvested year round subject to weather and market conditions.

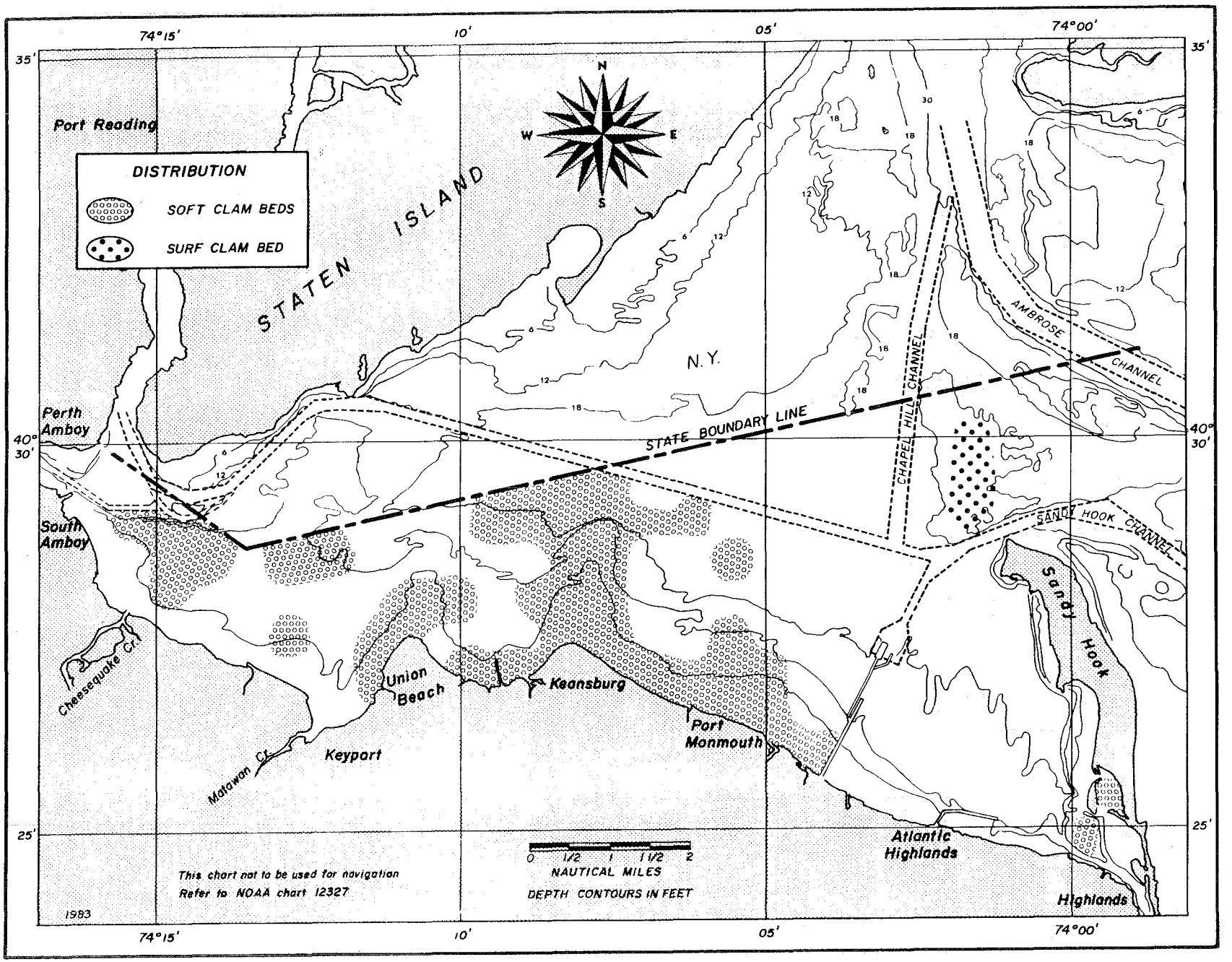
The soft clam depuration program is responsible for practically all of the commercial landings of soft clams in New Jersey. The primary reason is that the significant soft clam resource is located in northern Monmouth County waters all of which are closed to direct market harvest of shellfish.

The hard clam relay and depuration program accounted for 25 percent of the total commercial hard clam landings in New Jersey in 1984-86. The remainder of the landings were from waters of the State where harvesting for direct marketing is approved. Although there is increasing interest and activity in the aquaculture of hard clams in New Jersey the majority of the landings come from natural stock.




74°15'
10'
05'
74°00'
35'
40° 30'
25'
N
S
E
W
Port Reading
STATEN ISLAND
Sediment Classification
Gravel
Shell
Sand
Sand-Mud
Mud
ND
No Data
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Union Beach
Keansburg
Keyport
Matawan Cr.
Port Monmouth
Sandy Hook
Atlantic Highlands
Highlands
ND
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET
This chart not to be used for navigation
Refer to NOAA chart 12327
1983


HARD CLAM DENSITY
NONE
OCCURRENCE
MODERATE
HIGH
74°15'
10'
05'
74°00'
35'
40° 30'
25'
N
S
E
W
STATEN ISLAND
N.Y.
STATE BOUNDARY LINE
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Matawan Cr.
Union Beach
Keansburg
Keyport
Port Monmouth
Sandy Hook
Atlantic Highlands
Highlands
This chart not to be used for navigation
Refer to NOAA chart 12327
1983
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET


74°15'
10'
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74°00'
35'
40° 30'
25'
N
S
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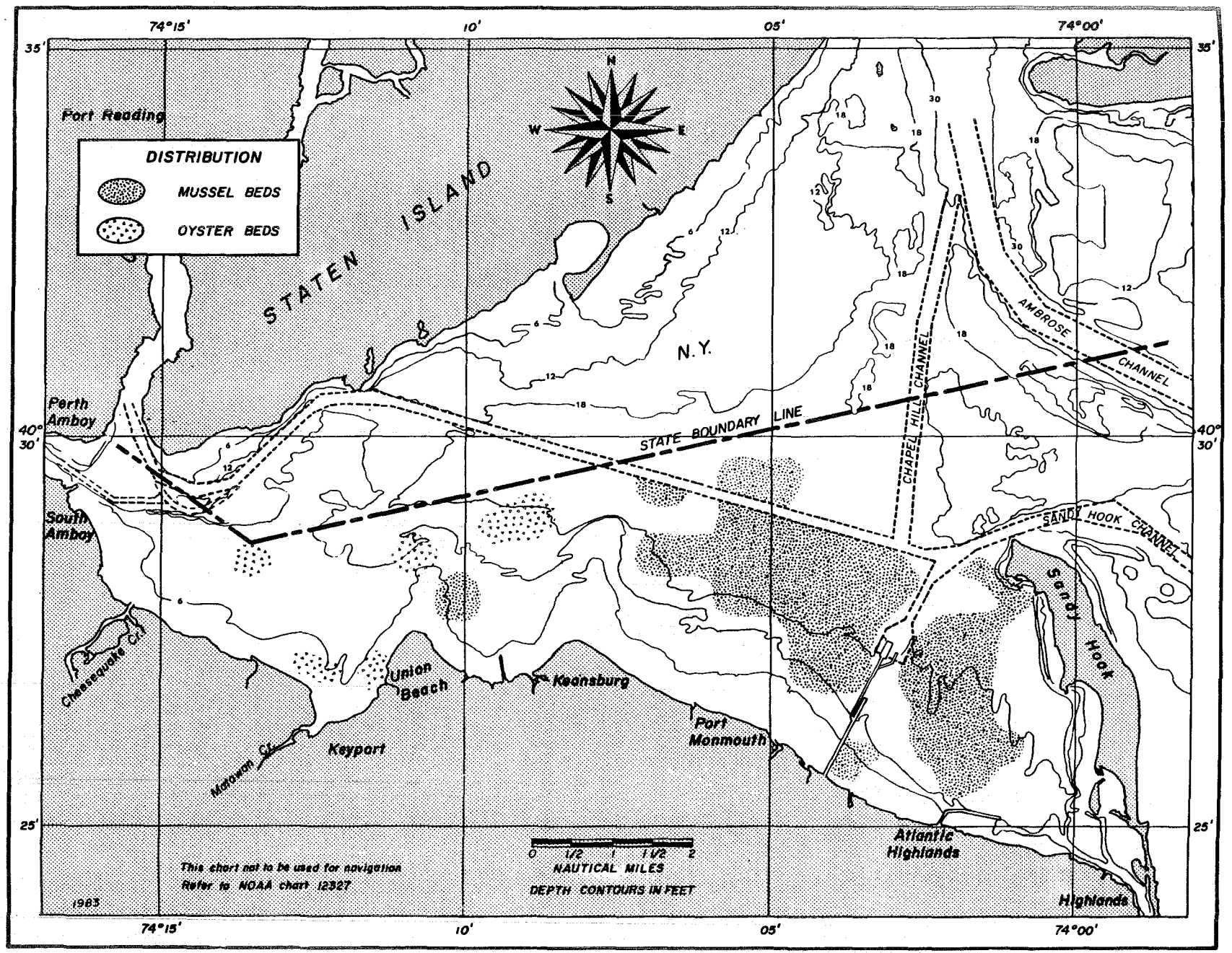
W
Port Reading
DISTRIBUTION
SOFT CLAM BEDS
SURF CLAM BED
STATEN ISLAND
N.Y.
STATE BOUNDARY LINE
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Union Beach
Keansburg
Port Monmouth
Sandy Hook
Matawan Cr.
Keyport
Atlantic Highlands
Highlands
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET
This chart not to be used for navigation
Refer to NOAA chart 12327
1983


74°15'
10'
05'
74°00'
35'
40° 30'
25'
DISTRIBUTION
MUSSEL BEDS
OYSTER BEDS
N
W
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S
Port Reading
STATEN ISLAND
N.Y.
Perth Amboy
South Amboy
STATE BOUNDARY LINE
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
SANDY HOOK CHANNEL
Sandy Hook
Cheesequake Cr.
Union Beach
Keansburg
Port Monmouth
Matawan Cr.
Keyport
Atlantic Highlands
Highlands
This chart not to be used for navigation
Refer to NOAA chart 12327
1983
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET

REFERENCE NO. 23

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO.:	DATE:	TIME:
02-9104-08	7/23/91	1115

DISTRIBUTION: Newark Housing Authority Property

BETWEEN:	OF:	PHONE:
Jim Sleigh	NJ Bureau of Safe Drinking Water	609 292-5550

AND: David Florin (NUS)

DISCUSSION:

Contacted NJ Bureau of Safe Drinking Water to obtain information on surface water intakes in the vicinity of Newark. Mr Sleigh informed me that there are no potable intakes in the Newark Bay, Arthur Kill, Kill Van Kull or New York Harbor. Mr Sleigh informed me that the NJ American water co. has a potable intake on the Passaic river in Patterson at Little Fall and that the Passaic Valley Water Co. has an intake on the Passaic above Patterson. Both of these intakes are well above the tidal area of the river. On the Hackensack River the Hackensack Water Co. has an intake near Ordwell Reservoir - this intake is also above mixing zone of tidal waters.

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE NO. 24

NUS CORPORATION — TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-9101-09	2/5/91	1513

DISTRIBUTION:

Kearny Drum Dump #1

BETWEEN:	OF:	PHONE:
Joseph Pane Senior Supervisor	Fish & Wildlife Section Region 2 Dept of Env Conservation LIC, NY	(718) 482-4922

AND: John V Rieckhoff (NUS)

DISCUSSION:

Mr Pane related to me that Pralls Island, Shooters Island and Island of Meadows are classified by the state of New York as 'significant habitat' for nesting by colonial birds. These birds utilize the trees and shrubbery for their nests. He listed herons (great blue heron), egrets, cormorants and gulls as typical inhabitants found on each island.

ACTION ITEMS:

REFERENCE NO. 25

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-9006-42	2-8-91	0950

DISTRIBUTION:

Chemical Waste Disposal

BETWEEN:	OF:	PHONE:
J. Roberts	NYSDEC Region 2 Marine Resources Unit	(718) 482-4922

AND:

T. Mulder

DISCUSSION:

Called to inquire after fisheries uses of East River and NY Harbor.

DEC advises against eating shellfish from NY Harbor and East River. No commercial fishing occurs in area. Recreational fishing is common; however, in some areas DEC would advise against eating bottom fish - particularly those areas w/ suspected high levels of contaminants in sediments.

ACTION ITEMS:

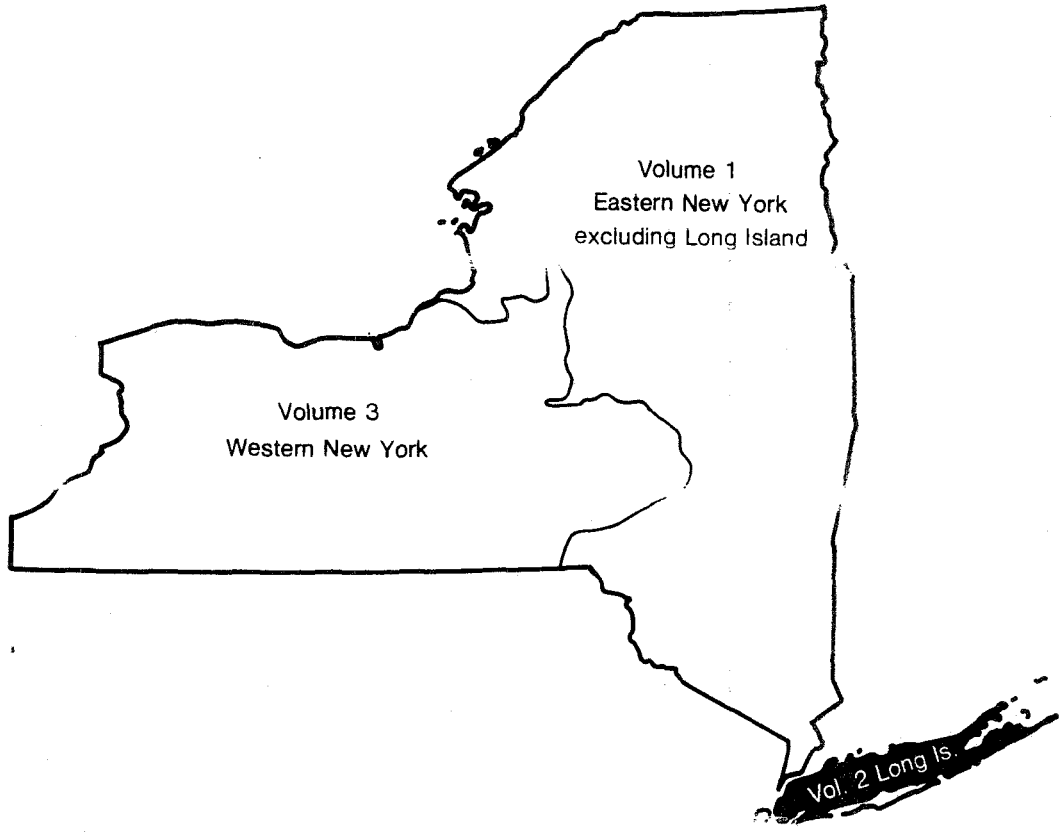
NUS 067 REVISED 0685

REFERENCE NO. 26

Water Resources Data New York

Water Year 1989

Volume 2. Long Island



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT NY-89-2
Prepared in cooperation with the State of New York
and with other agencies

404059073520702. Local number, K 1194.4
LOCATION.--Lat 40°40'59", long 73°52'07", Hydrologic Unit 02030202, at east side of Nichols Avenue, 54 ft north of Atlantic Avenue, New Lots. Owner: City of New York.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Driven steel observation well, diameter 2 in., depth 55 ft, screened 52 to 55 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 32.1 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.34 ft below land-surface datum.
REMARKS.--Replaced well K 1194.3 in July 1970.
PERIOD OF RECORD.--November 1970 to current year. Unpublished records from November 1970 to September 1987 are available in files of Long Island Subdistrict office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.76 ft NGVD, April 4, 1978; lowest measured, -0.83 ft NGVD, November 2, 1970.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	9.12	DEC 9	9.23	FEB 28	9.06	APR 27	9.20	JUN 21	9.89	AUG 30	10.34
NOV 16	9.07	JAN 17	9.21	MAR 29	8.97	MAY 22	9.37	JUL 24	10.18	SEP 28	10.30

403939073542901. Local number, K 1265.1
LOCATION.--Lat 40°39'39", long 73°54'29", Hydrologic Unit 02030202, at west side of Thatford Avenue, 30 ft south of Riverdale Avenue, Brownsville. Owner: City of New York.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Driven steel observation well, diameter 2 in., depth 44 ft, screened 42 to 43 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 23.3 ft National Geodetic Vertical Datum of 1929. Measuring point: Hole in top of plug, 0.01 ft above land-surface datum.
PERIOD OF RECORD.--April 1933 to current year. Unpublished records for 1933-35, 1941-78 are available in files of Long Island Subdistrict office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.99 ft NGVD, September 23, 1980; lowest measured, -11.55 ft NGVD, August 22, 1942.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	7.99	DEC 9	8.56	FEB 28	8.10	APR 27	8.05	JUN 21	8.39	JUL 24	8.48
NOV 16	8.65	JAN 17	8.36	MAR 29	8.09	MAY 22	8.18				

404236073574601. Local number, K 1301.1
LOCATION.--Lat 40°42'35", long 73°57'48", Hydrologic Unit 02030201, at Williamsburgh Savings Bank, in basement, 84 ft north of Broadway and 178 ft west of Driggs Avenue, Williamsburgh. Owner: Williamsburg Savings Bank.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled unused steel well, diameter 8 in. to 6 in., depth 92 ft, screened 72 to 92 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 52.5 ft National Geodetic Vertical Datum of 1929. Measuring point: Hole in top of 4-in. steel plug, 9.03 ft below land-surface datum.
PERIOD OF RECORD.--January 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.08 ft NGVD, October 2, 1978; lowest measured, -7.72 ft NGVD, January 19, 1961.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	4.50	DEC 9	4.46	FEB 28	1.24	APR 28	4.15	JUN 22	4.50	AUG 31	4.74
NOV 16	4.39	JAN 17	2.37	MAR 29	0.54	MAY 22	4.31	JUL 25	4.68	SEP 29	2.44

404155073552108. Local number, K 3245.1
LOCATION.--Lat 40°41'55", long 73°55'22", Hydrologic Unit 02030201, at west side of Wilson Avenue, 54 ft north of Stanhope Street, Bushwick. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Augered steel observation well, diameter 2 in., depth 24 ft, screened 21 to 24 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 24.5 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.05 ft below land-surface datum.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.52 ft NGVD, September 23, 1980; lowest measured, 5.80 ft NGVD, June 1, 1988.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	6.89	DEC 9	7.35	FEB 28	7.22	APR 28	6.99	JUN 22	7.68	AUG 31	8.30
NOV 16	7.11	JAN 17	7.26	MAR 29	6.70	MAY 22	7.20	JUL 25	7.95	SEP 29	8.32

403902073552801. Local number, K 3246.1
LOCATION.--Lat 40°39'02", long 73°55'28", Hydrologic Unit 02030202, at north side of Snyder Avenue, 86 ft west of East 56th Street, East Flatbush. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 30 ft, screened 27 to 30 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 25.7 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.04 ft below land-surface datum.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.62 ft NGVD, June 27, 1984; lowest measured, 7.27 ft NGVD, May 5, 1988.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	8.18	DEC 9	8.84	FEB 28	9.05	APR 27	8.36	JUN 21	9.00	AUG 30	8.98
NOV 16	8.48	JAN 17	9.01	MAR 29	8.30	MAY 22	8.54	JUL 24	9.16	SEP 28	8.79

403623074002101. Local number, K 3249.1
LOCATION.--Lat 40°36'23", long 74°00'23", Hydrologic Unit 02030202, at east side of Bay 16th Street, 42 ft north of Benson Avenue, Bath Beach. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 34 ft, screened 31 to 34 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 31.0 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.02 ft below land-surface datum.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.94 ft NGVD, September 29, 1989; lowest measured, 3.16 ft NGVD, May 21, 1985.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	3.81	DEC 9	4.00	FEB 28	4.43	APR 28	3.79	JUN 22	4.18	AUG 31	4.44
NOV 16	3.82	JAN 17	4.79	MAR 29	3.48	MAY 22	3.87	JUL 24	4.27	SEP 29	4.94

403520073575501. Local number, K 3251.1
LOCATION.--Lat 40°35'20", long 73°57'55", Hydrologic Unit 02030202, at north side of Avenue Y, 115 ft west of East 6th Street, Brighton Beach. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 23 ft, screened 20 to 23 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 9.5 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.06 below land-surface datum.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.36 ft NGVD, June 26, 1984, and June 21, 1989; lowest measured, 2.58 ft NGVD, March 25, 1982.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	2.82	DEC 9	2.93	FEB 28	2.71	APR 27	2.76	JUN 21	3.36	JUL 24	3.34
NOV 16	2.89	JAN 17	2.65	MAR 29	2.78	MAY 22	3.21				

403702073555808. Local number, K 3252.1
LOCATION.--Lat 40°37'04", long 73°55'59", Hydrologic Unit 02030202, at east side of Hendrickson Street, 46 ft north of Quentin Avenue, Flatlands. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 30 ft, screened 27 to 30 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 12.7 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.02 ft below land-surface datum.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.68 ft NGVD, February 11, 1981; lowest measured, 0.68 ft NGVD, October 6, 1982.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	1.38	DEC 9	1.58	FEB 28	1.28	APR 27	1.50	JUN 21	2.13	AUG 30	1.90
NOV 16	1.41	JAN 17	1.26	MAR 29	1.31	MAY 22	1.94	JUL 24	1.93	SEP 28	1.87

403728073590708. Local number, K 3253.2
LOCATION.--Lat 40°37'28", long 73°59'07", Hydrologic Unit 02030202, at north side of 56th Street, 55 ft west of 18th Avenue, Borough Park. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 55 ft, screened 52 to 55 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 46.5 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.03 ft below land-surface datum.
REMARKS.--Replaced well K 3253.1 in April 1981.
PERIOD OF RECORD.--April 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.07 ft NGVD, October 3, 1984; lowest measured, 4.33 ft NGVD, December 21, 1982.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	5.17	DEC 9	5.24	FEB 28	5.01	APR 28	5.04	JUN 22	5.80	AUG 31	5.88
NOV 16	5.07	JAN 17	4.97	MAR 29	4.80	MAY 22	5.28	JUL 24	5.86	SEP 29	5.83

403737073564908. Local number, K 3254.1
LOCATION.--Lat 40°37'36", long 73°56'46", Hydrologic Unit 02030202, at east side of East 31st Street, 46 ft south of Avenue J, Flatbush. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 29 ft, screened 26 to 29 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 26.9 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.09 ft below land-surface datum.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.91 ft NGVD, June 27, 1984; lowest measured, 4.69 ft NGVD, June 25, 1981.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	5.43	DEC 9	5.66	FEB 28	5.17	APR 27	5.48	MAY 22	5.82	JUN 21	6.29
NOV 16	5.38	JAN 17	5.22	MAR 29	5.20						

404036073584008. Local number, K 3261.1
LOCATION.--Lat 40°40'37", long 73°58'41", Hydrologic Unit 02030201, at east side of Lincoln Place, 122 ft north of 6th Avenue, north well, Park Slope. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 45 ft, screened 42 to 45 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 64.8 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.01 ft above land-surface datum.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 31.86 ft NGVD, March 16, 1984; lowest measured, 24.03 ft NGVD, March 29, 1989.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	25.04	JAN 17	24.42	MAR 29	24.03	APR 28	24.10	JUN 22	25.06	AUG 31	26.60
NOV 16	24.83	FEB 28	24.29	APR 11	24.04	MAY 22	24.29	JUL 25	25.86	SEP 29	26.89
DEC 9	24.65										

403635073580108. Local number, K 3274.1
LOCATION.--Lat 40°36'35", long 73°58'01", Hydrologic Unit 02030202, at west side of East 7th Street, 49 ft north of Avenue P, Gravesend. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 34 ft, screened 31 to 34 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 27.0 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel casing, 0.28 ft above land-surface datum.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.88 ft NGVD, October 3, 1984; lowest measured, 3.53 ft NGVD, October 6, 1982.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	4.60	DEC 9	4.71	FEB 28	4.27	APR 27	4.53	JUN 21	5.31	AUG 30	5.20
NOV 16	4.72	JAN 17	4.83	MAR 29	4.37	MAY 22	4.90	JUL 24	5.82	SEP 29	5.19

403737074011701. Local number, K 3275.1
LOCATION.--Lat 40°37'37", long 74°01'15", Hydrologic Unit 02030202, at east side of 6th Avenue, 19 ft south of 76th Street, Bay Ridge. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 76 ft, screened 73 to 76 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface datum is 67.2 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.15 ft below land-surface datum.
PERIOD OF RECORD.--June 1981 to current year. Unpublished records from June 1981 to September 1982 are available in files of Long Island Subdistrict office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.65 ft NGVD, January 5, 1984; lowest measured, 3.20 ft NGVD, April 28, 1989.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	3.76	DEC 9	3.69	FEB 28	3.67	APR 28	3.20	JUN 22	4.27	AUG 31	4.44
NOV 16	3.49	JAN 17	4.25	MAR 29	3.29	MAY 22	3.61	JUL 24	4.47	SEP 29	4.58

404135073584001. Local number, K 3276.1
LOCATION.--Lat 40°41'34", long 73°58'41", Hydrologic Unit 02030201, at east side of St. Edwards Street, 75 ft south of Myrtle Avenue, Fort Greene. Owner: United States Geological Survey.
AQUIFER.--Upper Glacial (water-table).
WELL CHARACTERISTICS.--Drilled steel observation well, diameter 2 in., depth 54 ft, screened 51 to 54 ft.
INSTRUMENTATION.--Measurement with chalked tape by USGS personnel.
DATUM.--Land-surface Datum is 38.0 ft National Geodetic Vertical Datum of 1929. Measuring point: Top of 2-in. steel coupling, 0.02 ft below land-surface datum.
PERIOD OF RECORD.--April 1981 to current year. Unpublished records from April 1981 to September 1982 are available in files of Long Island Subdistrict office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.71 ft NGVD, January 5, 1984; lowest measured, 4.30 ft NGVD, October 1, 1985.

WATER LEVEL, IN FEET IN REFERENCE TO NGVD, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	5.16	DEC 9	5.61	FEB 28	5.50	APR 28	5.23	JUN 22	5.90	AUG 31	5.83
NOV 16	5.01	JAN 17	5.62	MAR 29	5.05	MAY 22	5.48	JUL 25	5.97	SEP 29	5.84

REFERENCE NO. 27

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO.:	DATE:	TIME:
02-9104-08	7/23/91	1405

DISTRIBUTION:
Newark Housing Authority Property

BETWEEN:	OF:	PHONE:
Bill Anders, Fishery Biologist	NJDEP Div. of Fish, Game, Shellfisheries	609 748-2020

AND:
David Florin (NUS)

DISCUSSION:
Contacted Div. of Fish, Game, Shellfisheries to obtain information on the fisheries of the Newark Bay and surrounding waterways. Mr Anders informed me that at present there is a ban on the sale and consumption of Striped Bass, Blue Crab, and American Eel caught in Newark Bay. This ban extends to all tributaries of Newark Bay such as the Kill Van Kull, Arthur Kill. The entire tidal portions of the Passaic and Hackensack Rivers have a ban on the sale and consumption of all fish species. The ban is due to high levels of PCB's and dioxin found in the fish. Mr Anders stated that Newark Bay is used as a recreational fishery, but no commercial fishing. All waters in the Newark Bay complex are brackish except for the Passaic which is somewhat fresher.

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE NO. 28

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO.:	DATE:	TIME:
02-9104-08	7/25/91	1123

DISTRIBUTION: Newark Housing Authority Property

BETWEEN:	OF:	PHONE:
Bill Anders, Fishery Biologist	NJDEP Div. of Fish, Game, Shellfisheries	(609) 748-2020

AND: David Florin (NUS)

DISCUSSION:

Contacted Div of Fish, Game, Shellfisheries to obtain information on the upper and lower NewYork Bay. Mr Anders informed me that there is some recreational fishing that takes place on the water body but that NewJersey has an advisory (part of the "Hudson River Advisory" that states very limited consumption of white bass, striped bass, blue fish should take place. A total ban on American eel is in place for fish caught in this salin body of water.

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE NO. 29

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9002-27	7-10-92	1330

DISTRIBUTION:

Rikers Island

BETWEEN:	OF:	PHONE:
Mr. Fedrick Joseph	Engineer of Queen's water Dept.	(718) 658-1212

AND:

E. A. Calabrese (NUS)

DISCUSSION:

Mr. Joseph told me that nobody is on private wells. The entire city derives its water supply from upstate reservoirs. No surface water intakes 5 miles downstream or in general area of surface water intakes. Usages of Rikers Island...

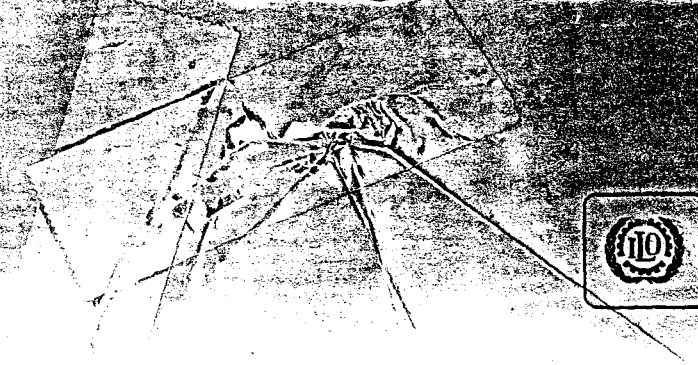
ACTION ITEMS:

REFERENCE NO. 30

INTERNATIONAL LABOUR OFFICE GENEVA

ENCYCLOPAEDIA OF OCCUPATIONAL HEALTH AND SAFETY

VOLUME 2 L-Z



"Caprolactam and its toxicological effects" (Le caprolactam et ses effets toxicologiques). Akbulut, T. *Arhiv za higijenu rada i toksikologiju* (Zagreb), 1979, 30/suppl. (453-455). 6 ref. (In French)

"ε-Caprolactam" (64-65). 9 ref. *Documentation of the Threshold Limit Values. Fourth edition* (Cincinnati, American Conference of Governmental Industrial Hygienists, 1980).

CIS 78-543 "Skin disorders in workers employed in polyamide fibre (vidlon) production" (Uvrědanija na kŏata sred rabotnicite, zaeti v proizvodstvoto na sintetični vlakna vidlon). Čurolinov, P.; Stamova, N.; Ginčeva, N. *Letopisi na higienno-epidemiologičnata slŭzba* (Sofia), Oct. 1977, 10/1 (38-42). 12 ref. (In Bulgarian)

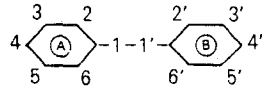
"Caprolactam and nylon 6" (115-130). 48 ref. *IARC monographs on the evaluation of the carcinogenic risk of chemicals to humans.* Vol. 19. *Some monomers, plastics, and synthetic elastomers, and acrolein* (Lyons, International Agency for Research on Cancer, 1979), 513 p.

"Contact dermatitis caused by polyamide trouser pockets". Grimalt, F.; Romaguera, C. *Dermatosen in Beruf und Umwelt* (Aulendorf), 1981, 29/2 (35-39). 3 ref.

Polychlorinated biphenyls

CHLORINATED BIPHENYLS; CHLOROBIPHENYLS; PCBs

PCBs, a group of organochlorine compounds, have the structural formula:



and the molecular formula: C_{12} $H_{10-x}Cl_x$ (1-10 hydrogen atoms may be replaced by chlorine atoms). There are 209 possible isomers. Their molecular weight varies between 188.7 for monochlorobiphenyl and 398.5 for decachlorobiphenyl. They are clear, pale yellow, liquid, viscous or solid products, their consistency increasing with their chlorination percentage. They have a mild aromatic odour.

The first chlorobiphenyl (dichlorobiphenyl) was synthesised by Griefs in 1867 by heating 4,4'-biphenyl-*bis*-(diazonium)-platinum chloride salt with sodium carbonate. The first description of PCBs was published by Schmidt and Schultz, in 1881. The commercial production of technical PCBs increased in 1929, when PCBs began to be used as non-flammable oils in electrical transformers and condensers. During the 1930s and 1940s a number of mining accidents had occurred because of the poor insulation of cables. These accidents decreased dramatically after the introduction of PCB-insulated cables.

Production. PCBs are produced in France, the Federal Republic of Germany, Italy, Japan, the United States, the USSR, etc., under the trade names Phenchlor, Clophen, Fenchlor, Kanechlor, Arochlor, Sovol, etc.

The commercial PCBs are mixtures of PCB isomers with a mean percentage of chlorination indicated in the numerical constituent of their trade name. (For example: Arochlor 1254 is a biphenyl compound, indicated by the number 12, with a 54% chlorine content indicated by the last two digits of the numerical symbol.)

Technical PCB mixtures are prepared by chlorination of biphenyl with anhydrous chlorine in the presence of a catalyst. The degree of chlorination of the technical product depends on the duration of the chemical reaction.

Uses. The main properties of PCBs that account for their use in the production of a variety of items are: low solubility in water, miscibility with organic solvents and polymers, high dielectric constant, chemical stability (very slow break down), high boiling points, low vapour pressure, thermostability, flame resistance. PCBs are also bacteriostatics, fungistatics and pesticide synergists.

PCBs are used in "closed" or "semiclosed" systems, such as electrical transformers, capacitors, heat transfer systems, fluorescent light ballasts, hydraulic fluids, lubricating oils, insulated electric wires and cables, etc., and in "open end" applications, as plasticisers for plastic materials, adhesives for waterproof wall coatings, surface treatment for textiles, surface coating of wood, metal and concrete, caulking material, paints, printing inks, paper, carbonless copy paper, impregnated citrus fruit wrapping paper, cutting oils, microscopic mounting medium, microscope immersion oil, vapour suppressants, fire retardants, etc., and in insecticide and bactericide formulations.

Absorption and metabolism. During manufacture and/or handling of PCBs, these compounds may penetrate into the human body following cutaneous, respiratory or digestive exposure. The workers are also exposed to food and water PCB residues and to other occupational and domestic xenobiotics (that is synthetic compounds not known to occur as a natural product).

The highly chlorinated biphenyl isomers undergo a very slow metabolism in the animal body and are consequently excreted in very low percentages (less than 20% of 2,4,5,2',4',5'-hexachlorobiphenyl was excreted within the lifetime of rats that received a single intravenous dose of this compound). On the other hand, the presence of the higher chlorinated biphenyls in the body seems to delay the excretion of the lower chlorinated biphenyls.

HAZARDS

PCB mixtures are contaminated with other organochlorine compounds like polychlorinated dibenzofurans (PCDFs) and polychlorinated naphthalenes. The lowest concentration of PCDFs was found in Arochlors (0.8-2.0 ppm), followed by Phenchlor A60 (8.4 ppm), Phenchlor DP-6 (13.6 ppm) and Kanechlors (1.0-17.0 ppm). Samples of "Yusho" oil (the rice oil disease that occurred in 1968 in Western Japan, due to the consumption of rice oil accidentally contaminated during its manufacture by polychlorinated biphenyls leaking from a corroded coolant system) contaminated with Kanechlor-400, contained an unusually high concentration of PCDFs (5.0 ppm). This fact raised the question of the contribution of PCDFs to the "Yusho" symptomatology. PCDFs are highly toxic compounds (0.2 µg pentachlorodibenzofuran causes 100% mortality in hen embryos). There is no technical use for PCDFs. Part of the PCDF contaminants originate in the use of sodium hydroxide in the distillation of PCBs. Pyrolysis of technical PCB mixtures yield about 60 different chlorinated dibenzofurans. One of the main contaminants, 2,3,7,8-tetrachlorodibenzofuran, is the most toxic of the PCDF group.

Occupational exposure. People occupationally exposed to PCBs have relatively high PCB residue levels. Plasma levels ranged generally, from several tens to several hundreds of ppb. In a plant in the United States the PCB plasma levels of workers assembling capacitors and transformers ranged from 10.0 to 2 500 ppb. The plasma concentration increased with the intensity and duration of exposure. The gas-chromatographic pattern of PCB residues differed from that of the general population. In highly exposed workers pentachlorodiphenyl represented a higher percentage of their total PCB plasma level, as compared with that of a control group. The PCB gas-

REFERENCE NO. 31

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01	August 29, 1991	9:34

DISTRIBUTION:

Vidan Auto Salvage

BETWEEN:	OF:	PHONE:
Operator	Federal Info. Center	(516) 334-[illegible]

AND:

Susan S. Hodgkins (NUS)

DISCUSSION:

Congressional District for Zip Code 11231 (location of Vidan property) is 13.

ACTION ITEMS:

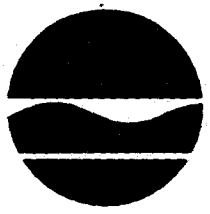
Susan S. Hodgkins 8/29/91

REFERENCE NO. 32

WATER QUALITY REGULATIONS

SURFACE WATER AND GROUNDWATER CLASSIFICATIONS AND STANDARDS

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



New York State Department of Environmental Conservation

701.19 Classes and standards for fresh surface waters. The following items and specifications shall be the standards applicable to all New York fresh waters which are assigned the classification of AA, A, B, C or D, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Fresh Surface Waters

Items	*Specifications*
1. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
2. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
3. Suspended, colloidal or setteable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
4. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.
5. Taste and odor-producing substances, toxic wastes and deleterious substances.	None in amounts that will be injurious to fishlife or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the waters for any best usage as determined for the specific water which are assigned to each class.
6. Thermal discharges.	(See Part 704 of this Title.)

CLASS "AA"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "AA" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 50 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 240 for 100 ml of sample.
2. pH	Shall be between 6.5 and 8.5.

3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "A"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "A" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "B"

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

Quality Standards for Class "B" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "C"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "C" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.

3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "D"

Best usage of waters. The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters. The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	*Specifications*
1. pH	Shall be between 6.0 and 9.5.
2. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.
3. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.

Historical Note

Sec. added by renum. and amd. 701.4, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

701.20 Classes and standards for saline surface waters. The following items and specifications shall be the standards applicable to all New York saline surface waters which are assigned the classification of SA, SB, SC or SD, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Saline Surface Waters

Items	*Specifications*
1. Garbage, cinders, ashes, oils, sludge or other refuse.	None in any waters of the marine district as defined by Environmental Conservation Law (§ 17-0105)
2. pH	The normal range shall not be extended by more than one-tenth (0.1) pH unit.
3. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
4. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
5. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
6. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.
7. Thermal discharges.	(See Part 704 of this Title.)

CLASS "SA"

Best usage of waters. The waters shall be suitable for shellfishing for market purposes and primary and secondary contact recreation.

Quality Standards for Class "SA" Waters

Items	*Specifications*
1. Coliform.	The median MPN value in any series of samples representative of waters in the shellfish-growing area shall not be in excess of 70 per 100 ml.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time.
3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for their specific waters which are assigned to this class.

CLASS "SB"

Best usage of waters. The waters shall be suitable for primary and secondary contact recreation and any other use except for the taking of shellfish for market purposes.

Quality Standards for Class "SB" Waters

Items	*Specifications*
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time.
3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for primary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS "SC"

Best usage of waters. The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose.

Quality Standards for Class "SC" Waters

Items	*Specifications*
1. Coliform.	The monthly medial coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. Dissolved oxygen.	Shall not be less than 5.0 mg/l at any time.

3. Toxic wastes and deleterious substances.	None in amounts that will interfere with use for secondary contact recreation or that will be injurious to edible fish or shellfish or the culture or propagation thereof, or which in any manner shall adversely affect the flavor, color, odor or sanitary condition thereof, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

CLASS "SD"

Best usage of waters. All waters not primarily for recreational purposes, shellfish culture or the development of fishlife, and because of natural or man-made conditions cannot meet the requirements of these uses.

Quality Standards for Class "SD" Waters

Items	*Specifications*
1. Dissolved oxygen.	Shall not be less than 3.0 mg/l at any time.
2. Toxic wastes and deleterious substances.	None alone or in combination with other substances or wastes in sufficient amounts to prevent survival of fishlife, or impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

Historical Note

Sec. added by renum. 701.5, filed July 3, 1985; amd. filed Sept. 20, 1985 eff. 30 days after filing.

PART 702

SPECIAL CLASSIFICATIONS AND STANDARDS

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

Sec.
702.1 Class A—Special (International boundary waters)
702.2 Class AA—Special (Lake Champlain drainage basin)
702.3 Special classes and standards for the lower Hudson River, Arthur Kill, Kill Van Kull, Harlem River, Raritan Bay and Lower East River drainage basins, New York Bay area, Nassau County including Long Island Sound, Suffolk County, Upper East River, Long Island Sound drainage basins, within Queens, Bronx and Westchester Counties and Jamaica Bay drainage basin within Kings and Queens Counties including a certain portion of Rockaway Inlet
702.4 Class AA—Special (Upper Hudson River drainage basin)

Historical Note

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

Section 702.1 Class A—Special (International boundary waters).

(GREAT LAKES WATER QUALITY AGREEMENT OF 1972)

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes, primary contact recreation and any other usages.

Conditions related to best usage. The waters, if subjected to approved treatment, equal to coagulation, sedimentation, filtration and disinfection with additional treatment, if necessary, to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class A—Special Waters (International Boundary Waters)

Items	*Specifications*
1. Coliform.	The geometric mean of not less than five samples taken over not more than a 30-day period should not exceed 1,000 per 100 ml total coliform nor 200 per 100 ml fecal coliform.
2. Dissolved oxygen.	In the rivers and upper waters of the lakes not less than 6.0 mg/l at any time. In hypolimnetic waters, it should be not less than necessary for the support of fishlife, particularly cold water species.

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Sue Hodgkiss DATE: 9/6/91

FROM: Joe Filosa Geologist COPIES:

SUBJECT: Gowanus Canal floodplain

REFERENCE:

There is no floodplain associated with the Gowanus Canal. The definition of a floodplain is as follows: "That portion of a river valley, adjacent to the channel, which is built of sediments deposited during the present regimen of the stream and is covered with water when the river overflows its banks at flood stages." *

The Gowanus Canal doesnot meet any of these requirements to be associated with a floodplain: Its not in a river valley, there are no sediments being deposited into it by any tributaries, there are no tributaries whatsoever flowining into the canal, and since the canal is part of the Hudson estuary system its tidally influenced, and therefore cannot possibly undergo flood stages. The area around the canal which forms the ~~Bank~~ Sides of the canal is built up with bulkheads and sea walls to a height where any water displacement onto the surrounding land appears unlikely.

Joseph G Filosa
9/6/91

* floodplain definition obtained from The Dictionary of Geological Terms 3rd ED. Bates Robert L, and Jackson Julia A, Editors American Geological Institute Anchor / Doubleday press, Garden City, New York, February 1983.

NUS 443A 58 1182

REFERENCE NO. 33

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01 PA	9/4/91	1300

DISTRIBUTION: UIDAN AUTO SALVAGE

BETWEEN:	OF:	PHONE:
On Scene NICK MAGRIPLES, Coordinator	U.S. EPA Region 2 Removal Action BRANCH	(908) 906 6930

AND: P.D. HASTINGS (NUS)

DISCUSSION:

NICK PROVIDED THAT R&B HAD RETURNED TO UIDAN ON JULY 10, 1991 TO TAKE samples. SAMPLING INCLUDED:

- the drain near the racks of stacked car parts for analysis of NVOAs & petroleum hydrocarbons.
- a composite of the heavily stained soil underneath the former location of the crane for analysis of NVOA's, PCB's, VOA's & metals
- ~~the~~ a hole in the concrete near the rear of the facility where FIT could not enter during the previous reconnaissance. After removed some sand off the surface, extremely oily soil was discovered.
- 1 drum 2/3 filled for VOA analysis.

ACTION ITEMS:

On site pH determination was 11 units. Analysis HAS NOT YET BEEN completed; DATA IS UNAVAILABLE.

NICK ALSO RELATED THAT THE SALVAGE YARD HAD HAD A MAJORITY OF THE SURFACE DEBRIS REMOVED SINCE OUR LAST VISIT ON JUNE 24/1991. All racks were now empty; some junk remained. The only areas of soil contamination were those previously seen; there was no staining evident where the debris had previously been.

NUS 067 REVISED 0685

REFERENCE NO. 34

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9106-01 PA	9/5/91	0900

DISTRIBUTION: VIDAN Auto Salvage

BETWEEN:	OF:	PHONE:
L. Tannenbaum	U.S. EPA Region II SUPERFUND	(212) 264-6697

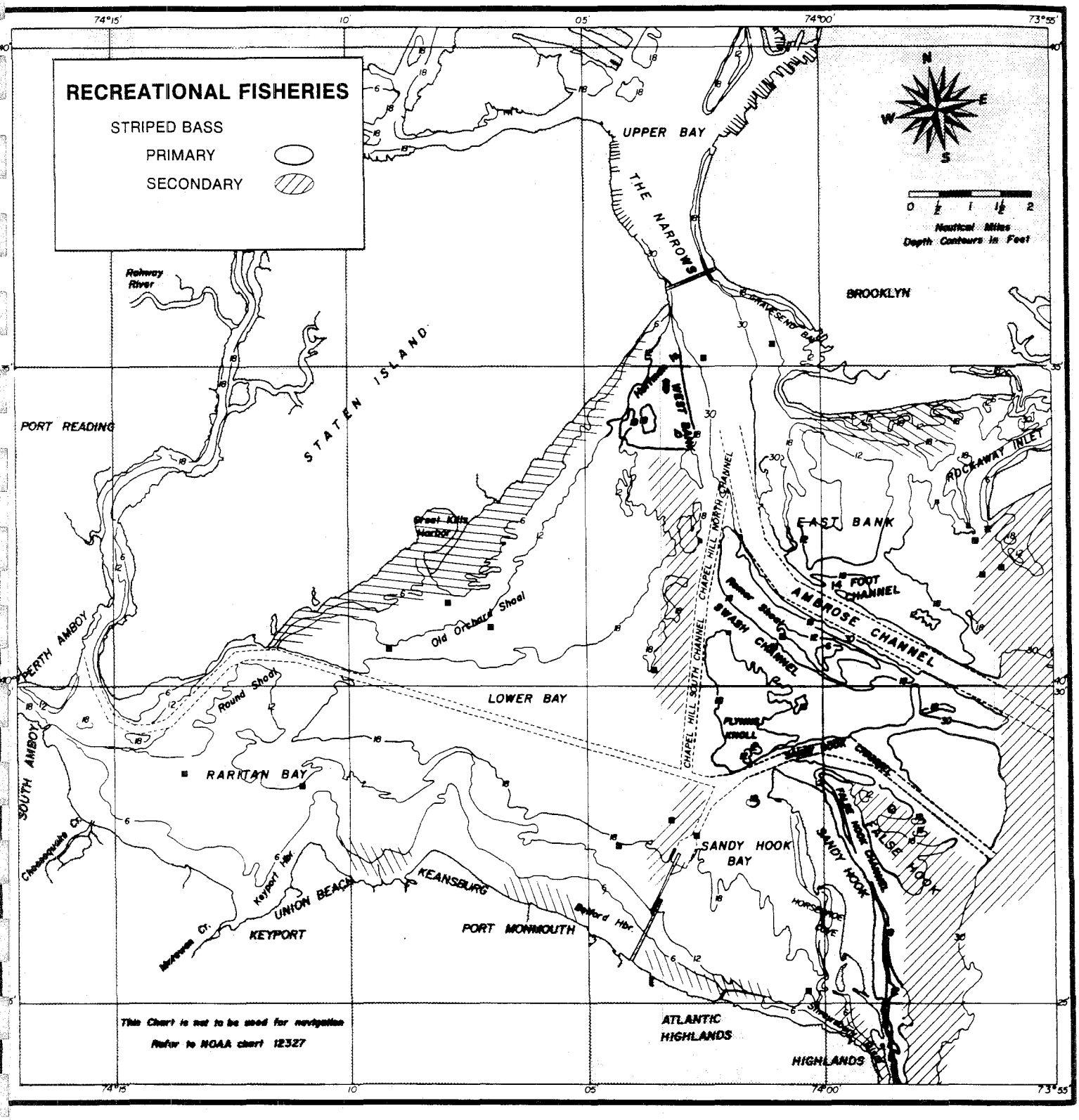
AND: P.D Hastings (NUS)

DISCUSSION:

Larry verified that the VIDAN AUTO Salvage site in KINGS COUNTY, New York HAD BEEN ASSIGNED A CERCLIS ID NUMBER OF NYD 986961167 and that the corresponding county code for this site was 47 ☺

ACTION ITEMS:

REFERENCE NO. 35


RECREATIONAL FISHERIES
STRIPED BASS
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
PERTH AMBOY
SOUTH AMBOY
LOWER BAY
RARITAN BAY
EAST BANK
ROCKAWAY INLET
AMBROSE CHANNEL
SWASH CHANNEL
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
Old Orchard Shoal
Round Shoal
Great Kills Harbor
Keyport Hbr.
UNION BEACH
KEYPORT
KEANSBURG
PORT MONMOUTH
Belford Hbr.
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
ATLANTIC HIGHLANDS
HIGHLANDS
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA chart 12327

VIDAN AUTO SALVAGE
NYD986961167
BROOKLYN
KINGS

FINAL
SITE INSPECTION REPORT
VIDAN AUTO SALVAGE SITE
BROOKLYN, KINGS COUNTY, NEW YORK

CERCLIS ID No.: NYD986961167

EPA Contract No.: 68-W5-0019
TDD No.: 02-98-08-0035
Document Control No.: START-02-F-03341

DECEMBER 1998

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:
Region II Superfund Technical Assessment And Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey 08837

FINAL
SITE INSPECTION REPORT
VIDAN AUTO SALVAGE SITE
BROOKLYN, KINGS COUNTY, NEW YORK

CERCLIS ID No.: NYD986961167

Prepared by:
Region II Superfund Technical Assessment and Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey

prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

EPA Contract No.: 68-W5-0019
TDD No.: 02-98-08-0035
Document Control No.: START-02-F-03341

DECEMBER 1998

SUBMITTED BY:

Sharon DaCosta — Date 12/28/98
Sharron DaCosta
START Project Manager

Dennis J. Foerter — Date 12/28/98
Dennis J. Foerter, CHMM
Site Assessment Group Leader

W. Scott Butterfield — Date 12/28/98
W. Scott Butterfield, CHMM
Site Assessment Team Leader

SI.WPD

SITE INSPECTION REPORT
VIDAN AUTO SALVAGE SITE
BROOKLYN, KINGS COUNTY, NEW YORK

CERCLIS ID No.: NYD986961167

EPA Contract No.: 68-W5-0019
TDD No.: 02-98-08-0035
Document Control No.: START-02-F-03183

DECEMBER 1998

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Prepared by:
Region II Superfund Technical Assessment And Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey 08837

SITE INSPECTION REPORT
VIDAN AUTO SALVAGE SITE
BROOKLYN, KINGS COUNTY, NEW YORK

CERCLIS ID No.: NYD986961167

Prepared by:
Region II Superfund Technical Assessment and Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey

prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

EPA Contract No.: 68-W5-0019
TDD No.: 02-98-08-0035
Document Control No.: START-02-F-03183

DECEMBER 1998

SUBMITTED BY:

Sharron DaCosta — Date 12/16/98
Sharron DaCosta
START Project Manager

Dennis J. Foerter — Date 12/18/98
Dennis J. Foerter, CHMM
Site Assessment Group Leader

W. Scott Butterfield — Date 12/18/98
W. Scott Butterfield, CHMM
Site Assessment Team Leader

SI.WPD

SITE SUMMARY

The Vidan Auto Salvage site (CERCLIS ID No. NYD986961167) is located at 327-331 Bond Street, Brooklyn, Kings County, New York (Ref. Nos. 15; 20). The geographic coordinates of the site are 40°40'47" latitude and 73°59'20" longitude. The site setting is predominantly industrial along the Gowanus Canal (Ref. Nos. 1, p. 2; 14, p. 7). A site location map is presented in Figure 1.

The site is approximately 1.72 acres in size (Ref. No. 10) and is a privately owned former automobile salvage yard. Due to activities involving stolen vehicles, the U.S. Department of Justice (DOJ) seized the property and auctioned the contents. The property was then returned to the owner under the stipulation that the property was not to be used as a junkyard (Ref. No. 17, p. 1). The current use of the site is divided among three businesses; Grecco's Towing, John Creech Design & Production, and Two Dan's Enterprises, Limited (Two Dan's) (Ref. No. 14). A site map is presented in Figure 2. The area (approximately 18,000 square ft (ft^2)) of the site utilized by Grecco's Towing is used for the storage of towed cars (Ref. No. 6, pp. 1-3). This portion of the site is covered with a concrete pad (approximately 3,000 ft^2), recycled crushed concrete (approximately 2,000 ft^2) and grass and soil (approximately 13,000 ft^2). The John Creech Design & Production business occupies only the office building (approximately 4,500 ft^2) found at 327 Bond Street (Ref. Nos. 14, p.1; 6, pp. 1,3). The area outside and around the office building is used for wrecked car storage by Two Dan's. Two Dan's is comprised of a wrecked car storage business component and an auto body shop (Ref. No. 14, p. 3). The remains of a demolished building (approximately 900 ft^2) are located next to the auto body shop (approximately 900 ft^2).

As a result of the past disassembling of vehicles on site, and the subsequent release of automobile fluids, site soil was suspected to be contaminated (Ref. No.17, p. 1). On 2 April 1991, the New York City Department of Environmental Protection (NYCDEP), Division of Hazardous Materials Programs, conducted a sampling event to determine the extent of oil contamination. The soil was identified as containing high levels of hydrocarbon oil, possibly fuel oil and lubricating oil (Ref No. 1, p. 7; 21).

Sampling performed by the U.S. EPA Environmental Services Division (ESD) in July 1991 confirmed the release of hazardous substances on site. Surface runoff collected from a drain on site revealed the presence of petroleum hydrocarbons at a concentration of 37.4 ppm. A composite soil sample taken from the area reportedly used for disassembling vehicles, revealed elevated levels of volatile organic compounds (toluene and xylene), polyaromatic hydrocarbons, and several heavy metals (cadmium, copper, nickel, lead, and zinc) (Ref. No. 17, p.1).

In 1991, the Halliburton NUS Environmental Corporation, Region II Field Investigation Team (FIT) prepared a Preliminary Assessment (PA) Report for the Vidan Auto Salvage site. The PA investigation included a review of previous background file information, an on-site reconnaissance, and a review of updated and additional information and data relevant to conducting a Hazard Ranking System (HRS) evaluation to determine if further action was

REFERENCE: U.S.G.S. TOPOGRAPHIC MAP, BROOKLYN QUADRANGLE, 7.5 MINUTE SERIES 1956 PHOTOREVISED 1981. SCALE: 1" = 2000'

WESTON MANAGERS DESIGNERS/CONSULTANTS — Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA PM Cathy Moyik	Site Vidan Auto Salvage
IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM Sharron DaCosta	Figure 1 Site Location Map

GOLF SOLAR HEAT
BAYSIDE FUEL OIL DEPOT CORPORATION

UNION

450-K

STREET

N

FORMER FOUNDRY
(INACTIVE)

RESIDENTIAL BUILDING

STREET

GARBAGE DUMPSTER

SITE BOUNDARY

CRUSHED CONCRETE

CANAL

STORAGE SHED

JUNK STORAGE

STACKED CARGO CARS

CONCRETE PAD

GRECCO'S TOWING

TRAILER

FENCE

VEGETATION

FENCE

STAINED SOIL

DEBRIS

GARBAGE DUMPSTER

FENCE

PRESIDENT ST.

PRESIDENT STREET

COBBLE STONE ROAD

DEBRIS

BELL ATLANTIC

STREET

WRECKED CARS

GAS CYLINDER STORAGE SHED

JOHN CREECH DESIGN & PRODUCTION

DRAIN

DEMOLISHED BUILDING

HIGH OVA READING

ELECTRIC MOTORS & PUMP CORP.

BOND

SCULPTURE STUDIO

TIRES

MOTORCYCLE WORKS LTD.

NYC 2 WAY INTERNATIONAL (LIMO SERVICE)

BUSINESS OFFICE

AUTO BODY SHOP

TWO DANS ENTERPRISES, LTD.

GOWANUS

NEVINS

RESIDENTIAL BUILDING

TRAILER OFFICE

SITE BOUNDARY

CARROLL

450-J BRIDGE

STREET

LEGEND:

⊠ STORM DRAIN

CARS

– DRAWING NOT TO SCALE –

FIGURE 2 – SITE MAP
VIDAN AUTO SALVAGE
BROOKLYN, KINGS COUNTY, NEW YORK
OCTOBER 1998

US ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
CONTRACT# 68-W5-0019

DRAWN BY : J. HAMPTON JR.

EPA TASK MONITOR: C. MOYIK

START PROJECT MANAGER: S. DaCOSTA

WESTON MANAGERS ENGINEERS/CONSULTANTS
Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION

IN ASSOCIATION WITH PRC ENVIRONMENTAL MANAGEMENT, INC.,
C.C. JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC.,
R.E. SARRIERA ASSOCIATES, AND GRB ENVIRONMENTAL SERVICES, INC.

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warranted. In the PA report dated 13 September 1991, it was recommended that a Site Inspection should be conducted to further determine the presence and extent of CERCLA-eligible hazardous substance contamination of the site and nearby surface water (Ref. No. 1, p. 2).

The Region II Superfund Technical Assessment and Response Team (START) conducted an on-site reconnaissance at the Vidan Auto Salvage site on 13 October 1998 (Ref. No. 14, p. 3). The on-site reconnaissance was conducted to evaluate current site conditions and activities, ascertain potential sampling locations, and to document the evaluation of HRS factors. During the site reconnaissance, a number of cars were observed on site. At the section of the site used for Grecco's Towing and Storage, cars were observed to be parked in an orderly fashion. The ground surface is covered with crushed concrete and a cement pad is located near the front of the property bordering Bond Street. There is no evidence of stained soil. There are wrecked cars located in the section of the site utilized by Two Dans Enterprises. There is a section of stained soil along President Street where President Street intersects the site. The staining appears to be petroleum and crank oils that have drained from the wrecked cars. Strong gasoline odors were noted in this area; however, there were no observed readings on the organic vapor analyzer (OVA) during the site reconnaissance. A high OVA reading was recorded south of the area of stained soil between a row of parked wrecked cars on the Two Dans section of the site (Ref. No. 14, p. 7).

According to tax records, this section of President Street does not belong to the site (Ref. No. 6, p. 3). It is a cobblestone road that is being utilized by Two Dans Enterprises for storage of auto debris and wrecked cars. Cars that have been repaired are stored behind the auto body shop on site.

Although soil contamination is documented, groundwater in this area is not used as drinking water and the site is fenced; therefore, potential human exposure is minimal (Ref. No. 16).

The nearest surface water body is the Gowanus Canal located adjacent to the east boundary of the site. Surface water bodies (Hudson River and Sandy Hook Bay) within the site's 15-mile target distance limit (TDL) are fisheries (Ref. Nos. 23, pp. 2, 4-7; 26; 27). There is approximately 1 mile of wetland frontage within the TDL (Ref. No. 19). There are no potable surface water intakes within 15 miles downstream of the site (Ref. No. 1, p. 10).

The site is located near residential property. The closest residence is located approximately 25 feet west and upslope of the site, across Bond Street (Ref. No. 14, p. 7). There are approximately 2,463 residents within 0.25 mile of the site (Ref. No. 2, p. 3). The Samuel Mills Sprole Elementary School is located on President Street approximately 0.1 mile west of the site (Ref. No. 14, p. 5).

An approximate population of 1,651,245 people live within 4 miles of the Vidan Auto Salvage site (Ref. No. 2, pp. 2, 7). Sensitive environments within the site's 4-mile radius include: the Peregrine Falcon, approximately 25 acres of wetlands, the Statue of Liberty National Monument, Shortnosed Sturgeon, Loggerhead Turtle, Leatherback Turtel, and Gateway National Recreation Area (Ref. No. 18; 29, p. 1). There are no schools or day care centers within 200 feet of the site (Ref. No. 14, pp. 5, 6). Approximately 10 people are employed at the Vidan Auto Salvage site (Ref. No. 14, pp. 3, 5).

SITE ASSESSMENT REPORT: EXPANDED SITE INSPECTION

PART I: SITE INFORMATION

1. Site Name/Alias Vidan Auto Salvage

   Street 327-331 Bond Street

   City Brooklyn State NY Zip 11231

2. County Kings County Code 047 Cong. Dist. 13

3. CERCLIS ID NO. NYD986961167

4. Block Nos. Block 438, 445 Lot Nos. 1, 2, 3, 8, 11, 20

5. Latitude 40° 40' 33" N Longitude 73° 59' 22" W

   USGS Quad(s). Brooklyn, New York

6. Approximate size of site 1.72 acres

7. Owner Daniel Tinneny Telephone No. (718) 243-2227

   Street 448 Stobe Avenue

   City Staten Island State New York Zip 10306

8. Operator Daniel Tinneny Telephone No. Same as above

   Street Same as above

   City Same as above State Same as above Zip Same as above

9. Type of Ownership

   X Private ___ Federal ___ State

   ___ County _ Municipal ___ Unknown ___ Other _____

10. Owner/Operator Notification on File

__ RCRA 3001 __ Date __ CERCLA 103c Date _____

X None ___ Unknown

11. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
None	N/A	N/A	N/A	N/A

12. Site Status

X Active __ Inactive ___ Unknown

13. Years of Operation: 1979-Present

14. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit
1	Contaminated Soil	Potentially Contaminated Soil

(b) Other Areas of Concern

There are no other areas of concern at the Vidan Auto Salvage site.

Ref. No. 14, p. 8

15. Describe the regulatory history of the site, including the scope and objectives of any previous response actions, investigations and litigation by State, Local and Federal agencies (indicate type, affiliation, date of investigations).

The following presents a general chronology of the regulatory history of the Vidan Auto Salvage site:

- The NYCDEP, Division of Hazardous Materials Program conducted a sampling event on April 2, 1991 at the request of the United States Marshalls Office to determine the extent of oil contamination. Two soil samples were collected. The soil was identified as containing high levels of hydrocarbon oil, possibly fuel oil and lubricating oil.

Ref. Nos. 1, p. 7; 21

- Halliburton NUS Environmental Corporation, Region II FIT conducted an on-site reconnaissance on June 24, 1991 for the purpose of performing a Preliminary Assessment. No samples were taken at this time.

  Ref. No. 1, p. 7

- The Environmental Services Division (ESD) of the EPA conducted a site visit on July 10, 1991. Four samples were collected for analysis (one from a drain, one from a drum, and two soil samples). The soil samples revealed elevated levels of VOAs, PAHs, cadmium, copper, nickel, lead, and zinc.

  Ref. No. 17, p. 1

- There have been no investigations of the site conducted by the New York State Department of Environmental Conservation (NYSDEC).

  Ref. No. 30

a) Is the site or any waste source subject to Petroleum Exclusion? Identify petroleum products and byproducts that justify this decision.

   A review of available background information indicates that both the site and the waste sources on site are subject to Petroleum Exclusion. Since the site is the location of a former vehicle junkyard, where vehicles were disassembled, gasoline and other petroleum products associated with vehicles were leaked and spilled onto the soil at the site.

   Ref. Nos. 1, p. 2; 14, pp. 7-8

b) Has normal farming application of pesticides registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) occurred at the site? Have pesticides been produced or stored at the site? Have there been any leaks or spills of pesticides on site?

   Based on available background information, the site has not been used for agricultural purposes; therefore, normal farming application of pesticides registered under FIFRA has not occurred at the site. Pesticides have not been produced or stored on site, nor have there been any reported leaks or spills of pesticides.

   Ref. Nos. 14, p. 8; 24, pp.25-105

c) Is the site or any waste source subject to RCRA Subtitle C (briefly explain)?

Neither the site nor any waste source on site are subject to RCRA Subtitle C. However the site is classified as a "conditionally exempt small quantity generator" under the Resource Conservation and Recovery Act database (RCRIS).

Ref. No. 24, pp. 16, 17

d) Is the site or any waste source maintained under the authority of the Nuclear Regulatory Commission (NRC)?

Neither the site nor any waste sources on site are maintained under authority of the Nuclear Regulatory Commission. None of the on-site waste sources exhibited radiation levels above background during SI site reconnaissance conducted by Region II START on 13 October 1998.

Ref. No. 14, p. 8

16. Do any conditions exist on site which would warrant immediate or emergency action?

During SI field activities conducted by Region II START on October 13, 1998, no conditions were noted on site which would warrant immediate or emergency action.

Ref. No. 25

17. Information available from

Contact Cathy Moyik Agency U.S. EPA Telephone No.: (212) 637-4339
Preparer Sharron DaCosta Agency Region II START Date: December 1998

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 1 - Potentially Contaminated Soil

Source Type

_____ Landfill	__X__ Contaminated Soil
_____ Surface Impoundment	_____ Pile
_____ Drums	_____ Land Treatment
_____ Tanks/Containers	_____ Other

Description:

As a result of the past disassembling of vehicles on site, and the subsequent release of automobile fluids, site soil was suspected to be contaminated. Sampling performed by the U.S. EPA Environmental Services Division in July 1991 confirmed the release of hazardous substances on site. Surface runoff collected from a drain on site revealed the presence of petroleum hydrocarbons at a concentration of 37.4 ppm. A composite soil sample taken from the area reportedly used for disassembling vehicles, revealed elevated levels of volatile organic compounds (toluene and xylene), polyaromatic hydrocarbons, and several heavy metals (cadmium, copper, nickel, lead, and zinc).

The current use of the site is divided among three businesses; Grecco's Towing, John Creech Design & Production, and Two Dan's Enterprises, Limited (Two Dan's). The area (approximately 18,000 square ft (ft^2)) of the site utilized by Grecco's Towing is used for the storage of towed cars. This portion of the site is covered with a concrete pad (approximately 3,000 ft^2), recycled crushed concrete (approximately 2,000 ft^2) and grass and soil (approximately 13,000 ft^2). The John Creech Design & Production business occupies only the office building (approximately 4,500 ft^2) found at 327 Bond Street. The area outside and around the office building is used for wrecked car storage by Two Dan's. Two Dan's is comprised of a wrecked car storage business component and an auto body shop. The remains of a demolished building (approximately 900 ft^2) is located next to the auto body shop (approximately 900 ft^2).

For the purpose of scoring the site, it is assumed that the entire area (approximately 75,178 ft^2) has contaminated soil at a depth of 1 foot below ground surface.

Ref. Nos. 6; 10; 17, p.1; 21

Hazardous Waste Quantity:

The hazardous waste quantity is assumed to be 75,178 square feet of contaminated soil, as stated above.

Ref. Nos. 6; 10

Hazardous Substances/Physical State:

Solid forms of hazardous substances were present when the site was sampled by the U.S. EPA Environmental Services Division in July 1991. A composite soil sample collected from the area reportedly used for disassembling vehicles, revealed elevated levels of volatile organic compounds (toluene and xylene), polyaromatic hydrocarbons, and several heavy metals (cadmium, copper, nickel, lead, and zinc).

Ref. Nos. 17, p. 1; 21

PART III. SAMPLING RESULTS

EXISTING ANALYTICAL DATA

On April 2, 1991, the New York City Department of Environmental Protection, Division of Hazardous Material Program collected two soil samples. The soil was identified as containing high levels of hydrocarbon oil, possibly fuel oil and lubricating oil (Ref. No. 21). Information is not available on the laboratory that performed the analysis and the parameters analyzed. Furthermore, QA/QC documentation is not available.

In July 1991, sampling performed by the U.S. EPA Environmental Services Division (ESD) confirmed the release of hazardous substances on site. Surface runoff collected from a drain on site revealed the presence of petroleum hydrocarbons at a concentration of 37.4 parts per million (ppm). A composite soil sample taken from the area reportedly used for disassembling vehicles, revealed elevated levels of volatile organic compounds (toluene and xylene), polyaromatic hydrocarbons, and several heavy metals (cadmium, copper, nickel, lead, and zinc) (Ref. No. 17, pp. 1-15). Information is not available on the laboratory that performed the analysis and the parameters analyzed. Furthermore, QA/QC documentation is not available.

SITE INSPECTION SAMPLING RESULTS

Based on a review of available background information, data, and target information to evaluating the site under the Hazard Ranking System (HRS), it was determined that further sampling was not necessary to characterize the site.

PART IV. HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.**

   A release to groundwater is not observed or suspected. A potential exists for contaminants associated with the site to be released to groundwater from the contaminated soil. However, the likelihood of documenting an observed release to drinking water wells is low. There are no known drinking water wells within a 4-mile radius of the site. No monitoring wells exist on site.

   Ref. Nos. 14, p. 3; 16

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

   The site is underlain by an unconsolidated till that is an unsorted and unstratified mixture of clay, sand, gravel, and boulders. The upper glacial aquifer is found in this geologic unit. This is the aquifer of concern for this site. The hydraulic conductivity of the upper glacial aquifer is estimated to be 270 feet per day (ft/d), which equals 9.52×10^{-2} centimeters per second (cm/s). The unit is approximately 145 feet thick and is underlain by the Gardiners Clay, a greenish-gray clay with silt and interbedded sand. The permeability of the Gardiners Clay unit is approximately 0.001 ft/d, which equals 3.52×10^{-7} cm/s. The Gardiners Clay unit restrict vertical flow between the upper glacial aquifer and the deeper aquifers. The Gardiners Clay is approximately 55 feet thick and is underlain by the Jameco Gravel. The Jameco Gravel is approximately 150 feet thick and consists mainly of a heterogenous mixture of igneous, metamorphic, and sedimentary rock types that are typically dark brown.

   The depth to the water table is approximately 10 feet below ground surface at the site. The quality of groundwater in the upper glacial aquifer is affected by saltwater encroachment from the sea. This affects the possibility of using groundwater for drinking water purposes.

   Ref. No. 3, pp. 11,12,14-17, 19, 41

3. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

   The lowest point of waste disposal at the site is 1 foot below ground surface. The highest seasonal level of the saturated zone of the aquifer of concern is approximately 10 feet below ground surface. Therefore, the depth from the lowest point of waste disposal to the highest

seasonal level of the aquifer of concern is approximately 9 feet.

Ref. Nos. 14, p. 8; 3, p. 41

4. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the top of the aquifer of concern?**

The unsaturated portion of the glacial till is the only intervening stratum between the ground surface and the water table, which is the top of the aquifer of concern. The glacial till is unconsolidated, and has an estimated permeability value of 10^{-6} cm/s.

Ref. No. 3, p. 11; 11

5. **What is the net precipitation at the site (inches)?**

The net precipitation at the site is approximately 44.14 inches.

Ref. No. 5, p. 6

6. **What is the distance to and depth of the nearest well that is currently used for drinking purposes?**

There are no wells within 4 miles of the site that are currently used for drinking water purposes.

Ref. Nos. 4, p. 2; 14, p. 3; 16

7. **If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be actually contaminated by hazardous substance(s) attributed to an observed release from the site.**

A release to groundwater is not observed or suspected. There are no wells documented or suspected to be contaminated by hazardous substances attributable to the site. There are no known drinking water wells within a 4-mile radius of the site.

Ref. Nos. 14, p. 3; 16

8. Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.

Distance	Population
0 - ¼ mile	0
> ¼ - ½ mile	0
> ½ - 1 mile	0
> 1 - 2 miles	0
> 2 - 3 miles	0
> 3 - 4 miles	0

Public water for the entire population of Brooklyn and most of Queens is supplied from upstate surface water sources. There is no known use of private wells for potable water supply in Brooklyn or Queens.

Ref. Nos. 3, p. 30; 16

State whether groundwater is blended with surface water, groundwater, or both before distribution.

Not applicable. Refer to previous question.

Is a designated wellhead protection area within 4 miles of the site?

There are no wellhead protection areas within 4 miles of the site.

Ref. No. 13, pp. 2, 3

Does a waste source overlie a designated or proposed wellhead protection area? If a release to groundwater is observed or suspected, does a designated or proposed wellhead protection area lie within the contaminant boundary of the release?

Not applicable. Refer to previous question.

9. Identify one of the following resource uses of groundwater within 4 miles of the site (i.e., commercial livestock watering, ingredient in commercial food preparation, supply for commercial aquaculture, supply for major, or designated water recreation area, excluding drinking water use, irrigation (5-acre minimum) of commercial food or commercial forage crops, unusable).

Groundwater is not known to be used as a resource within 4 miles of the site

Ref. Nos. 1, p. 9

SURFACE WATER ROUTE

10. Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.

The site is bordered by the Gowanus Canal. Sections of the site are subject to flooding during periods of heavy rain, therefore, it is possible that there may be a suspected release of contaminants to surface water. Contaminants that are suspected are VOCs, PAHs, and heavy metals (cadmium, copper, nickel, lead, and zinc). However, the site is located in a highly industrial area and the likelihood of attributing these contaminants solely to the Vidan Auto Salvage site is minimal.

Ref. Nos. 19; 21; 24

11. Identify the nearest down slope surface water. If possible, include a description of possible surface drainage patterns from the site.

The topography of the site is generally flat; therefore, during periods of heavy rain, the most probable drainage pathway from the site is east into the Gowanus Canal (this would be the location of a potential PPE) or west into the storm water drains located at the intersection of President and Bond Streets. The storm drains are connected to the sanitary sewer line.

Ref. No. 14, p. 7; 20; 24

12. What is the distance in feet to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.

The nearest downslope surface water is the Gowanus Canal, located along the southeast boundary of the site. Therefore, the distance to the nearest downslope surface water body is 0 feet.

Ref. Nos. 19; 24

13. Identify all surface water body types within 15 downstream miles.

Name	Water Body Type	Flow (cfs)	Saline/Fresh/Brackish
Gowanus Canal	Coastal Tidal	N.A.	Brackish
Hudson River	River	5,000	Brackish
Upper New York Bay	Coastal Tidal	N.A.	Brackish
Lower New York Bay	Coastal Tidal	N.A.	Brackish
Sandy Hook Bay	Coastal Tidal	N.A.	Brackish

Ref. Nos. 19; 22, pp. 3, 4; 23

14. Determine the 2 yr, 24 hr rainfall (inches) for the site.

The 2-year, 24 hour rainfall for the site is approximately 3.3 inches.

Ref. No. 12, p. 3

15. Determine size of the drainage area (acres) for sources at the site.

The drainage area for the site is 1.72 acres.

Ref. No. 31, p. 4

16. Describe the predominant soil group in the drainage area.

The predominant soil group in the drainage area is soil group C, defined as moderately fine-textured soils with low infiltration rates.

Ref. Nos. 3, p. 17; 11

17. Determine the type of floodplain that the site is located within.

The site is located in an area of mixed flooding. A portion of the site (section of site containing Grecco's Towing) is located in a zone C area (i.e., outside the 500-year flood boundary). A portion of the site (section of site containing office building housing John Creech Design & Production) is located in a zone B area (i.e., area between limits of the 100-year and 500-year flood boundary). A third portion of the site (section of site were wrecked cars are stored by Two Dan's Enterprises) is located in a zone A6 area (i.e., areas of 100-year flood).

Ref. Nos. 7, pp. 2, 3; 24, pp. 9, 10

18. Identify drinking water intakes in surface waters within 15 miles downstream of the point of surface water entry. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.

Intake	Distance	Population Served	Flow (cfs)
None	N/A	N/A	N/A

Ref. Nos. 1, p. 10; 4, p. 2

19. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:

Fishery Name	Water Body Type	Flow (cfs)	Saline/Fresh/ Brackish
Hudson River	River	5000	Brackish
Sandy Hook Bay	Coastal Tidal	N.A.	Brackish

Ref. Nos. 22, pp. 3, 4; 23, p. 3; 29

20. Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry.

Environment	Water Body Type	Flow (cfs)	Wetland Frontage
Statue of Liberty National Monument	Bay	N/A	N/A
Wetlands	N/A	N/A	1 mile
Shortnosed Sturgeon	Bay	N/A	N/A
Loggerhead Turtle	Bay	N/A	N/A
Leatherback Turtle	Bay	N/A	N/A
Gateway Nat. Rec. Area	Bay	N/A	N/A
Peregrine Falcon	N/A	N/A	N/A

Ref. Nos. 1, p. 11; 18

21. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 18-20 that are or may be actually contaminated by hazardous substance(s) attributed to an observed release of from the site.

Intake: N/A

Fishery: N/A

Sensitive Environment: N/A

Ref. Nos. 1, p. 11; 18; 23, p. 3

22. Identify whether the surface water is used for any of the following purposes, such as: irrigation (5 acre minimum) of commercial food or commercial forage crops, watering of commercial livestock, commercial food preparation, recreation, potential drinking water supply.

There is no evidence that the surface water is used for any of the above listed purposes.

Ref. No. 1, p. 9

SOIL EXPOSURE PATHWAY

23. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of observed contamination.

There is documentation of soil contamination on the site. Sampling performed by the U.S. EPA Environmental Services Division (ESD) in July 1991 confirmed the release of hazardous substances on site. Surface runoff collected from a drain on site revealed the presence of petroleum hydrocarbons at a concentration of 37.4 ppm. A composite soil sample taken from the area reportedly used for disassembling vehicles, revealed elevated levels of volatile organic compounds (toluene and xylene), polyaromatic hydrocarbons, and several heavy metals (cadmium, copper, nickel, lead, and zinc). Based on visual observations during the on-site reconnaissance on 13 October 1998 of townhouses and row homes, it is estimated that there are approximately 10 people that occupy residences within 200 feet of potential soil contamination. There are no schools or day care centers within 200 feet of potential soil contamination.

Ref. Nos. 14, p. 5; 17, p. 1; 24; 25

24. Determine the number of people that regularly work on or within 200 feet of observed contamination.

There are approximately 11 people that regularly work on or within 200 feet of soil contamination.

Ref. No. 14, p. 3

25. Identify terrestrial sensitive environments on or within 200 feet of observed contamination.

There are no known terrestrial sensitive environments within 200 feet of the site.

Ref. No. 1, p. 12

26. Identify whether there are any of the following resource uses, such as commercial agriculture, silviculture, livestock production or grazing within an area of observed or suspected soil contamination.

There is no commercial agriculture, silviculture, livestock production, or grazing on the site or on properties adjacent to the site.

Ref. No. 14, p. 7

AIR PATHWAY

27. Describe the likelihood of release of hazardous substances to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them the site. For observed release, define the supporting analytical evidence and relationship to background.

A release of contaminants to the air is not observed or suspected. There are no known analytical data available to determine if a release from the site to the air has occurred. A reading above background was detected in the breathing zone on the Organic Vapor Analyzer (OVA) flame ionization detector during site inspection reconnaissance activities conducted by Region II START on 13 October 1998. However, this reading was attributed to spilled gasoline in the area of the reading.

Ref. No. 14, p. 7

28. Determine populations that reside within 4 miles of the site.

Distance	Population
On site	0
>0 - ¼ mi	2,463
> ¼ - ½ mi	21,167
>½ - 1 mi	97,785
>1 - 2 mi	209,095
>2 - 3 mi	634,662
>3 - 4 mi	686,073

Ref. No. 2, pp. 2-6

29. Identify sensitive environments, including wetlands and associated wetlands acreage, within 4 miles of the site.

Distance	Wetlands Acreage	Sensitive Environments
0 - ¼ mi	0	None Identified
> ¼ - ½ mi	0	None Identified
>½ - 1 mi	0	None Identified
>1 - 2 mi	0	None Identified
>2 - 3 mi	0	Peregrine Falcon; Statue of Liberty National Monument
>3 - 4 mi	25	

Ref. No. 18; 29, p. 1

30. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.

A release to air is not observed or suspected; see question No. 27 for a description of likelihood of a release.

31. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 29, that are or may be located within the area of air contamination from the release.

A release to air is not observed or suspected; see question No. 27 for a description of likelihood of a release.

ATTACHMENT 1

PHOTOGRAPH LOG

VIDAN AUTO SALVAGE
BROOKLYN, KINGS COUNTY, NEW YORK

ON-SITE RECONNAISSANCE: 13 OCTOBER 1998

VIDAN AUTO SALVAGE
BROOKLYN, KINGS COUNTY, NEW YORK
ON-SITE RECONNAISSANCE
13 OCTOBER 1998

PHOTOGRAPH INDEX

All Photographs taken by Sharron DaCosta

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Northwest view of car storage at Grecco's Towing (facing Bond Street).

Photo 4 1140

Gowanus Canal northeast of site (facing back of Bell Atlantic).

Photo 5 1141

Bank of Gowanus Canal adjacent to the Grecco's Towing section of the site.

Photo 6 1142

Dumpster for auto debris on President Street intersection of site.

Photo 7 1143

Wrecked cars stored by Two Dan's Enterprises on the President Street section of the site

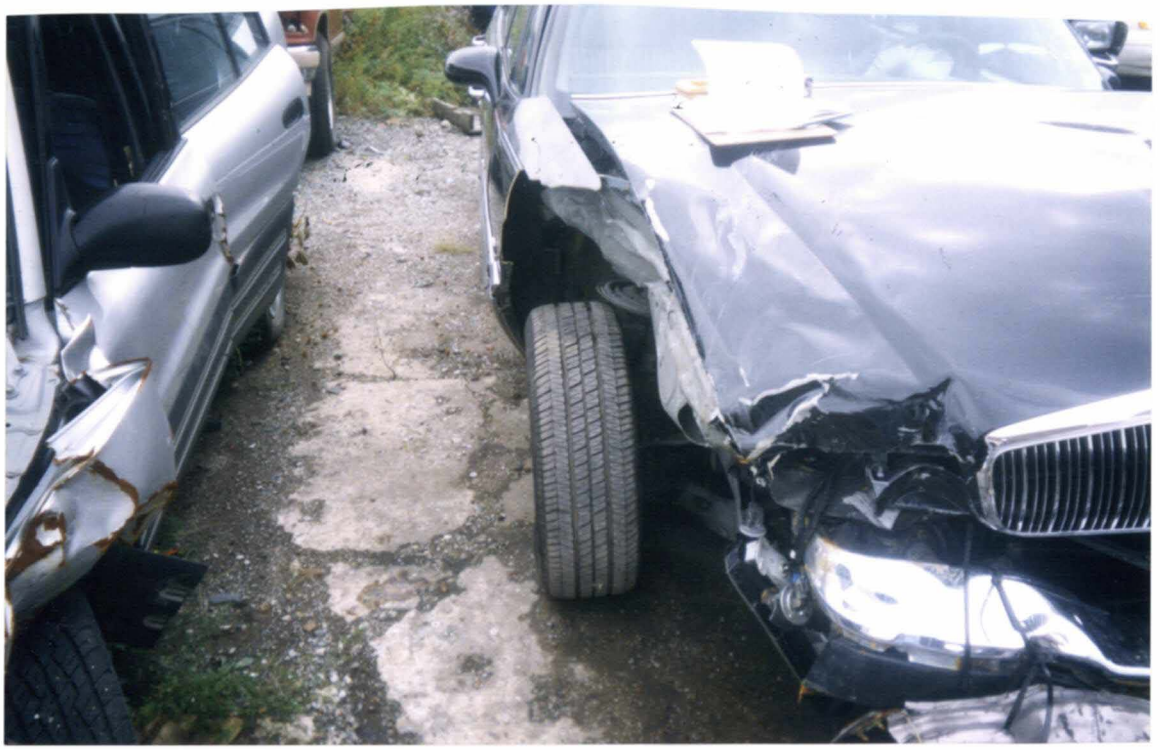

Photo 8 1145

Location of high OVA reading on Two Dan's section of site. Picture taken facing the Gowanus Canal.

Photo 9 1200

Storm drain behind office building housing John Creech Design and Production.

Photo 10 1215

View of back side of the site taken from bridge on Union Street.

ATTACHMENT 2

REFERENCES

REFERENCES

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REFERENCE 1

ICCO: 12/6/91
RECOMMENDED FOR SITE INSP. (HPFA)
ENTERED TO WASTELAN BY L. MARTINEZ

02-9106-01-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT REPORT
VIDAN AUTO SALVAGE
BROOKLYN, NEW YORK

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-9106-01
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

SEPTEMBER 13, 1991

HALLIBURTON NUS ENVIRONMENTAL CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

P.D. Hastings

PATRICIA D. HASTINGS
PROJECT MANAGER

Susan S. Hodgkiss

SUSAN S. HODGKISS
SITE MANAGER

REVIEWED/APPROVED BY:

Ronald M. Naman

RONALD M. NAMAN
FIT OFFICE MANAGER

SITE SUMMARY AND RECOMMENDATION

Finally, the U.S. EPA Removal Action Branch returned to the site on July 10, 1991 to perform sampling (Ref. No. 33). The results of analyses are not yet available. There have been no other reports of hazardous materials activities or related incidents associated with this site (Ref. No. 12).

A release to groundwater and surface water of fluids contaminated with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances is suspected from this site (Ref. No.4). It has been speculated that fluids contained within automobiles were allowed to drain directly on the ground surface without any means of containment allowing potential contamination of the nearby surface water, groundwater, and soil (Ref. Nos. 1, 2, 3). Groundwater is not used as a potable water sources within 4 miles of the site (Ref. Nos. 13, 14, 21, 29). However, surface water runoff flows directly to the Gowanus Canal which abuts the eastern border of the site and leads into the Hudson River Estuary System approximately 2 miles downstream. The New York State Division of Water has identified the Gowanus Canal on the Priority Water Problem List; the canal is designated as having a severe water pollution problem with the probable source indicated as combined sewer overflows. Confirmation of contamination attribution to the Vidan Auto Salvage Site will be difficult as there are several other active facilities bordering the Gowanus Canal. Regardless, potential contamination of surface water is a concern as there are several tidally-affected sensitive environments within 15 miles downstream and upstream of the site. These include a habitat of federal endangered species, a national monument, national seashore recreation areas, and a state wildlife refuge. Figure 3 provides a 15-mile surface water pathway from the Vidan Property Ref. Nos. 5, 6, 15, 16, 22, 13, 25, 27, 28, 29). Due to the suspected release to surface water and the close proximity of fisheries and other sensitive environments, a **SITE INSPECTION** is recommended for the Vidan Auto Salvage Site to determine the presence and extent of CERCLA-eligible hazardous substance contamination of the site and nearby surface water.

SITE ASSESSMENT REPORT: PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. Site Name Vidan Auto Salvage Alias None

   Street 319 to 331 Bond Street

   City Brooklyn State New York Zip 11231

2. County Kings County Code 47 Cong. Dist. 13

3 CERCLIS ID No. NYD986961167

4. Block No. 438, 444, 445 Lot No. 3, 39, 8-11-20, respectively

5. Latitude 40° 41' 47" N Longitude 73° 59' 55" W

   USGS Quad. Brooklyn, New York

6. Approximate size of site 1.71 Acres

7. Owner Daniel Tinneny Tel. No. Unknown

   Street 448 Stobe Avenue

   City Staten Island State New York Zip 10306

8. Operator Daniel Tinneny Tel. No. (718) 852-2798

   Street 319 to 331 Bond Street

   City Brooklyn State New York Zip 11231

9. Type of Ownership

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other _____

10. Owner/Operator Notification on File

    ☐ RCRA 3001 Date _____ ☐ CERCLA 103C Date _____
    ☒ None ☐ Unknown

11. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
None				

12. Site Status

☒ Active* ☐ Inactive ☐ Unknown

13. Years of Operation Unknown*

* Exact years of operation are unknown. However, it was provided during an on-site reconnaissance that the site had been owned for at least the last 15 years by the current owners. It is assumed that site operations as a junkyard were initiated at that time. Operations have continued until recently when the U.S. Marshall's office reportedly siezed the property in March 1991. The property was to be returned to the owners sometime after June 1991.

14. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit
1	Contaminated Soil	Contaminated Soil
2	Containers	Drums, carboys

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

There has been no known dumping on site.

Ref Nos. 1, 2, 3, 11, 12; Attachment 2, Photographs; 34

15. Information available from

Contact Amy Brochu Agency U.S. EPA Region 2 Tel. No. (908) 906-6802

Preparer Susan S. Hodgkiss Agency HALLIBURTON NUS Environmental Corp., Region 2 FIT

Date September 13, 1991

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 1 - Contaminated Soil

Source Type

____	Landfill	____	Land Treatment
____	Surface Impoundment	____	Chemical Waste Pile
____	Drums	____	Scrap Metal or Junk Pile
____	Tanks/Containers	____	Tailings Pile
X	Contaminated Soil	____	Trash Pile
____	Pile	____	Other

Description:

The Vidan Auto Salvage Site is a junkyard,approximately 1.71 acres in size, used for the salvaging of car parts. It is speculated that cars were brought on site through President Street, disassembled, and the parts stored on racks located on the southern border of the site. The U.S. Marshall's Office reported extensive soil staining and the ponding of oil potentially attributable to the cutting of automotive engines during salvage operations. At the time of an on-site reconnaissance conducted by Region 2 FIT on June 24, 1991, large areas of debris covered most of the site. In addition an area of stained soil was present on President Street on the eastern border of the site. Another area of stained soil was also noted in the area of the stacked car parts.

Hazardous Waste Quantity

An area of stained soil approximately 6,000 square feet (ft^2) was observed at the end of President Street during the Region 2 FIT on-site reconnaissance. The second reported area of stained soil was less than 4 ft^2 in area. No other areas are suspected to exhibit soil contamination. The total quantity of contaminated soil on site is assumed to be 6,004 ft^2.

Hazardous Substances/Physical State.

Stained soil is believed to have resulted from the drainage of used crankcase oil, lubrication oil, and transmission fluid during the salvaging of automobiles. Surface soil samples taken by the New York City Department of Environmental Protection revealed high levels of hydrocarbon oil and low levels of lead and PCBs. For the purposes of this assessment, the used crankcase oil, potentially containing heavy metals listed hazardous substances, has been considered eligible under the Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) (Ref. No. 4).

Ref. No 1, 2, 3, 4, 7, 30

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 2 - Drums, Carboys

Source Type

____	Landfill	____	Land Treatment
____	Surface Impoundment	____	Chemical Waste Pile
X	Drums	____	Scrap Metal or Junk Pile
____	Tanks/Containers	____	Tailings Pile
____	Contaminated Soil	____	Trash Pile
____	Pile	X	Other- Carboys

Description:

The Vidan Auto Salvage Site is a junkyard, approximately 1.71 acres in size, used for salvaging car parts. It is speculated that cars were brought on site through President Street, disassembled, and the parts stored on racks located on the southern border of the site. During a on-site reconnaissance conducted on June 24,1991, Region FIT reported the presence of numerous drums and carboys within the building shell located on the eastern border of the site. The area within the building shell was reported to be paved and in better condition compared to the rest of the site.

Hazardous Waste Quantity

Region 2 FIT reported the presence of approximately three to four 35-gallon polyethythene drums, two rusted closed head drums, approximately 12 empty open top drums, and aproximately four to five 10-gallon carboys. The contents, if any, of these containers are unknown. The total hazardous waste quantity contained in drums and carboys is assumed to be 325 gallons.

Hazardous Substances/Physical State.

The contents , if any, of the drums and carboys on site are unknown. However, based on container type, it is possible that liquid caustics may be contained in the carboys and polyethylene drums.

Ref. No. 7

PART III:

EXISTING ANALYTICAL DATA

On April 2, 1991, the New York City Department of Environmental Protection, Division of Hazardous Materials Programs collected two soil samples at the Vidan Auto Salvage Property at the request of the United States Marshalls Office to determine the extent of oil contamination. The soil samples were collected on President Street approximately 100 feet infront of the building and 50 feet further down the street from the previous sample location. Soil samples were reportedly analyzed for identification, percentage of oil, lead content, PCBs, and ignitability. Soil was identified as containing high levels of hydrocarbon oils, and low levels of lead and PCBs. PCBs were detected in both samples at less than 40 ppm and 10 ppm, respectivley (Ref. Nos. 1, 2, 3, 7).

On June 24, 1991, Region 2 FIT conducted an on-site reconnaissance at Vidan. No sampling was conducted (Ref. No. 7).

On July 10, 1991, the U.S. EPA RAB conducted sampling of areas of concern on site at Vidan including contaminatd soil, one drum, a drain, and a hole in the concrete. Analyses are not yet available (Ref. No. 33).

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

   A release to groundwater is suspected as waste crankcase oil, transmission fluid and lubrication oil are speculated to have drained directly on the ground surface without any means of containment during the disassembling of cars; contaminants spilled or drained onto on the ground would eventually percolate into the groundwater. Soil samples collected by the New York City Department of Environmental Protection on April 2, 1991 revealed high levels of hydrocarbon oil and low levels of lead and PCBs. During an on-site reconnaissance conducted by Region 2 FIT on June 24, 1991, areas of stained soil were observed on President Street and near a man-made drain located in the stacked car parts area. The discharge location of this drain is unknown. Several drums and carboys without any means of containment were also observed during the reconnaissance. The contents of these containers, if any, is unknown.

   Ref. Nos. 1, 2, 3, 4, 7

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

   Three water-bearing units have been identified in the vicinity of the site. They are glacial deposits, the Magothy Formation, and the Raritan Formation. The glacial deposits have a maximum thickness of 600 feet and with a permeability of 10^{-7} cm/sec are composed of till containing boulders, gravel, sand, and clay. This aquifer is encountered at depths ranging from 50 to 150 feet below the ground surface in Kings County and is overlain by permeable soil and surficial deposits. The glacial aquifer is hydraulically connected to the Magothy Formation.

   The Magothy Formation has a maximum thickness of 1,100 feet and is composed of fine- to medium-grain sand interbedded with lenses and layers of coarse sand, sandy clay, and solid clay, and has a permeability of 10^{-5} to 10^{-7} cm/sec. The Magothy is underlain by the Raritan Formation, which is subdivided into two members; The Raritan Clay and the Lloyd Sand. The Raritan Clay has a maximum thickness of 300 feet and is composed primarily of clay and silty clay. It has few lenses and layers of sand and little gravel and the permeability is poor at less than 10^{-7} cm/sec.

   The Raritan Clay overlies the Lloyd Sand, which has a maximum thickness of 500 feet, and is composed of fine- to coarse-grain sand and gravel. This aquifer commonly has a clayey matrix and contains some layers and lenses of solid and silty-clay. The permeability of the Lloyd Sand ranges from 10^{-5} to 10^{-7} to cm/sec.

   Groundwater is generally contained under artesian pressure by the overlying Raritan Clay and flow is genrally to the southwest, towards The Narrows. Based on well log data, the water table varies from approximately 24 to 38 feet.

   Ref. Nos. 20, 26

3. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

   The depth from the lowest point of waste, ground surface to the highest seasonal level of the saturated zone of the aquifer of concern is approximately 38 feet.

   Ref. Nos 20, 26

4. Identify and determine the distance to and depth of the nearest well that is currently used for drinking purposes?

There are no wells within 4 miles of the site used for drinking purposes.

Ref. Nos. 13, 14, 21, 29

5. If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contamination boundary of the release.

There are no wells within 4 miles of the site used for potable water purposes.

Ref. Nos. 13, 14, 21, 29

6. Identify the population served by wells that are not expected to be contaminated located within 4 miles of the site that draw from the aquifer of concern.

Distance	Population
0 - $\frac{1}{4}$ mi	0
> $\frac{1}{4}$ - $\frac{1}{2}$ mi	0
> $\frac{1}{2}$ - 1 mi	0
> 1 - 2 mi	0
> 2 - 3 mi	0
> 3 - 4 mi	0

State whether groundwater is blended with surface water, groundwater, or both before distribution.

There are no groundwater wells used for potable water purposes within 4 miles of the site.

Ref. Nos. 13, 14, 21, 29

7. Identify uses of groundwater within 4 miles of the site (i.e. private drinking source, municipal source, municipal and private, commercial, irrigation, unuseable).

There are no operational groundwater wells within 4 miles of the site used for any purposes except observation.

Ref. Nos. 13, 14, 21, 29

SURFACE WATER ROUTE

8. Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.

A release to surface water is suspected as used crank case oil, lubrication oil, and transmission fluids were allowed to spill directly onto the ground surface without any means of containment. Areas of stained soil were observed in the areas of the stacked car parts and on President Street during a Region 2 FIT reconnaissance conducted on June 24, 1991.

Soil samples collected by the New York Department of Environmental Protection revealed high levels of hydrocarbon oil, and low levels of lead and PCBs, possibly from transmission fluid and lubricating oil. The Gowanus Canal is located on the eastern border of the site and leads to the Hudson River Estuary System. An oil sheen was observed on the surface water in the canal during the reconnaissance. The New York State Division of Water has identified the Gowanus Canal as having a severe water pollution problem with the probable source indicated as combined sewer outflows. Confirmation of contamination attribution to the Vidan Auto Salvage Site will be difficult as there are several other active facilities bordering the Gowanus Canal.

Ref. Nos. 5, 6, 7, 9

9. **Identify the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The Gowanus Canal is located on the eastern border of the site and flows into the Hudson River approximately 2 miles downstream. The Hudson River and its tributaries in the area of the site are tidally affected. The property is relatively flat, therefore substances spilled would tend to pool on site as there is no barrier to contain runoff. However, during periods of rain, runoff may transport contaminants into the Gowanus Canal.

Ref. Nos. 5, 6

10. **What is the distance in feet to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The Gowanus Canal is located adjacent to the eastern border of the site. The distance along a course that runoff can be expected to follow is zero feet.

Ref. Nos. 5, 6

11. **Determine the type of floodplain that the site is located within.**

The Vidan Site is not located in a floodplain area.

Ref. No. 34

12. **Identify drinking water intakes in surface waters within 15 miles downstream of the point of surface water entry. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.**

Intake	Distance	Population Served	Flow (cfs)

There are no surface water intakes wihtin 15 upstream or downstream of the site.

Ref. Nos. 5, 13, 14, 23, 29

13. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:

Fishery Name	Water Body Type	Flow (cfs)	Saline/ Fresh/ Brackish
Hudson River	Large Stream to River	1,000 to 10,000	Brackish
East River	Large Stream to River	1,000 to 10,000	Brackish
Upper New York Bay	Bay	NA	Saline
Lower New York Bay	Bay	NA	Saline
*Newark Bay	Bay	NA	Brackish
*Hackensack River	Large Stream to River	1,000 to 10,000	Brackish
*Passaic River	Large River	1,000 to 10,000	Brackish
Jamaica Bay	Bay	NA	Brackish
Raritan Bay	Large Stream to River	NA	Saline
*Arthur Kill	Large Stream to River	1,000 to 10,000	Brackish
*Kill VanKull	Large Stream to River	1,000 to 10,000	Brackish

* Currently there is a ban of the consumption of certain species of fish in these waters due to high levels of PCBs and dioxins found in the fish.

Ref. Nos. 5, 6, 15, 16, 22, 23, 25, 27, 28, 29

14. Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:

Sensitive Environment	Water BodyType	Flow (cfs)	Wetland Frontage (miles)
Raritan Bay/Habitat of Federal Endangered Species Shortnosed Sturgeon, Loggerhead and Leatherback turtle	Bay	NA	NA
Upper New York Bay/National Monument Statue of Liberty	Bay	NA	NA
Raritan Bay/National Seashore Recreation Area Gateway National Recreation Area	Bay	NA	NA
Jamaica Bay/State Wildlife Refuge Jamaica Wildlife Refuge	Bay	NA	NA

Ref. Nos. 5, 8

15. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 12-14 that are or may be located within the contamination boundary of the release.

Intakes: None

Fisheries: Hudson River

Sensitive Environments: Upper New York Bay/National Monument, Raritan Bay/Habitat of Federal Endangered Species

Ref. Nos. 5, 8

SOIL EXPOSURE PATHWAY

16. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of the site property.

Based on visual observation during the Region 2 FIT on-site reconnaissance of several townhouses and row homes, it is estimated that there are approximately 50 residents within 200 feet of the site property.

Ref. No 7

17. Determine the number of people that regularly work on or within 200 feet of the site property.

Based on visual observation of the site and surrounding business, as including a saw mill plant to the north and two smaller companies to the south, during the Region 2 FIT on-site reconnaissance, it is estimated that 15 people regularly work on or within 200 feet of the site property.

Ref. No. 7

18. Identify terrestrial sensitive environments on or within 200 feet of the site property.

There are no terrestrial sensitive environments on or within 200 feet of the site property.

Ref. Nos. 5, 7, 8

AIR ROUTE

19. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.

There is no observed or suspected release of contaminants to the air. Hazardous substance that may have been contained in closed drums and/ or carboys would be unlikely to volatize. Soils contaminated as a result of automobile fluids draining directly onto the ground, are unlikely to become dry enough for contaminated particulates to become airborne during dry and windy conditions.

Ref. No. 7

20. Determine populations that reside within 4 miles of the site.

Distance	Population
0 - $\frac{1}{4}$ mi	8,992
> $\frac{1}{4}$ - $\frac{1}{2}$ mi	25,284
> $\frac{1}{2}$ - 1 mi	51,293
> 1 - 2 mi	167,753
> 2 - 3 mi	452, 592
> 3 - 4 mi	674, 700

Ref. No. 18

21. Identify sensitive environments, including wetlands and associated wetlands acreage, within $\frac{1}{2}$ mile of the site.

0-$\frac{1}{4}$ Mile	$\frac{1}{4}$ - $\frac{1}{2}$ Mile
Sensitive Environments/Wetland Acreage	SensitiveEnvironments/Wetland Acreage

There are no sensitive environments within a 1/2 mile of the site.

Ref. Nos. 7, 8

22. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.

There is no observed or suspected release of contaminants to the air.

Ref. No. 7

23. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 21, that are or may be located within the area of air contamination from the release.

There is no observed or suspected release of contaminants to the air.

Ref. No. 7

REFERENCE 2

FROST ASSOCIATES

88 Founders Village, Clinton, CT 06413
(860) 669-5859 FAX (860) 669-5859

October 13, 1998

To: Roy F. Weston Inc - Region II START
1090 King Georges Post Road, Suite 201
Edison, NJ

Attn: Sharon Decosta

NEW YORK PORTION

Fr: Frost Associates
Founders Village
Clinton, Conn 06413

Tel: (203) 669-5859
Fax: (860) 669-5859

Sub: Vidan Auto Salvage
Brooklyn, NY

CERCLIS:

Job: 4013

Site Longitude: 73-59-22 73.989441
Site Latitude : 40-40-33 40.675831

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. A CENTRACTS report may have up to six radii of any length and 1500 block groups.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from The Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, 88 Founders Village, Clinton Conn 06413. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

Vidan Auto Salvage
327-331 Bond Street, Brooklyn, NY NEW YORK PORTION

========== Site Data ==========

Population:	1643414.88
Households:	645842.81
Drilled Wells:	141.00
Dug Wells:	585.81
Other Water Sources:	280.16

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	678319.50
Households:	278545.56
Drilled Wells:	62.37
Dug Wells:	164.84
Other Water Sources:	106.16

** Population On Private Wells: 553.29

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	634583.13
Households:	224840.38
Drilled Wells:	57.63
Dug Wells:	178.98
Other Water Sources:	142.13

** Population On Private Wells: 667.80

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	209095.69
Households:	86834.17
Drilled Wells:	0.00
Dug Wells:	113.16
Other Water Sources:	17.14

** Population On Private Wells: 272.49

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	97785.70
Households:	45196.18
Drilled Wells:	20.94
Dug Wells:	107.67
Other Water Sources:	14.73

** Population On Private Wells: 278.24

Vidan Auto Salvage
327-331 Bond Street, Brooklyn, NY NEW YORK PORTION

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	21167.34
Households:	9265.78
Drilled Wells:	0.06
Dug Wells:	21.17
Other Water Sources:	0.00

** Population On Private Wells: 48.52

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	2463.55
Households:	1160.74
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 0.00

** Total Population On Private Wells: 1820.34

FROST ASSOCIATES

88 Founders Village, Clinton, CT 06413
(860) 669-5859 FAX (860) 669-5869

October 15, 1998

To: Roy F. Weston Inc - Region II START
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Edison, NJ

Attn: Sharron Decosta NEW JERSEY PORTION

Fr: Frost Associates
Founders Village
Clinton, Conn 06413

Tel: (203) 669-5859
Fax: (860) 669-5859

Sub: Vidan Auto Salvage
Brooklyn, NY

CERCLIS:

Job: 4013

Site Longitude: 73-59-22 73.989441
Site Latitude : 40-40-33 40.675831

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. A CENTRACTS report may have up to six radii of any length and 1500 block groups.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from The Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, 88 Founders Village, Clinton Conn 06413. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adja-

Vidan Auto Salvage
Brooklyn, NY

========== Site Data ==========

Population:	7833.23
Households:	4514.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	7753.57
Households:	4471.80
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 0.00

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	79.66
Households:	42.20
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 0.00

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: Not Applicable

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: Not Applicable

FROM : PHONE NO. :

Vidan Auto Salvage
Brooklyn, NY

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: Not Applicable

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: Not Applicable

** Total Population On Private Wells: 0.00

6/

REFERENCE 3

RECONNAISSANCE OF THE GROUND-WATER RESOURCES OF KINGS AND QUEENS COUNTIES, NEW YORK

By Herbert T. Buxton, Julian Soren, Alex Posner, and Peter K. Shernoff

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U.S. GEOLOGICAL SURVEY

Open-File Report 81-1186

Prepared in cooperation with the

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION and

THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Syosset, New York

1981

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UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

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Syosset, New York 11791

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CONVERSION FACTORS AND ABBREVIATIONS

Multiply inch-pound units	By	To obtain metric (SI)[1] units
cubic feet per second (ft^3/s)	.0283	cubic meters per second (m^3/s)
million gallons per day (Mgal/d)	.0438	cubic meters per second (m^3/s)
mile (mi)	1.609	kilometer (km)
foot (ft)	.3048	meter (m)
micromho per centimeter (μmho/cm)	1.001	microsiemens (μS)

National Geodetic Vertical Datum of 1929 (NGVD)

[1] International System of units

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RECONNAISSANCE OF THE GROUND-WATER RESOURCES OF KINGS AND QUEENS COUNTIES, NEW YORK

By

Herbert T. Buxton, Julian Soren, Alex Posner, and Peter K. Shernoff

ABSTRACT

Western Long Island's ground water is being considered for redevelopment as a supplemental source of public supply. The ground-water reservoir in Kings and Queens Counties supplied an average of more than 120 million gallons per day for industrial and public water supply from 1904 to 1947; however, deterioration of water quality from induced saltwater encroachment caused the cessation of pumping for public supply in Kings County in 1947 and in western Queens County in 1974.

Since the cessation of pumping, the maximum water-table altitude in Kings County has recovered to within 8 feet of the altitude in 1903. At present (1981), eastern Queens County has a major cone of depression, but water levels have not been drawn down to the historical extremes of Kings County.

Chloride and nitrate are indicators of contamination from saltwater intrusion and surface sources. Present chloride and nitrate concentrations in the upper glacial aquifer are generally above predevelopment levels (<0.2 milligrams per liter nitrate as N; <10 milligrams per liter chloride). However, some dilution in areas of past severe saltwater intrusion is evident. Contamination seems most severe in the upper glacial aquifer but decreases eastward and with depth. Contamination of the deeper aquifers from surface sources is attributed mainly to downward migration in zones of hydraulic connection between aquifers. The deeper aquifers show evidence of residual chloride contamination from past intrusion, but the extent of the zone of diffusion in these aquifers is not accurately defined.

Some potable water is available in the Magothy-Jameco and Lloyd aquifers; however, a precise estimate of the quantity of water available is undetermined.

INTRODUCTION

The western part of the Long Island ground-water reservoir (fig. 1) has been a source of public supply since the mid-19th century. However, an incomplete understanding of the hydrology of the ground-water system and the resultant failure to develop a comprehensive management plan for developing this resource resulted in detrimental effects that to some extent continue to the present. Rapid increases in population and the attendant increase in pumping of ground water for industry and public supply, in addition to numerous effects of urbanization, resulted in severe water-level declines and

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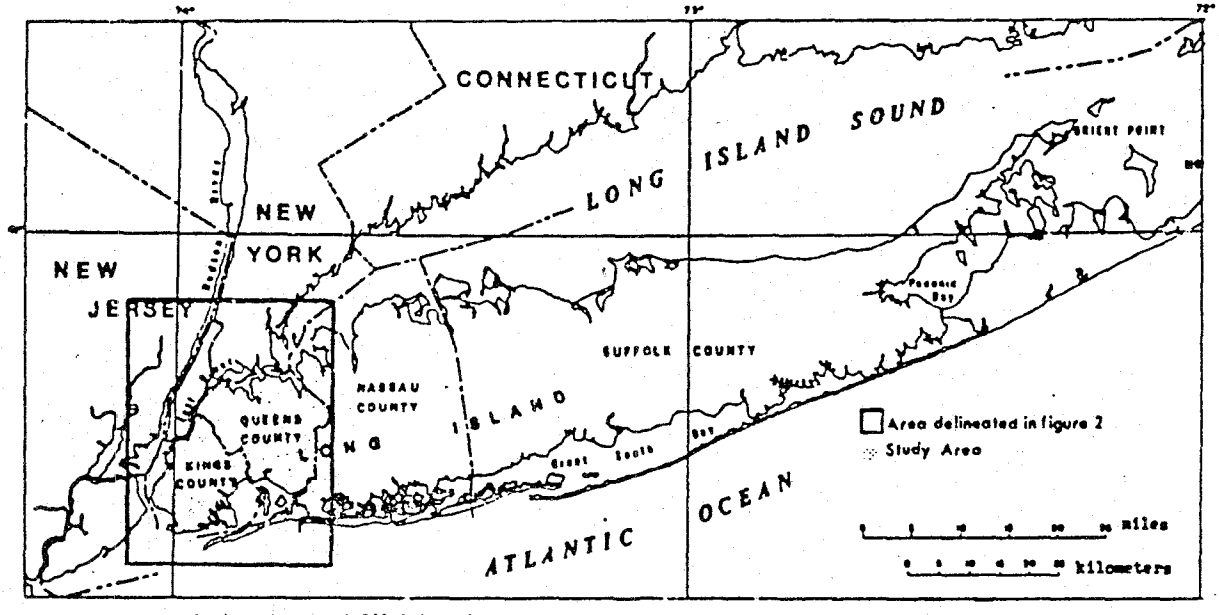
intrusion of water from coastal saltwater bodies. As a result, pumping for public supply in Kings County was stopped in 1947 and in southwest Queens County in 1974. As the early pumping centers in Queens County were abandoned, new ones were established farther east in areas more distant from the shore and where water-table altitudes were higher.

Since the cessation of pumping, water levels in western Long Island have recovered continuously. In some areas where the water table had been severely drawn down, as much as 35 ft below sea level[1], water levels are now above sea level. In many of these areas, subways and deep basements that were constructed in the early 20th century, when water levels were depressed, are now being flooded as the water table recovers, and must be continuously dewatered.



Base from U.S. Geological Survey, 1:250,000 series:
Scranton, Hartford, 1962; New York, 1957;
Newark, Providence, 1947

Figure 1.--Location of Kings and Queens Counties, Long Island, N.Y.

Purpose and Scope

This report summarizes results of the first phase of a detailed investigation of the western part of the Long Island ground-water system. The investigation was undertaken by the U.S. Geological Survey, in cooperation with the New York State Department of Environmental Conservation and the Department of Environmental Protection of the City of New York. Its purpose is to determine whether the ground-water reservoir of western Long

1/"Sea level" is used in place of National Geodetic Vertical Datum of 1929 (NGVD) to indicate fluctuating altitudes, or altitudes that occurred before the establishment of NGVD.

Island is still a useable source of water despite deterioration in quality from past pumping, and, if so, to provide the data and technical interpretation needed to begin developing a management plan for its optimum use.

The first phase of the investigation had the following objectives:

(1) To present a preliminary interpretation of the hydrogeology of the western part of the Long Island ground-water system, including the geometry of the major hydrogeologic units and their water-bearing characteristics.

(2) To briefly describe the predevelopment ground-water system including patterns of ground-water flow and ground-water quality.

(3) To describe the complex effects of urbanization and the development of the ground-water reservoir by summarizing historic pumpage data and the subsequent hydrologic response of the ground-water system.

(4) To develop an observation-well network to determine present ground-water levels and quality and to enable observation of changes resulting from any implemented pumping plan.

(5) To present the results of water-level observations and preliminary water-quality sampling. Water-level data are presented as a map of the 1981 water-table configuration; results of water-quality analyses are presented in a table and on maps showing the distribution of nitrate (NO_3^- as N) and chloride (Cl^-) in the major aquifers.

A proposed second phase of the study, not discussed in this report, entails the development and application of a three-dimensional digital model of the ground-water flow system to predict the effects of natural hydrologic fluctuations and proposed water-management plans.

Location and Geography

The area investigated includes all of Kings County (approximately 76 mi^2), all of Queens County (113 mi^2), and westernmost Nassau County. The area studied is bounded on the west by The Narrows, New York Bay, and the East River, on the north by the East River and Long Island Sound, on the south by the Atlantic Ocean, and on the east by Nassau County (fig. 2). Figures 1 and 2 show the location of the study area and major geographic features. Kings and Queens Counties, the Boroughs of Brooklyn and Queens, have been highly urbanized for most of this century. In 1980, the population was 2.22 million in Kings County and 1.89 million in Queens County.

Acknowledgments

Thanks are given the New York State Department of Environmental Conservation and the New York City Department of Environmental Protection for their support and cooperation. Special thanks are given Romola Popper and the staff of the Bureau of Water Supply Laboratory of the New York City Department of Environmental Protection for cooperation in handling and analysis of water-quality samples.

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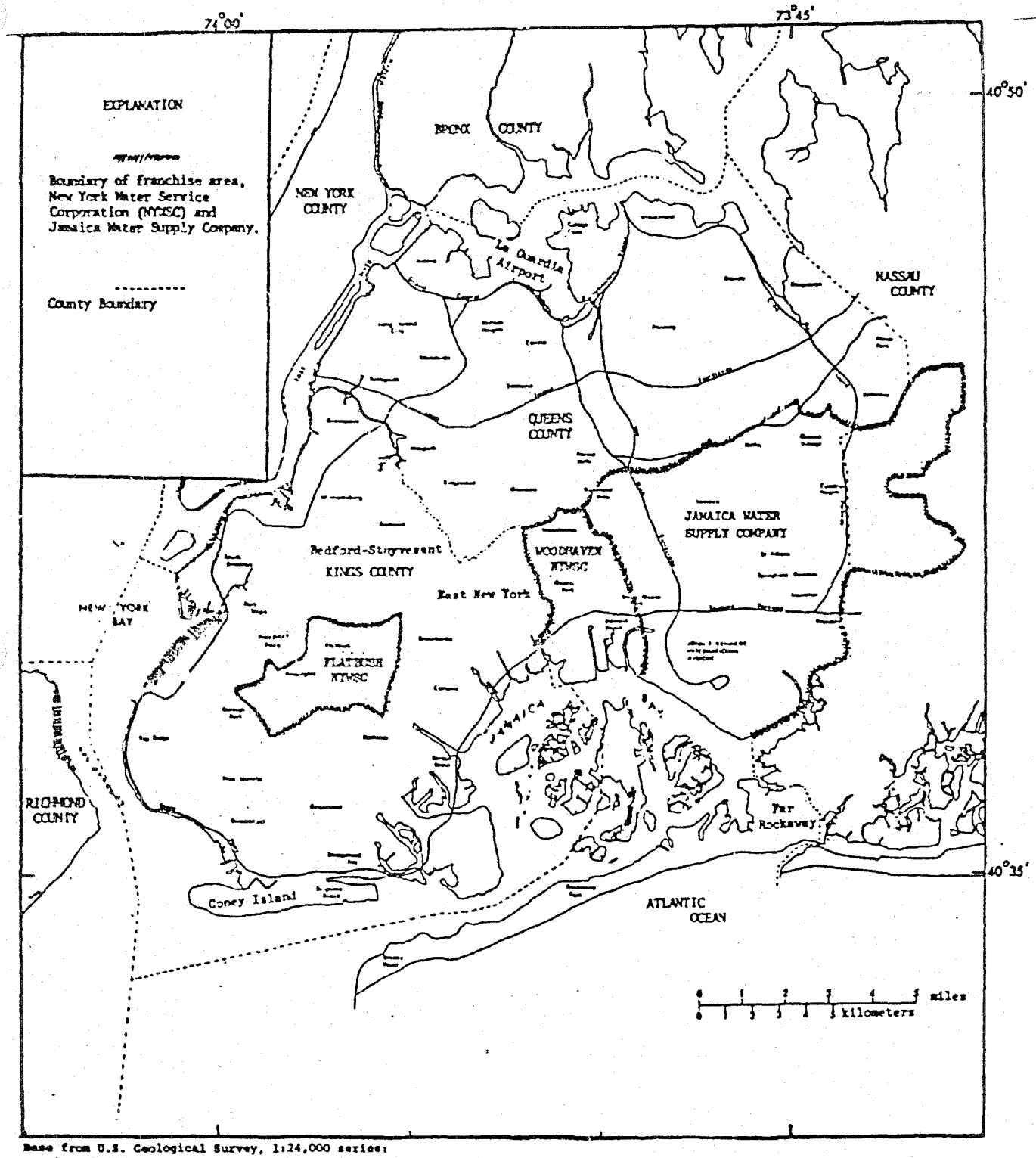

Base from U.S. Geological Survey, 1:24,000 series:
Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956;
Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955;
and Far Rockaway, Weehawken, 1954.

Figure 2.--Major geographic features of western Long Island.

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GEOLOGIC SUMMARY

The ground-water reservoir that underlies western Long Island is composed of a series of unconsolidated deposits of clay, sand, and gravel of Late Cretaceous and Pleistocene age. The stratigraphic relationship of the hydrogeologic units is summarized in table 1; their relative position is depicted in sections in figure 3. The unconsolidated formations are underlain by crystalline bedrock of Precambrian(?) age (figs. 3 and 4).

The bedrock was eroded to a peneplain before the overlying Cretaceous sediments were deposited; its surface shows signs of later erosion by Pleistocene glaciation in the north. Bedrock crops out in northwestern Queens County near the East River and slopes southward at about 80 ft/mi. Consequently, the overlying formations form a southward-dipping wedge that attains a maximum thickness of 1,150 ft in the southeast corner of Queens County. The maximum thickness of unconsolidated deposits in Kings County is about 800 ft, in southeast Kings.

Overlying bedrock is the Raritan Formation of Late Cretaceous age, consisting of the Lloyd Sand Member and an upper, unnamed clay member. Overlying the Raritan Formation is the Magothy Formation and Matawan Group, undifferentiated, also of Late Cretaceous age, the Jameco Gravel of Pleistocene (Illinoian?) age, the Gardiners Clay of Pleistocene (Sangamon) age, upper Pleistocene deposits of Wisconsin age, and a generally thin soil mantle of Holocene age (fig. 3). Holocene beach deposits make up most of the Rockaway Peninsula and Coney Island in the south (fig. 2), and Holocene salt-marsh deposits underlie and fringe the south-shore bay areas. Artificial filling has been done in low and swampy shoreline areas. Because Holocene deposits occur in relatively small areas of Kings and Queens and are not significant water bearers, they are not included in the geologic descriptions that follow.

Erosion of the Cretaceous strata from Late Cretaceous through Pleistocene time has resulted in a complex buried topography. An understanding of the depositional and erosional sequences associated with these units is integral to an accurate stratigraphic interpretation.

The most recent interpretive publication on the geology of Kings County is Suter and others (1949). More recent mapping of geologic units in Queens County (Soren, 1971 and 1978) made use of a greater number of wells and more detailed geologic and geophysical data; this allowed more accurate definition of the geology and provided new information on the depositional history of the units in western Long Island. The geologic data compiled from these sources, along with drillers' geologic logs, were reinterpreted in light of the current understanding of the erosional history. The resultant hydrogeologic interpretation reflects major revisions in Kings County and several minor revisions in Queens County along the Kings-Queens County border. The descriptions of geologic units in the following paragraphs include maps of the surface configuration of each unit (figs. 4-9).

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Table 1.—Western Long Island stratigraphic column with geologic and hydrogeologic interpretation.

SYSTEM	SERIES	GEOLOGIC UNIT		HYDROGEOLOGIC UNIT	RANGE OF THICKNESS, IN FEET	RANGE OF ALTITUDE OF UPPER SURFACE, IN FEET ABOVE OR BELOW MSVD
QUATERNARY	Holocene	Shore, beach salt-marsh deposits and alluvium				
	Pleistocene	Wisconsin Glaciation (Harbor Hill, Interstadial marine and Ronkonkoma? Drift	Till (ground and terminal moraine) Outwash "20-foot" clay (marine)	Upper glacial aquifer	0-300	Land surface
		unconformity?				
		Sangamon Interglaciation	Gardiners Clay (marine)	Gardiners Clay	0-150	-40 to -200
		unconformity?				
		Pre-Wisconsin Glaciation (Illinoian?)	Jameco Gravel	Jameco aquifer	0-200	-90 to -240
		unconformity?				
CRETACEOUS	Upper Cretaceous	Magothy Formation and Matawan Group undifferentiated		Magothy aquifer	0-500	40 to -400
		unconformity?				
		RARITAN FORMATION	Clay member	Raritan confining unit	0-200	30 to 650
			Lloyd Sand Member	Lloyd aquifer	0-300	-90 to -625
		unconformity?				
PRECAMBRIAN			Crystalline bedrock	Bedrock	—	15 to -1100

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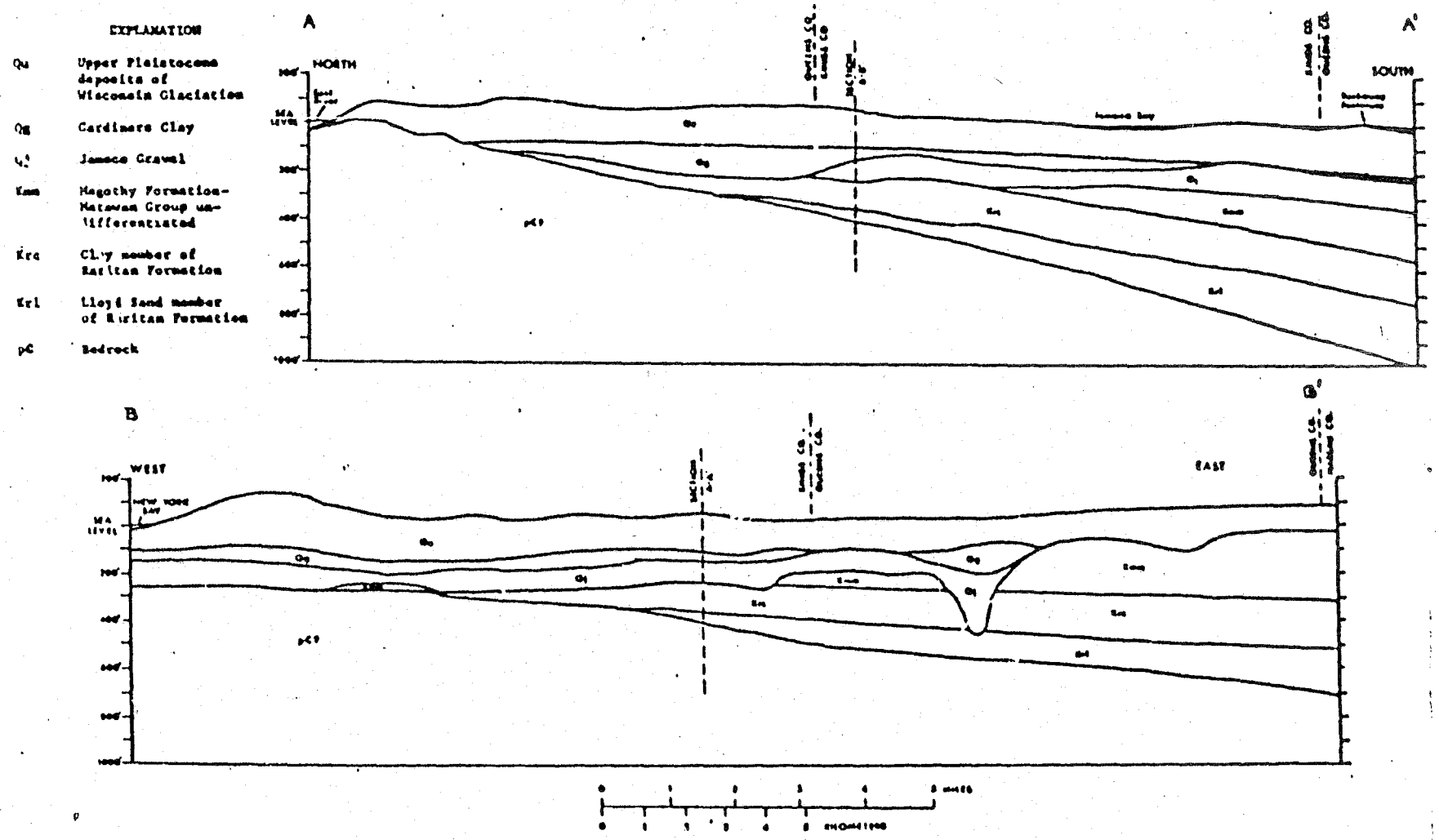
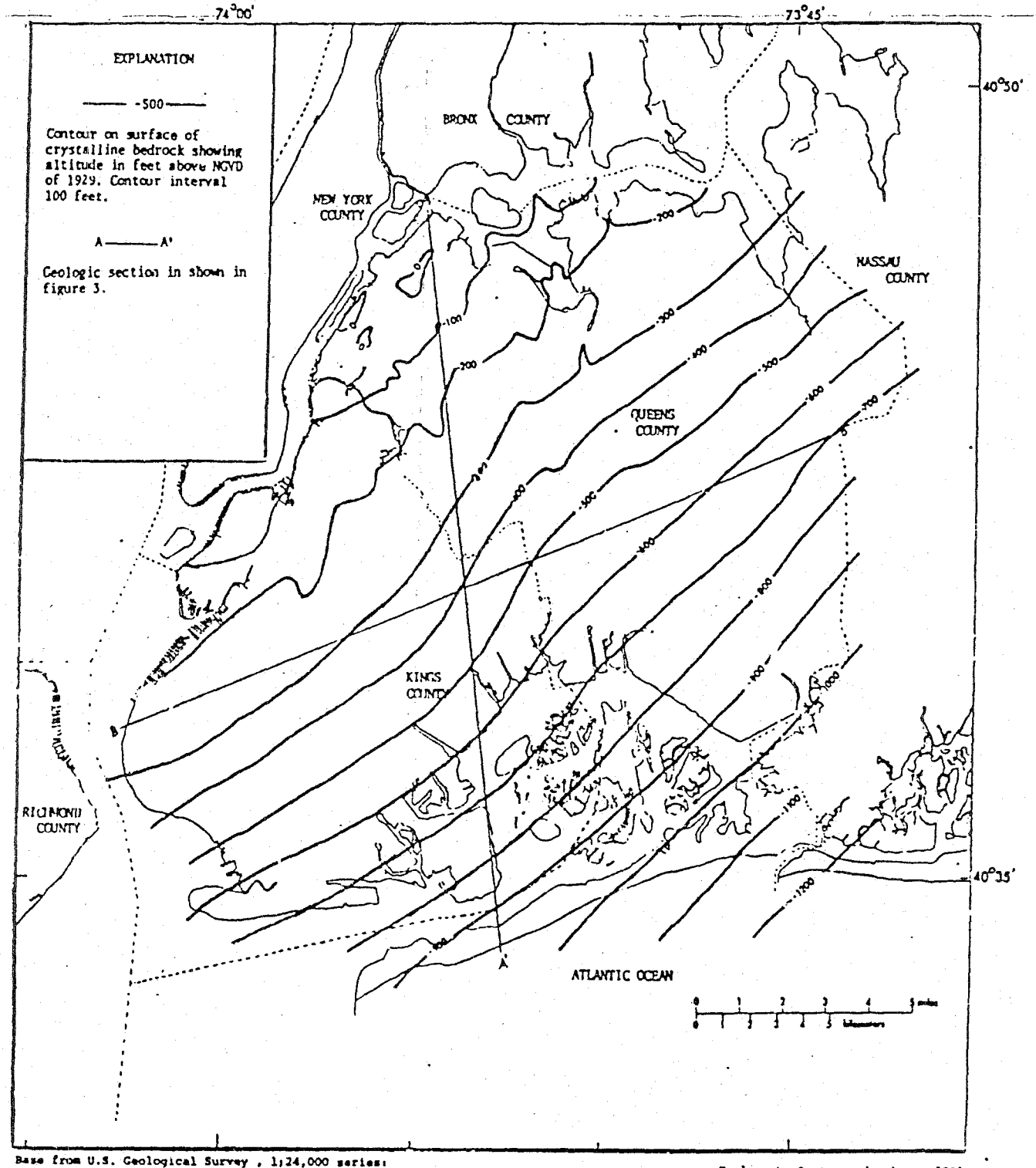


Figure 3.--Hydrogeologic sections. Locations are shown in figures 4-9; stratigraphic relationships are summarized in table 1.



Base from U.S. Geological Survey , 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mt. Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; Far Rockaway, Weehawken, 1954.

Geology by Paxton and others, 1981, and Soren,1978.

Figure 4.--Surface configuration of the crystalline bedrock.

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Upper Cretaceous

Lloyd Sand Member of the Raritan Formation

The Lloyd Sand Member, the earliest Cretaceous deposit in the area, lies unconformably on bedrock. It is absent in northwestern Kings and Queens Counties (fig. 5). The limit generally follows a line from southwest Kings County through central Kings northward to near New York Municipal (LaGuardia) Airport. As a result of pre-Wisconsin erosion, the formation is also missing in a tributary buried valley system extending from near the north shore in central Queens County to south of the Long Island Expressway.

The Lloyd Sand Member consists mainly of deltaic deposits of fine to coarse quartzose sand interbedded with sand and small- to large-pebble quartzose gravel. Interbeds of silt and clay and silty and clayey sand are common throughout the unit. The member is overlain and generally overlapped by the clay member of the Raritan Formation. The extent of the Lloyd Sand Member and the clay member are largely coincident where eroded in the buried valley system in northern Queens, but in some places the clay member extends well north of the underlying Lloyd Sand Member.

Thickness of the Lloyd Sand Member ranges from zero at its northern extent to about 200 ft at Kings County's southeast edge and 300 ft in southeast Queens County. The unit's surface is as shallow as 90 ft below sea level in northern Queens County and as deep as 825 ft below sea level in the southeast.

Clay Member of the Raritan Formation

The clay member of the Raritan Formation is absent in the western part of Kings County and in northwestern Queens (fig. 6) and is eroded in central Queens County in the same buried valley system as the Lloyd Sand Member; however, the clay member has been more extensively eroded, especially to the south. The clay member consists mainly of deltaic clay and silty clay beds and some interbedded sand. The clay member increases in thickness from a knife edge at its northern limit to about 150 ft in southeast Kings County and about 200 ft in southeast Queens County. Its upper surface lies as shallow as 120 ft below sea level in Kings County and a few feet above sea level in parts of northern Queens. It is as deep as 500 ft below sea level in southern Kings County and 650 ft below sea level in southeast Queens.

The clay member overlies the Lloyd Sand Member with apparent conformity and lies unconformably on bedrock. It was disconformably overlain by the remaining Upper Cretaceous deposits; however, as a result of a complex erosional history after the Late Cretaceous Epoch, the clay member became overlain northward by the Magothy Formation, the Jameco Gravel, the Gardiners Clay, and upper Pleistocene deposits, respectively (fig. 3).

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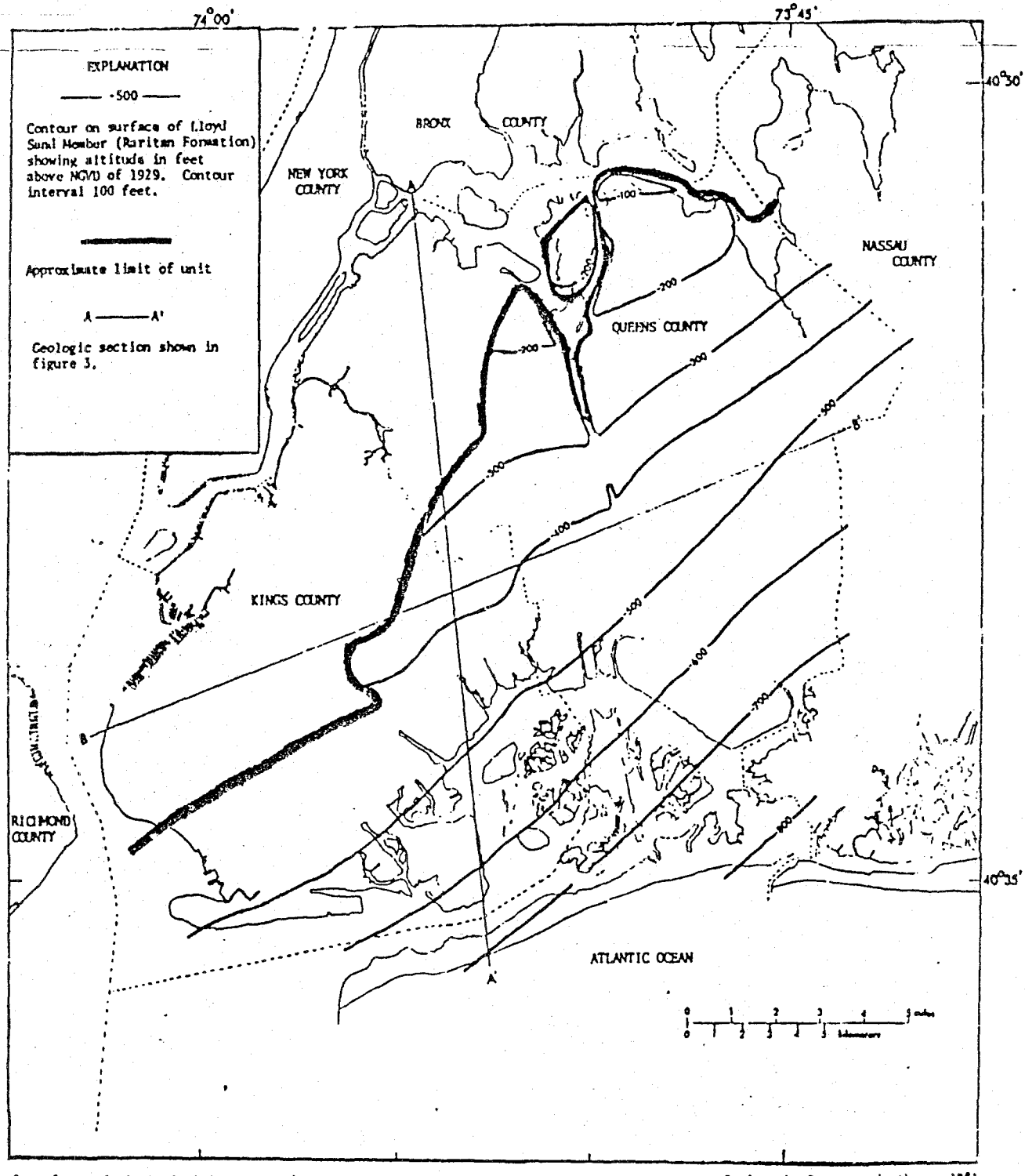

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Geology by Buxton and others, 1981 and Soren, 1978

Figure 5.--Surface configuration of the Lloyd Sand Member of the Raritan Formation.

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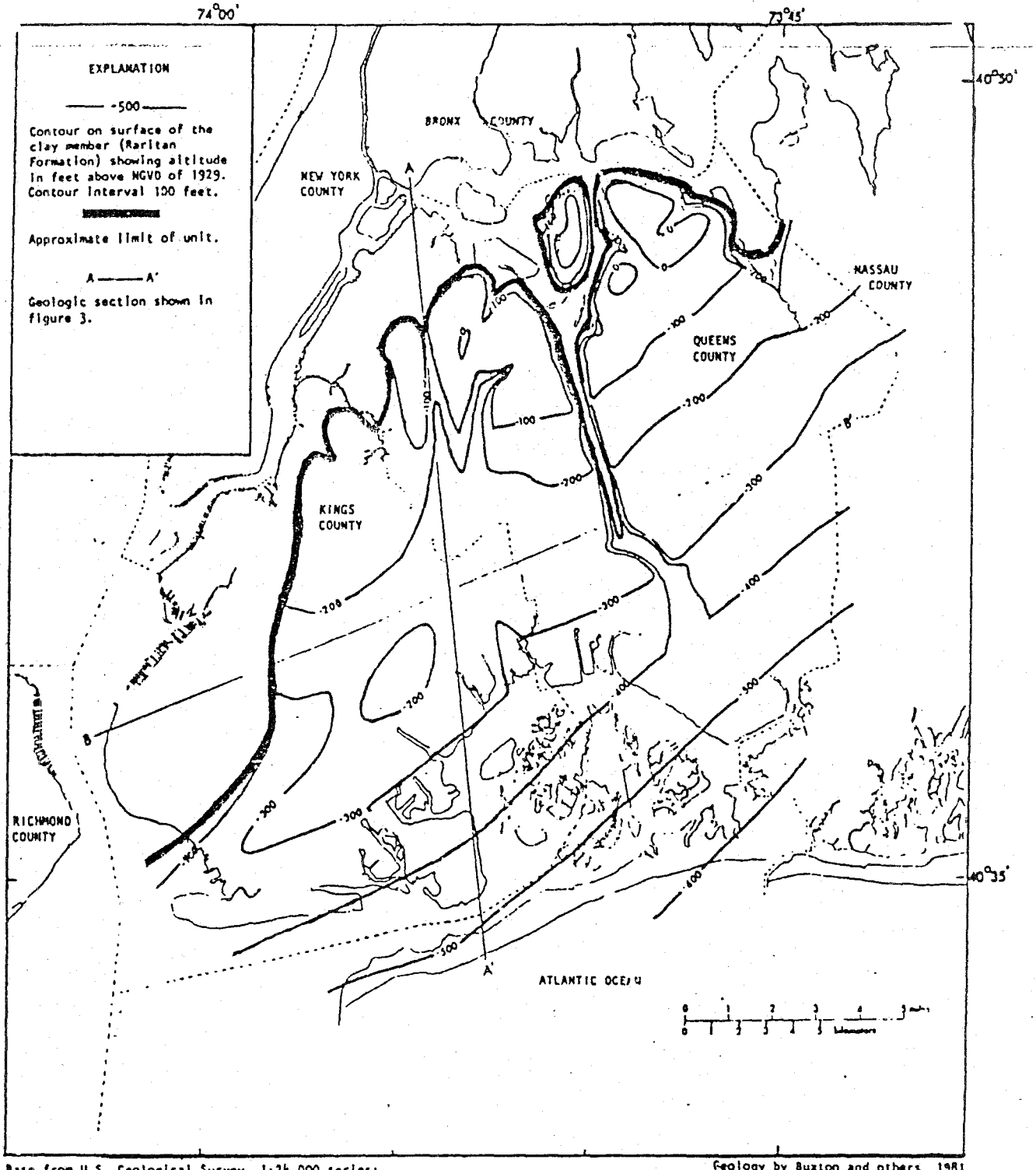

Figure 6.--Surface configuration of the clay member of the Raritan Formation.

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Magothy Formation and Matawan Group

The Magothy Formation and Matawan Group, undifferentiated comprises the remaining deposits of the Cretaceous Period in this area. This uppermost Cretaceous unit was severely eroded from the Late Cretaceous to the time of deposition of the Jameco Gravel. The erosion is most severe in what was probably a complex channel network from an ancestral diversion of the Hudson River (Soren, 1978, p. 12-15 and plate 2G). The Cretaceous surface in Kings and Queens Counties is a buried erosional surface. The surface configuration and extent of the unit (fig. 7) clearly show the effects of erosion. Two prominent channels have a north-south trend, one through central Queens and one generally parallel to the Kings-Queens County line. These channels have eroded through the unit to very near the south shore, where they seem to join and continue south in a single channel. Where the unit has been completely eroded, dissection is evident in the underlying clay member and Lloyd Sand Member of the Raritan Formation (figs. 5 and 6), and even in the bedrock in a small area of north-central Queens County (fig. 4). Erosion is also evident in Kings County, where northeast-southwest channelization has eroded through the unit and isolated a small area of remaining Magothy deposits in central Kings.

The deposits of the Magothy Formation and Matawan Group, like the earlier Cretaceous deposits, are of continental origin and are mostly deltaic quartzose very fine to coarse sand and silty sand with lesser amounts of interbedded clay and silt. The unit commonly has a coarse quartzose sand and in many places a gravel basal zone 25 to 50 ft thick.

The unit's thickness ranges from zero at its limits to more than 200 ft in southeast Kings and 500 ft in southeast Queens. It is significantly thinner in the buried valleys. Altitudes of the Magothy-Matawan surface range from a few feet above sea level in northeast Queens to more than 400 ft below sea level in the buried valley to the south.

Pleistocene

Jameco Gravel

The Jameco Gravel is the earliest Pleistocene deposit in the area (fig. 8). It is considered to be a channel filling associated with an ancestral pre-Sangamon (Illinoian?) diversion of the Hudson River (Soren, 1978, p. 8). This episode of fluvial erosion was probably also largely responsible for the irregular configuration of the Late Cretaceous land surface. The Jameco Gravel is present in most of Kings County and southern Queens County. It reaches greatest thickness in the deep channels eroded in the underlying unit and thins severely over the higher areas. For example, a small area in southeast Queens in which the Jameco Gravel has not been found coincides with a high point on the surface of the underlying Magothy Formation-Matawan Group (fig. 7). Thickness of the Jameco Gravel ranges from a knife edge at its northern limit to more than 200 ft in the main buried valley in central Queens County.

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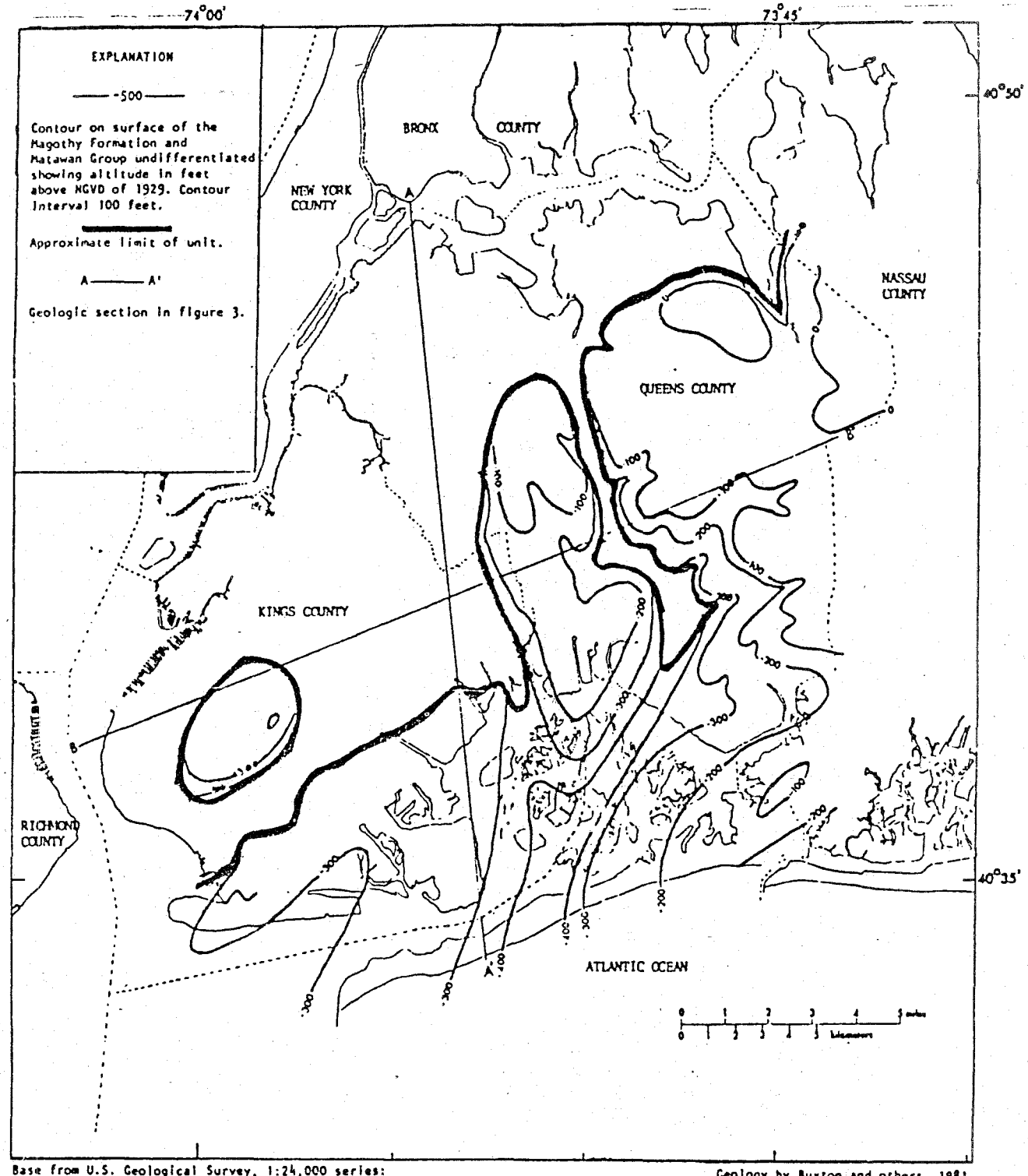

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956: Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955: and Far Rockaway, Weehawken, 1954.

Geology by Buxton and others, 1981 and Soren, 1978

Figure 7.--Surface configuration of the Magothy Formation and Matawan Group, undifferentiated.

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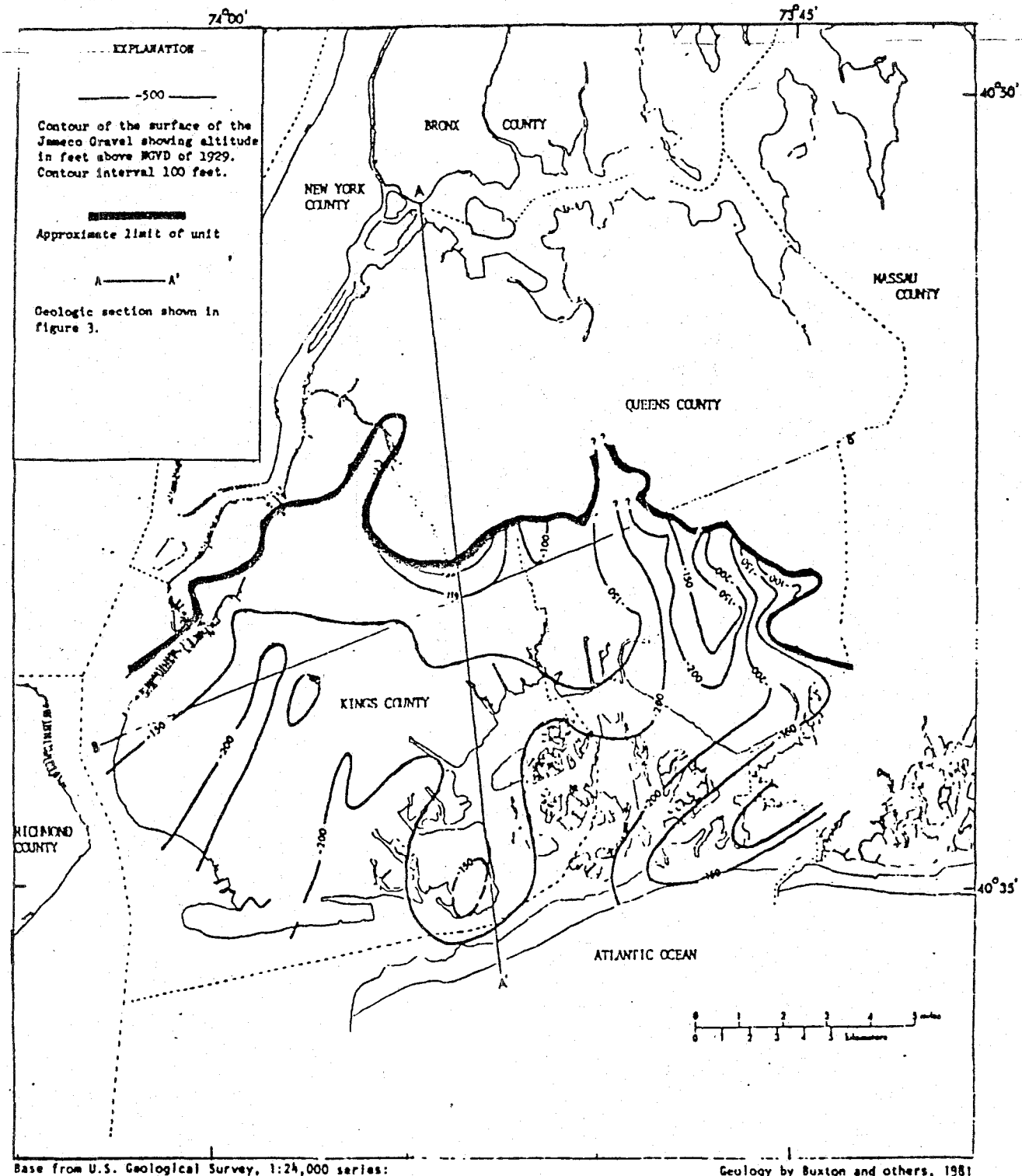

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Geology by Buxton and others, 1981 and Soren, 1978

Figure 8.--Surface configuration of the Jameco Gravel.

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Jameco deposits consist mainly of a heterogeneous suite of igneous, metamorphic, and sedimentary rock types that are typically dark-brown. The deposits grade from coarse sand and gravel with many cobbles and some boulders in the northern part of Kings County to finer particles southward. Many diabase fragments indicate transport by meltwater from a glacial terminus northwest of New York City. Soren (1978, p. 12-13) suggests that the Hudson was diverted from its channel on the west of Manhattan Island to Queens County (via the Harlem River channel) and that, from there, distributary streams carried diabase fragments into Kings and Queens Counties.

The surface altitude of the Jameco Gravel is generally highest along the unit's north edge, as shallow as 110 ft below sea level in northern Kings County, and 90 ft below sea level in Queens County. It is generally deeper to the south and over the deep channels eroded in the Late Cretaceous surface, where it is more than 200 ft below sea level. The surface of the Jameco Gravel was probably shaped by stream erosion and by glaciation.

Gardiners Clay

The Gardiners Clay occurs in most of Kings County and in the southwest part of Queens County (fig. 9). It unconformably overlies the Jameco Gravel and generally overlaps it along most of its extent.

The Gardiners Clay consists mainly of greenish-gray clay and silt and some interbedded sand. It was probably deposited in lagoonal and marine environments during an interglacial (Sangamon) interval (Soren, 1978, p. 10). The typical blue or green color of these beds is due to much glauconite, chlorite, and weathered biotite. The Gardiners Clay was commonly described as "blue clay" in many early 20th century drillers' logs. Fossil shells, foraminifera, and disseminated lignite are widespread in the formation.

Thickness of the Gardiners Clay ranges from a knife edge at its northern limit to a maximum of 150 ft in areas of stream and glacial erosion. The surface of the Gardiners Clay is predominantly flat but is probably affected locally by glacial erosion and compaction in the thickest areas. The upper surface ranges from less than 50 ft below sea level in the north to about 200 ft below sea level at the southernmost edge of the area. The Gardiners Clay is generally less than 100 ft below sea level at its northern extent and has not been found higher than 40 ft below sea level anywhere on Long Island. This is probably a result of the deposition during the Sangamon Interglaciation, when sea level is estimated to have been 40 ft lower than at present. The Gardiners Clay is probably absent in two localized areas in the southern part of the area, where underlying deposits (Magothy Formation and Matawan Group and Jameco Gravel) are higher than the expected surface of the Gardiners Clay.

Upper Pleistocene Deposits

These deposits are Wisconsin in age and of glacial origin. The deposits unconformably overlie all underlying units and are found at the surface in nearly all of Kings and Queens Counties. The surficial geology of this area was mapped by Fuller (1914). The glacial deposits include: (1) terminal

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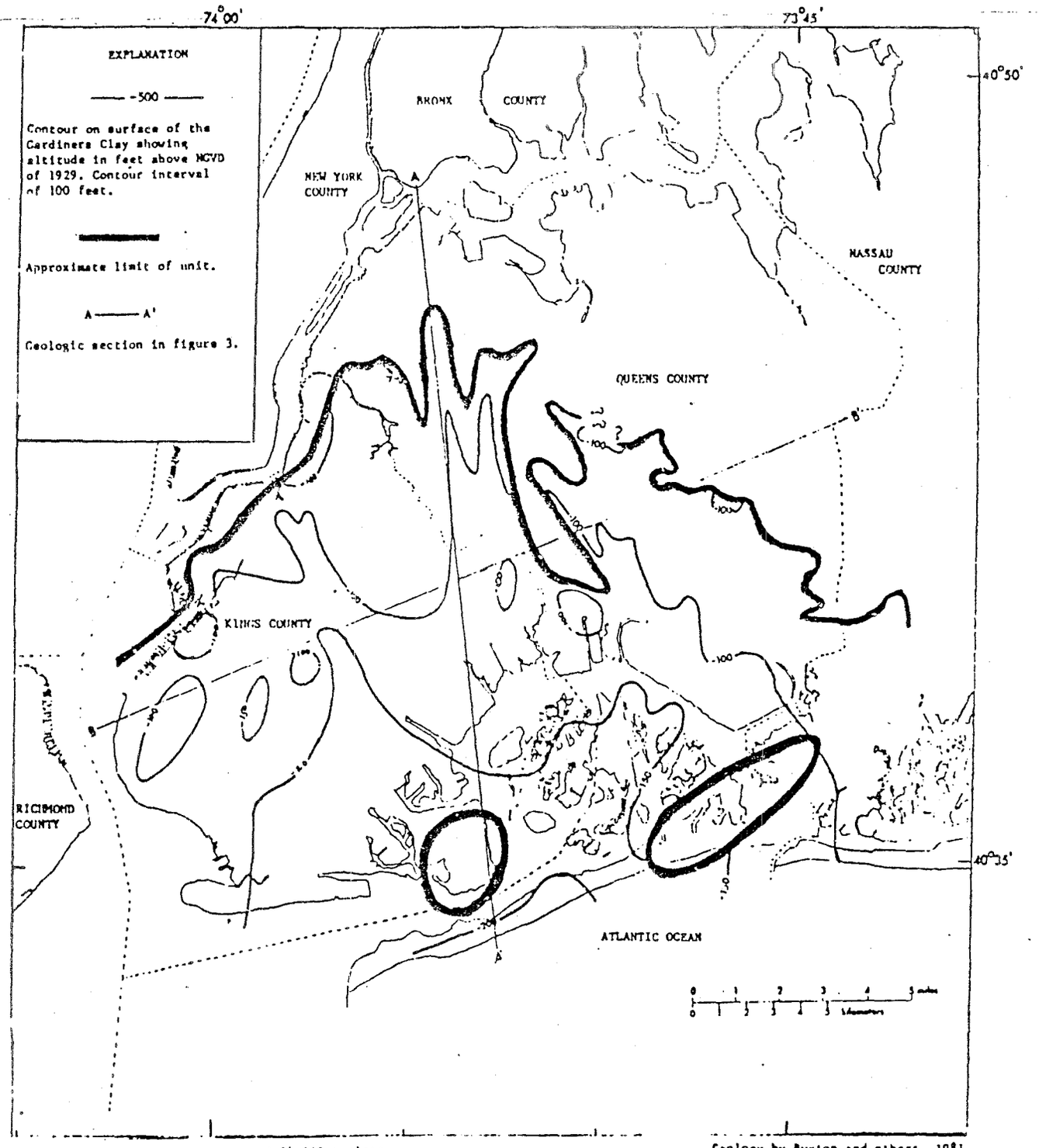

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956: Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955: and Far Rockaway, Weehawken, 1954.

Geology by Buxton and others, 1981 and Suren, 1978

Figure 9.--Surface configuration of the Gardiners Clay.

moraine deposits emplaced by an ice front of Harbor Hill age (see fig. 11, p. 22); (2) ground-moraine deposits north of the terminal moraine; and (3) glacial outwash south of the terminal moraine. Thickness of the upper Pleistocene deposits range from zero in small areas of northwestern Queens, where bedrock crops out, to as much as 300 ft in the terminal moraine and near the buried valleys. The terminal moraine is an unsorted and unstratified mixture of clay, sand, gravel, and boulders that were accumulated at the front of a continental glacier.

The ground moraine is similar in character to the terminal-moraine deposits but was formed at the base of the ice sheet during periods of ablation. Meltwater from the ice front flowed southward and carried sand and gravel in broad coalescing sheets to form an outwash plain that extends from the terminal moraine south to the coast. Pre-Harbor Hill deposits are present at depth in the sequence of upper Pleistocene deposits (table 1). The 20-foot clay in eastern Queens and Nassau Counties is a marine clay deposited during the Ronkonkoma-Harbor Hill interstade (Soren, 1978, p. 11). This unit locally separates the Harbor Hill Drift from the underlying Ronkonkoma Drift and earlier deposits.

HYDROLOGIC SUMMARY

The six major geologic units described in the preceding section correspond to hydrologic units with specific water-bearing characteristics. These hydrologic units and their corresponding geologic names (table 1 and fig. 3) are, in ascending order, the Lloyd aquifer (Lloyd Sand Member of the Raritan Formation), the Raritan confining unit (the clay member of the Raritan Formation), the Magothy aquifer (Magothy Formation and Matawan Group, undifferentiated), the Jameco aquifer (Jameco Gravel), the Gardiners Clay (geologic unit is known by same name), and the upper glacial aquifer (upper Pleistocene deposits).

The aquifers are the unconsolidated formations containing sufficient saturated permeable material to yield significant quantities of water to wells. The most permeable units are the beds of predominantly sand or sand and gravel. The clayey formations of low hydraulic conductivity within the mass of unconsolidated deposits behave as confining units where present and separate the ground-water reservoir into three major aquifer units--the Lloyd, the Magothy-Jameco, and the upper glacial aquifers (fig. 3).

Where present, the Gardiners Clay restricts vertical flow between the upper glacial and the deeper aquifers, and the Raritan confining unit restricts vertical flow between the upper aquifers and the Lloyd aquifer. Both clay units are significant confining beds and have been estimated to have a vertical hydraulic conductivity of 0.001 ft/d (Franke and Cohen, 1972), much lower than that of the aquifers. Large hydraulic gradients are developed across these units, and flow patterns in aquifers are affected. Where these confining units are absent, ground-water flow between aquifer units is uninhibited. Thus, special attention should be paid to the exact extent of the confining units when defining ground-water flow patterns.

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The bedrock underlying these unconsolidated deposits has a low hydraulic conductivity and does not yield more than a few gallons per minute to wells. The quantity of water that can flow across this boundary is insignificant compared with the quantities that flow in the overlying unconsolidated units. Therefore, the bedrock surface is considered to be the bottom hydrologic boundary of the ground-water flow system.

Aquifer Characteristics

Lloyd Aquifer

The Lloyd aquifer is of moderate horizontal hydraulic conductivity; Franke and Cohen (1972) estimated its average hydraulic conductivity to be 40 ft/d, but individual sandy and gravelly beds within the aquifer may have much higher values. High-capacity wells tapping the Lloyd aquifer have generally been pumped at rates less than 1,000 gal/min, but pumpage as high as 1,600 gal/min from a single well has been reported (Soren, 1971, p. 11). Specific capacities (gal/min pumped per foot of drawdown in the well) of wells in the Lloyd aquifer have ranged from 4 to about 40 (gal/min)/ft (Soren, 1971, p. 11). Water in the Lloyd aquifer is highly confined between the bedrock and the Raritan confining unit except where the confining unit has been eroded (fig. 6), providing good hydraulic connection with the overlying aquifer.

Magothy-Jameco Aquifer

The lateral hydraulic continuity between the Jameco Gravel and Magothy aquifer enables both units to act as one aquifer in which the Jameco is a zone of higher hydraulic conductivity. The Magothy-Jameco aquifer is to some extent hydraulically separated from the overlying upper glacial aquifer by the Gardiners Clay and from the underlying Lloyd aquifer by the Raritan confining unit.

The Magothy aquifer has been estimated to have an average horizontal hydraulic conductivity of 50 ft/d (Franke and Cohen, 1972) but, as in the Lloyd aquifer, individual sandy and gravelly beds may have values four to five times higher. No pumping of the Magothy aquifer in Kings County is known; however, wells tapping the Magothy aquifer in Queens County have yielded as much as 1,500 gal/min. The specific capacities of wells tested have ranged from 15 to 30 (gal/min)/ft in fine sand to 50 (gal/min)/ft in coarser material (Soren, 1971, p. 10).

Soren (1971, p. 9) estimated the horizontal hydraulic conductivity of the Jameco Gravel to be at least 270 ft/d. Wells tapping the Jameco have yielded 1,600 gal/min, and specific capacities of Jameco wells have been as high as 180 (gal/min)/ft (Soren, 1971, p. 9).

Water in the Magothy-Jameco aquifer system is highly confined in southern Queens and in Kings County, where it lies between the Gardiners Clay and the Raritan confining unit. In northern Queens, however, the Magothy is overlain by glacial deposits and is, therefore, a very "leaky" confined aquifer, practically under water-table conditions. Confinement within the Magothy is somewhat increased by en echelon lenses and beds of clay and silty clay, whose arrangement tends to produce an increased confining effect with depth.

Upper Glacial Aquifer

The upper glacial aquifer includes all of the saturated glacial drift. Sand beds and sand and gravel beds in the outwash south of the terminal moraine are highly permeable and are capable of yielding large quantities of water to properly constructed wells. Horizontal hydraulic conductivity of glacial outwash has been estimated to be 270 ft/d (Franke and Cohen, 1972). Public-supply and other high-capacity wells tapping outwash deposits have commonly yielded as much as 1,500 gal/min, with specific capacities ranging from 50 to 60 (gal/min)/ft (Soren, 1971, p. 8). Terminal and ground-moraine deposits generally have much lower conductivity than outwash because they include clay and silt deposits and are not well sorted. Coarse sand and gravel lenses within the morainal deposits may yield significant amounts of water, but because such lenses cannot be predictably located, their yields are uncertain.

Water in the upper glacial aquifer is under water-table (unconfined) conditions but, within the morainal deposits, it may be locally confined between beds of clay and silt. Perched ground-water bodies and ponds above the main water table, supported by local clayey and silty beds, are also common in the morainal areas.

PREDEVLOPMENT HYDROLOGIC CONDITIONS

Predevelopment Ground-Water Flow Patterns

Hydrologic data from central and eastern Long Island indicate that, under predevelopment conditions, approximately 50 percent of annual precipitation infiltrates to the water table and recharges the ground-water system (Cohen and others, 1968, p. 44-45); the remainder is lost to evapotranspiration and direct runoff. Although precipitation fluctuates on both seasonal and longer term cycles, the intermittent addition of fresh water is adequate to maintain a large reservoir of fresh water in the unconsolidated deposits beneath Long Island. The quantity of water stored in this reservoir fluctuates with recharge, as indicated by fluctuations in the water-table configuration.

The ground-water system is bounded on top by the water table, on the bottom by impermeable bedrock, and on the sides by contact with salty ground water or surface-water bodies (fig. 10). The water stored is in continuous motion. The path of flow from the water table to a point of discharge is complex and three dimensional. This path is affected by the rate and areal distribution of recharge, the geometry and hydraulic characteristics of the aquifers and confining units, the proximity and nature of discharge boundaries, and ultimately, the distribution of hydraulic head throughout the system, which depends on all the aforementioned factors.

Much of the water that enters the ground-water system remains in the upper glacial aquifer, moves laterally, and discharges to surrounding saltwater bodies (fig. 10). Ground-water seepage to streams and springs causes some vertical gradients in the shallow water-table aquifer (Franke and Cohen, 1972). (These are not shown in fig. 10.)

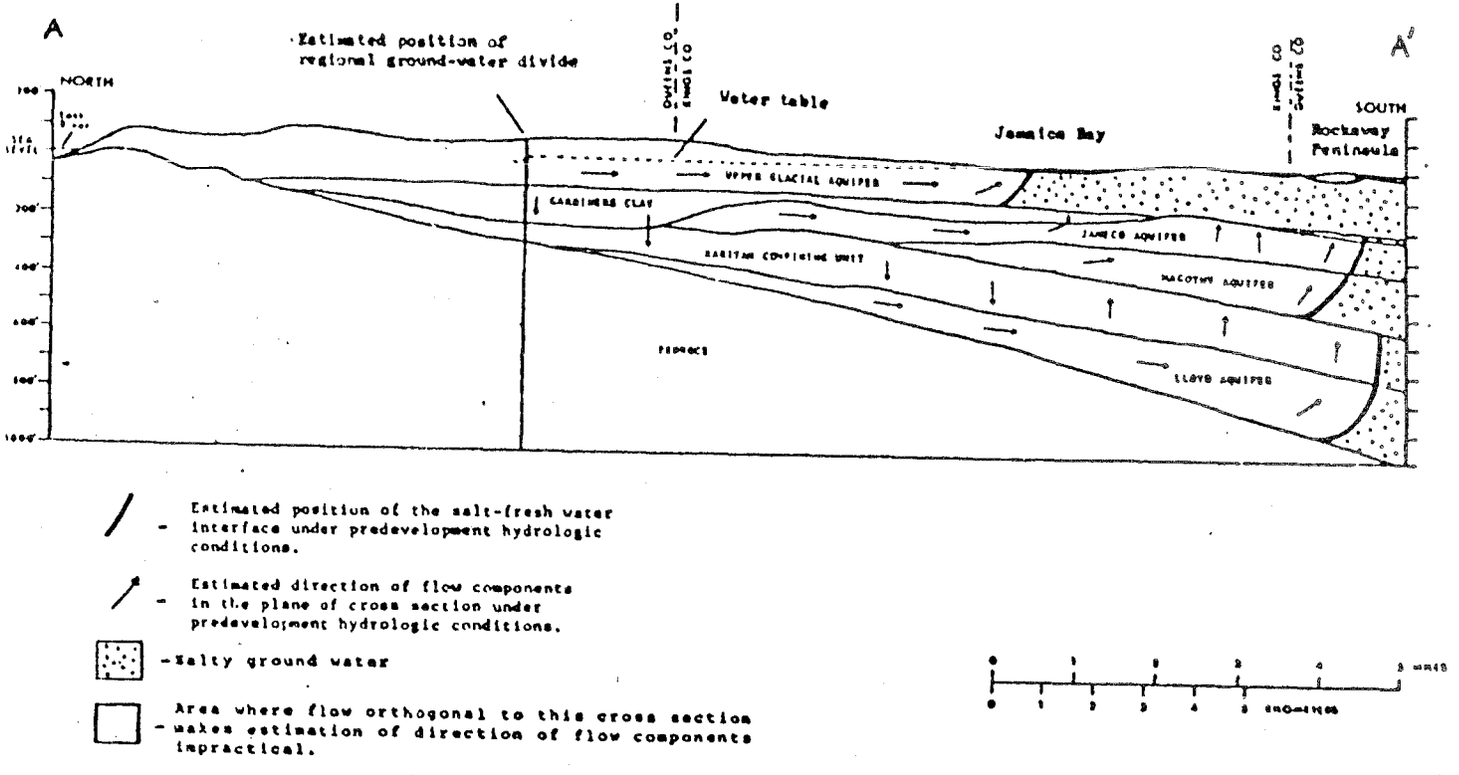

Figure 10.--Generalized hydrologic section showing estimated predevelopment flow patterns. (Location is shown in fig. 11.)

The rest of the water entering the system flows downward to the deeper aquifers (fig. 10). Water enters freely in areas of continuity between aquifer units, but moves more slowly and is refracted to near vertical through the confining units. Water in the deeper aquifer also moves toward the shore, where upward vertical gradients cause flow to shallower aquifers. The water may enter the shallow aquifer where the ground water is still fresh, in which case it would eventually discharge to the surrounding salty surface-water bodies. Where water in the overlying aquifer is salty, the fresh water mixes with the salty ground water and is lost from the freshwater system. Because saline water is of greater density than the fresh water, when the two fluids are in proximity in the aquifer units they behave largely as though immiscible. Although a zone of diffusion forms at the interface, mixing is minimal under nonpumping conditions, and flow normal to the interface is virtually nil.

Predevelopment Water-Table Configuration

The configuration of the water table is a primary indicator of the condition of the ground-water reservoir. The first measure of the water-table configuration on Long Island, made in 1903 (fig. 11), provides the best available estimate of the predevelopment water-table configuration, although urbanization and development of the ground-water system even then had begun to affect ground-water levels.

In the central parts of Long Island, the water-table altitude before urbanization exceeded 90 ft (Veatch and others, 1906) and, at the Queens-Nassau County line, it exceeded 50 ft (fig. 11). A steep water-table gradient westward into Queens County is apparent and indicates that a significant quantity of ground water enters Queens County from the east and assuredly helped maintain water levels in Kings and Queens Counties. Long Island's major ground-water divide trends east-west through Queens County, then gradually southward in Kings County; it is nearer the north shore than the south. The asymmetric shape of the water table in profile, with steep northward gradients and flatter gradients to the south, is apparent in figure 11 and is due to the thickening of the unconsolidated deposits to the south and to the higher hydraulic conductivity of the outwash plain to the south than that of the moraine deposits in the north.

High water levels in 1903 resulted in steep ground-water gradients to several stream channels in Kings and Queens Counties. These channels, which are relict from the glacial period, were sustained primarily by ground-water seepage. An extensive series of stream channels and swampy areas in Kings and Queens Counties suggests that a significant quantity of ground water was discharged at land surface into springs, lakes, and stream channels. Soren (1971, p. A5) estimates that ground-water discharge to streams before development in Queens County alone probably exceeded 30 Mgal/d, which is more than 25 percent of the natural recharge to the ground-water system in that county.

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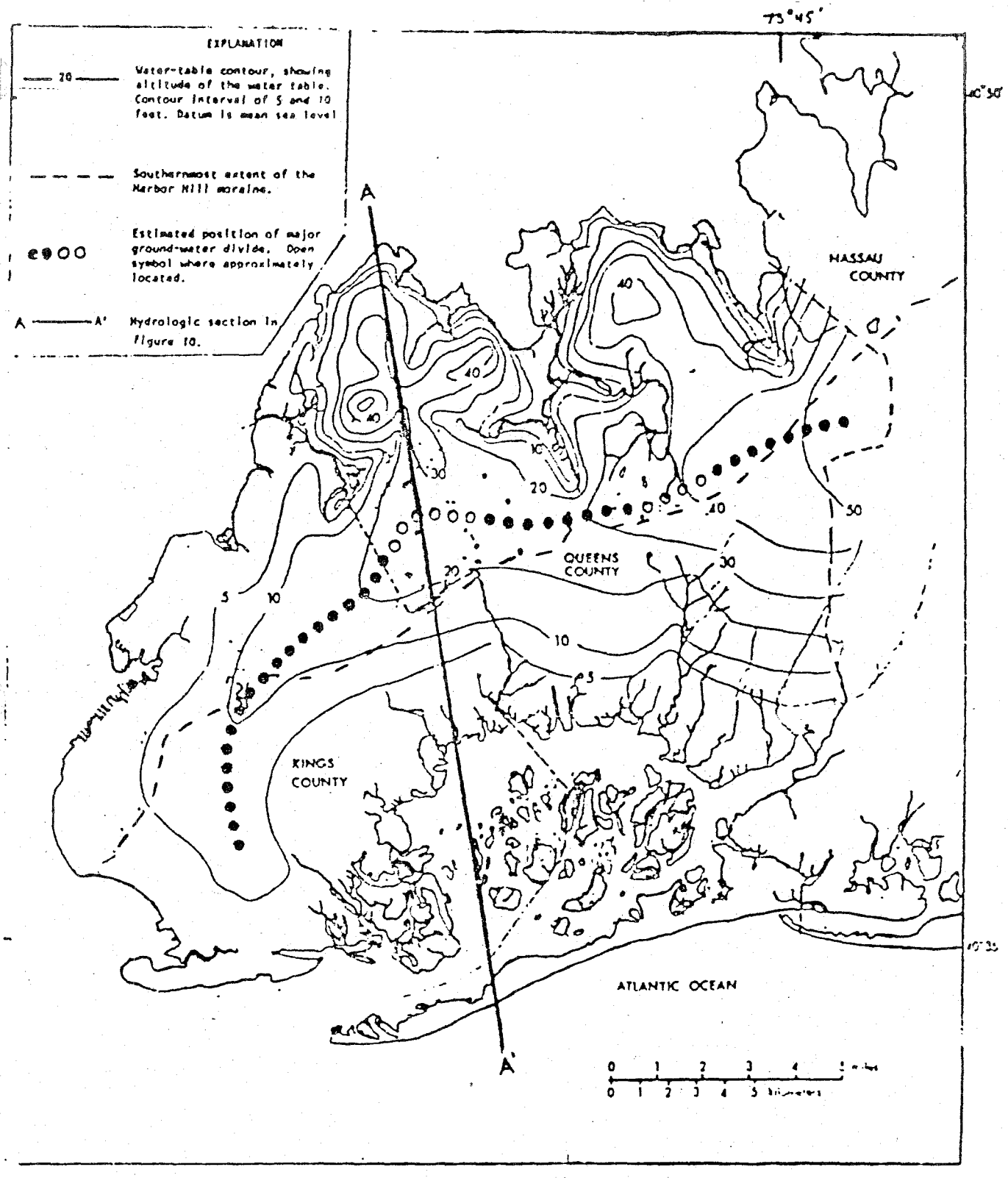

Base from U.S. Geological Survey 1:62,500 series: Hempstead, 1903; Brooklyn, Harlem, Oyster Bay, Staten Island, 1900.

Figure 11.--Water-table configuration in 1903. Section A-A' is depicted in fig. 10. (Modified from Veatch and others, 1906).

The anomalous high areas in the 1903 water table on the north shore of Queens County (fig. 11) are in part the result of the configuration of the bedrock surface (fig. 4), which restricts ground-water discharge along this boundary. Zones of low hydraulic conductivity in the moraine deposits may also cause these highs, which are still present today. (See fig. 21, p. 41.) Similar anomalous water-table highs have been found in association with moraine deposits farther east on Long Island.

Predevelopment Ground-water Quality

The predevelopment ground-water quality of western Long Island is not known in detail. As stated previously, extensive ground-water development and resultant changes in quality in the western part of the island began many decades ago. The eastern part of the island, which has a similar hydrologic character but was not urbanized until later, is probably indicative of predevelopment conditions throughout the island. It is therefore inferred from the earliest records that the ground-water quality in western Long Island was pristine.

Chloride and nitrate are discussed in detail later in this report because they are considered to be good indicators of ground-water contamination from several sources. The concentration of both ions in predevelopment water was probably low; therefore, elevated concentrations indicate contamination. High nitrate concentrations are characteristic of water contaminated by human or animal waste or by fertilizer. Chloride contamination may be due to infiltration of water contaminated by road salt or from landfill or septic tank leachate, or leaky sewer lines, especially when accompanied by high concentrations of nitrate. Chloride contamination may also be the result of encroachment from surrounding salty ground water and surface water.

Chloride

Jackson (1905, p. 29-31) estimates that the predevelopment levels of chloride in water on Long Island ranged from 3 to 8 mg/L. Burr, Hering, and Freeman (1903, p. 406) indicate that in 1898 the normal chloride concentration of ground water and surface water derived from the Ridgewood water-supply system was 5 to 6 mg/L. This agrees with later estimates for the eastern part of Long Island. Lusczynski and Swarzenski (1966, p. 19) assumed that before development, ground water on Long Island contained less than 10 mg/L chloride, that chloride in the 10-40 mg/L range in inland areas suggests contamination by manmade wastes, and that concentrations exceeding 40 mg/L in shore areas indicate saltwater intrusion. In Kings and Queens Counties, however, where contamination from the land surface has continued since before 1900, chloride concentrations before development are uncertain. Burr, Hering, and Freeman (1903, p. 406-423) note that some chloride contamination was already evident by the turn of the century. To summarize the period 1898-02, water supply derived from four streams in Queens County had average chloride concentration ranging from 8.8 to 12.4 mg/L, whereas 12 streams in Nassau County ranged from 5.3 to 6.7 mg/L. Ground water from wells near shore areas had averagrd as high as 264 mg/L, and by 1903, pumping had been diverted from some wells because of chloride contamination.

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Nitrate

Determination of predevelopment levels of nitrate in western Long Island ground water is as difficult as it is for chloride. Shallow ground water is especially susceptible to contamination by nitrogenous wastes. Kimmel (1972, p. D-200) surveyed the available data on nitrate in ground water in eastern Long Island and inferred that nitrate (as nitrogen) concentration of water in the upper glacial aquifer under predevelopment conditions was less than 0.2 mg/L. Analyses of water from shallow wells in nonurbanized areas and deep wells across the island suggest that predevelopment levels of nitrate may be even lower. In this report, nitrate levels above 0.2 mg/L as N are considered to indicate contamination.

URBANIZATION'S EFFECTS ON THE HYDROLOGIC SYSTEM

Ground water in western Long Island was developed rapidly in the 19th century with the rapid population growth of Brooklyn and western Queens. Man first obtained ground water for supply by pumping from shallow wells and collecting in reservoirs ground-water seepage to streams and springs. Most of the water from these sources was returned to the aquifer by infiltration through underground waste-disposal systems, so that these stresses caused only minor changes in the water-table configuration and shallow ground-water flow patterns. As the demand for public and industrial water supply increased, however, the number of wells and the quantity pumped increased accordingly, and the effects became more serious. As western Long Island became urbanized, new storm and sanitary sewers diverted out to sea wastewater that would have recharged the ground-water system. At the same time, the amount of impervious land surface increased, reducing the area available for infiltration of precipitation and further decreasing recharge. These changes, along with the continuous increase in industrial and water-supply pumpage, caused severe declines in the water table and in potentiometric head in the deeper aquifers through the 1930's and 40's. Declines in the water-table altitude caused many lakes and streams to disappear and severely decreased flow in the remaining streams (Soren, 1971, p. A5). At the same time, drawdown near the shores caused intrusion of salt water into the aquifers.

Development of the Ground-Water Reservoir

History of Ground-Water Development

Pumping for industrial and public supply has probably been the most severe stress on the western part of the Long Island ground-water system in the 20th century. Ground water pumped and lost either by evaporation or discharge to the sea is considered consumptive (net) pumpage and is a net draft on the ground-water system. Pumpage data in this section have been compiled from the literature and represent consumptive ground-water use.

1900-17.--By 1900, the ground-water reservoir of western Long Island was extensively pumped for both public supply and industrial uses. Johnson and Waterman (1952, p. 7) estimate that in 1904, 6.4 Mgal/d was obtained from

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surface storage of ground-water seepage to springs and streams in Queens County, and 77.4 Mgal/d was obtained from nearby Nassau County.

By 1904, pumpage for public supply had reached 14 Mgal/d in Kings County and 28 Mgal/d in Queens, most of which was used in Kings County. The estimated industrial and public-supply pumpage from 1904 to 1972 is plotted in figure 12. Industrial pumpage, although only a few million gallons per day in Queens, was 14 Mgal/d in Kings County. Industrial pumpage increased markedly in both counties thereafter, and from 1909-16, pumpage for public supply averaged 30 Mgal/d in Kings County and 58 Mgal/d in Queens County (fig. 12).

In 1917, the first New York City water tunnel was completed, and surface water from upstate New York was transported to the New York City water-supply system. This water replaced a significant amount of ground-water pumpage, as indicated in figure 12. The City of New York, Department of Water Supply, Gas, and Electricity, which had pumped more than 14 Mgal/d in Kings County and 40 Mgal/d in Queens County during the preceding 10 years, all but ceased pumping in 1917.

1918-30.--The post-World War I period in western Long Island was marked by a consistent increase in consumptive ground-water use for both public supply and industrial use. After the abrupt reduction in pumpage for public-supply in 1917, continued demand resulted in an increase in public-supply pumpage from 13 Mgal/d in Kings County and 23.1 Mgal/d in Queens in 1918 to 29.2 Mgal/d and 62.0 Mgal/d, respectively, in 1931 (fig. 12). Industrial pumpage in both counties also continued to increase and, by 1930, had exceeded 50 Mgal/d in Kings County and 20 Mgal/d in Queens.

1930-47.--The 1930's brought a noticeable decline in industrial pumpage in both counties (fig. 12) for two major reasons:

(1) Concern over the extensive use of ground water by industry prompted the adoption of the Water Conservation Law of 1933, which required that water pumped at a rate greater than 70 gal/min be reinjected to the source aquifer. Leggette and Brashears (1938, p. 415) estimate that at the end of 1933 only one recharge well was operating in Kings County (60 gal/min), but by 1937, the number had increased to 105, injecting a total of 33,385 gal/min.

(2) The widespread adoption of electric refrigeration severely reduced the quantity of water pumped for ice making. Lusczynski (1952, p. 4) states that from 1936 to 1947 the quantity of water pumped for ice decreased from 18 Mgal/d to 4 Mgal/d.

During World War II (1940-45), industrial pumpage increased slightly in Kings County; a similar increase was likely in Queens County, but no data on industrial pumpage in Queens County from 1937-47 are available.

1947-79.--In 1947, all public-supply pumpage in Kings County was stopped by New York City, primarily because of saltwater intrusion, but pumpage for public supply was continued in Queens County, where it increased from 45 Mgal/d in 1950 to more than 60 Mgal/d in the 1970's (fig. 12). The trend of pumping

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in Queens County has been to abandon wells showing contamination and to install new ones eastward, farther from the shores and near the higher water levels in the center of the island.

Pumpage declined in 1974 (fig. 12), when all pumping for public supply (10 Mgal/d) in the Woodhaven franchise area of the New York Water Service Corporation (NYWSC) was halted as a result of saltwater intrusion. Compensating pumpage to the east by the Jamaica Water Supply Company is evident during later years (fig. 12).

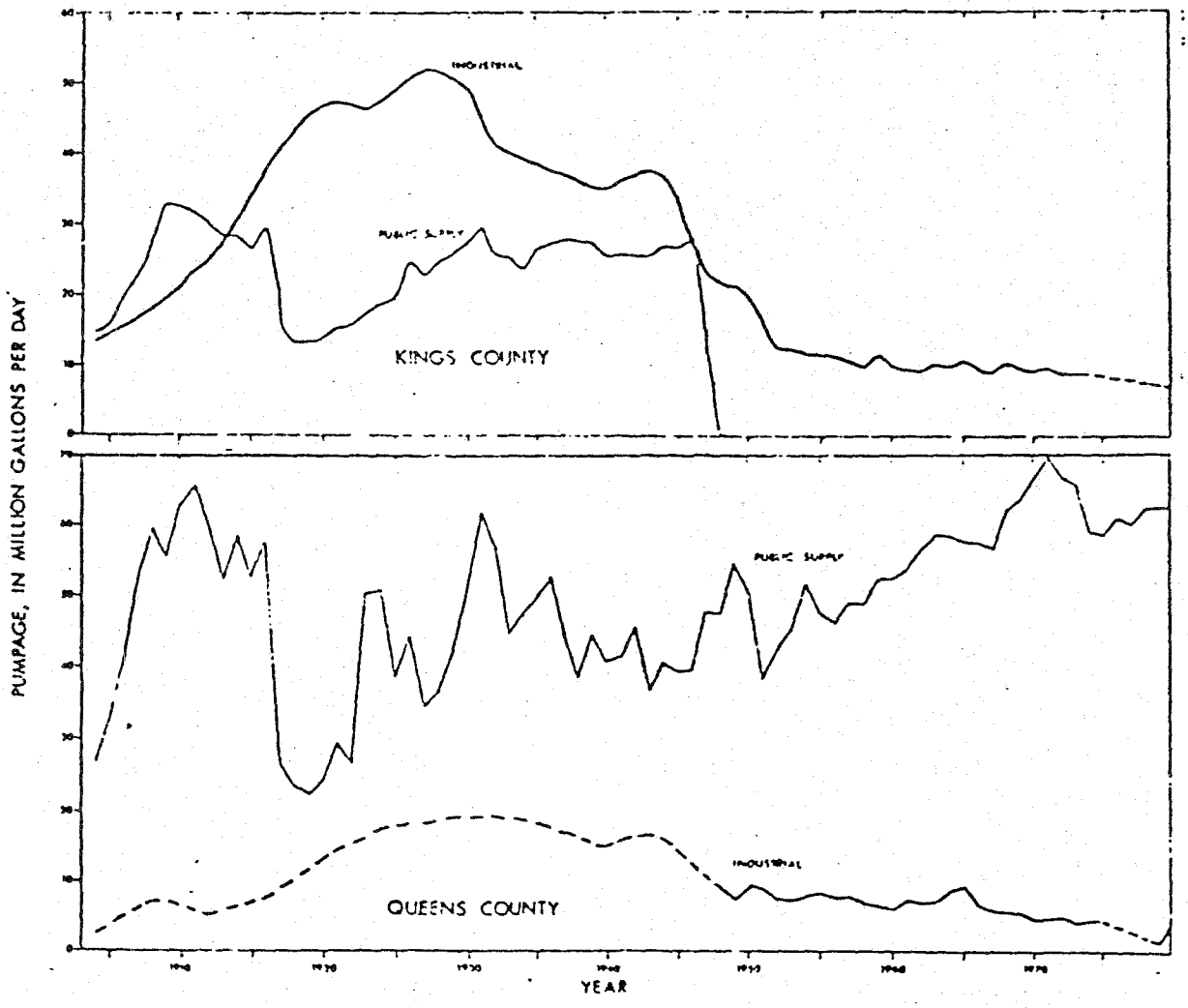

Figure 12.--Estimated net pumpage in Kings and Queens Counties, 1904-79. (Compiled from Johnson and Waterman, 1952; Thompson and Leggette, 1936; Suter, 1937; and New York State Department of Environmental Conservation).

Development of Individual Aquifers

The upper glacial aquifer was the first to be extensively pumped in western Long Island. Public-supply pumpage from this aquifer reached a high in 1910, with 24 Mgal/d in Kings County and 46 Mgal/d in Queens (Johnson and Waterman, 1952). Public-supply pumpage has now ceased in Kings County, but in Queens, the aquifer yielded 35 Mgal/d in 1961 and 30 Mgal/d in 1967 (Soren, 1971). Rapidly increasing demand and contamination of shallow wells by salt water encouraged development of the deeper aquifers.

The Jameco aquifer before 1917 yielded as much as 9 Mgal/d in Kings County and 13 Mgal/d in Queens County. This largely stopped, however, with the introduction of upstate surface water to the city supply. About 1933, pumpage from the Jameco aquifer for public supply reached a maximum of 15 Mgal/d in Kings County (Lusczynski, 1952), and from 1917-50 averaged 5 Mgal/d in Queens County (Johnson and Waterman, 1952, p. 7). In 1961, pumpage for public supply in Queens was 3.5 Mgal/d and in 1967 was 3.8 Mgal/d (Soren, 1971, p. A26).

Before 1935, pumpage from the Magothy and Lloyd aquifers was not differentiated. Their combined pumpage in Kings County was as much as 3 Mgal/d in 1931 but averaged less than 0.5 Mgal/d from 1909-46 (Johnson and Waterman, 1952, p. 7). In Queens County, pumpage for public supply from 1935-50 averaged 7.4 Mgal/d from the Magothy and 5.7 Mgal/d from the Lloyd. Soren (1971, p. A26) estimated that by 1961, public-supply pumpage from the Magothy aquifer in Queens had increased to 18.5 Mgal/d and, by 1967, to 22.7 Mgal/d, whereas pumpage from the Lloyd had not substantially changed (3.5 Mgal/d in 1961 and 4.6 Mgal/d in 1967).

Declines in Water-Table Altitude

The most obvious effect of urbanization on the hydrologic system of Long Island was a decline in the water table and in the potentiometric surface of the deeper aquifers. The configuration of the water table before development is discussed in a previous section (fig. 11, p. 22); the water-table maps for subsequent years (figs. 13-17) are provided to depict the changes resulting from urbanization and related stresses during the 20th century. (Note that the latter maps have been transferred to a common base.)

By 1936, the water table showed severe declines resulting from heavy pumping and loss of recharge. (Compare figs. 11 and 13.) An asymmetric cone of depression in northern Kings County, an area of extensive industrial pumping at that time, reached a depth of 35 feet below sea level. This cone of depression also extended into western Queens County.

The decline in industrial pumping that started around 1930 (fig. 12) resulted in some recovery of the water table by 1943 (fig. 14). The water-table configuration of 1943 shows a recovery of as much as 10 feet in northern Kings County as well as general recovery in western Queens County. After the cessation of pumping for public supply in Kings County in 1947, the water table recovered further. The water-table configuration of 1951 (fig. 15) shows a rise in the southern half of Kings County to altitudes above sea level, and the cone of depression in the north is smaller and shallower than in 1936 (fig. 13).

By 1961, the water table (fig. 16) had recovered to above sea level throughout Kings County except in a small area. However, a sizeable cone of depression is evident in the Woodhaven franchise area (NYWSC), which, after 1947, increased pumping to compensate for the stoppage of pumping in Kings County. The cone of depression extended into Jamaica, where the Jamaica Water Supply Company in 1961 was pumping nearly 50 Mgal/d. Although the cone of depression in 1961 was not at as low in altitude as that in Kings County in the 1930's (fig. 13), the initial water levels in Queens County were 20 ft higher than in Kings, so that the respective declines represent a similar loss in ground-water storage.

By 1974, the water table had recovered further in Kings County (fig. 17), and the cone of depression in Queens County had shifted from Woodhaven, where pumping stopped in 1974, to Jamaica, where the Jamaica Water Supply Company was pumping approximately 60 Mgal/d. Water levels in this cone of depression represent a drawdown of about 35 feet from water levels in 1903 (fig. 11).

Similar declines in the potentiometric surface of the deeper aquifers have resulted from increased pumping and urbanization. Historical data on the potentiometric surface of these aquifers are sparse, and recent changes in the definition of hydrogeologic units makes accurate interpretation of the data difficult. However, the observed response of water levels in wells screened in the deeper aquifers confirms that, in areas where confining units are absent, the aquifers have good hydraulic connection (Soren, 1971, p. A19). Here, water can flow freely between aquifers, and fluctuations in head propagate rapidly from one aquifer to the next. Observations have also indicated that pumping in well-confined parts of the deeper aquifers will produce a more rapid expansion of the cone of depression to the boundaries than in the water-table aquifer (Lusczynski, 1952, p. 5). Typical confined storage coefficients are much lower than the specific yield of the water-table aquifer; therefore, the transient response to stress is more rapid in the deeper aquifers.

Deterioration of Ground-Water Quality

In addition to lowering ground-water levels, urbanization and development of the ground-water system in Kings and Queens Counties have caused serious deterioration of ground-water quality. The most striking example was the encroachment of salt water from surrounding tidewater in response to excessive drawdown. Other sources of contamination, some of which were present from the early stages of development, include fertilizers, underground sewage-disposal systems, landfills, large cemeteries, road salts, leaking sewers, and toxic spills at land surface. Historical water-quality data are sparse; however, chloride and nitrate data were collected as far back as 1900 and are used here to give an indication of the response of ground-water quality during this century.

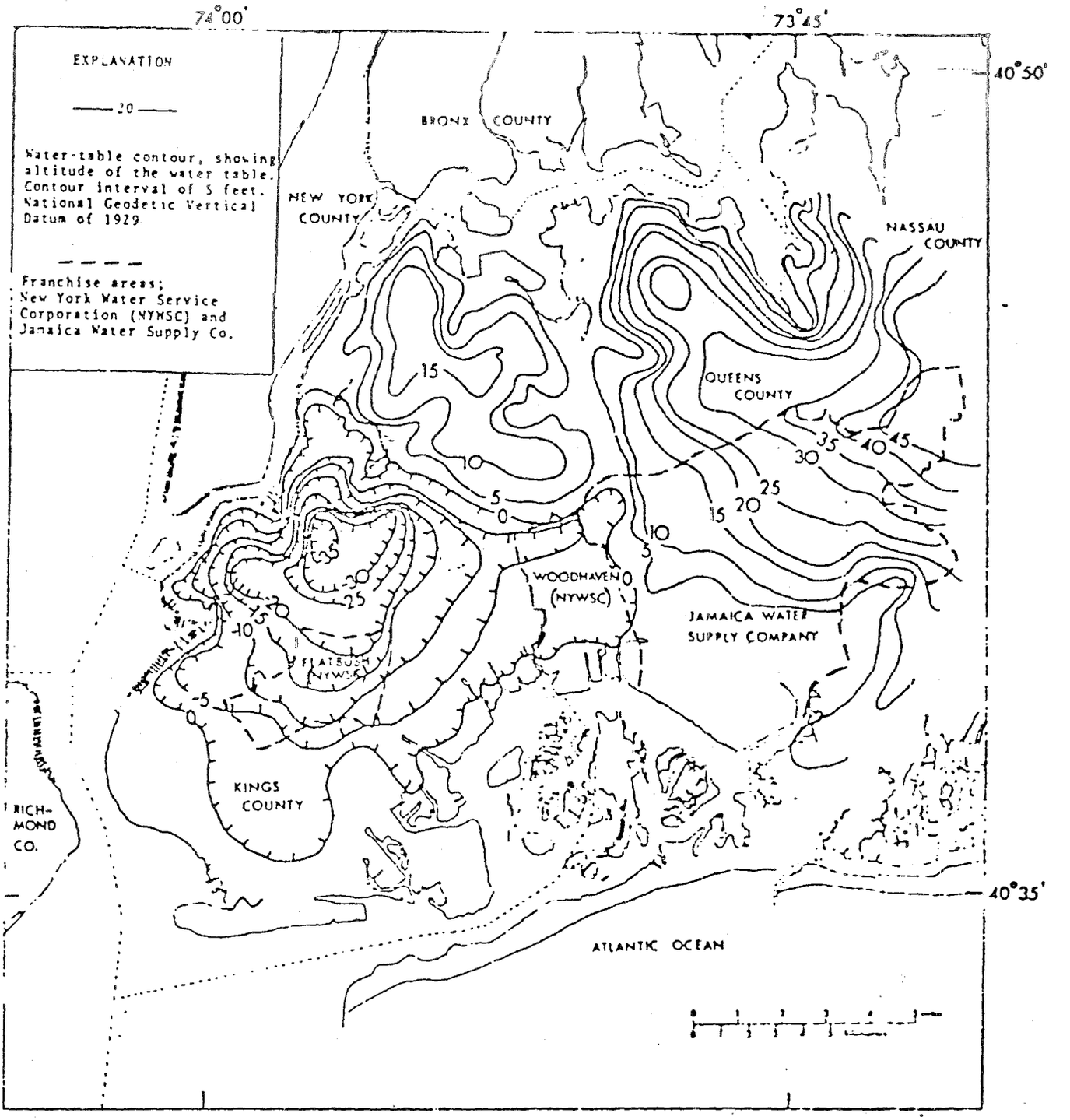

Figure 13.--Water-table configuration in 1936. (Modified from Suter, 1937.)

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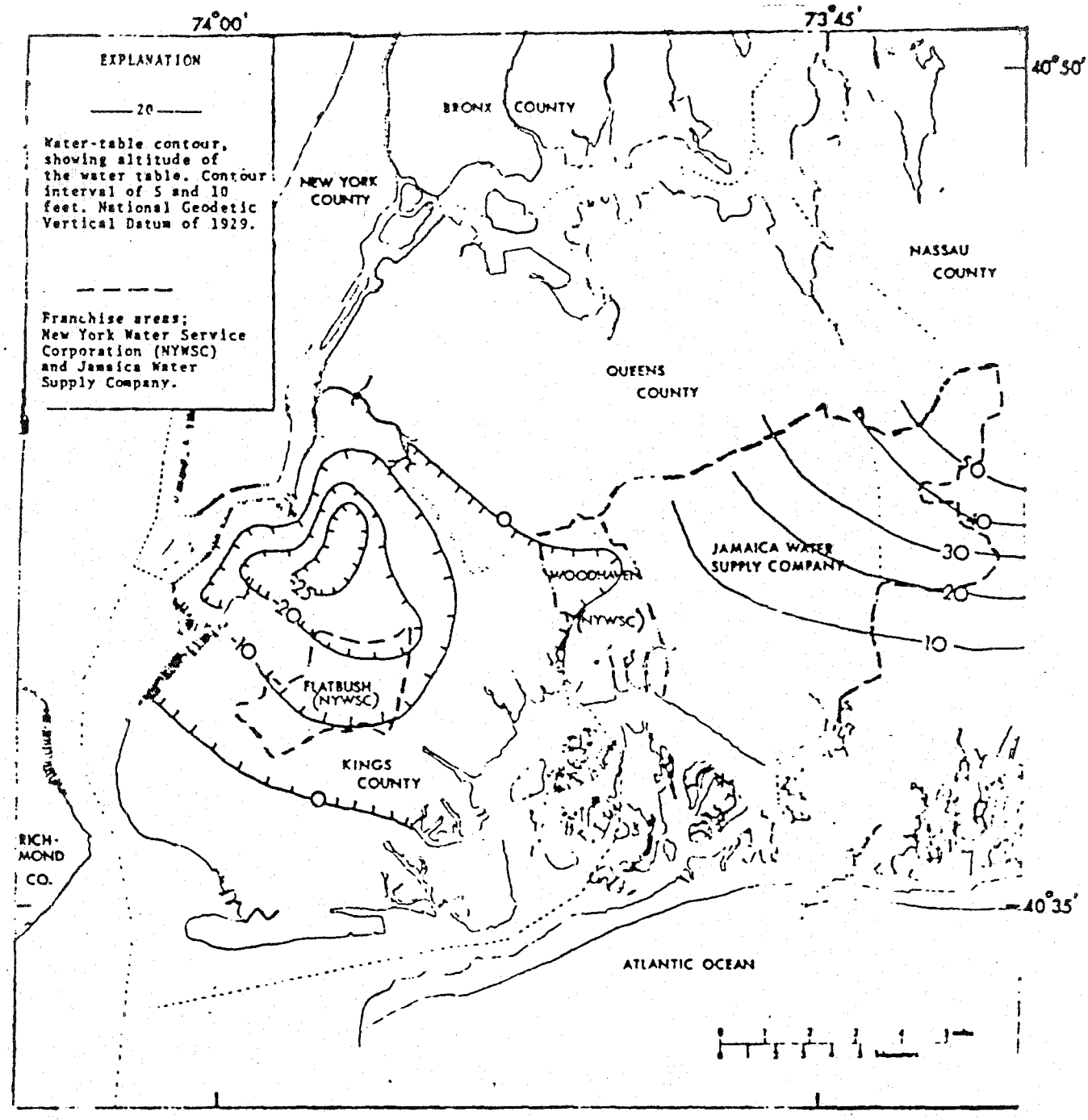
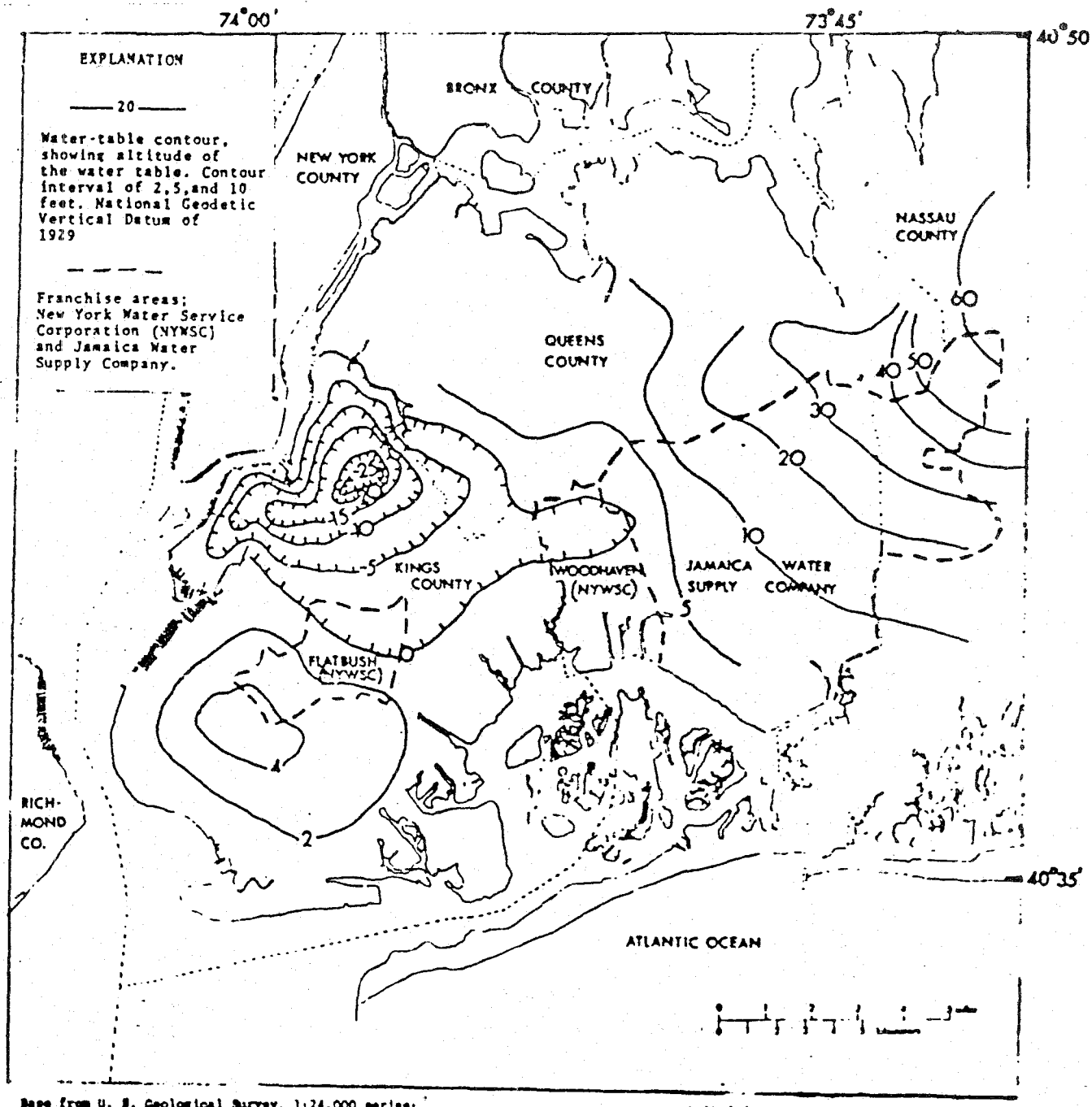


Base from U. S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Modified from Jacob, 1945.

Figure 14.--Water-table configuration in 1943. Water-level measurements were taken in late May. (Modified from Jacob, 1945.)



Base from U. S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

, Modified from Lusczynski and Johnson, 1951.

Figure 15.—Water-table configuration in 1951. Water-level measurements were taken in January. (Modified from Lusczynski and Johnson, 1951.)

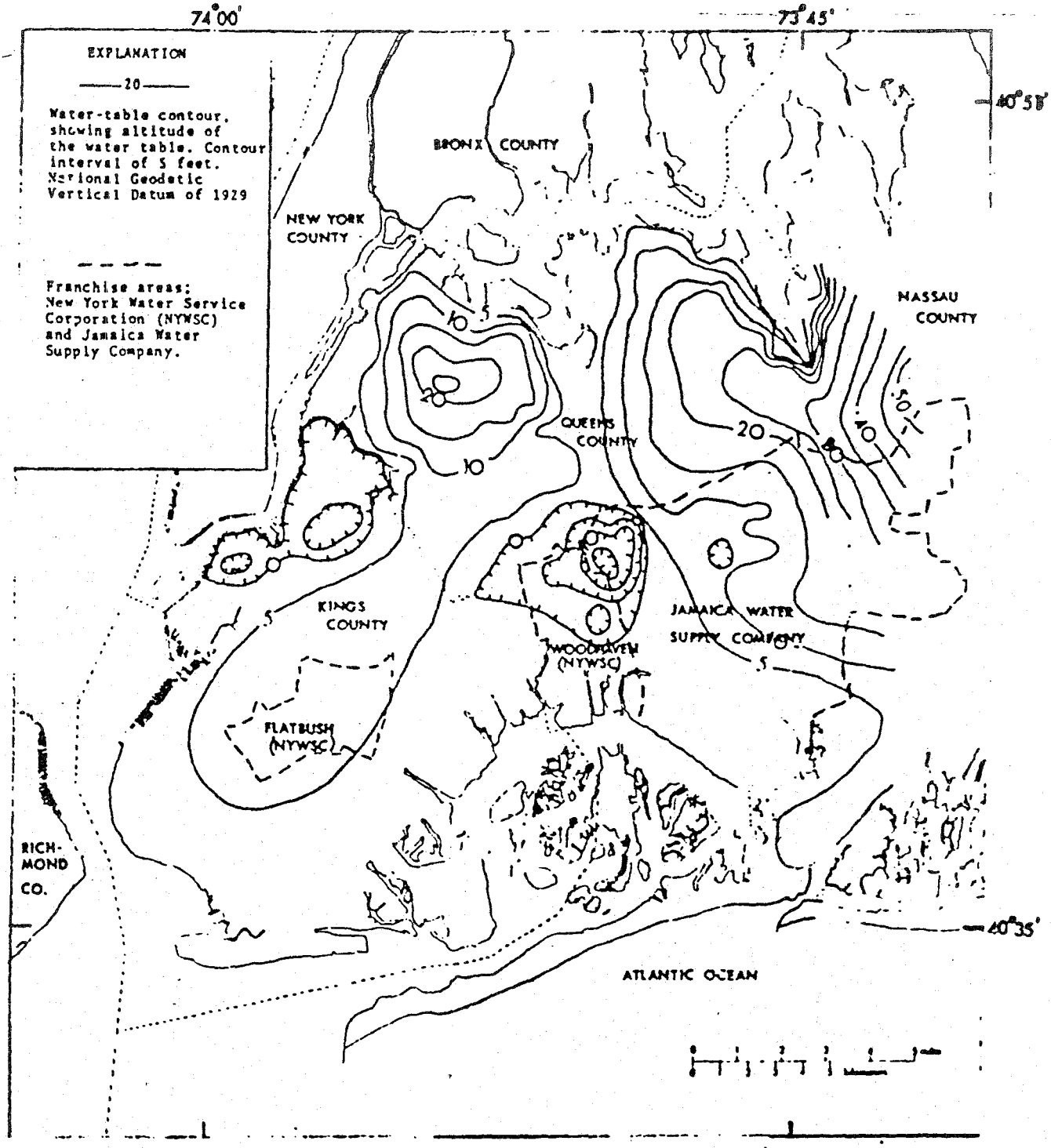


Figure 16.--Water-table configuration in 1961. Water-level measurements were taken in December. (Modified from Soren, 1971.)

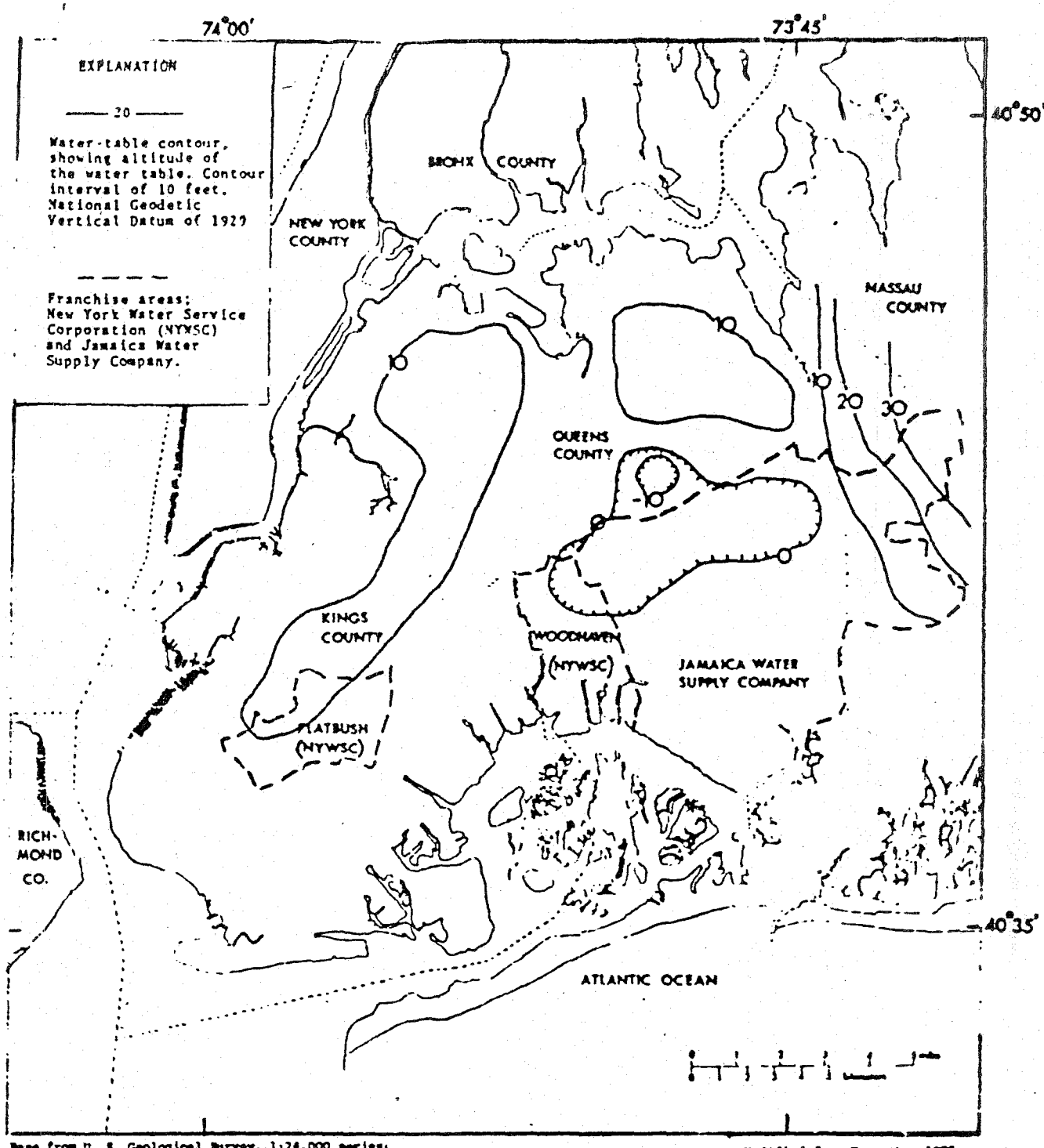


Figure 17.--Water-table configuration in 1974. Water-level measurements were taken in March. (Modified from Koszalka, 1975.)

Chloride

Chloride levels in water from public-supply wells in Kings County first began to show the effects of saltwater encroachment in the early 1930's (Lusczynski, 1952, p. 8). When the chloride concentration of water from the upper glacial aquifer began to increase, pumping was shifted east and to deeper aquifers. However, a similar increase in chloride concentration in the deeper aquifers soon followed. Because the transient response of water levels in the confined aquifers is quicker than that in the water-table aquifer, changes in hydraulic head reach the saltwater-freshwater boundaries more rapidly, and saltwater encroachment follows. Lusczynski (1952, p. 5-6) indicates that in the 1930's and 40's, encroachment into the Jameco aquifer was more rapid, extended farther inland, and caused higher chloride concentration than in the corresponding locations in the upper glacial aquifer.

A dramatic increase in chloride concentration in water from three public-supply wells in the upper glacial aquifer in the Flatbush franchise area (NYWSC) is evident in figure 18. The chloride concentration probably increased because the expanding cone of depression reached shore areas, where the decline in hydraulic head caused encroachment of salty ground water. The water-table configuration of 1903 (fig. 11) shows seaward gradients; that of 1936 (fig. 13) indicates a change to flat or slightly landward gradients near much of the shore in Kings County, which induced saltwater encroachment.

The maximum recommended level of chloride in community water systems is 250 mg/L (New York State Department of Health, 1977), the approximate taste threshold for most people. By 1940, public-supply water in Kings County had begun to exceed this amount, and, by 1947, chloride contamination in the upper glacial aquifer was extensive (fig. 19). Chloride concentrations above 40 mg/L throughout most of the upper glacial aquifer indicate contamination from saltwater intrusion even in inland areas. Water from wells near the shore reached concentrations of 1,000 to 8,000 mg/L and inland were as high as 700 mg/L. At this time, chloride concentration in Kings County was as high as 1,500 mg/L in the Jameco aquifer and exceeded 500 mg/L in the Lloyd aquifer.

In the early 1950's, pumping in Queens County increased sharply (fig. 12), and chloride concentrations in the upper glacial aquifer also increased (Soren, 1971). Water from three wells tapping the upper glacial aquifer in the Woodhaven franchise area (NYWSC) shows a marked increase in chloride from the late 1950's until 1974, when pumping for public supply in that area was stopped (fig. 18).

The map in figure 20 indicates that, in 1961, water from much of the upper glacial aquifer in Queens County had chloride concentrations greater than 40 mg/L. Chloride contamination appears primarily in shore areas and is largely the result of saltwater encroachment. Landward migration of salty ground water is evident in two tongues that originate where drawdown of water levels to near or below sea level reached shore areas. The tongues aline with steep

water-table gradients that appear around pumping centers in the Woodhaven franchise area (NYWSC) and the western part of the Jamaica Water Supply Company franchise area.

A part of the chloride contamination in Queens County is undoubtedly from inland surface sources, especially in northwest Queens County, which has been extensively developed since the 19th century and where apparent water-table gradents suggest that saltwater intrusion is unlikely.

Nitrate

High concentrations of nitrate in ground water indicate contamination from surface sources, such as fertilizers, landfills, leachate from cesspools and septic tanks, and leaky sewer lines. Because high nitrate concentrations in water may be harmful, a limit of 10 mg/L nitrate (as nitrogen) is defined as drinking-water standard (New York State Department of Health, 1977). Kimmel (1972) presented data on nitrate concentrations in the upper glacial aquifer in Kings County dating back to 1900. These concentrations ranged from 0.2 to 28 mg/L nitrate (as N), but water from 24 of 28 wells sampled exceeded 10 mg/L nitrate (as N). The trend of these data indicates that the quality of shallow ground water has deteriorated as a result of contamination from surface sources since the turn of the century.

Data on nitrate contamination of the deeper aquifers in Kings County are scarce, but concentrations above predevelopment levels as early as 1929 indicate downward migration of nitrate from the water-table aquifer (Kimmel, 1972, p. D202).

Nitrate data in Queens County are summarized by Soren (1971, table 1), which includes analyses of water from 38 wells (10 in the Lloyd aquifer, 15 in the Magothy-Jameco aquifer, and 13 in the upper glacial aquifer) sampled during the 1950's and 1960's. Nitrate (as N) concentrations were above 10 mg/L in water from only four of the wells; however, many samples, including several from the Magothy aquifer, had concentrations higher than 0.2 mg/L, indicating some contamination in the upper glacial aquifer with local downward movement of nitrate to the deeper aquifers. Nitrate contamination in Queens County is not as extensive as that in Kings County.

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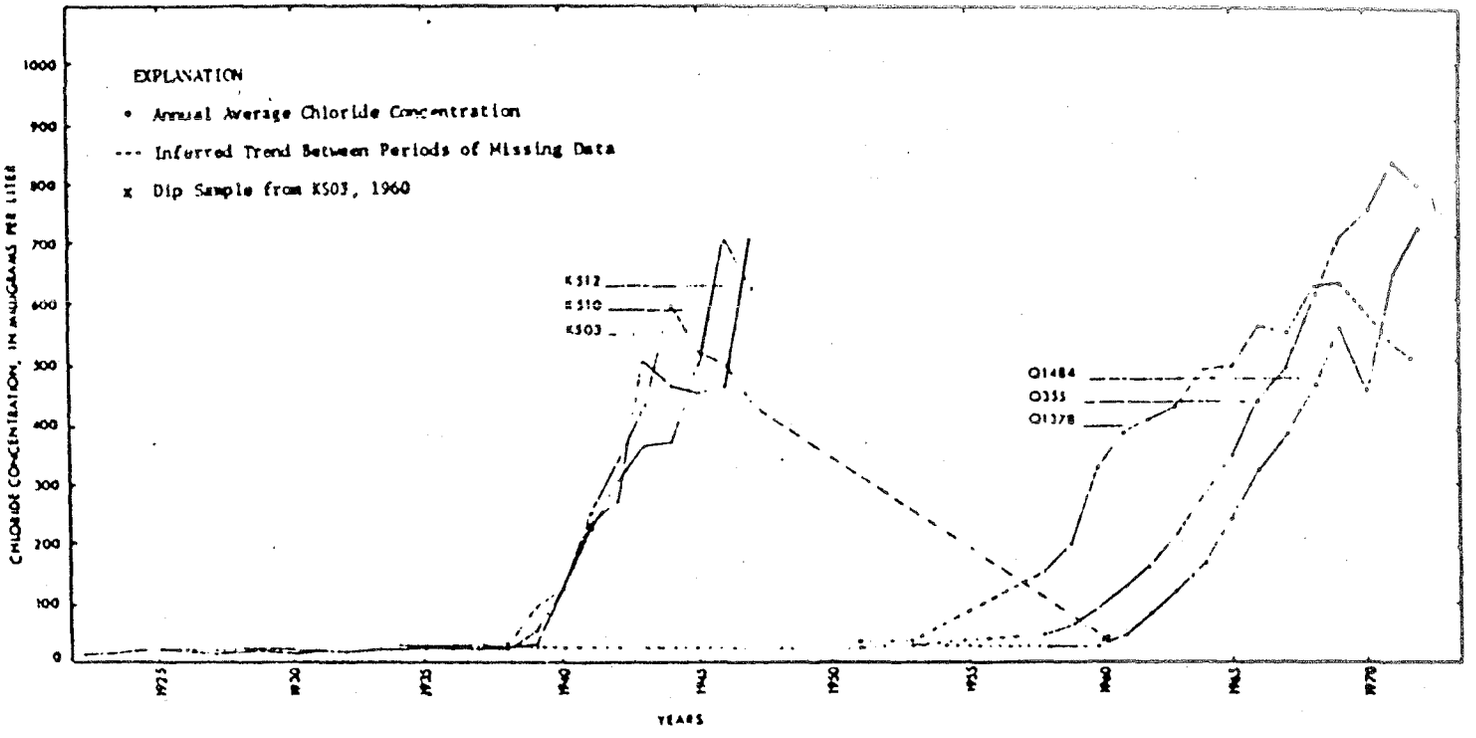

Figure 18.--Chloride levels in water from selected wells in Kings and Queens Counties since the 1920's. (Data are from U. S. Geological Survey files, Lusczynski, 1952, and selected annual reports of the Bureau of Water Supply, City of New York.)

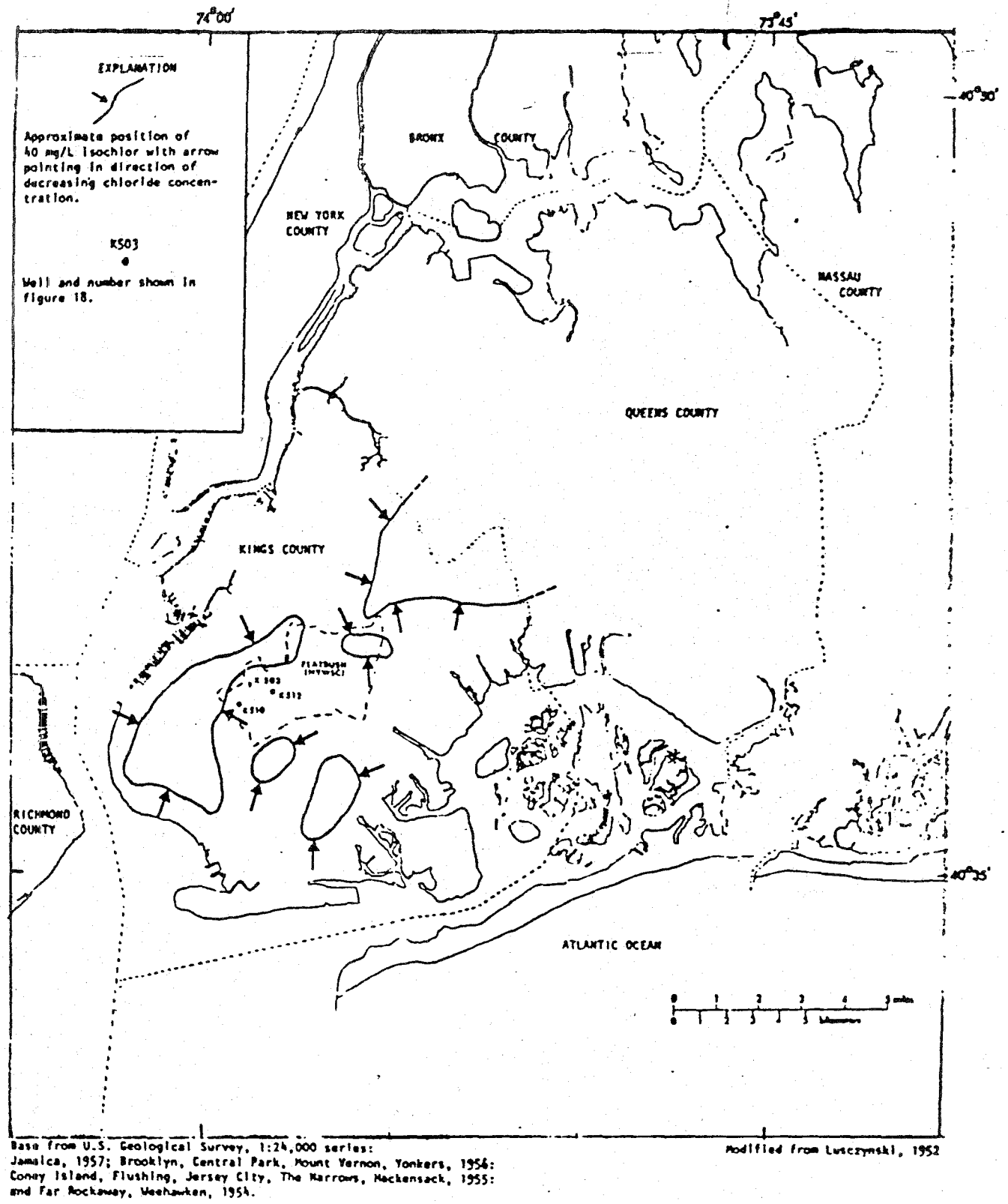

Figure 19.--Areas where chloride concentrations in ground water in Kings County exceeded 40 mg/L, 1947. (Modified from Lusczynski, 1952.)

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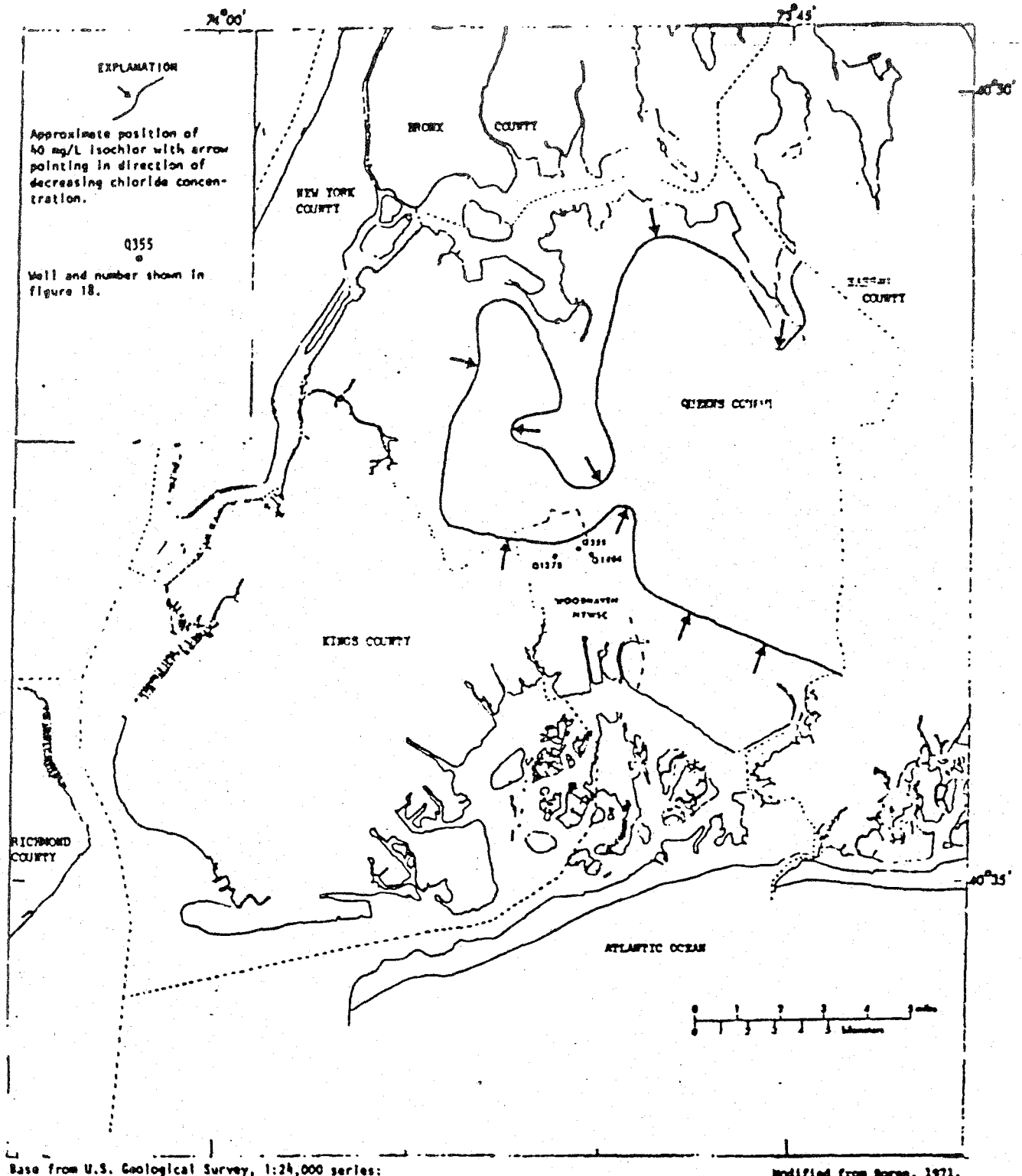

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Modified from Soren, 1971.

Figure 20.--Areas where chloride concentration in ground water in Queens County exceeded 40 mg/L, 1961. (Modified from Soren, 1971.)

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PRESENT HYDROLOGIC CONDITIONS (1981)

During the 20th century, the ground-water reservoir of western Long Island progressed through a series of development phases. Kings County first felt the effects of pumping and urbanization in the 1930's and 1940's; western Queens County felt similar effects in the 1950's and 1960's. Pumping was continually shifted east from these severely affected areas. Water levels in Kings County and western Queens County have gradually recovered; water quality has also shown improvement in some areas.

Today, the area most intensely stressed in western Long Island is eastern Queens County. Although water levels in this area are declining and water quality is still gradually deteriorating, these effects are not as severe as those previously experienced in Kings County.

At present, the entire population of Kings County and most of Queens is supplied with water from upstate surface-water sources totaling almost 700 Mgal/d (New York City, Bureau of Water Supply, written commun., 1980). However, more than 500,000 people and about 7,600 commercial and industrial users in southeast Queens obtain water from a private water company (Jamaica Water Supply Company) that pumps local aquifers. In 1980, net pumpage for public supply from Queens aquifers was 62.5 Mgal/d, and known net industrial pumpage in 1979 was 1.5 Mgal/d (New York State Department of Environmental Conservation, written commun., 1980). Of the 62.5 Mgal/d public-supply pumpage in Queens County, 16.6 Mgal/d was pumped from the upper glacial aquifer, 38.9 Mgal/d from the Magothy-Jameco aquifer (37.3 Mgal/d from the Magothy aquifer and 1.6 Mgal/d from the Jameco aquifer), and about 7 Mgal/d from the Lloyd aquifer (Jamaica Water Supply Co., written commun., 1981).

Water-table recovery after the cessation of pumping in Kings and southwestern Queens caused flooding in deep basements and subways (Soren, 1976). Dewatering is now (1981) continuous; however, it is difficult to assess the quantity. Perlmutter and Soren (1962, p. 138) report that dewatering at several subway stations in Flatbush rose from less than 20 gal/min to as much as 1,000 gal/min from 1947 to 1961. Currently the subway system is being dewatered in the Flatbush, Bedford, and East New York areas (fig. 2). Permits were issued by the New York State Department of Environmental Conservation to the subway authorities for installation of 20 wells with a total pumpage capacity of 31 Mgal/d. Not all wells are likely to be used simultaneously, nor will pumping be continuous; therefore, current net pumpage is probably less than half the capacity. Although no information is available on the amount of dewatering at numerous homes, businesses, and institutions, the total amount is probably significant.

Although much of the western Long Island ground-water system is recovering and water levels in parts of Kings County are approaching levels of 1903, some severe, perhaps irreversible, deviations from the predevelopment ground-water flow patterns persist. Precipitation still infiltrates the remaining permeable land surface and recharges the ground-water reservoir at the water table; however, Soren (1971, p. A20) estimates that recharge from precipitation is less than half of what it was before the effects of urbanization. An

artificial source of recharge is leakage from water-supply lines and combined storm and sanitary sewer lines. Soren (1971, p. A21) estimates that as much as 15 Mgal/d leaked from aging water-supply lines in Queens County in the 1960's; this is less than 6 percent of the average water use in Queens in the 1960's and is probably a conservative estimate. Leakage from sewer lines is also likely (Kimmel, 1972), although this has a more significant effect on quality than quantity. The principal hydrologic concern at present is the degree of recovery from past contamination by saltwater encroachment and the extent of present contamination from surface sources.

Present Water-Table Configuration

The U.S. Geological Survey measured water levels in 63 wells screened in the upper glacial aquifer in Kings County (29 wells) and Queens County (34 wells) from February through June 1981. Several measurements in Nassau County along the Queens County line were added; a map of the water-table configuration is shown in figure 21.

The water table is above sea level in all of Kings County. Recovery since 1974 (fig. 17) is evident in southeast Kings County and southwest Queens County, probably as a result of continued recovery after cessation of public-supply pumping in Woodhaven in 1974. The highest water levels in Kings County are probably within 8 feet of 1903 levels (fig. 10).

Anomalous high water levels are found in northern Queens County as indicated on several earlier water-table maps (figs. 11, 13-16). High water levels in wells screened near sea level indicate that these highs are not the result of perched conditions but are hydraulically connected to the water table.

A large cone of depression in the central part of Queens County (fig. 21) is most likely the result of public-supply pumping by the Jamaica Water Supply Company. Water levels in this area are measured in pumping wells that are, through the cooperation of the owner, turned off approximately 1 hour before the measurement is taken, so that water levels have time to recover. These water levels are not indicative of the static water level in the well, even over a short period of time; however, they give an approximate indication of the average water-table altitude in this area.

The steep eastward gradient in the water table at the Queens-Nassau County line suggests that a significant amount of water enters western Long Island from the east. The present water-table configuration in Kings and Queens Counties is, therefore, dependent upon this source of ground water, and future changes in the ground-water system in Nassau County that affect this source of water will also have an effect on hydrologic conditions in Kings and Queens Counties.

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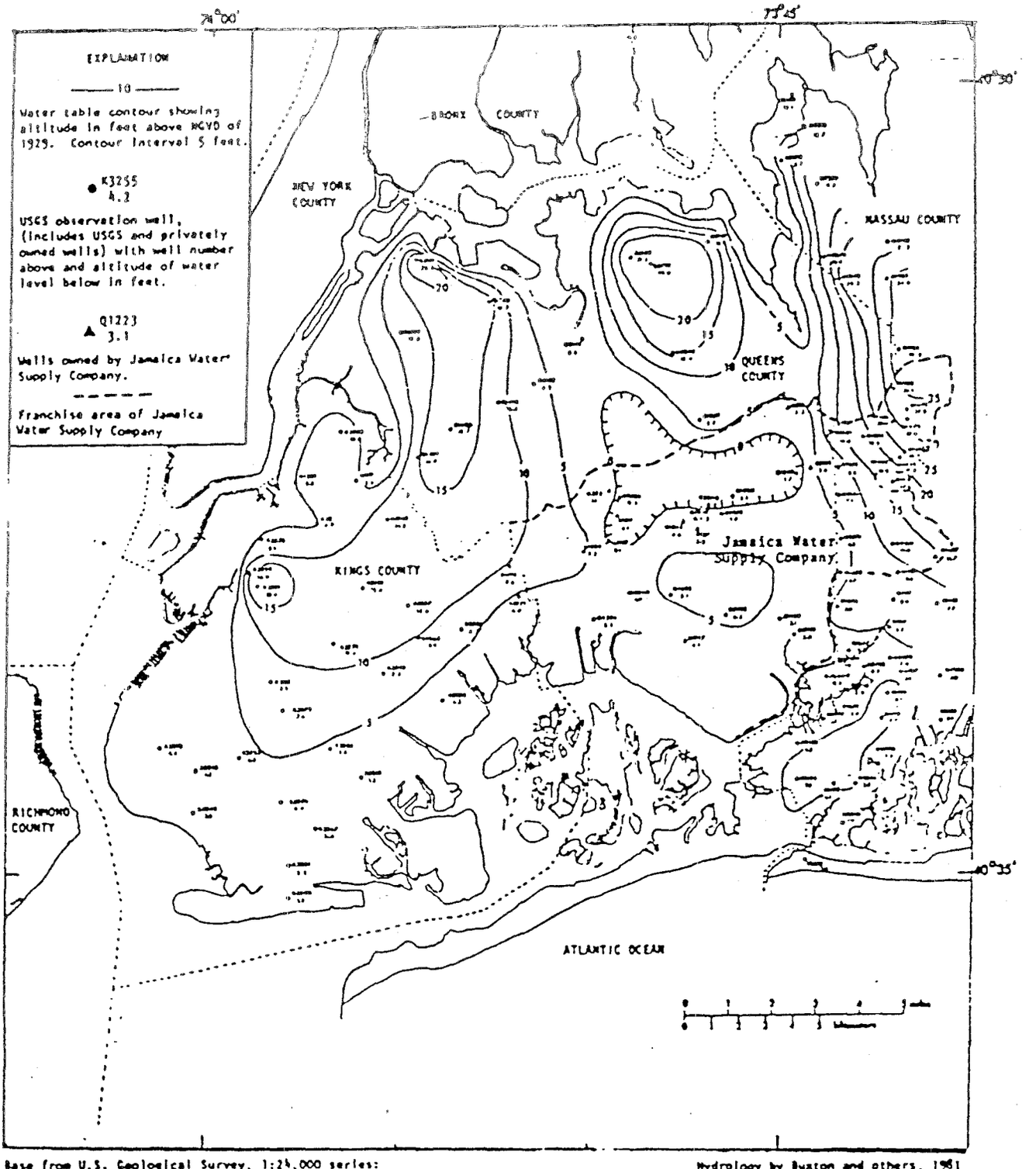

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Hydrology by Buxton and others, 1981

Figure 21.--Water-table configuration in 1981. Water-level measurements were taken from February to June.

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Present Ground-Water Quality

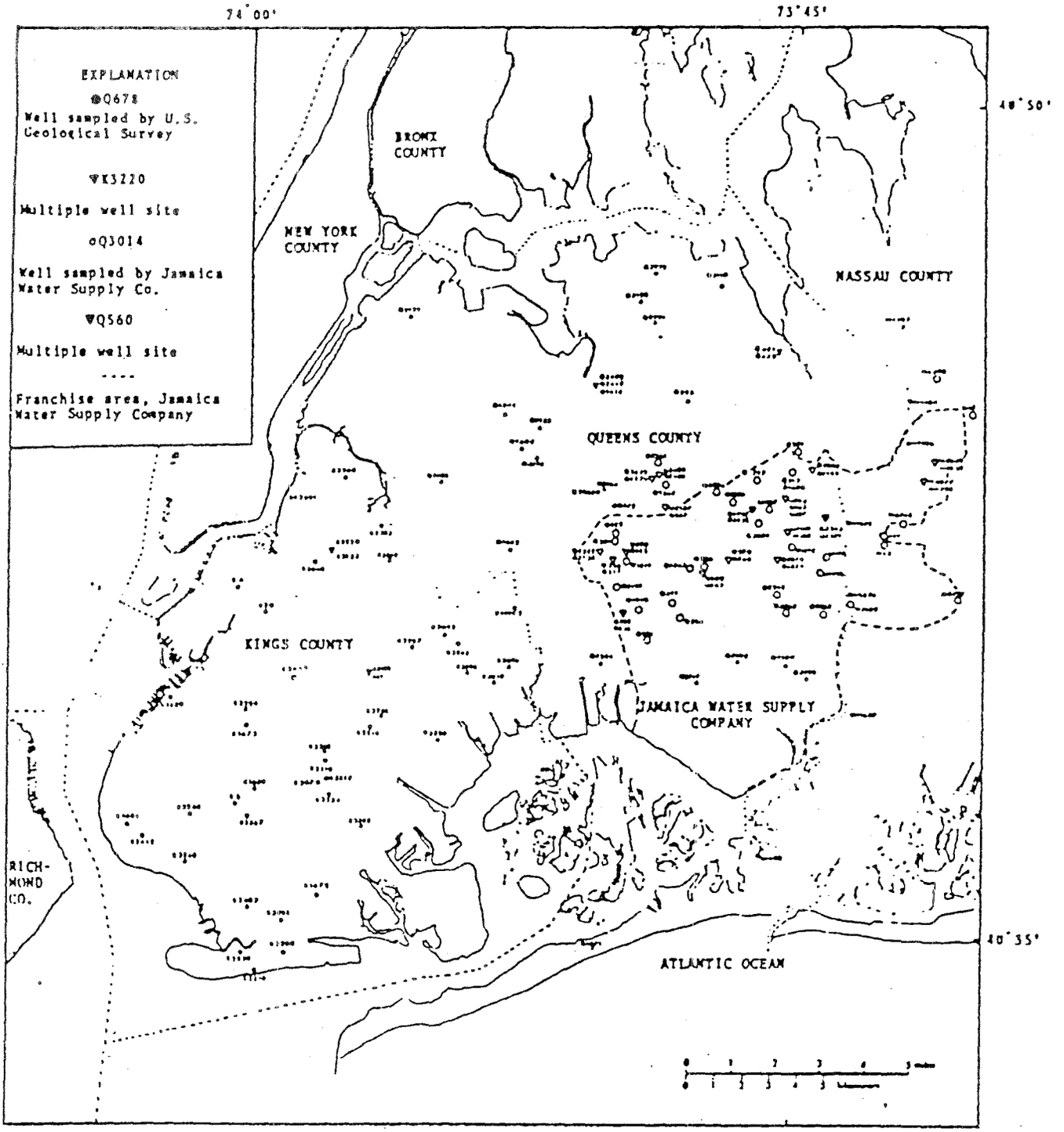
The U.S. Geological Survey undertook a reconnaissance sampling to determine the present ground-water quality in the western part of the Long Island ground-water system. Seventy-seven wells were sampled from February to April 1981; well locations are shown in figure 22. These wells were selected to give a representative estimate of ground-water quality both areally across western Long Island and in each of the aquifer units. Of the 77 wells sampled, 62 were screened in the upper glacial aquifer, 6 were screened in the Magothy-Jameco aquifer, and 9 were screened in the Lloyd aquifer. Few samples were taken from the Magothy-Jameco and Lloyd aquifers owing to a lack of wells. (Many wells have been lost or destroyed in recent years because of the cessation of public-supply pumping and the reduction in industrial pumping. Additional sampling may be possible during summer when deep air-conditioning wells are in operation.) Extensive water-quality analyses were performed; results are listed in table 2 (at end of report).

An additional 67 wells were sampled by the Jamaica Water Supply Company from August 1980 to April 1981. These wells are in the company's southeast Queens County franchise area (fig. 22). Of the 67 wells sampled, 31 were screened in the upper glacial aquifer, 32 were screened in the Magothy-Jameco aquifer, and 4 were screened in the Lloyd. These samples were analyzed by the Jamaica Water Supply Company's water-quality laboratory; results of the chloride and nitrate analyses are incorporated in the following discussion of the occurrence of these constituents in the ground water in the area. Figures 23-25 show the chloride distribution in each of the three major aquifers; figures 26-28 depict the nitrate distribution.

Sampling and Analytical Procedures

The wells sampled by the Geological Survey ranged in diameter from 2 to 32 inches. Generally, the smaller wells are Geological Survey observation wells; those of larger diameter are industrial supply wells. Sample-collection procedures varied accordingly, determined mainly by well diameter and depth to water. Normally, where the depth to water was 25 ft or less, a centrifugal pump was used, otherwise a submersible pump was used. In places where both the centrifugal pump and submersible pump were not practical, the samples were bailed. The volume of water standing in the well casing was evacuated three times, and specific conductance was monitored until stable before sampling.

All samples were stored and preserved with appropriate chemical reagents as prescribed by the Bureau of Water-Supply Laboratory (NYCDEP) (Romola Popper, written commun., 1981). Samples were analyzed according to "Standard Methods" (American Public Health Association and others, 1976).



Base from U.S. Geological Survey, 1:24,000 series
Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956;
Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955;
and Far Rockaway, Weehawken, 1954.

Figure 22.--Location of wells sampled from August 1980 to April 1981.

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Chloride

The most severe chloride contamination in all aquifers is near shore areas. Chloride contamination is present throughout the upper glacial aquifer in western Long Island. Most inland contamination is probably derived from surface contamination, but some inland areas probably also contain remnants of past contamination by saltwater encroachment.

Although inland contamination of the Magothy-Jameco aquifer is likely caused by downward movement of water from the upper glacial aquifer, more data would be needed to define the position of the saltwater interface in this aquifer. The Lloyd aquifer contains no evidence of inland chloride contamination; however, better definition of the saltwater interface on the south shore is needed.

Upper glacial aquifer.--Analyses of samples from 92 wells screened in the upper glacial aquifer are available. Of these, 38 are in Kings County, 47 are in Queens County, and 7 are in Nassau County. Chloride concentrations range from 12 mg/L to 1,340 mg/L. Water from all but three wells in Kings County had chloride concentration greater than 40 mg/L (fig. 23); 27 were in the range of 40 to 250 mg/L, which suggests contamination from saltwater intrusion. Water in the remaining eight wells ranged from 250 mg/L to 1,340 mg/L. The highest concentrations were near the shores and estuaries, which probably indicates the present position of the zone of diffusion. Water from several inland wells also had high chloride concentrations that are probably remnants of intrusion induced from pumping in the defunct Flatbush franchise area (NYWSC).

In Queens County, samples from 8 of the 47 wells had chloride concentration of 40 mg/L or less, and 30 had chloride concentration from 40 to 80 mg/L, indicating some contamination but generally better quality than in Kings County. Water from the remaining nine wells had chloride concentration ranging from 80 to 550 mg/L; the highest concentration was found in shore areas. Chloride concentration inland in Queens County was lower than that in Kings County, probably because past contamination from saltwater intrusion was less severe.

Water from six of the seven wells in Nassau County had chloride concentration less than 45 mg/L, demonstrating still better ground-water quality to the east. Therefore, ground water flowing westward from Nassau County probably aids the recovery of ground-water quality in Queens County.

In summary, chloride contamination in the upper glacial aquifer decreases eastward from Kings County. Chloride concentration has increased as compared with concentration in 1947 in Kings County (fig. 19) and 1961 in Queens County (fig. 20); at present, water from virtually all the upper glacial aquifer in both counties has chloride concentration of 40 mg/L or more. Recovery is evident, however, where severe saltwater intrusion in Kings County had elevated chloride concentration to as high as 15,000 mg/L; the highest concentration observed in 1981 was 1,340 mg/L (fig. 23).

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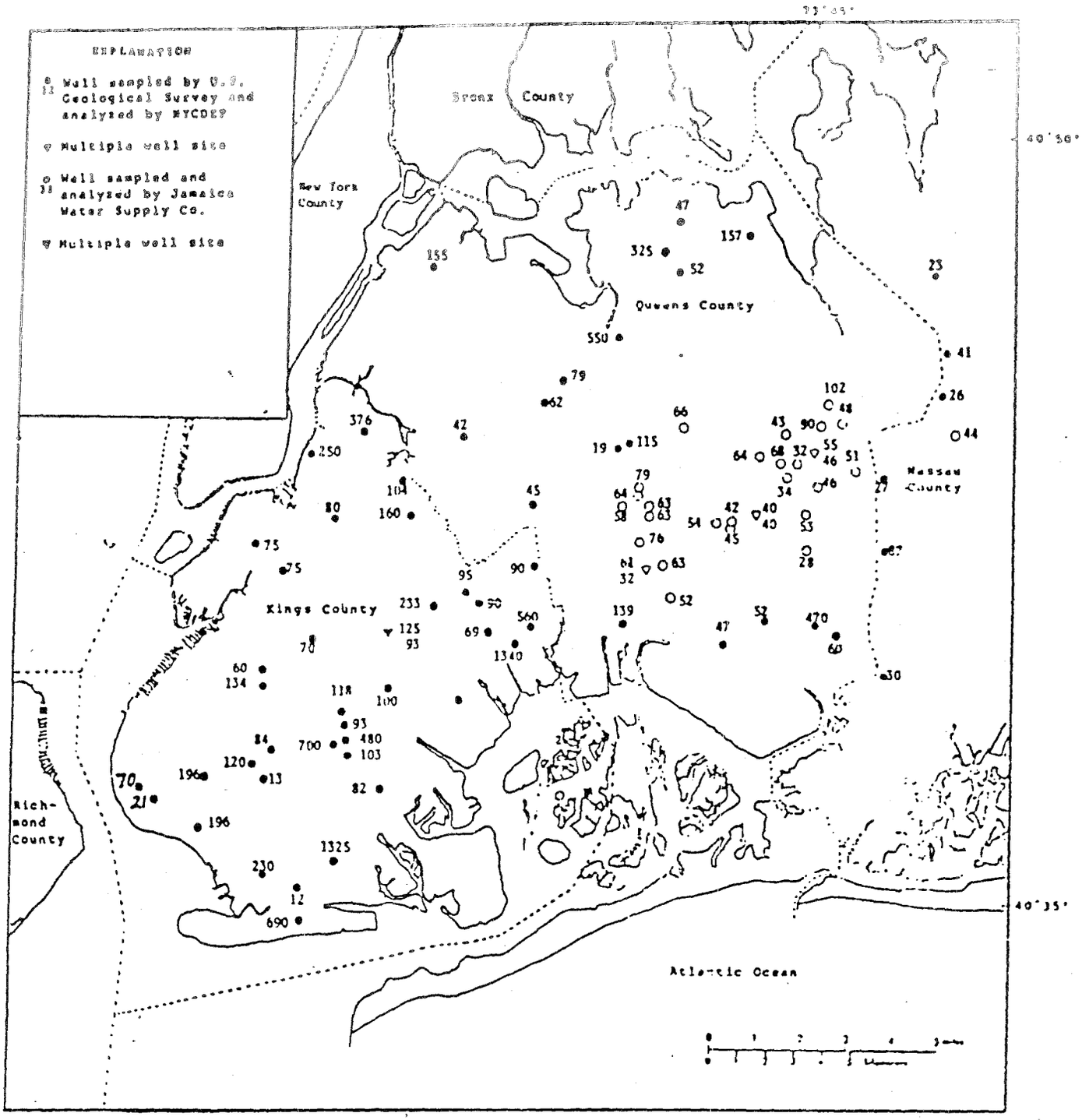

Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Figure 23.--Chloride (Cl^-) concentration in upper glacial aquifer, 1980-81. (Locations and county well numbers are given in fig. 22; complete analyses are given in table 2.)

Magothy-Jameco aquifer.--Samples from all 38 wells screened in the Magothy-Jameco aquifer were analyzed (fig. 24). Only four wells were available in Kings County; these are in shore areas, and water from them had concentration ranging from 94 to 15,000 mg/L. They probably all tap the zone of diffusion of the saltwater interface. In Queens County, chloride concentration in the Magothy-Jameco aquifer was noticeably lower than in the upper glacial aquifer. Water from all but five of the 24 wells in Queens County had concentrations of less than 42 mg/L, and only three showed concentrations exceeding 60 mg/L (one of these is in Far Rockaway, which is within the zone of diffusion of the saltwater interface).

Chloride concentrations in 10 samples from Nassau County along the Queens border ranged from 7 mg/L to 33 mg/L, and, as in the upper glacial aquifer, indicate that chloride concentration decreases eastward. The Magothy-Jameco aquifer may be contaminated from the advance of the zone of diffusion or from downward movement of chloride from the upper glacial aquifer. More data are needed to define the exact position of the saltwater interface in this aquifer and to identify recent trends in ground-water quality.

Lloyd aquifer.--Of the 13 wells sampled from the Lloyd aquifer, 12 are in Queens County. Chloride concentration inland ranges from 1 mg/L to 15 mg/L, suggesting that water in the Lloyd aquifer in most areas of Queens is near predevelopment quality (fig. 25). Two wells near the south shore show high chloride concentrations and may be in the leading edge of the zone of diffusion of the saltwater interface. Alternatively, this contamination may have migrated downward through the Raritan confining unit from the Magothy-Jameco aquifer, where the zone of diffusion seems to have advanced farther landward. Additional sampling in the Lloyd aquifer should more accurately define the zone of diffusion of the saltwater interface and areas of good hydraulic connection with the overlying aquifer.

Nitrate

Nitrate contamination is apparent throughout the upper glacial aquifer and is most severe in Kings County. Some contamination has entered the deeper aquifers by downward migration, predominantly in areas where the confining units are absent. Therefore, accurate delineation of these confining units, including their thickness and extent, is important in predicting future trends of nitrate contamination of the deeper aquifers.

Upper glacial aquifer.--Water from 93 wells screened in the upper glacial aquifer was analyzed for nitrate (as N) (fig. 26). Of the 38 samples from Kings County, 16 had nitrate (as N) concentrations of 10 mg/L or more, and 26 had concentrations of 1 mg/L or more. Only two had less than 1 mg/L; one of these had a chloride concentration of 690 mg/L, which indicates contamination by seawater.

In Queens County, 47 wells were sampled. All but 10 samples had nitrate concentrations lower than 10 mg/L, and many of these were below 1.0 mg/L. Water from all seven wells sampled in Nassau County had concentrations of nitrate (as N) less than 10 mg/L.

Overall, the nitrate data for the upper glacial aquifer indicate extensive contamination that seems to be most severe in Kings County and decreases eastward. The relative proximity of high and low concentrations (fig. 26) suggests localized sources of contamination.

Magothy-Jameco aquifer.--Concentrations of nitrate (as N) in samples from 38 wells in the Magothy-Jameco aquifer ranged from 0.1 to 15.8 mg/L (fig. 27). Only four analyses are available for Kings County, and no conclusions can be drawn. Samples in Queens County have nitrate (as N) concentration from 0.1 mg/L to 7.6 mg/L. The distribution of nitrate seems lower where the Magothy-Jameco aquifer is confined by the Gardiners Clay, where downward movement of surface contamination is inhibited, but the data are not conclusive. The analyses for Nassau County (where the Magothy-Jameco aquifer is unconfined) indicate concentrations comparable to those in Queens County where the aquifer is unconfined.

Lloyd aquifer.--Concentration of nitrate (as N) in the Lloyd aquifer ranges from 0.1 to 6 mg/L (fig. 28), generally indicating better quality than the overlying aquifers. Eleven wells were sampled from inland areas; six had concentrations of nitrate within the estimated predevelopment levels (0.2 mg/L as N), and only three exceeded 1.2 mg/L.

SUMMARY

The aquifers underlying Kings and Queens Counties have supplied an average of about 120 Mgal/d from 1904 to 1947. Since 1947, the aquifers in Queens County alone have supplied 60 Mgal/d. Ground-water quality in Kings County after 44 years of pumping deteriorated to the point of condemnation, primarily as a result of saltwater intrusion. The deterioration of ground-water quality in Queens County has not reached the severity noted in Kings County and is still meeting quality standards after 77 years of pumping. The condemnation of pumping for public supply in Kings County and southwest Queens did not mean that this source of water supply was totally unusable, especially as an emergency supply.

Since cessation of pumping in Kings County and southwest Queens County, ground-water levels have recovered steadily, and severe saltwater contamination has been diluted in some areas. However, before any plan to redevelop the ground-water reservoir of western Long Island is implemented, two major questions need to be addressed: (1) Does the present ground-water quality justify redevelopment of the ground-water resources of Kings and Queens Counties, and (2) what levels of ground-water pumpage, either continuous or periodic, can be sustained without jeopardizing ground-water quality?

The most significant findings from this phase of the study are as follows:

1. Heavy pumping in Kings County in the 1930's and in Queens by 1960 severely lowered ground-water levels.

2. Contamination of the aquifers by surrounding salt water began when water levels near shore areas were lowered; the encroachment progressed more rapidly when the cones of depression reached below sea level and near-shore ground-water gradients approached zero.

3. The upper glacial aquifer shows indications of recovery from saltwater intrusion induced during periods of severe pumping, but chloride contamination from surface sources and remnants of past saltwater intrusion are still dominant in inland areas.

4. The expansion of the cone of depression, and subsequent saltwater intrusion, is most rapid in the deeper aquifers where their confined storage properties result in shorter transient response to equilibrium.

5. At present, the upper glacial aquifer in both counties shows considerable contamination by nitrate and chloride from surface sources. However, the degree of contamination decreases eastward through the area studied.

6. Some contamination of deeper aquifers from surface sources is evident and is attributed to downward migration through areas of good hydraulic connection between aquifers. Pumping these areas of the deeper aquifers is expected to accelerate this downward migration of surface contaminants.

7. Although chloride and nitrate have been used as the principal indicators of ground-water contamination, concentrations of other constituents have not been carefully studied. Point-source contamination could have significant local effects on ground-water quality, especially in the upper glacial aquifer.

8. The ground-water reservoir of Kings and Queens Counties is an integral part of the entire Long Island ground-water system; the effects of any major stress impact the entire system. Thus, consideration of hydrologic conditions and future trends in central Long Island is integral to the accurate assessment and prediction of hydrologic conditions in Kings and Queens Counties.

The data collected in this investigation indicate that some potable ground water is available in the Magothy-Jameco and Lloyd aquifers. However, an accurate assessment of the quantity of water available and a suitable draft rate is as yet undetermined

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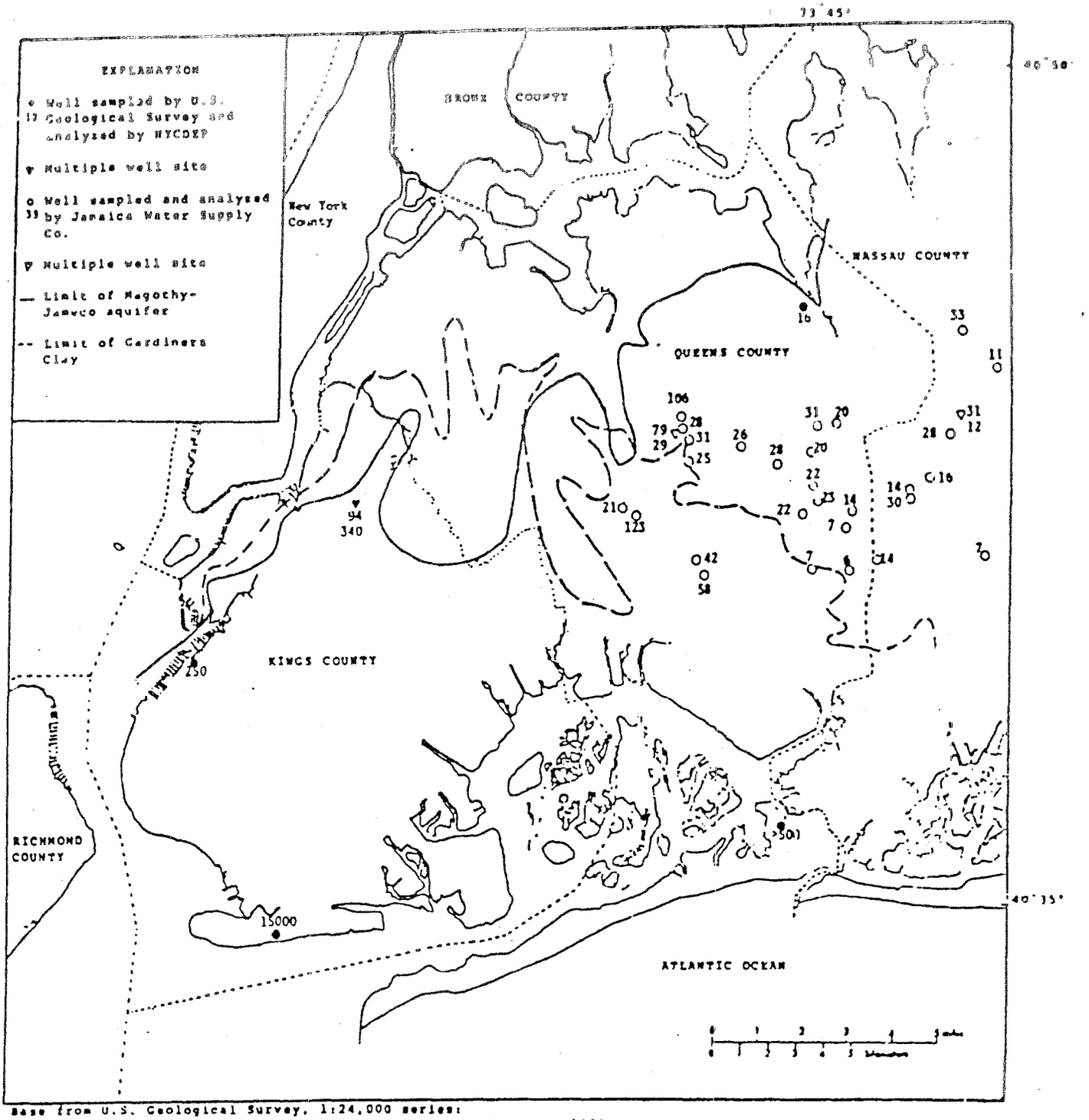
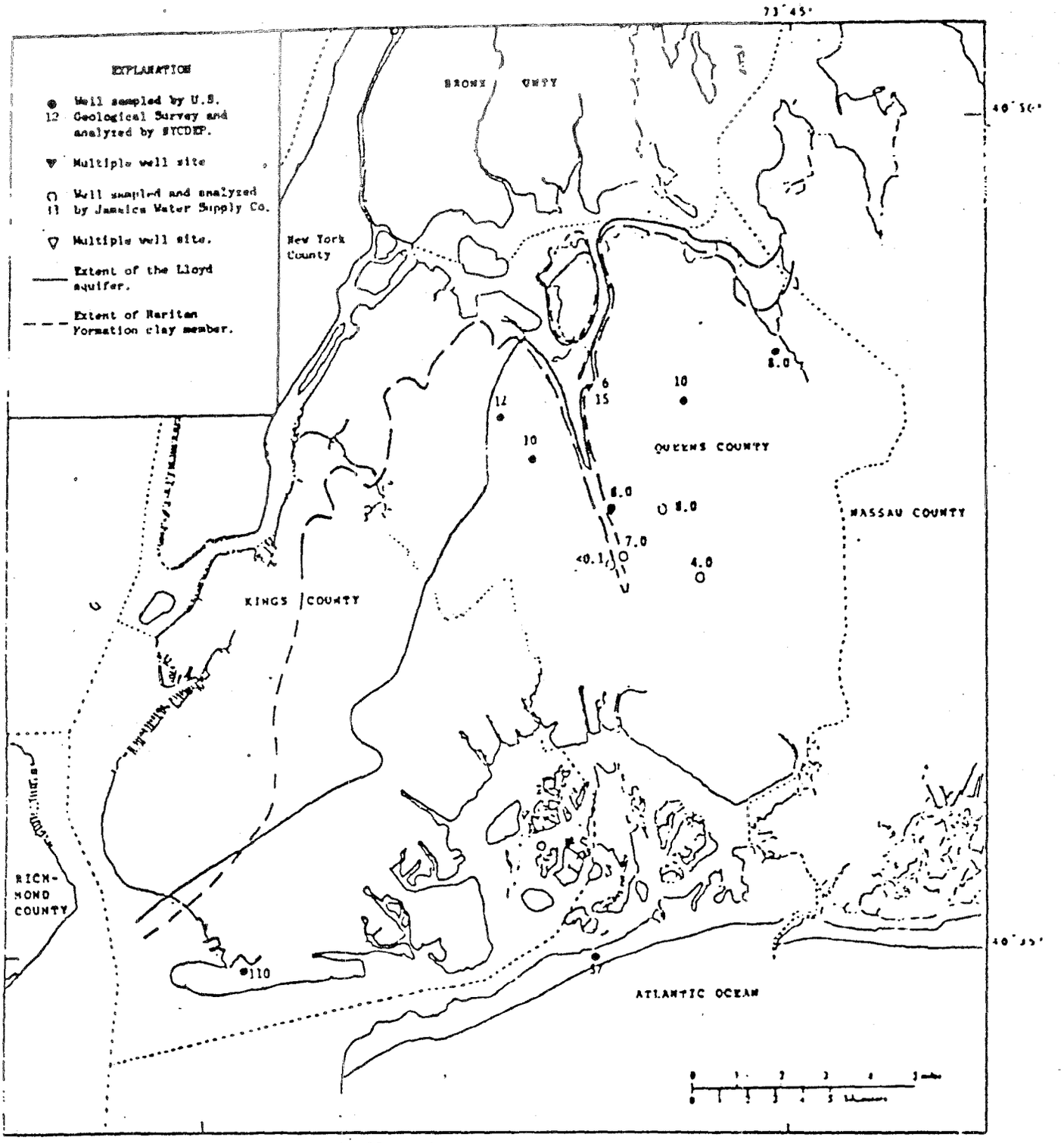


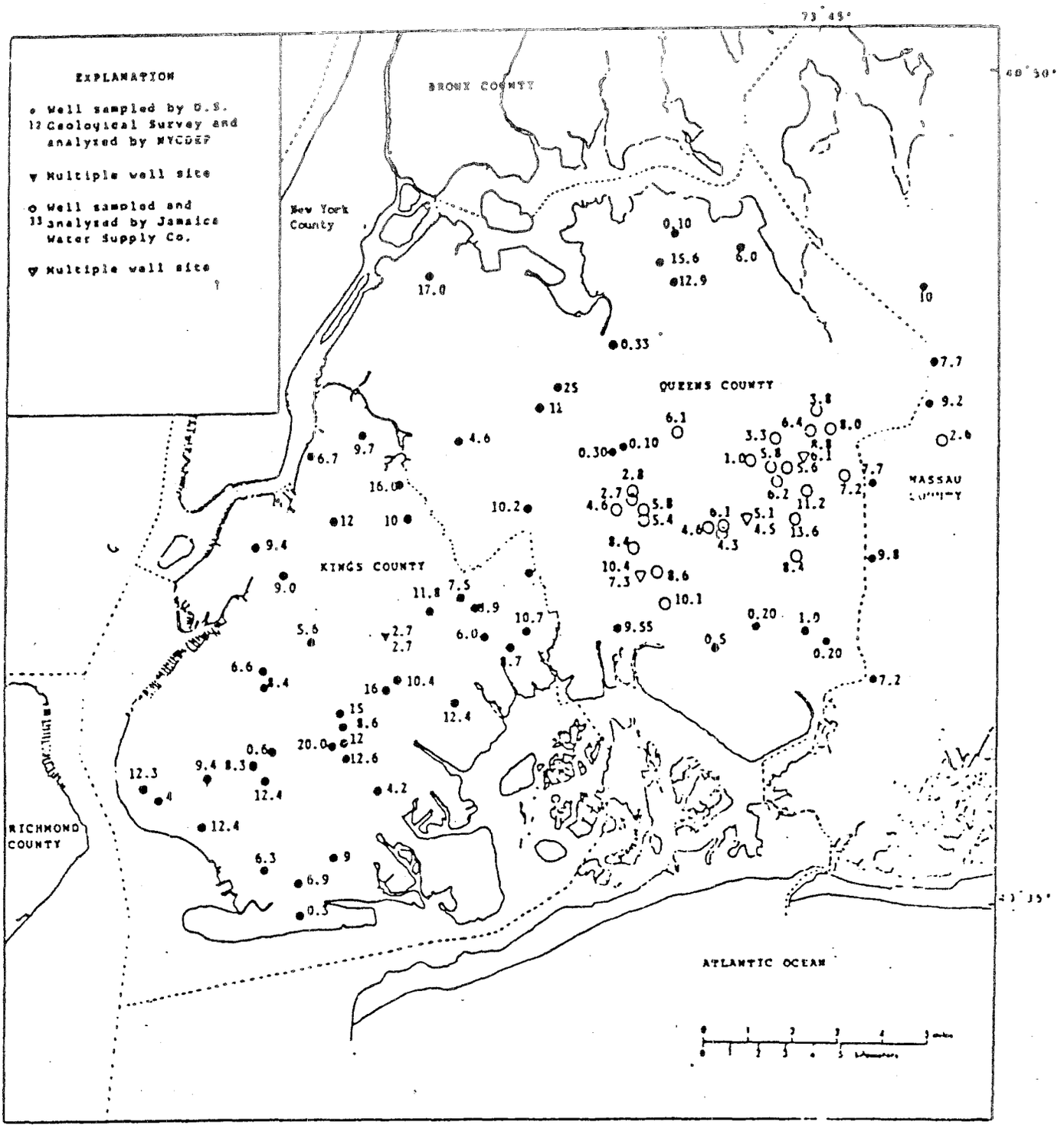
Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Reckensack, 1955; and Far Rockaway, Weehawken, 1954.

Figure 24.--Chloride (Cl^-) concentrations in the Magothy-Jameco aquifer, 1980-81. (Locations and county well numbers are given in fig. 22; complete analyses are given in table 2.)



Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1967; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockway, Weehawken, 1954.

Figure 25.--Chloride (Cl^-) concentrations in the Lloyd aquifer, 1980-81. (Locations and county well numbers are given in fig. 22; complete analyses are given in table 2.)



Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Figure 26.--Nitrate (NO_3^- as N) concentrations in the upper glacial aquifer, 1980-81. (Locations and county well numbers are given in fig. 22; complete analyses are given in table 2.)

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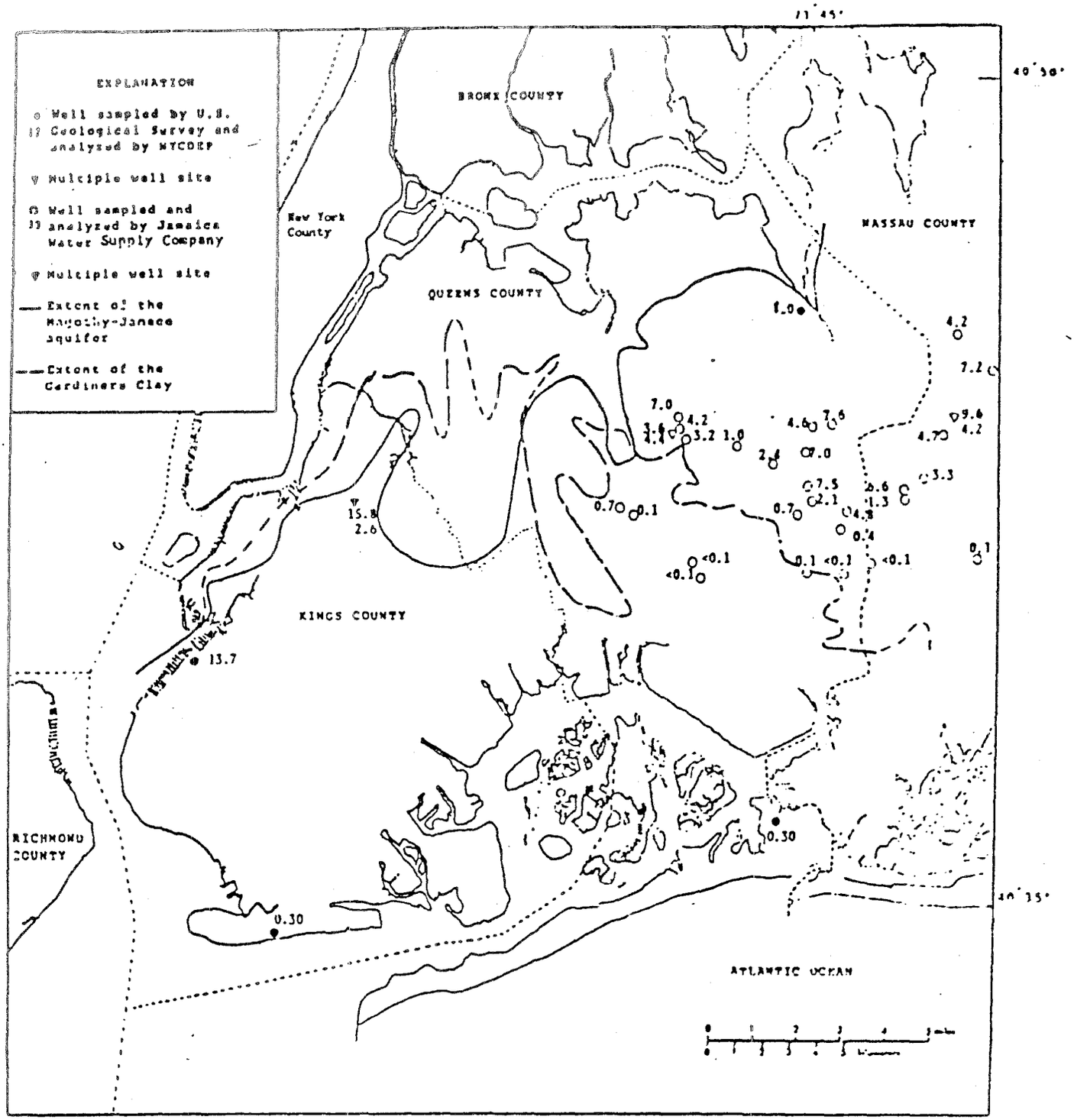
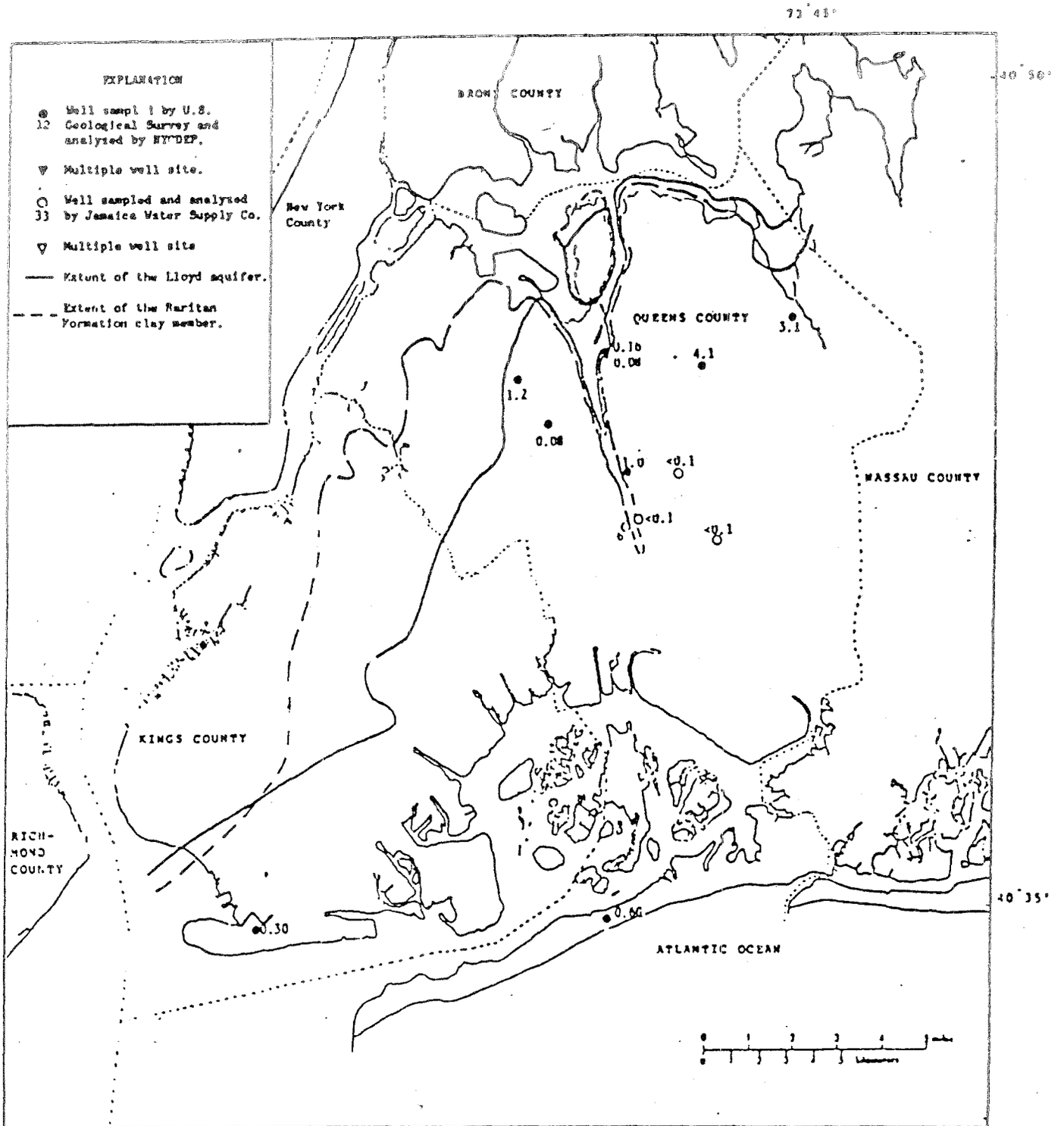


Base from U.S. Geological Survey, 1:24,000 series:
Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956;
Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955;
and Far Rockaway, Weehawken, 1954.

Figure 27.—Nitrate (NO_3^- as N) concentrations in the Magothy-Jameco aquifer, 1980-81. (Locations and county well numbers are given in fig. 22; complete analyses are given in table 2.)



Base from U.S. Geological Survey, 1:24,000 series: Jamaica, 1957; Brooklyn, Central Park, Mount Vernon, Yonkers, 1956; Coney Island, Flushing, Jersey City, The Narrows, Hackensack, 1955; and Far Rockaway, Weehawken, 1954.

Figure 28.—Nitrate (NO_3^- as N) concentrations in the Lloyd aquifer, 1980-81. (Locations and county well numbers are given in fig. 22; complete analyses are given in table 2.)

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Table 3.—Selected chemical analyses of ground water in Kings and Queens Counties, N.Y.

Well No.	Total Well Depth (ft)	Aquifer[1]	Date Sampled	Specific conductance (µmho)	pH (units)	Temp. Field (°C)	Color (u)	Turbidity (NTU)	Coliform, Total MF[2] (colo./100 mL)	Hardness (mg/L as $CaCO_3$)	Calcium, Total (mg/L as Ca)	Magnesium, Total (mg/L as Mg)	Sodium, Total (mg/L as Na)	Potassium, Total (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate, Dissolved (mg/L as SO_4)	Chloride, Dissolved (mg/L as Cl)
K20	126	UG	04/03/81	780	7.6	—	3	1.0	3	370	101.15	28.50	28	3.80	210	73.0	75
K41	100	UG	04/06/81	1150	7.2	19.0	8	2.3	<1	560	169.88	33.00	60	5.00	300	140.0	93
K307	73	UG	02/25/81	2500	7.0	16.5	3	.3	<1	240	—	91.50	70	3.84	92	100.0	700
K1189	144	J	03/11/81	1400	7.7	15.0	6	2.0	<1	280	60.00	31.00	200	10.00	180	95.0	250
K1946	32	UG	03/18/81	770	7.2	12.0	10	1.8	TNTC[3]	310	72.00	31.00	44	2.10	200	160.0	90
K1973	84	UG	02/18/81	890	7.3	15.5	2	.3	<1	400	—	—	—	—	224	86.0	134
K1978	124	UG	04/07/81	4560	7.6	13.0	220	>25.0	<1	880	298.70	32.50	700	14.00	96	260.0	1325
K1981	110	UG	02/24/81	890	7.3	14.0	3	.9	<1	680	237.70	20.40	2.6	3.20	172	125.0	70
K1989	73	UG	02/25/81	1000	7.3	19.5	3	.3	<1	96	—	50.00	40	3.30	240	65.0	84
K2040	101	UG	04/09/81	490	7.3	15.0	18	5.3	<1	170	29.05	23.75	38	2.15	98	90.0	80
K2135	80	UG	04/08/81	1200	6.8	21.5	9	2.5	<1	485	144.68	30.00	73	6.00	300	120.0	125
K2284	71	UG	02/18/81	660	7.3	21.0	2	.6	1	288	—	—	—	—	200	40.0	60
K2303	65	UG	03/31/81	1030	7.2	16.0	23	.3	<1	400	105.74	33.00	62	4.36	212	130.0	104
K2407	58	UG	02/12/81	1210	6.9	7.0	4	.4	<1	164	—	—	—	—	196	76.0	230
K2412	91	UG	04/28/81	600	7.6	15.0	3	1.2	<1	288	76.64	23.50	15	—	404	—	21
K2482	128	UG	03/19/81	720	7.4	14.0	7	.6	<1	282	62.40	30.00	41	2.70	180	88.0	70
K2510	207	J	03/23/81	>8000	7.2	13.0	5	2.1	<1	5250	319.00	1060	8000	360.00	150	2400	15000
14	51	UG	04/07/81	950	7.0	16.0	6	.4	<1	292	54.18	104.00	73	2.25	130	110.0	100
K2591	59	UG	04/13/81	1400	6.7	17.0	6	1.8	<1	410	104.14	36.50	150	11.50	194	90.0	250
K2594	66	UG	02/12/81	2500	7.5	24.5	5	.5	<1	620	—	—	—	—	168	148.0	560
K2610	60	UG	02/12/81	4300	6.9	16.0	6	.6	<1	1120	—	—	—	—	200	98.0	1340
K2622	105	UG	04/07/81	650	6.9	11.5	5	1.5	<1	272	29.40	21.50	20	1.10	96	85.0	95
K2859	500	L	03/27/81	500	8.0	15.0	18	30.0	<1	40	4.60	6.80	70	6.00	52	10.0	110
K3133	190	J	03/04/81	1700	7.4	12.0	6	.4	<1	460	176.40	4.50	175	4.08	180	126.0	340
K3215	75	UG	04/14/81	970	7.1	16.5	4	.3	<1	360	87.42	34.50	54	2.76	120	100.0	166
K3217	75	UG	04/14/81	2000	6.7	17.5	—	—	<1	350	39.14	61.50	175	4.40	110	—	480
K3218	70	UG	04/14/81	780	7.4	16.5	4	.3	<1	300	65.06	33.50	38	2.90	140	57.0	93
K3220	185	J	03/04/81	1140	7.4	14.0	5	.5	<1	464	179.00	4.38	56	2.90	222	208.0	94
K3243	—	UG	04/14/81	800	7.0	14.0	4	.3	<1	310	81.36	26.00	40	2.30	144	—	90
K3245	26	UG	02/25/81	1000	6.9	—	40	19.0	>30	190	—	—	—	—	80	156	160
K3246	30	UG	02/10/81	—	6.2	18	—	—	<1	—	—	—	—	—	—	—	—
K3248	42	UG	02/24/81	990	6.4	15.0	28	250.0	TNTC	400	—	134.37	6.6	18.50	100	115.0	196
K3249	32	UG	04/22/81	800	6.2	14.5	76	14.0	480	200	—	54.00	70	—	8	—	196
K3250	30	UG	02/11/81	2700	6.8	16.0	60	1.0	<1	500	—	—	—	—	230	130	690
K3251	23	UG	02/11/81	470	6.7	12.5	5	22.0	3	216	—	—	—	—	186	20	12
K3252	30	UG	02/11/81	580	6.4	16.5	27	10.0	24	124	—	—	—	—	96	56.4	82
K3254	29	UG	05/01/81	800	6.6	11.0	60	.7	<1	260	—	—	—	—	172	—	103
K3255	24	UG	02/11/81	—	—	17.0	—	—	4	—	—	—	—	—	—	—	850

1/ UG - Upper glacial aquifer; J - Jamaco aquifer; M - Magothy aquifer; L - Lloyd aquifer.

2/ MF - Membrane Filter.

3/ TNTC - Too numerous to count.

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Table 2.—Selected chemical analyses of ground water in Kings and Queens Counties, N.Y.—continued

Well No.	Fluoride Total (mg/L as F)	Total Dissolved Solids (mg/L)	Nitrogen, Nitrate Total (mg/L as N)	Nitrogen, Nitrite Total (mg/L as N)	Nitrogen, Ammonia Total (mg/L as N)	Arsenic, Total (mg/L as As)	Barium, Total (mg/L as Ba)	Cadmium, Total (mg/L as Cd)	Chromium, Total (mg/L as Cr)	Copper Total (mg/L as Cu)	Iron Total (mg/L as Fe)	Lead Total (mg/L as Pb)	Manganese, Total (mg/L as Mn)	Mercury, Total (mg/L as Hg)	Selenium, Total (mg/L as Se)	Silver Total (mg/L as Ag)	Zinc, Total (mg/L as Zn)	Linear Alkyl Sulfonate
K20	.14	—	9.00	<.001	.12	<.05	<.50	<.01	<.05	.01	.16	<.03	.08	<.001	—	<.01	.02	neg
K41	.11	—	2.70	.015	.06	—	<.50	<.01	<.05	.06	.23	<.03	.06	<.001	—	<.01	.27	neg
K307	—	1440	20.00	.002	.08	<.05	<.20	<.01	<.05	.02	.12	<.01	<.01	<.001	<.01	<.03	.03	neg
K1189	—	822	13.70	.009	.06	—	<.20	<.01	<.04	.06	2.66	<.01	.30	<.001	—	<.03	.04	neg
K1194	.13	464	13.10	.040	.18	<.02	<.50	<.01	<.05	.46	36.10	.60	.70	<.001	—	<.03	2.90	neg
K1673	—	616	8.40	.001	.09	<.05	—	<.01	<.04	.01	.03	<.01	.03	<.001	<.01	<.03	.04	neg
K1678	.10	—	9.00	<.001	<.03	—	<.50	<.01	<.05	.03	.10	<.03	.03	<.001	—	<.01	.04	neg
K1681	—	586	12.30	<.001	.18	<.05	<.20	<.01	<.04	.04	.17	<.01	<.01	<.001	<.01	<.03	.16	neg
K1689	—	560	.60	<.001	.03	<.05	<.20	<.01	<.05	.04	.10	<.01	<.01	<.001	<.01	<.03	.05	neg
K2040	.11	—	12.00	.002	.18	—	<.50	<.01	<.05	.01	.69	<.03	.04	<.001	—	<.01	1.98	neg
K2135	.16	—	2.70	.005	.14	—	<.50	<.01	.05	.03	.80	<.03	.40	<.001	—	<.01	.03	neg
K2286	—	430	6.60	<.001	.05	<.05	—	<.01	<.04	.01	.03	<.01	.03	<.001	<.01	<.03	.02	neg
K2303	.13	508	16.00	.004	.12	<.001	<.50	<.01	.60	.01	.06	<.01	.03	<.001	—	<.01	.02	neg
K2407	—	798	6.30	.004	.05	<.05	<.20	<.01	<.04	.01	.04	<.01	.44	<.001	<.01	<.03	.06	neg
K2412	.18	—	4.00	<.001	.05	—	<.50	<.01	<.05	.02	.18	<.03	.03	—	—	<.01	.05	—
K2482	.19	478	5.60	<.001	<.03	—	<.50	<.01	<.05	.01	.10	<.03	<.01	<.001	—	<.02	.01	—
K2510	.60	29220	.30	<.001	.03	<.02	<.50	<.01	<.05	.05	.32	<.03	.90	<.001	—	.05	.04	neg
K2514	.11	—	16.00	<.001	<.03	—	<.50	<.01	<.05	.01	.03	<.03	.05	<.001	—	<.01	.04	neg
K2591	.18	—	6.70	.016	.006	—	<.50	<.01	.35	.05	6.10	<.03	1.90	<.001	—	<.01	.03	neg
K2594	—	1560	10.70	.012	.05	<.05	—	<.01	<.04	.01	.03	<.01	.17	<.001	<.01	<.03	.07	neg
K2610	—	3320	8.70	.002	.03	<.05	<.20	<.01	.13	.02	.06	<.01	.16	<.001	<.01	<.03	.06	neg
K2622	.24	—	7.50	<.001	<.03	—	<.50	<.01	<.05	.01	.06	<.03	.02	<.001	—	<.01	.02	neg
K2859	.35	260	.30	<.001	.03	—	<.50	<.01	<.05	.01	1.70	<.01	.05	<.001	—	<.01	.07	neg
K3133	—	455	2.60	<.001	.21	<.05	<.20	<.01	.04	.05	.18	<.01	.36	<.001	<.01	<.03	<.01	neg
K3215	.12	—	8.60	<.001	.03	—	<.50	<.01	<.05	.01	.06	<.03	.01	<.001	—	<.01	.02	neg
K3217	.13	—	12.00	.002	.06	—	<.50	<.01	<.05	.01	.08	<.03	.25	<.001	—	<.01	.10	neg
K3218	.13	—	15.00	.001	.01	—	<.50	<.01	.05	.02	.05	<.03	.01	<.001	—	<.01	.03	—
K3220	—	720	15.80	<.001	.27	<.05	<.20	<.01	<.04	.03	.13	<.01	.01	<.001	<.01	<.03	.01	neg
K3243	.15	—	8.90	<.001	.11	—	<.50	<.01	<.05	.01	.06	<.03	.02	<.001	—	<.01	.02	neg
K3245	—	615	10.00	.033	.12	<.05	<.20	<.01	<.04	.07	>50	<.01	8.70	<.001	<.01	<.03	25.00	neg
K3246	—	—	10.40	.002	—	<.05	<.20	<.01	<.04	.01	.60	<.01	.17	<.001	<.01	<.03	1.40	neg
K3248	—	610	9.40	.009	.06	<.05	<.20	<.01	.05	2.50	54.00	<.01	5.30	<.001	<.01	<.03	13.80	neg
K3249	.17	—	12.40	.04	.69	—	<.50	<.01	<.05	.65	55.60	<.03	3.80	—	—	<.01	114.00	neg
K3250	—	1624	.30	<.001	.39	<.05	<.20	<.01	<.04	.01	6.70	<.01	1.30	<.001	<.01	<.03	.73	neg
K3251	—	280	6.90	<.001	.06	<.05	<.20	<.01	<.04	.02	2.10	<.01	.40	<.001	<.01	<.03	1.40	neg
K3252	—	338	4.20	.002	.75	<.05	<.20	<.01	<.04	.01	2.70	<.01	.48	<.001	<.01	<.03	1.00	neg
K3254	<.20	—	12.60	.050	.12	—	<.50	<.01	<.05	.09	23.60	<.03	—	—	—	—	—	neg
K3255	—	—	12.40	.003	—	<.05	<.20	<.01	<.04	.01	2.10	<.01	.05	<.001	<.01	<.03	1.40	neg

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Table 2.--Selected chemical analyses of ground water in Kings and Queens Counties, N.Y.--Continued

Well No.	Total Well Depth (ft)	Aquifer 1/	Date Sampled	Specific conductance (umho)	pH (units)	Temp. Field (°C)	Color (u)	Turbidity (NTU)	Coliform, Total MF 2/ (colo./100 mL)	Hardness (mg/L as $CaCO_3$)	Calcium, Total (mg/L as Ca)	Magnesium, Total (mg/L as Mg)	Sodium, Total (mg/L as Na)	Potassium, Total (mg/L as K)	Alkalinity (mg/L as $CaCO_3$)	Sulfate, Dissolved (mg/L as SO_4)	Chloride, Dissolved (mg/L as Cl)
K3256	29	UC	02/10/81	620	6.3	18.5	5	4.2	<1	180	--	--	--	--	96	92.0	69
K3257	50	UC	03/20/81	1400	5.9	14.0	60	35.0	<1	460	73.00	66.00	41	6.40	116	210.0	233
K3260	23	UC	02/12/81	2000	6.8	18.5	6	2.7	18	540	--	--	--	--	248	192.0	376
K3267	47	UC	04/23/81	400	6.6	13.0	5	.4	<1	168	1.60	40.00	6.5	--	100	--	33
KA	--	UC	04/06/81	1200	7.8	16.0	18	25.0	TNTC	130	10.07	25.50	140	5.60	236	85.0	75
KH	50	UC	04/09/81	850	7.0	18.5	5	.3	<1	354	81.74	36.50	35	3.90	228	45.0	120
Q273	438	L	04/08/81	160	7.0	--	120	50.0	<1	72	15.68	8.00	4.6	1.25	74	8	8
Q283	409	L	04/01/81	145	6.7	14.0	200	>25.0	<1	34	11.05	1.55	16	3.70	54	5.0	10
Q470	375	L	04/20/81	100	6.3	13.0	8	>20.0	<1	38	8.15	4.30	5.4	--	34	7.0	8
Q471	118	M	02/19/81	63	6.8	12.5	30	17.5	<1	40	--	--	--	--	22	4.0	16
Q1071	836	L	04/29/81	275	6.7	14.5	200	64.0	<1	38	12.58	1.60	--	--	22	--	57
Q1189	50	UC	02/18/81	1650	6.2	14.0	27	7.0	1	470	--	--	--	--	86	52.0	470
Q1241	301	L	03/03/81	230	6.5	--	170	>25.0	<1	60	14.90	5.40	22	2.00	74	18.5	12
Q1605	42	UC	02/20/81	850	7.0	15.5	4	1.0	<1	408	--	--	--	--	212	95.0	62
Q1663	139	UC	02/19/81	730	7.3	9.0	9	3.9	58	368	--	--	--	--	154	97.0	45
Q1930	126	J	03/17/81	>8000	6.8	13.5	88	>25.0	<1	2810	242.00	525.00	5600	120.00	112	1000	>500
Q2324	91	UC	02/13/81	1030	7.4	14.0	5	2.8	<1	452	--	--	--	--	210	100.0	139
518	65	UC	02/03/81	2200	6.8	14.0	70	>25.0	<1	296	111.40	4.16	350	1.80	234	4.0	550
Q2419	271	L	03/02/81	150	7.1	13.5	100	30.0	<1	62	14.80	5.92	7.4	1.33	68	6.3	6
Q2420	273	L	02/26/81	155	6.9	14.0	150	4.4	--	70	17.90	6.00	8.5	1.40	68	1.5	15
Q2656	125	UC	04/30/81	700	7.2	12.5	27	3.5	<1	736	--	40.50	--	--	268	--	62
Q2791	76	UC	05/12/81	700	7.0	15.0	5	.7	<1	160	--	--	--	--	156	--	52
Q2964	182	UC	03/24/81	760	7.2	--	11	3.2	<1	220	50.40	22.40	74	2.20	146	36.0	115
Q2965	208	UC	03/30/81	380	7.2	12.0	60	24.0	<1	87	5.20	17.60	9	5.28	150	26.0	19
Q2978	73	UC	05/18/81	600	6.4	13.0	5	1.4	<1	220	--	--	--	--	70	--	47
Q2993	72	UC	02/23/81	420	6.0	16.0	35	16.0	<1	120	--	--	--	--	40	51.0	52
Q2995	100	UC	02/25/81	85	8.7	14.0	88	23.0	TNTC	22	--	--	--	--	38	2.4	6.0
Q3026	269	L	03/02/81	195	6.7	12.5	150	45.0	<1	38	9.00	3.20	30	2.12	72	12.6	10
Q3117	--	UC	02/09/81	740	6.9	14.5	23	13.5	5	254	--	--	--	--	120	96.0	47
Q3119	40	UC	02/09/81	870	5.9	16.5	18	8.5	<1	288	--	--	--	--	20	92.0	157
Q3120	45	UC	03/02/81	1440	6.1	12.0	11	3.5	<1	550	104.00	69.00	41	6.20	94	70.0	325
Q3121	47	UC	02/27/81	1200	7.2	15.0	15	>25.0	<1	400	--	109.00	64	1.80	250	14.0	155
Q3123	24	UC	02/09/81	1100	7.1	15.0	13	25.0	<1	436	--	--	--	--	230	154.0	79
N1102	166	UC	04/22/81	390	7.8	12.0	30	9.5	60	230	60.51	19.20	19	--	92	--	23
N1104	101	UC	04/16/81	410	7.2	14.0	.8	190.0	<1	174	53 69	9.70	30	2.10	70	36.0	61
N1105	87	UC	04/20/81	360	6.5	13.5	21	2.0	<1	92	--	--	--	--	260	35.0	26
N1622	85	UC	04/15/81	600	6.8	12.5	250	40.0	<1	252	48.32	32.00	18	4.60	140	73.0	27
N1627	28	UC	04/13/81	440	6.0	16.0	7	1.1	<1	120	25.53	13.70	18	6.70	64	50.0	30
374	53	UC	04/10/81	700	6.2	14.5	15	25.0	<1	200	--	50.00	67.5	10.60	130	40.0	87

1/ UC - Upper glacial aquifer; J - Jamaica aquifer; M - Magothy aquifer; L - Lloyd aquifer.

2/ MF - Membrane Filter.

3/ TNTC - Too numerous to count.

Table 3.—Selected chemical analyses of groundwater in Kings and Queens Counties, N.Y.—continued

Well No.	Fluoride Total (mg/L as F)	Total Dissolved Solids (mg/L)	Nitrogen, Nitrate Total (mg/L as N)	Nitrogen, Nitrite Total (mg/L as N)	Nitrogen, Ammonia Total (mg/L as N)	Arsenic, Total (mg/L as As)	Barium, Total (mg/L as Ba)	Cadmium, Total (mg/L as Cd)	Chromium, Total (mg/L as Cr)	Copper Total (mg/L as Cu)	Iron Total (mg/L as Fe)	Lead Total (mg/L as Pb)	Manganese, Total (mg/L as Mn)	Mercury, Total (mg/L as Hg)	Selenium, Total (mg/L as Se)	Silver Total (mg/L as Ag)	Zinc, Total (mg/L as Zn)	Linear Alkyl Sulfonate
K3256	—	369	6.00	.002	.15	<.05	<.20	<.01	<.04	.01	11.50	<.01	.14	<.001	<.01	<.03	3.50	neg
K3257	.32	872	11.80	.020	.03	—	<.50	<.01	<.05	.36	46.00	3.00	3.80	<.001	—	<.02	78.00	neg
K3260	—	1704	9.70	.002	.06	<.05	<.20	<.01	<.04	.02	1.00	<.01	.06	<.001	<.01	<.03	1.40	neg
K3267	.14	—	12.40	.010	.14	—	<.50	<.01	<.05	.03	.15	<.03	.01	—	—	<.01	1.55	neg
KA	.17	—	9.40	<.001	.09	—	<.50	<.01	.28	.01	.05	<.03	.01	<.001	—	<.01	.02	neg
KB	.11	—	8.30	.012	.20	—	<.50	<.01	<.05	.01	.03	<.03	.02	.060	—	<.01	.02	—
Q273	.15	—	1.00	<.001	.30	—	<.50	<.01	<.05	<.01	4.00	<.03	.40	<.001	—	<.01	.02	neg
Q283	.15	88	4.10	<.001	1.10	<.05	<.50	<.01	<.05	.01	11.00	<.01	.14	<.001	—	<.01	.22	neg
Q370	<.10	—	3.10	<.001	.51	—	<.50	<.01	<.05	.44	70.00	<.03	.13	—	—	<.01	—	neg
Q477	—	45	1.00	<.001	.20	<.05	<.20	<.01	<.04	.015	.79	<.01	.01	<.001	<.01	<.03	.12	neg
Q1071	.10	—	.60	<.001	.54	—	<.50	<.01	<.05	.01	11.15	<.03	.35	—	—	—	.02	neg
Q1189	—	1020	1.00	.002	.96	<.05	—	<.01	<.04	.01	21.50	<.01	1.80	<.001	<.01	<.03	.09	—
Q1241	—	120	1.25	<.001	.45	<.05	<.20	<.01	<.04	.18	16.50	<.01	.07	<.001	<.01	<.03	.01	neg
Q1605	—	560	12.00	.008	.21	<.05	<.20	<.01	<.04	.09	.18	<.01	.02	<.001	<.01	<.03	.20	neg
Q1603	—	570	10.20	.002	.09	<.05	<.20	<.01	<.04	.08	.48	<.01	.04	<.001	<.01	<.03	.15	neg
Q1930	.18	14024	.30	<.001	.15	—	<.50	—	<.05	.06	30.00	<.03	2.40	<.001	—	<.03	.03	neg
Q2324	—	750	9.55	.002	.04	<.05	<.20	<.01	<.04	.01	.85	<.01	.03	<.001	<.01	<.03	.95	neg
Q2418	—	1300	.33	<.001	.44	<.05	<.20	<.01	<.04	.04	32.50	<.01	1.40	<.001	<.01	<.03	.03	neg
Q2419	—	75	.16	<.001	.30	<.05	<.20	<.01	<.04	.07	3.60	<.01	.12	<.001	<.01	<.03	.04	neg
Q2420	—	90	.08	.002	.29	—	—	—	—	—	—	<.01	—	—	—	—	—	—
Q2656	.22	—	4.60	.004	.30	—	<.50	<.01	<.05	.14	4.80	<.03	—	—	—	—	44.00	neg
Q2791	<.20	—	12.90	<.001	.03	—	—	—	—	—	.09	<.03	—	—	—	—	—	neg
Q2964	.21	452	.10	.005	.05	—	<.30	<.01	<.05	.02	.36	<.01	.30	<.001	—	<.02	<.01	neg
Q2965	.18	242	.30	.004	.08	<.001	<.30	<.01	<.05	.01	2.50	<.01	.05	<.001	—	<.01	.03	neg
Q2978	.10	—	.10	<.001	.18	—	—	—	—	—	—	<.03	—	—	—	—	—	neg
Q2993	—	240	.20	<.001	.45	—	—	—	—	—	—	<.01	—	<.001	—	—	—	neg
Q2995	—	60	.20	<.001	3.96	<.05	<.20	<.01	<.04	.05	4.20	<.01	.01	<.001	<.01	<.03	.04	neg
Q3036	—	110	.08	<.001	1.98	<.05	<.20	<.01	<.04	.04	17.20	<.01	.15	<.001	<.01	<.03	.26	neg
Q3117	—	384	.30	.002	2.25	<.05	<.20	<.01	<.04	.13	1.40	<.01	1.60	<.001	<.01	<.03	.15	neg
Q3119	—	543	6.00	.003	.09	<.05	<.20	<.01	<.04	.01	1.30	<.01	.05	<.001	<.01	<.03	1.60	neg
Q3120	.18	1054	15.60	.040	.15	—	<.50	<.01	<.05	.18	30.00	1.20	3.30	<.001	—	<.02	14.90	neg
Q3121	—	800	17.00	.010	.12	<.05	<.20	<.01	<.04	.35	37.00	<.01	4.20	<.001	<.01	<.03	.31	neg
Q3123	—	650	25.00	.003	.90	<.05	<.20	<.01	<.04	.01	2.60	<.01	.12	<.001	<.01	<.03	1.00	neg
N1102	.15	—	10.00	.085	.87	—	<.50	<.01	<.05	1.50	70.20	<.03	2.40	—	—	<.01	21.00	neg
N1104	.15	—	7.70	.040	.21	—	<.50	<.01	<.05	<.01	.03	<.03	.06	—	—	.01	14.00	neg
N1105	.10	—	9.20	<.001	.54	—	—	—	—	—	—	<.03	—	—	—	—	—	neg
N1622	.18	—	7.70	.003	.03	—	<.50	<.01	.30	.13	14.00	<.03	.50	—	—	<.01	43.00	neg
N1627	.10	—	7.20	.021	.01	—	<.50	<.01	<.05	.01	.30	<.03	.03	<.001	—	<.01	.11	neg
N8374	.13	—	9.80	.047	.51	—	<.50	<.01	<.05	.16	225	<.03	10.00	.031	-			

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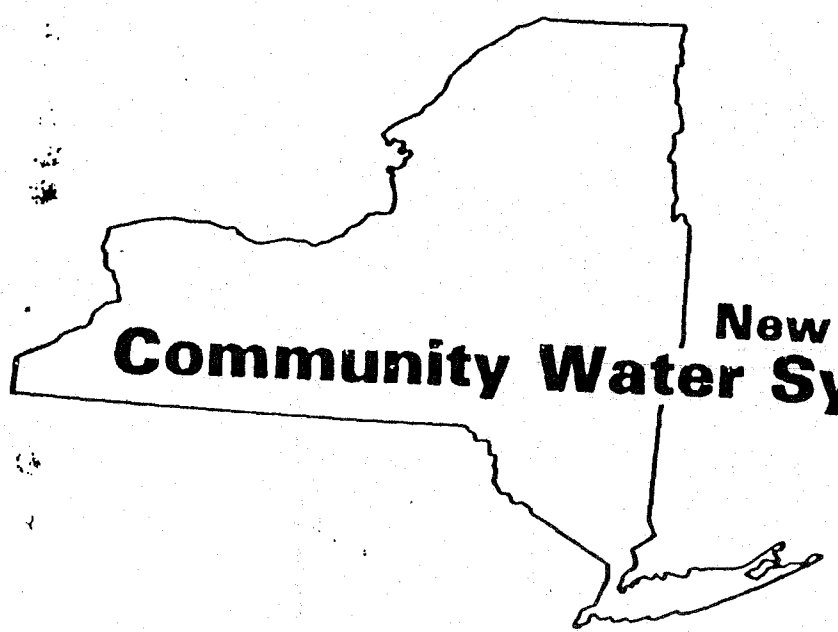
REFERENCE 4



New York State Atlas of Community Water System Sources 1982

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

The majority of New York City residents receive their drinking water from the New York City Aqueduct System. Only a portion of the borough of Queens is supplied by a separate groundwater system, the Jamaica Water Supply.

The New York City Aqueduct System consists of the Croton, Delaware, and Catskill branches. It is supplied by reservoirs and lakes in Westchester, Putnam, Ulster, Schoharie, Delaware, and Sullivan Counties. The reservoirs and lakes supplying the respective aqueduct branches are designated in those counties.

CROTON SYSTEM - The Croton supply is the oldest system which has a safe yield of about 240 MGD*. The Croton System embodies 12 reservoirs and 4 controlled lakes, situated in Westchester and Putnam Counties, which impound about 95 billion gallons of water from 375 square miles of the Croton River drainage area. The principal structures in the present Croton System are the New Croton Dam and the New Croton Aqueduct which supplemented the Old Croton Aqueduct now out of service. Croton water is delivered via the New Croton Aqueduct to the Jerome Park Reservoir in the Bronx and then via aqueduct and conduits to the Central Park Reservoir in Manhattan. The delivery capacity of the Aqueduct from the New Croton Reservoir to the Jerome Park Reservoir is 275 MGD.

CATSKILL SYSTEM - The Catskill supply is the second major system which has a safe yield of about 470 MGD. Its principal structures are the Schoharie, Ashokan, Kensico, and Hill View Reservoirs.

The Ashokan Reservoir impounds 128 billion gallons of available storage, at Elevation 590 in the West Basin and at Elevation 587 in the East Basin, from 257 square miles of drainge area in the Catskill Mountains west of Kingston. The Ashokan Reservoir feeds directly into the Catskill Aqueduct.

The Schoharie Reservoir, placed in service in 1924, impounds 19.6 billion gallons of available storage, at Elevation 1130, from 314 square miles of drainage area.

The Catskill Aqueduct is 92 miles long overall, extending 75 miles from the Ashokan Reservoir to the upstream influent chamber of the Kensico Reservoir, with a 2-mile bypass, then continuing 15 miles from the Kensico Reservoir effluent chamber to the Hill View Distributing Reservoir in Yonkers.

The Kensico Reservoir was originally constructed as an equalizing basin on the Catskill Aqueduct. The reservoir, having a safe yield of 5 MGD from its own drainage area, is formed by the Kensico Dam.

DELAWARE SYSTEM - The Delaware supply is the latest system which has a safe yield of about 580 MGD. The supply from the Delaware watershed, which is stored in the Neversink, Pepacton, and Cannonsville Reservoirs, has a safe yield of about 480 MGD. The Rondout Reservoir, serving as a collecting reservoir for these three reservoirs, has a safe yield of about 100 MGD from its own drainage area of 95 square miles which is part of the Hudson watershed. This reservoir impounds 50 billion gallons of available storage at the flow line, Elevation 840.

The Delaware Aqueduct is a pressure tunnel deep in bed rock for its entire length of 85 miles.

JAMAICA WATER SUPPLY - The Jamaica-Queens Water Company serves the Jamaica section of the borough of Queens. This system utilizes 76 wells located in 46 separate well fields. A map depicting the Jamaica-Queens service area is included on Page 77.

* Millions of Gallons per Day

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Albertson Water District.	13500. .	.Wells
2	Bayville Village.	.7500. .	.Wells
3	Bethpage Water District.	.32000. .	.Wells
4	Bowling Green Water District. . . .	12000. .	.Wells
5	Carle Place Water District. . . .	11000. .	.Wells
6	Citizens Water Supply Company. . .	.30000. .	.Wells
7	Deforest Drive Association.	.25. .	.Wells
8	East Meadow Water District.	52000. .	.Wells
9	Farmingdale Village.	7946. .	.Wells
10	Franklin Square Water District. . .	20000. .	.Wells
11	Freeport Village.	38272. .	.Wells
12	Garden City Park Water District. .	.22596. .	.Wells
13	Garden City Village.	.22927. .	.Wells
14	Glen Cove City.	24618. .	.Wells
15	Hempstead Village.	.40404. .	.Wells
16	Hicksville Water District.	.58000	Wells
17	Jamaica Water Supply Company. . . .	.128448. .	.Wells
18	Jericho Water District.	64000. .	.Wells
19	Levittown Water District.	50000. .	.Wells
20	Lido-Point Lookout Water District.	.10000. .	.Wells
21	Locust Valley Water District. . . .	.8500. .	.Wells
22	Long Beach City.	.34073. .	.Wells
23	Long Island Water Corporation. . .	258936. .	.Wells
24	Manhasset-Lakeville Water District.	44730. .	.Wells
25	Massapequa Water District.	.52000. .	.Wells
26	Mill Neck Estates Water Supply. . .	240. .	.Wells
27	Mineola Village.	.20600. .	.Wells
28	New York Water Service.	.172180. .	.Wells
29	Old Westbury Village.	.3100. .	.Wells
30	Oyster Bay Water District.	.10225. .	.Wells
31	Plainview Water District.	40000. .	.Wells
32	Plandome Village.	.2616. .	.Wells
33	Port Washington Water District. . .	35000. .	.Wells
34	Rockville Centre Village.	25405. .	.Wells
35	Roosevelt Field Water District. . .	.1640. .	.Wells
36	Roslyn Water District.	.27500. .	.Wells
37	Sands Point Village.	3002. .	.Wells
38	Sea Cliff Water Company.	.17850. .	.Wells
39	Sel-Bra Acres Water Supply.	.80. .	.Wells
40	South Farmingdale Water District. .	49900. .	.Wells
41	Split Rock Water Supply.	25. .	.Wells
42	Uniondale Water District.	25000. .	.Wells
43	West Hempstead-Hempstead Garden Water District.	32000. .	.Wells
44	Westbury Water District.	.20050. .	.Wells
45	Williston Park Village.	.8216. .	.Wells
	Non-Municipal Community		
46	Community Hospital at Glen Cove. . .	1350. .	.Wells
47	Planting Fields Arboretum.	90. .	.Wells
48	Stuart, Walker, Zimmer Water Supply. .	41. .	.Wells

REFERENCE 5

the Weather Almanac

Sixth Edition

Frank E. Bair
Editor

ISSN 0731-5627

The Weather Almanac

A Reference Guide to Weather, Climate, and Air Quality in the United States and Its Key Cities, Comprising Statistics, Principles, and Terminology. Provides Weather/Health Information and Safety Rules for Environmental Hazards Associated with Storms, Weather Extremes, Earthquakes, and Volcanoes. Also Includes World Climatological Highlights and Special Features on Weather, Climate, and Society

SIXTH EDITION

Frank E. Bair
Editor

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3/6

New York City, in area exceeding 300 square miles, is located on the Atlantic coastal plain at the mouth of the Hudson River. The terrain is laced with numerous waterways, all but one of the five boroughs in the city are situated on islands. Elevations range from less than 50 feet over most of Manhattan, Brooklyn, and Queens to almost 300 feet in northern Manhattan and the Bronx, and over 400 feet in Staten Island. Extensive suburban areas on Long Island, and in Connecticut, New York State and New Jersey border the city on the east, north, and west. About 30 miles to the west and northwest, hills rise to about 1,500 feet and to the north in upper Westchester County to 800 feet. To the southwest and to the east are the low-lying land areas of the New Jersey coastal plain and of Long Island, bordering on the Atlantic.

The New York Metropolitan area is close to the path of most storm and frontal systems which move across the North American continent. Therefore, weather conditions affecting the city most often approach from a westerly direction. New York City can thus experience higher temperatures in summer and lower ones in winter than would otherwise be expected in a coastal area. However, the frequent passage of weather systems often helps reduce the length of both warm and cold spells, and is also a major factor in keeping periods of prolonged air stagnation to a minimum.

Although continental influence predominates, oceanic influence is by no means absent. During the summer, local sea breezes, winds blowing onshore from the cool water surface, often moderate the afternoon heat. The effect of the sea breeze diminishes inland. On winter mornings, ocean temperatures which are warm relative to the land reinforce the effect of the city heat island and low temperatures are often 10-20 degrees lower in the inland suburbs than in the central city. The relatively warm water temperatures also delay the advent of winter snows. Conversely, the lag in warming of water temperatures keeps spring temperatures relatively cool. One year-round measure of the ocean influence is the small average daily variation in temperature.

Precipitation is moderate and distributed fairly evenly throughout the year. Most of the rainfall from May through October comes from thunderstorms, usually of brief duration and sometimes intense. Heavy rains of long duration associated with tropical storms occur infrequently in late summer or fall. For the other months of the year precipitation is more likely to be associated with widespread storm areas, so that day-long rain, snow or a mixture of both is more common. Coastal storms, occurring most often in the fall and winter months, produce on occasion considerable amounts of precipitation and have been responsible for record rains, snows, and high winds.

The average annual precipitation is reasonably uniform within the city but is higher in the northern and western suburbs and less on eastern Long Island. Annual snowfall totals also show a consistent increase to the north and west of the city with lesser amounts along the south shores and the eastern end of Long Island, reflecting the influence of the ocean waters.

Local Climatological Data is published for three locations in New York City, Central Park, La Guardia Airport, and John F. Kennedy International Airport. Other nearby locations for which it is published are Newark, New Jersey, and Bridgeport, Connecticut.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is November 11 and the average last occurrence in the spring is April 1.

TABLE 1 NORMALS, MEANS AND EXTREMES

NEW YORK, CENTRAL PARK, NEW YORK

LATITUDE: 40°47'N LONGITUDE: 73°58' W ELEVATION: FT. GRND 132 BARO 87 TIME ZONE: EASTERN WBAN: 94728

	(a)	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:														
Normals														
-Daily Maximum		38.0	40.1	48.6	61.1	71.5	80.1	85.3	83.7	76.4	65.6	53.6	42.1	62.2
-Daily Minimum		25.6	26.6	34.1	43.8	53.3	62.7	68.2	67.1	60.1	49.9	40.8	30.3	46.9
-Monthly		31.8	33.4	41.4	52.4	62.5	71.4	76.7	75.4	68.3	57.7	47.2	36.2	54.5
Extremes														
-Record Highest	121	72	75	86	96	99	101	106	104	102	94	84	72	106
-Year		1950	1985	1945	1976	1962	1966	1936	1918	1953	1941	1950	1982	JUL 1936
-Record Lowest	121	-6	-15	3	12	32	44	52	50	39	28	5	-13	-15
-Year		1882	1934	1872	1923	1891	1945	1943	1986	1912	1936	1875	1917	FEB 1934
NORMAL DEGREE DAYS:														
Heating (base 65°F)		1029	885	732	378	134	7	0	0	36	240	534	893	4868
Cooling (base 65°F)		0	0	0	0	56	199	363	322	135	14	0	0	1089
% OF POSSIBLE SUNSHINE	103	51	55	57	59	61	64	65	64	62	61	52	50	58
MEAN SKY COVER (tenths)														
Sunrise - Sunset	42	6.0	5.8	5.7	6.0	5.7	5.6	5.5	5.5	5.2	4.9	5.8	5.9	5.6
MEAN NUMBER OF DAYS:														
Sunrise to Sunset														
-Clear	42	8.1	8.3	8.8	7.6	8.0	8.0	8.5	9.2	10.6	11.8	9.0	8.9	106.7
-Partly Cloudy	42	9.2	8.7	10.1	10.5	12.4	12.4	13.0	12.1	10.0	9.7	9.5	9.1	126.7
-Cloudy	42	13.7	11.2	12.1	11.9	10.7	9.6	9.5	9.7	9.4	9.5	11.5	13.0	131.8
Precipitation														
.01 inches or more	120	11.1	9.8	11.4	10.7	11.1	10.2	10.5	9.8	8.3	8.2	9.3	10.3	120.6
Snow, Ice pellets														
1.0 inches or more	119	2.2	2.2	1.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.5	8.0
Thunderstorms	26	0.1	0.3	0.9	1.0	2.5	3.8	4.1	3.6	1.2	0.8	0.3	0.1	18.7
Heavy Fog Visibility														
1/4 mile or less	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Temperature °F														
Maximum														
90° and above	76	0.0	0.0	0.0	0.1	1.0	3.2	6.6	4.5	1.4	0.1	0.0	0.0	16.9
32° and below	76	8.8	5.7	1.3	0.*	0.0	0.0	0.0	0.0	0.0	0.0	0.2	5.0	21.0
-Minimum														
32° and below	76	22.7	20.3	12.5	1.5	0.*	0.0	0.0	0.0	0.0	0.3	4.7	18.1	80.0
0° and below	76	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
AVG. STATION PRESS. (mb)	10	1013.9	1013.7	1012.3	1011.5	1011.3	1012.3	1012.5	1014.2	1014.7	1015.1	1014.5	1014.5	1013.4
RELATIVE HUMIDITY (%)														
Hour 01	49	65	64	64	64	70	73	74	76	76	72	69	67	70
Hour 07 (Local Time)	61	68	68	67	67	71	74	75	78	79	76	73	69	72
Hour 13	61	60	58	55	51	53	55	55	57	57	55	59	60	56
Hour 19	61	60	59	57	56	60	61	63	66	66	63	63	62	61
PRECIPITATION (inches):														
Water Equivalent														
-Normal		3.21	3.13	4.22	3.75	3.76	3.23	3.77	4.03	3.66	3.41	4.14	3.81	44.12
-Maximum Monthly	120	10.52	6.87	10.41	8.77	10.24	9.78	11.89	10.86	16.85	13.31	12.41	9.98	16.85
-Year		1979	1869	1980	1874	1989	1903	1889	1955	1882	1903	1972	1973	SEP 1882
-Minimum Monthly	120	0.58	0.46	0.90	0.95	0.30	0.02	0.49	0.24	0.21	0.14	0.34	0.25	0.02
-Year		1981	1895	1885	1881	1903	1949	1910	1964	1884	1963	1976	1955	JUN 1949
-Maximum in 24 hrs	77	3.91	3.04	4.25	4.22	4.88	4.74	3.60	5.78	8.30	11.17	8.09	3.21	11.17
-Year		1979	1973	1876	1984	1968	1884	1971	1971	1882	1903	1977	1909	OCT 1903
Snow, Ice pellets														
-Maximum Monthly	121	27.4	27.9	30.5	13.5	T	0.0	0.0	0.0	0.0	0.8	19.0	29.6	30.5
-Year		1925	1934	1896	1875	1977					1925	1898	1947	MAR 1896
-Maximum in 24 hrs	121	13.6	17.6	18.1	10.2	T	0.0	0.0	0.0	0.0	0.8	10.0	26.4	26.4
-Year		1978	1983	1941	1915	1977					1925	1898	1947	DEC 1947
WIND:														
Mean Speed (mph)	58	10.7	10.8	11.0	10.5	8.8	8.1	7.6	7.6	8.1	8.9	9.9	10.4	9.4
Prevailing Direction through 1963		NW	NW	NW	NW	SW	SW	SW	SW	SW	SW	NW	NW	SW
Fastest Obs. 1 Min.														
-Direction (!!)	6	31	05	04	05	18	29	35	30	27	05	31	30	04
-Speed (MPH)	6	25	28	35	26	24	25	29	21	23	25	29	29	35
-Year		1989	1988	1984	1986	1989	1985	1986	1986	1985	1988	1989	1988	MAR 1984
Peak Gust														
-Direction (!!)	6	NW	NE	NE	SE	ENE	WSW	WSW	S	W	NE	NW	W	NE
-Speed (mph)	6	43	51	63	46	44	40	37	43	52	46	58	51	63
-Date		1989	1984	1984	1984	1989	1987	1988	1986	1985	1988	1989	1988	MAR 1984

See reference Notes to this table on the following page.

TABLE 2

PRECIPITATION (inches)

NEW YORK, CENTRAL PARK, NEW YORK

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1961	1.88	3.96	4.23	5.08	3.[illegible]	2.86	4.92	3.13	1.70	2.21	2.71	3.04	39.32
1962	2.62	3.74	2.97	3.00	1.[illegible]	3.73	1.67	5.71	3.10	3.15	3.94	2.26	37.15
1963	1.93	2.55	3.61	1.27	2.[illegible]	2.72	2.19	3.21	3.95	0.14	8.24	2.31	34.28
1964	4.62	2.93	2.57	5.09	0.[illegible]	2.6[illegible]	4.17	0.24	1.69	1.73	2.55	4.16	32.99
1965	3.09	3.66	2.49	2.90	1.[illegible]	1.27	1.33	2.73	1.70	2.16	1.46	1.72	26.09
1966	2.63	4.96	0.94	2.69	4.[illegible]	1.17	1.25	1.89	8.82	4.64	3.47	3.18	39.90
1967	1.39	2.68	5.97	3.45	4.[illegible]	4.64	6.99	5.94	1.84	3.47	2.59	6.08	49.12
1968	2.04	1.13	4.79	2.82	7.[illegible]	6.15	2.63	2.88	1.97	2.20	5.75	4.15	43.57
1969	1.10	3.05	3.73	3.99	2.[illegible]	3.16	7.37	2.53	8.32	1.97	3.58	7.07	48.54
1970	0.66	4.52	4.18	3.48	3.[illegible]	2.27	2.19	2.47	1.74	2.48	5.14	2.82	35.29
1971	2.67	5.33	3.80	2.95	4.[illegible]	2.31	7.20	9.37	7.36	4.14	5.64	1.76	56.77
1972	2.41	5.90	4.55	3.92	8.[illegible]	9.30	4.54	1.92	1.33	6.27	12.41	6.09	67.03
1973	4.53	4.55	3.60	8.05	4.[illegible]	4.55	5.89	3.08	2.75	3.92	1.82	9.98	57.23
1974	3.80	1.49	5.76	3.83	4.[illegible]	3.29	1.33	5.99	8.05	2.59	0.94	6.33	47.69
1975	4.76	3.33	3.32	3.04	3.[illegible]	7.58	11.77	3.05	9.32	3.70	4.33	3.63	61.21
1976	5.78	3.13	2.99	2.80	4.[illegible]	2.78	1.42	6.52	3.15	5.31	0.34	2.29	41.28
1977	2.25	2.51	7.41	3.75	1.[illegible]	3.83	1.60	4.57	4.75	5.03	12.26	5.06	54.73
1978	8.27	1.59	2.73	2.38	9.[illegible]	1.69	4.48	5.50	4.06	1.50	2.85	5.61	49.81
1979	10.52	4.58	4.40	4.04	6.[illegible]	1.56	1.76	4.27	4.83	3.87	3.38	2.69	52.13
1980	1.72	1.04	10.41	8.26	2.[illegible]	3.84	5.26	1.16	1.98	3.86	4.11	0.58	44.55
1981	0.58	6.04	1.19	3.42	3.[illegible]	2.71	6.21	0.59	3.45	3.49	1.69	5.18	38.11
1982	6.46	2.37	2.56	5.67	2.[illegible]	5.12	3.14	4.66	1.77	2.31	3.44	1.47	41.40
1983													
1984	1.87	4.86	6.30	6.62	9.[illegible]	5.76	7.03	1.38	2.51	3.63	4.07	3.26	57.03
1985	1.00	2.41	1.91	1.41	5.[illegible]	4.41	4.41	2.58	4.75	1.30	8.09	0.83	38.82
1986	4.23	2.86	1.46	3.93	1.[illegible]	1.86	5.56	4.24	2.20	1.92	6.85	6.16	42.95
1987	5.81	1.01	4.93	5.90	1.[illegible]	3.94	4.12	4.89	5.25	3.89	3.08	2.17	46.44
1988	3.64	3.91	2.10	2.20	5.[illegible]	1.29	8.14	2.19	2.34	3.56	8.90	1.13	44.67
1989	2.29	3.03	4.93	4.26	10.[illegible]	8.79	5.13	8.44	6.90	7.48	2.79	0.83	65.11
1990	5.34	2.33	3.64	5.12	9.[illegible]	2.50	3.51	12.36	2.24	6.38	2.82	5.58	60.92
Record Mean	3.44	3.37	3.84	3.54	3.66	3.46	4.29	4.33	3.70	3.52	3.53	3.44	44.14

TABLE 3

AVERAGE TEMPERATURE (deg. F)

NEW YORK, CENTRAL PARK, NEW YORK

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1961	27.7	36.7	41.5	49.0	59.[illegible]	72.3	78.1	76.4	73.6	61.1	48.8	35.5	55.1
1962	32.6	31.8	43.1	53.3	64.[illegible]	72.5	74.0	72.4	64.9	57.4	43.2	31.5	53.4
1963	30.1	28.3	43.7	53.7	61.[illegible]	70.9	76.4	72.1	63.1	61.8	50.4	31.2	53.6
1964	35.7	32.9	43.1	49.7	65.[illegible]	71.6	75.4	72.9	67.2	55.0	49.4	36.4	54.6
1965	29.7	33.9	40.0	50.6	66.[illegible]	70.1	74.3	73.2	67.5	57.3	46.8	40.5	54.2
1966	32.2	35.1	42.7	49.7	61.[illegible]	75.4	79.7	76.9	66.5	56.2	48.9	35.7	55.1
1967	37.4	29.2	37.6	49.6	55.[illegible]	72.8	75.3	73.9	66.7	57.2	42.5	38.2	53.0
1968	26.7	28.9	43.3	55.0	59.[illegible]	69.7	77.3	76.0	70.6	60.5	46.9	34.3	54.1
1969	31.8	32.6	40.1	55.9	65.[illegible]	73.1	74.8	77.4	69.0	57.7	46.4	33.4	54.8
1970	25.1	33.0	38.7	52.1	64.[illegible]	70.9	77.1	77.6	70.8	58.9	48.5	34.4	54.3
1971	27.0	35.1	40.1	50.8	61.[illegible]	74.2	77.8	75.9	71.6	62.7	45.1	40.8	55.2
1972	35.1	31.4	39.8	50.1	63.[illegible]	67.9	77.2	75.6	69.5	53.5	44.4	38.5	53.8
1973	35.5	32.5	46.4	53.4	59.[illegible]	73.4	77.4	77.6	69.5	60.2	48.3	39.0	56.1
1974	35.3	31.7	42.1	55.2	61.[illegible]	69.0	77.2	76.4	66.7	54.1	48.2	39.4	54.7
1975	37.3	35.8	40.2	47.9	65.[illegible]	70.5	75.8	74.4	64.2	59.2	52.3	35.9	54.9
1976	27.4	39.9	44.4	55.0	60.[illegible]	73.2	74.8	74.3	66.6	52.9	41.7	29.9	53.4
1977	22.1	33.5	46.8	53.7	65.[illegible]	70.2	79.0	75.7	68.2	54.9	47.3	35.7	54.3
1978	28.0	27.2	39.0	51.6	61.[illegible]	71.3	74.4	76.0	65.0	54.9	47.8	38.9	53.0
1979	33.6	25.5	46.9	52.6	65.[illegible]	69.2	76.9	76.8	70.5	57.3	52.5	41.1	55.7
1980	33.7	31.4	41.2	54.5	65.6	70.3	79.3	80.3	70.8	55.2	44.6	32.5	55.0
1981	26.3	39.3	42.3	56.2	64.8	73.0	78.5	76.0	67.6	54.4	47.7	36.5	55.2
1982	26.1	35.3	42.0	51.2	64.[illegible]	68.6	77.9	73.2	68.3	58.5	50.4	42.8	54.9
1983	34.5	36.4	44.0	52.3	60.2	73.4	79.5	77.7	71.8	57.9	48.9	35.2	56.0
1984	29.9	40.6	36.7	51.9	61.6	74.5	74.7	76.7	65.9	61.8	47.3	43.8	55.5
1985	28.8	36.6	45.8	55.5	65.3	68.6	76.2	75.4	70.5	59.5	50.0	34.2	55.5
1986	34.1	32.0	45.1	54.5	66.0	71.6	76.0	73.1	67.9	58.0	45.7	39.0	55.3
1987	32.3	33.2	45.2	53.4	63.6	72.8	78.0	74.2	67.7	53.8	47.7	39.5	55.1
1988	29.5	35.0	43.6	51.2	62.[illegible]	71.8	79.3	78.8	67.4	52.8	49.4	35.9	54.8
1989	37.4	34.5	42.4	52.2	62.[illegible]	72.0	75.0	74.0	68.1	58.2	45.7	25.9	54.0
1990	41.4	39.8	45.1	53.5	60.2	72.1	76.8	75.3	67.5	61.9	50.4	42.6	57.2
Record Mean	32.1	33.1	41.2	51.5	62.1	71.0	76.3	74.8	68.1	57.7	46.9	35.9	54.2
Max	38.4	39.9	48.7	59.9	71.[illegible]	79.7	84.8	83.0	76.3	65.6	53.4	41.9	61.9
Min	25.7	26.2	33.6	43.1	53.[illegible]	62.3	67.8	66.6	59.8	49.8	40.4	29.8	46.5

REFERENCE NOTES FOR TABLES 1, 2, 3 and 6 (NEW YORK, NY)

GENERAL

T - TRACE AMOUNT
BLANK ENTRIES DENOTE MISSING/UNREPORTED DATA.
# INDICATES A STATION OR INSTRUMENT RELOCATION.

SPECIFIC

TABLE 1

(a) - LENGTH OF RECORD IN YEARS. ALTHOUGH INDIVIDUAL MONTHS MAY BE MISSING.

x LESS THAN .05

NORMALS — BASED ON THE 1951-1980 RECORD PERIOD.
EXTREMES — DATES ARE THE MOST RECENT OCCURRENCE.
WIND DIR. — NUMERALS SHOW TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM.
RESULTANT WIND DIRECTIONS ARE GIVEN TO WHOLE DEGREES.

TABLE 3
MAX AND MIN ARE LONG-TERM MEAN DAILY MAXIMUM AND MEAN DAILY MINIMUM TEMPERATURES.

EXCEPTIONS

TABLE 1

1. MEAN SKY COVER, AND DAYS CLEAR - PARTLY CLOUDY -CLOUDY ARE THROUGH 1966.
2. PERCENT OF POSSIBLE SUNSHINE, AND MEAN WIND SPEED ARE THROUGH 1976.
3. FASTEST MILE WINDS ARE THROUGH MARCH 1977 AND FEBRUARY 1980 THROUGH OCTOBER 1981.
4. RELATIVE HUMIDITY IS THROUGH 1980.
5. LIQUID PRECIPITATION FOR 1983 IS NOT CONSIDERED IN DETERMINING EXTREMES.

TABLES 2, 3, and 6

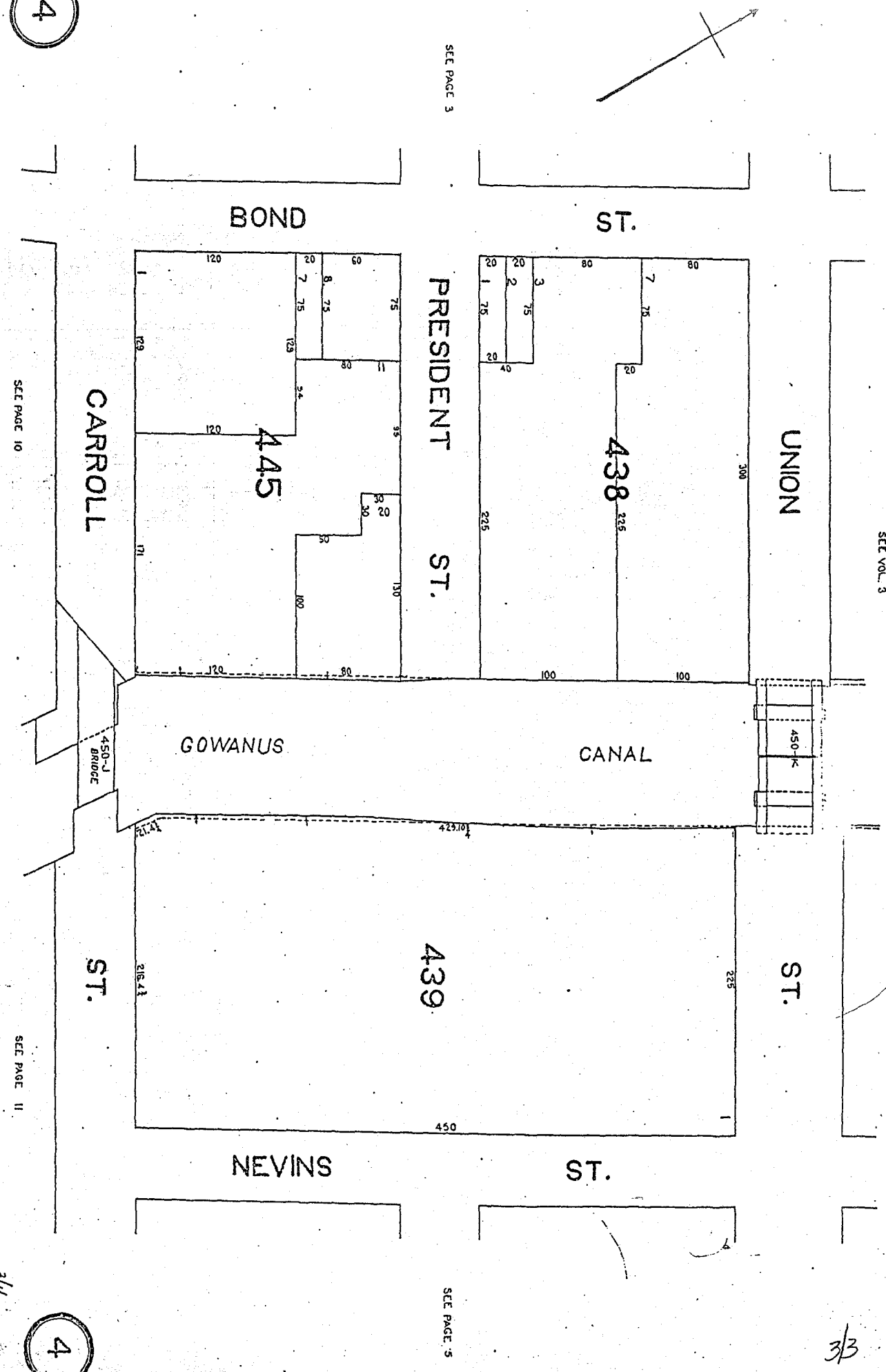
RECORD MEANS ARE THROUGH THE CURRENT YEAR,
BEGINNING IN 1912 FOR TEMPERATURE
1869 FOR PRECIPITATION
1869 FOR SNOWFALL

6/6

REFERENCE 6

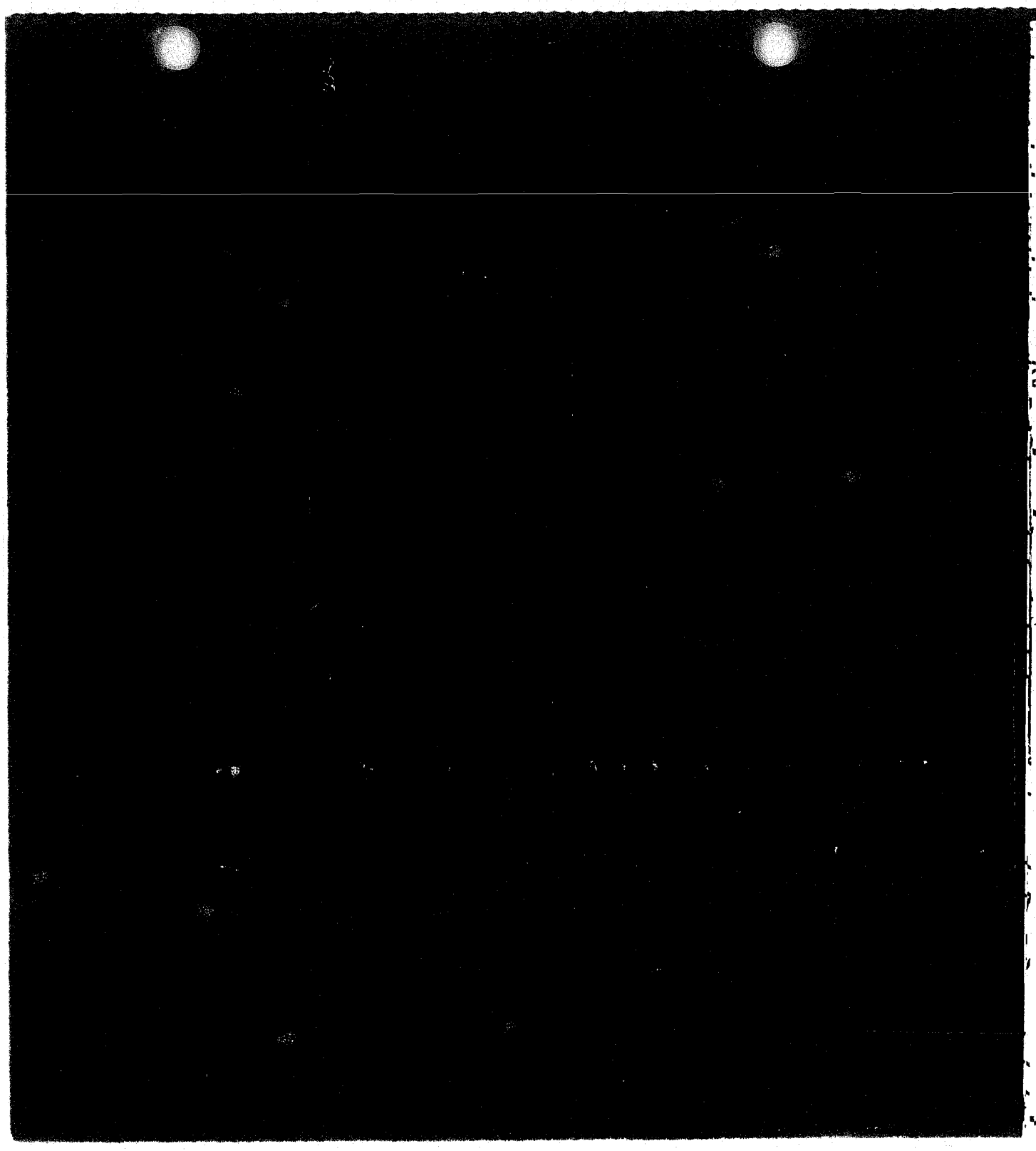
OWNERS NAME / BILLING NAME / ADDRESS	BLOCK / LOT / ESMT / SCC TX CL/ PROPERTY ADDRESS/ ZIP/ CORNER BLDG CLASS / LOT SIZE / I / # BLDGS EX CLASS / BLDG SIZE / EXT / STORIES		LAND	TOTAL	
TINNEY, DANIEL DAVID TINNERY 448 STOBE AVE STATEN ISL NY 10306	BLOCK 438 LOT 1 SCC 0 4 BOND STREET 11231 NE V1 20.00FT X 75.00FT 0.00FT X 0.00FT	ESTIMATED MARKET VALUE		15,000	
		ACTUAL AV	6,750	6,750	
		ACTUAL EX AV	0	0	
	SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON		6,750		
TINNENY, DANIEL DAVID TINNERY 448 STOBE AVE STATEN ISL NY 10306	BLOCK 438 LOT 2 SCC 8 4 BOND STREET 11231 V1 20.00FT X 75.00FT 0.00FT X 0.00FT	ESTIMATED MARKET VALUE		15,000	
		ACTUAL AV	6,750	6,750	
		ACTUAL EX AV	0	0	
	SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON		6,750		
DANIEL TINNENY DAVID TINNERY 448 STOBE AVE STATEN ISL NY 10306	BLOCK 438 LOT 3 SCC 6 4 319 BOND STREET 11231 Z9 80.00FT X 225.00FT IRREG 1 0.00FT X 0.00FT 1	ESTIMATED MARKET VALUE		235,000	
		ACTUAL AV	102,375	105,750	
		ACTUAL EX AV	0	0	
		TRANS AV	93,195	96,750	
		TRANS EX AV	0	0	
	SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON		96,750		
REGENCY SERVICE CARTS REGENCY SERV CARTS INC 337 CARROLL ST BROOKLYN NY 11231	BLOCK 438 LOT 7 SCC 7 4 450 UNION STREET 11231 SE F9 80.00FT X 300.00FT IRREG 2 40.00FT X 247.00FT 1	ESTIMATED MARKET VALUE		380,000	
		ACTUAL AV	126,000	171,000	
		ACTUAL EX AV	0	0	C
		TRANS AV	135,900	170,730	
		TRANS EX AV	0	0	
	SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON		170,730		

OWNERS NAME / BILLING NAME / ADDRESS	BLOCK / LOT / ESMT / SCC TX CL/ PROPERTY ADDRESS/ ZIP/ CORNER BLDG CLASS / LOT SIZE / I / # BLDGS EX CLASS / BLDG SIZE / EXT / STORIES		LAND	TOTAL	
E & M REALTY CORP E & M REALTY CORP 259 COLUMBIA ST BROOKLYN NY 11231	BLOCK 445 LOT 1 SCC 5 4 335 BOND STREET 11231 NE 09 120.00FT X 129.00FT 1 120.00FT X 129.00FT 1 SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON	ESTIMATED MARKET VALUE ACTUAL AV ACTUAL EX AV TRANS AV TRANS EX AV	105,750 0 105,750 0	635,000 285,750 0 285,486 0 285,486	C
MEHLMAN RONALD MEHLMAN RONALD JANICE MEHLMAN 80 STERLING PL BROOKLYN NY 11217	BLOCK 445 LOT 7 SCC 2 4 333 BOND STREET 11231 F9 20.00FT X 75.00FT 1 20.00FT X 75.00FT 2 SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON	ESTIMATED MARKET VALUE ACTUAL AV ACTUAL EX AV TRANS AV TRANS EX AV	8,100 0 7,290 0	54,000 24,300 0 24,840 0 24,300	
DANIEL TINNENY DAVID TINNERY 448 STOBE AVE STATEN ISL NY 10306	BLOCK 445 LOT 8 SCC 0 4 327 BOND STREET 11231 G9 60.00FT X 75.00FT 1 60.00FT X 75.00FT 1 SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON	ESTIMATED MARKET VALUE ACTUAL AV ACTUAL EX AV TRANS AV TRANS EX AV	24,300 0 22,680 0	144,000 64,800 0 57,645 0 57,645	
DANIEL TINNENY DAVID TINNERY 448 STOBE AVE STATEN ISL NY 10306	BLOCK 445 LOT 11 SCC 4 4 383 PRESIDENT STREET 11231 F9 171.00FT X 200.00FT IRREG 2 28.00FT X 76.00FT 2 SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON	ESTIMATED MARKET VALUE ACTUAL AV ACTUAL EX AV TRANS AV TRANS EX AV	135,000 0 141,800 0	378,000 170,100 0 163,220 0 163,220	
DANIEL TINNENY DAVID TINNERY 448 STOBE AVE STATEN ISL NY 10306	BLOCK 445 LOT 20 SCC 5 4 426 PRESIDENT STREET 11231 Z9 130.00FT X 80.00FT IRREG 1 25.00FT X 30.00FT 2 SUBJECT TO ADJUSTMENTS, YOUR 1998/99 TAXES WILL BE BASED ON	ESTIMATED MARKET VALUE ACTUAL AV ACTUAL EX AV TRANS AV TRANS EX AV	38,250 0 36,900 0	97,000 43,650 0 41,580 0 41,580	


4
SEE PAGE 3
BOND
ST.
PRESIDENT
ST.
CARROLL
ST.
UNION
ST.
NEVINS
ST.
445
438
439
GOWANUS
CANAL
450-J
BRIDGE
450-K
SEE PAGE 10
SEE PAGE 11
SEE VOL. 3
SEE PAGE 5
4

3/3

REFERENCE 7



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
NEW YORK,
NEW YORK
BRONX, RICHMOND,
NEW YORK, QUEENS
AND KINGS COUNTIES

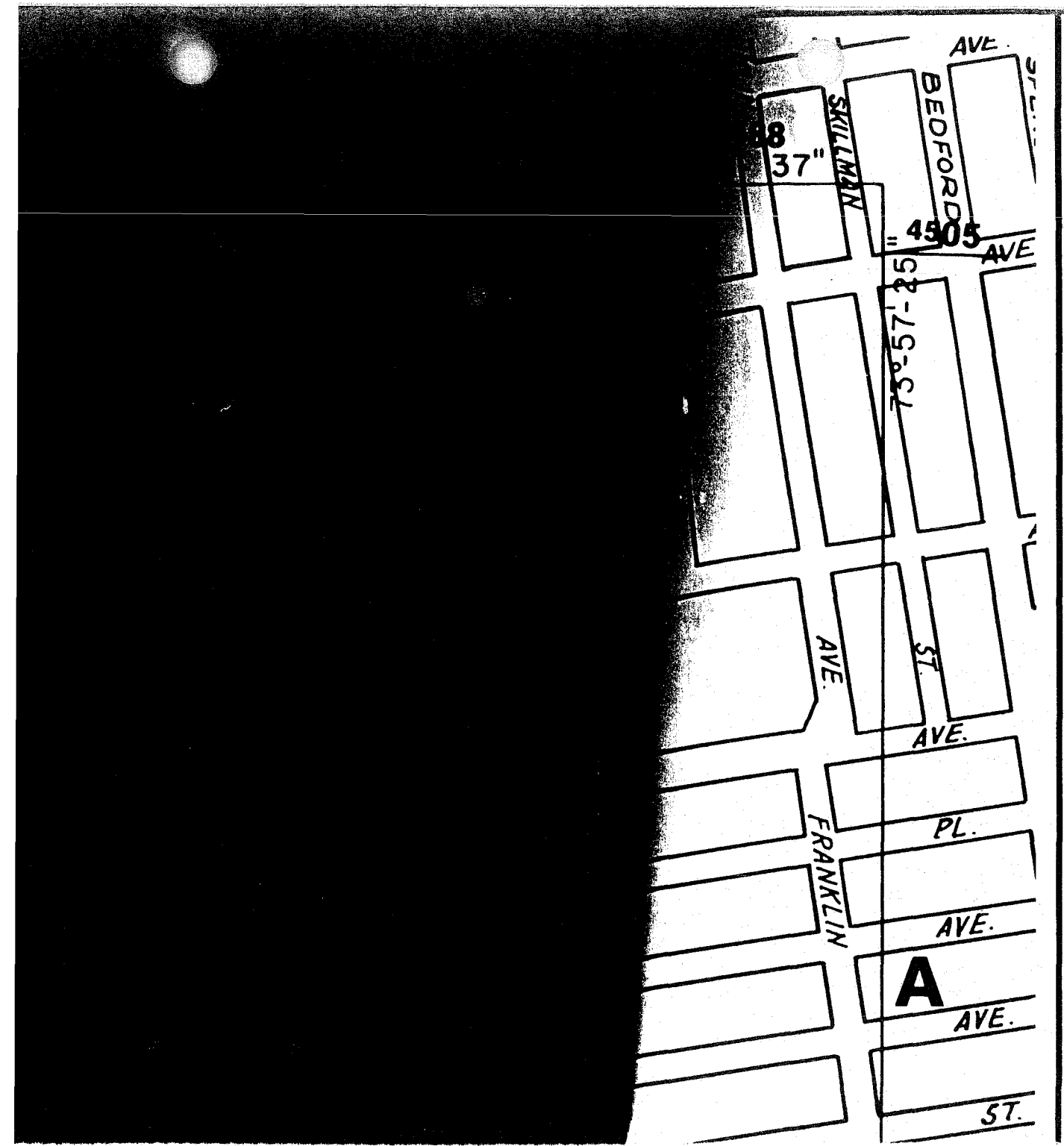
PANEL 63 OF 131
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
360497 0063 B

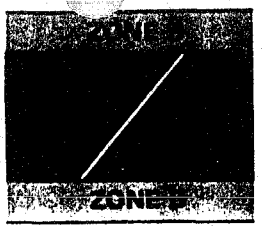
EFFECTIVE DATE:
NOVEMBER 16, 1983

1/3

Federal Emergency Management Agency



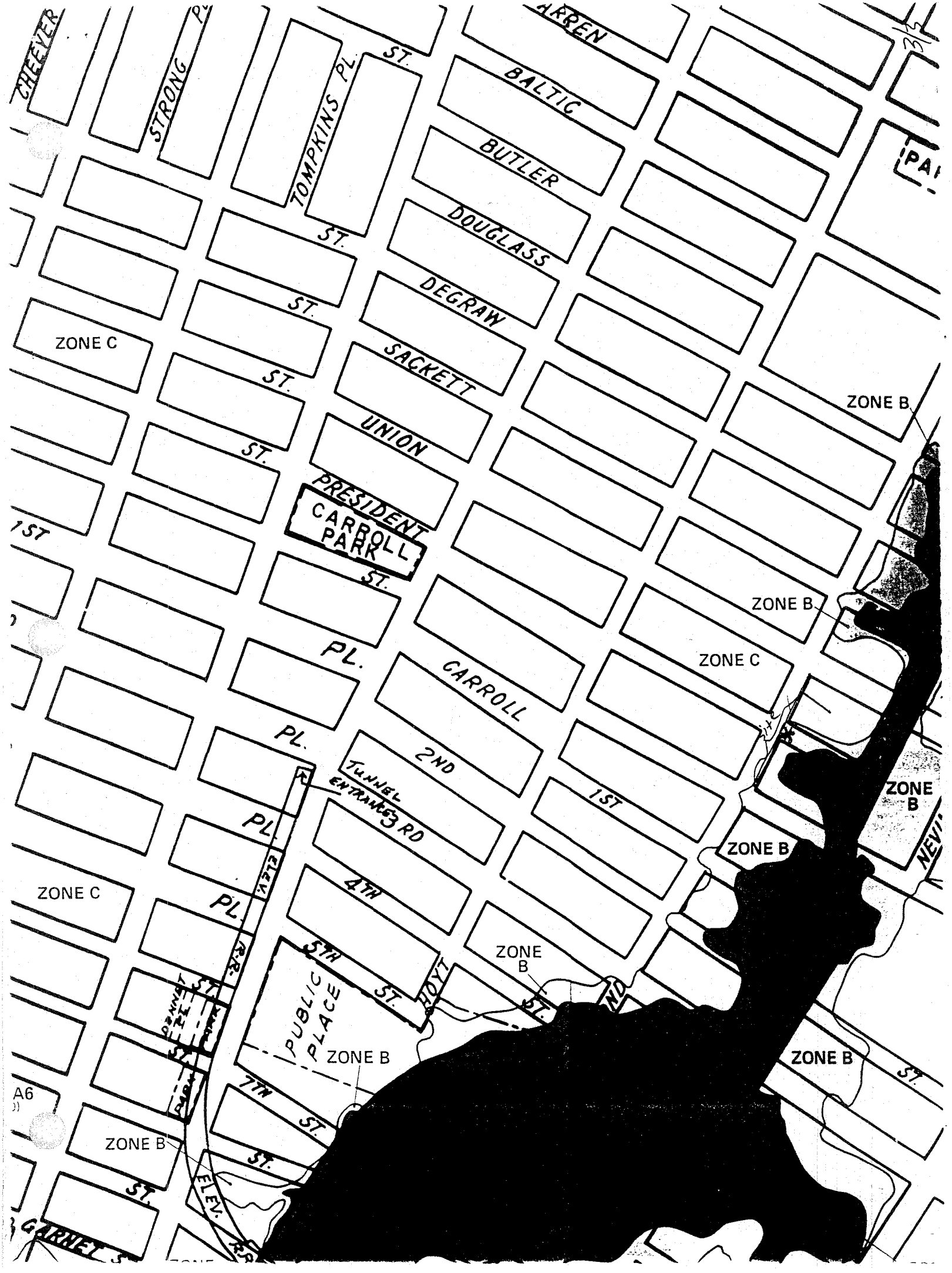
KEY TO MAP

500-Year Flood Boundary	
100-Year Flood Boundary	
Zone Designations*	
100-Year Flood Boundary	
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	ERM 7 ▲
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

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


CHEEVER
STRONG
TOMPKINS PL.
ST.
ARREN
BALTIC
BUTLER
DOUGLASS
DEGRAW
SACKETT
UNION
PRESIDENT
CARROLL PARK
ST.
ZONE C
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ZONE B
1ST
PL.
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PL.
PL.
CARROLL
2ND
1ST
TUNNEL ENTRANCE
3RD
4TH
5TH
ST.
HOYT
ST.
ND
ELEV.
R.R.
PUBLIC PLACE
7TH
ST.
ST.
ST.
ELEV.
GARNET
A6

REFERENCE 8

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
TO: Site File	DATE: 10/29/98
FROM: S. DaCosta	
SUBJECT: Hydraulic Conductivity (K) for Upper Glacial Aquifer	
REFERENCE 8	
The hydraulic conductivity of the **Upper Glacial Aquifer** is estimated to be 270 ft/day (Ref. 3,	
pg. 19).	
270 ft/day * 1 day/24 hrs * 1 hr/60 min * 1 min/60 sec =	
270ft/86400sec =	
0.003125 ft/sec * 30.48 =	
0.0952 cm/sec, which corresponds to **9.52×10^{-2} cm/sec**.	

REFERENCE 9

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
TO: Site File	DATE: 10/29/98
FROM: S. DaCosta	
SUBJECT: Hydraulic Conductivity (K) for Gardiners Clay	
REFERENCE 9	

The hydraulic conductivity of the **Gardiners Clay** is estimated to be 0.001 ft/day (Ref. 3, pg. 17).

0.001 ft / day * 1 day/24 hrs * 1 hr/60 min * 1 min/60 sec =

0.001 ft / 86400sec =

1.157×10^{-8} ft/sec * 30.48 =

3.52×10^{-7} cm/sec.

REFERENCE 10

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
TO: Site File	DATE: 10/29/98
FROM: S. DaCosta	
SUBJECT: Calculation of Site Area	
REFERENCE 10	

The area of the site was calculated using data taken from the Brooklyn Municipal Building Tax Assessment Office (Ref. 6).

The sizes of the lots that make up the Vidan Auto Salvage Site are as follows:

20 ft x 75 ft = 1,500 sq. ft.	171 ft x 200 ft = 34,200 sq. ft.
20 ft x 75 ft = 1,500 sq. ft.	28 ft x 76 ft = 2,128 sq. ft.
80 ft x 225 ft = 18,000 sq. ft.	130 ft x 80 ft = 10,400 sq. ft.
60 ft x 75 ft = 4,500 sq. ft.	25 ft x 30 ft = 750 sq. ft.
60 ft x 75 ft = 4,500 sq. ft.	

The sum of the lot areas is **77, 478 sq. ft.**

From this figure the area of the structures on the site were subtracted as follows:

Area of the office building utilized by John Creech Design: 4,500 sq. ft.

Area of concrete pad located at Grecco's Towing: 3,000 sq. ft.

Area of recycled crushed concrete located at Grecco's Towing: 2,000 sq. ft.

Area of Demolished Building Foundation: 900 sq. ft.

Area of the Auto Body Garage: 900 sq. ft.

The sum of the areas of these structures is **11,300 sq. ft.**

The difference between the summation of the areas of the lots and the structures located on site is **66,178 sq. ft.**

The site owner has utilized the section of President Street that runs through the site to the Gowanus Canal. The area of this section is approx. **9,000 sq. ft.**

The sum of the area of the site and the President Street section is approx. **75,178 sq. ft.**, which corresponds to **1.72 acres**.

REFERENCE 11

federal register

Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300
Hazard Ranking System; Final Rule

1/1

REFERENCE 12

U.S. DEPARTMENT OF COMMERCE
LUTHER H. HODGES, Secretary

WEATHER BUREAU
F. W. REICHELDERFER, Chief

TECHNICAL PAPER NO. 40

RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years

Prepared by
DAVID M. HERSFIELD
Cooperative Studies Section, Hydrologic Services Division
for
Engineering Division, Soil Conservation Service
U.S. Department of Agriculture

Ref. 14, p. 1/3

PRICE LIST: RAINFALL FREQUENCY ATLASES & EVENT STATISTICS — NOVEMBER 1996

The atlases described below may be ordered on one reel of 35mm microfilm at $33.00, or as individual paper pages at $4.00 per page.
Service & handling charge: $5.00, or $11.00 if ordered items total $50.00 or more
See reverse side for ordering information about Rainfall Event Statistics.
Prices subject to change without notice
Call to confirm current prices.
Federal agencies are required to submit U.S. government purchase orders.

National Climatic Data Center
151 Patton Avenue, Room 120
Asheville, NC 28801-5001
704-271-4800
FAX: 704-271-4876
TELEX: 6502643731
TDD: 704-271-4010*
INTERNET: orders@ncdc.noaa.gov
WEB SITE: http://www.ncdc.noaa.gov

TP-40: Rainfall Frequency Atlas of the US - Weather Bureau Technical Paper No. 40 (Washington, DC: GPO, 1961) 14x21 inches, paper cover, 61 pages. (Superseded in part by two publications listed below.)

Presents 49 US rainfall frequency maps for selected durations from 30 minutes to 24 hours and return periods from 1 to 100 years. OUT-OF-PRINT, but an 8 1/2x14 in. reduced photocopy priced at $20.00 is available from the NCDC address above.

HYDRO-35: Five- to 60-Minute Precipitation Frequency for the Eastern and Central US - NOAA Technical Memorandum NWS HYDRO-35 (Silver Spring, MD: NWS, 1977) 8 1/2x11 ins., cardstock cover, 36 pages. (Supersedes TP-40 above for the eastern 2/3 of the US for durations of 1 hr. and less.)

Presents 6 US rainfall frequency maps for durations of 5, 15 and 60 minutes at return periods of 2 and 100 years. Equations are given to derive 10- and 30-minute values between 2 and 100 years. Available from the NCDC on one microfiche at $1.00 or a reduced photocopy at $15.00.

NOAA Atlas 2: Precipitation Frequency Atlas of the Western US (Washington, DC: GPO, 1973) 16x22 inches, cardstock cover, 11 Vols (Supersedes TP-40 above for the 11 western states) OUT-OF-PRINT.

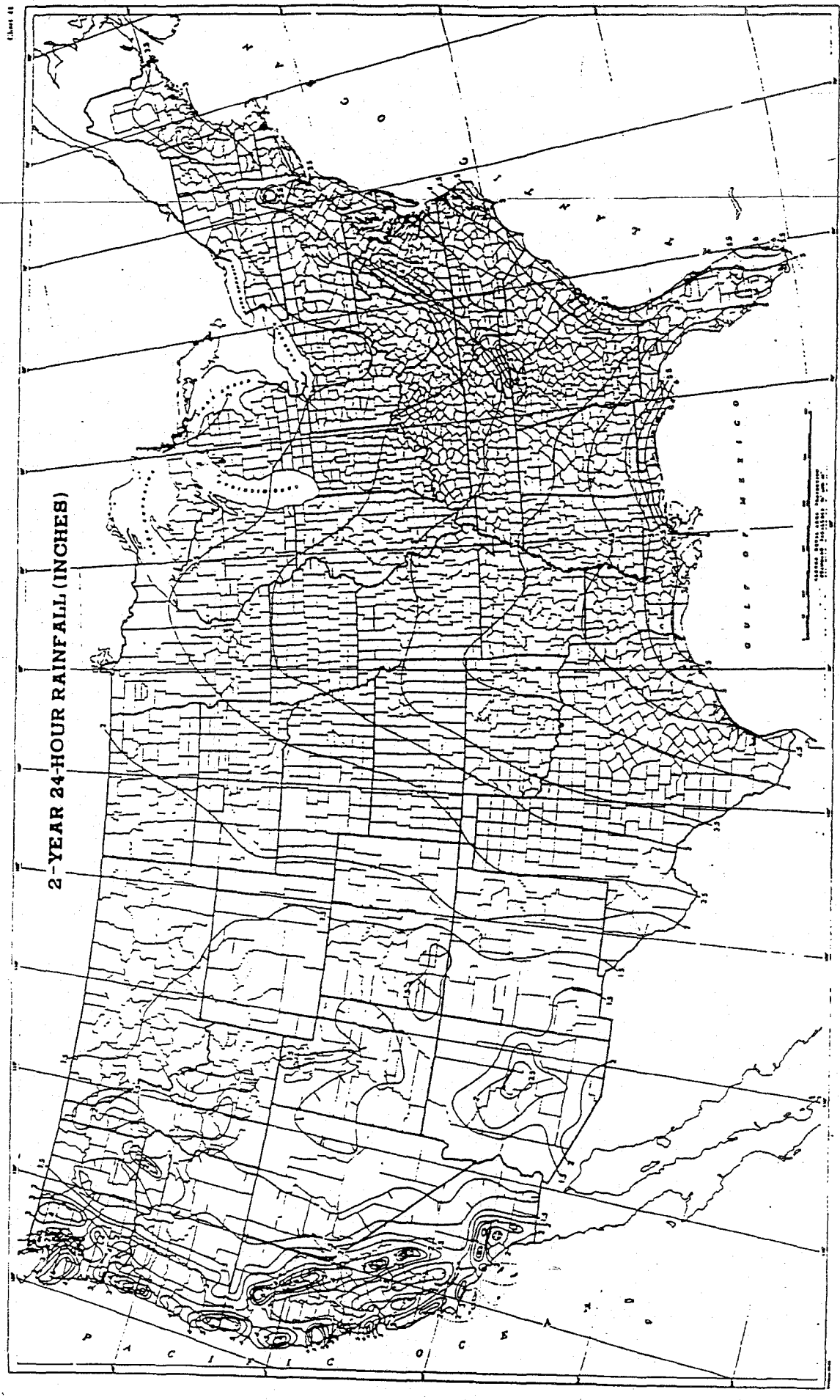
This atlas contains maps for the 6- and 24-hour durations for return periods of 2, 5, 10, 25, 50, and 100 years. All maps are prepared on the same 1:2,000,000 scale.

Vol.	State	Pages	Photocopy Price
I	Montana	34	$136.00
II	Wyoming	34	$136.00
III	Colorado	47	$188.00
IV	New Mexico	34	$136.00
V	Idaho	35	$140.00
VI	Utah	46	$184.00
VII	Nevada	35	$140.00
VIII	Arizona	33	$132.00
IX	Washington	35	$140.00
X	Oregon	35	$140.00
XI	California	48	$192.00

(Note: Topographic contours and city names not always legible on microprints of NOAA Atlas 2. Blank, numbered pages are not reproduced, resulting in apparent missing pages, but no data pages are missing.)

ORDER BLANK ON REVERSE

TDD = TELECOMMUNICATIONS DEVICE FOR THE DEAF



Ref. 12, p. 3/3

REFERENCE 13

NEW YORK STATE
WELLHEAD PROTECTION PROGRAM

SUBMITTAL
TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
IN
APPLICATION FOR IMPLEMENTATION FUNDS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
ALBANY, NY

SEPTEMBER 1990

Ref. 13, p. 1/3

TABLE 3.1.
WELLHEAD PROTECTION AREA
DELINEATION SUMMARY

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers	Deep Flow Recharge Area
	Glacial Aquifer	Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers	Aquifer Boundaries (land surface)
	Bedrock Aquifers	Fixed Radius: 1,500 ft. radius

Ref. 13, p. 2/3

numerous 3 to 12 square mile WHPA's (1-2 mile radius) for non-community wells intersect or nearly intersect across the State. It must be recognized that all fresh groundwaters in bedrock aquifers are classified as GA groundwaters and thus are already protected by substantial statewide protection programs which use rigorous ambient water quality standards in their design.

3: Mapping and Case Studies:

Mapping will be performed according to the phasing priorities described in Section 3.3. Case studies of fixed radius approaches are not considered to be of significant benefit. As proposals for revisions based on alternative approaches are submitted to the Department of Environmental Conservation, they will be evaluated for potential use as models for comparable hydrogeologic conditions.

4. Public Water Supply Significance:

Relatively few municipal community systems utilize bedrock aquifers in New York State and those that do are generally with low population dependence. Public water supplies in bedrock aquifers are typically non-community wells serving small numbers of people.

Magothy and Lloyd Aquifers - Long Island

1. WHPA Definition:

The boundaries of the wellhead protection area for public water supplies using the Magothy and Lloyd aquifers are the boundaries of the Deep Flow Recharge Area as recognized by the Department of Environmental Conservation. Refinements within the overall WHPA may include further definition of Wellfield Management Areas, pending approval by the Department of Environmental Conservation.

2. Rationale:

The Deep Flow Recharge Area was determined to be the most important overall groundwater protection area for wells in the Magothy and Lloyd aquifers in the Long Island Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Program. The delineations have also been adopted in the Suffolk County Sanitary Code.

3. Mapping and Case Studies:

Mapping of the Deep Flow Recharge Area is already completed. Additional case studies are not considered appropriate.

4. Public Water Supply Significance:

Most public water in Nassau County is withdrawn from the Magothy aquifer. The majority of public water supplies in Suffolk County are also withdrawn from the Magothy aquifer. Of those public water supplies in Suffolk County utilizing the Glacial aquifer, approximately half are located within the Deep Flow Recharge Area. Thus, these wells are included within the overall wellhead protection area for the deeper aquifers.

Glacial Aquifer - Long Island

1. WHPA Definition:

The boundaries of the wellhead protection area for public water supplies using the Glacial aquifer are defined as a fixed variable shape zone with a fixed radius in the upgradient groundwater flow direction of 1,500 feet and a fixed radius in the downgradient direction of 500 feet. Revisions may be made, pending approval by the Department of Environmental Conservation.

REFERENCE 14

STREET-02-583

RECORD

VIDAN AUTO SALVAGE

BROOKLYN, N.Y.

START-02-353

National® Brand	*ACCOUNT BOOKS*	9⅝ x 6¼"
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Item No. 56-522	"	Journal

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Avery Division, Consumer Service Center
P.O. Box 5244
Diamond Bar, CA 91765-4000

1035 Arrived at site. Meet w/ Mr. Tinney. Calibrated instruments. Weather ≈ 60°, cloudy.

1040 Talked w/ Mr. Tinney

- Acquired property in 1979
- prior to purchase property owned by S. Alexander trucking Co.
- Inside of building on site current activities include stage set building for various Broadway Shows, MTV, etc.
- Area outside of building used for storage of used/wrecked Automobiles
- Time length of wrecked Auto storage depends on insurance companies
- There are no wells on site
- There are no permits
- site not accessible to public
- No USTs or ABSs.

1050 Started site inspection

- went to Warehouse first
  - John Creech Design & Production
  - on site for 4 or 5 yrs.
  - 4 full time workers
  - At any given time a min of 2 to 10 full time workers (Avg. 4 or 5)
  - Has permits for flammable storage, compressor, oxyAcetalene (torches)

1058 Photo 1 Rt side of inside of warehouse
1058 2 left side of "
1102 3 flammable cabinet
1105 4 Inside of flammable cabinet
- when cabinet opened OVA reading 1.0 - 4.5 Inside cabinet
- when cabinet closed reading went to 1.5 from 1.0

1115 5 Picture of warehouse from back inside building (facing Bond St.)

1120 6 Covered drain

1122 7. Drain open (no reading on OVA)

1125 8. Paint (latex) ~~storage~~ (SD) storage on Rt. side of warehouse

1130 9 Storm drain
- Heavy flooding in intersection of Bond & President Streets

- Entire area used to be coal yards historically according to Mr. Timony

1132/1140 (SD) 10 Cans in storage at Grecco's

1146 11 Two car batteries & 5 Gallon container of Sunoco Hydraulic Fluid (≈ 1 gal)

1135/1150 (SD) 12 battery, Anti-freeze, 1 Gal car wash soap

1156 13 View of car storage facing Bond St.

1140 14 Gowanus Canal facing the back of Bell Atlantic phone company

1141 15 Bank of Gowanus Adjacent to the back of Grecco's (no OVA readings)

1142 16 Virgin Motor Oil 55 gal Drum on Two Dan's property

1143 17 Dumpster where Auto debris is in the process of being placed to be removed off of the property

1144 18 Wrecked cars (smelled gas but no readings on OVA)

1145 19 Gas cylinders (Argon, Acetylene) Oxygen 20 & 40 lb Hi-low container w/ Natural gas - full containers are kept inside trailer

@ 1145 OVA pegged at 10 on the 10 scale - location was among parked wrecked cars along the Gowanus behind the demolished building on the Two Dan's property. (Pic #21)

1145 21 location of high OVA reading at 1145. (facing Gowanus Canal)

1150 22 Storm Drain (Drains toward Carroll St) Some stained concrete

1200 22 Oil Absorbent

4 full time workers for Two Dan's
Part time help varies.

1215 23 View of back of site from Bridge on Union Street.

PS 32 elementary school located on President St. Samuel Mills Sprole School

5018

- No daycare centers w/in 200 ft. of site or pot. contaminated soil.

JCDP
We build everything
John Creech
Design & Production

John H. Creech

327 Bond Street Brooklyn, NY 11231
(718) 237-1144 fax: (718) 596-2504

DCA # 0764620
0900083
0895689

DMV # 7056277

Two Dans Enterprises, Ltd.
385 Carroll Street
Brooklyn, NY 11231
COLLISION SPECIALISTS

(718) 243-2227
Fax: (718) 625-8106

24 HOUR TOWING
(718) 625-7942

Notes:

- There are residential homes located across the street (Bond St.) from (225ft) the site. Since the site is located at the bottom of a hill, any flooding on-site will pond in the intersection of Presidents & Bond Streets. There are 3 storm/sewer drains located at this intersection. According to Mr. Tinneny, if the storm drains are clogged w/ leaves & or debris the flooding water will stand and eventually be evaporated into the ground. Any contamination from the site soil would probably drain into the Gowanus Canal

- The area around the site is highly industrial. There is no evidence of agriculture, silviculture, or livestock production. There are no known terrestrial sensitive environments within 1 mile of the site.

- The high OVA reading @ 1145 is attributed to spilled gasoline or oil in the vicinity of the reading. The odor of gas was very strong.

- The site is bordered by a fence along Bond Street, the forme foundry building to the north, the sculpture studio & NYC 2 Way International limo service & a fence to the south, the Gowanus borders the site to the east.

- The area of stained soil located on Presidents Street on the site is most likely gasoline and/or transmission fluid or some other liquid associated with cars. There was no OVA reading above background at this location.

- There were no hazardous substances seen during the site recon. The site/facility is not known to generate any hazardous substances.

The site recon ended at approx. 1315.

S. [illegible]

REFERENCE 15

U.S. ENVIRONMEN PROCTECTION AGENCY - REG II
OFFICE OF EME NCY AND REMEDIAL RESPONSE
CERCLIS 3 REPORT - NON-NFRAP

SITE LIST BY COUNTY

EPA ID	SITE NAME	STREET	CITY	ZIP	COUNTY	CNTY CODE
NYD002069573	AMERICAN VALVE	170 MANSION ST	COXSACKIE	12051	GREENE	039
NYD085751667	CATSKILL CHROME PLATING INC	370 WEST BRIDGE STREET	CATSKILL	12414	GREENE	039
NYD986882637	CATSKILL TIRE FIRE	RT 9 & BOULVEVARD AVENUE	CATSKILL	12414	GREENE	039
NYD002079374	ROYAL METALS PRODUCTS	WEST ROAD	SURPRISE	12176	GREENE	039
NY0000275578	DARI SERVICES	23 SOUTH HELMER AVENUE	DOLGEVILLE	13329	HERKIMER	043
NYD980508261	FERDULA LF	OLD ERIE CANAL	FRANKFORT	13340	HERKIMER	043
NYD980506612	GERMAN FLATS ILION	MORTZ RD	GERMAN FLATTS	13407	HERKIMER	043
NYD982272908	HERKIMER VILLAGE DUMP	EAST STEELE STREET	HERKIMER	13350	HERKIMER	043
NYD981560915	HITEMAN LEATHER COMPANY	SOUTH ST	WEST WINFIELD	13491	HERKIMER	043
NYD986868222	J & J TRUCKING	ROSE VALLEY ROAD	RUSSIA	13431	HERKIMER	043
NYD986927697	JOHNNY CAKE ROAD FARM	RURAL ROUTE # 1	DANUBE TWP	13365	HERKIMER	043
NYD986895290	MIDDLEVILLE TANNERY DUMP	TOWN OF NORWAY	NEWPORT	13416	HERKIMER	043
NYD980768758	OLD ERIE CANAL	TURNER ST	FRANKFORT	13340	HERKIMER	043
NYD982268815	SUDAKOW DUMP	WILLIAMS STREET	FRANKFORT	13340	HERKIMER	043
NY4210020281	FORT DRUM	BTWN RTS 3 & 11	WATERTOWN	13601	JEFFERSON	045
NYD987025137	BUSH TERMINALS, PIER SIX SITE	FIRST AVE. AND 43RD ST	BROOKLYN	11220	KINGS	047
NYD980768733	HAMILTON AVENUE INCINERATOR	555 HAMILTON AVE	BROOKLYN	11232	KINGS	047
NYD982272692	SIGNO TRADING KENSTON	1ST AVE BTWN 43RD & 50TH ST-BUSH BL#	BROOKLYN	11232	KINGS	047
NYD001288349	SLATTERY STOVE SITE	171 WALLBOUT ST	BROOKLYN	11206	KINGS	047
NY0001049303	SOUTH SHORE INCINERATOR SITE	308 FORBELL STREET	BROOKLYN	11208	KINGS	047
NYD980780894	TECHNICAL METAL FINISHERS	214 STARR STREET	BROOKLYN	11237	KINGS	047
NYD986961167	VIDAN AUTO SALVAGE	327-321 BOND STREET	BROOKLYN	11231	KINGS	047
NYD990762148	AMFLOWVILLE OPERATIONS	INTERSECTION NY RTS 12 AND 26	LOWVILLE	13367	LEWIS	049
NYD980532501	PAYNE-JONES	EAST RD	LOWVILLE	13367	LEWIS	049
NYD000813428	JONES CHEMICAL, INC	100 SUNNY SOL BLVD	CALEDONIA	14423	LIVINGSTON	051
NYD982181414	NORTH BLOOMFIELD	MARTIN RD BRAGG ST IDESON RD	LIMA	14485	LIVINGSTON	051
NYD980509178	SPRINGWATER LF	MOOSE RD	SPRINGWATER	14560	LIVINGSTON	051
NYD981561954	C & J DISPOSAL LEASING CO. DUMP	ROUTE 12B	HAMILTON	13346	MADISON	053
NYD982531964	OAKLEY FARM	GEES ROAD	CHITTENANGO	13037	MADISON	053
NYD981874472	ALLIANCE PRESICION PLASTICS	595 TRABOLD ROAD	ROCHESTER	14624	MONROE	028
NYD981130032	ARTCO INUDSTRIAL LAUNDRIES, INC.	333 W. MAIN ST.	ROCHESTER	14608	MONROE	028
NYD000887737	CHEVRON OIL CO. (USA TANK FARM)	837 BUFFALO ROAD	TOWN OF GATES	14624	MONROE	055

REFERENCE 16

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO:	DATE: 11/10/98	TIME: 1330
DISTRIBUTION: Vidan Auto Salvage Site File		
BETWEEN:	OF	PHONE
James Covey	NY State Dept. of Health--Bureau of Public Water Supply	518-458-6731
AND Barbara Leahy of START		

DISCUSSION

Mr. Covey returned a phone call made by Sharron DaCosta ,START member, on 11/9/98. Mr. Covey informed B. Leahy that the borough of Brooklyn gets it drinking water from reservoirs in upstate New York. He further stated that there are no potable ground water wells or public drinking water support systems in Brooklyn.

ACTION ITEMS:

REFERENCE 17

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

DATE: SEP 26 1991

SUBJECT: Vidan Auto Salvage

FROM: John Witkowski, Chief
Technical Support Section

TO: James F. Doyle, Attorney
Office of Regional Counsel

Vidan Auto Salvage was formerly a junkyard located on Bond Street in Brooklyn, New York. Due to activities with stolen vehicles at this location, the U.S. Department of Justice (DOJ) seized the property, auctioned its contents and then returned the property to the owner under the stipulation that the property could not be used as a junkyard.

As a result of the disassembling of vehicles at the property and the subsequent release of their fluids, the DOJ requested that the United States Environmental Protection Agency (EPA) conduct an investigation to determine if these releases posed a threat to the public and/or the environment. The Removal Action Branch conducted this investigation.

The On-Scene Coordinator (OSC), accompanied by the U.S. Marshall Service, conducted site visits on June 25, 1991 and July 10, 1991. On June 25th, the EPA Field Investigation Team (FIT) was also present conducting a Preliminary Assessment. On July 10th, representatives from the EPA Environmental Services Division (ESD) were present at the site, at the request of the OSC, to collect samples for analysis.

Samples were collected from a drain, a drum and two soil locations (see attachment for analytical results). The drain, which is located where the racks used to be, contained a heavy sheen. Petroleum hydrocarbons were present at 37.4 ppm in the sample collected from this point. A sample from the drum was analyzed for volatile organics and was found not to contain any. Its pH was equal to 11.

One of the soil samples was collected as a composite from a heavily stained area at the center of the property. This area was reportedly used for disassembling the vehicles. Elevated levels of volatile organics (VOAs), polyaromatic hydrocarbons (PAHs) and several heavy metals (cadmium, copper, nickel, lead and zinc) were detected. Another soil sample was collected as a grab from a small hole in the concrete on the west side of the property. The soil at this location was found to be saturated with what appeared to be a petroleum material. The level of contamination was considerably greater at this point with regards to the PAHs.

There has been a release of hazardous substances at a facility. Based on the sampling, it appears that the highest levels of contamination are below the surface, much of which is paved. The facility is located in a mostly industrial area and is fenced, thus limiting access to the site. Ground water in this area is not used as a drinking water source. Based on these items, Vidan Auto Salvage is not removal eligible at this time.

Based on the findings of the FIT Team, the site scored sufficiently high to warrant a Site Inspection (SI) sometime in the future.

Although the Removal Program can not address the contamination at the site, it may be an issue that another Division within the Agency, the New York State Department of Environmental Conservation or the New York City Department of Environmental Protection may be able to address.

Should you have any questions, please do not hesitate to call me at FTS 340-6739 or Nick Magriples at FTS 340-6930.

Attachment

cc: R. Salkie, ERR-ADREPP
G. Zachos, ERR-RAB
V. Pitruzzello, ERR-PS
R. Spear, ES-SM

2/15

UNITED S\. ,ES ENVIRONMENTAL PROTECTIC ,GENCY
REGION II

DATE: SEP 20 1991

JECT: Vidan Auto Salvage Data Report, Project #107

FROM: John Birri, Chief
Inorganic Chemistry Section

TO: Richard Spear, Chief
Surveillance & Monitoring Branch

THRU: Gerard F. McKenna, Chief
Technical Support Branch

Attached is a copy of the data report for Vidan Auto Salvage, Project #107. Please note that all NVOA hits in samples 97119 and 97120 were qualified with a "J" code due to high surrogate spike recoveries, attributable to matrix interference in both samples. Also, sample 97121, submitted for VOA analysis, contained headspace.

Attachment

RECEIVED
SEP 20 1991
S & M BRANCH

3/16

LAB DATA MANAGEMENT SYSTEM - REGION II
COMPLETED PROJECT APPROVAL

REPORT DATE 91/09/16

PROJECT NUMBER	PROJECT DATE	PROJECT NAME	
107	91/07/10	VIDAN AUTO SALVAGE	APPROVED

91/15

REPORT DATE: 91/09/16

COMPLETED ANALYSIS REPORT

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

EXPLANATIONS OF REMARK CODES

REMARK CODE	EXPLANATION
B	RESULTS BASED UPON COLONY COUNTS OUTSIDE ACCEPTABLE RANGE
J	ESTIMATED VALUE
K	ACTUAL VALUE KNOWN TO BE LESS THAN VALUE GIVEN
L	ACTUAL VALUE KNOWN TO BE GREATER THAN VALUE GIVEN
M	PRESENCE OF MATERIAL VERIFIED BUT NOT QUANTIFIED
N	NO OBSERVABLE EFFECT CONCENTRATION < 0.3%
O	SAMPLED BUT NOT ANALYZED DUE TO LAB ACCIDENT
T	REPORTED VALUE LESS THAN CRITERIA OF DETECTION
U	REPORTING LIMIT

QA/QC REMARK CODES

CODE	EXPLANATION
QD	ACCURACY CHECK SAMPLE ABOVE UPPER ACCEPTANCE LIMIT
QE	ACCURACY CHECK SAMPLE BELOW LOWER ACCEPTANCE LIMIT
QF	PRECISION OF CALIBRATION CURVE LESS THAN ACCEPTANCE CRITERIA
QG	CONTINUING CALIBRATION CHECK DOES NOT MEET ACCEPTANCE CRITERIA
QS	SPIKE RECOVERIES ABOVE UPPER ACCPETANCE LIMIT
QR	SPIKE RECOVERIES BELOW LOWER ACCPETANCE LIMIT
QP	SAMPLE REPLICATE PRECISION DOES NOT MEET ACCEPTANCE CRITERIA
QH	RECOMMENDED HOLDING TIMES EXCEEDED
QT	TENTATIVELY IDENTIFIED COMPOUND
QB	BLANK CONTAMINATED BY ANALYTE IN EXCESS OF ACCEPTANCE CRITERIA
QQ	SAMPLE IMPROPERLY PRESERVED

LOCATION CODES FOR IDENTIFICATION OF SAMPLING POINTS AT INDUSTRIAL / SANITARY FACILITIES, LANDFILLS, HAZARDOUS WASTE SITES.

CODE NUMBERS	SAMPLING POINTS
1001 - 1050	EFFLUENT PIPE NUMBER 001 TO 050
1051 - 1099	OTHER EFFLUENTS SUCH AS COOLING TOWER DISCHARGE, DISCHARGE FROM HOLDING PONDS, ETC...
1100 - 1249	IN PLANT SAMPLES
1435 - 1454	SEPARATE INFLUENT POINTS/WATER SOURCES
15XX	INFLUENT ASSOCIATED WITH EFFLUENT 10XX
2000	BLANK FOR VOLATILE ORGANICS
3000 - 3099	GROUND WATER FROM WELL 01 TO 99
3100 - 3199	SEDIMENT SAMPLE (WATER BOTTOM)
3200 - 3299	SOIL SAMPLE
3300 - 3399	STREAM WATER SAMPLE
3400 - 3499	LAGOON SAMPLE
3500 - 3599	STORAGE TANK SAMPLE
3600 - 3699	LEACHATE SAMPLE
3700 - 3799	OTHER TYPE SAMPLE

S-15

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
NONE	91/07/10	1018							
DEPTH: 0000 SUBSTRATE: AQUEOUS									
DESCRIPTION: WATER DRAIN									
			097118	45501	PETRO.HYDROCARBONS IR	MG/L	TOT REC	37.4	
				34586	2-CHLOROPHENOL	UG/L		11.1 U	
				34591	2-NITROPHENOL	UG/L		11.1 U	
				34694	PHENOL	UG/L		1.4 J	
				34606	2,4-DIMETHYLPHENOL	UG/L		7.4 J	
				34601	2,4-DICHLOROPHENOL	UG/L		11.1 U	
				34621	2,4,6-TRICHLOROPHENOL	UG/L		11.1 U	
				34452	P-CHLORO-M-CRESOL	UG/L		11.1 U	
				34616	2,4-DINITROPHENOL	UG/L		27.8 U	
				34657	4,6-DINITRO-O-CRESOL	UG/L		27.8 U	
				39032	PENTACHLOROPHENOL	UG/L		27.8 U	
				34646	4-NITROPHENOL	UG/L		27.8 U	
				34566	1,3-DICHLOROBENZENE	UG/L		11.1 U	
				34571	1,4-DICHLOROBENZENE	UG/L		11.1 U	
				34536	1,2-DICHLOROBENZENE	UG/L		11.1 U	
				34396	HEXACHLOROETHANE	UG/L		11.1 U	
				39702	HEXACHLOROBUTADIENE	UG/L		11.1 U	
				34551	1,2,4-TRICHLOROBENZENE	UG/L		11.1 U	
				34696	NAPHTHALENE	UG/L		11.1 U	
				34273	BIS(2-CHLOROETHYL) ET.	UG/L		11.1 U	
				34278	BIS(2-CHLOROETHOXY) METH.	UG/L		11.1 U	
				34408	ISOPHORONE	UG/L		11.1 U	
				34447	NITROBENZENE	UG/L		11.1 U	
				34428	N-NITROSODI-N-PROPYLAMINE	UG/L		11.1 U	
				34433	N-NITROSODIPHENYLAMINE	UG/L		11.1 U	
				34283	BIS(2-CHLOROISOPROPYL) ET.	UG/L		11.1 U	
				34386	HEXACHLOROCYCLOPENTADIENE	UG/L		11.1 U	
				34581	2-CHLORONAPHTHALENE	UG/L		11.1 U	
				34200	ACENAPHTHYLENE	UG/L		11.1 U	
				34205	ACENAPHTHENE	UG/L		0.5 J	
				34381	FLUORENE	UG/L		0.5 J	
				39700	HEXACHLOROBENZENE	UG/L		11.1 U	
				34636	4-BROMOPHENYL PHENYL ET.	UG/L		11.1 U	
				34461	PHENANTHRENE	UG/L		11.1 U	
				34220	ANTHRACENE	UG/L		11.1 U	
				99999	CARBAZOLE	UG/L		11.1 U	
				34341	DIMETHYL PHTHALATE	UG/L		11.1 U	
				34336	DIETHYL PHTHALATE	UG/L		11.1 U	
				39110	DI-N-BUTYLPHTHALATE	UG/L		11.1 U	
				34292	BUTYL BENZYL PHTHALATE	UG/L		11.1 U	
				34596	DI-N-OCTYL PHTHALATE	UG/L		5.6 J	

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COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097118	39100	BIS(2-ETHYLHEXYL) PHTHAL.	UG/L		6.3 J	
				34376	FLUORANTHENE	UG/L		11.1 U	
				34469	PYRENE	UG/L		0.4 J	
				34320	CHRYSENE	UG/L		0.4 J	
				34526	1,2-BENZANTHRACENE	UG/L		11.1 U	
				34641	4-CHLOROPHENYL PHENYL ET.	UG/L		11.1 U	
				34403	INDENO(1,2,3-C,D) PYRENE	UG/L		11.1 U	
				34247	BENZO(A)PYRENE	UG/L		11.1 U	
				34521	1,12-BENZOPERYLENE	UG/L		11.1 U	
				34556	1,2:5,6-DIBENZANTHRACENE	UG/L		11.1 U	
				34631	3,3'-DICHLOROBENZIDENE	UG/L		11.1 U	
				34626	2,6-DINITROTOLUENE	UG/L		11.1 U	
				34611	2,4-DINITROTOLUENE	UG/L		11.1 U	
				34230	3,4-BENZOFLUORANTHENE	UG/L		11.1 U	
				34242	11,12-BENZOFLUORANTHENE	UG/L		11.1 U	
				99999	2-METHYL PHENOL	UG/L		11.1 U	
				99999	4-METHYL PHENOL	UG/L		12 U	
				99999	4-CHLOROANILINE	UG/L		11.1 U	
				99999	ANILINE	UG/L		11.1 U	
				99999	2-METHYL NAPHTHALENE	UG/L		3.9 J	
				88894	2,4,5-TRICHLOROPHENOL	UG/L		27.8 U	
				99999	2-NITROANILINE	UG/L		27.8 U	
				99999	3-NITROANILINE	UG/L		27.8 U	
				99999	DIBENZOFURAN	UG/L		11.1 U	
				99999	4-NITROANILINE	UG/L		27.8 U	
				99999	BENZOIC ACID	UG/L		7.4 J	QG
				99999	BENZYL ALCOHOL	UG/L		0.9 J	
				99999	DIHYDRO-1H-INDENE	UG/L		9.7 J	QT
				99999	METHYLPROPYLBENZENE	UG/L		11.0 J	QT
				99999	DIMETHYLETHYLBENZENE	UG/L		27.0 J	QT
				99999	TETRAMETHYLBENZENE	UG/L		28.0 J	QT
				99999	DIHYDROMETHYL-1H-INDENE	UG/L		25.0 J	QT
				99999	ETHYL PHENOL	UG/L		6.40 J	QT
				99999	DIHYDRODIMETHYL-1H-INDENE	UG/L		8.90 J	QT
				99999	BENZOTHIAZOLE	UG/L		12.00 J	QT
				99999	DIMETHYL NAPHTHALENE	UG/L		5.40 J	QT
				99999	BENZOYLCHLORIDE,4METHYL	UG/L		5.00 J	QT
				99920	XYLENES (TOTAL)	UG/L		63.0 J	QT
				99999	ETHYLMETHYLBENZENE	UG/L		120.0 J	QT

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
NONE	91/07/10	1027							
DEPTH: 0000 SUBSTRATE: SEDIMENT									
DESCRIPTION: SOIL 1 COMPOSITE									
			097119	34421	METHYL CHLORIDE	UG/KG		1100 U	
				34416	METHYL BROMIDE	UG/KG		1100 U	
				34495	VINYL CHLORIDE	UG/KG		1100 U	
				34314	CHLOROETHANE	UG/KG		1100 U	
				34426	METHYLENE CHLORIDE	UG/KG		1100 U	
				99930	ACETONE	UG/KG		1100 U	
				99999	CARBON DISULFIDE	UG/KG		1100 U	
				34504	1,1-DICHLOROETHYLENE	UG/KG		1100 U	
				34499	1,1-DICHLOROETHANE	UG/KG		1100 U	
				34549	TRANS 1,2 DICHLOROETHYLENE	UG/KG		1100 U	
				34318	CHLOROFORM	UG/KG		1100 U	
				34534	1,2-DICHLOROETHANE	UG/KG		1100 U	
				99999	2-BUTANONE	UG/KG		1100 U	
				34509	1,1,1-TRICHLOROETHANE	UG/KG		1100 U	
				34299	CARBON TETRACHLORIDE	UG/KG		1100 U	
				34330	DICHLOROBROMOMETHANE	UG/KG		1100 U	
				34544	1,2-DICHLOROPROPANE	UG/KG		1100 U	
				34564	1,3-DICHLOROPROPYLENE	UG/KG		1100 U	
				34487	TRICHLOROETHYLENE	UG/KG		1100 U	
				34237	BENZENE	UG/KG		1100 U	
				99999	CIS-1,3-DICHLOROPROPENE	UG/KG		1100 U	
				34309	CHLORODIBROMOMETHANE	UG/KG		1100 U	
				34514	1,1,2-TRICHLOROETHANE	UG/KG		1100 U	
				34290	BROMOFORM	UG/KG		1100 U	
				34519	1,1,2,2-TETRACHLOROETHANE	UG/KG		1100 U	
				34478	TETRACHLOROETHYLENE	UG/KG		1100 U	
				34483	TOLUENE	UG/KG		1600	
				34304	CHLOROBENZENE	UG/KG		1100 U	
				34374	ETHYLBENZENE	UG/KG		810 J	
				99904	STYRENE	UG/KG		1100 U	
				99999	XYLENES (TOTAL)	UG/KG		4900	
				34589	2-CHLOROPHENOL	UG/KG		350000 U	
				34594	2-NITROPHENOL	UG/KG		350000 U	
				34695	PHENOL	UG/KG		350000 U	
				34609	2,4-DIMETHYLPHENOL	UG/KG		350000 U	
				34604	2,4-DICHLOROPHENOL	UG/KG		350000 U	
				34624	2,4,6-TRICHLOROPHENOL	UG/KG		350000 U	
				99999	P-CHLORO-M-CRESOL	UG/KG		350000 U	
				34619	2,4-DINITROPHENOL	UG/KG		850000 U	
				34660	4,6-DINITRO-O-CRESOL	UG/KG		850000 U	
				99999	PENTACHLOROPHENOL	UG/KG		850000 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097119	99999	4-NITROPHENOL	UG/KG		850000 U	
				34569	1,3-DICHLOROBENZENE	UG/KG		350000 U	
				34574	1,4-DICHLOROBENZENE	UG/KG		350000 U	
				34539	1,2-DICHLOROBENZENE	UG/KG		350000 U	
				34399	HEXACHLOROETHANE	UG/KG		350000 U	
				34394	HEXACHLOROBUTADIENE	UG/KG		350000 U	
				34554	1,2,4-TRICHLOROBENZENE	UG/KG		350000 U	
				34445	NAPHTHALENE	UG/KG		3500 J	
				34276	BIS(2-CHLOROETHYL) ET.	UG/KG		350000 U	
				34281	BIS(2-CHLOROETHOXY) METH.	UG/KG		350000 U	
				34411	ISOPHORONE	UG/KG		350000 U	
				34450	NITROBENZENE	UG/KG		350000 U	
				34431	N-NITROSODI-N-PROPYLAMINE	UG/KG		350000 U	
				34436	N-NITROSODIPHENYLAMINE	UG/KG		8600 J	
				34286	BIS(2-CHLOROISOPROPYL) ETH	UG/KG		350000 U	
				34389	HEXACHLOROCYCLOPENTADIENE	UG/KG		350000 U	
				34584	2-CHLORONAPHTHALENE	UG/KG		350000 U	
				34203	ACENAPHTHYLENE	UG/KG		430 J	
				34208	ACENAPHTHENE	UG/KG		500 J	
				34384	FLUORENE	UG/KG		4700 J	
				39701	HEXACHLOROBENZENE	UG/KG		350000 U	
				34639	4-BROMOPHENYL PHENYL ET.	UG/KG		350000 U	
				34464	PHENANTHRENE	UG/KG		83000 J	
				34223	ANTHRACENE	UG/KG		350000 U	
				34344	DIMETHYL PHTHALATE	UG/KG		350000 U	
				34339	DIETHYL PHTHALATE	UG/KG		350000 U	
				39112	DI-N-BUTYLPPHTHALATE	UG/KG		350000 U	
				34295	BUTYL BENZYL PHTHALATE	UG/KG		190000 J	
				34599	DI-N-OCTYL PHTHALATE	UG/KG		350000 U	
				39102	BIS(2-ETHYLHEXYL) PHTHAL.	UG/KG		350000 U	
				34379	FLUORANTHENE	UG/KG		86000 J	QR
				34472	PYRENE	UG/KG		88000 J	
				34323	CHRYSENE	UG/KG		350000 U	
				34529	1,2-BENZANTHRACENE	UG/KG		350000 U	
				34644	4-CHLOROPHENYL PHENYL ET.	UG/KG		350000 U	
				34406	INDENO(1,2,3-C,D) PYRENE	UG/KG		3100 J	
				34250	BENZO(A)PYRENE	UG/KG		9900 J	
				34524	1,12-BENZOPERYLENE	UG/KG		3300 J	
				34559	1,2:5,6-DIBENZANTHRACENE	UG/KG		350000 U	
				34634	3,3'-DICHLOROBENZIDENE	UG/KG		350000 U	
				34629	2,6-DINITROTOLUENE	UG/KG		350000 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097119	34614	2,4-DINITROTOLUENE	UG/KG		350000 U	
				34349	1,2-DIPHENYLHYDRAZINE	UG/KG		350000 U	
				34233	3,4-BENZOFLUORANTHENE	UG/KG		6700 J	
				34245	11,12-BENZOFLUORANTHENE	UG/KG		5500 J	
				99999	BENZYL ALCOHOL	UG/KG		350000 U	
				99999	2-METHYL PHENOL	UG/KG		350000 U	
				99999	4-METHYL PHENOL	UG/KG		1300 J	
				77722	4-CHLOROANILINE	UG/KG		850000 U	
				99999	BENZOIC ACID	UG/KG		350000 U	
				99999	ANILINE	UG/KG		350000 U	
				99999	2-METHYL NAPHTHALENE	UG/KG		3900 J	
				77733	2,4,5-TRICHLOROPHENOL	UG/KG		850000 U	
				99999	2-NITROANILINE	UG/KG		850000 U	
				99999	3-NITROANILINE	UG/KG		850000 U	
				99999	DIBENZOFURAN	UG/KG		290 J	QG
				99999	4-NITROANILINE	UG/KG		350000 U	
				99999	DIMETHYLETHYLBENZENE	UG/KG		2500 J	QT
				99999	DIMETHYL NAPHTHALENE	UG/KG		15000 J	QT
				99999	ETHYLMETHYLBENZENE	UG/KG		3000 J	QT
				99999	DIMETHYLBENZENE	UG/KG		6700 J	QT
				99922	PCB-1016	UG/KG		180 U	
				99923	PCB-1221	UG/KG		360 U	
				99924	PCB-1232	UG/KG		180 U	
				99925	PCB-1242	UG/KG		180 U	
				99926	PCB-1248	UG/KG		180 U	
				99927	PCB-1254	UG/KG		180 U	
				99928	PCB-1260	UG/KG		180 U	
				01078	SILVER	MG/KG		2.9 J	QP
				01108	ALUMINUM	MG/KG		6120	
				01003	ARSENIC	MG/KG		4.8 J	QR
				01008	BARIUM	MG/KG		537 J	QP
				01013	BERYLLIUM	MG/KG		0.6 U	
				00917	CALCIUM	MG/KG		17500	
				01028	CADMIUM	MG/KG		35.1	
				01038	COBALT	MG/KG		7	
				01029	CHROMIUM	MG/KG		38	
				01043	COPPER	MG/KG		525	
				01170	IRON	MG/KG		32700	
				71921	MERCURY	MG/KG		0.16 J	QR
				99999	POTASSIUM	MG/KG		640	
				00924	MAGNESIUM	MG/KG		3370	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097119	01053	MANGANESE	MG/KG		270	
				00934	SODIUM	MG/KG		565 U	
				01068	NICKEL	MG/KG		108	
				01052	LEAD	MG/KG		901	
				01098	ANTIMONY	MG/KG		26	
				01148	SELENIUM	MG/KG		0.56 U	QR
				34480	THALLIUM	MG/KG		0.88 U	
				01088	VANADIUM	MG/KG		17	
				01093	ZINC	MG/KG		1020	
NONE	91/07/10	1037							
DEPTH: 0000 SUBSTRATE: SEDIMENT									
DESCRIPTION: SOIL 2 GRAB									
			097120	34421	METHYL CHLORIDE	UG/KG		1500 U	
				34416	METHYL BROMIDE	UG/KG		1500 U	
				34495	VINYL CHLORIDE	UG/KG		1500 U	
				34314	CHLOROETHANE	UG/KG		1500 U	
				34426	METHYLENE CHLORIDE	UG/KG		1500 U	
				99930	ACETONE	UG/KG		1500 U	
				99999	CARBON DISULFIDE	UG/KG		1500 U	
				34504	1,1-DICHLOROETHYLENE	UG/KG		1500 U	
				34499	1,1-DICHLOROETHANE	UG/KG		1500 U	
				34549	TRANS 1,2 DICHLOROETHYLENE	UG/KG		1500 U	
				34318	CHLOROFORM	UG/KG		1500 U	
				34534	1,2-DICHLOROETHANE	UG/KG		1500 U	
				99999	2-BUTANONE	UG/KG		1500 U	
				34509	1,1,1-TRICHLOROETHANE	UG/KG		1500 U	
				34299	CARBON TETRACHLORIDE	UG/KG		1500 U	
				34330	DICHLOROBROMOMETHANE	UG/KG		1500 U	
				34544	1,2-DICHLOROPROPANE	UG/KG		1500 U	
				34564	1,3-DICHLOROPROPYLENE	UG/KG		1500 U	
				34487	TRICHLOROETHYLENE	UG/KG		90 J	
				34237	BENZENE	UG/KG		1500 U	
				99999	CIS-1,3-DICHLOROPROPENE	UG/KG		1500 U	
				34309	CHLORODIBROMOMETHANE	UG/KG		1500 U	
				34514	1,1,2-TRICHLOROETHANE	UG/KG		1500 U	
				34290	BROMOFORM	UG/KG		1500 U	
				34519	1,1,2,2-TETRACHLOROETHANE	UG/KG		1500 U	
				34478	TETRACHLOROETHYLENE	UG/KG		1500 U	
				34483	TOLUENE	UG/KG		1500 U	

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097120	34304	CHLOROBENZENE	UG/KG		1500 U	
				34374	ETHYLBENZENE	UG/KG		1500 U	
				99904	STYRENE	UG/KG		230 J	
				99999	XYLENES (TOTAL)	UG/KG		1500 U	
				34589	2-CHLOROPHENOL	UG/KG		1900000 U	
				34594	2-NITROPHENOL	UG/KG		1900000 U	
				34695	PHENOL	UG/KG		2600 J	
				34609	2,4-DIMETHYLPHENOL	UG/KG		2100 J	QG
				34604	2,4-DICHLOROPHENOL	UG/KG		1900000 U	
				34624	2,4,6-TRICHLOROPHENOL	UG/KG		1900000 U	
				99999	P-CHLORO-M-CRESOL	UG/KG		1900000 U	
				34619	2,4-DINITROPHENOL	UG/KG		4700000 U	
				34660	4,6-DINITRO-O-CRESOL	UG/KG		4700000 U	
				99999	PENTACHLOROPHENOL	UG/KG		4700000 U	
				99999	4-NITROPHENOL	UG/KG		4700000 U	
				34569	1,3-DICHLOROBENZENE	UG/KG		1900000 U	
				34574	1,4-DICHLOROBENZENE	UG/KG		1900000 U	
				34539	1,2-DICHLOROBENZENE	UG/KG		1900000 U	
				34399	HEXACHLOROETHANE	UG/KG		1900000 U	
				34394	HEXACHLOROBUTADIENE	UG/KG		1900000 U	
				34554	1,2,4-TRICHLOROBENZENE	UG/KG		1900000 U	
				34445	NAPHTHALENE	UG/KG		17000 J	
				34276	BIS(2-CHLOROETHYL) ET.	UG/KG		1900000 U	
				34281	BIS(2-CHLOROETHOXY) METH.	UG/KG		1900000 U	
				34411	ISOPHORONE	UG/KG		1900000 U	
				34450	NITROBENZENE	UG/KG		1900000 U	
				34431	N-NITROSODI-N-PROPYLAMINE	UG/KG		1900000 U	
				34436	N-NITROSODIPHENYLAMINE	UG/KG		1900000 U	
				34286	BIS(2-CHLOROISOPROPYL) ETH	UG/KG		1900000 U	
				34389	HEXACHLOROCYCLOPENTADIENE	UG/KG		1900000 U	
				34584	2-CHLORONAPHTHALENE	UG/KG		1900000 U	
				34203	ACENAPHTHYLENE	UG/KG		16000 J	
				34208	ACENAPHTHENE	UG/KG		21000 J	
				34384	FLUORENE	UG/KG		21000 J	
				39701	HEXACHLOROBENZENE	UG/KG		1900000 U	
				34639	4-BROMOPHENYL PHENYL ET.	UG/KG		1900000 U	
				34464	PHENANTHRENE	UG/KG		240000 J	
				34223	ANTHRACENE	UG/KG		73000 J	
				34344	DIMETHYL PHTHALATE	UG/KG		1900000 U	
				34339	DIETHYL PHTHALATE	UG/KG		1900000 U	
				39112	DI-N-BUTYLPPHTHALATE	UG/KG		1900000 U	

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COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097120	34295	BUTYL BENZYL PHTHALATE	UG/KG		1900000 U	
				34599	DI-N-OCTYL PHTHALATE	UG/KG		6900 J	
				39102	BIS(2-ETHYLHEXYL) PHTHAL.	UG/KG		59000 J	
				34379	FLUORANTHENE	UG/KG		400000 J	QR
				34472	PYRENE	UG/KG		370000 J	
				34323	CHRYSENE	UG/KG		200000 J	
				34529	1,2-BENZANTHRACENE	UG/KG		1900000 U	
				34644	4-CHLOROPHENYL PHENYL ET.	UG/KG		1900000 U	
				34406	INDENO(1,2,3-C,D) PYRENE	UG/KG		98000 J	
				34250	BENZO(A)PYRENE	UG/KG		180000 J	
				34524	1,12-BENZOPERYLENE	UG/KG		21000 J	
				34559	1,2:5,6-DIBENZANTHRACENE	UG/KG		22000 J	
				34634	3,3'-DICHLOROBENZIDENE	UG/KG		1900000 U	
				34629	2,6-DINITROTOLUENE	UG/KG		1900000 U	
				34614	2,4-DINITROTOLUENE	UG/KG		1900000 U	
				34349	1,2-DIPHENYLHYDRAZINE	UG/KG		1900000 U	
				34233	3,4-BENZOFLUORANTHENE	UG/KG		280000 J	
				34245	11,12-BENZOFLUORANTHENE	UG/KG		1900000 U	
				99999	BENZYL ALCOHOL	UG/KG		1900000 U	
				99999	2-METHYL PHENOL	UG/KG		1900000 U	
				77722	4-CHLOROANILINE	UG/KG		4700000 U	
				99999	BENZOIC ACID	UG/KG		1900000 U	
				77722	4-CHLOROANILINE	UG/KG		4700000 U	
				99999	ANILINE	UG/KG		1900000 U	
				99999	2-METHYL NAPHTHALENE	UG/KG		1900000 U	
				77733	2,4,5-TRICHLOROPHENOL	UG/KG		4700000 U	
				99999	2-NITROANILINE	UG/KG		4700000 U	
				99999	3-NITROANILINE	UG/KG		4700000 U	
				99999	DIBENZOFURAN	UG/KG		1900000 U	
				99999	4-NITROANILINE	UG/KG		1900000 U	
				99999	2,6-B1,1DIMETHYLETHYL4METHPH	UG/KG		96000 J	QT
				99999	DIBENZOTHIOPHENE	UG/KG		46000 J	QT
				99999	9H-CARBAZOLE	UG/KG		58000 J	QT
				99999	4-METHYLPHENANTHRENE	UG/KG		150000 J	QT
				99922	PCB-1016	UG/KG		470 U	
				99923	PCB-1221	UG/KG		950 U	
				99924	PCB-1232	UG/KG		470 U	
				99925	PCB-1242	UG/KG		470 U	
				99926	PCB-1248	UG/KG		470 U	
				99927	PCB-1254	UG/KG		470 U	
				99928	PCB-1260	UG/KG		470 U	

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COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097120	01078	SILVER	MG/KG		32.5 J	QP
				01108	ALUMINUM	MG/KG		12100	
				01003	ARSENIC	MG/KG		6.9 J	QR
				01008	BARIUM	MG/KG		291 J	QP
				01013	BERYLLIUM	MG/KG		4.9	
				00917	CALCIUM	MG/KG		21200	
				01028	CADMIUM	MG/KG		62.7	
				01038	COBALT	MG/KG		21	
				01029	CHROMIUM	MG/KG		96	
				01043	COPPER	MG/KG		777	
				01170	IRON	MG/KG		28700	
				71921	MERCURY	MG/KG		0.17 J	QR
				99999	POTASSIUM	MG/KG		1990	
				00924	MAGNESIUM	MG/KG		10200	
				01053	MANGANESE	MG/KG		377	
				00934	SODIUM	MG/KG		786 U	
				01068	NICKEL	MG/KG		601	
				01052	LEAD	MG/KG		456	
				01098	ANTIMONY	MG/KG		27	
				01148	SELENIUM	MG/KG		5.7 J	QR
				34480	THALLIUM	MG/KG		0.64 U	
				01088	VANADIUM	MG/KG		47	
				01093	ZINC	MG/KG		933	
NONE	91/07/10	1105							
DEPTH: 0000 SUBSTRATE: OIL									
DESCRIPTION: DRUM									
			097121	34421	METHYL CHLORIDE	UG/KG		4000 U	QQ
				34416	METHYL BROMIDE	UG/KG		4000 U	QQ
				34495	VINYL CHLORIDE	UG/KG		4000 U	QQ
				34314	CHLOROETHANE	UG/KG		4000 U	QQ
				34426	METHYLENE CHLORIDE	UG/KG		4000 U	QQ
				99930	ACETONE	UG/KG		4000 U	QQ
				99999	CARBON DISULFIDE	UG/KG		4000 U	QQ
				34491	TRICHLOROFLUOROMETHANE	UG/KG		4000 U	QQ
				34504	1,1-DICHLOROETHYLENE	UG/KG		4000 U	QQ
				34499	1,1-DICHLOROETHANE	UG/KG		4000 U	QQ
				34549	TRANS 1,2 DICHLOROETHYLENE	UG/KG		4000 U	QQ
				34318	CHLOROFORM	UG/KG		4000 U	QQ
				34534	1,2-DICHLOROETHANE	UG/KG		4000 U	QQ

COMPLETED ANALYSIS REPORT

REPORT DATE: 91/09/16

PROJECT NO: 107

PROJECT NAME: VIDAN AUTO SALVAGE

STATION NO	DATE FROM TO	TIME OF DAY	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK	QA/QC REMARK
			097121	99999	2-BUTANONE	UG/KG		4000 U	QQ
				34509	1,1,1-TRICHLOROETHANE	UG/KG		4000 U	QQ
				34299	CARBON TETRACHLORIDE	UG/KG		4000 U	QQ
				34330	DICHLOROBROMOMETHANE	UG/KG		4000 U	QQ
				99999	VINYL ACETATE	UG/KG		4000 U	QQ
				34544	1,2-DICHLOROPROPANE	UG/KG		4000 U	QQ
				34564	1,3-DICHLOROPROPYLENE	UG/KG		4000 U	QQ
				34487	TRICHLOROETHYLENE	UG/KG		4000 U	QQ
				34309	CHLORODIBROMOMETHANE	UG/KG		4000 U	QQ
				34514	1,1,2-TRICHLOROETHANE	UG/KG		4000 U	QQ
				34237	BENZENE	UG/KG		4000 U	QQ
				99999	CIS-1,3-DICHLOROPROPENE	UG/KG		4000 U	QQ
				34290	BROMOFORM	UG/KG		4000 U	QQ
				99999	4-METHYL-2-PENTANONE	UG/KG		4000 U	QQ
				99999	2-HEXANONE	UG/KG		4000 U	QQ
				34478	TETRACHLOROETHYLENE	UG/KG		4000 U	QQ
				34519	1,1,2,2-TETRACHLOROETHANE	UG/KG		4000 U	QQ
				34483	TOLUENE	UG/KG		4000 U	QQ
				34304	CHLOROBENZENE	UG/KG		4000 U	QQ
				34374	ETHYLBENZENE	UG/KG		4000 U	QQ
				99904	STYRENE	UG/KG		4000 U	QQ
				99999	XYLENES (TOTAL)	UG/KG		4000 U	QQ

***** END OF PROJECT *****

REFERENCE 18

WESTON MANAGERS DESIGNERS CONSULTANTS Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA PM C. Moyik	Site Vidan Auto Salvage
IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM S. DaCosta	4- Mile Vicinity Wetlands Map

REFERENCE 19

TDD No. 02-98-08-0025
CONTRACT No. 68-S5-3002

Site Location

15 Mile Target Distance Limit

Figure 4
Fifteen Mile Surface Water Pathway
Vidan Auto Salvage Site
Brooklyn, Kings County, NY

LEGEND

- Site Location
  -Longitude: -73 59 20 West
  -Latitude: 40 40 47 North
- Surface Water Pathway Mile Marker
- Fifteen Mile Surface Water Pathway

N

0.6 0 0.6 Miles

MAP SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangles: Brooklyn, NY, 1967, photorevised 1979; Jersey City, NJ-NY, 1967, photorevised 1981; Coney Island, NY-NJ, 1965, photorevised 1979; The Narrows, NY-NJ, 1966, photorevised, 1981; Sandy Hook West, NJ-NY, 1954, photorevised 1981.

Date: 12/10/98

WESTON MANAGERS DESIGNERS/CONSULTANTS
FEDERAL PROGRAMS DIVISION

REFERENCE 20

TDD No. 02-98-08
CONTRACT No. 68

Figure 3
Four Mile Radius Map
Vidan Auto Salvage Site
Brooklyn, Kings County, NY

LEGEND

● Site Location
-Longitude: -73 59 20 West
-Latitude: 40 40 47 North

4 Miles
3 Miles
2 Miles
1 Mile
1/2 Mile
1/4 Mile
Site Location

N

0.5 0 0.5 Miles

MAP SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangles: Brooklyn, NY, 1967, photorevised 1979; Jersey City, N.J-N.Y., 1967, photorevised 1981; Coney Island, NY, 1967, photorevised 1979; The Narrows, NY, 1967, photorevised 1979

REFERENCE 21

City of New York
Department of
Environmental Protection

2358 Municipal Building, New York 10007 (212) 669-8200

ALBERT F. APPLETON
Commissioner

CV-91-0183

May 2, 1991

Mr. Richard Veits
Supervisory Deputy Marshall
United States Marshall Service
225 Cadman Plaza East
Brooklyn, New York 11201

Dear Mr. Veits:

On April 2, 1991, the New York City Department of Environmental Protection (DEP), Division of Hazardous Materials Programs (DHMP), conducted soil sampling at the above location at the request of the United States Marshall's Office. The soil samples were taken to determine the extent of oil contamination on the above mentioned property. The soil samples were analyzed for identification, percentage of oil, lead content, polychlorinated biphenyls (PCB), and ignitability.

The soil was identified as containing high levels of hydrocarbon oil, possibly fuel oil and lubricating oil. The flash point of the soil was found to be greater than 140 degrees Fahrenheit, and therefore not ignitable.

If you need any more assistance please let me know.

Sincerely yours,

Cyprian Cox, Director

pc: S. Matos
I. Catanzaro

IC/ic

Save Water

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This is 100% recycled paper.

REFERENCE 22

Division of Water
Bureau of Monitoring and Assessment

New York State Water Quality 1990

Submitted Pursuant to Section 305(b) of the Federal Clean Water Act Amendments of 1977 (PL 95-217)

April 1991

less than 2400 per 100 ml of sample and the monthly logarithmic average fecal coliform concentration to be less than 200 per 100 ml of sample to be suitable for bathing. The median coliform value in waters suitable for shellfish harvesting may not exceed 70 per 100 ml of sample.

Combined Sewer Overflows (CSO) - Most of the larger cities in New York and some of the smaller cities have combined sewer systems that collect sanitary sewage and stormwater in the same system of pipes. The treatment facilities and pumping stations that are part of these systems are usually designed to accommodate a certain maximum flow, which is normally two to three times the average dry weather flow. Therefore, during rainstorms and snow melts when that flow is exceeded in the system, there will be untreated discharges (overflows) of a mixture of sanitary sewage and stormwater. This combined sewage which is not treated, contains bacteria, suspended solids, etc., and may also contain some untreated or pretreated industrial wastes. These discharges can and do have a severe impact on water quality, particularly near large urbanized areas such as New York City.

Conductivity - A method of measuring the dissolved salts in a water sample by passing an electrical current through it and measuring the strength of the current.

Dissolved Oxygen (DO) - A measure of the amount of oxygen gas dissolved in water. Fish and other desirable aquatic organisms need dissolved oxygen to survive and propagate. A minimum concentration of 4 mg/l is generally necessary for survival of warmwater fish species, and cold water species require a minimum of 5 mg/l. High surface concentrations are necessary though to insure successful propagation.

EPA - The United States Environmental Protection Agency

Effluent Limiting Segments - A designated portion of a water body that will meet applicable water quality standards with the application of technology-based treatment requirements by industries and secondary treatment by municipalities.

Eutrophication - The enrichment of water by natural or anthropogenic causes.

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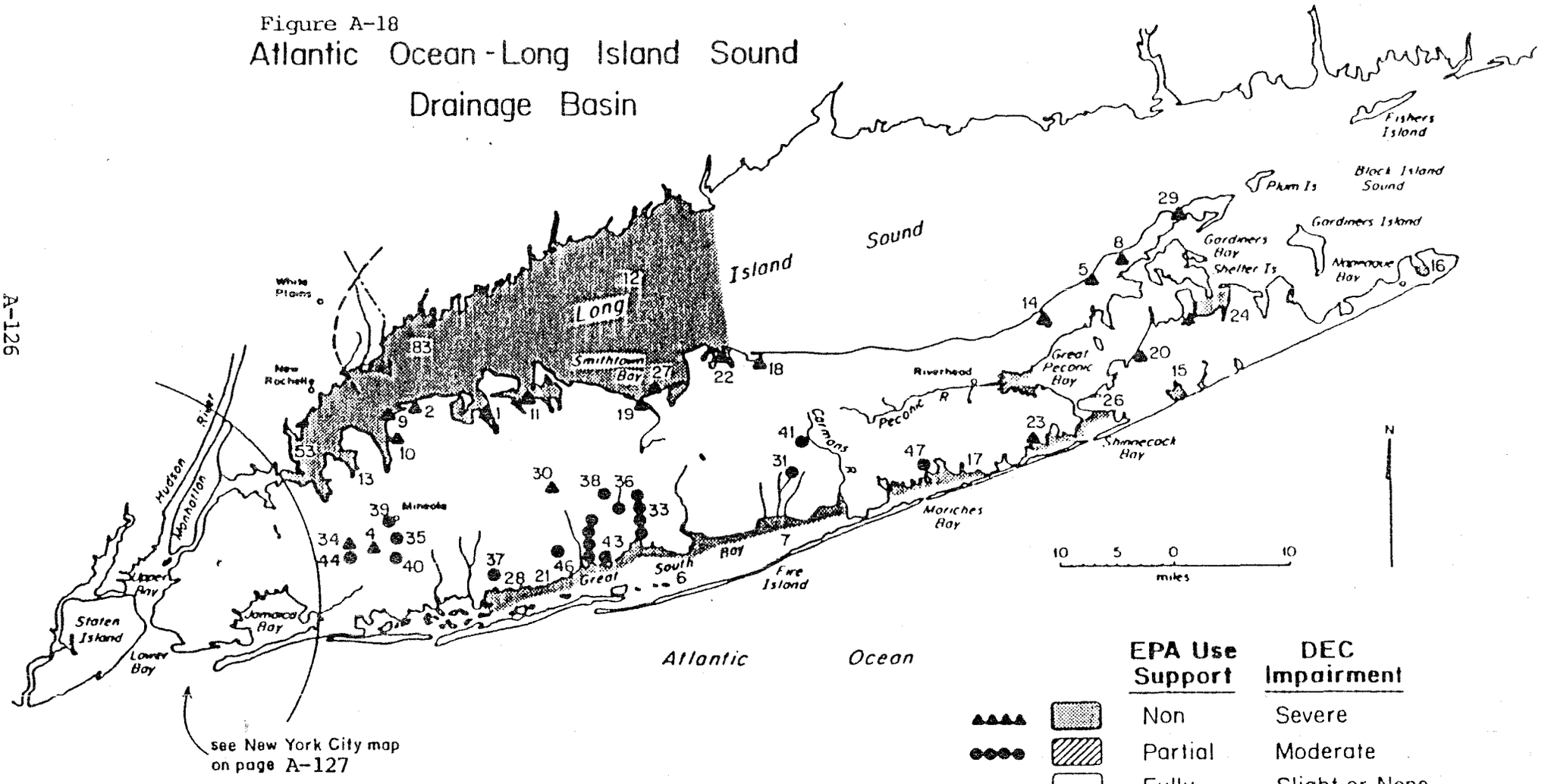
1988 Priority Water Problem List

SEGMENT	ID#	COUNTY	SEGMENT TYPE	SEGMENT SIZE	CLASS	USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY PROBLEM SOURCE
BASIN : Atlantic-Long Island Sound									
SUB-BASIN : Atlantic Ocean									
BASIN CODE : 17-01									
Arthur Kill	72	Richmond	Estuary	15.0 mi	SD	Fish Passage	Moderate	Organic enrichment/DO	Municipal Point Source
Atlantic Ocean	48	Kings	Ocean	26623 A	SA	Shellfishing	Moderate	Pathogens	CSOs
Belmont Lake	30	Suffolk	Lake	26 A	C	Fishing	Severe	Nutrients	Urban Runoff
Bergen Basin	73	Kings	Estuary	1.5 mi	I	Aesthetic	Moderate	Aesthetics	CSOs
Brightwaters Pond	43	Suffolk	Lake	5 A	C	Fishing	Moderate	Nutrients	Urban Runoff
Canaan Lake	31	Suffolk	Lake	26 A	B(T)	Fish Propagation	Moderate	Nutrients	Landfills
Champlins Creek	33	Suffolk	River	2.5 mi	C(T)	Fish Propagation	Moderate	Unknown toxicity	Source Unknown
Coney Island Cr.	59	Kings	Estuary	1.5 mi	I	Fishing	Severe	Organic enrichment/DO	CSOs
Flanders Bay	3	Suffolk	Bay	1444 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Freeport Reserv.	4	Nassau	Lake(R)	17 A	A	Fishing	Severe	Priority organics	Urban Runoff
Fresh Creek	63	Kings	Estuary	1.5 mi	I	Fishing	Moderate	Aesthetics	CSOs
Fresh Kills	64	Richmond	Estuary	3.0 mi	SC	Fishing	Severe	Aesthetics	Landfills
Gowanus Canal	65	Kings	Estuary	1.5 mi	SD	Fish Passage	Severe	Organic enrichment/DO	CSOs
Gr. South Bay (C)	6	Suffolk	Bay	1793 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Gr. South Bay (E)	7	Suffolk	Bay	3445 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Halls Pond	34	Nassau	Lake	2 A	C	Fishing	Severe	Priority organics	Urban Runoff
Hawtree Basin	74	Queens	Estuary	1.0 mi	I	Fishing	Moderate	Aesthetics	On-site systems
Hempstead Bay	9	Nassau	Bay	10770 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Hempstead Lake	35	Nassau	Lake	237 A	D	Fishing	Moderate	Nutrients	Urban Runoff
Hendrix Creek	75	Kings	Estuary	1.5 mi	I	Aesthetic	Moderate	Aesthetics	CSOs
Jamaica Bay	52	Kings	Bay	12235 A	SB	Bathing	Severe	Pathogens	CSOs
Lake Ronkonkoma	36	Suffolk	Lake	243 A	B	Bathing	Moderate	Pathogens	Urban Runoff
Lofts Pond	44	Nassau	Lake	4 A	D	Fishing	Moderate	Priority organics	Urban Runoff
Lower NY Bay (N)	54	New York	Bay	31400 A	SB	Bathing	Severe	Pathogens	CSOs
Massapequa Reserv	37	Nassau	Lake(R)	20 A	A	Fishing	Moderate	Priority organics	Urban Runoff
Mattituck Inlet	14	Suffolk	Bay	125 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Mecox Bay	15	Suffolk	Bay	1045 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Montauk Harbor	16	Suffolk	Bay	205 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
North Sea Harbor	20	Suffolk	Bay	18 A	SA	Shellfishing	Severe	Pathogens	Boat pollution
Paerdegat Basin	69	Queens	Bay	68 A	I	Fishing	Severe	Aesthetics	CSOs
Quantuck Bay	23	Suffolk	Bay	730 A	SA	Shellfishing	Severe	Pathogens	On-site systems
Raritan Bay	55	Richmond	Bay	12410 A	SA	Shellfishing	Severe	Pathogens	Municipal Point Source
Roosevelt Pond	39	Nassau	Lake	15 A	C	Fishing	Moderate	Priority organics	Urban Runoff

SEGMENT	ID#	COUNTY	SEGMENT TYPE	SEGMENT SIZE	CLASS	USE IMPAIRED	SEVERITY	PRIMARY POLLUTANT	PRIMARY PROBLEM SOURCE
BASIN : Atlantic-Long Island Sound									
SUB-BASIN : Atlantic Ocean									
BASIN CODE : 17-01									
Sag Harbor &Coves	24	Suffolk	Bay	208 A	SA	Shellfishing	Severe	Pathogens	Storm Sewers
Santapogue Creek	46	Suffolk	River	2.0 mi	C	Fishing	Moderate	Unknown toxicity	Source Unknown
Shellbank Basin	70	Kings	Bay	24 A	I	Fish Propagation	Severe	Organic enrichment/DO	CSOs
Shinnecock Bay	26	Suffolk	Bay	165 A	SA	Shellfishing	Severe	Pathogens	Storm Sewers
Smith Pond	40	Nassau	Lake	20 A	C	Fishing	Moderate	Priority organics	Urban Runoff
South Oyster Bay	28	Nassau	Bay	6215 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Spring Lake	41	Suffolk	Lake	2 A	B	Fishing	Moderate	Priority organics	Urban Runoff
Three Mile Harbor	29	Suffolk	Bay	355 A	SA	Shellfishing	Severe	Pathogens	Storm Sewers
West Hill Pond	47	Suffolk	Lake	20 A	D	Fishing	Moderate	Organic enrichment/DO	Duck farm runoff
SUB-BASIN : Long Island Sound									
BASIN CODE : 17-02									
Alley Creek	57	Queens	Estuary	3.0 mi	SB	Fishing	Moderate	Aesthetics	CSOs
Bronx River	58	The Bronx	River	8.0 mi	I	Aesthetic	Moderate	Aesthetics	CSOs
Cold Spring Har.	1	Suffolk	Bay	310 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Dosoris Pond	2	Nassau	Bay	105 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
East River -Lower	60	Kings	Estuary	8.0 mi	I	Fish Propagation	Moderate	Organic enrichment/DO	CSOs
East River-Upper1	49	Queens	Estuary	5.0 mi	I	Fish Propagation	Moderate	Pathogens	CSOs
East River-Upper2	780	Queens	Estuary	2.0 mi	SB	Bathing	Moderate	Pathogens	CSOs
Eastchester Bay	61	The Bronx	Bay	3 A	SB	Bathing	Moderate	Pathogens	CSOs
Flushing Cr./Bay	62	Queens	Estuary	2.5 mi	I	Fishing	Severe	Aesthetics	CSOs
Goldsmiths Inlet	5	Suffolk	Bay	20 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Harlem River	66	New York	Estuary	5.0 mi	I	Fishing	Moderate	Aesthetics	CSOs
Hashamomuck Pond	8	Suffolk	Bay	170 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Hempstead Harbor	10	Nassau	Bay	3465 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Huntington Bay	11	Suffolk	Bay	881 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Hutchinson River	67	The Bronx	Estuary	2.5 mi	SB	Bathing	Severe	Pathogens	CSOs
Little Neck Bay	646	Queens	Bay	1600 A	SB	Bathing	Severe	Pathogens	On-site systems
Long Is.Sound (W)	12	Nassau	Bay	26650 A	SA	Shellfishing	Severe	Pathogens	Urban Runoff
Long Is.Sound NYC	53	The Bronx	Bay	11960 A	SB	Shellfishing	Severe	Pathogens	CSOs
Long Island Sound	83	Westchester	Bay	15520 A	SB	Shellfishing	Severe	Pathogens	Municipal Point Source
Manhasset Bay	13	Nassau	Bay	2275 A	SA	Shellfishing	Severe	Pathogens	CSOs
Meadow Lake	699	Queens	Lake	84 A	B	Aesthetics	Severe	Nutrients	Sediment nutrients
Millers Pond	38	Suffolk	Lake	35 A.	C	Fishing	Moderate	Organic enrichment/DO	Urban Runoff

Figure A-18

Atlantic Ocean - Long Island Sound Drainage Basin



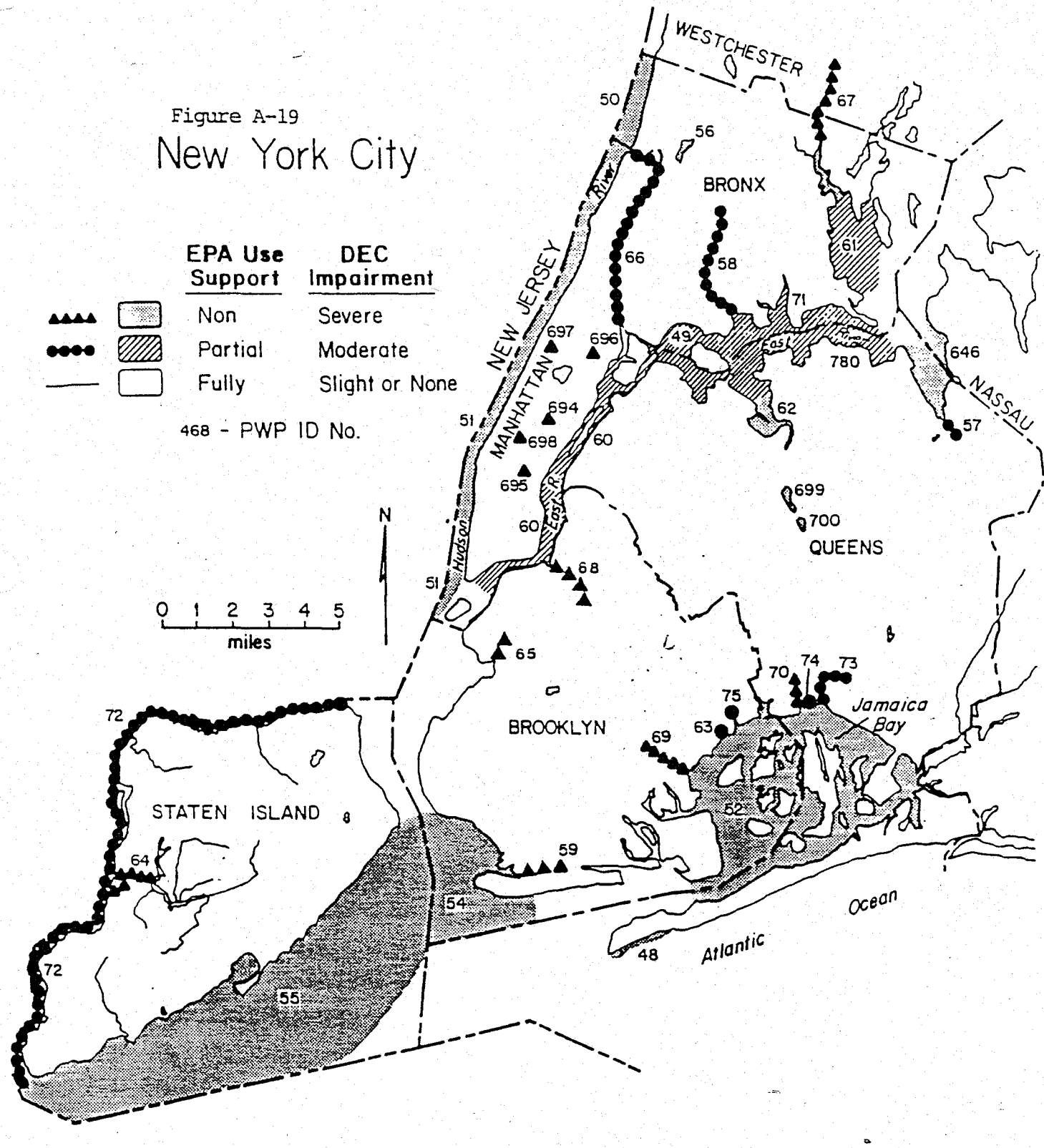
see New York City map on page A-127

	EPA Use Support	DEC Impairment
▲▲▲▲	Non	Severe
●●●●	Partial	Moderate
——	Fully	Slight or None

468 - PWP ID No.

Figure A-19

New York City



REFERENCE 23

New Jersey Department of Environmental Protection
Division of Fish, Game and Wildlife
Marine Fisheries Administration
Bureau of Marine Fisheries
Bureau of Shellfisheries

October, 1988

New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay

by William Figley

and

The Shellfish Resources of Raritan Bay and Sandy Hook Bay

by Thomas McCloy

Charts by Barry Preim

New Jersey Department of Environmental Protection
Division of Fish, Game and Wildlife
Marine Fisheries Administration

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George P. Howard, Director, Fish, Game and Wildlife
Bruce L. Freeman, Administrator, Marine Fisheries

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Technical Series 88-1

Marine Fisheries Administration, CN 400
Trenton, NJ 08625

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New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay

INTRODUCTION

New Jersey's two largest embayments, Raritan Bay and Sandy Hook Bay in the north and Delaware Bay at the southern end of the state, contain important fishing grounds for a large number of recreational and commercial fishermen. In addition to providing important fisheries, there are other uses of the resources of these bays. Shipping requires the maintenance of deepwater channels and the disposal of massive quantities of dredge spoil. The mining industry has an interest in sand deposits for fill material and building aggregates. Various industries and municipalities use the bay water for treatment and dilution of wastes and for cooling water. Unfortunately, many of these uses often adversely affect the fish and shellfish resources, commonly referred to as the living marine resources, by degrading their living space and thereby reducing their populations. Also, because of our carelessness in disposing of toxic chemicals, we contaminate many seafood species. These and other uses of our coastal waters can directly affect fishermen by disrupting or preventing fishing operations.

Unfortunately, during the past, exploitation of the physical resources of these large embayments has been done with little thought given to the fishery resources or the fishermen who depend upon them. Now, however, all proposed resource development activities are subject to the process of environmental review. This process has greatly reduced many of the negative effects.

Information regarding the location of fishing grounds is needed to protect both fish and shellfish resources and the fishermen that derive their recreation or livelihood from them. The recreational and commercial fishing grounds of New Jersey's ocean waters were described in "New Jersey's Recreational and Commercial Ocean Fishing Grounds" (Technical Series 81-1). This report is a continuation of our mapping efforts and presents the fishing grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay.

METHODS

The fishing grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay were determined through a survey of commercial and recreational fishermen from New Jersey and Delaware. Although some fishermen were contacted in person, most were mailed survey forms and charts. Our list of commercial fishermen was derived from commercial fishing licenses. Party and charter boat captains were selected from our statewide list. Names of other recreational fishermen were obtained from fishing clubs, bait shops and the suggestions of other anglers.

Fishermen were requested to delineate specific areas they fished during the past five years by each type of fishing gear, in the case of commercial fishermen, and by species, in the case of recreational fishermen. The completed charts were then analyzed in two ways. First, the irregular outlines of delineated fishing grounds were transferred to master charts, one for each species or gear type. When completed, these charts depicted the entire area fished by species or gear type for all the fishermen surveyed. Survey charts were then analyzed quantitatively by overlaying each chart with a grid and tallying each grid block that was covered by any portion of a delineated fishing ground. The grid size was 1.25 minutes square (latitude) for Raritan Bay and Sandy Hook Bay and 2.5 minutes square (latitude) for Delaware Bay. Separate tallies were kept for each type of gear and species. The highest scoring grid blocks were designated as primary fishing grounds for each particular gear or species, and the lower scoring blocks were designated secondary fishing grounds. However, in preparing the final composite charts, only the irregularly-shaped outlines obtained from the first transfer were plotted. This was to insure that only that portion of a grid block that was actually fished was plotted.

It should be noted that these charts show the fishing grounds and not the distribution of each species. Fishing grounds represent only a portion of the geographic range of a species. Their extent is often limited by factors such as the density of fish, the suitability of an area for fishing, depth, regulations, pollution and distance from port. Furthermore, the charts depict only primary and secondary fishing grounds, areas where the majority of recreational and commercial fishing occurs; they do not include areas where rare or infrequent catches are made or where a species is taken as a bycatch of another species. In addition, fishing ground

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boundaries are not permanent. Fishing effort adapts to changes in fish distribution and the location of grounds can vary from year to year. The information contained on these charts must therefore be considered in the context of time. Also, it must be recognized that although the survey included a large and diverse sample of New Jersey's recreational and commercial fishermen, not all fishermen were interviewed. Therefore, some actively fished areas may have been omitted.

The charts of Raritan Bay and Sandy Hook Bay indicate the fishing grounds of only New Jersey fishermen. The charts of Delaware Bay depict the fishing grounds of fishermen from both New Jersey and Delaware. Commercial fishing activities in Delaware Bay are greatly influenced by the state boundary line, which generally follows the shipping channel near the middle of the bay. Commercial fishermen are, for the most part, restricted by licenses and regulations to their respective sides of the bay. Thus, the commercial fishing grounds of New Jersey and Delaware fishermen depicted on the charts are exclusive. In the case of recreational fisheries, there are no area restrictions and anglers from both states mix over much of the fishing grounds. The areas on the charts labelled "Delaware Only" are fished only by Delaware anglers, because they lie too far across the bay for New Jersey anglers to reach.

PHYSICAL CHARACTERISTICS OF THE BAYS

Raritan Bay and Sandy Hook Bay

Raritan Bay and Sandy Hook Bay is a triangular-shaped embayment measuring nine by twelve miles and has a surface area of 109 square miles. It receives freshwater inflow from several drainage systems including the Hudson, Passaic and Hackensack Rivers to the north, the Raritan River to the west and the Navesink River to the south. The Bay system is divided between New York and New Jersey. Two shipping channels lead into the bays. Starting at the seaward edge, Ambrose Channel cuts northward under the Verazano Narrows Bridge to New York Harbor and the Hudson River. Sandy Hook Channel enters at the tip of Sandy Hook and proceeds westward to Perth Amboy, the Arthur Kill and Raritan River. Chapel Hill Channel joins these two main channels in a north-south direction. Except for the shipping channels, most of Raritan Bay and Sandy Hook Bay is relatively shallow, usually less than 20 feet in depth. Tides enter and leave the bay in a counter-clockwise gyre. Flood tides bring higher salinity ocean water in through Ambrose Channel that flows along the New York shores. Ebb tides drain less saline waters from the New Jersey shore out to the ocean through Sandy Hook channel. The volume of the tidal prism is 9.2 billion cubic feet and the mean tidal range is 5.5 feet.

The shores of Raritan Bay and Sandy Hook Bay and the numerous rivers, streams and tidal creeks that flow into them are the most highly industrialized and urbanized in New Jersey. Industrial and sewage effluents and storm-water run-off have resulted in severe water pollution and fish contamination, particularly in the northern drainage systems. Fortunately, public efforts and laws to reduce pollution are leading to improved water quality. As a result, blue crabs, striped bass, bluefish and other marine organisms are returning to many areas, such as Newark Bay and the Hackensack River, where they have been absent for decades.

Delaware Bay

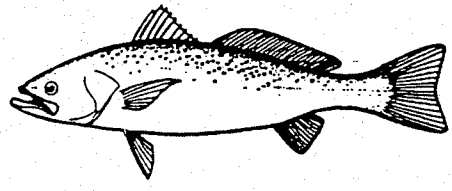
Delaware Bay is 46.7 miles long and has an average width of 15.3 miles. It has a surface area of 720 square miles and a volume of 4.7 trillion gallons. Although the major source of freshwater is the Delaware River, scores of tributaries, from narrow tidal creeks to small rivers, enter from both the Delaware and New Jersey shores. Each day, an average of 13 billion gallons of freshwater reach the bay from the Delaware River and the various tributaries. Tidal influence is much greater, however, with over a trillion gallons of seawater entering the bay daily. Tidal circulation follows a counter-clockwise pattern. Entering seawater tends to follow the New Jersey shore and tidal water mixed with freshwater tends to exit along the Delaware shore. For this reason, the Delaware side exhibits much greater variations in salinity. Tides extend from the mouth of the bay, where the mean range is 4.1 feet, to as far upstream as Trenton Falls, where the mean range is 6.8 feet.

About 80 percent of Delaware Bay is less than 30 feet deep. The shipping channel, with depths of 40 to 60 feet, runs close to the center of the bay and is bordered on each side by shoals only 6 to 20 feet deep. A deep-water area on the Delaware side of the channel near the mouth of the bay serves as a ship anchorage, with depths of 60 feet and more. Wide shoals less than 12 feet in depth border both the New Jersey and Delaware shores. One large shoal extends from Egg Island Point to Cape May Point. Another set of shoals, called The Rips, extends out from Cape May Point partially across the mouth of the Bay.

Vast stretches of tidal marsh border Delaware Bay in sharp contrast to the urbanized shores of Raritan and Sandy Hook Bay. Unlike the northern part of state, there has been much less industrial or residential development along Delaware Bay.

A 1960 study by the University of Delaware indicated that 138 species of fish can be found in the bay. Over 60 of these use the estuary as both a spawning and nursery ground. The Delaware River was once an important migratory pathway and sprawning ground for anadromous species, such as shad, herring and striped bass. Heavy municipal and industrial pollution from Philadelphia and Camden, however, has resulted in seriously low dissolved oxygen levels during the summer. This pollution block had prevented fish in upstream portions of the river from returning to the sea. However, in the last few years, the City of Philadelphia has completed its last sewerage treatment facility and the water quality as well as the dissolved oxygen levels have increased considerably. This has allowed the shad runs to increase after a half century of reduced population levels. Unfortunately, striped bass reproduction in the river continued to remain at a low level.

RECREATIONAL FISHERIES



Weakfish

Season

The weakfish, sometimes called gray sea trout, is the primary target of Delaware Bay anglers. Weakfish enter the Bay, usually in mid-April, to spawn. As they first enter, they do not actively feed. By early May, however, feeding increases as water temperatures rise. The first wave of fish to enter the bay are old, mature fish weighing 6-14 pounds. Many leave after spawning in mid-June and migrate northward along the coast. A second wave, also of mature, but smaller fish (3-6 pounds), arrives as the first wave exits. After spawning, the second wave also departs and is replaced by a third group of immature one-year-old fish that stay until October.

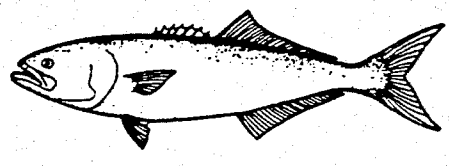
In recent years, the weakfish has increased tremendously in importance in Raritan Bay and Sandy Hook Bay, where it is believed to spawn. The first weakfish are taken by anglers during mid to late June. Large fish are caught in the bay and along the oceanfront by anglers throughout the summer.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds include the areas between Ambrose, Sandy Hook and Chapel Hill Channels, between Sandy Hook and Earle Pier and the oceanfront along Sandy Hook. Secondary grounds extend further into the bay and include a large area bordering Perth Amboy Channel and another area along the west side of Chapel Hill Channel and the Shoals surrounding West Bank Light. Another secondary ground occurs at the mouth of the bay, north and south of Ambrose and Sandy Hook Channels.

Delaware Bay

The primary sportfishing grounds extend from Brandywine Shoal up the bay to Cross Ledge and from Egg Island Point and Deadman Shoal to Blake and Lower Middle Channels. The secondary grounds cover most of the remainder of the bay from Arnold Point Shoal to the shoals at the mouth of the bay.



Bluefish

Season

Bluefish enter New Jersey's major bays in early May. Until their departure in late October, the bluefish population is represented by one or more year classes, from young-of-the-year fish, called snappers, to 15-pound jumbos. Bluefish less than three pounds dominate the population throughout the summer.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

Although bluefish are caught at one time or another throughout the entire bay, the primary fishing grounds extend from the Verrazano Narrows Bridge to Ambrose Channel, encompass the large area at the mouth of the

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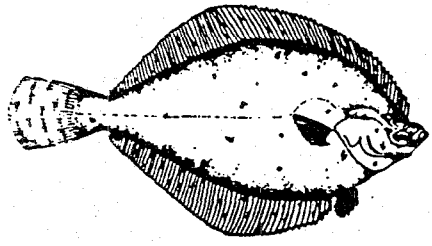
bay bordered by Chapel Hill, Sandy Hook and Ambrose Channels, and extend along the oceanfront off Sandy Hook.

Delaware Bay

While bluefish are taken throughout the offshore portion of the bay as far upbay as Ship John Shoal, the primary grounds extend from Brandywine and Deadman Shoal up the north side of the shipping channel to Ben Davis Point Shoal.



Winter Flounder

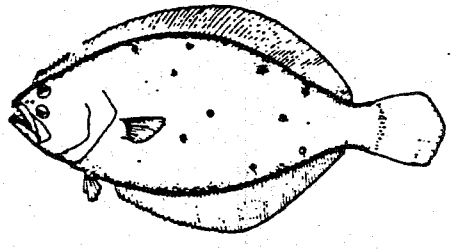
Season

Adult winter flounder enter New Jersey bays in November and remain until late April, when they return to the ocean to spend the summer. Juveniles and some adult fish remain in the bays throughout the year. Although winter flounder enter Delaware Bay, their numbers are relatively small, particularly in recent years, and presently do not support a sportfishery. It is, however, an important species in Raritan Bay and Sandy Hook Bay. Most fishing activity occurs during March and April. With cold water temperatures in January and February, winter flounder do little feeding and thus are rarely caught by anglers.

An angler unhooks a bluefish caught at the mouth of Delaware Bay.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds extend from the Highlands Bridge along Sandy Hook to the channel and around Earle Pier. Secondary grounds include the area from Sandy Hook along the shore to Matawan Creek, the mouth of the Arthur Kill and the area between Perth Amboy Channel and Great Kills Harbor.



Summer Flounder

Season

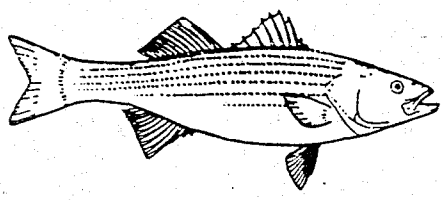
Summer flounder, called fluke in the northern part of the state and flounder in the south, enter New Jersey bays in late April or early May. They spend the summer feeding in the bays and then move into the ocean in early September prior to their offshore migration to wintering grounds offshore as far as the edge of the continental shelf.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds include the area at the mouth of the bay between the three channels and between Sandy Hook and Earle Pier. Secondary grounds include the large area spanning the length of Staten Island and the area to the west of Earle Pier on either side of Perth Amboy Channel.

Delaware Bay

The primary summer flounder fishing grounds extend from Brandywine and Deadman Shoals up both sides of the shipping channel to Cross Ledge. The secondary grounds surround the primary grounds and include the shoals at the mouth of the bay.



Striped Bass

Season

Striped bass, called rock on Delaware Bay, are caught by anglers in Delaware Bay and Raritan Bay and Sandy Hook Bay between mid-April and mid-November. During the early season, stripers are found in the interior parts of the bay. As the season progresses, they seem to move towards the mouth of the bay.

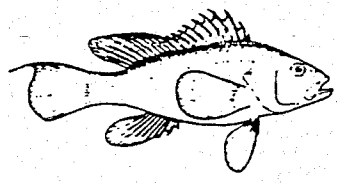
Fishing Grounds

Raritan Bay and Sandy Hook Bay

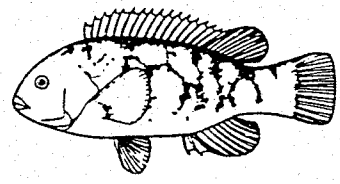
The primary fishing grounds for striped bass include the area bounded by Sandy Hook and Chapel Hill Channels, Rockaway Point, West Bank, the Verazano Narrows Bridge and the beachfront along Sandy Hook. Secondary grounds include the bayfront along Staten Island and the New Jersey shore between Union Beach and Highlands, Earle Pier and the west side of Chapel Hill Channel.

laware Bay

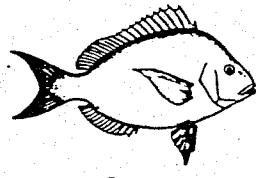
A minimal amount of fishing is directed at striped bass in Delaware Bay. Striped bass are caught at the mouth of the bay on the various shoals, collectively known as The Rips, and up the bay on shoals that border the shipping channel such as Cross Ledge, Ben Davis Point Shoal and Ship John Shoal.



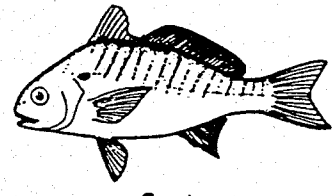
Sea Bass



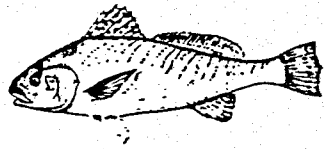
Tautog



Scup



Spot



Croaker

Sea Bass, Tautog, Scup, Spot and Croaker

Season

A variety of bottom fish, including sea bass, scup, spot, croaker and tautog, are caught by anglers between April and October. Spot and croaker inhabit sand, mud and shell bottoms. Sea bass, progy and tautog prefer shell and rock.

Gaffing a Sandy Hook Bay striper.

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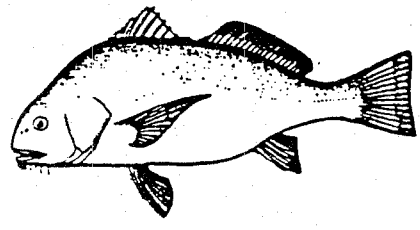
Fishing Grounds
Raritan Bay and Sandy Hook Bay

Bottom fish are found throughout the bay around tural and artificial structures such as piers, jetties, ixed channel markers, gravel bars, shellfish beds and debris. The largest areas are the Tin Can Grounds and Romer Shoal at the mouth of the bay and the shellfish beds off Union Beach. Other smaller areas include the Highlands Bridge, Earle Pier, Atlantic Highlands breakwater, the islands around West Bank, the tip of Sandy Hook, Old Orchard Shoal, the deep holes off Perth Amboy and to the west of Chapel Hill Channel.

Delaware Bay

In Delaware Bay, most of the bottom fishing grounds are on sand, mud or oyster shell bottom. The area surrounding Deadman Shoal has been productive for croakers. Spot are caught along the bayshore at Bidwell Creek, Egg Island Point and Fortescue. Sea bass are caught, usually incidentally to the taking of summer flounder, over a wide area, including Egg Island flats and the Punk Grounds on the New Jersey side, and from Fourteen Foot Light to the Shears on the Delaware side. Tautog are caught around artificial rock structures such as Brandywine Light and the Lewes Ferry breakwater.



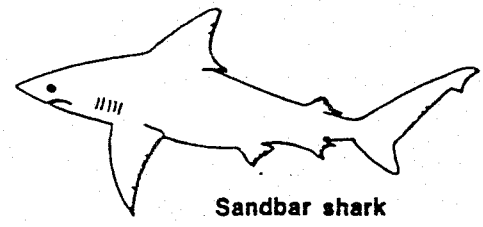
Black Drum

Season

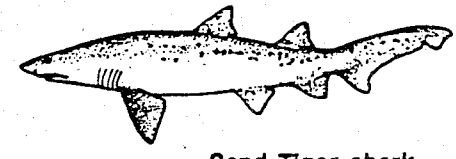
Although black drum historically were caught in the bays throughout New Jersey, they are now almost entirely restricted to Delaware Bay. Drum enter the bay in May to spawn. After spawning, they remain in the bay throughout the summer, but are most actively fished during May and early June.

Fishing Grounds
Delaware Bay

The primary sportfishing ground for black drum is bounded by Bay Shore Channel and Deadman Shoal on the east and Brandywine Shoal and Fourteen Foot Bank on the west. Secondary grounds surround the periphery of the primary grounds and include several areas on the Delaware side near Old Bank Shoal and the Hawknest.



Sandbar shark



Sand Tiger shark

Sharks

Season

The two most common species of toothed sharks caught in New Jersey bays are the sandbar or brown shark and the sand tiger. In addition, bull sharks have occasionally been taken by sportfishermen in Delaware Bay. Sharks enter the bays in June and stay until water temperatures begin to decline in September or October. Adult female sandbar sharks use Delaware Bay as an important pupping area. They usually do not feed during the time subsequent to giving birth to live young. The adult males remain offshore and thus are not found in the bay.

Sharks have provided a popular sportfishery in Delaware Bay for over 50 years, but little fishing activity has been exerted for them in Raritan Bay and Sandy Hook Bay.

Fishing Grounds
Delaware Bay

The most productive shark fishing areas have been the ends or edges of deep sloughs and channels near the mouth of Delaware Bay. There are two primary shark fishing grounds, one on the New Jersey side of the Shipping Channel to the east of Brandywine Shoal and another on the Delaware side of the channel in the anchorage. Secondary fishing grounds occur along the Shipping Channel as far up the bay as Ben Davis Point Shoal.

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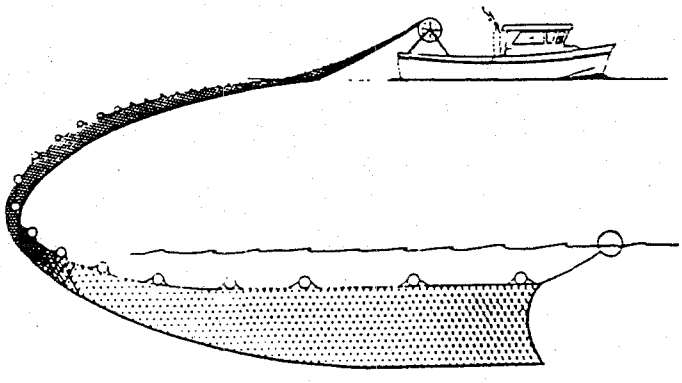
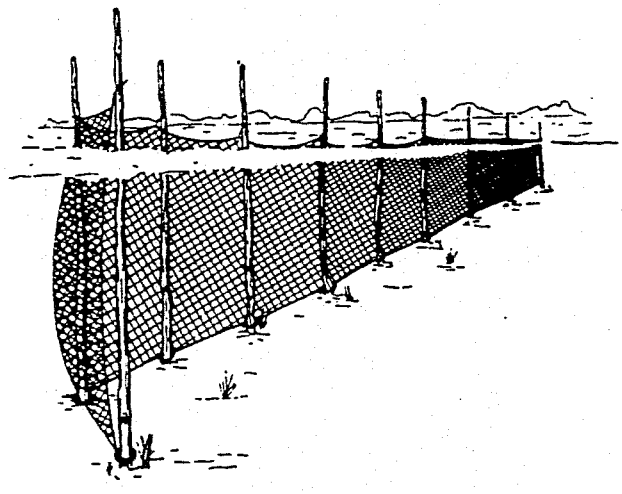
COMMERCIAL FISHERIES



Drift gill net



Staked gill net

Gill Net

Description of Gear

Two basic types of gill nets are used in Delaware Bay, the staked or anchored net and the drift net. Staked nets are set between wooden stakes or poles that are either driven or jetted into the bottom. Anchored nets are held in position by a series of anchors. Due to strong tidal currents, staked nets are usually set in coves and shoal areas less than 15 feet deep. To further reduce drag, they are also relatively short, usually less than 180 feet in length. A lead line at the base keeps the net on or near the bottom. A float line along the top rises and falls with the tide and keeps the upper edge of the net at the surface of the water.

Drift nets are allowed to drift with the current and are usually used in water deep enough so that the lead line does not touch bottom. They are much longer than staked nets, ranging from 300 to 1,200 feet in length.

Gill nets are made of monofilament or fine nylon that is relatively invisible in the turbid bay waters. The mesh size used is dependent upon the target species. Stretched mesh of 5" or larger is used for shad, large weakfish and bluefish. Mesh of 2 3/4" or larger is used for river herring, menhaden, white perch, and small weakfish.

Only staked gill nets for shad are allowed in Raritan Bay and Sandy Hook Bay and only in a limited area. On the New Jersey side of Delaware Bay both staked and drift nets are permitted. On the Delaware side, staked nets are only permitted on the oyster grounds. Elsewhere, only drift gill nets are permitted.

Season

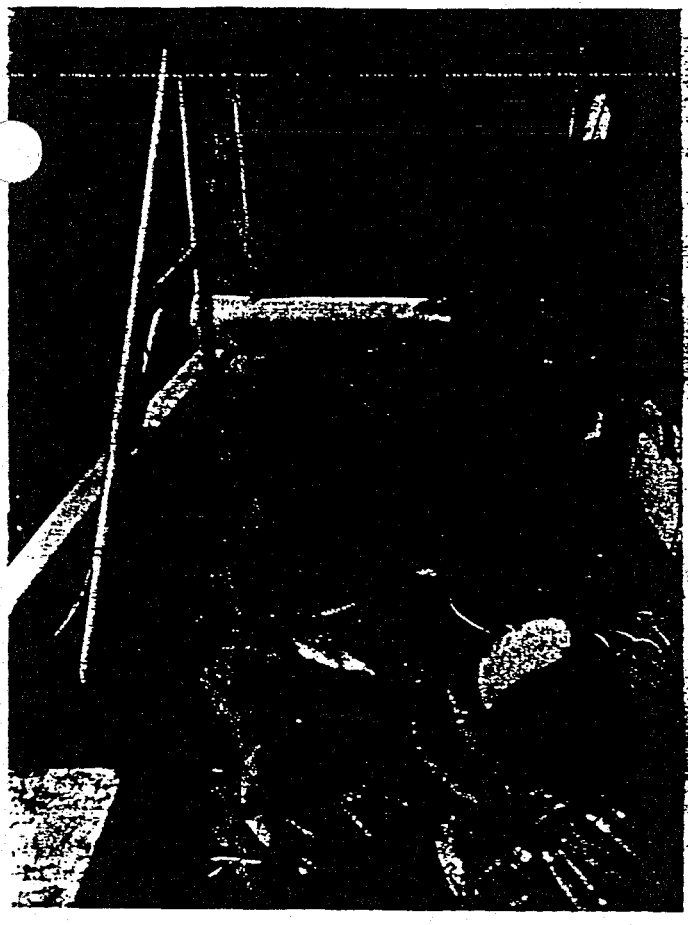
The use of staked or anchored and drift gill nets is confined to particular seasons by law. The prescribed seasons, however, are liberal and the netting period is limited more by the availability of fish than regulation.

Staked gill nets are usually first set in late February or March, to catch shad migrating up the Delaware or Hudson Rivers to spawn. Other early species include river herring, menhaden and white perch. The herring and menhaden are sold for crab bait.

Drift netting begins with the arrival of weakfish and bluefish in mid-April. The weakfish is the moneymaker, having the highest market value of the fish caught in volume in the two bays.

Most staked nets are pulled our during mid-May due to a number of problems, including the invasion of horseshoe crabs, which create extensive net tangles and damage; warm water temperatures, which lead to spoilage of fish; and the fouling of nets with slimy algae and stinging sea nettles. The few staked nets that are fished throughout the summer are primarily intended for menhaden.

8/25



Gillnetting shad and weakfish on Delaware Bay.

Drift nets are used throughout the summer and early fall, although the greatest effort is expended during spring and early summer.

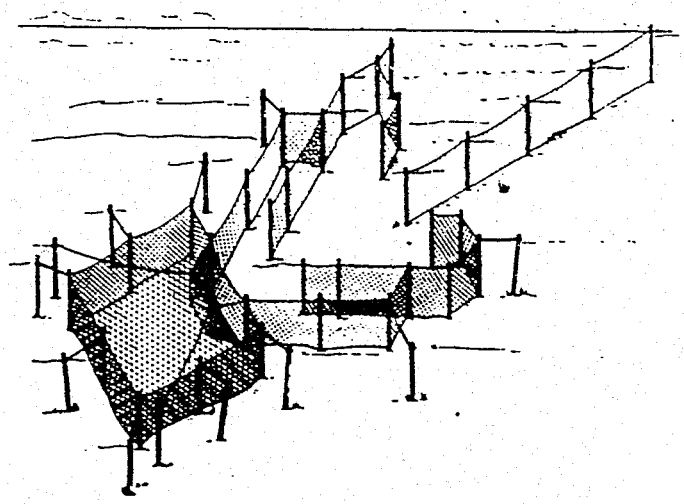
Methods

Staked gill netters operate anywhere from a couple of nets to 40 or more. A small number of nets can be checked by one man, but a large number requires a two-man crew. Weather permitting, nets are checked every day. To check the nets, a boat starts at one end of a row, and is hauled along from pole to pole, via the net lines. As the nets are lifted and pulled across the boat the fish are removed.

A drift net is followed and tended continuously by the fisherman. It is set in a line perpendicular to the flow of the current and may be set many times during the day.

Fishing Grounds

On Delaware Bay, staked gill nets are set in the shallow cove areas on the New Jersey side. The primary drifting gill net grounds here extend from the channel to the bayshore from the Cape May Canal to Egg Island Point. In Raritan Bay and Sandy Hook Bay, staked nets are confined to the nearshore area between Keyport and Port Monmouth and along Sandy Hook.



Pound Net

Description of Gear

Pound nets are stationary fish traps. In Raritan Bay, they have been in use for over a century. Pound nets are strung on long hardwood poles that are driven or jetted into the bay bottom. They are set perpendicular to the prevailing shore and tidal currents to intercept fish as they travel up and down the bay. When several pounds are set in the same area they are aligned end to end to form a long continuous barrier to fish movements.

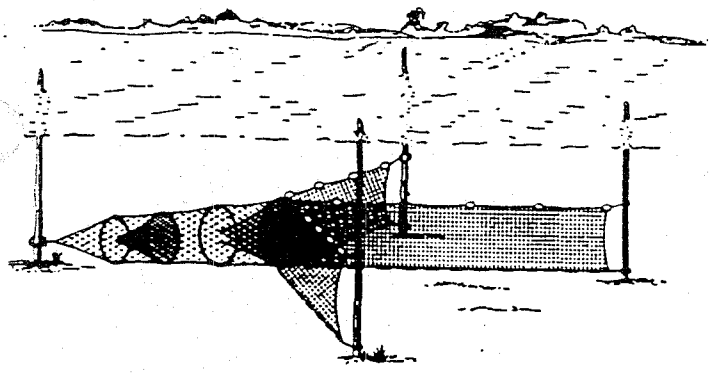
The overall length of pound nets is 500 to 750 feet. A long leader (400 to 600 feet in length) consisting of 9 inch stretched mesh netting acts as a barrier to moving fish. The natural tendency of fish encountering the leader is to go around the net by heading offshore to deeper water. As fish move down the net, they enter the first of two heart-shaped funnels. The heart shape tends to always direct the fish further into the interior of the net. Eventually, they pass through the final funnel into the square-shaped pound or holding pocket. The pocket is about 50 feet long on a side and has a net floor.

Season

Although in some years pound nets may be erected as early as late February, the more typical start of operations is sometime during April. The season extends through the summer into October or November. After fishing operations end, the net and poles are removed to prevent their loss when ice locks the bay in winter.

In early spring, the catch consists of shad, herring and menhaden. Menhaden caught in pounds are sold as bait for other commercial and recreational fisheries. Summer catches are dominated by bluefish and weakfish. Other species taken include summer flounder, butterfish, northern puffer, sea bass, sturgeon and blue crab.

9/25



Methods

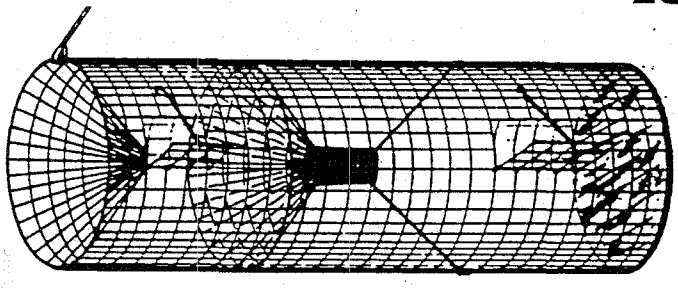
Each day, weather permitting, the nets are checked and emptied of their catch. A pound boat enters the pocket by lowering one edge of the net. The floor of the net is then raised very slowly until the fish inside are restricted to a small section of the pocket. The fishermen then ladle the catch into the boat using a long-handled dip net and a power winch.

Every two or three weeks, the nets must be taken to land for washing and drying. This process removes the algae which grows on and clogs the net. While one net is being cleaned, a fresh one is hung on the poles in its place.

Fishing Grounds

There are two primary pound net grounds in Raritan and Sandy Hook bays. The one in Sandy Hook Bay is located along Sandy Hook just north and west of Horseshoe Cove. The area in Raritan Bay is much larger, extending from Earle Pier to Keyport, although the majority of nets are located to the north of Earle Pier.

Eel Pot



Description of Gear

The typical eel pot is a 3-foot cylinder, 10-12 inches in diameter, made of plastic coated rectangular mesh wire with two net funnels. The funnels divide the pot into two compartments. The external one serves as a bait and entrance chamber, while the internal one is a holding chamber. Pots for catching large eels for sale as food are made with 1/2 inch by 1 inch mesh. Pots for small eels that are either salted for crab bait or held live for sportfish bait are made with 1/2 inch by 1/2 inch mesh.

Season

The eeling season begins in mid-April as eels emerge from their winter dormancy in the mud. Fishing continues until bay waters cool in late October. Eeling activity declines from late June to mid-August, when water tempertatures get very warm and eels become difficult to keep alive in the holding pens.

Methods

Eel pots are set in tidal creeks or along the bayshore either individually or in small strings. They are marked with floats or stakes. Individual eelers may set and tend 50 to 80 pots or more.

Eels are kept alive in large, floating boxes or pens. In the summer, when dissolved oxygen levels are low, aeration is often needed to keep the eels from suffocating. When a sufficient quantity has been caught, the eels are picked up by dealers who transport them live in tank trucks. The primary markets for eels are in Europe. They are packed on ice in crates and shipped overseas by airplanes.

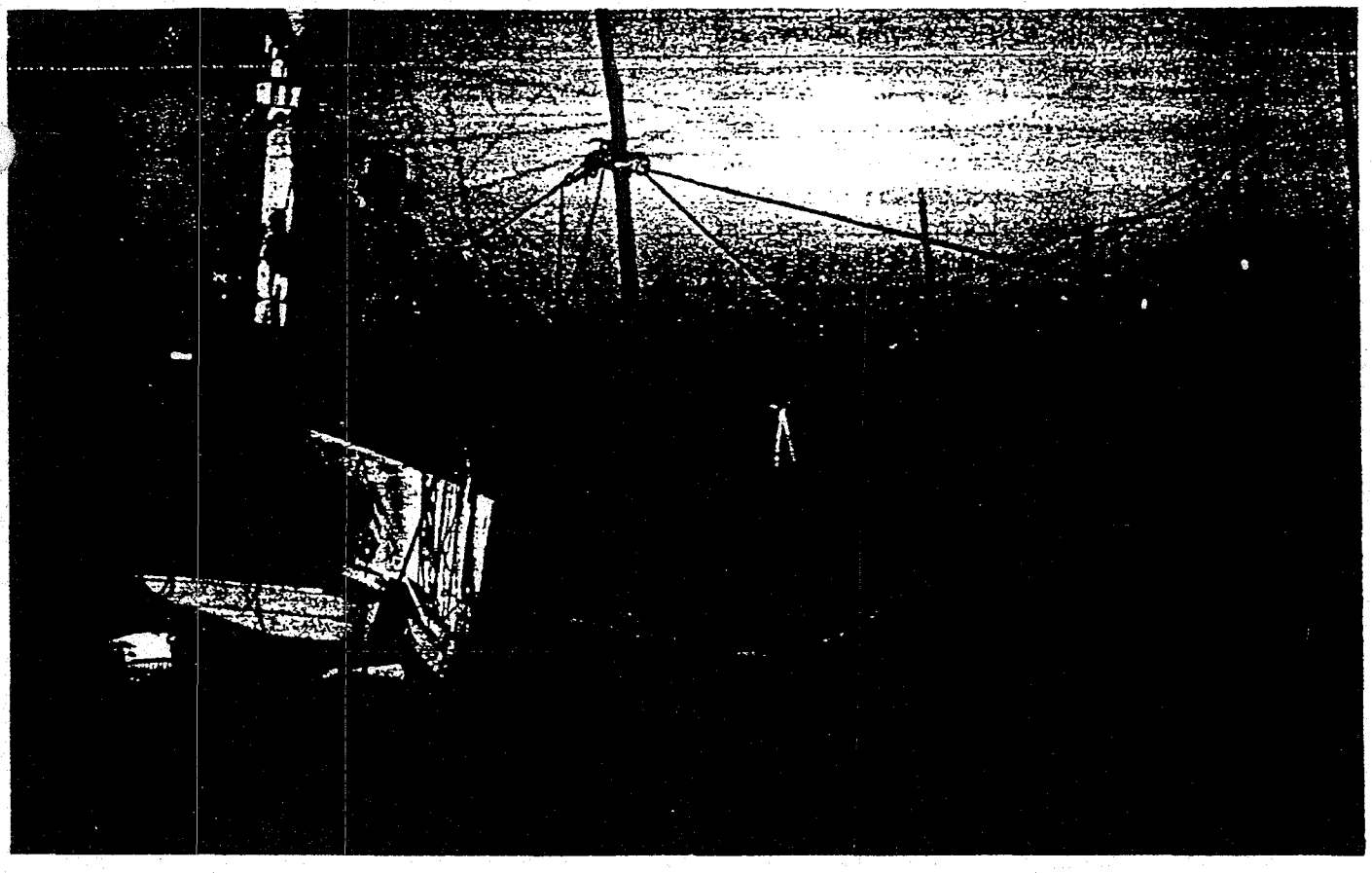
Although surf clams and fish are used, female horseshoe crabs are the preferred bait for catching eels. Horseshoe crab fisheries have developed to supply bait for the eel fishery. In Delaware Bay, horseshoe crabs are caught in small wire pound nets that are set in shallow water along the beach. In Raritan Bay and Sandy Hook, they are caught mostly by modified crab dredges.

Fishing Grounds

In Raritan Bay and Sandy Hook Bay, eels are caught in the tidal creeks and along the bayshore during the cooler months of spring and fall. During the warm summer months, pots are set along the edge of Perth Amboy Channel.

In Delaware Bay, eels are caught in the tidal creeks and a 1/2 mile wide strip along the entire bayshore; during October, pots are occasionally set as far offshore as 2 miles. Pots are also set along the shipping channel in the upper reaches of the bay during midsummer.

10/25

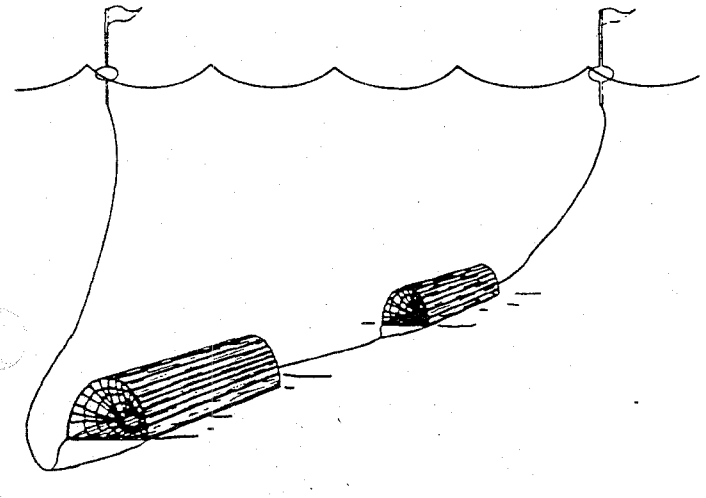


Commercial fishermen tend a pound net in Raritan Bay.

Lobster

Description of Gear

The typical New Jersey lobster pot is a rectangular box made of oak lathe with a pair of net entrance funnels. Depending on the preference of the fisherman, pots either have flat or rounded tops. A lobster pot has two compartments, with a net funnel leading into each. The initial one is for entry and bait and the second is for holding the catch. Wooden doors or flaps permit access to bait and to empty the pot. The pots are tarred to preserve the wood and netting; bricks are secured to the bottom for ballast.



Season

In the bays, lobstering begins in mid-June, extends through the summer and has a final spurt in October before the fishery drops off.

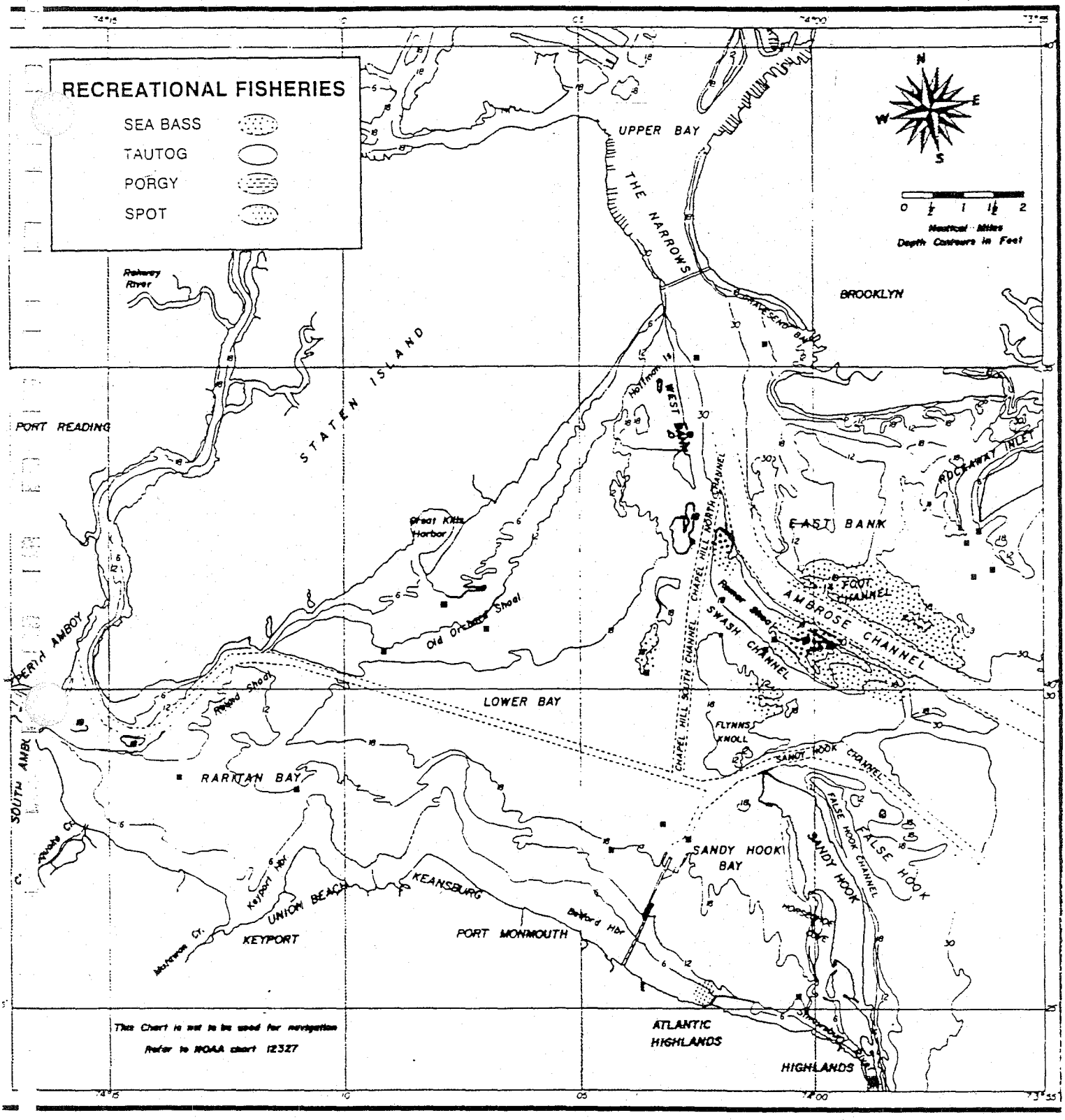
Method

Lobster pots are set in strings of 6 to 25 pots, each connected to a main line. Flag buoys, marking the location of the pot string, are attached to each end of the main line. Pots are baited with menhaden or scraps of fish.

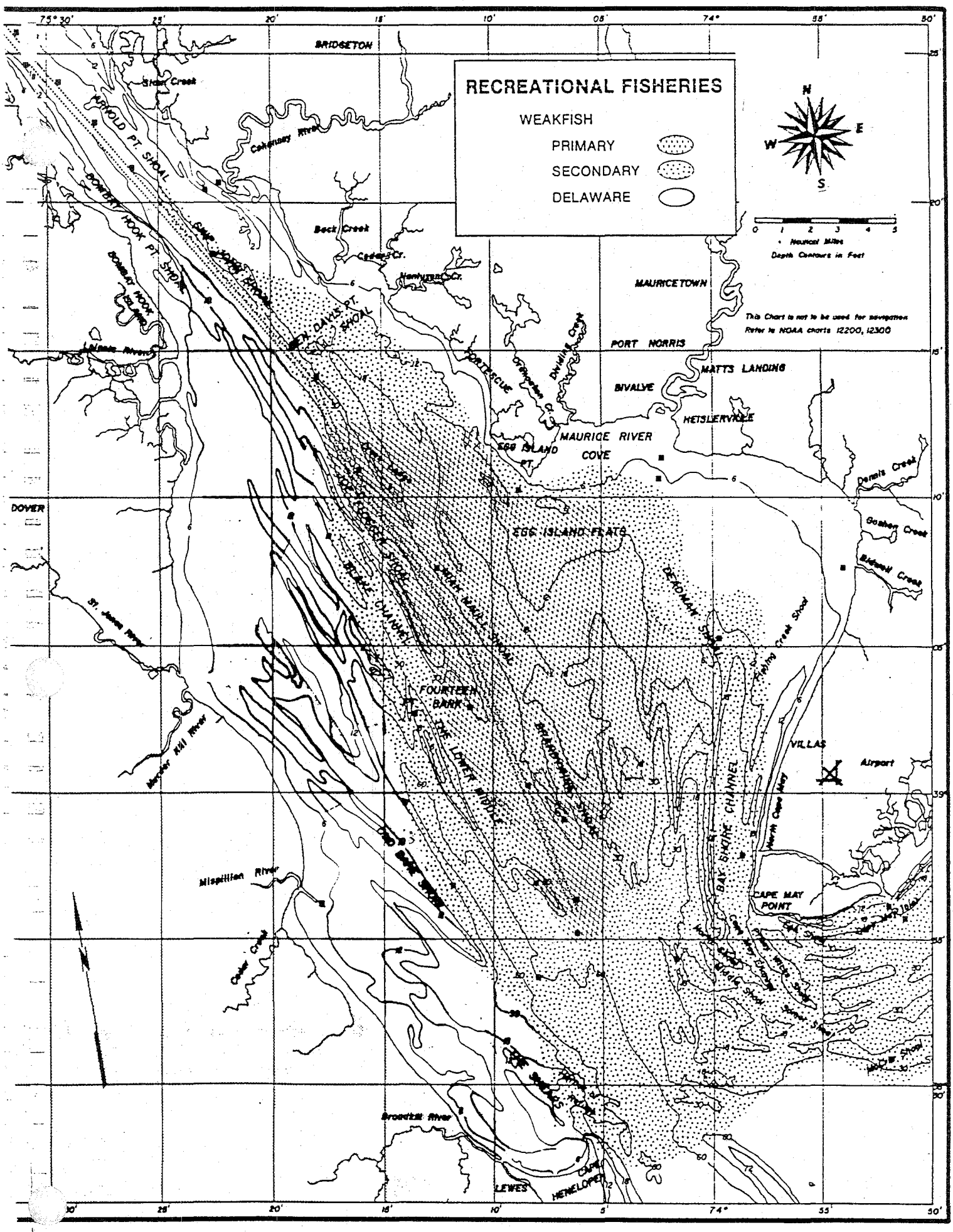
Fishing Grounds

In Raritan Bay and Sandy Hook Bay, lobster pots are set along the edges of Ambrose, Sandy Hook, Chapel Hill, and Perth Amboy Channels and in the deep holes west of Chapel Hill Channel.

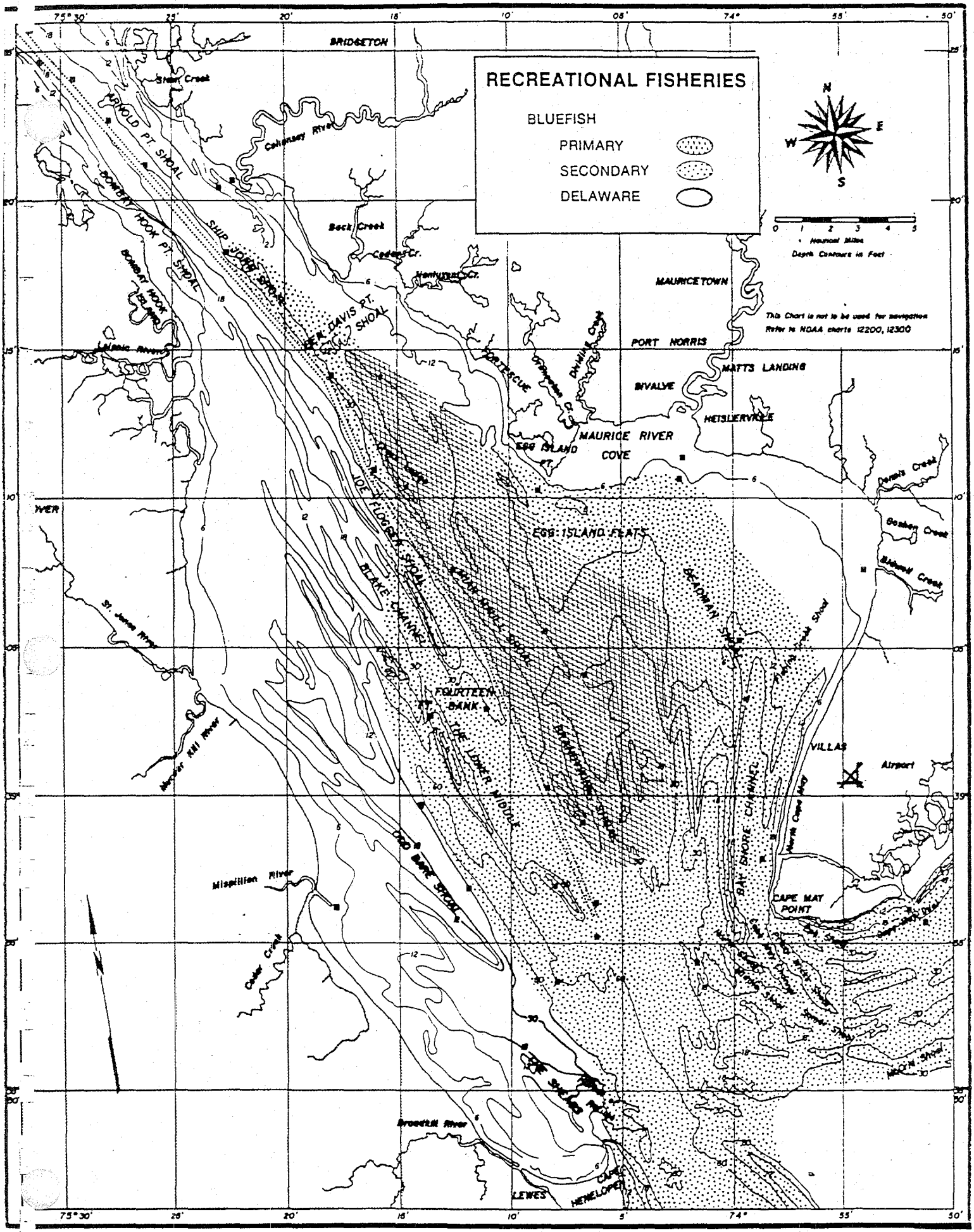
In Delaware Bay, lobstering is restricted to Delaware fishermen in the area around the breakwater at Lewes, Delaware.


RECREATIONAL FISHERIES
SEA BASS
TAUTOG
PORGY
SPOT
N
E
S
W
0 ½ 1 1½ 2
Nautical Miles
Depth Contours in Feet
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Raritan River
Great Kills Harbor
Old Orchard Shoal
Romer Shoal
WEST BANK
EAST BANK
ROCKAWAY INLET
FOUR FATHOM CHANNEL
AMBROSE CHANNEL
SWASH CHANNEL
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
FLYNNS KNOLL
SANDY HOOK CHANNEL
FALSE HOOK CHANNEL
FALSE HOOK
SANDY HOOK BAY
SANDY HOOK
LOWER BAY
RARITAN BAY
SOUTH AMBOY
Raritan River
Keyport Hbr
UNION BEACH
KEANSBURG
KEYPORT
Matawan Cr.
Belford Hbr
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327

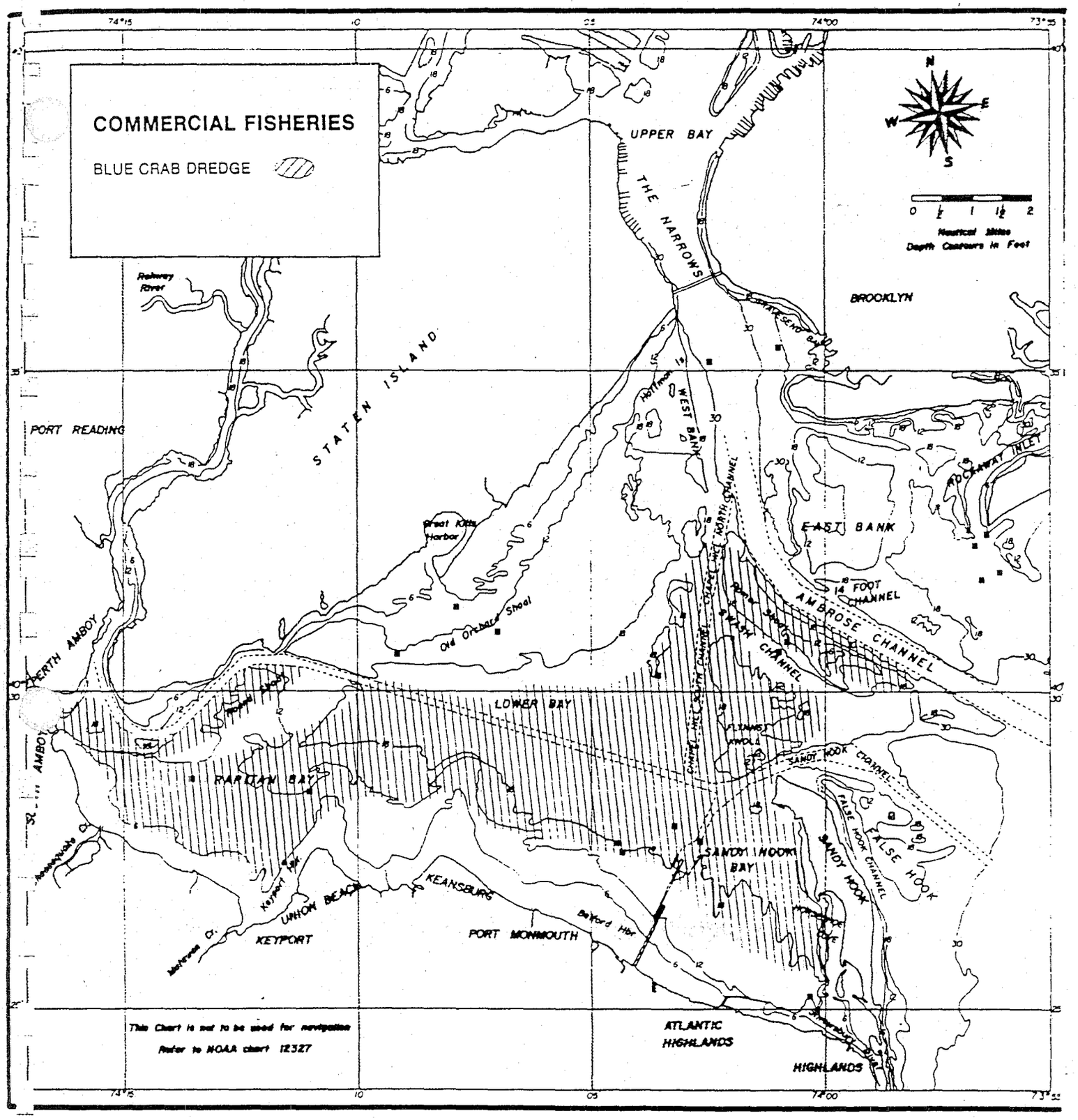
12/25


RECREATIONAL FISHERIES
WEAKFISH
PRIMARY
SECONDARY
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
Back Creek
Cedar Cr.
Hantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
DEADMAN SHOAL
Fishing Creek Shoal
Dennis Creek
Goshen Creek
Bidwell Creek
DOVER
St. Jones River
Mercer Kill River
FOURTEEN BARK
THE LOWER MIDDLE
BRANDYWINE SHOAL
BAY SHORE CHANNEL
North Cape May
VILLAS
Airport
CAPE MAY POINT
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE HENELOPEN

13/25

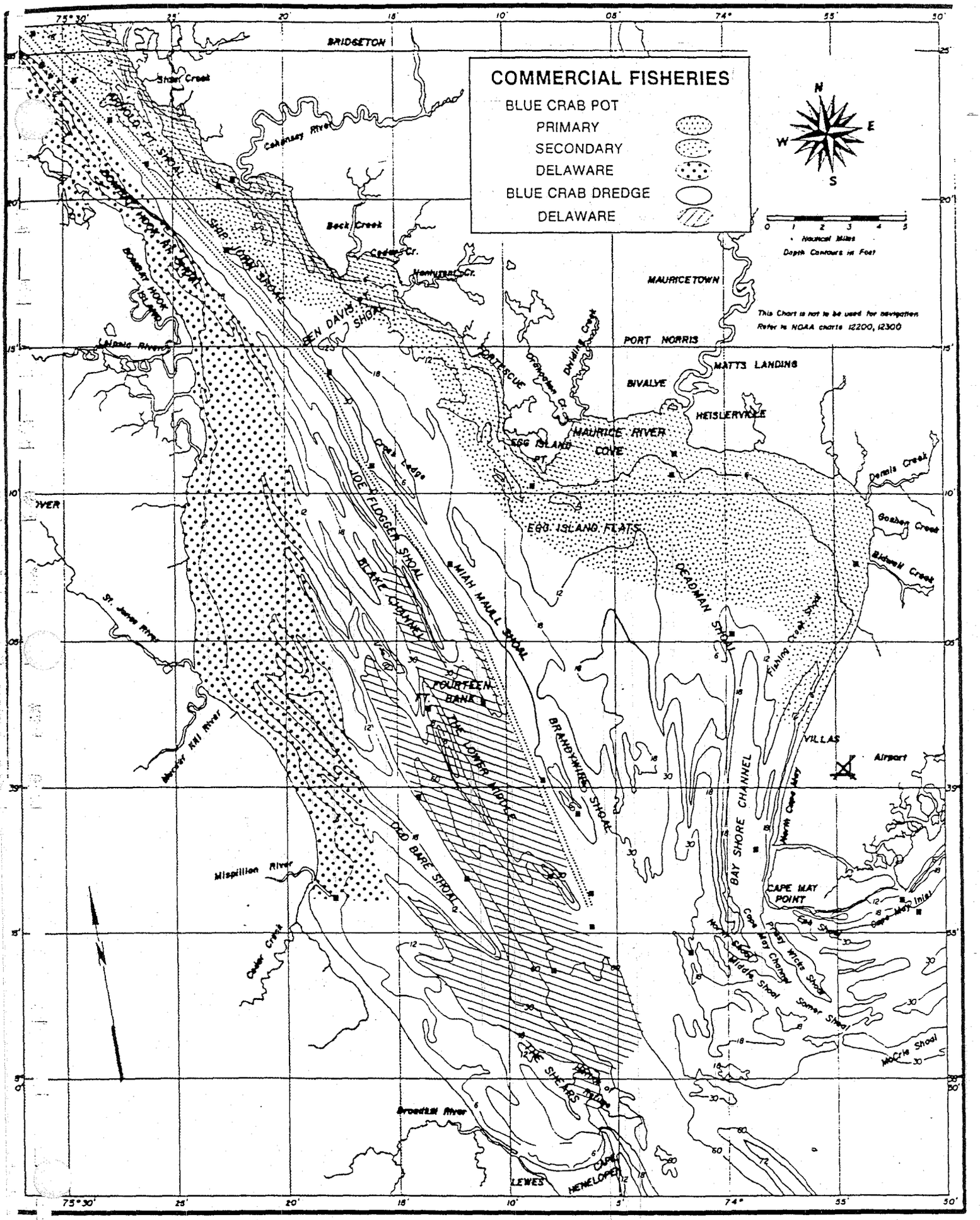

RECREATIONAL FISHERIES
BLUEFISH
PRIMARY
SECONDARY
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
DOMBAY HOOK PT. SHOAL
DOMBAY HOOK ISLAND
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
DAVIS PT. SHOAL
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
Dennis Creek
Goshen Creek
Bidwell Creek
JOE FLOGGER SHOAL
BLAKE CHANNEL
BEADMAN SHOAL
FOURTEEN BANK
THE LOWER MIDDLE
BAY SHORE CHANNEL
VILLAS
Airport
CAPE MAY POINT
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE HENELOPEN
St. Jones River
Mercer Kill River
75°30'
25'
20'
15'
10'
05'
74°
55'
50'

14/25

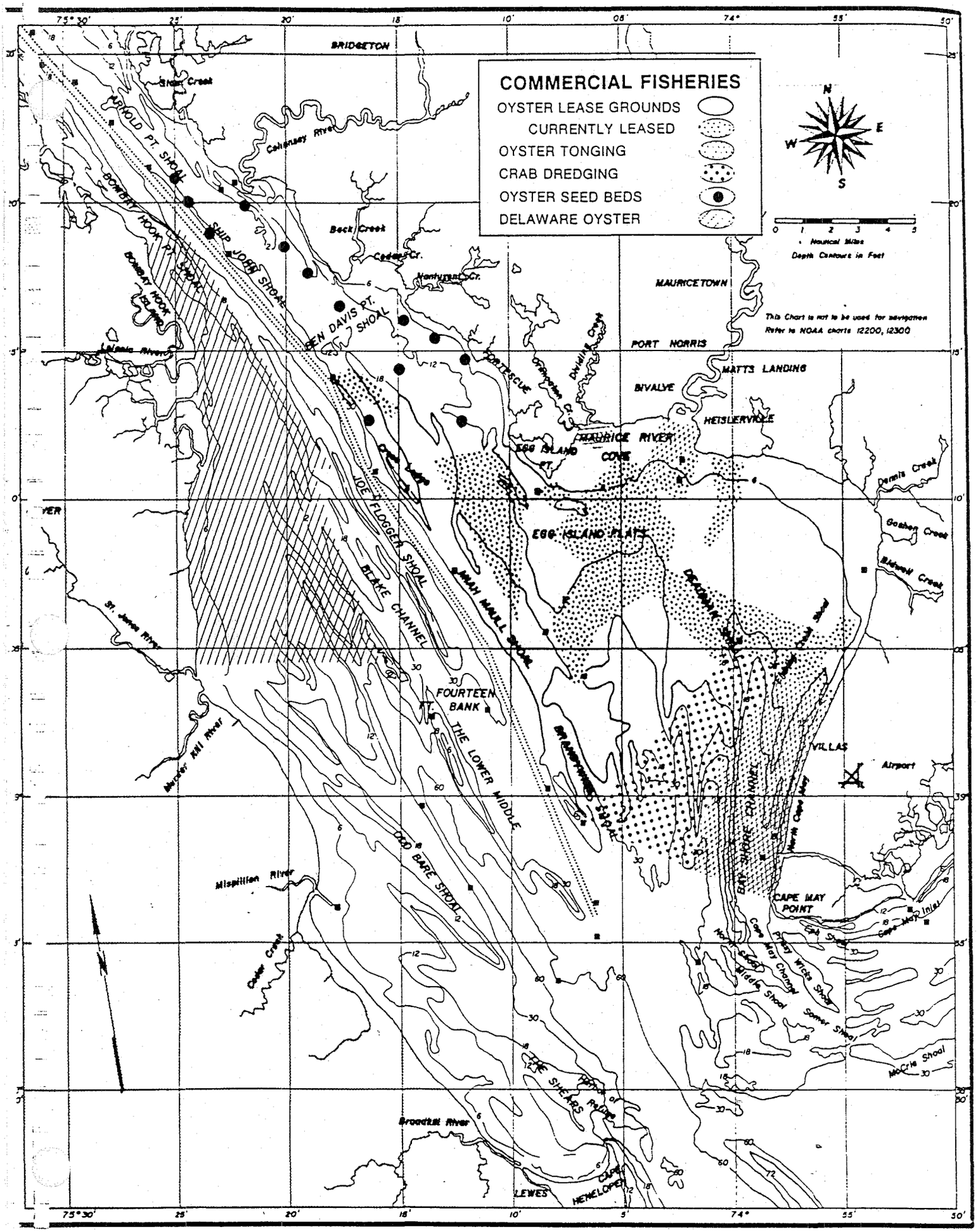

COMMERCIAL FISHERIES
BLUE CRAB DREDGE
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Rahway River
Hoffman
WEST BANK
EAST BANK
ROCKAWAY INLET
Great Kills Harbor
Old Orchard Shoal
14 FOOT CHANNEL
AMBROSE CHANNEL
SWASH CHANNEL
SOUTH CHANNEL
NORTH CHANNEL
LOWER BAY
RARITAN BAY
SANDY HOOK CHANNEL
FALSE HOOK CHANNEL
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
KEANSBURG
UNION BEACH
KEYPORT
PORT MONMOUTH
Belford Hbr
ATLANTIC HIGHLANDS
HIGHLANDS
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA chart 12327

15/25

COMMERCIAL FISHERIES
DRIFTING GILL NETS
PRIMARY
SECONDARY
DELAWARE
N
E
W
S
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Cohansey River
Back Creek
Cedar Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND PT.
EGG ISLAND FLATS
FORTESCUE
BEN DAVIS PT. SHOAL
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
FOURTEEN FT. BANK
THE LOWER MIDDLE
DEADMAN SHOAL
BAY SHORE CHANNEL
VILLAS
Airport
North Cape May
CAPE MAY POINT
Dennis Creek
Goshen Creek
Bidwell Creek
St. Jones River
Murderkill River
Mispillion River
Cedar Creek
Broadkill River
OLD BAIT SHOAL
THE SHEARS
LEWES
HENLOPEN
McCrie Shoal


COMMERCIAL FISHERIES
BLUE CRAB POT
PRIMARY
SECONDARY
DELAWARE
BLUE CRAB DREDGE
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Shaw Creek
Cohansey River
Back Creek
Cedar Cr.
Nantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
Dennis Creek
Goshen Creek
Bidwell Creek
Fishing Creek Shoal
VILLAS
Airport
North Cape May
CAPE MAY POINT
Cape May Inlet
Eph Shoal
Prissy Wicks Shoal
Cape May Channel
North Shoal
Middle Shoal
Somer Shoal
McCrie Shoal
BAY SHORE CHANNEL
DEADMAN SHOAL
BRANDYWINE SHOAL
MIAH MAULL SHOAL
JOE FLOGGER SHOAL
BLAKE CHANNEL
FOURTEEN FT. BANK
THE LOWER MIDDLE
OLD BARE SHOAL
THE SHEARS
Harbor of Refuge
CAPE HENELOPEN
LEWES
Broadkill River
Mispillion River
Cedar Creek
Mercer Kill River
St. James River
Leipsic River
BOMBAY HOOK ISLAND
BOMBAY HOOK RR SHOAL
SHIP JOHN SHOAL
BEN DAVIS PT. SHOAL
Cross Ledge
75°30'
25'
20'
15'
10'
05'
74°
55'
50'

17/25


COMMERCIAL FISHERIES
OYSTER LEASE GROUNDS
CURRENTLY LEASED
OYSTER TONGING
CRAB DREDGING
OYSTER SEED BEDS
DELAWARE OYSTER
N
E
S
W
0 1 2 3 4 5
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BOMBAY HOOK ISLAND
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
Nantuxent Cr.
BEN DAVIS PT. SHOAL
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
Dividing Creek
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
Dennis Creek
Goshen Creek
Bidwell Creek
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
DEADMAN SHOAL
St. Jones River
FOURTEEN FT. BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
VILLAS
Airport
Murder Kill River
BAY SHORE CHANNEL
North Cape May
CAPE MAY POINT
Cape May Inlet
Mispillion River
OLD BARE SHOAL
Cedar Creek
Cape May Channel
Middle Shoal
Somer Shoal
McCrie Shoal
THE SHEARS
Broadkill River
LEWES
CAPE HENELOPEN
75°30'
25'
20'
18'
10'
05'
74°
55'
50'

18/25

INTRODUCTION

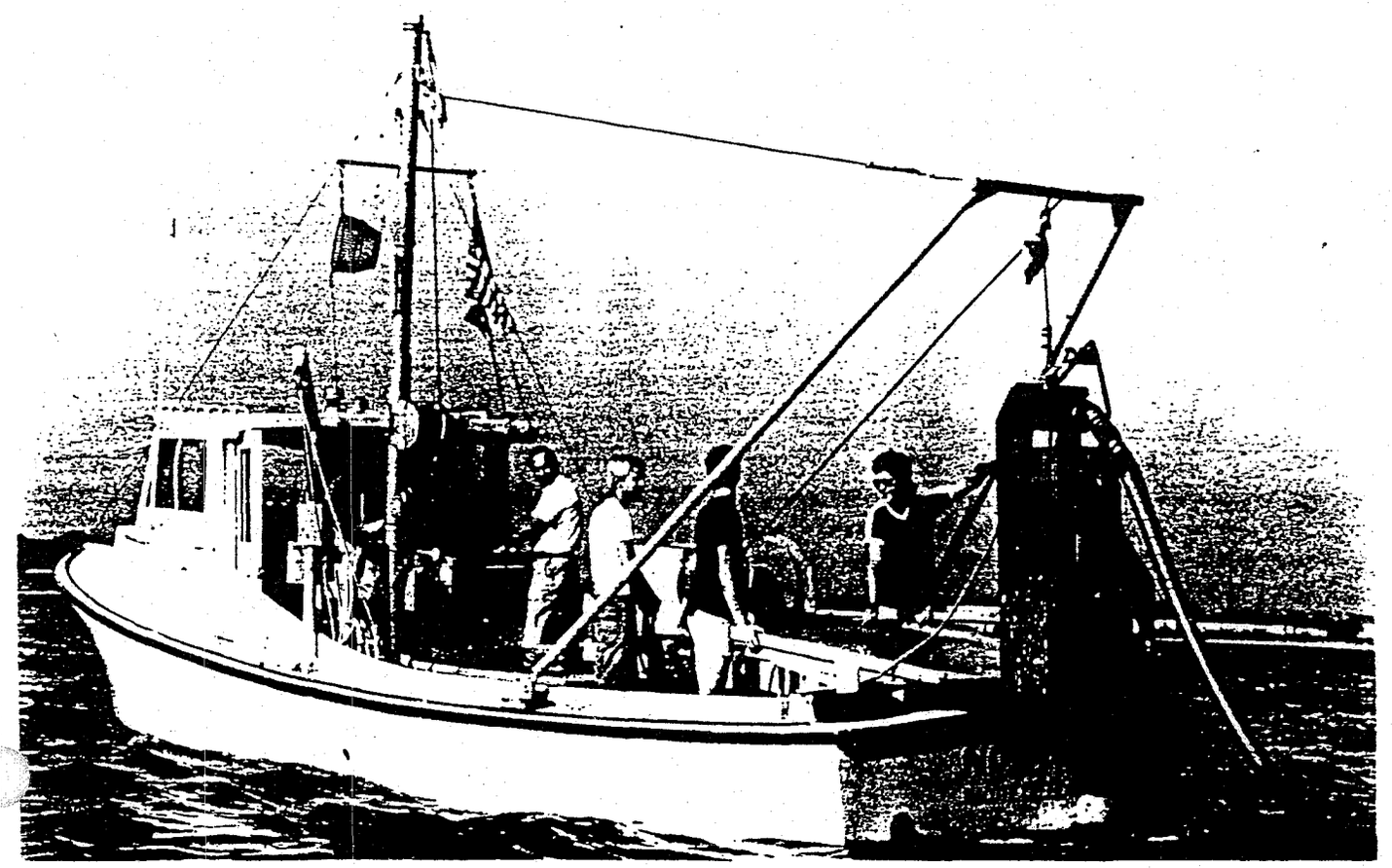
Since the harvest of shellfish has been prohibited in Raritan Bay and Sandy Hook Bay in 1964, it was not possible to delineate current fishing areas through the process of fisherman interview. Instead, the Bureau of Shellfisheries initiated a shellfish inventory of these areas in 1983.

The primary purpose for conducting an inventory was to provide current information on the distribution and abundance of the various shellfish species. The data collected forms the basis on which management programs are developed. Before a resource can be effectively managed information on resource abundance, location and its well-being must be known.

The inventory data also provide an additional benefit when conducting assessments of coastal development projects. Activities such as dredging, spoil disposal, pipeline or cable routing, discharge of sewage effluent, marina construction as well as residential and commercial development along the coast have the potential to adversely affect the shellfish resources by contamination or destruction of shellfish populations, as well as the destruction of its habitat. The information derived from the inventory program is extremely useful in the development review process and serves to protect important shellfish beds from the negative impacts associated with these activities.

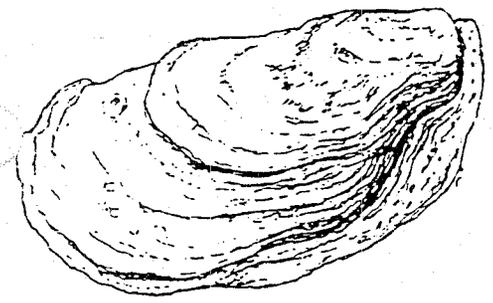
The shellfish inventory program was designed primarily to sample hard clam populations because the most current historical information indicated that this species was the most abundant and widely distributed. The sampling technique employed was also capable of collecting other shellfish species such as oysters, soft clams, surf clams and blue mussels.

The inventory of Raritan Bay and Sandy Hook Bay has been the first systematic shellfish survey conducted of New Jersey estauries in over twenty years. The Bureau of Shellfisheries is continuing this program throughout all of the state's estauries.

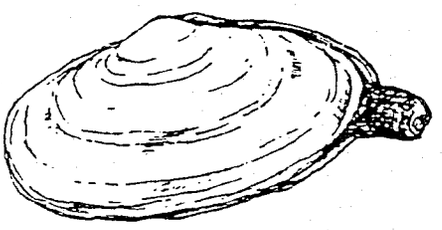


The Bureau of Shellfisheries research vessel, Notata, uses a hydraulic dredge to delineate shellfish grounds.

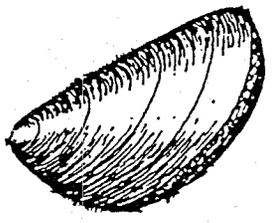
19/25



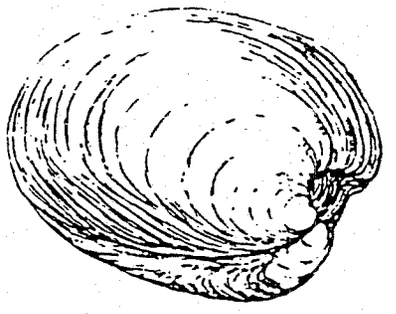
Oyster



Soft Clam



Blue Mussel



Hard Clam

METHODS

The sampling device was a miniature hydraulic clam dredge with a knife width of one foot that was towed from a research vessel. Water is pumped from a pump onboard the vessel down to the dredge manifold which has a series of nozzles. Water pumped through the forward directed nozzles loosens the sediment ahead of the knife while the rear facing nozzles wash sediment from the basket. The dredge basket is designed to retain all hard clams 1-3/16 inches or greater in length.

Sampling stations were established at regular intervals throughout Raritan Bay and Sandy Hook Bay. Over two hundred stations were sampled throughout the course of this program. Two tows of approximately 100 feet each were sampled at each station and the density of hard clams was determined by averaging the catch of the two tows. For the purpose of delineating the general abundance pattern of the hard clam resource four classifications of abundance were established-none, occurrence, moderate density and high density. Adjacent stations within the same density classification were grouped together thus giving the general abundance distributions.

Quantitative results for other shellfish species collected (oysters, soft clams, surf clams, mussels) were not deemed as useful because the sampling gear was not specifically designed for their capture. However, the information collected on these other species was sufficient to permit delineation of the significant beds.

HARVEST METHODS

Soft clams are harvested by a method known as "hoe and net" which is rather unique to New Jersey. All harvesting is conducted in shoal areas with the harvester in the water. The harvester works the hoe up and down creating a depression in the bottom. As the clams are dislodged from the sediment they become buoyant and are scooped up with the net. No mechanical gear is allowed for harvest.

Hard clams are harvested by a variety of methods. However, laws in New Jersey restrict the harvest to hand employed gear only. No mechanical harvest or dredging is permitted. Three commonly used harvest methods in New Jersey include treading, tonging and raking. In treading, the clammer, proceeding backwards, shuffles his feet through the mud. When the hard edge of a clam is encountered, the clammer takes a breath, ducks under and pulls the clam out of the bottom. The equipment required for treading includes an intertube and basket to hold clams and thin rubber boots and gloves to protect feet and hands.

Tonging is done from an anchored boat. The tong handles are opened and closed, forcing the tong's teeth to scrape the upper two or three inches of substrate and pick up loosened clams. The area around the entire boat is worked before the anchor is moved.

In raking, the third method, the boat is allowed to drift while the rake is dragged across the bottom. The handle is worked up and down by hand to insure a smooth and continuous drag. The long teeth of the rake lift the clams out of the bottom and the mesh basket at the back of the rake holds the clams until the rake is lifted into the boat.

FISHERY

All of Raritan Bay and Sandy Hook Bay is moderately polluted and is classified as condemned for the direct market harvest of shellfish. Consequently, there is no recreational fishery and, prior to 1983, only a small commercial soft clam fishery existed. Following the shellfish inventory of 1983 a commercial fishery for hard clams was initiated under closely controlled conditions. At present, the only shellfish species for which commercial fishery exists are hard and soft clams.

Because the water of these areas is moderately polluted, the shellfish must be cleansed prior to consumption. When polluted clams are placed in a clean water environment they have the ability to flush bacterial and viral contaminants out of their digestive system through a natural cleansing mechanism. This cleansing process is accomplished through three State supervised programs known as soft clam depuration, hard clam depuration and hard clam relay.

Soft clam and hard clam depuration are similar processes with slightly different operating requirements because of the physiological differences between the two species. Both operations start with the harvest of the clams from moderately polluted areas. The clams are then transported to a depuration plant. Once in the plant the clams are placed in tanks and flooded with purified water for 48 hours. Through their natural feeding activity they eliminate harmful contaminants from their system and are acceptable for marketing and consumption.

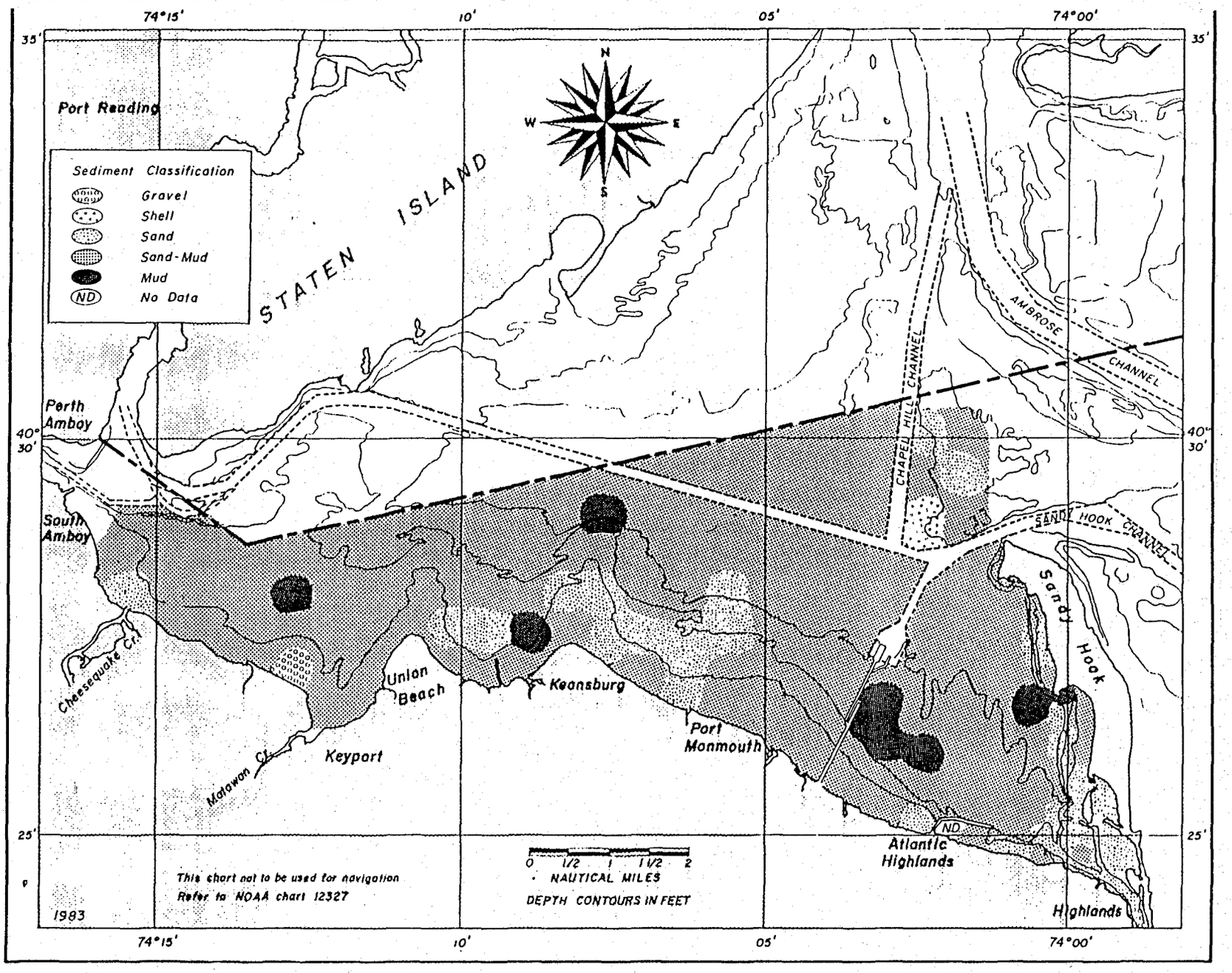
The hard clam relay also begins with the harvest of clams from moderately polluted waters. The clams are then transplanted to "relay lots", leased from the State by shellfishermen, which are in areas of good water quality. Following a thirty day cleansing period the clams are tested and available for harvesting and subsequent marketing.

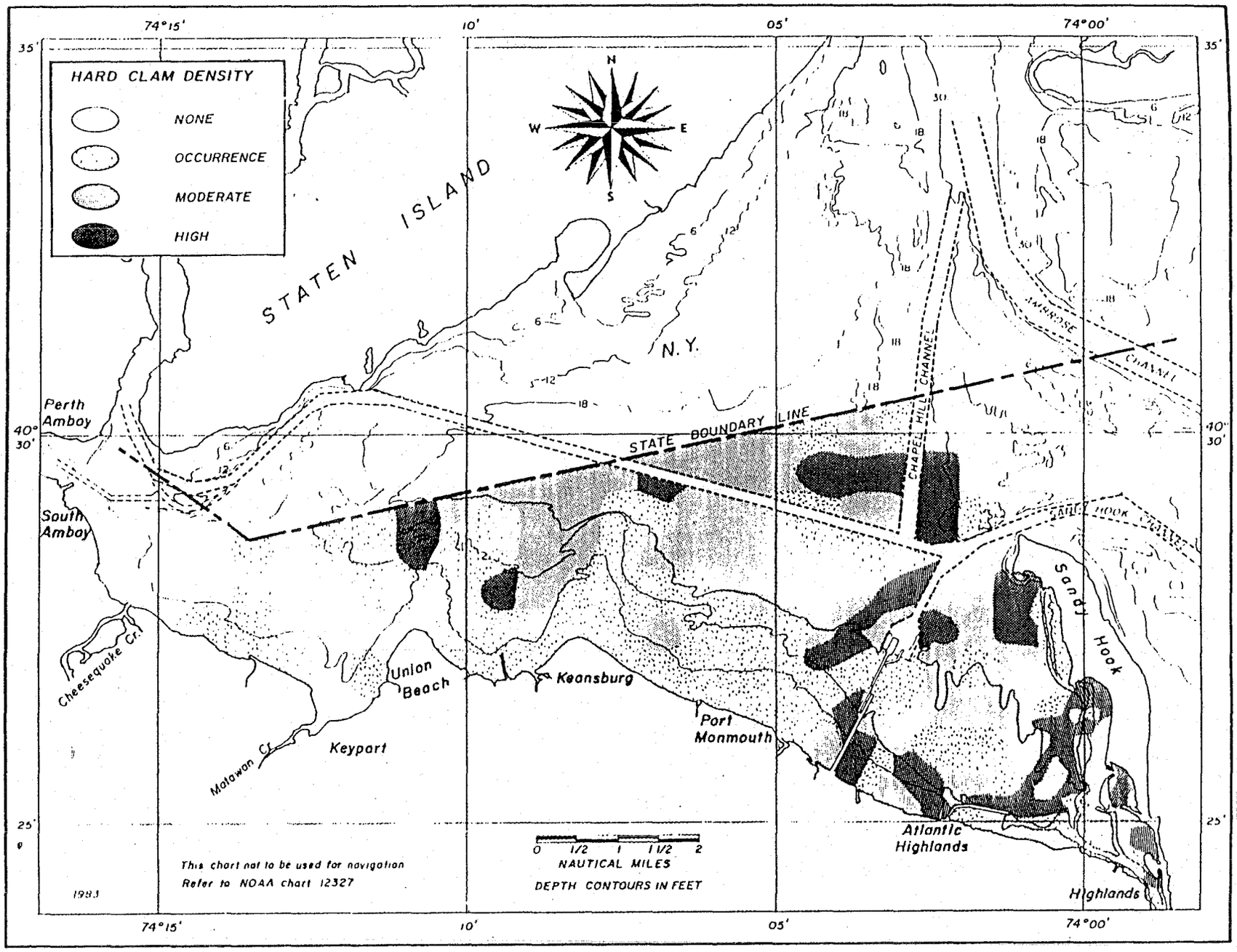
There are no conservation associated seasonal restrictions on the harvest of hard or soft clams. For the most part they are harvested year round subject to weather and market conditions.

The soft clam depuration program is responsible for practically all of the commercial landings of soft clams in New Jersey. The primary reason is that the significant soft clam resource is located in northern Monmouth County waters all of which are closed to direct market harvest of shellfish.

The hard clam relay and depuration program accounted for 25 percent of the total commercial hard clam landings in New Jersey in 1984-86. The remainder of the landings were from waters of the State where harvesting for direct marketing is approved. Although there is increasing interest and activity in the aquaculture of hard clams in New Jersey the majority of the landings come from natural stock.

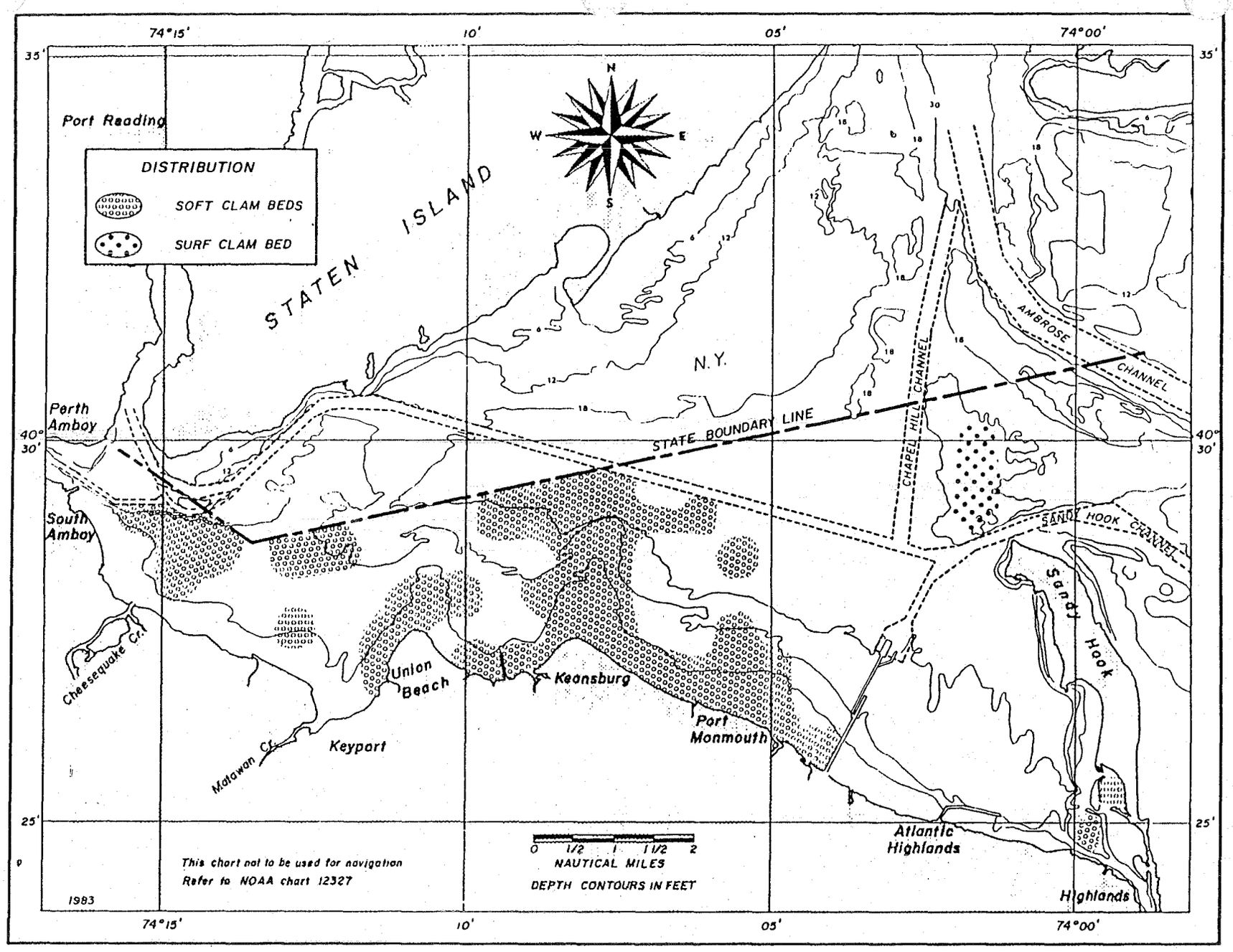
21/25

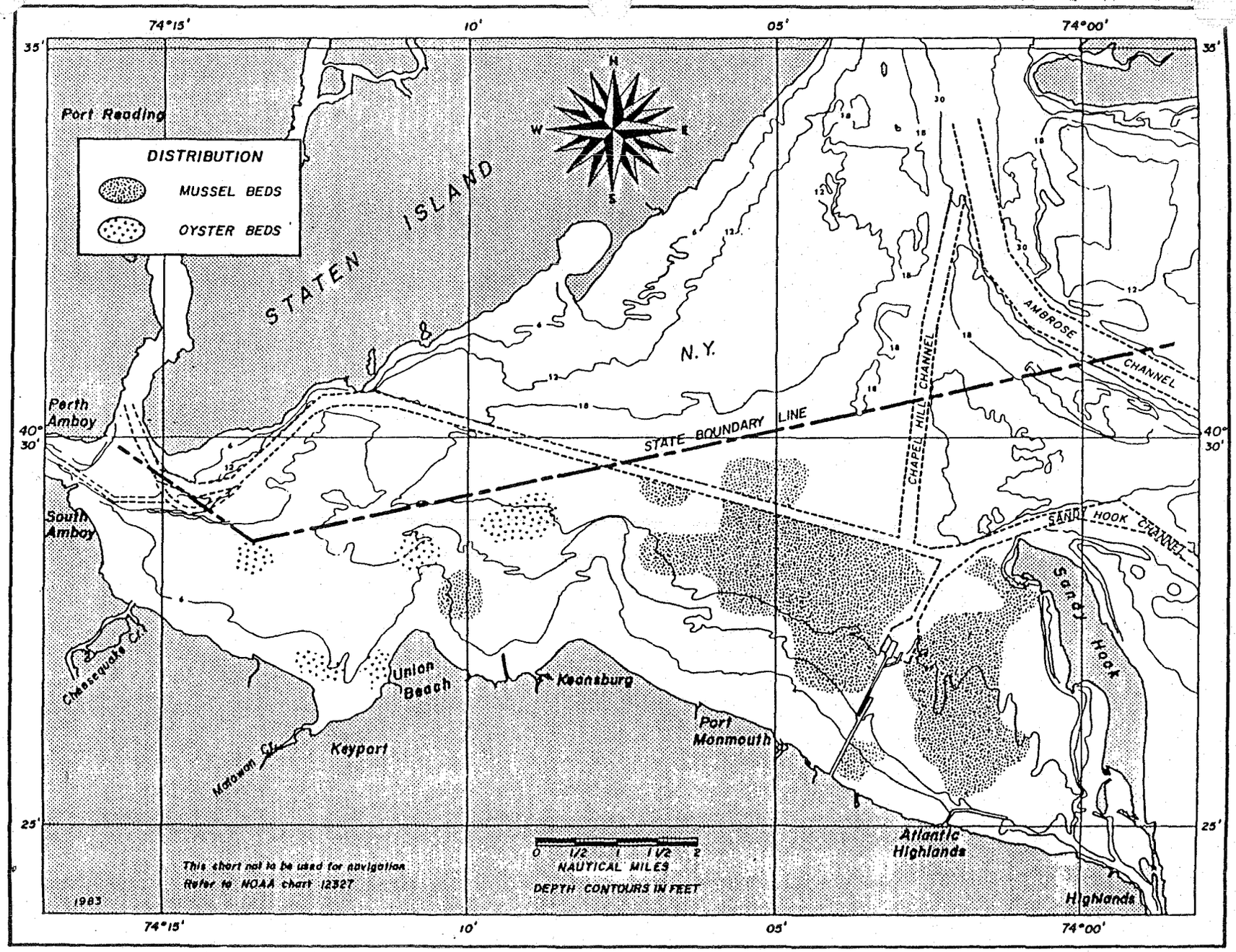

74°15'
10'
05'
74°00'
35'
40° 30'
25'
Port Reading
STATEN ISLAND
Sediment Classification
Gravel
Shell
Sand
Sand-Mud
Mud
ND
No Data
N
W
E
S
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Matawan Cr.
Union Beach
Keansburg
Keyport
Port Monmouth
Sandy Hook
Atlantic Highlands
Highlands
This chart not to be used for navigation
Refer to NOAA chart 12327
1983
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET


HARD CLAM DENSITY
NONE
OCCURRENCE
MODERATE
HIGH
74°15'
10'
05'
74°00'
35'
40° 30'
25'
N
S
E
W
STATEN ISLAND
N.Y.
STATE BOUNDARY LINE
CHAPEL HILL CHANNEL
ANDROSS CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Union Beach
Keansburg
Port Monmouth
Keyport
Matawan Cr.
Sandy Hook
Atlantic Highlands
Highlands
This chart not to be used for navigation
Refer to NOAA chart 12327
1983
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET

37

23/25


74°15'
10'
05'
74°00'
35'
40°
30'
25'
Port Reading
DISTRIBUTION
SOFT CLAM BEDS
SURF CLAM BED
STATEN ISLAND
N.Y.
N
S
E
W
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
STATE BOUNDARY LINE
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Union Beach
Keansburg
Port Monmouth
Keyport
Matawan Cr.
Sandy Hook
Atlantic Highlands
Highlands
This chart not to be used for navigation
Refer to NOAA chart 12327
1983
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET



74°15'
10'
05'
74°00'
35'
40° 30'
25'
Port Reading
DISTRIBUTION
MUSSEL BEDS
OYSTER BEDS
STATEN ISLAND
N.Y.
Perth Amboy
South Amboy
STATE BOUNDARY LINE
CHAPEL HILL CHANNEL
AMBROSE CHANNEL
SANDY HOOK CHANNEL
Sandy Hook
Union Beach
Keansburg
Port Monmouth
Keyport
Matawan Cr.
Cheesequake Cr.
Atlantic Highlands
Highlands
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET
This chart not to be used for navigation
Refer to NOAA chart 12327
1983

25/70

REFERENCE 24

The EDR-Radius Map
with GeoCheck®

Vidan Auto Salvage
327-331 Bond St.
Brooklyn, NY 11215

Inquiry Number: 1312670.1p

November 17, 1998

Environmental Data Resources, Inc.
an edr company

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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APPENDICES

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-97. Search distances are per ASTM standard or custom distances requested by the user.

The address of the subject property for which the search was intended is:

327-331 BOND ST.
BROOKLYN, NY 11215

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the subject property or within the ASTM E 1527-97 search radius around the subject property for the following Databases:

NPL:	National Priority List
Delisted NPL:	NPL Deletions
SHWS:	State Haz. Waste
CERC-NFRAP:	Comprehensive Environmental Response, Compensation, and Liability Information System
AST:	Petroleum Bulk Storage (AST)
RAATS:	RCRA Administrative Action Tracking System
HMIRS:	Hazardous Materials Information Reporting System
PADS:	PCB Activity Database System
ERNS:	Emergency Response Notification System
TRIS:	Toxic Chemical Release Inventory System
NPL Lien:	NPL Liens
TSCA:	Toxic Substances Control Act
MLTS:	Material Licensing Tracking System
NY Spills:	NY Spills
CBS AST:	Chemical Bulk Storage (CBS) Database
MOSF AST:	Major Oil Storage Facilities Database
ROD:	ROD
CONSENT:	Superfund (CERCLA) Consent Decrees

Unmapped (orphan) sites are not considered in the foregoing analysis.

Search Results:

Search results for the subject property and the search radius, are listed below:

Subject Property:

The subject property was identified in the following government records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
DENTS OUT AUTO BODY LTD 327 BOND ST BROOKLYN, NY 11215	CERCLIS FINDS RCRIS-SQG	NYD986961167

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EXECUTIVE SUMMARY

Surrounding Properties:

Elevations have been determined from the USGS 1 degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. EDR's definition of a site with an elevation equal to the subject property includes a tolerance of -10 feet. Sites with an elevation equal to or higher than the subject property have been differentiated below from sites with an elevation lower than the subject property (by more than 10 feet). Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-TSD list, as provided by EDR, and dated 07/01/1998 has revealed that there is 1 RCRIS-TSD site within approximately 0.5 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PATTERSON CHEMICAL CO INC	***102 THIRD ST***	***1/8 - 1/4 SW***	***26***	***49***

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 12/15/1997 has revealed that there is 1 CORRACTS site within approximately 1 mile of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PATTERSON CHEMICAL CO INC	***102 THIRD ST***	***1/8 - 1/4 SW***	***26***	***49***

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the list.

A review of the SWF/LF list, as provided by EDR, and dated 12/31/1997 has revealed that there are 2 SWF/LF sites within approximately 0.5 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SPARTAN-DISMANTLING	110-5TH STREET	1/4 - 1/2 SSW	44	72
BALTIC RECYCLING T.S.	524-26 BALTIC STRET	1/4 - 1/2 ENE	56	85

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Conservation's Spills Information Database.

A review of the LUST list, as provided by EDR, and dated 04/01/1998 has revealed that there are 33 LUST sites within approximately 0.5 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
400 CARROLL ST	***400 CARROLL ST***	***0 - 1/8 SSE***	***6***	***11***

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EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
325 NEVINS STREET	325 NEVINS ST	1/8 - 1/4 ESE	C13	18
318 NEVINS STREET	***318 NEVINS ST***	***1/8 - 1/4 ESE***	***D15***	***20***
473 PRESIDENT	473 PRESIDENT ST	1/8 - 1/4 ESE	C20	30
KIWANAS PUMPING STATION	***201 DOUGLASS ST***	***1/8 - 1/4 NE***	***G31***	***51***
175 3RD STREET	175 3RD ST	1/8 - 1/4 S	F34	56
ALL BORO'S	200 3RD ST	1/4 - 1/2 SSE	39	67
3RD AVE SERVICE CENTER	3RD AVE / 1ST ST	1/4 - 1/2 SE	40	68
MCIZ CORP	1-25 2ND AV	1/4 - 1/2 S	I41	69
NYC DEPT OF SANITATION	15 2ND AVE	1/4 - 1/2 SSW	I42	70
540 PRESIDENT STREET	540 PRESIDENT ST	1/4 - 1/2 ESE	43	71
220 1ST STREET	220 1ST ST	1/4 - 1/2 SE	J45	72
7 3RD STREET/PEP S/S	7 3RD STREET	1/4 - 1/2 W	46	73
3RD AVE YARD	***222 1ST ST***	***1/4 - 1/2 SE***	***J47***	***74***
THIRD AVE YARD	***222 1ST ST***	***1/4 - 1/2 SE***	***J48***	***75***
HOBART INDUST BLDG	48-48 5 ST	1/4 - 1/2 SW	49	77
THIRD AVENUE YARD	3RD AV/3RD ST	1/4 - 1/2 SSE	50	78
280 DOUGLAS ST	***280 DOUGLASS ST***	***1/4 - 1/2 ENE***	***51***	***79***
106 6TH ST	106 6TH ST	1/4 - 1/2 SSW	54	84
141 6TH ST BET 1 & 2 AVES	141 6TH ST	1/4 - 1/2 SSW	K55	84
MERRIT GASOLINE STATION	204-222 4TH AVE	1/4 - 1/2 ESE	L57	86
MERRITT GAS STATION	204-222 4TH AVE	1/4 - 1/2 ESE	L58	87
4TH & SACKETT STREET	4TH / SACKETT STREET	1/4 - 1/2 ESE	L59	88
WYCKOFF GARDENS	272 WYCKOFF STREET	1/4 - 1/2 NE	M61	89
WYCKOFF GARDENS	272 WYCKOFF ST	1/4 - 1/2 NE	M62	90
WYCKOFF CONSOLIDATED	572 WARREN ST	1/4 - 1/2 ENE	N63	90
572 WARREN STREET HOUSES	572 WARREN ST	1/4 - 1/2 ENE	N64	91
467 COURT ST./ST. MARY'S	467 COURT ST.	1/4 - 1/2 WSW	65	92
440 CLINTON STREET	440 CLINTON ST	1/4 - 1/2 WNW	66	94
124 4TH AVENUE	124 4TH AVE	1/4 - 1/2 E	68	95
105 3RD AVE	105 3RD AVE	1/4 - 1/2 ENE	69	96
506 COURT ST	506 COURT ST	1/4 - 1/2 WSW	70	97

Lower Elevation	Address	Dist / Dir	Map ID	Page
ULAMO CORP	280 BERGEN ST	1/4 - 1/2 NE	67	95

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database

A review of the UST list, as provided by EDR, and dated 07/01/1998 has revealed that there are 9 UST sites within approximately 0.25 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SACKETT STREET GARAGE	***498-502 SACKETT STREET***	***0 - 1/8 NE***	***B9***	***13***
BELL ATLANTIC	***318 NEVINS ST***	***1/8 - 1/4 ESE***	***D16***	***21***
NICKS UNION NEVINS SER. STA. C	301 NEVINS ST	1/8 - 1/4 E	D19	27
BAYSIDE FUEL OIL CORP	***267 BOND ST***	***1/8 - 1/4 NNE***	***21***	***31***
ADMIRAL METALS	270 NEVINS ST	1/8 - 1/4 ENE	E23	45
TE CONKLIN BRASS CO	***270 NEVINS ST***	***1/8 - 1/4 ENE***	***E24***	***46***
160 3RD STREET	160 3RD ST	1/8 - 1/4 S	30	50
NYCDEP - GOWANUS PUMPING STATI	***201 DOUGLASS ST***	***1/8 - 1/4 NE***	***G32***	***53***
BELL ATLANTIC	***175 3RD ST***	***1/8 - 1/4 S***	***H35***	***57***

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EXECUTIVE SUMMARY

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-SQG list, as provided by EDR, and dated 07/01/1998 has revealed that there are 13 RCRIS-SQG sites within approximately 0.25 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PENSKE TRUCK LEASING CO LP	347 BOND ST	0 - 1/8 SSW	2	9
TWO DANS ENTERPRISES	*385 CARROLL ST*	*0 - 1/8 S*	*4*	*10*
REGENCY SVC CARTS INC	*337-361 CARROLL ST*	*0 - 1/8 W*	*7*	*12*
NYSDOT UNION ST BRIDGE	*UNION ST BRG - GOWANUS*	*0 - 1/8 E*	*10*	*16*
BAYSIDE FUEL OIL CO.	*510 SACKETT STREET*	*0 - 1/8 NE*	*B11*	*16*
CRUSADER CANDLE CO INC	*325 NEVINS ST*	*1/8 - 1/4 ESE*	*C14*	*20*
NEW YORK TELEPHONE CO	*318 NEVINS ST*	*1/8 - 1/4 ESE*	*D17*	*26*
NYC BD OF ED - PUBLIC SCHOOL 3	317 HOYT ST	1/8 - 1/4 NW	18	27
PATTERSON CHEMICAL CO INC	*102 THIRD ST*	*1/8 - 1/4 SW*	*26*	*49*
NYSDOT 3RD ST BRIDGE & GOWANUS	*3RD ST BRG OVER GOWANUS*	*1/8 - 1/4 S*	*F28*	*50*
LINDA TOOL & DIE CORP	*459 CARROLL ST*	*1/8 - 1/4 SE*	*33*	*56*
NEW YORK TELEPHONE CO	*175 THIRD ST*	*1/8 - 1/4 S*	*H36*	*62*
WESLEY LACQUER CORP	*95 FOURTH ST*	*1/8 - 1/4 SW*	*37*	*62*

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-LQG list, as provided by EDR, and dated 07/01/1998 has revealed that there are 8 RCRIS-LQG sites within approximately 0.25 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
THOMAS PAULSON & SON INC	*450 UNION ST*	*0 - 1/8 NNE*	*A3*	*9*
NYCDOT BIN 2240270	UNION ST BRIDGE OVER	0 - 1/8 NNE	A5	10
NEW AMSTERDAM THEATER	40 1ST ST	0 - 1/8 SW	8	13
CHATHAM CLEANERS INC	*280 NEVINS ST*	*1/8 - 1/4 ENE*	*E22*	*45*
O-Z GEDNEY	*262 BOND ST*	*1/8 - 1/4 NNE*	*25*	*48*
AUTO BODY CONCEPTS DBA ABC COL	*549 SACKETT ST*	*1/8 - 1/4 E*	*27*	*49*
NYCDEP - GOWANUS PUMPING STATI	*201 DOUGLASS ST*	*1/8 - 1/4 NE*	*G32*	*53*
CROSS BAY CONTRACTING	*242 NEVINS ST*	*1/8 - 1/4 ENE*	*38*	*67*

CBS UST: Chemical Bulk Storage Database. Registration data collected as required by 6 NYCRR Part 596. It includes facilities storing hazardous substances listed in 6 NYCRR Part 597, in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size. Includes facilities registered (and closed) since effective date of CBS regulations (July 15, 1988) through the date request is processed.

A review of the CBS UST list, as provided by EDR, and dated 04/01/1998 has revealed that there is 1 CBS UST site within approximately 0.25 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
WESLEY LACQUER CORP	*95 FOURTH ST*	*1/8 - 1/4 SW*	*37*	*62*

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EXECUTIVE SUMMARY

MOSF UST: Major Oil Storage Facilities Database. Facilities are licensed pursuant to Article 12 of the Navigation Law, 6 NYCRR Part 610 and 17 NYCRR Part 30. These facilities may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater. Includes MOSF's licensed or closed since April 1, 1986, (responsibility was transferred from DOT on October 13, 1985) plus available data obtained from DOT facilities licensed since Article 12 became law on April 1, 1978.

A review of the MOSF UST list, as provided by EDR, and dated 04/01/1998 has revealed that there is 1 MOSF UST site within approximately 0.5 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
BAYSIDE FUEL OIL DEPOT CORP.	510 SACKETT ST	0 - 1/8 NE	B12	16

HSWDS: The Hazardous Substance Waste Disposal Site Inventory includes any known or suspected hazardous substance waste disposal sites. Also included are sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites and non-registry sites which the U.S. EPA Preliminary Assessment (PA) reports or Site Investigation (SI) reports were prepared.

A review of the HSWDS list, as provided by EDR, and dated 09/01/1997 has revealed that there are 2 HSWDS sites within approximately 0.5 miles of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
BUG, CARROLL GARDENS	CORNER OF 5TH AND SMITH	1/4 - 1/2 WSW	52	80
BUG, CITIZENS GATE STATION	6TH STREET AND 2ND AVEN	1/4 - 1/2 SSW	K53	82

(Coal Gas) Former Manufactured gas (Coal Gas) Sites:

The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative

A review of the Coal Gas list, as provided by EDR, has revealed that there are 4 Coal Gas sites within approximately 1 mile of the subject property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
FULTON MUNICIPAL GAS CO.	263 NEVINS ST.	1/8 - 1/4 ENE	29	50
CITIZENS GAS LIGHT CO.	437 SMITH ST.	1/4 - 1/2 WSW	60	89

Lower Elevation	Address	Dist / Dir	Map ID	Page
METROPOLITAN GAS LIGHT CO.	35 12TH ST.	1/2 - 1 SSW	71	98
BROOKLYN UNION GAS CO.	157 SECOND AVE.	1/2 - 1 SSW	72	98

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EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
GOWANUS GT SITE	LUST, NY Spills
GOWANAS GAS TURBINES	LUST
GOWANUS GAS TURBINE SITE	LUST, NY Spills
GOWANUS CANNAL	LUST
65 SOUTH 3RD STREET	LUST
RESIDENTS	LUST
4TH ST AREA	LUST
138 2ND AVENUE	LUST
GETTY SVCE STATION	LUST
GAS STATION	LUST
VIRGINIA DARE EXTRACT COM	LUST, NY Spills
ROADWAY	LUST
OLD GAS STATION	LUST, NY Spills
850 THIRD AVENUE	LUST, NY Spills
1ST AVE BET 50 & 51ST STS	LUST
138 2ND AVE/USPS	LUST
990 3RD AVE	LUST
6418 8TH AVE/GETTY	LUST
5600 1ST AVENUE	LUST
118 8TH AVENUE	LUST
CLARA BARTON HIGH SCHOOL	LUST
722 COURT ST	LUST
300 FLATBUSH AV/ 7TH AV	LUST
27TH STREET & THIRD AVE	LUST
GOWANUS CANAL	LUST, NY Spills
FT HAMI/OFF 1ST AVE B218	LUST
RED HOOK TERMINAL	LUST, NY Spills
20 FT W OF PRESIDENT ST	LUST
CON ED	LUST, NY Spills
21 ST OFF 3RD AVENUE	LUST
114 32ND ST AT 3RD AVE.	LUST
44-21 9TH ST/NY TEL	LUST
LIRR ATLANTIC AVENUE	RCRIS-SQG, FINDS
MARCELINO ALMONTE M & A REPAIRS	FINDS, RCRIS-SQG
NYCHA - WYCKOFF	RCRIS-SQG
AMOCO SVC STA	FINDS, RCRIS-SQG
NYCHA - GOWANUS	RCRIS-SQG

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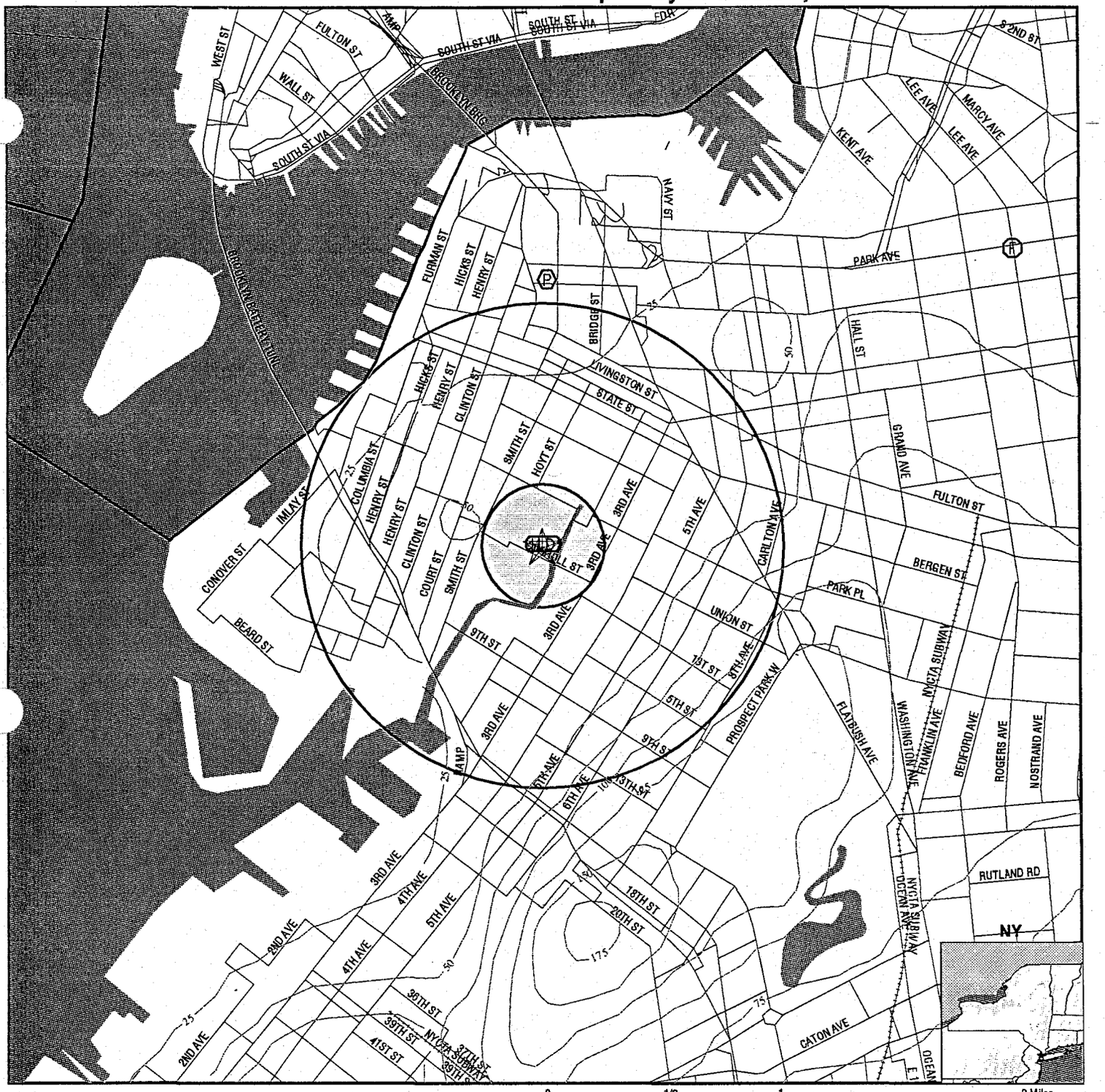
TOPOGRAPHIC MAP - 1312670.1p - Roy F. Weston, Inc.



0 1/2 1 2 Miles

- Major Roads
- Contour Lines
- Waterways
- Earthquake epicenter, Richter 5 or greater
- (F) Closest Federal Well in quadrant
- [S] Closest State Well in quadrant
- (P) Closest Public Water Supply Well
- (HD) Closest Hydrogeological Data

TARGET PROPERTY:	Vidan Auto Salvage	CUSTOMER:	Roy F. Weston, Inc.
ADDRESS:	327-331 Bond St.	CONTACT:	Sharron DaCosta
CITY/STATE/ZIP:	Brooklyn NY 11215	INQUIRY #:	1312670.1p
LAT/LONG:	40.6791 / 73.9904	DATE:	November 17, 1998 3:09 pm

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GEOCHECK VERSION 2.1
SUMMARY

TARGET PROPERTY COORDINATES

Latitude (North):	40.679100 - 40° 40' 44.8"
Longitude (West):	73.990448 - 73° 59' 25.6"
Universal Transverse Mercator:	Zone 18
UTM X (Meters):	2774631.5
UTM Y (Meters):	38461396.0

USGS TOPOGRAPHIC MAP ASSOCIATED WITH THIS SITE

Target Property:	2440073-F8 BROOKLYN, NY

GEOLOGIC AGE IDENTIFICATION†

Geologic Code:	uK
Era:	Mesozoic
System:	Cretaceous
Series:	Upper Cretaceous

ROCK STRATIGRAPHIC UNIT†

Category:	Stratified Sequence

GROUNDWATER FLOW INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, including well data collected on nearby properties, regional groundwater flow information (from deep aquifers), or surface topography.‡

AQUIFLOW™** Search Radius: 2.000 Miles

MAP ID	DISTANCE FROM TP	DIRECTION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported			

General Topographic Gradient at Target Property: General East
General Hydrogeologic Gradient at Target Property: No hydrogeologic data available.
Site-Specific Hydrogeological Data*:

Search Radius:	2.0 miles
Location Relative to TP:	0 - 1/8 Mile NNE
Site Name:	Vidan Auto Salvage
Site EPA ID Number:	NYD986961167
Groundwater Flow Direction:	SW TOWARD THE NARROWS.
Inferred Depth to Water:	approximately 38 feet.
Hydraulic Connection:	The surficial aquifer and underlying aquifer are hydraulically connected.
Sole Source Aquifer:	No information about a sole source aquifer is available
Data Quality:	Information is inferred in the CERCLIS investigation report(s)

FEDERAL DATABASE WELL INFORMATION

WELL QUADRANT	DISTANCE FROM TP	LITHOLOGY	DEPTH TO WATER TABLE
Eastern	>2 Miles	Sand	17 ft.
Southern	>2 Miles	Sand	47 ft.

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Morristown, N.J. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.
† Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).
‡ U.S. EPA Ground Water Handbook, Vol I: Ground Water and Contamination, Office of Research and development EPA/625/6-90/016a,Chapter 4, page 78, September 1990.
** EDR AQUIFLOW™ information System of hydrogeologically determined groundwater flow directions at specific locations. See the date pages at the end of this report for a complete description.

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GEOCHECK VERSION 2.1
SUMMARY

STATE DATABASE WELL INFORMATION

WELL QUADRANT	DISTANCE FROM TP

NO WELLS FOUND

PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Nearest PWS.
NOTE: PWS System location is not always the same as well location.

PWS Name: SPRING GLEN LAKE
BLOOMINGBURG, NY 12721
Location Relative to TP: 1 - 2 Miles North
PWS currently has or has had major violation(s): No

AREA RADON INFORMATION

State Radon Information for Zip Code: 11215

Number of sites tested: 14

Average (pCi/L)	Geometric Mean (pCi/L)	Geometric Std Dev.	Maximum (pCi/L)
1.3	0.8	2.5	4.9

EPA Radon Zone for KINGS County: 3

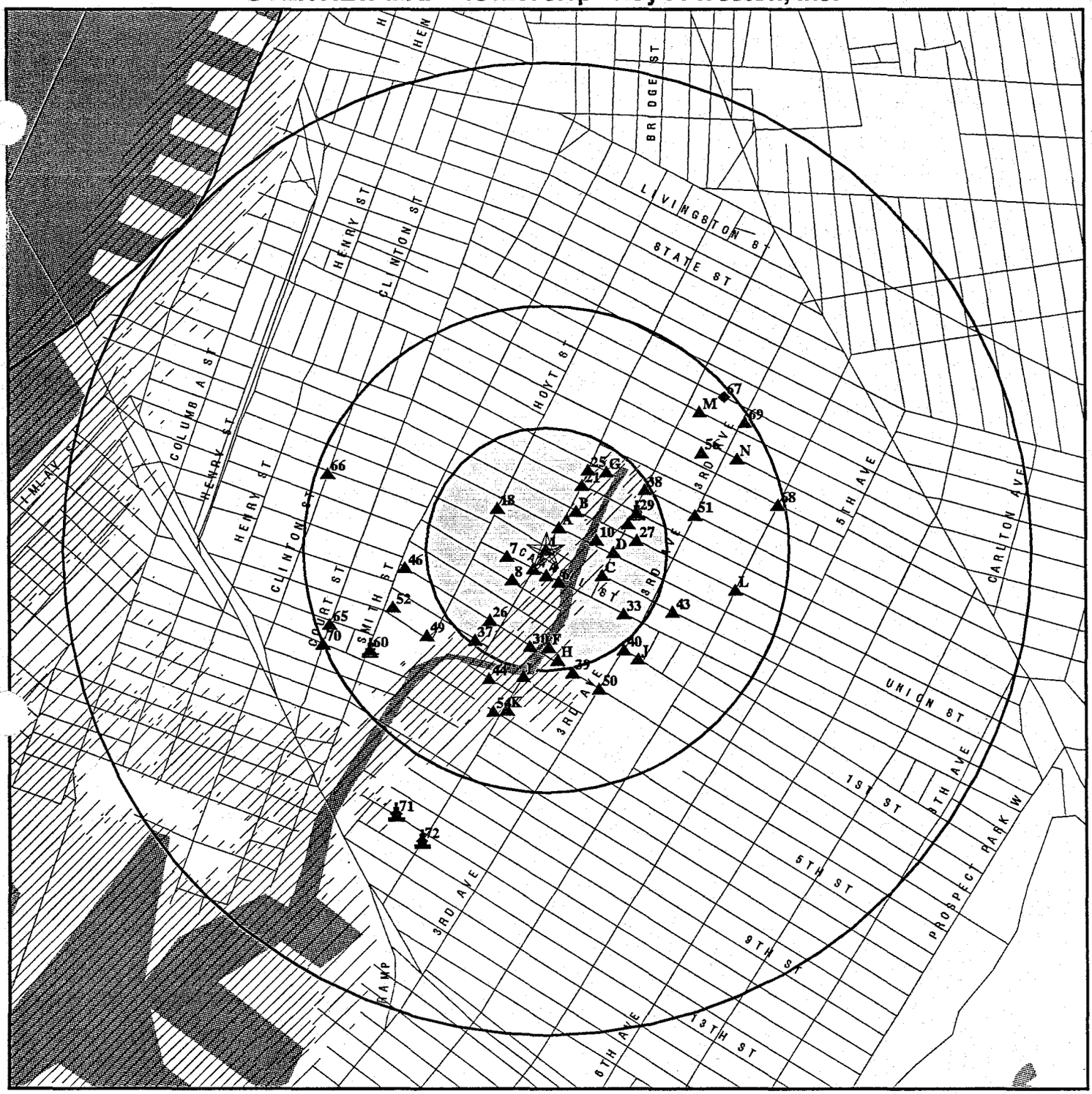
Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

KINGS COUNTY, NY

Number of sites tested: 51

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area	0.750 pCi/L	100%	0%	0%
Basement	1.370 pCi/L	88%	10%	2%

OVERVIEW MAP - 1312670.1p - Roy F. Weston, Inc.



- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ♟ Coal Gasification Sites (if requested)
- National Priority List Sites
- Landfill Sites
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Wetlands per National Wetlands Inventory (1994)

TARGET PROPERTY:	Vidan Auto Salvage	CUSTOMER:	Roy F. Weston, Inc.
ADDRESS:	327-331 Bond St.	CONTACT:	Sharron DaCosta
CITY/STATE/ZIP:	Brooklyn NY 11215	INQUIRY #:	1312670.1p
LAT/LONG:	40.6791 / 73.9904	DATE:	November 17, 1998 2:56 pm

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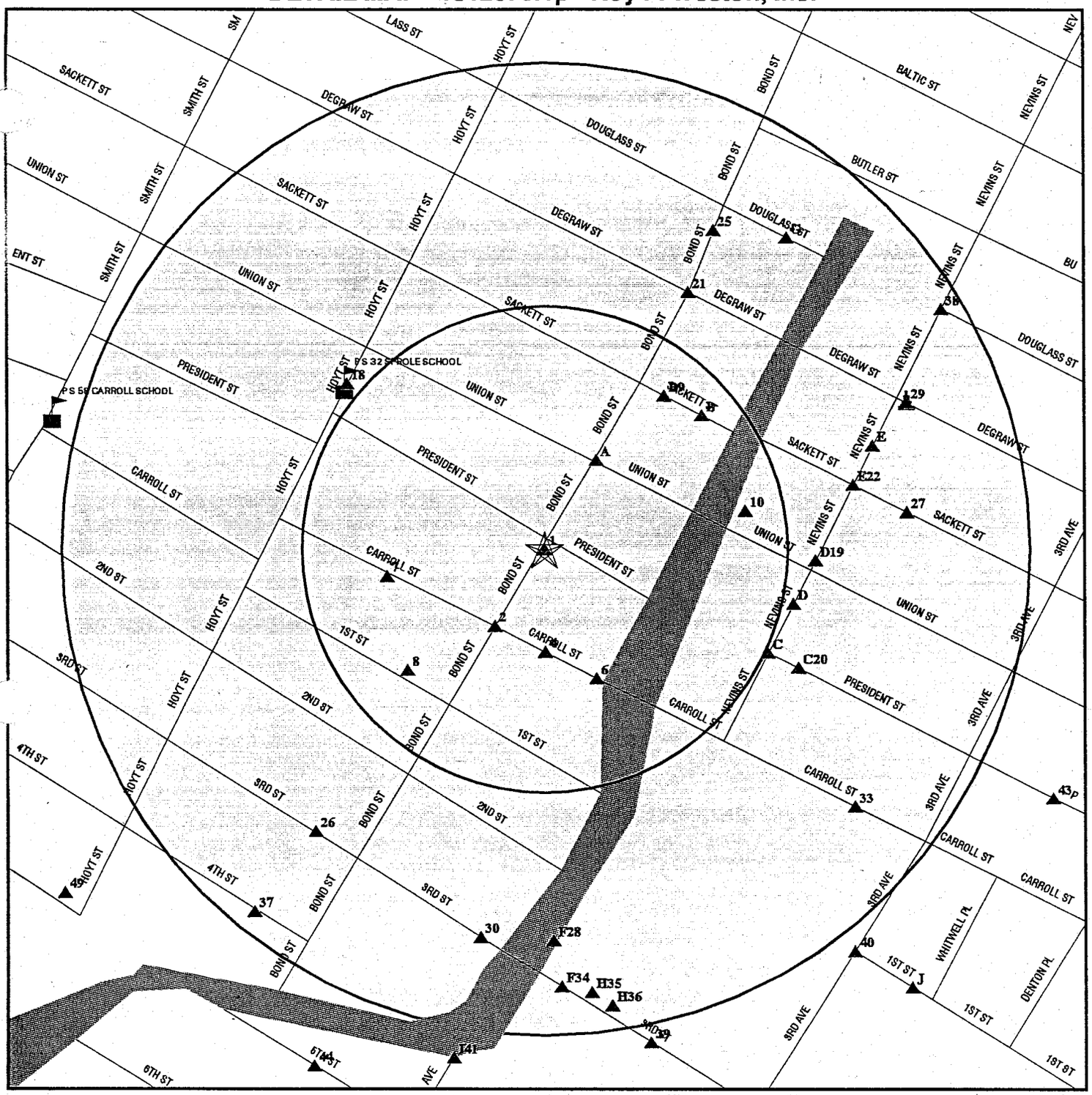
DETAIL MAP - 1312670.1p - Roy F. Weston, Inc.



★ Target Property

▲ Sites at elevations higher than or equal to the target property

◆ Sites at elevations lower than the target property

Coal Gasification Sites (if requested)

Sensitive Receptors

National Priority List Sites

Landfill Sites

Power transmission lines

Oil & Gas pipelines

0 1/16 1/8 1/4 Miles

TARGET PROPERTY:	Vidan Auto Salvage	CUSTOMER:	Roy F. Weston, Inc.
ADDRESS:	327-331 Bond St.	CONTACT:	Sharron DaCosta
CITY/STATE/ZIP:	Brooklyn NY 11215	INQUIRY #:	1312670.1p
LAT/LONG:	40.6791 / 73.9904	DATE:	November 17, 1998 3:03 pm

MAP FINDINGS SUMMARY SHOWING ALL SITES

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPL		1.000	0	0	0	0	NR	0
Delisted NPL		TP	NR	NR	NR	NR	NR	0
RCRIS-TSD		0.500	0	1	0	NR	NR	1
State Haz. Waste		1.000	0	0	0	0	NR	0
CERCLIS	X	0.500	0	0	0	NR	NR	0
CERC-NFRAP		TP	NR	NR	NR	NR	NR	0
CORRACTS		1.000	0	1	0	0	NR	1
State Landfill		0.500	0	0	2	NR	NR	2
LUST		0.500	1	5	27	NR	NR	33
UST		0.250	1	8	NR	NR	NR	9
AST		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
RCRIS Sm. Quan. Gen.	X	0.250	5	8	NR	NR	NR	13
RCRIS Lg. Quan. Gen.		0.250	3	5	NR	NR	NR	8
HMIRS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
FINDS	X	TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
NY Spills		TP	NR	NR	NR	NR	NR	0
CBS UST		0.250	0	1	NR	NR	NR	1
CBS AST		0.250	0	0	NR	NR	NR	0
MOSF UST		0.500	1	0	0	NR	NR	1
MOSF AST		0.500	0	0	0	NR	NR	0
HSWDS		0.500	0	0	2	NR	NR	2
ROD		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
Coal Gas		1.000	0	1	1	2	NR	4

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

MAP FINDINGS SUMMARY SHOWING
ONLY SITES HIGHER THAN OR THE SAME ELEVATION AS TP

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPL		1.000	0	0	0	0	NR	0
Delisted NPL		TP	NR	NR	NR	NR	NR	0
RCRIS-TSD		0.500	0	1	0	NR	NR	1
State Haz. Waste		1.000	0	0	0	0	NR	0
CERCLIS	X	0.500	0	0	0	NR	NR	0
CERC-NFRAP		TP	NR	NR	NR	NR	NR	0
CORRACTS		1.000	0	1	0	0	NR	1
State Landfill		0.500	0	0	2	NR	NR	2
LUST		0.500	1	5	26	NR	NR	32
UST		0.250	1	8	NR	NR	NR	9
AST		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
RCRIS Sm. Quan. Gen.	X	0.250	5	8	NR	NR	NR	13
RCRIS Lg. Quan. Gen.		0.250	3	5	NR	NR	NR	8
HMIRS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
FINDS	X	TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
NY Spills		TP	NR	NR	NR	NR	NR	0
CBS UST		0.250	0	1	NR	NR	NR	1
CBS AST		0.250	0	0	NR	NR	NR	0
MOSF UST		0.500	1	0	0	NR	NR	1
MOSF AST		0.500	0	0	0	NR	NR	0
HSWDS		0.500	0	0	2	NR	NR	2
ROD		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
Coal Gas		1.000	0	1	1	0	NR	2

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

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Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
1 Target Property	DENTS OUT AUTO BODY LTD 327 BOND ST BROOKLYN, NY 11215	CERCLIS FINDS RCRIS-SQG	1000789020 NYD986961167

CERCLIS Classification Data:
Site Incident Category: Not reported
Federal Facility: Not a Federal Facility
Ownership Status: Unknown
NPL Status: Not on the NPL
Site Description: FORMER AUTOMOTIVE 'CHOP SHOP' AND CHEMICAL DUMPING SITE UNDER SITE UNDER ATTORNEY GENERAL INVESTIGATION.

CERCLIS Assessment History:
Assessment: PRELIMINARY ASSESSMENT
Completed: 25-SEP-91
Assessment: REMOVAL ASSESSMENT
Completed: 26-SEP-91

CERCLIS Site Status:
Not reported

RCRIS:
Owner: MICHAEL PLANTZ
(718) 488-5936

Contact: MICHAEL PLANTZ
(718) 488-5936

Record Date: 05/10/1993

Classification: Conditionally Exempt Small Quantity Generator

Used Oil Recyc: No

Violation Status: No violations found

---

2 SSW < 1/8 Higher	PENSKE TRUCK LEASING CO LP 347 BOND ST BROOKLYN, NY 11231	RCRIS-SQG	1000990241 NYR000002006

RCRIS:
Owner: COSMO CORP C-O ABE STERN
(718) 435-1944

Contact: GENE RAFFA
(718) 797-4091

Record Date: 03/28/1995

Classification: Conditionally Exempt Small Quantity Generator

Used Oil Recyc: No

Violation Status: No violations found

NY MANIFEST
Additional detail is available in NY MANIFEST. Please contact your EDR Account Executive for more information.

A3 NNE < 1/8 Higher	THOMAS PAULSON & SON INC 450 UNION ST BROOKLYN, NY 11231	FINDS RCRIS-LQG	1000296296 NYD001263136

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

THOMAS PAULSON & SON INC (Continued) **1000296296**

RCRIS:
Owner: Not reported
Contact: IRVIN SCHLANSKY (718) 625-2936
Record Date: 09/24/1984
Classification: Large Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
- Facility is monitored or permitted for air emissions under the Clean Air Act (under AFS/AIRS)

---

4 South < 1/8 Higher **TWO DANS ENTERPRISES** **FINDS 1000981522**
385 CARROLL ST **RCRIS-SQG NY0001008663**
BROOKLYN, NY 11231

RCRIS:
Owner: DANNY TINNEY (718) 243-2227
Contact: DANNY TINNEY (718) 243-2227
Record Date: 01/18/1995
Classification: Conditionally Exempt Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

A5 NNE < 1/8 Higher **NYCDOT BIN 2240270** **RCRIS-LQG 1001090370**
UNION ST BRIDGE OVER **NYR000022079**
BROOKLYN, NY 11231

RCRIS:
Owner: NYCDOT (212) 788-2083
Contact: JOHN ANZALONE (212) 788-2083
Record Date: 04/10/1996
Classification: Large Quantity Generator

NYCDOT BIN 2240270 (Continued) **1001090370**

Used Oil Recyc: No

Violation Status: No violations found

NY MANIFEST
Additional detail is available in NY MANIFEST. Please contact your EDR Account Executive for more information.

---

6 **400 CARROLL ST** **LUST** **S102401891**
SSE **400 CARROLL ST** **NY Spills** **N/A**
< 1/8 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9705145	Region of Spill:	2
Facility Contact:	FF BARRY	Facility Tele:	(917) 769-0483
Investigator:	TANG	SWIS:	61
Caller Name:	FF BARRY	Caller Agency:	NEW YORK CITY HAZ MAT
Caller Phone:	(917) 769-0483	Caller Extension:	Not reported
Notifier Name:	FF BARRY	Notifier Agency:	NEW YORK CITY HAZ MAT
Notifier Phone:	(917) 769-0483	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
Spiller:	UNKNOWN		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	07/29/1997		
Spill Cause:	Other	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Vessel
Spill Notifier:	Fire Department	PBS Number:	Not reported
Spill Date:	07/29/1997 13:50	Reported to Dept:	07/29/1997 15:17
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	07/30/1997		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	07/29/1997		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	GASOLINE		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	20	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:	CALLED FIRE HAZMAT, READINGS BELOW LEL, AND DEP WAS CALLED. WILL HANDLE. NO ACTION BY DEC.		
Caller Remarks:	caller reports above address is vacant commercial bldg that was on fire - inside bldg a boat was being stored and due to fire gas tank ruptured - no clean up - product was absorbed by ground		

SPILLS:

Spill Number:	9605780	Region of Spill:	2
Facility Contact:	ANDREW LEIDER	Facility Tele:	(718) 522-7400

400 CARROLL ST (Continued) **S102401891**

Investigator: TOMASELLO
Caller Name: JON KOLLEENY
Caller Agency: ELDON ENVIORNMENTAL
Caller Phone: (516) 229-2325
Caller Extension: Not reported
Notifier Name: JON KOLLEENY
Notifier Agency: ELDON ENVIORNMENTAL
Notifier Phone: (516) 229-2325
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
SWIS: 61
Spiller: UNKNOWN
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Unknown
Resource Affected: Groundwater
Water Affected: Not reported
Spill Source: Unknown
Spill Notifier: Other
PBS Number: Not reported
Spill Date: 07/31/1996 09:30
Reported to Dept: 08/05/1996 11:58
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 09/03/1996
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 08/05/1996
Date Region Sent Report To Central Office: Not reported
DEC Remark: Not reported
Caller Remark: property was a fuel storage area 30 yrs ago - then property was a demolition waste transfer station - now property is in bankrupsy - attorney for prospective buyers hired caller for phase 1 & phase 2 investigation - conatminated soil & water found **** request call back ********

7
West
< 1/8
Higher

REGENCY SVC CARTS INC **RCRIS-SQG** **1000912162**
337-361 CARROLL ST **FINDS** **NY0000475137**
BROOKLYN, NY 11231

RCRIS:
Owner: GIACOMO ABBATE
(718) 855-8304
Contact: CARL COCCHIOLA
(718) 855-8304
Record Date: 07/21/1994
Classification: Conditionally Exempt Small Quantity Generator

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REGENCY SVC CARTS INC (Continued) **1000912162**

Used Oil Recyc: No

Violation Status: Violations exist

There are 2 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
Compliance Evaluation Inspection (CEI)	Generator-All Requirements	09/11/1995
	Generator-All Requirements	09/11/1995

---

8 SW < 1/8 Higher **NEW AMSTERDAM THEATER** **RCRIS-LQG** **1001113438**
40 1ST ST **NYR000024281**
NEW YORK, NY 10013

RCRIS:

Owner: EMPIRE STATE DEVELOPMENT CORP
(212) 790-2575

Contact: STAN ABRAMSKI
(516) 681-7136

Record Date: 05/21/1996

Classification: Large Quantity Generator

Used Oil Recyc: No

Violation Status: No violations found

B9 NE < 1/8 Higher **SACKETT STREET GARAGE** **UST** **U003074650**
498-502 SACKETT STREET **AST** **N/A**
BROOKLYN NY, NY 11231

PBS UST:

PBS Number:	2-017590	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	3		
Owner:	BAYSIDE FUEL OIL CORP 180 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 976-4000 ATTN: FREDERICK J. CAPURO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	4000		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	06/79
Product Stored:	UNLEADED GASOLINE	Tank Type:	Steel/carbon steel

SACKETT STREET GARAGE (Continued) U003074650

Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	GALVANIZED STEEL
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	Product Level Gauge	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	10/02
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	4550	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		

PBS AST:

PBS Number:	2-017590	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Facility Type:	Not reported		
Owner Type:	Corporate/Commercial		
Owner Sub Type:	Not reported		
Owner:	BAYSIDE FUEL OIL CORP 180 SHORE PARKWAY BROOKLYN, NY 11214		
Owner Phone:	(718) 946-4000		
Facility Phone:	(718) 625-5932		
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Name:	FRED		
Emergency Phone:	(718) 946-4000		
Total Tanks:	3		
Total Capacity:	4550		
Tank ID:	002		
Tank Status:	In Service		
Capacity (Gal):	275		
Tank Error Status:	No data missing		
Tank Location:	ABOVEGROUND		
Product Stored:	LUBE OIL		
Tank Type:	Steel/carbon steel		
Install Date:	06/85		
Tank Internal:	NONE		
Tank External:	NONE/NONE		
Tank Containment:	NONE/NONE		
Pipe Type:	STEEL/IRON		
Pipe Location:	Aboveground		
Pipe Internal:	NONE		
Pipe External:	NONE/NONE		
Leak Detection:	NONE/NONE		

SACKETT STREET GARAGE (Continued) U003074650

Overfill Protection:	Product Level Gauge	Dispenser Method:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False
Inspected:	Not reported	Inspector:	Not reported
Result of Inspection:	Not reported		
Mailing Name:	BAYSIDE FUEL OIL CORP		
Mailing Address:	1810 SHORE PARKWAY BROOKLYN, NY 11214		
Mailing Contact:	FREDERICK J. CAPURO	Mailing Telephone:	(718) 976-4000
Owner Mark:	First Owner	Expiration Date:	10/23/02
Certification Flag:	False	Certification Date:	11/12/97
Renew Flag:	False	Renew Date:	08/12/97
Dead Letter:	False		
Facility Screen:	Minor data missing		
Owner Screen:	No data missing		
Tank Screen:	Minor data missing		

Fiscal Amount for Registration Fee is Correct: True

PBS Number:	2-017590	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Facility Type:	Not reported		
Owner Type:	Corporate/Commercial		
Owner Sub Type:	Not reported		
Owner:	BAYSIDE FUEL OIL CORP 180 SHORE PARKWAY BROOKLYN, NY 11214		
Owner Phone:	(718) 946-4000		
Facility Phone:	(718) 625-5932		
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Name:	FRED		
Emergency Phone:	(718) 946-4000		
Total Tanks:	3		
Total Capacity:	4550		
Tank ID:	003		
Tank Status:	In Service		
Capacity (Gal):	275		
Tank Error Status:	Minor data missing		
Tank Location:	ABOVEGROUND		
Product Stored:	LUBE OIL		
Tank Type:	Steel/carbon steel		
Install Date:	06/85		
Tank Internal:	Not reported		
Tank External:	Not reported		
Tank Containment:	NONE/NONE		
Pipe Type:	STEEL/IRON		
Pipe Location:	Aboveground		
Pipe Internal:	NONE		
Pipe External:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Protection:	Product Level Gauge	Dispenser Method:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False

SACKETT STREET GARAGE (Continued) **U003074650**

Inspected:	Not reported	Inspector:	Not reported
Result of Inspection:	Not reported		
Mailing Name:	BAYSIDE FUEL OIL CORP		
Mailing Address:	1810 SHORE PARKWAY BROOKLYN, NY 11214		
Mailing Contact:	FREDERICK J. CAPURO	Mailing Telephone:	(718) 976-4000
Owner Mark:	First Owner	Expiration Date:	10/23/02
Certification Flag:	False	Certification Date:	11/12/97
Renew Flag:	False	Renew Date:	08/12/97
Dead Letter:	False		
Facility Screen:	Minor data missing		
Owner Screen:	No data missing		
Tank Screen:	Minor data missing		

Fiscal Amount for Registration Fee is Correct: True

10
East
< 1/8
Higher

NYSDOT UNION ST BRIDGE **RCRIS-SQG** **1000555037**
UNION ST BRG - GOWANUS CANAL **FINDS** **NYD986975324**
BROOKLYN, NY 11201

RCRIS:

Owner:	NYSDOT (212) 555-1212
Contact:	MUHAMMAD AFZAL (212) 414-7172
Record Date:	11/01/1991
Classification:	Small Quantity Generator
Used Oil Recyc:	No
Violation Status:	No violations found

B11
NE
< 1/8
Higher

BAYSIDE FUEL OIL CO. **RCRIS-SQG** **1000382088**
510 SACKETT STREET **FINDS** **NYD981872419**
BROOKLYN, NY 11231

RCRIS:

Owner:	ALFRED ALLEGRETTI (718) 372-9800
Contact:	ANTHONY NATALE (718) 378-9800
Record Date:	04/06/1998
Classification:	Small Quantity Generator
Used Oil Recyc:	No
Violation Status:	No violations found

B12
NE
< 1/8
Higher

BAYSIDE FUEL OIL DEPOT CORP. **MOSF UST** **S102633573**
510 SACKETT ST **N/A**
BROOKLYN, NY 11231

BAYSIDE FUEL OIL DEPOT CORP. (Continued) **S102633573**

MOSF UST:

Facility ID:	2-1220	Facility Status:	ACTIVE FACILITY
SWIS Code:	61	Facility Town:	NEW YORK CITY
Operator:	VINCENT ALLEGRETTI	Contact Phone:	(718) 625-5932
Owner:	ALFRED ALLEGRETTI BAYSIDE FUEL OIL DEPOT CORP. 1776 SHORE PARKWAY BROOKLYN, NY 11214		
Owner Tel:	(718) 372-9800	Owner Type:	UNDEFINED
Mail To:	BAYSIDE FUEL OIL DEPOT CORP. 1776 SHORE PARKWAY P.O. BOX 140128 BROOKLYN, NY 11214 ATTN: ALFRED ALLEGRETTI (718) 372-9800		
Legal Agent:	ALFRED ALLEGRETTI 1776 SHORE PARKWAY BROOKLYN, NY 11214		
Date Filed:	Not reported	CBS Number:	Not reported
Emerg Contact:	VINCENT ALLEGRETTI, (718) 625-5932		
SPDES Num:	Not reported		
Total Tanks:	2	Total Capacity:	1501000
Tank Status:	Temp. Out of Service		
Status of Data:	Complete		
Avg Throughpt:	200000	License Stat:	Issued
License Issued:	04/01/95	Expiration Date:	03/31/00
Facility Type:	Storage Terminal		
Transfer Operation:	Tank Truck, Vessel/Barge		
Applic Rcvd:	01/25/95	Tank ID:	A-B-C
Tank Location:	Underground		
Install Date:	12/47	Capacity (Gal):	1500000
Product:	Nos. 1, 2, or 4 Fuel Oil	Tank Internal:	Epoxy Liner
Tank Type:	Steel/carbon steel		
Tank External:	13		
Pipe Location:	Aboveground	Pipe Type:	STEEL/IRON
Pipe Internal:	None	Dispenser:	Submersible
Pipe External:	13		
Second Contain:	None		
Leak Detection:	Groundwater Well		
Overfill Protection:	20		
Test Date:	06/92	Date Closed:	Not reported
Region:	Not reported	First Name:	Not reported
Inspected Date:	06/04/95	Inspector:	AS
Lat/Long:	40|40|50 / 73|59|20	Inspected State:	Not reported
Owner Mark:	1		
Renew Date:	11/07/94	Vessel ID:	Not reported

Facility ID:	2-1220	Facility Status:	ACTIVE FACILITY
SWIS Code:	61	Facility Town:	NEW YORK CITY
Operator:	VINCENT ALLEGRETTI	Contact Phone:	(718) 625-5932
Owner:	ALFRED ALLEGRETTI BAYSIDE FUEL OIL DEPOT CORP. 1776 SHORE PARKWAY BROOKLYN, NY 11214		
Owner Tel:	(718) 372-9800	Owner Type:	UNDEFINED
Mail To:	BAYSIDE FUEL OIL DEPOT CORP. 1776 SHORE PARKWAY P.O. BOX 140128 BROOKLYN, NY 11214		

BAYSIDE FUEL OIL DEPOT CORP. (Continued) S102633573

ATTN: ALFRED ALLEGRETTI
(718) 372-9800
Legal Agent: ALFRED ALLEGRETTI
1776 SHORE PARKWAY
BROOKLYN, NY 11214

Date Filed:	Not reported	CBS Number:	Not reported
Emerg Contact:	VINCENT ALLEGRETTI, (718) 625-5932		
SPDES Num:	Not reported		
Total Tanks:	2	Total Capacity:	1501000
Tank Status:	Temp. Out of Service		
Status of Data:	Minor Errors		
Avg Throughpt:	200000	License Stat:	Issued
License Issued:	04/01/95	Expiration Date:	03/31/00
Facility Type:	Storage Terminal		
Transfer Operation:	Tank Truck, Vessel/Barge		
Applic Rcvd:	01/25/95	Tank ID:	BOILER TANK
Tank Location:	Underground		
Install Date:	12/47	Capacity (Gal):	1000
Product:	Nos. 1, 2, or 4 Fuel Oil	Tank Internal:	Epoxy Liner
Tank Type:	Steel/carbon steel		
Tank External:	13		
Pipe Location:	Underground	Pipe Type:	STEEL/IRON
Pipe Internal:	None	Dispenser:	Suction
Pipe External:	13		
Second Contain:	Not reported		
Leak Detection:	Groundwater Well		
Overfill Protection:	24		
Test Date:	08/79	Date Closed:	Not reported
Region:	Not reported	First Name:	Not reported
Inspected Date:	06/04/95	Inspector:	AS
Lat/Long:	40|40|50 / 73|59|20	Inspected State:	Not reported
Owner Mark:	1		
Renew Date:	11/07/94	Vessel ID:	Not reported

C13 **325 NEVINS STREET** LUST S102672916
ESE **325 NEVINS ST** N/A
1/8-1/4 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9501568	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	MARTINKAT	SWIS:	61
Caller Name:	PETER LEPORE	Caller Agency:	WHALECO OIL
Caller Phone:	(718) 852-7000	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
Spiller:	WHALECO - DRIVER		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	05/08/1995		
Spill Cause:	Tank Overfill	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Commercial/Industrial
Spill Notifier:	Responsible Party	PBS Number:	Not reported
Spill Date:	05/08/1995 10:00	Reported to Dept:	05/08/1995 10:05
Cleanup Ceased:	05/08/1995		

325 NEVINS STREET (Continued) **S102672916**

Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 05/19/1995
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: #2 FUEL OIL
Material Class: Petroleum
Unknwn Quantity: False
Quantity Spilled: 2
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: Not reported
Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported
Unk Qt Recovered: False
Quant Recovered: 2

Spill Number: 9508359
Facility Contact: CRUSADER CANDLE CO
Investigator: O'DOWD
Caller Name: PETER LEPORE
Caller Phone: (718) 852-7000
Notifier Name: PETER LEPORE
Notifier Phone: (718) 852-7000
Spiller Contact: Not reported
Spiller: WHALCO FUEL OIL
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. No DEC Response. No corrective action required.
Spill Closed Dt: 10/09/1995
Spill Cause: Tank Overfill
Water Affected: Not reported
Spill Notifier: Responsible Party
Spill Date: 10/09/1995 07:15
Cleanup Ceased: 10/09/1995
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 10/30/1995
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 10/09/1995
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: #2 FUEL OIL
Material Class: Petroleum
Region of Spill: 2
Facility Tele: (718) 625-0005
SWIS: 61
Caller Agency: WALCO FUEL OIL
Caller Extension: 522
Notifier Agency: WALCO FUEL OIL
Notifier Extension: 522
Spiller Phone: Not reported
Resource Affected: On Land
Spill Source: Private Dwelling
PBS Number: Not reported
Reported to Dept: 10/09/1995 07:46
Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

325 NEVINS STREET (Continued) — **S102672916**

Unknwn Quantity: False
Unk Qt Recovered: False
Quantity Spilled: 1
Quant Recovered: 1
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: TANK OVERFILL

C14 ESE 1/8-1/4 Higher — **CRUSADER CANDLE CO INC**, **325 NEVINS ST**, **BROOKLYN, NY 11215** — **RCRIS-SQG** **1000694280**; **FINDS** **NYD987005840**

RCRIS:
Owner: PAUL J MORRA
(718) 625-0005
Contact: PASCHAL VANORE
(718) 625-0005
Record Date: 06/12/1992
Classification: Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

D15 ESE 1/8-1/4 Higher — **318 NEVINS STREET**, **318 NEVINS ST**, **BROOKLYN, NY** — **LUST** **S100667928**; **NY Spills** **N/A**

LUST:
Spill Number: 9208840
Region of Spill: 2
Facility Contact: Not reported
Facility Tele: Not reported
Investigator: TANG
SWIS: 61
Caller Name: LEROY HYMAN
Caller Agency: NYTEL
Caller Phone: (718) 488-6075
Caller Extension: Not reported
Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: Not reported
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 10/30/1992
Spill Cause: Other
Resource Affected: Surface Water
Water Affected: GOWANUS CANAL
Spill Source: Other Commercial/Industrial
Spill Notifier: Responsible Party
PBS Number: Not reported
Spill Date: 10/30/1992 14:45
Reported to Dept: 10/30/1992 16:20
Cleanup Ceased: 10/30/1992
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported

318 NEVINS STREET (Continued) S100667928

Date Spill Entered In Computer Data File: 11/04/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: WASTE OIL
Material Class: Petroleum
Unknwn Quantity: False
Quantity Spilled: 2
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: OCURRED WHILE TESTING OIL WATER SEPERATION DRAIN SYSTEM OIL WENT TO BOOM DELAYED SINCE YESTERDAY,MECHANICAL PROBLEM HAS FIXED PROBLEM NO MORE LEAK ONLY 2 GALS
Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported
Unk Qt Recovered: False
Quant Recovered: 0

SPILLS:
Spill Number: 9207367
Facility Contact: Not reported
Investigator: TANG/SULLIVAN
Caller Name: DONNA HYMES
Caller Phone: (215) 344-3380
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
SWIS: 61
Spiller: Not reported
Address: Not reported
Not reported
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Unknown
Water Affected: Not reported
Spill Notifier: Other
Spill Date: 09/24/1992 16:00
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 12/03/1992
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/28/1992
Date Region Sent Report To Central Office: Not reported
DEC Remark: Not reported
Caller Remark: GASOLINE DISCOVERED IN WELL NEAR TANK 2K GASOLINE WILL TEST NEXT WEEK4K GASOLINE DOUBLE WALL,FIBERGLASS WILL CHECK LEAK DET- SYSTEM AND SPACE 2K DEISEL WILL TEST NEXT WEEK.
Region of Spill: 2
Facility Tele: Not reported
Caller Agency: LEXICON ENV
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported
Resource Affected: Groundwater
Spill Source: Other Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 09/24/1992 18:24

D16 **BELL ATLANTIC** UST U003074735
ESE **318 NEVINS ST** AST N/A
1/8-1/4 **BROOKLYN, NY 11215**
Higher

PBS UST:
PBS Number: 2-344265
CBS Number: Not reported

BELL ATLANTIC (Continued) U003074735

SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	3		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	2000		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	UNLEADED GASOLINE	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Suction
Date Tested:	05/89	Next Test Date:	Not reported
Date Closed:	05/93	Test Method:	PETRO-TITE
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	8275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		
PBS Number:	2-344265	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	3		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		

BELL ATLANTIC (Continued) U003074735

Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	2000		
Tank Location:	UNDERGROUND		
Tank ID:	003	Install Date:	09/93
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Suction
Date Tested:	06/89	Next Test Date:	N.T.R
Date Closed:	09/93	Test Method:	PETRO-TITE
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	8275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		
PBS Number:	2-344265	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	3		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	4000		
Tank Location:	UNDERGROUND		
Tank ID:	004	Install Date:	12/88
Product Stored:	UNLEADED GASOLINE	Tank Type:	Fiberglass coated steel

BELL ATLANTIC (Continued) U003074735

Tank Internal:	NONE	Pipe Internal:	FIBERGLASS LINER [FRP]
Pipe Location:	Underground	Pipe Type:	FIBERGLASS [FRP]
Tank External:	NONE/FIBERGLASS		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/FIBERGLASS		
Second Containment:	NONE/DOUBLED-WALLED TANK		
Leak Detection:	INTERSTITIAL MONITORING/IN-TANK SYSTEM		
Overfill Prot:	High Level Alarm, Catch Basin	Dispenser:	Suction
Date Tested:	09/93	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	PETRO-TITE
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	8275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		
PBS Number:	2-344265	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	3		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	280		
Tank Location:	UNDERGROUND		
Tank ID:	005	Install Date:	00/00
Product Stored:	OTHER	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	Not reported
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	Not reported		
Leak Detection:	Not reported		
Overfill Prot:	Not reported	Dispenser:	Not reported
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	05/93	Test Method:	Not reported

BELL ATLANTIC (Continued) **U003074735**

Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	8275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		
PBS Number:	2-344265	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	3		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	4000		
Tank Location:	UNDERGROUND		
Tank ID:	006	Install Date:	08/93
Product Stored:	DIESEL	Tank Type:	Concrete
Tank Internal:	FIBERGLASS LINER [FRP]	Pipe Internal:	FIBERGLASS LINER [FRP]
Pipe Location:	Underground	Pipe Type:	FIBERGLASS [FRP]
Tank External:	NONE/FIBERGLASS		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/FIBERGLASS		
Second Containment:	NONE/DOUBLED-WALLED TANK		
Leak Detection:	INTERSTITIAL MONITORING/IN-TANK SYSTEM		
Overfill Prot:	High Level Alarm, Catch Basin	Dispenser:	Suction
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	8275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		

BELL ATLANTIC (Continued) **U003074735**

PBS AST:

PBS Number:	2-344265	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Facility Type:	UTILITY		
Owner Type:	Corporate/Commercial		
Owner Sub Type:	New York Telephone		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016		
Owner Phone:	(800) 339-6144		
Facility Phone:	(800) 339-6144		
Operator:	BELL ATLANTIC		
Emergency Name:	BELL		
Emergency Phone:	(800) 386-9639		
Total Tanks:	3		
Total Capacity:	8275		
Tank ID:	007		
Tank Status:	In Service		
Capacity (Gal):	275		
Tank Error Status:	Minor data missing		
Tank Location:	ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE		
Product Stored:	USED OIL		
Tank Type:	Steel/carbon steel		
Install Date:	09/93		
Tank Internal:	NONE		
Tank External:	NONE/PAINTED/ASPHALT COATING		
Tank Containment:	NONE/DOUBLED-WALLED TANK		
Pipe Type:	NONE		
Pipe Location:	None		
Pipe Internal:	NONE		
Pipe External:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Protection:	Product Level Gauge, Catch Basin	Dispenser Method:	Not reported
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False
Inspected:	Not reported	Inspector:	Not reported
Result of Inspection:	Not reported		
Mailing Name:	BELL ATLANTIC		
Mailing Address:	221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016		
Mailing Contact:	KATHLEEN TOBIN	Mailing Telephone:	(212) 338-6731
Owner Mark:	First Owner	Expiration Date:	12/14/02
Certification Flag:	False	Certification Date:	01/28/98
Renew Flag:	True	Renew Date:	09/29/97
Dead Letter:	False		
Facility Screen:	No data missing		
Owner Screen:	No data missing		
Tank Screen:	Minor data missing		

Fiscal Amount for Registration Fee is Correct: True

D17 **NEW YORK TELEPHONE CO** RCRIS-SQG 1000791295
ESE **318 NEVINS ST** FINDS NYD987028016
1/8-1/4 **BROOKLYN, NY 11215**
Higher

NEW YORK TELEPHONE CO (Continued) **1000791295**

RCRIS:
Owner: BANKERS LIFE CO
(212) 555-1212
Contact: FRED SMITH
(718) 726-9909
Record Date: 03/25/1993
Classification: Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

18
NW
1/8-1/4
Higher

NYC BD OF ED - PUBLIC SCHOOL 32 K **RCRIS-SQG** **1001028758**
317 HOYT ST **NYR000009902**
BROOKLYN, NY 11231

RCRIS:
Owner: NYC BD OF ED
(718) 935-5010
Contact: MICHAEL MOSKOWITZ
(212) 727-7676
Record Date: 08/03/1995
Classification: Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

D19
East
1/8-1/4
Higher

NICKS UNION NEVINS SER. STA. CORP. **UST** **U003128182**
301 NEVINS ST **N/A**
BROOKLYN, NY 11217

PBS UST:

PBS Number:	2-452483	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-8667
Operator:	NICHOLAS S.CONIGLIO		
Emergency Contact:	NICH, (718) 494-6669		
Total Tanks:	4		
Owner:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669		
Owner Type:	Private Resident	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669		
	Not Reported		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		

NICKS UNION NEVINS SER. STA. CORP. (Continued) **U003128182**

Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	OTHER	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	Not reported
Tank External:	Not reported		
Tank Status:	Temporarily Out Of Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	2200	Renewal Date:	06/01/98
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	06/12/98
Old PBS Number:	Not reported	Expiration Date:	08/23/03
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		
PBS Number:	2-452483	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-8667
Operator:	NICHOLAS S.CONIGLIO		
Emergency Contact:	NICH, (718) 494-6669		
Total Tanks:	4		
Owner:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669		
Owner Type:	Private Resident	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669 Not Reported		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	002	Install Date:	00/00
Product Stored:	OTHER	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	Not reported
Tank External:	Not reported		
Tank Status:	Temporarily Out Of Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		

NICKS UNION NEVINS SER. STA. CORP. (Continued) U003128182

Overfill Prot:	Not reported	Dispenser:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	2200	Renewal Date:	06/01/98
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	06/12/98
Old PBS Number:	Not reported	Expiration Date:	08/23/03
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		
PBS Number:	2-452483	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-8667
Operator:	NICHOLAS S.CONIGLIO		
Emergency Contact:	NICH, (718) 494-6669		
Total Tanks:	4		
Owner:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669		
Owner Type:	Private Resident	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669 Not Reported		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	003	Install Date:	00/00
Product Stored:	OTHER	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	Not reported
Tank External:	Not reported		
Tank Status:	Temporarily Out Of Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	2200	Renewal Date:	06/01/98
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	06/12/98
Old PBS Number:	Not reported	Expiration Date:	08/23/03

NICKS UNION NEVINS SER. STA. CORP. (Continued) U003128182

Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		
PBS Number:	2-452483	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-8667
Operator:	NICHOLAS S.CONIGLIO		
Emergency Contact:	NICH, (718) 494-6669		
Total Tanks:	4		
Owner:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669		
Owner Type:	Private Resident	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NICHOLAS S. CONIGLIO 37 UXBRIDGE STREET STATEN ISLAND, NY 10314 (718) 494-6669 Not Reported		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	004	Install Date:	00/00
Product Stored:	OTHER	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	Not reported
Tank External:	Not reported		
Tank Status:	Temporarily Out Of Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	2200	Renewal Date:	06/01/98
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	06/12/98
Old PBS Number:	Not reported	Expiration Date:	08/23/03
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		

C20 **473 PRESIDENT** **LUST** **S101508966**
ESE **473 PRESIDENT ST** **N/A**
1/8-1/4 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9412605	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	TIBBE	SWIS:	61

473 PRESIDENT (Continued) **S101508966**

Caller Name:	JEFF BEAUDETTE	Caller Agency:	TANKNOLOGY
Caller Phone:	(800) 666-2605	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
Spiller:	SAME		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Tank Test Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Commercial/Industrial
Spill Notifier:	Tank Tester	PBS Number:	Not reported
Spill Date:	12/20/1994 11:20	Reported to Dept:	12/20/1994 11:25
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	Not reported		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	Not reported		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	03/01/1995		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	UNKNOWN PETROLEUM		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	True
Quantity Spilled:	-1	Quant Recovered:	0
Quantity Units:	Not reported		
DEC Remarks:			
Caller Remarks:	ABOANDONED LINE FAILED TEST - NO SPILL OF PRODUCT - TANK TESTER HAD NO TANK NUMBER		

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21 NNE 1/8-1/4 Higher **BAYSIDE FUEL OIL CORP** **UST** **U003074649**
267 BOND ST **AST** **N/A**
BROOKLYN, NY 11231

PBS UST:

PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY		

BAYSIDE FUEL OIL CORP (Continued) U003074649

BROOKLYN, NY 11214
(718) 946-4000
ATTN: FREDERICK J. CAPURRO

Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	In Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	002	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON

BAYSIDE FUEL OIL CORP (Continued) U003074649

Tank External:	Not reported		
Tank Status:	In Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	None
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	003	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing

BAYSIDE FUEL OIL CORP (Continued) U003074649

FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	004	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported

4/17

BAYSIDE FUEL OIL CORP (Continued) **U003074649**

SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	005	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		

BAYSIDE FUEL OIL CORP (Continued) U003074649

Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	006	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	007	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel

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BAYSIDE FUEL OIL CORP (Continued) U003074649

Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	008	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported

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BAYSIDE FUEL OIL CORP (Continued) U003074649

Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	009	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		

BAYSIDE FUEL OIL CORP (Continued) U003074649

PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	010	Install Date:	12/60
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		

PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		

BAYSIDE FUEL OIL CORP (Continued) U003074649

Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	011	Install Date:	12/60
Product Stored:	KEROSENE	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		

BAYSIDE FUEL OIL CORP (Continued) U003074649

Tank ID:	012	Install Date:	12/60
Product Stored:	KEROSENE	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 625-5932
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Contact:	FRED, (718) 946-4000		
Total Tanks:	16		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214 (718) 946-4000 ATTN: FREDERICK J. CAPURRO		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	013	Install Date:	12/60
Product Stored:	KEROSENE	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Above/Underground Combination	Pipe Type:	STEEL/IRON
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction

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BAYSIDE FUEL OIL CORP (Continued) U003074649

Date Tested:	10/97	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	7975	Renewal Date:	08/12/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	11/12/97
Old PBS Number:	Not reported	Expiration Date:	10/23/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		

PBS AST:

PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Facility Type:	Not reported		
Owner Type:	Corporate/Commercial		
Owner Sub Type:	Not reported		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214		
Owner Phone:	(718) 946-4000		
Facility Phone:	(718) 625-5932		
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Name:	FRED		
Emergency Phone:	(718) 946-4000		
Total Tanks:	16		
Total Capacity:	7975		
Tank ID:	014		
Tank Status:	In Service		
Capacity (Gal):	275		
Tank Error Status:	No data missing		
Tank Location:	ABOVEGROUND		
Product Stored:	LUBE OIL		
Tank Type:	Steel/carbon steel		
Install Date:	08/85		
Tank Internal:	NONE		
Tank External:	NONE/NONE		
Tank Containment:	NONE/NONE		
Pipe Type:	STEEL/IRON		
Pipe Location:	Underground		
Pipe Internal:	NONE		
Pipe External:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Protection:	Product Level Gauge	Dispenser Method:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False
Inspected:	Not reported	Inspector:	Not reported
Result of Inspection:	Not reported		
Mailing Name:	BAYSIDE FUEL OIL CORP		
Mailing Address:	1810 SHORE PARKWAY BROOKLYN, NY 11214		

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BAYSIDE FUEL OIL CORP (Continued) U003074649

Mailing Contact:	FREDERICK J. CAPURRO	Mailing Telephone:	(718) 946-4000
Owner Mark:	First Owner	Expiration Date:	10/23/02
Certification Flag:	False	Certification Date:	11/12/97
Renew Flag:	False	Renew Date:	08/12/97
Dead Letter:	False		
Facility Screen:	Minor data missing		
Owner Screen:	No data missing		
Tank Screen:	Minor data missing		

Fiscal Amount for Registration Fee is Correct: True

PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Facility Type:	Not reported		
Owner Type:	Corporate/Commercial		
Owner Sub Type:	Not reported		
Owner:	BAYSIDE FUEL OIL CORP 1810 SHORE PARKWAY BROOKLYN, NY 11214		
Owner Phone:	(718) 946-4000		
Facility Phone:	(718) 625-5932		
Operator:	BAYSIDE FUEL OIL CORP		
Emergency Name:	FRED		
Emergency Phone:	(718) 946-4000		
Total Tanks:	16		
Total Capacity:	7975		
Tank ID:	015		
Tank Status:	In Service		
Capacity (Gal):	275		
Tank Error Status:	No data missing		
Tank Location:	ABOVEGROUND		
Product Stored:	LUBE OIL		
Tank Type:	Steel/carbon steel		
Install Date:	08/85		
Tank Internal:	NONE		
Tank External:	NONE/NONE		
Tank Containment:	NONE/NONE		
Pipe Type:	STEEL/IRON		
Pipe Location:	Underground		
Pipe Internal:	NONE		
Pipe External:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Protection:	None	Dispenser Method:	Suction
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False
Inspected:	Not reported	Inspector:	Not reported
Result of Inspection:	Not reported		
Mailing Name:	BAYSIDE FUEL OIL CORP		
Mailing Address:	1810 SHORE PARKWAY BROOKLYN, NY 11214		
Mailing Contact:	FREDERICK J. CAPURRO	Mailing Telephone:	(718) 946-4000
Owner Mark:	First Owner	Expiration Date:	10/23/02
Certification Flag:	False	Certification Date:	11/12/97
Renew Flag:	False	Renew Date:	08/12/97

BAYSIDE FUEL OIL CORP (Continued) U003074649

Dead Letter: False
Facility Screen: Minor data missing
Owner Screen: No data missing
Tank Screen: Minor data missing
Fiscal Amount for Registration Fee is Correct: True

PBS Number:	2-017574	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported

Facility Status: 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Type: Not reported
Owner Type: Corporate/Commercial
Owner Sub Type: Not reported
Owner: BAYSIDE FUEL OIL CORP
1810 SHORE PARKWAY
BROOKLYN, NY 11214
Owner Phone: (718) 946-4000
Facility Phone: (718) 625-5932
Operator: BAYSIDE FUEL OIL CORP
Emergency Name: FRED
Emergency Phone: (718) 946-4000
Total Tanks: 16
Total Capacity: 7975
Tank ID: 016
Tank Status: In Service
Capacity (Gal): 275
Tank Error Status: No data missing
Tank Location: ABOVEGROUND
Product Stored: USED OIL
Tank Type: Steel/carbon steel
Install Date: 08/85
Tank Internal: NONE
Tank External: NONE/NONE
Tank Containment: NONE/NONE
Pipe Type: STEEL/IRON
Pipe Location: Underground
Pipe Internal: NONE
Pipe External: NONE/NONE
Leak Detection: NONE/NONE

Overfill Protection:	Product Level Gauge	Dispenser Method:	Suction
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False
Inspected:	Not reported	Inspector:	Not reported

Result of Inspection: Not reported
Mailing Name: BAYSIDE FUEL OIL CORP
Mailing Address: 1810 SHORE PARKWAY
BROOKLYN, NY 11214

Mailing Contact:	FREDERICK J. CAPURRO	Mailing Telephone:	(718) 946-4000
Owner Mark:	First Owner	Expiration Date:	10/23/02
Certification Flag:	False	Certification Date:	11/12/97
Renew Flag:	False	Renew Date:	08/12/97

Dead Letter: False
Facility Screen: Minor data missing
Owner Screen: No data missing
Tank Screen: Minor data missing

BAYSIDE FUEL OIL CORP (Continued) U003074649

Fiscal Amount for Registration Fee is Correct: True

E22
ENE
1/8-1/4
Higher

CHATHAM CLEANERS INC — **FINDS** 1000407106
280 NEVINS ST — **RCRIS-LQG** NYD981133747
BROOKLYN, NY 11217

RCRIS:
Owner: Not reported
Contact: BORIS WEISS
(718) 834-6060
Record Date: 09/10/1985
Classification: Large Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
- Facility is monitored or permitted for air emissions under the Clean Air Act (under AFS/AIRS)

E23
ENE
1/8-1/4
Higher

ADMIRAL METALS — **UST** U000408644
270 NEVINS ST — N/A
BROOKLYN, NY 11217

PBS UST:

PBS Number:	2-483001	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 643-6360
Operator:	TOM FAILLA		
Emergency Contact:	HERB, (212) 349-5618		
Total Tanks:	1		
Owner:	NEVINS CANAL CORP 116 JOHN STREET, ROOM 312 NEW YORK, NY 10038 (212) 349-5618		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEVINS CANAL CORP 116 JOHN STREET, ROOM 312 NEW YORK, NY 10038 (212) 349-5618 Not Reported		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	5000		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	NOS 1,2, OR 4 FUEL OIL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	In Service		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		

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ADMIRAL METALS (Continued) U000408644

Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Suction
Date Tested:	10/90	Next Test Date:	10/95
Date Closed:	Not reported	Test Method:	HORNER
Deleted:	False	Updated:	False
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	5000	Renewal Date:	08/01/95
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	11/15/95
Old PBS Number:	Not reported	Expiration Date:	11/16/00
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		

E24
ENE
1/8-1/4
Higher

TE CONKLIN BRASS CO **FINDS** **1000551031**
270 NEVINS ST **UST** **NYD986916831**
BROOKLYN, NY 11217

FINDS:

Other Pertinent Environmental Activity Identified at Site:

- Facility is monitored or permitted for air emissions under the Clean Air Act (under AFS/AIRS)
- Civil judicial and administrative enforcement case against facility (under DOCKET)

PBS UST:

PBS Number:	2-349216	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 643-6360
Operator:	T E CONKLIN BRASS&COPPER CO,IN		
Emergency Contact:	THOM, (516) 536-4568		
Total Tanks:	0		
Owner:	NEVINS CANAL CORP 116 JOHN ST RM 312 NEW YORK, NY 10038 (212) 349-5618		
Owner Type:	Not reported	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEVINS CANAL CORP 116 JOHN ST RM 312 NEW YORK, NY 10038 (212) 349-5618 Not Reported		
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	GALVANIZED STEEL
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		

TE CONKLIN BRASS CO (Continued) 1000551031

Overfill Prot:	Product Level Gauge	Dispenser:	Suction
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	04/93	Test Method:	Not reported
Deleted:	False	Updated:	False
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	0	Renewal Date:	02/01/93
Tank Screen:	0	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	05/19/88
Old PBS Number:	Not reported	Expiration Date:	05/19/93
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-349216	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 643-6360
Operator:	T E CONKLIN BRASS&COPPER CO,IN		
Emergency Contact:	THOM, (516) 536-4568		
Total Tanks:	0		
Owner:	NEVINS CANAL CORP 116 JOHN ST RM 312 NEW YORK, NY 10038 (212) 349-5618		
Owner Type:	Not reported	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEVINS CANAL CORP 116 JOHN ST RM 312 NEW YORK, NY 10038 (212) 349-5618 Not Reported		
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	002	Install Date:	00/00
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	GALVANIZED STEEL
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Product Level Gauge	Dispenser:	Suction
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	04/93	Test Method:	Not reported
Deleted:	False	Updated:	False
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	0	Renewal Date:	02/01/93
Tank Screen:	0	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	05/19/88
Old PBS Number:	Not reported	Expiration Date:	05/19/93

TE CONKLIN BRASS CO (Continued) 1000551031

Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		
PBS Number:	2-349216	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 643-6360
Operator:	T E CONKLIN BRASS&COPPER CO,IN		
Emergency Contact:	THOM, (516) 536-4568		
Total Tanks:	0		
Owner:	NEVINS CANAL CORP 116 JOHN ST RM 312 NEW YORK, NY 10038 (212) 349-5618		
Owner Type:	Not reported	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEVINS CANAL CORP 116 JOHN ST RM 312 NEW YORK, NY 10038 (212) 349-5618 Not Reported		
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.		
Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	003	Install Date:	00/00
Product Stored:	UNLEADED GASOLINE	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	GALVANIZED STEEL
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Product Level Gauge	Dispenser:	Suction
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	04/93	Test Method:	Not reported
Deleted:	False	Updated:	False
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	0	Renewal Date:	02/01/93
Tank Screen:	0	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	05/19/88
Old PBS Number:	Not reported	Expiration Date:	05/19/93
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		

25
NNE
1/8-1/4
Higher

O-Z GEDNEY
262 BOND ST
BROOKLYN, NY 11217

FINDS 1000115937
RCRIS-LQG NYD066086547

O-Z GEDNEY (Continued) 1000115937

RCRIS:
Owner: GENERAL SIGNAL
(203) 357-8800
Contact: BEN HUAMANI
(718) 624-4200
Record Date: 08/18/1980
Classification: Large Quantity Generator
Used Oil Recyc: No
Violation Status: Violations exist

There are 1 violation record(s) reported at this site:

Evaluation	Area of Violation	Date of Compliance
Compliance Evaluation Inspection (CEI)	Generator-All Requirements	12/12/1985

26
SW
1/8-1/4
Higher

PATTERSON CHEMICAL CO INC
102 THIRD ST
BROOKLYN, NY 11231

RCRIS-SQG
FINDS
RCRIS-TSD
CORRACTS

1000403436
NYD980592471

CORRACTS Data:
Prioritization: Low
Status: RCRA Facility Assessment Completed

RCRIS:
Owner: ACE TERMINALS
(212) 855-7676
Contact: MOE STONE
(718) 855-7676
Record Date: 07/25/1980
Classification: TSDF, Hazardous Waste Transporter
Used Oil Recyc: No
TSDF Activities: Not reported
Violation Status: No violations found

27
East
1/8-1/4
Higher

AUTO BODY CONCEPTS DBA ABC COLLISION
549 SACKETT ST
BROOKLYN, NY 11217

FINDS
RCRIS-LQG

1000555866
NYD986984136

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

AUTO BODY CONCEPTS DBA ABC COLLISION (Continued) — **1000555866**

RCRIS:
Owner: ANTHONY DIMONDA
(212) 555-1212
Contact: ANTHONY DIMONDA
(718) 522-3111
Record Date: 10/22/1991
Classification: Large Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

NY MANIFEST
Additional detail is available in NY MANIFEST. Please contact your EDR Account Executive for more information.

F28 South 1/8-1/4 Higher — **NYSDOT 3RD ST BRIDGE & GOWANUS CANAL**
3RD ST BRG OVER GOWANUS CANAL
BROOKLYN, NY 11201

RCRIS-SQG / FINDS — **1000555036 / NYD986975316**

RCRIS:
Owner: NYSDOT
(212) 555-1212
Contact: MUHAMMAD AFZAL
(212) 414-7172
Record Date: 11/01/1991
Classification: Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

---

29 ENE 1/8-1/4 Higher — **FULTON MUNICIPAL GAS CO.**
263 NEVINS ST.
BROOKLYN, NY 11217

Coal Gas — **G000000435 / N/A**

COAL GAS SITE DESCRIPTION:
Site is on the western half of two blocks on Nevins St. between Douglass St. and Sackett St. Site includes the block between Sackett St. and Degraw St. west of Nevins St., ending at the Gowanus Canal. Site later called Brooklyn Union Gas Co. (C13) Site is a CERCLIS Site I.D. #NYD980531982. CERCLIS address is poor.

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30 South 1/8-1/4 Higher — **160 3RD STREET**
160 3RD ST
BROOKLYN, NY 11231

UST — **U000411350 / N/A**

PBS UST:
PBS Number: 2-480509
SPDES Number: Not reported
SWIS ID: 6101
Operator: PHILIP MARCANTONIO
Emergency Contact: PHIL, (718) 000-0000
CBS Number: Not reported
Telephone: (718) 000-0000

5/17

160 3RD STREET (Continued) U000411350

Total Tanks:	0		
Owner:	PHILIP MARCANTONIO 160 3RD STREET BROOKLYN, NY 11231 (718) 000-0000		
Owner Type:	Not reported	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	PHILIP MARCANTONIO 160 3RD STREET BROOKLYN, NY 11231 (718) 000-0000		
	Not Reported		
Facility Status:	2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14.		
Capacity (gals):	2200		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	Closed-In Place		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Product Level Gauge	Dispenser:	Submersible
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	03/90	Test Method:	Not reported
Deleted:	False	Updated:	False
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	0	Renewal Date:	06/01/95
Tank Screen:	0	Federal ID:	Not reported
Renew Flag:	Renwal has not been printed	Facility Screen:	Minor data missing
Certification Flag:	False	Certification Date:	09/21/90
Old PBS Number:	Not reported	Expiration Date:	09/10/95
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	Not reported		

G31 **KIWANAS PUMPING STATION** **LUST** **S102240139**
NE **201 DOUGLASS ST** **NY Spills** **N/A**
1/8-1/4 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9602000	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	(718) 965-2626
Investigator:	KOLLEENY	SWIS:	61
Caller Name:	MIKE BYRNE	Caller Agency:	URS CONSULTANTS
Caller Phone:	(716) 856-5636	Caller Extension:	Not reported
Notifier Name:	MIKE BYRNE	Notifier Agency:	URS CONSULTANTS
Notifier Phone:	(716) 856-5636	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(718) 965-2626
Spiller:	KIWANAS PUMPING STATION		
Address	201 DOUGLAS ST BROOKLYN, NY		

KIWANAS PUMPING STATION (Continued) S102240139

Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Other
Water Affected: Not reported
Spill Notifier: Other
Spill Date: 05/10/1996 00:00
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 10/14/1997
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 05/10/1996
Date Region Sent Summary to Central Office: Not reported
Resource Affected: On Land
Spill Source: Other Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 05/10/1996 09:03
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: DIESEL
Material Class: Petroleum
Unknwn Quantity: True
Quantity Spilled: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: caller received results of soil tests that were done at water pumping station which indicated contamination
Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported
Unk Qt Recovered: False
Quant Recovered: 0

SPILLS:
Spill Number: 8606864
Facility Contact: Not reported
Investigator: Not reported
Caller Name: Not reported
Caller Phone: Not reported
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
SWIS: 61
Spiller: GUANIS PUMPING STAT
Address: Not reported
Not reported
Spill Class: Not reported
Spill Closed Dt: 02/09/1987
Spill Cause: Equipment Failure
Water Affected: GUANIS CANAL
Spill Notifier: Responsible Party
Spill Date: 02/07/1987 09:00
Cleanup Ceased: 02/09/1987
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Region of Spill: 2
Facility Tele: Not reported
Caller Agency: Not reported
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: (625) 175-7718
Resource Affected: Surface Water
Spill Source: Other Non Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 02/09/1987 11:42

KIWANAS PUMPING STATION (Continued) S102240139

Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 03/16/1987
Date Region Sent Report To Central Office: Not reported
DEC Remark: 10/10/95: This is additional information about material spilled from the translation of the old spill file: 3 MGD RELEASED
Caller Remark: ITEM 945; MAIN INTERUPTION AT MAIN SEWAGE PUMP FAILED. NOTIFIED BY WARREN YAO, DEP, 212-860-9302

G32 **NYCDEP - GOWANUS PUMPING STATION** **FINDS** 1000153815
NE **201 DOUGLASS ST** **RCRIS-LQG** NYD982728602
1/8-1/4 **BROOKLYN, NY 11217** **UST**
Higher **NY Spills**

RCRIS:
Owner: NYC DEP
(212) 555-1212
Contact: MIKE A CHOLEWKA
(718) 797-5700
Record Date: 04/17/1989
Classification: Large Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

SPILLS:
Spill Number: 9602974 Region of Spill: 2
Facility Contact: MICHAEL KOWALSKI Facility Tele: (718) 372-7193
Investigator: MULQUEEN - SPEDES
Caller Name: MICHAEL KOWALSKI Caller Agency: DEP
Caller Phone: (718) 372-7193 Caller Extension: Not reported
Notifier Name: DEP Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: MICHAEL KOWALSKI Spiller Phone: (718) 372-7193
SWIS: 61
Spiller: GOWANUS PUMPING STATION
Address 201 DOUGLASS ST
BROOKLYN, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 12/31/1997
Spill Cause: Equipment Failure Resource Affected: Surface Water
Water Affected: GOWANUS CANAL Spill Source: Other Commercial/Industrial
Spill Notifier: Responsible Party PBS Number: Not reported
Spill Date: 05/31/1996 16:00 Reported to Dept: 06/01/1996 09:30
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 01/06/1998
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 06/01/1996
Date Region Sent Report To Central Office: Not reported

NYCDEP - GOWANUS PUMPING STATION (Continued) 1000153815

DEC Remark: Not reported
Caller Remark: pump failure caused spill

PBS UST:

PBS Number:	2-456217	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 965-2836
Operator:	NYCDEP		
Emergency Contact:	GEOR, (718) 326-2906		
Total Tanks:	2		
Owner:	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION 59-17 JUNCTION BOULEVARD CORONA, NY 11368 (718) 595-4374		
Owner Type:	Local Government	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION 59-17 JUNCTION BOULEVARD CORONA, NY 11368 (718) 595-4374 ATTN: JOSE A. LEON		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	1500		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	DIESEL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	None	Pipe Type:	NONE
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Gravity
Date Tested:	11/96	Next Test Date:	11/01
Date Closed:	Not reported	Test Method:	HORNER
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	3000	Renewal Date:	01/18/94
Tank Screen:	No data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/16/98
Old PBS Number:	Not reported	Expiration Date:	12/06/98
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		

PBS Number:	2-456217	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 965-2836
Operator:	NYCDEP		
Emergency Contact:	GEOR, (718) 326-2906		
Total Tanks:	2		
Owner:	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION 59-17 JUNCTION BOULEVARD		

NYCDEP - GOWANUS PUMPING STATION (Continued) 1000153815

CORONA, NY 11368
(718) 595-4374

Owner Type:	Local Government	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION 59-17 JUNCTION BOULEVARD CORONA, NY 11368 (718) 595-4374 ATTN: JOSE A. LEON		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Capacity (gals):	1500		
Tank Location:	UNDERGROUND		
Tank ID:	002	Install Date:	00/00
Product Stored:	NOS 5 OR 6 FUEL OIL	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	None	Pipe Type:	NONE
Tank External:	NONE/NONE		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Gravity
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	3000	Renewal Date:	01/18/94
Tank Screen:	No data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/16/98
Old PBS Number:	Not reported	Expiration Date:	12/06/98
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		
PBS Number:	2-456217	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(718) 965-2836
Operator:	NYCDEP		
Emergency Contact:	GEOR, (718) 326-2906		
Total Tanks:	2		
Owner:	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION 59-17 JUNCTION BOULEVARD CORONA, NY 11368 (718) 595-4374		
Owner Type:	Local Government	Owner Mark:	First Owner
Owner Subtype:	Not reported		
Mailing Address:	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION 59-17 JUNCTION BOULEVARD CORONA, NY 11368 (718) 595-4374 ATTN: JOSE A. LEON		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		

NYCDEP - GOWANUS PUMPING STATION (Continued) 1000153815

Capacity (gals):	550		
Tank Location:	UNDERGROUND		
Tank ID:	005	Install Date:	00/00
Product Stored:	UNLEADED GASOLINE	Tank Type:	Steel/carbon steel
Tank Internal:	NONE	Pipe Internal:	NONE
Pipe Location:	Underground	Pipe Type:	GALVANIZED STEEL
Tank External:	NONE/PAINTED/ASPHALT COATING		
Tank Status:	Closed-In Place		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/NONE		
Second Containment:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Prot:	None	Dispenser:	Suction
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	02/96	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	Minor data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	3000	Renewal Date:	01/18/94
Tank Screen:	No data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/16/98
Old PBS Number:	Not reported	Expiration Date:	12/06/98
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	OTHER		

33
SE
1/8-1/4
Higher

LINDA TOOL & DIE CORP RCRIS-SQG 1000791081
459 CARROLL ST FINDS NYD987025822
BROOKLYN, NY 11215

RCRIS:

Owner: MIKE DIMARINO
(718) 522-2066

Contact: MIKE DIMARINO
(718) 522-2066

Record Date: 01/14/1993

Classification: Small Quantity Generator

Used Oil Recyc: No

Violation Status: No violations found

NY MANIFEST
Additional detail is available in NY MANIFEST. Please contact your EDR Account Executive for more information.

F34
South
1/8-1/4
Higher

175 3RD STREET LUST S102148318
175 3RD ST N/A
BROOKLYN, NY 11231

LUST:

Spill Number:	9208180	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	SULLIVAN	SWIS:	61
Caller Name:	ROBERT GOLDMAN	Caller Agency:	LEXICON ENVIRONMENTAL
Caller Phone:	(215) 344-3380	Caller Extension:	Not reported

175 3RD STREET (Continued) S102148318

Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: Not reported
Address Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 10/15/1992
Spill Cause: Tank Overfill
Resource Affected: On Land
Water Affected: Not reported
Spill Source: Other Commercial/Industrial
Spill Notifier: Other
PBS Number: Not reported
Spill Date: 10/14/1992 17:00
Reported to Dept: 10/15/1992 11:03
Cleanup Ceased: 10/15/1992
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 10/15/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Leak Rate: Not reported
Capacity (Gal): Not reported
Gross Leak/Fail: Not reported
Material: WASTE OIL
Material Class: Petroleum
Unknwn Quantity: False
Unk Qt Recovered: False
Quantity Spilled: -1
Quant Recovered: 0
Quantity Units: Not reported
DEC Remarks:
Caller Remarks: INITIAL INVESTIGATION SEEMS TO SHOW SURFACE TYPE SPILLAGE-SAMPLES IS BEING TESTED.

H35 **BELL ATLANTIC** **UST** U003074727
South **175 3RD ST** **NY Spills** N/A
1/8-1/4 **BROOKLYN, NY 11231** **AST**
Higher

SPILLS:
Spill Number: 9706734
Region of Spill: 2
Facility Contact: IKE DEJESUS
Facility Tele: (718) 237-1578
Investigator: TANG
Caller Name: IKE DEJESUS
Caller Agency: BELL ATLANTIC
Caller Phone: (718) 237-1578
Caller Extension: Not reported
Notifier Name: EMPLOYEES
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
SWIS: 61
Spiller: UNKNOWN
Address Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 09/05/1997
Spill Cause: Unknown
Resource Affected: On Land

BELL ATLANTIC (Continued) U003074727

Water Affected: Not reported
Spill Notifier: Affected Persons
Spill Date: 09/05/1997 13:30
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 09/08/1997
Spill Source: Unknown
PBS Number: Not reported
Reported to Dept: 09/05/1997 13:50
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/05/1997
Date Region Sent Report To Central Office: Not reported
DEC Remark: Not reported
Caller Remark: SPILL IFO THE MAIN DRIVEWAY - REQ A CALLBACK

This is the most recent NY SPILLS record for this site.
The NY SPILLS database contains 1 additional record for this site.
Please contact your EDR Account Executive for more information.

PBS UST:

PBS Number:	2-344133	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	2		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. this site.		
Capacity (gals):	2000		
Tank Location:	UNDERGROUND		
Tank ID:	001	Install Date:	00/00
Product Stored:	UNLEADED GASOLINE	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	Closed-Removed		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Suction
Date Tested:	10/87	Next Test Date:	Not reported
Date Closed:	05/94	Test Method:	Not reported

5/17

BELL ATLANTIC (Continued) U003074727

Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	4275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		
PBS Number:	2-344133	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	2		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. this site.		
Capacity (gals):	2000		
Tank Location:	UNDERGROUND		
Tank ID:	002	Install Date:	00/00
Product Stored:	UNLEADED GASOLINE	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	STEEL/IRON
Tank External:	Not reported		
Tank Status:	Closed-Removed		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	NONE		
Leak Detection:	NONE		
Overfill Prot:	Not reported	Dispenser:	Suction
Date Tested:	10/87	Next Test Date:	Not reported
Date Closed:	05/94	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	4275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		

BELL ATLANTIC (Continued) U003074727

Facility Type:	UTILITY		
PBS Number:	2-344133	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	2		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC 221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016 (212) 338-6731 ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. this site.		
Capacity (gals):	280		
Tank Location:	UNDERGROUND		
Tank ID:	003	Install Date:	00/00
Product Stored:	OTHER	Tank Type:	Steel/carbon steel
Tank Internal:	Not reported	Pipe Internal:	Not reported
Pipe Location:	Not reported	Pipe Type:	Not reported
Tank External:	Not reported		
Tank Status:	Closed-Removed		
Tank Error Status:	Minor Data Missing		
Pipe External:	Not reported		
Second Containment:	Not reported		
Leak Detection:	Not reported		
Overfill Prot:	Not reported	Dispenser:	Not reported
Date Tested:	Not reported	Next Test Date:	Not reported
Date Closed:	05/94	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	4275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		
PBS Number:	2-344133	CBS Number:	Not reported
SPDES Number:	Not reported		
SWIS ID:	6101	Telephone:	(800) 339-6144
Operator:	BELL ATLANTIC		
Emergency Contact:	BELL, (800) 386-9639		
Total Tanks:	2		
Owner:	NEW YORK TELEPHONE 221 EAST 37TH STREET, 4TH FLOOR		

BELL ATLANTIC (Continued) **U003074727**

	NEW YORK, NY 10016		
	(800) 339-6144		
Owner Type:	Corporate/Commercial	Owner Mark:	First Owner
Owner Subtype:	New York Telephone		
Mailing Address:	BELL ATLANTIC		
	221 EAST 37TH STREET, 4TH FLOOR		
	NEW YORK, NY 10016		
	(212) 338-6731		
	ATTN: KATHLEEN TOBIN		
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. this site.		
Capacity (gals):	4000		
Tank Location:	UNDERGROUND		
Tank ID:	004	Install Date:	05/94
Product Stored:	UNLEADED GASOLINE	Tank Type:	Fiberglass reinforced plastic [FRP]
Tank Internal:	NONE	Pipe Internal:	FIBERGLASS LINER [FRP]
Pipe Location:	Underground	Pipe Type:	FIBERGLASS [FRP]
Tank External:	NONE/IMPRESSED CURRENT		
Tank Status:	In Service		
Tank Error Status:	No Missing Data		
Pipe External:	NONE/FIBERGLASS		
Second Containment:	NONE/DOUBLED-WALLED TANK		
Leak Detection:	INTERSTITIAL MONITORING/IN-TANK SYSTEM		
Overfill Prot:	High Level Alarm, Catch Basin	Dispenser:	Suction
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Deleted:	False	Updated:	True
Dead Letter:	False	Owner Screen:	No data missing
FAMT:	Fiscal amount for registration fee is correct		
Total Capacity:	4275	Renewal Date:	09/29/97
Tank Screen:	Minor data missing	Federal ID:	Not reported
Renew Flag:	Renwal has been printed	Facility Screen:	No data missing
Certification Flag:	False	Certification Date:	01/28/98
Old PBS Number:	Not reported	Expiration Date:	12/14/02
Inspected Date:	Not reported	Inspector:	Not reported
Lat/long:	Not reported		
Facility Type:	UTILITY		

PBS AST:

PBS Number:	2-344133	CBS Number:	Not reported
SPDES Number:	Not reported	SWIS Code:	6101
Federal ID:	Not reported	Previous PBS#:	Not reported
Facility Status:	1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.		
Facility Type:	UTILITY		
Owner Type:	Corporate/Commercial		
Owner Sub Type:	New York Telephone		
Owner:	NEW YORK TELEPHONE		
	221 EAST 37TH STREET, 4TH FLOOR		
	NEW YORK, NY 10016		
Owner Phone:	(800) 339-6144		
Facility Phone:	(800) 339-6144		
Operator:	BELL ATLANTIC		
Emergency Name:	BELL		
Emergency Phone:	(800) 386-9639		
Total Tanks:	2		
Total Capacity:	4275		

BELL ATLANTIC (Continued) U003074727

Tank ID:	005		
Tank Status:	In Service		
Capacity (Gal):	275		
Tank Error Status:	Minor data missing		
Tank Location:	ABOVEGROUND		
Product Stored:	OTHER		
Tank Type:	Steel/carbon steel		
Install Date:	06/94		
Tank Internal:	NONE		
Tank External:	NONE/NONE		
Tank Containment:	NONE/DOUBLED-WALLED TANK		
Pipe Type:	NONE		
Pipe Location:	None		
Pipe Internal:	NONE		
Pipe External:	NONE/NONE		
Leak Detection:	NONE/NONE		
Overfill Protection:	Product Level Gauge, Catch Basin	Dispenser Method:	Not reported
Date Tested:	Not reported	Next Test Date:	N.T.R
Date Closed:	Not reported	Test Method:	Not reported
Updated:	True	Deleted:	False
Inspected:	Not reported	Inspector:	Not reported
Result of Inspection:	Not reported		
Mailing Name:	BELL ATLANTIC		
Mailing Address:	221 EAST 37TH STREET, 4TH FLOOR NEW YORK, NY 10016		
Mailing Contact:	KATHLEEN TOBIN	Mailing Telephone:	(212) 338-6731
Owner Mark:	First Owner	Expiration Date:	12/14/02
Certification Flag:	False	Certification Date:	01/28/98
Renew Flag:	True	Renew Date:	09/29/97
Dead Letter:	False		
Facility Screen:	No data missing		
Owner Screen:	No data missing		
Tank Screen:	Minor data missing		

Fiscal Amount for Registration Fee is Correct: True

H36
South
1/8-1/4
Higher

NEW YORK TELEPHONE CO RCRIS-SQG 1000791294
175 THIRD ST FINDS NYD987028008
BROOKLYN, NY 11231

RCRIS:

Owner:	175 3RD ST ASSOC C-O H CHAVES (212) 555-1212
Contact:	FRED SMITH (718) 726-9909
Record Date:	03/25/1993
Classification:	Small Quantity Generator

Used Oil Recyc: No

Violation Status: No violations found

37
SW
1/8-1/4
Higher

WESLEY LACQUER CORP RCRIS-SQG 1000282561
95 FOURTH ST FINDS NYD001492800
BROOKLYN, NY 11231 CBS UST

19/15

WESLEY LACQUER CORP (Continued) 1000282561

RCRIS:
Owner: Not reported
Contact: Not reported
Record Date: 12/31/1979
Classification: Not reported
Used Oil Recyc: No
Violation Status: No violations found

CBS UST:

CBS Number:	2-000126	ICS No:	2-126040
PBS No:	Not reported	MOSF No:	Not reported
Town:	NEW YORK CITY	Lat/Long:	Not reported
Operator:	MARTIN STONE	Facility Tel:	(718) 625-6358
Emergency Contact:	MARTIN STONE, (718) 855-7676		
Certification Date:	06/17/1997	Expiration Date:	07/18/1999
Owner:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231		
Owner Phone	(718) 625-6358		
Owner Type:	Corporate/Commercial		
Owners Mark:	Not reported		
Facility Type:	CHEMICAL DISTRIBUTOR, MANUFACTURING		
Mail To:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231 ATTN: MARTIN STONE (718) 625-6358		
SPDES No:	Not reported	Facility Status:	ACTIVE FACILITY
Owner Subtype:	Not reported		
Tank Number:	001	Tank Status:	In Service
Tank Error Status:	No Missing Data		
Total Tanks:	6	Capacity:	1080 Gals
Tank Location:	Underground		
Install Date:	00/00	Capacity (Gal):	Not reported
CAS No:	67641		
Substance:	Single Hazardous Substance on DEC List		
Tank Type:	Steel/carbon steel	2nd Containmt:	None
Tank Internal:	None		
Tank External:	None		
Pipe Internal:	Epoxy Liner	Pipe Location:	Underground
Pipe External:	None		
Pipe Containment:	None	Haz Percent:	100
Leak Detection:	None		
Overfill Protection:	0		
Chemical:	2-Propanone		
Acutely Hazardous:	False	Tank Closed:	Not reported
Tank Secret:	False	Date Entered:	07/18/1989 07:02:52
DEC Reportable Quantities:	1		
Air Reportable Quantities:	5000		

CBS Number:	2-000126	ICS No:	2-126040
PBS No:	Not reported	MOSF No:	Not reported
Town:	NEW YORK CITY	Lat/Long:	Not reported
Operator:	MARTIN STONE	Facility Tel:	(718) 625-6358

WESLEY LACQUER CORP (Continued) 1000282561

Emergency Contact: MARTIN STONE, (718) 855-7676
Certification Date: 06/17/1997 Expiration Date: 07/18/1999
Owner: WESLEY LACQUER CORP.
95 FOURTH ST.
BROOKLYN, NY 11231
Owner Phone (718) 625-6358
Owner Type: Corporate/Commercial
Owners Mark: Not reported
Facility Type: CHEMICAL DISTRIBUTOR, MANUFACTURING
Mail To: WESLEY LACQUER CORP.
95 FOURTH ST.
BROOKLYN, NY 11231
ATTN: MARTIN STONE
(718) 625-6358
SPDES No: Not reported Facility Status: ACTIVE FACILITY
Owner Subtype: Not reported
Tank Number: 002 Tank Status: In Service
Tank Error Status: No Missing Data
Total Tanks: 6 Capacity: 550 Gals
Tank Location: Underground
Install Date: 00/00 Capacity (Gal): Not reported
CAS No: 108883
Substance: More than one Hazardous Substance on DEC List
Tank Type: Steel/carbon steel 2nd Containmt: None
Tank Internal: None
Tank External: None
Pipe Internal: Epoxy Liner Pipe Location: Underground
Pipe External: None
Pipe Containment: None Haz Percent: 100
Leak Detection: None
Overfill Protection: 0
Chemical: Toluene
Acutely Hazardous: False Tank Closed: Not reported
Tank Secret: False Date Entered: 07/18/1989 07:03:13
DEC Reportable Quantities: 1
Air Reportable Quantities: 1000

CBS Number: 2-000126 ICS No: 2-126040
PBS No: Not reported MOSF No: Not reported
Town: NEW YORK CITY Lat/Long: Not reported
Operator: MARTIN STONE Facility Tel: (718) 625-6358
Emergency Contact: MARTIN STONE, (718) 855-7676
Certification Date: 06/17/1997 Expiration Date: 07/18/1999
Owner: WESLEY LACQUER CORP.
95 FOURTH ST.
BROOKLYN, NY 11231
Owner Phone (718) 625-6358
Owner Type: Corporate/Commercial
Owners Mark: Not reported
Facility Type: CHEMICAL DISTRIBUTOR, MANUFACTURING
Mail To: WESLEY LACQUER CORP.
95 FOURTH ST.
BROOKLYN, NY 11231
ATTN: MARTIN STONE
(718) 625-6358
SPDES No: Not reported Facility Status: ACTIVE FACILITY
Owner Subtype: Not reported

7/1/17

WESLEY LACQUER CORP (Continued) 1000282561

Tank Number:	003	Tank Status:	In Service
Tank Error Status:	No Missing Data		
Total Tanks:	6	Capacity:	550 Gals
Tank Location:	Underground		
Install Date:	00/00	Capacity (Gal):	Not reported
CAS No:	108883		
Substance:	More than one Hazardous Substance on DEC List		
Tank Type:	Steel/carbon steel	2nd Containmt:	None
Tank Internal:	None		
Tank External:	None		
Pipe Internal:	Epoxy Liner	Pipe Location:	Underground
Pipe External:	None		
Pipe Containment:	None	Haz Percent:	100
Leak Detection:	None		
Overfill Protection:	0		
Chemical:	Toluene		
Acutely Hazardous:	False	Tank Closed:	Not reported
Tank Secret:	False	Date Entered:	07/18/1989 07:03:36
DEC Reportable Quantities:	1		
Air Reportable Quantities:	1000		

CBS Number:	2-000126	ICS No:	2-126040
PBS No:	Not reported	MOSF No:	Not reported
Town:	NEW YORK CITY	Lat/Long:	Not reported
Operator:	MARTIN STONE	Facility Tel:	(718) 625-6358
Emergency Contact:	MARTIN STONE, (718) 855-7676		
Certification Date:	06/17/1997	Expiration Date:	07/18/1999
Owner:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231		
Owner Phone	(718) 625-6358		
Owner Type:	Corporate/Commercial		
Owners Mark:	Not reported		
Facility Type:	CHEMICAL DISTRIBUTOR, MANUFACTURING		
Mail To:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231 ATTN: MARTIN STONE (718) 625-6358		
SPDES No:	Not reported	Facility Status:	ACTIVE FACILITY
Owner Subtype:	Not reported		
Tank Number:	004	Tank Status:	In Service
Tank Error Status:	No Missing Data		
Total Tanks:	6	Capacity:	550 Gals
Tank Location:	Underground		
Install Date:	00/00	Capacity (Gal):	Not reported
CAS No:	108883		
Substance:	More than one Hazardous Substance on DEC List		
Tank Type:	Steel/carbon steel	2nd Containmt:	None
Tank Internal:	None		
Tank External:	None		
Pipe Internal:	Epoxy Liner	Pipe Location:	Underground
Pipe External:	None		
Pipe Containment:	None	Haz Percent:	100
Leak Detection:	None		
Overfill Protection:	0		
Chemical:	Toluene		

12/17

WESLEY LACQUER CORP (Continued) **1000282561**

Acutely Hazardous:	False	Tank Closed:	Not reported
Tank Secret:	False	Date Entered:	07/18/1989 07:04:00
DEC Reportable Quantities:	1		
Air Reportable Quantities:	1000		
CBS Number:	2-000126	ICS No:	2-126040
PBS No:	Not reported	MOSF No:	Not reported
Town:	NEW YORK CITY	Lat/Long:	Not reported
Operator:	MARTIN STONE	Facility Tel:	(718) 625-6358
Emergency Contact:	MARTIN STONE, (718) 855-7676		
Certification Date:	06/17/1997	Expiration Date:	07/18/1999
Owner:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231		
Owner Phone	(718) 625-6358		
Owner Type:	Corporate/Commercial		
Owners Mark:	Not reported		
Facility Type:	CHEMICAL DISTRIBUTOR, MANUFACTURING		
Mail To:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231 ATTN: MARTIN STONE (718) 625-6358		
SPDES No:	Not reported	Facility Status:	ACTIVE FACILITY
Owner Subtype:	Not reported		
Tank Number:	005	Tank Status:	In Service
Tank Error Status:	No Missing Data		
Total Tanks:	6	Capacity:	550 Gals
Tank Location:	Underground		
Install Date:	00/00	Capacity (Gal):	Not reported
CAS No:	67641		
Substance:	Single Hazardous Substance on DEC List		
Tank Type:	Steel/carbon steel	2nd Containmt:	None
Tank Internal:	None		
Tank External:	None		
Pipe Internal:	Epoxy Liner	Pipe Location:	Underground
Pipe External:	None		
Pipe Containment:	None	Haz Percent:	100
Leak Detection:	None		
Overfill Protection:	0		
Chemical:	2-Propanone		
Acutely Hazardous:	False	Tank Closed:	Not reported
Tank Secret:	False	Date Entered:	07/18/1989 07:04:22
DEC Reportable Quantities:	1		
Air Reportable Quantities:	5000		
CBS Number:	2-000126	ICS No:	2-126040
PBS No:	Not reported	MOSF No:	Not reported
Town:	NEW YORK CITY	Lat/Long:	Not reported
Operator:	MARTIN STONE	Facility Tel:	(718) 625-6358
Emergency Contact:	MARTIN STONE, (718) 855-7676		
Certification Date:	06/17/1997	Expiration Date:	07/18/1999
Owner:	WESLEY LACQUER CORP. 95 FOURTH ST. BROOKLYN, NY 11231		
Owner Phone	(718) 625-6358		
Owner Type:	Corporate/Commercial		

WESLEY LACQUER CORP ***(Continued)*** **1000282561**

Owners Mark: Not reported
Facility Type: CHEMICAL DISTRIBUTOR, MANUFACTURING
Mail To: WESLEY LACQUER CORP.
95 FOURTH ST.
BROOKLYN, NY 11231
ATTN: MARTIN STONE
(718) 625-6358

SPDES No:	Not reported	Facility Status:	ACTIVE FACILITY
Owner Subtype:	Not reported		
Tank Number:	006	Tank Status:	In Service
Tank Error Status:	No Missing Data		
Total Tanks:	6	Capacity:	1080 Gals
Tank Location:	Underground		
Install Date:	00/00	Capacity (Gal):	Not reported
CAS No:	108883		
Substance:	More than one Hazardous Substance on DEC List		
Tank Type:	Steel/carbon steel	2nd Containmt:	None
Tank Internal:	None		
Tank External:	None		
Pipe Internal:	Epoxy Liner	Pipe Location:	Underground
Pipe External:	None		
Pipe Containment:	None	Haz Percent:	100
Leak Detection:	None		
Overfill Protection:	0		
Chemical:	Toluene		
Acutely Hazardous:	False	Tank Closed:	Not reported
Tank Secret:	False	Date Entered:	07/18/1989 07:04:43

DEC Reportable Quantities: 1
Air Reportable Quantities: 1000

38
ENE
1/8-1/4
Higher

CROSS BAY CONTRACTING **FINDS** **1000386132**
242 NEVINS ST **RCRIS-LQG** **NYD012515870**
BROOKLYN, NY 11217

RCRIS:
Owner: UNKNOWN
(212) 555-1212
Contact: TOM FIORIO
(718) 852-5800
Record Date: 05/16/1988
Classification: Large Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
- Facility is monitored or permitted for air emissions under the Clean Air Act (under AFS/AIRS)
- Civil judicial and administrative enforcement case against facility (under DOCKET)

39
SSE
1/4-1/2
Higher

ALL BORO'S **LUST** **S102618894**
200 3RD ST **N/A**
BROOKLYN, NY

7 4/15

ALL BORO'S (Continued) **S102618894**

LUST:

Spill Number:	9702117	Region of Spill:	2
Facility Contact:	MIKE DENICOLA	Facility Tele:	(718) 858-7600
Investigator:	TOMASELLO	SWIS:	61
Caller Name:	TONY RIZZO	Caller Agency:	ALVIN PETROLEUM
Caller Phone:	(718) 461-5400	Caller Extension:	Not reported
Notifier Name:	TONY RIZZO	Notifier Agency:	ALVIN PETROLEUM
Notifier Phone:	(718) 461-5400	Notifier Extension:	Not reported
Spiller Contact:	MIKE DENICOLA	Spiller Phone:	(718) 858-7600
Spiller:	ALL BORO'S		
Address	200 3RD ST BROOKLYN, NY		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Tank Test Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Commercial/Industrial
Spill Notifier:	Tank Tester	PBS Number:	Not reported
Spill Date:	05/19/1997 13:00	Reported to Dept:	05/19/1997 13:17
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	05/21/1997		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	05/19/1997		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	6-437344	Tank Number:	001
Test Method:	UNKNOWN	Leak Rate:	0.00
Capacity (Gal):	550	Gross Leak/Fail:	Not reported
Material:	Not reported		
Material Class:	Not reported		
Unknwn Quantity:	Not reported	Unk Qt Recovered:	Not reported
Quantity Spilled:	Not reported	Quant Recovered:	Not reported
Quantity Units:	Not reported		
DEC Remarks:			
Caller Remarks:	AIR PRESSURE TEST TO 10 LBS - TANK FAILED - NO LEAK		

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40 SE 1/4-1/2 Higher **3RD AVE SERVICE CENTER** **LUST** **S102662668**
3RD AVE / 1ST ST **N/A**
BROOKLYN, NY

LUST:

Spill Number:	9608437	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	O'CONNELL	SWIS:	61
Caller Name:	PAT MCHUGH	Caller Agency:	CON ED
Caller Phone:	(212) 580-6763	Caller Extension:	Not reported
Notifier Name:	PAYNE	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported

3RD AVE SERVICE CENTER (Continued) S102662668

Spiller: CON EDISON
Address 128 WEST END AV
NEW YORK, NY 10023
Spill Class: Known release that creates potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Other
Water Affected: Not reported
Spill Notifier: Responsible Party
Spill Date: 10/07/1996 14:50
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 10/18/1996
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 10/07/1996
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: DIESEL
Material Class: Petroleum
Unknwn Quantity: True
Quantity Spilled: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: poss leak from a ust - sheen on water in monitoring well

Resource Affected: On Land
Spill Source: Other Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 10/07/1996 15:47

Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported

Unk Qt Recovered: False
Quant Recovered: 0

I41 South 1/4-1/2 Higher **MCIZ CORP** LUST S102619097
1-25 2ND AV N/A
BROOKLYN, NY

LUST:
Spill Number: 9603998
Facility Contact: JACK MARMURSTEIN
Investigator: SIGONA
Caller Name: BOB ARCARO
Caller Phone: (718) 331-5003
Notifier Name: BOB ARCARO
Notifier Phone: (718) 331-5003
Spiller Contact: JACK MARMURSTEIN
Spiller: MCIZ CORP
Address 1-25 2ND AV
BROOKLYN, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Test Failure
Water Affected: Not reported
Spill Notifier: Other
Spill Date: 06/24/1996 11:00
Cleanup Ceased: Not reported
Last Inspection: Not reported

Region of Spill: 2
Facility Tele: (718) 875-8200
SWIS: 61
Caller Agency: TONE TANK AND PUMP
Caller Extension: Not reported
Notifier Agency: TONE TANK AND PUMP
Notifier Extension: Not reported
Spiller Phone: (718) 875-8200

Resource Affected: On Land
Spill Source: Other Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 06/24/1996 11:36

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MCIZ CORP (Continued) S102619097

Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: True
Spill Record Last Update: 07/03/1996
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 06/24/1996
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Leak Rate: Not reported
Capacity (Gal): Not reported
Gross Leak/Fail: Not reported
Material: DIESEL
Material Class: Petroleum
Unknwn Quantity: False
Unk Qt Recovered: False
Quantity Spilled: 0
Quant Recovered: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: CALLERS COMPANY HIRED FOR TANK TESTING AND DISCOVERED THE FAILURE - NO PRODUCT HAS LEAKED ONTO THE GROUND

I42 **NYC DEPT OF SANITATION** LUST S102555959
SSW **15 2ND AVE** N/A
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:
Spill Number: 9614826
Region of Spill: 2
Facility Contact: CALLER
Facility Tele: (716) 856-5636
Investigator: KRIMGOLD
SWIS: 61
Caller Name: ANDRE LAPRES
Caller Agency: URS GREINER
Caller Phone: (716) 856-5636
Caller Extension: Not reported
Notifier Name: ANDRE LAPRES
Notifier Agency: URS GREINER
Notifier Phone: (716) 856-5636
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: CITY OF NEW YORK
Address: Not reported
NEW YORK, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Failure
Resource Affected: On Land
Water Affected: Not reported
Spill Source: Other Commercial/Industrial
Spill Notifier: Other
PBS Number: Not reported
Spill Date: 03/25/1997 10:00
Reported to Dept: 03/25/1997 11:17
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 03/27/1997
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 03/25/1997
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported

NYC DEPT OF SANITATION (Continued) S102555959

Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	OTHER PETROLEUM		
Material Class:	Petroleum		
Unknwn Quantity:	True	Unk Qt Recovered:	False
Quantity Spilled:	*0*	*Quant Recovered:*	*0*
Quantity Units:	Gallons		
DEC Remarks:			
Caller Remarks:	RESULTS JUST GOT BACK FROM SOIL SAMPLES - SHOWED MIX OF GAS, DIESEL AND OIL CONSTRUCTION MANAGER IS DEMATTEIS CONSTRUCTION		

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43 ESE 1/4-1/2 Higher | **540 PRESIDENT STREET** | **LUST** | **S102672075**
540 PRESIDENT ST | **N/A**
BROOKLYN, NY

LUST:

Spill Number:	9211878	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	TANG	SWIS:	61
Caller Name:	MR. CRAIGLER	Caller Agency:	NYCFDD
Caller Phone:	(718) 476-6288	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(718) 871-6269
Spiller:	HOLMES FUEL CO.		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	01/18/1993		
Spill Cause:	Tank Overfill	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Commercial Vehicle
Spill Notifier:	Fire Department	PBS Number:	Not reported
Spill Date:	01/18/1993 14:00	Reported to Dept:	01/18/1993 14:50
Cleanup Ceased:	01/18/1993		
Last Inspection:	Not reported		
Cleanup Meets Standard:	True		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	Not reported		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	01/28/1993		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	#2 FUEL OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	100	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:			
Caller Remarks:	HOLMES OVERFILLED TANK NYC DOS ON SCENE NOTIFIED CON ED SAND PLACE IN SPILL HOLMES TO COME AND PICK UP CALLED FD HAZ MAT FIREMAN HANK REPORTED THAT SPILLED FROM VENT PIPE CONTAINED ON SIDEWALK CLEANUP		

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Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
44 SSW 1/4-1/2 Higher	**SPARTAN DISMANTLING** **110-5TH STREET** **BROOKLYN, NY 11215**	SWF/LF	S100546644 N/A

LF:

Facility ID:	24TA6	Telephone:	(718) 596-1151
DEC Region:	2	Permit #:	2610300091000020
Permit issue date:	Not reported	Permit Expires:	06/08/1998
Authrzd/Operate Dt:	06/08/1993	Constrct Perm #:	0
Auth. to Construct:	Not reported	Const Permit Exp:	Not reported
Regulatory Status:	Permit	Receiving Waste:	True
Started Rec Waste:	Not reported	Stop Rec Waste:	Not reported
Aquifer:	none		
Inactive HWS:	False	Inactive HWS #:	0
Inactive HWS Class:	Not reported		
Waste type:	Asbestos		
Owner Name:	Spartan Dismantling	Owner Type:	Private
Mail Address:	110-5th Street Brooklyn, NY 11125		
Owner Phone Num:	(718) 522-2263	Operator Name:	Sal Arnone
Annual Report Submitted to ALB:			
1989:	False	1990:	False
1991:	False	1992:	False
1993:	True	1994:	True
1995:	True	1996:	True
1997:	False		
Annual Rprt Waived:	False	Tiping Fee Rprtd:	False
Primary Liner:	False	Secondary Liner:	False

Single Liner:	False
Single Composite Liner:	False
Double Liner:	False
Double Composite Liner:	False
Site Can Take Ash	False
Date Ordered On Consent Signed:	Not reported
Accomplish Date Of Order:	Not reported
Ny Transverse Mercator Coordinates East:	0
Ny Transverse Mercator Coordinates North:	0
Remarks:	Not reported

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
J45 SE 1/4-1/2 Higher	**220 1ST STREET** **220 1ST ST** **BROOKLYN, NY**	LUST	S102671944 N/A

LUST:

Spill Number:	9207274	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	ENGELHARDT	SWIS:	61
Caller Name:	ARNIE ROWLAND	Caller Agency:	CON EDISON
Caller Phone:	(212) 580-6763	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(212) 460-4833
Spiller:	CON EDISON		
Address	4 IRVING PLACE NEW YORK, NY		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Other	Resource Affected:	On Land

220 1ST STREET (Continued) **S102671944**

Water Affected: Not reported
Spill Notifier: Responsible Party
Spill Date: 09/15/1992 12:00
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 11/23/1994
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/29/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: UNKNOWN PETROLEUM
Material Class: Petroleum
Unknwn Quantity: False
Quantity Spilled: -1
Quantity Units: Not reported
DEC Remarks: 11/23/94: REASSIGNED FROM SIGONA TO ENGELHARDT ON 11/23/94.
Caller Remarks: Not reported

Spill Source: Other Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 09/23/1992 17:35
Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported
Unk Qt Recovered: False
Quant Recovered: 0

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46 West 1/4-1/2 Higher **7 3RD STREET/PEP S/S** **LUST** **S100493230**
7 3RD STREET **N/A**
BKLYN, NY

LUST:
Spill Number: 9112287
Facility Contact: Not reported
Investigator: MILLER
Caller Name: Not reported
Caller Phone: Not reported
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
Spiller: Not reported
Address Not reported
Not reported
Spill Class: Known release that creates potential for fire or hazard. (Highly Improbable)
Spill Closed Dt: Not reported
Spill Cause: Tank Failure
Water Affected: Not reported
Spill Notifier: Other
Spill Date: 02/29/1992 10:00
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 08/09/1995

Region of Spill: 2
Facility Tele: Not reported
SWIS: 61
Caller Agency: Not reported
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported
Resource Affected: Groundwater
Spill Source: Unknown
PBS Number: Not reported
Reported to Dept: 02/29/1992 10:38

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7 3RD STREET/PEP S/S (Continued) **S100493230**

Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 04/28/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported — Tank Number: Not reported
Test Method: Not reported — Leak Rate: Not reported
Capacity (Gal): Not reported — Gross Leak/Fail: Not reported
Material: GASOLINE
Material Class: Petroleum
Unknwn Quantity: False — Unk Qt Recovered: False
Quantity Spilled: -1 — Quant Recovered: 0
Quantity Units: Not reported
DEC Remarks:
Caller Remarks: Not reported

J47 SE 1/4-1/2 Higher **3RD AVE YARD** **LUST** **S102239537**
222 1ST ST **NY Spills** **N/A**
BROOKLYN, NY

LUST:
Spill Number: 9704814 — Region of Spill: 2
Facility Contact: CALLER — Facility Tele: (315) 483-6944
Investigator: MARTINKAT — SWIS: 61
Caller Name: MIKE CESARE — Caller Agency: CON EDISON
Caller Phone: (212) 580-6763 — Caller Extension: Not reported
Notifier Name: MIKE CESARE — Notifier Agency: CON EDISON
Notifier Phone: (212) 580-6763 — Notifier Extension: Not reported
Spiller Contact: UNK — Spiller Phone: (000) 000-0000
Spiller: NILFISK OF AMERICA
Address: 300 TECHNOLOGY DR
MELVERNE, PA 19355
Spill Class: Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 07/22/1997
Spill Cause: Other — Resource Affected: On Land
Water Affected: Not reported — Spill Source: Other Commercial/Industrial
Spill Notifier: Affected Persons — PBS Number: Not reported
Spill Date: 07/22/1997 11:30 — Reported to Dept: 07/22/1997 15:49
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 07/23/1997
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 07/22/1997
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported — Tank Number: Not reported
Test Method: Not reported — Leak Rate: Not reported
Capacity (Gal): Not reported — Gross Leak/Fail: Not reported
Material: ASBESTOS
Material Class: Nonpetroleum/Nonhazardous
Unknwn Quantity: True — Unk Qt Recovered: True
Quantity Spilled: 0 — Quant Recovered: 0
Quantity Units: Gallons

51/15

3RD AVE YARD (Continued) **S102239537**

DEC Remarks:
Caller Remarks: VENDOR WAS EMPTYING A VACUMM BAG OF ASBESTOS WHICH SOME SPILLED ONTO PAVEMENT AND SOME PARTICLES WENT INTO AIR-ALL WAS CLEANED UP AT SITE (APPROX 1LB TOTAL)

SPILLS:

Spill Number:	9711941	Region of Spill:	2
Facility Contact:	MIKE CESARE	Facility Tele:	(212) 580-6763
Investigator:	O'CONNELL		
Caller Name:	MIKE CESARE	Caller Agency:	CON EDISON
Caller Phone:	(212) 580-6763	Caller Extension:	Not reported
Notifier Name:	PACE	Notifier Agency:	CON ED
Notifier Phone:	(212) 580-6764	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
SWIS:	61		
Spiller:	CON EDISON		
Address	128 WEST END AV NEW YORK, NY 10023		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	01/30/1998		
Spill Cause:	Equipment Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Commercial/Industrial
Spill Notifier:	Responsible Party	PBS Number:	Not reported
Spill Date:	01/26/1998 07:00	Reported to Dept:	01/26/1998 10:22
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	01/30/1998		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	01/26/1998		
Date Region Sent Report To Central Office:	Not reported		
DEC Remark:	Not reported		
Caller Remark:	1/2 PINT SPILLED IN CATCH BASIN - CLEANUP IN PROGRESS		

This is the most recent NY SPILLS record for this site.
The NY SPILLS database contains 7 additional records for this site.
Please contact your EDR Account Executive for more information.

J48 **THIRD AVE YARD** **LUST** **S102234639**
SE **222 1ST ST** **NY Spills** **N/A**
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9605014	Region of Spill:	2
Facility Contact:	PRIMEGGIA	Facility Tele:	(212) 580-6763
Investigator:	O'CONNELL	SWIS:	61
Caller Name:	PRIMEGGIA	Caller Agency:	CON ED
Caller Phone:	(212) 580-6763	Caller Extension:	Not reported
Notifier Name:	DESIDERIO	Notifier Agency:	CON ED
Notifier Phone:	(212) 580-6763	Notifier Extension:	Not reported
Spiller Contact:	PRIMEGGIA	Spiller Phone:	(212) 580-6763

THIRD AVE YARD (Continued) **S102234639**

Spiller: CON ED
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Overfill
Resource Affected: On Land
Water Affected: Not reported
Spill Source: Other Commercial/Industrial
Spill Notifier: Responsible Party
PBS Number: Not reported
Spill Date: 07/17/1996 11:00
Reported to Dept: 07/17/1996 16:00
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 09/30/1997
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 07/17/1996
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Leak Rate: Not reported
Capacity (Gal): Not reported
Gross Leak/Fail: Not reported
Material: GASOLINE
Material Class: Petroleum
Unknwn Quantity: True
Unk Qt Recovered: True
Quantity Spilled: 0
Quant Recovered: 0
Quantity Units: Gallons
DEC Remarks: Transferred from Engelhardt to Katz on 7/22/96 at which time an investigation at the site was in progress. 9/30/97: TRANSFERRED FROM KATZ TO O'CONNELL.
Caller Remarks: contaminated soil found around the underground gas tanks

SPILLS:
Spill Number: 9706833
Region of Spill: 2
Facility Contact: JOHN DEVOTI
Facility Tele: (212) 580-6763
Investigator: O'CONNELL
Caller Name: JOHN DEVOTI
Caller Agency: CON ED
Caller Phone: (212) 580-6763
Caller Extension: Not reported
Notifier Name: MR MCBRIDE
Notifier Agency: EMPLOYEE
Notifier Phone: (718) 802-5150
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: (212) 580-6763
SWIS: 61
Spiller: CON ED
Address: 4 IRVING PLACE
MANHATTAN, NY 10003
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 09/10/1997
Spill Cause: Equipment Failure
Resource Affected: On Land
Water Affected: Not reported
Spill Source: Commercial Vehicle
Spill Notifier: Responsible Party
PBS Number: Not reported
Spill Date: 09/08/1997 19:00
Reported to Dept: 09/08/1997 20:44
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False

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THIRD AVE YARD (Continued) S102234639

Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 09/10/1997
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/08/1997
Date Region Sent Report To Central Office: Not reported
DEC Remark: Not reported
Caller Remark: FLUSH TRUCK FOR SEWERS WHILE IN OPERATION ACCIDENTLY SPILLED PRODUCT - ALL CONTAINED - POSS SEWER CONTAINATION - NOT VERIFIED

This is the most recent NY SPILLS record for this site.
The NY SPILLS database contains 3 additional records for this site.
Please contact your EDR Account Executive for more information.

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49 SW 1/4-1/2 Higher **HOBART INDUST BLDG** LUST S100142518
48-48 5 ST N/A
NYC, NY

LUST:

Spill Number: 8805326
Facility Contact: Not reported
Investigator: SULLIVAN
Caller Name: HOWARD GREENBERG
Caller Phone: (718) 461-5400
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
Spiller: SAME
Address: Not reported
Not reported
Spill Class: Not reported
Spill Closed Dt: 04/24/1989
Spill Cause: Tank Test Failure
Water Affected: Not reported
Spill Notifier: Tank Tester
Spill Date: 09/19/1988 16:00
Cleanup Ceased: 04/24/1989
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: True
Spill Record Last Update: 05/08/1989
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/21/1988
Date Region Sent Summary to Central Office: Not reported
PBS Number: 2-096326
Test Method: Not reported
Capacity (Gal): Not reported
Material: GASOLINE
Material Class: Petroleum
Unknwn Quantity: False
Quantity Spilled: -1

Region of Spill: 2
Facility Tele: Not reported
SWIS: 63
Caller Agency: ALVIN PETRO
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported

Resource Affected: Groundwater
Spill Source: Other Commercial/Industrial
PBS Number: 2-096326
Reported to Dept: 09/20/1988 16:09

Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported

Unk Qt Recovered: False
Quant Recovered: 0

HOBART INDUST BLDG (Continued) S100142518

Quantity Units: Gallons
DEC Remarks:
Caller Remarks: 4K TK FAILED PETRO-TITE. L R = UNREADABLE. BAD SITTING ON STAGE 1 VAPOR RECOVERY LINE. REPLACE UNION.

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50 **THIRD AVENUE YARD** **LUST** **S102662682**
SSE **3RD AV/3RD ST** **N/A**
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9608854	Region of Spill:	2
Facility Contact:	CHERYL PANE	Facility Tele:	(718) 204-4256
Investigator:	O'CONNELL	SWIS:	61
Caller Name:	PAT MCHUGH	Caller Agency:	CON ED
Caller Phone:	(212) 580-6763	Caller Extension:	Not reported
Notifier Name:	CHERYL PANE	Notifier Agency:	CON ED
Notifier Phone:	(718) 204-4256	Notifier Extension:	Not reported
Spiller Contact:	TIM SOILCH	Spiller Phone:	(212) 580-6764
Spiller:	CON ED		
Address	4 IRVING PLACE MANHATTAN, NY 10003		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Other	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Gas Station
Spill Notifier:	Responsible Party	PBS Number:	Not reported
Spill Date:	10/16/1996 15:38	Reported to Dept:	10/16/1996 16:53
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	09/30/1997		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	10/16/1996		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	VIOLATILE ORGANICS		
Material Class:	Hazardous Material		
Unknwn Quantity:	False	Unk Qt Recovered:	True
Quantity Spilled:	0	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:	11/12/96: Transferred from Engelhardt to Katz. 11/21/96: KATZ SPOKE WITH CHERYL PAYNE, CON ED - FREE PRODUCT FOUND IN WELL. TIGHTNESS TEST DONE ON TANK & PIPING AND FOUND TO BE TIGHT. UNKNOWN SOURCE OF PRODUCT - POSSIBLY OVERFILLS. 2000 GALLON GASOLINE & 2000 GALLON DIESEL UNDER CONCRETE MAT. NOT AWARE OF ANY PROBLEMS WITH DISPENSERS. 9/30/97: TRANSFERRED FROM KATZ TO O'CONNELL.		
Caller Remarks:	while digging wells for a tank tightness test con ed noticed high levels voc levels in the well		

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
51 ENE 1/4-1/2 Higher	280 DOUGLAS ST 280 DOUGLASS ST BROOKLYN, NY	LUST NY Spills	S101341149 N/A

LUST:

Spill Number:	9410669	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	MILLER	SWIS:	61
Caller Name:	JEFF BEAUDETTE	Caller Agency:	TANKNOLOGY
Caller Phone:	(800) 666-2605	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(610) 775-6471
Spiller:	PENSKE TRUCK		
Address	Not reported Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	03/10/1995		
Spill Cause:	Tank Test Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Commercial/Industrial
Spill Notifier:	Tank Tester	PBS Number:	Not reported
Spill Date:	11/10/1994 12:20	Reported to Dept:	11/10/1994 12:24
Cleanup Ceased:	03/10/1995		
Last Inspection:	Not reported		
Cleanup Meets Standard:	True		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	04/17/1995		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	12/08/1994		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	WASTE OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	True
Quantity Spilled:	-1	Quant Recovered:	0
Quantity Units:	Not reported		
DEC Remarks:			
Caller Remarks:	TO EX-TANK AFTER PUMPING OUT		

SPILLS:

Spill Number:	9415530	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	TIBBE		
Caller Name:	JOANNE SOTTILR	Caller Agency:	WHALECO FUEL
Caller Phone:	(718) 852-7000	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(718) 852-7000
SWIS:	61		
Spiller:	WHALECO FUEL		
Address	1 COFFEY ST BROOKLYN, NEW YORK 11231		

280 DOUGLAS ST (Continued) S101341149

Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 03/01/1995
Spill Cause: Equipment Failure
Water Affected: Not reported
Spill Notifier: Responsible Party
Spill Date: 02/28/1995 10:30
Cleanup Ceased: 03/01/1995
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Resource Affected: On Land
Spill Source: Other Commercial/Industrial
PBS Number: Not reported
Reported to Dept: 02/28/1995 10:48
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 04/20/1995
Date Region Sent Report To Central Office: Not reported
DEC Remark: Not reported
Caller Remark: BAD GAUGE WHEN FILLING - PRODUCT VENTED ONTO THE ROOF OF THE BUILDING. 7-10 PEOPLE FROM WHALECO FUEL THERE NOW TO CLEAN UP. PETROLEEUM TANK CLEANERS WAS UP ON ROOF.

52
WSW
1/4-1/2
Higher

BUG, CARROLL GARDENS HSWDS S102872849
CORNER OF 5TH AND SMITH STREET N/A
BROOKLYN, NY 11215

NY HSWDS:
Facility ID: HS2006
Facility Status: Unknown
Owner Type: Municipal
Owner: M
Owner Address: 2 Lafayette Street
New York
Owner Phone: Unknown
Operator Type: Puplic
Operator: Brooklyn Union Gas
Operator Address: 195 Montague Street
Brooklyn
Operator Phone: (710)403-3053
Registry: D
Registry Site ID: 224012
Site Code: 2A
Quadrange: Brooklyn, Jersey Cit
Acres: 5.80
Investment Cost: 125000
Future Est. cost: 5225000
Operator Date: 1860
Completed: Phase 1
Substance: lead, phenanthrene, benzo(a)anthracene, pyrene, fluoranthene
EPA ID: NYD981184161
RCRA Permitted: No
Mailing: Not reported
Lat/Long: 40 40 33 N / 73 39 46 W
Cost per Acre: 0
Estimated Cost: 5100000
Close Date: 1960
Active: No

8/1/17

BUG, CARROLL GARDENS (Continued) S102872849

Site Description: The site is located in an industrial/residential neighborhood in the Red Hook section of Brooklyn. The site was formerly used as a coal gasification plant over one hundred years by BUG. Coal tar constituents and other wastes products form past siteoperations may have been disposed on site. The lot is currently vacant, and appears to have been used as an illegal dump site after the gas plant was decommissioned in the 1960's. The lot is littered with piles of debris, cinder blocks, old lumber,and at least 14 55-gallon drums, some of which are embedded in a slab of concrete (the drum contents are unknown). Residential housing was proposed for construction at this location prior to the environmental investigations.

Volatile Organic Compounds Disposed:	No
Semi Volatile Organic Compounds Disposed:	Yes
PCB's Disposed:	No
Pesticides Disposed:	No
Metals Disposed:	Yes
Asbestos Disposed:	No
Analytical Info Exists for Air:	Not reported
Analytical Info Exists for Ground:	Groundwater
Analytical Info Exists for Surface:	Surface Water
Analytical Info Exists for Sediments:	Not reported
Analytical Info Exists for Surface Soil:	Surface Soil
Analytical Info Exists for Substance:	Not reported
Analytical Info Exists for Waste:	Not reported
Analytical Info Exists for Leachate:	Not reported
Analytical Info Exists for EP Toxicity:	Not reported
Analytical Info Exists for TCLP:	TCLP
Site Poses Threat to Environment/Public Health:	E/P
Internal Ranking of Site:	25
Surface Water Contamination:	Yes
Surface Water Body Class:	SB
Groundwater Contamination:	Yes
Groundwater Classification:	Sole
Drinking Water Contamination:	No
Drinking Water Supply is Active:	Yes
Any Known Fish or Wildlife:	Unknown
Hazardous Exposure:	Yes
Site Has Controlled Acess:	No
Ambient Air Contamination:	No
Direct Contact:	Yes
EPA Hazardous Ranking System Score:	Unknown

Agencies

	NYSDEC
Air	Not reported
Building	
	NEAREST BUILDING: ONSITE, INDUSTRIAL
Drink	
	LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Eptox	
	LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Fish	
	LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Ground	
	LEAD, PHENANTHRENE, BENZO
Ground	
	LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE

88/15

BUG, CARROLL GARDENS (Continued) S102872849

Hazardous Threat
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Leachate
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Preparer
DAVID K. HARRINGTON(JJS)
Reason Not reported
Sediment
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Soil
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Surface
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Status Not reported
Surface Soil
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Surface
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE
Waste
LEAD, PHENANTHRENE, BENZO(A)ANTHRCENE, PYRENE

K53 **BUG, CITIZENS GATE STATION** HSWDS S102873296
SSW **6TH STREET AND 2ND AVENUE** N/A
1/4-1/2 **BROOKLYN, NY 11215**
Higher

NY HSWDS:

Facility ID:	Not reported	EPA ID:	NYD980532212
Facility Status:	Unknown		
Owner Type:	Publ Utily		
Owner:	Publ Utily		
Owner Address	195 Montague Street		
	Brooklyn		
Owner Phone:	(718)403-3053		
Operator Type:	Unknown		
Operator:	Unknown		
Operator Address	Unknown		
	Not reported		
Operator Phone:	Unknown		
Registry:	Not on NYS Registry of Inactive Haz Waste Disposal Sites		
Registry Site ID:	Unknown	RCRA Permitted:	Unknown
Site Code:	2A	Mailing:	Not reported
Quadrange:	Unknown	Lat/Long:	40 40 30 N / 73 59 30 W
Acres:	0.00	Cost per Acre:	0
Investment Cost:	0	Estimated Cost:	0
Future Est. cost:	0		
Operator Date:	1981	Close Date:	Unknown
Completed:	PA	Active:	Unknown
Substance:	suspected PCB's		

89/117

BUG, CITIZENS GATE STATION *(Continued)* **S102873296**

Site Description: The site is a gate station that houses pressure-regulating equipment to control the pressure and flow of natural gas entering BUG's distribution system. This equipment is designed and operated in accordance with 49 CFR Part 192, and 6 NYCRR Part 255. Liquid condensate is removed by a gas scrubber and collected in the body of the scrubber in a small, above ground receiving vessel. All recovered liquids are collected and disposed in accordance with regulatory requirements. This site is a gate station that houses pressure-regulating equipment to control the flow of natural gas throughout BUG's distribution system. At this site condensate is removed by a gas scrubber and collected in a 1500-gallon underground tank. BUG's liquid condensatehas been known to be contaminated with PCB's.

Volatile Organic Compounds Disposed:	No
Semi Volatile Organic Compounds Disposed:	No
PCB's Disposed:	Unknown
Pesticides Disposed:	No
Metals Disposed:	No
Asbestos Disposed:	No
Analytical Info Exists for Air:	Not reported
Analytical Info Exists for Ground:	None
Analytical Info Exists for Surface:	Not reported
Analytical Info Exists for Sediments:	Not reported
Analytical Info Exists for Surface Soil:	Not reported
Analytical Info Exists for Substance:	Not reported
Analytical Info Exists for Waste:	Not reported
Analytical Info Exists for Leachate:	Not reported
Analytical Info Exists for EP Toxicity:	Not reported
Analytical Info Exists for TCLP:	Not reported
Site Poses Threat to Environment/Public Health:	E
Internal Ranking of Site:	0
Surface Water Contamination:	Unknown
Surface Water Body Class:	Unknown
Groundwater Contamination:	Unknown
Groundwater Classification:	Unknown
Drinking Water Contamination:	Unknown
Drinking Water Supply is Active:	Unknown
Any Known Fish or Wildlife:	Unknown
Hazardous Exposure:	Unknown
Site Has Controlled Acess:	Unknown
Ambient Air Contamination:	Unknown
Direct Contact:	Unknown
EPA Hazardous Ranking System Score:	Unknown
Agencies	Not reported
Air	Not reported
Building	Not reported
Drink	Not reported
Eptox	Not reported
Fish	Not reported
Ground	Not reported
Ground	Not reported
Hazardous Threat	Not reported
Leachate	Not reported
Preparer	Not reported
Reason	Not reported
Sediment	Not reported
Soil	Not reported
Surface	Not reported

BUG, CITIZENS GATE STATION (Continued) S102873296

Status	Not reported
Surface Soil	Not reported
Surface	Not reported
Waste	Not reported

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54 **106 6TH ST** **LUST** **S102660664**
SSW **106 6TH ST** **N/A**
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9502574	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	TANG	SWIS:	61
Caller Name:	MRS HAWKINS	Caller Agency:	EPA
Caller Phone:	(718) 595-6700	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
Spiller:	UNKNOWN		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	05/31/1995		
Spill Cause:	Tank Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Unknown
Spill Notifier:	Local Agency	PBS Number:	Not reported
Spill Date:	05/31/1995 12:44	Reported to Dept:	05/31/1995 12:49
Cleanup Ceased:	05/31/1995		
Last Inspection:	Not reported		
Cleanup Meets Standard:	True		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	Not reported		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	06/07/1995		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	UNKNOWN PETROLEUM		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	-1	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:			
Caller Remarks:	4 BARRELS ABANDONED - POSS. CONTAINING HAZARDOUS MATERIAL - NOT LEAKING - REFER TO NYCDEP HAZMAT		

K55 **141 6TH ST BET 1 & 2 AVES** **LUST** **S102671920**
SSW **141 6TH ST** **N/A**
1/4-1/2 **BKLYN, NY**
Higher

141 6TH ST BET 1 & 2 AVES (Continued) S102671920

LUST:

Spill Number:	9204442	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	O'DOWD	SWIS:	61
Caller Name:	KERRI-ANN O'DOWD	Caller Agency:	NYSDEC
Caller Phone:	(718) 482-4933	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
Spiller:	Not reported		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Unable/unwilling Responsible Party. Corrective action taken. (ISR)		
Spill Closed Dt:	07/31/1992		
Spill Cause:	Other	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Gas Station
Spill Notifier:	Local Agency	PBS Number:	Not reported
Spill Date:	07/15/1992 12:00	Reported to Dept:	07/17/1992 12:00
Cleanup Ceased:	07/31/1992		
Last Inspection:	Not reported		
Cleanup Meets Standard:	True		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	04/26/1993		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	07/22/1992		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	DIESEL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	200	Quant Recovered:	0
Quantity Units:	Gallons		
Material:	FABRIC SHARDS		
Material Class:	Hazardous Material		
Unknwn Quantity:	Not reported	Unk Qt Recovered:	Not reported
Quantity Spilled:	Not reported	Quant Recovered:	Not reported
Quantity Units:	Not reported		
DEC Remarks:			
Caller Remarks:	NYCDEP SAMPLED. SANITATION POLICE INVESTIGATING.		

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56 **BALTIC RECYCLING T.S.** SWF/LF S102632786
ENE **524-26 BALTIC STRET** N/A
1/4-1/2 **BROOKLYN, NY 11217**
Higher

BALTIC RECYCLING T.S. (Continued) S102632786

LF:

Facility ID:	24T97	Telephone:	(718) 624-2459
DEC Region:	2	Permit #:	Not reported
Permit issue date:	11/13/1991	Permit Expires:	11/13/1996
Authrzd/Operate Dt:	Not reported	Constrct Perm #:	0
Auth. to Construct:	Not reported	Const Permit Exp:	Not reported
Regulatory Status:	None	Receiving Waste:	True
Started Rec Waste:	Not reported	Stop Rec Waste:	Not reported
Aquifer:	none		
Inactive HWS:	False	Inactive HWS #:	0
Inactive HWS Class:	Not reported		
Waste type:	Putrescible		
Owner Name:	Baltic recycling Corp.	Owner Type:	Private
Mail Address:	524-26 Baltic Stret Brooklyn, NY 11217		
Owner Phone Num:	(718) 624-2459	Operator Name:	Paul Rutigliano
Annual Report Submitted to ALB:			
1989:	False	1990:	False
1991:	False	1992:	False
1993:	False	1994:	False
1995:	False	1996:	False
1997:	False		
Annual Rprt Waived:	False	Tiping Fee Rprtd:	False
Primary Liner:	False	Secondary Liner:	False

Single Liner:	False
Single Composite Liner:	False
Double Liner:	False
Double Composite Liner:	False
Site Can Take Ash	False
Date Ordered On Consent Signed:	Not reported
Accomplish Date Of Order:	Not reported
Ny Transverse Mercator Coordinates East:	0
Ny Transverse Mercator Coordinates North:	0
Remarks:	Not reported

L57 **MERRIT GASOLINE STATION** LUST S102673439
ESE **204-222 4TH AVE** N/A
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9605719	Region of Spill:	2
Facility Contact:	RON BAMER	Facility Tele:	(610) 527-7900
Investigator:	O'DOWD	SWIS:	61
Caller Name:	CELESTE RUFER	Caller Agency:	GROUND WATER ENVIRON SVC
Caller Phone:	(516) 753-1260	Caller Extension:	Not reported
Notifier Name:	FIELD REP	Notifier Agency:	GROUND WATER ENVIRON
Notifier Phone:	(516) 753-1260	Notifier Extension:	Not reported
Spiller Contact:	RON BAMER	Spiller Phone:	(610) 527-7900
Spiller:	MERRIT GASOLINE STATION		
Address	204-222 4TH AVE BROOKLYN		
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Other	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Gas Station
Spill Notifier:	Other	PBS Number:	Not reported

MERRIT GASOLINE STATION (Continued) S102673439

Spill Date: 08/02/1996 16:00 Reported to Dept: 08/02/1996 16:56
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 09/03/1996
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 08/02/1996
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported Tank Number: Not reported
Test Method: Not reported Leak Rate: Not reported
Capacity (Gal): Not reported Gross Leak/Fail: Not reported
Material: GASOLINE
Material Class: Petroleum
Unknwn Quantity: True Unk Qt Recovered: True
Quantity Spilled: 0 Quant Recovered: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: removal of under ground tanks-poss soil contamination

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L58
ESE
1/4-1/2
Higher

MERRITT GAS STATION LUST S102239356
204-222 4TH AVE N/A
BROOKLYN, NY

LUST:
Spill Number: 9515732 Region of Spill: 2
Facility Contact: Not reported Facility Tele: Not reported
Investigator: O'DOWD SWIS: 61
Caller Name: TOM LAVIN Caller Agency: CROMPCO CORP
Caller Phone: (610) 278-7203 Caller Extension: Not reported
Notifier Name: TOM LAVIN Notifier Agency: CROMPCO CORP
Notifier Phone: (610) 278-7203 Notifier Extension: Not reported
Spiller Contact: Not reported Spiller Phone: Not reported
Spiller: MERRITT GAS STATION
Address 204-222 4TH AV
BROOKLYN, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 06/11/1997
Spill Cause: Tank Test Failure Resource Affected: On Land
Water Affected: Not reported Spill Source: Gas Station
Spill Notifier: Other PBS Number: Not reported
Spill Date: 03/07/1996 16:20 Reported to Dept: 03/07/1996 16:44
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: True
Spill Record Last Update: 06/11/1997
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 03/07/1996

MERRITT GAS STATION (Continued) **S102239356**

Date Region Sent Summary to Central Office: Not reported

PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	GASOLINE		
Material Class:	Petroleum		
Unknwn Quantity:	True	Unk Qt Recovered:	False
Quantity Spilled:	0	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:	SEE SPILL # 9605719.		
Caller Remarks:	line failed during testing - failure .12 gallons per hour		

L59 **4TH & SACKETT STREET** **LUST** **S100493314**
ESE **4TH / SACKETT STREET** **N/A**
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9113310	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	SULLIVAN	SWIS:	61
Caller Name:	CHUCK PEDNNO	Caller Agency:	CROMPCO CORP.
Caller Phone:	(215) 646-3161	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(718) 625-7904
Spiller:	MERIT GAS STA.		
Address	4TH & SACKETT ST. BROOKLYN, NY		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	08/03/1994		
Spill Cause:	Tank Test Failure	Resource Affected:	Groundwater
Water Affected:	Not reported	Spill Source:	Gas Station
Spill Notifier:	Tank Tester	PBS Number:	Not reported
Spill Date:	03/31/1992 14:30	Reported to Dept:	03/31/1992 15:21
Cleanup Ceased:	08/03/1994		
Last Inspection:	Not reported		
Cleanup Meets Standard:	True		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	08/03/1994		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	04/07/1992		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	Not reported	Tank Number:	Not reported
Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	WASTE OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	0	Quant Recovered:	0
Quantity Units:	Not reported		
DEC Remarks:	08/03/94: RETESTED AND PASSED 4/10/92. PASSING RESULTS GAVE TO PBS UNIT.		
Caller Remarks:	WILL E.I.R., ALSO REG. UNLEADED PRODUCT LINE FAILED AT SAME LOCATION,		

95/117

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
	4TH & SACKETT STREET (Continued)		**S100493314**

LEAK RATE = .112 GPH.

60	**CITIZENS GAS LIGHT CO.**	**Coal Gas**	**G000000386**
WSW	**437 SMITH ST.**		**N/A**
1/4-1/2	**BROOKLYN, NY 11237**		
Higher			

COAL GAS SITE DESCRIPTION:
Site is on the eastern side of Smith St. at the end of Luquer St. Site is between 7th St. and 5th St. Site is currently a park. (C14)

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M61	**WYCKOFF GARDENS**	**LUST**	**S100146694**
NE	**272 WYCKOFF STREET**		**N/A**
1/4-1/2	**NEW YORK CITY, NY**		
Same			

LUST:

Spill Number:	9010808	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	SACCACIO	SWIS:	61
Caller Name:	SEBASTIAN LOREFICE	Caller Agency:	TANK TESTING INC
Caller Phone:	(718) 789-3776	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	Not reported
Spiller:	NYCHA		
Address	Not reported		
	Not reported		
Spill Class:	Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Tank Test Failure	Resource Affected:	Groundwater
Water Affected:	Not reported	Spill Source:	Other Non Commercial/Industrial
Spill Notifier:	Tank Tester	PBS Number:	2-474460
Spill Date:	01/09/1991 10:00	Reported to Dept:	01/09/1991 15:50
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	09/27/1994		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	01/16/1991		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	2-474002	Tank Number:	001
Test Method:	Not reported	Leak Rate:	0.00
Capacity (Gal):	0	Gross Leak/Fail:	Not reported
PBS Number:	2-473995	Tank Number:	002
Test Method:	Not reported	Leak Rate:	0.00
Capacity (Gal):	0	Gross Leak/Fail:	Not reported
Material:	#2 FUEL OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	-1	Quant Recovered:	0

96/117

WYCKOFF GARDENS (Continued) S100146694

Quantity Units: Not reported
DEC Remarks:
Caller Remarks: (2) 25K TANKS FAILED HORNER EZY CHECK WITH A VISUAL LEAK AT TOP OF TANK,TO REPAIR & RETEST.

M62
NE
1/4-1/2
Same

WYCKOFF GARDENS LUST S100781767
272 WYCKOFF ST N/A
BROOKLYN, NY

LUST:

Spill Number:	9307448	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	SACCACIO	SWIS:	61
Caller Name:	PAT NERO	Caller Agency:	NYC HOUSING AUTHORITY
Caller Phone:	(212) 306-3142	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(718) 852-3832
Spiller:	NYCHA		
Address	Not reported		
	Not reported		
Spill Class:	*Known release with minimal potential for fire or hazard. DEC Response.* Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Tank Test Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Non Commercial/Industrial
Spill Notifier:	Tank Tester	PBS Number:	2-474460
Spill Date:	09/20/1993 11:00	Reported to Dept:	09/20/1993 11:15
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	09/27/1994		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	09/21/1993		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	2-475556	Tank Number:	001
Test Method:	Not reported	Leak Rate:	0.00
Capacity (Gal):	0	Gross Leak/Fail:	Not reported
Material:	#2 FUEL OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	0	Quant Recovered:	0
Quantity Units:	Not reported		
DEC Remarks:	10/10/95: This is additional information about material spilled from the translation of the old spill file: TTF.		
Caller Remarks:	VISUAL LEAKS AT TOP OF TANK. EMPTY TANK - PRESSURE TEST, GAS LEAK & ULTRA SOUND TESTED.		

N63
ENE
1/4-1/2
Higher

WYCKOFF CONSOLIDATED LUST S100177034
572 WARREN ST N/A
BKLYN, NY

WYCKOFF CONSOLIDATED (Continued) S100177034

LUST:

Spill Number:	9105220	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	SACCACIO	SWIS:	61
Caller Name:	Not reported	Caller Agency:	TANK TESTING INC
Caller Phone:	Not reported	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(212) 306-3142
Spiller:	NYCHA		
Address	Not reported		
	Not reported		
Spill Class:	Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.		
Spill Closed Dt:	Not reported		
Spill Cause:	Tank Test Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Non Commercial/Industrial
Spill Notifier:	Tank Tester	PBS Number:	2-474479
Spill Date:	08/14/1991 13:30	Reported to Dept:	08/14/1991 15:27
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	08/07/1995		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	10/09/1991		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	2-474215	Tank Number:	001
Test Method:	Not reported	Leak Rate:	0.00
Capacity (Gal):	0	Gross Leak/Fail:	Not reported
Material:	#2 FUEL OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	-1	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:			
Caller Remarks:	GROSS LEAK		

N64 **572 WARREN STREET HOUSES** LUST S102233327
ENE **572 WARREN ST** N/A
1/4-1/2 **BROOKLYN, NY**
Higher

LUST:

Spill Number:	9602519	Region of Spill:	2
Facility Contact:	CALLER	Facility Tele:	(718) 439-3135
Investigator:	SACCACIO	SWIS:	61
Caller Name:	DAVID WALTER	Caller Agency:	AQUA-X
Caller Phone:	(718) 439-3135	Caller Extension:	Not reported
Notifier Name:	DAVID WALTER	Notifier Agency:	AQUA-X
Notifier Phone:	(718) 439-3135	Notifier Extension:	Not reported
Spiller Contact:	FRANK OCELLO	Spiller Phone:	(212) 306-3229

98/11

572 WARREN STREET HOUSES (Continued) S102233327

Spiller: NYC HOUSING AUTHORITY
Address: 250 BROADWAY
MANHATTAN, NY 10007
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Failure
Resource Affected: On Land
Water Affected: Not reported
Spill Source: Other Non Commercial/Industrial
Spill Notifier: Other
PBS Number: Not reported
Spill Date: 05/22/1996 10:00
Reported to Dept: 05/22/1996 11:46
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: False
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 05/30/1996
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 05/22/1996
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Leak Rate: Not reported
Capacity (Gal): Not reported
Gross Leak/Fail: Not reported
Material: #2 FUEL OIL
Material Class: Petroleum
Unknwn Quantity: False
Unk Qt Recovered: False
Quantity Spilled: 10
Quant Recovered: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: removing a 10,000 gallon heating oil tank. under the tank there was some trapped water that had a petroleum sheen on it. less than 10 gallons are visible.

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65 WSW 1/4-1/2 Higher **467 COURT ST./ST. MARY'S** LUST S100144787
467 COURT ST. N/A
NEW YORK CITY, NY

LUST:
Spill Number: 8705377
Region of Spill: 2
Facility Contact: Not reported
Facility Tele: Not reported
Investigator: BATTISTA
SWIS: 61
Caller Name: Not reported
Caller Agency: Not reported
Caller Phone: Not reported
Caller Extension: Not reported
Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: ST.MARY'S STAR OF THE SEA
Address: 467 COURT ST.
B'KLYN, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Test Failure
Resource Affected: Groundwater
Water Affected: Not reported
Spill Source: Other Non Commercial/Industrial
Spill Notifier: Tank Tester
PBS Number: 2-306266
Spill Date: 09/26/1987 13:00
Reported to Dept: 09/26/1987 16:45

99/15

467 COURT ST./ST. MARY'S (Continued) **S100144787**

Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 11/24/1992
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/28/1987
Date Region Sent Summary to Central Office: Not reported
PBS Number: 2-306266 Tank Number: Not reported
Test Method: Not reported Leak Rate: Not reported
Capacity (Gal): Not reported Gross Leak/Fail: Not reported
Material: #4 FUEL OIL
Material Class: Petroleum
Unknwn Quantity: False Unk Qt Recovered: False
Quantity Spilled: -1 Quant Recovered: 0
Quantity Units: Not reported
DEC Remarks:
Caller Remarks: 3K TANK- HIGH VOLUME LEAK- NO ACTION.

Spill Number: 8706042 Region of Spill: 2
Facility Contact: Not reported Facility Tele: Not reported
Investigator: BATTISTA SWIS: 61
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: Not reported Spiller Phone: (718) 625-2270
Spiller: ST.MARY'S STAR OF THE SEA
Address 467 COURT ST.
B'KLYN, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Test Failure Resource Affected: Groundwater
Water Affected: Not reported Spill Source: Other Non Commercial/Industrial
Spill Notifier: Tank Tester PBS Number: 2-306266
Spill Date: 10/17/1987 17:00 Reported to Dept: 10/17/1987 19:39
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 11/24/1992
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 10/19/1987
Date Region Sent Summary to Central Office: Not reported
PBS Number: 2-306266 Tank Number: Not reported
Test Method: Not reported Leak Rate: Not reported
Capacity (Gal): Not reported Gross Leak/Fail: Not reported
Material: #4 FUEL OIL

467 COURT ST./ST. MARY'S (Continued) S100144787

Material Class: Petroleum
Unknwn Quantity: False — Unk Qt Recovered: False
Quantity Spilled: -1 — Quant Recovered: 0
Quantity Units: Not reported
DEC Remarks:
Caller Remarks: 3K TANK FAILED TEST WITH LEAK RATE OF -.32 G/HR. WILL EXCAVATE, ISOLATE, AND RETEST. CONTACT: PAUL (718) 625-2270.

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66 WNW 1/4-1/2 Higher | **440 CLINTON STREET** | **LUST** | **S102671957**
440 CLINTON ST | **N/A**
BROOKLYN, NY

LUST:
Spill Number: 9208109 — Region of Spill: 2
Facility Contact: Not reported — Facility Tele: Not reported
Investigator: TANG — SWIS: 61
Caller Name: PETE LEPORE — Caller Agency: WHALECO
Caller Phone: (718) 852-7000 — Caller Extension: Not reported
Notifier Name: Not reported — Notifier Agency: Not reported
Notifier Phone: Not reported — Notifier Extension: Not reported
Spiller Contact: Not reported — Spiller Phone: Not reported
Spiller: Not reported
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 10/14/1992
Spill Cause: Tank Overfill — Resource Affected: On Land
Water Affected: Not reported — Spill Source: Tank Truck
Spill Notifier: Responsible Party — PBS Number: Not reported
Spill Date: 10/14/1992 09:25 — Reported to Dept: 10/14/1992 09:29
Cleanup Ceased: 10/14/1992
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 10/15/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported — Tank Number: Not reported
Test Method: Not reported — Leak Rate: Not reported
Capacity (Gal): Not reported — Gross Leak/Fail: Not reported
Material: #2 FUEL OIL
Material Class: Petroleum
Unknwn Quantity: False — Unk Qt Recovered: False
Quantity Spilled: 2 — Quant Recovered: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: CONTAINED IN PAVEMENT DRIVER CLEANED UP.

10 1/11

67
NE
1/4-1/2
Lower

ULAMO CORP
280 BERGEN ST
BROOKLYN, NY

Database(s): LUST
EDR ID Number: S103037423
EPA ID Number: N/A

LUST:

Spill Number:	9713764	Region of Spill:	2
Facility Contact:	ABOVE CALLER	Facility Tele:	Not reported
Investigator:	SIGONA	SWIS:	61
Caller Name:	EDWIN ROSARO	Caller Agency:	TANKNOLOGY
Caller Phone:	(800) 666-2605	Caller Extension:	Not reported
Notifier Name:	EDWIN ROSARO	Notifier Agency:	TANKNOLOGY
Notifier Phone:	(800) 666-2605	Notifier Extension:	Not reported
Spiller Contact:	ABOVE CALLER	Spiller Phone:	Not reported
Spiller:	ULAMO CORP		
Address	280 BERGIN ST BROOKLYN		
Spill Class:	Known release that creates potential for fire or hazard. (Highly Improbable)		
Spill Closed Dt:	Not reported		
Spill Cause:	Tank Test Failure	Resource Affected:	On Land
Water Affected:	Not reported	Spill Source:	Other Commercial/Industrial
Spill Notifier:	Responsible Party	PBS Number:	2-295345
Spill Date:	03/12/1998 11:45	Reported to Dept:	03/12/1998 11:57
Cleanup Ceased:	Not reported		
Last Inspection:	Not reported		
Cleanup Meets Standard:	False		
Recommended Penalty:	No Penalty		
Spiller Cleanup Date:	Not reported		
Enforcement Date:	Not reported		
Investigation Complete:	Not reported		
UST Involvement:	False		
Spill Record Last Update:	03/12/1998		
Corrective Action Plan Submitted:	Not reported		
Date Spill Entered In Computer Data File:	03/12/1998		
Date Region Sent Summary to Central Office:	Not reported		
PBS Number:	4-163805	Tank Number:	Not reported
Test Method:	TANKOLOGY [VACUTECT]	Leak Rate:	0.00
Capacity (Gal):	10000	Gross Leak/Fail:	F
Material:	#2 FUEL OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	0	Quant Recovered:	0
Quantity Units:	Gallons		
DEC Remarks:			
Caller Remarks:	tank test failure - will isolate and retest		

68
East
1/4-1/2
Higher

124 4TH AVENUE
124 4TH AVE
BROOKLYN, NY

Database(s): LUST
EDR ID Number: S101658438
EPA ID Number: N/A

LUST:

Spill Number:	9505523	Region of Spill:	2
Facility Contact:	Not reported	Facility Tele:	Not reported
Investigator:	ROMMEL	SWIS:	61
Caller Name:	JOHN LEDDY	Caller Agency:	PRO-TEST
Caller Phone:	(516) 321-4670	Caller Extension:	Not reported
Notifier Name:	Not reported	Notifier Agency:	Not reported
Notifier Phone:	Not reported	Notifier Extension:	Not reported
Spiller Contact:	Not reported	Spiller Phone:	(718) 626-8083

124 4TH AVENUE (Continued) S101658438

Spiller: CITGO STATION
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Test Failure
Water Affected: Not reported
Spill Notifier: Tank Tester
Spill Date: 08/03/1995 12:00
Cleanup Ceased: Not reported
Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 09/25/1995
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Test Method: Not reported
Capacity (Gal): Not reported
Material: UNKNOWN PETROLEUM
Material Class: Petroleum
Unknwn Quantity: False
Quantity Spilled: 1
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: PRODUCT LINE TEST - REMOTE DISCHARGE LINES LEAK RATE - 3

Resource Affected: On Land
Spill Source: Gas Station
PBS Number: Not reported
Reported to Dept: 08/03/1995 18:36
Tank Number: Not reported
Leak Rate: Not reported
Gross Leak/Fail: Not reported
Unk Qt Recovered: False
Quant Recovered: 0

---

69 ENE 1/4-1/2 Same
105 3RD AVE
105 3RD AVE
BROOKLYN, NY
LUST **S102672023**
N/A

LUST:
Spill Number: 9210549
Facility Contact: *Not reported*
Investigator: SIGONA
Caller Name: SUSANNE HIGGINS
Caller Phone: (718) 647-4200
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: *Not reported*
Spiller: Not reported
Address: Not reported
Not reported
Spill Class: Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: Not reported
Spill Cause: Tank Overfill
Water Affected: Not reported
Spill Notifier: Responsible Party
Spill Date: 12/12/1992 15:00
Cleanup Ceased: Not reported

Region of Spill: 2
Facility Tele: *Not reported*
SWIS: 61
Caller Agency: BAERENKLAU
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: *Not reported*
Resource Affected: On Land
Spill Source: Private Dwelling
PBS Number: Not reported
Reported to Dept: 12/13/1992 06:04

105 3RD AVE (Continued) S102672023

Last Inspection: Not reported
Cleanup Meets Standard: Not reported
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: 11/23/1994
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 12/15/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Leak Rate: Not reported
Capacity (Gal): Not reported
Gross Leak/Fail: Not reported
Material: #2 FUEL OIL
Material Class: Petroleum
Unknwn Quantity: False
Unk Qt Recovered: False
Quantity Spilled: -1
Quant Recovered: 0
Quantity Units: Gallons
DEC Remarks:
Caller Remarks: BAERENKLAU OIL APPLIED SPEEDY-DRY

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70 WSW 1/4-1/2 Higher **506 COURT ST** **LUST** S102671874
506 COURT ST N/A
BKLYN, NY

LUST:
Spill Number: 9200939
Region of Spill: 2
Facility Contact: Not reported
Facility Tele: Not reported
Investigator: TANG
SWIS: 61
Caller Name: P LAPORE
Caller Agency: WHALECO
Caller Phone: (718) 852-7000
Caller Extension: Not reported
Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: WHALECO
Address: Not reported
Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 04/24/1992
Spill Cause: Tank Overfill
Resource Affected: On Land
Water Affected: Not reported
Spill Source: Private Dwelling
Spill Notifier: Responsible Party
PBS Number: Not reported
Spill Date: 04/23/1992 12:01
Reported to Dept: 04/24/1992 09:01
Cleanup Ceased: 04/24/1992
Last Inspection: Not reported
Cleanup Meets Standard: True
Recommended Penalty: No Penalty
Spiller Cleanup Date: Not reported
Enforcement Date: Not reported
Investigation Complete: Not reported
UST Involvement: False
Spill Record Last Update: Not reported
Corrective Action Plan Submitted: Not reported
Date Spill Entered In Computer Data File: 04/24/1992
Date Region Sent Summary to Central Office: Not reported
PBS Number: Not reported
Tank Number: Not reported

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

506 COURT ST (Continued) S102671874

Test Method:	Not reported	Leak Rate:	Not reported
Capacity (Gal):	Not reported	Gross Leak/Fail:	Not reported
Material:	#2 FUEL OIL		
Material Class:	Petroleum		
Unknwn Quantity:	False	Unk Qt Recovered:	False
Quantity Spilled:	1	*Quant Recovered:*	0
Quantity Units:	Gallons		
DEC Remarks:			
Caller Remarks:	Not reported		

71
SSW
1/2-1
Lower

METROPOLITAN GAS LIGHT CO. Coal Gas G000000436
35 12TH ST. N/A
BROOKLYN, NY 11215

COAL GAS SITE DESCRIPTION:
Site is east of 2nd Ave., before the Gowanus Canal. Site is between 11th St. and 13th St. Site later called Brooklyn Union Gas Co. (C14) Site is a CERCLIS Site I.D. #NYD980532006

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72
SSW
1/2-1
Lower

BROOKLYN UNION GAS CO. Coal Gas G000000385
157 SECOND AVE. N/A
BROOKLYN, NY 11232

COAL GAS SITE DESCRIPTION:
Site is on the western side of 2nd Ave. between 13th St. and where 11th Street would have been. Site is bordered on the west by the Gowanas Canal. (C14)

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ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)	Facility ID
BROOKLYN	S102240021	GOWANUS GT SITE	27TH ST / 3RD AVE		LUST, NY Spills	9506005
BROOKLYN	S102662634	GOWANAS GAS TURBINES	27TH ST/2ND AV		LUST	9603451
BROOKLYN	S101341009	GOWANUS GAS TURBINE SITE	27TH ST / 3RD AVE		LUST, NY Spills	9405594
BROOKLYN	S102663511	GOWANUS CANNAL	29TH STREET / 2ND AVE		LUST	9706169
BROOKLYN	S101103247	65 SOUTH 3RD STREET	65 SOUTH 3RD STREET		LUST	9401369
BROOKLYN	1000911946	LIRR ATLANTIC AVENUE	4TH & 5TH AVES - MANHOLE S72	11217	RCRIS-SQG, FINDS	
BROOKLYN	S102662901	RESIDENTS	67 NORTH 8TH STREET		LUST	9614853
BROOKLYN	S102672154	4TH ST AREA	4TH ST AREA		LUST	9300721
BROOKLYN	1000790657	MARCELINO ALMONTE M & A REPAIRS	164 4TH AVE & DOUGLAS	11217	FINDS, RCRIS-SQG	
BROOKLYN	1001224056	NYCHA - WYCKOFF	130 3RD AVE	11217	RCRIS-SQG	
BROOKLYN	1000457994	AMOCO SVC STA	375-381 4TH AVE & 6TH ST	11215	FINDS, RCRIS-SQG	
BROOKLYN	S102671883	138 2ND AVENUE	138 2ND AVE	11215	LUST	9201414
BROOKLYN	S102672579	GETTY SVCE STATION	64023 7TH AVE		LUST	9406935
BROOKLYN	S102663432	GAS STATION	AVE Y/ W. 3RD ST SE CORN		LUST	9705437
BROOKLYN	S102402021	VIRGINIA DARE EXTRACT COM	882 3RD AVE		LUST, NY Spills	9607381
BROOKLYN	S102662728	ROADWAY	8402 8TH AVE		LUST	9610255
BROOKLYN	S102150349	OLD GAS STATION	3RD AVE		LUST, NY Spills	9503549
BROOKLYN	S100879066	850 THIRD AVENUE	850 3RD AVE		LUST, NY Spills	9312153
BROOKLYN	S102671918	1ST AVE BET 50 & 51ST STS	1ST AVE		LUST	9204053
BROOKLYN	S102671818	138 2ND AVE/USPS	138 2ND AVE		LUST	9111199
BROOKLYN	S103037634		990 3RD AVE		LUST	9510315
BROOKLYN	S100177039	6418 8TH AVE/GETTY	6418 8TH AVE/GETTY		LUST	9105805
BROOKLYN	S101174409	5600 1ST AVENUE	5600 1ST AVENUE		LUST	9404199
BROOKLYN	S101658301	118 8TH AVENUE	118 8TH AVENUE		LUST	9501741
BROOKLYN	S102960526	CLARA BARTON HIGH SCHOOL	CLASSON AVE AT PRESIDENT		LUST	9712737
BROOKLYN	S100667609	722 COURT ST	722 COURT ST		LUST	9102797
BROOKLYN	S102662726	300 FLATBUSH AV/ 7TH AV	300 FLATBUSH AV/ 7TH AV		LUST	9610245
BROOKLYN	S102672539	27TH STREET & THIRD AVE	GOWANUS GAS 27TH / 3RD ST		LUST	9404443
BROOKLYN	S102148419	GOWANUS CANAL	GOWANUS CANAL-SACKETT ST		LUST, NY Spills	9404240
BROOKLYN	S100494204	FT HAMI/OFF 1ST AVE B218	FT HAMI/OFF 1ST AVE B218		LUST	9208534
BROOKLYN	S102238450	RED HOOK TERMINAL	HAMILTON AVE		LUST, NY Spills	8908683
BROOKLYN	1001224061	NYCHA - GOWANUS	195 HOYT ST	11217	RCRIS-SQG	
BROOKLYN	S102662653	20 FT W OF PRESIDENT ST	HOYT ST		LUST	9608016
BROOKLYN	S102147384	CON ED	HUDSON AVE STATION		LUST, NY Spills	9310544
BROOKLYN	S102672354	21 ST OFF 3RD AVENUE	21 ST OFF 3RD AVENUE		LUST	9312696
BROOKLYN	S102662567	114 32ND ST AT 3RD AVE.	114 32ND ST AT 3RD AVE.		LUST	9305702
BROOKLYN	S100177516	44-21 9TH ST/NY TEL	44021 9TH ST		LUST	9110490

GEOCHECK VERSION 2.1 ADDENDUM
FEDERAL DATABASE WELL INFORMATION

Well Closest to Target Property (Eastern Quadrant)

BASIC WELL DATA

Site ID:	404149073571201	Distance from TP:	>2 Miles
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	Not Reported	County:	Kings
Altitude:	18.00 ft.	State:	New York
Well Depth:	56.00 ft.	Topographic Setting:	Hillside (slope)
Depth to Water Table:	17.00 ft.	Prim. Use of Site:	Observation
Date Measured:	04011933	Prim. Use of Water:	Unused

LITHOLOGIC DATA

Geologic Age ID (Era/System/Series):	Cenozoic-Quaternary-Pleistocene
Principal Lithology of Unit:	Sand
Further Description:	Not Reported

WATER LEVEL VARIABILITY

Not Reported

GEOCHECK VERSION 2.1
FEDERAL DATABASE WELL INFORMATION

Well Closest to Target Property (Southern Quadrant)

BASIC WELL DATA

Site ID:	403819073581101	Distance from TP:	>2 Miles
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	1935	County:	Kings
Altitude:	40.00 ft.	State:	New York
Well Depth:	145.00 ft.	Topographic Setting:	Flat surface
Depth to Water Table:	47.00 ft.	Prim. Use of Site:	Observation
Date Measured:	06011947	Prim. Use of Water:	Unused

LITHOLOGIC DATA

Geologic Age ID (Era/System/Series):	Cenozoic-Quaternary-Pleistocene
Principal Lithology of Unit:	*Sand*
Further Description:	COARSE GRAINED

WATER LEVEL VARIABILITY

Not Reported

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GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Nearest PWS.

PWS SUMMARY:

PWS ID:	NY0003335	PWS Status:	Active	Distance from TP:	1 - 2 Miles
Date Initiated:	Not Reported	Date Deactivated:	Not Reported	Dir relative to TP:	North
PWS Name:	SPRING GLEN LAKE BLOOMINGBURG, NY 12721				
Addressee / Facility:	System Owner/Responsible Party BUDD HERBERT H & H BUDD EARTH MOVING EX CO MOUNTAINDALE RD. SPRING GLEN, NY 12483				
Facility Latitude:	40 41 42		Facility Longitude:	073 59 24	
Facility Latitude:	41 39 03		Facility Longitude:	074 26 30	
City Served:	MAMAKATING (T)				
Treatment Class	Not Reported		Population Served:	Not Reported	

PWS currently has or has had major violation(s): No

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM RECORDS:

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 08/27/98
Date Made Active at EDR: 10/06/98
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 09/03/98
Elapsed ASTM days: 33
Date of Last EDR Contact: 08/27/98

ERNS: Emergency Response Notification System
Source: EPA/NTIS
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/30/98
Date Made Active at EDR: 07/20/98
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 07/14/98
Elapsed ASTM days: 6
Date of Last EDR Contact: 07/10/98

NPL: National Priority List
Source: EPA
Telephone: 703-603-8852
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC).

Date of Government Version: 03/06/98
Date Made Active at EDR: 07/09/98
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/09/98
Elapsed ASTM days: 30
Date of Last EDR Contact: 09/21/98

RCRIS: Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 07/01/98
Date Made Active at EDR: 10/06/98
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 08/27/98
Elapsed ASTM days: 40
Date of Last EDR Contact: 08/14/98

CORRACTS: *Corrective Action Report*
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/15/97
Date Made Active at EDR: 02/02/98
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 01/05/98
Elapsed ASTM days: 28
Date of Last EDR Contact: 08/14/98

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FEDERAL NON-ASTM RECORDS:

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/95
Database Release Frequency: Biennially
Date of Last EDR Contact: 09/22/98
Date of Next Scheduled EDR Contact: 12/21/98

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: Varies
Database Release Frequency: Varies
Date of Last EDR Contact: Varies
Date of Next Scheduled EDR Contact: N/A

FINDS: Facility Index System
Source: EPA/NTIS
Telephone: 703-908-2493
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 09/30/97
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/23/98
Date of Next Scheduled EDR Contact: 12/21/98

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4526
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/97
Database Release Frequency: Annually
Date of Last EDR Contact: 07/22/98
Date of Next Scheduled EDR Contact: 10/26/98

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/28/98
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/13/98
Date of Next Scheduled EDR Contact: 10/12/98

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 08/28/98
Date of Next Scheduled EDR Contact: 11/23/98

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-260-3936
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/22/97
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/18/98
Date of Next Scheduled EDR Contact: 11/16/98

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 09/14/98
Date of Next Scheduled EDR Contact: 12/14/98

ROD: Records Of Decision
Source: NTIS
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/31/95
Database Release Frequency: Annually

Date of Last EDR Contact: 10/09/98
Date of Next Scheduled EDR Contact: 01/18/99

TRIS: Toxic Chemical Release Inventory System
Source: EPA/NTIS
Telephone: 202-260-1531
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/95
Database Release Frequency: Annually

Date of Last EDR Contact: 09/28/98
Date of Next Scheduled EDR Contact: 12/28/98

TSCA: Toxic Substances Control Act
Source: EPA/NTIS
Telephone: 202-260-1444
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. USEPA has no current plan to update and/or re-issue this database.

Date of Government Version: 12/31/94
Database Release Frequency: Annually

Date of Last EDR Contact: 07/22/98
Date of Next Scheduled EDR Contact: 10/26/98

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF NEW YORK ASTM RECORDS:

LUST: Spills Information Database
Source: Department of Environmental Conservation
Telephone: 518-457-2462
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/01/98
Date Made Active at EDR: 07/15/98
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 06/15/98
Elapsed ASTM days: 30
Date of Last EDR Contact: 07/27/98

SHWS: Inactive Hazardous Waste Disposal Sites in New York State
Source: Department of Environmental Conservation
Telephone: 518-457-0747
State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 04/01/97
Date Made Active at EDR: 04/13/98
Database Release Frequency: Annually
Date of Data Arrival at EDR: 03/13/98
Elapsed ASTM days: 31
Date of Last EDR Contact: 08/31/98

LF: Facility Register
Source: Department of Environmental Conservation
Telephone: 518-457-2051
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 12/31/97
Date Made Active at EDR: 04/28/98
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 03/26/98
Elapsed ASTM days: 33
Date of Last EDR Contact: 08/12/98

UST: Petroleum Bulk Storage (PBS) Database
Source: Department of Environmental Conservation
Telephone: 518-457-4351
Facilities that have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons.

Date of Government Version: 07/01/98
Date Made Active at EDR: 09/23/98
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 08/24/98
Elapsed ASTM days: 30
Date of Last EDR Contact: 07/27/98

CBS UST: Chemical Bulk Storage Database
Source: NYSDEC
Telephone: 518-457-4351
Facilities that store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size.

Date of Government Version: 04/01/98
Date Made Active at EDR: 07/20/98
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 06/18/98
Elapsed ASTM days: 32
Date of Last EDR Contact: 07/27/98

MOSF UST: Major Oil Storage Facilities Database
Source: NYSDEC
Telephone: 518-457-4351
Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 04/01/98
Date Made Active at EDR: 07/20/98
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 06/18/98
Elapsed ASTM days: 32
Date of Last EDR Contact: 07/27/98

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF NEW YORK NON-ASTM RECORDS:

AST: Petroleum Bulk Storage (AST)
Source: Department of Environmental Conservation
Telephone: 518-457-4351
Registered Aboveground Storage Tanks.

Date of Government Version: 07/01/98
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/27/98
Date of Next Scheduled EDR Contact: 11/02/98

CBS AST: Chemical Bulk Storage Database
Source: NYSDEC
Telephone: 518-457-4351
Facilities that store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size.

Date of Government Version: 04/01/98
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/27/98
Date of Next Scheduled EDR Contact: 11/02/98

MOSF AST: Major Oil Storage Facilities Database
Source: NYSDEC
Telephone: 518-457-4351
Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 04/01/98
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/27/98
Date of Next Scheduled EDR Contact: 11/02/98

HSWDS: Hazardous Substance Waste Disposal Site Inventory
Source: Department of Environmental Conservation
Telephone: 518-457-0639
The list includes any known or suspected hazardous substance waste disposal sites. Also included are sites delisted from the Registry of Inactive Hazardous Waste Diposal Sites and non-registry sites which U.S. EPA Preliminary Assessment (PA) reports or Site Investigation (SI) reports were prepared.

Date of Government Version: 09/01/97
Database Release Frequency: N/A
Date of Last EDR Contact: 09/10/98
Date of Next Scheduled EDR Contact: 12/07/98

SPILLS: Spills Information Database
Source: Department of Environmental Conservation
Telephone: 518-457-2462
Data collected on spills reported to NYSDEC as required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

Date of Government Version: 04/01/98
Database Release Frequency: Quarterly
Date of Last EDR Contact: 07/27/98
Date of Next Scheduled EDR Contact: 11/02/98

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NEW YORK COUNTY RECORDS

CORTLAND COUNTY:

Cortland County UST Listing (AST)
Source: Cortland County Health Department
Telephone: 607-753-5035

Date of Government Version: 03/24/98
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/08/98
Date of Next Scheduled EDR Contact: 12/07/98

Cortland County UST Listing (UST)
Source: Cortland County Health Department
Telephone: 607-753-5035

Date of Government Version: 06/26/98
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/08/98
Date of Next Scheduled EDR Contact: 12/07/98

NASSAU COUNTY:

Registered Tank Database
Source: Nassau County Health Department
Telephone: 516-571-3314

Date of Government Version: 04/07/98
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/05/98
Date of Next Scheduled EDR Contact: 01/04/99

Registered Tank Database
Source: Nassau County Health Department
Telephone: 516-571-3314

Date of Government Version: 04/07/98
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/05/98
Date of Next Scheduled EDR Contact: 01/04/99

ROCKLAND COUNTY:

Petroleum Bulk Storage Database (AST)
Source: Rockland County Health Department
Telephone: 914-364-2605

Date of Government Version: 04/01/98
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/08/98
Date of Next Scheduled EDR Contact: 12/07/98

Petroleum Bulk Storage Database (UST)
Source: Rockland County Health Department
Telephone: 914-364-2605

Date of Government Version: 06/22/98
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/08/98
Date of Next Scheduled EDR Contact: 12/07/98

SUFFOLK COUNTY:

Underground Storage Tank Database (AST)
Source: Suffolk County Department of Health Services
Telephone: 516-854-2521

Date of Government Version: 03/01/98
Database Release Frequency: Annually

Date of Last EDR Contact: 09/08/98
Date of Next Scheduled EDR Contact: 12/07/98

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Underground Storage Tank Database (UST)
Source: Suffolk County Department of Health Services
Telephone: 516-854-2521

Date of Government Version: 03/01/98
Database Release Frequency: Annually

Date of Last EDR Contact: 09/08/98
Date of Next Scheduled EDR Contact: 12/07/98

Historical and Other Database(s)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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DELISTED NPL: NPL Deletions
Source: EPA
Telephone: 703-603-8769
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/06/98
Date Made Active at EDR: 07/09/98
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 06/09/98
Elapsed ASTM days: 30
Date of Last EDR Contact: 09/28/98

NFRAP: No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 08/27/98
Date Made Active at EDR: 10/03/98
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 09/03/98
Elapsed ASTM days: 30
Date of Last EDR Contact: 08/27/98

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SWDIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

Area Radon Information: The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones: Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

Oil/Gas Pipelines/Electrical Transmission Lines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines and electrical transmission lines.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

USGS Water Wells: In November 1971 the United States Geological Survey (USGS) implemented a national water resource information tracking system. This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on more than 900,000 wells, springs, and other sources of groundwater.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1996 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in March 1997 from the U.S. Fish and Wildlife Service.

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Water Dams: National Inventory of Dams
Source: Federal Emergency Management Agency
Telephone: 202-646-2801
National computer database of more than 74,000 dams maintained by the Federal Emergency Management Agency.

New York Public Water Wells
Source: New York Department of Health
Telephone: 518-458-6731

New York Facility and Manifest Data
Source: NYSDEC
Telephone: 518-457-6585
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

REFERENCE 25

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM **PROJECT NOTE**

TO: Vidan Auto Salvage Site File

DATE: 10/15/98

FROM: Sharron DaCosta

SUBJECT: Site Information

REFERENCE 25

The Vidan Auto Salvage site is located in a highly industrial area. There are a number of businesses located near the site (see site map). According to the site owner, Mr. Daniel Tinneny, during periods of heavy rain, there is ponding of stormwater on site and in the intersection of President and Bond Streets. Since the site is located at the bottom of a hill, the possiblity of contamination from site soils to the nearby residences is minimal. There are three storm drains located in the intersection of President and Bond Streets.

There were no conditions on site during the site recon to warrant immediate or emergency action.

REFERENCE 26

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9104-08	7/25/91	1123

DISTRIBUTION: Newark Housing Authority Property

BETWEEN:	OF:	PHONE:
Bill Anders, Fishery Biologist	NJDEP Div. of Fish, Game, Shellfisheries	609/748-2020

AND: David Florin (NUS)

DISCUSSION:

Contacted Div of Fish, Game, Shellfisheries to obtain information on the upper and lower New York Bay. Mr Anders informed me that there is some recreational fishing that takes place on the water body that that New Jersey has an advisory (part of the "Hudson River Advisory" that states very limited consumption of white bass, striped bass, blue fish should take place. A total ban on American eel is in place for fish caught in this sealin body of water

ACTION ITEMS:

REFERENCE 27

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-9006-42	2-8-91	0950

DISTRIBUTION:

Chemical Waste Disposal

BETWEEN:	OF:	PHONE:
J. Roberts	NYSDEC Region 2 Marine Resources Unit	(718) 482-4922

AND:

T. Mulder

DISCUSSION:

Called to inquire after fisheries uses of East River and NY Harbor.

DEC advises against eating shellfish from NY Harbor and East River. No commercial fishing occurs in area. Recreational fishing is common; however, in some areas DEC would advise against eating bottom fish - particularly those areas w/ suspected high levels of contaminants in sediments.

ACTION ITEMS:

REFERENCE 28

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO:	DATE: 11/23/98	TIME: 1310
DISTRIBUTION: Vidan Auto Salvage.Site File		
BETWEEN: Steve Zahn	OF NYSDEC Marine Resourses Unit	PHONE (718)482-4922
AND S. DaCosta of START II		

DISCUSSION

Mr. Zahn returned my phone call concerning the fishery status of the Gowanus Canal. He informed me that the Gowanus is not a designated fishery. He stated that there may be fish present however, due to the dissolve oxygen (DO) limiting factor, the likelihood of fish being present is doubtful. If fish are present, Mr. Zahn does not know the variety or quantity.

ACTION ITEMS:

REFERENCE 29

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
TO: Vidan Auto Salvage Site File	DATE: 10/15/98
FROM: Sharron DaCosta	
SUBJECT: Sensitive Environments Associated with the Vidan Auto Salvage Site	
REFERENCE Letter from T. Mackey, Information Services, NY Natural Heritage Program	
The following sensitive environments were identified as being within a 4-mile radius of the	
Vidan Auto Salvage site: Peregrine Falcon and the Virginia False Gromwell plant.	
The Pergrine Falcon is on the federally endangered species list.	

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
Wildlife Resources Center – New York Natural Heritage Program
700 Troy-Schenectady Road, Latham, New York 12110-2400
Phone: (518) 783-3932 FAX: (518) 783-3916

John P. Cahill
Commissioner

December 1, 1998

Sharron Harris DaCosta
Weston Inc., Fed. Programs Div.
1090 King Georges Post Road, Suite 201
Edison, New Jersey 08837-3703

Dear Ms. DaCosta:

We have reviewed the New York Natural Heritage Program files with respect to your recent request for biological information concerning the proposed EPA Inspection at the Vidan Auto Salvage site, Bond Street, area as indicated on your enclosed map, including a 4-mile radius, located in Brooklyn, Kings County, New York State.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals and/or significant wildlife habitats. Please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we may update this response. Kindly address your requests to the above address,

Sincerely,

Teresa Mackey

Teresa Mackey, Information Services
NY Natural Heritage Program

Encs
cc: Reg. 2, Wildlife Mgr.
Peter Nye, Endangered Species Unit, Delmar

REFERENCE 30

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO:	DATE: 11/9/98	TIME: 1300
DISTRIBUTION: Vidan Auto Salvage.Site File		
BETWEEN: Vadim Brevdo	OF NYSDEC Region II	PHONE (718)482-4995
AND S. DaCosta of START II		

DISCUSSION

Mr. Vadim Brevdo called to report that he was unable to find any files or information relating to Vidan Auto Salvage. It is his assumption that NYSDEC has not investigated Vidan Auto Salvage.

ACTION ITEMS:

I will wait for an official reply from Mr. Hewitt.

REFERENCE 31

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM **PROJECT NOTE**

TO: Vidan Auto Salvage Site File

DATE: 10/15/98

FROM: Sharron DaCosta

SUBJECT: Drainage Area for Vidan Auto Salvage site

REFERENCE

USGS Topographic Map for Brooklyn , NY and the Hazard Ranking System Rule

The drainage area for the Vidan Auto Salvage site was calculated from the Brooklyn, New York topographic map (photo revised 1979) using the Hazard Ranking System Rule Section 4.1.2.1.2.1.2. The drainage for the site was determined to be approximately 1.72 acres.

If the site is in more than one watershed:

- Calculate a separate overland/flood migration component score for each watershed, using likelihood of release, waste characteristics, and targets applicable to each watershed.
- Select the highest overland/flood migration component score from the watersheds evaluated and assign it as the overland/flood migration component score for the site.

4.1.2 *Drinking water threat.* Evaluate the drinking water threat for each watershed based on three factor categories: likelihood of release, waste characteristics, and targets.

4.1.2.1 *Drinking water threat—likelihood of release.* Evaluate the likelihood of release factor category for each watershed in terms of an observed release factor or a potential to release factor.

4.1.2.1.1 *Observed release.* Establish an observed release to surface water for a watershed by demonstrating that the site has released a hazardous substance to the surface water in the watershed. Base this demonstration on either:

- Direct observation:
  - –A material that contains one or more hazardous substances has been seen entering surface water through migration or is known to have entered surface water through direct deposition, or
  - –A source area has been flooded at a time that hazardous substances were present, and one or more hazardous substances were in contact with the flood waters, or
  - –When evidence supports the inference of a release of a material that contains one or more hazardous substances by the site to surface water, demonstrated adverse effects associated with that release may also be used to establish an observed release.
- Chemical analysis:
  - –Analysis of surface water, benthic, or sediment samples indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site for that type of sample (see section 2.3).
  - –Limit comparisons to similar types of samples and background concentrations—for example, compare surface water samples to surface water background concentrations.
  - –For benthic samples, limit comparisons to essentially sessile organisms.
  - –Some portion of the significant increase must be attributable to the site to establish the observed release, except when the site itself consists of contaminated sediments with no identified source, no separate attribution is required.

If an observed release can be established for a watershed, assign an observed release factor value of 550 to that watershed, enter this value in Table 4–1, and proceed to section 4.1.2.1.3. If no observed release can be established for the watershed, assign an observed release factor value of 0 to that watershed, enter this value in Table 4–1, and proceed to section 4.1.2.1.2.

4.1.2.1.2 *Potential to release.* Evaluate potential to release only if an observed release cannot be established for the watershed. Evaluate potential to release based on two components: potential to release by overland flow (see section 4.1.2.1.2.1) and potential to release by flood (see section 4.1.2.1.2.2). Sum the values for these two components to obtain the potential to release factor value for the watershed, subject to a maximum value of 500.

4.1.2.1.2.1 *Potential to release by overland flow.* Evaluate potential to release by overland flow for the watershed based on three factors: containment, runoff, and distance to surface water.

Assign potential to release by overland flow a value of 0 for the watershed if:

- No overland segment of the hazardous substance migration path can be defined for the watershed, or
- The overland segment of the hazardous substance migration path for the watershed exceeds 2 miles before surface water is encountered.

If either condition applies, enter a value of 0 in Table 4–1 and proceed to section 4.1.2.1.2.2 to evaluate potential to release by flood. If neither applies, proceed to section 4.1.2.1.2.1.1 to evaluate potential to release by overland flow.

4.1.2.1.2.1.1 *Containment.* Determine the containment factor value for the watershed as follows:

- If one or more sources is located in surface water in the watershed (for example, intact sealed drums in surface water), assign the containment factor a value of 10 for the watershed. Enter this value in Table 4–1.
- If none of the sources is located in surface water in the watershed, assign a containment factor value from Table 4–2 to each source at the site that can potentially release hazardous substances to the hazardous substance migration path for this watershed. Assign the containment factor value for the watershed as follows:
  - –Select the highest containment factor value assigned to those sources that meet the minimum size requirement described below. Assign this highest value as the containment factor value for the watershed. Enter this value in Table 4–1.
  - –If, for this watershed, no source at the site meets the minimum size requirement, then select the highest containment factor value assigned to the sources at the site eligible to be evaluated for this watershed and assign it as the containment factor value for the watershed. Enter this value in Table 4–1.

A source meets the minimum size requirement if its source hazardous waste quantity value (see section 2.4.2.1.5) is 0.5 or more. Do not include the minimum size requirement in evaluating any other factor of this surface water migration component, except potential to release by flood as specified in section 4.1.2.1.2.2.3.

4.1.2.1.2.1.2 *Runoff.* Evaluate runoff based on three components: rainfall, drainage area, and soil group.

TABLE 4–2.—CONTAINMENT FACTOR VALUES FOR SURFACE WATER MIGRATION PATHWAY

Source	Assigned value
All Sources (Except Surface Impoundments, Land Treatment, Containers, and Tanks)	
Evidence of hazardous substance migration from source area (i.e., source area includes source and any associated containment structures)	10
No evidence of hazardous substance migration from source area and:	
(a) Neither of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system	10
(b) Any one of the two items in (a) present	9
(c) Any two of the following present: (1) maintained engineered cover, or (2) functioning and maintained run-on control system and runoff management system, or (3) liner with functioning leachate collection and removal system immediately above liner	7
(d) All items in (c) present	5
(e) All items in (c) present, plus no bulk or non-containerized liquids nor materials containing free liquids deposited in source area	3
No evidence of hazardous substance migration from source area, double liner with functioning leachate collection and removal system above and between liners, and:	
(f) Only one of the following deficiencies present in containment: (1) bulk or nonconainerized liquids or materials containing free liquids deposited in source area, or (2) no or nonfunctioning or nonmaintained run-on control system and runoff management system, or (3) no or nonmaintained engineered cover	3
(g) None of the deficiencies in (f) present	0
Source area inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate is generated, liquids or materials containing free liquids not deposited in source area, and functioning and maintained run-on control present	

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TABLE 4-2.—CONTAINMENT FACTOR VALUES FOR SURFACE WATER MIGRATION PATHWAY—Concluded

Source	Assigned va
Surface Impoundment	
Evidence of hazardous substance migration from surface impoundment	10
Free liquids present with either no diking, unsound diking, or diking that is not regularly inspected and maintained	10
No evidence of hazardous substance migration from surface impoundment, free liquids present, sound diking that is regularly inspected and maintained, adequate freeboard, *and*:	
(a) No liner	9
(b) Liner	7
(c) Liner with functioning leachate collection and removal system below liner	5
(d) Double liner with functioning leachate collection and removal system between liners	3
No evidence of hazardous substance migration from surface impoundment and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).	Evaluate using A Sources crite (with no bulk liquids deposi
Land Treatment	
Evidence of hazardous substance migration from land treatment zone	10
No functioning and maintained run-on control and runoff management system	10
No evidence of hazardous substance migration from land treatment zone *and*:	
(a) Functioning and maintained run-on control and runoff management system	7
(b) Functioning and maintained run-on control and runoff management system, and vegetative cover established over entire land treatment area.	5
(c) Land treatment area maintained in compliance with 40 CFR 264.280	0
Containers	
All containers buried	Evaluate using A Sources crite
Evidence of hazardous substance migration from container area (i.e., container area includes containers and any associated containment structures).	10
No diking (or no similar structure) surrounding container area	10
Diking surrounding container area unsound or not regularly inspected and maintained	10
No evidence of hazardous substance migration from container area and container area surrounded by sound diking that is regularly inspected and maintained.	9
No evidence of hazardous substance migration from container area, container area surrounded by sound diking that is regularly inspected and maintained, *and*:	9
(a) Essentially impervious base under container area with liquids collection and removal system	7
(b) Containment system includes essentially impervious base, liquids collection system, sufficient capacity to contain 10 percent of volume of all containers, and functioning and maintained run-on control; and spilled or leaked hazardous substances and accumulated precipitation removed in timely manner to prevent overflow of collection system, at least weekly inspection of containers, hazardous substances in leaking or deteriorating containers transferred to containers in good condition, and containers sealed except when waste is added or removed.	5
(c) Free liquids present, containment system has sufficient capacity to hold total volume of all containers and to provide adequate freeboard, and single liner under container area with functioning leachate collection and removal system below liner.	5
(d) Same as (c) except: double liner under container area with functioning leachate collection and removal system between liners	3
Containers inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any unsealed or ruptured containers, liquids or materials containing free liquids not deposited in any container, and functioning and maintained run-on control present.	0
No evidence of hazardous substance migration from container area, containers leaking, and all free liquids eliminated at closure (either by removal of liquids or solidification of remaining wastes and waste residues).	Evaluate using A Sources criter (with no bulk c liquids deposi
Tank	
Below-ground tank	Evaluate using A Sources criter
Evidence of hazardous substance migration from tank area (i.e., tank area includes tank, ancillary equipment such as piping, and any associated containment structures).	10
No diking (or no similar structure) surrounding tank and ancillary equipment	10
Diking surrounding tank and ancillary equipment unsound or not regularly inspected and maintained	10
No evidence of hazardous substance migration from tank area and tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained.	9
No evidence of hazardous substance migration from tank area, tank and ancillary equipment surrounded by sound diking that is regularly inspected and maintained, *and*:	
(a) Tank and ancillary equipment provided with secondary containment (e.g., liner under tank area, vault system, double-wall) with leak detection and collection system.	7
(b) Tank and ancillary equipment provided with secondary containment system that detects and collects spilled or leaked hazardous substances and accumulated precipitation and has sufficient capacity to contain 110 percent of volume of largest tank within containment area, spilled or leaked hazardous substances and accumulated precipitation removed in a timely manner, at least weekly inspection of tank and secondary containment system, and all leaking or unfit-for-use tank systems promptly responded to.	5
(c) Containment system has sufficient capacity to hold total volume of all tanks within the tank containment area and to provide adequate freeboard, and single liner under tank containment area with functioning leachate collection and removal system below liner.	5
(d) Same as (c) except: double liner under tank containment area with functioning leachate collection and removal system between liners.	3
Tank is above ground, and inside or under maintained intact structure that provides protection from precipitation so that neither runoff nor leachate would be generated from any material released from tank, liquids or materials containing free liquids not deposited in any tank, and functioning and maintained run-on control present.	0

Rainfall. Determine the 2-year, 24-hour rainfall for the site. Use site-specific, 2-year, 24-hour rainfall data if records are available for at least 20 years. If such site-specific data are not available, estimate the 2-year, 24-hour rainfall for the site from a rainfall-frequency map. Do not round the rainfall value to t nearest integer.

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Drainage area. Determine the drainage area for the sources at the site. Include in this drainage area both the source areas and the area upgradient of the sources, but exclude any portion of this drainage area for which runoff is diverted from entering the sources by storm sewers or run-on control and/or runoff management systems. Assign a drainage area value for the watershed from Table 4–3.

Soil group. Based on the predominant soil group within the drainage area described above, assign a soil group designation for the watershed from Table 4–4 as follows:

- Select the predominant soil group as that type which comprises the largest total area within the applicable drainage area.
- If a predominant soil group cannot be delineated, select that soil group in the drainage area that yields the highest value for the runoff factor.

Calculation of runoff factor value. Assign a combined rainfall/runoff value for the watershed from Table 4–5, based on the 2-year, 24-hour rainfall and the soil group designation. Determine the runoff factor value for the watershed from Table 4–6, based on the rainfall/runoff and drainage area values. Enter the runoff factor value in Table 4–1.

TABLE 4–3.—DRAINAGE AREA VALUES

Drainage area (acres)	Assigned value
Less than 50	1
50 to 250	2
Greater than 250 to 1,000	3
Greater than 1,000	4

TABLE 4–4.—SOIL GROUP DESIGNATIONS

Surface soil description	Soil group designation
Coarse-textured soils with high infiltration rates (for example, sands, loamy sands).	A
Medium-textured soils with moderate infiltration rates (for example, sandy loams, loams).	B
Moderately fine-textured soils with low infiltration rates (for example, silty loams, silts, sandy clay loams).	C
Fine-textured soils with very low infiltration rates (for example, clays, sandy clays, silty clay loams, clay loams, silty clays); or impermeable surfaces (for example, pavement).	D

TABLE 4–5.—RAINFALL/RUNOFF VALUES

2-Year, 24-hour rainfall (inches)	Soil group designation			
	A	B	C	D
Less than 1.0	0	0	2	3
1.0 to less than 1.5	0	1	2	3
1.5 to less than 2.0	0	2	3	4
2.0 to less than 2.5	1	2	3	4
2.5 to less than 3.0	2	3	4	4
3.0 to less than 3.5	2	3	4	5
3.5 or greater	3	4	5	6

TABLE 4–6.—RUNOFF FACTOR VALUES

Drainage area value	Rainfall/runoff value						
	0	1	2	3	4	5	6
1	0	0	0	1	1	1	1
2	0	0	1	1	2	3	4
3	0	0	1	3	7	11	15
4	0	1	2	7	17	25	25

4.1.2.1.2.1.3 *Distance to surface water.* Evaluate the distance to surface water as the shortest distance, along the overland segment, from any source with a surface water containment factor value greater than 0 to either the mean high water level for tidal waters or the mean water level for other surface waters. Based on this distance, assign a value from Table 4–7 to the distance to surface water factor for the watershed. Enter this value in Table 4–1.

4.1.2.1.2.1.4 *Calculation of factor value for potential to release by overland flow.* Sum the factor values for runoff and distance to surface water for the watershed and multiply this sum by the factor value for containment. Assign the resulting product as the factor value for potential to release by overland flow for the watershed. Enter this value in Table 4–1.

4.1.2.1.2.2 *Potential to release by flood.* Evaluate potential to release by flood for each watershed as the product of two factors: containment (flood) and flood frequency. Evaluate potential to release by flood separately for each source that is within the watershed. Furthermore, for each source, evaluate potential to release by flood separately for each category of floodplain in which the source lies. (See section 4.1.2.1.2.2.2 for the applicable floodplain categories.) Calculate the value for the potential to release by flood factor as specified in 4.1.2.1.2.2.3.

4.1.2.1.2.2.1 *Containment (flood).* For each source within the watershed, separately evaluate the containment (flood) factor for each category of floodplain in which the source is partially or wholly located. Assign a containment (flood) factor value from Table 4–8 to each floodplain category applicable to that source. Assign a containment (flood) factor value of 0 to each floodplain category in which the source does not lie.

4.1.2.1.2.2.2 *Flood frequency.* For each source within the watershed, separately evaluate the flood frequency factor for each category of floodplain in which the source is partially or wholly located. Assign a flood frequency factor value from Table 4–9 to each floodplain category in which the source is located.

4.1.2.1.2.2.3 *Calculation of factor value for potential to release by flood.* For each source within the watershed and for each category of floodplain in which the source is partially or wholly located, calculate a separate potential to release by flood factor value. Calculate this value as the product of the containment (flood) value and the flood frequency value applicable to the source for the floodplain category. Select the highest value calculated for those sources that meet the minimum size requirement specified in section 4.1.2.1.2.1.1 and assign it as the value for the potential to release by flood factor for the watershed. However, if, for this watershed, no source at the site meets the minimum size requirement, select the highest value calculated for the sources at the site eligible to be evaluated for this watershed and assign it as the value for this factor.

TABLE 4–7.—DISTANCE TO SURFACE WATER FACTOR VALUES

Distance	Assigned value
Less than 100 feet	25
100 feet to 500 feet	20
Greater than 500 feet to 1,000 feet	16
Greater than 1,000 feet to 2,500 feet	9
Greater than 2,500 feet to 1.5 miles	6
Greater than 1.5 miles to 2 miles	3

TABLE 4–8.—CONTAINMENT (FLOOD) FACTOR VALUES

Containment criteria	Assigned value
Documentation that containment at the source is designed, constructed, operated, and maintained to prevent a washout of hazardous substances by the flood being evaluated.	0
Other	10

TABLE 4–9.—FLOOD FREQUENCY FACTOR VALUES

Floodplain category	Assigned value
Source floods annually	50
Source in 10-year floodplain	50
Source in 100-year floodplain	25
Source in 500-year floodplain	7
None of above	0

Enter this highest potential to release by flood factor value for the watershed in Table 4–1, as well as the values for containment (flood) and flood frequency that yield this highest value.

4.1.2.1.2.3 *Calculation of potential to release factor value.* Sum the factor values assigned to the watershed for potential to release by overland flow and potential to release by flood. Assign this sum as the potential to release factor value for the watershed, subject to a maximum value of 500. Enter this value in Table 4–1.

4.1.2.1.3 *Calculation of drinking water threat-likelihood of release factor category value.* If an observed release is established for the watershed, assign the observed release factor value of 550 as the likelihood of release factor category value for that watershed. Otherwise, assign the potential to release factor value for that watershed as the likelihood of release factor category value for that watershed. Enter the value assigned in Table 4–1.

4.1.2.2 *Drinking water threat-waste characteristics.* Evaluate the waste characteristics factor category for each