Report No.: Y030-SIP
Rev. No.: 0
Work Assignment No.: 019-2JZZ
Contract No.: 68-WP-0051
March 13, 1992

SLF
3/31/92
SLF
9/23/92

Ms. Sandy Foose
U.S. Environmental Protection Agency
Region 2
Edison, New Jersey 08837

Re: Cantor Brothers, Inc. Site Inspection Prioritization Evaluation

Dear Ms. Foose:

The following is a summary of the Site Inspection Prioritization evaluation of the Cantor Brothers, Inc. Site (CERCLIS ID No. NYD001367150) located on Engineers Lane, East Farmingdale, Town of Babylon, Suffolk County, New York.

General Description and Site History

The Cantor Brothers, Inc. Site is an active chemical repacker and manufacturer of paint products. The site covers 3.2 acres in an industrial/commercial area, and consists of a two-story building, which includes a warehouse area, a factory area, and an office area, and the grounds surrounding the building. The building contains drum storage areas and aboveground storage and mixing tanks. Also found on site are below-ground tanks, a 6,000-gallon tank truck, and storm drains (Ref. Nos. 1; 2; 17, pp. R-2, R-3, R-51; 18, pp. R-1, R-2, R-3).

The Suffolk County Department of Health Services (SCDHS) has frequently cited Cantor Brothers, Inc. for violations including the storage of toxic or hazardous materials without a valid permit, spills of toxic or hazardous materials onto the ground and/or into a storm drain, and removal of an underground fuel storage tank without notifying the SCDHS. Hazardous wastes disposed of on site as a result of spills and leaks include 1,1,1-trichloroethane, tetrachloroethene, fluoranthene, pyrene, chrysene, benzo(a)pyrene, lead, chromium, and manganese (Ref. No. 18, pp. R-2, R-3, R-4, R-21, R-49, R-50, R-52, R-55).

During an SCDHS inspection in 1988, it was found that chemicals were stored in 55-gallon drums (indoors and outdoors), in earth-covered underground tanks, and in 5-gallon containers. Of the drums that were stored indoors, over 50 were discovered outside spill containment areas. Those drums contained a viscous chemical material used in the manufacture of caulking compounds. The owner claimed that this material was nontoxic, but his claim could not be verified or documented. Some drums containing 1,1,1-trichloroethane, paint thinner, and lacquer thinner were stored inside spill containment areas. However, it was discovered that prior to 1983, no such containment area existed in the warehouse. In addition, spills of hazardous materials including creosote, caulking compound, and paint thinner occurred which entered the catch basins. The drums that were stored outside have been removed. It is not known what substances they contained (Ref. Nos. 18, pp. R-36, R-37; 20, pp. R-9, R-13, R-14, R-15, R-46, R-175).

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At the time of the SCDHS inspection, there were 13 underground storage tanks on site containing organic solvents - specifically, lacquer thinner and turpentine - and kerosene. Many of these tanks were suspected to be leaking, as they had failed pressure tests. The total capacity of the storage tanks is 52,000 gallons. It is not known precisely how much the tanks actually contained (Ref. No. 18, pp. R-37, R-73; 20, pp. R-49, R-52, R-53, R-54, R-65, R-66).

The 5-gallon containers were stored in the warehouse area and contained paint products, such as lacquer thinner and turpentine (Ref. No. 18, p. R-38).

Evaluation of Existing Information

Existing information and analytical data from the New York State Department of Environmental Conservation (NYSDEC) Phase I and Phase II investigations were used to do an initial evaluation of the site. This evaluation indicated the groundwater exposure pathway as the main pathway of concern. Four groundwater monitoring wells were installed, and five groundwater, three sediment, and two soil samples were collected and analyzed for Target Compound List volatiles, semivolatiles, pesticides/polychlorinated biphenyls (PCBs), and inorganics. These results were reported in accordance with NYSDEC Contract Laboratory Protocol. Refer to Ref. No. 18, p. R-57 for a sample location map. Analytical results from samples collected from the monitoring wells indicate a release of 1,1,1-trichloroethane and tetrachloroethene to groundwater (Ref. No. 18, p. R-49). The concentration of 1,1,1-trichloroethane in one of the downgradient wells is nearly 4 times the detection limit. This compound was found at trace levels in the upgradient well. The concentration of tetrachloroethene in one downgradient well was significantly higher (3700 ug/L) than that in the upgradient well (110 ug/L) (Ref. Nos. 18, pp. R-49, R-58; 19, p. R-21). For complete results of sampling, refer to Reference No. 19, pp. R-13 through R-126 (Ref. Nos. 18, pp. R-4, R-13; 19).

Hazard Assessment

Updated and additional information and data collected to further evaluate the site to determine further CERCLA remedial action included groundwater population data, well locations, and 4-mile radius populations.

Groundwater Pathway

Analytical results of groundwater samples indicate an observed release to groundwater. The concentration of 1,1,1-trichloroethane in one of the downgradient wells is nearly 4 times the detection limit. This compound was found at trace levels in the upgradient well. The concentration of tetrachloroethene in one downgradient well was significantly higher (3700 ug/L) than that in the upgradient well (110 ug/L) (Ref. Nos. 18, pp. R-49, R-58; 19, p. R-21). As some tanks were known to be leaking, the lowest point of waste disposed of is considered to be the depth of the tanks (Ref. Nos. 18, pp. R-37, R-73; 20, p. R-66). Tank depths are unknown but are assumed to be at least 6 feet. Groundwater, which flows southeast on site, occurs at a depth of approximately 40 feet (Ref. No. 18, p. R-5, R-32). Since analytical results indicate a release of contaminants to groundwater, wastes are considered to be in contact with groundwater. 1,1,1-Trichloroethane is known to have been used on site (Ref. No. 18, pp. R-37, R-175).

Groundwater is the sole source of drinking water within 4 miles of the site (Ref. Nos. 3; 4; 5; 6; 7; 8; 9). The aquifers of concern are the Upper Glacial Aquifer and the Magothy Aquifer, which are hydraulically connected (Ref. No. 18, p. R-5). Long Island has been designated as a Wellhead Protection Area (Ref. Nos. 10, 11). Within 4 miles of the site at least 73,608 people draw their drinking water from the aquifer of concern (0 to ¼ mile: 0; ¼ to ½ mile: 0; ½ to 1 mile: 1,347; 1 to 2 miles: 13,282; 2 to 3 miles: 34,969; 3 to 4 miles: 27,508) (Ref. Nos. 1; 4; 5; 6; 7; 8; 9; 15, pp. 4-1, 4-2). The nearest well known to be used for drinking is an East Farmingdale Water District public supply well approximately 0.75 mile southwest of the site. The depth of this well is 585 feet (Ref. Nos. 1, 6, 13). It is not known whether this drinking water well has been affected by a release of contaminants from the site.

Surface Water Pathway

The nearest downslope surface water is Neguntatogue Creek, more than 4 miles southeast of the Cantor Brothers, Inc. Site. The area in which the site is found is generally flat, with an average slope of 0.5 percent. Surrounding the site is paved ground, with catch basins and recharge basins receiving surface runoff. The catch basins are not connected to any piped storm water collection system; rather, runoff gradually leaches into the Upper Glacial Aquifer. In addition, the site is located in a zone with a flood frequency of greater than 500 years. There is therefore no route for surface water to follow from the site to the creek (Ref. Nos. 3; 12; 17, p. R-51; 18, pp. R-28, R-43).

Soil Exposure Pathway

Sediment samples were collected from the three on-site catch basins, and soil samples were collected from monitoring wells No. 1 and No. 2. (These soil samples were collected during the drilling of the wells [Ref. No. 18, p. R-12].) All were analyzed for volatile organics, semivolatile organics, pesticides/PCBs, and metals. The soil from Monitoring Well No. 1 was considered to be representative of background soil. This soil sample was collected from a depth of 36 feet (Ref. No. 18, p. R-41). There were no surficial soil samples collected. Storm drains in all likelihood are greater than 2 feet deep, and it is likely that the soil sample from Monitoring Well No. 2 was collected from a depth of more than 2 feet. In addition, most of the site appears to be paved, with the exception of a small grassy area in front of the building (Ref. Nos. 17, p. R-67; 18, p. R-205). Therefore, there is virtually no potential for a release of contaminants from the site to surface soils.

Analytical results of sediment samples indicate the presence of fluoranthene, pyrene, chrysene, and benzo(a)pyrene in the catch basins on site (Ref. No. 18, p. R-55). As these compounds were not present in background samples but were present at levels significantly higher than detection limits, and as Cantor Brothers, Inc. is known to have handled creosote, which contains polyaromatic hydrocarbons (PAHs), it can be stated that these compounds are attributable to the site (Ref. No. 18, pp. R-21, R-36, R-37, R-42, R-43).

Based on the U.S. Geological Survey topographic map, which indicates that the site is located in an industrial/commercial area, it does not appear that there are any residences, schools, or day care centers within 200 feet of the site property. Likewise, it does not appear that there are any sensitive environments in the site vicinity. There are 25 to 30 people currently working on site (Ref. Nos. 1; 14; 18, pp. R-52, R-55).

Air Pathway

There are no analytical results available to determine whether a release of contaminants to air has occurred. As the site is almost entirely paved, and as contaminants were present in groundwater and in soils and sediments more than 2 feet below the ground surface, the potential for a release to air is virtually nonexistent.

The nearest population would be the 25 to 30 on-site workers (Ref. No. 14). There are approximately 149,602 people living within a 4-mile radius of the site (0-¼ mile: 21; ¼ to ½: 12; ½ to 1: 1,218; 1 to 2: 6,661; 2 to 3: 42,728; 3 to 4: 98,962) (Ref. Nos. 15, 16). There are no sensitive environments located within one-half mile of the site (Ref. No. 1).

Summary and Recommendation

The Cantor Brothers, Inc. Site is recommended for **LOWER PRIORITY FOR FURTHER ACTION.** The existing information, data, and additional information collected were sufficient to evaluate the site to determine further CERCLA remedial action required. The analytical results indicate a release of contaminants attributable to the site to groundwater. There is a public water supply well located 0.75 mile southwest of the site serving approximately 526 people. Based on the direction of groundwater flow on site (southeast) and on the depth of the well and its distance from the site, it is not suspected that the well is within the contaminant boundary of the release. There are 77,106 people using groundwater as a drinking water supply within 4 miles of the site. Analytical results also indicate subsurface soil contamination at the site. There are no residences within 200 feet of the site property.

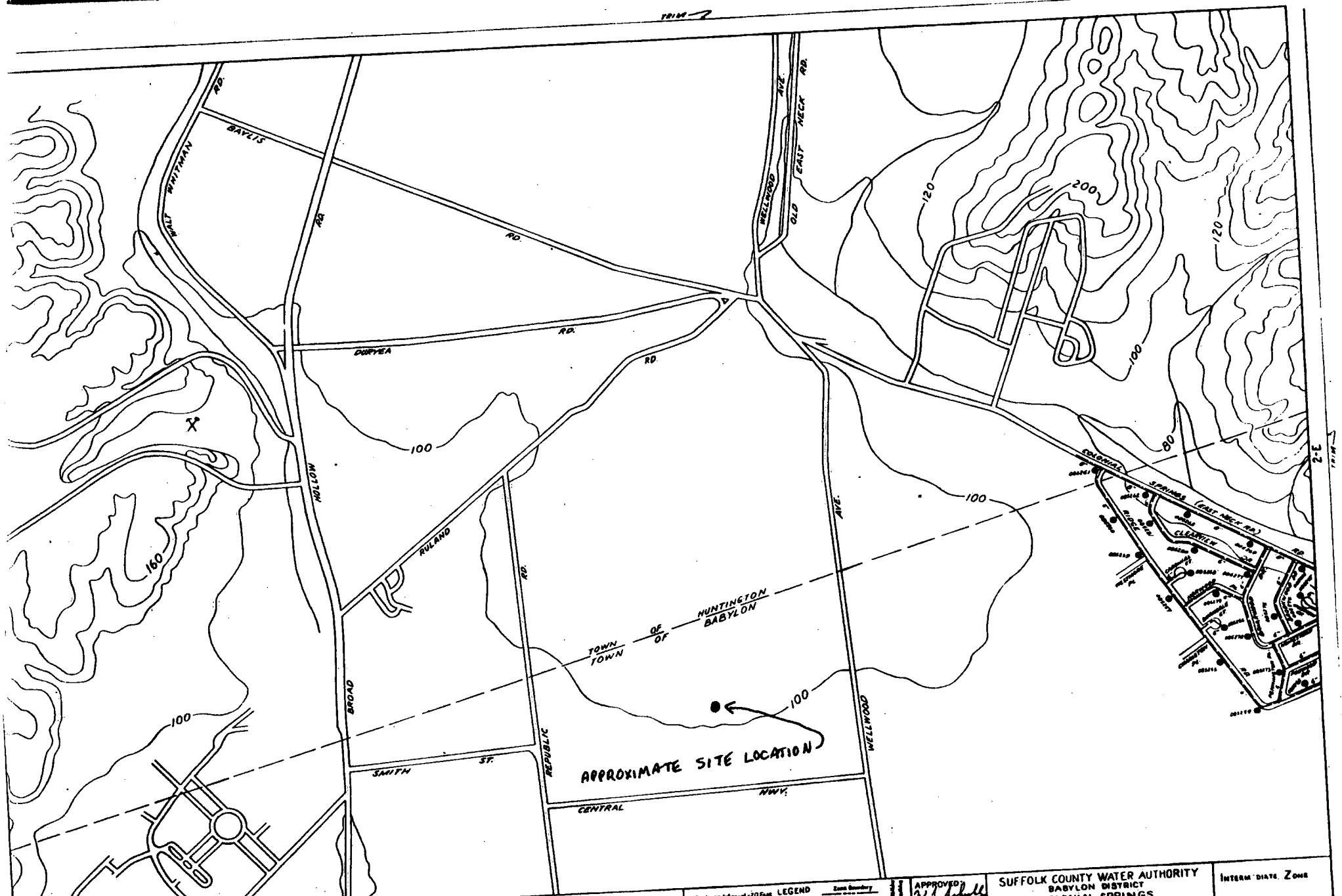
Very truly yours,

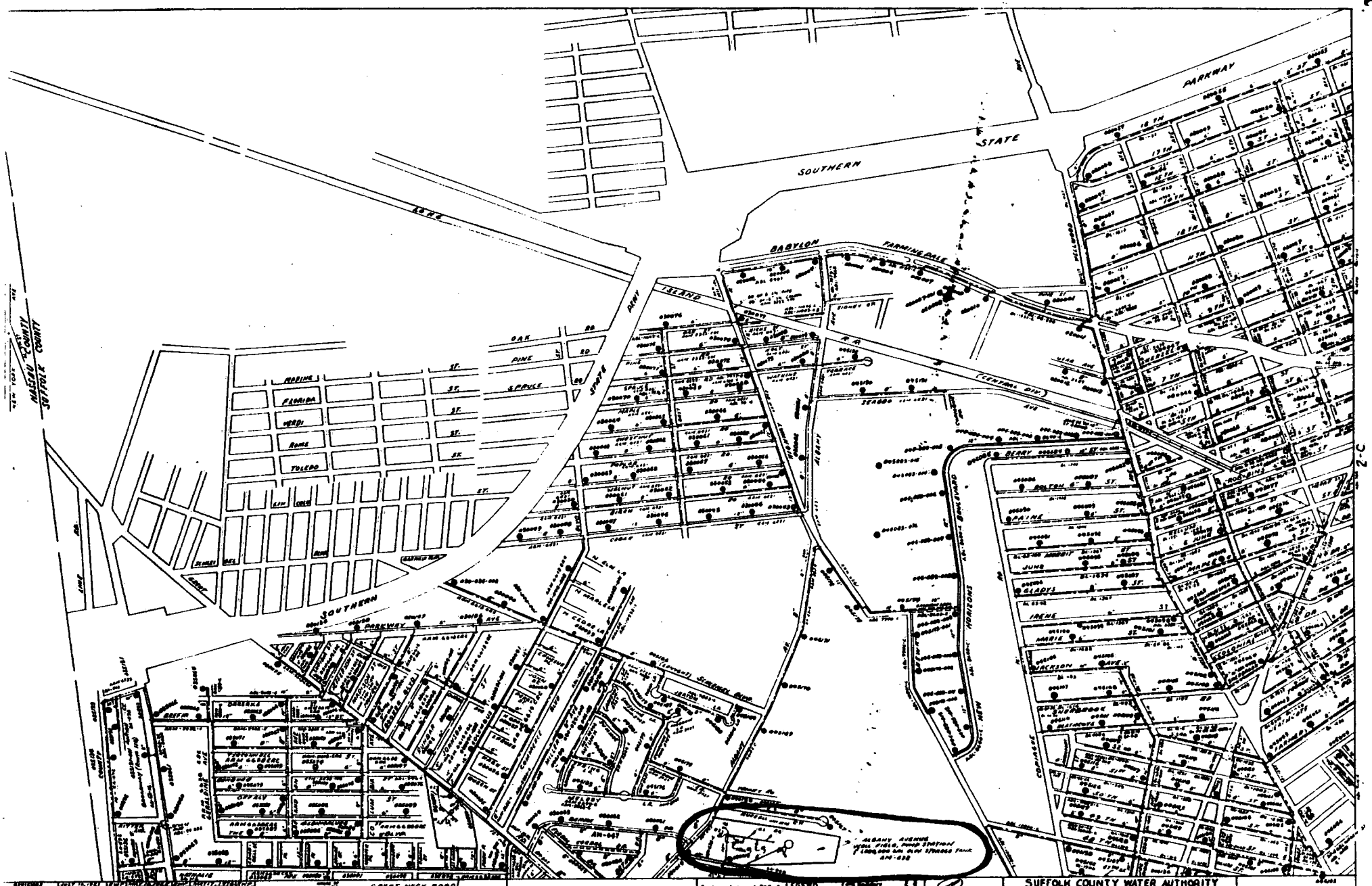
Susan Lenczyk
SITE MANAGER

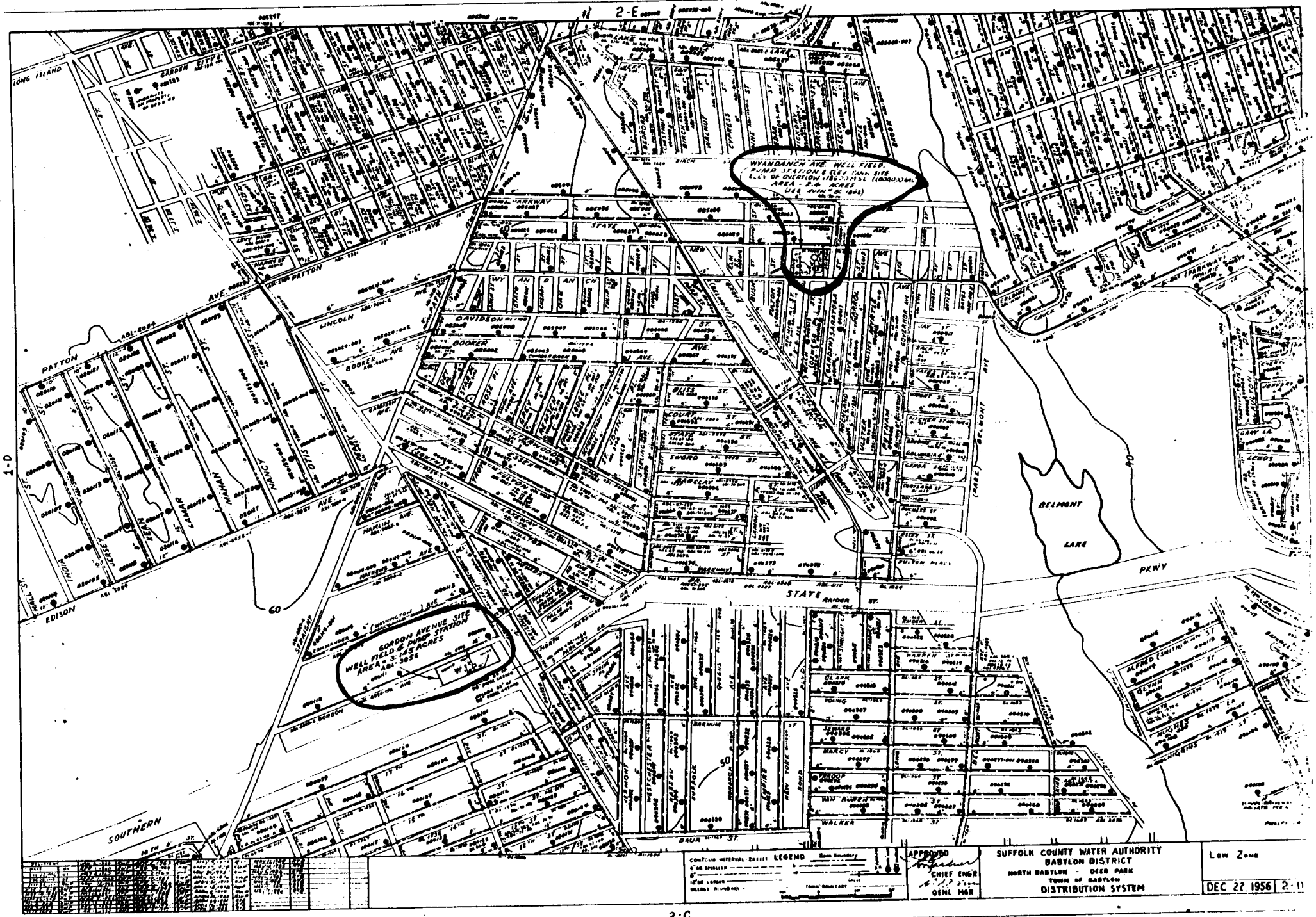
David J. Grupp
PROJECT MANAGER

Ronald M. Naman
SUBCONTRACT OFFICE MANAGER

Dennis Stainken Ph. D.
WORK ASSIGNMENT MANAGER


TRIM
WALT WHITMAN RD.
BAYLIS RD.
DURYEA RD.
HOLLOW RD.
RULAND RD.
BROAD
REPUBLIC RD.
SMITH ST.
CENTRAL HWY.
WELLWOOD AVE.
OLD EAST NECK RD.
COLONIAL SPRINGS (EAST NECK RD.)
CLEARVIEW RD.
RIDGE
TOWN OF HUNTINGTON
TOWN OF BABYLON
APPROXIMATE SITE LOCATION
100
120
160
200
80
2-E
1-D
LEGEND
Contour Interval - 20 Feet
6" or Smaller
8"
12" or Larger
Village Boundary
Zone Boundary
6"
10"
Valve Hydrant
Town Boundary
APPROVED
CHIEF ENGR.
GENL. MGR.
SUFFOLK COUNTY WATER AUTHORITY
BABYLON DISTRICT
COLONIAL SPRINGS
TOWN OF BABYLON — TOWN OF HUNTINGTON
DISTRIBUTION SYSTEM
INTERM. DIATE ZONE
JAN 30, 1971
1-E
REVISIONS
DATE
BY


SOUTHERN STATE PARKWAY
BABYLON FARMINGDALE
ISLAND
STATE PKWY
OAK RD
PINE RD
SPRUCE RD
MADISON ST.
FLORIDA ST.
VERDI ST.
ROME ST.
TOLEDO ST.
SOUTHERN PARKWAY
NEW HORIZONS BOULEVARD
ALBANY AVENUE
WELL FIELD, PUMP STATION
NASSAU COUNTY
SUFFOLK COUNTY
GREAT NECK ROAD
WELL FIELD & PUMP STA
AREA: 6.0 ACRES
LEGEND
Contour Interval 20 feet
Village Boundary
Town Boundary
Valve Hydrant
CHIEF ENGR.
GENL MGR.
SUFFOLK COUNTY WATER AUTHORITY
BABYLON DISTRICT
NORTH AMITYVILLE
TOWN OF BABYLON
DISTRIBUTION SYSTEM
LOW ZONE
DEC-31-1954
1-C


2-E
1-D
2-C
WYANDANCH AVE. WELL FIELD, PUMP STATION & ELEV. TANK SITE
AREA - 2.4 ACRES
GORDON AVENUE SITE
WELL FIELD & PUMP STATION
AREA = 3.145 ACRES
ABL-3856
BELMONT LAKE
PKWY
STATE
PATTON
EDISON
SOUTHERN
LONG ISLAND
LEGEND
APPROVED
CHIEF ENGR
GENL MGR
SUFFOLK COUNTY WATER AUTHORITY
BABYLON DISTRICT
NORTH BABYLON - DEER PARK
TOWN OF BABYLON
DISTRIBUTION SYSTEM
LOW ZONE
DEC 22 1956
2-D

LEGEND

APPROVED:
CHIEF ENGR
GENL MGR

SUFFOLK COUNTY WATER AUTHORITY
BABYLON DISTRICT
DEER PARK
TOWN OF BABYLON
DISTRIBUTION SYSTEM

LOW & INTERMEDIATE ZONES

NOV 25, 1956 | 2-E

2-D

This Report was conducted under the following USEPA Documentation Procedure

Guidance for Performing Site Inspections Under CERCLA Draft Publication 9345.1-0

ATTACHMENT A

REFERENCES

1. Four-Mile Vicinity Map for Cantor Brothers, Inc. based on U.S. Geological Survey Topographic Maps, 7.5 minute series, Quadrangles for Huntington, N.Y., 1967, photorevised 1979; Amityville, N.Y., 1969, photorevised 1979; Bay Shore West, N.Y., 1969, photorevised 1979; and Greenlawn, N.Y., 1967, photorevised 1979.

2. U.S. Environmental Protection Agency (EPA) Superfund Program, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), List 8: Site/Event Listing, p. 217, December 2, 1991; and List 4: Site Alias Location Listing, p. 320, December 2, 1991.

3. Project Note: to Cantor Brothers, Inc. File, from Susan Lenczyk, re: attached Suffolk County Water Authority (SCWA) Distribution System Maps, Map. Nos. 1-E(January 30, 1971), 1-C (December 31, 1954), 2-E(November 1956), 3-E(no date), and 2-D(December 22, 1956).

4. Telecon Notes: Conversations between Mr. Dassler, SCWA, and Joann Wagner, NUS Corporation, February 1, 1991; Mr. Robert Bowen, SCWA, and K. Campbell, NUS Corporation January 7, 1991; Joseph Dalo, SCWA, and Joann Wagner, NUS Corporation, February 13, 1991.

5. Project Note: to Cantor Brothers, Inc. File, from Susan Lenczyk, re: SCWA wells within 4 miles, February 7, 1992.

6. Project Note: to Cantor Brothers, Inc. File, from Susan Lenczyk, re: East Farmingdale Water District Wells within 4 miles, February 7, 1992; with attached Telecon Notes: Conversations between Carol, East Farmingdale Water District, and Sue Lenczyk, HALLIBURTON NUS Environmental Corporation, January 29, 1992; George Veilson, East Farmingdale Water District, and Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, January 13, 1992.

7. Project Note: to Cantor Brothers, Inc. File, from Susan Lenczyk, re: Dix Hills Water District wells within 4 miles, February 7, 1992; with attached Telecon Notes: Conversations between Vincent Candora, Dix Hills Water District, and Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, January 29, 30, and 31, 1992.

8. Project Note: to Cantor Brothers, Inc. File, from Susan Lenczyk, re: South Huntington Water District wells within 4 miles, February 7, 1992; with attached Letters from Kevin Carroll, Superintendent, South Huntington Water District, to Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, January 30, 1992, and followup letter.

9. New York State Department of Health, Division of Environmental Protection, Bureau of Public Water Supply Protection, New York State Atlas of Community Water System Sources 1982, pp. 78, 80.

REFERENCES (CONTD)

10. Telecon Notes: Conversation between Audrey Moore, U.S. EPA Region II, Office of Groundwater Management Division, and Gerald J. Hannay, NUS Corporation, November 6, 1990; Conversation between Rob Shnick, NYSDEC, Region I, Division of Water, and Anthony Bonasera, HALLIBURTON NUS Environmental Corporation, March 4, 1992.

11. Letter from Constantine Sidamon-Eristoff, Regional Administrator, U.S. EPA Region II, to Governor Mario M. Cuomo, September 27, 1990, with attached NYSDEC, Division of Water, Proposed New York State Wellhead Protection Program, Submittal to U.S. EPA, May 1990.

12. Telecon Note: Conversation between Kate Finley, Town of Babylon, and Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, February 5, 1992.

13. Telecon Note: Conversation between George Veilson, East Farmingdale Water District, and Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, February 6, 1992.

14. Telecon Note: Conversation between Cantor Brothers, Inc. and Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, February 5, 1992.

15. General Sciences Corporation, Graphical Exposure Modeling Systems (GEMS), Landover, Maryland, 1986.

16. Telecon Note: Conversation between Shirley, U.S. Census Bureau, and Susan Lenczyk, HALLIBURTON NUS Environmental Corporation, March 2, 1992.

17. Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase I - Preliminary Investigation, Final Report, Cantor Brothers, Inc. Site, Contract No. D000452, NYSDEC Site No. 152021, submitted to Division of Solid Waste, NYSDEC, submitted by Woodward-Clyde Consultants, Inc., September 20, 1984.

18. Engineering Investigations at Inactive Hazardous Waste Sites, Phase II Investigation, Volume I, Cantor Brothers, Inc., Site No. 152021, Town of Babylon, Suffolk County, Final Report, prepared for New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation, by LeRoy Callender, P.C., Subcontractor to Gibbs & Hill, Inc., June 1990.

19. Engineering Investigations at Inactive Hazardous Waste Sites, Phase II Investigation, Volume II, Cantor Brothers, Inc., Site No. 152021, Town of Babylon, Suffolk County, Final Report, prepared for New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation, by LeRoy Callender, P.C., Subcontractor to Gibbs & Hill, Inc., June 1990.

20. Engineering Investigations at Inactive Hazardous Waste Sites, Phase II Investigation, Volume III, Cantor Brothers, Inc., Site No. 152021, Town of Babylon, Suffolk County, Final Report, prepared for New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation, by LeRoy Callender, P.C., Subcontractor to Gibbs & Hill, Inc., June 1990.

EPA ID NO	SITE NAME / STREET / CITY / COUNTY CODE AND NAME	STATE	ZIP / CONG DIST	OPROLE UNIT	EVENT TYPE	NFA FLAG	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NYD986838881	CAMP ARROWHEAD			00	DS1			11/01/89	STATE(FUND)
	ROUTE 16				PA1			12/01/89	STATE(FUND)
	TOWN OF MACHIAS	NY	14101						
	007 CATTARAUGUS								
NYD980535207	CAMP BERKSHIRE			00	DS1			04/01/80	EPA (FUND)
	LAKE ELLIS RD				PA1			09/01/84	STATE(FUND)
	DOVER (T)	NY	12522		SI1		05/01/85	05/31/85	STATE(FUND)
	027 DUTCHESS								
NYD982181109	CAMP SHANKS LANDFILL			00	DS1			02/24/87	STATE(FUND)
	RT 303				PA1			03/05/87	STATE(FUND)
	ORANGETOWN	NY	10960						
	087 ROCKLAND								
NYD990925524	CAMPBELL PLASTICS			00	DS1			04/01/80	EPA (FUND)
	CAMPBELL RD				PA1			06/08/87	STATE(FUND)
	ROTTERDAM	NY	12303						
	093 SCHENECTADY								
NYD982050742	CARAJOHARIE LF			00	DS1			04/01/80	EPA (FUND)
	CARLISLE RD				PA1		06/15/87	06/18/87	EPA (FUND)
	CARAJOHARIE	NY	13317		SI1		07/01/90	09/25/90	EPA (FUND)
	057 MONTGOMERY								
NYD981006190	CANASTOTA LANDFILL			00	DS1			11/01/89	STATE(FUND)
	OLD ERIE CANAL AND DEERE BRIDG				PA1			12/01/89	STATE(FUND)
	TOWN OF LENOX	NY	13032						
	053 MADISON								
NYD001367150	CANTOR BROTHERS INC			00	DS1			09/01/84	STATE(FUND)
	ENGINEERS LANE				PA1		09/01/84	09/01/84	STATE(FUND)
	TOWN OF BABYLON	NY	11735		SI1		12/03/90	12/28/90	STATE(FUND)
	059 SUFFOLK								
NYD002070222	CAPITAL DIST TOOL & DIE CO INC			00	DS1			05/01/81	EPA (FUND)
	22 PAINE ST				PA1	NFA	06/15/87	06/18/87	EPA (FUND)
	GREEN ISLAND	NY	12183						
	083 RENSSELAER								

UENCE: REG. ST. SITE NAME
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EPA ID	SITE/ALIAS NAME STREET CITY COUNTY NAME	STATE COUNTY	ZIP CODE	ALIAS SEQ.	NAME SOURCE	FED EAC
D001367150	CANTOR BROTHERS, INC ENGINEERS LANE TOWN OF BABYLON SUFFOLK	NY 059	11722		EPA	N
D002076222	CAPITAL DIST. TOOL & DIE CO INC 22 PAINE ST GREEN ISLAND RENSSELAER	NY 083	12183		HWDMS	N
D000513366	CARBORUNDUM HYDE PARK BLVD NIAGARA FALLS NIAGARA	NY 063	143[illegible]		STS	N
D960507583	CARBORUNDUM WALMORE RD WHEATFIELD ERIE	NY 029	14150		STS	N
D980507867	CARBORUNDUM SOUTH OF RTE 89 NIAGARA FALLS NIAGARA	NY 063	14301		STS	N
D046763777	CARBORUNDUM [illegible] FRAX PLANT 501 NEW YORK FALCONER CHAUTAUQUA	NY 013	14733		HWDMS	N
D042513754	CARBORUNDUM [illegible] BUFFALO AVE NIAGARA NIAGARA	NY 063	14303		STS	N
D003999810	CARDIN ELECTRONICS LONG ISLAND [illegible] SERVICE ROAD WOODBURY NASSAU	NY 059	11797			D
	CARDIN ELECTRONICS NASSAU	NY		01		

REFERENCE NO. 3

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Canton Brothers, Inc. File

DATE: February 26, 1993

FROM: Susan Lenczyk

COPIES:

SUBJECT: Location of Suffolk County Water Authority (SCWA) wells within 4 miles

REFERENCE: Y030

The attached SCWA distribution system maps show the location of the site as well as the locations of the public supply wells within 4 miles of the site.

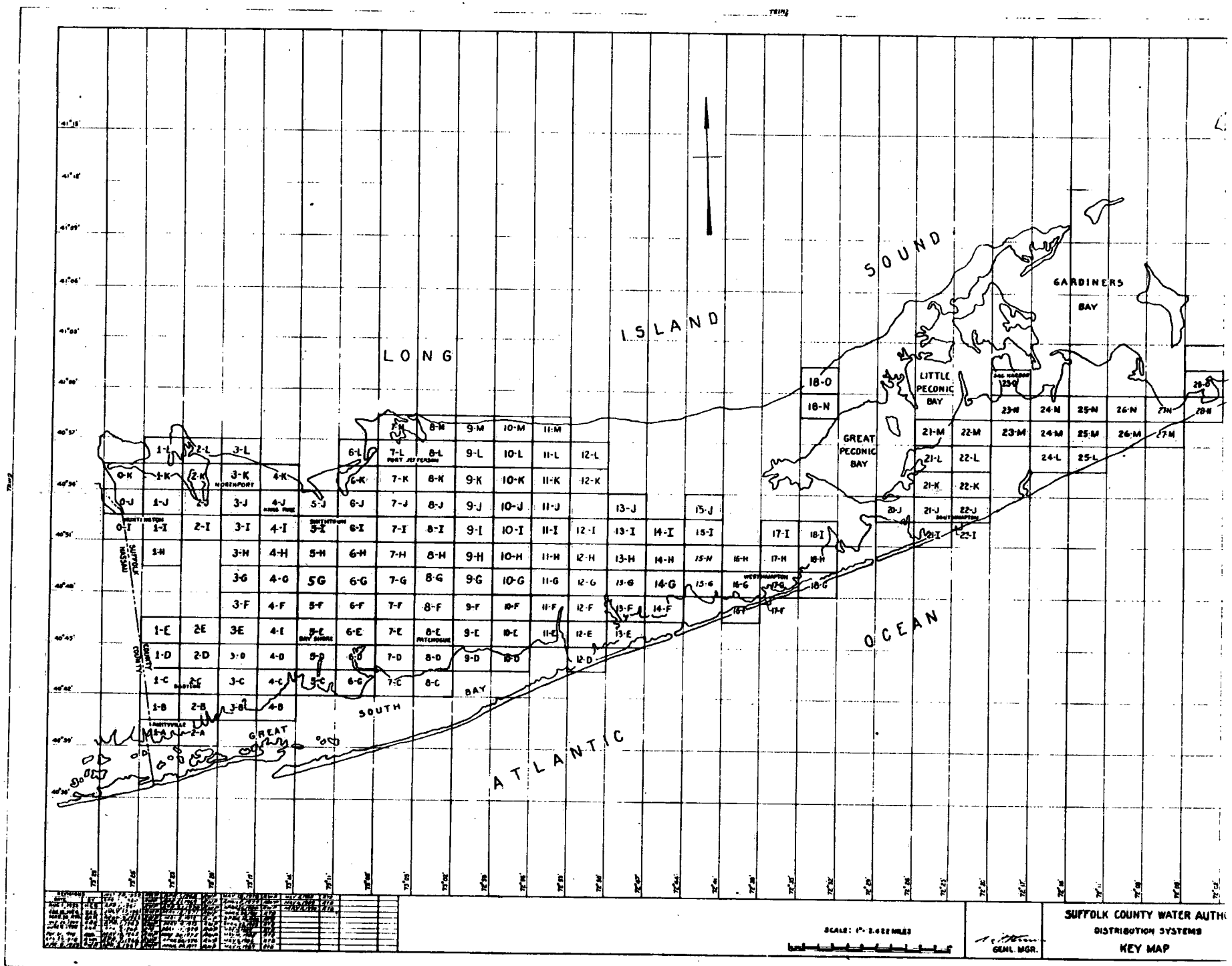
Map 1E shows the location of the Canton Brothers, Inc. site.

Map 1C shows the location (circled) of the Albany Avenue Well Field, which is approximately 3.8 miles south of the site.

Map 2E shows the locations (circled) of the Circle Drive Well Field, approximately 1.5 miles east of the site, and the Adams Avenue Well Field, approximately 2.8 miles east of the site.

Map 2D shows the locations of the Wyandanch Avenue Well Field (circled), approximately 2.8 miles east-southeast of the site, and the Gordon Avenue Well Field (circled), approximately 2.6 miles southeast of the site.

NUS 443A 58 1182


LONG ISLAND SOUND
GARDINERS BAY
LITTLE PECONIC BAY
GREAT PECONIC BAY
GREAT SOUTH BAY
ATLANTIC OCEAN
SUFFOLK COUNTY
NASSAU COUNTY
NORTHPORT
PORT JEFFERSON
SMITHTOWN
BAY SHORE
PATCHOGUE
BABYLON
AMITYVILLE
SAG HARBOR
SOUTHAMPTON
WESTHAMPTON
SCALE: 1" = 2.422 MILES
GENL. MGR.
SUFFOLK COUNTY WATER AUTH
DISTRIBUTION SYSTEMS
KEY MAP

REFERENCE NO. 4

NUS CORPORATION AND SUBSIDIARIES ① **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
[illegible]	2/[illegible]/91	1350

DISTRIBUTION:

Bellport Laundry File

BETWEEN:	OF:	PHONE:
Mr. Dassler	Suffolk County Water Authority (SCWA)	(516) 563-6002

AND: Joann Wagner (NUS)

DISCUSSION:

I called the SCWA to request sample results from the periodic monitoring of the public supply wells at Head of the Neck Road in the Village of Bellport. Mr. Dassler at first suggested that I call their Freedom of Information Officer, Joseph Dalo, to get the appropriate forms to fill out (to request this information under FOIA); when he realized it was a "follow-up request", he said that perhaps just a telephone request to Mr. Dalo would suffice. I also asked whether certain areas or populations were served by certain wells or whether all wells are interconnected - he answered yes, in a sense, to both. Mr. Dassler said the entire system is interconnected (with the exception of an area out on the north fork at the eastern end of Long Island, which has a separate system), but that any area is most likely going to be getting its water from the nearest well field, unless the lines have to be shut down for some reason, in which case the water would come from the next closest well field or from whichever well field's pumpage would replace that of the shut off system's. He said the distribution maps (which I've requested from Mr. Dalo) may be helpful in making that determination (i.e., populations served by each well). I also asked how often the public supply wells are sampled - he said it depends on whether there are any particular problems at a given location, but that the wells

ACTION ITEMS:

(continued)

NUS CORPORATION AND SUBSIDIARIES (a) **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
G2-9012-23	2/1/91	1350

DISTRIBUTION:

Bellport Laundry file

BETWEEN:	OF:	PHONE:
Mr. Dassler	SCWA	(516) 563-0202

AND: Joann Wagner (NUS)

DISCUSSION:

are sampled at least four times per year. I asked him what parameters the wells are sampled for. he said they sample "for anything". He also suggested calling the lab to find out if there was a basic or minimum set of parameters for which they analyze. Mr. Dassler said that one of his engineers is working on the request I had sent to Joseph Dalo on January 15, 1991, but that they have been very, very busy. I will be notified when they are done.

ACTION ITEMS:

Call Joseph Dalo at (516) 563-0299 for public supply well monitoring results

(I called Mr. Dalo's office after my conversation with Mr. Dassler; the former was not in. The receptionist suggested I try again at approx. 3 or 3:30 p.m.)

I called again at 3:40 p.m. - he had not yet returned. The receptionist suggested I try again at 4:30 p.m. Their office is open until 5 p.m.)

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.	DATE	TIME
02-9009-05	01/07/91	11:00

DISTRIBUTION

RCA-Riverhead

BETWEEN	OF	PHONE
Mr. Robert Bowen	Suffolk County Water Authority - Public Water Supply Distribution	(516) 589-5200

AND

K. Campbell (NUS)

DISCUSSION:

The Suffolk County Water Authority (SCWA) within a four mile radius of the site; it is located southwest of Riverhead on Moriches-Riverhead Road. The SCWA serves approximately 85% of Suffolk County. The system is blended. According to their 1989 Annual Report, the total population served is 963,000. The SCWA does not serve Riverhead.

There is a comprehensive set of maps (177 11x17 maps) available through the SCWA with details on mains, well fields, etc. Price is $100.00/set.

Attn: Joseph Dalo
Suffolk County Water Authority
4050 Sunrise Highway
Oakdale, New York 11769

ACTION ITEMS:

K. Campbell 1/7/91

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
	2/13/91	0855 0905

DISTRIBUTION:

Bellport Laundry file

BETWEEN:	OF:	PHONE:
Joseph Dalo	Suffolk County Water Authority (SCWA)	(516) 563-0299

AND: Joann Wagner (NUS)

DISCUSSION:

0855

I called Mr. Dalo to ask about the distribution maps I had requested in my letter to him dated 1/15/91 and which were not included with the information he sent to me in response to that and another letter. He said it was oversight on his part, and that as soon as we can get a check to him for $100.00 (includes fee for shipping/handling), he will send us a set of distribution maps. I asked him if he knew off hand how many active wells the SCWA has in use - he estimated 380 individual wells (i.e., 380 wells not 380 well fields).

0905

Mr. Dalo called me to correct the number he gave me earlier - their latest count of active wells is 403.

Joann L. Wagner
2/13/91

ACTION ITEMS:

REFERENCE NO. 5

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Cantor Brothers, Inc. File

DATE: February 7, 1992

FROM: Susan Lenczyk

COPIES:

SUBJECT: Suffolk County Water Authority (SCWA) Wells within 4 miles

REFERENCE: Y030

There are 403 wells in the SCWA. They serve 963,000 people. It is assumed that each well serves approximately 1/403 of the total population.

963,000 ÷ 403 = 2,390

1-2 miles → 3 wells → 7,170 people
2-3 miles → at least 5 wells → 11,950 people
3-4 miles → 6 wells → 14,340 people

Ref. nos. 1, 3, 4

REFERENCE NO. 6

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Cantor Brothers, Inc. File

DATE: February 7, 1992

FROM: Susan Lenczyk

COPIES:

SUBJECT: East Farmingdale Water District Wells within 4 miles

REFERENCE: Y030

The following information was obtained from the attached telecon notes:

Well	Average Annual Production	% Total Production	% Total Population	Apportioned Population
Route 110 and Melville Rd.	109,956,000	14.44	14.44	823
Gazza Blvd.	70,169,000	9.22	9.22	526
Route 109 and New Highway	267,749,000	35.16	35.16	2004
Route 109 and New Highway	313,589,000	41.18	41.18	2347
TOTALS	761,463,000	100	100	5,700

½ to 1 mile → 2 wells (Route 110 and Melville Rd. and Gazza Blvd.) → 1,349 people

1 to 2 miles → 2 wells (Route 109 and New Highway) → 4,351 people

Ref. No. 1

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
Y030	January 29, 1992	1330

DISTRIBUTION:
Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
Carol	East Farmingdale Water District	(516) 249-4211

AND:
Sue Lenczyk

DISCUSSION:
There are four wells in the East Farmingdale Water District: Route 110 and Melville Road, 72 Gazza Blvd., New Highway, and Route 109. The total population served is 5,700. Pumpage for 1991: Route 110 and Melville Road: 109,956 gallons; Gazza Blvd.: 70,169 gallons; New Highway: 267,749; Route 109: 313,589. She did not know whether the wells were blended, but said she'd try to find out and get back to me. She also could not pinpoint the latter two wells.

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
Y030	January 30, 1992	1540

DISTRIBUTION:
Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
George Veilson	East Farmingdale Water District	(516) 249-4211

AND:
Susan Lenczyk

DISCUSSION:

Mr. Veilson clarified a few points of confusion stemming from yesterday's info. There are four wells. Two are at one location: the intersection of Route 109 and New Highway. The pumpage given yesterday was in millions of gallons.

Route 110 and Melville Rd.: 109,956,000 gallons (1991)
Gazza Blvd.: 70,169,000 gallons "
Route 109 and New Highway - 1 well: 267,749,000 gals
other well: 313,589,000 gals

The system is blended.

ACTION ITEMS:

REFERENCE NO. 7

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Canton Brothers, Inc. File

DATE: February 7, 1992

FROM: Susan Lenczyk

COPIES:

SUBJECT: Dix Hills Water District wells within 4 miles

REFERENCE: Y030

The following information was obtained from the attached telecon notes:

Well	1991 Production	% Total Production	% Total Population	Apportioned Population
Elkland near Woodmont	314,957,000	14.945	6.67	2,000
Ryder	173,605,000	8.238	6.67	2,000
Thoragrove near Burns Lane (2 wells)	257,846,000	12.235	13.33	4,000
Vanderbilt Parkway near Half Hollows Road	237,176,000	11.254	6.67	2,000
10 other wells	1,123,897,000	53.33	66.66	20,000
TOTALS	2,107,481,000	100	100	30,000

15 TOTAL WELLS serve 30,000 people. $\frac{30,000}{15} = 2,000$ people per well

5 in the 4-mile radius

No one well contributes more than 40 percent.

2-3 miles → 3 wells (Elkland near Woodmont and Thoragrove near Burns Lane) → 6,000 people

3-4 miles → 2 wells (Ryder and Vanderbilt Parkway near Half Hollows Rd.) → 4,000 people

Ref. No. 1

NUS 443A 58 1182

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
Y030	January 31, 1992	1615

DISTRIBUTION:

Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
Mr. Vincent Candora	Dix Hills Water District	(516) 421-1812

AND:

Susan Lenczyk

DISCUSSION:

1991 pumpage for the four wells within 4 miles of site:

Elkland near Woodmont (Plant No. 7) 314,957,000 gallons
Ryder (Plant No. 8) 173,605,000 gallons
Thorngrove near Burns Lane (Plant No. 9) 257,846,000 gallons
Vanderbilt Parkway near
Half Hollow Road (Plant No. 5) 237,176,000 gallons

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
4030	January 30, 1992	1610

DISTRIBUTION:

Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
Mr. Vincent Candora	Dix Hills Water District	(516) 421-1812

AND:

Susan Lenczyk

DISCUSSION:

I asked Mr. Candora what is the average annual production of the entire Dix Hills Water System, as well as pumpage for the four well locations we ~~talked~~ discussed yesterday (i.e., Elkland near Woodcroft, Ryder, Thompson near Burr Lane, and Vanderbilt Parkway near Half Hollow Road). I also asked whether any single well contributed more than 40 percent of the entire system.

~~Avera~~ Annual production for 1991 → 2,107,481,000

As for individual wells, he said he'd need to dig up that info and asked that I call back tomorrow around 4:15.

No single well contributes ~~to over~~ 40 percent to the entire system.

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
	January 29, 1992	1550

DISTRIBUTION:
Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
Mr. Vincent Candora	Dix Hills Water District	(516) 421-1812

AND:
Susan Lenczyk

DISCUSSION:
There are 15 wells in the Dix Hills Water District. They are part of a blended system, which serves 30,000 people. Mr. Candora described to me, as if had the topo map in front of me, where the wells are that are within my 4-mile radius. One is on Elkland near Woodmont (near Interchange 50 of the Long Island Expressway). The second is on Ryder; the third, on Thorngrove (2 wells here) near Burra Lane; and the fourth, on Vanderbilt Parkway near Half Hollows Road.

ACTION ITEMS:

REFERENCE NO. 8

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Cantor Brothers, Inc. File

DATE: February 7, 1992

FROM: Susan Lenczyk

COPIES:

SUBJECT: South Huntington Water District wells within 4 miles

REFERENCE: Y030

The following information was obtained from the attached letters:

Well	1991 Pumpage	% Total Production	% Total Population	Apportioned Population
Wolf Whitman Rd. and Duryea Rd. (2 wells)	613,497,000	21.1	11.1	6112
East Mall Drive	307,900,000	10.6	5.6	3056
New York Ave. and Old Country Rd.	107,634,600	3.7	5.6	3056
Gwynne Rd.	166,138,200	5.7	5.6	3056
Amityville Rd., Melville (2 wells)	255,133,000	8.8	11.1	6112
Wolf Hill Road	134,480,000	4.6	5.6	3056
All other wells (10 wells)	1,323,191,400	45.5	55.4	30,552
TOTALS	2,907,974,200	100	100	55,000

8 wells within 4-mile radius. 18 total wells in district, feeding into a blended system. 18 wells serve 55,000 people. 55,000 ÷ 18 = 3,056

1-2 miles → 2 wells (Wolf Whitman Rd. & Duryea Rd.) → 6,112 people

2-3 miles → 3 wells (East Mall Dr., Gwynne Rd., and New York Ave. & Old Country Rd.) → 9,168 people

3-4 miles → 3 wells (Amityville Rd., Melville (2 wells), Wolf Hill Rd.) → 9,168 people

Ref. No. 1

South Huntington Water District
W. 13th Street & 5th Avenue South
P.O. BOX 370
Huntington Station, New York 11746
427-8190/91/92

January 30, 1992

Ms. Susan Lenczyk
Halliburton NUS
120 Wood Avenue So.
Iselin, NJ 08830
Fax - (908)603-9033

Dear Ms. Lenczyk:

The following information is in response to your letter of January 24, 1992.

The South Huntington Water District has 18 wells which feed into a blended system. A nineteenth well will come on line later this year. The District serves an estimated 55,000 people.

All of the District's wells are east of the Oyster Bay Expressway. The wells south of Jericho Turnpike are as follows:

#15-1 & 15-2 - Downs Road, Huntington Station
#3-1 & 3-2 - Amityville Road, Melville
#8 - Wolf Hill Road, Melville
#9 - Gwynne Road, Melville
#16 - East Mall Drive, Melville
#7-1 & 7-2 - Walt Whitman Road & Duryea Road, Melville
#4 - New York Avenue & Old Country Road, Melville
#18 - Cottontail Road & Walt Whitman Road, Melville
(This is the well presently under construction)

Please call if any further information is needed.

Sincerely,

Kevin Carroll
Superintendent

kc/pm

South Huntington Water District
W. 13th Street & 5th Avenue South
P.O. BOX 370
Huntington Station, New York 11746
427-8190 / 91 / 92

Ms. Susan Lenczyk
Halliburton NUS
Iselin, NJ 08830
Fax (908) 603-9033

Dear Ms. Lenczyk:

The additional information you requested in your letter of January 30, 1992 follows:

(1) Well #9 is located at exit 40 of the Northern State Parkway, the N/W/C of Route 110 and the Northern State.

(2) The total annual production for 1991 was 2,907,974,200 Gallons.

(3) No well in the district contributes more than 40% of the total annual pumpage.

(4) & (5) The pumpage capacity (gals/min) and 1991 pumpage totals for the wells in question are:

#15-1	1300 GPM	268,194,300
#15-2	1150 GPM	255,133,000
#3-1	600 GPM	0 (Down for repair)
#3-2	1350 GPM	527,960,500
#8	1375 GPM	134,480,000
#9	1000 GPM	166,138,200
#16	800 GPM	307,900,000
#7-1	1300 GPM	289,925,000
#7-2	1150 GPM	323,572,000
#4	1200 GPM	107,634,600
#18	Under Construction	

Please don't hesitate to call if further information is needed.

Sincerely,

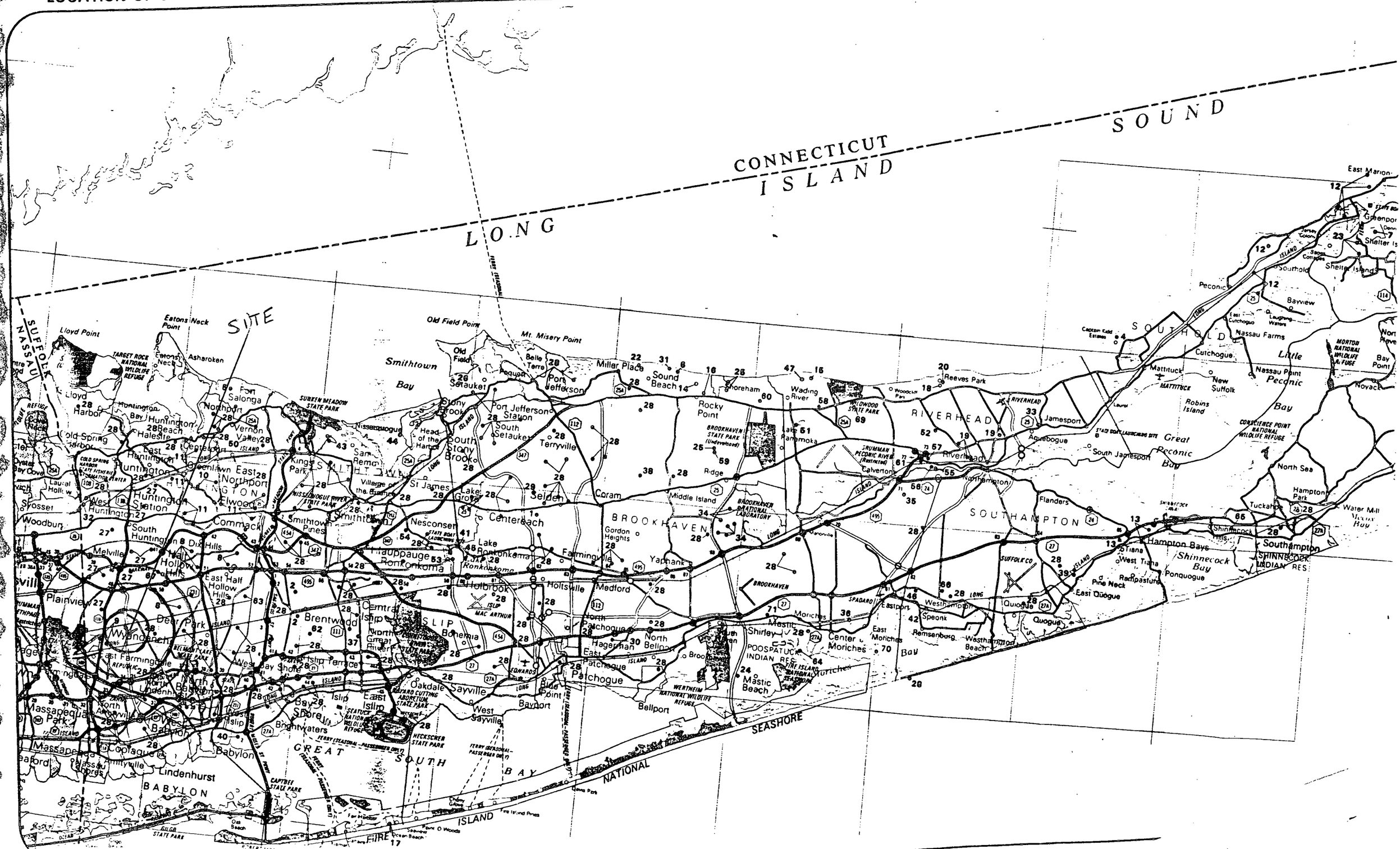
Kevin Carroll
Superintendent

REFERENCE NO. 9

SUFFOLK COUNTY

	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Devon Water Corporation	1150	Wells
2	Brentwood Water District	25812	Wells
3	Bridgehampton Water Company	1916	Wells
4	Captain Kidd Water Company	580	Wells
5	Crab Meadow Beach	50	Wells
6	Culross Corporation (Culross Beach)	104	Wells
7	Dering Harbor Village	130	Wells
8	Dix Hills Water District	30000	Wells
9	East Farmingdale Water District	7850	Wells
10	Fishers Island Water Works Corporation	250	Barlow, Middle Farms and Treasure Ponds, Wells
11	Greenlawn Water District	40000	Wells
12	Greenport Village	6851	Wells
13	Hampton Bays Water District	9500	Wells
14	Hawthorne - Maple Civic Association	50	Wells
15	Herod Point Association	80	Wells
16	North Shores Water Company	5000	Wells
17	Ocean Beach Village	155	Wells
18	Reeves Beach Water Company	650	Wells
19	Riverhead Water District	9300	Wells
20	Roanoke Water Corporation	201	Wells
21	Saltaire Village	35	Wells
22	Scott's Beach Water Company	342	Wells
23	Shelter Island Heights Association	498	Wells
24	Shirley Water Works	3400	Wells
25	Shorewood Water Corporation	10000	Wells
26	Soundview Association	236	Wells
27	South Huntington Water District	51260	Wells
28	Suffolk County Water Authority	900000	Wells
29	Sunhill Water Corporation	3959	Wells
30	Swan Lake Water Corporation	1485	Wells
31	Terrace-on-the-Sound	400	Wells
32	Woodbury Triangle Corporation	800	Wells
	Non-Municipal Community		
33	Aquebogue Mobile Home Court	120	Wells
34	Brookhaven National Labs	3373	Wells
35	Calverton Hills Owners Association	897	Wells
36	Cedar Lodge Nursing Home	100	Wells
37	Central Islip Psychiatric Center	4525	Wells
38	Crest Hall Health Related Facility	120	Wells
39	East Quogue Mobile Estates	160	Wells
40	Good Samaritan Hospital	NA	Wells
41	Greis Mobile Park	70	Wells
42	Hampton Gateway Apartments	304	Wells
43	Kings Park Psychiatric Center	3100	Wells
44	Knox School	NA	Wells
45	Lake Hurst Lodge Adult Home	57	Wells
46	Leier's Mobile Park	350	Wells
47	Little Flower Children's Services	150	Wells
48	Montauk Air Force Station	10	Wells
49	Napeague Trailer Park	78	Wells
50	Northport VA Hospital	3000	Wells
51	Oak Park Trailer Park	50	Wells
52	Oakland Ridge Mobile Park	74	Wells
53	Park Lake Rest Home	46	Wells
54	Peacock Alley	35	Wells
55	Peconic River Trailer Park	90	Wells
56	Peconic View Adult Mobile Home Park	70	Wells
57	Pinecrest Garden Apartments	392	Wells
58	Ramblewood Mobile Homes	210	Wells
59	Ridge Rest Home	58	Wells
60	Rocky Point Family Housing	55	Wells
61	Rollin Mobile Homes	220	Wells
62	St Joseph Convent - Long Island University	1177	Wells
63	Sam A Lewison Start Center	40	Wells
64	South Bay Adult Home	40	Wells
65	Southampton College	1000	Wells
66	Speonk Mobile Home Park	50	Wells
67	Suffolk Developmental Center	3500	Wells
68	Three Mile Harbor Trailer Park	40	Wells
69	Thurm's Mobile Estates	450	Wells
70	USCG Station - Moriches	23	Wells
71	Wes Dubicki Apartments	NA	Wells

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982



REFERENCE NO. 10

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9008-03	~~10 30~~ 11/6/90	1030/1132

DISTRIBUTION:
File-Oakville Drum Site (WJF)

BETWEEN:	OF:	PHONE:
Audry Moore	U.S. EPA Region II Office of Ground Water Management Division	(212)264-5635

AND:
Gerald J. Hannay (NUS)

DISCUSSION:
1030 - I asked her if there had been well head protection areas designated in Long Island yet and if there had been if there were designated areas within 4-miles of the Oakville Drum Site she said she would call me back with that information.
1132 - She said that the primary aquifers in New York were to be considered designated well head protection areas and as such all of Long Island would be considered a designated well head protection area.

Gerald J Hannay 11/6/90

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
Y028 - SIP	3/4/92	11:30 a.m.

DISTRIBUTION:

BETWEEN:	OF:	PHONE:
Rob Shnick	DEC Region 1 Division of Water	(516)751-7900

AND: Anthony Bonasera (NUS)

DISCUSSION:

Rob Shnick told me that Long Island is considered a sole source aquifer and therefore any and all areas within Long Island are considered to be within a wellhead protection area.

ACTION ITEMS:

NUS 067 REVISED 0685

REFERENCE NO. 11

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

SEP 27 1990

Honorable Mario M. Cuomo
Governor of the State of
New York
State Capitol
Executive Chamber
Albany, New York 12224

Dear Governor Cuomo:

In response to a letter from former EPA Administrator, Lee Thomas, you designated the New York State Department of Environmental Conservation (DEC) as the lead State agency for the development and implementation of New York's Wellhead Protection Program under Section 1428 of the Safe Drinking Water Act Amendments of 1986 (SDWA).

In accordance with the SDWA, the DEC submitted a draft Wellhead Protection (WHP) Program document to EPA, Region II, on June 19, 1989. Under Section 1428 of the SDWA, EPA must evaluate each State's Program document to determine whether the Program is fully adequate to protect public water supply systems from contaminants that may have an adverse effect on the public's health.

EPA Region II reviewed DEC's June 1989 submittal and subsequent addenda that were received over the next few weeks. Comments were sent to the State, and DEC revised its plan to address comments from EPA and the public. The revised documents, received in September 1990, responded to all comments sufficiently. Therefore, I am pleased to inform you that the New York Wellhead Protection Program document adequately addresses the requirements of Section 1428 of the Safe Drinking Water Act and the program is fully approved.

The level of activity and sense of commitment to Wellhead Protection on the part of New York State is impressive, especially considering the delays associated with Congressional appropriations for the WHP Program. It is a great credit to the Department of Environmental Conservation, and in particular to the staff of the Division of Water, to have successfully completed the Wellhead Protection Program document. New York State is one of twenty-seven states nationwide to have submitted a WHP Program document within the time frame specified by the SDWA and is one of the first states to receive EPA approval of its program. We recognize your continual efforts to improve upon the program, as reflected in the current revisions to New York's Wellhead Protection Program document.

New York has made major strides in ground water protection over the years, particularly with respect to the development of the State's Upstate and Long Island Ground Water Management Programs, the Nonpoint Source Management Program, and the Water Resources Management Strategy. The State has established itself as a national leader in ground water protection, and EPA looks forward to further advances in this area.

EPA continues to support New York State in the implementation of the Wellhead Protection Program. Federal funding is presently available under Section 106 of the Clean Water Act to support the Department of Environmental Conservation with this new program. Our Ground Water Management Section staff will assist DEC in preparing a WHP implementation workplan for the use of these funds in the coming fiscal year.

Again, congratulations on the accomplishments of your staff.

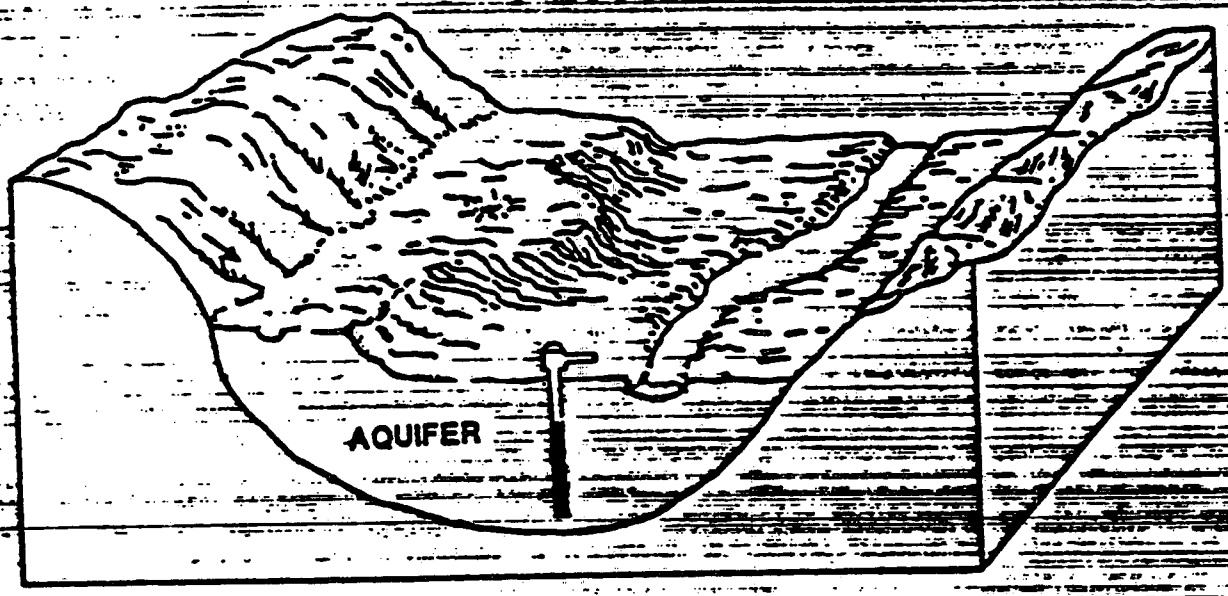
Sincerely,

Constantine Sidamon-Eristoff
Regional Administrator

cc: Thomas Jorling, NYSDEC
Sal Pagano, NYSDEC
Phil DeGaetano, NYSDEC
Al Tedrow, NYSDEC
Kevin Roberts, NYSDEC

Department of Environmental Conservation

PROPOSED NEW YORK STATE WELLHEAD PROTECTION PROGRAM



Submittal

to

United States Environmental Protection Agency

New York State Department of Environmental Conservation

MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

May 1990

PROPOSED
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

MAY 1990

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PREFACE

This report represents a revision of the Proposed New York State Wellhead Protection Program, submitted to the U.S. Environmental Protection Agency on June 19, 1989. Following the June 1989 submittal, there was an additional review by the New York State Wellhead Protection Advisory Committee (see ACKNOWLEDGEMENTS) and by key program managers and regional staff of the NYS Department of Environmental Conservation. The initial comments of the USEPA concerning the submittal were received by New York in January 1990. In March 1990, the USEPA, in accordance with the provisions of the Safe Drinking Water Act amendments, notified the state that the submittal was incomplete. The revisions contained in this document primarily include many clarifications of statements made in the original document, but also include additional items to complete the original submittal (e.g., public participation summary) and items to address the adequacy concerns of USEPA.

The wellhead protection activities of the Department of Environmental Conservation in the intervening period have included further development of new source management programs (e.g., chemical bulk storage), incorporation of wellhead protection in existing programs (e.g., water supply permit program), assistance to regional planning agencies in wellhead protection activities (e.g., 205(j) projects on source identification), regional and statewide outreach and education efforts, and providing geologic information and unconsolidated aquifer delineation information.

Most importantly, the interest of county agencies and municipal governments in New York in wellhead protection has grown considerably since the June 1989 submittal, with significant activity by key counties and municipalities in Upstate New York, by the Long Island Regional Planning Board concerning Long Island's Special Groundwater Protection Areas, and by Long Island's major water suppliers. Substantial interest in training (including delineation models and management tools), and in developing protection ordinances has been expressed.

Agencies and local government associations apart from the Department of Environmental Conservation have initiated public discussion and training activities concerning wellhead protection and groundwater management.

These activities demonstrate the desired evolution of local wellhead protection programs that the New York State Wellhead Protection Program is designed to foster.

ACKNOWLEDGEMENTS

The New York State Department of Environmental Conservation gratefully acknowledges the assistance and recommendations of the members of the Wellhead Protection Advisory Committee. To date, these members have included the following:

- Aldo Andreoli, Suffolk County Dept. of Health Services
- Donald Beavers, Temporary Commission on Tug Hill
- Donald Bingham, U.S. Geological Survey
- Jessica Breiten, Herkimer-Oneida Planning Dept.
- James Coon, NYS Dept. of State;
- Robert Denz, Broome County Health Dept
- Hope Donovan, League of Women Voters
- John Edwards, Long Island Water Conference
- James Feuss, Cortland Co. Dept. of Health
- Robert Fickies, NYS Geological Survey
- William Golinitz, Chautauqua Co. Health Dept.
- Bernard Gorman, Long Island Water Conference
- Nancy Jarvis, Cortland Co. Planning Dept.
- Richard Kasprowicz, NYS Dept. of Health
- Margaret Kavanaugh, Schenectady Co. Planning Dept.
- John Kent, Herkimer-Oneida Planning Dept.
- William Lee, American Water Resources Association
- Sarah Meyland, Suffolk Co. Water Authority
- Todd Miller, U S. Geological Survey
- Jacqueline Moody, NYS Dept. of Agriculture & Markets
- James Napoli, Dutchess Co. Health Dept.
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CHAPTER 1

WELLHEAD PROTECTION PROGRAM SUMMARY AND PURPOSE

1.1. Introduction

Responsible and effective environmental management demands careful focus on geographic areas where resource management is most needed to achieve the greatest benefit for a given level of effort. This is the overriding objective of wellhead area protection. The resource is groundwater. The benefit is reducing the risk of contamination of drinking water supply wells for the greatest number of people. The level of effort includes the cost of activities ranging from planning and assessment to the implementation and enforcement of appropriate groundwater quality protection controls at all levels of government. The issues to be evaluated and resolved include better defining the federal, state and local government partnership in groundwater protection, establishing the most rational geographic targeting and preventive management framework, and determining the optimum allocation of funds, if they become available, to achieve results.

This report is intended to satisfy the requirements of Section 1428 of the Safe Drinking Water Act in describing New York State's overall goal and plan for groundwater resource and wellhead area protection. Many important elements of wellhead area protection will evolve as local plans are designed and evaluated, especially aspects involving education, local government roles, and data collection and assessment. This submittal is intended to serve as supporting information in application for assistance funds from EPA to further develop and implement the plan. It presents the basic direction for using additional support obtained through new funding or reallocation of existing resources.

The elements of this report include the following:

- Duties of state agencies, local governments and public water supply systems (Chapter 2).
- Delineation of wellhead protection areas (Chapter 3).
- Identification of potential groundwater contamination sources (Chapter 4).
- Discussion of groundwater management approaches (Chapter 5).
- Discussion of groundwater-dependent public water system contingency planning (Chapter 6).
- Discussion of wellhead protection planning for new wells (Chapter 7).
- Discussion of public participation aspects (Chapter 8).

It is important to recognize that the proposed Wellhead Protection Program is not the first groundwater resource protection program in New York State. It does not replace the state's existing groundwater management program. Indeed, its goals and structure are already contained within that comprehensive program. This submittal refines and extends the geographic targeting framework already adopted as a principal groundwater protection policy. The basic groundwater program will continue to apply to the entire groundwater resource of the state and thus will provide a significant degree of protection for all groundwaters.

The remainder of this chapter provides additional introductory background on New York State's groundwater resources, its existing groundwater management program, and the general meaning of wellhead area protection.

1.2. Background: Groundwater and Groundwater Management in New York State

Groundwater is a critically important and uniquely vulnerable source of drinking water for over six million people in New York State, roughly one-third of the state's residents. These people draw their water from over 5,000 community wellfields or wells (serving over four million people), and more than 10,000 non-community public wells and an unknown number of private wells (serving

over two million people). In recent years, increased use of chemicals in our society has been accompanied by increasing evidence of contamination of groundwater resources. This contamination, in some cases, has been caused by chemicals of significant toxicological concern and has been sufficient to require closure or treatment of public and private water supplies.

New York State recognized the importance of groundwater resource and drinking water protection relatively early and began the development of its groundwater quality management programs in the years following World War II. Groundwater classifications and standards evolved into groundwater discharge [illegible]ns and early wellhead protection area approaches. The adoption of 83 ambient groundwater quality standards in 1978, supplemented by drinking water quality standards, coincided with the development of comprehensive groundwater protection programs. This culminated in the final publication of two major reports, the Long Island Groundwater Management Program (1986), and the Upstate New York Groundwater Management Program (1987).

These comprehensive programs form the foundation for all groundwater management efforts in the state. They encompass many major groundwater protection programs, including but not limited to solid waste, hazardous waste, pesticides, petroleum, hazardous substances, mining, and wastewater disposal and discharge. They include the activities of all relevant state agencies and form a bridge to local government activities. Most importantly, the comprehensive program reports specifically describe geographic targeting frameworks for groundwater protection that are the basis for wellhead area protection.

More recently, the New York State Water Resources Planning Council published a comprehensive New York State Water Resources Management Strategy (1989). This Strategy, prepared with major input from the New York State Departments of Environmental Conservation and Health, from local government and public representatives, and from six other state agencies, comprises 14 volumes and addresses specific issues in 13 regions of the state. It endorses the geographic targeting frameworks of the previous Groundwater Management Program reports and supports the adoption of Watershed Rules and Regulations as a protective management approach for public water supplies.

As a general rule, wellhead area protection is a targeting approach to protect groundwater supplying specific wells. In certain cases, wellfields with multiple wells or regions with high densities of wells and complicated recharge characteristics must be considered together. Aquifer-level or aquifer segment targeting is a potentially useful approach for wellhead protection in New York because the aquifers are typically not geographically extensive (Upstate New York) or are pumped using a great number of wells (Long Island).

An important aspect of New York State's groundwater program is that <u>all</u> fresh groundwaters in the state are classified for best usage as a source of potable water supply (Class GA) regardless of location or current use. The comprehensive set of ambient groundwater quality standards and guidelines apply to all groundwater. These standards and guidelines (which include drinking water standards) underlie all major groundwater protection programs currently operating or under development.

New York's groundwater management programs have either already adopted or have begun to set a targeting framework that goes beyond commonly recognized wellhead area concepts. In Nassau and Suffolk counties (which share a single aquifer system on Long Island), considerable effort has been devoted to the delineation and revision of the boundaries of eight hydrogeologic zones. The Deep Flow Recharge Area (which comprises three of these zones) is considered to be the highest priority area for protecting wells in the deeper Magothy and Lloyd aquifers. Management program targeting on Long Island is keyed to these eight zones.

Additionally, nine Special Groundwater Protection Areas (SGPAs) have been delineated on Long Island and are the subject of an extensive planning effort funded in part by New York State and by the Long Island Regional Planning Board. Suffolk County has also defined "Water Supply Sensitive Areas" for protecting wells in the Glacial aquifer. The implementation of wellhead area

protection on Long Island will not replace this targeting approach. Additional geographic assessment may be included in the Wellhead Program for Long Island. It is important to emphasize that management program targeting and implementation are ultimately the most critical aspects of wellhead protection. The groundwater protection accomplishments of county-wide ordinances on Long Island must also be recognized.

In Upstate New York, unconsolidated aquifers are not as extensive as on Long Island. A considerable degree of geographic targeting has been achieved by the mapping and categorizing of Upstate aquifers. Many of these are relatively thin [illegible] of glacial drift in narrow valleys (less than one or two miles wide). Certain state-level programs, particularly waste management and disposal, are already strongly tied to these delineations.

The partnership between federal, state and local government is perhaps the most important part of a successful wellhead protection effort. Certain local land use control elements of a successful program are not within the state's statutory authority and are more appropriately implemented at the local level. Under the home rule provisions of New York State Law, towns, cities and villages are responsible for regulating land use. Land use controls are an important component of wellhead protection plans.

The state/local partnership is also important in adjusting protection efforts to be sensitive to local and regional differences in the groundwater resources and vulnerability, uses, programs, and local capacity for management. Local authorities in many areas of the state also have the principal authority for inspecting and testing potential contamination sources and have important roles in enforcement.

1.3. Wellhead Protection Program: Purpose and Goal

The purpose and goal of New York State's Wellhead Protection Program are to protect wellhead areas within New York State from contaminants which may have any adverse effects on the health of persons, as described in the federal Safe Drinking Water Act. This goal is more explicitly described in the adopted New York State Groundwater Management Program as follows:

1. Protect and conserve groundwater resources for the best use as drinking water supply.

2. Emphasize problem prevention.

3. Target the groundwater program to most effectively use available program resources by focusing special emphasis on critical high-yielding aquifer systems.

4. Foster a state/local partnership.

The quantity management goal of the comprehensive program has been deleted from this list. However, the Wellhead Protection Program, essentially a quality management effort, is indirectly supportive of the quantity goal because protection of existing wells reduces the need to abandon supplies and develop new sources.

The key goal for emphasis in the Wellhead Protection Program is the third, that of geographic targeting, which has been left in the original groundwater program wording above. Part of the emphasis of the Wellhead Protection Program will be to refine and strengthen this goal.

The Wellhead Protection Program will promote targeting of staffing and funding resources and adjust program operations to achieve the maximum water quality protection benefits. Determining the optimum balance between expenditures on geographic assessment (delineation and mapping) and expenditures on improved enforcement of existing programs and development of new programs is the key challenge in developing the wellhead protection effort. This balance will differ in different areas of the state. In all areas of the state, a major need is actual program implementation and enforcement.

Wellhead protection cannot be viewed in a discrete, piecemeal fashion. The steps of delineation, source inventory and source management and control must be considered together. A scheme of very costly groundwater flow delineation analyses cannot be consistent

with the overall wellhead protection objectives if they unduly diminish funds available for management program implementation or if the management program does not require great sophistication. Increased refinements of delineations are justifiable to the extent that corresponding refinements in management and enforcement are practical and possible.

1.4. Wellhead Protection Program Summary

This summary is an overview of material developed in more detail in Chapters 2 through 8.

1.4.1. Agency Responsibilities

[illegible]ment of Environmental Conservation (DEC) is the principal agency responsible for developing and implementing state-level aspects of the Wellhead Protection Program and for coordination. The Department of Health (DOH) is responsible for certain aspects related to public water supply well data, contingency planning, new well planning, and Watershed Rules and Regulations. Regional and county planning agencies and county governments are responsible for county-level planning, management and educational outreach elements in the overall program, in addition to any county-level ordinances developed for wellhead protection. Town, village and city governments are responsible for local land use control, local ordinances and other local-level aspects of wellhead protection. Water suppliers will have a role in developing local Watershed Rules and Regulations, education, land acquisition and other program aspects determined by DEC and DOH. The educational effort will be shared by all levels, including Cooperative Extension, the universities and the State Education Department. Federal agencies and other state agencies will participate as appropriate, as coordinated by DEC with the assistance of EPA for federal agencies.

1.4.2. Wellhead Protection Area Delineation

The Safe Drinking Water Act defines a Wellhead Protection Area (WHPA) as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." This definition is not specific because there is no time framework and because there is a requirement that contaminants be reasonably likely to reach the well, a condition that is very difficult to accurately predict. States are given flexibility by the Safe Drinking Water Act in determining delineation approaches.

New York State proposes that unconsolidated aquifer boundaries serve as the fundamental delineation of wellhead protection areas and that a multiple zone approach be used within the total WHPA for varying management relative to risk. This approach is modified for Long Island and for bedrock aquifers, as described in Chapter 3. New York's approach proposes to allow local flexibility in an evolutionary process of delineation refinements, and to allow utilization of previously delineated protection areas, where appropriate.

There are many distinct advantages in this overall approach. A very important advantage is that considerable aquifer characterization and mapping work has already been accomplished. Second, it is consistent with the evolution and principal policies of both the comprehensive New York State Groundwater Management Program (1987) and New York State Water Resources Management Strategy (1989), in addition to the New York State Watershed Rules and Regulation policies. Third, it focuses attention of local governments on the entire aquifer resource and facilitates contingency planning and new (or future) well protection. Finally, it provides a base within which more sophisticated delineations (e.g., subdividing the overall WHPA) can be made as programs require and funding permits.

A possible drawback of using aquifer boundaries--that aquifers may be broad regional systems--is not a major problem in most of New York State. In Upstate New York most public water supplies using groundwater are in unconsolidated aquifers of rather limited areal extent. Most important recharge areas are within the boundaries of the unconsolidated aquifers, another advantage of this approach.

Chapter 3 provides further details and background on wellhead protection area delineation.

1.4.3. Potential Contamination Source Identification

The New York State Wellhead Protection Program proposes to use the classification of potential contamination sources based on process or operation proposed by the Office of Technology Assessment and endorsed by USEPA.

Many source inventory and identification programs are already in place or are being developed for individual groundwater protection programs. These include but are not limited to registries of hazardous waste disposal sites, petroleum storage locations, the Industrial Chemical Survey, records of the State Pollutant [illegible] Elimination System (SPDES), and the hazardous material storage registry (in development). Similar information is available for other potential sources (mining, municipal waste, etc.). Other inventories (pesticides, salt storage) are needed and certain improvements (locational data, data formats) are needed in the existing registries.

The effort expended in pinpointing and mapping any possible source will be determined in balance with the effort needed to manage the most important sources. The current registries will be used as much as possible at the greatest level of geographic detail feasible within the constraints of the registry. Using these registries, some sources outside of the actual wellhead protection areas may be listed. An effort will be made to explore new formats for processing available registry data to maximize compatibility and ease of interpretation.

Chapter 4 provides further detail on potential contamination source inventory.

1.4.4. Groundwater Management Approaches

The emphasis in groundwater management efforts from the state level will be to continue to develop and implement the program recommendations made as part of the comprehensive groundwater management program, with a special focus on aspects relevant to geographic targeting of program elements.

Groundwater protection for all fresh groundwaters in New York is accomplished in the existing state regulatory programs by classifying all fresh groundwaters as potential drinking water sources, and using the stringent 6 NYCRR Part 703 groundwater standards as the management objectives statewide. Solid and hazardous waste management programs formally utilize geographic targeting as a management tool. Other state-level programs (e.g., spill response) have integrated major water supply aquifer targeting into day-to-day functions even though such targeting may not be explicitly stated in written policy.

Current and developing state-level programs will be evaluated to determine useful new approaches or cost-effective methods for targeting management practices. The needs identified will be considered in allocating available funds or staff, soliciting new funds, and in regulatory and program development.

Local governments, with the authority to regulate land use, have the capability of controlling new facilities through zoning and site plan review. Density of new development can also be controlled through zoning. Adoption of specific groundwater protection ordinances is also an avenue available to municipal and county governments, through sanitary codes or other approaches. Finally, land acquisition for groundwater protection is a viable management tool for local governments and water suppliers.

Watershed Rules and Regulations can be promulgated by the New York State Health Department following initiation and development by public water purveyors, whether municipal or privately-owned. The WHPA delineation proposals in this submittal are compatible with the models for Watershed Rules and Regulations.

The state will also use its available resources and explore new approaches for technical assistance, outreach and education to local governments to encourage participation and local initiatives. The potential for using "facilitated training", or training intermediate parties to train local groups, will be considered.

Management aspects are described in further detail in Chapter 5.

1.4.5. Contingency Planning

The existing contingency planning requirements of the New York State Department of Health's emergency planning program meet and exceed the requirements of Section 1428(a)(b) of the Safe Drinking Water Act. The existing New York program deals with all forms of water supply emergencies. In addition, the Superfund Amendments and Reauthorization Act (SARA) Title III emergency planning activities in New York support contingency planning needs for wellhead protection.

Chapter 6 further discusses contingency planning.

1.4.6. New Well Planning

The existing New York State Water Supply Permit Program enables the Department of Environmental Conservation to require, as part of the permit approval process, the adoption of a groundwater (or wellhead) protection plan for proposed new wells. The New York State Wellhead Protection Program proposes that development of such a plan be required for new wells. The plan may include Watershed Rules and Regulations, local ordinances (town, village, or city), or county ordinances. Such plans often will entail the collection of hydrogeologic information to support WHPA delineations. Such plans must be consistent with existing authorities of the water supplier and they may include intermunicipal or county-level agreements or Watershed Rules and Regulations (NYSDOH).

This aspect of the Wellhead Protection Program is further discussed in Chapter 7.

1.4.7. Public Participation

There has been substantial public participation in the evolution of these proposals, particularly in the two major planning and strategy development projects from which New York's Wellhead Protection Program was derived. The public participation in both the New York State Groundwater Management Plan and the New York State Water Resources Management Strategy fully adhered to public participation procedures.

In addition, the Wellhead Protection Program development has established a Wellhead Protection Advisory Committee to assist in development of the submittal.

Public participation is further discussed in Chapter 8.

1.5. Evaluation of Wellhead Protection Program Progress

Program progress reports which evaluate Wellhead Protection Program development and implementation will follow one of two alternative approaches. In the event that an Assistance Agreement is adopted between EPA and DEC in accordance with the provisions of the Safe Drinking Water Act, three types of reports will be submitted to EPA which are specific to the Wellhead Protection Program and which follow the "Guidance for Applicants for State Wellhead Protection Program Funds Under the Safe Drinking Water Act" (EPA 440/6-87-011).

These are:

a. Interim and End-of-Year Progress Reports;

b. Biennial Status Report; and

c. Annual Financial Status Report.

The precise content and schedule for these reports would be negotiated as part of the Assistance Agreement.

If EPA does not provide assistance and an Assistance Agreement is not established, the progress of the Wellhead Protection Program will be reported within the context of the already established procedures for reviewing the DEC Division of Water Management Plan between DEC and EPA.

CHAPTER 2

DUTIES AND RESPONSIBILITIES

2.1. Introduction

New York State's designation of the wellhead area as the highest priority area for groundwater protection is documented in New York State's Groundwater Management Program. Wellhead protection is a concept that has been utilized by a number of environmental and public health programs in New York State for decades. The [illegible] of the 1986 Amendments of the Safe Drinking Water Act creating the Wellhead Protection Program serves as an opportunity for New York State to build on previous efforts and to foster a coherent and consistent statewide approach for a wellhead protection program through additional management efforts.

New York State's proposed Wellhead Protection Program (WHPP) has been developed from existing regulatory and management structures. Within the state there are agencies and programs at all levels of government established to regulate, enhance and manage natural resources and protect the public health. As in the State's Groundwater Management Program, it will be largely these agencies and programs that will be called upon to implement an effective WHPP.

2.2. Federal Agencies: General Responsibilities

There are two principal federal agencies with important roles and responsibilities relating to groundwater protection in New York State. These are the U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS), a unit of the Department of Interior.

2.2.1. Environmental Protection Agency

The USEPA is the agency responsible for most of the major federal regulatory programs which provide for protection of the environment and public health. These include: the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA), Superfund (CERCLA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Toxic Substances Control Act (TSCA), and the Clean Air Act (CAA).

EPA generally delegates many of the specific program activities to the states upon request and upon attainment of legislative requirements. This allows the state to be flexible in tailoring the program to local environmental needs (to the extent permitted by statute). EPA continues to play a role in overseeing state performance in carrying out delegated national programs which use federal grants and in supporting the states through technical expertise and research.

New York State has received delegation of programs under the Clean Water Act, the Safe Drinking Water Act, RCRA, and the Clean Air Act. The authorities in the Acts are generally mirrored by comparable state legislation, and the delegated programs have in the past decade provided essential funding support to assist strong state programs in water pollution control, public water supply regulation, air pollution control, and solid and hazardous waste management.

Not all elements of federal programs have been delegated. Examples of program activities for which USEPA maintains direct responsibility in New York include:

- Development of national drinking water quality standards (note that New York maintains a more comprehensive set of state drinking water standards);
- Designation of "sole source" aquifers under the Safe Drinking Water Act;
- Underground injection control under the Safe Drinking Water Act;
- Registration of pesticides for use under FIFRA;

- Administration of federal Superfund.

2.2.2. U.S. Geological Survey

The second federal agency with major responsibility relating to groundwater in New York State is the U.S. Geological Survey - Water Resources Division (USGS-WRD). The mission of the USGS-WRD, which is a non-regulatory agency, is to develop and disseminate scientific knowledge and understanding of the Nation's water resources. In cooperation with federal, state and local agencies, the USGS-WRD maintains an observation-well network for collection of groundwater levels and conducts interpretive investigations of the groundwater resources in New York State. The USGS-WRD maintains extensive files of groundwater data including computerized databases containing information from over 40,000 wells in the state.

The USGS-WRD will provide technical support to the Wellhead Protection Program by providing groundwater data and through cooperatively funded investigations. Wellhead protection-related investigations include regional studies of the hydrogeology and water quality of the state's aquifers and demonstration projects involving the delineation of contributing areas and sources of recharge to wellfields in selected representative hydrogeologic settings.

2.2.3. Other Federal Agencies

Several other federal agencies have indirect relationships to wellhead protection in New York. With respect to technical support, the soil information collected by the U.S. Department of Agriculture - Soil Conservation Service (SCS) may be utilized in various aspects of the program. This information is generally available in published form. Coordination between NYS and the SCS State Office in Syracuse is generally routine and direct, and no new arrangements are needed.

There is relatively little federal land in New York State outside of several military facilities. Of these, only Fort Drum in Jefferson County is a significant user of groundwater for public water supply. In such cases, the policies described in this submittal apply. The WHPA's have already been determined according to the delineation approach in Chapter 3. General coordination with the facility will be through the Department of Environmental Conservation's Regional Office. Such coordination has been routine in the past.

For other coordination with federal agencies not related to site-specific concerns, the USEPA-Region II office (New York City) will be responsible for assisting the Central Office of the Department of Environmental Conservation in communications and issue resolution.

2.3. State Agencies: General Responsibilities

There are a variety of state agencies with interests and responsibilities relating to groundwater and wellhead protection. The two agencies with the most direct responsibilities are the Department of Environmental Conservation (DEC) and the Department of Health (DOH).

2.3.1. Department of Environmental Conservation

The DEC is the state's environmental agency, with responsibility for administering a full array of environmental quality and natural resource programs. The Department is the state's custodian for water in the environment. It is charged with the "coordinated management of water resources" (ECL Section 3-03031), the control of water pollution and the maintenance of reasonable standards of purity of the state's waters, both ground and surface (ECL Article 17). The DEC is also the agency that has been delegated authority to administer a number of EPA programs under the CWA and RCRA such as the SPDES program and the municipal and hazardous waste programs. The DEC has been designated by the Governor to be responsible for the wellhead protection elements of the Safe Drinking Water Act.

Integral elements of the Department's groundwater management and wellhead protection programs include water resources planning, issuing water supply permits, setting ambient water quality standards and classifications, water quality monitoring and surveillance, issuing municipal and industrial

wastewater discharge permits (SPDES), spill response, regulating hazardous substance and petroleum bulk storage, regulating the development, operation and maintenance of municipal wastewater facilities, and the nonpoint source management program.

Several other programs regulate important potential sources of groundwater contamination. Principal among these are programs in the areas of solid and hazardous waste (including waste facilities regulation) permitting of industrial waste transport, state Superfund (relating to hazardous waste site remediation), and hazardous waste enforcement.

Other programs which have a relationship to wellhead protection include those in the areas of pesticides and other hazardous substances regulation, mineral resources, and oil and gas regulation.

2.3.2. Department of Health

The Department of Health (DOH), under the New York State Public Health Law, is responsible for the protection of public health and more particularly, to assure a potable supply of drinking water for the state's citizens. Generally, it is responsible for water which has been withdrawn by public water suppliers for distribution to the consumer.

EPA delegated the water system supervision aspects of the Safe Drinking Water Act to the DOH in the late 1970's. The DOH implements this aspect of the SDWA through Part 5 of the State Sanitary Code. Under the Public Health Law and Part 5, the DOH inspects public water supply systems in the state to ensure proper operation and maintenance and delivery of a potable and adequate supply of water. This program includes regulation of public water supply facility design and construction; monitoring of the quality of waters delivered to the tap; inspection surveillance, and evaluation of all public water systems; emergency response to water supply systems experiencing critical water quality or quantity problems; laboratory services; establishment of state drinking water standards; and enforcement of both state and federal drinking water standards. In addition, the DOH plays an integral role in DEC's water supply permit program through the review of water quality and plans for any needed treatment process, well construction or other improvements needed as part of the water supply permit.

The DOH evaluates available health effects data and establishes appropriate drinking water standards and guidelines.

Standards for installing on-site domestic sewage disposal systems are promulgated by the DOH with protection of public health and groundwater protection as goals.

The DOH has statutory authority for two programs which will play a significant role in the state's WHPP. These two programs are the Emergency Planning Program, and the Watershed Rules and Regulations Program.

2.3.3. Other State Agencies

Other state agencies also have roles and responsibilities which form parts of the state's current program for groundwater management and thus have a role in the state's WHPP. For example, the Department of State is responsible for many aspects related to local government, particularly training of zoning and planning board officials. The NYS Geological Survey is responsible for mapping the bedrock and surficial deposits of the state, and providing geologic advice and data to the various federal, state and local agencies concerned with protection of the state's groundwater resource. The Attorney General represents the state in cases of litigation to enforce regulatory controls and obtain clean-up by responsible parties. The New York State Soil and Water Conservation Committee provides guidance and training for managing certain nonpoint source threats. The NYS Legislative Commission on Water Resource Needs of Long Island is authorized to recommend groundwater protection approaches, new legislative or administrative actions for groundwater protection, and to investigate and evaluate water resource studies.

2.4. Regional Planning Agencies

Regional planning agencies exist in many areas of New York State, including most of the areas which contain heavily utilized aquifer systems. These agencies prepare regional plans for a variety of public purposes, and undertake planning-related studies. In many cases, their activities have included water quality management planning under Sections 208 and 205(j) of the federal Clean Water Act.

2.5. County and Local Governments

Land use controls are within the regulatory jurisdiction of local government, and are an important aspect of groundwater protection. Such land use controls may prohibit or otherwise manage activities that adversely affect wellhead areas and sensitive aquifer systems.

County agencies in many parts of New York State play an important role in assisting the administration of state-level regulatory programs, thereby effectively augmenting the effort devoted to these activities, as well as carrying out important management activities which cannot be accomplished within available state or federal resources.

2.5.1. County Government Agencies

Planning agencies and health agencies exist in most of New York State's counties.

County health agencies may administer major elements of state-level (DEC and DOH) programs for water pollution control and water supply regulation. In some cases, county health agencies also administer their own programs, resulting in a more comprehensive overall program than that administered by the state. A major example is Suffolk County on Long Island, where the County's Article 12 Program provides for comprehensive regulation of the storage and handling of toxic and hazardous chemicals.

County planning agencies are often involved in environmental or natural resource planning activities, as well as in providing expertise and technical assistance to local government on the development and implementation of local land use controls. In many cases, these agencies can assist in tailoring environmental management activities, such as wellhead or groundwater management, to best meet local needs and conditions. They also may be able to provide an important program linkage with local government on the development and implementation of land use controls to better protect wellheads and groundwaters.

County planning boards, under the General Municipal Law (Sections 239:l, m, n), must review certain municipal zoning actions and, where the county legislative body has so authorized, subdivision plats before the municipal board can take final action. While this is a limited power (if the county planning board opposes a certain action, the municipal board needs a majority plus one of the full board to approve said action), it can serve as a tool to raise the awareness of municipalities concerning groundwater and wellhead protection.

Several counties, such as Chautauqua and Cortland, have established the position of county groundwater coordinator. This position may be located either in the County Health Department or Planning Department. The general role of the position is to serve as a focal point for all groundwater protection and related activities within the county and to provide assistance to towns and municipalities. These positions are proving to be significant positive steps in furthering groundwater protection efforts in these counties.

All counties, except those in New York City, in New York State have County Soil and Water Conservation Districts (SWCDs) as well as Cooperative Extension offices. These agencies have strong working relationships with the rural/agricultural community in the state and increasingly with local governments in urbanizing areas. The SWCDs work directly with farmers to develop farm conservation plans which include soil erosion control and nonpoint source control. SWCDs also review environmental data pertaining to soil properties, terrain, and associated watershed characteristics.

Cooperative Extension is an important vehicle for providing public education and information in rural areas. In its work with individual farmers, Cooperative Extension implements Integrated Pest Management and soil testing programs throughout the state. Where fertilizer and pesticide use in wellhead areas or over critical aquifer systems may be an issue, or where public education may be an appropriate means of addressing wellhead concerns generic to rural areas, these agencies represent important potential participants in the wellhead program.

2.5.2. Towns, Cities and Villages

Towns, cities and villages in New York State are vested under state law with responsibility for regulation of land use. Local land use controls (e.g., zoning) are not used widely at present for wellhead/groundwater protection, although a few important examples have recently emerged. In the future, however, effective local land use control powers must be an important element of management programs.

Zoning requirements which have been used for groundwater and wellhead -area protection include: use restrictions; density limits; lot coverage; setbacks; special use permits; and performance standards.

In addition to zoning, municipalities also have authority for site plan and subdivision review and local ordinance adoption, all of which can play a significant role in wellhead/groundwater protection.

2.6. Public Water Supply Systems

While public water system purveyors generally do not have regulatory authority, they do have roles to play in the protection of water supply sources.

Two specific areas of responsibility fall to the water purveyor; compliance with terms of the water supply permit authorizing the taking of water (administered by DEC), and the decision to develop Watershed Rules and Regulations (which are ultimately promulgated by the State Department of Health). Water supply permits for wells generally require the control of lands close to the well through ownership or easement.

Water purveyors also share the responsibility to educate their consumers about wellhead protection and what the consumer can do to promote groundwater and wellhead protection. It is therefore essential that the officials of public water supply systems be aware of potentially contaminating activities within their wellhead areas. It is further incumbent on these officials to identify the need for local wellhead protection programs. Without strong support by these officials, local programs may be difficult to establish.

2.7. Coordination

The Department of Environmental Conservation will have the central coordination role in the Wellhead Protection Program. Wellhead protection activities of the U.S. Environmental Protection Agency within New York State, including those related to local governments and the New York State Water Resources Institute's activities in New York State's WHPP, will be coordinated through the Department of Environmental Conservation's Wellhead Protection Program unit. The DEC's interactions with local governments will be through its existing agency structure, including both the DEC regional offices and direct coordination by the Central Office. The Department of Environmental Conservation will also be responsible for coordination with other NYS agencies and with other adjacent states concerning wellhead protection issues.

Interstate wellhead protection issues in actuality will be a rare concern in New York State. A review of public water supply well locations shows that very few systems are in the vicinity of state boundaries. In addition, there are relatively few interstate aquifer systems. The Department of Environmental Conservation will have the lead responsibility for interstate coordination, where needed. Chapter 5 further discusses this issue.

2.8. Summary

The existing institutional structure in New York State can accommodate the program activities

required to provide wellhead protection. Most of the required program elements already exist. Major new programs are not required. It is more important to provide adequate funding and carry out existing programs and responsibilities, with appropriate adjustment and targeting to provide a high level of wellhead protection. The following listing summarizes major responsibilities in wellhead protection.

SPECIFIC DUTIES IN WELLHEAD PROTECTION PROGRAM

Federal Agencies

1. Environmental Protection Agency

   - Oversight and approval of WHPP's
   - Technical guidance and assistance
   - Funding
   - Assist NYS in coordination with federal agencies

2. U.S. Geological Survey

   - Development of information on groundwater resources
   - Assessing utility of various technical procedures for delineating wellhead areas
   - Determining usefulness of generic wellhead delineations using aquifer classification systems or other parameters

3. Other Agencies

   - Implementation of NYS WHPP (as appropriate)

State Agencies

1. Department of Environmental Conservation

   - Lead agency responsibility for WHPP as delegated by Governor.
   - Administering the major statewide environmental protection programs which regulate potential sources of groundwater contamination.
   - Installing and implementing wellhead protection concepts in environmental management programs.
   - Establishing wellhead protection area delineation policies, and review of enhanced local delineations.
   - Providing available records of potential contamination sources to local wellhead protection programs.
   - Providing guidance for local agencies for wellhead protection area delineations and management and promoting local WHPP's.
   - Reviewing and commenting on local programs.
   - Funding assistance for regional and local efforts to develop wellhead programs.
   - Oversight of reporting requirements and recordkeeping for Superfund Amendments and Reauthorization Act Title III data. Planning oversight is the responsibility of the State Emergency Management Office.
   - Oversight of the Water Supply Permit Program for new wells, and coordination with wellhead protection.
   - Coordination (local governments, other state agencies, EPA and federal agencies, other states).

- Funding USGS cooperative program to continue groundwater and wellhead information development.

2. Department of Health

- Promulgating watershed rules and regulations for groundwater supplies.
- Promoting local initiatives for watershed rules and regulations.
- Administering emergency planning requirements of State Law and SDWA.
- Providing assistance for water supply programs administered by counties.

3. Department of State

- Local government interactions and training of zoning and planning officials.

4. State Geological Survey

- Miscellaneous aspects of geologic information management and assessment.

5. New York State Water Resources Institute, Cooperative Extension and State Universities

- Community and local government education.
- Research

6. New York State Soil and Water Conservation Committee

- Guidance and outreach for certain nonpoint source threats.

7. New York State Legislative Commission on Water Resource Needs of Long Island

- Education.
- Recommending State legislation.

Local Agencies

1. Municipal Governments

- Adopting local groundwater protection ordinances (including delineation), implementing and enforcing the ordinances.
- Using zoning, site plan review, subdivision review powers to protect groundwater and wellhead areas.
- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.

2. County Governments

- Implementing NYSDEC and NYSDOH programs that are related to wellhead protection (as coordinated by the relevant state agency).
- Adopting ordinances to supplement existing state regulations (6 NYCRR and 10 NYCRR), as appropriate, and implementing and enforcing the ordinances.
- Providing local assistance to municipal and town governments related to wellhead protection.
- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.
- Educating county citizens and commercial sector concerning

groundwater and wellhead protection.

3. Regional Planning Agencies

- Promoting and supporting local wellhead protection efforts.

- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.

4. Public Water Supply System Purveyors

- Evaluating need for and initiating (if appropriate) adoption of watershed rules and regulations including definition of protection zones.

- Inventorying sources of contamination, as coordinated with other state and local agencies, and as determined by local management programs for wellhead protection.

- Enforcing Watershed Rules and Regulations, in coordination with relevant state and local agencies.

- Implementing conditions of water supply permits, in coordination with relevant state and local agencies.

- Complying with emergency planning requirements of DOH.

- Participating in water user and public education efforts.

CHAPTER 3

WELLHEAD PROTECTION AREA DELINEATION

3.1. Introduction and Institutional Processes

3.1.1. Introduction

The comprehensive New York State Groundwater Management Program, developed in the early 1980's and published in revised and final documents in 1986 (for Long Island) and 1987 (for Upstate), recommended key policies and program initiatives endorsing geographic targeting and critical area protection. These concepts were forerunners of the Safe Drinking Water Act's Wellhead Protection Program. Significant progress has been made in different aspects of geographic targeting of programs and in different parts of New York State. New York acknowledges these accomplishments as an integral part of its overall Wellhead Protection Program.

Delineation determines geographic areas for which different levels of groundwater protection activities are to be instituted. The Wellhead Protection Program in New York State is intended to accomplish a wider recognition of targeting objectives by all levels of government, by citizens in general, and to begin an evolutionary process toward improved targeting and protective program implementation.

The basic wellhead protection delineation approach in New York State recognizes aquifers as the fundamental geographic unit for targeting management efforts. This approach must be modified where aquifers are broad regional systems (DEC considers this case to occur only on Long Island), or where aquifers are not well characterized (considered to be the case for bedrock aquifers, in general). Elsewhere, the unconsolidated aquifers of New York tend to be of limited areal extent and they generally include the important recharge areas within their boundaries. These unconsolidated aquifers also are the source of the large majority of groundwater-derived public water supply systems.

The New York State Wellhead Protection Program proposes that unconsolidated aquifer boundaries (the land surface overlying the aquifer) serve as the baseline definition for the overall wellhead protection area (WHPA). For the baseline definition, both confined and unconfined unconsolidated aquifers are grouped together. Revisions are allowable based on site-specific evaluations. This aquifer boundary approach is proposed to be modified on Long Island and for wells in bedrock aquifers as described in Section 3.2. For all public water supply wells, specific proposed WHPA delineation policies are described in Section 3.2.

The aquifer boundary approach for the overall WHPA has several distinct advantages. It takes advantage of considerable recent and ongoing work in mapping and detailed assessments of aquifer boundaries. Incorporating this work directly into the Wellhead Protection Program provides a practical way for more effective targeting to move forward rapidly rather than being constrained by the need to perform modeling to delineate protection areas.

The aquifer approach also encompasses other non-public wells and potential future well sites, and places major focus on the high-yielding groundwater resources which are most important and most vulnerable. This last aspect is considered very important in the education component of wellhead protection, both for local officials and for the general public.

Wellhead protection area delineation is an evolutionary process. The first need for refinement is the further subdivision of the total wellhead protection area, as required for differentiated management objectives. A second area for potential refinement is delineation of the overall WHPA in the Glacial Aquifer on Long Island and in bedrock aquifers. Issues related to these topics are reviewed in both Sections 3.2 and 3.3. Flexibility for refinement or revision is very important due to the wide variability in

hydrogeologic settings, data availability, and local degree of contamination threat in New York State.

3.1.2. Institutional Processes for Overall Delineation Policies

Advisory committee and work group input into the original comprehensive Groundwater Management Program was substantial. The basic concept of geographic targeting was set forth in that program. The groups included:

- Federal Agencies (EPA, USGS)
- State Agencies (DEC, DOH, DOT, Agriculture & Markets, Energy Office, Geological Survey)
- Cornell University
- County Agencies (Health, Planning)
- Associations (Conference of Mayors, American Water Works Association, Business Council)
- Citizen Groups (NRDC, League of Women Voters)

DEC reconvened most of the original contributors into an advisory committee to assist in guiding the Wellhead Protection Program, with particular emphasis on delineation issues. Added to the original group have been:

- State Agencies (Department of State)
- County Agencies (a wider range of county participants)
- Regional Agencies and Commissions (additional planning and legislative commissions)
- Associations (Association of Towns, American Water Resources Association)

The new group, the Wellhead Protection Advisory Committee, has also included additional participation from the U.S. Geological Survey and DEC geological staff.

The delineation approach proposed in this submittal was recommended by the DEC Groundwater Management Section (responsible for developing the program) and agreed to by the Wellhead Protection Advisory Committee (members listed in front of submittal). The delineation approach directly conforms with the policies in the formally adopted Upstate New York Groundwater Management Program and Long Island Groundwater Management Program.

The DEC has also established a Memorandum of Understanding (MOU) with the DOH concerning the development of the Wellhead Protection Program. Additional MOU's will be developed as needed to institutionalize interagency working arrangements.

To support the technical needs of DEC and of local governments in carrying out and refining delineations, DEC plans to convene an ongoing Delineation Technical Workgroup consisting of geologists and groundwater management staff of DEC, DOH, State Geological Survey, USGS, and local governments. This group would consider revisions or improvements in the overall delineation approach, and would essentially be concerned with hydrogeologic aspects of the program rather than administration or contamination source control. The mission of this group is to provide recommendations to the DEC staff responsible for the overall Wellhead Protection Program. It will be convened upon EPA approval of New York State's submittal and will meet on at least a semi-annual basis or as needed.

Local authorities involved in wellhead protection may vary, as discussed elsewhere in this submittal. Therefore, uniform institutional processes at the local level will not be proposed across the entire state. Local agencies may act according to their own needs and authority. However, in all cases where Watershed Rules and Regulations are utilized as the local wellhead protection approach, the existing requirements of the New York State Department of Health (DOH) will be followed. Similarly, for all new wells, the institutional requirements of the New York State Department of Environmental Conservation's (DEC) Water Supply Permit Program will apply.

The proposed responsibility for initiating refinements of the baseline delineations described in this submittal will depend upon the regulatory approach adopted. Delineation refinements to be incorporated in Watershed Rules and Regulations approaches will be initiated and performed by water purveyors. Delineation refinements to be incorporated in county, town, village or city ordinances (including local public health ordinances) will be initiated and performed by the corresponding political authority. Delineation refinements to be incorporated in state-level regulatory programs will be performed by DEC.

In practice, most local activities will involve coor- [illegible] with the State DEC and DOH. Each Department routinely reviews local activities to ensure that there are no conflicts with respect to policies and procedures and advises on the availability of technical information for delineation purposes. The overall coordination for aspects specifically related to the WHPP is the responsibility of DEC.

Other institutions, particularly the U.S. Geological Survey and Cornell and other universities, may be involved in special projects or case studies, as coordinated by DEC.

3.2. Delineation Criteria, Thresholds and Methods

3.2.1. Background - Existing Geographic Targeting

The existing, and still evolving, geographic targeting framework for groundwater protection provides a priority system for managing risks to groundwater. Following is a brief summary:

- Groundwater Classification - 6 NYCRR Part 703

Ambient water quality standards and guidelines apply to all Class GA (fresh) groundwaters. Class GA groundwaters are defined as having best use as a source of drinking water and must meet New York State's drinking water standards in addition to the ambient standards. State management programs use this framework for protection of all fresh groundwaters in New York State.

- Unconsolidated Aquifers

Mapping of unconsolidated aquifers has progressed significantly including State-defined primary and principal aquifers which are subsets of the unconsolidated aquifers. Site-specific detailed mapping is still in progress.

Primary and principal aquifers are generally similar geologically (both are highly productive unconsolidated deposits); primary aquifers are those which have large populations using them as drinking water sources. Primary aquifers have high priority for mapping additional hydrogeologic data through the DEC/USGS cooperative program, and in special Long Island programs.

These delineations are used in the process for siting new waste disposal facilities.

- Long Island Hydrogeologic Zones

Eight hydrogeologic zones have been delineated, covering all of Long Island. Three of these together comprise the Deep Flow Recharge Area. Management program initiatives (e.g., hazardous substance storage) are based on this Deep Flow Recharge Area.

- Special Groundwater Protection Areas

Nine Special Groundwater Protection Areas have been delineated within the Deep Flow Recharge Area in both Nassau and Suffolk Counties and are currently the subject of a planning project by the Long Island Regional Planning Board.

- Other Geographic Targeting Approaches

Suffolk County has specifically defined "Water Supply Sensitive Areas" which include zones 500 feet downgradient to 1,500

feet upgradient of public wells in the Upper Glacial Aquifer.

Watershed Rules and Regulations are promulgated by the NYS Department of Health upon initiation by local water purveyors. These include delineations of protection management zones for public water supply wells. The WRR delineations do not conflict with the wellhead protection area delineation policies proposed in this submittal.

The NYS Solid Waste Management Program, in 6 NYCRR Part 360, has defined "public water supply wellhead area" as the surface and subsurface area between a public water supply well or wellfield and the 99% theoretical maximum extent of the stabilized cone of depression of that well or wellfield considering all flow system boundaries and seasonal fluctuations. New landfills are banned in these areas, in addition to all primary and principal aquifers in the Upstate area. Special provisions are defined in law for Long Island siting. As with the Watershed Rules and Regulations, there is no conflict in terminology between the Part 360 public water supply wellhead area and the overall wellhead protection area proposed in this submittal. The overall protection area includes, and is larger than, the Part 360 wellhead itself. For landfill siting, Part 360 regulations will prevail. Part 360 determinations are made only for proposed landfill siting cases.

Other setback requirements have been utilized in various state or local management programs. When used, such as for pesticides (e.g., aldicarb) or septic tanks, the setbacks apply to all wells, public or private. As with the other targeting approaches, such setbacks do not conflict with the proposed wellhead protection area policies.

- Well Construction Specifications

Direct protection of the wellhead itself is achieved through adoption of construction specifications and standards. These are administered by the New York State Department of Health and follow the "Recommended Standards for Water Works" (NYS Health Department Bulletin #42, 1982). They apply to public water supply wells.

3.2.2 Wellhead Protection Area Delineation Objectives

The USEPA guidance for development of wellhead protection programs (Guidance for Applicants for State Wellhead Protection Program Assistance Funds under the Safe Drinking Water Act, EPA 440/6-87-011) contains the expectation that proposed programs will be designed to provide protection from three types of threats: direct introduction of contaminants in the immediate well area, microbial contaminants, and chemical contaminants. The first is dealt with through well construction and completion standards to be applied at the wellhead itself. The second is managed by delineating a zone to keep potential sources sufficiently distant from the well to allow die-off of the microorganisms. Establishing a minimum distance by measurement or by time-of-travel is the most common procedure for delineating areas for protection against microbial contamination.

To achieve protection against chemical contamination, EPA suggests three delineation approaches: delineation of wellfield management areas, contamination attenuation zones, or remedial action zones. Since chemicals can travel long distances, all or part of the recharge area for a well becomes the zone to be delineated for protection efforts.

The overall goals of New York State's delineation approach are essentially a combination of the wellfield management and remedial action zone goals described by EPA.

Wellfield management is used to define areas where heightened levels of protection will be

emphasized. A number of different zones may be delineated for a single water supply to provide different levels of management. The management options may range from selected land use prohibitions to specialized design specifications, enhanced facility inspections, or increased monitoring and education.

The remedial action area approach excludes high risk activities from a specifically defined zone but still allows them in more distant recharge areas. This may be refined by varying exclusions in different zones according to risk or the importance of the activity. The remedial action area concept is best applied to new or changing [illegible], whereas wellfield management may be applied to existing or new land uses.

The contamination attenuation zone approach described by EPA is difficult to strictly apply due to limited capabilities to accurately predict chemical migration and persistence. In addition, the New York State groundwater standards apply to all fresh groundwaters, reducing the utility of an attenuation zone approach.

3.2.3. Delineation Policy

The underlying objective of delineation is to use different degrees of management to control risks to water supplies. The significant diversity in geological conditions, aquifer use, and in local government capabilities across New York State indicates that the approach to delineation can not be uniform and rigid for all locations.

The ideal technical goal of wellhead delineation is to have sufficient knowledge of the hydrogeology of each public water supply well or wellfield to allow precise determination of the catchment area along with accurate times-of-travel for the entire flow system. Such information is not uniformly available across the state. New information will become available unevenly as funding from various local, state and federal sources is applied to specific priority areas.

In this setting, the New York State Wellhead Protection Program proposes general recognition of high-yielding aquifers (both confined and unconfined) as the fundamental wellhead protection area units. As described in Section 3.2.4., this policy recognizes that more targeted delineations will be necessary on Long Island because it is entirely an aquifer. Also, bedrock aquifers are not adequately characterized now to allow this approach; however, most of the major, high-yielding aquifers in New York are in unconsolidated deposits. Within the wellhead protection area, delineation of an area designated as the remedial action area is proposed, as described in Sectin 3.2.5.

This policy is intended to reinforce public and management program recognition of the need to protect high-yielding aquifers. It takes advantage of considerable past and ongoing work on aquifer mapping and delineation and will permit further progress in communities which have already delineated aquifer boundaries and protection areas. These communities may directly proceed to management implementation or may utilize available funds on more advanced hydrogeologic evaluations within the WHPA, depending on local needs and goals.

Within this framework, utilization of alternative delineation approaches (such as time-of-travel) is allowed and encouraged. In most cases, such alternative approaches would be applied to subdividing the WHPA within the unconsolidated aquifer boundaries for applying different levels of management. The WHPA itself would remain the area defined by aquifer boundaries. In some cases, such as for bedrock aquifers, the alternative approaches may be used to redefine the WHPA itself. The Department of Environmental Conservation will be responsible for providing guidance for such alternative approaches.

3.2.4. Wellhead Protection Area Delineations

The wellhead protection area delineation approach is summarized in Table 3.1. It recognizes that the aquifer system on Long Island and bedrock aquifers in Upstate New York must be treated differently than the unconsolidated aquifers in Upstate. The unconsolidated aquifer boundaries for the wellhead protection areas are those delineated on a series of maps titled

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

"Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York" by the U.S. Geological Survey. Specifically, these maps, distributed for sale by the U.S. Geological Survey, are as follows:

1. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Lower Hudson Sheet. Water Resources Investigations Report 87-4274. U.S. Department of the Interior, Geological Survey, Albany, NY.

2. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Hudson Mohawk Sheet. Water Resources Investigations Report 87-4275, U.S. Department of the Interior, Geological Survey, Albany, NY.

3. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Adirondack Sheet. Water Resources Investigations Report 87-4276, U.S. Department of the Interior, Geological Survey, Albany, NY.

4. Miller, T.S., 1988. Unconsolidated Aquifers in Upstate New York - Finger Lakes Sheet. Water Resources Investigations Report 87-4122, U.S. Department of the Interior, Geological Survey, Albany, NY.

5. Miller, T.S., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Niagara Sheet. Water Resources Investigations Report 88-4076. U.S. Department of the Interior, Geological Survey, Albany, NY.

The boundaries illustrated on these maps serve as the total wellhead protection areas for public water supplies utilizing those aquifers. In certain cases, more detailed aquifer boundary maps or determinations for primary or principal aquifers (subsets of the full range of unconsolidated aquifers) have been or will be made by the U.S. Geological Survey or NYS Department of Environmental Conservation. These more detailed boundary determinations will generally supersede boundaries illustrated on the above referenced maps as "revised" delineations of wellhead protection areas.

Both unconfined and confined unconsolidated aquifers are included on these maps and both are included in this definition of the overall wellhead protection area.

For all public water supplies utilizing groundwater, the overall wellhead protection area (WHPA) delineation will be subdivided into two parts. The innermost zone is referred to as the Remedial Action Area. The remainder of the WHPA is referred to as the Wellfield Management Area. The terminology is derived from the EPA guidance referenced earlier. Depending on local management objectives for groundwater protection, local hydrogeology, and data availability and resource availability, the Wellfield Management Area may be further subdivided. This further subdivision of the Wellfield Management Area would be considered a refinement of the "baseline" delineation. Methodologies, criteria and thresholds used for such revisions are flexible. Approaches proposed by local water purveyors will be evaluated and approved or disapproved upon submittal to the New York State Department of Environmental Conservation.

The term "baseline" delineation, as used in this submittal, is intended to represent the initial WHPA delineation advocated by the Department of Environmental Conservation. The delineation may be directly utilized in implementing management activities for groundwater protection. However, if site-specific conditions suggest that alternative delineations are appropriate (including the further subdivision of the Wellfield Management Area already cited), those delineations may be accepted by the Department of Environmental Conservation. The evolution of improved delineation techniques, the growing availability of hydrogeologic information, and the longer-term enhancements of groundwater protection programs may lead to a redefinition of the baseline delineations by the Department of Environmental Conservation.

These baseline delineations apply to public water supply wells. Applicants for new public water supply wells may be required to perform

alternative site-specific delineations according to conditions stipulated through the Water Supply Permit Program (refer to Chapter 7).

The proposed WHPA delineations are described according to the following geographic and hydrogeologic settings. They are also summarized in Table 3.1.

- Unconsolidated Aquifers - Upstate New York

1. WHPA Definition:

The boundaries of wellhead protection areas for public water supplies in unconsolidated aquifers in Upstate New York are the land surface boundaries of the aquifers as illustrated on the five-aquifer sheet maps for Upstate published and distributed by the U.S. Geological Survey (see earlier reference). These boundaries may be revised in accordance with more detailed primary and principal aquifer maps and boundary determinations as approved by the Department of Environmental Conservation. The maps provide definition for both unconfined and confined aquifers. Revisions of these boundaries may be made, pending approval by the Department of Environmental Conservation.

2. Rationale:

The delineations proposed above are hydrogeologically-based and are consistent with the policies and goals of the Upstate Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Plan.

3. Mapping and Case Studies:

Mapping of these areas is already completed and published. Case studies are not considered appropriate, as the maps have been reviewed and approved by the U.S. Geological Survey and the Department of Environmental Conservation as part of the publication process.

4. Public Water Supply Significance:

The large majority of public water supplies using groundwater, particularly for municipal and community systems, are located in unconsolidated aquifers. It is expected that a significant proportion of additional future supplies will also tap these systems.

- Bedrock Aquifers - Upstate New York

1. WHPA Definition:

The baseline boundaries of wellhead protection areas for public water supplies in bedrock aquifers are fixed radius areas with a radius of 1,500 feet from the wellhead. Revisions based on site-specific information are desirable, with the goals being to identify and delineate principal recharge areas. Revisions may be developed, pending approval by the Department of Environmental Conservation.

2. Rationale:

The fixed radius approach for the initial WHPA is not based on estimated times-of-travel or drawdown. It provides a substantial increase in protection over more commonly existing protection zones (typically 100 feet or 200 feet). The principal rationale is that the baseline delineation gives a basis for immediate action on wellfield management without requiring expensive site-specific delineations. Revisions based on local conditions are encouraged, particularly for municipal community systems, of which there are relatively few in the State. The geographic targeting benefits of uniformly delineating substantially larger fixed radius areas for all bedrock wells are very questionable. Many of the bedrock public water supply wells are among the approximately 10,000 non-community public wells (e.g., isolated public buildings, roadside rest areas, etc.). There will be little geographic targeting advantage for groundwater protection programs if

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.

2. Rationale:

Fixed-shape zones are not based on calculated time-of-travel or drawdown. The proposed definition is consistent with Water Supply Sensitive Areas already delineated by Suffolk County (which contains nearly all of the Glacial wells on Long Island) and for which enhanced protection programs have already been implemented in the Suffolk County Sanitary Code. Approximately half of the Glacial wells are within the Deep Flow Recharge Area and are thus protected within a larger overall WHPA. Significant expansion of the WHPA for all Glacial wells may not provide any reasonable geographic targeting benefits, as most of the WHPA's would intersect or nearly intersect. All fresh groundwaters in the Glacial aquifer are already covered by substantial protection programs which utilize a rigorous set of ambient water quality standards.

3. Mapping and Case Studies:

Mapping of the WHPA's for Glacial wells in Suffolk County has been completed through the Water Supply Sensitive Area delineations. For the relatively few Glacial wells in Nassau County, mapping will be completed according to the phasing priorities described in Section 3.3. Case studies of fixed-shape delineations 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 other Glacial well delineations.

4. Public Water Supply Significance:

As stated previously, approximately one-fourth of the public water supplies in Suffolk County are based in Glacial wells that are outside of the Deep Flow Recharge Area. If Nassau County is included, only about one-eighth of the water supply dependency is from Glacial wells outside of the Deep Flow Recharge Area.

3.2.5. Remedial Action Areas

For all community public water supply wells, regardless of setting, a remedial action area will be delineated within the WHPA. For those supply wells, the proposed baseline delineation of this area will be a fixed radius zone of 200 feet radius from the well. Revisions may be made after evaluation by the Department of Environmental Conservation. For non-community public water supply wells (e.g., isolated public buildings, etc.), the existing New York State Department of Health standards for well separations (e.g., from waste disposal facilities) are to be followed.

The rationale for this baseline delineation is based upon general observations in the past that such a zone has been adequate for protection against microbiological contamination. An alternative time-of-travel basis for delineating revised remedial action area boundaries would be to use a time-of-travel from a minimum of 60-days up to one year. The 60-day period has been used in New York State and in many European countries (USEPA, EPA 440/6-87-010, Guidelines for Delineation of Wellhead Protection Areas). A one-year period is considered conservative. In certain cases, the site-specific hydrogeology (e.g., confined aquifer conditions or long times-of-travel) and the nature of existing land uses and management options may allow remedial action areas smaller than 200 feet radius.

3.2.6. Potential Refinements and Summary

Table 3.1 summarizes the baseline delineations for wellhead protection areas.

Refinements may include:

- Subdivision of the Wellfield Management Area portion of the WHPA, to allow application of different levels of management within the WHPA.
- Revision of the Remedial Action Area portion of the WHPA, according to alternative methods, including time-of-travel or drawdown analysis.

- Revised boundary determinations of the unconsolidated aquifers in Upstate, including primary and principal aquifers, or of the Deep Flow Recharge Area on Long Island.

- Alternative hydrogeologic determinations of appropriate WHPA's in bedrock aquifers or for wells in the Glacial aquifer on Long Island.

3.3. Phasing Considerations

The published unconsolidated aquifer maps cited in the previous section complete the baseline WHPA delineations for all public water supply wells within those aquifers. The completed delineation of the Deep Flow Recharge Area on Long Island has been defined according to road boundaries. That delineation defines the WHPA for all public water supply wells in the Magothy and Lloyd aquifers. The baseline WHPA boundaries for public water supply wells using the Glacial aquifer in Suffolk County have been determined by the Suffolk County Department of Health Services through its Water Supply Sensitive Area designations.

The remaining baseline WHPA boundary determiantions that are needed consist of a relatively small set of Glacial aquifer wells and public water supply wells in bedrock aquifers. The phasing priorities for these groups are, in order:

1. Municipal community wells

2. Non-municipal community wells

3. Non-community public wells

Within each priority group additional phasing may be generally ordered by population dependency with modifications made if there are significant known or suspected threats to the wells.

It is emphasized that the baseline WHPA delineations for the very large majority of public water supply wells (by population served) are completed. The delineations for the remaining bedrock wells and Glacial wells will be performed as resources permit.

CHAPTER 4

SOURCE IDENTIFICATION

4.1. Categories of Potential Groundwater Contamination Sources

4.1.1. Introduction

Potential contamination sources as described in the federal Safe Drinking Water Act include those anthropogenic sources, both point and nonpoint, which involve the manufacture, use, storage, [illegible], transport, or disposal of toxic and hazardous substances which may have any adverse effect on human health. Certain activities (e.g., mining) may also be considered potential sources, because they may increase vulnerability to contamination and may be associated with other activities of concern.

In the broadest sense, potential contamination sources may include nearly all commercial, and many governmental and domestic activities. To be useful in guiding the management of contamination sources to maximize groundwater protection benefits, some differentiation or priority system is needed.

Priorities are based on the significance of the source and the intended management application of the inventory. Source significance is based on the type of contaminant (mobility in groundwater, known impacts on public water supplies, toxicology, pathogenicity), the quantity of the contaminant at that location, and the potential of that source type to release contaminants to groundwater and impact water supplies.

The management applications of the source inventory may include:

- Developing local awareness and support for groundwater protection program adoption;
- Emergency response planning;
- Inspection planning or sequencing;
- Monitoring design;
- Enforcement; tracking compliance;
- Targeting education efforts;
- Regional and local planning;
- Local land use regulations development; and
- Identifying new program or program improvement needs.

4.1.2. Classification of Sources

Potential contamination sources may be classified in many ways. The major need for groundwater protection is to provide a structure for collecting and interpreting data regarding existing contamination sources which is readily useable in a variety of programs.

The United States Office of Technology Assistance developed a comprehensive listing of potential contamination sources, including 33 types within six major groups (Table 4.1). This classification has been included in wellhead protection program guidance manuals prepared by USEPA. All of these source types occur within New York State, although mine tailings, mine waste and mine drainage are less important than in many other states. Mining (e.g., sand and gravel) is still considered to be a potential source in that may be associated with other activities (fuel usage) that can contaminate groundwater.

The OTA classification in Table 4.1 is endorsed by the Department of Environmental Conservation as a useful structure for collecting data related to potential contamination sources.

A long-term goal of contamination source inventory is to utilize computer geographic information systems (GIS) to manage and interpret the data collected. The mapping keys of GIS methods or other maps will not be required to explicitly duplicate the OTS classification, as this would be counterproductive if more efficient

TABLE 4.1
SOURCES OF GROUNDWATER CONTAMINATION

CATEGORY 1: Sources Designed To Discharge Substances

- Subsurface percolation (e.g., septic tanks and cesspools)
- Injection wells
  - . Hazardous waste
  - . Non-hazardous waste (e.g., brine disposal and drainage)
  - . Non-waste (e.g., enhanced recovery, artificial recharge solution mining and in-situ mining)
- Land application
  - . Wastewater (e.g., spray irrigation)
  - . Wastewater by-products (e.g., sludge)
  - . Hazardous waste
  - . Non-hazardous waste

CATEGORY 2: Sources Designated to Store, Treat, and/or Dispose of Substances; Discharge Through Unplanned Release

- Landfills
  - . Industrial hazardous waste
  - . Industrial non-hazardous waste
  - . Municipal Sanitary
- Open dumps, including illegal dumping (waste)
- Residential (or local) disposal (waste)
- Surface impoundments
  - . Hazardous waste
  - . Non-hazardous waste
- Waste tailings
- Waste piles
  - . Hazardous waste
  - . Non-hazardous waste
- Materials stockpiles (salt, coal, etc.)
- Graveyards
- Animal burial
- Aboveground storage tanks
  - . Hazardous waste
  - . Non-hazardous waste
  - . Non-waste (petroleum, etc.)
- Underground storage tanks
  - . Hazardous waste
  - . Non-hazardous waste
  - . Non-waste (petroleum, etc.)
- Containers
  - . Hazardous waste
  - . Non-hazardous waste
  - . Non-waste
- Open burning and detonation sites
- Radioactive disposal sites

CATEGORY 3: Sources Designed to Retain Substances During Transport or Transmission

- Pipelines
  - . Hazardous waste
  - . Non-hazardous waste
  - . Non-waste (petroleum, etc.)

SOURCE: Office of Technology Assessment, Protecting the Nation's Groundwater from Contamination, October 1984.

TABLE 4.1
SOURCES OF GROUNDWATER CONTAMINATION
(Continued)

- Materials transport and transfer operations

  . Hazardous waste
  . Non-hazardous waste
  . Non-waste (petroleum, etc.)

CATEGORY 4: Sources Discharging Substances as a Consequence of Other Planned Activities

- Irrigation practices (e.g., return flow)

- Pesticide applications

- Fertilizer applications

- De-icing salts applications

- Urban runoff

- Percolation of atmospheric pollutants

- Mining and mine drainage

  . Surface mine-related
  . Underground mine-related

CATEGORY 5: Sources Providing Conduit or Inducing Discharge Through Altered Flow Patterns

- Production wells

  . Oil (and gas) wells
  . Geothermal and heat recovery wells
  . Water supply wells

- Other wells (non-waste)

  . Monitoring wells
  . Exploration wells

- Construction excavation

CATEGORY 6: Naturally occurring Sources Whose Discharge Is Created and/or Exacerbated by Human Activity

- Groundwater-surface water interactions

- Natural leaching

- Saltwater intrusion/brackish water upconing (or intrusion of other poor quality natural water)

SOURCE: Office of Technology Assessment, Protecting the Nation's Groundwater from Contamination, October 1984.

keys are developed. However, the goal of all acceptable source inventory approaches will be to include the categories in the OTS listing.

4.2 Contamination Source Inventory Procedures

Mapping of sources should use a minimum base map scale of 1:24,000 for printed map or map overlays. The use of alternative larger scale base maps which enable more precise locations (e.g., tax maps) should be considered on a case-by-case basis. GIS methods may be accepted, pending approval by the Department of Environmental Conservation.

[illegible] source-related data systems and registries for the most important potential contamination sources already exist in New York State. However, these vary in design and geographic specificity. These important data systems include, but are not limited to:

- Groundwater discharge permits
- Industrial Chemical Survey: Locations of ontinuationusage, handling and storage of industrial and toxic chemicals
- Underground Injection Control (UIC) Program data, especially UIC Class V wells (USEPA program)
- Emergency management and response data, including the Superfund Amendments Reauthorization Act (SARA) Title III data
- Solid waste facility locations
- Hazardous waste site locations (inactive and active)
- Hazardous waste generators
- Mining operation locations
- Oil and gas production locations
- Petroleum storage locations
- Petroleum and chemical spill or leak locations
- Hazardous substance storage locations
- Radioactive waste storage locations

The recommended procedure for contamination source inventory is as follows:

1. The lead responsible local authority obtains the location data for the major categories listed above with the assistance of DEC and other local, state and federal agencies. The lead responsibility is determined by the intended management approach (e.g., county agency if county ordinances are intended, town officials if town ordinances are intended, water purveyor if Watershed Rules and Regulations are intended, etc.).
2. Lead responsible local authority collects available information on other categories of sources listed in the OTS classification in Table 4.1.
3. General field survey performed to confirm or revise collected information and to fill in information gaps.
4. If used, GIS mapping methods are coordinated with DEC to ensure compatibility.
5. If GIS methods are not directly used, hard copy maps are prepared on a 1:24,000 scale or larger.

Baseline wellhead protection areas have already been determined by the policies described in Chapter 3. In certain cases, where a locality has further subdivided the overall wellhead protection area into higher priority and lower priority areas, source inventory activities may be phased to focus on the higher priority area. Contamination source inventories should generally follow delineation activities to focus those efforts. The inventory stage may collect information from areas larger than the WHPA itself, depending on the geographic specificity of the available data bases cited above.

The general priorities for source inventory, if phasing is necessary, should be to focus on waste disposal sites, petroleum storage sites,

hazardous/toxic substance usage, storage and handling locations first, as most known public water supply well contaminations have been related to these sources. Out of the wide array of hazardous substance locations, first priority should be given to the chlorinated solvents, because these are the most common type of public water supply well contamination. Alternatively, higher priorities may be placed on inventorying sources of chemicals included in the New York State drinking water quality standard category known as "Principal Organic Contaminants" (10 NYCRR Part 5), which includes the chlorinated solvents and other high priority chemicals of concern to public water supplies.

4.3. Completion, Refinement and Update of Contamination Source Inventory

A major goal of source inventory is to support the needs of a groundwater protection management program. Therefore, the ideal completion target for source inventory is prior to adoption or promulgation of groundwater protection ordinances or Watershed Rules and Regulations. The initial results of source inventory should be assessed prior to drafting such ordinances.

In some cases, as in complex commercial or industrial areas, phasing of source inventory activities will be necessary. The first level should be identifying industrial or commercial zones. More detailed phases may categorize the industrial or commercial land uses. The ideal, exhaustive inventory of all specific sources may not ultimately reside within a wellhead protection program data base. Rather, the most detailed data bases will reside with the appropriate regulatory program (e.g., petroleum bulk storage registry, etc.). Unnecessary duplication of efforts should be avoided.

The adoption of GIS mapping procedures will allow continuous updating of the source inventory. In the absence of GIS capabilities, printed or overlay updates will be completed at least every five years. Management program staff at the local and state level ordinarily maintain continuously updated files regarding regulated sources of contamination.

The Department of Environmental Conservation has initiated systematic inventories for several areas of the state by contracting with regional planning and development boards or councils utilizing Clean Water Act, Section 205(j)(5) pass-through funds. In eight different regions, the boards have selected municipal water supply systems and are inventorying contamination threats generally within a mile of the wells. This will be a beginning for a statewide system with some of the boards preparing their information in a GIS format as well as on 1:24000 maps.

For Nassau and Suffolk Counties on Long Island, Region 1 staff of DEC has been participating in a GIS user's group, comprised of representatives of federal, state, county, and local agencies. The group is building a shared data system which will result in an inventory of many groundwater contamination threats and of known groundwater quality problem areas in relation to public water supply wells. Additionally, the Long Island Regional Planning Board, in conjunction with other local agencies, is assessing major threats to groundwater as part of a comprehensive planning project for nine Special Groundwater Protection Areas covering large areas of Long Island.

CHAPTER 5

SOURCE MANAGEMENT

5.1. Introduction

Water resource protection programs in New York State have a long history. It was largely within the structure of New York State's existing programs and institutions that the state's groundwater management program was developed and it is within this structure that the Wellhead Protection Program will evolve. Adequate authorities and mechanisms for the [illegible] Protection Program already exist in New York State. There is not a need to modify existing legislation or regulations. The principal needs are for local governments (including counties) to obtain staff resources to further implement protection activities. Adoption of local ordinances may be needed as well as support from the state through technical assistance, financial assistance and training.

The foundation of nearly all groundwater protection programs is New York's stringent sets of standards and guidelines for ambient groundwater quality and drinking water quality. The standards themselves include broad classes of compounds, substantially reducing the possibility of unforeseen problems and the need for their revision. The availability of guidelines as a tool enables quick response to concerns with new substances. All fresh groundwaters in New York State are classified as potential sources of drinking water and are protected through statewide application of programs designed to prevent degradation with respect to these stringent standards. Anti-degradation goals are applied to all groundwater. It is important to recognize that groundwaters outside of wellhead protection areas are not left unprotected.

New York State has already adopted stringent protection programs for the most important categories of potential contamination sources. Certain nonpoint source categories are not directly controlled through specific state-level regulatory oversight (e.g., fertilizer applications, road salt applications). However, for these source categories (and <u>any</u> source category) any harm (e.g., contamination) is actionable through "public nuisance", a long standing common law doctrine in New York State. Liability, therefore, does exist even for sources not directly regulated. In these cases, best management practices (BMPs) and other tools may be more viable than direct regulation. The New York State Nonpoint Source Management Program, a new effort, is designed to address these needs.

A complete identification and evaluation of all existing federal, state and local source management programs that have bearing on groundwater protection or potential contamination sources is far beyond the scope of this submittal or of any single work. Rather, major programs are briefly summarized in Section 5.2. Section 5.3. summarizes future source management considerations and management coordination.

5.2. Existing Source Control Programs

5.2.1. Federal Agencies

The USEPA is responsible for most of the major federal regulatory control programs for groundwater protection. These programs are given authority under the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA), Superfund (CERCLA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and the Toxic Substances Control Act (TSCA). An overview of the coverage of these Acts is provided in Table 5.1.

EPA policy in administering these programs is generally to delegate many of the specific program activities to the states upon request and upon attainment of legislative requirements; to provide flexibility for states to tailor the programs to most effectively meet environmental needs within each state, to the extent permitted by statute; to oversee state performance in carrying out delegated national programs which use

Table 5.1

OVERVIEW OF USEPA STATUTORY AUTHORITY RELATING TO GROUNDWATER

Clean Water Act	Principal regulatory programs focus primarily on surface water. The Act contains only general references to groundwater. However, the Act provides major sources of funding for state water pollution control programs.
Safe Drinking Water Act	Authorizes EPA to set maximum contaminant levels and monitoring requirements for public water systems; provides for regulation of underground injection wells to protect drinking water aquifers; provides for designation of "sole source" drinking water aquifers; provides source of funding for state programs of public water supply regulation. Authorizes states to develop Wellhead Protection Programs.
Resource Conservation and Recovery Act	Provides for establishment of standards for hazardous waste treatment, storage, and disposal facilities; and requirements for ensuring that land disposal of solids or hazardous waste protects groundwater. Establishes the Federal Underground Storage Tank Program.
Superfund (Comprehensive Environmental Response Compensation, and Liability Act of 1980)	Creates a trust fund to provide for emergency clean-up of chemical spills or hazardous waste dumps for which no responsible party can be immediately found. Trust fund money is derived from taxes on oil and 42 other specific chemical compounds.
Toxic Substances Control Act	Authorizes EPA to restrict or prohibit the manufacture, distribution, or use of products which may adversely affect the environment.
FIFRA (Federal Insecticide, Fungicide and Rodenticide Act)	Gives EPA the responsibility to control the use of pesticides; specifically, EPA is responsible for registering, canceling, suspending, or changing the classification of individual pesticides for use, and considering a broad range of environmental impacts including impacts as groundwater.

federal grants; and to support the states through provision of technical expertise and research. The Underground Injection Control (UIC) program, a program not delegated to New York State, may benefit the Wellhead Protection Program through inventory activities, particularly for existing UIC Class V wells.

The DOH must also approve the subdivision of land when more than 4 new lots are created within a three-year time period and when the lots are smaller than 5 acres each. Through this review process, development within a protection zone of a public water supply well is strictly controlled or prohibited.

5.2.2 State Agencies

The two state agencies with the major responsibility for managing potential threats to groundwater are the Department of Environmental Conservation (DEC) and the Department of Health (DOH).

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

The DEC is responsible for administering a full array of environmental programs to be used in implementing the Wellhead Protection Program. An overview of these programs follows:

- SPDES

  The New York State Pollutant Discharge Elimination System (SPDES) is a program for the issuance of permits and regulatory control of discharges of appropriately treated sanitary, industrial, or commercial wastewater into the surface or groundwaters of the state. It is a comprehensive program for protecting water quality encompassing effluent limitations, monitoring requirements, and, for existing discharges not yet meeting effluent limitations, a schedule for achieving compliance. The SPDES Program is authorized by Article 17, Title 8 of the New York State Environmental Conservation Law (ECL) as amended in 1973. All groundwater discharges must be permitted with the exception of those which are less than 1,000 gallons per day and are composed entirely of domestic wastewater.

- Petroleum Bulk Storage

  In effect since December 1985, the program regulates the storage and handling of petroleum. Major provisions of the program include registration of all stationary tanks over 1,100 gallons that store petroleum; establishment of standards for retrofitting; operation and closure of existing facilities; and establishment of standards for new and substantially modified petroleum facilities. The program is authorized by Article 17, Title 10 of the ECL.

- Hazardous Substance Storage and Handling (Chemical Bulk Storage)

  Phase I of the program (effective July 15, 1988) and Phase II (expected to be effective during 1991) will regulate the storage and handling of hazardous substances. Phase I requires the registration of all underground tanks and those aboveground stationary tanks storing 185 gallons (750 kilograms) or greater. Phase II will regulate the storage and handling of hazardous substances and include standards for dikes, piping systems, vents, transfer stations, monitoring, inventory record keeping, closure, container storage and the storage of bulk solids. The program is authorized under Articles 37 and 40 of the ECL.

- Spill Response

  The program, started in 1978, is designed to protect both public health and the environment from the effects of petroleum and chemical spills and leaks. Major components of the program include reporting requirements, a 24-hour hotline telephone/response network, on-site response by regional staff, stand-by

clean-up contractors, a data management system, and coordination with the other public agencies. The program also provides assistance to local governments in emergency planning related to spills and leaks and monitors compliance with Superfund Amendments and Reauthorization Act Title III requirements. The Department maintains geotechnical services to assist the program, both in the central office and in regional offices. The program is authorized by Article 12 of the Navigation Law.

Water Supply Permits

The Water Supply Permit Program, also discussed in Chapter 7, is primarily a quantity management program. However, it indirectly controls potential contamination sources by controlling the influences on groundwater flow. The most important is the control on intrusion of naturally-occurring saline groundwater. The program is authorized by the ECL Article 15, Title 15 and is regulated under 6 NYCRR Parts 601 and 602.

- Flood Plain Management

The program, which is consistent with the Natural Flood Insurance Program, includes performance standards for water supply systems. Water systems within the 100-year flood plain are required to be designed to minimize or eliminate infiltration of flood waters into the systems. Over 1,350 cities, towns and villages in New York State have adopted local laws containing the federal standards for flood protection of water supply systems. In addition, the state flood plain regulations (6 NYCRR Part 500) are applicable within 136 towns and villages. The New York State Flood Plain Management Program maintains an outreach and education effort to assist local governments in implementing flood protection, including water supply protection. The program is authorized by ECL Article 36.

- Municipal Solid Waste

The program regulates the collection, transport, processing, incineration and ultimate disposal of municipal solid waste. Pertinent landfill requirements include: limitations on acceptance of hazardous waste; geological siting standards, including a minimum verticle separation between the base of the constructed landfill liner and groundwater of five feet and between the base of the constructed landfill liner and bedrock of ten feet; environmental monitoring of facilities; engineering standards, including design provisions for impermeable liners and leachate collection systems to restrict subsurface migration of contaminants and closure provisions for low permeability caps to minimize infiltration in the waste mass and subsequent leachate generation; and hydrogeologic siting restrictions on new landfills and landfill expansions including prohibitions within public water supply wellhead areas and primary and principal aquifers. The program is authorized by the ECL, Article 27.

- Hazardous Waste Management

The program regulates the entire scope of industrial and commercial hazardous waste management. Hazardous wastes are identified, regulated at the point of generation, tracked in transport from generation to point of ultimate disposal, and regulated with regard to treatment, storage and disposal. The siting of new facilities for off-site treatment, storage and disposal (i.e., those facilities receiving hazardous waste from other facilities) must conform to stringent siting requirements in accordance with 6 NYCRR Part 361. The overall program is authorized by the ECL, Articles 19, 23 and 27.

- **Hazardous Waste Remediation**

The program deals with the problems associated with inactive hazardous waste sites. The three major aspects of the program include identifying, evaluating and remediating hazardous waste sites. The 1986 Environmental Quality Bond Act provided the program with access to $1.2 billion for remediation costs. The program is authorized by the ECL, Article 27, Title 13.

- **Low Level Radioactive Wastes**

The program develops and implements low-level radioactive waste regulations, reviews permit applications for radioactive waste discharges, issues permits for transporters of low-level radioactive waste, provides technical support on low-level radioactive waste and assists in the siting of a low-level radioactive waste disposal facility. The program is also responsible for oversight of ground and surface water quality at extant disposal sites such as West Valley, New York, and potential new sites such as the proposed low-level radioactive disposal facility. The existing siting regulations ban new sites overlying primary and principal aquifers and require evaluation of potential groundwater impacts in all other areas. The program is authorized by the ECL, Articles 27 and 29.

- **Pesticides**

Under the state program, pesticides must be registered, and a permit is required for the distribution, sale, or offer-for-sale of "restricted use" pesticides, as defined by DEC. A permit is also required for the purchase, possession, or use of these products, and all applicators must be certified. The primary emphasis of the program is on the certification of pesticide users and on issuing permits to distributors of "restricted use" products. Nearly all pesticides registered in New York State have been previously registered by EPA. The existing registration procedure in New York State relies heavily on EPA review, supplemented by additional state DEC and DOH review. The USEPA's pesticide registration procedures include the evaluation of a variety of chemical characteristics, such as water solubility and chemical persistence, relating to potential leaching to groundwaters. The New York State program is authorized by the ECL, Articles 15 and 33.

- **Mineral Resource Extraction**

The DEC administers New York State's Mined Land Reclamation Program under Article 23, Title 27 of the ECL. The program involves the permitting of all mining operations in the state from which more than 1,000 tons of mineral are extracted within twelve successive calendar months. DEC's rules and regulations require the preparation and filing of plans and, through the process of an application review and field inspection, the determination that the mining operation will be conducted in an environmentally sound manner and that upon completion of mining, the affected land will be returned to a condition which encourages future productive use. Provisions for protection of ground and surface waters from potential adverse impacts of mining activity are included within the program.

- **Oil and Gas Program**

The program regulates the drilling, operation, and plugging and abandonment of oil, natural gas, underground gas storage, solution salt mining, brine disposal, geothermal and stratigraphic wells. Pertinent parts of the program include inspections of operations and facilities; financial security requirements that ensure availability of funds for well plugging and surface restoration costs; well construction and plugging requirements; drilling,

completion and production requirements; and the imposition of supplementary permit conditions for all drilling in primary and principal aquifers and other environmentally sensitive areas. The program is authorized under the ECL, Article 23.

DEPARTMENT OF HEALTH

The New York State Department of Health is responsible for the protection of public health and assuring provision of potable public water supplies. While most of the DOH's water supply program attention is on water delivered to the consumer, the Public Health Law authorizes the Commissioner of Health to promulgate rules and regulations for the protection of any public water supply from contamination. It is under this authority that the DOH's Watershed Rules and Regulations Program is based. Under the program, the DOH enacts state regulations to protect a specific water supply upon request from the water supplier. Existing and proposed Watershed Rules and Regulations for groundwater sources limit specific activities and prohibit potential sources of contamination from locating within specifically defined areas and may include design specifications for groundwater protection for new facilities allowed in the areas. The level of protection for each area reflects the vulnerability of the source to contamination by activities within the area. Watershed Rules and Regulations are considered to be fully compatible with the Wellhead Protection Program.

5.2.3. Local Government

COUNTY GOVERNMENT

County health agencies in many of the counties in New York State assist, through delegation, in administering major elements of state level (DEC and DOH) programs for water pollution control and water supply regulation. In some cases, county health agencies administer more comprehensive overall programs than those administered by the state. One example is Suffolk County, which provides for enhanced regulation of the storage and handling of toxic and hazardous chemicals. A similar program is also provided by Nassau County. In such cases, county health agencies perform the bulk of the day-to-day activities required for groundwater management, either through delegation from the state or directly under their own statutory authority. Although these counties have more extensive programs than most Upstate New York counties, they illustrate the important role potential for county health agencies in groundwater management.

An important management role may also be assumed by county planning departments, either through overall coordination of groundwater protection activities among towns or through direct assistance in drafting ordinances or other activities. Among the examples are Schenectady County and Cortland County.

Each county also maintains a County Emergency Management Office as part of the statewide network of emergency planning, data management and response. Their activities are an integral part of local wellhead protection efforts.

A key management issue for counties is to evaluate the potential adoption of county-wide groundwater protection ordinances. Such approaches may be more efficient than town-by-town ordinance implementation. Examples where this has been utilized include counties on Long Island.

TOWNS, CITIES AND VILLAGES

Municipal and town governments have two significant management tools that can be used to provide protection of groundwater and wellhead areas - land use controls and municipal or town ordinances. Under state law, towns, cities and villages are vested with the power to regulate land use. By the home rule provisions of New York State law, the state government will not impose zoning controls and land use requirements on local governments. The enactment of land use controls or zoning allows a municipality to prescribe the type of permitted land use and related activities in a specific land area. Thus, it can prohibit inappropriate land uses such as industrial use in sensitive groundwater areas,

while allowing more appropriate land uses. Within this framework, the site plan review mechanism may be used to require specific engineering designs to protect groundwater for an allowed land use. In addition to zoning, municipalities can adopt local ordinances to control or prohibit activities which may contaminate groundwater such as sewage disposal, hazardous material storage, etc. The development of zoning ordinances and other groundwater protection ordinances at the local government level is voluntary. Statewide groundwater protection controls prevail in all areas. In New York State, the Office of Local Government Services of the Department of State provides training and guidance to local officials in the use and development of zoning and site plan review.

WATER PURVEYORS

The groundwater management activities of water purveyors, whether municipally-owned or privately-owned, are described in Chapter 2, under "Public Water Supply Systems". Briefly, these include compliance with conditions of the water supply permit, initiation and development of optional Watershed Rules and Regulations for submittal to the state DOH, and consumer and water-user education. Because of their exclusive responsibility for providing a potable water supply, water purveyors can and should play a central role in motivating other local officials to implement groundwater protection efforts, and motivating the general public to assist in the effort.

5.2.4. Existing Technical Assistance Program

Technical assistance is available for local governments and water purveyors from a variety of sources. This assistance varies from basic information about groundwater resources to assistance with data interpretation and analysis.

- Groundwater Reports and Maps

The Division of Water maintains a limited inventory of reports and maps which are available for loan or possession. In some cases, when a particular item is scarce and cannot leave the office, citations are provided for library searches. The USGS also has much of the same information.

- Source Data from Regulatory Programs

Data regarding the potential contamination sources controlled by the various programs described in Section 5.2.2., above, are available to local management agencies. The nature, size, and location of the facility, in addition to requirements imposed by permits, can be retrieved on request. There are limitations with the ease of retrieval and with the locational information, as discussed in Chapter 4.

- Technical Assistance

Assistance from geologists in the Division of Water is available on a limited basis to interpret and analyze groundwater information. This can include modelling of groundwater flow.

- Data Acquisition and Interpretation

The Division of Water maintains a cooperative program with the USGS whereby water resources data are collected, organized, and interpreted. Information developed in this program can be used in the creation of local wellhead protection programs.

- Other Data Sources

Other types of useful data are available from such sources as county Soil and Water Conservation Districts (soils, land use) and the NYS Geological Survey (geology). Various data sets are available in a geographic information system format through the State Office of Equalization and Assessment.

5.2.5. Existing Financial Assistance Programs

- Section 205(j) Funds

NYSDEC has contracted with a number of regional planning and development agencies to undertake a series of demonstration projects in association with the Wellhead Protection Program.

The projects include collection and information on public groundwater supplies, inventorying and mapping contamination threats, and meeting with local officials to explore the development of local protection programs.

- New York State Environmental Quality Bond Act of 1986

The Act provides money for acquisition of aquifer recharge areas when in association with an appropriate local groundwater protection program.

- Nonpoint Source Control Program

Under both the federal Section 319 Program and the state-enacted Nonpoint Source Law, there is the potential for funding wellhead protection activities.

- Federal Clean Water Act - Section 106 Funds

The 1990 appropriation of 106 funds provides monies for wellhead protection.

5.2.6. Existing Education and Training Programs

Education and training activities are carried out by a number of agencies through publication and distribution of guidance materials, presentations at meetings, and direct "one-on-one" assistance.

NYSDEC has underwritten the preparation of a document for guiding the development of local water supply protection programs and distributes it on request and at relevant workshops. The NYSDOH provides guidance on the writing of watershed rules and regulations, which are a primary tool for implementing water supply protection measures. The State Water Resources Institute at Cornell University (WRI) produces written materials and computer software products to provide self-help support to local government. The NYS Department of State distributes a range of guidance manuals on zoning, site plan review, and other aspects of land use control and instructs local officials on these tools at statewide and regional conferences and workshops.

Presentations on wellhead protection options are made by DEC staff at such places as the meetings of the NYS Planning Federation and the Association of Towns of New York State where training workshops for local officials are held. WRI stages short courses and training sessions as part of their educational programs.

Finally, direct assistance is provided by NYSDEC and WRI as resources are available and as demand exists.

5.3. Future Management Considerations

Given the variety and extent of programs available at the federal, state and local level, there are no uncontrolled sources of contamination for wellhead areas. The basic structure exists for addressing all formats.

The primary task for the future is to bring the available program tools to bear on the threats to wellheads. This will be accomplished as a result of increased recognition of threats, outreach and training programs to inform government officials at all levels concerning control options, further development of information on groundwater resources, and development of efforts to focus particular attention of existing programs on wellhead areas.

The future management considerations for wellhead protection areas may be divided into state-level activities and local government activities. In New York State, the principal needs for state-level activities do not entail developing new legislation or regulations, as the existing structure is essentially adequate for protection of all fresh groundwaters, including the wellhead protection areas. The true needs are in more comprehensive implementation of the existing groundwater protection programs and carrying out the remaining implementation recommendations of the adopted Groundwater Management Program relevant to wellhead protection.

Local government activities have a broader range of future management considerations, because current activities are not usually as highly developed as the state-level protection programs.

The needs range from coordination and education to developing, implementing and enforcing the appropriate mix of land use controls and contamination source controls. Generally, the greatest need is implementation and enforcement staff development. Local groundwater and wellhead area protection plans and ordinances, including the preparatory delineation and source inventory, will have little benefit if implementation and enforcement staff resources are inadequate. Education and provision of guidance to local governments are important responsibilities of the state programs.

The key recommendation to local governments in [illegible]ing wellhead protection management is to first assess local needs and goals for groundwater protection. As part of this process, local officials should familiarize themselves with the basics of the existing groundwater protection efforts at all levels . of government and establish a communication and coordination "network" with the many parties that may assist them. These include county health and planning officials, regional planning agencies, DEC, DOH, Soil and Water Conservation Districts, Cooperative Extension, and many of the other parties cited in this document. The importance ofcommunication cannot 2be overemphasized. Local officials would benefit from the experience of other communities within the state, and such communication is also encouraged.

From this needs and goals assessment, and from a basic knowledge of available state programs and local management options, local officials can best select a preferred "framework" and general plan for local wellhead protection (e.g., Watershed Rules and Regulations, zoning, local ordinances, county ordinances, etc.).

The basic stages of a wellhead protection effort described in the Safe Drinking Water Act (e.g., delineation refinements, inventory, etc.) should be executed within this framework. It is anticipated that localities could waste considerable resources if they proceed directly into advanced delineation refinements or inventories without doing any preliminary goal assessment or coordination with other groundwater management officials.

The following sections briefly highlight three aspects of wellhead protection management relevant to future program considerations.

5.3.1. State Environmental Quality Review (SEQR)

SEQR is a mechanism available to all levels of government within the state to enable consideration of environmental factors early in the planning stages. It relates to actions which are undertaken, funded or approved by state, regional and local government agencies.

A particularly important feature of SEQR for wellhead protection and groundwater management is the provision for designation of Critical Environmental Areas. Local governments may designate specific geographical areas within their boundaries as Critical Environmental Areas. The designated areas become part of the Statewide "TYPE I" list under SEQR, meaning that any state or local agency action within or contiguous to the area will be more likely to be considered significant and therefore require an environmental impact statement and full review. This provision has strong potential for application in areas with sensitive groundwater resources, especially wellhead protection areas. The Department of Environmental Conservation's Division of Regulatory Affairs oversees the SEQR program and provides training and assistance concerning SEQR procedures.

5.3.2. Options and Tools for Protection Program Enhancement

The options and tools for protection program enhancement may have applicability in both state-level and local government programs. They include both regulatory and non-regulatory approaches. The following review is necessarily brief. Further details are available through the appropriate programs (e.g., zoning assistance from Department of State, emergency planning from State Emergency Management Office and DEC, source reduction from DEC Resource Recovery Program and Pollution Prevention Program, etc.). Among the options and tools are:

- Engineering Design: New facilities may be designed, or existing facilities may be retrofitted, with specific groundwater protection barriers or controls that enable continued operation or siting of facilities. Examples include: secondary and/or tertiary containment for petroleum or hazardous materials storage; structural coverage of stockpiles; leak detection systems; etc. Approaches may include special permitting, performance standards, septic system upgrades, and other methods. Continued enforcement is needed for these approaches.

- Source Reduction: A wide range of management options may be titled source reduction. Existing facilities may continue to operate with emphasis on reducing the threat to groundwater by methods that supplement prohibitions and engineering design. Among the source reduction options are: (1) reducing quantities of chemicals used; (2) conversion to lower-risk alternative chemicals; (3) modifying methods of use to increase efficiencies, including better targeting of applications (e.g., pesticides, coatings, cleaning operations); (4) waste reduction and recycling; (5) updating equipment, replacing storage tanks and container, and more frequent equipment calibration and inspection; (6) improving site plan and layout to reduce accident probability; and (7) improving site to reduce rainfall or runoff entering critical areas. There are many other options. Education and specifically targeted technology transfer and outreach (e.g., material prepared for specific types of businesses) are important tools in source reduction. Approaches may include both voluntary and mandatory elements.

- Inspections and Testing: Increasing the frequency or intensity of inspections and testing of facilities and operations is a straightforward approach to enhancing protection. Options for managing the costs of these approaches should be explored, including the potential for utilizing consulting "environmental monitors" as inspectors, funded by a fee system.

- Reporting: More frequent or more detailed reporting requirements for specific facilities and operations is a potential protection tool. However, this option is only useful to the extent that the information can be evaluated and properly stored, and that appropriate responses can be carried out. Staff resources for public agencies is again an important concern. The key need is for improvements in electronic data management, automated transfers of information, developing automated interpretive techniques, and in quality assurance efforts. Improved accuracy and completeness of reporting is an important concern. Solutions may include redesign of reporting requirements and formats and improved guidance.

- Prohibitions: Prohibitions are evaluated based on the relative risk of the facility or operation and the availability of engineering design alternatives. Prohibitions may also target specific chemicals themselves, such as solvent septic tank cleaners, rather than entire types of land use. Prohibitions may be adopted as part of Watershed Rules and Regulations, zoning ordinances, or other municipal, county or state ordinances.

- Land Use Controls: Land use controls include other options and tools beside prohibitions. Zoning density changes for residential development may be used. Transfer of development rights, whereby certain commercial or industrial development rights are transferred outside of wellhead protection areas (or portions of the overall WHPA) or designated groundwater protection districts, is another tool. Cluster or planned unit development (PUD) design may also be used to guide residential development outside of more sensitive

groundwater areas or to allow better management of wastewater disposal and nonpoint sources. Various growth controls may be utilized to allow more comprehensive development of local groundwater and wellhead protection programs. Subdivision rules may be used to better control drainage and runoff in subdivisions in sensitive groundwater areas. Site plan review may be utilized to require engineered contamination prevention barriers and other designs for permitted development. These opportunities provide a diverse menu of tools that enable more sophisticated local protection programs than generalized land use prohibitions.

- Water Withdrawal Controls: Water withdrawal controls are commonly recognized as a primary tool for water quantity management, but they also may play a role in water quality management. The DEC Water Supply Permit Program, described in Chapter 7, regulates water withdrawals for both objectives. Water withdrawal management is particularly important for controlling saltwater intrusion in coastal areas, for controlling the influences of withdrawals on migration of contaminants from nearby contamination plumes or contaminated aquifers (in multiple aquifer systems), and for altering groundwater flow patterns and consequently the relevant shapes and sizes of existing wellhead protection areas.

- Monitoring: Groundwater sample collection and analysis is a potential option associated with others cited above. Monitoring is useful to the extent that the sampling is truly representative of the groundwater regime of concern, that frequency is adequate, that data variability does not prevent determination of actual contamination, and that reported data are managed in a retrievable and interpretable fashion. The greatest potential for monitoring applications is in "source monitoring"; that is, monitoring at or very close to known high priority potential contamination sources. Generalized ambient monitoring of aquifers or wellhead protection areas (i.e., not targeting a potential source or the water supply well itself), sometimes called "early warning monitoring", may be conceptually desirable but is very likely to be impractical and very inefficient if attempted for all systems. It may be appropriate in special circumstances. The major problem is that truly representative sampling would require many locations, several depths at each location, frequent sampling, and many chemical constituents. Data variability and statistical interpretations are serious concerns in properly using monitoring results. Associated with this is the major burden of well installation, hydrogeologic characterization, proper sample collection and handling, and data management. The total analytical costs, themselves, would be enormous. Although ambient monitoring can have special value in specific locations and in research, the total resources for universal adoption would be far better spent on other options cited above to achieve greater degrees of groundwater protection.

- Emergency Planning: Emergency planning is an ongoing activity to plan for response to accidents, spills, and other emergencies. The principal goal in this case is to facilitate the fastest, most efficient and most effective proper response to emergencies that threaten groundwater quality. The existing emergency planning and response programs can be enhanced by various options including: (1) requiring risk management and emergency planning for a wider range of facilities or operations than at present; (2) requiring clearly visible posting at all facilities of key contacts (owners/operators, hazmat response teams, standby cleanup contractors, fire departments, etc.); (3) fire department preplanning for responses

at all important facilities; and (4) instituting county or regional hazmat (emergency response) teams to assist in local emergencies. The keys are speed and appropriate response. Any approach that enhances these may have potential. Facilities and industries may have standby emergency cleanup contractors that can mobilize faster than state government contractors. Local authorities should maintain records of these cases. Knowledge of who to contact is a critical concern.

- Land Acquisition and Conservation Easements: Land acquisition is the most effective method for ensuring control of sensitive groundwater areas. However, it is very urgent that lands acquired for such purposes not be misused for government activities which represent potential contamination threats (e.g., waste disposal, petroleum storage, salt storage, etc.). Donations and conservation easements should also be explored. The passage of a special additional 0.25% sales tax by a public vote in Suffolk County to provide funds for land acquisition should demonstrate the interest and concern of citizens to support this approach.

- Best Management Practices (BMPs) and Guidance: To supplement regulatory oversight, best management practice documents and other types of guidance may be developed and distributed to specifically targeted types of facilities or operations, concerning risk reduction and other forms of protection against groundwater contamination. These approaches may require follow-through, redistribution and special training to maintain or enhance their effectiveness.

- Education, Guidance and Technical Assistance: Citizen education, guidance for local government officials and technical assistance have obvious benefits for enhancing wellhead protection efforts. Despite this generally accepted notion, the potential cost savings by providing well targeted guidance are often overlooked. Good guidance will avoid unnecessary costs and overspending on less important elements, and, most importantly, can save considerably by getting the job done right much more quickly. Technology transfer and training assistance are key areas where a state-federal partnership can improve local protection programs. Road sign posting of protection areas may be a useful approach to promote public recognition of wellhead protection.

- Coordination: Directly related to the issue of guidance and assistance is the subject of coordination at all levels of government. In New York State, the level of government which generally has the greatest potential for enhancing groundwater protection through coordination is the county level. County agencies are best suited to assist their towns and villages directly and frequently. They are also an excellent link with state agencies. It is most cost-efficient for towns, villages and small cities to rely on county staff for groundwater coordination. Counties which have developed this capability in either their health or planning agencies (or in environmental agencies, if they exist) have benefitted considerably. The skills that may be tapped or developed at this level include both technical skills (hydrogeology, environmental chemistry, environmental engineering) and management skills (ordinance drafting, public speaking and writing, enforcement techniques). Coordination is further discussed in the following section.

5.3.3. Jurisdictional Coordination in Wellhead Protection Areas

As with most facets of government and public authority, multi-jurisdictional issues may occur with wellhead protection areas. Given the existing governmental structure in New York State, the

locations of public water supply wells, and other factors (existence and nature of federal lands, the nature and extent of aquifers, availability of State Watershed Rules and Regulations, etc.), significant problems are considered to be unlikely.

First, one means for resolving multi-jurisdictional issue among municipalities or counties is the promulgation of Watershed Rules and Regulations. Coordination is directly achieved through promulgation of the regulations, which are considered by New York State to represent an acceptable wellhead protection program.

County government is generally strong in New York State and a significant portion of multi-jurisdictional coordination is achieved directly by county agencies. Among counties, coordination is achieved through several avenues. First, regional planning agencies are well established in New York State and have been increasingly involved with groundwater protection in recent years. Second, the State Department of Environmental Conservation, in particular, and the State Department of Health have strong regional presence in New York State with responsibilities for local coordination with both counties and municipalities. Finally, coordination is provided by a wide range of assisting associations and agencies (including the Association of Towns, Association of Counties, Conference of Mayors, New York Planning Federation, Cooperative Extension, Soil and Water Conservation Districts, Water Resources Institute, etc.).

Concerning international jurisdictional issues, problems are nonexistent because public water supply wells in the general border area are extremely rare. Those located there would have appropriate protection areas entirely within New York State.

Nearly the same conditions occur along the interstate borders. Interstate coordination has not been a problem with respect to groundwater. In the event that such coordination is needed, New York's interstate borders are covered by the following interstate compacts of which New York is a member:

- New England Interstate Water Pollution Control Commission (NEIWPCC)
- Ohio River Valley Water Sanitation Commission (ORSANCO)
- Susquehanna River Basin Commission (SRBC)
- Delaware River Basin Commission (DRBC)

Federally-owned land is very limited in New York State, and the occurrence of public water supply wells on or in the vicinity of federal land is very rare. Coordination with other federal agencies concerning wellhead protection will be accomplished by the Department of Environmental Conservation working through the U.S. Environmental Protection Agency - Region II Office, and direct interaction with the federal authorities on-site where possible. This approach has been successful in the past and no problems are anticipated.

5.4. Summary

A simplified summary of existing institutions responsible for management of potential groundwater contamination sources is presented in Table 5.2.

TABLE 5.2

EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT

SOURCE	INSTITUTIONS (See Key)
CATEGORY 1: Sources Designed To Discharge Substances	
- Subsurface percolation (e.g., septic tanks and cesspools)	CHD*, DOH*, MUN
- Injection wells	
. Hazardous waste	DOH*, EPA*, DEC
. Non-hazardous waste (e.g., brine disposal and drainage)	DEC*, DOH*
. Non-waste (e.g., enhanced recovery, artificial recharge solution mining and in-situ mining)	DOH
- Land application	
. Wastewater (e.g., spray irrigation)	DEC*
. Wastewater by-products (e.g., sludge)	DEC*
. Hazardous waste	DEC*
. Non-hazardous waste	DEC*, DOH
CATEGORY 2: Sources Designated to Store, Treat, and/or Dispose of Substances: Discharge Through Unplanned Release	
- Landfills	
. Industrial hazardous waste	DEC*, DOH*, EPA*, CHD*, MUN
. Industrial non-hazardous waste	DEC*, CHD*, DOH, EPA, MUN
. Municipal Sanitary	DEC*, CHD*, MUN*, EPA
- Open dumps, including illegal dumping (waste)	DEC*, CHD*, DOH, MUN
- Residential (or local) disposal (waste)	DEC*, CHD*, MUN
- Surface impoundments	
. Hazardous waste	DEC*, CHD*, DOH
. Non-hazardous waste	DEC*, CHD*, DOH

TABLE 5.2
EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT
(Continued)

SOURCE	INSTITUTION (See Key)
- Waste tailings	DEC*
- Waste piles	
. Hazardous waste	DEC*, DOH*, CHD*, EPA
. Non-hazardous waste	DEC*, CHD*, DOH
[illegible] stockpiles (salt, coal, etc.)	DEC*, CHD*, DOT, MUN, DOH
- Graveyards	DOH*, CHD*
- Animal burial	DOH*, DEC*
- Aboveground storage tanks	
. Hazardous waste	DEC*, MUN, CHD
. Non-hazardous waste	DEC*, MUN, CHD
. Non-waste (petroleum, etc.)	DEC*, MUN, CHD
- Underground storage tanks	
. Hazardous waste	DEC*, MUN, CHD
. Non-hazardous waste	DEC*, MUN, CHD
. Non-waste (petroleum, etc.)	DEC*, MUN, CHD
- Containers	
. Hazardous waste	DEC*, MUN, CHD
. Non-hazardous waste	DEC*, MUN, CHD
. Non-waste	DEC*, MUN, CHD
- Open burning and detonation sites	DEC*, CHD*, MUN
- Radioactive disposal sites	DEC*. DOH*, MUN
CATEGORY 3: Sources Designed to Retain Substances During Transport or Transmission	
- Pipelines	
. Hazardous waste	DEC*
. Non-hazardous waste	DEC*
. Non-waste (petroleum, etc.)	DEC*

TABLE 5.2
EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT
(Continued)

SOURCE	INSTITUTION (See Key)
- Materials transport and transfer operations	
. Hazardous waste	DEC*, DOH
. Non-hazardous waste	DEC*, DOH, MUN
. Non-waste (petroleum, etc.)	DOT*, DEC
CATEGORY 4: Sources Discharging Substances as a Consequence of Other Planned Activities	
- Irrigation practices (e.g., return flow)	CE, SWCD
- Pesticide applications	DEC*, DOH, CE, SWCD
- Fertilizer applications	CE, SWCD
- De-icing salts applications	DEC, DOT, MUN
- Urban runoff	DEC, MUN
- Percolation of atmospheric pollutants	DEC*
- Mining and mine drainage	
. Surface mine-related	DEC*, SWCD
. Underground mine-related	DEC*, SWCD
CATEGORY 5: Sources Providing Conduit or Inducing Discharge Through Altered Flow Patterns	
- Production wells	
. Oil (and gas) wells	DEC*
. Geothermal and heat recovery wells	DEC*
. Water supply wells	DOH*, DEC*, CHD*, MUN*
. Solution Mining Wells	DEC*

TABLE 5.2
EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT
(Continued)

SOURCE	INSTITUTION (See Key)
- Other wells (non-waste)	
. Monitoring wells	DEC, DOH, CHD
. Exploration wells	DEC*, DOH
- Construction excavation	MUN*, DEC, SWCD
CATEGORY 6: Naturally occurring Sources Whose Discharge Is Created and/or Exacerbated by Human Activity	
- Groundwater-surface water interactions	DEC*
- Natural leaching	DEC*
- Saltwater intrusion/brackish water upconing (or intrusion of other poor quality natural water)	DEC*

KEY: * = Major Responsibility

CE = Cooperative Extension
CHD = County Health Departments
DEC = NYS Department of Environmental Conservation
DOH = NYS Department of Health
DOT = NYS Department of Transportation
EPA = U.S. Environmental Protection Agency
MUN = Municipal Government
SWCD = Soil and Water Conservation District

Absence of a designation does not preclude additional or related responsibilities of similar or other local, state or federal institutions.

CHAPTER 6

CONTINGENCY PLANNING

6.1. Introduction

In New York State, the Department of Health, through the authorities provided to it in the Public Health Law (PHL), oversees and regulates the development of contingency or emergency plans for public water systems. In addition, the New York State Division of Military and Naval Affairs, Office of Disaster Preparedness, oversees and [illegible] the stockpiles of emergency equipment that are available to assist in responding to public water supply emergencies.

The federal Safe Drinking Water Act requirements for contingency planning (Subsections 1413(b)(5) and 1428(a)(5)) are satisfied by the program administered by the Department of Health. An additional aspect of contingency planning is required under the federal Superfund Amendments and Reauthorization Act (SARA) Title III. The SARA emergency planning program, which requires reporting of routine and accidental releases of toxics to air, water and land, is administered by the New York State Department of Environmental Conservation. In actual practice, this program is most useful for indicating potential problem areas. Response to immediate public water supply threats is coordinated with DOH and water suppliers.

6.2. Emergency Planning Program

The new emergency (or contingency) planning program administered and coordinated by the New York State Department of Health contains all four elements suggested by USEPA for consideration by states in the Wellhead Protection Program along with additional items. The first two elements, temporary and long-term alternate water supply assessment, are included in the DOH requirement for identification of existing and future water supply sources in both emergency and non-emergency conditions. The final two, coordination and financial responsibility assessment, are included in the DOH requirement for specific action plans. The key responsibilities are with the water purveyor, with oversight by the New York State Department of Health.

On September 24, 1988, revisions to Section 5-1.33 of Part 5 of the New York State Sanitary Code were promulgated. This section entitled "Water Supply Emergency Plans" requires the following:

1. All community water systems with an annual gross operating revenue of greater than $125,000 must develop and submit to the state a water supply emergency plan by December 31, 1990 and update the plan every five years.

2. The plan must include at a minimum:

   - The development of procedures for providing consumer notification during all phases of the water supply emergency;

   - The development of criteria and procedures for determining the subsequent reporting of critical water levels of safe yield of the source or sources of water;

   - The identification of existing and future sources of water available during normal non-emergency and water supply emergency conditions;

   - The identification of all available water storage, including source, transmission and distribution system storage;

   - The identification, capacity and location of existing interconnections. Identification of additional interconnections needed to provide potable water during a water supply emergency;

   - The development of a specific action plan outlining all the steps to be implemented, taken or followed during a water supply

emergency, including state notification, emergency notification rosters of key water supply personnel with current telephone numbers (both business and home), and follow-up correction action to minimize the reoccurrence of an emergency;

- The identification and implementation of procedures for water conservation and water use restrictions to be put in place during a water supply emergency;

- The identification of and the procedures for prioritization of potable water use during a water supply emergency;

- The identification of availability of emergency equipment needed during a water supply emergency;

- A development of criteria and procedures for determining and the subsequent reporting of the water supplier's capacity and ability to meet peak water demands and fire flow conditions concurrently.

3. A vulnerability assessment must be performed for the source or sources of water supply, the public water system, disinfection stations and water treatment plants to determine the vulnerability of these water supply components to a water supply emergency. The water supplier shall take whatever steps are necessary to ensure that potable water can be and is available during a water supply emergency.

4. The state can require any other community or non-community water system to develop emergency plans.

The NYS Department of Health currently is revising its guidance available for use by public water systems in developing their emergency plans. It is not expected that the revised guidance will deviate significantly from the existing guidance. The existing guidance includes a generic outline or framework of worksheets and checklists that will assist the water system in developing its plan. This outline includes topics such as: map of the entire public water system, including source locations and activities that may affect the system such as contamination threats, transportation corridors, etc.; data on sources; assessments of types of emergencies; component vulnerability assessment forms; notification roster; and hazardous material spill vulnerability checklist.

The DOH has also developed statewide policy procedures and guidance for dealing with ongoing water supply emergencies. These include procedures for dealing with community water system emergencies, reporting water borne disease outbreaks and guidance on boil water notices and blending of sources.

6.3. Emergency Equipment Stockpiles

The New York State Division of Military and Naval Affairs, Office of Disaster Preparedness (ODP), coordinates the New York State Emergency Equipment Stockpiles. This equipment is available on an emergency loan basis to local political subdivisions and other state agencies primarily to assist in responding to potable water supply emergencies. The stockpiles consist of high capacity pumps, water filters, chlorination equipment, generators, light weight-quick coupling aluminum pipe, water couplings, and adapters necessary to provide delivery of an emergency source of drinking water.

In addition to the stockpile maintained by New York State at Waterford (near Albany) and Pittsford (near Rochester), each District Office of Disaster Preparedness coordinates a district stockpile which is maintained by various counties in each District. The District stockpile equipment is federal property and is considered a Civil Defense resource. District stockpiles of emergency equipment are not intended to be under direct state control in times other than an emergency. However, this equipment is a district resource available on a cooperative basis to any jurisdiction which is in need of it. District stockpile equipment loans are coordinated through the ODP District Offices.

6.4. Wellhead Protection Program Submittal

Section 1428(a)(5) of the SDWA requires that the State WHP Program include contingency plans "for the location and provision of alternate drinking water supplies for each public water system in the event of well or wellfield coordination."

The requirements of NYSDOH's emergency planning program not only meet the state's requirements of Section 1428(a)(5) of the SDWA, but actually go beyond them since the state's program deals with all forms of water supply emergencies.

For the purposes of meeting the federal Wellhead Protection Program, New York State will define those community water systems with an annual gross operating revenue of greater than $125,000 as "major" public water systems. The federal guidance calls for all major public water systems to have a completed contingency plan at the time of the state's Wellhead Protection Program submittal. The recent promulgation of the revisions to the State Sanitary Code required plan submittals to the NYSDOH by December 31, 1990. It is not feasible to revise this schedule, nor does New York State consider it reasonable or necessary.

Implementation of the emergency plan requirements at other groundwater source community and non-community public water systems should be accomplished as resources permit. Remaining community water systems should be dealt with first on the basis of population served – the greater the population served, the higher the priority. Non-community systems should then be addressed.

CHAPTER 7

NEW WELLS

7.1. Institutional Processes

The protection of new public water supply wells will be accomplished through a variety of methods from state-level contamination source controls, to county, town and village or city land use controls. The institutional mechanism that will guide the protection and management of new wells is the set of procedures for the Public Water Supply Permit Program, operated by the New York State Department of Environmental Conservation.

This program, authorized by the Environmental Conservation Law Article 15, Title 15 and regulated under 6 NYCRR Parts 601 and 602, is more thoroughly described in DEC's Division of Water Technical Operation Guidance Series (TOGS) 3.2.1., "Public Water Supply Permit Program Application Processing." This document contains complete descriptions of responsibilities, technical review, procedures for objections and hearings, and permit conditions along with other information.

The permit conditions currently include elements that are consistent with Wellhead Protection Program objectives. The permit conditions will be revised to strengthen wellhead protection principles at the time that a new well permit is approved.

Currently, these permit conditions include, but are not limited to, the following:

- Direct Control of the Wellhead

  Construction and installation standards (NYS Health Department Bulletin 42, "Recommended Standards for Water Works"; administered by NYSDOH).

- Strict Protection Zone

  A strict protection zone of a minimum 200-foot radius (variances possible in special circumstances, if approved by DEC) shall be protected and controlled by direct ownership of the land, by the acquisition of protection easements or by other appropriate measures (to be approved by DEC).

  This area shall further be protected from pollution by surface waters by the construction of suitable diversion ditches or embankments, and the development of the wells shall be carried out that there shall be no opportunity for pollution to enter the wells.

- Water Quality Monitoring Requirement

  Prior to permit approval.

- Watershed Protection Requirement

  The permittee is required to adopt Watershed Rules and Regulations, pursuant to Section 1100 of the NYS Public Health Law, for all surface water sources. However, this requirement may be waived by the DEC Water Supply Permit Program for groundwater sources if the degree of protection provided by a specifically defined zone (fixed radius or calculated) and other existing control measures is considered adequate by DEC.

The permit procedure and the permit conditions designated by DEC provide the best and simplest means for including new wells in the Wellhead Protection Program. The watershed protection permit conditions, including potential enhancements of the above conditions, afford the best opportunity for refinement of wellhead protection for new wells. Permit conditions, for example, enable DEC's Public Water Supply Permit Program to require new surface water supply permittees to adopt Watershed Rules and Regulations even though they are otherwise voluntary under New York State Department of

Health programs. This and other aspects are discussed in the next section.

7.2. Wellhead Protection for New Wells

The current procedures for permit conditions allow applicants for new wells the option of not adopting Watershed Rules and Regulations if the protection zone (fixed radius or calculated) and other measures are considered adequate by the DEC Water Supply Permit Program.

The New York State Wellhead Protection Program proposes that the new well permit conditions be amended to require the permittee to develop and adopt a wellhead protection plan to be approved by DEC. DEC recognizes that these plans may vary depending on local conditions and capabilities and that implementation will be an evolutionary process. This plan may take the form of local ordinances (town, village, city, county) or protection program enhancements, or the form of Watershed Rules and Regulations (DOH approval), or other options described in Chapter 5. The local program should be consistent with the proposed State Wellhead Protection Program.

In cases where privately-owned public water systems are the permittees, the supplier is still proposed to be responsible for developing the required wellhead protection plan. Adoption and implementation of such a plan will, however, typically require the endorsement and cooperation of local government authorities. In such cases, it is proposed that the Water Supply Permit Program require the permittee, in cooperation with the appropriate local authorities, to provide a wellhead protection implementation plan. This may include Watershed Rules and Regulations or other appropriate agreements with local authorities, and is subject to DEC approval.

It is also proposed that the permit conditions be amended to require the permittee to show site-specific hydrogeologic evidence that the remedial action area (or inner zone proposed in the local plan) is adequately protective against biological contamination. For this portion of the wellhead protection area, a guideline of a 60-day minimum time-of-travel may be allowed. The 60-day criterion has been used in New York State and many European nations to provide adequate die-off of microorganisms. Time-of-travel should be considered from the point of potential contamination discharge. Alternative methods and criteria may be accepted in delineating this zone. In certain cases, existing land uses may be considered in delineating the remedial action zone as approved by DEC. Finally, it is proposed that all applicants for new well permits file a well log with the DEC Water Supply Permit Program at the time of completion of the well.

This approach for new wells will still allow local flexibility for delineating further subdivisions with the overall WHPA, and in determining the appropriate local management controls. The overall delineation for the total wellhead protection area and other policies of the State Wellhead Program would be retained. Such flexibility is necessary due to considerable variation in hydrogeologic conditions, contamination threats, and local authorities and capabilities. However, the approach is stronger in that wellhead protection plan adoption is mandatory for new well permit approval. Many existing wells are covered or will be covered by local wellhead protection plans. The Water Supply Permit Program may reopen the permit process to include existing wells in this process. The delineations performed as part of this procedure may utilize the baseline delineations described in Chapter 3, but should preferably utilize a three-zone approach.

Finally, the program accomplishments and strategies described in the Upstate and Long Island Groundwater Management plans (Department of Environmental Conservation) are recognized as part of the Wellhead Protection Program for new wells. Specific projects, such as the Special Groundwater Protection Area project by the Long Island Regional Planning Board, target planning for additional protection of groundwater resources with potential for future use. Similarly, in Upstate New York, inclusion of aquifer areas in the Wellhead Protection Program provides a means of protecting groundwater resources that may be utilized for future public water supplies even though specific well locations may not yet be known.

The NYS Water Resources Management Strategy (NYS Water Resources Planning Council, 1989; 14 volumes) also includes elements related to new wells. The recommendations of this strategy for water supply source protection, endorsed by the Water Resources Planning Council representing both public members and eight New York State agencies, support the "multiple-layer" management concepts (state and local controls) and the Watershed Rules and Regulations and local ordinance options. Comprehensive water supply system management, which includes an analysis of future water needs and creation or revision of Watershed Rules and Regulations, is a major recommendation of the Water Resource Strategy.

The Water Supply Permit Program itself does not specifically manage the sources of contamination. The permit program is used to require adoption of local programs for wellhead protection. The management of the sources is accomplished first and most importantly by the comprehensive state-level management programs described elsewhere in this submittal. Local government protection programs may take various forms, including county-level sanitary codes, town ordinances, water supplier watershed rules and regulations, and zoning ordinances. The implementation and enforcement of these local programs provide additional levels of source controls, and are the responsibility of corresponding local authority.

CHAPTER 8

SUMMARY OF PUBLIC PARTICIPATION IN THE DEVELOPMENT OF THE WELLHEAD PROTECTION PROGRAM

Section 1428(b) of the Safe Drinking Water Act requires that state wellhead protection programs be developed with the participation of the public including technical and citizens' advisory committees.

For partial compliance with the federal requirements and to gain the benefit of expertise of people outside the Department, a Wellhead Protection Advisory Committee was convened by the Director of the Division of Water October 12, 1988. The advisory committee con-sisted a broad spectrum of persons active and interested in groundwater protection efforts. Included were representatives of water purveyors, county government, regional planning boards and commissions, legislative staff, state agencies and private citizens. The roster is presented in the ACKNOWLEDGEMENTS at the front of this report.

The committee met formally three times to discuss the issues to be addressed in the wellhead program. The members also reviewed draft materials as the document took shape.

Issues which the Advisory Committee raised included the following:

1. The level of knowledge about groundwater varies enormously among local officials across the state. Some have a sophisticated understanding of groundwater and the tools available to protect public supplies; some need a basic knowledge of groundwater hydrology. The wellhead program must reach both extremes of the audience.

2. DEC should have its data bases on facilities it regulates organized and available for use by others to facilitate the understanding of sources of potential groundwater contamination.

3. Authorization for the Wellhead Protection Program in New York State will not require new legislation or regulations. Guidance, education, and promotion should be the primary means of establishing local programs.

4. To effectively deliver the wellhead protection message, there must be an aggressive outreach program which goes beyond printing brochures and reports.

5. Delineation procedures must be considered in the context of what is to be accomplished on the management programs. They are not purely technical exercises.

6. For implementing local protection programs, flexibility should be provided in having choices available to municipal officials and water purveyors. Watershed Rules and Regulations may be appropriate in many instances, but alternative protection schemes such as groundwater protection ordinances, zoning and site plan review procedures should be recognized as legitimate elements of a wellhead protection program.

7. While baseline delineations are needed, the program must recognize that where technical justification is available, deviations from the baseline criteria must be allowed. For instance, deep wells in confined aquifers that tap a horizontal groundwater flow regime may gain no increased protection from a 200-ft. radius Zone I than one of lesser area.

8. In densely developed areas and in many areas where critical aquifer segments cross municipal boundaries, a county-wide approach to groundwater protection may be appropriate.

9. Outreach and education programs should also focus on groups outside of government and the water supply industry. Bankers, insurance agents and other business persons should be aware of wellhead protection issues.

10. To assist the development of a consistent approach to creation of data bases and geographic information systems, the state should provide guidance and specification.

11. The outreach effort should include input from other capable agencies such as Cooperative Extension, Soil and Water Conservation Districts, the Department of State, the Water Resources Institute, and others.

12. In selecting source control programs for adjustment for wellhead protection concerns, the occurrence of problems should be reviewed so that the most significant sources are addressed first.

The more widespread public review of the submittal will be accomplished as follows:

1. The document will be distributed DEC and DOH regional offices, regional planning and development boards, county health departments, county planning departments, key local government associations, the Wellhead Protection Advisory Committee and to those persons that have expressed interest in the program.

2. The availability of the document for review at the planning offices and DEC sub-offices will be announced via the Environmental Notice Bulletin.

3. A public hearing will also be announced in the Environmental Notice Bulletin.

When the comments are received and the public hearing concluded, revisions to the program will be considered.

REFERENCE NO. 12

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
Y030	February 5, 1992	1335

DISTRIBUTION:

Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
Kate Finley	Town of Babylon	(516) 957-3000

AND:

Susan Lenczyk

DISCUSSION:

The site area is Zone C - greater-than-500-year flood zone.

ACTION ITEMS:

REFERENCE NO. 13

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
Y030	February 6, 1992	1340

DISTRIBUTION:

Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
George Veilson	East Farmingdale Water District	(516) 249-4211

AND:

Susan Lenczyk

DISCUSSION:

The depth of the Gazza Blvd. well is 585 feet.

ACTION ITEMS:

REFERENCE NO. 14

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
Y030	February 5, 1992	1434

DISTRIBUTION:
Canton Brothers, Inc.

BETWEEN:	OF:	PHONE:
Canton Brothers, Inc.	East Farmingdale	(516) 694-6666

AND:
Susan Lenczyk

DISCUSSION:
There are 25 to 30 employees currently working for Canton Brothers, Inc.

ACTION ITEMS:

REFERENCE NO. 15

CANTOR BROTHERS, INC.

LATITUDE 40:45:21 LONGITUDE 73:24:23 1980 POPULATION

KM	0.00- 0.4	0.4- 0.8	0.8- 1.6	1.6- 3.2	3.2- 4.8	4.8- 6.4	SECTOR TOTALS
S 1	0	0	1218	6661	42728	98962	149569
RING TOTALS	0	0	1218	6661	42728	98962	149569

REFERENCE NO. 16

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
Y030	March 2, 1992	0952

DISTRIBUTION:
Cantor Brothers, Inc.

BETWEEN:	OF:	PHONE:
Shirley	U.S. Census Bureau	(301) 763-5002

AND:
Susan Lenczyk (NUS)

DISCUSSION:
Based on the 1990 Census, the average number of persons per household in Nassau County, NY is 2.94, and in Suffolk County, is 3.04.

ACTION ITEMS:

REFERENCE NO. 17

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

PHASE I - PRELIMINARY INVESTIGATION

FINAL REPORT

CANTOR BROTHERS, INC. SITE

CONTRACT NO. D000452
NYSDEC SITE NO. 152021

Submitted To:
Division of Solid Waste
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-0001

Submitted By:
Woodward-Clyde Consultants, Inc.
1250 Broadway, 15th Floor
New York, New York 10001

September 20, 1984

82C4548

1250 Broadway 15th Floor
New York, New York 10001
212-926-2878 (NY/NJ)
212-594-2118 (Direct)
Telex 133-541

Woodward-Clyde Consultants, Inc.

September 20, 1984
82C4548

New York State Department of Environmental Conservation
Division of Solid Waste
Room 209
50 Wolf Road
Albany, New York 12233

Attention: Mr. Norman H. Nosenchuck
Director

Subject: Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York
Phase I - Preliminary Investigation
Cantor Brothers, Inc.
NYSDEC No. 152021
EPA No. Not Available

Dear Sir:

This report presents the results of our Preliminary Investigation of the Cantor Brothers, Inc. site in Farmingdale, Suffolk County, New York. This preliminary investigation fulfills the requirements of Phase I of our Contract No. D000452 to perform engineering investigations at 40 inactive hazardous waste sites in the State of New York. Phase II involves field investigation services at the sites.

The objective of Phase I was to:

- collect and review data
- perform a site reconnaissance
- prepare a draft Hazard Ranking System (HRS) and Documentation
- develop a specific site work plan for Phase II
- develop Phase II site investigation costs
- identify known responsible parties
- prepare a summary report

This report contains six sections. Section 1.0 includes a description of the site. Section 2.0 presents the preliminary HRS work sheets, the HRS documentation records, and EPA site assessment forms (2070-12 and 2070-13). Section 3.0 provides a brief summary of the history of site activities. Section 4.0 includes a discussion of existing site data. Section 5.0 provides an assessment of the data adequacy identifying major data gaps. Lastly, Section 6.0 presents the recommended Phase II Site Investigation Work Plan and costs. The sampling and analysis plan and the health and safety plan are not included. These are to be supplied by NYSDEC.

The Cantor Brothers, Inc. site consists of an existing building containing drum storage areas and above ground storage and mixing tanks. The site also contains below ground tanks, a 6000-gallon tank truck, and storm drains. Cantor Brothers, Inc. is an active repacker and handler of organic chemicals, paint thinners, and caulking compounds. The Cantor Bros., Inc. site is reportedly owned by Mathew Miller, Engineers Lane, Farmingdale, New York.

State officials have reported that Cantor Brothers, Inc. has been in violation of Article 12 of the Suffolk County Sanitary Code on several occasions. These violations include improper storage of chemicals and illegal discharge of hazardous materials onto the ground and into storm drains.

The HRS scores developed for the Cantor Brothers site are as follows:

S_M = 18.37 (S_{gw} = 31.77 S_{sw} = 0.00 S_a = 0.00)
S_{FE} = N/A
S_{DC} = 37.50

Data were generally adequate to complete HRS scoring. Data deficiencies exist with regard to the amount and contents of the wastes, previous history of the existing facilities, subsurface information at the site, and the extent of air, soil and water contamination.

The Phase II work plan is specifically designed to address the data deficiencies. We have proposed a limited geophysical survey, the installation of four monitoring wells, and limited ground water, soil, and air sampling. A detailed description of the work plan and estimated costs is provided in Section 6.0. The total estimated cost for Phase II investigations at the Cantor Brothers, Inc. site is $32,923.

If there are any questions or comments concerning the work plan or any other portion of the Phase I report, please do not hesitate to contact us.

Very truly yours,

Donald R. Ganser

Donald R. Ganser,
Project Manager

DRG:jc
enclosure

C664/134

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2 LOCATION PLAN FOR PROPOSED PHASE II INVESTIGATION

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Appendix

A REFERENCES

B PERTINENT INFORMATION

C UPDATED NEW YORK STATE REGISTRY FORM

1.0
SITE DESCRIPTION

Cantor Brothers, Inc. is located on Engineers Lane in Farmingdale, New York (Figure 1). The site is located in southwestern Suffolk County, approximately 2 miles east of the Nassau County line. Cantor Brothers, Inc. currently occupies a large building on the site within an industrial park area. Numerous commercial and manufacturing facilities surround the Cantor Brothers, Inc. site. Large cemeteries are located immediately south and east of the site and Bethpage State Park is located approximately 1.5 miles to the west. The site area is almost entirely developed and paved with roads and parking lots. Also, the site is relatively flat with drainage and run-off via storm drains.

At the time of the WCC site survey (September, 1983), Cantor Brothers, Inc. was an active chemical repacker, handling petroleum distillate solvents, paint thinners, creosote, and caulking compounds. The site presently consists of a two-story building (approximately 60,000 square feet), 15 underground storage tanks, 16 indoor storage and mixing tanks, 55-gallon drum storage areas, and a 6000-gallon tank truck (SCDHS, 1983b; WCC Site Survey, 1983).

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2.0
U.S. ENVIRONMENTAL PROTECTION AGENCY DOCUMENTATION

This section includes documentation records and work sheets required to develop Hazard Ranking System (HRS) scores. In addition, two EPA forms regarding site inspection and preliminary assessment have been completed and are included as required.

Documents included in this section are:

1. Preliminary Hazard Ranking System (HRS) Work Sheets
2. Documentation Records for HRS
3. EPA Form 2070-12 (Preliminary Assessment)
4. EPA Form 2070-13 (Site Inspection Report)

All forms were prepared as completely as possible using information available from county, state, and federal agency files. However, site specific data are very sparse and consist primarily of SCDHS reports and laboratory test results. All information provided in the Documentation Records for HRS are referenced, and copies of most references are included in Appendix B.

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2.1 Preliminary HRS Work Sheets

Facility Name: Cantor Brothers, Inc.

Location: Farmingdale, New York

EPA Region: II

Person(s) in Charge of the Facility: Matthew Miller, Gen. Mgr.

Name of Reviewer: C. Mancini, WCC **Date:** 6 Sept. 83

General Description of the Facility:

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

Site operations include chemical repackaging and manufacturing with 15 underground tanks, 16 indoor tanks, and a 55-gallon drum storage area. Although the route of major concern is Direct Contact, Ground Water was also scored relatively high. Additional data is required for waste quantity and depth to aquifer of concern.

Scores: $S_M = 18.37$ ($S_{gw} = 31.77$ $S_{sw} = 0.00$ $S_a = 0.00$)
$S_{FE} = N/A$
$S_{DC} = 37.50$

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2.2 Documentation Records For HRS

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DOCUMENTATION RECORDS FOR HAZARD RANKING SYSTEM

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

FACILITY NAME: Cantor Brothers, Inc.

LOCATION: Farmingdale, New York

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GROUND WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):

None known.

Rationale for attributing the contaminants to the facility:

N/A.

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Upper glacial aquifer; Magothy aquifer (Franke and McClymonds, 1972; Jensen and Soren, 1974).

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

34 feet (Donaldson and Koszalka, 1979; USGS, 1979b).

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

Unknown.

Net Precipitation

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

46 inches (User's Manual).

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

31 inches (User's Manual).

Net precipitation (subtract the above figures):

15 inches.

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Sandy loam (SCS, 1975).

Permeability associated with soil type:

Less than 10^{-3}, more or less than 10^{-5} cm/sec (User's Manual).

Physical State

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

Liquid (SCDHS, 1983d).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

15 underground tanks; 16 above ground tanks;
approximately 200 55-gallon drums; 1 - 6000-gallon tank truck.

Method with highest score:

Leaking tanks.

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

	Toxicity	Persistence
Benzene	3	1
Toluene	2	1
M-xylene	2	1
O-xylene	2	1

Compound with highest score:

benzene: 12.

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Unknown.

Basis of estimating and/or computing waste quantity:

N/A.

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5. TARGETS

Ground Water Use

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

Public supply wells, industrial and irrigation wells (NYSDEC, 1983a).

Distance to Nearest Well

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

495 Smith Street, Guild Arts and Crafts, Inc.

Distance to above well or building:

600 feet (USGS, 1979b).

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

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

Public water supplies of S. Huntington (51,000), Dix Hills (30,000), East Farmingdale (5,200), and Babylon (Suffolk County Water Authority) (377,000) (NYSDEC, 1983a; Rand McNally,, 1980).

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

None.

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

463,000

Is the facility completely surrounded by areas of higher elevation?

No (WCC Site Survey, 1983).

1-Year 24-Hour Rainfall in Inches

2.7 inches (User's Manual).

Distance to Nearest Downslope Surface Water

4 miles (USGS, 1979a).

Physical State of Waste

Liquid (SCDHS, 1983d).

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

See: Ground Water.

Method with highest score:

See: Ground Water.

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

N/A.

Total population served:

N/A.

Name/description of nearest of above water bodies:

N/A.

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

N/A.

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AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

None known.

Date and location of detection of contaminants:

N/A.

Methods used to detect the contaminants:

N/A.

Rationale for attributing the contaminants to the site:

N/A.

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

None known.

Most incompatible pair of compounds:

None known.

Toxicity

Most toxic compound:

None known.

Hazardous Waste Quantity

Total quantity of hazardous waste:

Unknown.

Basis of estimating and/or computing waste quantity:

N/A.

* * *

3. TARGETS

Population Within 4-Mile Radius

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

0 to 4 mi	0 to 1 mi	0 to 1/2 mi	0 to 1/4 mi
153,593	2,922	0	0

(Donnelly Marketing, 1982).

Distance to a Sensitive Environment

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

None (NYSDEC, 1975a).

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

(NYSDEC, 1975b).

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

None (NYSDEC, 1983b).

Land Use

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

200 feet (WCC Site Survey, 1983).

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

1.5 miles (USGS, 1979b).

Distance to residential area, if 2 miles or less:

1/4-mile (WCC Site Survey, 1983).

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

None (NYS Department of Agriculture and Markets, 1983).

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

None (NYS Department of Agriculture and Markets, 1983).

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

No (NYS Parks and Recreation, 1983).

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2.3 EPA Form 2070-12
(Preliminary Assessment)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	N/A

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
CANTOR BROTHERS, INC.	ENGINEERS LANE

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
FARMINGDALE	NY	11735	SUFFOLK	103	

09 COORDINATES LATITUDE	LONGITUDE
40 45 20.0	73 24 17.0

10 DIRECTIONS TO SITE (Starting from nearest public road)
495 to Rt. 110 South, east on New Highway, left onto Central Ave., left onto Engineers Lane.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
MATHEW J. MILLER, GENERAL MGR.	ENGINEERS LANE

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
FARMINGDALE	NY	11735	(516) 694-6666

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

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

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: __/__/__ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 9 / 1 / 83 (MONTH DAY YEAR)
☐ NO

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

CONTRACTOR NAME(S): WOODWARD-CLYDE CONSULTANTS, Inc. (WCC)

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

03 YEARS OF OPERATION
1975 (BEGINNING YEAR) | PRESENT (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
WILLIAM ROBERTS	SCDHS - Suffolk County Dept. of Health Services	(516) 451-4627

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
DONALD R. GANSER		WCCI	212 594-2118 (201) 785-0700	9 / 2 / 83 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

1 PHYSICAL STATES (Check all that apply)

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

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

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

. WASTE TYPE

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

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

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SOL	Benzene	71-43-2	STORM DRAIN	330	ppb
SOL	TOLUENE	108-88-3	"	4800	"
SOL	M-XYLENE	1330-20-7	"	114	"
SOL	O-XYLENE	"	"	90	"
SOL	P-XYLENE	"	"	35	"
SOL	ETHYLBENZENE	100-41-4	"	31	"

V. FEEDSTOCKS (See Appendix for CAS Numbers)

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

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

SCDHS

EPA FORM 2070-12 (7-81)

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EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 463,000 — 04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS LEAKING FROM TANKS AND DISCHARGED INTO STORM DRAIN HAS POTENTIAL FOR REACHING GROUND WATER SYSTEM

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: UNKNOWN — 04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS DISCHARGED INTO STORM DRAINS AND ON SURFACE HAS POTENTIAL FOR RUN OFF. DURING STORMS.

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

No information available (N/A).

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

N/A

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

N/A

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

HAZARDOUS MATERIALS DISCHARGED ON GROUND FOUND TO HAVE CONTAMINATED SOILS ON SITE

01 [X] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 463,000 — 04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS LEAKING FROM TANKS AND INTO STORM DRAINS MAY MIGRATE DOWNGRADIENT AND AFFECT THE PUBLIC WATER SUPPLY.

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

N/A

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

N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: N/A

. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

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

N/A

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

N/A

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

N/A

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: UNKNOWN — 04 NARRATIVE DESCRIPTION

INDOOR DRUM AND TANK STORAGE AREA NOT PROPERLY BERMED OR PROTECTED FROM INDOOR SPILLS.

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

N/A

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

HAZARDOUS MATERIALS LEAKING ONTO GROUND SURFACE MAY ENTER STORM DRAINS DURING STORMS.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: 1982 & 1983) ☒ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS HAVE BEEN OBSERVED LEAKING FROM DRUMS, TANKS AND A 6000 GALLON TANK TRUCK ON SITE.

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

N/A

III. TOTAL POPULATION POTENTIALLY AFFECTED: 463,000

IV. COMMENTS

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

SCDHS

EPA FORM 2070-12 (7-81)

R-33

2.4 EPA Form 2070-13
(Site Inspection Report)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	N/A

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
CANTOR BROTHERS, INC.	ENGINEERS LANE

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
FARMINGDALE	NY	11735	SUFFOLK	103	

09 COORDINATES — LATITUDE: 40 45 20.0 | LONGITUDE: 72 24 11.0

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

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 9 1 83 (MONTH DAY YEAR)

02 SITE STATUS: ☒ ACTIVE ☐ INACTIVE

03 YEARS OF OPERATION: 1975 (BEGINNING YEAR) | PRESENT (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply): ☐ A. EPA ☐ B. EPA CONTRACTOR ___ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ___ (Name of firm) ☐ E. STATE ☒ F. STATE CONTRACTOR WCC (Name of firm) ☐ G. OTHER ___ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
A.J. SCACIFERO	ASSIST. PROJECT GEOLOGIST	Wood & Ward - Clyde Consultants, Inc.	(201) 785-0700

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
			( )
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
NONE			( )
ACCESS DENIED			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☐ PERMISSION ☐ WARRANT	1230	SUNNY WARM

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
WILLIAM ROBERTS	SCDHS - Suffolk County Dept. of Health Services	(516) 451-4627

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
DONALD R. GANSER		WCCI	(212) 594-2118 (201) 785-0700	9 2 83 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

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EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	N/A

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

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

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

- TONS: unknown
- CUBIC YARDS: _____
- NO. OF DRUMS: _____

03 WASTE CHARACTERISTICS (Check all that apply)

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

III. WASTE TYPE

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

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

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SOL	BENZENE	71-43-2	STORM DRAIN	330	ppb
SOL	TOLUENE	108-88-3	"	4800	"
SOL	M-XYLENE	1330-20-7	"	114	"
SOL	O-XYLENE	"	"	90	"
SOL	P-XYLENE	"	"	35	"
SOL	ETHYLBENZENE	100-41-4	"	31	"

V. FEEDSTOCKS (See Appendix for CAS Numbers)

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

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

Suffolk County Dept. of Health Services (SCDHS)

EPA FORM 2070-13 (7-81)

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EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 463,000
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS LEAKING FROM TANKS AND DISCHARGING INTO STORM DRAIN HAS POTENTIAL FOR REACHING GROUND WATER SYSTEM.

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

HAZARDOUS MATERIALS DISCHARGED INTO STORM DRAIN AND ONTO GROUND SURFACE HAS POTENTIAL FOR RUN-OFF DURING STORMS.

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

No information available (N/A)

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

N/A

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

N/A

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

HAZARDOUS MATERIALS DISCHARGED ON GROUND SURFACE FOUND TO HAVE CONTAMINATED SOILS ON SITE.

01 [X] G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 463,000
02 [ ] OBSERVED (DATE: _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS LEAKING FROM TANKS AND INTO STORM DRAINS MAY MIGRATE DOWN GRADIENT AND AFFECT THE PUBLIC WATER SUPPLY.

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

N/A

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

N/A

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

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

N/A

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

N/A

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

N/A

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: UNKNOWN
04 NARRATIVE DESCRIPTION

INDOOR DRUM AND TANK STORAGE AREA NOT PROPERLY BERMED OR PROTECTED FROM INDOOR SPILLS.

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

N/A

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

HAZARDOUS MATERIALS LEAKING ONTO GROUND SURFACE MAY ENTER STORM DRAINS & SEWER SYSTEM DURING STORMS.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: 1982 & 1983) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION

HAZARDOUS MATERIALS HAVE BEEN OBSERVED LEAKING FROM DRUMS, TANKS AND A 6000 GALLON TANK TRUCK ON SITE.

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

N/A

III. TOTAL POPULATION POTENTIALLY AFFECTED: 463,000

IV. COMMENTS

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

SCDHS

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EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NY

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☒ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☒ C. DRUMS, ABOVE GROUND	200	
☒ D. TANK, ABOVE GROUND	16	
☒ E. TANK, BELOW GROUND	15	
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

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

05 OTHER

- ☒ A. BUILDINGS ON SITE

06 AREA OF SITE: ~4 (Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

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

OPEN DRUMS LEAKING ONTO GROUND SURFACE
STORAGE AREA NOT PROPERLY BERMED
6000 GAL. TANK MOCK LEAKING

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO
02 COMMENTS

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

SCDHS

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EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	N/A

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check all applicable)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☒	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. 0.25 (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 463,000

03 DISTANCE TO NEAREST DRINKING WATER WELL .25 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
34 (ft)	SOUTHEAST	0 (ft)	unknown (gpd)	☒ YES ☐ NO

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

PUBLIC WATER SUPPLY WELLS FOR SOUTH HUNTINGTON, DIX HILLS, EAST FARMINGDALE AND BABYLON (Suffolk County Water Authority); INDUSTRIAL WELLS; IRRIGATION OF LAWNS (CEMETERIES, GOLF COURSES, ETC).

10 RECHARGE AREA ☐ YES ☐ NO COMMENTS

11 DISCHARGE AREA ☐ YES ☐ NO COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☒ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
NONE KNOWN	☐	_____ (mi)
	☐	_____ (mi)
	☐	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	Four(4) THREE(3) MILES OF SITE
A. 2922 NO OF PERSONS	B. 9154 NO OF PERSONS	C. 153,593 NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.25 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ~3000

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0 (mi)

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

SITE IS LOCATED IN AN INDUSTRIALIZED AREA AMONG OTHER COMMERCIAL AND MANUFACTURING BUSINESSES. RESIDENTIAL AREA AND CEMETERIES SURROUNDING SITE.

EPA FORM 2070-13 (7-81)

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EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☒ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☒ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
1300 (ft)	unknown (ft)	unknown

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
15 (in)	2.7 (in)	<3 %	SOUTH	<3 %

09 FLOOD POTENTIAL

SITE IS IN — YEAR FLOODPLAIN

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

11 DISTANCE TO WETLANDS (5 acre minimum) N/A

ESTUARINE: A. — (mi)

OTHER: B. — (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species) N/A

— (mi)

ENDANGERED SPECIES: —

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. 1.5 (mi)	C. — (mi)	D. — (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

SITE IS RELATIVELY FLAT TERRAIN.
AREA IS ALMOST ENTIRELY DEVELOPED AND PAVED.

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

SCDHS
WCCI SITE SURVEY

EPA FORM 2070-13 (7-81)

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EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NIA

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
		NONE	
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
	NONE

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF _____ (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS WOODWARD - CLYDE CONSULTANTS FILES

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

PHOTOGRAPHS OF FACILITY

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

SCDHS
WCCI SITE SURVEY

EPA FORM 2070-13 (7-81)

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EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	N/A

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
MATHEW MILLER, GEN. MGR.	

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

05 CITY	06 STATE	07 ZIP CODE
FARMINGDALE	NY	11735

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER

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

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

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

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

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

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

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

12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable list most recent first)

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

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

05 CITY	06 STATE	07 ZIP CODE

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

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EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER		

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME		11 D+B NUMBER
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE

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

01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME		11 D+B NUMBER
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE
10 NAME		11 D+B NUMBER
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE
10 NAME		11 D+B NUMBER
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE
14 CITY	15 STATE	16 ZIP CODE

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

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. ON-SITE GENERATOR N/A

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

III. OFF-SITE GENERATOR(S)

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

IV. TRANSPORTER(S)

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

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

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. PAST RESPONSE ACTIVITIES See next page

01 ☐ A. WATER SUPPLY CLOSED 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ C. PERMANENT WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ D. SPILLED MATERIAL REMOVED 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ E. CONTAMINATED SOIL REMOVED 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ F. WASTE REPACKAGED 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ G. WASTE DISPOSED ELSEWHERE 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ H. ON SITE BURIAL 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ I. IN SITU CHEMICAL TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ J. IN SITU BIOLOGICAL TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ K. IN SITU PHYSICAL TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ L. ENCAPSULATION 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ M. EMERGENCY WASTE TREATMENT 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ N. CUTOFF WALLS 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ P. CUTOFF TRENCHES/SUMP 04 DESCRIPTION	02 DATE	03 AGENCY
01 ☐ Q. SUBSURFACE CUTOFF WALL 04 DESCRIPTION	02 DATE	03 AGENCY

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NJA

II. PAST RESPONSE ACTIVITIES (Continued)

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

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

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

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

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

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

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

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

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

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

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

01 ☒ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE 12/2/82 03 AGENCY _____
04 DESCRIPTION
WASTES SCAVANGED - CREOSOTE RESIDUE, ACRYLIC LATEX CAULKING WASTE WATER BY MARINE POLUTION CONTROL, INC.

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

SCDHS

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	N/A

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

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

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

SCDHS

3.0
SITE HISTORY

Cantor Brothers, Inc. has been operating as a chemical repacker and distributor at the site since at least 1975 (the first reported inspection by SCDHS was on 6/18/75) (SCDHS, 1983c). The present facility has been in existence since at least 1964, the year most of the underground tanks were reported to have been installed (SCDHS, 1982c).

Site inspections conducted by SCDHS since 1980 have documented chemical spills, illegal discharge of hazardous substances, leaking drums and tanks, and improper storage of drums on the site (SCDHS, 1983d).

In June 1982 and again in August 1982, violations of Article 12 of the Suffolk County Sanitary Code were observed by SCDHS inspectors. These violations included: (1) numerous leaking 55-gallon drums stored outside; (2) no provisions for spill contaminant inside the facility; (3) 6000-gallon tanker truck containing creosote and oil found leaking; and (4) underground tanks not pressure tested (SCDHS, 1982a; SCDHS, 1982b). The SCDHS informed Cantor Brothers, Inc. of these violations and ordered them to take remedial action in a letter dated August 30, 1982 (SCDHS, 1982c). It is not clear as to how many of these violations were remedied.

In April 1983, hazardous chemicals were again observed to be discharging from drums and tanks on the site. Black stains suspected of being creosote were noticed on the ground around the site and leaking from drums (SCDHS, 1983a). Strong odors of creosote and fuel oil were also detected by the SCDHS

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inspector. Samples of the industrial waste were taken from a storm drain on the south side of the building in April 1983. Upon analysis, the following substances were found in concentrations above the maximum allowable standards: benzene - 330 ppb, toluene - 4800 ppb, m-xylene - 114 ppb, and o-xylene - 90 ppb (SCDHS, 1983e).

In June 1983, a SCDHS inspection indicated that the tanks were in the process of being Kent Moore tested, creosote drums were scavanged by a licensed hauler, and wastewater operations were being properly conducted (SCDHS, 1983b). However, the creosote-soaked soils were still not removed.

To date, no known permits have been issued to Cantor Brothers, Inc.. Access to the site was denied by Mr. Matthew Miller, General Manager of Cantor Brothers for a site survey (WCC Site Survey, 1983). He indicated that Cantor Brothers, Inc. was still in negotiations with the SCDHS and until matters were resolved, no permission would be granted to visit the site.

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4.0
SITE DATA

4.1 Site Area Surface Features

The site of Cantor Brothers, Inc. is located in a generally flat area with an average ground surface slope of less than 3 percent.

There are no surface water features in the vicinity of the site. The area surrounding the site is paved and surface run-off is via existing storm drains.

The predominant land use in the area is industrial. The site is surrounded by existing manufacturing and commercial facilities. Large cemeteries are located immediately to the south and east of the site vicinity.

4.2 Site Hydrogeology

4.2.1 Ground Water Occurrence. Ground water in the site area occurs in unconsolidated sediments of Pleistocene and Cretaceous age. These deposits are approximatley 1300 feet thick and overlie Precambrian crystalline bedrock (Taney, 1961; Jensen and Soren, 1974). The low hydraulic conductivity bedrock is considered to be the bottom of the ground water reservoir (Jensen and Soren, 1974).

The site area is directly underlain by glacial outwash deposits consisting of coarse sand and gravel. These deposits comprise the upper glacial aquifer and are probably less than 100 feet thick. Ground water in the upper glacial aquifer occurs at an approximate elevation of 66 feet above MSL (Donaldson and

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Koszalka, 1983) which translates to approximately 34 feet below the ground surface at the site (USGS, 1979b). The water table has a hydraulic gradient of about 8 feet per mile (Kimmel and Braids, 1980) in a southeasterly direction.

The next major water bearing unit underlying the site area is the Cretaceous Magothy Formation. The Magothy aquifer is a major aquifer throughout most of Long Island and is hydraulically linked to the upper glacial aquifer. The Magothy aquifer consists of predominantly fine to coarse sand interbedded with clay, silt and lignite. It is believed to be approximately 750 feet thick in the site area (Taney, 1961; Jensen and Soren, 1974).

The Magothy aquifer directly overlies the clay member of the Cretaceous Raritan Formation. The clay, in turn, overlies and confines the Lloyd Sand member of the Raritan Formation, which constitutes the deep confined aquifer in the site area (Taney, 1961; Jensen and Soren, 1974). The Lloyd Sand consists of stratified beds of sand, gravel, silt and clay.

Underlying the members of the Raritan Formation is crystalline bedrock of Precambrian age. The bedrock surface dips approximately 60 feet per mile to the southeast, as do the overlying Cretaceous formations (Taney, 1961; Franke and McClymonds, 1972).

4.2.2 Ground Water Quality. Ground water quality in Suffolk County is generally good, typically containing less than 100 ppm dissolved solids (51 mg/l in the vicinity of the Babylon landfill). Local contamination by domestic waste, industrial waste, and road salt has caused some alteration of the regional quality of the ground water (Kimmel and Braids, 1980).

Water quality samples from the Babylon landfill (approximately 1-1/2 miles southeast of the site) show that the water in the upper glacial aquifer has been contaminated by domestic waste with high concentrations of ammonia, nitrate, calcium, sodium, sulfate, and chloride (Kimmel and Braids, 1980).

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4.3 Past Sampling and Analysis

Past sampling and analysis at the site has been confined to samples of the waste collected from surface puddles, storm drains and open drums (SCDHS, 1982a; SCDHS, 1983a). All available analytical results are included in Appendix B.

There has been no known soil, water, and air sampling, nor water quality analysis, from the vicinity of the site.

5.0
DATA ADEQUACY

Available data were generally adequate for HRS scoring of the Cantor Brothers, Inc. site. Two data gaps may, however, present a somewhat incomplete score with respect to the Ground Water Route and the overall Migration Route scores. Incomplete data for the depth to aquifer of concern, and lack of any data on the hazardous waste quantity, most likely serve to decrease the true Ground Water Route score. In lowering the Ground Water Route score, these two gaps make Direct Contact the route of concern.

6.0
WORK PLAN

6.1 Objectives

Because there has been no reported previous sampling and analysis of water, soil or air at the site, the objective of this proposed work plan is to collect essential field information required to adequately prepare a final HRS Score and recommend remedial action if required. For the Cantor Brothers, Inc. site, the work plan will primarily address questions concerning ground water flow and quality and extent of soil contamination.

6.2 Field Investigation Plan

6.2.1 Geophysical Studies. A geophysical survey utilizing the terrain conductivity technique will be performed at the site. In cases where alleged liquid wastes have leaked from underground tanks or seeped into the subsurface soils, this technique may be utilized to locate the subsurface plumes resulting from that leakage. For this purpose, measurements will be taken around the site vicinity. Furthermore, these measurements could help identify anomalous conductivity distributions that may indicate buried metallic objects such as tanks and pipes. Ground water flow is assumed to be in a southesterly direction; therefore, the survey will concentrate in this area to determine any downgradient plume. The data will be plotted on maps and contoured. These contour maps will provide the basis for refining the exact location of ground water monitoring wells.

It is anticipated that a two person team will require two days to perform the conductivity survey, with readings taken for exploration depths to approximately 50 feet.

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6.2.2 Monitoring Wells

6.2.2.1 Installation. Monitoring wells will be installed to provide data pertinent to both water chemistry and characterization of the stratigraphy and ground water regime at the site. It is recommended that four monitoring wells be installed, at the approximate locations shown in Figure 2. Finalized well locations will be determined after the geophysical data has been plotted and reduced. These locations will depend also on a utility search in order to avoid underground obstacles and on accessibility around the plant building.

One well (MW-1) will be installed at an upgradient location. This well will provide background data of the ground water flowing into the area.

Three monitoring wells will be required to monitor downgradient flow directions and water quality. Wells MW-2, MW-3, and MW-4 will be installed at the approximate locations shown in Figure 2. These locations will provide an opportunity for determining the extent and direction of waste contamination.

All monitoring wells will be installed so as to sample the upper 10 feet of ground water. It is assumed that the ground water table will be within 35 feet of the ground surface and that total well depth will be 50 feet.

Borings will be advanced through the overburden by 6-inch I.D. hollow stem augers or driven casing, with continuous split spoon sampling through the upper 15 feet of soil, and at 5-foot intervals below 15 feet. Soil samples will be classified in the field by a hydrogeologist. Selected samples will be sent to our geotechnical laboratory where grain size analyses and Atterberg Limits tests will be performed. To maximize information on any volatile organic contaminants, headspace analyses will be conducted on soil samples, using a portable gas chromatograph. These data will be used to evaluate relative concentrations of organic contaminants in various stratigraphic horizons.

Slotted 3-inch I.D. PVC well screen will be installed over 10-foot intervals in each well, with a riser of flush joint, threaded, 3-inch I.D. PVC pipe. A gravel pack will be completed to approximately 2 feet above the top of the screen, where a 1-foot bentonite seal will be installed. To further assure that water samples will be representative of the screened interval, the remaining annular space will be grouted, and a protective steel casing will be installed. The well will be capped in a manner so no unauthorized entry or contamination can occur. After installation, the wells will be developed by pumping, to remove any fine grained material.

It is estimated that 12 days will be required for drilling and well installation. This time also includes surveying of well elevation, organic vapor analysis, and slug-type permeability testing.

6.2.2.2 Water Elevations. Ground water depths will be measured at the time of well development and again at the time of pumping. Relative well elevations will be surveyed by WCC personnel. Water elevations will be plotted and used to develop contours of the ground water table at the site. Based on this map, the direction(s) of ground water flow will be calculated.

Flow and gradient data will be fundamental input in quantifying site conditions and will be assessed together with plume geometries (if any) inferred from geophysical survey data.

6.2.2.3 Aquifer Testing. "Slug"-type permeability tests will be conducted in each newly installed well to evaluate the permeability of materials spanning the screened interval. The method is a rapid means by which the in-situ permeability in the immediate vicinity of a monitoring well can be approximated. The test does not involve pumping of potentially contaminated water, and results generally suffice for ground water flow analysis.

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6.2.3 Sampling and Analysis Plan

6.2.3.1 General Plan. Sampling and analysis plan to be supplied by NYSDEC.

6.2.3.2 Sampling Parameters. Previous sampling at the site is limited to waste material collected from drums and spills on site. Therefore, the laboratory analysis will focus on chemical screening techniques to determine the range of concentration and the migration of contamination in the ground water and soils underlying the site. Sampling parameters will cover a variety of contaminants, including heavy metals and volatile and non-volatile organics. In addition, air quality will be monitored using an HNU photoionization analyzer or an Organic Vapor Analyzer (OVA) to determine whether volatile organics are being released from the site towards adjacent residential areas. It is estimated that two days will be required for field sampling and air monitoring at the site. Sample types and chemical parameters are summarized in Table 6-1.

6.2.3.3 Sampling Locations. One water sample and one soil sample from each of the four ground water monitoring wells will be analyzed. Results of each pair of analyses will be compared to evaluate any downward migration of contaminants through soil. Ground water analyses will be evaluated in terms of other hydrogeologic data to evaluate the presence, distribution, and migration directions of any ground water contaminant plume.

Air quality will be assessed at upwind and downwind locations utilizing an Organic Vapor Analyzer (OVA) or HNU photoionization detector.

6.3 Health and Safety Plan

To be supplied by NYSDEC.

6.4 Cost Estimate

Costs for Phase II work were developed based on assumptions, rates, and charges described in WCC's cost proposal submitted to NYSDEC on 29 October

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1982. Costs have been grouped by task, and estimates are presented in Tables 6-2, 6-3, 6-4, 6-5, and 6-6. Costs may be impacted by the contents of the sampling and analysis plan or the health and safety plan to be supplied by NYSDEC. The total estimated cost for Phase II investigations at the Cantor Brothers, Inc. site is $32,923.

Table 6-1. PROPOSED CHEMICAL ANALYSES AT THE CANTOR BROTHERS, INC. SITE.

	ANALYSES			
Sample Type	Metals	Volatile Organics	Non-Volatile Organics	Remarks
Ground Water	X	X	X	One sample from each of four wells.
Soil	X	X	X	One sample from unsaturated zone at each of four wells.
Air		X		Upwind and downwind of the site using HNU or OVA.

TABLE 6-2. GEOPHYSICAL STUDIES COSTS.

			Estimated Cost	Total Estimated Cost
1. Direct Material				
a. Purchased Parts				
b. Subcontract Items				
c. Other				
2. Material Overhead				
	Estimated Hours	Rate/ Hour		
3. Direct Labor				
Senior Staff Engineer/ Geologist/Scientist	40	12.62	505	
		Total Direct Labor		$ 505
	O H Rate	X Base		
4. Labor Overhead	120%	505	606	
		Total Labor Overhead		$ 606
5. Special Testing				
6. Special Equipment-Terrain Conductivity Equipment			(EM-34)	$ 400
7. Travel				
a. Transportation			25	
b. Subsistence			120	
		Total Travel		$ 145
8. Consultants				
9. Other Direct Costs				
10.		Total Direct Costs and Overhead		$1,656
11. General and Administrative Expense (rate 15% of Cost Element No's. 1, 3, 4, 7, 9)				$ 188
12. Royalties				
13.			Sub-Total	$1,844
14. Fee			166	
15.		Total Estimated Cost		$2,010

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TABLE 6-3. DRILLING/WELL INSTALLATION COSTS.

			Estimated Cost	Total Estimated Cost
1. Direct Material				
a. Purchased Parts				
b. Subcontract Items			$10,420	
c. Other				
			Total Direct Material	$10,420
2. Material Overhead				
	Estimated Hours	Rate/ Hour		
3. Direct Labor				
Senior Staff Engineer/ Geologist/Scientist	120	12.62	1,514	
			Total Direct Labor	$ 1,514
	O H Rate	X Base		
4. Labor Overhead	120%	1,514	1,817	
			Total Labor Overhead	$ 1,817
5. Special Testing				
6. Special Equipment				
Century Organic Vapor Analyzer			250	
Photovac 10A10 Gas Chromatograph			450	
			Total Special Equipment	$ 700
7. Travel				
a. Transportation			76	
b. Subsistence			840	
			Total Travel	$ 916
8. Consultants				
9. Other Direct Costs				
10.			Total Direct Costs and Overhead	$15,367
11. General and Administrative Expense (rate 15% of Cost Element No's. 1, 3, 4, 7, 9)				$ 2,200
12. Royalties				
13.			Sub-Total	$17,567
14. Fee			1,581	
15.			Total Estimated Cost	$19,148

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TABLE 6-4. SAMPLING AND ANALYSIS COSTS.

			Estimated Cost	Total Estimated Cost
1. Direct Material				
a. Purchased Parts				
b. Subcontract Items			$4,400	
c. Other				
		Total Direct Material		$4,400
2. Material Overhead				
	Estimated Hours	Rate/ Hour		
3. Direct Labor				
Senior Staff Engineer/ Geologist/Scientist	20	11.54	231	
		Total Direct Labor		$ 231
	O H Rate	X Base		
4. Labor Overhead	120%	231	277	
		Total Labor Overhead		$ 277
5. Special Testing				$1,456
6. Special Equipment - Pumps, Bailers				$ 100
7. Travel				
a. Transportation			25	
b. Subsistence			60	
		Total Travel		$ 85
8. Consultants				
9. Other Direct Costs				
Sample Shipment			250	$ 250
10.		Total Direct Costs and Overhead		$6,799
11. General and Administrative Expense (rate 15% of Cost Element No's. 1, 3, 4, 7, 9)				$ 786
12. Royalties				
13.			Sub-Total	$7,585
14. Fee			683	
15.		Total Estimated Cost		$ 8,268

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TABLE 6-5. REPORT PREPARATION COSTS.

			Estimated Cost	Total Estimated Cost
1. Direct Material				
a. Purchased Parts				
b. Subcontract Items				
c. Other				
2. Material Overhead				
	Estimated Hours	Rate/ Hour		
3. Direct Labor				
Senior Staff Engineer/ Geologist/Scientist	30	12.62	379	
Draftsperson	10	10.24	102	
Typist	3	8.44	25	
		Total Direct Labor		$ 506
	O H Rate	X Base		
4. Labor Overhead	120%	506	607	
		Total Labor Overhead		$ 607
5. Special Testing				
6. Special Equipment				
7. Travel				
a. Transportation				
b. Subsistence				
8. Consultants				
9. Other Direct Costs			150	
		Total Other Direct Costs		$ 150
10.		Total Direct Costs and Overhead		$ 1,263
11. General and Administrative Expense (rate 15% of Cost Element No's. 1, 3, 3, 7, 9)				$ 189
12. Royalties				
13.			Sub-Total	$ 1,452
14. Fee			131	
15.		Total Estimated Cost		$ 1,583

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TABLE 6-6. PROJECT MANAGEMENT COSTS.

	Estimated Hours	Rate/ Hour	Estimated Cost	Total Estimated Cost
1. Direct Material				
a. Purchased Parts				
b. Subcontract Items				
c. Other				
2. Material Overhead				
3. Direct Labor				
Principal In Charge	2	33.32	67	
Activity Leader	10	20.92	209	
Project Manager	10	20.91	209	
Asst. Prj. Engr/Geol/Sci.	10	14.96	150	
Typist	4	8.44	34	
		Total Direct Labor		$ 669
	O H Rate	X Base		
4. Labor Overhead	120%	669	803	
		Total Labor Overhead		$ 803
5. Special Testing				
6. Special Equipment				
7. Travel				
a. Transportation			55	
b. Subsistence				
		Total Travel		$ 55
8. Consultants				
9. Other Direct Costs				
10.		Total Direct Costs and Overhead		$1,527
11. General and Administrative Expense (rate 15% of Cost Element No's. 1, 3, 4, 7, 9)				$ 229
12. Royalties				
13.			Sub-Total	$1,756
14. Fee			158	
15.		Total Estimated Cost		$1,914

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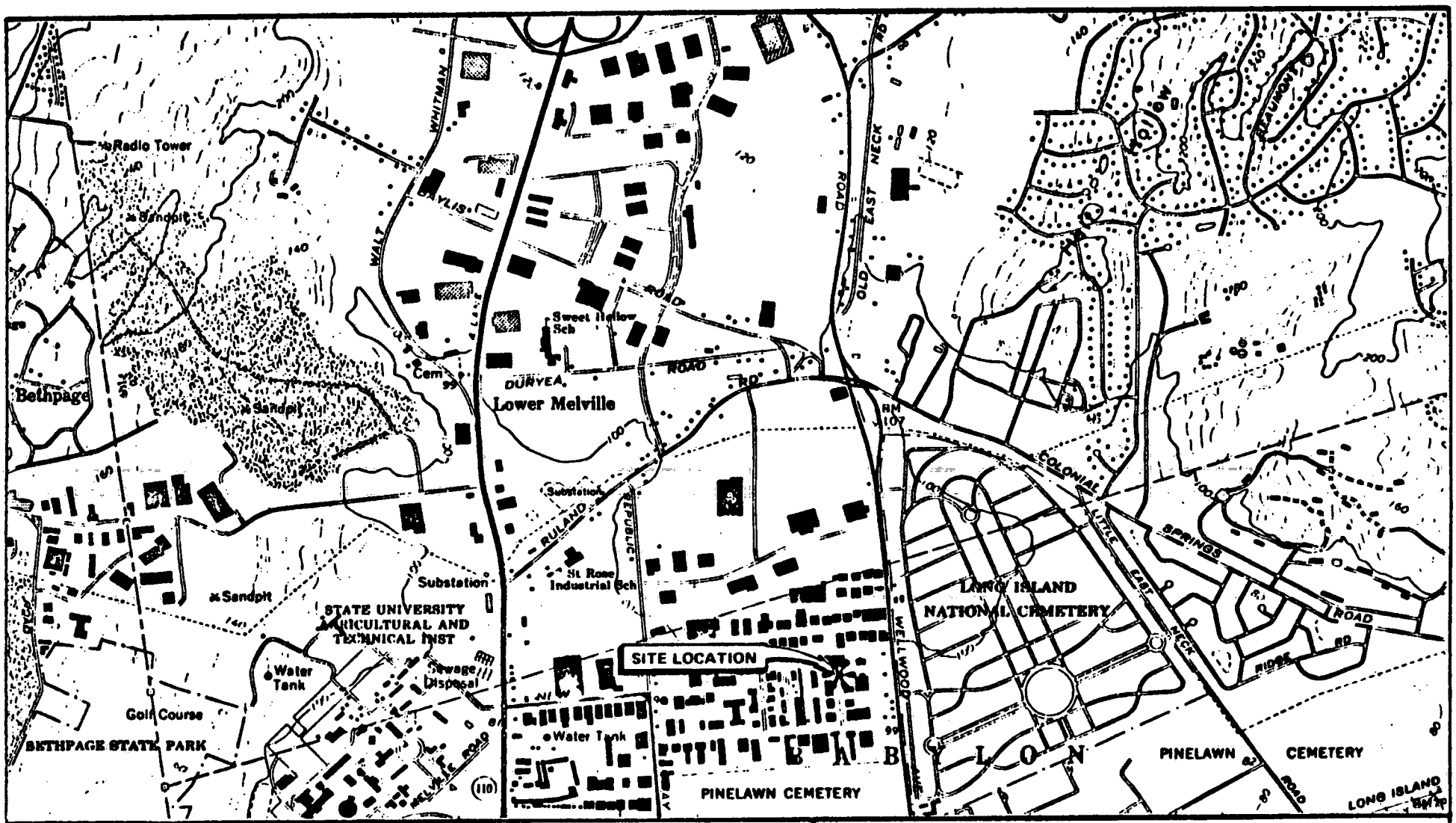

NOTE: BASE MAP FROM USGS, HUNTINGTON QUAD, 1979

SITE LOCATION MAP
CANTOR BROTHERS, INC.

WOODWARD—CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
WAYNE, NEW JERSEY

DR. BY:	CIG	SCALE:	1 IN. = 2000 FT	PROJ. NO.:	82C4548-14
CK'D. BY:	AJS	DATE:	31 AUGUST 1983	FIG. NO.:	1

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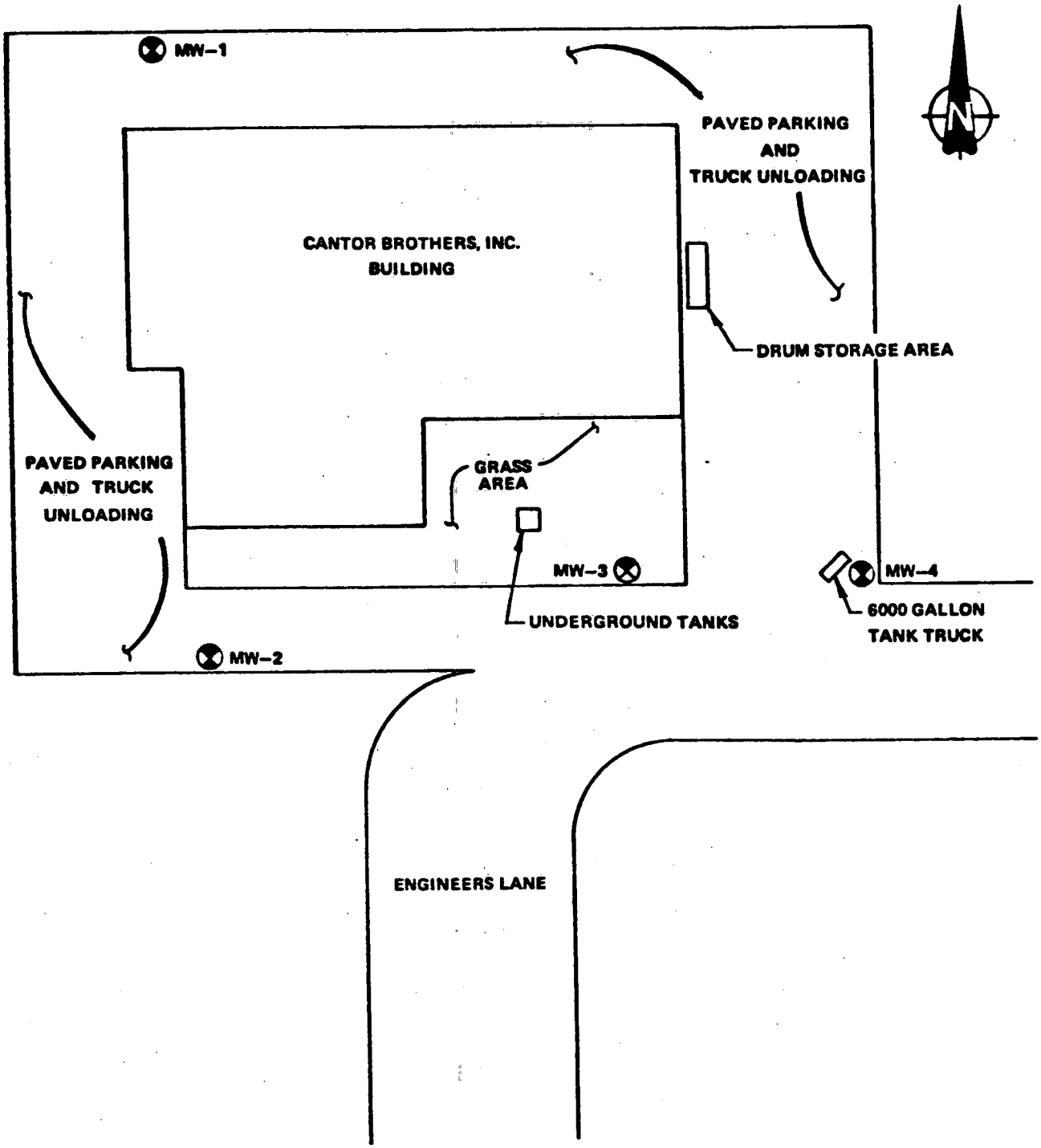

NOTE: FROM FIELD SKETCH MADE DURING SITE SURVEY (WCC, 1983)

LEGEND

⊗ PROPOSED MONITORING WELL

LOCATION PLAN
FOR PROPOSED PHASE II INVESTIGATION
CANTOR BROTHERS, INC.

WOODWARD—CLYDE CONSULTANTS, INC.
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
NEW YORK, NEW YORK

DR. BY: BTD	SCALE: NOT TO SCALE	PROJ. NO.: 82C4548-14
CK'D. BY: AJS	DATE: 6 SEPTEMBER 1983	FIG. NO.: 2

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APPENDIX B

APPENDIX A
REFERENCES

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(4) LARGE CREOSOTE VAT STORED IN PARKING LOT
(5) 16/55 GAL EMPTY DRUMS STORED EAST SIDE OF BUILDING ADJACENT TO LOADING DOCK
47/55 GAL DRUMS STORED IN PARKING LOT ON EAST SIDE OF BUILDING. THESE DRUMS CONTAINED LATEX WASH WATER AND BEING WITHOUT TOPS WERE OVER FLOWING FROM RAIN WATER.
30/55 GAL DRUMS STORED IN REAR OF PARKING LOT ON EAST SIDE OF BUILDING. MOST DRUMS WERE ON THEIR SIDES AND APPEARED TO BE LEAKING CREOSOTE FOR SOME TIME.
50/55 GAL EMPTY CREOSOTE DRUMS STORED ALONG NORTH PROPERTY LINE. SOME DRUMS WERE OBSERVED RAIN WATER AND CREOSOTE MIXTURE.
(6) FOUR LARGE MIXING AND PACKAGING UNITS IN WORK AREA WITH FLOOR DRAINS AT DOORS
(7) WORK AREA HAS NUMEROUS VATS AND DRUMS OF CHEMICAL WITH NO CONTAINMENT STRUCTURE

NOTE THE FOLLOWING DOCUMENTS WERE DELIVERED TO MATTHEW MILLER
(1) COPY OF 6/2/82 INSPECTION REPORT
(2) REVISED COPY OF ARTICLE 12 DATED 7/28/82
(3) SCAVENGER LIST PRINTED BY THE STATE of NEW YORK
(4) TANK TESTING CONTRACTOR LIST PRINTED BY SUFFOLK COUNTY

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

The following information was noted upon arriving at the Cantor Bros site on 20 April 83, 9:00 am.

① Numerous 55 gallon drums with black stains noted that apparently had spilled from these drums. (Strong odor of cresote noted)

② The loading dock area was completely filled with liquid. (Some portions appeared cloudy white.)

③ Black substance noted along east wall and ground adjacent to the loading dock. Black substance appeared to be emitting from "scuppers" along east wall.

④ Tanker truck still present on site on east side of the building in loading dock area. (Black stains also noted around tanker truck.

⑤ Large wooden vat still on site with black stains around it, emitting strong odor of cresote. (Will not sample without assistance & respirator)

After observing the above violations, I entered the building to speak to Mr Miller about the above mentioned conditions, and to notify him that I was there to collect phenol samples.

I spoke to Ms Lia Cons (Receptionist) who asked me if I had an appointment. When I told her that I did not, Ms Cons stated that Mr Miller did not speak to anyone without an appointment. I then explained that the department is interested in seeing a facility in its natural state & that Mr Akras had informed Mr Miller that someone would be back to his facility to procure samples.

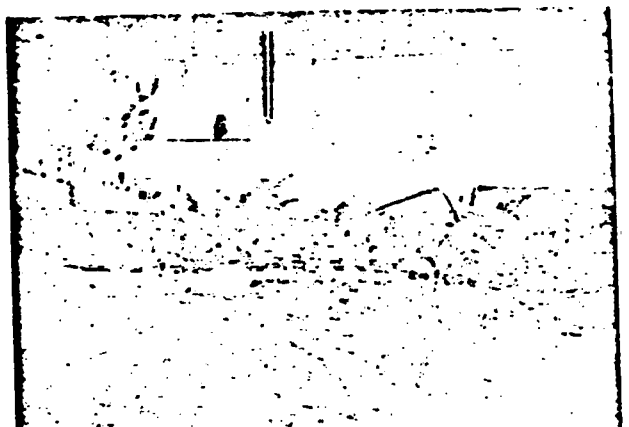
Ms. Cons then went to speak to Mr Miller (apparently) & when she returned she said Mr Miller never heard of or spoke to Mr Akras & that he was a very busy man & would not see me without an appointment.

On 21 April 83 I met Mr Finkenberg at the Cantor Bros site at approximately 8:30 am. At this time it was noted that:

① A tanker truck was making a delivery at the fill station in front of the building. Black spillon

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

② evidence of inground tanks noted on front lawn. (Photo 4JJ421)
③ Person (possibly an employee?) noted to be applying dirt to area around storm drain, front of the building approximately 15 ft NE of front entrance to Cantor Bros. (See upper right hand portion of photo labeled 3JJ421)



(4JJ421)

④ ≅6000 gallon blue tanker truck still present on east side of building. (See photos labeled 5JJ421; 6JJ421)
⑤ "Scuppers" on east wall of Cantor Bros building appear to be discharging black substance to ground. (See photos 7JJ421, 8JJ421) This area is in close proximity to loading dock area. Loading dock houses a storm drain.
⑥ Loading dock previously filled with white cloudy material pumped out. Storm drain was also pumped dry, clean fill noted both in the storm drain and around area of storm drain. (See photos 9JJ421 + 10JJ421)
⑦ Large wooden vat still present on east side of building. I was unable to remove cover to ascertain if the vat contained material but concluded it did when I noted a very strong odor of creosote emitting from it. Black stains also noted around area of the vat. Vat appears to be leaking. (See photo 11JJ421)
⑧ Drums storage on east side of building (Photo 12JJ421)
⑨ Numerous 55 gallon drums on east side of building, lying on their sides, mostly open topped. Black material appears to have spilled from them. Area around the drums black. (See Photos 13JJ421, 14JJ421, 15JJ421)

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

odor." (Sample procured from the storm drain & delivered to H2M for analysis.)

(11) Hand delivered a copy of Article 12 and six notices of violation to Ms Cons (Receptionist) and asked her to deliver the material to Mr Miller. I also ask Ms Cons to have Mr Miller call the Dept. for an appointment to discuss the multiple violation conditions noted.

Joanne Johnson,
22 April 83

* 27 April 83
Mr Miller has not to this date contacted dept.

APPENDIX B
PERTINENT INFORMATION

R-76

COUNTY OF SUFFOLK

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

July 8, 1982

Cantor Bros., Inc.
Engineers Lane
Farmingdale, N.Y. 11735

Att'n: Mr. E. Cantor

Re: Drum Storage of Toxic or Hazardous Materials

Gentlemen:

A recent inspection of your facility by a representative of this Department revealed that your facility is in violation of Article 12 of the Suffolk County Sanitary Code.

Article 12 regulates the storage and handling of both raw and waste toxic or hazardous materials. Section 1203 defines a toxic or hazardous material as any substance, solution or mixture which may present a potential hazard to human health or drinking water. All existing or new facilities that store drums of toxic or hazardous materials (raw or waste) must obtain a permit to operate issued by the Department.

Prior to issuance of the permit, all storage areas for drums or other portable containers must meet construction standards acceptable to the Department. Containers must be stored on a concrete surface surrounded by a berm or curb to contain any spillage or leakage. Further details can be found in the enclosed Standards for Construction of Storage Areas for Portable Containers. Please complete and return 4 copies of the enclosed application for a permit to construct with plans for upgrading your facility within 60 days from the date of this letter.

Your plans will be reviewed for conformance with the enclosed standards. Facilities with approvable plans will be issued a permit to construct by the Department which will be valid for one year. Please note that a $100 review fee is required for facilities having storage for a total of 25 or more 55 gallon drums or equivalent.

If you have any questions, you may contact me at 234-2622, ext. 243.

Very truly yours,

Peter R. Akras
Ass't. Public Health Engineer
Hazardous Materials Management
PRA/rt
Encl.

[illegible] 8/82 - Mat Miller - Claims drums contain rainwater contaminated with creosote. Wants reinspection - bring list [illegible] - claims tanks are registered

5 JETSON LANE, P.O. BOX G
CENTRAL ISLIP, N.Y. 11722
(516) 234-2622

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SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
65 JETSON LA., PO BOX G, CENTRAL ISLIP, NY. 11722
(516) 234-2622

ME OF CILITY Cantor Bros Inc	OWNER/ OFFICER PRE E CANTOR SEC. MARTIN CANTOR	PAGE 1 OF
COMPANY NAME S/A/A	CONTACT S/A/A	TEL 694 666
ANT DRESS Engineer Lane	VILLAGE Farmingdale TOWN Babylon	ZIP 11735
MAILING ADDRESS S/A/A		

TE 6/2/82	TIME	ORIG. PERIODIC RE.	WASTE NO WASTE H&H	SEWAGE SYSTEM	PUBLIC PRIVATE

DUSTRY Distributor of Paint Solvents

DES OR PDES PERMIT? YES NO PERMIT NO.	360 PERMIT? YES NO PERMIT NO.

AVENGER TEL.

CAVENGER APPROVED YES NO	PICK UP RECORDS AVAILABLE YES NO	RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION YES NO

ATING SYSTEM-MFG NAME	FUEL TYPE	FIRING RATE
NCIN. ME	WASTE BURNED	RATE

RUM STORAGE YES NO	NUMBER OF DRUMS STORED NUMEROUS	TYPE OF MATERIAL STORED WASTE RAW BOTH
K STORAGE YES NO	ABOVE GROUND UNDER GROUND BOTH	TYPE OF MATERIAL STORED WASTE RAW BOTH
AVE TANKS EEN REGISTERED YES NO	CONDITION OF ABOVEGROUND TANKS GOOD FAIR POOR	ANY ART. XII VIOLATIONS YES NO

5/28/82 REFUSED INSPECTION TODAY APPOINTMENT MADE FOR 6/2 IN THE AFTERNOON

6/2/82 ① 13 undiscard solvent tanks in front lawn tanks form 1 gasoline tank (4000 gal) west side of property in violation of Article 12

② Spill SE corner of building (white substance) into storm drain

③ 5000 gal tank truck back stored in parking lot containing creosote

④ 35/55 gal open drums unknown substance stored outside east side of building (30) 55 gal drums stored outside east side building containing creosote some drums are leaking large (≈500 gal) creosote wet stored in parking lot (5) 55 gal drums of unknown stored at north side of building

MISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF SPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

REINSPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY SULT IN A HEARING AND/OR FINE.

IGN. OF PERSON EC. REPORT	TITLE	Bruce Clarke Stark INSPECTOR

5 6/81

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5) Four large mixing and packaging units in work area with floor drains at doors
6) Work area has numerous vats + drums of chemical with no containment structure
7) Loading dock 25/30 gal drums lacquer and 45/55 gal drums of lacquer with no provisions for spill containment
8) Note Building has water sprinkler system for fire control.

3/24/82 The problems noted on 6/2/82 remain unchanged except lacquer drums were removed from loading dock

The following new violations were noted

1) 10/55 gal drums stored by east door
2) 47/55 gal drums containing white fluid stored in front of east door (Mr Miller) stated contents wash water from mixing vats
3) Green tanker truck back east side of building Mr Miller stated contained creosote and fuel oil. Piping from truck to building was leaking.

The documents were delivered to Mr Miller
1) copy of 6/2/82 inspection report
2) Revised copy of Article 12 date 7/20/82
3) Scavenger list from State of New York
4) List of trade testing contractors.

COUNTY OF SUFFOLK

Peter's copy

DEPARTMENT OF HEALTH SERVICES

Aug. 30, 1982

Mr. Matthew Miller, General Manager
Cantor Bros., Inc.
Engineers Lane
Farmingdale, N.Y. 11735

Re: Storage and Handling of
Toxic or Hazardous Materials

Dear Mr. Miller:

On Aug. 24, 1982 Mr. Bruce Stark of this Department and I conducted a reinspection of your facility for compliance with Article 12 of the Suffolk County Sanitary Code. This reinspection was conducted at your request since you were not present during Mr. Stark's initial inspection on June 2, 1982.

After the inspection we discussed with you the violations that were found and the corrective actions that will be necessary to eliminate the violations. The purpose of this correspondence is to enumerate these violations and to clarify the corrective actions that should be taken as follows:

1. Outside Drum Storage - During the inspection it was noted that you were storing drums containing waste materials outdoors unprotected in violation of Section 1215 of Article 12. Specifically, there were 4 separate areas where drums were being stored:

   a. Approximately 16 apparently empty drums stored along the east side of the building adjacent to the unloading dock.
   b. Approximately 47 drums on the east side of the building containing washwater from the cleaning of your latex caulk mixing tanks. Many of these drums had no tops and contained rainwater in addition to the washwater.
   c. Approximately 30 "empty" drums of creosote laying on their sides on the east side of the building. From the condition of the asphalt in this area it appears

15 Horseblock Pl. Farmingville, N.Y. 11738 • 516/451-4649

R-80

that creosote has leaked on the ground and, in fact, some of these drums may still have creosote residue in them.

d. Approximately 50 empty creosote drums along the north property line. Most of these drums contained rainwater that had been contaminated with residual creosote.

Article 12 requires that drums of toxic or hazardous materials be stored in a roofed area, on a concrete pad surrounded by a dike to contain any spillage. Empty drums containing no visible residue may be stored outdoors provided that they are capped and covered to exclude rainwater.

You indicated to me during the inspection that the creosote drums have been on your property for the last 2 or 3 years. This condition cannot be allowed to continue because of the possibility of groundwater contamination. Within the next 30 days you should provide this Department with the name of the firm that has been contracted to remove these drums. Because rainwater contaminated with creosote is a toxic material, it must be removed by a N.Y.S. licensed industrial waste hauler. A list of these haulers was given to you after our inspection. Within 60 days from the date of this letter all these drums must be removed.

EVAPORATES ≈ 20 GAL OF WASHWATER

The drums containing washwater from the caulking tank must also be removed or stored in an indoor protected area. You should investigate the possibility of recycling or evaporating this wastewater in order to reduce the amount that must be disposed of. You may want to contact a consulting engineer who can recommend a recirculating or evaporation system. These drums must also be removed or relocated within the next 60 days.

2. Interior Storage - During the inspection it was noted that you have several mixing and dispensing areas inside your facility for creosite, caulking compound, paints and thinners. Floor drains are located in several areas of your plant and trough drains are located at some of the entranceways. Drums of various chemicals are also stored in this area.

R-81

Article 12 requires that indoor storage of toxic or hazardous materials be on a concrete surface surrounded by a dike or curb for spill control. For indoor storage, tanks or mixing tanks, Section 1214 of Article 12 requires that a dike be constructed to contain 110% of the volume of materials being stored. For drum storage, a dike is required to contain 30% of the total volume of drums being stored.

Within the next 30 days you should submit plans and applications to upgrade the inside of your plant. Application instructions and construction requirements can be found in the material that was enclosed with my letter of July 8, 1982.

No modifications to your facility are allowed until your plans have been approved by the Department.

Your plans should show that all floor drains and trough drains will be permanently sealed with concrete. Your plans should also show that dikes or curbs will be constructed around the tanks and drum areas in accordance with Departmental standards. In lieu of diking each individual area, you may want to consider constructing ramps at all the entranceways to contain any spillage. You should also provide some means of spill control your warehouse and loading dock areas.

3. Tanker Truck Storage - During the inspection it was noted that a 6000 gallon tanker truck body is being used to hold creosote and oil along the east side of the building. At the time of the inspection a valve was visibly leaking creosote and/or oil onto the surface of the ground. This area is pitched towards a storm drain adjacent to the loading dock. From the appearance of the pavement this leak has been continuing for quite some time.

Article 12 requires that above ground tanks be situated on a concrete pad surrounded by a dike to contain 110% of the tank volume. The tank must be fitted with a high level alarm to detect an overfill condition. All piping must be of non-corrosive material and must be within the diked area.

R-82

Within the next 30 days you should submit plans to replace or upgrade this tank and associated piping. Plans for installation of a new tank must be submitted by a N.Y.S. licensed professional engineer. A $100 filing fee is required for review of new plans. No upgrading or replacement is allowed until your plans have been approved by this Department.

4. Underground Tanks - In 1981 you submitted a tank registration form to this Department which showed that you have 16 underground storage tanks on your property. Article 12 requires that these tanks be periodically leak-tested by an approved firm.

The registration form shows that most of these tanks were installed in 1964. These tanks must be tested by the end of 1982. Any tanks found to be leaking must be emptied and removed from service. Leaking tanks cannot be repaired unless they meet construction standards for new installations. By 1987 all underground tanks containing materials other than those with a specific gravity of less than one and which are only slightly soluble in water must be replaced with tanks that meet new construction standards. Tanks that contain materials such as oils and gasoline do not have to be replaced until 1995.

Section 1213 of Article 12 also regulates truck fill stands that are used to transfer toxic or hazardous materials. These areas must be paved and curbed with an impervious material and roofed to exclude rainwater. The height of the curb must be adequate to contain any spill that could reasonably be expected to occur during normal operation. Within the next 30 days you should submit plans to upgrade your truck fill stand area in accordance with these requirements.

I have tried to outline the most obvious violations that were observed during my inspection and the necessary corrective actions. This outline is not meant to be complete. You are still responsible for each and every requirement under Article 12 of the Suffolk County Sanitary Code that applies to your facility. In addition, this Department has made arrangements to procure samples from the storm drains on your

property which may indicate the need for pump-out and clean-up.

If you have any questions please do not hesitate to contact me.

Very truly yours,

Peter R. Akras
Hazardous Materials Management

PRA/rt
cc: B. Stark

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INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
65 JETSON LA., PO BOX G, CENTRAL ISLIP, NY 11722
(516) 234-2622

Art XII Air — Letter — Sample — File

NAME OF FACILITY: CANTOR BROS INC.	OWNER/OFFICER: E CANTOR	PAGE 1 OF 2
COMPANY NAME: SAME AS ABOVE	CONTACT: MATTHEW MILLER	TEL. 694 6666
PLANT ADDRESS: ENGINEERS LANE	VILLAGE: FARMINGDALE TOWN: BABYLON	ZIP 11735
MAILING ADDRESS: SAME AS ABOVE		

DATE 8/24/82 | TIME | ORIG. PERIODIC (RE.) (WASTE) NO WASTE H&H | SEWAGE SYSTEM PUBLIC PRIVATE

INDUSTRY: DISTRIBUTER OF PAINT SOLVENTS

PRES OR ES PERMIT? NOT APPLICABLE YES NO PERMIT NO. | 360 PERMIT? NOT APPLICABLE YES NO PERMIT NO

SCAVENGER: NONE USED TEL. NOT APPLICABLE

SCAVENGER APPROVED NOT APPLICABLE YES NO | PICK UP RECORDS AVAILABLE NOT APPLICABLE YES NO | RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION NOT APPLICABLE YES NO

HEATING SYSTEM-MFG NAME	FUEL TYPE	FIRING RATE
	WASTE BURNED	RATE

DRUM STORAGE (YES) NO	NUMBER OF DRUMS STORED SEE ENCLOSED REPORT	TYPE OF MATERIAL STORED WASTE RAW BOTH
TANK STORAGE (YES) NO	ABOVE GROUND (UNDER GROUND) BOTH	TYPE OF MATERIAL STORED WASTE (RAW) BOTH
TANKS REGISTERED (YES) NO	CONDITION OF ABOVEGROUND TANKS GOOD FAIR POOR	ANY ART. XII VIOLATIONS (YES) NO

1) 15 SOLVENT TANKS IN FRONT LAWN } ALL REQUIRE
1 FUEL TANK WEST SIDE OF PROPERTY } TANK TEST BY 12/82

2) WHITE SUBSTANCE SPILLED FROM SOUTH EAST CORNER OF BUILDING INTO STORM DRAIN.

3) GREEN TANK TRUCK BACK STORED EAST S[illegible] BUILDING, MATTHEW MILLER STATED UNIT CONTAINED CREOSOTE AND FUEL OIL. PIPING FROM TRUCK BACK TO BUILDING WAS LEAKING FLOWING TOWARDS STORM DRAIN IN LOADING DOCK AREA.

CONTINUED

PERMISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF CESSPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

REINSPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY RESULT IN A HEARING AND/OR FINE.

NAME OF PERSON REPORT	TITLE	Bruce C Stark INSPECTOR

[illegible]155: 6/81 5/81 TJK

R-85

9 June 83

A reinspection of the Cantor Brothers Inc facility was conducted on 9 June 83 at 3:10 pm. The following information is an update on their status with regard to Article 12 compliance.

Interior of Facility

(I) According to Mr Miller, a small area near the loading dock on the west side of the building is being sublet to Cardinal Petrochemical (Mitchel Elsner) for storage of various grades of lacquer thinners (both 55 gal drums, 5 gallon cans and 15 gallon cans), lacquer reducers and E.Z. Klean. There are over 519 x 5 gallon cans, 75 x 15 gallon cans and 67 x 55 gallon drums. Because of the way the various drums & cans are stacked, and because the materials are also boxed in some instances, (EZ Klean for example) it was impossible to get an exact count. Mr Miller states that Cantor Bros. puts the formulations into the cans & drums for Cardinal but states that any Art. 12 correspondence should be directed to Mr Elsner. The material is only stored in this area since the materials are sold approximately 1 month after they are stored in this area (In other words, there is a turnover of materials every month)

* Please advise as to how I should proceed in directing Article 12 compliance in writing)

(II) As far as the Cantor Brothers operation is concerned, the following corrective actions have been taken:

(A) All 55 gallon creosote drums have been scavenged by a lisc. hauler, (receipts are attached) as requested.

(B) Caulking washwater has also been scavenged by a lisc. hauler (receipts are attached) as requested.

(C) The washwater operation has been revised. Vats are no longer washed out with previous volume of water. Material is now dried (naturally) and ≈ 20 gallons of water is used for cleanup a month. This water is evaporated & dried material is scraped out

d) [illegible] is now in the process of conducting Kent Moore Tests on the in ground tanks. Mr Santino has been advised of this information.

As far as any other Article 12 violations are concerned, Mr Miller states that he is still waiting for a response to his 24 Nov 82 letter to Mr Akras. No other corrective actions have taken place except for those stated above. (The violation conditions are all previous mentioned in the file.)

As far as the phenol sampling that was requested by Mr Akras, a period of time elapsed before the bottles were given to me, & I was also advised not to hand them in (by Ken Hill) unless a noticable odor was noted upon procuring the sample. Numerous attempts were made to obtain samples but no odor was ever noted. (odor of the creosote was the odor to be detected)
There was a sample taken out of a storm drain located ≅ 15 ft NE of the front entrance on the 21st of April 83 which was over in organics. (See the File) Because of the length of time that elapsed before the results were received in this office, Cantor Brothers was not notified for quite some time. On 25 April 83, Mr Miller had this storm drain pumped by George Cooper, (See attached) (Mr Cooper is not a lisc. scavenger.) Mr Miller received a violation for a spill on 21 April 83 because of the extremely noxious odor of fuel that was noted both in the surrounding soil & procured sample.

) Mr Miller was advised to have all the creosote soaked ground on the east side of the building, & the area around the above mentioned storm drain, cleaned & scavenged (See insp. report 9 June 83 in File)

1 (11 0)

? CO[illegible]
instr[illegible]s

EASE TYPE [illegible] ION

t A: [illegible] ST

DOCUMENT NO. NY[illegible]

NERATOR NAME: CANTOR BROS., INC. | PHONE: 516 694-6666 | EPA ID NO.: NY D 0 6 3 5 4 - K Y 0 1

ITE ADDRESS: ENGINEERS LANE, FARMINGDALE, L.I., N.Y. 11735

ANSPORTER NO. 1: MARINE POLLUTION CONTROL, INC. | PHONE: 516-654-4900 | NY D 0 7 5 7 8 8 3 1

TE ADDRESS: 375 DUNTON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

HANSPORTER NO. 2: | PHONE:

E ADDRESS:

REATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: WR, ENVIRONMENTAL WASTE REMOVAL, INC. | PHONE: 203-755-2283 | CT-D072138969

ADDRESS: 130 FREIGHT STREET, WATERBURY, CT., 06702

FORM IS NO. ____ OF A TOTAL OF ____ THE FIRST MANIFEST DOCUMENT NO. IS NY

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
CREOSOTER RESIDUE	COMBUSTIBLE	NA 1993	01	1 1 1 1 5	D	0 0 9	0 0		

SPECIAL HANDLING INSTRUCTIONS (INCLUDING CONTAINER EXEMPTION OR IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A HAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

[illegible]

GENERATOR'S CERTIFICATION: This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE: Matthew J. Miller [signature]
Print name also

TRANSPORTER NO. 1 SIGNATURE: "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."

TRANSPORTER NO. 1 PERMIT NUMBER: NY1A041

DATE SHIPPED: 1 2 0 2 1 2 (Mo. Day Yr.)

EXPECTED ARRIVAL DATE: 1 2 0 3 8 2 (Mo. Day Yr.)

DATE RECEIVED: Mo. Day Yr.

COPY 3 Generator—Retained by Generator

Tear at this Perforation

R-88

NTOR ...S, INC. | A.D. NO.

DDRESS
NGINEERS LANE, FARMINGDALE, L.I. N.Y. 11735

SPORTER NO. 1
MARINE POLLUTION CONTROL, INC. PHONE 516 694 4900 | NY D 07[illegible]

ADDRESS
375 DUNTON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

SPORTER NO. 2 PHONE

F ADDRESS

ATMENT, STORAGE OR DISPOSAL (TSD) FACILITY PHONE
GWR ENVIRONMENTAL WASTE REMOVAL, INC. 203-755-2283 | CT-2072138959

ADDRESS
130 FREIGHT STREET, WATERBURY, CT. 06702

FORM IS NO. ___ OF A TOTAL OF ___ THE FIRST MANIFEST DOCUMENT NO. IS NY

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
PHOSPHATE RESIDUE, N.O.S.	COMBUSTIBLE LIQUID	NA 1993	01	[illegible]	01	001	02		[illegible]
ACRYLIC LATEX CAULKING COMPOUND WASH WATER	N/A	N/A		[illegible]	01	001	02		

IAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A HAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

ERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in per condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were signed to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also forms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

ATOR'S SIGNATURE
Matthew J. Miller
Type name also

DATE SHIPPED Mo. Day Yr.

EXPECTED ARRIVAL DATE Mo. Day Yr.

ORTER NO. 1 SIGNATURE "To the best of my knowledge the con- of the shipment I have accepted for transport conforms with the tion on this manifest."

TRANSPORTER NO. 1 PERMIT NUMBER

DATE RECEIVED Mo. Day Yr.

COPY 5 Transporter No. 1 – Retained by Transporter No. 1

Tear at this Perforation

S:

GEN EPA ID# [illegible]

PORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED

R-89

David Harris, M.D., M.P.H.
Commissioner

July 13, 1983

CERTIFIED MAIL - R.R.R.

Cantor Brothers, Inc.
Engineers Lane
Farmingdale, N.Y. 11735

Gentlemen:

The records of this office indicate that you have violated Article 12 of the Suffolk County Sanitary Code in that:

On 6/9/83, 4/21/83, 4/20/83, 8/24/82, 6/2/82, 11/7/80 and 5/5/80 you did store toxic or hazardous materials; without a valid permit in violation of Article 12, Section 1207 and in a manner not designed to prevent the discharge of toxic or hazardous materials in violation of Article 12, Section 1215.

On 6/9/83, 4/21/83, 4/20/83, 8/24/82, 6/2/85 and 5/5/80 you did discharge toxic or hazardous materials to the ground and/or a storm drain in violation of Article 12, Section 1205.

In order to resolve the foregoing violations, a preliminary hearing is being scheduled at this office on August 10, 1983 at 9:30 a.m. You may appear at this hearing with or without counsel; you may produce witnesses and evidence, but no sworn testimony will be taken or recorded.

Please be advised that each violation of the Suffolk County Sanitary Code is punishable by a civil penalty not to exceed $500 for each day or part thereof that such violation continues. Therefore, it would be in your best interest to appear at the preliminary hearing. A failure to appear will result in the scheduling of a formal hearing by the Department.

If you are unable to meet the above-mentioned scheduling requirements, or if you have any questions regarding this proceeding, please do not hesitate to contact this office.

Very truly yours,

Patrick Perrella
Environmental Enforcement

PP/rt
cc: J. Finkenberg

5 Horseblock Pl. • Farmingville, N.Y. 11738 • 516/451-4643

R-90

Air

OF LITY	[illegible]	[illegible]	[illegible]
ANY E		CONTACT	TEL. [illegible]
NT RESS	Engineers LA	VILLAGE Farmingd. TOWN Babylon	ZIP 11735
ILING DRESS			

9 Jun 83	TIME 3:10 pm	ORIG. PERIODIC (RE.)	WASTE (NO WASTE) H&H	SEWAGE	PUBLIC	

DUSTRY Repackages Chemical Materials

S OR S PERMIT?	YES (NO)	PERMIT NO.	360 PERMIT?	YES (NO)	PERMIT NO.

VENGER Marine Pollution Control TEL.

ENGER OVED	(YES) NO	PICK UP RECORDS AVAILABLE	(YES) NO	RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION	YES NO

ATING SYSTEM MFG. NAME	FUEL TYPE	FIRING RATE
	#2 Fuel	
N. ME	WASTE BURNED	RATE

STORAGE	(YES) NO	NUMBER STORED OVER 200 (INDOORS) OUTDOORS	TYPE OF MATERIAL STORED	WASTE	(RAW)
RAGE TANKS	(YES) NO	NUMBER OF TANKS ABOVEGROUND #16 UNDERGROUND #15	TYPE OF MATERIAL STORED	WASTE	(RAW)
N CESS TANKS	YES (NO)	NUMBER OF OPEN PROCESS TANKS	ANY ART. XII VIOLATIONS	(YES)	NO

1) All creosote soaked ground on east side of building - area around storm drain soaked with #2 Fuel oil must be cleaned & scavenged.
2) Tanks are in process of being kept more tested by Island Tank.
3) Receipts attached for cleanups. (Caulk wash, ~20 gal a month is [illegible])
4) Troughs & floor drains still present in plant. Mr. Miller states that the fire dept. requires them.
5) It is suggested that Peter Akras be contacted immediately & appointment be made to resolve the Article 12 problems. (All violations still exist)

MISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF SPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

SPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY ULT IN A HEARING AND/OR FINE.

N OF PERSON REPORT. [signature]	TITLE Gen. Mgr.	INSPECTOR JoAnne Johnson

155: 9/82 5/81 TJK

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CONTINUE FOR THIS

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHAR
(1)	North Side of Bldg. All Storage of Finished Product			
(2)	6x Mixing Liquids	4x150 gal; 2 x 210 gal, 1 x 300 gal	N/A	
(3)	4x Mass Cmpds	(1 stainless; All others steel)	N/A	
(4)	Liquid Packaging Machines	Varies	N/A	
(5)	15 x Underground Tanks	(List of Tank Contents & Capacity in File)	N/A	
(6)	Storage Vat For Creosote	(Wooden, ≈ 300 gals)	N/A	
(7)	Caulking Filling Machine	Caulking Material	N/A	
(8)	Putty & Glazing Cmpd.	Putty	N/A	
(9)	Putty Mixer	Putty	N/A	
(10)	2x Mixers (300 gal)	Caulking	N/A	
(11)	1x Fillermachine	Caulking	N/A	
(12)	Large Putty Mixing Machine	Putty	N/A	
(13)	Soy Bean Oil Tanks (2x750 gal)	Soy Bean Oil	N/A	
(14)	2x 1500 gal Tanks	Raw Lindseed, Poly Butene	N/A	
(15)	1x 3000 gal Creosote Tank			

AIR POLLUTION SOURCES

NO.	PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.
	(None)					

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Lab No. IW-K81026
Field No. 4 JJ 10-28
Date 28 OCT 81
Time 113 AM
Col. By [illegible]
(Name not Initials)

FILE
8.0

Received in Lab 10-28-81 12:3 PM
Public Water
Private Water
Other
Date Completed 10-30-81
Examined By KH BPEH

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC HEALTH LABORATORY

TRACE ORGANIC ANALYSIS OF WATER

Name CANNON BROS. Owner or District

Location ENGINEERS LANE, FARMI.

Point of Collection PUDDLE, NE SIDE OF BLD.
Remarks:

UHO

	Compound	ppb		Compound	ppb
305	Methylene Chloride		250	Benzene	
90	Bromochloromethane		251	Toluene	
323	1,1 Dichloroethane		254	o-Xylene	
09	Trans Dichloroethylene		252	m-Xylene	
300	Chloroform	<5	253	p-Xylene	
04	1,2 Dichloroethane		255	Xylene (s)	
321	1,1,1 Trichloroethane	<2	258	Chlorobenzene	
04	Carbon Tetrachloride	<1		Ethylbenzene	
294	1 Bromo-2-Chloroethane			Bromobenzene	
5	1,2 Dichloropropane			o-Chlorotoluene	
310	1,1,2 Trichloroethylene	<5		m-Chlorotoluene	
03	Chlorodibromomethane	<2		p-Chlorotoluene	
293	1,2 Dibromoethane		265	Chlorotoluene (s)	
	2-Bromo-1-Chloropropane		415	m-Dichlorobenzene	
301	Bromoform	<5	412	o-Dichlorobenzene	
1	Tetrachloroethylene	<2	413	p-Dichlorobenzene	
	Cis-Dichloroethylene			1,2,4 Trimethylbenzene	
	Freon 113	<4		2,3 Dichloropropene	
	Dibromomethane			1,1,2 Trichloroethane	
	1,1 Dichloroethylene			1,1,1,2 Tetrachlorethane	
302	BromoDichloromethane	<3		1,2,2,3 Tetrachlorpropane	
				s-Tetrachloroethane	

R-93

CHEMICAL EXAMINATION OF WATER, SEWAGE, INDUSTRIAL WASTE ✓

ELD NO. 7BS728 LAB NO. 7-82-212 DATE COMPLETED 8/4/82

AME OR FIRM CANTOR BROS

DRESS OR LOCATION ENGINEERS LN. E FARMINGDALE

OINT OF COLLECTION STORM DRAIN SE C/O of BLDG

MARKS/INSTRUCTIONS WHITE STAIN FROM BACK DOOR TO STORM DRAIN
not pH adjusted in field

TEST	RESULTS		TEST	RESULTS		TEST	RESULTS
H(LAB)			TOTAL SOLIDS	Mg/l	✓	COPPER	.05 Mg/l
LORIDE	Mg/l		SUSPENDED SOLIDS		✓	IRON	.3
YANIDE			DISSOLVED SOLIDS			MANGANESE	
AS					✓	CHROMIUM-TOT	<.02
OD					✓	NICKEL	<.1
C					✓	ZINC	.3
					✓	LEAD	<.2
					✓	CADMIUM	<.02
ITRATE-N					✓	SILVER	<.02
RITE					✓	CHROMIUM-+6	
MMONIA-N							
N			pH (FIELD)				
			TEMP. (FIELD)				

METHOD OF PRESERVATION ☐ HNO_3 TO pH <2 ☐ COOL 4°C

CUSTODY OF SAMPLE

RING TRANSPORT OF THE SAMPLE FROM SAMPLING SITE TO LABORATORY, THE N OF CUSTODY MUST BE UNBROKEN. GENERALLY THIS WILL REQUIRE THAT THE PLE BE DELIVERED BY THE SAMPLE COLLECTOR OR HIS DESIGNATED REPRESEN- IVE WHO WILL SIGN FOR THE RECEIPT, INTEGRITY AND TRANSFER OF THE SAMPLE NG SHIPMENT.

	NAME	AFFILIATION		
COLLECTED BY			DATE	TIME
OSSESSION BY			DATE - TIME TO	DATE - TIME
POSSESSION BY			DATE - TIME TO	DATE - TIME
CEIVED LAB BY	G. Mallard	Env. lab	7/28/82 2pm DATE	TIME
POSSESSION BY			DATE - TIME TO	DATE - TIME
SSESSION BY			DATE - TIME TO	DATE - TIME

R-94

CONTOR BROS., INC

MATTHEW J. MILLER, GENERAL MGR

4. Name of firm to be charged. Indicate officer or alleged violating facility and main office if not the same, mailing address if different:

ENGINEERS LANE
FARMINGDALE, L.I. NY 11735

5. Violations alleged - check those you believe applicable and include dates of alleged occurrance:

I. Industrial Wastes and Hazardous Materials

a. acted as a scavenger without a proper license
(b) hired unlicensed scavenger
(c) discharged hazardous material
d. discharged industrial waste without a SPDES Permit
e. discharged industrial waste in violation of SPDES Permit
f. storage of hazardous material without a permit (Pt. 360)
(g) improper storage of hazardous materials
(1) portable containers
(2) underground tanks
3. above-ground tanks
4. indoor tanks
5. other
(h) failure to report a leak or spill of hazardous material
i. failure to report leak or spill of material likely to pollute groundwater where at the time of leak or spill at least 1500 gallons of such material was on the site
j. discharge in excess of groundwater standards
k. other

II. Public Nuisance - Liquid Discharges; Sewage Plants

a. overflowing cesspools
b. overflowing sewage treatment plant
c. STP - discharge in violation of SPDES Permit
d. other

III. Air Pollution

a. construction of source without a permit
b. operation of source without a permit
c. nuisance conditions [illegible] emission
d. opacity violation
e. operation in violation of permit (i.e. improper maintenance of equipment
f. open burning
g. auto emission violations
h. fugitive dust
i. emissions in excess of applicable standards
j. other

NB - make sure no exemptions apply

6. Brief discription of nature of proof to support allegation

(1) 6-18-75 INSPECTION. A OWNER DENIED ACCESS 2 TIMES.
(2) 6-11-79 INSPECTION L. CARTINO SPILLS NOTED
(3) 5 MAY 80 SPILL REPORT J FINKENBERG CHEMICAL SPILLS
(4) 7-31-80 INSPECTION R. GOVERNALE. ART 12 VIOLATIONS

7. Recommendation for Consent Order (OVER)

a. by Inspectional Services
1- PUMP OUT + CLEAN SEPTIC TANKS USING LICENSED SCAVENGER
2- SITE WORK
3- COMPLETE ENGINEERING REPORT 4- FINE
b. by applicable Engineering Section

As Tanyi in profile

June 1, 1981 and July 5, 82 Contor notified by use in violation 12

Received July 8, 1983

J. Pim (Art. 12)
J. Malone (Art. 10)
W. Roberts

TEL. ( ) O

CLIENT NAME AND ADDRESS

S.C. Dept. of Health Services
15 Horseblock Place
Farmingville, NY 11738

NOTICE SENT

RUN NO. 352463
TYPE OF WATER Miscellaneous
SAMPLING PT. I.D. #R-1-LI-4-21

DATE SAMPLED 4/21/83
TIME SAMPLED
RUN TIME (WELL)
COLLECTED BY CL 99

VOLATILE HALOGENATED	ug/l
methylene chloride	< 3
1,1-dichloroethylene	< 3
1,1-dichloroethane	< 3
* trans-1,2-dichloroethylene	
* cis-1,2-dichloroethylene	550
chloroform	< 10
1,1,2-trichlorotrifluoroethane	< 3
1,2-dichloroethane	< 3
1,1,1-trichloroethane	< 5
carbon tetrachloride	< 3
bromodichloromethane	< 3
* 1,2-dichloropropane	< 3
* 2,3-dichloropropene	< 3
trans-1,3-dichloropropene	< 3
trichloroethylene	220
* 1,1,2-trichloroethane	< 3
* chlorodibromomethane	< 3
* cis-1,3-dichloropropene	< 3
* bromoform	< 3
* 1,1,1,2-tetrachloroethane	< 3
* tetrachloroethylene	12
* 1,1,2,2-tetrachloroethane	
* vinyl chloride	< 3
* dichlorodifluoro methane	< 3
chlorobenzene	< 3

VOLATILE NON-HALOGENATED

benzene	
toluene	
* m-xylene	
* p-xylene	
o-xylene	

PESTICIDES	ug/l
lindane	
heptachlor	
aldrin	
heptachlor epoxide	
dieldrin	
endrin	
o,p'DDT	
p,p'DDT	
methoxychlor	
toxaphene	
chlordane	

HERBICIDES

2,4-D	
2,4,5-TP (silvex)	

OTHERS

RUN NO. (S) RECEIVED *Reported value represents total

JUN 3 1983

SUFFOLK COUNTY DEPT.
HEALTH SERVICES

4/28/83 DATE REPORTED

DIRECTOR

R-96

ilc
9f

CHEMICAL EXAMINATION OF WATER, [illegible] INDUSTRIAL WASTE

18-247 2/82

LD NO. 1VJ420 LAB NO. 4-83-158 DATE COMPLETED 5/4/83 [illegible]

AME OR FIRM CANTOR BROS

DDRESS OR LOCATION ENGINEERS LA, FARMD

OINT OF COLLECTION FLOODED AREA OVER STORM DRAIN, EAST

REMARKS/INSTRUCTIONS side of bldg.

TEST	RESULTS		TEST	RESULTS		TEST	RESULTS
H(LAB)			TOTAL SOLIDS	Mg/l	X	COPPER	.08 Mg/l
CHLORIDE	Mg/l		SUSPENDED SOLIDS		X	IRON	.8
CYANIDE			DISSOLVED SOLIDS			MANGANESE	
MBAS					X	CHROMIUM-TOT	<.02
COD					X	NICKEL	<.1
TOC					X	ZINC	.17
					X	LEAD	<.2
					X	CADMIUM	<.02
NITRATE-N					X	SILVER	<.02
NITRITE					X	CHROMIUM-+6	—
AMMONIA-N							
TKN			pH (FIELD)	≅ 7			
			TEMP. (FIELD)				

METHOD OF PRESERVATION ☒ HNO_3 TO pH <2 ☐ COOL 4°C

CUSTODY OF SAMPLE

URING TRANSPORT OF THE SAMPLE FROM SAMPLING SITE TO LABORATORY, THE HAIN OF CUSTODY MUST BE UNBROKEN. GENERALLY THIS WILL REQUIRE THAT THE AMPLE BE DELIVERED BY THE SAMPLE COLLECTOR OR HIS DESIGNATED REPRESEN-ATIVE WHO WILL SIGN FOR THE RECEIPT, INTEGRITY AND TRANSFER OF THE SAMPLE URING SHIPMENT.

	NAME	AFFILIATION	DATE	TIME
. COLLECTED BY	V JOHNSON	SCDHS	4/20/83	9:15 AM
. POSSESSION BY	V JOHNSON	SCDHS	4/20/83 9:15 AM	4/20/83 10:30 AM
. POSSESSION BY				
. RECEIVED LAB BY	G.M		4/20 AM	
. POSSESSION BY				

FIELD NO. 2 V V 420 LAB NO. 4-83-159 DATE COMPLETED 5/4/83

NAME OR FIRM Cantor Bros

ADDRESS OR LOCATION Engineers LA, Farmd

POINT OF COLLECTION Unlabeled open top 55 gal drum, east

REMARKS/INSTRUCTIONS side of bldg.

TEST	RESULTS		TEST	RESULTS		TEST	RESULTS
pH (LAB)			TOTAL SOLIDS	Mg/l	X	COPPER	.03 Mg/l
CHLORIDE	Mg/l		SUSPENDED SOLIDS		X	IRON	2.3
CYANIDE			DISSOLVED SOLIDS			MANGANESE	
MBAS					X	CHROMIUM-TOT	<.02
COD					X	NICKEL	<.1
TOC					X	ZINC	.13
					X	LEAD	<.2
					X	CADMIUM	<.02
NITRATE-N					X	SILVER	<.02
NITRITE					X	CHROMIUM-+6	—
AMMONIA-N							
TKN			pH (FIELD)	≅	7		
			TEMP. (FIELD)				

METHOD OF PRESERVATION ☒ HNO_3 TO pH <2 ☐ COOL 4°C

CUSTODY OF SAMPLE

DURING TRANSPORT OF THE SAMPLE FROM SAMPLING SITE TO LABORATORY, THE CHAIN OF CUSTODY MUST BE UNBROKEN. GENERALLY THIS WILL REQUIRE THAT THE SAMPLE BE DELIVERED BY THE SAMPLE COLLECTOR OR HIS DESIGNATED REPRESENTATIVE WHO WILL SIGN FOR THE RECEIPT, INTEGRITY AND TRANSFER OF THE SAMPLE DURING SHIPMENT.

	NAME	AFFILIATION	DATE	TIME
1. COLLECTED BY	Johnson	SCDHS	4/20/83	9:20 AM
2. POSSESSION BY	Johnson	SCDHS	4/20/83 9:20 AM	4/20/83 10:30 AM
3. POSSESSION BY				
4. RECEIVED LAB BY	[illegible]		4/20 AM	
5. POSSESSION BY				
6. POSSESSION BY				

0 98

File
JJ

[illegible] Y
[illegible] ICAL EXAMINATION OF [illegible] INDUSTRIAL WASTE

18 247 2/82

FIELD NO. 3 JJ 420 LAB NO. 4-83-160 DATE COMPLETED 5/4/83 [illegible]

NAME OR FIRM Cantor Bros

ADDRESS OR LOCATION Engineers La, Farmd

POINT OF COLLECTION open top unlabeled 55 gal drum east

REMARKS/INSTRUCTIONS side of bldg.

TEST	RESULTS		TEST	RESULTS		TEST	RESULTS
pH (LAB)			TOTAL SOLIDS	Mg/l	X	COPPER	<.02 Mg/l
CHLORIDE	Mg/l		SUSPENDED SOLIDS		X	IRON	.8
CYANIDE			DISSOLVED SOLIDS			MANGANESE	
MBAS					X	CHROMIUM-TOT	<.02
COD					X	NICKEL	<.1
TOC					X	ZINC	<.1
					X	LEAD	<.2
					X	CADMIUM	<.02
NITRATE-N					X	SILVER	<.02
NITRITE					X	CHROMIUM-+6	
AMMONIA-N							
TKN			pH (FIELD)	≈ 7			
			TEMP. (FIELD)				

METHOD OF PRESERVATION ☒ HNO_3 TO pH <2 ☐ COOL 4°C

CUSTODY OF SAMPLE

DURING TRANSPORT OF THE SAMPLE FROM SAMPLING SITE TO LABORATORY, THE CHAIN OF CUSTODY MUST BE UNBROKEN. GENERALLY THIS WILL REQUIRE THAT THE SAMPLE BE DELIVERED BY THE SAMPLE COLLECTOR OR HIS DESIGNATED REPRESENTATIVE WHO WILL SIGN FOR THE RECEIPT, INTEGRITY AND TRANSFER OF THE SAMPLE DURING SHIPMENT.

	NAME	AFFILIATION	DATE	TIME
1. COLLECTED BY	Johnson	SCDHS	4/20/83	9:25 AM
2. POSSESSION BY	Johnson	SCDHS	4/20/83 9:25 AM	4/20/83 10:30 AM
3. POSSESSION BY				
4. RECEIVED LAB BY	[illegible]		4/20 AM	
5. POSSESSION BY				

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PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

Cantor Brothers, Inc.
Engineers Lane
Farmingdale, New York 11735

Date June 1, 1983
SPDES NO.
Lab. No. 352464
Field No. R1 JJ 4

Gentlemen:

On 21 April 1983 samples of industrial waste were taken from your
m drain south side of bldg. approx. 10 feet east of front entrance.
Upon analysis, the following parameters were found in concentrations above
the maximum allowed in your SPDES Permit or in groundwater effluent
standards:

1. Benzene 330.0 ppb
2. Toluene & unknown organic 4800.0 ppb
3. m-xylene 114.0 ppb
4. o-xylene 90.0 ppb
5.
6.
7.
8.
9.
10.

Please be advised that these unsatisfactory conditions constitute viola-
ions of the N.Y.S. Environmental Conservation Law and/or the Suffolk
County Sanitary Code. Please be further advised that the discharge of
any water from an industrial process to the groundwater of Suffolk County
ithout having first obtained a State Pollutant Discharge Elimination
ystem (SPDES) Permit for that discharge is also a violation of the N.Y.S.
E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

f you do not already possess a valid SPDES Permit for the above discharge,
then you should apply immediately through this office for said permit.

ince the above-noted violations may subject you to legal action, it is
xpected that these violations cease immediately. Violations of the
Suffolk County Sanitary Code are subject to the imposition of a civil
enalty of up to Five Hundred ($500) dollars per violation. E.C.L.
olations are also subject to a civil penalty. A reinspection in the
ear future will determine your compliance in this matter.

ery truly yours,

ohn H. Finkenberg, Sr. Sanitarian
nvironmental Pollution Control

seblock Pl.
gville, NY 11738

(SEE REVERSE SIDE FOR STANDARDS)

451-4429

R-100

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

NT OF HEALTH SERVICES

David Harris, M.D., M.P.H.
Commissioner

antor Brothers, Inc.
Engineers Lane
Farmingdale, New York 11735

June 1, 1983

CERTIFIED MAIL

lemen:

21 April 1983 samples taken from the storm drain on the south of your building approximately 10 feet east of entrance.
e collected by a representative in this Department. The laboratory ysis performed by this Department revealed that 330.0 ppb of nzene, 4800.0 ppb of toluene and an unknown organic, 114.0 ppb of m-xylene nd 90.0 ppb of o-xylene has been discharged to this storm drain.

to the excessive nature of this discharge, you are directed to e these leaching pools/ holding tanks/ storm drains pumped of all ds and sludge by an approved industrial waste scavenger. A list pproved scavengers may be obtained by calling James Heil, P.E., york State Department of Environmental Conservation, 751-7900.

are also directed to notify this office when these pools are pumped hat an inspector may witness this operation.

ou have any questions, please call me at 451-4635.

truly yours,

H. Finkenberg
onmental Pollution Control

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300
COUNTY OF SUFFOLK
RTMENT OF HEALTH SERVICES
NMENTAL POLLUTION CONTROL
15 Horseblock Place
ningville, New York 11738

inkenberg
(Name of Sender)

reet or P.O. Box)

State, and ZIP Code)

ACE

FARMINGVILLE, NEW YORK 1

Form 3800

R-101

NY

S.C. Dept. of Health Services
15 [illegible] Pl.
[illegible]gville, NY 11738

[illegible] 64
[illegible] R [illegible]
[illegible] PT. I.D. #R 1 JJ 4-21

DATE SAMPLED 4/21/83
TIME SAMPLED
RUN TIME (WELL)
COLLECTED BY JJ 99

VOLATILE HALOGENATED	ug/l
methylene chloride	
1,1-dichloroethylene	
1,1-dichloroethane	
* trans-1,2-dichloroethylene	
* cis-1,2-dichloroethylene	
chloroform	
1,1,2-trichlorotrifluoroethane	
1,2-dichloroethane	
1,1,1-trichloroethane	
carbon tetrachloride	
bromodichloromethane	
* 1,2-dichloropropane	
* 2,3-dichloropropene	
trans-1,3-dichloropropene	
trichloroethylene	
* 1,1,2-trichloroethane	
* chlorodibromomethane	
* cis-1,3-dichloropropene	
* bromoform	
* 1,1,1,2-tetrachloroethane	
* tetrachloroethylene	
* 1,1,2,2-tetrachloroethane	
* vinylchloride	
* dichlorodifluoromethane	
chlorobenzene	

VOLATILE NON-HALOGENATED	
benzene	330
toluene & Unknown	4,800
m-xylene	114
p-xylene	35
o-xylene	90
ethylbenzene	31

PESTICIDES	ug/l
lindane	
heptachlor	
aldrin	
heptachlor epoxide	
dieldrin	
endrin	
o,p'DDT	
p,p'DDT	
methoxychlor	
toxaphene	
chlordane	

HERBICIDES	
2,4-D	
2,4,5-TP (silvex)	

OTHERS	

RUN NO. (S)

*Reported value represents total

RECEIVED
MAY 23 1983
SUFFOLK COUNTY DEPT.
HEALTH SERVICES

5/9/83 DATE REPORTED

[illegible], LAB DIRECTOR

R-102

Facility ID No. : NY [illegible]

Effective Date : _____

Expiration Date : _____

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Special Conditions
(Part I)

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the provisions of the Federal Water Pollution Control Act, as amended by the Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500, October 18, 1972, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as "the Act").

Cantor Brothers, Inc
Engineer Lane
Farmingdale, NY 11735

Babylon (T)
Suffolk (C)

is authorized to discharge from the facility described below:

Same as above

into receiving waters known as:

Groundwater, Class GA

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or written authorization is given by the Department. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the Department of Environmental Conservation no later than 180 days prior to the expiration date.

By Authority of _____
Designated Representative of Commissioner of the
Department of Environmental Conservation

_____ _____
Date Signature

R-103

Follow-up Investigation - Industrial Chemical Survey

A

...any Name	Sic Code	Official Use Only
CANTOR BROS		

...pany Mailing Address	City	State	Zip Code
...gineer Lane	Farmingdale	NY	11735

... Name	Contact Name	Telephone
...gineer Lane	MR Mike Hollins MFG MGR	516 694 6666

...r Address	City	State	Zip Code
...ame as ABOVE	SAME AS ABOVE	SAME	SAME

...ncipal Business of Plant
Package solvents m/g caulking & glazing
Paint sundries distributor

B - Description of Chemicals Used

...ame of Substance	Code	Physical State Solid, Liquid, Gas	Describe Usage	Losses Possible Water, Air, Land, Non...
... Bean oil		L	Caulk	0
... " leather		L	"	0
...seed oil		L	"	0
...y butane		L	"	0
...thy Ethyl Ketoxine		L	Glazing	1 Dm. 2 gps 0
...ea T DK Cement		L	Wood Preserv	0
...fute Turf		L	Solvent use	0
...mmonia		L	Caulking	5 gal ... ph adjustment
...h oil		L	Glazing	0
...a Fatty acid			Caulking	0

... Description of Possible Losses of Chemicals to Environment (For Each Chemical)

No losses:

Minor amts evaporation
" " dust.

No leaching
Only sanitary waste

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Kerosene	L	jell clay	Very Mina	
Lacque Thinner	L	Solvent	O	
Min. Spirits	L	Solvent	O	
Naphtha	L	Solvent	O	
Tri ethanol Amine	L	1 dm. 1976	O	
Butyl Cellosolve	L	Paint 2 dm. jell clay	O	
Denat Alcohol	L	Solvent	O	
Ethylene Glycol	L	caulking 1 dm. yr.	O	
Algon Comp II	Powder	water 200 softener lb. yr.	O	
Butyl rubber	Semi liquid	Caulking	O	
Varnishes	L	Makeup paints	O	
Titanium Dioxide	Powder	paint caulk	O	500 lbs year
UE 100 Latex Em. Poly Urethane	L H2O base	Paint mfg.	O O	2 dms
Poly Ure. resin	L	"	O	60 dms year.
Replex WP 1 solvent based plastisizer	L	Caulk mfg	O O	Rhome & Haas
C40 Acrylic emulsion H2O base	L	Caulk mfg	O O	
Calcium Carbonate	Powder	Caulking	40,000 lbs mo. dust. O	

APPENDIX C
UPDATED NEW YORK STATE REGISTRY FORM

HAZARDOUS WASTE DISPOSAL SITES REPORT
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Code: _____

Site Code: 152021

Name of Site: Cantor Brothers, Inc. **Region:** 1

County: Suffolk **Town/City** Farmingdale

Street Address Engineer's Lane

Status of Site Narrative:

Cantor Brothers, Inc. is an active chemical repacking and handling facility which has been in operation since at least 1975. Organic solvents, creosote, and fuel oils have been observed leaking from drums and storage tanks on site.

Access to the site was denied. This report is based solely on limited SCDHS data and records. No known permits have been issued to Cantor Brothers, Inc. to date.

Type of Site: Open Dump ☐ Landfill ☐ Structure ☒ Treatment Pond(s) ☐ Lagoon(s) ☐ Number of Ponds _____ Number of Lagoons _____

Estimated Size 4 **Acres**

Hazardous Wastes Disposed? Confirmed ☒ Suspected ☐

***Type and Quantity of Hazardous Wastes:**

TYPE	QUANTITY (Pounds, drums, tons, galions)
organic solvents, fuel oils, creosote	unknown

*** Use additional sheets if more space is needed.**

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Name of Current Owner of Site: Cantor Brothers, Inc.

Address of Current Owner of Site: Engineers Lane, Farmingdale, New York

Time Period Site Was Used for Hazardous Waste Disposal:

_____, 19 75 To Present, 19 _____

Is site Active [XX] Inactive [ ]
(Site is inactive if hazardous wastes were disposed of at this site and site was closed prior to August 25, 1979)

Types of Samples: Air [ ] Groundwater [ ] None [XX]
Surface Water [ ] Soil [ ]

Remedial Action: Proposed [XX] Under Design [ ]
In Progress [ ] Completed [ ]
Nature of Action:

Status of Legal Action: None State [ ] Federal [ ]

Permits Issued: Federal [ ] Local Government [ ] SPDES [ ]
Solid Waste [ ] Mined Land [ ] Wetlands [ ] Other [ ]

Assessment of Environmental Problems:

Organic solvents, fuel oil, and creosote leaked from drums and tanks and allegedly contaminated soils on site. Chemicals discharged into a storm drain on site.

Assessment of Health Problems:

Potential for hazardous chemicals to reach ground water, migrate downgradient and enter public water supply.

Persons Completing this Form:

A.J. Scacifero

Woodward-Clyde Consultants

New York State Department of Environmental Conservation

New York State Department of Health

Date 09/02/83

6/3/81
RPM:cl

R-108

REFERENCE NO. 18

At the time of Phase II site investigation (July 1988), Cantor Brothers, Inc. was an active chemical repacker and manufacturer of paint products, handling petroleum distillate solvents, paint thinners, and caulking compounds. The site presently consists of a two-story building, comprised of a Warehouse Area, a Factory Area, and an Office Area, with a total floor space of approx. 51,500 square feet, (Figure I-2). In addition to indoor storage of hazardous substances (e.g. 1,1,1,-Trichloroethane, Turpentine, and Lacquer Thinner), there are thirteen underground storage tanks buried on the southeastern side of the building, used for the storage of hazardous chemicals and solvents (such as Kerosene, Turpentine, and Lacquer Thinner). There is no discernible process waste stream, as such.

Cantor Brothers, Inc. has been cited frequently by the Suffolk County Department of Health Services (SCDHS) for violations of Article 12 of the Suffolk County Sanitary Code. These violations have included storing toxic or hazardous materials (e.g. Kerosene, Turpentine, and the like) without a valid permit, spills of toxic or hazardous materials onto the ground and/or a storm drain, and removal of an underground fuel storage tank without proper notification of the SCDHS.

R-2

-Cantor Brothers has been assessed Civil Penalties, as much as $250 (in June of 1988) because of Suffolk County Sanitary Code violations, (See Order on Consent dated June 3, 1988, SCDHS 1988b).

-Hazardous wastes disposed on the site, either through surface spills or tank leakeage, have been classified under "RCRA" definition to be highly ignitable (Kerosene), highly or moderately toxic/persistent (Arsenic, & 1,1,1-Trichloroethane), and slightly reactive (1,1,1-Trichloroethane).

The Cantor Brothers, Inc. site is located in a generally flat area, entirely developed with paved roads and parking lots. The storm drainage system consists of catch basins and leaching pits.

The predominant land use is industrial/commerical. The site is surrounded by manufacturing and commercial facilities. Large cemeteries are located in the site vicinity, towards the south and south-east. Bethpage State Park is located 1.5 miles west of the site.

Within a 1 1/2 - mile radius of the site, there are several public supply wells, ranging in depth between 200 and 534 feet. The wells of Suffolk County Water Authority are located about 1 1/2- mile to the northwest.

B. PHASE II INVESTIGATION

A Phase II investigation of the site was conducted to collect sufficient information to assess the extent of the contamination released from the site, to classify the site for further action, and to calculate the final Hazard Ranking System (HRS) scores. Recommendations for future actions or studies are also included. Field investigations included a site reconnaissance, a geophysical survey, installation of four groundwater monitoring wells, and collection of five groundwater, three sediment and two soil samples. Groundwater, sediment and soil samples were analyzed to assess the extent of potential or actual contamination at the Cantor Brothers, Inc. site.

C. SITE ASSESSMENT

On July 19, 1988 a site reconnaissance was undertaken by LeRoy Callender, P.C. No visible signs of any hazardous waste discharges or spills of any kind were observed. However, results from the chemical analyses of collected samples, (Tables IV-2A, 2B, 4A, 4B, 4C, and 4D) indicate releases of 1,1,1 - Trichloroethane, Trichloroethene, and Tetrachloroethene from the site to the groundwater, and the presence of significantly higher than background concentrations of arsenic in the groundwater and lead in the sediment samples. These analytical results are discussed

R-4

in Section IV-D. Included in the discussion is a comparison between contaminant concentrations detected at the site and appropriate State and Federal environmental quality standards.

The geological stratigraphy at this site is relatively simple and straightforward. The site area is directly underlain by the Upper Glacial aquifer, which is probably less than 100 feet thick and mostly comprises fine to coarse sand with some gravel and/or boulders. Ground water in the Upper Glacial aquifer occurs at an approximate depth of 40 feet below the ground surface at the site. The next major water bearing unit underlying the Upper Glacial aquifer is the Magothy aquifer. The two aquifers are hydralically connected to each other (Reference No. 1, listed on Page V-32). The water table has a hydraulic gradient of about 11 feet per mile in a southeasterly direction.

D. HAZARD RANKING SYSTEM SCORE

The preliminary HRS scores for this site, calculated as part of the Phase I investigation, were S_M = 18.3, S_{DC} = 37.50, S_{FE} = 0. The S_M score reflects the potential for harm due to migration of hazardous substances away from the facility. This score is the composite of scores for groundwater (S_{GW}), surface water (S_{SW}), and air (S_A) transport routes. The S_{FE} score reflects the potential for harm from substances which can cause fire or explosions, and the S_{DC} score reflects the potential harm from direct contact with hazardous substances.

The final HRS scores for the Cantor Brothers Inc. site based on the results of this Phase II investigation have been calculated as follows:

$S_M = 51.13$

$S_{GW} = 88.46$

$S_{SW} = 0.00$

$S_A = 0.00$

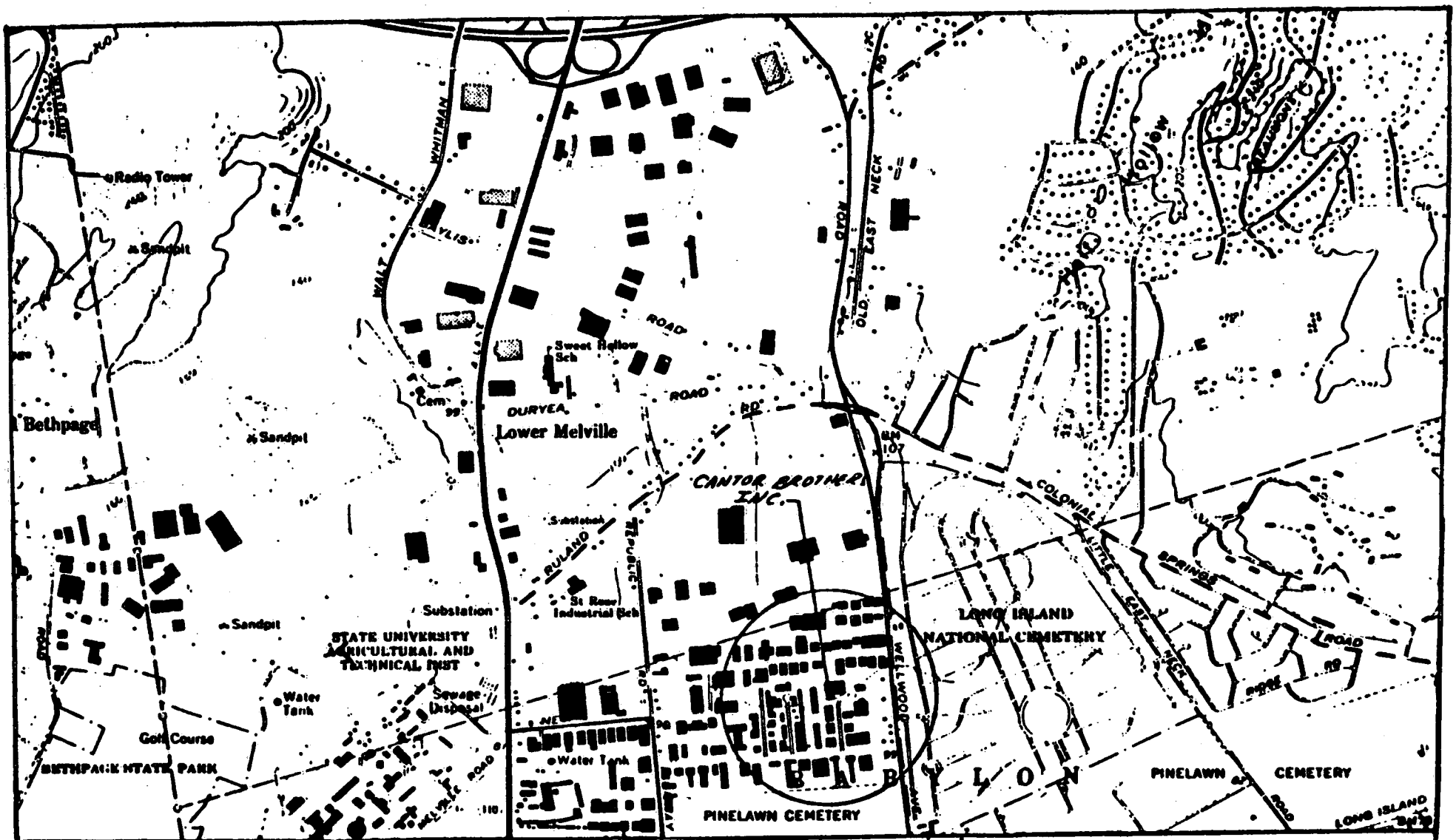
$S_{FE} = 35.00$

$S_{DC} = 50.00$

E. RECOMMENDATIONS

It is recommended that a remedial investigation and feasibility study be conducted at this site to determine the most cost-effective method(s) to determine the extent of contamination and to characterize the site in detail.

Due to the presence of certain contaminants in the upgradient well, if those sources could be identified, the Remedial Investigation (RI) should take into account those facts. Consideration should be given to either coordinate the RI with other nearby sites which may have an impact on this site's remediation, or to plan a comprehensive RI for all the nearby sites, including this one, for which contamination plumes are superimposed.



LONGITUDE: 73° 24' 17"
LATITUDE: 40° 45' 20"

REFERENCE: U.S.G.S. 7.5' TOPOGRAPHIC MAP
HUNTINGTON QUADRANGLE, N.Y. (1979)

SCALE 0 1000 2000 3000 4000 FEET

N

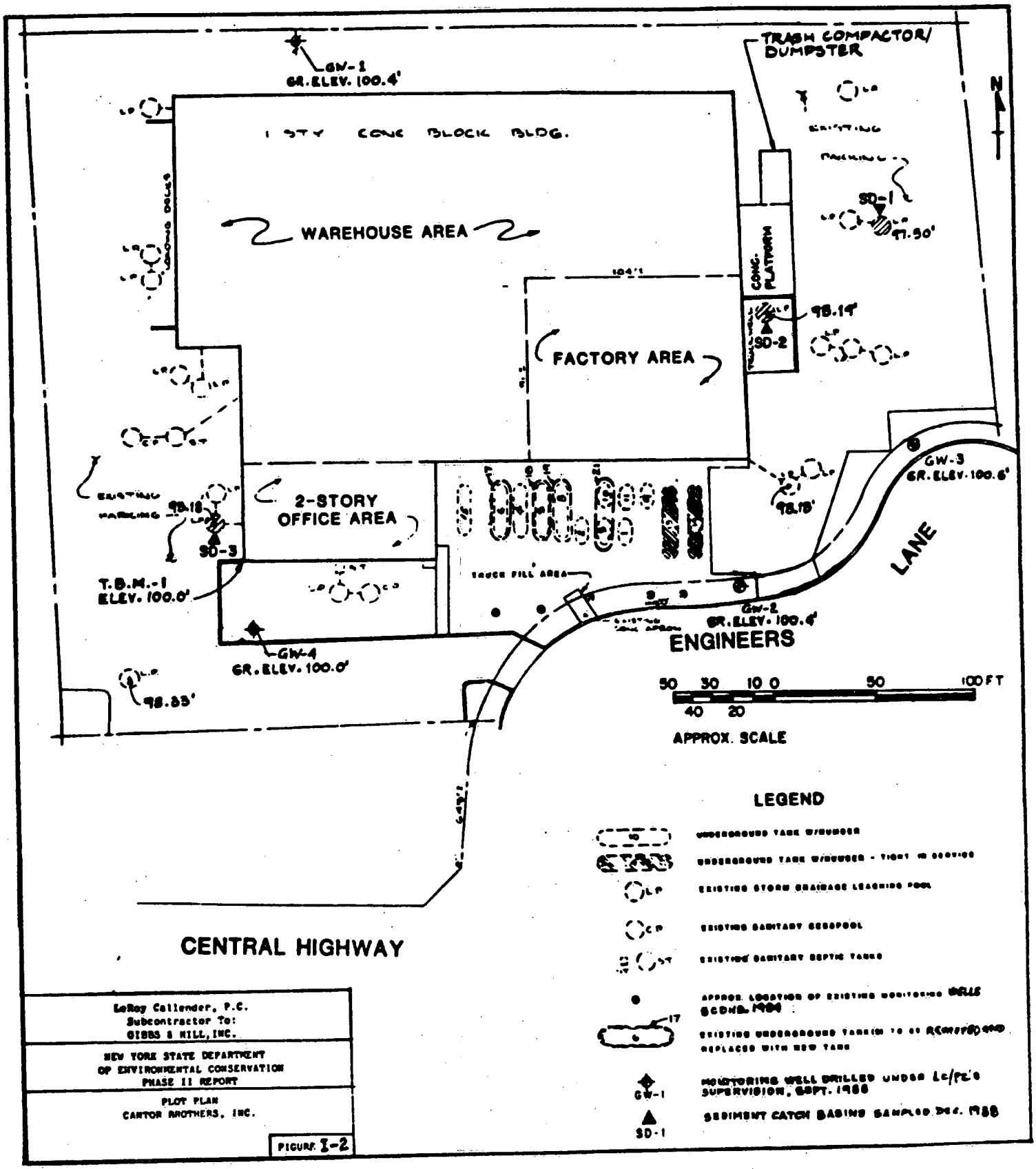
LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT

SITE LOCATION MAP
CANTOR BROTHERS, INC.

FIGURE 1-1

R-7



LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT

PLOT PLAN
CANTOR BROTHERS, INC.

FIGURE I-2

Callender
PC

SECTION II

PURPOSE

The purpose of this New York State Department of Environmental Conservation (NYSDEC) Phase II investigation and report on the Cantor Brothers Site is: (1) to determine the depth to aquifer of concern; (2) to assess the hazardous waste quantity; (3) to perform a site reconnaissance survey to obtain all the information spelled out in the NYSDEC Work Plan and the Phase I Report; (4) to collect essential field information to adequately assess if contamination has been released from the site; (5) to determine whether a significant threat to human health or the environment exists; (6) to prepare final HRS Scores, and (7) to make recommendations for possible future actions at the site.

SECTION III

SCOPE OF WORK

A. INTRODUCTION

The Phase II investigation at the Cantor Brothers Site began in July 1988 and was completed in December 1988. A Phase II Work Plan had been prepared by the NYSDEC after a site visit in November 1985 to define the scope of work at the site. This work plan was updated in August 1988 based on the actual field conditions present during the site visit made in July 1988.

The locations of the four (4) monitoring wells proposed in the Work Plan Update were modified slightly based on the site accessibility and other field conditions (See Figure IV-2). A magnetometer survey was made in July 1988 to detect buried ferromagnetic objects which might be encountered during drilling activities.

Groundwater samples from the four monitoring wells and sediment samples from the three drainage catch basins were collected in October 1988. The sampling of the monitoring wells and catch basins had to be repeated in December 1988 because of inadequate QA/QC on the original samples.

The field investigation for the Phase II project included magnetometer survey, drilling of four boreholes and installation of monitoring wells. In addition, groundwater and sediment

sampling and analysis and also ambient air sampling by an HNu Photoionizer was conducted to screen for release of contaminants to air.

SITE INVESTIGATION

The scope of the investigation is summarized in Table III-1 and is described below.

B. Geophysical Survey

A magnetometer survey was conducted around the areas where the installation of the wells was anticipated to detect buried ferromagnetic objects which might be encountered during drilling operations, and to ensure the proper placement of the wells. The field procedures and the results obtained are presented in Appendix A.

C. Monitoring Well Installation

Four monitoring wells were installed around the perimeter of the site (see Figure III-1) in the Upper Glacial aquifer (GW-1, GW-2, GW-3 and GW-4), ranging in depth from 50 to 52 feet. One well (GW-1) was installed at a presumed upgradient location, on the north side of the existing facility. This well provided a representative sample of the ground-water flowing into the area. Three monitoring wells were installed to monitor downgradient flow

directions and water quality. Wells GW-2 thru GW-4 were installed at the locations shown in Figure III-1. These locations provided an opportunity for interception of any contaminant plume from the waste alleged to have leaked from the underground storage tanks (see Table III-2).

During drilling boreholes, soils samples were collected on a continuous basis from the ground surface to a maximum depth of 52 feet. PVC wells were installed with filter sand packs surrounding ten-foot long PVC screens with 20 slots per foot, and provided with primary and secondary bentonite seals.

Each well was logged visually during drilling. During well development by an air-lift pump, evacuation and recovery periods were measured for each well after its development, and permeability computations were made based on the in-situ falling head method. To further characterize the lithology of the site soils, a grain size analysis of each soil unit (one sample above the water table and one sample in the screened interval for each well) was performed in the laboratory according to ASTM D-422-63.

Boring logs and grain size analyses are included in Appendix B. Permeability computation results are shown in Table IV-1. Field procedures are detailed in Appendix B.

D. Groundwater Sampling and Analysis

Groundwater samples were taken from each of the four wells in December of 1988. These samples were analyzed for volatile organics, semi-volatile organics, inorganic constituents, pesticides and PCBs.

H2M Labs, Inc. in Melville, New York performed the analytical testing and reported the results in accordance with the NYSDEC Contract Laboratory Protocol (1987). The chemical analytical results are discussed in Section IV and listed in Appendix C. The field procedures are outlined in Appendix C.

E. Soil/Sediment Sampling and Analysis

Soil/sediment samples were collected from each of the three catch basins identified in Figure III-1. In addition, two soil samples were collected from the drill cuttings of GW-1 & GW-2.

The above samples were collected in October of 1988, but the samples from catch basins had to be collected again in December 1988, because the original samples did not meet QA/QC requirements. These samples were analyzed for volatile and semi-volatile organics, inorganics, pesticides, and PCBs by H2M Labs, Inc. in accordance with NYSDEC Protocols. The field procedures are outlined in Appendix C. The chemical analysis results are summarized in Section IV and detailed in Appendix C.

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F. Air Survey

An HNu meter was used to screen the air along the perimeter of the site for organic contaminants. In addition, the air above the borings and the soil samples collected from each boring during drilling operations were monitored using an HNu meter to examine for potential release of organic contaminants to the environment.

TABLE III-1

WORK PLAN - TASK DESCRIPTION (1)

CANTOR BROTHERS

Tasks		Descripton of Task
Task		
II-A	Update Work Plan	Reviewed the information in the Phase I report, conducted a site visit, and revised the Phase II work plan.
II-B	Conduct magnetometer survey	A magnetometer survey was conducted to ensure the proper placement of the monitoring wells.
II-C	Conduct Boring/ Install Monitoring Wells	Installed four wells into the aquifer (Upper Glacial). Wells were constructed of 2-inch PVC pipe. The depth of the wells ranged from 50 to 52 feet.
	Soil samples from borings	Eight samples were collected for grain size analysis, and two samples from drill cuttings (GW-1 & GW-2) for chemical analysis.

(1) As implemented

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TABLE III-1 (Continued)

WORK PLAN - TASK DESCRIPTION

CANTOR BROTHERS

Tasks		Description of Task
II-D	Perform Sampling and Analysis	
	Soil (Sediment) Samples from catch basins	Three samples were collected and analyzed for volatile and semi-volatile organics, inorganics, pesticides & PCBs.
	Soil Samples from test pits and auger holes.	No sampling was performed.
	Sediment samples from surface waters	No sampling was performed.
	Groundwater samples	Four groundwater samples were collected and analyzed for volatile and semi-volatile organics, inorganics, pesticides & PCBs
	Surface water samples	No samples were collected.
	Leachate samples	No samples were collected.
	Air samples	HNu photoionizer was used to monitor the presence of organic vapors.
II-E	Calculate Final HRS	Based on the field data collected in Tasks II-B-II-D, the HRS form was completed.

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TABLE III-1 (Continued)

WORK PLAN - TASK DESCRIPTION

CANTOR BROTHERS

Tasks		Description
II-F	Conduct Site Assessment & Report Preparation	A final report containing significant Phase I information, additional field data, final HRS score and HRS documentation records, and site asessments was written. The site assessment included recommendations for possible future actions at the site.
II-G	Project Management	Project coordination, administration and reporting.

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TABLE III-2

MONITORING WELL LOCATIONS AND SPECIFICATIONS

Well No.	Upgradient/ Downgradient	Depth (ft)	Depth of Screening (ft)
GW-1	Upgradient	50 (Upper Glacial aquifer)	39 - 49
GW-2	Downgradient	52 (U.G. aquifer)	40 - 50
GW-3	Downgradient	52 (U.G. aquifer)	40'-9" - 50'-9"
GW-4	Downgradient	50 (U.G. aquifer)	39 - 49

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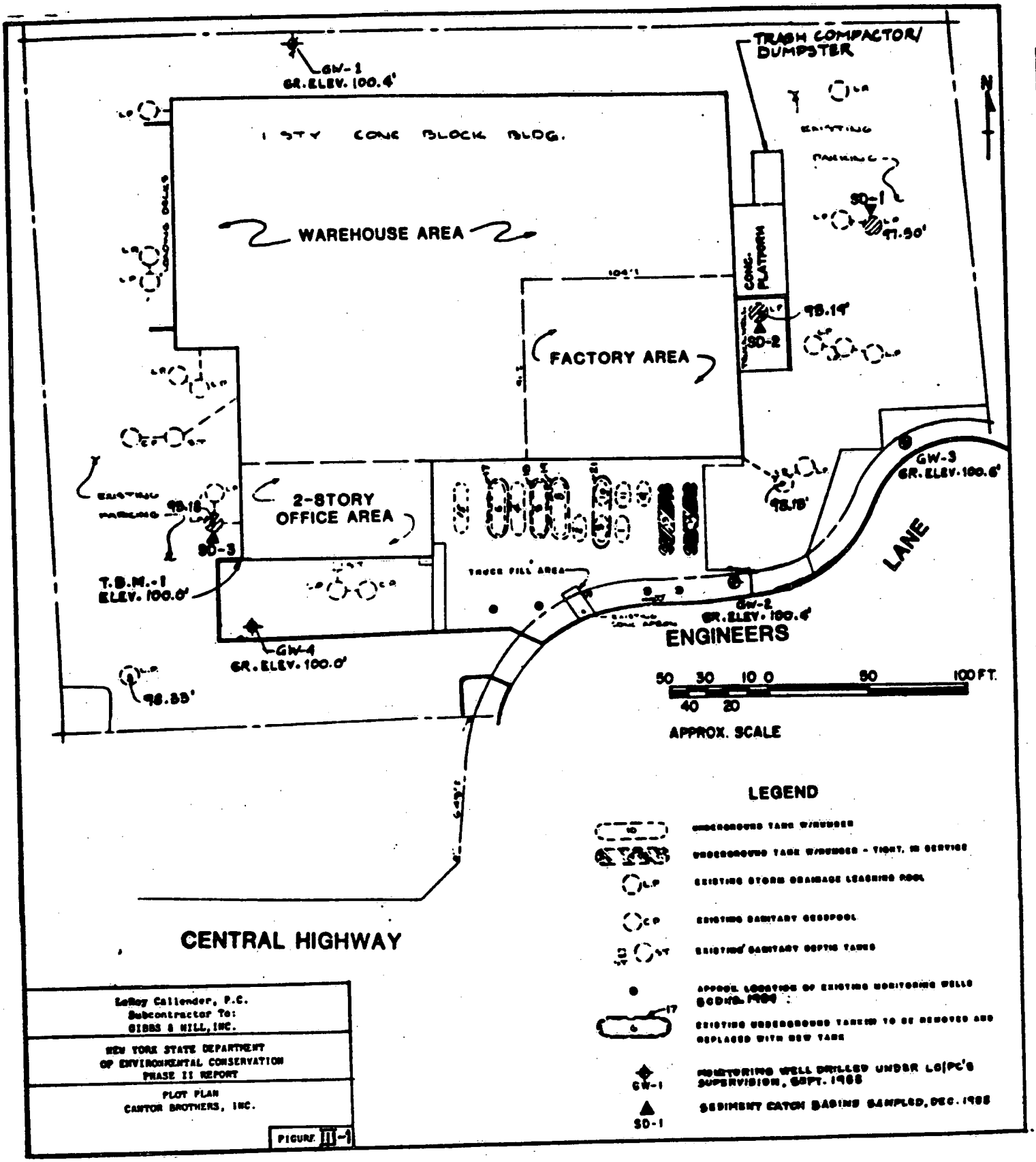

TRASH COMPACTOR/ DUMPSTER
GW-1
GR. ELEV. 100.4'
1 STY CONC BLOCK BLDG.
WAREHOUSE AREA
CONC. PLATFORM
SD-1
97.50'
95.19'
SD-2
FACTORY AREA
2-STORY OFFICE AREA
95.18'
SD-3
T.B.M.-1
ELEV. 100.0'
GW-4
GR. ELEV. 100.0'
98.33'
TRUCK FILL AREA
GW-2
GR. ELEV. 100.4'
GW-3
GR. ELEV. 100.6'
LANE
ENGINEERS
50 30 10 0 50 100 FT.
40 20
APPROX. SCALE
LEGEND
UNDERGROUND TANK W/NUMBER
UNDERGROUND TANK W/NUMBER - TIGHT, IN SERVICE
EXISTING STORM DRAINAGE LEACHING POOL
EXISTING SANITARY CESSPOOL
EXISTING SANITARY SEPTIC TANKS
APPROX. LOCATION OF EXISTING MONITORING WELLS
EXISTING UNDERGROUND TANKS TO BE REMOVED AND REPLACED WITH NEW TANK
MONITORING WELL DRILLED UNDER LC/PC'S SUPERVISION, SEPT. 1988
SEDIMENT CATCH BASINS SAMPLED, DEC. 1988
GW-1
SD-1
CENTRAL HIGHWAY
LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
PLOT PLAN
CANTOR BROTHERS, INC.
FIGURE III-1

SECTION IV

SITE ASSESSMENT

A. SITE HISTORY

Cantor Brothers, Inc. has been in operation as a chemical repacker, manufacturer and distributor of paint products at the present site since at least 1975 (the first reported inspection by SCDHS was on 6/18/75) (SCDHS, 1983c). The present facility has been in existence since at least 1964, the year most of the underground tanks were reported to have been installed (SCDHS,1982C).

Another industrial waste site which may have an impact on this site is Lincoln Graphic Arts site located northwest of this site within a distance of 800 feet. Lincoln Graphic Arts is owned by Mr. Leo Sweedler, located at 200 Finn Court, Farmingdale, New York. No information on its area is available.

During the period beginning in 1980 and up to the end of 1983, periodic site inspections by the Suffolk County Department of Health Services (SCDHS) revealed several violations of Article 12 of the Suffolk County Sanitary Code (SCDHS, 1983d).

In September 1983, Woodward-Clyde Consultants, Inc. (WCC) was assigned by NYSDEC to perform a Phase I preliminary investigation at the site. The Final Phase I Report of Cantor Brothers Site by

WCC, dated September 20, 1984, includes documented Sanitary Code violations at the site (SCDHS, 1982 a, b, c; 1983a, b, c, d, & e). These violations included: (1) numerous leaking 55-gallon drums stored outside; (2) no provisions for spill containment inside the facility; (3) a 6000-gallon tanker truck containing creosote and oil found leaking; and (4) underground tanks not pressure tested.

The SCDHS informed Cantor Brothers, Inc. of these violations and ordered it to take remedial action in a letter dated August 30, 1982 (SCDHS, 1982c).

During 1983, violations of the Suffolk County Sanitary Code continued at the Cantor Brothers Site.

In April 1983, samples of the industrial waste were taken from a storm drain on the south side of the building (see Figure IV-2, storm drain w/top elevation 98.15'). Upon analysis, the following substances were found in concentrations above the maximum allowable standards (i.e. New York State Water Quality Standards of 1985 - see App. D. Vol. III): benzene: 330ppb, toluene: 4800ppb, m-xylene: 114ppb, and o-xylene: 90ppb (SCDHS, 1983e).

In June 1983, a SCDHS inspection indicated that the underground tanks were in the process of being "Kent Moore" tested, (i.e. tank system tightness test, in accordance with NFPA Code 329.30), creosote drums were scavenged by a licensed hauler, and wastewater operations were being properly conducted (SCDHS, 1983b).

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In July 1983, the SCDHS informed Cantor Brothers, Inc. that a preliminary hearing had been scheduled on August 10, 1983 to resolve Article 12 violations of the Suffolk County Sanitary Code and notified it to participate (SCDHS, 1983d).

During the period from June 14, to October 4, 1983, Island Pump and Tank Corporation pressure tested the underground tanks at Cantor Brothers, Inc. Only three (3) tanks out of the thirteen underground tanks tested were tight under pressure. (SCDHS, 1983f).

In the Summer of 1984, the SCDHS arranged for the installation of five (5) monitoring wells near the southern boundary line of the Cantor Brothers, Inc. Site north of Engineers Lane, (SCDHS, 1984a).

Well logs and construction details for these wells are not available. The information obtained from Mr. Matthew Miller, General Manager of Cantor Brothers, Inc. indicates that these are 4" PVC groundwater monitoring wells, 30-35 feet deep, without sand packing and with no betonite seals. No further information was found about these wells either in SCDHS files or in Cantor Brothers, Inc. records. For sampling results and dates, reference may easily be made to SCDHS, 1984b, Pages 1 thru 5, in Volume III.

Sampling of these wells by SCDHS showed relatively high concentrations of some organic chemicals (Tetrachloroethylene

2600ppb, Cis Dichloroethylene 1900ppb, 1,1,2 Trichloroethylene 470 ppb). SCDHS notified Cantor Brothers of the Sanitary Code violations through a Notice of Violation dated September 14, 1984. (SCDHS, 1984b).

In November 1984, an engineering report by Allen & Grant, P.C. of Huntington, New York made recommendations to bring the underground storage tanks into compliance with Article 12 of the Suffolk County Sanitary Code. (SCDHS, 1984c). This report shows that at the time of Allen & Grant survey, there were sixteen underground tanks at the site, fifteen of which were located adjacent to the southeast corner of the building, and the other tank was located in the parking area on the west side of the building. The report includes the result of pressure testing of these tanks (Table 2-2, SCDHS, 1984c). Of the fifteen existing tanks located adjacent to the southeast corner of the building, only five were found to be tight (tank numbers 1, 2, 4, 13, & 14). The sixteenth tank in the west parking area was not tested, and was subsequently removed from the site.

The report indicates that the ten tanks which were found to be defective, (i.e. tank numbers 3,5,6,7,8,9,10,11,12, & 15) were subsequently removed from service. The report recommends that these tanks be removed from the site and be replaced with several new tanks. (SCDHS, 1984c, Section 3.1). The report also recommends that the five existing tanks which were tight be periodically retested, as required by Article 12. It also recommends that all eight tanks (five existing ones and the three new tanks) be monitored by careful, regular inventory control, as required by Article 12 (SCDHS, 1984C, Page 7).

Despite the recommendations of the Allen and Grant report, a SCDHS inspection of the Cantor Brothers site in early 1988 indicated that most of the defective underground tanks were still in service (SCDHS, 1988a, updated tank inventory).

In December 1984, a spill of No. 2 fuel oil occurred at the site, which was caused by a broken pressure gauge on a 5,000 gal. underground fuel tank, and resulted in the spilling of 450 gal. of No. 2 fuel oil into a nearby storm drain. The spill was reported to SCDHS, and the contaminated soil around the storm drain was bagged and transported to Babylon Town Landfill by a Licensed Hauler (Marine Pollution Control) (SCDHS, 1984d).

In November 1985, a site visit was conducted by the New York State Department of Environmental Conservation (NYSDEC) personnel. From the site visit a Work Plan for Phase II Investigation was put

together, which included the drilling of four boreholes and installation of four monitoring wells (See Appendix A Work Plan Update). The updating and implementation of the Work plan for Cantor Brothers began in July 1988 and completed in October 1988.

In June 1986, SCDHS notified Cantor Brothers, Inc. that existing underground tank No. 4, containing 5,000 gals. of fuel oil had failed the tank system tightness test, and required it to immediately empty the tank contents and remove the tank from service (SCDHS, 1986a).

In August 1987, SCDHS served Cantor Brothers, Inc. with a notice of violation for failing to properly notify SCDHS of the removal of an underground storage tank and the abandonment of another underground storage tank (SCDHS 1987a).

In January 1988, SCDHS inspected the site and found the following violations of Article 12 of the Suffolk County Sanitary Code:

Indoors - 50 plus drums of a viscous material used in manufacturing caulking compound, stored indoors but outside of Article 12 containment area;

Outdoors - 2-3 drums stored outdoors with unknown contents, 1/2 full to completely full. These drums must be moved indoors or disposed of in a proper manner. The inspection report also included an updated tank inventory, indicating thirteen (13)

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underground storage tanks outdoors and one small storage tank indoors, in addition to 5 gal. containers and 55 gal. drums in the Warehouse Area and 55 gal. drums in the Packaging Area. (SCDHS, 1988a).

In May 1988, SCDHS signed a consent order with Cantor Brothers, Inc. The Order on Consent No. IW88-42 dated May 24, 1988 included a fine of $500, 1/2 of which was to be suspended and ultimately discharged contingent upon Respondent's compliance with the term, provisions and conditions of the Order on Consent, while the other half ($250) had to be paid to the SCDHS, to be remitted with the return of the duly executed Order on Consent by Respondent. The alleged violation against the Respondent (Cantor Brothers, Inc.) was that in Aug. 1987 it had failed to properly abandon an underground storage tank for toxic or hazardous materials (removal of an underground fuel storage tank) in that it did not notify SCDHS of said removal in writing, in violation of Section 760-1210 (h) (2) of Article 12 of the Suffolk County Sanitary Code.

In September 1988, SCDHS sent a letter to Cantor Brothers, Inc. and acknowledged satisfactory compliance with the provisions of the Order on Consent No. IW 88-42, (SCDHS, 1988c).

In October 1988, SCDHS sampled the storm drain at east side of building near the depressed loading dock (see Figure IV-2) and analyzed it for organic parameters. The results of the chemical analysis are attached to the SCDHS Inspection Report (SCDHS, 1988d, Reference No. 23).

In September and October 1988, the Phase II Investigation of the site started and the drilling and installation of four monitoring wells was completed as required by the NYSDEC Work Plan. The details of the Phase II investigations and the drilling and installation of monitoring wells are described under Section III.

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B. SITE TOPOGRAPHY

This summary of site topography is based on the following sources and the site reconnaissance survey by LeRoy Callender, P.C. (LC/PC) in August 1988.

- Phase I - Preliminary Investigation - WCC - Sept. 1984
- NYSDEC - Phase II Work Plan - Nov. 1985
- Site Survey of Cantor Brothers by Storch Associates Oct. 1988.

The site of Cantor Brothers, Inc. is a 3.2-Acre parcel located in a generally flat area with an average ground surface slope of less than 0.5 percent.

The nearest downslope surface water is Neguntatogue Creek which is more than 4 miles from the site (USGS, 1979, Amityville Quandrangle). The area surrounding the site is paved, with drainage and surface run-off via catch basins and recharge basins.

The predominant land use in the area is industrial. The site is surrounded by manufacturing and commercial facilities. Large cemeteries are located immediately to the south and east of the site vicinity. In 1986, there were twenty-four similar Inactive Hazardous Waste Disposal Sites, within a three-mile radius of Cantor Brothers Site, being investigated by the NYSDEC. (See pp. V-54 and V-55).

There are several public and private wells within a one-mile radius of the site, ranging in depth from 60 to 712 feet. The nearest private well is 600 feet to the northwest and the nearest public well is about one mile to the southwest.

Within a 1 1/2-mile radius of the site, there are several public supply wells, ranging in depth between 200 and 534 feet. The wells of Suffolk County Water Authority are located about 1 1/2- mile to the northwest. (See Appendix D for well locations and permit data).

There are no freshwater wetlands or coastal wetlands within a one-mile radius of the site.

The nearest NYS recognized freshwater wetland area is located more than a mile to the northeast of the site and is about one acre in area (see Map of Freshwater Wetlands - Ref. 9).

The nearest NYS recognized coastal wetland area is located about 7 1/2 miles to the south of the site and has an area of about 30-acres (see map of Coastal Wetlands - Ref. 10).

The site does not have any potential impacts on endangered, threatened, or special concern wildlife species, rare plant, animal or natural occurrences, or other significant habitats (see letter dated January 27, 1989 by the Bureau of Wildlife, NYSDEC, Region I, Ref. 11).

C. SITE HYDROLOGY

Regional Geology and Hydrology

The site is located in an area consisting of unconsolidated sediments of Pleistocene and Cretaceous age. These deposits are approximately 1300 feet thick and are underlain by Precambrian Crystalline Bedrock (Taney, 1961; Jensen and Soren, 1974). The low hydraulic conductivity bedrock is considered to be the bottom of the groundwater reservoir (Jensen and Soren, 1974).

Site Geology

The following summary of site geology is based on the information from the Phase I report and the Phase II field boring program.

Figures IV-3 and IV-4 depict the subsurface geology at the Cantor Brothers site in cross-sectional views. The site area is directly underlain by glacial outwash deposits consisting of fine to coarse sand, and gravel. These deposits comprise the Upper Glacial aquifer and are probably less than 100 feet thick.

Underlying the Upper Glacial aquifer is the Crataceous Magothy Formation which consists of predominantly fine to coarse sand interbedded with clay, silt and lignite. It is believed to be approximately 750 feet thick in the site area (Taney, 1961; Jensen and Soren, 1974).

Underlying the Magothy Formation is the clay member of the Cretaceous Raritan Formation which overlies and confines the Lloyd sand member of the same formation. The Lloyd Sand consists of stratified beds of sand, gravel, silt, and clay.

The Raritan Formation directly overlies crystalline bedrock of Precambrian age. The bedrock surface dips approximately 60 feet per mile to the southwest, as do the overlying Cretaceous formations (Taney, 1961; Franke and McClymonds, 1972).

Site Hydrology

Several aquifers have been identified in the subsurface of the Cantor Brothers site and are defined as follows:

Upper Glacial Aquifer - this upper unit is immediately underlying the site. Ground water in the Upper Glacial aquifer occurs at an approximate elevation of 59.6 feet above mean sea level (MSL) (Phase II field activity) which translates to be approximately 40.8 feet below the ground surface at the site.

Magothy Aquifer - this is a major aquifer throughout most of Long Island and is hydraulically connected to the Upper Glacial aquifer.

Lloyd Sand Aquifer - this constitutes the deep confined aquifer in the site area and is overlain by the clay member of the Raritan Formation. Underlying the Lloyd Sand aquifer is crystalline bedrock (Franke and McClymonds, 1972).

In - situ permeability tests were performed on the GW-series wells during the Phase II investigation. The results of these tests are presented in Table IV-1. The average permeability in the Upper Glacial aquifer is computed as 7.38×10^{-2} cm/sec.

This value compares very favorably with the hydraulic conductivity of the upper glacial aquifer studied regionally by McClymonds and Franke (1972) with specific-capacity tests from existing wells. Their calculations showed an average hydraulic conductivity ($\bar{k}$) of 270 ft/day or 9.525×10^{-2} cm/sec. (See Ref. 1, Page 32.)

Groundwater flow directions can be inferred from the piezometric surface presented on figure IV-3. The direction of flow is in a southeasterly direction with a hydraulic gradient of 11 feet per mile* (Phase II investigation).

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*El. of piezometric surface at GW-1 = 60.3
El. of piezometric surface at GW-2 = 59.6
Distance between GW-1 and GW-2 = 334'

$$\text{Hydraulic gradient} = \frac{60.3 - 59.6}{334'} \times \frac{5280'}{\text{Mi}} = 11.06 \text{ ft/mile.}$$

TABLE IV-1
IN-SITU FALLING HEAD METHOD PERMEABILITY TEST RESULTS
CANTOR BROTHERS, INC. (1)

BOREHOLE NUMBER (4)	PERMEABILITY TEST NO.	h_1 (ft)	h_2 (ft)	r (in)	L (ft)	R (in)	t (sec)	El. of Ground-water table at start of test (2) (3) (ft)	K (cm/sec)
GW-1	1	8.92	10^{-7}	1	4.46	6	13.0	60.32	7.37×10^{-2}
GW-2	2	9.17	10^{-7}	1	4.58	6	18.0	59.57	5.21×10^{-2}
GW-3	3	8.92	10^{-7}	1	4.46	6	13.0	58.77	7.37×10^{-2}
GW-4	4	8.83	10^{-7}	1	4.41	6	10.0	59.83	9.55×10^{-2}

Average K = 7.38×10^{-2} cm/sec

(1) See notes on next sheet.
(2) For ground surface elevations, See Drawing #III-1.
(3) For total depth of borings, See Table III-2 on page III-9.
(4) For schematic diagrams of the monitoring wells, See field log book in appendix C, Volume II.

NOTES ON TABLE IV-1

1. Intermittent pumping (evacuation and recharge of the wells during and after development) was the method used to calculate the permeability or conductivity rate on the basis of recovery or recharge time, measured during and after completion of well development. An air-lift pump was used to develop each well.

   The pumping test described above approximates like a recovery test. However, due to the inadequacy of the data, the calculations for the permeability of the soil in the Upper Glacial aquifer were based on the Slug Test equations.

2. The permeability of the soil was computed based on the following formula:

$$K = \frac{r^2}{2L(t_2-t_1)} \ln({}^{L}/r) \ln h_1/h_2 \quad (1)$$

K = Permeability rate in feet/sec (converted to cm/sec.)

L = screen length below water table, since l varies with time, the arithmetic average, L/2 will be used (feet)

R = Bore hole radius (inches)

r = well radius

h_1= initial head causing flow at time t_1 (2)

h_2= final head causing flow at time t_2

Notes:

1. Formula reommended by Mr. Manickam, N.Y.S.D.E.C., Albany, New York.

2. In our test, the only reading that was made was the final head (h_2) after full recovery, in which case h_2=0. This will result in indeterminate value for K. Therefore, using a very low value for h_2(i.e.,10^{-7} feet), the K value may be determined.

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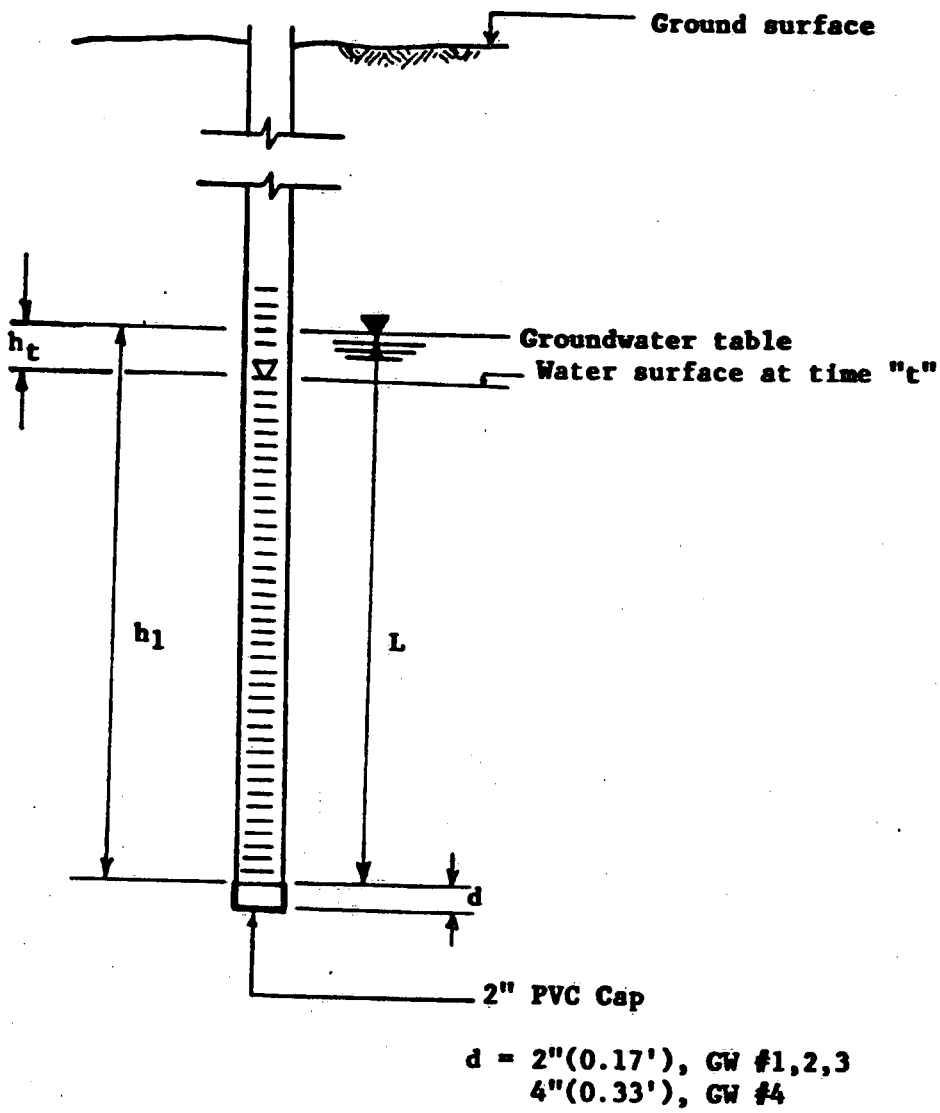

Figure IV-1 Permeability Test Nomenclature

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D. SITE CONTAMINATION

Potential contamination of the environment within the site boundary lines was evaluated by a review of the character and quantity of wastes suspected at the site, chemical analysis of the groundwater and soil or sediment samples, and a survey of the air quality with an HNu meter.

1. WASTE CHARACTERISTICS

Cantor Brothers, Inc. has been active as a chemical repacker and paint specialities' manufacturer and distributor on the site since at least 1975. The latest site inspection by SCDHS carried out in January of 1988 (SCDHS 1988 a, Ref. No.24) lists three types of chemical storage, in 55-gal drums, in earth-covered underground tanks, and in 5-gal containers.

The 55-gal. drums were stored in three locations:

a) Indoors, inside spill-containment areas

b) Indoors, outside spill-containment areas

c) Outdoors

The b) and c) locations above could result in spills of hazardous chemicals into drainage catch basins, which could subsequently leach out into ground water aquifer.

The underground storage tanks (at the time of SCDHS inspection, there were thirteen underground tanks totaling 52,000 gallons in capacity) were all buried near the southern wall of the factory area (Figure III-1). These tanks contained organic solvents (namely, lacquer thinner and turpentine) and kerosene, and were suspected of leaking due to failed pressure tests (SCDHS 1986 a).

The 55-gal drums referred to above which were stored outside the spill-containment areas contained a viscous chemical material used in manufacturing caulking compounds. Although the owner claimed that the contents of these drums were non-toxic, this could not be verified or documented (SCDHS 1988a).

The 55-gal drums which were found outdoors during the SCDHS inspection (1/22/88) contained unknown chemicals which could have been hazardous materials. (These drums have been removed from the site since January of 1988.)

The 55-gal drums which were stored inside the spill-containment areas (Packaging Areas) contained 1,1,1 - Trichloroethane, paint thinner, and lacquer thinner, all of which are hazardous chemicals. Prior to 1983, there were no spill-containment provisions inside the Warehouse Area and there were spills of hazardous materials (e.g., creosote, caulking compound, and paint thinners) into the catch basins and ground water (page IV-1, Site History).

The 5-gal containers which were stored in the Warehouse Area during SCDHS inspection contained paint products, (such as lacquer thinner and turpentine) which are highly toxic chemicals.

2. GROUND WATER CONTAMINATION ASSESSMENT

Groundwater samples have been collected and analyzed from the Upper Glacial aquifer at the Cantor Brothers Site. In addition to the samples collected and analyzed as part of the phase II investigation in 1988, the results of the monitoring well samples collected and analyzed by the Suffolk County Department of Health Services (SCDHS) in 1984 were also considered in the assessment of groundwater contamination, (SCDHS, 1984 b).

Table IV-2A shows the volatile organic chemicals which were found in greater concentrations in downgradient samples as compared to upgradient samples. Two of the chemicals, i.e., 1,1,1 - Trichloroethane, and Tetrachloroethene were found in 1984 monitoring well samples collected and analyzed by SCDHS, (see SCDHS, 1984b). The chemical 1,1,1,- Trichloroethane, which was found in Phase II Investigation sampling of 1988 and in SCDHS sampling of 1984, is stored on the site in the Packaging Area of Cantor Brothers, as indicated in the SCDHS Site Inspection Report dated January 22, 1988, (See SCDHS, 1988a). The concentration of this chemical in MW#3 (19ug/L) is more than six times its concentration in MW#1(3 ug/L). MW#1 is on the upgradient side of groundwater flow, and MW#3 is on the downgradient side. Therefore,

it can be concluded from the above comparison that the increase in the 1,1,1, - Trichloroethane concentration in the downgradient well is attributable to the Cantor Brothers Site. The same reasoning can be made for Trichloroethene and Tetrachloroethene, (See Table IV-2A).

Comparison of the volatile organic compounds concentration in Phase II groundwater samples with the EPA and NYSDEC water quality standards indicates that the groundwater samples exceed the EPA and NYSDEC water quality standards in

Trichloroethene (CAS No. 79-01-6) concentration

and exceed the NYSDEC water quality criteria

(except MW #4 for Trichloroethene concentration.)[1]

Table IV-2B shows the metals which were found in greater concentrations in downgradient samples as compared to upgradient sample. The last two columns show the EPA National Drinking Water Regulations of 1978, and the NYSDEC Water Quality Criteria of 1985.

Notes:

(1)-based on current standards of groundwater quality established by EPA & NYSDEC, this exception is not valid henceforth.

Iron, manganese, and selenium were found in excess of both standards. Chromium concentration varied in the four well samples from 8 to 67 ug/L, with the duplicate well at 85 ug/L, which exceeded both EPA and State standards. Lead concentration exceeded EPA & State standards in MW#2, MW#4, and the duplicate sample (which was taken from MW#2). Arsenic was significant because its concentration in downgradient samples (MW #2, MW # 3, and MW#4, and the duplicate sample) was ten times the upgradient well MW#1, and twice the State standard. It should be noted, however, that arsenic concentration is equal to EPA standard, i.e., 50 ug/L.

Pesticide organics Endrin, Lindane, and Methoxychlor were present in groundwater samples but in concentrations either below or at the same level of both EPA and State standards, (See Table IV-2B, continued.)

Semi-volatile Organics which exceeded the NYSDEC water quality criteria at this site consisted of bis (2-Chloroethyl) ether (CAS No. 111-44-4) and Benzo (a) pyrene (CAS No. 50-32-8). It should be noted, however, that the two chemicals appear in the Field Blank sample at the same concentration as in the well samples. (NYS drinking water standard for bis (2-Chloroethyl) ether and Benzo(a)pyrene is 50ppb, and groundwater standard for bis (2-Chloroethyl) ether is 1 ppb.)

3. SURFACE WATER CONTAMINATION ASSESSMENT

No surface water sources are located in the vicinity of this site, and no surface water sampling has been called for in the Work Plan for the site.

4. SEDIMENT CONTAMINATION ASSESSMENT

Sediment samples were collected from the three Catch Basins SD-1, SD-2, and SD-3 (See Figure IV-2) as part of the Phase II Investigations. The samples were analyzed for metals, volatile organics, semi-volatile organics, and pesticides/PCB's. In addition, soil samples were also collected from Monitoring Wells No. 1 & No. 2, and analyzed for the same parameters. The soil sample from MW#1 (36 ft. deep soil sample) is used as background soil type for this site.

Table IV-4A shows metals concentrations found in catch basin sediment samples (SD-1, SD-2, and SD-3) and in two of the four monitoring well soil samples (MW#1 and MW #2), comparing the concentrations with NYSDEC guidelines in Table 1, Land Application of Sewage Sludge, and with the ranges of concentration in non-contaminated soils.

Antimony, Cobalt, Copper, Lead, Selenium, and Zinc concentrations exceeded the ranges of concentration in uncontaminated soils in one or more catch basin sediment samples. Lead and Arsenic were of concern because of high concentrations in sediment samples in case of Lead, and in monitoring well soil samples in case of Arsenic. Cadium, Chromium, Copper, Lead, Mercury, and Nickel concentrations were well below the NYSDEC

guidelines, and also within the normal range of concentration in non-contaminated soils. Barium, Calcium, Magnesium, Potassium, and Vanadium had concentrations several times greater than the background soil levels, as represented by soil sample from Monitoring Well # 1.

The volatile organics contamination in the sediment and soil samples are presented in Table IV-4B. Acetone and toluene exhibited elevated levels of contamination in all catch-basin sediment samples, as compared to background levels in soil samples of MW#1 & MW#2. Methylene Chloride, Vinyl Acetate and 4-Methyl-2-Pentanone concentrations in sediment samples from catch-basins SD-1 & SD-2 were also several times higher than those in soil samples from MW#1 & MW#2. The two chemicals: 1,1,1 - Trichloroethane and Tetrachloroethene, which exhibited high levels of concentration in groundwater samples from downgradient wells demonstrate relatively high levels of concentration in SD-2 sediment samples. This might be attributable to the same sources of contamination which affected groundwater samples referred to in foregoing Paragraph 2, Page IV-19.

Table IV-4C shows the levels of contamination by semi-volatile compounds in catch-basin sediment samples and in monitoring well soil samples. Sediment sample SD-1, from catch-basin SD-1 located in the northeastern side of the Warehouse Area and in the vicinity of Trash Compactor/Dumpster exhibited elevated levels of Fluorenthene, Pyrene, Chrysene, and Benzo (b) fluoranthene, which are all polycyclic aromatic hydro-carbons (PAH's).

The last column in the table shows the range of Concentration of some of these compounds in Non-contaminated Soils. The level of concentration of Benzo (a) Pyrene (BaP) in SD-1 & SD-2 samples exceeds the typical range of concentration in non-contaminated soils, and also the typical background soil of Monitoring Well # 1. This compound has been researched extensively and has been found to be carcinogenic (See: Edwards, N.T., "Polycyclic Aromatic Hydrocarbons (PAH's) in the Terrestrial Environment, "Journal of Environmental Quality, Dec. 1983).

Pesticide organics which were found in elevated levels of concentration in all three sediment samples, SD-1, SD-2, and SD-3 are presented in Table IV-4D, comparing them with soil sample from MW#1 and MW#2. Chlordane, Methoxychlor, and Toxaphene exhibited levels of concentration in SD-1 sediment sample, which were twenty (20) times the levels found in the MW#1 or MW#2 soil samples. Since the drainage catch basins are not connected to any piped storm water collection system, the contaminants present in catch basin sediments would gradually leach out into the Upper Glacial aquifer, and possibly further down into the Magothy aquifer.

5. AIR CONTAMINATION ASSESSMENT

Perimeter air quality surveys were made throughout the drilling of monitoring wells on the site, using an HNu meter. The results of air monitoring were recorded in the Daily Log, giving the actual dates, the contaminant monitoring locations, levels of air contaminant concentration, and prevailing wind direction on a

daily basis. The range of air contaminant concentrations in the site perimeter was from 0.2 to 1.15 ppm. The maximum level of 1.15 ppm was monitored on the downwind side of the entrance door to the Factory Area, southeast of the building, (See Fig. IV-2).

6. QA/QC PLAN IMPLEMENTATION

The QA/QC Plan for Cantor Brothers, Inc. site was implemented rigorously throughout the well drilling/development and ground water, soil, and sediment sampling activities.

During well drilling/development, the following QA/QC plan requirements were fulfilled:

a. All drilling and sampling equipment (such as augers, drill heads, split spoon samplers, etc.), including all PVC screens and riser pipes, were steam cleaned. Steam cleaning of all equipment was performed prior to drilling a new well, i.e, before the first well on the site was commenced and thereafter between drilling each of the remaining wells. Upon completion of each day's activities, all gear, tools, and equipment were steam cleaned or washed with Alquinox detergent and rinsed properly with clean potable water and air dried, (the acetone wash, followed with a final hexane wash was waived by the NYSDEC representative.) This procedure was also observed at the end of well drilling/ development operations.

b. All down-hole equipment, instruments and tools were placed in a specially-designated staging area, surrounding each well. This staging area was made of wooden pallets, to ensure that all items to be used in the borehole were kept off the ground and out of mud and any other material that might potentially contaminate the well. Plastic sheets were spread on the ground around the work area to prevent dirt, mud, and other contaminating material from entering the borehole.

c. When drilling equipment had to be withdrawn from the borehole, then re-inserted in the hole at the start of the next day, the top of the borehole was covered by a wooden log, then covered with an overturned empty and clean drum to prevent the entry of any dirty or foreign matter into the hole overnight.

During sampling of groundwater from the wells or sediment sampling from Storm Drains or Catch Basins, the following QA/QC plan stipulations were complied with:

a. For sampling of groundwater from each of the monitoring wells, polyethylene bailers and dedicated "parachute cords" (nylon ropes) were used. Sampling bailers were steam cleaned before and after using them to withdraw samples from each well. A separate dedicated cord was used for each well.

b. The sample containers were obtained from the analyzing lab (i.e., H2M Labs, Inc. in Melville, L.I., N.Y. in the case of Cantor Brothers, Inc. site), sufficiently ahead of sampling date, and before filling the bottles, assurance was made that all the bottles were clean and ready for use. The groundwater samples were transferred immediately into their shipping bottles, and placed in the shipping container, after having been properly labeled. Refrigeration of the samples was provided by plastic ice-bags put in the shipping containers. To prevent the labels on the bottles to be wiped off by meltwater, pens with indelible ink were used to write on the labels. The samples were transported to the laboratory the same day for each well. Chain-of-Custody papers and forms were properly filled and signed by the sampling

personnel and also by lab personnel receiving the sample containers.

c. Sampling of sediment from Storm Drains or Catch Basins was accomplished by using split spoon samplers fastened to the end of long steel rods, which were hammered into the soil at the bottom of each Catch Basin. Dedicated split spoons were used for collecting sediment samples from each of the Catch Basins, and split spoons and rods were steam cleaned before insertion into the Catch Basin and after the sampling was completed.

d. The QA/QC plan stipulations for sediment samples were identical to those already described for ground water samples.

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E. RECOMMENDATIONS

Based on the results of the analyses of ground water, soil and sediment samples from the monitoring wells and catch basins or storm drains on this site, the conclusion may be drawn that the activities and operations of Cantor Brothers, Inc. has contributed to the contamination of ground water and soil, in and around the site area. Furthermore, Cantor Brothers, Inc. has been operating on this site since at least 1975 without a SPDES permit from the State.

The following violations have been documented in the past for Cantor Brothers, Inc. facility:

(a) Violations of Article 7 and Article 12 of the Suffolk County Sanitary Code;

(b) Violations of Babylon Town Fire Prevention Code.

In order to determine the extent of contamination at this site, a remedial investigation and feasibility study for the Cantor Brothers, Inc. site should be made at the outset.

TABLE IV-2A

ANALYTICAL RESULTS OF PHASE II GROUNDWATER SAMPLES (1)

Compound (2)	SAMPLE LOCATIONS MW#1 (ug/L)	MW#2 (ug/L)	MW#3 (ug/L)	MW#4 (ug/L)	Duplicate (ug/L)	Field Bl. (ug/L)	Trip Bl. (ug/L)	EPA National Drinking Water Reg's. (3) (ug/L)	NYS Groundwater Standards (ug/L)(5)
1,1,1-Trichloroethane	3J	7	19	5U	6	5U	5U	200 MCL & MCLG (4)	5
Trichloroethene	33	96	100	10	87	1J	5U	5 MCL	5
Tetrachloroethene	110	110	2000D	18	100	5	5U	NS	5

(1) Samples collected and analyzed by H2M Labs, Inc., 1988.

(2) Only those compounds whose concentrations in downgradient samples were several times greater than upgradient samples are presented.

(3) Environmental Protection Agency "National Drinking Water Regulations," Primary - 40 CFR 141; Secondary -40 CFR 143, (7-1-87 Edition).

(4) MCL = Maximum Contaminant Level; MCLG = Maximum Contaminant Level Goal.

J Estimated value, less than the instrument detection limit.

U Minimum attainable detection limit for the sample.

NS No standard

D Concentration is outside the calibration range of the analysis.

(5) Groundwater samples from MW #2 & MW #4 exceed NYS Standards.

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TABLE IV-2B

ANALYTICAL RESULTS OF PHASE II GROUNDWATER SAMPLES (1)

Constituents (2)	Sample Locations MW#1 (ug/L)	MW#2 (ug/L)	MW#3 (ug/L)	MW#4 (ug/L)	DUPLICATE (ug/L)	FIELD BL. (ug/L)	EPA National Drinking Water Reg's (3) (ug/L)	NYSDEC Water Quality Criteria (4) (ug/L)
Arsenic	5UW	50U	50U	50U	50U	5U	50 (5)	25
Barium	120	420	210	220	510	1B	1,000	1,000
Chromium	8B	71	26	67	85	3U	50	50
Copper	14B	67 *	26 *	65 *	94 *	3B*	1,000S	1,000
Iron	14,700 *	55,800 *	19,100 *	75,200 *	74,000 *	2B	300S	300
Lead	13N	59N	25SN	54N	75+N	5UWN	50	25
Manganese	810	4,200	1,700	1,880	5,300	OU	50S	300
Potassium	3,900B	7,500	6,200	5,000	8,200	200U	NS	NS
Selenium	50UW	50U	50UW	50U	50U	5U	10	20
Silver	8B	17	9B	5B	11	10B	50	50
Zinc	45	130	72	170	170	1U	5,000S	5,000

(1) Samples collected and analyzed by H2M Labs, Inc., 1988.
(2) Only those constituents whose concentrations in downgradient samples were several times greater than upgradient sample are presented. Selenium is presented for its high concentration in all the samples.
(3) See Note 3 under Table IV-2A.
(4) "Groundwater Classifications, Quality Standards and Effluent Standards and/or limitations", 6NYCRR Part 703, 1978. Amended version in NYSDEC "Ambient Water Quality Standards and Guidance Criteria", Memorandum No. 85-w-38, July, 1985.
(5) All figures in this column are MCL (see Table IV-2A) except those marked with S, i.e., SMCL = Secondary Maximum Contaminant level (40 CFR 143).

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TABLE IV-2B (Continued)

ANALYTICAL RESULTS OF PHASE II GROUNDWATER SAMPLES (1)

B Reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).
U Constituent was analyzed for but not detected, less than the IDL.
N Spiked sample recovery not within control limits.
S Reported value was determined by the Method of Standard Additions (MSA).
+ Correlation coefficient for the MSA is less than 0.995.
W Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
* Duplicate analysis not within control limits.

TABLE IV-2B-PESTICIDE ORGANICS IN GROUNDWATER SAMPLES(2)

Compound	MW#1	MW#2	MW#3	MW#4	Duplicate	Field Bl.	EPA Standards	NYSDEC W. Quality St.
Endrin	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U	0.20MCL	0.20MCL
Lindane	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	4.0 MCL	4.0 MCL
Methoxychlor	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	100 MCL	35 MCL

(2) Notes to this table are the same as for inorganics content in groundwater samples.

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TABLE IV-4A
ANALYTICAL RESULTS FOR SEDIMENT & SOIL SAMPLES (1)

Constituent (2)	Sample Locations SD-1 (mg/kg)	SD-2 (mg/kg)	SD-3 (mg/kg)	MW#1 (Soil) (mg/kg)	MW#2(Soil) (mg/Kg)	Range of Concentration in Noncontaminated Soil (mg/kg)	NYSDEC Land Application of Sewage Sludge Table 1 (mg/kg)
Aluminium	4,500*	2,600*	3,200*	4,000	4,000	150,000-600,000(3)	
Antimony	17	26	18	4.7B+	3.1B+	0.1-10(3)	
Arsenic	11UW	2.8W	1.6	87*	78*	<40(3)	
Barium	33B	47B	37B	7.5B	13.0B	1-1000(3)	
Beryllium	0.64B	0.35B	0.54B	0.39B	0.41B	<1(3)	
Cadmium	0.43U*	0.69B*	0.54B*	0.20U	0.21U	<1(3)	25
Calcium	21,600*	7,160*	21,700*	260B	620B*	NA	
Chromium	26E*	38E*	29E*	13.0N*	11.0	Trace - 250(3)	1,000
Cobalt	19N*	24N*	4.9BN*	2.5B*	2.3B*	0.1-13(3)	
Copper	340*	170*	53*	4.1BN	4.9B	2-100(4)	1,000
Iron	8,700	4,640	10,300	7,700	7,900	10,000-100,000(3)	
Lead	300*	160*	430*	2.0	11.0	2-200(3)	1,000
Magnesium	7,700*	1,640*	12,000*	360B	530B	NA	
Manganese	87	35	88	60	79	20-30,000(4)	
Mercury	0.42	0.34	0.13U	0.1U*	0.1U*	<1(4)	10
Nickel	8.7B	9B	15	3.7BN	2.3B	3-1,000(3)	200
Potassium	520B	310B	430B	219B	300B	NA	
Selenium	11U	1.7UW	1.4UW	5.0U	5.2U	1-10(3)	
Silver	3.4	6.9	1.1B	3.9	2.5	15-50(3)	
Sodium	1300	2030	1600	1700	1600	NA	
Thallium	1.1 UWN*	1.7UWN*	1.4 UWN*	0.6U	0.6U	<2(4)	
Vanadium	24N*	19N*	26N*	6.9B	8.0B*	5-140(3)	
Zinc	340N	360N	200N	25N*	23.0	10-300(3)	2,500

(See continuation of Table IV-4A on next sheet)

TABLE IV-4A (Continued)
ANALYTICAL RESULTS FOR SEDIMENT & SOIL SAMPLES (1)

(1) Samples Collected by LC/PC & H2M Labs as part of Phase II investigation, September & December, 1988.
(2) Only constituents present in one or more samples are presented.
(3) Handbook on Toxicology of Metals. Friberg, L., et. al. (1979).
(4) Applied Soil Trace Elements. Davies (1980).

B The reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).
E The reported value is estimated because of the presence of interference.
W Post- digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
U Entered if the constituent was analyzed for but not detected, less than the IDL.
N Spiked sample recovery not within control limits.
+ Correlation coefficient for the Method analyzed for but not detected, less than the IDL.
N Spiked sample recovery not within control limits.
+ Correlation coefficient for the Method of Standard Additions (MSA) is less than 0.995.
* Duplicate analysis not within control limits.

TABLE IV-4B
ANALYTICAL RESULTS FOR SEDIMENT & SOIL SAMPLES (1)

Compound (2)	Samples Locations					Range of Concentration in Noncontaminated Soils
	SD-1 (mg/kg)	SD-2 (mg/kg)	SD-3 (mg/kg)	MW#1 (Soil) (mg/kg)	MW#2 (Soil) (mg/kg)	(mg/kg)
Vinyl Chloride	46U	63U	21U	12U (3)	13U	NA
Methylene Chloride	55B	33B	20B	9	9	NA
Acetone	200B	110B	38B	4J	4J	NA
1,2-Dichloroethene (total)	23U	46	10U	6U	6U	NA
1,1,1-Trichloroethane	23U	32U	10U	21	24	NA
Vinyl Acetate	46U	63U	21U	12U	13U	NA
Trichloroethene	23U	15J	10U	6U	6U	NA
4-Methyl-2-Pentanone	46U	63U	21U	12U	13U	NA
Tetrachloroethane	6U	29J	10U	6U	6U	NA
Toluene	21 J,B	78B	68B	6U	6U	NA

(1) Samples collected by LC/PC & H2M labs as part of Phase II investigation, October, December 1988.
(2) Only those compounds which exhibited contaminant levels higher than background levels are presented.
(3) Concentrations in MW#1 soil sample represent background levels of soil contamination for the site.
U Minimum attainable detection limit for the sample.
B Indicates possible blank contamination.
J Concentration less than instrument detection limit, listed concentration is an estimated value.
NA Information not available.

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TABLE IV-4C
ANALYTICAL RESULTS FOR SEDIMENT & SOIL SAMPLES (1)

Compound (2)	Samples Locations SD-1 (ug/kg)	SD-2 (ug/kg)	SD-3 (ug/kg)	MW#1 (Soil) (ug/kg)	MW#2 (Soil) (ug/kg)	Range of Concentration in Noncontaminated Soils (ug/kg)
Anthracene	200,000	35,000J	13,000J	330U	340U	NA
Fluoranthene	540,000D	190,000	6,600J	330U	340U	70-100 (3)
Pyrene	430,000D	160,000	5,900J	330U	340U	50-1000 (3)
Chrysene	340,000	120,000	4,500J	330U	340U	30-80 (3)
Benzo (b) fluorantene	230,000	110,000	4,200J	330U	240U	NA
Benzo (a) pyrene	65,000	30,000J	2,200J	330U	340U	100-1000 (3)
Benzo (g,h,i) perylene	27,000	15,000J	1,500J	330U	340U	NA
Benzoic acid	120,000U	190,000U	65,000U	1,600U	1,700U	NA
Hexachlorobutadiene	24,000U	37,000U	13,000U	330U	340U	NA
Hexachlorocyclopentadiene	24,000U	37,000U	13,000U	330U	340U	NA
2,4,5,-Trichlorophenol	120,000U	190,000U	65,000U	1,600U	1,700U	NA
Hexachlorobenzene	24,000U	37,000U	13,000U	330U	340U	NA
Pentachlorophenol	120,000U	190,000U	65,000U	1,600U	1,700U	NA
Butylbenzylphthalate	24,000U	37,000U	13,000U	330U	340U	NA
3,3' - Dichlorobenzidine	48,000U	74,000U	26,000U	660U	680U	NA

(1) Samples collected by LC/PC, and analyzed by H2M labs, October, and December, 1988.
(2) Only those constituents which exhibited elevated levels of semi-volatile organic concentration in drainage catch basin sediment samples, or had high concentrations of PAH's (polycyclic aromatic hydrocarbons), or could be sources of emissions for hazardous air contaminants are presented.
(3) Edwards (1983). "Polycyclic Aromatic Hydrocarbons (PAH's) in the Terrestrial Environment - A Review", J.Envir. Quality.

J Concentration less than instrument detection limit, listed concentration is an estimated value.

D Entered if concentration was above the calibration range of the first analysis.

U Minimum attainable detection limit for the sample.

NA Information not available.

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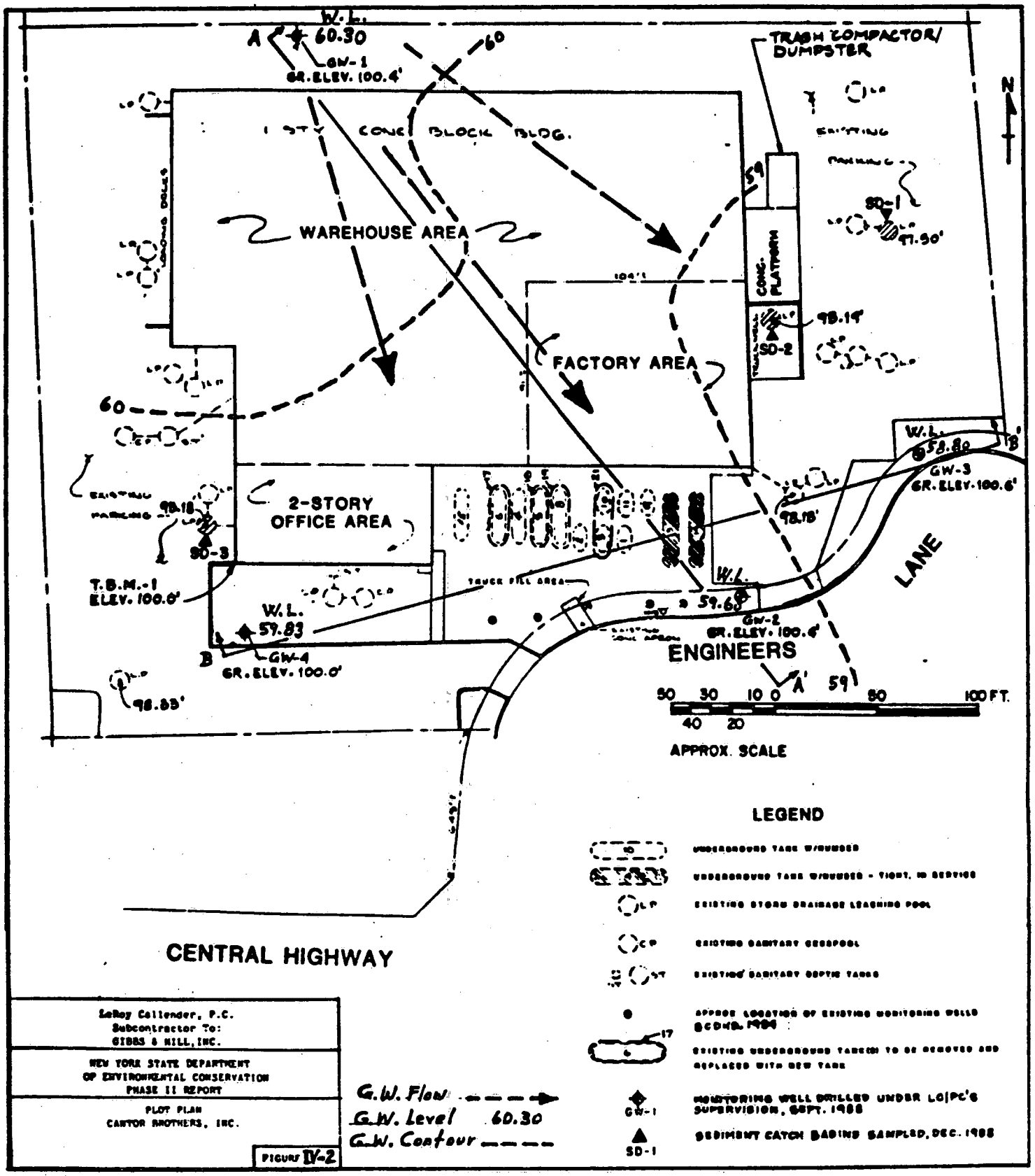
TABLE IV-4D
ANALYTICAL RESULTS FOR SEDIMENT & SOIL SAMPLES (1)

Compound (2)	Sample Locations					Range of Concentration in Noncontaminated Soils (ug/kg)
	SD-1 (DL) (ug/kg)	SD-2 (DL) (ug/kg)	SD-3 (DL) (ug/kg)	MW#1 (Soil) (ug/kg)	MW#2 (Soil) (ug/kg)	
Aldrin	160U	70U	67	8U (3)	8U	NA
Chlordane	1,600U	700U	550U	80U	80U	NA
Dieldrin	320U	140U	120	16U	16U	NA
Endrin	180J	140U	240	1	16U	NA
Heptachlor	160U	70U	55U	8U	8U	NA
Lindane	160U	70U	55U	8U	8U	NA
Methoxychlor	1,600U	700U	550U	80U	80U	NA
Toxaphene	3,200U	1,400U	1,100U	160U	160U	NA

(1) Samples collected by LC/PC & H2M labs, September and October 1988.
(2) Only those constituents which exhibited elevated levels of pesticide organic concentration in catch basin sediment samples, and whose concentrations in groundwater are regulated under State Standards 6NYCRR Part 703, 1978, are presented.

(3) Concentrations in MW#1 soil sample represent background levels of soil contamination for the site.
DL Entered when the sample extract had to be diluted, because of suspected interference.
U Minimum attainable detection limit for the sample.
NA Information not available.


W.L.
60.30
GW-1
GR. ELEV. 100.4'
TRASH COMPACTOR/
DUMPSTER
N
CONC. BLOCK BLDG.
WAREHOUSE AREA
FACTORY AREA
CONC. PLATFORM
SD-1
SD-2
98.14'
2-STORY
OFFICE AREA
SD-3
98.18'
T.B.M.-1
ELEV. 100.0'
W.L.
59.83
GW-4
GR. ELEV. 100.0'
W.L.
58.80
GW-3
GR. ELEV. 100.6'
98.18'
W.L.
59.63
GW-2
GR. ELEV. 100.4'
ENGINEERS
LANE
TRUCK FILL AREA
98.55'
50 30 10 0 50 100 FT.
40 20
APPROX. SCALE
LEGEND
UNDERGROUND TANK W/MANHOLE
UNDERGROUND TANK W/MANHOLE - TIGHT, IN SERVICE
EXISTING STORM DRAINAGE LEACHING POOL
EXISTING SANITARY CESSPOOL
EXISTING SANITARY SEPTIC TANKS
APPROX LOCATION OF EXISTING MONITORING WELLS (CONS. 1984)
EXISTING UNDERGROUND TANKS TO BE REMOVED AND REPLACED WITH NEW TANK
MONITORING WELL DRILLED UNDER LO/PC'S SUPERVISION, SEPT. 1988
SEDIMENT CATCH BASINS SAMPLED, DEC. 1988
CENTRAL HIGHWAY
G.W. Flow
G.W. Level 60.30
G.W. Contour
LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
PLOT PLAN
CANTOR BROTHERS, INC.
FIGURE IV-2

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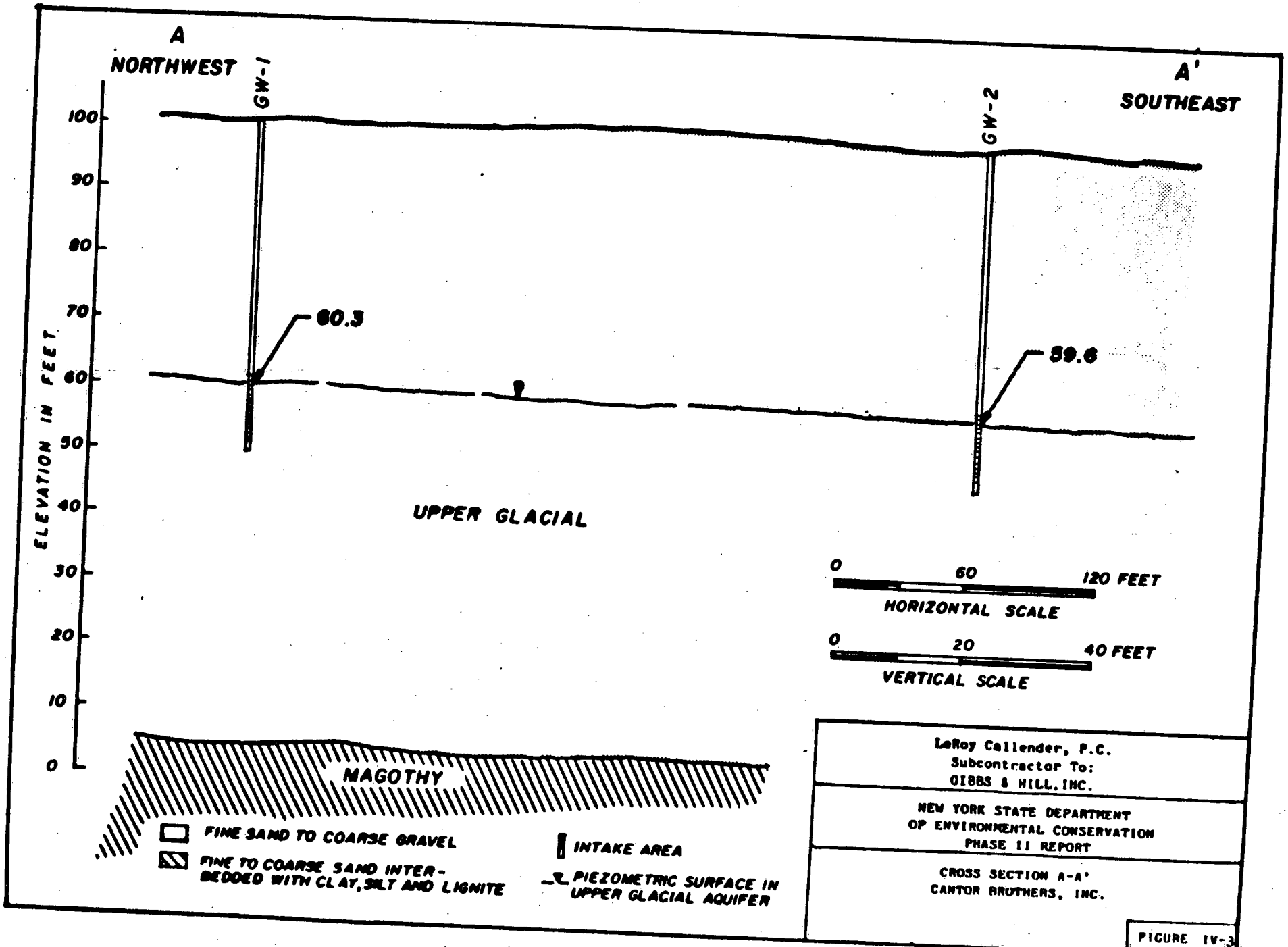
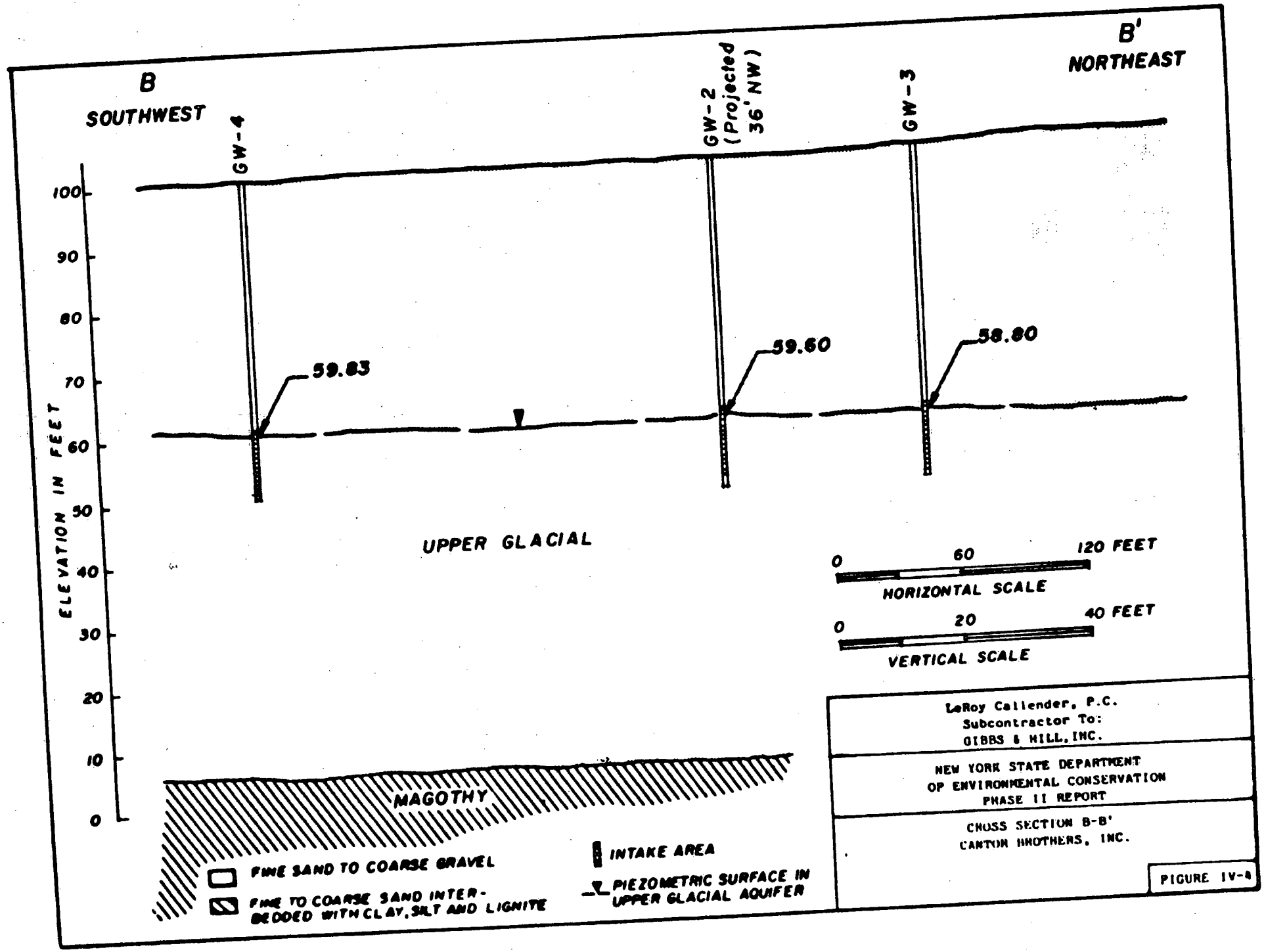

A
NORTHWEST
A'
SOUTHEAST
GW-1
GW-2
ELEVATION IN FEET
100
90
80
70
60
50
40
30
20
10
0
60.3
59.6
UPPER GLACIAL
MAGOTHY
0
60
120 FEET
HORIZONTAL SCALE
0
20
40 FEET
VERTICAL SCALE
FINE SAND TO COARSE GRAVEL
FINE TO COARSE SAND INTER-BEDDED WITH CLAY, SILT AND LIGNITE
INTAKE AREA
PIEZOMETRIC SURFACE IN UPPER GLACIAL AQUIFER
LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
CROSS SECTION A-A'
CANTOR BROTHERS, INC.
FIGURE IV-3


B
SOUTHWEST
B'
NORTHEAST
GW-4
GW-2 (Projected 36' NW)
GW-3
59.83
59.60
58.80
ELEVATION IN FEET
100
90
80
70
60
50
40
30
20
10
0
UPPER GLACIAL
MAGOTHY
0
60
120 FEET
HORIZONTAL SCALE
0
20
40 FEET
VERTICAL SCALE
FINE SAND TO COARSE GRAVEL
FINE TO COARSE SAND INTER-BEDDED WITH CLAY, SILT AND LIGNITE
INTAKE AREA
PIEZOMETRIC SURFACE IN UPPER GLACIAL AQUIFER
LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT
CROSS SECTION B-B'
CANTON BROTHERS, INC.
FIGURE IV-8

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A. NARRATIVE SUMMARY

Cantor Brothers, Inc. site is a 3.2-acre site on Engineers Lane, Town of Babylon, in southwestern Suffolk County, New York, approximately 2 miles east of the Nassau County line.

At the time of the LC/PC site survey (July, 1988), Cantor Brothers, Inc. was an active chemical repacker, handling petroleum distillate solvents, paint thinners, and caulking compounds. Cantor Brothers, Inc. is a private corporation which owns the site property, and its operations are directed by its General Manager, Mr. Matthew J. Miller.

Contamination of the groundwater and catch basin sediments was detected during the Phase II ivestigation and earlier site inspections. Several inorganic and organic contaminants were found in the groundwater, and catch basin sediments. The upper glacial aquifer was found to be contaminated. An HNu meter survey showed no significant organic contamination of the air at the site.

Approximately 5,454 people live within 1-mile radius of the site, and groundwater is their primary source of drinking water supply.

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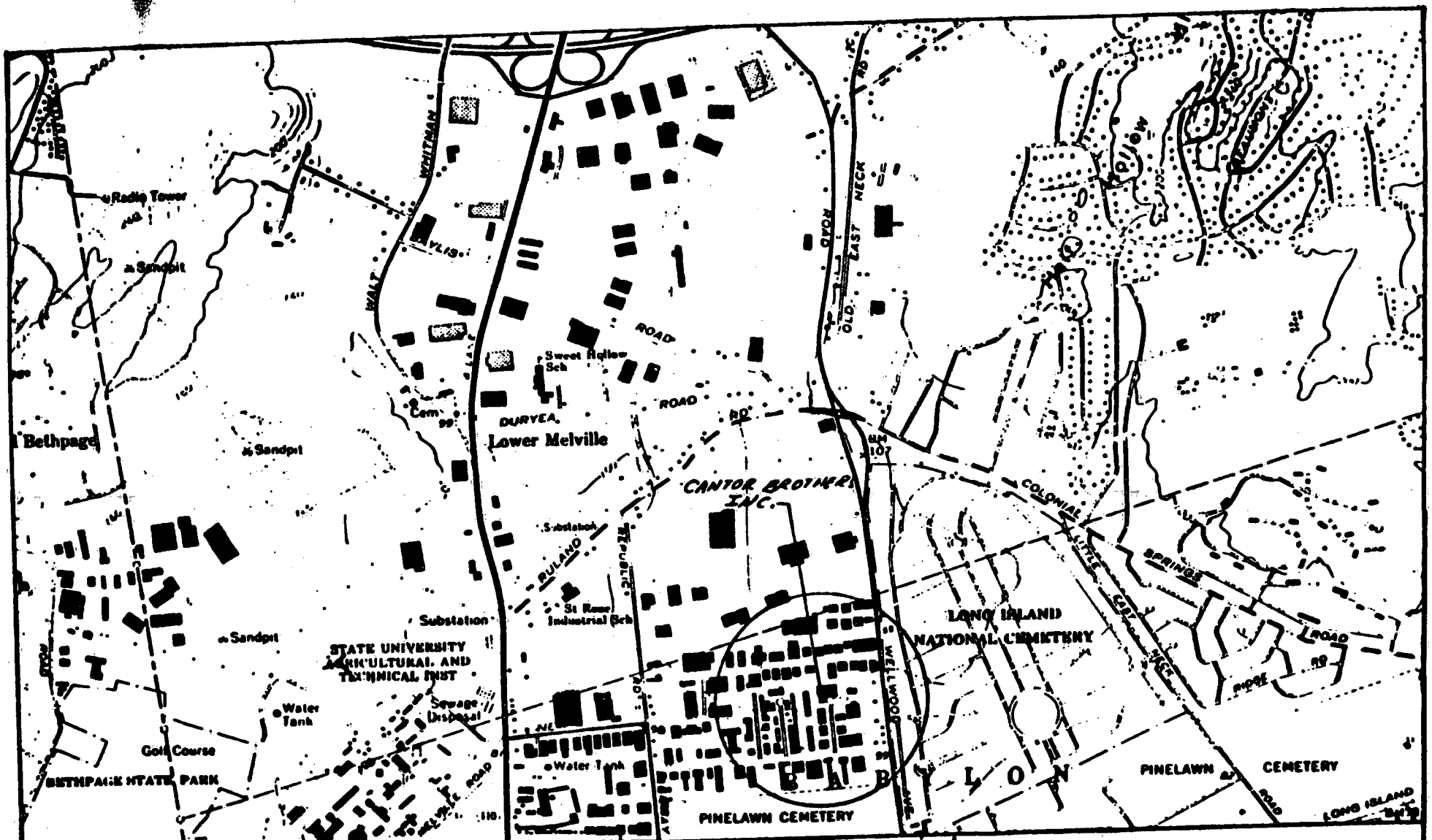
The site is surrounded by numerous commercial and manufacturing facilities, and Bethpage State Park is located approximately 1.5 miles to the west. There are no surface water intakes, freshwater or coastal wetlands within a one-mile radius of the site. The site has no potential impacts on endangered species, rare plant, animal or natural occurrences, or other significant habitats.

State officials have cited Cantor Brothers, Inc. for violation of Article 12 of the Suffolk Country Sanitary Code on several occasions. These violations include spills of hazardous chemicals onto the ground, leaking underground chemical storage tanks, and improper storage of hazardous materials indoors, outside spill-containment areas.



LONGITUDE: 73° 24' 17"
LATITUDE: 40° 45' 20"

REFERENCE: U.S.G.S. 7.5' TOPOGRAPHIC MAP
HUNTINGTON QUADRANGLE, N.Y. (1979)

SCALE 0 1000 2000 3000 4000 FEET

N

LeRoy Callender, P.C.
Subcontractor To:
GIBBS & HILL, INC.

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE II REPORT

SITE LOCATION MAP
CANTOR BROTHERS, INC.

FIGURE V-1

V-2

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LeRoy
Callender
PC

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

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

Facility Name: Cantor Brothers, Inc.

Location: East Farmingdale, Town of Babylon,
Suffolk County, New York

Date Scored: May 1, 1989

Person Scoring: Sirous H. Nabavi, LeRoy N. Callender, P.C.

GROUNDWATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum)
- Tetrachloroethene
- 1,1,1-Trichloroethane
- Trichloroethene
- Arsenic

Rationale for attributing the contaminants to the facility:

Downgradient sample (MW#3) exhibits several times concentration of above-mentioned contaminants found in upgradient sample(MW#1). (Ref. #3, H2M Labs, Inc. 1989).

Assigned Value = 45

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/Description of aquifer(s) of concern:

Upper glacial aquifer; Magothy aquifer (Ref. #1, Franke and McClymonds, 1972; Ref. #4, Jensen and Soren, 1974).

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

39 feet (measured in monitoring wells drilled 9/88).

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

15 feet (measured in Catch Basin No.2).

Assigned Value = 3

Net Precipitation
(Ref. #19, Climatic Atlas of the United States, U.S. Dept. of Commerce, National Climatic Center, 1979).

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

46 inches (Normal Annual Total Precipitation).

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

31 inches (Mean Annual Lake Evaporation).

Net precipitation (subtract the above figures):

15 inches.

Assigned Value = 2

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

sand and gravel (Ref. #1 on Page V-32).

Permeability associated with soil type:

greater than 10^{-3} cm/sec (Ref. #21, User's Manual). See, also, permeability calculations from Phase II Monitoring well test results, page IV-13.

Assigned Value = 3

Physical State

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

Liquid (Ref. #24 SCDHS, Insp. Report dated 1/22/88).

Assigned Value = 3

3. CONTAINMENT

Containment

Method (s) of waste or leachate containment evaluated:

13 underground tanks; approximately 40 55-gal. drums; indoors concrete curbs or berms around drum storage area.

Method with highest score:

Leaking underground tanks.

Assigned Value = 3 (Ref. #21, User's Manual).

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4. WASTE CHARACTERISTICS

Toxicity and Persistance

Compound(s) evaluated:

Arsenic, tetrachloroethene, 1, 1, 1 - trichloroethane, trichloroethene (Ref. #3, H2M Labs, Inc. 1989).

Compound with highest score:

Arsenic - Matrix Value = 18

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (give a reasonable estimate even if quantity is above maximum):

270 tons (13 underground tanks = 52,000 gallons: 40 drums @ 50 gals. each = 2,000 gallons. Total = 54,000 gallons or 270 tons.)

Assigned Value = 5

This is an estimated amount based on the capacity of the storage tanks. It could be higher or lower depending on the total period of leakage.

Basis of estimating and/or computing waste quantity:

Inspection Report dated 1/22/88, by Suffolk County Dept. of Health Services (Ref. #24, SCDHS, 1988 a).

5. TARGETS

Groundwater Use

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

Public supply wells and industrial wells.

(Ref. #13, NYS Atlas of Community Water System Sources, 1982 - 1988 Update. Also, Ref. #12, Well Permits obtained from NYSDEC-Region I.)

Groundwater sources of Magothy aquifer are used for public water supplies. This aquifer is hydraulically connected to Upper Glacial aquifer, which overlies it (Ref. #16, Taney, 1961; Ref. #4, Jensen and Soren, 1974).

Assigned Value = 3

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Distance to Nearest Well

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

495 Smith Street, (Long Island Transmission, Inc.)

Distance to above well or building:

600 feet (Ref. #12, Well Permit No. S-30062, NYSDEC-Reg.1).

Population Served by Groundwater Wells Within a 3-Mile Radius

Public water supplies of East Farmingdale (affected popultion: 7,850); Babylon (Suffolk County Water Authority-affected population, estimated @ 29,221): South Huntington (affected population, estimated @ 15,378): and Dix Hills (affected population estimated @ 6,666). Total affected population : 59,115.

(Ref. #13, NYS Atlas of Community Water System Sources - 1982 - 1988 Update. Also, Ref. #6, 1988 Long Island Almanac).

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

None

Total population served by ground water within a 3-mile radius: 59,115. (Ref. #8, on Page V-32).

Assigned Value = 40

SURFACE WATER ROUTE

1. OBSERVED RELEASE

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

None known.

Assigned Value = 0

Rationale for attributing the contaminants to the facility:

Not applicable.

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0.14 percent (Ref. #14, Storch Assoc. Site Survey, 1988).

[100.4' - 100.00' = 0.4' - 291 = 0.137%]

Name/description of nearest downslope surface water:

Neguntatogue Creek (Ref. #22, USGS, Amityville Quadrangle, 1979).

[The Creek is situated 4.1 miles south-east of the site]

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

Less than 1% (Ref. #22, USGS, Amityville Quadrangle, 1979).

[100.0' - 28.0' = 72.0' - 21,600.0' = 0.33%]

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

No (Ref. #22, USGS, Huntington Quadrangle, 1979: LC/PC Site Reconnaissance, 1988).

Is the facility completely surrounded by areas of higher elevation?

No (Ref. #22, USGS, Huntington Quadrangle, 1979).

Matrix Value = 0

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1-Year 24-Hour Rainfall in Inches

2.7" (Ref. #20, U.S. Department of Commerce Technical Paper NO. 40).

Assigned Value = 2

Distance to Nearest Downslope Surface Water

4 miles (Ref. #22, USGS, Amityville Quadrangle, 1979).

Assigned Value = 0

Physical State of Waste

Liquid (Ref. #24, SCDHS, 1988 a).

Assigned Value = 3

* * *

3. CONTAINMENT

Containment

Methods(s) of waste or leachate containment evaluated:

13 Underground storage tanks: approximately 40 55-gal. drums; indoor concrete berms or curbs around 55-gal. containers. (Ref. #24, on Page V-34).

Method with highest Score:

Leaking underground tanks.

Assigned Value =3

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4. WASTE CHARACTERISTICS

Toxicity and Persistance

Compound(s) evaluated:

Arsenic, Tetrachloroethene, 1,1,1 - Trichloroethane, Trichloroethene(Ref. #3, H2M Labs., Inc.1989).

Compound with highest score:

Arsenic - Matrix Value = 18

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

270 tons (13 underground tanks = 52,000 gallons : 40[1] drums @ 50 gal. each = 2,000 gallons. Total = 54,000 gallons or 270 tons.

Assigned Value = 5

This is an estimated amount based on the capacity of the storage tanks. It could be higher or lower depending on the total period of leakage.

Basis of estimating and/or computing waste quantity:

Inspection Report dated January 22, 1988 by Suffolk County Dept. of Health Services (Ref. #24, SCDHS, 1988 a).

* * *

Note (1)-For capacity of drums, see User's Manual, Ref. #21, Page 19.

5. TARGETS

Surface Water Use

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

None known. (See Ref. #1 on Page V-32; Franke & McClymonds, Page F8.)

Is there tidal influence?

No (Ref. #22, USGS, Amityville Quadrangle, 1979).

Assigned Value = 0

Distance to a Sensitive Environment

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

None (Ref. #10, NYSDEC, Region I-Bureau of Marine Habitat, Map of State Recognized Coastal Wetlands, January 1989).

Distance to 5-acre (minimum) freshwater wetlands, if 1 mile or less:

None (Ref. #9, NYSDEC, Reg. I - Bureau of Freshwater Wetlands, Map of State Recognised Freshwater Wetlands, January 1989).

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

None (Ref. #11, NYSDEC, Reg. I - Bureau of Wild Life Corres., January 1989).

Assigned Value = 0

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Population Served by Surface Water

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

Not applicable.

Matrix Value = 0

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

Not applicable.

Total population served:

Not applicable.

Name/description of nearest of above water bodies:

Not applicable.

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

Not applicable.

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

No significant organic contamination detected during Phase II investigation with an HNu meter (LC/PC, 1988).

Date and location of detection of contaminants:

See above.

Methods used to detect the contaminants:

See above

Rationale for attributing the contaminants to the site:

See above.

Assigned Value = 0

* * *

R-80

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

1,1,1 - Trichloroethane - score = 1.

Most incompatible pair of compounds:

No incompatible substances are present, (Ref. #7, Mallinckrodt, Inc., 1989).

Score = 0

Assigned Value = 1

Toxicity

Most toxic compound:

Arsenic - Score = 3

Hazardous Waste Quantity

Total quantity of hazardous substances:

270 tons (13 underground tanks = 52,000 gallons; 40 drums @ 50 gal. each = 2,000 gallons. Total = 54,000 gallons or 270 tons.) (See note on Page V-19).

Basis of estimating and/or computing waste quantity:

Inspection Report dated Jan. 22, 1988 by Suffolk County Dept. of Health Services (Ref. #24, SCDHS, 1988a).

Assigned Value = 5

This is an estimated amount based on the capacity of the storage tanks. It could be higher or lower depending on the total period of leakage.

* * *

R-81

3. TARGETS

Population within 4-mile Radius

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

0 to 4 mi 0 to 1 mi 0 to 1/2 mi (0 to 1/4 mi)

1,298.

(Ref. #22, USGS, Huntington Quadrangle, 1979) - Number of industrial buildings: 63, assumed population per building: 20; number of dwellings: 10, assumed population per dwelling: 3.8. Thus:

(63 x 20 = 1,260) + (10 x 3.8 = 38) = 1,298.)

Assigned Value = 24

Distance to a Sensitive Environment

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

None within 2 miles (Ref. #10, NYSDEC, Region I - Bureau of Marine Habitat, Map of State-Recognised Wetlands, Jan./89).

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

None within a mile (Ref. #9, NYSDEC, Region I - Bureau of Freshwater Wetlands, Map of State Recognized Freshwater Wetlands, Jan. 1989).

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

None within 1 mile (Ref. #11, NYSDEC, Region I- Bureau of Wildlife, Corres., Jan. 1989).

Assigned Value = 0

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Land Use

(Ref. #22, on Page V-34; USGS Quandrangle Maps)

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

Immediately adjacent to site. Score = 3

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

1.5 miles - Bethpage State Park.

Distance to residential area, if 2 miles or less:

Less than 1/4-mile (Ref. #14, Site Survey). - Score = 3

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

1/2 to 1 mile (Ref. #15, Suffolk County Soil & Water Conservation District, Corres. 1989).
Score = 1

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

No. (Ref. #18, Corres. w/ Historian, Town of Babylon, 1/89)
Score = 0

Assigned Value = 3

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FIRE AND EXPLOSION

NOTE: Although the local Fire Marshal has not declared this site a Fire and/or explosion hazard, several violations of the Babylon Town Fire Prevention Code have been found at the site. In addition, the Fire Prevention Permit (#524) has not been issued for this location in a number of years. (Ref. #17, Senior Fire Marshal's letter of 1/4/89).

1. CONTAINMENT

Hazardous substances present:

1,1,1-Trichloroethane, Trichlorothene, Tetrachloroethene, Kerosene, Lacquer thinner (Ref. #24, SCDHS, 1988a).

Type of containment, if applicable:

Underground tanks; 55-gal. drums; 5-gal. containers.

Assigned Value = 3 (Ref. #21, User's Manual).

* * *

R-84

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

Not applicable.

Assigned Value = 0

Ignitability

Compound used:

Kerosene (Ref. #21, User's Manual)

Assigned Value = 2

Reactivity

Most reactive compound:

1,1,1 - Trichloroethane (Ref. #24, SCDHS, 1988a.) - score = 1.

Incompatibility

No incompatible substances are present (Ref. #7, Mallinckrodt, Inc., 1989).

Assigned Value = 0

Hazardous Waste Qauntity

Total quantity of hazardous substances at the facility:

270 tons (13 underground tanks = 52,000 gallons; 40 drums @ 50 gal. each = 2,000 gals. Total = 54,000 gallons or 270 tons.)

Basis of estimating and/or computing waste quantity:

Inspection Report dated 1/22/88 by SCDHS (Ref. #24, SCDHS, 1988 a.)

Assigned Value = 5 (Ref. #21, User's Manual).

This is an estimated amount based on the capacity of the storage tanks. It could be higher or lower depending on the total period of leakage.

* * *

R-85

3. TARGETS

Distance to Nearest Population

0.0 mile (Ref. #14, on Page V-33).

Assigned Value = 5

Distance to Nearest Building

0.0 mile (Ref. #14, on Page V-33).

Assigned Value = 3

Distance to Sensitive Environment

Distance to wetlands:

More than 100 feet (Ref. #9, Map of State Recognized Wetlands - NYSDEC, Region 1).

Score =0

Distance to critical habitat:

More than 1/2 mile (Ref. #11, NYSDEC, Region 1- Bureau of Wildlife Correspondence 1/89). Score = 0

Assigned Value = 0

Land Use

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

Immediately adjacent to site (Ref. #22, on Page V-34, USGS Quadrangle Maps). Score =3

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

1.5 miles - Bethpage State Park.

Distance to residential area , if 2 miles or less:

Less than 1/4 mile (Ref. #14, Site Survey).

Score = 3

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

1/2 to 1 mile (Ref. #15, Suffolk County Soil& Water Conservation District, Correspondence, 1/89); Ref. #6, Long Island Almanac, Sheet #6.

Score = 1

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

No, (Ref. #18, Corres. w/ Historian, Town of Babylon - 1/89).

Assigned Value = 3

Population within 2-mile Radius

32,886 (Ref. #22, USGS Amityville, Huntington, Greenlawn, and Bay Shore West Quadrangles, 7.5 Minutes Series, topographic, 1979; Ref. #6, Long Island Almanac, 1988).

Assigned Value = 5

Buildings within 2-Mile Radius

2,653 (Estimated - Ref. #22, USGS Amityville, Huntington, Greenlawn,and Bay Shore West Quadrangles, 7.5 Minute Series, Topographic, 1979).

Assigned Value = 5 (User's Manual)

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DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

No known observed incidents.

Assigned Value = 0

2. ACCESSIBILITY

Describe type of barrier(s):

No barrier completely surrounds the facility.

Assigned Value = 3

3. CONTAINMENT

Type of containment, if applicable:

Underground and above-ground tanks; 55-gal. drums and 5 gal. containers.

Assigned Value = 15

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4. WASTE CHARACTERISTICS

Compounds evaluated:

Arsenic, 1,1,1, - Trichloroethane, Tetrachloroethene, Trichloroethene, and Kerosene (Ref. #3 on Page V-32, H2M Labs, Inc., 1989; Ref #24, SCDHS, 1988a).

Compound with highest score:

Arsenic - Score = 3

Assigned Value = 3

5. TARGETS

Population within one-mile radius

5,454 people (Ref. #22, USGS Amityville, and Huntington Quadrangles, 7.5 Minute Series, Topographic, 1979).

Assigned Value = 4 (User's Manual)

Distance to critical habitat (of endangered species)

Greater than 1 mile (Ref. #11, NYSDEC, REGION 1-Bureau of Wildlife Corresp. 1/89).

Assigned Value = 0

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ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

VOLUME I

Cantor Brothers, Inc.
Town of Babylon

Site No. 152021
Suffolk County

Final Report

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Prepared for :

New York State
Department of
Environmental Conservation

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

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

by:

LeRoy Callender, P. C.
Subcontractor to :
Gibbs & Hill, Inc.

LeRoy
Callender
PC

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

PHASE II INVESTIGATIONS

VOLUME I

CANTOR BROTHERS, INC.

NYS SITE I.D. NO. 152021

TOWN OF BABYLON

SUFFOLK COUNTY

NEW YORK STATE

Prepared For:

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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ALBANY, NEW YORK 12233

THOMAS C. JORLING, COMMISSIONER

DIVISION OF HAZARDOUS WASTE REMEDIATION
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SECTION I

EXECUTIVE SUMMARY

The Phase II investigation of Cantor Brothers, Inc. site (NYSDEC site ID # 152021) was conducted by LeRoy Callender, P.C. (LC/PC) under a subcontract dated March 21st, 1988 with Gibbs & Hill, Inc., for the New York State Department of Environmental Conservation (NYSDEC), Division of Hazardous Waste Remediation. The subcontract agreement referred to hereabove called for furnishing consultant services for Engineering Investigations of Inactive Hazardous Waste Disposal Sites in New York State - Phase II Investigations. On June 28, 1989, the subcontract agreement was amended by Amendment No. 1, which reduced LC/PC's scope of services in the original agreement by deleting the task of disposal of drilling cuttings drummed as a result of the installation of monitoring wells. This report presents the results of the Phase II investigation of Cantor Brothers, Inc. site performed by LC/PC. A Phase I investigation of this site was completed in September 1984 by Woodward-Clyde Consultants, Inc.

A. SITE DESCRIPTION

Cantor Brothers, Inc. site is a 3.2 -acre site located in East Farmingdale, Town of Babylon, Suffolk County, New York, (Figure I-1). The site is located in southwestern part of Suffolk County, approximately 2 miles east of the Nassau County line, and is presently owned by Cantor Brothers, Inc.

REF. 1.

Summary of the Hydrologic Situation on Long Island, New York, as a Guide to Water-Management Alternatives

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

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

GEOLOGICAL SURVEY PROFESSIONAL PAPER 627-F

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

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ROGERS C. B. MORTON, *Secretary*

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In this section of the report the basic time unit for presenting hydrologic information is the water year, which is the 12-month period beginning on October 1 and ending on September 30; it is designated by the calendar year in which it ends.

HOW AND WHERE THE WATER OCCURS

On Long Island and its environs, water occurs as vapor, as a liquid, and at times during the winter as a solid in the form of ice or snow. The water vapor occurs primarily in the atmosphere and in the zone of aeration. In this study the water vapor of the atmosphere is not of concern until it condenses and reaches the land surface as precipitation.

Liquid water occurs mainly in bodies of surface water and as ground water. Fresh surface-water bodies include lakes and streams. In addition, Long Island is surrounded by the salty water of Long Island Sound and the Atlantic Ocean. Brackish surface water occurs in the estuaries and bays between the fresh-water streams and ocean water.

Most of the fresh ground water occurs from the bedrock surface to the water table beneath the entire mainland of Long Island, except for the Forks where only the upper layers contain fresh ground water. Locally, small, and probably insignificant, amounts of fresh ground water occur in fractures and in the upper part of the bedrock where it is highly weathered. The occurrence of fresh ground water beneath the adjacent bays and barrier beaches varies with depth and specific location, and salty ground water occurs seaward of fresh ground water around the entire perimeter of Long Island.

BODIES OF SURFACE WATER

Several lakes and most of the principal streams on Long Island are shown in figure 3. Lake Ronkonkoma, with an area of about 0.85 square mile, is the largest lake on Long Island. The northward-flowing Nissequogue River has the greatest average discharge—about 42 cfs (cubic feet per second) for the period 1940–65—of any stream on Long Island. The eastward-flowing Peconic River is the longest stream, having a main wet-channel length of about 9–10 miles upstream from the gaging station. The remaining larger streams flow southward into Great South Bay. Relative to the southward-flowing streams—except for the Nissequogue River—the northward-flowing streams are short, few in number, and discharge relatively small amounts of water.

ZONE OF AERATION

The zone of aeration is that part of the solid earth lying above the water table. The interstices in this zone are largely filled with atmospheric gases (including water vapor) and liquid water. The extremely significant process of evapotranspiration occurs primarily on and within several feet of the upper surface of the zone of aeration (land surface), and most of the water that recharges the ground-water reservoir passes through the zone of aeration.

The volumes of the zone of aeration for all of Long Island and for the water-budget area were about 11 and 10 cubic miles, respectively, in September 1965. If the specific retention of the deposits in the zone of aeration is assumed to be 10–15 percent (see section on "Infiltration to the Zone of Aeration," p. F20), an average of about 1 cubic mile of water was stored in this zone on Long Island at that time. However, this water cannot move into a well and, therefore, is not available for direct use by man.

The distribution of areas with various depths to the water table in the water-budget area and the immediately adjacent nearshore areas is shown in figure 6. The data show that the depth to the water table is less than 10 feet for about 14 percent, or for about 120 square miles of this area. Within the water-budget area, however, the depth to the water table is less than 10 feet in only about 50 square miles.

Figure 7 shows the depth to the water table in a typical area in the southern part of Long Island, based on water levels in October 1961. An appreciable area near the south shore is characterized by depths to the water table that are less than 10 feet; the depth to the water table generally increases gradually northward to the terminal moraine. In most of the areas

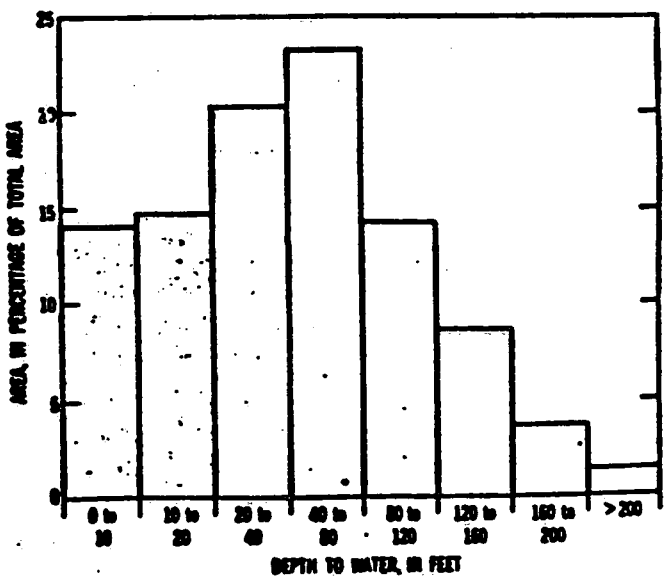

FIGURE 6.—Distribution of depths to the water table in the water-budget and adjacent nearshore areas, based on ground-water levels in September 1965.

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underlain by terminal-moraine deposits, the depth to the water table is more than 50 feet, and in small areas the depth to the water table is more than 200 feet. Depths to the water table near the northern coast of the island generally are more than 20 feet, except adjacent to stream channels or in narrow bands near the shoreline.

GROUND-WATER RESERVOIR

HYDROLOGIC FEATURES OF THE GROUND-WATER RESERVOIR

The overall hydrogeologic setting of Long Island was described in considerable detail by Veatch (1906), Fuller (1914), and Suter, De Laguna, and Perlmutter (1949). The geology and related hydrology of several smaller areas of Long Island have been studied in greater detail by others, including De Laguna (1963), Isbister (1966), Lubke (1964), Luszczynski and Sw zenski (1966), Perlmutter and Geraghty (196 Pluhowski and Kantrowitz (1964), and Swarzen (1963).

Long Island is underlain by consolidated bedro which, in turn, is overlain by a wedge-shaped mass unconsolidated rock materials (fig. 8).[1] These ma rials, which constitute Long Island's ground-wa reservoir, consist primarily of a series of Pleistoc glacial deposits and Cretaceous fluvial or deltaic dep its composed of gravel, sand, silt, clay, and mixtu thereof. The Cretaceous deposits were eroded

[1] The actual dip of the upper bedrock surface is slightly less than to the southeast. The much greater inclination of the bedrock sur and the Magothy aquifer shown in figure 8 is due to the large verti scale exaggeration of this cross section.

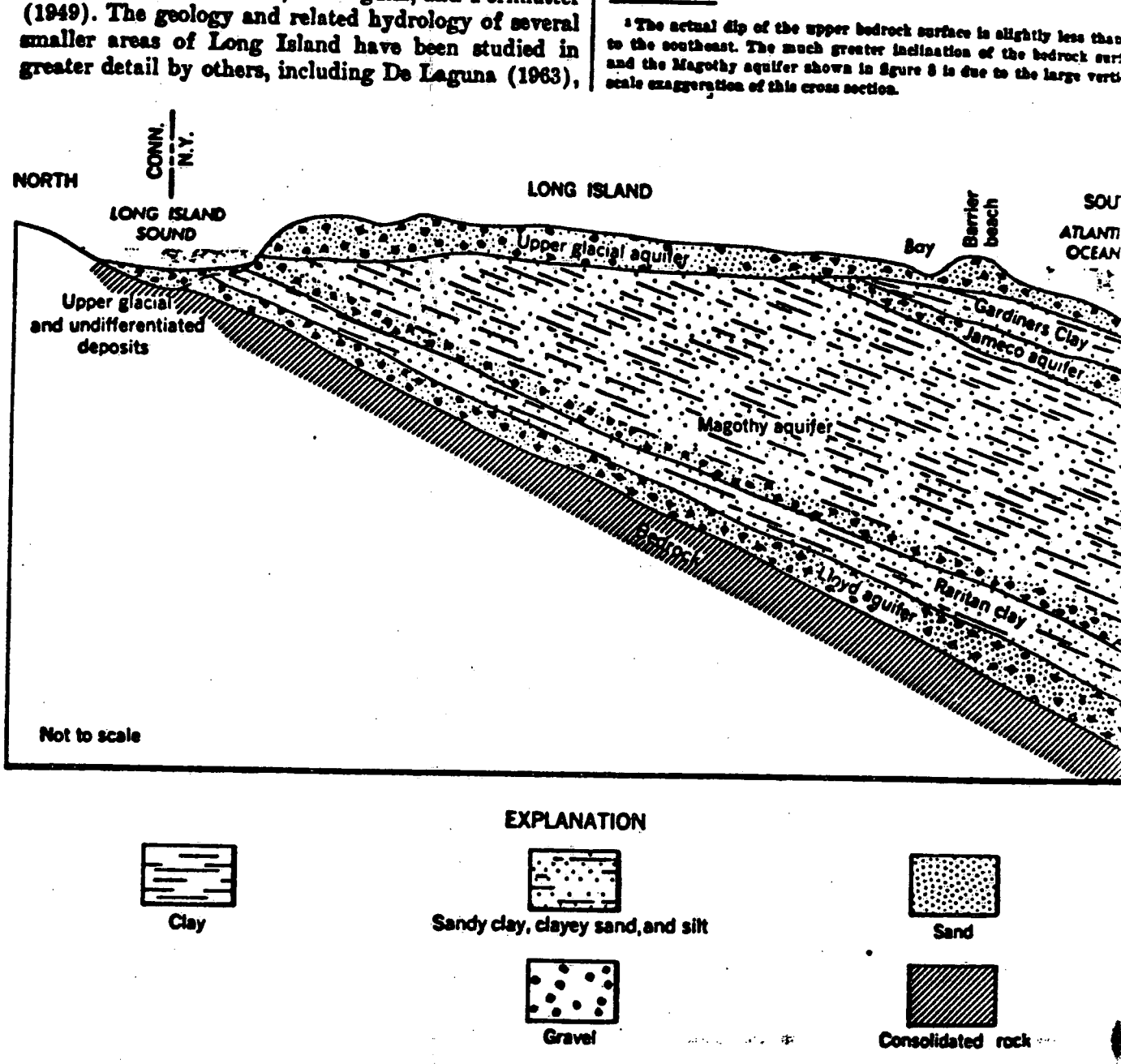

FIGURE 8.—Geologic features of the ground-water reservoir.

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reams and glaciers so that the Pleistocene deposits on an irregular Cretaceous surface, and in places s Pleistocene deposits fill valleys cut by preglacial d glacial streams. These valleys have been fairly well defined in Kings and Queens Counties and along s northern margin of the island eastward to the ddle of Suffolk County. In eastern Suffolk County, owever, data on the contact between the Pleistocene d the Cretaceous are very sparse.

upper surface of the Cretaceous deposits is a level in a large area in northern Nassau and rn Suffolk Counties, and in all but a few small as, the Pleistocene deposits cover the Cretaceous posits throughout Long Island. Pertinent information concerning the principal hydrogeologic units hin the ground-water reservoir are briefly summarized in table 2.

Ground water in the uppermost part of the zone saturation on Long Island (mainly in the upper cial aquifer, but locally also in the Magothy uifer) is generally under water-table conditions. esian conditions predominate in most of the other ts of the ground-water reservoir of Long Island, ere the saturated deposits are overlain and confined silty and clayey layers of low hydraulic conductity. The hydraulic head in the confined aquifers ges from several feet below the water table to rly 20 feet above it. At places along the north and th shores and on the barrier beaches, the head in Lloyd aquifer is high enough to cause some wells which penetrate this aquifer to flow.

a addition to the Raritan clay, which confines water the Lloyd aquifer, the other major well-defined fining layer in the ground-water reservoir is the diners Clay. This unit locally confines water in Jameco and Magothy aquifers. Numerous clayey silty layers in the Magothy aquifer and clay s in the glacial deposits also are significant con- g layers. Normally, the degree of confinement in Magothy aquifer increases with depth as more more clayey layers intervene between the deep and the water table.

OUNDARIES OF THE FRESH GROUND-WATER RESERVOIR

e boundaries of the fresh ground-water reservoir the water table, the fresh-salt water interface, and bedrock surface. The estimated average position e water table under natural conditions is shown igure 9. The position of the contours is based on map of the water table in Kings, Queens, and au Counties in 1903 (prepared by Veatch in 1906), on later water-table maps of Suffolk County. Major features of this map are the two areas of highest ground-water altitude (represented by closed 80-ft and 60-ft contours) which extend approximately westward in the north-central parts of Nassau and Suffolk Counties. Also noteworthy are the steep water-level gradients near the north shore of Long Island compared to the gradients near the south shore.

The water table, which is the upper boundary of the ground-water reservoir, is a dynamic (moveable) feature. Present information indicates that recharge to the water table occurs throughout virtually all of Long Island. Therefore, the water table is not, from the point of view of potential theory, a stream surface. It is instead a surface characterized by a constantly varying potential which is equal to the altitude of the water table at any point. Because the water table on Long Island is largely a recharging potential boundary of the ground-water reservior, streamlines flow perpendicularly from the water table into the ground-water reservoir. Locally, as near the shorelines where ground water is lost by evapotranspiration, the water table is a discharging potential boundary.

The ground-water reservoir is bordered laterally by a second moveable boundary—the fresh-salt water interface. The position of this interface (or these interfaces) is fairly accurately known only in southwestern Nassau and southeastern Queens Counties as a result of an intensive investigation by Lusczynski and Swarzenski (1966). A north-south cross section through the ground-water reservoir in this area (fig. 10) shows three separate salt-water wedges—a shallow wedge in the glacial aquifer and intermediate and deep wedges in the Magothy aquifer. Furthermore, a fourth wedge exists in the Lloyd aquifer somewhere seaward of the barrier beaches.

The occurrence of fresh ground water in the Lloyd aquifer below salty ground water in the lower part of the Magothy aquifer has never been adequately explained. However, this occurrence must be related in some way to the relatively impermeable Raritan clay overlying the Lloyd aquifer. At least four separate wedges of salty ground water with relative positions approximately as indicated in figure 10 probably occur for a considerable distance eastward from western Nassau County (on the order of tens of miles) along the south shore of Long Island.

Very scanty information indicates that the Lloyd aquifer and the deep Magothy aquifer contain salty ground water beneath the Forks of Long Island. The fresh ground water beneath the Forks occurs in a lens ranging in thickness from a few feet to several hundred feet.

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TABLE 2.—*Summary of the rock units and their water-bearing properties, Long Island, N.Y.*

[After McClymonds and Franke, 1971]

System	Series	Geologic unit	Hydrogeologic unit	Approximate maximum thickness (feet)	Depth from land surface to top (feet)	Character of deposits	Water-bearing properties
Quaternary	Holocene	Artificial fill, salt marsh deposits, stream alluvium, and shoreline deposits.	Holocene deposits	80	0	Sand, gravel, clay, silt, organic mud, peat, loam, and shells. Colors are gray, brown, green, black, and yellow. Holocene artificial-fill deposits of gravel, sand, clay, and rubbish.	Permeable sandy beds beneath barrier beaches yield fresh water at shallow depths, brackish to salty water at greater depth. Clay and silt beneath bays retard salt-water encroachment and confine underlying aquifers. Stream-flood-plain and marsh deposits may yield small quantities of water, but are generally clayey or silty and much less permeable than underlying upper glacial aquifer.
	Pleistocene	Upper Pleistocene deposits	Upper glacial aquifer	600	0-80	Till (mostly along north shore and in moraines) composed of clay, sand, gravel, and boulders. Forms Harbor Hill and Ronkonkoma terminal moraines. Outwash deposits (mostly between and south of terminal moraines, but also interlayered with till) consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Glaciolacustrine deposits (mostly in central and eastern Long Island) and marine clay (locally along south shore) consist of silt, clay, and some sand and gravel layers; includes "20-foot clay" in southern Nassau County and Queens County. Colors are mainly gray, brown, and yellow; silt and clay locally are grayish green. Contains shells and plant remains, generally in finer grained beds; also contains Foraminifera. Contains chlorite, biotite, muscovite, hornblende, olivine, and feldspar as accessory minerals; "20-foot clay" commonly contains glauconite.	Till is poorly permeable; commonly causes perched-water bodies and impedes downward percolation of water to underlying beds. Outwash deposits are moderately to highly permeable; specific capacities of wells tapping them range from about 10 to more than 200 gpm per foot of drawdown. Good to excellent infiltration characteristics. Glaciolacustrine and marine clay deposits are mostly poorly permeable, but locally have thin moderately permeable layers of sand and gravel; generally retard downward percolation of ground water. Contains fresh water, except near the shoreline. Till and marine deposits locally retard salt-water encroachment.
		—Unconformity?—					
		Gardiners Clay	Gardiners Clay	300	80-400	Clay, silt, and few layers of sand and gravel. Colors are grayish green and brown. Contains marine shells, Foraminifera, and lignite; also glauconite, locally. Altitude of top generally is 30-60 ft below mean sea level. Occurs in Kings and Queens Counties, southern Nassau County, and Suffolk County; similar clay occurs in buried valleys near north shore.	Poorly permeable; constitutes confining layer for underlying Jameco aquifer. Locally, sand layers yield small quantities of water.
		—Unconformity?—					
		Jameco Gravel	Jameco aquifer	300	80-550	Sand, fine to very coarse, and gravel to large-pebble size; few layers of clay and silt. Gravel is composed of crystalline and sedimentary rocks. Color is mostly dark brown. Contains chlorite, biotite, muscovite, hornblende, and feldspar as accessory minerals. Occurs in Kings and Queens Counties, and southern Nassau County; similar deposits occur in buried valleys near north shore.	Moderately to highly permeable; contains mostly fresh water, but brackish water and water with high iron content locally in southeastern Nassau County and southern Queens County. Specific capacities of wells in the Jameco range from about 20 to 120 gpm per foot of drawdown.
		—Unconformity—					
Tertiary(?)	Pliocene(?)	Manetto Gravel	(Commonly included with upper glacial aquifer.)	200	0-120	Gravel, fine to coarse, and lenses of sand; scattered clay lenses. Colors are white, yellow, and brown. Occurs only near Nassau-Suffolk County border near center of island.	Highly permeable, but occurs mostly above water table. Excellent infiltration characteristics.
		—Unconformity—					
Cretaceous		Magothy Formation	Magothy aquifer	1,100	0-600	Sand, fine to medium, clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal 50-200 ft. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common; muscovite, magnetite, rutile, and garnet are accessory minerals. Colors are gray, white, red, brown, and yellow.	Most layers are poorly to moderately permeable; some are highly permeable locally. Specific capacities of wells in the Magothy generally range from 1 to about 30 gpm per foot of drawdown, rarely are as much as 60 gpm per ft. Water is unconfined in uppermost parts, elsewhere is confined. Water is generally of excellent quality but has high iron content locally along north and south shores. Constitutes principal aquifer for public-supply wells in western Long Island, except Kings County where it is mostly absent. Has been invaded by salty-ground water locally in southwestern Nassau County and southern Queens County, and in small areas along north shore.

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TABLE 2.—*Summary of the rock units and their water-bearing properties, Long Island, N.Y.*—Continued

Series	Geologic unit		Hydrogeologic unit	Approximate maximum thickness (feet)	Depth from land surface to top (feet)	Character of deposits	Water-bearing properties
	Unconformity						
Upper Cretaceous	Raritan Formation	Clay member	Raritan clay	300	70-1,800	Clay, solid and silty; few lenses and layers of sand; little gravel. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated.	Poorly to very poorly permeable; constitutes confining layer for underlying Lloyd aquifer. Very few wells produce appreciable water from these deposits.
		Lloyd Sand Member	Lloyd aquifer	800	200-1,800	Sand, fine to coarse, and gravel, commonly with clayey matrix; some lenses and layers of solid and silty clay; contains thin lignite layers and iron concretions locally. Locally, has gradational contact with overlying Raritan clay. Sand and most of gravel are quartzose. Colors are yellow, gray, and white; clay is red locally.	Poorly to moderately permeable. Specific capacities of wells in the Lloyd generally range from 1 to about 25 gpm per foot of drawdown, rarely are as much as 50 gpm per ft. Water is confined under artesian pressure by overlying Raritan clay; generally of excellent quality but has high iron content locally. Has been invaded by salty ground water locally in necks near north shore, where aquifer is mostly shallow and overlying clay discontinuous. Called deep confined aquifer in some earlier reports.
	Unconformity						
[illegible]ian	Bedrock		Bedrock	.....	0-2,700	Crystalline metamorphic and igneous rocks; muscovite-biotite schist, gneiss, and granite. A soft clayey zone of weathered bedrock locally is more than 100 ft thick.	Poorly permeable to virtually impermeable; constitutes virtually the lower boundary of ground-water reservoir. Some hard, fresh water is contained in joints and fractures, but is impracticable to develop at most places; however, a few wells near the western edges of Queens and Kings Counties obtain water from the bedrock.

[illegible] fresh-salt water interface is not a sharp [illegible]ary. The horizontal distance over which the [illegible]ved-solids content of ground water changes [illegible] completely fresh to completely salty is gen[illegible]y on the order of 2–3 thousand feet near the [illegible] shore of Long Island. Over this distance, [illegible] dissolved-solids content of the ground water [illegible]ases at first gradually in the direction of the [illegible] ground water and then more rapidly.

The fresh-salt water interface is a complex streamline surface, and fresh ground water discharging into the ocean and bays moves parallel to the interface and not across it. The hydrodynamics of a stable interface and, to an even greater degree, an unstable interface that changes position in response to changes in head within the ground-water reservoir, is complicated and beyond the scope of this report. (See Lusczynski, 1961; Cooper, 1964; and Kohout, 1964.)

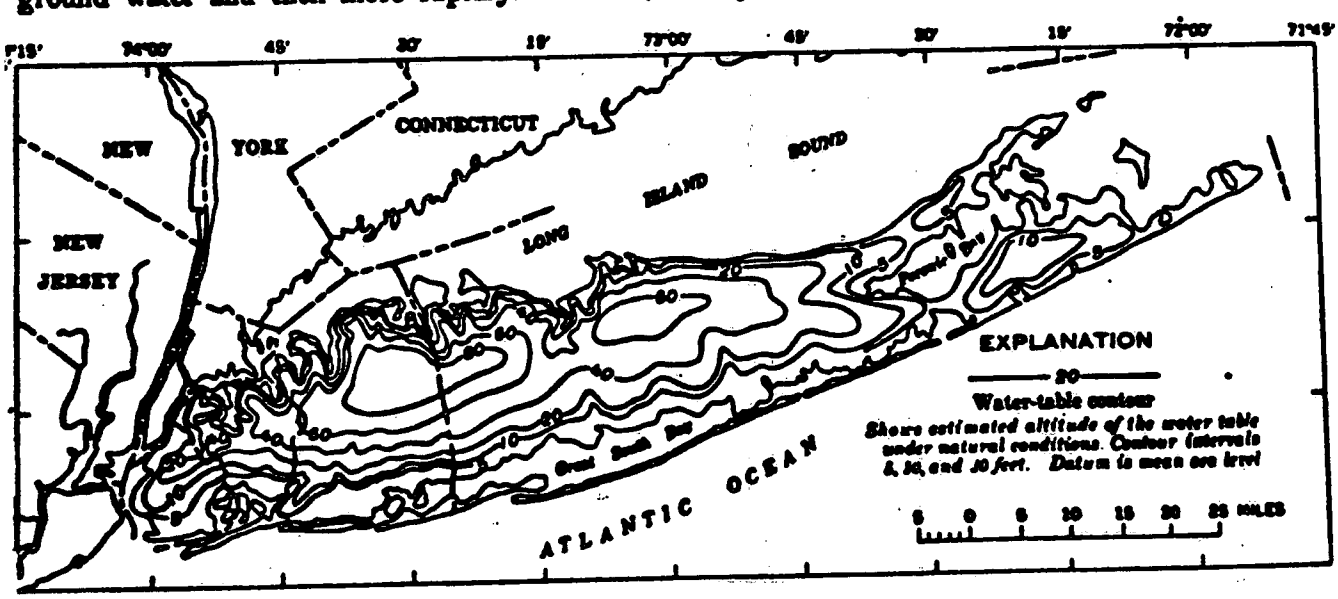

FIGURE 9.—Estimated average position of the water-table under natural conditions.

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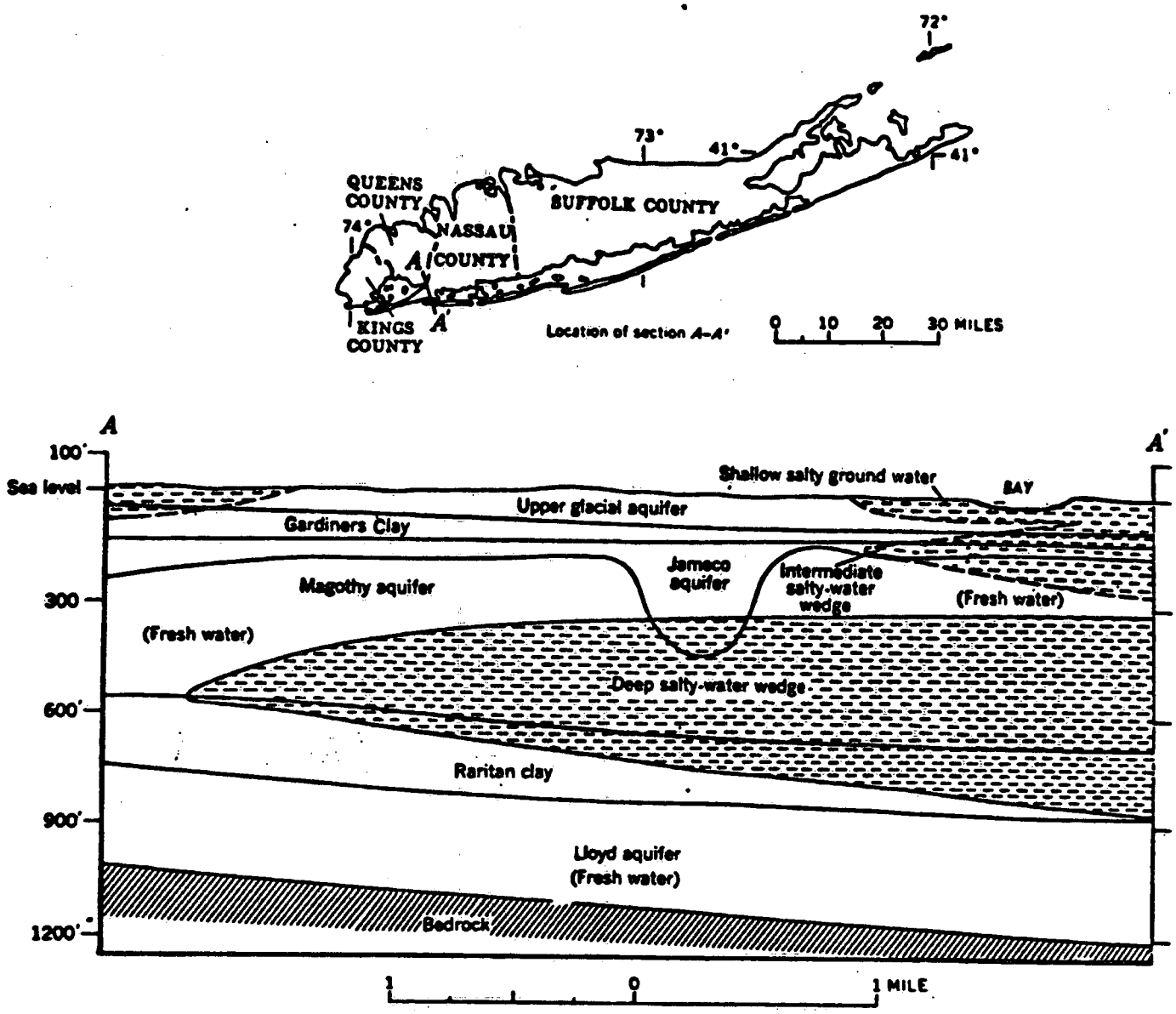

FIGURE 10.—Occurrence of salty ground water in southwestern Nassau County, in 1961. Adapted from Lusczynski and Swarzenski (1966, pl. 3).

The top of the bedrock surface, which outcrops in western Queens County, dips southeast on the average about 65 feet per mile, or slightly less than 1°, to an estimated depth of about 2,000 feet in south-central Suffolk County (fig. 11). The number of control points on the bedrock surface, particularly in Suffolk County, is small; therefore, the surface undoubtedly is more irregular than is indicated in figure 11.

For practical purposes the bedrock surface is the impervious bottom of the ground-water reservoir. Hydraulically, therefore, the top of the bedrock is a stream surface; ground water flows parallel to the bedrock and not across it, and equipotential lines or surfaces intersect the bedrock at right angles.

Generally, the flowing parts of the streams on Long Island are ground-water drains, and the ground water continually discharges into these parts under natural conditions. Therefore, in relation to the ground-water reservoir, the streams are discharging potential boundaries. The potential at a given point on the stream is equal to the altitude of the stream at that point. Thus, the potential along the stream channel varies continuously from the altitude of start of flow of the stream to the altitude of the surrounding bay or ocean.

The approximate location and altitude of the points of start of flow for several streams in June 1967 are shown in figure 8. Because ground-water levels and

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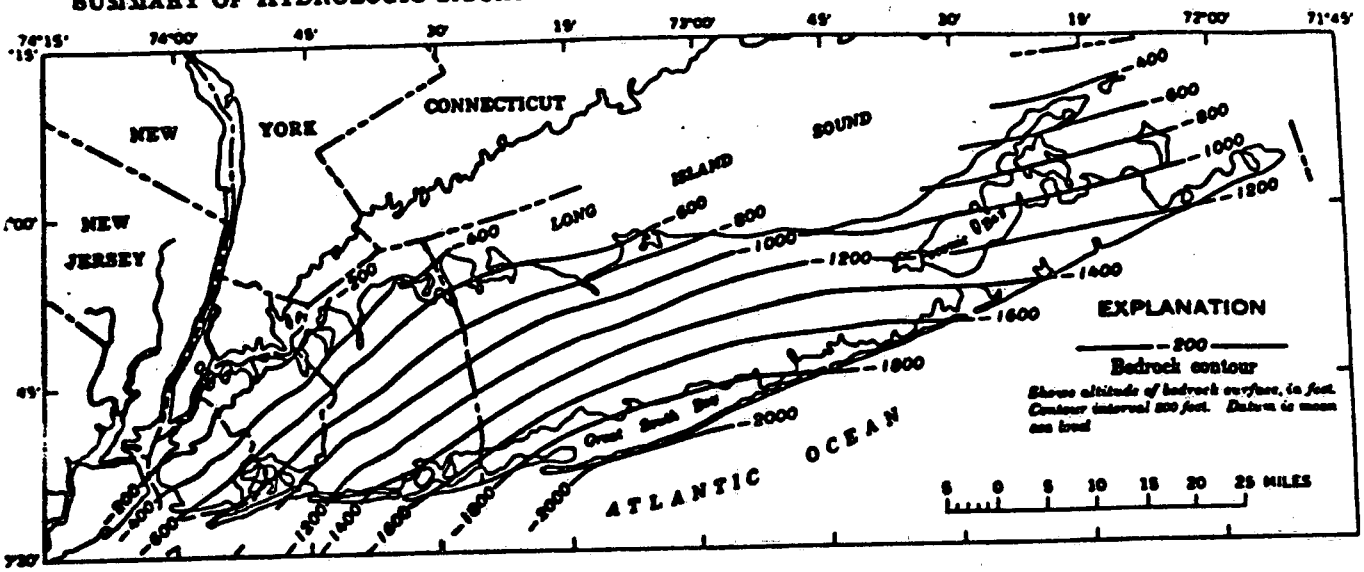

FIGURE 11.—Contour map of the bedrock surface. Modified from Suter, De Laguna, and Perlmutter (1949, pls. 8–10).

streamflow were below average for this month, these altitudes are slightly lower than (on the order of ft) and the points of start of flow are slightly seaward (on the order of several hundred feet) of their average positions. The points of start of flow of the streams are points on the water table, and the locations of these points reflect local conditions relating to topography and position of the water table.

SIZE OF THE FRESH GROUND-WATER RESERVOIR

The volumes of various parts of the fresh ground-water reservoir are given in table 3. The estimates of the volumes of unconsolidated deposits saturated with fresh ground water (col. 2) were derived mainly from a map showing the saturated thickness of the ground-water reservoir in 1965 (fig. 12). The water table at this time, particularly in Kings, Queens, and western Nassau Counties, was considerably lower than the water table under natural conditions. However, the difference in the total volume of fresh ground water in the ground-water reservoir in 1965 compared to the volume under natural conditions is negligible compared to the total volume of fresh ground water in the ground-water reservoir.

The values in column 2 of table 3 are probably accurate to within about 10 percent, except for one entry—the volume of deposits "beneath areas adjacent to the water-budget area" (item *c*). The magnitude

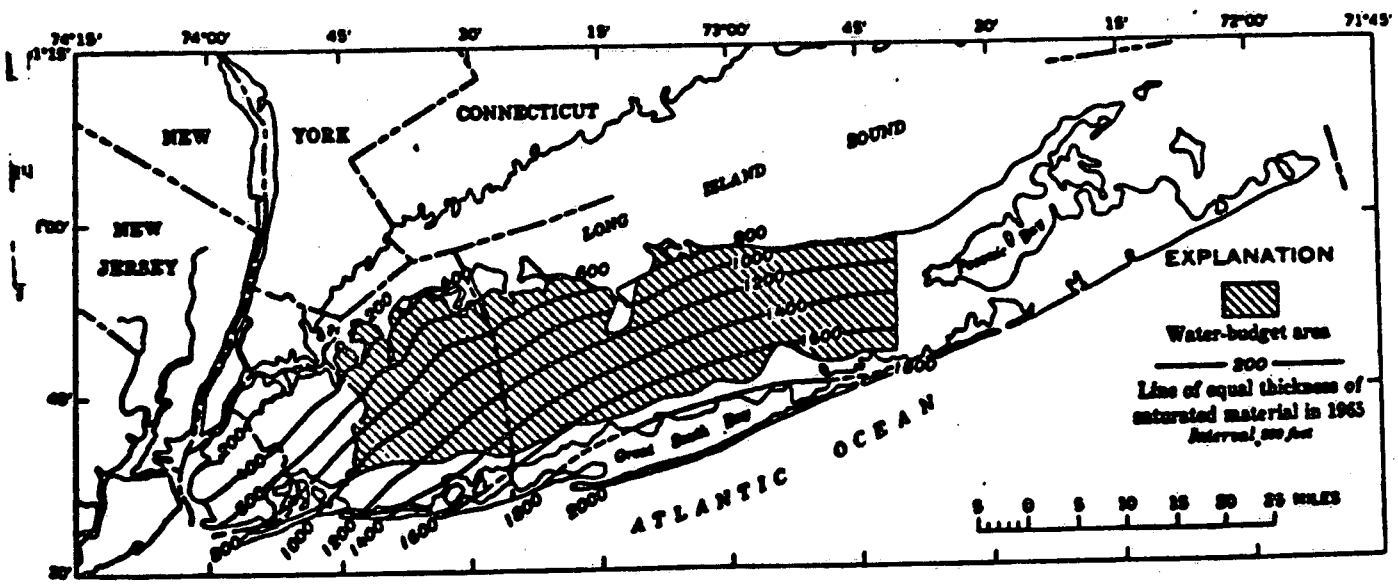

FIGURE 12.—Thickness of unconsolidated deposits saturated with fresh ground water in 1965. After Cohen, Franke, and Foxworthy (1968, pl. 2G).

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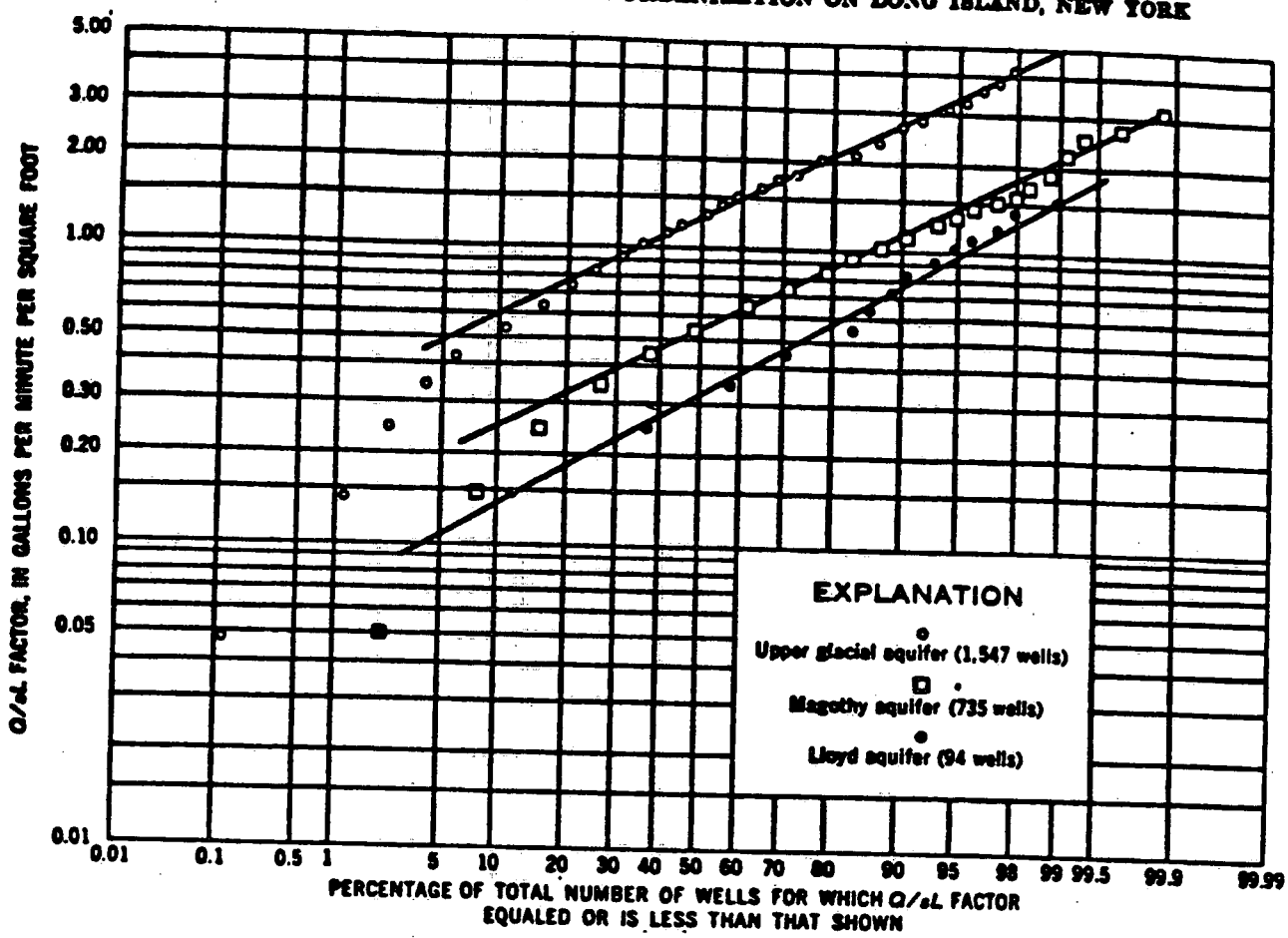

FIGURE 30.—Relation between a modified specific capacity factor (Q/sL) and percentage of total number of wells for the principal aquifers of Long Island, N.Y. After McClymonds and Franke (1971).

2 or 3 square miles. Average-hydraulic conductivity maps were prepared for each aquifer in the manner described above. The average-hydraulic conductivity maps and thickness maps of each aquifer were used to construct the transmissivity maps in figure 29. Average values of thickness, hydraulic conductivity, and transmissivity of the principal aquifers in the water-budget area, which were derived from figure 29 and from additional maps in the report by McClymonds and Franke, are given in table 9.

Estimated rates of subsurface outflow from the water-budget area and for each aquifer are given in table 10. These estimates were computed by applying Darcy's law, $Q=TIL$, to appropriate parts of each aquifer and by summing the flow from each part. In this formula, Q is the flow of ground water, in gallons per day; T is the transmissivity, in gallons per day per foot; I is the hydraulic gradient, in feet per foot; and L is the width, in feet, of the cross section through which the flow occurs. Appropriate T values were obtained from figure 29, and approximate values of the hydraulic gradient I were obtained from water-level contour maps.

Estimating the quantity of subsurface outflow from the upper glacial aquifer presented special difficulties because much of the water in the upper part of this aquifer discharges into streams. Thus, for the purpose of calculating subsurface outflow, it was assumed that ground water in the upper 40–50 feet of the upper glacial aquifer discharged to streams (see previous discussion on movement through the ground-water reservoir), and calculations of underflow were made only for the material below the upper 40–50 feet. In

TABLE 9.—*Average transmissivity of the principal aquifers for the water-budget area, Long Island, N.Y.*

Aquifer	Average thickness (feet)	Average hydraulic conductivity (gallons per day per square foot)	Average transmissivity (gallons per day per foot)
Upper glacial	120	1,800	210,000
Magothy	620	400	250,000
Lloyd	350	250	85,000

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measured at wells of different depths at the same site and at many locations in both areas, were virtually identical.

The hydraulic conductivity of the upper glacial aquifer was studied regionally by McClymonds and Franke (1972) with specific-capacity tests from wells. They used the relation proposed by Theis, Brown, and Meyer (1963, p. 332):

$$\bar{K} = 2{,}000\ (Q/s)L$$

where $\bar{K}$ = average hydraulic conductivity of materials opposite the well screen, in gallons per day per foot squared,

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

L = length of the well screen, in feet.

The constant factor 2,000 was found to be average for conditions on Long Island. Values of hydraulic conductivity contoured on maps (McClymonds and Franke, 1972, pl. 1) indicate that the average hydraulic conductivity ($\bar{K}$) in the area of the Babylon and Islip landfills is about 2,000 (gal/d)/ft² or 270 ft/d.

In the upper glacial aquifer south of the Babylon landfill, there are seven public-supply wells at four stations and, in the vicinity of the Islip landfill, five public-supply wells at two stations (fig. 5). These wells partly penetrate the aquifer, and screens are set near the bottom of the aquifer. About 35 percent of the aquifer is screened at Babylon and about 25 percent at Islip. Specific capacities ranged from 17 to 104 gal/ft of drawdown when the wells were new.

A computer analysis by T. E. Reilly (written commun., 1976) to determine the vertical and horizontal hydraulic conductivity took into consideration the partial penetration of the aquifer and used a 10:1 ratio of horizontal to vertical hydraulic conductivity. This ratio seems valid for regional models (Getzen, 1975; Franke and Getzen, 1976, p. 78). Where data were available from more than one supply well at a given station, only data from the well with the highest specific capacity were used; it was assumed that wells with the higher value would indicate more accurately the hydraulic conductivity in the area because those with lower values could be reflecting screen losses or other losses due to variations in well construction. Hydraulic conductivities obtained from three stations at Babylon and two stations at Islip are given in figure 5. Data from the two wells at the Albans Road station near Babylon were not included because their specific capacity was 17 and 18 gal/ft —only 20 percent of the next lowest value in the area. This amount suggests that the data from the wells would not accurately reflect the hydraulic conductivity at the well site. Values of hydraulic conductivity ranged from 470 to 500 ft/d for the Babylon area and from 190 to 360 ft/d for the Islip area (fig. 5). The values for the Babylon area are about twice the values obtained by the method used in McClymonds and Franke (1972), and those values probably more nearly reflect the hydraulic conductivity in the area of the landfill than those of McClymonds and Franke.

Fine-grained deposits in the Magothy aquifer (Cohen and others, 1968) occur directly beneath the Gardiners Clay at Babylon and the outwash deposits at Islip. The Magothy aquifer is composed of beds of sand, silt, and clay and is between 800 and 1,000 ft thick in the area. At Babylon, water in the Magothy is currently (1974) 3 ft below the water in the upper glacial aquifer at the site of the Babylon landfill; it is probably lower because of public-supply withdrawals. Samples from 9 ft of drilling below the Gardiners Clay at Babylon indicate that the Magothy aquifer consists of lignitic and micaceous, silty, fine to medium sand. Pyrite is associated with the lignite. Observation wells of the kind used in this study that are screened in the Magothy aquifer at Babylon yield very little water—1 to 2 gal/min. The average hydraulic conductivity of the Magothy aquifer in the region of the two sites is estimated to be 50 ft/d (McClaymonds and Franke, 1972). Although one hole is hardly sufficient to characterize the Magothy in the report area, logs for the three public-supply-well stations near Babylon (fig. 5) indicate that the sampling point was characteristic of the top of the Magothy in that area.

QUALITY OF NATIVE AND AMBIENT GROUND WATER

Fresh, uncontaminated ground water—native ground water—generally contains only small amounts of dissolved mineral matter on Long Island. Water from several wells in the vicinity of the landfills (table 2) had dissolved-solids concentrations of 51 mg/L (milligrams per liter) or less, which indicates a chemical character close to that of native ground water in at least some parts of the upper glacial aquifer.

In native ground water on Long Island, the concentration of individual species of the major cations (calcium, magnesium, sodium, potassium) and anions (bicarbonate, sulfate, chloride) is usually less than 10 mg/L, and only minor amounts of other ions are present. However, the quality of ground water in this region has been altered to various degrees, mostly by cesspool and septic-tank wastewater; thus, the ambient water in areas affected by landfill leachate can be different from native water.

Analyses of water samples listed in table 2 (well locations are shown in figs. 3 and 4) indicate that during the time of sampling (1972–73), the ground water in some places was of essentially native quality. Sub-

REF. 2.

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ANTIMONY TRICHLORIDE SOLUTION	60	1733
ANTIMONY TRIFLUORIDE	60	1549
ANTIMONY TRIFLUORIDE SOLUTION	60	1549
ANTIMONY TRIOXIDE	31	9201
ARGON, compressed	12	1006
ARGON, refrigerated liquid (cryogenic liquid)	21	1951
ARSENIC, white, solid	53	1561
ARSENIC ACID, liquid	55	1553
ARSENIC ACID, solid	53	1554
ARSENICAL DUST	53	1562
ARSENICAL FLUE DUST	53	1562
ARSENICAL PESTICIDE, flammable liquid, n.o.s.	28	2760
ARSENICAL PESTICIDE, flammable liquid, n.o.s.	28	2993
ARSENICAL PESTICIDE, liquid, n.o.s.	55	2994
ARSENICAL PESTICIDE, n.o.s.	55	2759
ARSENIC BROMIDE	53	1555
ARSENIC CHLORIDE	55	1560
ARSENIC COMPOUND, liquid, n.o.s.	55	1556
ARSENIC COMPOUND, solid, n.o.s.	53	1557
ARSENIC DISULFIDE	53	1557
ARSENIC IODIDE, solid	53	1557
ARSENIC METAL	53	1558
ARSENIC PENTOXIDE	53	1559
ARSENIC TRICHLORIDE	55	1560
ARSENIC TRIOXIDE	53	1561
ARSENIC TRISULFIDE	53	1557

Name of Material	Guide No.	ID No.
ARSINE *	18	2188
ARYL SULFONIC ACID, liquid	60	2584
ARYL SULFONIC ACID, liquid	60	2586
ARYL SULFONIC ACID, solid	60	2583
ARYL SULFONIC ACID, solid	60	2585
ASBESTOS, blue	31	2212
ASBESTOS, white	31	2590
ASPHALT	27	1999
AZINPHOS METHYL (Guthion)	55	2783
1-AZIRIDINYL PHOSPHINE OXIDE (TRIS)	55	2501
2,2'-AZODI(2,4-DIMETHYL-4-METHOXYVALERONITRILE)	70	2955
2,2'-AZODI(2,4-DIMETHYL-VALERONITRILE)	70	2953
AZODI(1,1'-HEXAHYDRO-BENZONITRILE)	72	2954
AZODI(ISOBUTYRONITRILE)	70	2952
AZODI(2-METHYL-BUTYRONITRILE)	70	3030
BARIUM	40	1400
BARIUM ALLOY	40	1399
BARIUM ALLOY, pyrophoric	37	1854
BARIUM AZIDE, with not less than 50% water or alcohol	36	1571
BARIUM BROMATE	42	2719
BARIUM CHLORATE	42	1445
BARIUM COMPOUND, n.o.s.	55	1564
BARIUM CYANIDE	53	1565
BARIUM HYPOCHLORITE	44	2741
BARIUM METAL	40	1400
BARIUM NITRATE	42	1446
BARIUM OXIDE	53	1884

* Look for information next to this NAME in the TABLE OF EVACUATION DISTANCES in the back of this book. Use this in addition to the Guide Page if there is NO FIRE.

Name of Material	Guide No.	ID No.
BARIUM PERCHLORATE	42	1447
BARIUM PERMANGANATE	42	1448
BARIUM PEROXIDE	42	1449
BARIUM SELENATE	53	2630
BARIUM SELENITE	53	2630
BATTERY, electric, storage, dry, containing POTASSIUM HYDROXIDE	60	1813
BATTERY, electric, storage, dry, containing POTASSIUM HYDROXIDE	60	3028
BATTERY, electric, storage, wet, filled with acid	60	2794
BATTERY, electric, storage, wet, filled with alkali	60	2795
BATTERY, electric, storage, wet, filled with alkali	60	2797
BATTERY, electric, storage wet, nonspillable	60	2800
BATTERY, wet, filled with acid (electric storage)	60	2794
BATTERY, wet, filled with alkali (electric storage)	60	2795
BATTERY, wet, nonspillable (electric storage)	60	2800
BATTERY FLUID, acid	39	2796
BATTERY FLUID, alkali	60	2797
BENZALDEHYDE	26	1989
BENZENE	27	1114
BENZENE-1,3-DISULFO-HYDRAZIDE	72	2971
BENZENE PHOSPHORUS DICHLORIDE	39	2798
BENZENE PHOSPHORUS THIODICHLORIDE	39	2799
BENZENE SULFOHYDRAZIDE	72	2970

Name of Material	Guide No.	ID No.
BENZENE SULFONYL CHLORIDE	59	2225
BENZIDINE	53	1885
BENZINE	26	1115
BENZOIC ACID	31	9094
BENZOIC DERIVATIVE PESTICIDE, flammable liquid, n.o.s.	28	2770
BENZOIC DERIVATIVE PESTICIDE, flammable liquid, n.o.s.	28	3003
BENZOIC DERIVATIVE PESTICIDE, liquid, n.o.s.	55	3004
BENZOIC DERIVATIVE PESTICIDE, solid, n.o.s.	53	2769
BENZONITRILE	55	2224
BENZOQUINONE	55	2587
BENZOTRICHLORIDE	60	2226
BENZOTRIFLUORIDE	28	2338
BENZOYL CHLORIDE	39	1736
BENZOYL PEROXIDE	49	2085
BENZOYL PEROXIDE	49	2086
BENZOYL PEROXIDE	49	2087
BENZOYL PEROXIDE	49	2088
BENZOYL PEROXIDE	49	2089
BENZOYL PEROXIDE	49	2090
BENZOYL PEROXIDE, not more than 62%, with not less than 28% inert solid and not less than 10% water	49	3074
BENZYL BROMIDE	59	1737
BENZYL CHLORIDE	59	1738
BENZYL CHLOROFORMATE	39	1739
BENZYL DIMETHYLAMINE	26	2619
4-(BENZYL(ETHYL)AMINO)-3-ETHOXYBENZENEDIAZONIUM ZINC CHLORIDE	70	3037

REF.

KEEP YOURSELF AND OTHERS AWAY FROM ALL SPILLS, FUMES AND SMOKE, AND NEVER ASSUME VAPORS ARE HARMLESS BECAUSE OF LACK OF SMELL.

GUIDEBOOK - ARSENIC 2.

SHEET 2 OF 3

R-106

GUIDE 52

POTENTIAL HAZARDS

FIRE OR EXPLOSION

May ignite itself if exposed to air.
May be ignited by heat, sparks or flames.
May burn rapidly with flare-burning effect.
May explode from heat, contamination or loss of temperature control.
Runoff to sewer may create fire or explosion hazard.

HEALTH HAZARDS

Contact may cause burns to skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Self-contained breathing apparatus (SCBA) and structural firefighter's protective clothing will provide limited protection.
CALL CHEMTREC AT 1-800-424-9300 FOR EMERGENCY ASSISTANCE. If water pollution occurs, notify the appropriate authorities.

LOSS OF COOLING

Specified control temperature of material must be maintained. Obtain liquid nitrogen, Dry Ice or ice for cooling. If none can be obtained, evacuate area.

FIRE

Small Fires: Dry chemical, CO2, Halon, water spray or standard foam.
Large Fires: Flood fire area with water.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles.
If fire can be controlled, cool container with water from unmanned hose holder or monitor nozzles until well after fire is out.
If this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

Do not touch spilled material; stop leak if you can do it without risk.
Shut off ignition sources; no flares, smoking or flames in hazard area.
Small Spills: Take up with sand or other noncombustible material; move containers from spill area.
Large Spills: Dike liquid spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.
Keep victim quiet and maintain normal body temperature.

GUIDE 53
ARSENIC

POTENTIAL HAZARDS

HEALTH HAZARDS

Poisonous if swallowed.
Inhalation of dust poisonous.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Self-contained breathing apparatus (SCBA) and structural firefighter's protective clothing will provide limited protection.
CALL CHEMTREC AT 1-800-424-9300 FOR EMERGENCY ASSISTANCE. If water pollution occurs, notify the appropriate authorities.

FIRE

Small Fires: Dry chemical, CO2, Halon, water spray or standard foam.
Large Fires: Water spray, fog or standard foam is recommended.
Move container from fire area if you can do it without risk.

SPILL OR LEAK

Do not touch spilled material; stop leak if you can do it without risk.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Small Dry Spills: With clean shovel place material into clean, dry container and cover; move containers from spill area.
Large Spills: Dike far ahead of liquid spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
Remove and isolate contaminated clothing and shoes at the site.
In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes.

GUIDEBOOK – ARSENIC
SHEET 3 OF 3

R-107

REF. 3.*

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 117
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

MW A
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874719
Lab File ID: PU9550
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q	MW #1 ug/L	Q
74-87-3	Chloromethane	10	U	10	U
74-83-9	Bromomethane	10	U	10	U
75-01-4	Vinyl Chloride	10	U	10	U
75-00-3	Chloroethane	10	U	10	U
75-09-2	Methylene Chloride	11	B	11	B
67-64-1	Acetone	8	J,B	7	J,B
75-15-0	Carbon Disulfide	5	U	5	U
75-35-4	1,1-Dichloroethene	5	U	5	U
75-34-3	1,1-Dichloroethane	5	U	5	U
540-59-0	1,2-Dichloroethene (total)	7		45	
67-66-3	Chloroform	10	B	10	B
107-06-2	1,2-Dichloroethane	5	U	5	U
78-93-3	2-Butanone	10	U	3	J,B
71-55-6	1,1,1-Trichloroethane	6		3	J
56-23-5	Carbon Tetrachloride	5	U	5	U
108-05-4	Vinyl Acetate	10	U	10	U
75-27-4	Bromodichloromethane	5	U	5	U
78-87-5	1,2-Dichloropropane	5	U	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U	5	U
79-01-6	Trichloroethene	87		33	
124-48-1	Dibromochloromethane	5	U	5	U
79-00-5	1,1,2-Trichloroethane	5	U	5	U
71-43-2	Benzene	5	U	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U	5	U
75-25-2	Bromoform	5	U	5	U
108-10-1	4-Methyl-2-Pentanone	10	U	10	U
591-78-6	2-Hexanone	10	U	10	U
127-18-4	Tetrachloroethene	100		110	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	5	U
108-88-3	Toluene	5	U	2	J
108-90-7	Chlorobenzene	5	U	5	U
100-41-4	Ethylbenzene	5	U	5	U
100-42-5	Styrene	5	U	5	U
1330-20-7	Xylene (total)	5	U	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.

*FOR COMPLETE RESULTS, SEE APPENDIX C.

REF. 3
SHEET 2 OF 6

Y. 11747

#1		MW # 2		MW # 3		MW # 3 DL		MW # 4		FIELD BL	
	Q	Ug/L	Q	Ug/L	Q	Ug/L	Q	Ug/L	Q	Ug/L	Q
	U	10	U	10	U	200	U	10	U	10	U
	U	10	U	10	U	200	U	10	U	10	U
	U	10	U	10	U	200	U	10	U	10	U
	U	10	U	10	U	200	U	10	U	10	U
	B	8	B	9	B	130	B	8	B	4	
	J,B	5	J,B	5	J,B	48	J,B	4	J,B	4	J
	U	5	U	5	U	110	B	5	U	5	U
	U	5	U	5	U	100	U	5	U	5	
	U	1	J	2	J	100	D	5	U	5	
		9		17		100	D	5	U	5	
	B	13	B	2	B	100	D	5	U	1	J
	U	5	U	5	U	100	U	5	U	5	
	J,B	4	J,B	3	J,B	140	J,B	10	U	2	
	J	7		19		34	J	5	U	5	U
	U	5	U	5	U	100	U	5	U	5	
	U	10	U	10	U	200	U	10	U	10	
	U	5	U	5	U	100	U	5	U	5	U
	U	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	
		96		100		130		10		1	
	U	5	U	5	U	100	U	5	U	5	U
	U	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	U
	U	5	U	5	U	100	U	5	U	5	
	U	10	U	10	U	200	U	10	U	10	
	U	10	U	10	U	200	U	10	U	10	
		110		2000	D	3700		18		5	
	U	5	U	5	U	100	U	5	U	5	
	J	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	
	U	5	U	5	U	100	U	5	U	5	

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sediment samples

P BLANK		SD 1		SD 2		SD-3		SOIL MW#1		SOIL MW#2
Ug/L	Q	Ug/L	Q	Ug/L	Q	Ug/L	Q	Ug/L	Q	Ug/L
10	U	46	U	63	U	21	U	12	U	13
10	U	46	U	63	U	21	U	12	U	13
10	U	46	U	63	U	21	U	12	U	13
10	U	46	U	63	U	21	U	12	U	13
3	J,B	55	B	33	B	20	B	9		9
23	B	200	B	110	B	38	B	4	J	4
5	U	23	U	45		8	J	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	46	U	10	U	6	U	6
5	U	23	U	16	J	5	J	6	U	6
5	U	23	U	32	U	10	U	6	U	6
3	J,B	31	J,B	10	J,B	14	J,B	12		13
5	U	23	U	32	U	10	U	21		24
5	U	23	U	32	U	10	U	6	U	6
10	U	46	U	63	U	21	U	12	U	13
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	15	J	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
10	U	46	U	63	U	21	U	12	U	13
10	U	6	J	63	U	21	U	12	U	13
5	U	23	U	29	J	10	U	6	U	6
5	U	21	J,B	32	U	10	U	6	U	6
5	U	23	U	78	B	68	B	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6
5	U	23	U	32	U	10	U	6	U	6

REF. 3

SHEET 4 OF 6

H2M LABS, INC.

575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW #0

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859376

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M	MW # 1 Ug/L	C
7429-90-5	Aluminum	46000		*	P	7950	
7440-36-0	Antimony	100			P	46	B
7440-38-2	Arsenic	50	U		F	5	U
7440-39-3	Barium	510			P	120	
7440-41-7	Beryllium	6			P	1	B
7440-43-9	Cadmium	2	U		A	2	U
7440-70-2	Calcium	15700			P	12040	
7440-47-3	Chromium	85			P	8	B
7440-48-4	Cobalt	80		N	P	16	B
7440-50-8	Copper	94			P	14	B
7439-89-6	Iron	74000		*	P	14700	
7439-92-1	Lead	75		+N	F	13	U
7439-95-4	Magnesium	11000			P	3900	
7439-96-5	Manganese	5300			P	810	
7439-97-6	Mercury	0.2	U		CV	0.2	U
7440-02-0	Nickel	69			A	5	U
7440-09-7	Potassium	8200			A	3900	B
7782-49-2	Selenium	50	U		F	50	U
7440-22-4	Silver	11			P	8	B
7440-23-5	Sodium	30000			P	21300	
7440-28-0	Thallium	5	U		F	5	U
7440-62-2	Vanadium	95		N	P	15	B
7440-66-6	Zinc	170			P	45	
	Cyanide	10	U		C	10	U

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

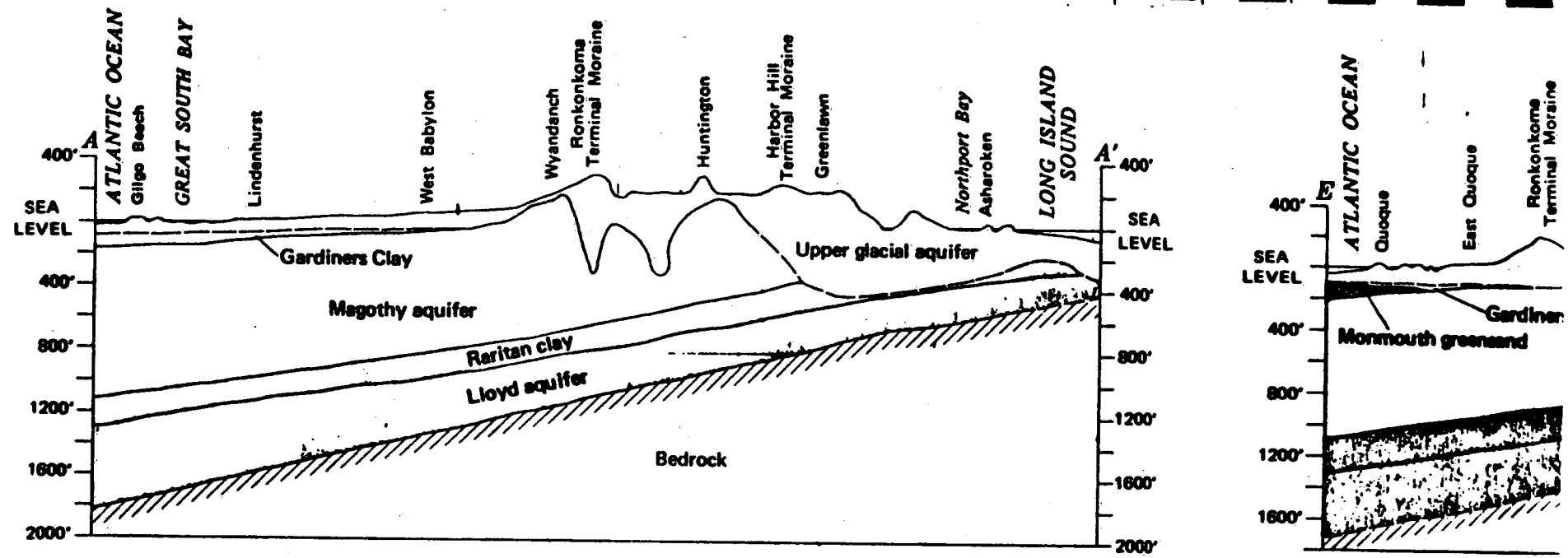
R-111

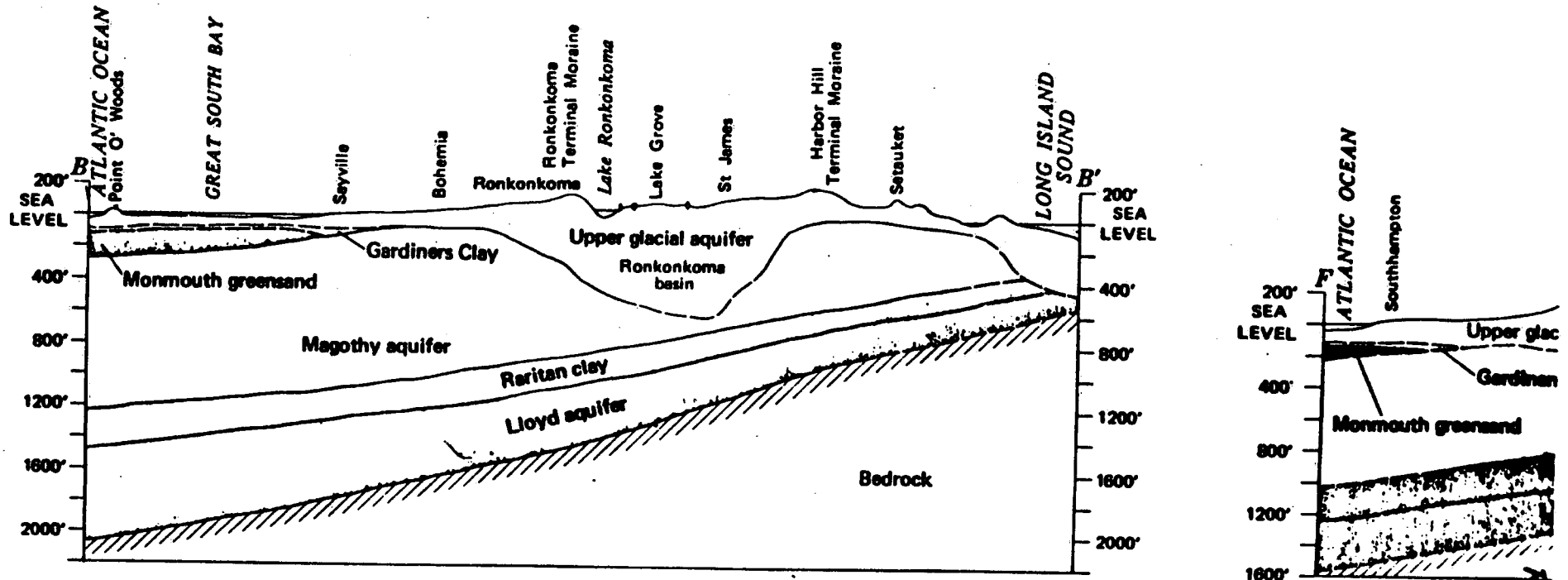
REF. 3

SHEET 5 OF 6

	MW # 2			MW # 3			MW # 4			FIELD BLANK			CAT
	Ug/L			Ug/L			Ug/L			Ug/L			
Q		C	Q		C	Q		C	Q		C	Q	
*	35200		*	16600		*	42500		*	200	U	*	
	100			88			98			35	B		
W	50	U		50	U		50	U		5	U		
	420			210			220			1	B		
	5	B		2	B		5	B		0	U		
	2	U		2	U		2	U		2	U		
	15100			89500			7900			6	U		21
	71			26			67			3	U		
N	66		N	23	B		54		N	4	B	N	
	67			26			65			3	B		
*	55800		*	19100		*	75200		*	2	B	*	8
UN	59		SN	25		SN	54		N	5	U	N	
	8800			7900			7300			56	B		7
	4200			1700			1880			0	U		
	0.2	U		0.2	U		0.2	U		0.2	U		
	44			14			29			5	U		
	7500			6200			5000			200	U		5
	50	U		50	U	W	50	U		5	U		
	17			9	B		5	B		10	B		
	28800			21000			9100			18	U		13
	5	U		5	U		5	U		5	U		
	78		N	34	B	N	99		N	6	B	N	
	130			72			170			1	U		3
	10	U		10	U		20			10	U		

AS IN #1		CATCH BASIN #2 Ug/L			CATCH BASIN #3 Ug/L			MW#1 (SOIL) Ug/L			MW#2 (SOIL) Ug/L		
C	Q		C	Q		C	Q		C	Q		C	Q
	*	2600		*	3200		*	4000			4000		
		26			18			4.7	B		3.1	B	
U		2.8			1.6			87		+	78		+
B		47	B		37	B		7.5	B		13.0	B	
.4 B		0.35	B		0.54	B		0.39	B		0.41	B	
1.3 U		0.69	B		0.54	B		0.20	U		0.21	U	
	*	7160		*	21700		*	260	B		620	B	
	*E	38		*E	29		*E	13.0		*N	11.0		*
	*N	24		*N	4.9	B	*N	2.5	B		2.3	B	
	*	170		*	53		*	4.1	B	*N	4.9	B	*
	*	4640		*	10300		*	7700			7900		
		160			430			2.0			11.0		
	*	1640		*	12000		*	360	B		530	B	
	*	35		*	88		*	60			79		
4.2		0.34			0.13	U		0.1	U		0.1	U	
B		9	B		15			3.7	B	*N	2.3	B	*
B		310	B		430	B		219	B		300	B	
U		1.7	U	W	1.4	U	W	5.0	U		5.2	U	
1		6.9			1.1	B		3.9			2.5		
		2030			1600			1700			1600		
1 U	WN	1.7	U	WN	1.4	U	WN	0.6	U		0.6	U	
	*N	19		*N	26		*N	6.9	B		8.0	B	
	N*	360		N*	200		N*	25		*N	23.0		*
(U		1.7	U		1.4	U		0.5			0.50	U	





Jensen & Soren, 1974

SHEET 1 OF 3

REF. 4.

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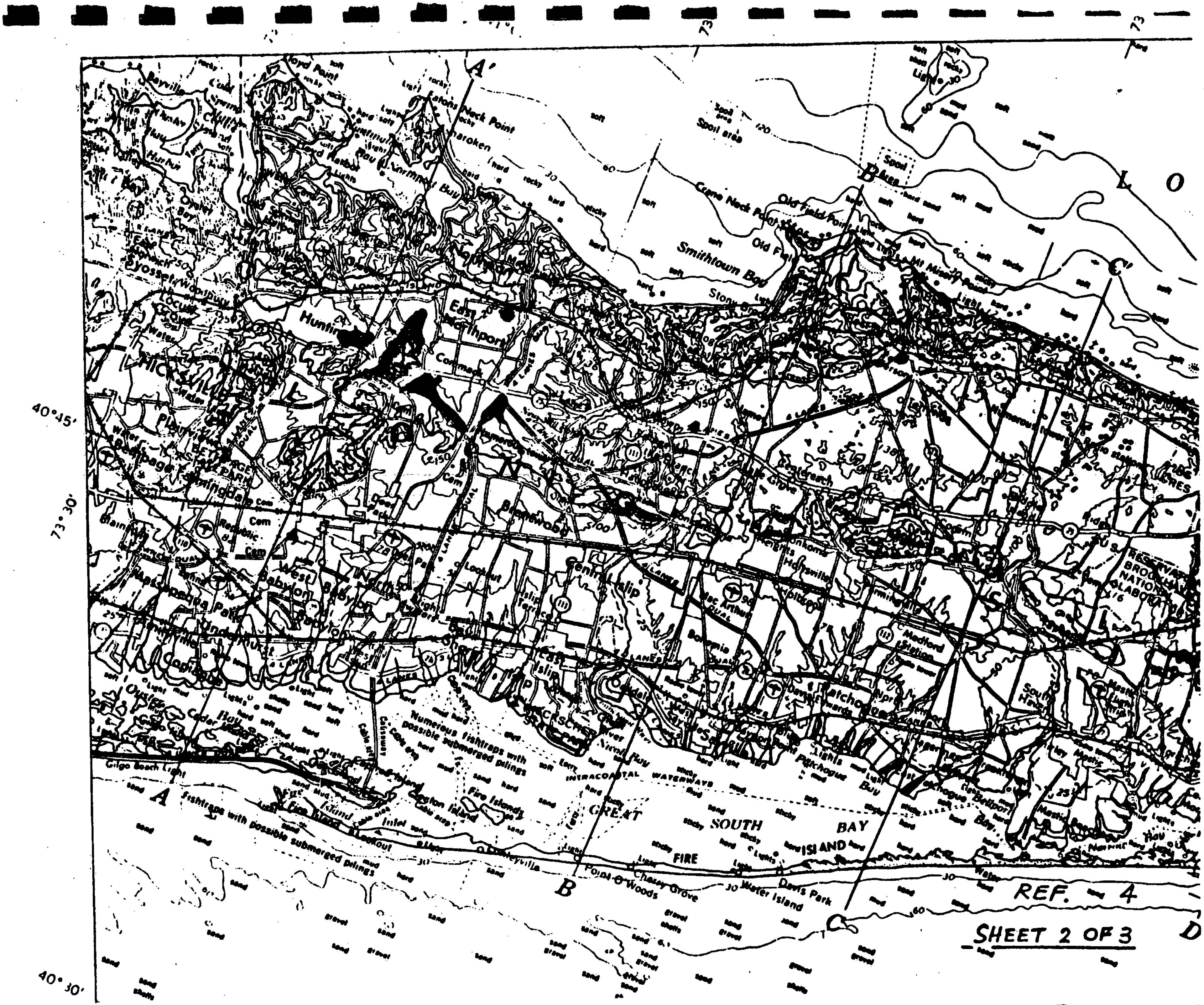
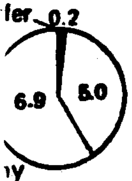
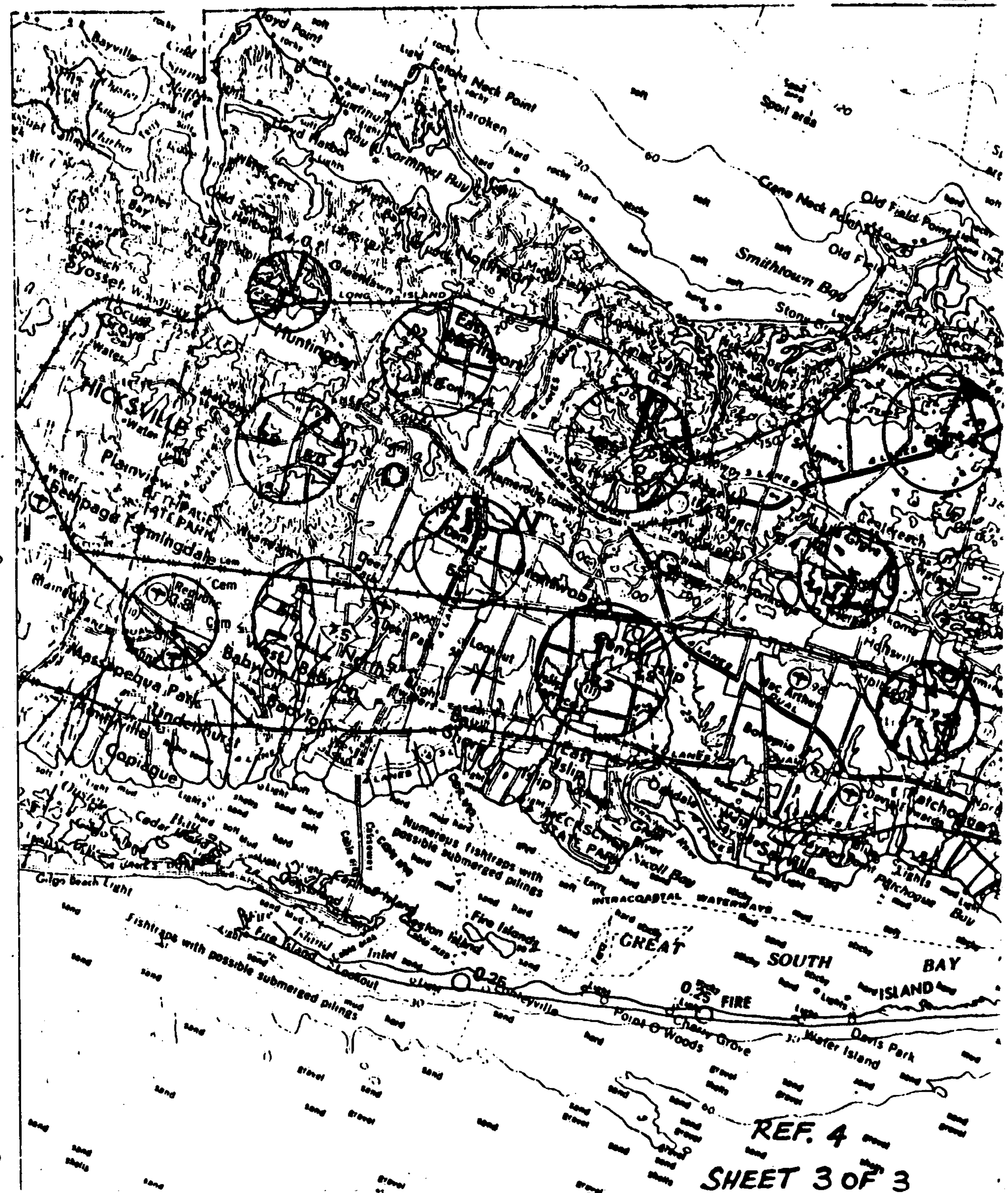

REF. 4
SHEET 2 OF 3
40°45'
40°30'
73°30'
Eatons Neck Point
Crane Neck Point
Old Field Point
Smithtown Bay
Stony Brook
Mt Misery Point
Spoil area
Huntington
East Northport
Commack
Plainview
Bethpage State Park
Farmingdale
Republic
West Babylon
Babylon
Massapequa Park
Lindenhurst
Copiague
Central Islip
Islip Terrace
East Islip
Bohemia
Mac Arthur
Holbrook
Medford
Medford Station
Patchogue
Bellport
South Haven
Mastic
Brentwood
Great South Bay
Fire Island
Fire Island Inlet
Gilgo Beach Light
Oak Island
Captree Island
Saltaire
Point O Woods
Cherry Grove
Water Island
Davis Park
Numerous fishtraps with possible submerged pilings
Fishtraps with possible submerged pilings
Intracoastal Waterways
U.S. Reservation
Brookhaven National Laboratory
L O

R-115

L LANATION



APPROXIMATE AREAL CENTER OF MAJOR GROUND-WATER PUMPING AND SOURCE AQUIFERS – Diameter of circle is proportional to pumpage; number is average daily pumpage, in million gallons per day



R-116

REF. No. 5

LeRoy Callender, P.C. Boring Logs

One boring log for each drilling location has been submitted. The log is representative of the subsurface conditions found in the well at that drilling location. The dates shown on the logs represent the total amount of time needed to complete all drilling activities at that drilling location. Drilling was done by Marine Pollution Control, Inc. Further details regarding the drilling operations are given in Appendix C.

Driller: Joe Kaufman

Consultant Representatives:
Sirous H. Nabavi
Larrington D. Naraysingh

The United Soil Classification system was used.

G = gravel
S = sand
M = silt
W = well-graded
P = poorly graded
SS= split spoon
GW-1 = monitoring well - number 1
HNu = Photoionization detector

LEROY CALLENDER P.C.
BORING LOG

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

BORING NO.: GW-1
SURFACE ELEV: 100.4'

DRILLING METHOD: HOLLOW STEM AUGERS

SAMPLING METHOD: SPLIT SPOON

DATE STARTED: 9/14/88
DATE FINISHED: 9/15/88

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
1	9	SS	0		Light brown mixture of fine to coarse sand with some pebbles. HNu=0.2 ppm
	29		1		
2	5	SS	2		
	32		3		
3	12	SS	4		HNu=0.4 ppm
	28		5		
4	7	SS	6		Light brown mixture of fine to coarse sand with some fine gravel. HNu=0.5 ppm
	20		7		
5	7	SS	8		grading with white sand. HNu=0.4 ppm
	20		9		
6	8	SS	10		grading with rounded pebbles.
	26		11		
7	7	SS	12		Brown/light brown mixture of fine to coarse sand and some gravel.
	8		13	SP-SM GP	
8	9	SS	14		
	16		15		
			16		
			17		
			18		
			19		
9	6	SS	20		grading moist, and with some pebbles.
	13		21		
			22		
			23		
			24		
10	8	SS	25		grading moist with boulders.
	22		26		HNu=0.6ppm

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LEROY CALLENDER P.C.
BORING LOG

BORING NO.: GW-1

CLIENT:NYSDEC
LOCATON: CANTOR BROTHERS, INC.

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
			27		
			28		
			29		
11	9	SS	30		grading with some gravel HNu=0.6 ppm
	18		31		
			32		
			33	SP-SM GP	
			34		
12	21	SS	35		grading moist and reddish with boulders.
	38		36		HNu=0.5 ppm
			37		
			38		
			39		grading wet
13	14		40		
	17		41		
			42		
			43		
			44		
14	20	SS	45	SP -- GP	Brown, wet sand and gravel with pebbles
	12		46		
			47		
			48		
			49		
15	33	SS	50		Brown, wet, fine sand with granite pebbles.
	28		51		
			52		Boring terminated at a depth of 50.0 feet on Sept. 15, 1988

LEROY CALLENDER P.C.
BORING LOG

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

BORING NO.: GW-2
SURFACE ELEV: 100.4'

DRILLING METHOD: HOLLOW STEM AUGERS

SAMPLING METHOD: SPLIT SPOON

DATE STARTED: 9/29/88
DATE FINISHED: 9/29/88

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
1	8	SS	0		Dark/light brown, layered fine sand.
	17		1		HNu=1.0 ppm
2	30	SS	2		grading with white rock particles.
	64		3		
3	10	SS	4		grading with white sand.
	28		5		HNu=0.8 ppm
4	7	SS	6		HNu=0.6 ppm
	11		7		
5	15	SS	8		
	34		9		
6	9	SS	10		grading with organic soil and white pebbles.
	20		11		HNu=0.7 ppm
7	10	SS	12		grading with roots.
	16		13	SP	HNu= 0.8 ppm
8	25	SS	14		
	31		15		HNu=0.7 ppm
			16		
			17		
			18		
			19		
9	12	SS	20		Light brown, fine sand and some gravel with organic material.
	17		21		
			22		
			23		
			24		
10	11		25		
	21		26		

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LEROY CALLENDER P.C.
BORING LOG

BORING NO.: GW-2

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
			27		
			28		
			29		
11	14	SS	30		HNu=0.8 ppm
	18		31	SP	
			32		
			33		
			34		
12	12	SS	35		
	34		36		
			37		
			38		
			39		
13	12	SS	40	SP-SM / GP-GM	Dark/light, wet sand with gravel, rounded pebbles and boulders.
	30		41		
			42		HNu=1.2 ppm
			43		
			44		
14	13	SS	45		HNu=1.1 ppm
	9		46		
			47		
			48	SP -- GP	
			49		
15	7	SS	50		Light brown sand and gravel HNu=1.4 ppm
	3		51		
			52		Boring terminated at a depth of 52.0 feet on Sept. 29, 1988.

LEROY CALLENDER P.C.
BORING LOG

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

BORING NO.: GW-3
SURFACE ELEV: 100.6'

DRILLING METHOD: HOLLOW STEM AUGERS

SAMPLING METHOD: SPLIT SPOON

DATE STARTED: 9/20/88
DATE FINISHED: 9/20/88

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
1	17	SS	0		Brown mixture of fine to coarse sand, with pebbles and organic soil.
	16		1		HNu=0.6 ppm
2	7	SS	2		grading layered with more fine sand.
	8		3		HNu=0.55 ppm
3	5	SS	4		
	9		5		
4	16	SS	6		grading with boulders, and coarse white sand.
	40		7		
5	14	SS	8		Dark/light brown, fine to coarse sand with some gravel.
	21		9		HNu=0.4 ppm
6	24	SS	10		
	22		11		
7	6	SS	12		
	21		13	SW-SM / GW	
8	10	SS	14		
	21		15		
			16		
			17		
			18		
			19		
9	23	SS	20		
	15		21		
			22		
			23		
			24		
10	19	SS	25		
	26		26		

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LEROY CALLENDER P.C.
BORING LOG

BORING NO.: GW-3

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
			27		
			28		
			29		
11	20	SS	30		grading with pebbles.
	17		31		
			32		
			33		
			34		
12	15	SS	35		
	45		36		
			37		
			38		
			39	SW-SM / GW	
13	19	SS	40		grading with dark brown, moist sand. HNu=0.3 ppm
	16		41		
			42		
			43		
			44		
14	9	SS	45		grading wet HNu=0.2 ppm.
	12		46		
			47		
			48		
			49		
15	9	SS	50		Boring terminated at a depth of 52.0 feet on Sept. 20, 1988.
	9		51		
			52		

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LEROY CALLENDER P.C.
BORING LOG

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

BORING NO.: GW-4
SURFACE ELEV: 100.0'

DRILLING METHOD: HOLLOW STEM AUGERS

SAMPLING METHOD: SPLIT SPOON

DATE STARTED: 9/30/88
DATE FINISHED: 9/30/88

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRIPTION
1	11	SS	0		Dark/light brown fine sand with pebbles. HNu=0.6 ppm
	31		1		
2	40	SS	2		grading with boulders and gravel.
	56		3		
3	7	SS	4		grading with large cobbles.
	22		5		
4	17	SS	6		grading with organic soil.
	23		7		
5	22	SS	8		grading with traces of white clay. HNu=0.5 ppm
	23		9		
6	20	SS	10		White/light brown, fine to coarse sand.
	11		11		
7	8	SS	12		grading increase in coarse sand. HNu= 0.6 ppm
	17		13	SW	
8	17	SS	14		HNu= 0.4 ppm
	30		15		
			16		
			17		
			18		
			19		
9	15	SS	20		White/brown, fine to medium sand. HNu=0.5 ppm
	18		21		
			22		
			23		
			24		
10	12	SS	25		grading with quartz pebbles.
	28		26		

LEROY CALLENDER P.C.
BORING LOG

BORING NO.: GW-4

CLIENT: NYSDEC
LOCATION: CANTOR BROTHERS, INC.

SAMPLE NO.	BLOWS/FT	SAMPLE TYPE	DEPTH IN FT	SOIL GRAPH	MATERIAL DESCRITION
			27	SW	
			28		
			29		
11	5	SS	30		Brown/light brown, fine to coarse sand with gravel. HNu= 0.4 ppm
	13		31		
			32		
			33		
			34	GW -- SW	
12	14	SS	35		grading with some pebbles. HNu= 0.5 ppm
	30		36		
			37		
			38		
			39		
13	10	SS	40		Brown/dark brown, fine to medium, wet sand and gravel with quartz pebbles.
	12		41		
			42		HNu= 0.4 ppm
			43		
			44		
14	15	SS	45		
	11		46	GP-GM SP	
			47		
			48		
			49		
15	9	SS	50		grading with few boulders HNu= 0.3 ppm
	3		51		Boring terminated at a depth of 50.0 feet on Sept. 30, 1988.
			52		

REF. 6

SHEET 1 OF 6

Nassau/Suffolk Community Statistics

Community	Township	Area Square Miles	Population 1987 Est.	Population 1980 Census	Density Persons/ Sq Mile	Median* Family Income	Congress District
Albertson	North Hempstead	1.12	5,339	5,561	4,767	43,273	3
Amagansett	East Hampton	20.02	2,415	2,188	121	25,288	1
Amityville (v)	Babylon	*2.20	9,297	9,076	4,245	38,000	2
Amityville (uninc)	Babylon	—	43	43	4,425	38,000	
Aquebogue	Riverhead	2.50	1,006	895	402	28,345	1
Asharoken (v)	Huntington	1.50	690	635	460	85,270	3
Atlantic Beach (v)	Hempstead	.63	1,938	1,775	3,076	54,363	5
Atlantic Beach (uninc)	Hempstead	.66	2,202	2,008	3,336	48,954	5
X Babylon (v)	Babylon	2.51	12,500	12,388	4,980	39,738	2
Baldwin	Hempstead	4.29	31,337	31,630	7,304	43,489	4 & 5
Baxter Estates (v)	North Hempstead	.16	871	911	5,444	51,924	3
Bay Park	Hempstead	.46	2,299	2,353	4,998	36,040	5
Bay Shore	Islip	2.97	11,351	10,777	3,822	27,198	2
Bayport	Islip	4.32	9,183	9,282	2,126	38,798	2
Bayville (uninc)	Oyster Bay	.29	523	487	1,803	53,453	3
Bayville (v)	Oyster Bay	1.39	7,477	7,034	5,379	41,348	3
Belle Terre (v)	Brookhaven	.93	872	826	937	67,996	1
Bellerose (v)	Hempstead	.13	1,224	1,187	9,415	51,302	5
Bellerose Terrace	Hempstead	.13	1,930	1,951	14,846	36,965	5
Bellmore	Hempstead	2.47	17,565	18,106	7,111	42,789	4
Bellport (v)	Brookhaven	1.39	2,876	2,809	2,069	43,279	1
X Bethpage	Oyster Bay	3.55	16,567	16,840	4,666	41,384	4
Blue Point	Brookhaven	1.70	4,340	4,096	2,552	36,614	1
Bohemia	Islip	8.57	9,314	9,308	1,086	33,926	2
Brentwood	Islip	9.85	45,097	44,321	4,578	34,689	2
Pilgrim Psych Center (sp)	Islip	—	2,949	3,865	—	—	—
Bridgehampton	Southampton	†20.21	2,244	1,941	170	30,573	1
Brightwaters (v)	Islip	1.00	3,200	3,286	3,200	50,360	2
Brookhaven	Brookhaven	5.30	3,041	3,050	573	40,800	1
Brookhaven Nat'l Lab (sp)	Brookhaven	—	205	205	—	—	
Poospatuck Indian Res (sp)	Brookhaven	.09	203	203	2,255	17,935	
Brookville (v)	Oyster Bay	4.17	3,686	3,290	883	93,106	3
CW Post Center	Oyster Bay	—	1984	1629	—	—	
Calverton-Roanoke	Riverhead	30.93	5,660	4,952	183	22,627	1
Captree Island	Babylon	.22	38	37	173	—	
Captree State Park	Islip	—	10	10	—	—	
Carle Place	North Hempstead	.89	5,224	5,470	5,869	38,765	3
Cedarhurst (v)	Hempstead	1.00	5,896	6,162	5,896	42,132	5
Center Moriches	Brookhaven	5.60	6,950	5,703	1,241	31,733	1
Centereach	Brookhaven	8.76	31,660	30,136	3,614	35,879	1
Centerport	Huntington	3.36	6,612	6,576	1,967	46,193	3
Central Islip	Islip	12.16	16,957	17,341	4 533	32,198	2
CI Psychiatric Center (sp)	Islip	—	1,100	2,194	—	—	
NY Inst of Technology (sp)	Islip	—	642	—	—	—	
Centre Island (v)	Oyster Bay	1.15	400	378	347	79,929	3
Cold Spring Harbor	Huntington	3.74	5,228	5,336	1,397	53,095	3
Commack	Huntington	*10.62	13,214	13,687	3,250	45,934	3
	Smithtown	—	21,304	21,032	3,250	45,934	3
Copiague	Babylon	3.17	21,454	20,132	6,767	34,158	2
Coram	Brookhaven	13.59	29,838	24,752	2,195	36,467	1
Cove Neck (v)	Oyster Bay	1.51	335	331	221	63,349	3
Cutchogue-New Suffolk	Southold	9.30	2,964	2,788	318	33,262	1
X Deer Park	Babylon	6.14	30,643	30,394	4,990	37,885	2
Dering Harbor (v)	Shelter Island	.40	17	16	42	NA	1
X Dix Hills	Huntington	15.75	27,455	26,693	1,743	54,889	2 & 3
X East Farmingdale	Babylon	5.79	6,134	5,522	1,059	33,176	2
X SUNY Farmingdale	Babylon	—	900	1,025	—	—	
East Garden City	Hempstead	3.08	4,243	2,781	1,377	39,234	5
Hofstra University	Hempstead	—	3,141	1,680	—	—	
East Hampton (v)	East Hampton	4.80	1,911	1,886	398	41,951	1
East Hills (v)	North Hempstead	*2.08	6,843	7,146	3,296	83,191	3
	Oyster Bay	—	14	14	3,296	83,191	3
East Islip	Islip	4.02	14,586	13,852	3,628	36,158	2
East Marion-Orient	Southold	8.40	1,573	1,511	187	30,521	1
East Massapequa	Oyster Bay	2.36	13,340	13,987	5,652	47,032	4
East Meadow	Hempstead	6.64	39,834	39,317	5,999	41,346	5
NC Jail	Hempstead	—	1,044	595	—	—	
East Moriches	Brookhaven	5.40	4,340	3,613	803	30,372	1

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Population

SHEET 2 OF 6

Community	Township	Area Square Miles	Population 1987 Est.	Population 1980 Census	Density Persons/ Sq Mile	Median* Family Income	Congress District
East Northport	Huntington	4.25	19,823	20,187	4,664	40,277	3
East Norwich	Oyster Bay	1.17	2,700	2,841	2,307	49,732	3
East Patchogue	Brookhaven	8.46	20,873	18,139	2,467	32,397	1
East Quogue	Southampton	3.47	3,890	3,668	1,121	31,349	1
East Rockaway (v)	Hempstead	1.00	10,529	10,917	10,529	40,257	4
East Shoreham	Brookhaven	3.05	4,091	3,817	1,341	46,945	1
East Williston (v)	North Hempstead	.69	2,614	2,708	4,356	59,070	3
Eastport	Brookhaven	*1.48	490	425	897	30,372	1
	Southampton	—	837	852	897	30,372	1
Eatons Neck	Huntington	.90	1,613	1,574	1,792	56,476	3
Elmont	Hempstead	3.36	27,201	27,592	8,095	36,124	5
Elwood	Huntington	4.79	11,678	11,847	2,437	44,871	3
X Farmingdale (v)	Oyster Bay	1.08	7,998	7,946	7,406	38,395	4
Farmingville	Brookhaven	4.48	14,793	13,398	3,302	33,629	1
Fire Island	Brookhaven	*9.39	88	83	36	33,722	1
	Islip	—	247	226	36	33,722	2
Fishers Island	Southold	5.32	405	318	76	43,468	1
Floral Park (v)	Hempstead	*1.39	13,800	14,478	11,742	39,822	3 & 5
	North Hempstead	—	2,522	2,327	11,742	39,822	3
Flower Hill (v)	North Hempstead	1.58	4,578	4,558	2,897	82,044	3
Fort Salonga	Huntington	*8.57	6,386	5,760	1,228	51,371	3
	Smithtown	—	4,137	3,790	1,228	51,371	3
Franklin Square	Hempstead	2.90	28,646	29,051	9,877	37,656	5
Freeport (v)	Hempstead	4.59	38,641	38,272	8,418	34,048	4 & 5
Garden City (v)	Hempstead	5.29	21,998	22,927	4,158	61,132	5
Adelphi Univ	Hempstead	—	837	788	—	—	
Garden City Park	North Hempstead	.97	7,746	7,712	7,985	42,352	3
Garden City South	Hempstead	.39	4,043	4,273	10,366	40,373	5
Gilgo-Oak Beach	Babylon	8.44	380	381	45	41,407	2
Glen Cove City	Oyster Bay	6.45	25,733	24,618	3,989	38,287	3
Glen Head	Oyster Bay	1.70	4,513	4,513	2,654	46,279	3
Glenwood Landing	North Hempstead	*.98	216	220	3,670	46,423	3
	Oyster Bay	—	3,381	3,335	3,670	46,423	3
Gordon Heights	Brookhaven	1.40	1,621	1,590	1,157	27,847	1
Great Neck (uninc)	North Hempstead	1.01	6,566	7,033	6,500	60,075	8
Great Neck (v)	North Hempstead	1.39	8,936	9,168	6,428	52,208	8
Great Neck Estates (v)	North Hempstead	.81	2,794	2,936	3,449	86,500	8
Great Neck Plaza (v)	North Hempstead	.31	6,029	5,604	19,448	40,084	3
Great River	Islip	6.90	1,599	1,631	231	58,709	1 & 2
Greenlawn	Huntington	3.82	14,179	13,869	3,711	41,951	3
Greenport (uninc)	Southold	2.60	1,792	1,571	689	25,650	1
Greenport (v)	Southold	.90	2,475	2,273	2,750	26,650	1
Greenvale	North Hempstead	*.26	776	766	4,062	39,027	3
	Oyster Bay	—	280	232	4,062	39,027	3
Hampton Bays	Southampton	10.62	8,073	7,256	760	29,132	1
Hampton Park	Southampton	5.30	1,511	1,331	285	31,436	
Hauppauge	Islip	*10.23	10,232	10,145	2,036	41,436	1, 2 & 3
	Smithtown	—	10,600	10,764	2,036	41,436	1, 2 & 3
Head of The Harbor (v)	Smithtown	3.00	1,196	1,023	398	63,731	1 & 3
Hempstead (v)	Hempstead	3.78	41,389	40,404	10,949	31,683	5
Herricks	North Hempstead	1.16	7,761	8,123	6,690	52,192	3
Hewlett	Hempstead	.89	7,127	6,986	8,007	43,040	5
Hewlett Bay Park (v)	Hempstead	.39	464	489	1,189	114,227	5
Hewlett Harbor (v)	Hempstead	.86	1,240	1,331	1,441	114,227	5
Hewlett Neck (v)	Hempstead	.23	449	472	1,952	110,210	5
Hicksville	Oyster Bay	6.64	41,824	43,245	6,298	40,970	4
Holbrook	Brookhaven	*6.68	5,313	4,899	3,903	36,011	1 & 2
	Islip	—	20,756	19,483	3,903	36,011	1 & 2
Holtsville	Brookhaven	*7.15	11,497	11,073	1,980	36,052	1 & 2
	Islip	—	2,662	2,442	1,980	36,052	1 & 2
X Huntington	Huntington	8.38	22,170	21,727	2,645	50,900	3
Huntington Bay (v)	Huntington	1.06	1,777	1,783	1,676	81,281	3
Huntington Station	Huntington	5.41	29,625	28,769	5,475	36,225	2 & 3
Inwood	Hempstead	1.70	9,196	9,228	5,409	27,123	5
Island Park (uninc)	Hempstead	1.18	4,693	4,108	3,977	38,792	4
Island Park (v)	Hempstead	.39	4,812	4,847	12,338	29,584	4
Islandia (v)	Islip	—	2,797	2,569	—	—	2
Islip	Islip	3.94	14,680	13,438	3,725	34,389	2
Islip Terrace	Islip	1.31	5,966	5,588	4,554	35,827	2
Jamesport	Riverhead	1.70	1,142	1,069	671	37,036	1
Jericho	Oyster Bay	4.21	13,347	12,739	3,170	55,864	3 & 4
Kensington (v)	North Hempstead	.24	1,124	1,132	4,683	93,282	8

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REF. 6.

SHEET 3 OF 6

Community	Township	Area Square Miles	Population 1987 Est.	Population 1980 Census	Density Persons/ Sq Mile	Median* Family Income	Congres District
Kings Park	Smithtown	6.22	16,417	16,131	2,639	40,465	3
Kings Park Psych Center (sp)	Smithtown	—	2,520	2,681	—	—	—
Kings Point (v)	North Hempstead	3.59	5,245	5,235	1,461	113,497	8
USMM Academy	North Hempstead	—	1,000	803	—	—	
Lake Grove (v)	Brookhaven	3.01	10,277	9,692	3,414	35,177	1
Lake Ronkonkoma	Brookhaven	*13.40	15,317	14,305	3,028	34,143	1 & 2
Lake Ronkonkoma	Islip	—	20,626	19,567	3,028	34,143	1 & 2
Lake Ronkonkoma	Smithtown	—	4,628	4,339	3,028	34,143	1 & 2
Lake Success (v)	North Hempstead	1.86	2,198	2,396	1,181	81,797	3
Lakeview	Hempstead	.58	5,217	5,276	8,994	41,075	5
Lattingtown (v)	Oyster Bay	3.94	2,013	1,749	510	61,173	3
Laurel	Southold	2.60	1,079	962	415	36,430	1
Laurel Hollow (v)	Oyster Bay	3.08	1,663	1,527	539	79,577	3
Lawrence (v)	Hempstead	4.29	6,166	6,175	1,437	65,299	5
Levittown	Hempstead	6.76	55,280	57,045	8,177	39,971	4 & 5
Lido-Point Lookout	Hempstead	2.02	4,909	4,504	2,430	54,517	4
X Lindenhurst (v)	Babylon	3.78	27,177	26,919	7,189	34,111	2
Lloyd Harbor (v)	Huntington	9.19	3,555	3,405	386	90,025	3
Locust Grove	Oyster Bay	2.08	9,095	9,670	4,372	50,204	3 & 4
Locust Valley	Oyster Bay	1.04	3,461	3,576	3,327	37,917	3
Long Beach City	Hempstead	2.08	34,595	34,073	16,632	31,176	5
Lynbrook (v)	Hempstead	2.51	19,615	20,424	7,814	38,704	5
Malverne (uninc)	Hempstead	.19	1,289	1,183	6,784	45,920	5
Malverne (v)	Hempstead	1.31	8,872	9,262	6,772	48,821	5
Manhasset	North Hempstead	2.39	8,518	8,485	3,564	52,414	3
Manorhaven (v)	North Hempstead	.62	5,792	5,384	9,341	36,688	3
Manorville	Brookhaven	27.70	8,171	6,548	294	28,987	1
Massapequa	Oyster Bay	3.94	23,659	24,454	6,004	43,011	4
Massapequa Park (v)	Oyster Bay	2.32	19,304	19,779	8,320	45,826	4
Mastic	Brookhaven	5.10	11,396	10,413	2,234	26,922	1
Mastic Beach	Brookhaven	4.29	9,447	8,318	2,202	23,450	1
Matinecock (v)	Oyster Bay	2.71	1,095	985	404	85,264	3
Mattituck	Southold	8.76	4,270	3,923	487	35,550	1
Medford	Brookhaven	10.73	21,961	20,418	2,046	34,354	1
X Melville	Huntington	10.19	11,334	10,380	1,112	61,113	2 & 3
LI Developmental Center		—	1,200	1,480	—	—	
Sagamore Children's Center		—	84	—	—	—	
Merrick	Hempstead	4.25	23,781	24,478	5,595	48,972	4
Middle Island	Brookhaven	8.22	8,149	5,703	991	30,104	1
Mill Neck (v)	Oyster Bay	3.00	1,026	959	342	68,342	3
Miller Place	Brookhaven	6.52	8,863	7,877	1,359	41,351	1
Mineola (v)	Hempstead	*1.81	52	52	11,240	37,562	3
	North Hempstead	—	20,293	20,705	11,240	37,562	3
Montauk	East Hampton	15.67	3,102	2,819	197	31,776	1
Mount Sinai	Brookhaven	6.14	8,436	6,591	1,373	37,385	1
Munsey Park (v)	North Hempstead	.50	2,731	2,806	5,462	78,261	3
Muttontown (v)	Oyster Bay	6.64	3,329	2,725	501	80,548	3
Napeague Hither Hills	East Hampton	6.54	245	151	37	38,922	1
Nesconset	Smithtown	3.78	11,977	10,706	3,168	39,603	1
New Cassel	North Hempstead	1.47	10,469	9,635	7,121	32,565	4
New Hyde Park (v)	Hempstead	*1.00	3,961	4,047	9,484	38,541	3 & 5
	North Hempstead	—	5,523	5,754	9,484	38,541	3 & 5
Nissequogue (v)	Smithtown	4.20	1,647	1,462	392	70,200	1 & 3
X North Amityville	Babylon	2.39	13,333	13,140	5,578	29,804	2
North Babylon	Babylon	3.36	18,751	19,019	5,580	38,998	2
North Bay Shore	Islip	8.49	35,133	35,020	4,138	34,913	2
North Bellmore	Hempstead	2.66	20,017	20,630	7,525	43,698	4 & 5
North Bellport	Brookhaven	4.59	7,804	7,432	1,700	26,165	1
North Great River	Islip	4.52	11,789	11,416	2,608	32,437	2
North Haven (v)	Southampton	2.60	755	738	290	36,700	1
North Hills (v)	North Hempstead	2.84	2,859	1,587	1,006	82,894	3
X North Lindenhurst	Babylon	1.89	11,553	11,511	6,112	34,403	2
North Massapequa	Oyster Bay	2.78	20,955	21,385	7,537	43,669	4
North Merrick	Hempstead	1.74	12,487	12,848	7,176	43,465	4 & 5
North New Hyde Park	North Hempstead	1.97	14,548	15,114	7,384	41,072	3 & 5
North Patchogue	Brookhaven	2.12	7,517	7,126	3,545	31,348	1
North Sea	Southampton	2.50	1,460	1,171	584	29,019	1
North Valley Stream	Hempstead	1.89	14,452	14,530	7,646	41,898	5
North Wantagh	Hempstead	1.85	13,077	12,677	7,068	45,676	4 & 5
Northport (v)	Huntington	2.55	7,950	7,651	3,117	44,176	3
Northport VA Hosp (sp)	Huntington	—	309	650	—	—	—
Northville	Riverhead	18.53	3,227	2,583	174	30,806	1

Continued on Next Page

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Population

Community	Township	Area Square Miles	Population 1987 Est.	Population 1980 Census	Density Persons/ Sq Mile	Median* Family Income	Congress District
Northwest Harbor	East Hampton	17.35	2,922	2,459	168	35,611	1
Noyack	Southampton	16.99	3,476	2,657	204	28,265	1
Oakdale	Islip	3.20	8,072	8,090	2,522	39,811	2
Dowling College	Islip	—	204	204	—	—	—
Ocean Beach (v)	Islip	.14	164	155	1,171	36,171	2
Oceanside	Hempstead	5.13	33,470	33,639	6,524	43,837	4
Old Bethpage	Oyster Bay	4.02	6,336	6,215	1,576	49,525	4
Old Brookville (v)	Oyster Bay	4.03	1,725	1,574	428	91,643	3
Old Field (v)	Brookhaven	2.20	909	829	413	70,676	1
Old Westbury (uninc)	North Hempstead	.02	96	96	4,800	35,854	3
Old Westbury (v)	North Hempstead	*8.49	2,360	2,175	410	88,118	3
Old Westbury (v)	Oyster Bay	—	1,129	1,102	410	88,118	3
Oyster Bay	Oyster Bay	1.24	7,467	6,497	6,021	38,162	3
Oyster Bay Cove (v)	Oyster Bay	4.30	2,292	1,799	533	93,547	3
Patchogue (v)	Brookhaven	2.20	11,243	11,291	5,110	27,709	1
Peconic	Southold	4.00	1,249	1,056	312	31,205	1
Plainedge	Oyster Bay	1.43	9,396	9,629	6,570	40,338	4
Plainview	Oyster Bay	5.64	27,572	28,037	4,888	49,546	4
Plandome (v)	North Hempstead	.50	1,469	1,503	2,938	83,185	3
Plandome Heights (v)	North Hempstead	.19	956	986	5,031	67,445	3
Plandome Manor (v)	North Hempstead	.58	924	883	1,593	99,111	3
Poquott (v)	Brookhaven	.47	692	588	1,472	33,220	1
Port Jefferson (v)	Brookhaven	3.51	7,390	6,731	2,105	44,470	1
Port Jefferson Station	Brookhaven	5.87	17,623	17,009	3,002	35,862	1
Port Washington	North Hempstead	3.90	14,301	14,521	3,666	46,864	3
Port Washington NE & NW	North Hempstead	.30	1,504	1,484	5,013	50,851	3
Port Washington North (v)	North Hempstead	.46	3,074	3,147	6,683	52,711	3
Quogue	Southampton	1.20	631	609	525	28,133	1
Quogue (v)	Southampton	4.14	1,354	966	327	38,249	
Remsenberg-Speonk	Southampton	3.62	2,187	1,868	604	35,513	1
Ridge	Brookhaven	18.53	10,916	8,977	589	29,988	1
Riverhead	Riverhead	4.29	6,516	6,339	1,518	25,525	1
Riverside-Flanders	Southampton	27.22	5,712	5,400	209	22,359	1
SC Jail	Southampton	—	459	375	—	—	
Rockville Centre (v)	Hempstead	3.32	24,997	25,412	7,529	47,833	5
Rocky Point	Brookhaven	10.39	7,690	7,012	740	24,526	1
Roosevelt	Hempstead	1.74	14,578	14,109	8,378	33,696	5
Roslyn (v)	North Hempstead	.70	2,253	2,134	3,218	47,292	3
Roslyn Estates (v)	North Hempstead	.44	1,235	1,292	2,806	96,866	3
Roslyn Harbor (v)	Oyster Bay	*1.20	347	344	956	84,036	3
Roslyn Harbor (v)	North Hempstead	—	801	785	956	84,036	3
Roslyn Heights	North Hempstead	1.43	6,288	6,546	4,397	48,977	3
Russell Gardens (v)	North Hempstead	.18	1,343	1,263	7,461	87,413	3
Saddle Rock (v)	North Hempstead	.26	954	921	3,669	90,154	8
Sag Harbor (v)	East Hampton	*2.01	906	895	1,361	28,342	1
Sag Harbor (v)	Southampton	—	1,870	1,686	1,361	28,342	1
Sagaponack	Southampton	†20.21	330	245	—	37,314	1
Saint James	Smithtown	4.52	12,154	12,122	2,688	38,325	1
Saltaire (v)	Islip	.30	40	35	132	114,227	2
Sands Point (v)	North Hempstead	4.29	2,730	2,742	636	114,227	3
Sayville	Islip	3.47	12,696	12,013	3,658	37,961	2
Sea Cliff (v)	Oyster Bay	1.00	5,385	5,364	5,385	43,340	3
Seaford	Hempstead	2.61	15,898	16,117	6,091	42,678	4
Searingtown	North Hempstead	.99	5,167	4,900	5,219	70,212	3
Selden	Brookhaven	3.71	18,749	17,259	5,053	32,169	1
Setauket-E.Setauket	Brookhaven	6.95	11,283	10,176	1,623	43,169	1
Shelter Island	Shelter Island	*11.68	1,332	1,115	204	26,653	1
Shelter Island Heights	Shelter Island	—	1,054	940	204	36,933	1
Shinnecock Hills	Southampton	5.40	3,079	2,344	570	32,132	1
Shinnecock Indian Res (sp)	Southampton	1.28	297	297	232	28,556	
Southampton College	Southampton	—	675	625	—	—	
Shirley	Brookhaven	10.93	19,923	18,072	1,822	28,201	1
Shoreham (v)	Brookhaven	.45	582	555	1,293	54,647	1
Smithtown	Smithtown	13.01	31,758	30,906	2,441	46,624	1 & 3
Sound Beach	Brookhaven	2.66	8,733	8,071	3,283	33,346	1
X South Farmingdale	Oyster Bay	2.16	15,706	16,439	7,271	42,505	4
South Floral Park (v)	Hempstead	.10	1,647	1,490	16,470	36,056	5
South Hempstead	Hempstead	.58	3,207	3,217	5,529	42,396	5
X South Huntington	Huntington	3.94	14,579	14,854	3,700	43,873	2 & 3
South Valley Stream	Hempstead	.89	5,200	5,462	5,842	54,849	5
South Westbury	Hempstead	1.27	9,435	9,732	7,429	45,743	4 & 5
Southampton (v)	Southampton	5.60	4,171	4,000	744	31,550	1

Continued on Next Page

REF. 6

LONG ISLAND ALMANAC '88

SHEET 5 OF 6

Community	Township	Area Square Miles	Population 1987 Est.	Population 1980 Census	Density Persons/ Sq Mile	Median* Family Income	Congress District
Southold	Southold	12.20	5,196	4,770	425	29,424	1
Springs	East Hampton	8.65	3,831	3,201	442	26,002	1
Stewart Manor (v)	Hempstead	.22	2,477	2,373	11,259	45,717	5
Stony Brook	Brookhaven	7.34	25,428	22,393	3,464	48,553	1
SUNY Stony Brook	Brookhaven	—	6804	6,238	—	—	
Syosset	Oyster Bay	2.66	10,403	9,818	3,910	51,651	3 & 4
Thomaston (v)	North Hempstead	.35	2,642	2,684	7,548	55,539	3
Tuckahoe	Southampton	4.70	1,022	953	217	33,169	1
Uniondale	Hempstead	2.66	19,448	20,016	7,311	36,276	5
AH Patterson-Home For Aged & Infirm	Hempstead	—	889	900	—	—	
Upper Brookville (v)	Oyster Bay	4.32	1,401	1,245	324	83,628	3
Valley Stream (v)	Hempstead	3.98	34,670	35,769	8,711	40,026	5
Village of The Branch (v)	Smithtown	.80	1,775	1,707	2,218	51,480	1 & 3
Wading River	Riverhead	8.00	4,648	4,405	581	35,114	1
Wainscott	East Hampton	6.90	570	421	82	25,493	1
Wantagh	Hempstead	3.94	20,354	19,817	5,165	45,015	4 & 5
Watermill	Southampton	†20.21	865	722	—	37,314	1
West Amityville	Oyster Bay	1.24	7,202	6,623	5,808	39,217	2
X West Babylon	Babylon	7.64	44,695	41,699	5,850	34,828	2
West Bay Shore	Islip	2.36	5,241	5,118	2,220	45,536	2
West Hempstead	Hempstead	2.63	17,994	18,536	6,841	41,872	5
West Hills	Huntington	4.79	6,038	6,071	1,260	51,806	2 & 3
West Islip	Islip	6.18	29,177	29,533	4,721	40,698	2
West Sayville	Islip	3.17	8,602	8,185	2,713	32,942	2
Westbury (v)	North Hempstead	2.59	13,775	13,871	5,318	44,137	4 & 5
Westhampton	Southampton	20.96	3,461	2,774	165	25,655	1
Westhampton Beach (uninc)	Southampton	*3.10	19	39	582	36,806	1
Westhampton Beach (v)	Southampton	—	1,805	1,629	588	36,511	1
Williston Park (v)	North Hempstead	.62	7,817	8,216	12,608	40,340	3
Woodbury	Oyster Bay	4.94	7,718	7,043	1,562	60,416	3 & 4
Woodmere	Hempstead	2.63	16,017	17,205	6,090	60,433	5
Woodsburgh (v)	Hempstead	.44	849	847	1,929	104,622	5
X Wyandanch	Babylon	5.64	13,375	13,215	2,371	33,316	2
Yaphank	Brookhaven	12.30	4,254	2,812	345	29,027	1

Notes:
* Figure is for total area of community.
† area of Watermill-Bridgehampton-Sagaponak is 20.21 sq miles.
Note: No adjustment was made for Islandia which was incorporated in 1985.
(v) - incorporated village (have their own elected officials)
(uninc) - unincorporated area, although clearly defined communities, have no village gov't. See pg 8 - How LI is Governed.
(sp) - Special population.
* - 1980 Census - adjusted using the consumer price index.
Source: Lilco

Your Representative In Congress Is:

District #	Name	Address	Phone #
1	George J Hochbrueckner (D),	3771 Nesconset Hwy, Centereach 11720,	(689-6767)
2	Thomas J Downey (D)	4 Udall Rd, W Islip 11795	(661-8777)
3	Robert Mrazek (D)	143 Main St, Huntington 11743	(673-6500)
4	Norman F Lent (R-C)	2280 Grand Ave, Baldwin 11510	(223-1616)
5	Raymond J McGrath (R)	203 Rockaway Ave, Valley Stream 11580	(872-9550)
6	James H Scheuer (D)	137-08 Northern Blvd, Flushing 11354	(466-3939)

REF. 6.

Top 19 Colleges & Universities

(By number of faculty)

Rank	School/Location/President/Phone	Full-Time Faculty/ Tuition Per Year	'86-'87 Enrollment Under-grad	Grad	'86-'87 #Undergrad Degrees	'86-'87 #Grad Degrees
4-Year Schools						
1	SUNY at Stony Brook (Stony Brook), Dr John Marburger III 632-6265	1,400/$1,800	11,200	4,900	2,800	1,300
2	LI University (includes CW Post in Greenvale, Brentwood and Southampton campuses), Dr David Steinberg 299-0200	431/$6,450	7,300	4,350	1,394	957
3	Hofstra University (Hempstead), Dr James Shuart, Pres 560-6800	457/$8,870	8,189	3,744	1,454	495
4	Adelphi University (Garden City), Dr Peter Diamandopoulos 663-1135	354/$6,860	5,396	5,104	784	659
5	NY Institute of Technology (Old Westbury/Central Islip), Dr Matthew Schure, Pres 686-7650	268/$5,370	8,045	1,424	1,167	270
6	SUNY at Old Westbury (Old Westbury), Dr L Eudora Pettigrew, Pres 876-3000	140/$1,350	3,624	—	720	—
7	Molloy College (Rockville Centre), Sister Janet Fitzgerald 678-5000	102/$5,700	1,472	—	347	—
8	NY Chiropractic College (Old Brookville), Keith Asplin, PhD, Pres 626-2700	103/$7,950	700	—	220	—
9	US Merchant Marine Academy (Kings Pt), Rear Admiral Paul Krinsky, Act Supt 773-5000	73/Pd by Fed'l Gov't	926	—	219	—
10	Dowling College (Oakdale), Dr Victor Meskill, Pres 244-3040	72/$4,950	2,523	540	511	131
11	Polytechnic Univ LI Campus (Farmingdale), Dr George Bugliarello 454-5111	60/$9,900	657	805	140	200
12	St Joseph's College (Patchogue), Sister George Aquin O'Connor 654-3200	47/$4,400	1,470	—	321	—
13	SUNY Empire State College (Old Westbury), Dr Patricia Lefor, Dean LI Ctr 997-4700	21/$1,107	585	—	362	1 (new prog)
14	Friends World College (Huntington), Dr Lawrence Weiss 549-5000	34/$5,700	550	—	21	—
15	Webb Inst of Naval Arch (Glen Cove), Vice Admiral Benedict Stabile 671-2213	8/None*	87	—	19	—
2-Year Schools						
1	Nassau Community College (Garden City), Dr Sean Fanelli 222-7205	530/$1,350	19,363	—	3,100	—
2	Suffolk Community College (Selden), Robert Kreiling 451-4110	502/$1,340	17,629	—	2,200	—
3	SUNY at Farmingdale (Farmingdale), Dr Frank Cipriani 420-2000	285/$1,350	11,747	—	1,465	—
4	Five Towns College (Seaford), Dr Stanley Cohen 783-8800	18/$4,250	393	—	71	—

*All students receive 4yr tuition free scholarships. Source: *LI BUSINESS NEWS* Research Dept (8/87)

TRIVIA:

In 1912 Farmingdale College was founded as agricultural institute reflecting Suffolk's position as NY State's leading agricultural county.

In the 1870s, Greenlawn became the center of the production of pickles.

Land Surveyors	94	141	235
Landscape Architects	27	42	69
Licensed Practical Nurses	4,507	5,535	10,042
Masseuses	174	126	300
Medical Doctors (MD)	5,822	2,786	8,608
Occupational Therapists	240	145	385
Occupational Therapy Assistants	27	32	59
Ophthalmologists	316	163	479

Estimated LI Acreage

(Under Cultivation — 1987)

Commodity	Acres	Commodity	Acres
Potatoes	9,000	Cucumbers	30[illegible]
Grain	7,000	Peppers	30[illegible]
Nursery	5,500	Onions	300
Sod	4,000	Spinach	300
Cauliflower	1,500	Strawberries	30[illegible]
Cabbage	1,500	Tomatoes	2[illegible]
Sweet Corn	1,000	Lettuce	200
Pasture	1,200	Squash	200
Grapes	1,500	Pumpkins	2[illegible]
Green Beans	500	Melons	1[illegible]
Peaches	400	Other	1,4[illegible]
Apples	300	TOTAL	37,280

Source: LI Farm Bureau, Cornell Cooperative Extension, US Dept of Agriculture

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Mallinckrodt
Material Safety Data

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Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 40361.

05/03/89 09:44 ☎606 987 3456 Mallinckrodt Ky. REF 7.

mergency Phone Number: 314-982-5000

ETRACHLOROETHYLENE

RODUCT IDENTIFICATION:

ynonyms: tetrachloride ethylene; tetrachloroethene

ormula CAS No.: 127-18-4

olecular Weight: 165.83

hemical Formula: C_2Cl_4

azardous Ingredients: Tetrachloroethylene

RECAUTIONARY MEASURES

ARNING! HARMFUL IF SWALLOWED OR
HALED.
AUSES IRRITATION TO SKIN, EYES AND RESPIRATORY
RACT.
FFECTS CENTRAL NERVOUS SYSTEM.

o not get in eyes, on skin, or on clothing.
o not breathe mist.
eep container closed.
se with adequate ventilation.
ash thoroughly after handling.

MERGENCY/FIRST AID

swallowed, induce vomiting immediately by giving two glasses of ater, or milk if available and sticking finger down throat. Never ve anything by mouth to an unconscious person. If inhaled, move to fresh air. If not breathing, give artificial spiration. If breathing is difficult, give oxygen. In case of ntact, immediately flush skin or eyes with plenty of water for at ast 15 minutes. In all cases call a physician.
EE SECTION 5.

OT Hazard Class: ORM-A

SECTION 1 Physical Data

Appearance: Clear, colorless liquid.

Odor: Ethereal.

Solubility: 0.015 g in 100 g of water.

Boiling Point: 119-121°C (246-250°F)

Melting Point: -22°C (-8°F)

Density: 1.63

Vapor Density (Air=1): 5.83

Vapor Pressure (mm Hg): 16 @ 22°C (72°F)

Evaporation Rate: (CCl_4=1) 0.27

SECTION 2 Fire and Explosion Information

Fire:
Not considered to be a fire hazard but becomes hazardous in a fire situation becuase of vapor generation and possible degradation to phosgene (highly toxic) and hydrogen chloride (corrosive).

Explosion:
Not considered to be an explosion hazard.

Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire. Thermo-oxidative reactions can produce highly toxic phosgene or hydrogen chloride.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

SECTION 3 Reactivity Data

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:
This substance does not polymerize.

Incompatibilities:
Strong oxidizers, strong alkalies, especially NaOH, KOH; finely divided metals, especially zinc.

SECTION 4 Leak/Spill Disposal Information

Clean-up personnel require protective clothing and respiratory protection from vapors. Contain and recover liquid when possible. Chlorinated solvents in large amounts should be burned in an approved incinerator with appropriate scrubbers. Alternatively, absorb with vermiculite, dry sand, earth, or similar material. Scoop up with non-sparking tools and place in a closed container, and dispose in a RCRA approved facility. Do not flush to the sewer.

Reportable Quantity (RQ)(CWA/CERCLA) : 1 lb.

Ensure compliance with local, state and federal regulations.

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MAY 04 1989

R-132

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0

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linckrodt
erial Safety Data

y Phone Number: 314-982-5000

5 Health Hazard Information

OSURE / HEALTH EFFECTS

:
the upper respiratory tract. Giddiness, headache, , nausea and vomiting may follow the inhalation of nts while massive amounts can cause breathing arrest Concentrations of 600 ppm and more may effect the vous system after a few minutes.

:
toxic by this route because of low water solubility. oral dosage for hookworm (1 to 4 ml). May cause pain, nausea, diarrhea, headache, and dizziness.

ntact:
or repeated contact may produce irritation or due to defatting the skin. Soreness or skin flaking

ntact:
tearing will be experienced after contact with the vent or strong concentrations of vapors.

Exposure:
e liver, kidney or central nervous system damage after or prolonged exposures.

tion of Pre-existing Conditions:
with pre-existing skin disorders or eye problems or kidney function may be more susceptible to the effects bstance. Use of alcoholic beverages enhances the toxic f exposure.

B. FIRST AID

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:
If swallowed, induce vomiting immediately by giving two glasses of water, or milk if available and sticking finger down throat. Call a physician immediately. Never give anything by mouth to an unconscious person.

Skin Exposure:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

Eye Exposure:
Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1986)

Oral rat LD50: 8850 mg/kg. Oral mouse LD50: 8100 mg/kg. Irritation data: Skin rabbit: 810 mg/24H Severe. Eye rabbit: 162 mg Mild. Tumorigenic effects cited. Mutation references cited. Reproductive effects cited. Aquatic toxicity rating: TLm96: 100-10 ppm. Carcinogenic Determination: Limited evidence in animals. Category III - cannot be classified as to its caranogenicity in humans. (IARC Supp. 4, 1982).

SECTION 6 Occupational Control Measures

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
100 ppm (TWA) 200 ppm ceiling 300/5M/3H peak.
-ACGIH Threshold Limit Value (TLV):
50 ppm (TWA) 200 ppm (STEL)

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators: (NIOSH Approved)
If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection:
Wear protective gloves and clean body-covering clothing.

Eye Protection:
Use chemical safety goggles. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

SECTION 7 Storage and Special Information

Store in a cool, dry, ventilated area away from sources of heat or ignition. Isolate from flammable materials. Protect from direct sunlight.

TOROE

R-133

Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

Mallinckrodt makes no representations, or warranties, either express or implied, of merchantability, fitness for a particular purpose with respect to the information set forth herein or to the product to which the information refers. Accordingly, Mallinckrodt will not be responsible for damages resulting from use of or reliance upon this information.

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laterial Safety Data

ergency Phone Number: 314-982-5000

Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 40361.

Addendum to Material Safety Data Sheet

REGULATORY STATUS

s Addendum Must Not Be
ached from the MSDS
ntifies SARA 313 substance(s)
opying or redistribution of the MSDS
include a copy of this addendum
em.Key: TOROE)

Hazard Categories for SARA Section 311/312 Reporting				
Acute	Chronic	Fire	Pressure	Reactive
X	X			

uct or Components oduct:	SARA EHS Sect. 302 RQ (lbs.)	SARA EHS Sect. 302 TPQ (lbs.)	SARA Section 313 Chemicals Name List	SARA Section 313 Chemicals Chemical Category	CERCLA Sec.103 RQ (lbs.)	RCRA Sec. 261.33
ACHLOROETHYLENE (127-18-4)	No	No	Yes	No	1	U210

A Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.
A Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a Threshold Planning Quantity ies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.
A Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.
CLA Sec. 103: Comprehensive Enviromental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous ances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4
A: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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inckrodt
erial Safety Data

y Phone Number: 314-982-5000

Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 40361.

TRICHLOROETHANE

UCT IDENTIFICATION:

: Methyl chloroform; trichloroethane; chloroctene; lorethane

CAS No.: 71-55-6

r Weight: 133.40

l Formula: CH_3CCl_3

us Ingredients:
t contains a minimum 96% Trichloroethane (stabilized).
rs can vary for each lot and may include
wing in proprietary concentrations:
), 123-91-1 diethylene ether
-92-2 sec butanol

CAUTIONARY MEASURES

NG! HARMFUL IF SWALLOWED OR
ED. AFFECTS CENTRAL NERVOUS SYSTEM.
S IRRITATION.

breathing vapor.
container closed.
nly with adequate ventilation.
thoroughly after handling.
contact with eyes, skin and clothing.

ERGENCY/FIRST AID

a physician immediately. If swallowed give several glasses of or water. If medical help is not immediately available and amount swallowed was appreciable, induce vomiting. Never give thing by mouth to an unconscious person. If inhaled, remove to h air. If not breathing, give artificial respiration. If athing is difficult, give oxygen. In case of contact, mediately flush skin or eyes with plenty of water for at least 15 nutes.

E SECTION 5.

OT Hazard Class: ORM-A

SECTION 1 Physical Data

Appearance: Clear, colorless solution.

Odor: Mild chloroform-like odor.

Solubility: 0.07g/100g water @ 25°C (77°F)

Boiling Point: 74°C (165°F).

Melting Point: -32°C (-26°F).

Specific Gravity: 1.32

Vapor Density (Air=1): 4.55

Vapor Pressure (mm Hg): 100 @ 20°C (68°F).

Evaporation Rate: (ethylether=1): 0.35

SECTION 2 Fire and Explosion Information

Fire:
Considered nearly nonflammable.
Autoignition temperature: 537°C (998°F).
Flammable limits in air, % by volume; lel 8.0, uel: 10.5.
Within the flammable limits, ignition may occur upon contact with a high-intensity source of heat.

Explosion:
Can react with strong caustic, such as potash to form a flammable or explosive material.

Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Do not use water.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

SECTION 3 Reactivity Data

Stability:
Requires inhibitor content to prevent corrosion of metals.
Slowly hydrolyzes in water to form hydrochloric and acetic acid.

Hazardous Decomposition Products:
Emits toxic and corrosive hydrogen chloride, and small amounts of chlorine and phosgene when heated to decomposition.

Hazardous Polymerization:
This substance does not polymerize.

Incompatibilities:
Acetone, nitrogen tetroxide, oxygen, liquid oxygen, sodium, sodium hydroxide, and sodium-potassium alloy.

SECTION 4 Leak/Spill Disposal Information

Dike and cover leaking or spilled liquid with dirt, vermiculite, kitty-litter or other inert absorbent. Collected waste may be transferred to a closed, preferably metal, container and sent to a RCRA-approved waste disposal facility. Ventilate the area of the leak or spill. Do not use aluminum, magnesium or zinc metal for storage container.

Reportable Quantity (RQ)(CWA/CERCLA): 1000 lbs.

Ensure compliance with local, state and federal regulations.

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 1

R-135

Mallinckrodt
Material Safety Data

Emergency Phone Number: 314-982-5000

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SECTION 5 Health Hazard Information

EXPOSURE / HEALTH EFFECTS

Inhalation:
May cause headache, dizziness, nausea, fall in blood pressure, unconsciousness, and death. May cause sensitization to the myocardium, and kidney and liver damage after severe exposure. Affects the central nervous system.

Ingestion:
Systemic poisoning may occur through ingestion; symptoms may parallel inhalation. Swallowing irritates the gastrointestinal tract. Vomiting and subsequent aspiration into the lungs may lead to chemical pneumonia and pulmonary edema which is a potentially fatal condition.

Skin Contact:
May cause mild irritation and redness.

Eye Contact:
Liquids and vapors may cause irritation.

Chronic Exposure:
Prolonged or repeated skin contact may cause dermatitis.

Aggravation of Pre-existing Conditions:
Preclude personnel with CNS, liver or heart disease from exposure. Use of alcoholic beverages may aggravate symptoms.

B. FIRST AID

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:
Aspiration hazard.
Call a physician immediately. If swallowed give several glasses of milk or water. If medical help is not immediately available and the amount swallowed was appreciable, induce vomiting. Never give anything by mouth to an unconscious person.

Skin Exposure:
Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Exposure:
Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1986)

Oral rat LD50: 10300 mg/kg. Mutation references cited. Reproductive data cited. Irritation data: skin rabbit 500mg/24H modeate eye rabbit 2mg/24H severe

SECTION 6 Occupational Control Measures

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
350 ppm (TWA)
-ACGIH Threshold Limit Value (TLV):
350 ppm (TWA).
450 ppm (STEL)

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators: (NIOSH Approved)
If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection:
Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

Eye Protection:
Use chemical safety goggles. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

SECTION 7 Storage and Special Information

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage.

TRICH

R-136

lallinckrodt
Iaterial Safety Data

ıergency Phone Number: 314-982-5000

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Addendum to Material Safety Data Sheet

REGULATORY STATUS

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lentifies SARA 313 substance(s)
copying or redistribution of the MSDS
t include a copy of this addendum
:hem.Key: TRICH)

Hazard Categories for SARA Section 311/312 Reporting

Acute	Chronic	Fire	Pressure	Reactive
X				X

ɔduct or Components Product:	SARA EHS Sect. 302 RQ (lbs.)	SARA EHS Sect. 302 TPQ (lbs.)	SARA Section 313 Chemicals Name List	SARA Section 313 Chemicals Chemical Category	CERCLA Sec.103 RQ (lbs.)	RCRA Sec. 261.33
l-TRICHLOROETHANE	No	No	Yes	No	1000	U226
lethyl chloroform (71-55-6) 96-100%	No	No	Yes	No	1	U108
ɔioxane (123-91-1) < 4%	No	No	Yes	No	No	No
ɜc-Butyl alcohol (78-92-2) < 4%						
ıctual concentrations proprietary						

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.
SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.
SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.
CERCLA Sec. 103: Comprehensive Enviromental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4
RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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gency Phone Number: 314-982-5000

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Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 40361.

ICHLOROETHYLENE

ODUCT IDENTIFICATION:

nyms: Trichloroethene; TCE; acetylene trichloride

ula CAS No.: 79-01-6

cular Weight: 131.39

nical Formula: C_2HCl_3

rdous Ingredients: Not applicable.

ECAUTIONARY MEASURES

NING! HARMFUL IF SWALLOWED OR
ALED. CAUSES IRRITATION.
CTS CENTRAL NERVOUS SYSTEM. POSSIBLE CANCER
ARD BASED ON TESTS WITH LABORATORY ANIMALS.
OSURE MAY CREATE A CANCER RISK.

not get in eyes, on skin, or on clothing.
not breathe vapor.
p container closed.
with adequate ventilation.
h thoroughly after handling.

MERGENCY/FIRST AID

wallowed, induce vomiting immediately by giving two glasses of er and sticking finger down throat. Never give anything by uth to an unconscious person. If inhaled, remove to fresh air. ot breathing, give artificial respiration. If breathing is icult, give oxygen. In case of contact, immediately flush skin eyes with plenty of water for at least 15 minutes. In all cases a physician. Note to physician: Do not administer adrenaline epinephrine to a victim of chlorinated solvent poisoning.
E SECTION 5.

OT Hazard Class: ORM-A

SECTION 1 Physical Data

Appearance: Clear, colorless liquid.

Odor: Chloroform-like.

Solubility: Practically insoluble in water. Readily miscible in organic solvents.

Boiling Point: 87°C (188.6°F).

Melting Point: -73°C (-99.4°F).

Specific Gravity: 1.45

Vapor Density (Air=1): 4.5

Vapor Pressure (mm Hg): 57.8 @ 20°C (68°F).

Evaporation Rate: No information found.

SECTION 2 Fire and Explosion Information

Fire:
Flashpoint: None by standard methods.
Flammable limits in air, % by volume at 57°C (135°F): lel: 12.5, uel: 90.
Autoignition temperature: 410°C (770°F).

Explosion:
A strong ignition source, e.g., a welding torch, can produce ignition.

Fire Extinguishing Media:
Use water spray to keep fire exposed containers cool. If substance does ignite, use CO*2, dry chemical or foam.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

SECTION 3 Reactivity Data

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Decomposed by heat or flame and in the presence of oxygen and light, especially UV radiation. Can form carbon monoxide, phosgene, and emit corrosive fumes of hydrochloric acid.

Hazardous Polymerization:
This substance does not polymerize.

Incompatibilities:
Alkali hydroxides, powdered metals, liquid oxygen.

SECTION 4 Leak/Spill Disposal Information

Ventilate area of leak or spill. Clean-up personnel require protective clothing.
Contain and recover liquid when possible.

Larger Spills: absorb with vermiculite, dry sand, earth, or similar material for disposal as hazardous waste in a RCRA approved facility.

Do Not Flush To Sewer.

Reportable Quantity (RQ)(CWA/CERCLA) : 1000 lbs.

Ensure compliance with local, state and federal regulations.

R-138

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 0

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aterial Safety Data

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Mallinckrodt, Inc., Science Products Division, P.O. Box M, Paris, KY 40361.

gency Phone Number: 314-982-5000

ION 5 Health Hazard Information

XPOSURE / HEALTH EFFECTS

ation:
exposure causes depression of the central nervous system ay include symptoms of visual disturbances and mental sion, incoordination, headache, nausea, euphoria, and ess. Inhalation of high concentrations could cause sciousness and death.

stion:
o moderately toxic. May cause effects similar to inhalation. cause coughing, abdominal pain, diarrhea, dizziness, sciousness. Kidney failure can result in severe cases. ated fatal dose is 3-5 mk/kg.

Contact:
cause irritation. Continued skin contact has a defatting n and can produce rough, dry, red skin resulting in ndary infection.

Contact:
ors may cause severe irritation with redness and pain. shes may cause eye damage.

onic Exposure:
onic exposures may cause liver and kidney damage and nervous em effects. Workers chronically exposed may exhibit central ous system depression, intolerance to alcohol, and increased liac output.

revation of Pre-existing Conditions:
ons with pre-existing skin disorders or eye problems, or aired liver, kidney or respiratory function may be more eptible to the effects of the substance.

B. FIRST AID

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:
If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

Skin Exposure:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician immediately.

Eye Exposure:
Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY DATA (RTECS, 1986)

Oral rat LD50: 4920 mg/kg. Mutation references cited. Reproductive effects cited. Tumorigenic effects cited. Carcinogenic determination: limited evidence in experimental animals (IARC Supplement 4, 1982) Aquatic Toxicity Rating: TI. 96: 1000-100 ppm.

SECTION 6 Occupational Control Measures

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
100 ppm (TWA); 200 ppm (Ceiling);
300 ppm/5M/2H (Peak).
-ACGIH Threshold Limit Value (TLV):
50 ppm (TWA) 200 ppm (STEL).

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators: (NIOSH Approved)
If the TLV is exceeded a full facepiece chemical cartridge respirator may be worn, in general, up to 100 times the TLV or the maximum use concentration specified by the respirator supplier, whichever is less. Alternatively, a supplied air full facepiece respirator or airlined hood may be worn.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area.

SECTION 7 Storage and Special Information

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

TRILO

R-139

lallinckrodt

Iaterial Safety Data

ergency Phone Number: 314-982-5000

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hem.Key: TRILO)

Hazard Categories for SARA Section 311/312 Reporting

Acute	Chronic	Fire	Pressure	Reactive
X	X			

duct or Components roduct:	SARA EHS Sect. 302 RQ (lbs.)	SARA EHS Sect. 302 TPQ (lbs.)	SARA Section 313 Chemicals Name List	SARA Section 313 Chemicals Chemical Category	CERCLA Sec.103 RQ (lbs.)	RCRA Sec. 261.33
CHLOROETHYLENE (79-01-6)	No	No	Yes	No	1000	U228

RECEIVED
MAY 04 1989
LeRoy Callender P.C.

A Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.
A Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (*) following a Threshold Planning Quantity ifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.
A Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.
RCLA Sec. 103: Comprehensive Enviromental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous tances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4
RA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

KEF 4.

Map Of State Recognized Freshwater Wetlands

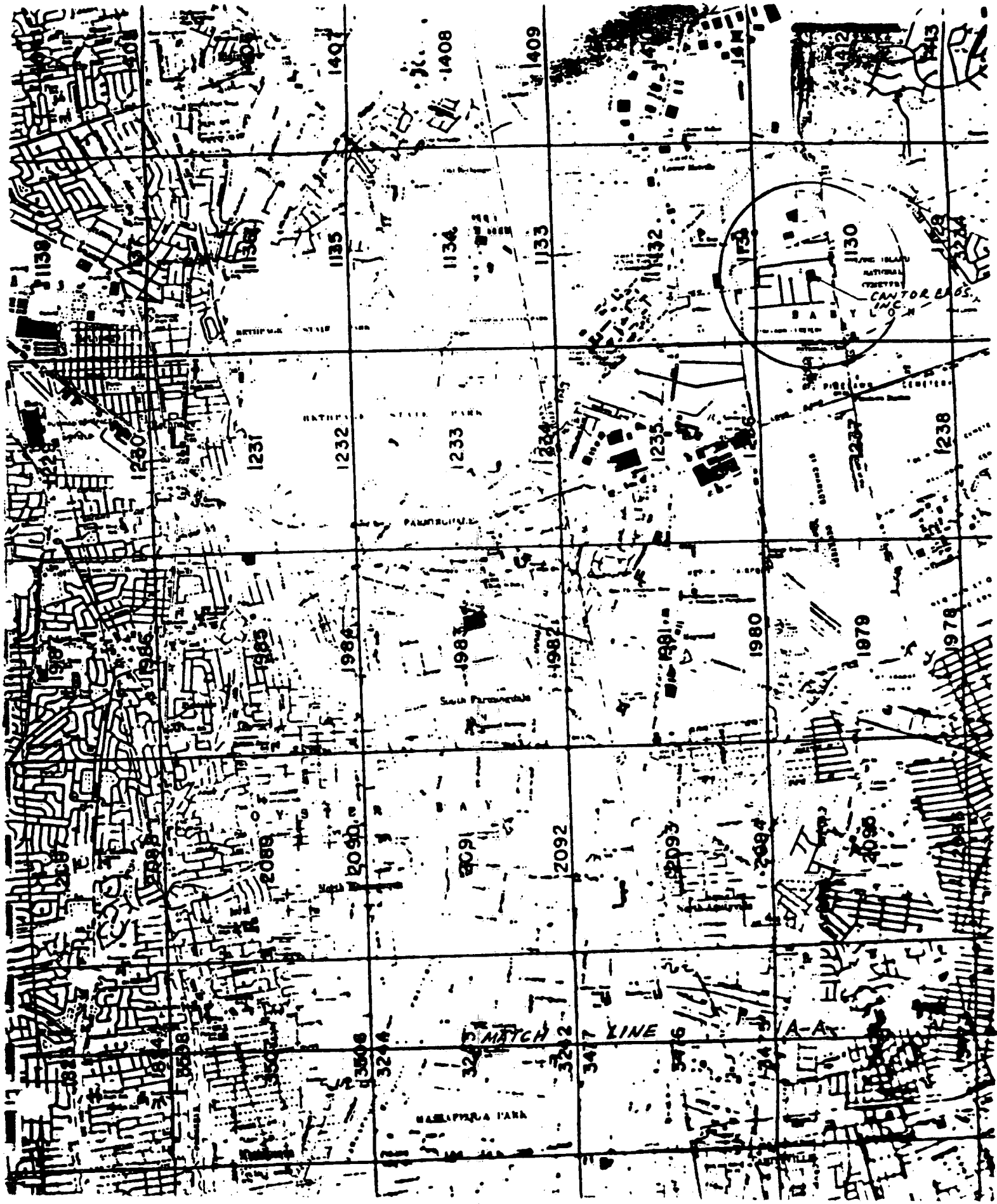
1" = 2000'

REF 10.

SCALE: 1:48,000

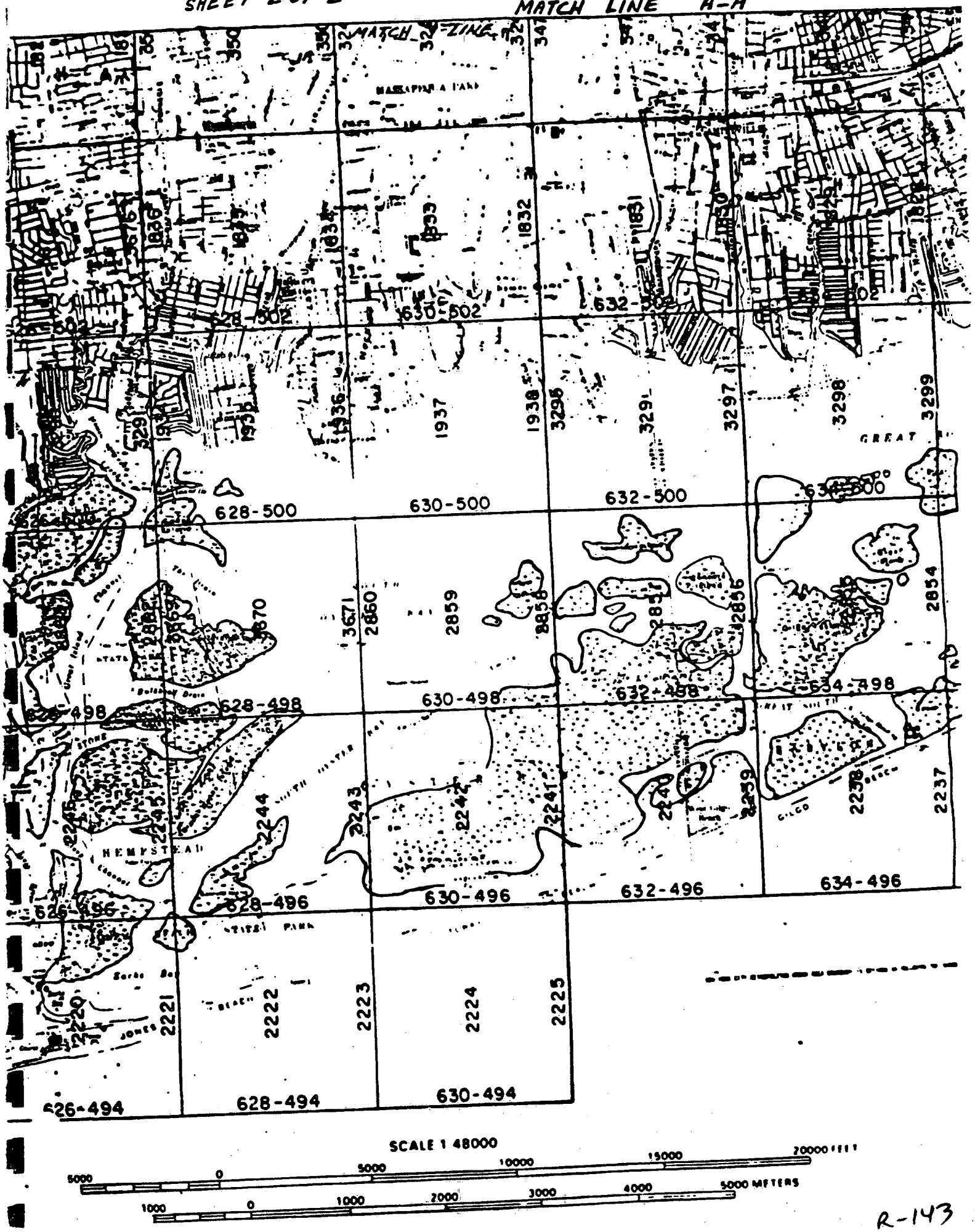
SHEET 1 of 2

Map Of State Recognized Coastal Wetlands



SHEET 2 OF 2

MATCH LINE A-A



R-143

REF. 11.

New York State Department of Environmental Conservation
Building 40 - SUNY Stony Brook, New York 11794
(516) 751-7900 (ext. 248)

ACTION ROUTING
ACTION
1.
2.
3.
4.
5. 86-279
FILE NO.

Thomas C. Jorling
Commissioner

January 27, 1989

Mr. Sirous H. Nabavi
LeRoy Callender, PC
236 West 26th Street
New York, New York 10001

Re: Phase II Investigations
@ Cantor Brothers, Inc.
E. Farmingdale, New York

Dear Mr. Nabavi:

We have reviewed the Significant Habitat Program and the Natural Heritage Program files with respect to the above site.

We did not identify any potential impacts on endangered, threatened, or special concern wildlife species, rare plant, animal or natural community occurrences, or other significant habitats.

The absence of data does not necessarily mean that rare or endangered elements, natural communities or other significant habitats do not exist on or adjacent to the proposed site, but rather that our files currently do not contain any information which indicates the presence of these. 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 cannot provide a definitive statement on the presence or absence of species, habitats or communities. This information should <u>not</u> be substituted for on-site surveys that may be required for environmental assessment.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

If we can be of further assistance please do not hesitate to contact me at the above address and telephone number.

Sincerely,

Michael S. Scheibel
Senior Wildlife Biologist

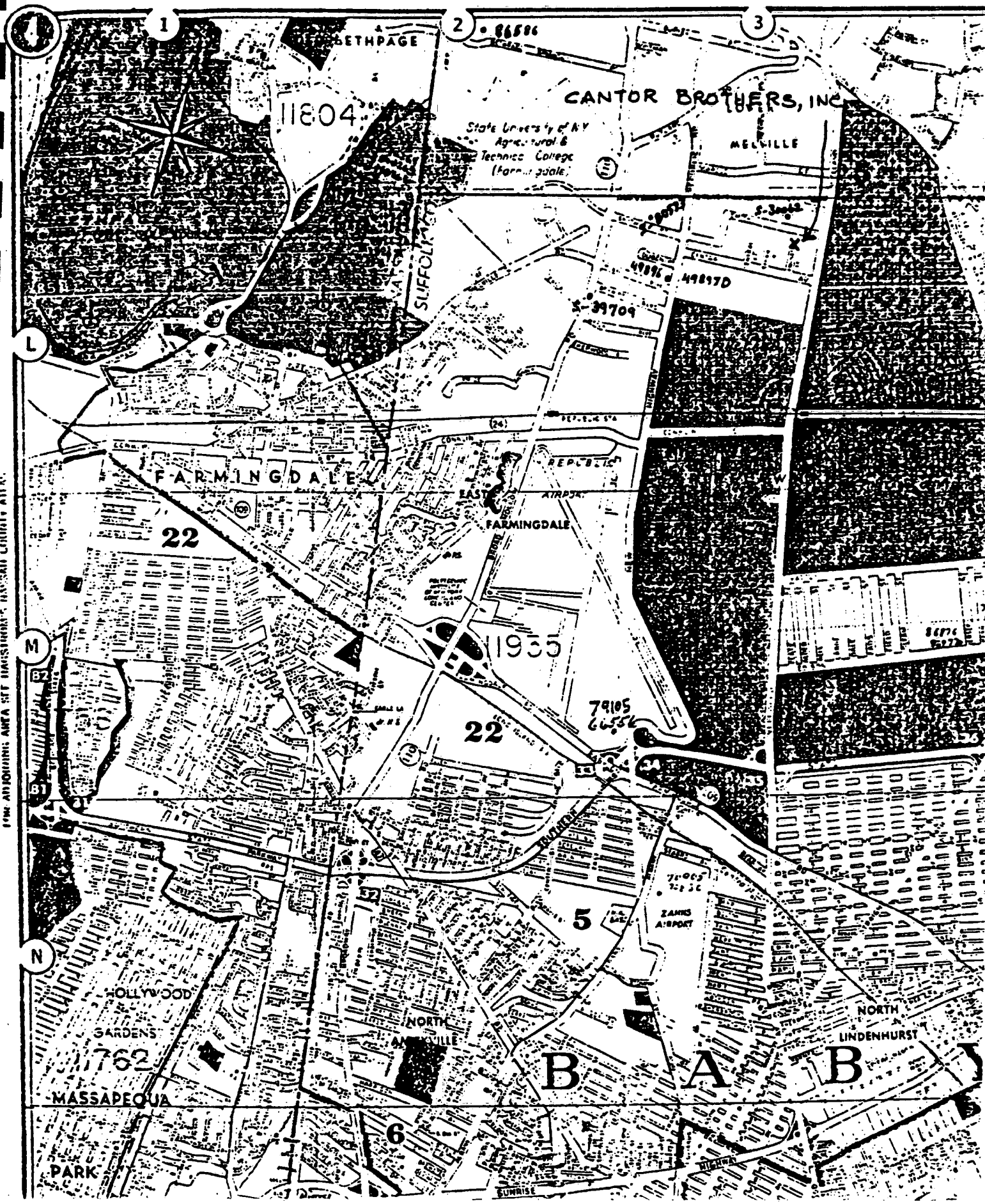
MSS/sjmr

RECEIVED
FEB 01 1989
LEROY CALLENDER/P.C.

R-144

APPENDIX D REF. 12

PUBLIC & PRIVATE WELLS



REF. 12

LEGEND

- Main Through Roads
- Highways Under Construction
- Proposed Highways
- Other Roads and Streets
- Parkways
- Highway Route Numbers (State 27, County 38)
- Interchange Numbers (40)
- Railroad Lines and Stations (Passenger, Freight Only)
- Parks & Camps
- Golf Courses
- Cemeteries
- Hospitals
- Airports
- State and Federal Lands
- School Districts (2)
- Schools
- Zip Code Areas (11792)
- State Boundaries
- County Boundaries
- Town Boundaries
- Village Boundaries

SCALE IN FEET (Approx.) 0 2000 4000 6000 8000

SCALE IN MILES (Approx.) 0 0.5 1 1.5

SCALE IN KILOMETERS (Approx.) 0 1 2

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FOR ADJOINING AREA SEE HAGSTROM'S NASSAU COUNTY ATLAS

COVE NECK

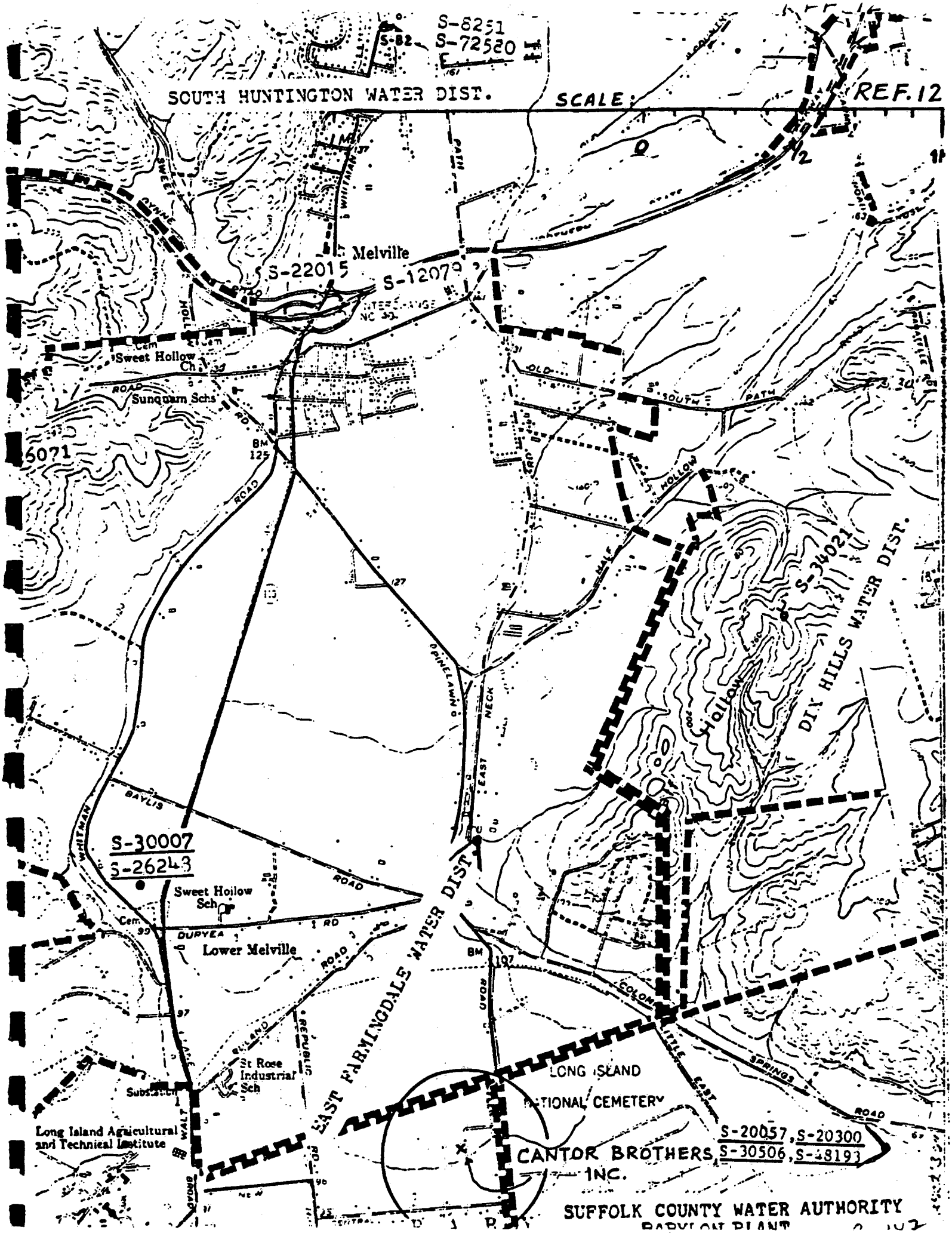
OYSTER BAY COVE

11771

11701

COLD SPRING HARBOR

NASSAU SUFFOLK


S-8251
S-72520
S-82
SOUTH HUNTINGTON WATER DIST.
SCALE:
REF. 12
Melville
S-22015
S-12079
Sweet Hollow Ch
Sunquam Schs
6071
BM 125
S-34021
DIX HILLS WATER DIST.
S-30007
S-26243
Sweet Hollow Sch
Lower Melville
EAST FARMINGDALE WATER DIST.
St Rose Industrial Sch
Substation
Long Island Agricultural and Technical Institute
LONG ISLAND NATIONAL CEMETERY
CANTOR BROTHERS INC.
S-20057, S-20300
S-30506, S-48193
SUFFOLK COUNTY WATER AUTHORITY
BABYLON PLANT

REF. 12

ORIGINAL—TO COMMISSION

County Suffolk

State of New York
Department of Conservation
Division of Water Resources

Well No. [illegible]

Ground Surf. [illegible]

COMPLETION REPORT—LONG ISLAND WELL

Owner GUILD ARTS & [illegible], INC.

Address 495 Smith Street, Farmingdale, N.Y.

Location of well Same as above

Dept of well below surface [illegible] ft

Depth to ground water from surface 45 ft

CASINGS:
Diameter 6" in. in. in. in.
Length 121'-2" ft. ft. ft. ft.
Sealing
Casings removed

SCREENS: Make Cock Openings #20
Diameter 4 in. in. in. in.
Length 10'-7" ft. ft. ft. ft.
Depth to top from top of casing ft.

PUMPING TEST: Date 4/15/67 Test or permanent pump? Perm.
Duration of Test 2 hours
Maximum Discharge 45 gallons per minute
Static level prior to test 45 in. below [illegible]
Level during Max. Pumping [illegible] in. below [illegible]
Maximum Drawdown 5 ft.
Approx. time of return to [illegible] 29 [illegible]
of pumping

PUMP INSTALLED:
Type Subm. Make Reda Model No. [illegible]
Motive power Elec. Make Reda H.P.
Capacity 45 g.p.m. against ft. of di[illegible]
No. bowls or stages 9 ft. or [illegible]

DROP LINE: SUCTION LINE:
Diameter 1¼" in. -
Length 80' ft. -

Use of water Plant Process Cooling Supply

Work started 2/24/67 Completed [illegible]

Date 5/1/67 Driller MATHIES [illegible] & PUMP CO., INC.

License No. 153

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, [illegible] additional pumping tests and other matters of interest. Describe [illegible]

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

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JAN 25 1989
LEROY CALLENDER/P.C.

R-148

REF. 12

S-30062

ORIGINAL

COUNTY Suffolk WELL NO. S-30062

Water Resources Commission—State of New York

PRELIMINARY REPORT ON PROPOSED WELL

OWNER Guild Arts & Crafts, Inc.

MAIL ADDRESS 495 Smith Str. Farmingdale, NY

WELL LOCATION Same as above

DEPTH 200 FT. DIAM. CASINGS 6 IN.

PUMP CAPACITY 45 G.P.M. TYPE Subm.

PURPOSE Plant Process Cooling Supply

DATE 2/10/67 19 LIST OF EXISTING WELLS S-22304 to be abandoned S-22305D

DRILLER [SIGNATURE] MATHIES WELL & PUMP CO., INC. No. 153

WATER RESOURCES COMMISSION

BY [signature] ENGINEER IN CHARGE

PERMIT TO SINK WELL

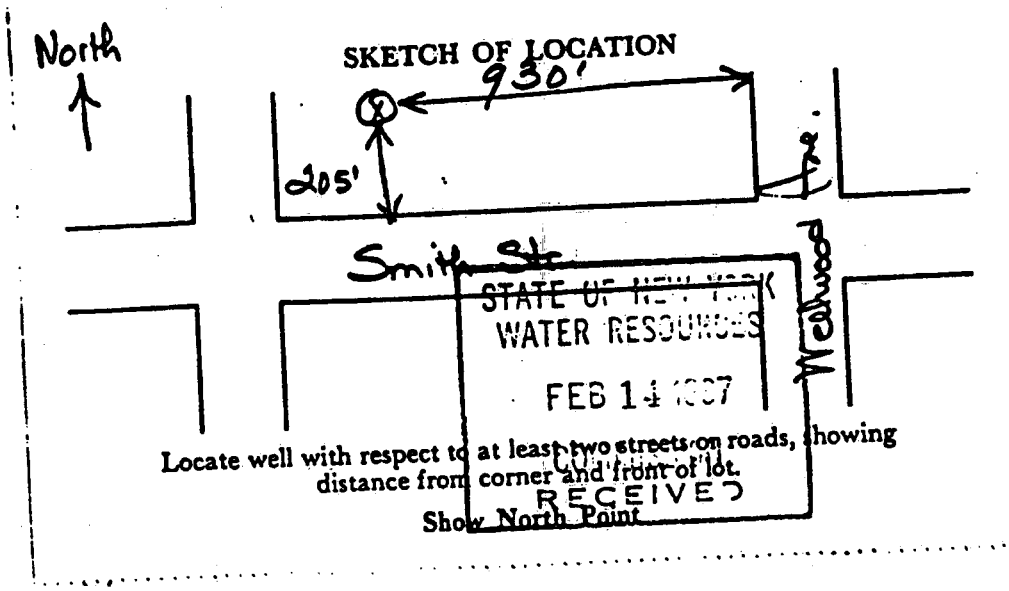
FEB 14 1967

DATE

R-149

REF. 12

SKETCH OF LOCATION



STATE OF NEW YORK
WATER RESOURCES
FEB 14 1997
RECEIVED

Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

R-150

KEF 13.

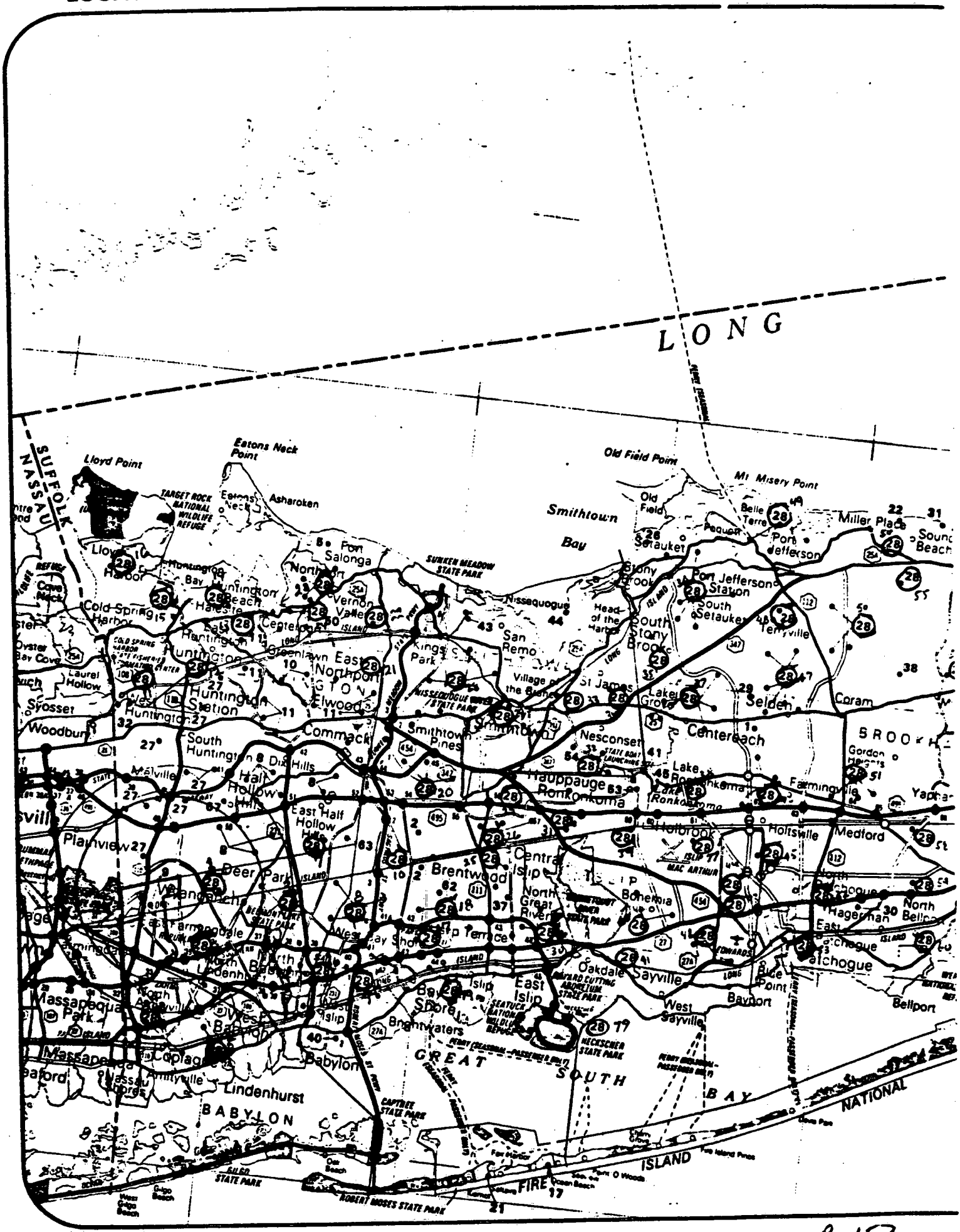
SUFFOLK COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Bevon Water Corporation	1150	Wells
2	Brentwood Water District	25812	Wells
3	Bridgehampton Water Company	1916	Wells
4	Captain Kidd Water Company	580	Wells
5	Crab Meadow Beach	50	Wells
6	Culross Corporation (Culross Beach)	104	Wells
7	Dering Harbor Village	130	Wells
8	Dix Hills Water District	30000	Wells
9	East Farmingdale Water District	7850	Wells
10	Fishers Island Water Works Corporation	250	Barlow, Middle Farms and Treasure Ponds, Wells
11	Greenlawn Water District	40000	Wells
12	Greenport Village	6851	Wells
13	Hampton Bays Water District	9500	Wells
14	Hawthorne - Maple Civic Association	50	Wells
15	Herod Point Association	80	Wells
16	North Shores Water Company	5000	Wells
17	Ocean Beach Village	155	Wells
18	Reeves Beach Water Company	650	Wells
19	Riverhead Water District	9300	Wells
20	Roanoke Water Corporation	201	Wells
21	Saltaire Village	35	Wells
22	Scott's Beach Water Company	342	Wells
23	Shelter Island Heights Association	498	Wells
24	Shirley Water Works	3400	Wells
25	Shorewood Water Corporation	10000	Wells
26	Soundview Association	236	Wells
27	South Huntington Water District	51260	Wells
28	Suffolk County Water Authority	900000	Wells
29	Sunhill Water Corporation	3959	Wells
30	Swan Lake Water Corporation	1485	Wells
31	Terrace-on-the-Sound	400	Wells
32	Woodbury Triangle Corporation	800	Wells
	Non-Municipal Community		
33	Aquebogue Mobile Home Court	120	Wells
34	Brookhaven National Labs	3373	Wells
35	Calverton Hills Owners Association	897	Wells
36	Cedar Lodge Nursing Home	100	Wells
37	Central Islip Psychiatric Center	4525	Wells
38	Crest Hall Health Related Facility	120	Wells
39	East Quogue Mobile Estates	160	Wells
40	Good Samaritan Hospital	NA	Wells
41	Greis Mobile Park	70	Wells
42	Hampton Gateway Apartments	304	Wells
43	Kings Park Psychiatric Center	3100	Wells
44	Knox School	NA	Wells
45	Lake Hurst Lodge Adult Home	57	Wells
46	Leier's Mobile Park	350	Wells
47	Little Flower Children's Services	150	Wells
48	Montauk Air Force Station	10	Wells
49	Napeague Trailer Park	78	Wells
50	Northport VA Hospital	3000	Wells
51	Oak Park Trailer Park	50	Wells
52	Oakland Ridge Mobile Park	74	Wells
53	Park Lake Rest Home	46	Wells
54	Peacock Alley	35	Wells
55	Peconic River Trailer Park	90	Wells
56	Peconic View Adult Mobile Home Park	70	Wells
57	Pinecrest Garden Apartments	392	Wells
58	Ramblewood Mobile Homes	210	Wells
59	Ridge Rest Home	58	Wells
60	Rocky Point Family Housing	55	Wells
61	Rollin Mobile Homes	220	Wells
62	St Joseph Convent - Long Island University	1177	Wells
63	Sam A Lewison Start Center	40	Wells
64	South Bay Adult Home	40	Wells
65	Southampton College	1000	Wells
66	Speonk Mobile Home Park	50	Wells
67	Suffolk Developmental Center	3500	Wells
68	Three Mile Harbor Trailer Park	40	Wells
69	Thurm's Mobile Estates	450	Wells
70	USCG Station - Moriches	23	Wells
71	Wes Dubicki Apartments	NA	Wells

R-151

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982

REF. 13

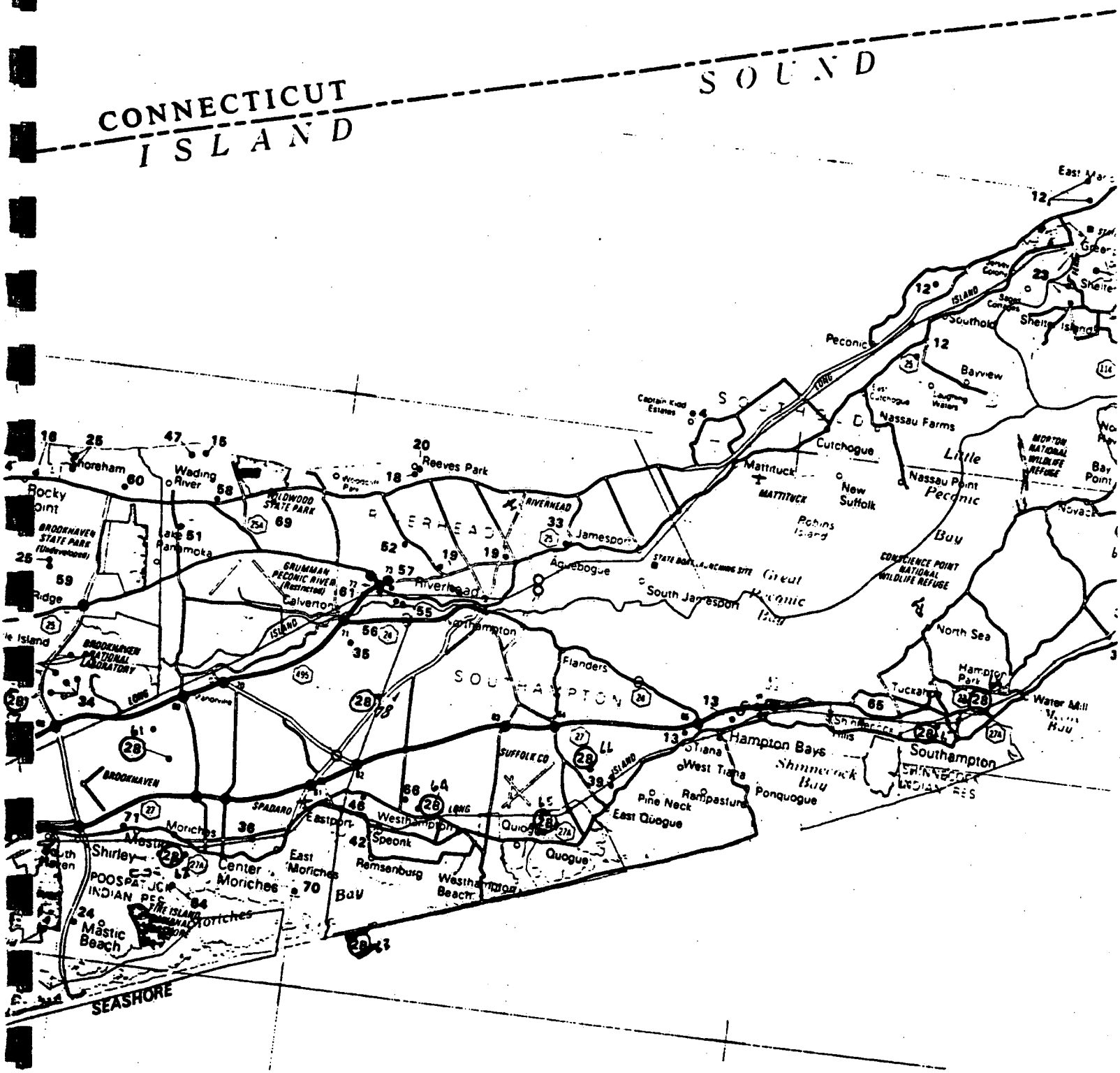


R-152

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

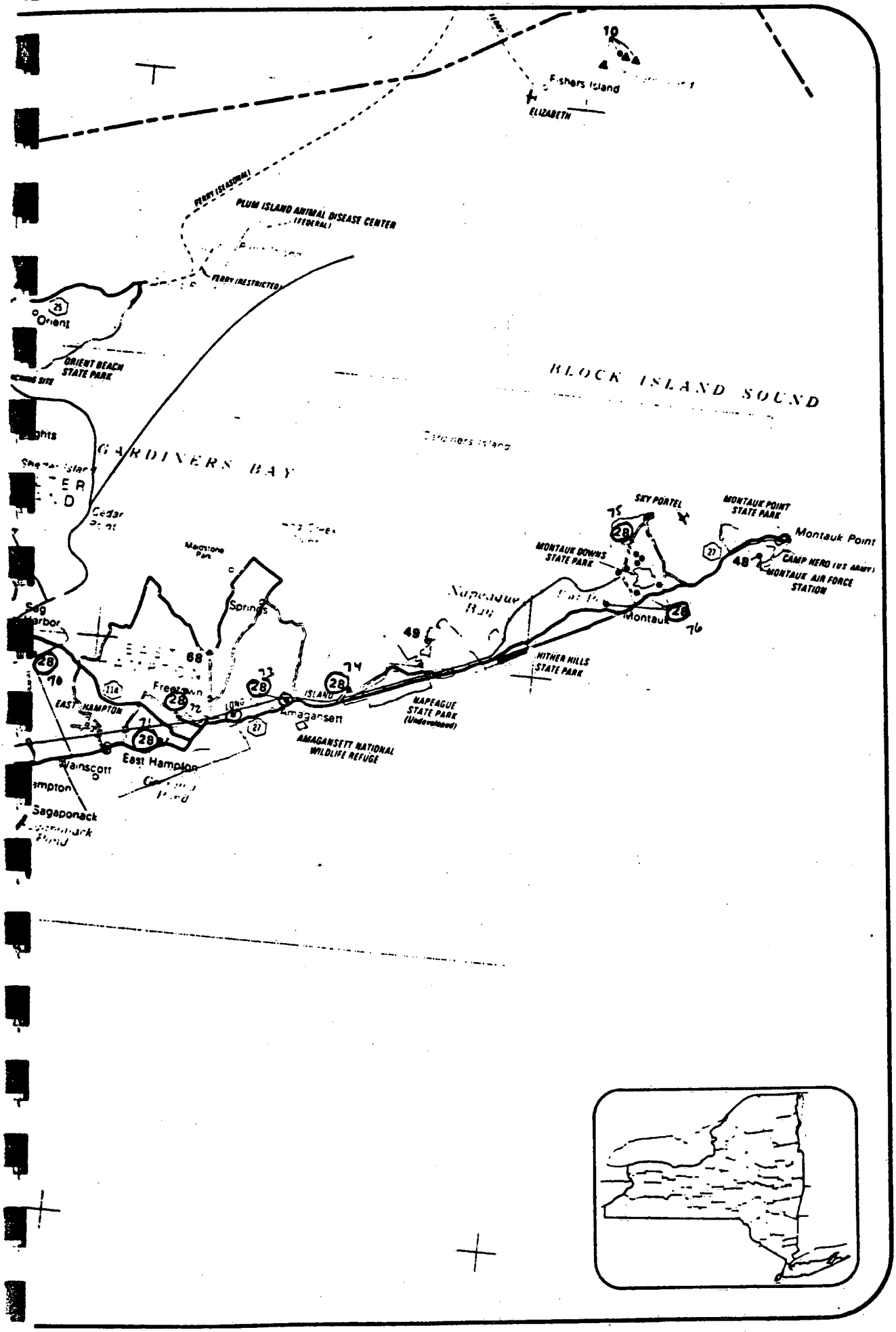
NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION

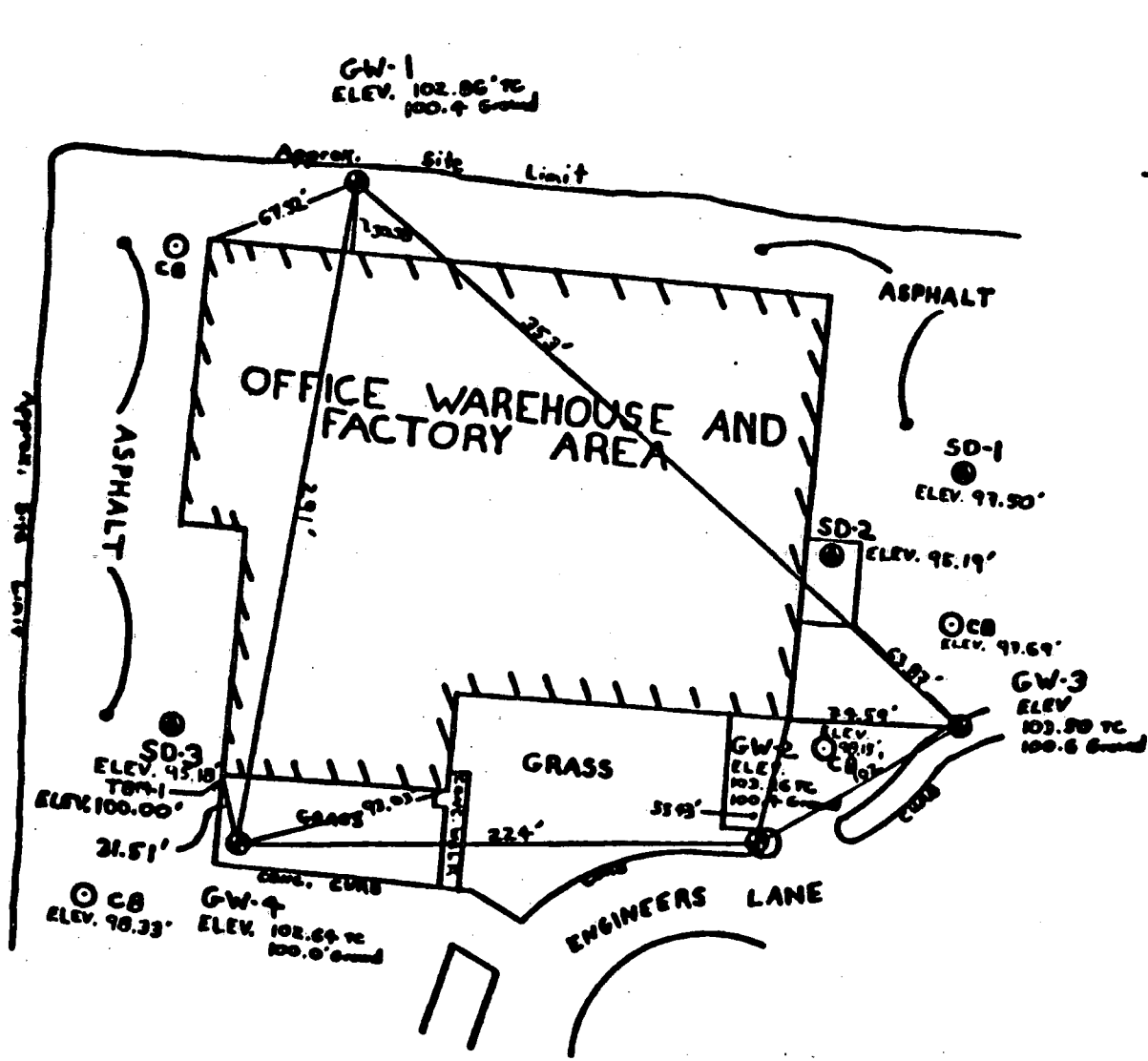
REF. 13



R-153

SUFFOLK COUNTY





CANTOR BROTHERS
NYSDEC # 152021 12/88

- MONITORING WELL
- SEDIMENT SAMPLING LOC.
- CATCH BASIN

STORCH ASSOCIATES

30 JERICHO TURNPIKE
JERICHO, NEW YORK 11753
1-516-938-6100

REF 14.

R-155

REF 15.

COUNTY OF SUFFOLK

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

SOIL AND WATER
CONSERVATION DISTRICT

STANLEY A. PAUZER
DISTRICT MANAGER

January 17, 1989

Sirous H. Nabavi, P.E., Project Engineer
LeRoy Callendar PC
236 West 26th Street
New York, New York 10001

Dear Mr. Nabavi:

Regarding your request for the proximity of Cantor Brothers, Inc., of East Farmingdale to agricultural land and prime agricultural land in production within the past 5 years. Please be advised that there are both agricultural land and prime agricultural land within 1 and 2 miles of the site, respectively. However, this office does not have any direct specific sources regarding production status or ownership of such lands.

Sincerely yours,

Thomas J. McMahon

Thomas J. McMahon
Senior District Technician

A ... O.TING
A ... ION
1. ...
2.
3.
4.
5.

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JAN 20 1989
LEROY CALLENDER/P.C.

R-156

PECONIC PLAZA
164 OLD COUNTRY ROAD, ROUTE 58

REF. 16.

GEOMORPHOLOGY OF THE SOUTH SHORE OF LONG ISLAND, NEW YORK

TECHNICAL MEMORANDUM NO. 128
BEACH EROSION BOARD
CORPS OF ENGINEERS

RECEIVED
FEB 08 1989
LEROY CALLENDER/P.C.

SEPTEMBER 1961

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R-157

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APPENDIX A: Ranges Along the South Shore of Long Island

APPENDIX B: Comparative Profile Data for the South Shore of Long Island

R-158

Manhasset times also complicates the determination of the history of the island during the late Wisconsin.

Fuller, table 2, postulated a long period of erosion, the Vineyard, after the deposition of the Manhasset and then the final advance, slight withdrawal, readvance and retreat of the ice during the Wisconsin glacial stage. Contemporary geologists, table 3, do not recognize the Vineyard and place all post-Gardiners deposits into the Wisconsin age of glaciation. No erosional features, interglacial lagoon nor marine deposits similar to the Gardiners clay have been found and identified as Vineyard in age. In general, an oscillating ice front which first deposited the Manhasset formation, then the Ronkonkoma moraine and its attendant drift and outwash, and finally the Harbor Hill moraine and outwash is the mechanism used to explain the Wisconsin glacial stage. Fleming, in fact, suggests that the Harbor Hill and Ronkonkoma ridges were built during Herod times and then veneered with boulders during a later ice advance.

On the order of 10,000 years ago as the ice melted and withdrew at the end of the Wisconsin sub-epoch, sea level rose and reached its present elevation. During the recent epoch stream erosion and deposition have been minor, but the headlands of the eastern end of the south fluke have been cut back and truncated by wave and littoral forces and the sediments moved westward. As these littoral materials moved westward, a narrow beach was built abutting the headlands and separating the headlands from the sea. This process also sealed off the small bays from the ocean to the south. West of Southampton a combination of spit and offshore bar has enclosed a series of bays or lagoons which are intermittently connected to the ocean by tidal inlets. The inlets are cut through during storms and would, in the normal course of events, be sealed naturally unless they are stabilized and maintained. During the most recent past migration of the inlets to the west has resulted in overlapping, such as is found at Fire Island, Rockaway, and East Rockaway Inlets, see figures 22, 23 and 24.

Two features are found on and north of the barrier beaches. On the beaches and offshore islands the winds have erected sand dunes of varying height and length. Ranging in height from 10 to more than 30 feet and in length from circular mounds to miles, the dunes front most of the Atlantic coast. However, those of the Rockaways, as well as the once conspicuous dunes of Coney Island have been modified greatly by human activity. In the lagoons north of the barrier islands are the fresh and salt marshes of Recent age. The salt marshes have increased the area of the island by at least 100 square miles. The marshes fringe the shores of the bays and, west from Fire Island Inlet, are present as islands.

GEOLOGIC FORMATIONS

Most of the surface of Long Island is covered with stratified or unstratified glacial deposits. The narrow barrier beaches formed by marine forces and the marshes are the non-glacial areas. All of the surface

R-159

deposits rest unconformably upon Cretaceous sediments. No Tertiary deposits are now visible on the surface nor have they been found in wells. Beneath the Cretaceous is the peneplained basement complex.

Subsurface Formations. The attitude of the subsurface has been deduced by many geologists from the geologic correlation of well logs. Vertical sections are given by Fuller (1914) and Suter, de Laguna, and Perlmutter (1949) and are shown in figures 4, 5, 6, and 7; however, such sections contain inherent inaccuracies due to the means of collecting and analyzing the data. The wells are not equally spaced and are lacking in some areas, such as along the Harbor Hill moraine in Kings County or in eastern Suffolk County. Difficulties in distinguishing various formations and in correlating such well logs lead to erroneous information. Contouring a hidden surface without knowledge of critical areas of change lacks precision. The above, plus the absence of numbers of deep wells in Suffolk County, subject the maps and the vertical sections derived from them to change as further data are acquired.

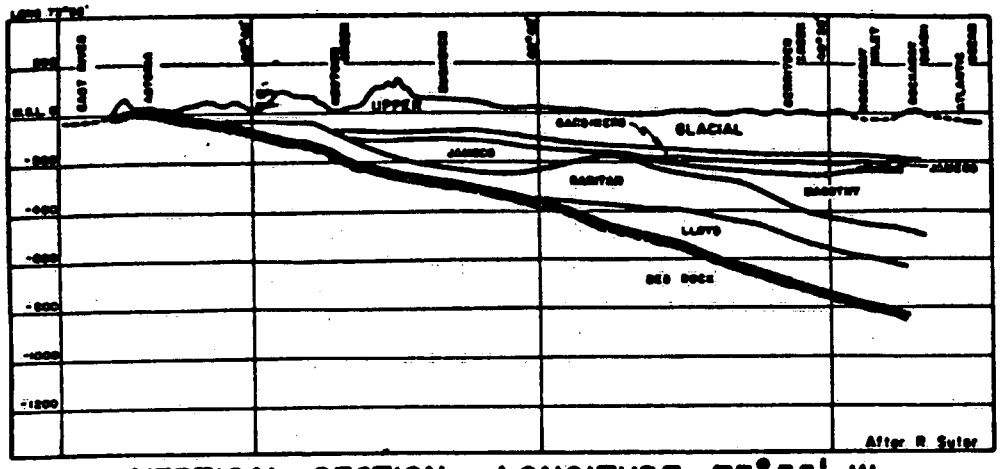
The basement complex has been penetrated by a number of wells at the western end of the island; however, only six wells reach to this surface in all of Suffolk County. Because data are so lacking, only a very generalized subsurface contour map on top of the basement can be drawn, figure 8. The basement is made up of gneiss, schist, some quartzite and some dolomite of pre-Cambrian and early Paleozoic age. It is a deeply weathered peneplain which slopes gently to the southeast.

The Cretaceous sediments lying unconformably on the basement pinch out along the northeast-southwest line at the western end of the island. Usually the younger formations overlap the older and extend further to the northwest. All of the Cretaceous formations thicken toward the southeast.

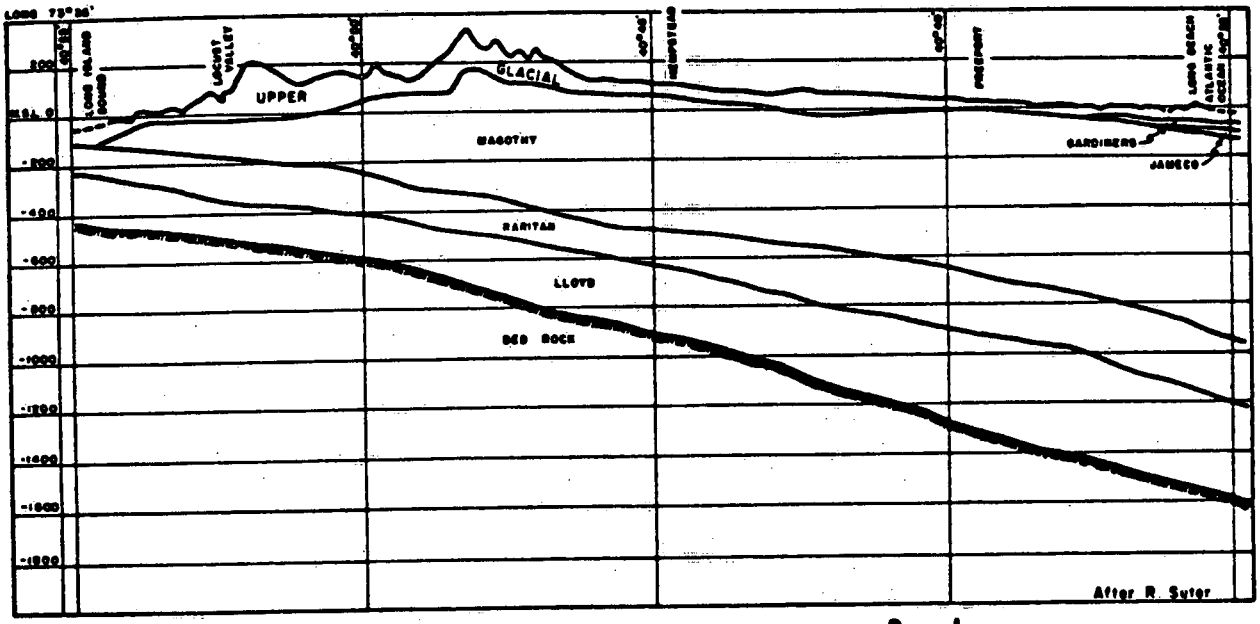
The Lloyd gravel, a part of the oldest Cretaceous formation found in the wells, ends approximately along a line from Flushing Bay to Coney Island. The upper face of this member slopes downward to the southeast at approximately 60 feet per mile. The gradually thickening member is composed of medium to coarse clear sand and fine to coarse gravel. Mixed with the gravels in patches locally are some fine sandy clay, clayey sand, and very thin layers of clay. The thickness varies from 20 to slightly over 300 feet.

The second part of the Raritan formation, the Raritan clay member, lies conformably on the Lloyd gravel. Clay, silty clay, and some sandy layers make up this member with light to dark gray colors being most common. Floral fossils present at all depths and the absence of marine fossils would point to subaerial deposition. Erosion subsequently removed parts of the Raritan clay until it now extends just to the west and northwest of the Lloyd member. The same erosion may have completely removed the clay member in limited areas and exposed the Lloyd to the overlying Magothy. The surface of the Raritan clay is shown in figure 9. The thickness of the Raritan clay varies from 30 to 300 feet.

R-160



VERTICAL SECTION — LONGITUDE 73°55' W.
FIGURE 4.



VERTICAL SECTION — LONGITUDE 73°35' W.
FIGURE 5.

R-161

ARTHUR G. PITTS, Supervisor

Town of Babylon

200 EAST SUNRISE HIGHWAY, LINDENHURST, N.Y. 11757-2598

January 4, 1989

Sirous H. Nabavi, P.E.
Project Engineer
LeRoy Callender, PC
236 West 26th Street
New York, New York 10001

RE: Cantor Brothers, Inc.
50 Engineers Lane
Farmingdale, New York 11735

Dear Mr. Nabavi:

There are presently several violations of the Babylon Town Fire Prevention Code at the above subject location.

In addition, the Fire Prevention Permit (#524) has not been issued for this location in a number of years.

If you have any questions, please contact my office.

Very truly yours,

Thomas J. Karn
Sr. Fire Marshal

TJK/mlg

RECEIVED
JAN 06 1989

Department of Planning & Development — DANIEL FALASCO, Commissioner
Division of Fire Prevention — GILBERT W. HANSE, Chief Fire Marshal
(516) 957-3069

R-162

REF. 18

ARTHUR PITTS, Supervisor

Town of Babylon

(Founded in 1872)

Phelps Lane Mansion
151 Phelps Lane
North Babylon, NY 11703

Town Historian
Robert Mills Smith
(516) 422-7205 Ext. 65

January 26,1989

Mr. Sirous Nabivi
Lero Callender Construction Eng.
236 W. 26th Street
New York, NY 10001

Dear Mr. Nabavi,

In answer to your inquiry concerning the site of the Cantor Brothers Repackaging Plant.

There are no nearby Historic Sites that are listed by New York State, nor that I am aware of.

There are also no sensitive Archeological Sites nearby, that I know of.

This should be sufficient for your DEIS report.

If I can be of any further help please contact me.

Sincerely,

Robert Mills Smith

RMS:pfb

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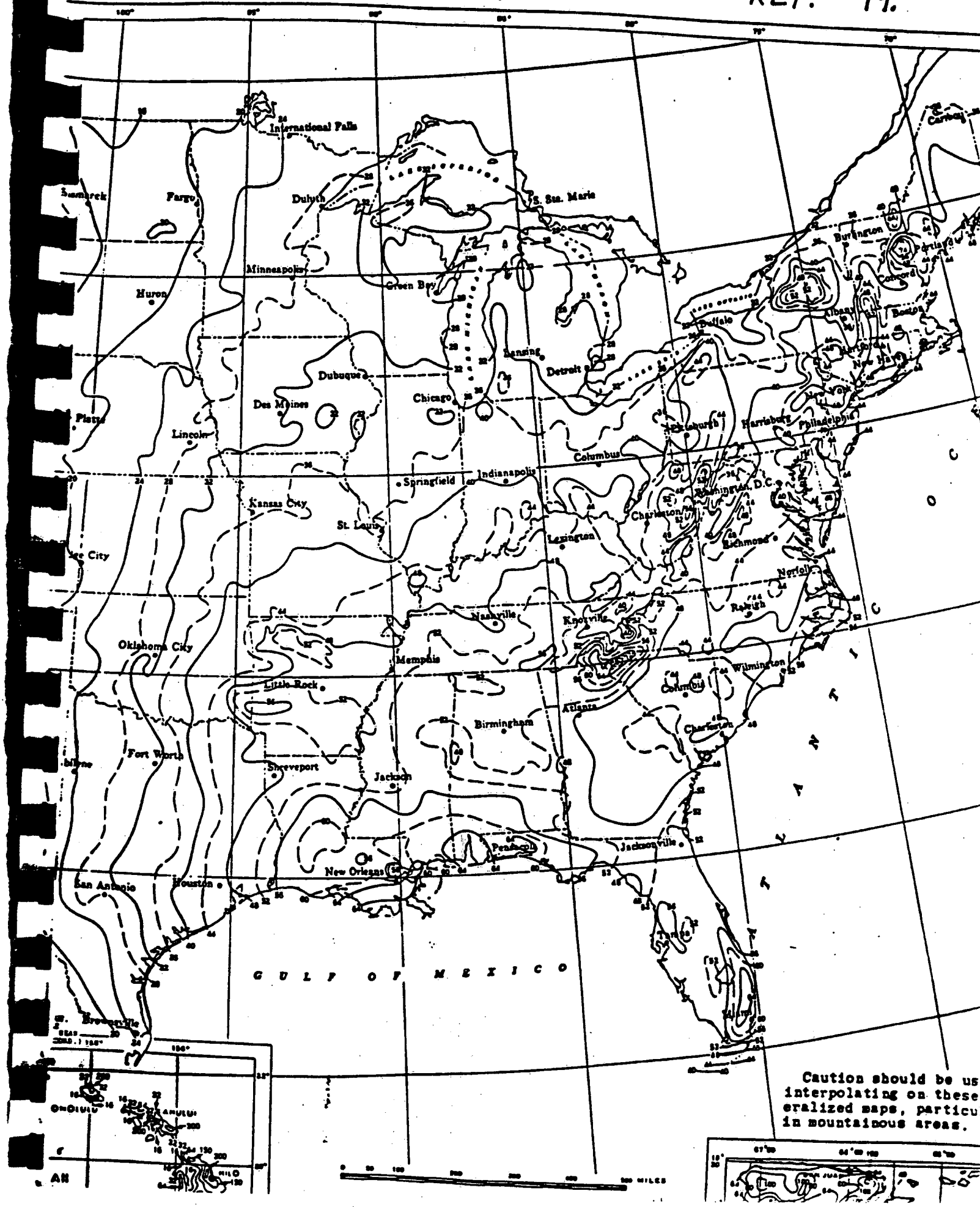
JAN 30 1989

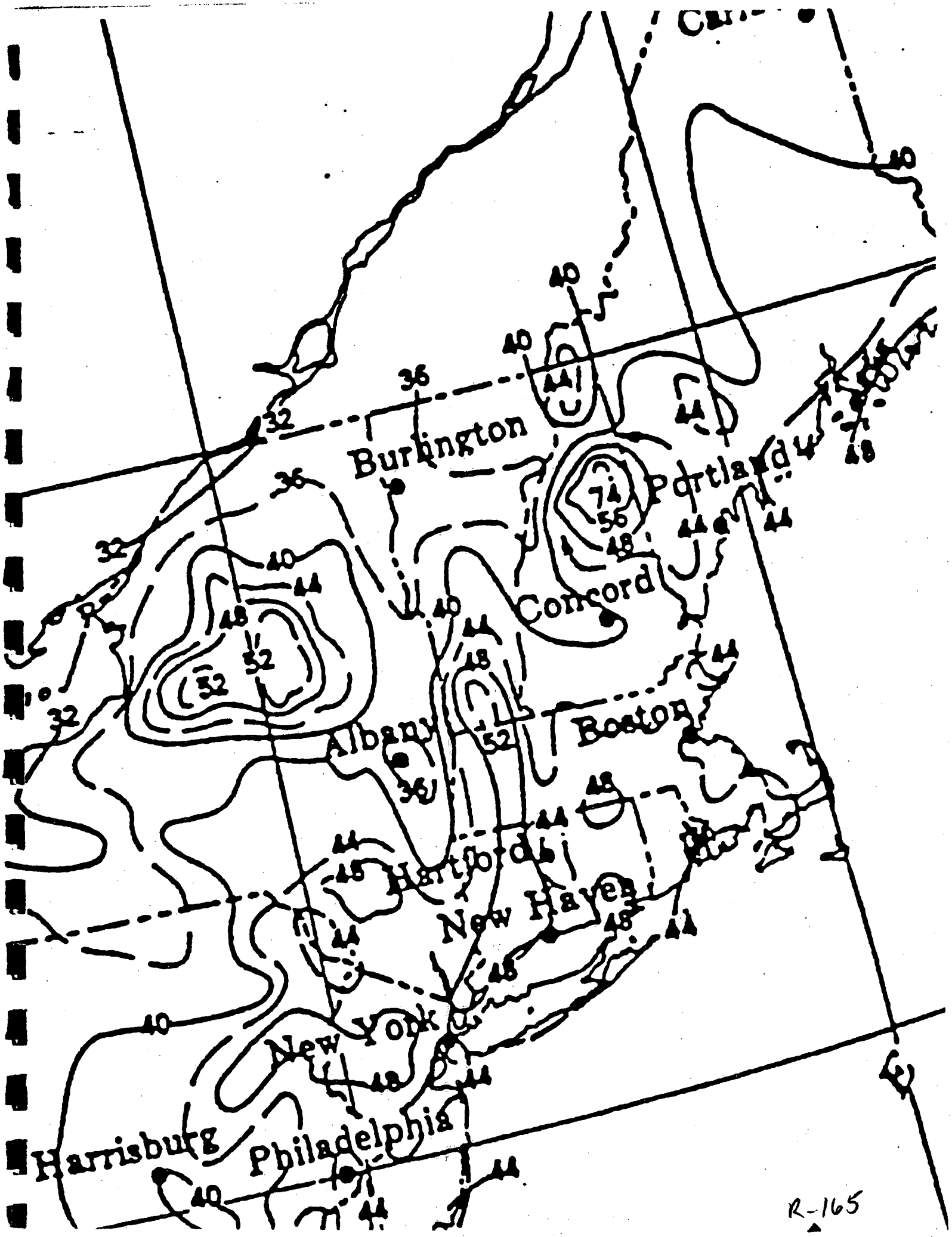
R-163

NUAL TOTAL PRECIPITATION (Inches)

REF. 19.



Caution should be us
interpolating on these
eralized maps, particu
in mountainous areas.


Burlington
Portland
Concord
Boston
Albany
Hartford
New Haven
New York
Harrisburg
Philadelphia
74
56
52
48
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32

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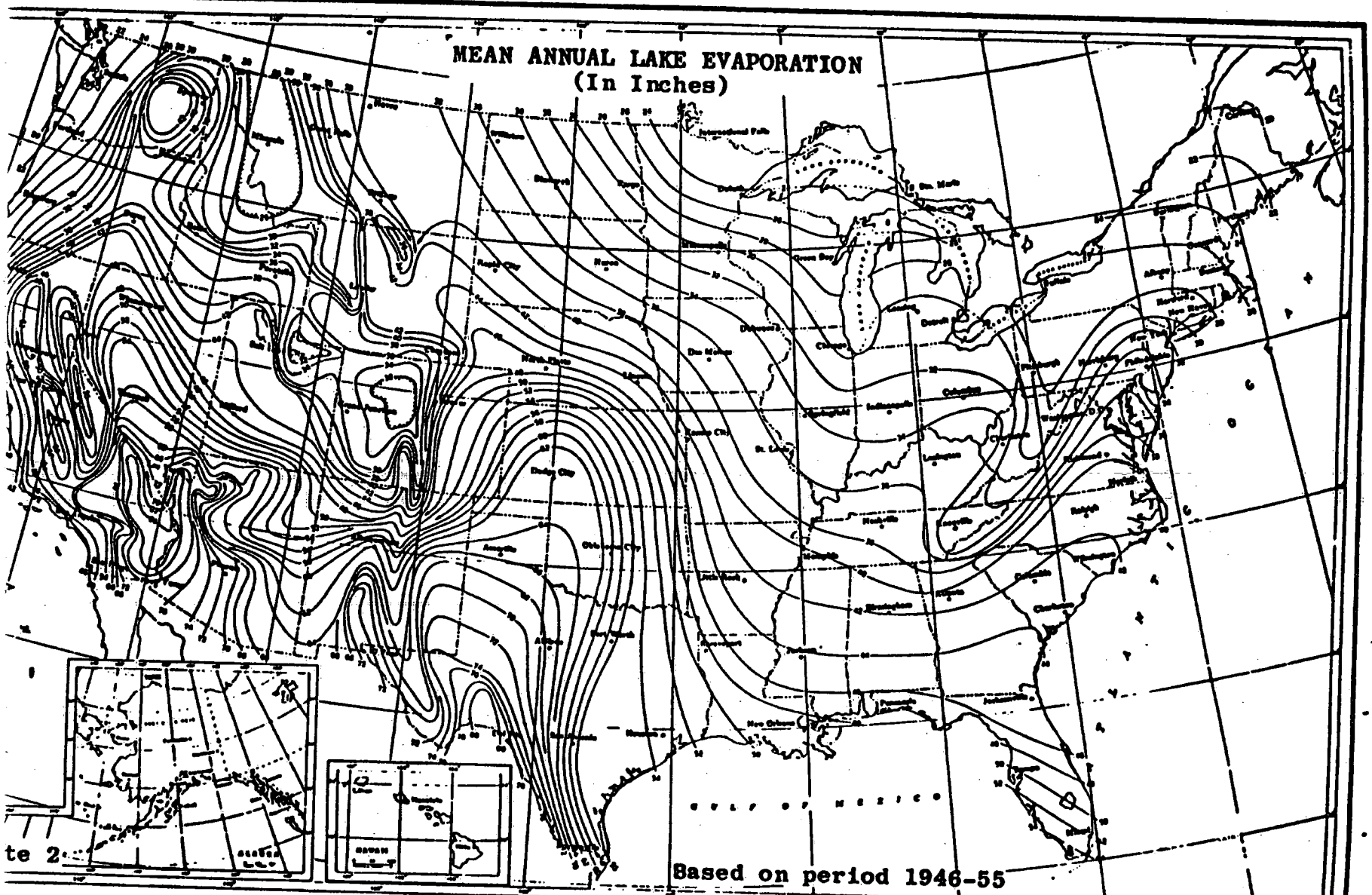
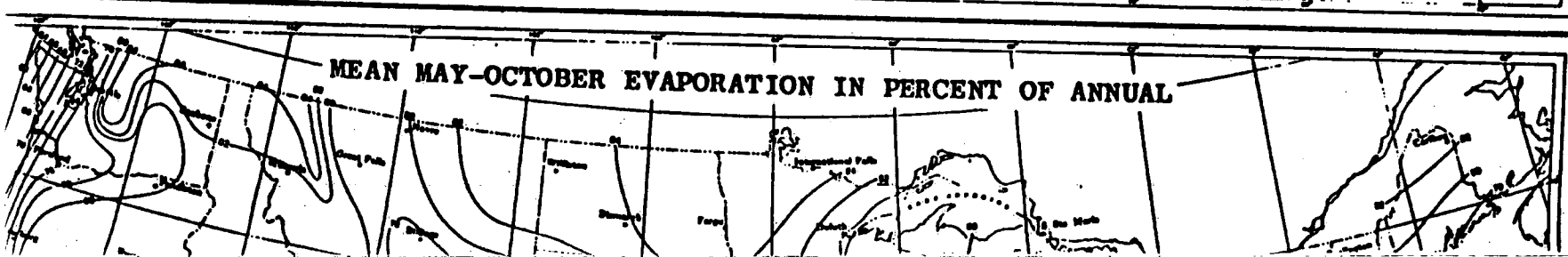
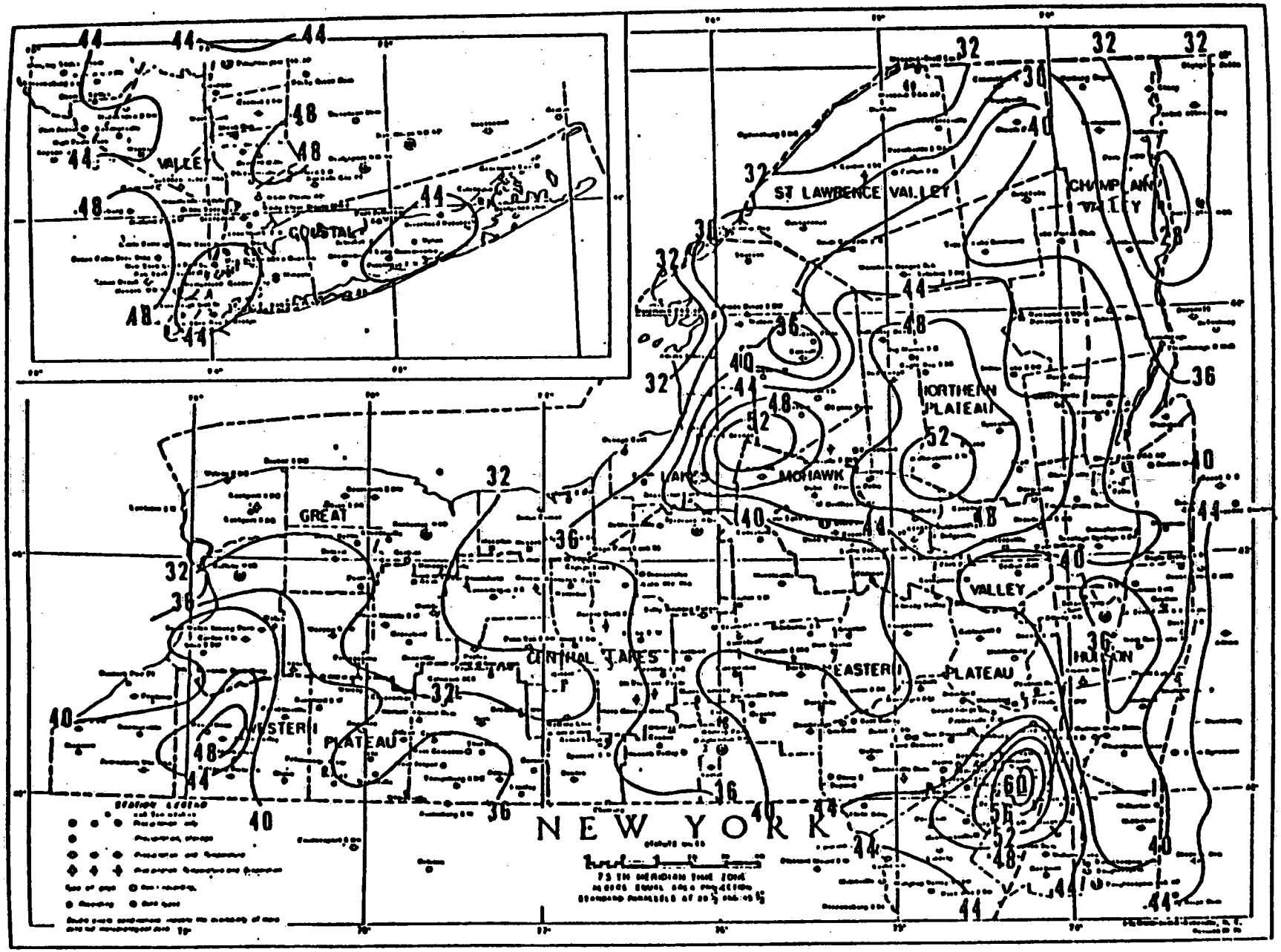

MEAN ANNUAL LAKE EVAPORATION
(In Inches)
Based on period 1946-55


MEAN MAY-OCTOBER EVAPORATION IN PERCENT OF ANNUAL

MEAN ANNUAL PRECIPITATION, INCHES

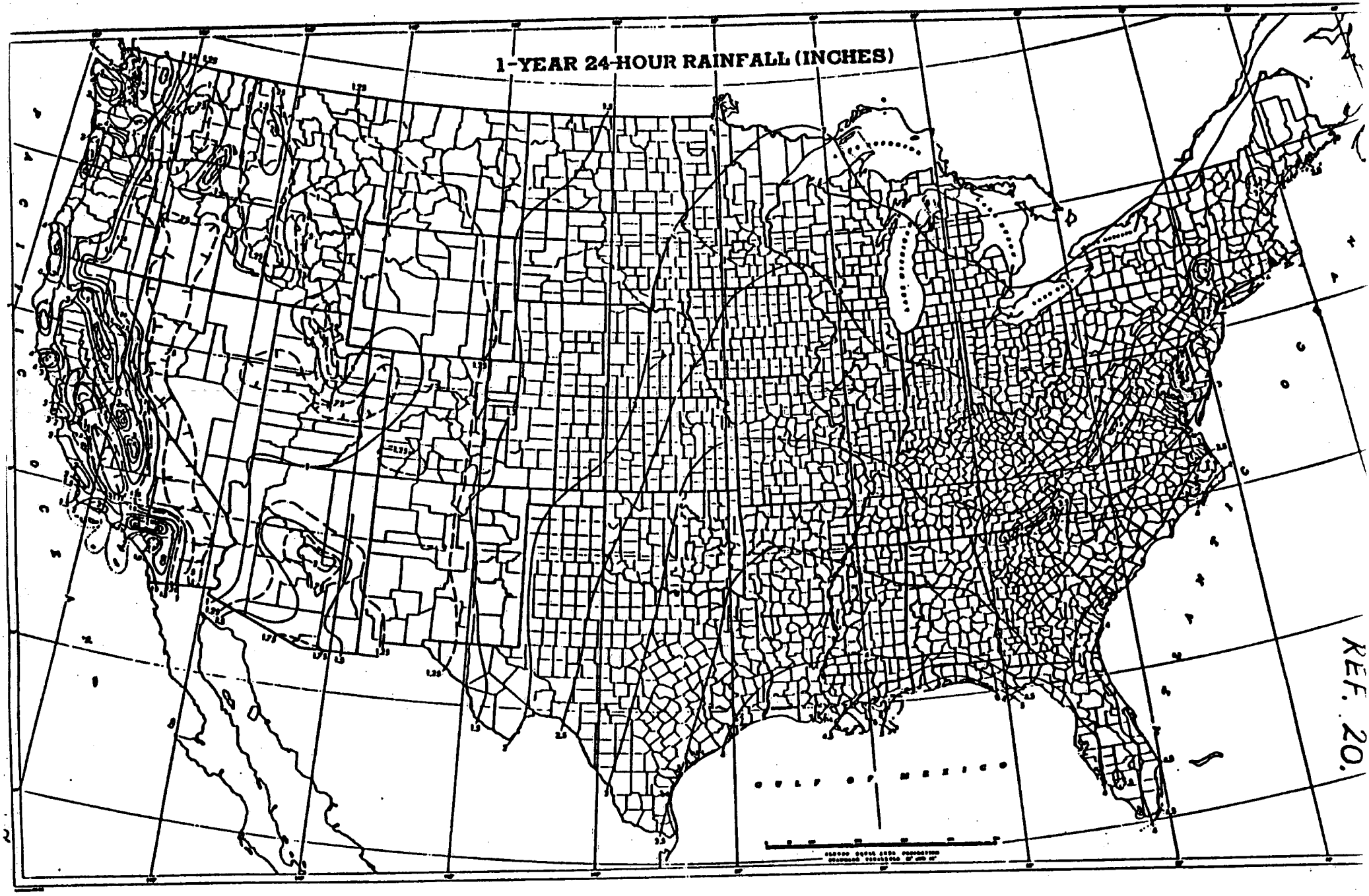


Data are based on the period 1931-55. Isolines are drawn through points of approximately equal value. Caution should be used in interpolating on these maps, particularly in mountainous areas.

National Oceanic and Atmospheric Administration, Climates of the States, Vol. 2, p. 719, 1978.

R-167

Fig 4.1



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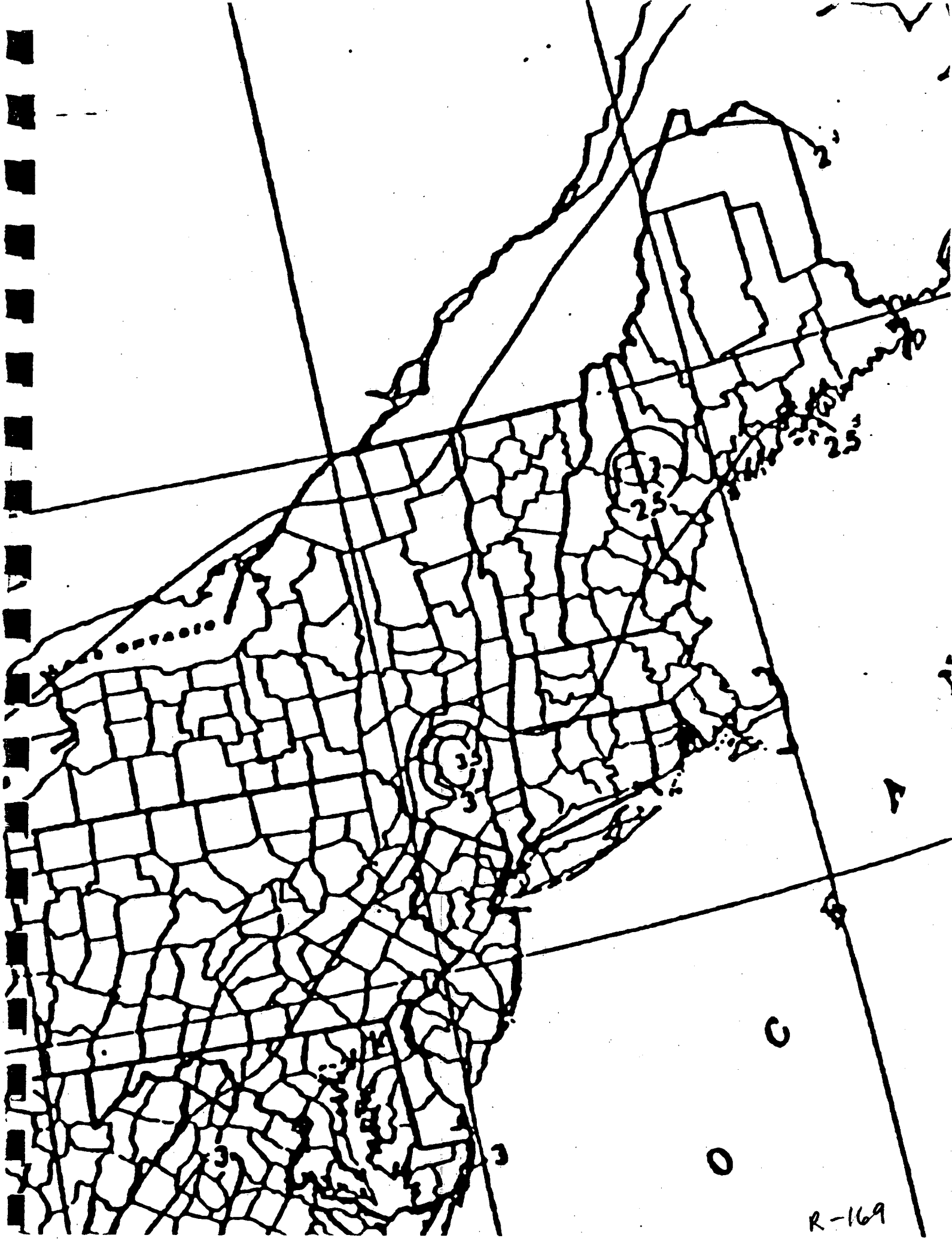

2
2.5
2.5
3
3
3
3
R-169

REF. No. 21

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

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

United States
Environmental Protection
Agency

1984

R-170

LeRoy
Callender
PC

REF. No. 22

PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

USGS 7.5' SERIES
TOPOGRAPHIC MAPS
FOR
AMITYVILLE
HUNTINGTON
GREENLAWN, &
BAY SHORE WEST
QUADRANGLES
(1979)

(Will be submitted later)

R-171

SCDHS
1988d

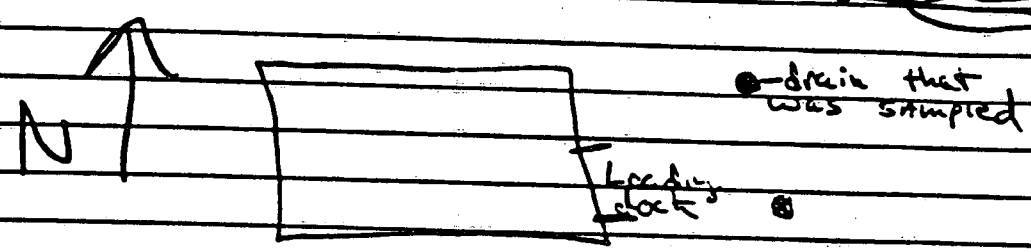
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

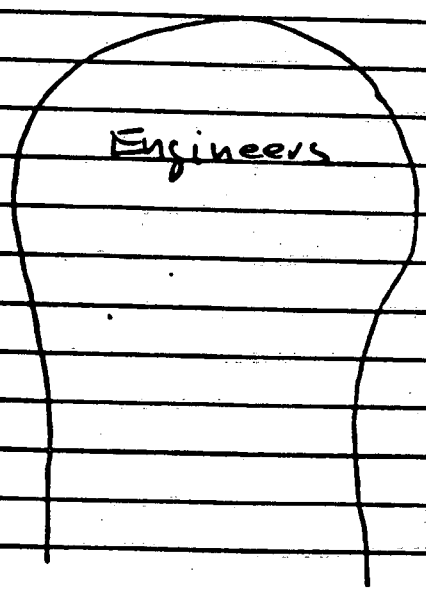
NAME OF FACILITY: Cantor Brothros INC.		OWNER/OFFICER	PAGE ___ OF 1/2
COMPANY NAME: "Nankee"		CONTACT	TEL.
PLANT ADDRESS: Engineers Dr.	VILLAGE: Farmingdale	TOWN: Babylon	ZIP: 11735
MAILING ADDRESS			

DATE	TIME	ORIG. PERIODIC RE.	WASTE	NO WASTE	H&H	SEWAGE SYSTEM	PUBLIC PRIVATE
10/19/88		SAMPLE					

Sampled storm drain at east side of building near loading dock. Sample was for organic parameters 2RM-10-19.

Robert P. Moran





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DEC 21 1988
LEROY CALLENDER, P.C.

R-172

REF. #25

ERP 11/3/88

1988 d

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY
ORGANIC & FLASHPOINT ANALYSIS OF INDUSTRIAL & HAZARDOUS MATERIALS

Lab. No. IW- 1088032
Field No. 2RM-10-19

701

Date Completed 10-27-88
Method EPA 8240/EPA 1010/

Name Cantor Brothers

Remarks Storm drain

Compound	ppb	Compound	ppb
☐ Purgeable Halocarbons1			
Dichlorodifluoromethane		Dibromochloromethane	<40
Chloromethane		Tetrachloroethylene	<40
Vinyl Chloride		Bromoform	<40
Bromomethane		1,1,2,2 Tetrachloroethane	<40
Chloroethane		Benzene	<40
Trichlorofluoromethane		Toluene	<40
2-Chloroethyl vinyl ether		Chlorobenzene	<40
☒ Purgeable Halocarbons2/Aromatics		Ethylbenzene	<40
1,1 Dichloroethylene	<40	Xylene(s)	<40
Methylene Chloride	<40	Styrene	<40
Freon 113	<40	Bromobenzene	<40
1,1 Dichloroethane	<40	Chlorotoluene(s)	<40
cis-1,2 Dichloroethylene	<40	p-Ethyltoluene	<40
Chloroform	<40	1,3,5 Trimethylbenzene	<40
1,2 Dichloroethane	<40	1,2,4 Trimethylbenzene	<40
1,1,1 Trichloroethane	<40	m-Dichlorobenzene	<40
Carbon Tetrachloride	<40	p-Dichlorobenzene	<40
1,2 Dichloropropane	<40	o-Dichlorobenzene	<40
Bromodichloromethane	<40	p-Diethylbenzene	<40
1,1,2 Trichloroethylene	<40	1,2,4,5 Tetramethylbenzene	<40
trans-1,3 Dichloropropene	<40	1,2,4 Trichlorobenzene	<40
cis-1,3 Dichloropropene	—	1,2,3 Trichlorobenzene	<100
1,1,2 Trichloroethane	<40		

Analyst [signature]

☐ Polychlorinated Biphenyls

PCB 1016		PCB 1254	
PCB 1221		PCB 1260	
PCB 1232		PCB 1262	
PCB 1242			
PCB 1248			

Analyst

☐ Flash Point

Pensky-Martens Closed Cup Flash Point _____ °C= _____ °F

Analyst

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REF. # 24 SCDHS

SUFFOLK COUNTY DEPARTMENTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

FILE/W

1988a

L.D. No 70

NAME OF FACILITY: Cantor Bros. INC
OWNER/OFFICER: Gen Mgr. Mat Miller
VIOLATIONS NOTED: YES NO
COMPANY NAME:
CONTACT: Mat Miller
TEL: 694-666
PLANT ADDRESS: Engineer La
VILLAGE: E. Farmingdale
TOWN: Babylon
ZIP: 11735
MAILING ADDRESS:
INSP:
HYDRO.:
MAP COORD.:
PROPERTY OWNER: Firm owns property.
DATE: 1/22/88
TIME:
ORIG: PER. RE. SAMPLE
ART. 7 YES NO
ART. 10 No
ART. 12 No H22
INDUSTRY: Paint + Thinners -
SPDES OR NPDES PERMIT YES NO PERMIT NO.
HEATING SYSTEM - MFG NAME:
FUEL TYPE: GAS
FIRING RATE:
TANK SIZE:
NUMBER OF DRUMS INDOORS 3 OUTDOORS
NUMBER OF TANKS ABOVEGROUND UNDERGROUND
NUMBER OF OPEN PROCESS TANKS
SEWAGE SYSTEM PUBLIC PRIVATE
SCAVENGER TEL.
PICK UP RECORDS AVAILABLE YES NO
VOLUME GENERATED

(1) 55, gal drums stored in Art XII containment area stacked 4 pallets high. 50+ drums of a more viscous contents used in making chaulking compounds are indoors but outside of Art XII containment area. Owner claims this above material is non toxi

(2) 2-3 drums outdoors with unknown contents 1/2 full - completely full. must be moved indoors or disposed of in a proper manner. This is a violation of Art XII sec 1215 of the suffolk County Sanitary Code.

(3) See attached updated tank inventory.

INDUSTRIAL WASTES MUST NOT BE DISCHARGED TO THE GROUND OR DISPOSED OF IN A DUMPSTER, BUT MAY ONLY BE TRANSPORTED AND DISPOSED OF BY A LICENSED INDUSTRIAL WASTE SCAVENGER FOR AN APPROVED LIST CONTACT THE N.Y.S. D.E.C. AT 751 - 7900

REINSPECTION SCHEDULED ON OR AFTER 1/24/88 FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY RESULT IN A HEARING AND OR FINE.

PERMISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF CESSPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

SIGN. OF PERSON REC. REPORT: Matthew J. Miller
TITLE: Gen. Mgr.
INSP: Robert P. Moreau

8-1442 (7/29)

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12/86

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE		
			LIQUID	AIR	
				CONTROL TYPE	EP
1	Ware house area	paint products packaged in 5 gal containers or less			
2	Packaging area.	40 "working drums of 111 Tri, Paint thinner, lquer thinner.			
3	ware house area.	≈ 50 drums of chaulking type chemicals - visous - no art XII			

1/25/88 WITHIN CONTAINMENT AREA

2200 GAL DRUM STORAGE REGISTRED.

REF. # 24

SCDHS 1988 2/4

SUFFOLK COUNTY DEPARTMENT OF HEALTH S[illegible]ICES
Office of Environmental Engineering & Pollution Control
N.Y. State CRR Part 230 and S.C. Sanitary Code Article 12
Gasoline Station Inspection Form

[illegible]y Name [illegible]TOR DROS. INC.	No.	Street	Comm.	Phone No.
[illegible]lity Owner	No.	Street	Comm.	Phone No.
[illegible]cility Operator	No.	Street	Comm.	Phone No.
Land Owner	No.	Street	Comm.	Phone No.
Tank Owner	No.	Street	Comm.	Phone No.

Facility I.D. Number: 4 7 2 0 0 0 2 A 1 1 Air Certificates: YES NO Exp. Dte.:

Permits: Tanks Registered: YES NO Reg. Number: 1 1 2 2 Exp. Date:

Tax No. Dist. Sec. Block Lot Map Quad

Gasoline Annual Throughput: How Determined:

(If annual throughput not available): Date of Last Delivery: Volume (gal):

Super Unleaded: Unleaded: Reg Leaded:

Approximate Frequency of Delivery:

Brand of Fuel Displayed: Fuel Distributor:

Number of nozzles:

Tank ID	Tank Capacity	Type of Fuel	Date Tank Installed	Above/ Below	Type of Controls: 2 Point System	Co-Axial	Submerged Fill	No Controls
12	2000	ORG SOLV.	64	B/U	Removed			
13	10000 ✓	KEROSENE	64	B/U				✓
14	10000 ✓	ORG SOLV.	64	B/U				✓
15	3000		64	B/U				✓
16	100	PAINT	64	A/I				✓
17	2000	DRUM STORAGE	85	A/I	N/A			✓
18	5000	#2 FUEL	64	B/U	Removed			
[illegible]d. [illegible]anks								

[illegible] Inspection Date: 1/22/88

REF. # 24 SCDHS 1988a 4/4

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
Office of Environmental Engineering & Pollut . Control
N.Y. State CRR Part 230 and S.C. Sanitary Code Article 12
Gasoline Station Inspection Form

	No.	Street	Comm.	Phone No.
Facility Name CANTOR BRO. INC		ENGINEERS LANE	FARMINGDALE	
Facility Owner	No.	Street	Comm.	Phone No.
Facility Operator	No.	Street	Comm.	Phone No.
Land Owner	No.	Street	Comm.	Phone No.
Tank Owner	No.	Street	Comm.	Phone No.

Facility I.D. Number: 4 7 2 0 0 0 2 A 1 1 Air Certificates: YES NO Exp. Dte.:

Permits: Tanks Registered YES NO Reg. Number: 1 1 2 2 Exp. Date:

Tax No. Dist. Sec. Block Lot Map Quad

Gasoline Annual Throughput: N/A How Determined:

(If annual throughput not available): Date of Last Delivery: Volume (gal):

Super Unleaded: Unleaded: Reg Leaded:

Approximate Frequency of Delivery:

Brand of Fuel Displayed: Fuel Distributor:

Number of nozzles:

Tank ID	Tank Capacity	Type of Fuel	Date Tank Installed	Above/ Below	2 Point System	Type of Controls: Co-Axial	Submerged Fill	No Controls
1	2000 ✓	ORG SOLV.	64	B/U		all remote fills		✓
2	2000 ✓	ORG SOLV.	64	B/U				✓
3	2000 ✓	ORG SOLVENT	64	B/U				✓
4	5000 ✓	KEROSENE	64	B/U				✓
5	5000 ✓	ORG SOLVENT	64	B/U				✓
6	5000 ✓	ORG. SOLV.	64	B/U				✓
7	5000	ORG SOLV.	64	B/U	Removed			
8	3000 ✓	ORG. SOLV.	64	B/U		all remote fills.		✓
9	2000 ✓	ORG. SOLV.	64	B/U				✓
10	2000 ✓	ORG. SOLV.	64	B/U				✓
11	[illegible] ✓	ORG. SOLV.	64	B/U				✓

Id. anks

REF. No. 8

F. METHODOLOGY FOR ESTIMATING POPULATION

A. Population within 3-Mile radius of the site, served by public groundwater supply wells

1. The public water supply systems within a 3-Mile radius of the site are identified from the Atlas of Community Water System Sources. These systems are:

   - East Farmingdale Water District
   - Suffolk County Water Authority
   - South Huntington Water District
   - Dix Hill Water District

2. The total number of wells serving each system is computed, and the number of wells within the 3-Mile radius of the site is counted. The total population served by each system is taken from the Atlas and the population served within the 3-Mile radius is proportioned based on the number of wells within that radius. Thus, the following table is obtained:

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ID NO.	MUNICIPAL COMMUNITY	TOTAL NO. OF WELLS	TOTAL POPULATION SERVED	NO. OF WELLS WITHIN 3-MILE RADIUS	EST. POPULATION SERVED WITHIN 3-MILE RADIUS
9	East Farmingdale Water District	2	7,850	2	7,850
28	Suffolk County Water Authority	154	900,000	5	29,221
27	South Huntington Water District	10	51,260	3	15,378
8	Dix Hills Water District	9	30,000	2	6,666
	Total				59,115

LeRoy
Callender
PC

B. Population 0-1/4 Mile Radius* 63 large bldgs. x 20 = 1260
10 dwellings x 3.8 = 38

(Estimated) 1298

C. Population 1/4 to 1/2 Mile Radius* 39 large bldgs. x 20 = 780
10 dwellings x 3.8 = 38

(Estimated) 818

D. Population 1/2 to 1 Mile Radius* 136 large bldgs x 20 = 2720
110 dwellings x 3.8 = 418

(Estimated) 3138

Therefore: Population 0-1/4 M 1,298

0-1/2 M 2,116

0-1M 5,454 (add 200 for St. Rose Ind. School)

*Based on USGS Amityville, Huntington, Greenlawn, and Bay Shore West Quadrangles, 7.5 Minutes Series, Topographic, 1979.

E. Population within 2-M Radius

1. No. of Large Bldgs. 621 x 20 = 12,420
2. No. of dwellings 801 x 3.8 = 3,044
1/4 Farmingdale (1/4 x 7,998) = 2,000
1/5 Wyandanch (1/5 x 13,375) = 2,675

20,139

St. Rose Industrial Sch. 200 (Assumed)
SUNY Agr. & Tech. Inst. 11,747 (L.I. Almanac)
Milton Olive Sch. & High Sch. 800 (Assumed)

32,886

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No. of Buildings within 2-M Radius

No. of building (large & small) withing 2-M Radius 1422 (1+ 2 above)

1/4 Farmingdale (2000: 3.8)	527
1/5 Wyandach (2675: 3.8)	704
	2,653

F. Estimated Population within a 4-Mile Radius

(Based on proportions of Communities located within 4-M Radius)

Community	Population*	Ratio	
Plainview	27,572	2/3	18,381
Bethpage	16,567	1/2	8,284
Farmingdale			7,998
South Farmingdale	15,706	2/3	10,471
North Amityville	13,333	2/3	8,889
North Lindenhurst			11,553
Wyandanch			13,375
Half Hollow Hills (1,942 Houses x 3.8)			7,380
South Huntington	14,579	1/2	7,290
East Farmingdale			6,134
Deer Park	30,643	1/2	15,322
Melville			11,334
West Babylon	44,695	4/5	35,756
Total			162,167

*Note-Basis of Population Estimate-Long Island Almanac, 1988.

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Site Inspection Report

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EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier				
Cantor Brothers, Inc.	Engineer's Lane				
03 City	04 State	05 Zip Code	06 County	07 County Code	08 Cong. Dist.
Town of Babylon	NY	11735	Suffolk	103	2

09 Coordinates Latitude	Longitude	10 Type of Ownership (Check one)
40° 45' 20.0"	73° 24' 17.0"	[X] A. Private [ ] B. Federal ____ [ ] C. State [ ] D. County [ ] E. Municipal [ ] F. Other ____ [ ] G. Unknown

III. INSPECTION INFORMATION

01 Date of Inspection	02 Site Status	03 Years of Operation
7 / 19 / 88 (Month Day Year)	[X] Active [ ] Inactive	1975 (Beginning Year) | PRESENT (Ending Year) [ ] Unknown

04 Agency Performing Inspection (Check all that apply)
[ ] A. EPA [ ] B. EPA Contractor ____ (Name of Firm) [ ] C. Municipal [ ] D. Municipal Contractor ____ (Name of Firm)
[ ] E. State [X] F. State Contractor LC/PC (Name of Firm) [ ] G. Other ____ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
S. Nabavi	Project Engineer	LeRoy Callender, P.C	(212989-2900
09 Other Inspectors	**10 Title**	**11 Organization**	**12 Telephone No.**
			( )
			( )
			( )
			( )
			( )

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Matthew Miller	Gen. Manager	Cantor Brothers, Inc.	(516694-6666
			( )
			( )
			( )
			( )

17 Access Gained By (Check one)	18 Time of Inspection	19 Weather Conditions
[X] Permission [ ] Warrant	8:30 - 11:00	Hazy, Warm

IV. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)	03 Telephone No.
A.M. Santino	Suffolk County Dept. of Health Services (SCDHS)	(516 451-4640

04 Person Responsible for Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
S. Nabavi		LC/PC	(212989-290	7 / 14 / 89 (Month Day Year)

EPA Form 2070-13 (7-81)

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

[ ] A. Solid
[ ] B. Powder, Fines
[ ] C. Sludge
[ ] D. Other _____ (Specify)
[ ] E. Slurry
[X] F. Liquid
[ ] G. Gas

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons 270
Cubic Yards _____
No. of Drums _____

03 Waste Characteristics (Check all that apply)

[X] A. Toxic
[ ] B. Corrosive
[ ] C. Radioactive
[X] D. Persistent
[X] E. Soluble
[ ] F. Infectious
[X] G. Flammable
[X] H. Ignitable
[ ] I. Highly volatile
[ ] J. Explosive
[ ] K. Reactive
[ ] L. Incompatible
[ ] M. Not applicable

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge			
OLW	Oily waste			
SOL	Solvents	38,000	Gallons	Organic Solvents
PSD	Pesticides			
OCC	Other organic chemicals	17,100	Gallons	Kerosene, Paint Products
IOC	Inorganic chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy Metals			

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

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure of Concentration
SOL	1,1,1-Trichloroethane	71-55-6	Storm Drains	3-19	ppb
SOL	Trichloroethene	79-01-6	<< <<	10-100	ppb
SOL	Tetrachloroethene	127-18-4	<< <<	18-2000	ppb
SOL	1,2-Dichloroethene (total)	540-59-0	<< <<	5-45	ppb
IOC	Arsenic	7440-38-2	<< <<	5-50	ppb

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

SCDHS, 1988-1989; Phase II investigations, 1988.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
NY	N/A

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Groundwater Contamination
03 Population Potentially Affected 59,115
02 [X] Observed (Date 1/22/88) [ ] Potential [ ] Alleged
04 Narrative Description: 10/6/88, 10/19/88

Sampling of groundwater from Upper Glacial aquifer revealed contamination by organic chemicals, such as Tetrachloroethene, and inorganic chemicals, such as Arsenic

01 [X] B. Surface Water Contamination
03 Population Potentially Affected unknown
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Hazardous materials discharged into storm drains and onto ground surface have potential for run-off during heavy storms and flooding.

01 [X] C. Contamination of Air
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No obnoxious odor, no organic vapors detected with HNu meter.

01 [X] D. Fire/Explosive Conditions
03 Population Potentially Affected 32,886
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Ignitable and reactive compounds found are Kerosene and 1,1,1 - Trichloroethane; Violations of Town of Babylon Fire Prevention Code have been found at the site.

01 [X] E. Direct Contact
03 Population Potentially Affected 5,454
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Indoor above ground storage containers have potential for contact.

01 [X] F. Contamination of Soil
03 Area Potentially Affected Unknown (Acres)
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Soil samples from drilling of monitoring wells showed high concentrations of inorganic che micals, such as Arsenic, Barium, Lead & Selenium.

01 [X] G. Drinking Water Contamination
03 Population Potentially Affected 59,115
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Groundwater sources of Magothy aquifer are used for public water supplies. This aquifer is hydraulically connected to Upper Glacial aquifer, which is contaminated.

01 [ ] H. Worker Exposure/Injury
03 Workers Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

None Known.

01 [ ] I. Population Exposure/Injury
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

None Known.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
NY	N/A

II. HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)

01 [ ] J. Damage to Flora — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No information available (N/A)

01 [ ] K. Damage to Fauna — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

N/A

01 [ ] L. Contamination of Food Chain — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

N/A

01 [x] M. Unstable Containment of Wastes (Spills/Runoff/Standing liquids, Leaking drums) — 02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
03 Population Potentially Affected Unknown — 04 Narrative Description:

55-Gal. drums of hazardous chemicals stored indoors, outside of spill-containment area could potentially result in spills into storm drains.

01 [ ] N. Damage to Offsite Property — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

N/A

01 [x] O. Contamination of Sewers, Storm/Drains, WWTPs — 02 [ ] Observed (Date 10/19/88) [ ] Potential [ ] Alleged
04 Narrative Description:

Sampling of storm drain east of Factory Area showed high concentrations of 1,2,3, Trichloro benzene

01 [x] P. Illegal/Unauthorized Dumping — 02 [x] Observed (Date 8/26/87) [ ] Potential [ ] Alleged
04 Narrative Description:

An underground storage tank containing hazardous chemicals was abandoned in violation of SCDHS Sanitary Code.

05 Description of Any Other Known, Potential, or Alleged Hazards

None Known

III. TOTAL POPULATION POTENTIALLY AFFECTED 59,115

IV. COMMENTS

Underground storage tanks on the south side have a history of leaking.

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

SCDHS files; Phase II investigation results, 1989.

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POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. PERMIT INFORMATION

01 Type of Permit Issued (Check all that apply)	02 Permit Number	03 Date Issued	04 Expiration Date	05 Comments
[ ] A. NPDES				
[ ] B. UIC				
[ ] C. AIR				
[ ] D. RCRA				
[ ] E. RCRA Interim Status				
[ ] F. SPCC Plan				
[ ] G. State (Specify)				
[ ] H. Local (Specify)				
[X] I. Other (Specify)	1122			Tank Registration Number
[ ] J. None				

III. SITE DESCRIPTION

01 Storage Disposal (Check all that apply)	02 Amount	03 Unit of Measure
[ ] A. Surface Impoundment		
[ ] B. Piles		
[X] C. Drums, Above Ground	2,000	Gal.
[X] D. Tank, Above Ground	100	Gal.
[X] E. Tank, Below Ground	52,000	Gal.
[ ] F. Landfill		
[ ] G. Landfarm		
[ ] H. Open Dump		
[ ] I. Other _____ (Specify)		

04 Treatment (Check all that apply)

- [ ] A. Incineration
- [ ] B. Underground Injection
- [ ] C. Chemical/Physical
- [ ] D. Biological
- [ ] E. Waste Oil Processing
- [ ] F. Solvent Recovery
- [ ] G. Other Recycling Recovery
- [ ] H. Other _____ (Specify)

05 Other

- [ ] A. Buildings On Site

06 Area of Site: 3.2 Acres

07 Comments

IV. CONTAINMENT

01 Containment of Wastes (Check one)

[ ] A. Adequate, Secure [ ] B. Moderate [X] C. Inadequate, Poor [ ] D. Insecure, Unsound, Dangerous

02 Description of Drums, Diking, Liners, Barriers, etc.

PART OF INDOOR 55-Gal. DRUM STORAGE AREA NOT PROPERLY BERMED.
UNDERGROUND STORAGE TANKS NOT REGULARLY PRESSURE-TESTED TO PREVENT LEAKS.

V. ACCESSIBILITY

01 Waste Easily Accessible: [X] Yes [ ] No

02 Comments:

Contaminated runoff from flooded storm drains after heavy rains is easily accessible.

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

Phase II site inspection, 1988.

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POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 State	02 Site Number
NY	N/A

II. DRINKING WATER SUPPLY

01 Type of Drinking Supply (Check as applicable)

	Surface	Well
Community	A. [ ]	B. [X]
Non-community	D. [ ]	D. [X]

02 Status

Endangered	Affected	Monitored
A. [X]	B. [ ]	C. [ ]
D. [X]	E. [ ]	F. [ ]

03 Distance to Site

A 1 (mi)

B 0.12 (mi)

III. GROUNDWATER

01 Groundwater Use in Vicinity (Check one)

[X] A. Only Source for Drinking

[ ] B. Drinking (Other sources available) Commercial, Industrial, Irrigation (No other water sources available)

[ ] C. Commercial, Industrial, Irrigation (Limited other sources available)

[ ] D. Not Used, Unuseable

02 Population Served by Groundwater 5,454(0-1mileR) 03 Distance to Nearest Drinking Water well 1 (mi)

04 Depth to Groundwater	05 Direction of Groundwater Flow	06 Depth to Aquifer of Concern	07 Potential Yield of Aquifer	08 Sole Source Aquifer
40.8 (ft)	southeasterly	0 (ft)	Unknown (gpd)	[X] Yes [ ] No

09 Description of Wells (including usage, depth, and location relative to population and buildings)
Public and private supply wells within populated areas, used for drinking, industrial and commercial applications. Depth rangesfrom 60' to over 700'.

10 Recharge Area

[X] Yes

[ ] No

Comments: Site located in Zone II of deep recharge area (Suffolk County San. Code-Article 7)

11 Discharge Area

[X] Yes

[ ] No

Comments: Storm drains, into groundwater aquifer

IV. SURFACE WATER

01 Surface Water (Check one)

[ ] A. Reservoir Recreation Drinking Water Source

[ ] B. Irrigation Economically Important Resources

[ ] C. Commercial, Industrial

[X] D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance to Site
None Known	[ ]	(mi)
	[ ]	(mi)
	[ ]	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 Total Population Within

One (1) Mile of Site	Two (2) Miles of Site	Three (3) Miles of Site
A. 5,454 No. of Persons	B. 32,886 No. of Persons	C. 59,115 No. of Persons

02 Distance to Nearest Population 0 (mi)

03 Number of Buildings Within Two (2) Miles of Site 2,653

04 Distance to Nearest Off-Site Building Approx. 25' (mi)

05 Population Within Vicinity of Site (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area) The site is located in an industrial area among other commercial & industrial facilities. Large cemeteries, parks and residential areas surround the site.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 9 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

VI. ENVIRONMENTAL INFORMATION

01 Permeability of Unsaturated Zone (Check one)

[ ] A. 10^{-6} - 10^{-8} cm/sec [ ] B. 10^{-4} - 10^{-6} cm/sec [ ] C. 10^{-4} - 10^{-3} cm/sec [X] D. Greater Than 10^{-3} cm/sec

02 Permeability of Bedrock (Check one)

[X] A. Impermeable (Less than 10^{-6} cm/sec) [ ] B. Relatively Impermeable (10^{-4} - 10^{-6} cm/sec) [ ] C. Relatively Permeable (10^{-2} - 10^{-4} cm/sec) [ ] D. Very Permeable (Greater than 10^{-2} cm/sec)

03 Depth to Bedrock	04 Depth of Contaminated Soil Zone	05 Soil pH
1,300 (ft)	15 (ft)	6.7

06 Net Precipitation	07 One Year 24-Hour Rainfall	08 Slope Site Slope	Direction of Site Slope	Terrain Average Slope
15 (in)	2.7 (in)	0.14 %	S,W	<1 %

09 Flood Potential
Site is in More than 100 Year Floodplain

10 [ ] Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

ESTUARINE: A. 7.6 (mi)
OTHER: B. 0.95 (mi)

12 Distance to Critical Habitat (of endangered species)

_____ (mi)

Endangered Species: None within 1 mile of site.

13 Land Use in Vicinity

Distance to:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREA; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. 1.5 (mi)	C. 1-2 (mi)	D. ½ - 1 (mi)

14 Description of Site in Relation to Surrounding Topography

The site is located on relatively flat terrain.
Area surrounding the site is almost entirely developed and paved.

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

Phase II Investigation, 1988, USDOC, Climatic Atlas, 1979: USGS Topo Maps, 1979; NYSDEC Region I.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. SAMPLES TAKEN

Sample Type	01 Number of Samples Taken	02 Samples Sent to	03 Estimated Date Results Available
Groundwater	6	H2M Labs, Inc.	
Surface Water			
Waste			
Air			
Runoff			
Spill			
Soil	4	H2M Labs, Inc.	
Vegetation			
Other Sediment	3	H2M Labs, Inc.	

III. FIELD MEASUREMENTS TAKEN

01 Type	02 Comments
HNu	Air survey with HNu photoionization detector
pH	pH of Ground-water samples
Temperature	Temperature of Ground-Water samples
Conductivity	Conductivity of Ground-Water samples

IV. PHOTOGRAPHS AND MAPS

01 Type [x] Ground [ ] Aerial

02 In Custody of LeRoy Callender, P.C. - New York Office
(Name of organization or individual)

03 Maps [x] Yes [ ] No

04 Location of Maps
LeRoy Callender, P.C. - New York Office

V. OTHER FIELD DATA COLLECTED (Provide narrative description of sampling activities)

Magnetometer Survey.
Boring logs, development time, recharge time, and static water level measurement for GW-Series wells.
Topographic survey.
Sampling of ground water and soil from monitoring wells.
Sampling of sediment from Storm Drains.

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

Phase II Investigation, 1988.

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POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. CURRENT OWNER(S)			PARENT COMPANY (If applicable)		
01 Name Cantor Brothers, Inc.	02 D+B Number		08 Name	09 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.) Engineers Lane	04 SIC Code		10 Street Address (P.O. Box, RFD #, etc.)	11 SIC Code	
05 City Farmingdale	06 State NY	07 Zip Code 11735	12 City	13 State	14 Zip Code
01 Name	02 D+B Number		08 Name	09 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		10 Street Address (P.O. Box, RFD #, etc.)	11 SIC Code	
05 City	06 State	07 Zip Code	12 City	13 State	14 Zip Code
01 Name	02 D+B Number		08 Name	09 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		10 Street Address (P.O. Box, RFD #, etc.)	11 SIC Code	
05 City	06 State	07 Zip Code	12 City	13 State	14 Zip Code
01 Name	02 D+B Number		08 Name	09 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		10 Street Address (P.O. Box, RFD #, etc.)	11 SIC Code	
05 City	06 State	07 Zip Code	12 City	13 State	14 Zip Code

III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable, list most recent first)		
01 Name	02 D+B Number		01 Name	02 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code
01 Name	02 D+B Number		01 Name	02 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code
01 Name	02 D+B Number		01 Name	02 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code

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

SCDHS; Phase II Investigation, 1988.

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 Name Cantor Brothers, Inc.	02 D+B Number		10 Name	11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.) Engineers Lane	04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)	13 SIC Code	
05 City Farmingdale	06 State NY	07 Zip Code 11735	14 City	15 State	16 Zip Code
08 Years of Operation 14	09 Name of Owner				

III. PREVIOUS OPERATOR(s) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)		
01 Name	02 D+B Number		10 Name	11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)	13 SIC Code	
05 City	06 State	07 Zip Code	14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period				
01 Name	02 D+B Number		10 Name	11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)	13 SIC Code	
05 City	06 State	07 Zip Code	14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period				
01 Name	02 D+B Number		10 Name	11 D+B Number	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)	13 SIC Code	
05 City	06 State	07 Zip Code	14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period				

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

SCDHS files.

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POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. ON-SITE GENERATOR

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	05 City	06 State	07 Zip Code
Same owner/operator						

III. OFF-SITE GENERATOR(S)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	05 City	06 State	07 Zip Code

IV. TRANSPORTER(S)

01 Name	02 D+B Number	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	05 City	06 State	07 Zip Code
Marine Pollution Control, Inc		375 Dunton Ave.		East Patchogue	N.Y.	11772

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

SCDHS files (6/9/83 Site Inpection Report).

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. PAST RESPONSE ACTIVITIES

01 [ ] A. Water Supply Closed — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] B. Temporary Water Supply Provided — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] C. Permanent Water Supply Provided — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] D. Spilled Material Removed — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] E. Contaminated Soil Removed — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] F. Waste Repackaged — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] G. Waste Disposed Elsewhere — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] H. On Site Burial — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] I. In Situ Chemical Treatment — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] J. In Situ Biological Treatment — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] K. In Situ Physical Treatment — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] L. Encapsulation — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] M. Emergency Waste Treatment — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] N. Cutoff Walls — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] O. Emergency Diking/Surface Water Diversion — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] P. Cutoff Trenches/Sump — 02 Date _____ 03 Agency _____
04 Description:

01 [ ] Q. Subsurface Cutoff Wall — 02 Date _____ 03 Agency _____
04 Description:

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. PAST RESPONSE ACTIVITIES (Cont.)

01 [ ] R. Barrier Walls Constructed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] S. Capping/Covering — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] T. Bulk Tankage Repaired — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] U. Grout Curtain Constructed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] V. Bottom Sealed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] W. Gas Control — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] X. Fire Control — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] Y. Leachate Treatment — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] Z. Area Evacuated — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] 1. Access to Site Restricted — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] 2. Population Relocated — 02 Date _____ — 03 Agency _____
04 Description:

01 [X] 3. Other Remedial Activities — 02 Date 12/2/82 — 03 Agency _____
04 Description:

Waste scavanged - creosote residue, acrylic latex caulking waste water, by Marine Polution Control, Inc. transported to Town of Babylon Landfill.

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

SCDHS files.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART II - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	N/A

II. ENFORCEMENT INFORMATION

01 Past Regulatory/Enforcement Action [X] Yes [ ] No

02 Description of Federal, State, Local Regulatory/Enforcement Action

SCDH's letter dated 7/13/83 to Cantor Brothers, Inc. cited numerous violations of Article 12 of the Suffolk County Sanitary Code during the period from 5/5/80 to 6/9/83, and set-up a preliminary hearing to resolve the cited violations.

In September 1984, SCDHS installed five (5) monitoring wells on the south boundary of Cantor Brothers, Inc. site and conducted periodic sampling of groundwater from these wells. SCDHS's letters dated September 13 & September 14, 1984 to Cantor Brothers shows the results of analysis of the groundwater samples, and notifies Cantor Brothers of violations of the N.Y.S. Environmental Conservation Law and/or Suffolk County Sanitary Code.

On May 24, 1988, SCDHS sent a proposed Order on Consent to Cantor Brothers, Inc. concerning their failure to properly abandon an underground storage facility for toxic or hazardous materials. On 5/26/88 Cantor Brothers, Inc. responded to the Order of Consent No. IW 88-42 described above, and agreed to be bound by its terms and conditions. Cantor Brothers, Inc. paid SCDHS a $250 fine for the violation cited in the Consent Order.

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

SCDHS files

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Inactive Hazardous Waste Disposal Sites Surrounding Cantor Brothers, Inc. (which are being investigated by NYSDEC)*

Name	City-Town-Village	County	HRS	ID#	Classf. Code	1986 Registry Page #
1. U.S. Electro-plating Corp.	West Babylon	Suffolk	-	1-52-027	3	1-115
2. Fairchild Re-public Aircraft	Farmingdale	"	-	1-52-004	2a	1-69
3. Tronic Plating Co., Inc.	"	"	45.14	1-52-028	2	1-117
4. Preferred Plating	"	"	35.06	1-52-030	2	1-121
5. Kenmark Textiles (Sasquahana Textile)	"	"	31.72	1-52-032	2	1-125
6. Astro Electro-plating, Inc.	"	"	-	1-52-036	2	1-133
7. 110 Sand Co.	Farmingdale, NY	"	-	1-52-100	2a	1-225
8. Louis Sorrentino Property	"	"	-	1-52-111	2a	1-245
9. Hazardous Waste Disposal	"	"	-	1-52-113	2a	1-249
10. Target Rock Corp.	"	"	-	1-52-119	2a	1-261
11. West Babylon Industrial Area	West Babylon	"	-	1-52-025	2	1-111
12. Spectrum Finishing Corp.	"	"	-	1-52-029	2a	1-119
13. Babylon Landfill	"	"	-	1-52-039	2	1-139
14. NTU Circuits, Inc.	"	"	-	1-52-086	2a	1-199
15. Jameco Industries, Inc.	Wyandanch	Suffolk	-	1-52-006	2a	1-73
16. Ron Lyn, Inc.	"	"	-	1-52-112	2a	1-247
17. Cardwell Condenser Corp.	Lindenhurst	"	-	1-52-035	2a	1-131

Inactive Hazardous Waste Sites - continued

Name	City-Town-Village	County	HRS	ID#	Classf. Code	1986 Registry Page #
18. Southern Container Corp.	Deer Park	Suffolk	-	1-52-019	2a	1-99
19. SMS Instruments, Inc.	"	"	-	1-52-026	2	1-113
20. Commercial Envelope Mfg.-Co. Inc.	"	"	-	1-52-103	2a	1-231
21. C.T.I. Metal Finishing (T&S Metal Fin.)	"	"	-	1-52-115	2a	1-253
22. Radiator Center, Inc.	(Islip)Deer Park	"	-	1-52-107	2a	1-239
23. I.W. Industries, Inc.	Melville	"	-	1-52-102	2	1-229
24. McGovern Sod Farm	"	"	-	1-52-120	2a	1-263

*Source: Inactive Hazardous Waste Disposal Sites In New York State, Site List by Counties; Volume 1. Nassau .Suffolk December 1986; A Joint Report of the N.Y.S.D.E.C. and N.Y.S.D.O.H., pp. G1-2, G1-3, G1-4, G1-5, & G1-6.

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 3 REGION: 1 SITE CODE: 152021
EPA ID: NYD980768717

NAME OF SITE : Cantor Bros., Inc.
STREET ADDRESS: Engineers Lane
TOWN/CITY: Farmingdale
COUNTY: Suffolk
ZIP: 11735

SITE TYPE: Open Dump- Structure-X Lagoon- Landfill- Treatment Pond-
ESTIMATED SIZE: 3.2 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: Firm owns property
CURRENT OWNER ADDRESS.: Engineers Lane, Farmingdale, NY 11735
OWNER(S) DURING USE...: Cantor Bros., Inc.
OPERATOR DURING USE...: Cantor Bros., Inc.
OPERATOR ADDRESS.....: Engineers Lane, Farmingdale, NY 11735
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1975 To Present

SITE DESCRIPTION:
Cantor Brothers is an active chemical repacking and handling facility which has been in operation since at least 1975. Organic solvents, paint thinners and fuel oils have been observed leaking from drums and storage tanks on site.
Phase I investigation and Phase II investigation have been performed.

HAZARDOUS WASTE DISPOSED: TYPE	Confirmed-X	Suspected- QUANTITY (units)
Organic solvents, fuel oils, paint thinners		Unknown

APPENDIX A

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SITE CODE: 152021

ANALYTICAL DATA AVAILABLE:
Air- Surface Water- Groundwater-X Soil-X Sediment-X None-

CONTRAVENTION OF STANDARDS:
Groundwater-X Drinking Water- X Surface Water- Air-

LEGAL ACTION:

TYPE..: Order on Consent State-X Federal-
STATUS: Negotiation in Progress- Order Signed-X

REMEDIAL ACTION:

Proposed-X Under design- In Progress- Completed-
NATURE OF ACTION: RI/FS

GEOTECHNICAL INFORMATION:
SOIL TYPE: Sand, gravel
GROUNDWATER DEPTH: 39 feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Organic solvents, and fuel oil leaked from drums and underground tanks and allegedly contaminated groundwater and soils on site. Chemicals discharged into a storm drain on site.

ASSESSMENT OF HEALTH PROBLEMS:

Medium	Contaminants Available	Migration Potential	Potentially Exposed Population	Need for Investigatio
Air	Likely	Likely	Yes	High
Surface Soil	Likely	Likely	Yes	High
Groundwater	Likely	Highly Likely	Yes	High
Surface Water	Likely	Unlikely	No	Low

Health Department Site Inspection Date : 1/88

MUNICIPAL WASTE ID:

R-200

APPENDIX A

47-15-11 (10/83)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

Priority Code: 3 Site Code: 152021

Name of Site: Cantor Brothers, Inc. Region: 1

Street Address: 50 Engineers Lane

Town/City: Farmingdale, N.Y. County: Suffolk

Name of Current Owner of Site: Firm owns property

Address of Current Owner of Site: Engineers Lane, Farmingdale, N.Y.

Type of Site: [ ] Open Dump [X] Structure [ ] Lagoon
[ ] Landfill [ ] Treatment Pond

Estimated Size: 3.2 acre(s)

Site Description: Cantor Brothers is an active chemical re-packing and handling facility which has been in operation since at least 1975. Organic solvents and fuel oils have been observed leaking from drums and underground storage tanks on site.

Phase I and II investigations have been performed.

Hazardous Waste Disposed: [X] Confirmed [ ] Suspected

Type and Quantity of Hazardous Wastes Disposed:

Type	Quantity (Pounds, Drums, Tons, Gallons)
Organic solvents	38,000 Gallons (Est.)
Fuel oils	15,000 Gallons (Est.)

APPENDIX A

Time Period Site was Used for Hazardous Waste Disposal:

_____, 19 75 To Present, X

Owner(s) During Period of Use: Cantor Brothers, Inc.

Site Operator During Period of Use: Cantor Brothers, Inc.

Address of Site Operator: Engineers Lane, Farmingdale, N.Y.

Analytical Data Available: [ ] Air [ ] Surface Water [X] Groundwater
[X] Soil [X] Sediment [ ] None

Contravention of Standards: [X] Groundwater [X] Drinking Water
[ ] Surface Water [ ] Air

Soil Type: Sand and Gravel

Depth to Groundwater Table: 39 feet

Legal Action: Type: Order on Consent [X] State [ ] Federal

Status: [ ] In Progress [X] Completed

Remedial Action: [X] Proposed [ ] Under Design
[ ] In Progress [ ] Completed

Nature of Action: RI/FS

Assessment of Environmental Problems: Contamination of groundwater by organic solvents and fuel oils has been observed.

Assessment of Health Problems: Contamination of groundwater may potentially affect the drinking water wells of the surrounding communities.

Person(s) Completing This Form:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION		NEW YORK STATE DEPARTMENT OF HEALTH	
Name:	Sirous H. Nabavi	Name:	
Title:	Project Eng., LeRoy Callender, P.C.	Title:	
Name:		Name:	
Title:		Title:	
Date:	January 1989	Date:	

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APPENDIX A

CONSULTING GROUND-WATER
GEOLOGISTS AND ENGINEERS
ROUX ASSOCIATES INC

ROUX

THE HUNTINGTON ATRIUM
775 PARK AVENUE
SUITE 255
HUNTINGTON, NEW YORK 11743 516 673-7200 FAX # 516 673-7216

July 27, 1988

Mr. Sirous Nabavi, PE
LeRoy Callender PC Consulting Engineers
236 West 26th Street
New York, NY 10001

Re: NYSDEC Phase II Investigations
Site #152021 Magnetometer Survey

Dear Mr. Nabavi:

A magnetometer survey was conducted at the Cantor Brothers site on July 25, 1988 at the proposed well locations, shown on the attached figures, to detect buried ferromagnetic objects which might be encountered during drilling activities.

The Schonstedt Model GA-52B flux-gate magnetometer which was used provides a continuous audio signal which increases from the idling frequency of 40 H_z as surface and/or subsurface ferromagnetic material is approached.

The well locations are designated in the Phase II Work Plan furnished by the NYSDEC. At each proposed well location, an area of approximately 300 square feet was screened in detail with the magnetometer. If no detections of ferromagnetic material were made within the survey area, the location center was marked with red spray paint indicating the proposed well number. If detections were made, the surrounding area was screened until a clear location was found. Before leaving the location, two distances from the location center to permanent site reference points were made and recorded to the nearest foot in case the paint indicator becomes obliterated.

Distances from proposed well location centers to permanent site reference points are shown on the attached figures.

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APPENDIX A

In addition to the original work plan well locations, four alternate well locations were screened. These alternate locations were chosen during a site visit by representatives of LeRoy Callender PC Consulting Engineers, in conjunction with Mr. Mathew Miller representing Cantor Brothers.

Please call if you have questions regarding the survey.

Sincerely,

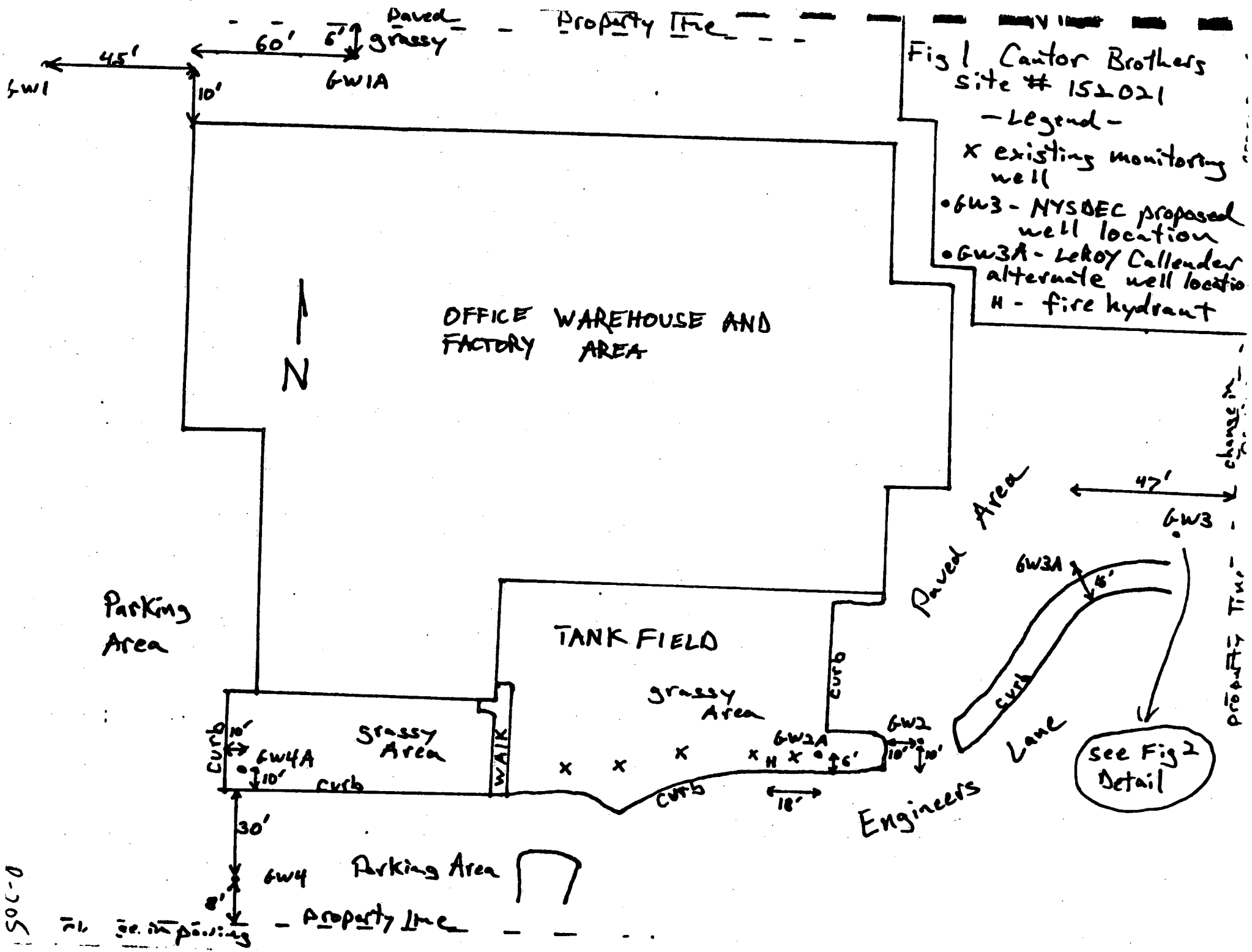
Peter C. Breen

Peter C. Breen
Hydrogeologist

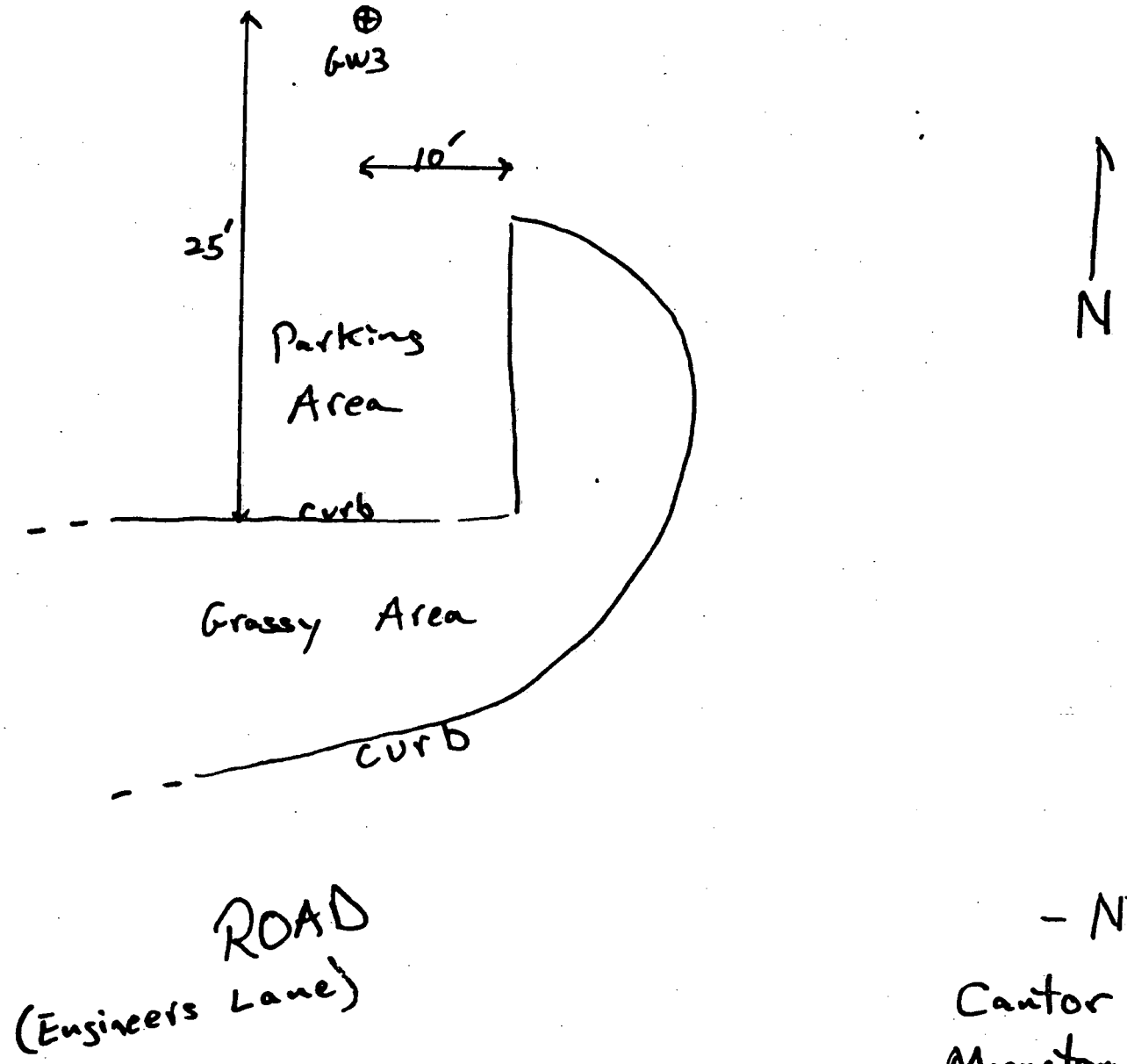
PCB:g

Encl.

cc: Gibbs & Hill


Paved
Property Line
45'
60'
6'
grassy
GW1
GW1A
10'
OFFICE WAREHOUSE AND FACTORY AREA
N
Parking Area
TANK FIELD
grassy Area
grassy Area
curb
10'
GW4A
10'
curb
WALK
curb
GW2A
H
6'
18'
GW2
10'
10'
curb
Paved Area
47'
GW3
GW3A
6'
curb
Engineers Lane
see Fig 2 Detail
Property Line
change in
30'
GW4
Parking Area
8'
Property Line
Fig 1 Cantor Brothers site # 152021
-Legend-
x existing monitoring well
• GW3 - NYSDEC proposed well location
• GW3A - LeROY Callender alternate well locatio
H - fire hydrant

D-205



- NTS -

Cantor Brothers
Magnetometer Survey
Site Location Detail
GW-3

Figure 2

APPENDIX A

LeRoy
Callender
PC

236 West 26 Street
New York, NY 10001
212 989 2900

Consulting Engineers

4856 U.S. Route 1 South
Iselin, NJ 08830
201 750 8955

675 Delaware Avenue
Buffalo, NY 14202
716 886 2694

Eastern Investigation Section
Bureau of Hazardous Site Control
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation

August 30, 1988

Attn: Mr. Lawrence J. Alden
Assistant Sanitary Engineer

RE: Job #86-279
Phase II Investigations of
Inactive Hazardous Waste Sites
Cantor Brothers-DEC I.D. # 152021
Suffolk County, New York
Revised Work Plan Update

Dear Mr. Alden:

Please find, herewith enclosed, a revised copy of our Work Plan Update for the subject site, which has been revised based on your comments, passed on to us by Gibbs & Hill, Plus theirs. A copy of the original work plan is also attached.

We hope that the revised Work Plan update meets with your approval.

We anticipate that the drilling operations could begin on the above site on or about September 12, 1988.

Very truly yours,

Sirous H. Nabavi

Sirous H. Nabavi, P.E.
Project Engineer

cc:Mr. Norman Hinsey, Gibbs & Hill

SHN:lb

LeRoy
Callender
PC

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PHASE II INVESTIGATION
WORK PLAN UPDATE *

CANTOR BROTHERS
NYSDEC I.D. NO. 152021
SUFFOLK COUNTY, NEW YORK

(Revised : August 30, 1988)

* * *

PART I:	SITE RECONNAISSANCE REPORT
PART II:	MAGNETOMETER SURVEY REPORT
PART III:	SITE HEALTH & SAFETY PLAN & NYSDEC QUESTIONNAIRE
PART IV:	SAMPLING PROTOCOL (TABLES 2 & 3 OF THE WORK PLAN)
PART V:	TELEPHONE CONVERSATION RECORD (Permission for use of Plant water as source of potable water.)

* Presented as an addendum to the original work plan.

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PART I

SITE RECONNAISSANCE REPORT

CANTOR BROTHERS, INC. SITE

NYSDEC I.D. NO. 152021

SUFFOLK COUNTY, NEW YORK

1. DATE: July 19, 1988
2. Time: 9:00 - 12:00 a.m.
3. Present: Sirous H. Nabavi, P.E. LeRoy Callender, P.C. Consulting Engineers & Mr. Mathew Miller, General Manager, Cantor Brothers, Inc.

4. Contact Person: Mr. Mathew Miller, General Manager,
Cantor Brothers, Inc.
Tel. No. (516) 694-6666

5. General Site Access:

The site is generally accessible from the west side and east side parking lots. Trucks can drive in, around, and out of the paved driving lanes of the site, and there seems to be no problem for access by the drilling rig, (see Figure 1).

6. Adjoining Site Owners

All monitoring wells are located within the boundaries of the site, and none of the adjoining sites would be affected.

7. Site Changes Since DEC Site Reconnaissance

The following changes have occurred since the DEC site reconnaissance dated 11/6/85:

-Underground fuel tank #16 on the west side has been removed from the site (Figure 1);

-Three underground tanks (#4,#7,& #15) in front of the Factory Area (Figure 1) have been removed.

8. Recommended Relocation of Monitoring Wells

Table 1 gives the recommended relocation of the four monitoring wells to be drilled on Cantor Brothers site, and the reasons for the change of locations. Figure 1 is an owner-provided scaled site plan, which shows the original locations of all the monitoring wells as well as the recommended relocations.

The altenative locations have been included in the Magnetometer Survey (Part II).

9. Drilling Rig Access to Recommended Well Locations

Direction for access to Site: 495 East to Route 110. South on Route 110; East on New Highway; left onto Central Ave; Left on Engineers Lane

GW-1 : Access to the relocated GW-1 would be possible both from the west side or the east side parking areas and truck lanes.

GW-2 : Directly accessible from Engineers Lane.

GW-3 : Accessible from the east side parking area.

GW-4 : Accessible from the west side parking lot.

10. Useable Potable Water Source

Location

Internal plumbing system of the plant. Potable water available from sink faucets, by hose.

Contact Person

Mr. Mathew Miller, General Manager, Cantor Brothers, Inc. Tel. # (516) 694-6666
(See Telephone Conversation Record, Part V.)

11. Placement of drilling Cuttings

Drilling cuttings and water from monitoring wells will be placed in drums and left on site. Drums shall be U.S. DOT approved 17-H (soil) or 17-E (water) 55 Gal. steel drums with ring and bolt.

12. Changes to Site Sketch

See Figure 1

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13. Recommended Relocaton of Sampling Locations

None. Soil/Sediment sampling locations remain unchanged, (See Figure 1).

14. Other Relevant Information

The drainage catch basins are covered with heavy metallic gratings which have to be lifted before sampling. These gratings would have to be loosened with a crow bar before they can be lifted.

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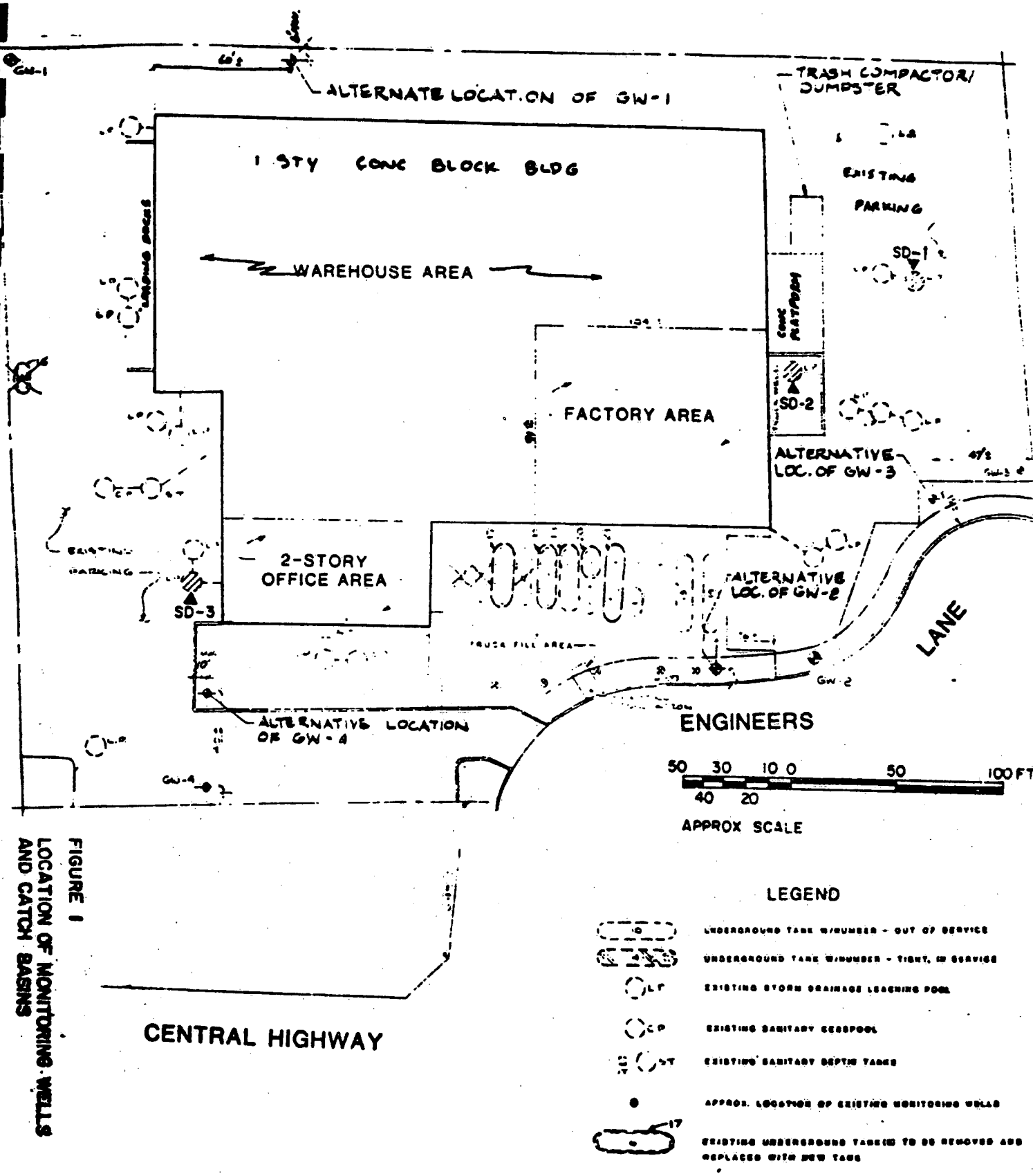

FIGURE 1
LOCATION OF MONITORING WELLS AND CATCH BASINS

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TABLE I
ALTERNATIVE MONITORING WELL LOCATIONS
CANTOR BROTHERS
(See Figure 1)

Well no.	Original Location	Proposed Alternative Location	Reason for Change of Location
#1	Northwest corner of site site	Approximately 120' east of original location	- original location is occupied by a lot of junk tires and trash - more accessible to the drilling rig and equipment
#2	Southeast of Factory Area, approx. 20' east of existing fire hydrant	Fire hydrant location corrected. Alternative well location approx. 26' West of entrance ramp to east parking lot.	- original location was in the middle of ramp. - moved closer to underground tanks

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TABLE I (CONT'D)
ALTERNATIVE MONITORING WELL LOCATIONS
CANTOR BROTHERS
(See Figure 1)

Well no.	Original Location	Proposed Alternative Location	Reason for Change of Location
#3	Southeast corner of site.	Approx. 47' west of the east property line.	-original location was too close to east property line -moved closer to Factory Area, which might be a source of groundwater contamination.
#4	Southwest parking lot.	Approx. 40' to the north of original location, and inside the grassed area.	-moved out of the parking lot, which is normally crowded with cars. -moved closer to SD-3, which might be a source of groundwater contamination.

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PHASE II INVESTIGATION

SITE HEALTH & SAFETY PLAN

CANTOR BROTHERS, INC.

NYSDEC I. D. No. 152021

SUFFOLK COUNTY, NEW YORK

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SITE HEALTH & SAFETY PLAN

CANTOR BROTHERS, INC.

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PHASE II INVESTIGATION

SITE HEALTH & SAFETY PLAN

CANTOR BROTHERS, INC.

NYSDEC I. D. NO. 152021

SUFFOLK COUNTY, NEW YORK

I. PURPOSE OF THE PLAN

The purpose of the site health and safety plan is to establish requirements for protecting the health and safety of all persons working at the above-named site during drilling and installation of monitoring wells, and sampling of groundwater, soil, and catch basins, as called for in the work plan.

The plan contains health and safety requirements for routine (but hazardous) work plan activities and also for unexpected site emergencies.

This document shall be read and understood in conjunction with the following references, which will be kept on the site at all times.

Exhibit 1, Generic Work Plan-State superfund Program Phase II Investigations

Exhibit 3, Guidelines for Exploratory Boring, Monitoring Well Installations, and Documentation of these activities

Updated Work Plan

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II. SUMMARY OF THE WORK PLAN

At the Cantor Brothers Site, a total of four (4) borings will be drilled, in which monitoring well equipment will be installed, and from which samples of groundwater and soil will be collected. In addition, samples of soil, or sediment (depending on conditions at the time) will be collected from three (3) surface water drainage catch basins. Air monitoring around the monitoring well locations,and around catch basins will also be conducted, and air samples will be collected from each sampling point, if conditions warrant it (Figure 1).

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III. ANTICIPATED HAZARDOUS CHEMICALS, AND HAZARDS AND RISKS INVOLVED DURING WORK PLAN ACTIVITIES.

1. The following hazardous chemicals might be found in groundwater & soil samples from the four monitoring wells:

-Benzene
-Toluene
-M-Xylene
-O-Xylene
-P-Xylene
-Ethyl Benzene
-Tetrachloroethylene
-1,1,2 Trichloroethylene
-1,1,1 Trichloroethane
-Cis Dichloroethylene

The following chemicals might be found in the soil (or sediment) samples collected from the surface water catch basins SD-1, SD-2, amd SD-3 marked on the work plan:

-1,1,1 Trichloroethane
-1,1,2 Trichloroethylene
-Methylene Chloride
-Benzene
-Toluene

Some of the above-named chemicals, such as Benzene and Toluene are highly toxic, and some of the others, like Xylene and Ethyl Benzene are strongly toxic. However, concentrations are expected to be extremly low, not to create a highly toxic situation.

2. Some of the hazardous chemicals named in paragraph 1 above can cause serious health hazards, and working personnel must be protected against these hazards. For instance, Benzene or toluene entail the following health hazards, if high concentrations occur:

-May be poisonous if inhaled or absorbed through skin.
-Vapors may cause dizziness or suffocation.
-Contact may irritate or burn skin and eyes.
-Fire may produce irritating or poisonous gases.
-Runoff from fire control or dilution water may cause pollution.

However, high concentrations of neither chemical is anticipated to occur.

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3. Potential fire or explosion hazard

The following hazards are present whenever benzene or toluene are present in high concentrations:

-Flammable/combustible material; may be ignited by heat, sparks or flames.
-Vapors may travel to a source or ignition and flash back.
-However, high concentrations of neither chemical is anticipated to occur.
-Container may explode in heat of fire.
-Vapor explosion hazard indoors, outdoors, or in sewers.
-Runoff to sewers may create fire or explosion hazard.

However, high concentrations of neither chemical is expected to occur at this site.

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IV. Key personnel and alternates for site safety and protection of public.

LeRoy Callender/P.C.: Safety Engineer: S. Nabavi
LeRoy Callender/P.C.: Alternate: L. Naraysingh

MPC Drilling Co. Manager: J. Goff
MPC Drilling Co. Alternate: Joe Kaufman

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V. Levels of Protection to be worn by personnel

It is essentially important for the drilling crew, the consultant's representatives, and for all other personnel working on this site to observe strict health and safety rules and take appropriate precautions during the entire drilling and sampling operations.

It is presently anticipated that Level D protective gear will be required for all personnel during work plan activities.

If, during the investigation, it is determined that the level of protection should be upgraded, the consultant's safety officer designee shall be ready to employ the appropriate protective gear and equipment. In such cases, the higher level of protection adopted will be recorded in the Log Book.

Protective gear must be cleaned or disposed of properly at the end of each working day. Contaminated clothing and shoes must be isolated and removed from the site.

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VI. General Safety Rules and Equipment

1. There will be no eating, drinking, or smoking in the working or contamination reduction zones.

2. All personnel must pass through the contamination reduction zone to enter or exit the working zones.

3. An abundant supply of clean water must be provided in the contamination reduction and decontamination areas. (Figure 2).

4. Where practical, all tools/equipment will be sprak proof, explosion resistant, and/or bonded and grounded.

5. Fire extinguishers will be on-site for use on equipment or small fires only.

6. An adequately stocked first-aid kit will be on-scene at all times during operational hours.

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VII. Support area, working zones, contamination reduction, and decontamination areas

Figure 2 delineates the following zones and areas on the Cantor Brothers Site:

Working zones-taped-off areas around Monitoring wells no. 1,2,3,& 4, and around Catch Basins SD-1, SD-2, & SD-3.

Contamination Reduction Zone-Where personnel and equipment will be thoroughly cleaned before and after the daily drilling and sampling activties, and whenever equipment and personnel are moved from one working zone to another.

Decontamination and support zone. This will be the main staging area for the entire work plan operations. All clean tools, equipment, sampling containers, protective gear and other instruments, gauges, appliances and facilities will be kept covered or enclosed throught the entire work plan activities.

All above mentioned areas will be taped-off by barricade tapes throughout the period of their use, and unauthorized persons will be kept off these areas.

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VIII-Emergencies

Three types of emergency situations may be anticipated at this site:

a- Emergency fires at the drilling locations
b- Emergency personnel health hazards as a result of contact with hazardous material.
c- Emergency physical accidents or injuries caused by drilling equipment, mechanical hazards, or similar causes.

A- Emergency fires are expected to be of a small scale, which can be extinguished with a portable dry chemical fire extinguisher, which should be provided as part of the support equipment.

Unexpected large fires, although not anticipated, must be reported immediately to the local fire department. [Tel. No. (516) 226-9546].

B- In case of contact with hazardous materials (See para. III) immediately flush eyes with clean running water for at least 15 minutes. Wash skin with soap and water. If hazards or injuries incurred are serious, call an ambulance, or take the victim to the hospital (See last page of NYSDEC Questionnaire, Part III.). Remove and isolate contaminated clothing and shoes at the site.

IX. Morning Safety Meeting

A morning safety meeting will be conducted for all site personnel and they will sign a daily attendance sheet indicating they have read the site health and safety plan and will comply. The health and safety procedures, and the day's planned operations should be discussed.

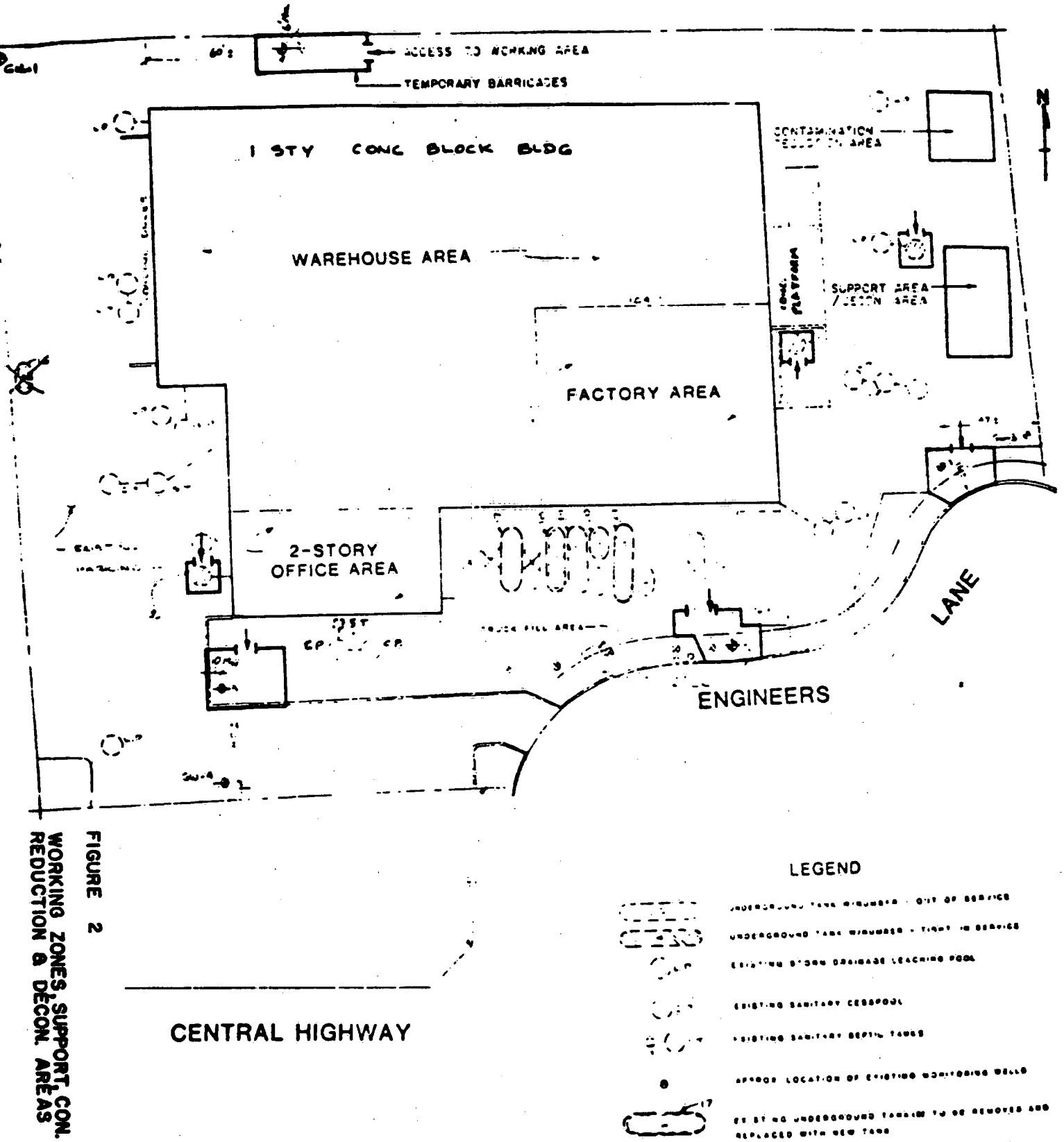

FIGURE 2
WORKING ZONES, SUPPORT, CON.
REDUCTION & DECON. AREAS

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SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: Cantor Brothers, Inc. N.Y. I.D. No. 152021

LOCATION: East Farmingdale Suffolk County CONTACT: Mr. Mathew Miller (516) 694-6666

PLAN PREPARED BY: LeRoy Callender, PC. DATE: AUG. 22, 1988

APPROVED BY:

BUREAU SAFETY OFFICER: _____ DATE: _____

SECTION CHIEF: _____ DATE: _____

WORK SCOPE: To drill monitoring wells and collect soil, ground water, and sediment samples at the site for Inactive H.W. Site Investigation.

PROPOSED DATE OF INVESTIGATION: 9/6/1988 (Starting Date)

BACKGROUND REVIEW: Complete: X Preliminary: _____

OVERALL HAZARD: Serious: _____ Moderate: _____

Low: X Unknown: _____

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid X Solid _____ Sludge _____ Gas _____

CHARACTERISTIC(S): Corrosive ___ Ignitable ___ Radioactive ___

Volatile X Toxic X Reactive ___

Unknown ___ Other ___

FACILITY FUNCTION: An active chemical repacker, handling petroleum distillate solvents, paint thinners

Principal Disposal Method (type and location): Most of the waste is transported out of the site. Some of the underground tanks might be leaking.

Unusual Features (dike integrity, power lines, terrain, etc.) The site is located within an industrial park area, and overhead power lines and telephone lines pass over some parts of site.

Status: (active, inactive, unknown) active

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RECOMMENEDED LEVEL OF PROTECTION: Level D Protection is recommended.

*Modifications: If during the drilling of monitoring wells the level of Protection has to be upgraded, the State will be notified immediately.

Monitoring Equipment and Materials:
H Nu air monitoring equipment will be used.

DECONTAMINATION AND DISPOSAL:

Decontamination Procedure: (D) level to be utilized

_____ Level A - Segretated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot wash, suit safety boot rinse, (Tank Change), safety boot removal, suit and hard hat removal, inner glove wash, inner glove removal, inner clothig removal, field wash, redress.

_____ Level B - Segretated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, outer glove removal, suit/safety boot wash, suit/SCBA/boot/glove/ rise, (Tank Change) safety boot removal, (splash suit removal) SCBA backpack removal, inner glove wash, inner glove rinse, facepiece removal, inner glove removal, inner clothing removal, field wash, redress.

_____ Level C - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot rinse (Canister or Mask Change), safety boot removal, splash suit removal, inner glove wash, inner glove rinse, facepiece removal, inner glove removal, inner clothing removal, field wash, redress.

X Level D - Segregated equipment drop, boot and glove wash, boot and glove rinse.*

_____ *Modifications (specify)_____

* If modified in the field, be sure to attach statement to file copy upon return to office.

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History: (Worker or non-worker injury; complaints from public; previous agency action): None

HAZARDOUS/TOXIC MATERIAL (known or suspected, contaminted media or in storage container, etc.)
Petroleum distillate solvents, paint thinners, creosote and caulking compounds. Benzene, toluene, and xylene are suspected of being released into ground water.

HAZARD ASSESSMENT (toxic and pharmacologic effects, reactivity, stability, flammabiliy, and operational concerns, sampling, decontaminating, etc.)
Benzene and toluene are highly toxic. Past releases of hazardous wastes to groundwater will be investigated.

C. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch attached Site Plan attached
Site secured? No

Perimeter Identified? Yes Zone(s) of Contamination Identified? No

PROPOSED ON-SITE ACTIVITIES: Four (4) monitoring wells will be drilled, soil or sediment samples will be obtained from three (3) catch basins. Groundwater and soil samples will be collected from each monitoring well. (See the original work plan).

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D. PERSONNEL & RESPONSIBILITIES

D.E.C.

1. Representative to be designated later
2.
3.
4.
5.
6.
7.
8.

OTHER

1. LeRoy Callender, P.C. : S. NABAVI, Safety Engineer
2. " " " : L. NARRAYSINGH, Alternate
3. Marine Pollution Control: J. GOFF, Manager
4. " " " : Joe KAUFMAN, Alternate
5.

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E. EMERGENCY PLANNING

HOSPITAL: Brunswick Hospital in Amityville, (516) 789-7000

AMBULANCE: Call 911

POLICE:

FIRE: East Farmingdale Fire Dept. (516) 226-9546

POISON CONTROL CENTER:

RADIO:

TELEPHONE:

WATER SUPPLY: East Farmingdale Water District. (516) 249-421

D.E.C. REGIONAL CONTACT: Mr. Robert Schneck, Reg. I (516) 751-79

ROUTE TO HOSPITAL

Directions to Brunswick Hospital: Drive south to Central Ave. turn right, bearing west. Drive to New Highway, and turn left. Drive south on New Highway, and make the second right turn to Milbar Blvd. Drive west on Milbar Blvd. to Route 110. Turn left on Route 110, which would be due south. Drive 3-4 miles on Route 110 to the Hospital.

TABLE 2*
PHASE II WORK PLAN - SAMPLING SUMMARY
CANTOR BROTHERS

Designation	Location Rationale	Aquifer Screened	Approx. Boring Depth (ft)	Length of Screen (ft)
Soil				
S-1	Catch basin			
S-2	Catch basin			
S-3	Catch basin			
Groundwater				
GW-1*	Upgradient	Upper Glacial	50	10
GW-2	Downgradient	Upper Glacial	50	10
GW-3	Downgradient	Upper Glacial	50	10
GW-4	Downgradient	Upper Glacial	50	10
Surface Water				
None				
Sediment				
None				
Leachate				
None				
Borings				
SS-1	If necessary			
SS-2	If necessary			
SS-3	If necessary			
SS-4	If necessary			
Air				
Use a FID or PID to determine the presence of organics				

NOTE: Locations, aquifer screened, approximate boring depth, length of screen (ft) listed are based on existing data and are the basis of the cost estimate. These criteria may change based on the results of the geophysical surveys and/or field conditions.

* The four (4) monitoring wells will be drilled and sampled consecutively, i.e., #1, #2, #3, #4.

TABLE 3
NYSDEC - CHEMICAL ANALYSES - CANTOR BROTHERS

	Type of Analyses(1)				
Type of Sample	HSL(2) Metals	HSL(3) Volatiles	HSL(4) Semi-Volatiles	HSL(5) Pesticides/ PCBs	Matrix Spike/ Duplicate (6)
Groundwater(7)	5	5	5	5	1/1
Surface Water	---	---	---	---	---
Sediment	---	---	---	---	---
Soil	7	7	7	7	1/1
Leachate	---	---	---	---	---
Drums	---	---	---	---	---
Waste	---	---	---	---	---
Trip Blank	---	1	---	---	---
Field Blank	1	1	1	1	---

(1) Complete identification per NYSDEC Generic Work Plan, Section 3(b)(ii)(B). Field pH, conductivity and temperature measurements will be conducted on all water samples.

(2) HSL Metals - Preparation and analysis of the 15 Task 1 and 9 Task 2 inorganic compounds using the specified CLP methods.

(3) HSL Volatiles - Preparation and analysis using the CLP specified GC/MS method for HSL purgeable organics plus a library search for and the quantification of any additional non-HSL compounds (the CLP requires the library search only for the 10 non-HSL compounds of largest apparent concentration).

(4) HSL Semi-Volatiles - Preparation and Analysis using the CLP specified GC/MS method for HSL Extractable Base/Neutral and Acid Organic compounds plus a library search for and the quantification of any additional non-HSL compounds (the CLP requires the library search only for the 20 non-HSL compounds of largest apparent concentration).

(5) HSL Pesticides/PCB's - Preparation and pre-extraction of the HSL organochloride pesticides and polychlorinated biphenyls using the CLP specified GC-ECD method.

(6) Superfund and Contract Laboratory Protocol, January 1985, requires at least one spiked sample analysis and one duplicate sample analysis from each group of samples of a similar matrix type for each case of samples or for each 20 samples received, whichever is more frequent.

(7) The reason for one (1) additional groundwater sample is that a duplicate groundwater sample must be obtained from a monitoring well chosen at random (or some other medium if wells are not available). That duplicate sample must not be identified as a duplicate to the laboratory, but must be assigned an identifier similar to other groundwater samples. The Bureau requires the blind analysis of a duplicate sample for each site by the laboratory to confirm the integrity of all sampling and analytical activities.

--- Designates that no samples are to be analyzed.

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TELEPHONE CONVERSATION RECORD

CONTRACT NO. G&H PROJ. NO. 5583

DATE: August 25, 1988

OUR JOB NO. 86-279 (II)

TIME: 2:00 p.m.

C.C TO:

CALL BY: S. Nabavi (NAME) OF LeRoy Callender, P.C. (212) 989-2900

CALL TO: Mr. M. Miller, Gen. Manager (NAME) OF Cantor Brothers, Inc. (COMPANY) (516) 694-6666

SUBJECT DISCUSSED: Availability of potable water from the Plant for use by the drilling subcontractor.

SUMMARY OF DISCUSSION, DECISIONS AND COMMITMENTS:

According to Mr. Miller, the plumbing system inside the plant provides potable water for domestic and sanitary purposes. This water supply would be available for drilling operations, provided the necessary hoses and hose bibs, etc. are supplied by the driller.

S. Nabavi
AUTHORIZED SIGNATURE

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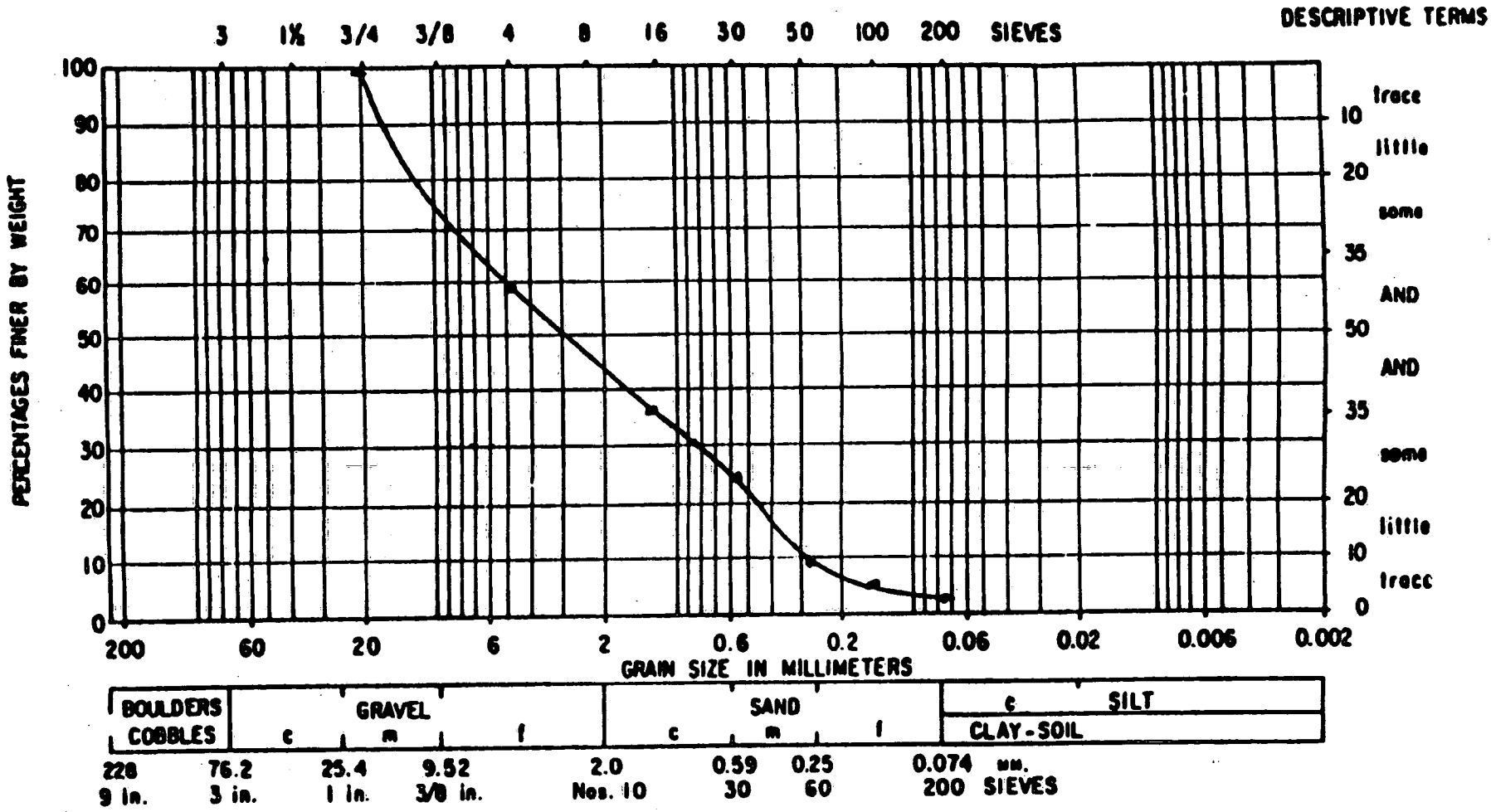
GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #1, Depth 46'

APPENDIX B

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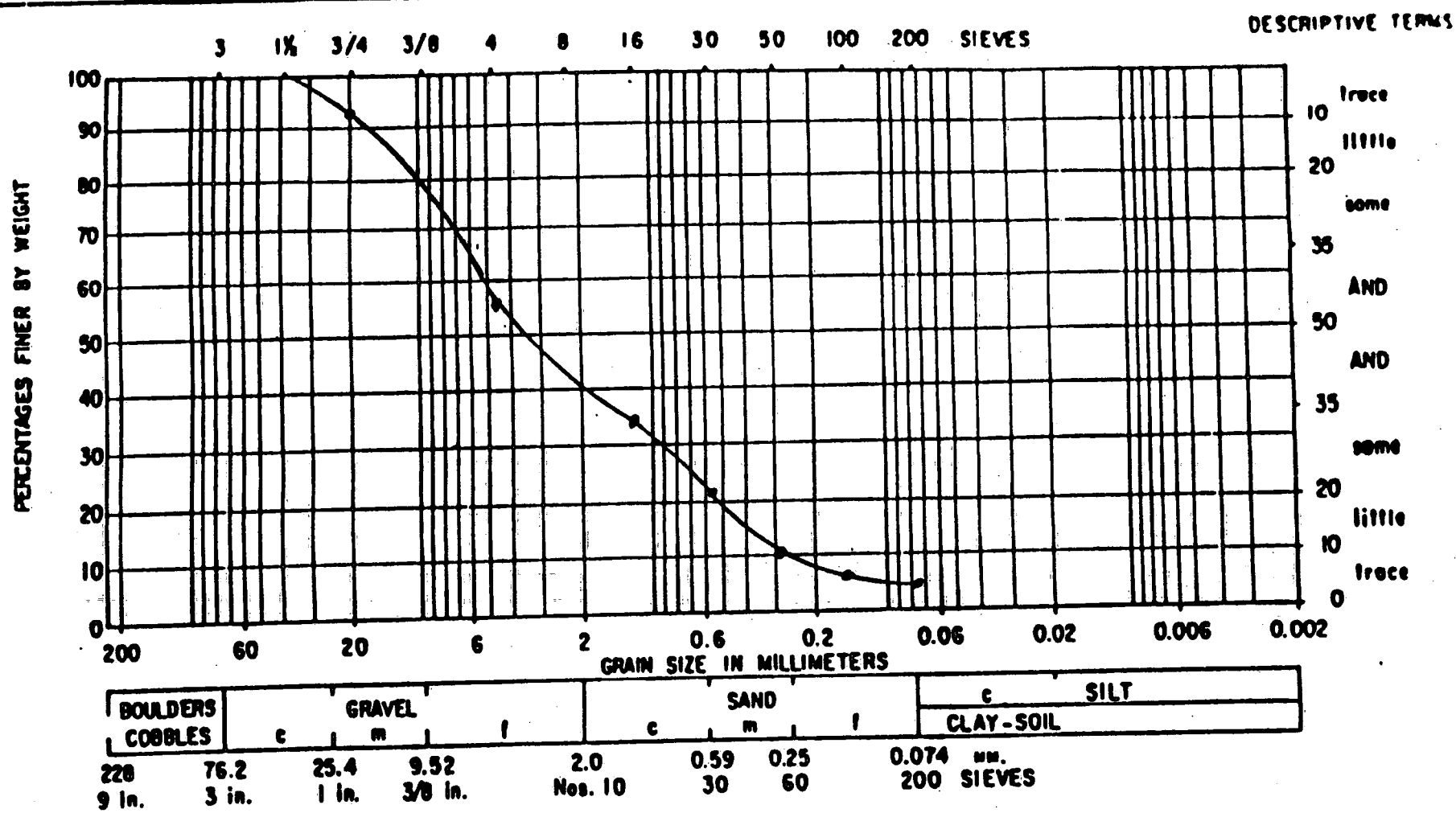
GRAIN SIZE ANALYSIS



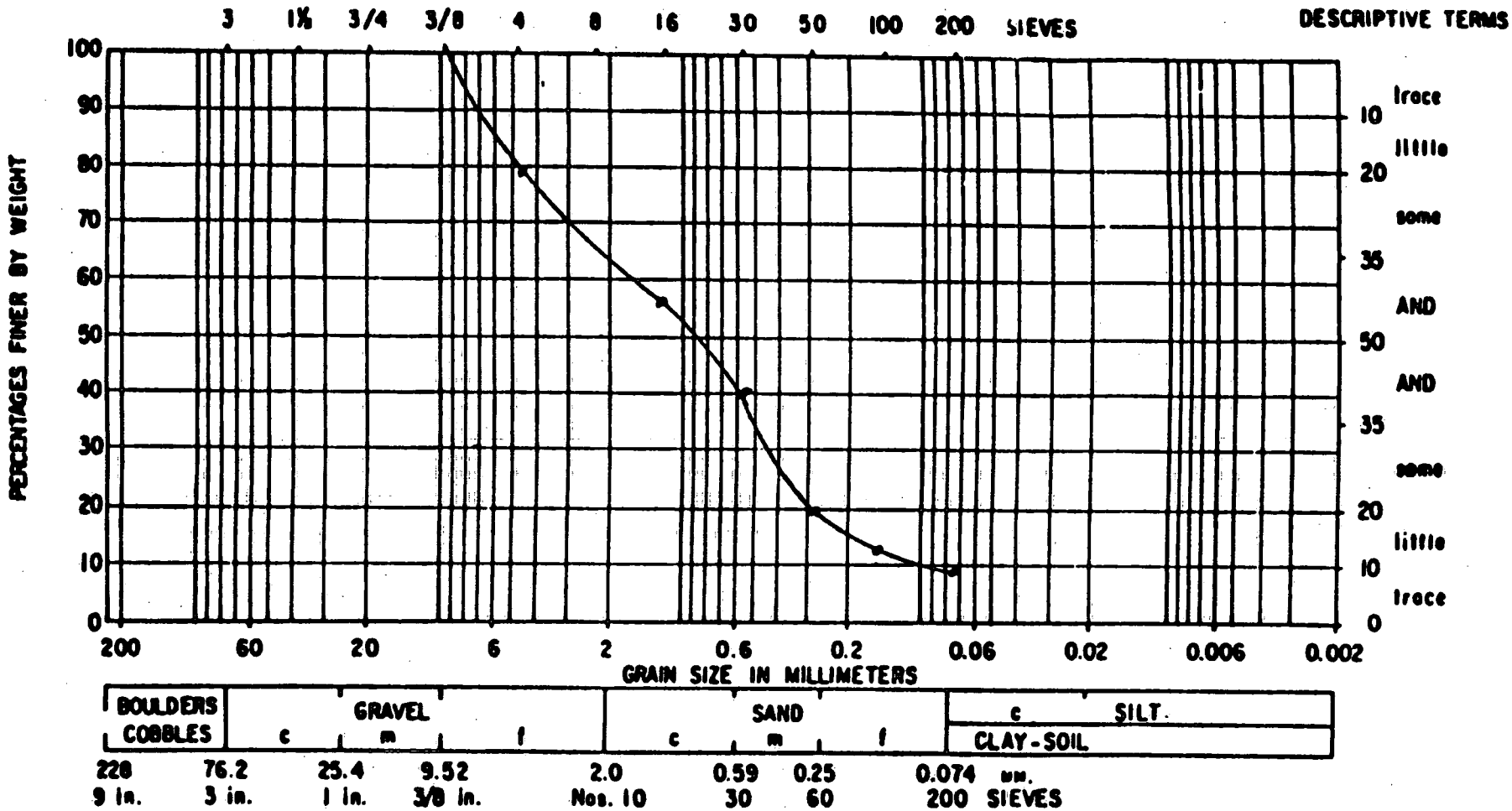
Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #4, Depth 36'

APPENDIX B

GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #3 Depth 36'

APPENDIX B

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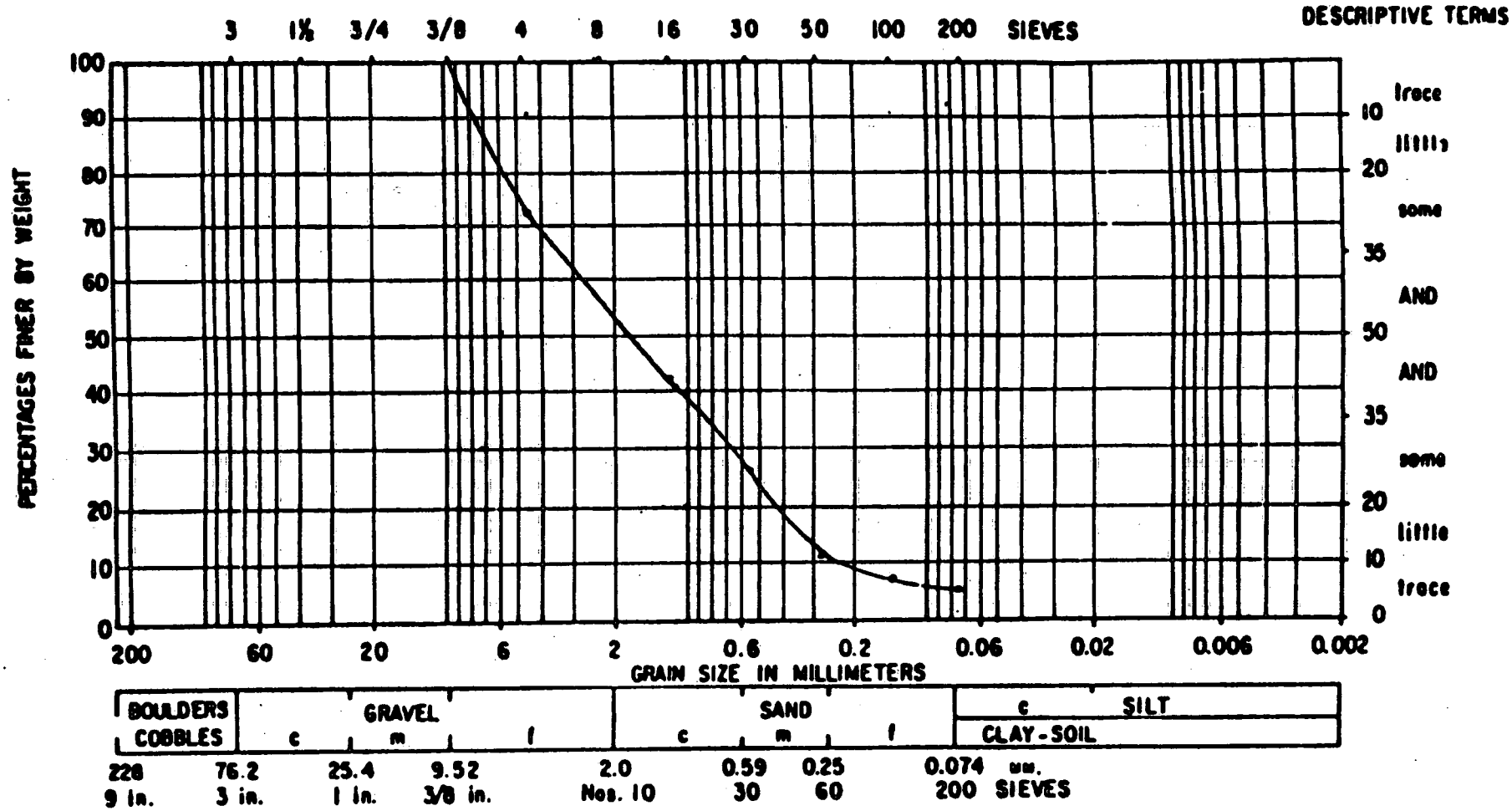
GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW # 2 Depth 46'

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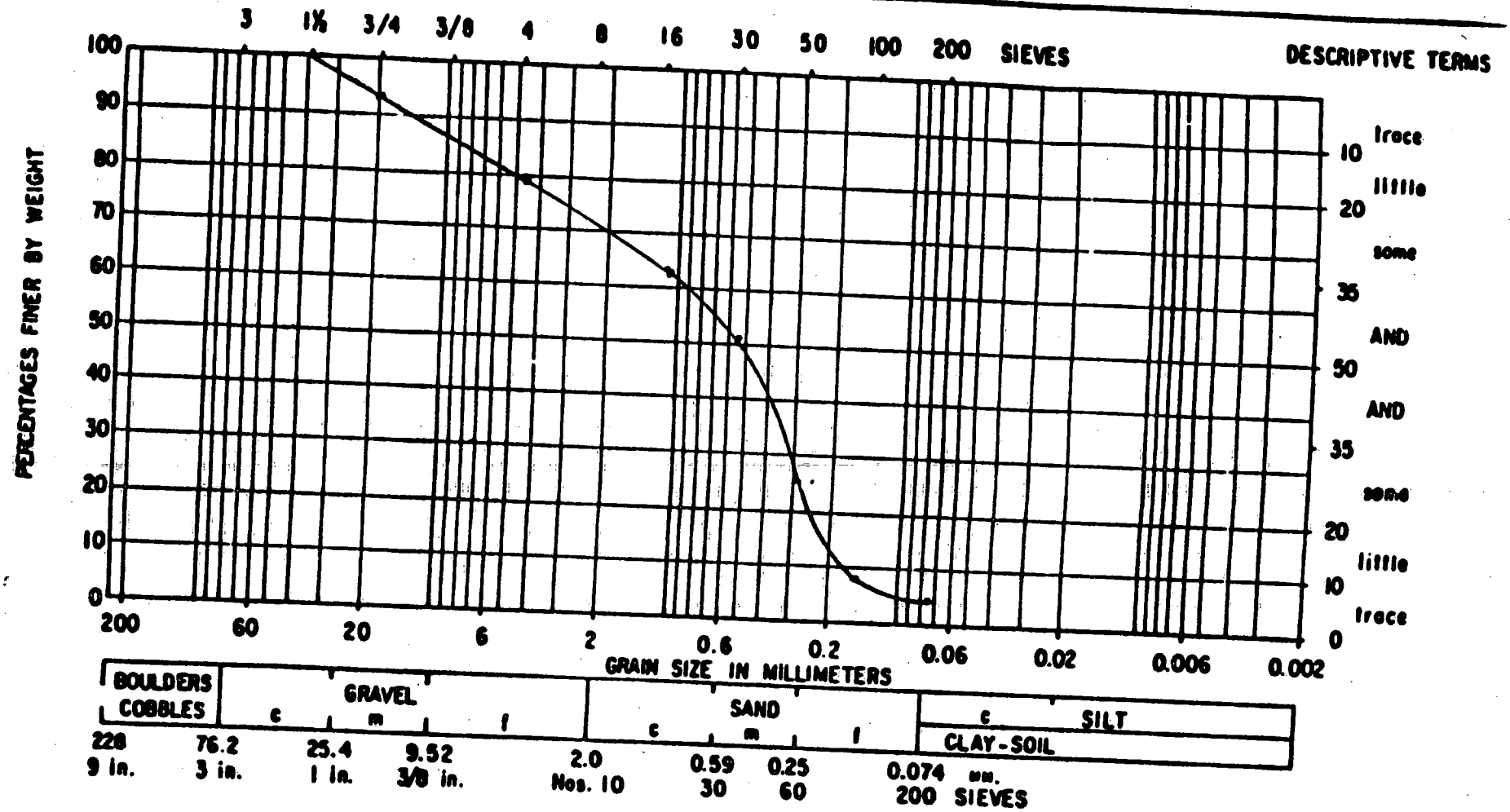
APPENDIX B

GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #2 Depth 31'

APPENDIX B

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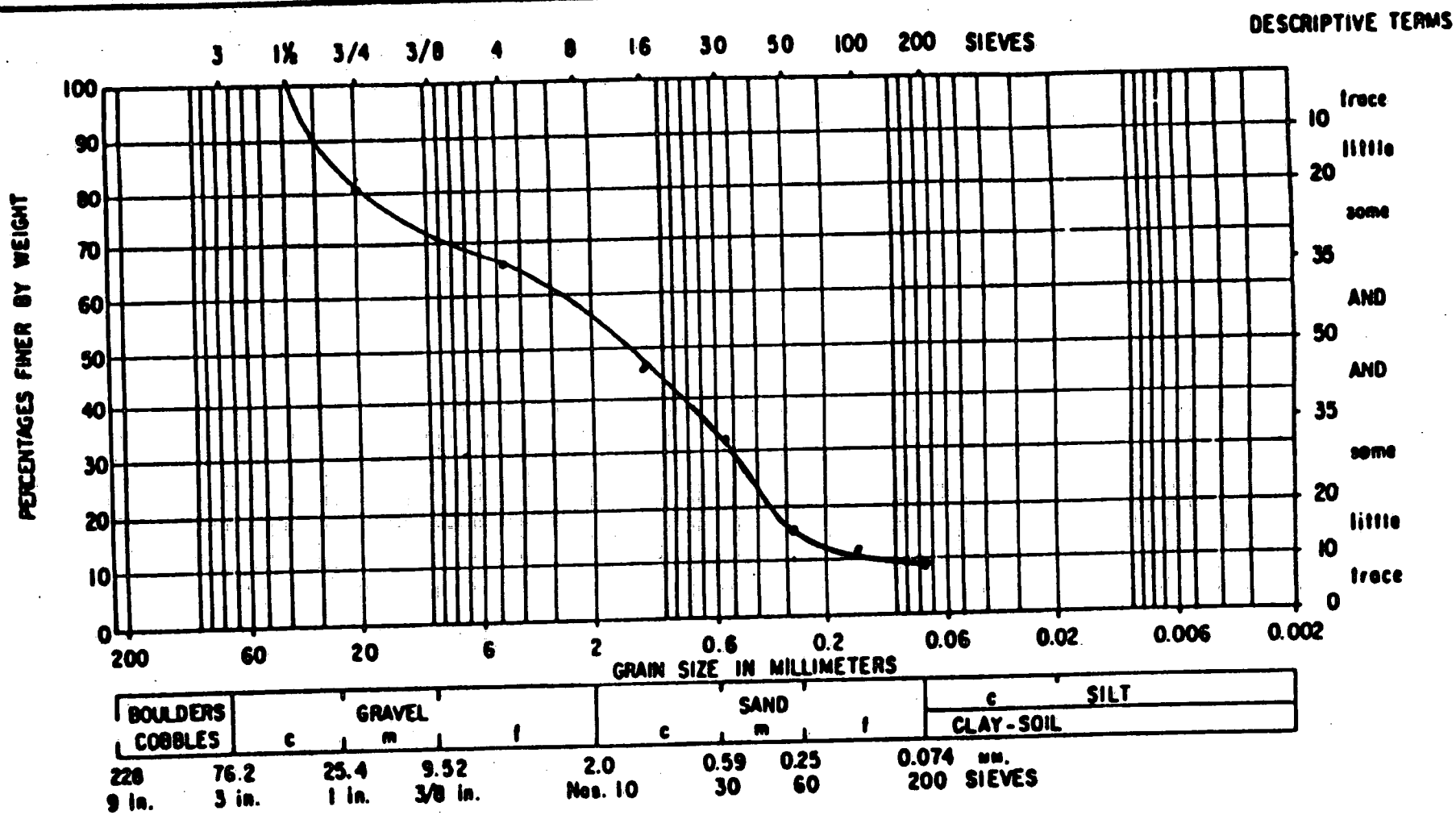
GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #2 (relocated) Depth 41'

APPENDIX E

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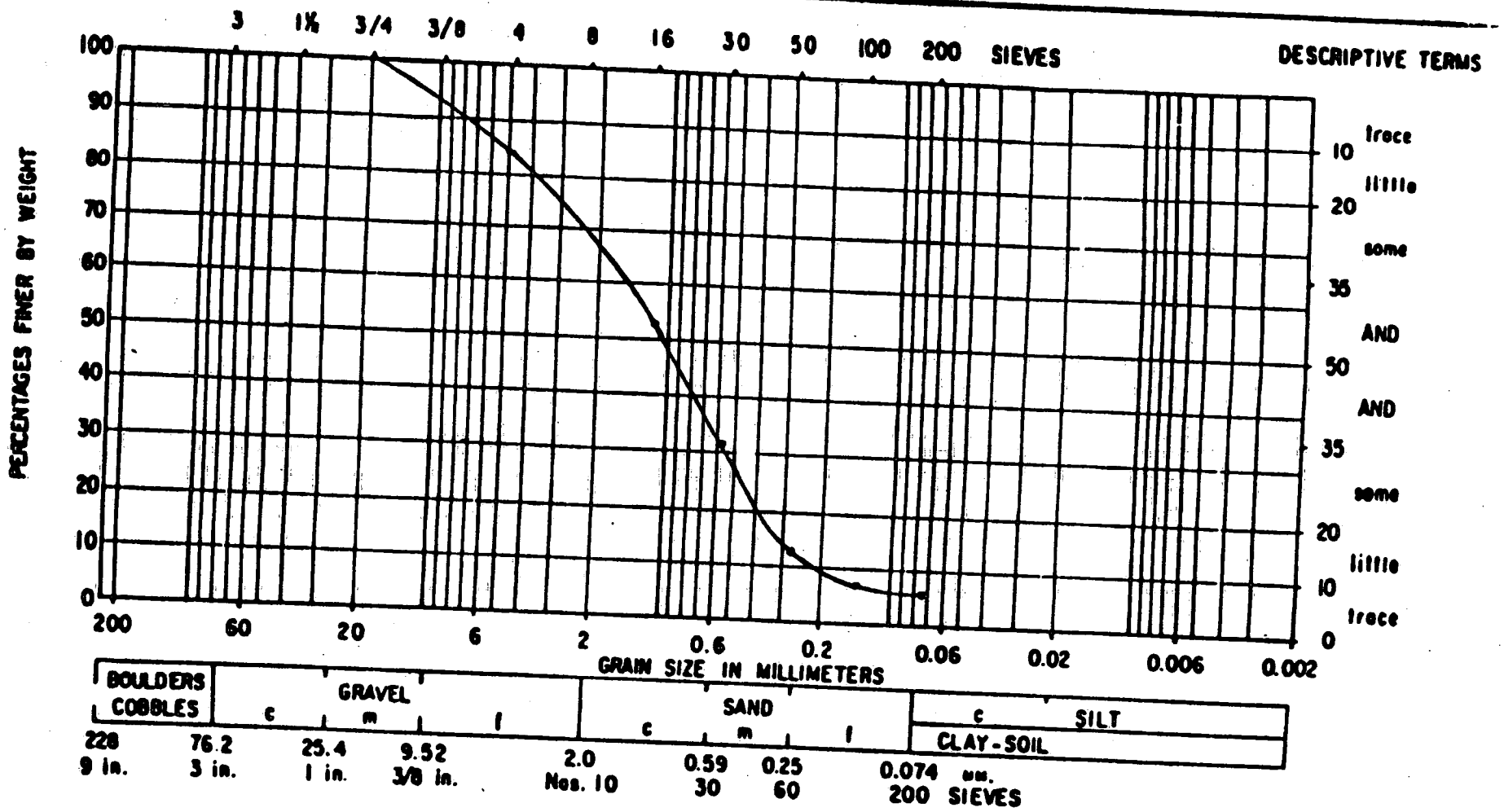
GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #1 Depth 31'

APPENDIX B

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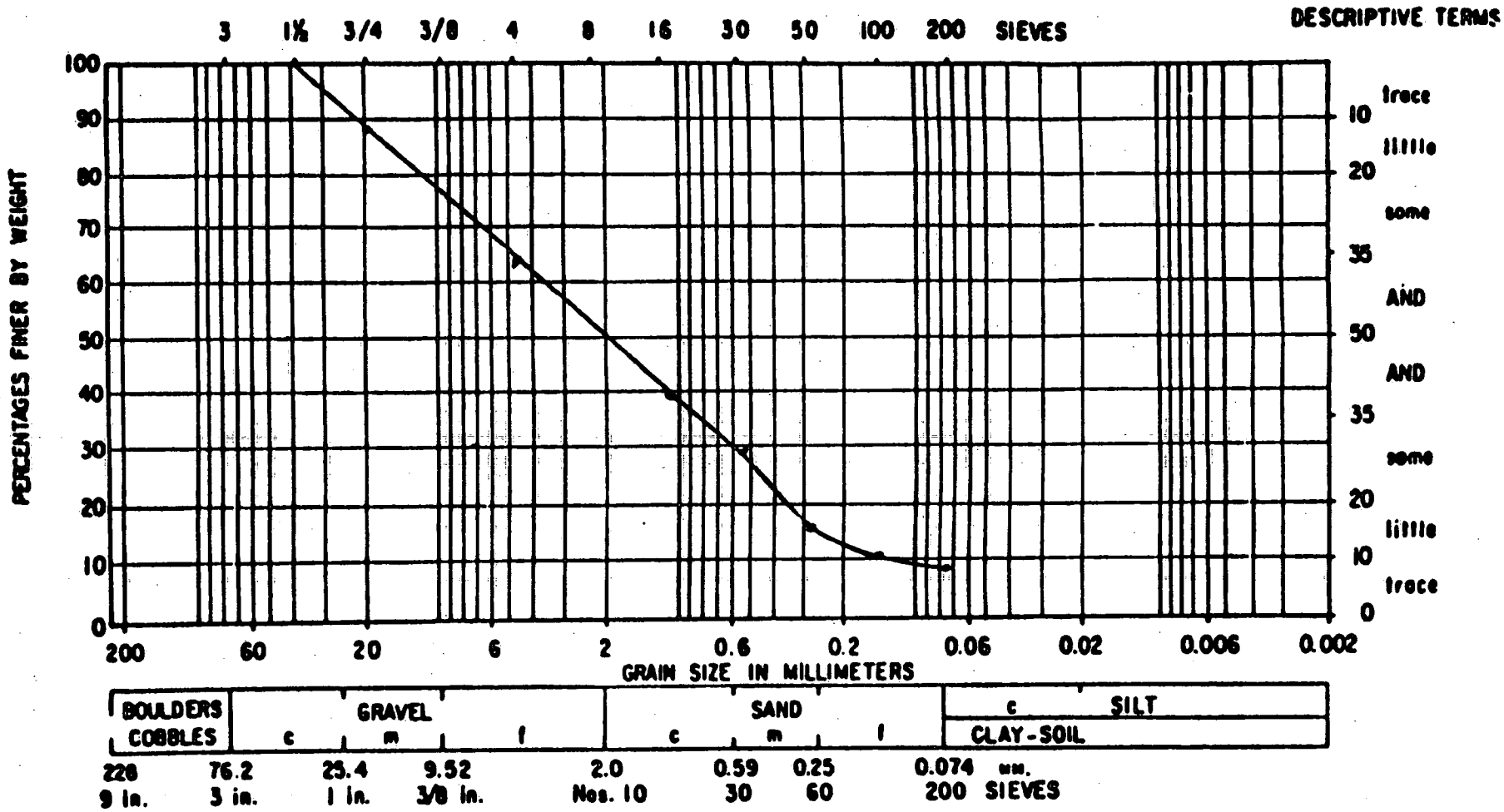
GRAIN SIZE ANALYSIS



Project: Cantor Brothers

Location: Site ID #152021 Phase II Investigation

Sample: MW #4 Depth 46'

APPENDIX B

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REFERENCE NO. 19

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

VOLUME II

Cantor Brothers, Inc.
Town of Babylon

Site No. 152021
Suffolk County

Final Report

RECEIVED
JUN 11 1980
BUREAU OF
HAZARDOUS SITE CONTROL
DIVISION OF HAZARDOUS
WASTE REMEDIATION

Prepared for:

New York State
Department of
Environmental Conservation

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

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

by:
LeRoy Callender, P.C.
Subcontractor to:
Gibbs & Hill, Inc.

LeRoy
Callender
PC

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

PHASE II INVESTIGATIONS

VOLUME II

CANTOR BROTHERS, INC.

NYS SITE I.D. NO. 152021

TOWN OF BABYLON

SUFFOLK COUNTY

NEW YORK STATE

Prepared For:

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

50 WOLF ROAD

ALBANY, NEW YORK 12233

THOMAS C. JORLING, COMMISSIONER

DIVISION OF HAZARDOUS WASTE REMEDIATION
MICHAEL J.O'TOOLE, P.E. DIRECTOR

Prepared By:
LEROY CALLENDER, P.C

Subcontractor to:
GIBBS & HILL, INC.

PROFESSIONAL ENGINEER
LeROY N. CALLENDER
No. 041607
UNIVERSITY OF THE STATE OF NEW YORK

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PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME II

APPENDIX C:

- CHEMICAL ANALYTICAL RESULTS

- FIELD LOG BOOK

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VOLUME II

CANTOR BROTHERSS, INC.

CHEMICAL ANALYTICAL RESULTS

BY

H2M LABS, INC.

FOR:
VOLATILE ORGANICS
SEMI-VOLATILE ORGANICS
INORGANICS DATA
PESTICIDES/PCB's

FOR:
GROUNDWATER, SOIL
AND SEDIMENT SAMPLES

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H2M LABS, INC.

Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076

(516) 694-3040

March 16, 1988

Mr. Sirous Nabavi, P.E.
Leroy Callender, P.C.
236 West 26th Street
New York, NY 10001

Dear Mr. Nabavi:

Please find enclosed copies of the lab data reports and case narratives for the samples submitted from the Cantor Bros. site for volatile, semi-volatile, and inorganic analysis. The sample data for the pesticide/pcb analysis will be forwarded to you upon completion.

If you have any questions regarding this material, please feel free to contact us.

Very truly yours,

H2M Labs, Inc.

Stanley Isaacson
Laboratory Manager

SI/ltc
Enclosure

RECEIVED

MAR 17 1989

LeRoy Callender P.C.

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements CLP					
		VOA GC/MS	BNA GC/MS	VOA GC	PEST PCB	METALS TCL	OTHER CYANID
MW #1	868800 / 868001	X	X		X	X	X
MW #2	868002 / 868003	X	X		X	X	X
SAMPLE #1 EPTOX	868652 / 868654					X	X
SAMPLE #2 EPTOX	868653 / 868655					X	X
MW #0	869369 / 869376				X	X	X
MW #1	869370 / 869377				X	X	X
MW #2	869371 / 869378				X	X	X
MW #3	869372 / 869379				X	X	X
MW #4	869373 / 869380				X	X	X
FIELD BLANK	869374 / 869381				X	X	X
CATCH BASIN #1	869382 / 869385				X	X	X
CATCH BASIN #2	869383 / 869386				X	X	X
CATCH BASIN #3	869384 / 869387				X	X	X
MW-A	874719	X	X				
MW #1	874720	X	X				
MW #2	874721	X	X				
MW #3	874722	X	X				
MW #4	874723	X	X				
FIELD BLANK	874724	X	X				
TRIP BLANK	874725	X	X				
SD-1	874726	X	X				
SD-2	874727	X	X				
SD-3	874728	X	X				

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DATA REPORTING QUALIFIERS

Value - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit). The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J - Indicates as estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g.: If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J).

C - This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10 ng/ul in the final extract should be confirmed by GC/MS.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

D - This flag identifies compounds whose concentrations are outside the calibration range of the analysis. If one or more compounds have a response greater than full scale, the extract must be diluted and reanalyzed, according to the specifications in Exhibit D. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I the diluted sample shall have the "DL" suffix appended to the sample number. Compounds whose concentrations are above the calibration range of the first analysis shall be flagged with "D" on the Form I from that first analysis. Compounds identified in that first analysis but below the calibration range of the second analysis shall be flagged "D" on the Form I for the second analysis. The contractor shall report the results of at most two analyses, one with the "DL" suffix, and one without the suffix.

H2M LABS, INC.

Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076

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CASE NARRATIVE FOR VOLATILE ORGANICS

CANTOR BROTHERS SITE

All Q.C. requirements for this data package were in compliance with the following exceptions: The matrix spike % RPD for toluene, sample SDI exceeded Q.C. limits.

Sample MW#3 initial analysis exceeded linearity and was reanalyzed at a secondary dilution.

The Trip Blank was analyzed using a low level soil calibration. All soil method protocols were followed.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 2-27-89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW A = Duplicate G.W. Sample

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874719
Lab File ID: PU9550
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	11	B
67-64-1	Acetone	8	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	7	
67-66-3	Chloroform	10	B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	6	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	87	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	100	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW A=Duplicate G.W. Sample

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture:not dec. - dec.
Column:(pack/cap) PACK

Lab Sample ID: 874719
Lab File ID: PU9550
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 0
CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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VOLATILE ORGANICS ANALYSIS DATA SHEET

MW #1
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874720
Lab File ID: PU9553
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	11	B
67-64-1	Acetone	7	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	45	
67-66-3	Chloroform	10	B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	3	J,B
71-55-6	1,1,1-Trichloroethane	3	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	33	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	110	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW #1
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture:not dec. - dec.
Column:(pack/cap) PACK

Lab Sample ID: 874720
Lab File ID: PU9553
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 0

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

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VOLATILE ORGANICS ANALYSIS DATA SHEET

MW #2
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874721
Lab File ID: PU9554
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	8	B
67-64-1	Acetone	5	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	1	J
540-59-0	1,2-Dichloroethene (total)	9	
67-66-3	Chloroform	13	B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	4	J,B
71-55-6	1,1,1-Trichloroethane	7	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	96	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	110	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW #2
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874721
Lab File ID: PU9554
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 6

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	Retention Time RT	EST. CONC.	Q
1	75-28-5	2-METHYL-PENPANE	03:18	96	J
2		UNKNOWN	07:30	100	J
3		UNKNOWN ALKANE	13:51	6	J
4	589-34-4	3-METHYL-HEXANE	16:45	8	J
5		UNKNOWN	12:27	29	J
6	592-27-8	2-METHYL-HEPTANE	21:48	9	J
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW #3
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture:not dec. -- dec.
Column:(pack/cap) PACK

Lab Sample ID: 874722
Lab File ID: PU9555
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	9	B
67-64-1	Acetone	5	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	2	J
540-59-0	1,2-Dichloroethene (total)	17	
67-66-3	Chloroform	2	B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	3	J,B
71-55-6	1,1,1-Trichloroethane	19	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	100	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	2000	D
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW #3
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874722
Lab File ID: PU9555
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 2

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	75-13-1	1,1,2,-TRICHLORO-1,2,2,-TRI-FLUOROETHANE	07:45	230	J
2		UNKNOWN	27:33	56	J
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
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28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW #3 DL
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 250 ul
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874722 DL
Lab File ID: PU9558
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 20

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND		
74-87-3	Chloromethane	200	U
74-83-9	Bromomethane	200	U
75-01-4	Vinyl Chloride	200	U
75-00-3	Chloroethane	200	U
75-09-2	Methylene Chloride	130	B
67-64-1	Acetone	45	J,B
75-15-0	Carbon Disulfide	100	U
75-35-4	1,1-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
540-59-0	1,2-Dichloroethene (total)	100	U
67-66-3	Chloroform	100	U
107-06-2	1,2-Dichloroethane	100	U
78-93-3	2-Butanone	140	J,B
71-55-6	1,1,1-Trichloroethane	34	J
56-23-5	Carbon Tetrachloride	100	U
108-05-4	Vinyl Acetate	200	U
75-27-4	Bromodichloromethane	100	U
78-87-5	1,2-Dichloropropane	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
79-01-6	Trichloroethene	130	
124-48-1	Dibromochloromethane	100	U
79-00-5	1,1,2-Trichloroethane	100	U
71-43-2	Benzene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
75-25-2	Bromoform	100	U
108-10-1	4-Methyl-2-Pentanone	200	U
591-78-6	2-Hexanone	200	U
127-18-4	Tetrachloroethene	3700	
79-34-5	1,1,2,2-Tetrachloroethane	100	U
108-88-3	Toluene	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	100	U
100-42-5	Styrene	100	U
1330-20-7	Xylene (total)	100	U

Date Reported: 01/31/89

*Analyte found in spiking solution

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

MW #3 DL
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Matrix: WATER
Sample vol: 250 ul
Level: LOW
% Moisture:not dec. -- dec.
Column:(pack/cap) PACK

Lab Sample ID: 874722 DL
Lab File ID: PU9558
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 20

Number TICs found: 0

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
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Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

R-22

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW #4
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874723
Lab File ID: PU9556
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	8	B
67-64-1	Acetone	4	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	10	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	18	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW #4
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874723
Lab File ID: PU9556
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 0

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
8					
9					
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11					
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Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

FIELD BLANK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874724
Lab File ID: PU9557
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J,B
67-64-1	Acetone	4	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	1	J,B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	2	J,B
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	1	J
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD BLANK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874724
Lab File ID: PU9557
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 1

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	1066-40-6	TRIMETHYL SILANOL	9:33	18	J
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
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24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

TRIP BLANK
LEFROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. -- dec.
Column: (pack/cap) PACK

Lab Sample ID: 874725
Lab File ID: PU9568
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J,B
67-64-1	Acetone	23	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	3	J,B
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
70-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

TRIP BLANK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 (mL)
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874725
Lab File ID: PU9568
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

Number TICs found: 0

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
8					
9					
10					
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27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW A MS
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID: 874719 MS
Lab File ID: PU9551
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CONCENTRATION UNITS: ug/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	17	B
67-64-1	Acetone	5	J,B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	*	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	7	
67-66-3	Chloroform	11	B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	5	J,B
71-55-6	1,1,1-Trichloroethane	7	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	*	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	*	
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	100	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	*	
108-90-7	Chlorobenzene	*	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

*Analyte found in spiking solution

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

MW A MSD
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
AQUEOUS SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture:not dec. - dec.
Column:(pack/cap) PACK

Lab Sample ID: 874719 MSD
Lab File ID: PU9552
Date Received: 12/28/88
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	20	B
67-64-1	Acetone	9	J,B
75-15-0	Carbon Disulfide	3	B
75-35-4	1,1-Dichloroethene	*	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	8	
67-66-3	Chloroform	12	B
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	6	B
71-55-6	1,1,1-Trichloroethane	6	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	*	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	*	
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	110	
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	*	
108-90-7	Chlorobenzene	*	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

*Analyte found in spiking solution

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

CASE NARRATIVE FOR BASE NEUTRAL/ACID EXTRACTABLES

All quality control and calibration requirements for this data package were met with the following exceptions:

The recovery of 2,4,6-tribromophenol was outside the allowable limits for MW-A, MW-A MS, MW-A MSD, MW#1 thru MW#4, SD-1 and the field blank.

The recovery of the spiked compound pyrene was outside the allowable limits for SD-1 MS/MSD.

Based on previous site data, SD-1, SD-2, SD-3 were extracted using the medium level protocol. SD-1 was also analyzed at a secondary dilution.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

John J. Molloy, P.E.
Laboratory Director

R-31

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW A

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719

Sample wt/vol: 1000 (g/ml) ML Lab File ID: :P5397

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

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Date Reported: 2/26/89 John J. Molloy, P.E.

R-32

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6123

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE No.

MW A

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5397

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

John J. Molloy, P.E.

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-6120

SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW A

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5397

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

Number TICs found: 5

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127184	Ethene, tetrachloro- (9CI)	6.45	22.	JJ
2.	21964498	1,13-Tetradecadiene (8CI9CI)	29.51	48.	JJB
3.		Unknown	32.45	8.	JJ
4.		Unknown	35.30	20.	JJ
5.		Unknown	36.77	16.	JJB
6.					
7.					
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29.					
30.					

Date Reported: 2/26/89

John J. Molloy P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-8122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW #1

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874720

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P9400

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

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John J. Mulloy, PE

Date Reported: 2/26/89

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW #1

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874720

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5400

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	11.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

John J. [illegible], P.E.
Laboratory Director

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW #1

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874720

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5400

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

Number TICs found: -

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127184	Ethene, tetrachloro- (9CI)	6.43	12.	J
2.	21964498	1,13-Tetradecadiene (8CI9CI)	29.69	24.	JE
3.	462953	Ethane, 1,1'-(methylenebis(o	32.48	10.	J
4.		Unknown	32.58	14.	J
5.		Unknown Alcohol	35.32	46.	J
6.		Unknown	37.80	20.	J
7.		Unknown	40.62	74.	J
8.					
9.					
10.					
11.					
12.					
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27.					
28.					20
29.					
30.					

Date Reported: 2/26/89

John L. Malloy, P.E.
Laboratory Director

R-37

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-1220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW #2

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874721

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5401

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	50.	U
65-85-0	Benzoic acid	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
[illegible]	2,6-Dinitrotoluene	10.	U

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW #2

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874721

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5401

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	14.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

[signature] Laboratory Director

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-8120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW #2

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874721

Sample wt/vol: 1000 (g/mL) ML Lab File ID: :P5401

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

Number TICs found: 4

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127184	Ethene, tetrachloro- (9CI)	6.43	16.	J
2.	2190-4-98	1,13-Tetradecadiene (8CI,9CI)	29.55	100.	JB
3.		Unknown	35.34	28.	J
4.		Unknown	37.87	14.	J
5.					
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25.					
26.					
27.					
28.		Date Reported: 2/26/89			
29.					
30.					

John J. Kilroy, P.E.
Laboratory Director

0.40

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW #3

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874722

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5402

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

John J. Molloy, P.E.

Date Reported: 2/26/89

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-1286

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW #3

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874722

Sample wt/vol: 1000 (g/mL) ML. Lab File ID: P5402

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	11.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 2/26/89

John L. Molloy, P.E.
Laboratory Director

R-42

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MW #3

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW #

Matrix: (soil/water) WATER Lab Sample ID: 874722

Sample wt/vol: 1000 (g/mL) ML Lab File ID: :P5402

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127184	Ethene, tetrachloro- (9CI)	6.46	500.	IJ
2.		Unknown	12.65	12.	IJ
3.	21964498	1,13-Tetradecadiene (8CI,9CI)	29.52	140.	IJB
4.		Unknown	32.48	14.	IJ
5.		Unknown Alcohol	32.58	12.	IJ
6.		Unknown Alcohol	35.33	50.	IJ
7.		Unknown	36.76	22.	IJB
8.		Unknown	37.84	42.	IJ
9.		Unknown	40.62	52.	IJ
10.					
11.					
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28.					
29.		Date Reported: 2/26/89			
30.					

John J. Molloy, P.E.
Laboratory Director

R-43

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX:(516)694-8120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW #4

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW 4

Matrix: (soil/water) WATER Lab Sample ID: 874723

Sample wt/vol: 1000 (g/mL ML Lab File ID: :P5403

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

John J. Melly, P.E.

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW #4

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW 4

Matrix: (soil/water) WATER Lab Sample ID: 874723

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5403

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	8.	JB
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

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(1) - Cannot be separated from Diphenylamine

Date Reported: 1/26/89

Laboratory Director

R-45

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 1174
(516) 694-3040 FAX (516) 694-8120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW 4A

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW 4

Matrix: (soil/water) WATER Lab Sample ID: 874723

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5403

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

Number TICs found: 4

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127184	Ethene, tetrachloro- (9CI)	6.44	22.	J
2.	21964498	1,13-Tetradecadiene (8CI,9CI)	29.62	54.	JB
3.		Unknown	35.35	12.	J
4.		Unknown	36.76	12.	JB
5.					
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28.		Date Reported: 2/26/89			
29.					
30.					

John J. Malloy, P.E.

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX:(516)694-8120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FIELD BLANK

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874724

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5404

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

John J. McRae, P.E.

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R-47

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FIELD BLANK

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874724

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5404

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	20.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10	U

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FIELD BLANK

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874724

Sample wt/vol: 1000 (g/mL) ML Lab File ID: :P5404

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	21964498	1,13-Tetradecadiene (8CI,9CI)	29.53	130.	JB
2.		Unknown	36.74	20.	JB
3.					
4.					
5.					
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28.		Date Reported: 2/26/89			
29.					
30.					

John J. M[illegible], P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW A MS

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719 MS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5398

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sep/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
111-44-4	bis(2-Chloroethyl)Ether	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

FORM I SV-1 1/87 Rev.

John J. Mulloy, P.E.

Date Reported: 2/26/89

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW A MS

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719 MS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5398

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
51-28-5	2,4-Dinitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	6.	JB
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

Date Reported: 2/26/89

John J. Molloy, P.E.

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-8120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW A MSD

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719 MSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: >P5399

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
111-44-4	bis(2-Chloroethyl)Ether	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

FORM I SV-1 1/87 Rev.

Date Reported: 2/26/89

John J. Molloy, P.E.

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4122

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW A MSD

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: 874719 MSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5399

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
51-28-5	2,4-Dinitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	17.	B
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/8 Rev.

John J. Molloy, P.E.
Laboratory Dir.

Date Reported: 2/26/89

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

DATA REPORTING QUALIFIERS

Value - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit). The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J - Indicates as estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g.: If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J).

C - This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10 ng/ul in the final extract should be confirmed by GC/MS.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

D - This flag identifies compounds whose concentrations are outside the calibration range of the analysis. If one or more compounds have a response greater than full scale, the extract must be diluted and reanalyzed, according to the specifications in Exhibit D. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I the diluted sample shall have the "DL" suffix appended to the sample number. Compounds whose concentrations are <u>above</u> the calibration range of the first analysis shall be flagged with "D" on the Form I from that first analysis. Compounds identified in that first analysis but <u>below</u> the calibration range of the second analysis shall be flagged "D" on the Form I for the second analysis. The contractor shall report the results of at most two analyses, one with the "DL" suffix, and one without the suffix.

H2M LABS, INC.
Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076
(516) 694-3040

QUALIFIERS FOR METALS ANALYSIS

E - The reported value is estimated because of the presence of interference. An explanatory note is included in the case narrative.

M - Duplicate injection precision not met.

N - Matrix spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

+ - Correlation coeffiecient for the MSA is less than 0.995.

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

Concentration Qualifiers.

B - Entered if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).

U - Entered if the analyte was analyzed for but not detected, less than the IDL.

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

CASE NARRATIVE FOR PESTICIDES/PCBS

System Performace Checks

DBC retention time shifts could not be determined for samples, because DBC was masked by an interference.

4,4'-DDT and Endrin degradation could not be calculated from the orginal integration of the HP5290 integrator. The area reject had been set to 5000 area, which was not low enough to detect 20% breakdown i.e. 10% per breakdown product. The raw data which were stored on an HP1000 computer were reintegrated and the HP1000 data used to compute the percentage of breakdown products. Problems occurred with the computer data file of the first Evaluation Mix B, therefore, the breakdown for the beginning of the sequence was calculated from the Evaluation Mix C instead. Also, for the last Evaluation Mix in the sequence, Evaluation Mix C had accidentally been loaded instead of Mix B.

QC Data

Recoveries for the surrogate DBC wre calculated from the confirmatory column, because of a coeluting interference on the primary column. The DBC was diluted out and could not be quantified for Catch Basin #1 and its spike duplicates.

The concentration of the solution used for spiking of the water matrix spike duplicates was too high by a factor of ten (10). Recoveries for Lindane was under the advisory QC limit and RPD was outside the limit for Heptachlor and 4,4'-DDT.

For the soil spike duplicates the Aldrin recoveries were too high on both extracts due to the coelution on an interference. (Recoveries calculated from the confirmatory column do meet QC limits.)

Sample Analyses

Only half of the extract volume of the water samples was subject to alumina cleanup resulting in a dilution factor of two.

Based on the appearance of the soil samples only 15g were extracted, but the total extract was cleaned up with GPC. In spite of the cleanup the extracts were highly colored and it was found necessary to dilute the extracts, 1:5 and 1:10 respectively for Catch Basin #1.

I certify that this data package is in compliance with the terms and conditions of the contract, both tecnically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verfied by the following signature.

Date Reported: 3/20/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC. Contract: _____

MW#0
Leroy Callender
Cantor Bros. Site

Matrix: WATER
Sample Vol: 1000 ml
Level: LOW
% Moisture: not dec. ___ dec. ___
Extraction: SEPF
GPC Cleanup: N pH: ____

Lab Sample ID: 869369
Lab File ID: 108
Date Received: 10-6-88
Date Extracted: 10-8-88
Date Analyzed: 10-21-88/10-24-88
Dilution Factor: 2

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
76-44-8	Heptachlor	0.10	U
309-00-2	Aldrin	0.10	U
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	0.20	U
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.20	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	2.0	U
11096-82-5	Aroclor-1260	2.0	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC. Contract: _____

MW#1
Leroy Callender
Cantor Bros. Site

Matrix: WATER
Sample Vol: 1000 ml
Level: LOW
% Moisture: not dec. ___ dec. ___
Extraction: SEPF
GPC Cleanup: N pH: ___

Lab Sample ID: 869370
Lab File ID: 109
Date Received: 10-6-88
Date Extracted: 10-8-88
Date Analyzed: 10-21-88/10-24-88
Dilution Factor: 2

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
76-44-8	Heptachlor	0.10	U
309-00-2	Aldrin	0.10	U
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	0.20	U
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.20	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	2.0	U
11096-82-5	Aroclor-1260	2.0	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC. Contract: _____

MW#2
Leroy Callender
Cantor Bros. Site

Matrix: WATER
Sample Vol: 1000 ml
Level: LOW
% Moisture: not dec. ___ dec. ___
Extraction: SEPF
GPC Cleanup: N pH: ___

Lab Sample ID: 869371
Lab File ID: 110
Date Received: 10-6-88
Date Extracted: 10-8-88
Date Analyzed: 10-21-88/10-24-88
Dilution Factor: 2

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
76-44-8	Heptachlor	0.10	U
309-00-2	Aldrin	0.10	U
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	0.20	U
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.20	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	2.0	U
11096-82-5	Aroclor-1260	2.0	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC. Contract: _____

MW#3
Leroy Callender
Cantor Bros. Site

Matrix: WATER
Sample Vol: 1000 ml
Level: LOW
% Moisture: not dec. ___ dec. ___
Extraction: SEPF
GPC Cleanup: N pH: ___

Lab Sample ID: 869372
Lab File ID: 111
Date Received: 10-6-88
Date Extracted: 10-8-88
Date Analyzed: 10-21-88/10-24-88
Dilution Factor: 2

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
76-44-8	Heptachlor	0.10	U
309-00-2	Aldrin	0.10	U
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	0.20	U
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.20	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	2.0	U
11096-82-5	Aroclor-1260	2.0	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

MW#4
Leroy Callender
Cantor Bros. Site

Lab Name: H2M LABS, INC. Contract: _____

Matrix: WATER
Sample Vol: 1000 ml
Level: LOW
% Moisture: not dec. ___ dec. ___
Extraction: SEPF
GPC Cleanup: N pH: ___

Lab Sample ID: 869373
Lab File ID: 112
Date Received: 10-6-88
Date Extracted: 10-8-88
Date Analyzed: 10-21-88/10-24-88
Dilution Factor: 2

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
76-44-8	Heptachlor	0.10	U
309-00-2	Aldrin	0.10	U
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	0.20	U
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.20	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	2.0	U
11096-82-5	Aroclor-1260	2.0	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Field Blank
Leroy Callender
Cantor Bros. Site

Lab Name: H2M LABS, INC. Contract: _____

Matrix: WATER
Sample Vol: 1000 ml
Level: LOW
% Moisture: not dec. ___ dec. ___
Extraction: SEPF
GPC Cleanup: N pH: ___

Lab Sample ID: 869374
Lab File ID: 114
Date Received: 10-6-88
Date Extracted: 10-8-88
Date Analyzed: 10-21-88/10-24-88
Dilution Factor: 2

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/l	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC (Lindane)	0.10	U
76-44-8	Heptachlor	0.10	U
309-00-2	Aldrin	0.10	U
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.20	U
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	0.20	U
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.20	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	0.10	U
5103-74-2	gamma-Chlordane	0.10	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor-1016	0.10	U
11104-28-2	Aroclor-1221	0.10	U
11141-16-5	Aroclor-1232	0.10	U
53469-21-9	Aroclor-1242	0.10	U
12672-29-6	Aroclor-1248	0.10	U
11097-69-1	Aroclor-1254	2.0	U
11096-82-5	Aroclor-1260	2.0	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
Environmental and Industrial Analytical Laboratory
575 Broad Hollow Road, Melville, NY 11747-5076
(516) 694-3040

QUALIFIERS FOR METALS ANALYSIS

E - The reported value is estimated because of the presence of interference. An explanatory note included in case narrative.

M - Duplicate injection precision not met.

N - Matrix spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

+ - Correlation coefficient for the MSA is less than 0.995.

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

Concentration Qualifiers.

B - entered if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL).

U - entered if the analyte was analyzed for but not detected, less than the IDL.

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

CASE NARRATIVE FOR METALS

ICP analysis was performed on ARL's 3410 ICP. Furnace analysis was performed on Varian GTA-96 graphite furnace. Mercury was analyzed using the manual cold vapor method. Problems encountered are as follows:

Matrix spike recoveries for sample MW2 869378 were greater than 125% for Lead analysis. All associated Lead results reported flagged with "N". Arsenic analysis required dilution on the initial sample therefore the matrix spike was incalculable. Arsenic results reported unflagged. No spike recoveries were calculated for Cobalt and Vanadium due to an absence of these elements in the flame spiking solution. Cobalt and Vanadium results reported flagged with "N".

Matrix spike recoveries for sample Catch Basin 1 869385 were less than 75% for Thallium analysis. All associated Thallium results reported flagged with "N". Zinc recoveries were greater than 125%, all associated Zinc results reported with "N". Arsenic, Selenium and Lead analysis of the initial sample required dilution therefore the spike recoveries were not calculated. Results for these elements were reported unflagged.

Duplicate analysis of sample MW2 869378 was out of the required control limits for Aluminum and Iron. All associated results reported flagged with "*".

Duplicate analysis of sample Catch Basin 1 869385 was out of the required control limits for the following parameters: Aluminum, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Vanadium and Zinc. All associated results reported flagged with "*".

ICP serial dilution analysis of Chromium for sample Catch Basin 2 869387 was out of the required control limit of ten percent difference. All soil Chromium results reported flagged with "E" suspecting interferences.

Furnace MSA analysis of Lead was required for samples: MW0 869376, MW2 869378 and MW3 869379. Results reported with the appropriate flag as required.

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Some samples have increased detection limits, this is due to sample dilution. Results were multiplied by the corresponding dilution factors and reported.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 10/12/88

John J. Molloy, P.E.
Laboratory Director

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CASE NARRATIVE FOR INORGANICS

Cyanide analysis was performed via manual distillation and spectrophotometric determination. The following problems were encountered:

Matrix spike recovery for sample SD #2, 869386, was less than 75%. Results for SD #1, 869385, SD #2, 869386 and SD #3, 869387, were therefore reported flagged with "N".

Soil sample detection limits vary due to percent total solids.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Date Reported: 11/03/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW #0

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859376

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	46000		*	P
7440-36-0	Antimony	100			P
7440-38-2	Arsenic	50	U		F
7440-39-3	Barium	510			P
7440-41-7	Beryllium	6			P
7440-43-9	Cadmium	2	U		A
7440-70-2	Calcium	15700			P
7440-47-3	Chromium	85			P
7440-48-4	Cobalt	80		N	P
7440-50-8	Copper	94			P
7439-89-6	Iron	74000		*	P
7439-92-1	Lead	75		+N	F
7439-95-4	Magnesium	11000			P
7439-96-5	Manganese	5300			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	69			A
7440-09-7	Potassium	8200			A
7782-49-2	Selenium	50	U		F
7440-22-4	Silver	11			P
7440-23-5	Sodium	30000			P
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium	95		N	P
7440-66-6	Zinc	170			P
	Cyanide	10	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW #1

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859377

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7950		*	P
7440-36-0	Antimony	46	B		P
7440-38-2	Arsenic	5	U	W	F
7440-39-3	Barium	120			P
7440-41-7	Beryllium	1	B		P
7440-43-9	Cadmium	2	U		A
7440-70-2	Calcium	12040			P
7440-47-3	Chromium	8	B		P
7440-48-4	Cobalt	16	B	N	P
7440-50-8	Copper	14	B		P
7439-89-6	Iron	14700		*	P
7439-92-1	Lead	13		MN	F
7439-95-4	Magnesium	3900			P
7439-96-5	Manganese	810			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	5	U		A
7440-09-7	Potassium	3900	B		A
7782-49-2	Selenium	50	U	W	F
7440-22-4	Silver	8	B		P
7440-23-5	Sodium	21300			P
7440-28-0	Thallium	5	U	W	F
7440-62-2	Vanadium	15	B	N	P
7440-66-6	Zinc	45			P
	Cyanide	10	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.

575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW #2

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859378

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	35200		*	P
7440-36-0	Antimony	100			P
7440-38-2	Arsenic	50	U		F
7440-39-3	Barium	420			P
7440-41-7	Beryllium	5	B		P
7440-43-9	Cadmium	2	U		A
7440-70-2	Calcium	15100			P
7440-47-3	Chromium	71			P
7440-48-4	Cobalt	66		N	P
7440-50-8	Copper	67			P
7439-89-6	Iron	55800		*	P
7439-92-1	Lead	59		SN	F
7439-95-4	Magnesium	8800			P
7439-96-5	Manganese	4200			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	44			A
7440-09-7	Potassium	7500			A
7782-49-2	Selenium	50	U		F
7440-22-4	Silver	17			P
7440-23-5	Sodium	28800			P
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium	78		N	P
7440-66-6	Zinc	130			P
	Cyanide	10	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW #3

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859379

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16600		*	P
7440-36-0	Antimony	88			P
7440-38-2	Arsenic	50	U		F
7440-39-3	Barium	210			P
7440-41-7	Beryllium	2	B		P
7440-43-9	Cadmium	2	U		A
7440-70-2	Calcium	89500			P
7440-47-3	Chromium	26			P
7440-48-4	Cobalt	23	B	N	P
7440-50-8	Copper	26			P
7439-89-6	Iron	19100		*	P
7439-92-1	Lead	25		SN	F
7439-95-4	Magnesium	7900			P
7439-96-5	Manganese	1700			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	14			A
7440-09-7	Potassium	6200			R
7782-49-2	Selenium	50	U	W	F
7440-22-4	Silver	9	B		P
7440-23-5	Sodium	21000			P
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium	34	B	N	P
7440-66-6	Zinc	72			P
	Cyanide	10	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW #4

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859380

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	42500		*	P
7440-36-0	Antimony	98			P
7440-38-2	Arsenic	50	U		F
7440-39-3	Barium	220			P
7440-41-7	Beryllium	5	B		P
7440-43-9	Cadmium	2	U		A
7440-70-2	Calcium	7900			P
7440-47-3	Chromium	67			P
7440-48-4	Cobalt	54		N	P
7440-50-8	Copper	65			P
7439-89-6	Iron	75200		*	P
7439-92-1	Lead	54		N	F
7439-95-4	Magnesium	7300			P
7439-96-5	Manganese	1880			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	29			A
7440-09-7	Potassium	5000			A
7782-49-2	Selenium	50	U		F
7440-22-4	Silver	5	B		P
7440-23-5	Sodium	9100			P
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium	99		N	P
7440-66-6	Zinc	170			P
	Cyanide	20			C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.

575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

FIELD BLANK

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): WATER Lab Sample ID: 859381

Level (low/med): LOW Date Received: 10/06/88

% Solids : -

Concentration Units (ug/L or mg/kg dry weight) ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200	U	*	P
7440-36-0	Antimony	35	B		P
7440-38-2	Arsenic	5	U		F
7440-39-3	Barium	1	B		P
7440-41-7	Beryllium	0	U		P
7440-43-9	Cadmium	2	U		A
7440-70-2	Calcium	6	U		P
7440-47-3	Chromium	3	U		P
7440-48-4	Cobalt	4	B	N	P
7440-50-8	Copper	3	B		P
7439-89-6	Iron	2	B	*	P
7439-92-1	Lead	5	U	WN	F
7439-95-4	Magnesium	56	B		P
7439-96-5	Manganese	0	U		P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	5	U		A
7440-09-7	Potassium	200	U		A
7782-49-2	Selenium	5	U		F
7440-22-4	Silver	10	B		P
7440-23-5	Sodium	18	U		P
7440-28-0	Thallium	5	U		F
7440-62-2	Vanadium	6	B	N	P
7440-66-6	Zinc	1	U		P
	Cyanide	10	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M Labs, Inc.
Lab Code:--- Case No.----- SAS No.: ------- SDG No.:---------
Matrix: Soil
Sample Vol: 4.03 g
Level: Low
% Moisture: 0
Column: Pack

Lab Sample ID: 868000 MW#1 (36 Ft)
Lab File ID: PU9126
Date Received: 9/16/88
Date Analyzed: 9/20/88
Dilution Factor: 1

Concentration Unit: ug/kg

C.A.S. Number	Compound		
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	9	
67-64-1	Acetone	4	J
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-02-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	12	
71-55-6	1,1,1-Trichloroethane	21	
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-02-6	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-01-5	trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2,Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

John J. Molloy, P.E.
Laboratory Director

Date Reported: 10/14/88

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M Labs, Inc. Lab Sample ID: 868002 MW#2 (36 Ft)
Lab Code:--- Case No.----- SAS No.: ------- SDG No.:---------
Matrix: Soil Lab File ID: PU9127
Sample Vol: 4.10 g Date Received: 9/16/88
Level: Low Date Analyzed: 9/20/88
% Moisture: 3 Dilution Factor: 1
Column: Pack

C.A.S. Number	Compound	Concentration	Unit: ug/kg
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	9	
67-64-1	Acetone	4	J
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-02-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	24	
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-02-6	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-01-5	trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2,Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

Date Reported: 10/14/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M Labs, Inc.
Matrix: Soil
Sample Wt: 4.03 g
Level: Low
% Moisture:
Column: Pack

SDG No.: MW#1
Lab SampleID: 868000
Lab File ID: PU9126
Date Received: 9/16/88
Date Analyzed: 9/20/88
Dilution Factor: 1

Number TICs found: 0

Concentration Units: ug/kg

Compound Name	RT	Estimated Conc.	Q
No unknowns found			

Date Reported: 10/14/88

John J. Molloy, P.E.
Laboratory Director

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M Labs, Inc.
Matrix: Soil
Sample Wt: 4:10 g
Level: Low
% Moisture: not dec. 3
Column: Pack

SDG No.: MW#2
Lab SampleID: 868002
Lab File ID: PU9126
Date Received: 9/16/88
Date Analyzed: 9/20/88
Dilution Factor: 1

Number TICs found: 1
Concentration Units: ug/kg

	Compound Name	RT	Estimated Conc.	Q
625274	2-Methyl-2-pentene	7:30	12	JB

Date Reported: 10/14/88

John J. Molloy, P.E.
Laboratory Director

R-76.

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

Semi-Volatile Organics

Lab Name: H2M Labs, Inc.
Lab Code: ---- Case No.:----
Matrix: Soil
Sample Wt: 30.0295 g
Level: Low
% Moisure: not dec. 0
Extraction: Sonc.
GPC Cleanup: No

Contract:
Sas No.:------ SDG No.: MW#1 (36 Ft)
Lab Sample ID: 868000
Lab File ID: >P4845
Date Received: 9/16/88
Date Extracted: 9/20/88
Date Analyzed: 10/5/88
Dilution Factor: 1

		Concentration Unit ug/kg	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic acid	1600	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

Date Reported: 10/13/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

Lab Name: H2M Labs, Inc.
Lab Code:-----Case No.:---- Sas No.:----- SDG No.: MW#1 (36 Ft)
Matrix: Soil
Sample Wt: 30.0295 g
Level: Low
% Moisture: not dec. 0
Extraction: Sonc.
GPC Cleanup: No

Lab Sample ID: 868000
Lab File ID: >P4845
Date Received: 9/16/88
Date Extracted: 9/20/88
Date Analyzed: 10/5/88
Dilution Factor: 1

CAS NO.	Compound	Concentration Unit ug/kg	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	550	B
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenz(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 10/13/88

John J. Molloy, P.E.
Laboratory Director

R-78

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M Labs, Inc.
Matrix: Soil
Sample Wt: 30.0295 g
Level: Low
% Moisture: 0
Extraction: Sonc.
GPC Cleanup: No

Lab SampleID: 868000
Lab File ID:)P4845
Date Received: 9/16/88
Date Extracted: 9/20/88
Date Analyzed: 10/5/88
Dilution Factor: 1

Number TICs found: 2

Concentration Units: ug/kg

	Compound Name	RT	Estimated Conc.	Q
	Unknown	14.04	300	J
21964498	1,13-Tetradecadiene	29.50	4000	J

Date Reported: 10/4/88

John J. Molloy, P.E.
Laboratory Director

R-79

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

Lab Name: H2M Labs, Inc.
Lab Code: ---- Case No.:----
Matrix: Soil
Sample Wt: 30.0195 g
Level: Low
% Moisure: not dec. 3
Extraction: Sonc.
GPC Cleanup: No

Contract:
Sas No.:------ SDG No.: MW#2 (36 Ft)
Lab Sample ID: 868002
Lab File ID: >P4846
Date Received: 9/16/88
Date Extracted: 9/20/88
Date Analyzed: 10/5/88
Dilution Factor: 1

		Concentration Unit ug/kg	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
100-51-6	Benzyl alcohol	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	bis(2-Chloroisopropyl)ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U

Date Reported: 10/13/88

John J. Molloy, P.E.
Laboratory Director

R-80

H2M LABS, INC.
575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

Lab Name: H2M Labs, Inc.
Lab Code:-----Case No.:---- Sas No.:----- SDG No.: MW#2 (36 Ft)
Matrix: Soil
Sample Wt: 30.0195 g
Level: Low
% Moisture: not dec. 3
Extraction: Sonc.
GPC Cleanup: No

Lab Sample ID: 868002
Lab File ID: >P4846
Date Received: 9/16/88
Date Extracted: 9/20/88
Date Analyzed: 10/5/88
Dilution Factor: 1

CAS NO.	Compound	Concentration Unit ug/kg	Q
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	680	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	700	B
117-84-0	Di-n-octylphthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

Date Reported: 10/13/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: H2M Labs, Inc.
Matrix: Soil
Sample Wt: 30.0195 g
Level: Low
% Moisture: 3
Extraction: Sonc.
GPC Cleanup: No

SDG No.: MW#1 (36 Ft)
Lab SampleID: 868002
Lab File ID:)P4846
Date Received: 9/16/88
Date Extracted: 9/20/88
Date Analyzed: 10/5/88
Dilution Factor: 1

Number TICs found: 2

Concentration Units: ug/kg

	Compound Name	RT	Estimated Conc.	Q
	Unknown	14.09	290	J
21964498	1,13-Tetradecadiene	29.57	5200	J

Date Reported: 10/4/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. · 575 BROAD HOLLOW ROAD, MELVILLE, N Y 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

MW #1

Lab Name: H2M LABS, INC. Contract: G & H

Lab Code: Case No.: SAS No.: SDG No.:

Matrix: SOIL Lab Sample ID: 868000

Sample wt: 29.7 g Lab File ID: HP 91

Level: Date Received: 09/16/88

% Moisture: not dec. dec. Date Extracted: 09/20/88

Extraction: SONC Date Analyzed: 09/28/88

GPC Cleanup: N Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/kg	Q
319-84-6	alpha-BHC	8	U
319-85-7	beta-BHC	8	U
319-86-8	delta-BHC	8	U
58-89-9	gamma-BHC (Lindane)	8	U
76-44-8	Heptachlor	8	U
309-00-2	Aldrin	8	U
1024-57-3	Heptachlor epoxide	8	U
959-98-8	Endosulfan I	8	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	1	J
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	2	J
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

Date Reported: 10/13/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

PESTICIDE ORGANICS ANALYSIS DATA SHEET

MW #2

Lab Name: H2M LABS, INC. Contract: G & H

Lab Code: Case No.: SAS No.: SDG No.:
Matrix: SOIL
Sample wt: 29.1 g
Level:
% Moisture: not dec. dec.
Extraction: SONC
GPC Cleanup: N

Lab Sample ID: 868002
Lab File ID: HP 92
Date Received: 09/16/88
Date Extracted: 09/20/88
Date Analyzed: 09/28/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/kg	Q
319-84-6	alpha-BHC	8	U
319-85-7	beta-BHC	8	U
319-86-8	delta-BHC	8	U
58-89-9	gamma-BHC (Lindane)	8	U
76-44-8	Heptachlor	8	U
309-00-2	Aldrin	8	U
1024-57-3	Heptachlor epoxide	8	U
959-98-8	Endosulfan I	8	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

Date Reported: 10/13/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW#1

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): SOIL Lab Sample ID: 868001

Level (low/med): LOW Date Received: 09/16/88

% Solids : 99.7

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1400			P
7440-36-0	Antimony	4.7	B		P
7440-38-2	Arsenic	87		+	F
7440-39-3	Barium	7.5	B		P
7440-41-7	Beryllium	.39	B		P
7440-43-9	Cadmium	.20	U		P
7440-70-2	Calcium	260	B		P
7440-47-3	Chromium	13.0		*N	P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	4.1	B	*N	P
7439-89-6	Iron	7700			P
7439-92-1	Lead	2.0			F
7439-95-4	Magnesium	360	B		P
7439-96-5	Manganese	60			P
7439-97-6	Mercury	.1	U		CV
7440-02-0	Nickel	3.7	B	*N	P
7440-09-7	Potassium	219	B		AA
7782-49-2	Selenium	5.0	U		F
7440-22-4	Silver	3.9			P
7440-23-5	Sodium	1700			P
7440-28-0	Thallium	0.6	U		F
7440-62-2	Vanadium	6.9	B		P
7440-66-6	Zinc	25		*N	P
	Cyanide	0.5	U		C

COMMENTS:

Date Reported: 10/12/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

MW#2

Lab Name: H2M LABS, INC. Contract: G & M

Matrix (soil/water): SOIL Lab Sample ID: 868003

Level (low/med): LOW Date Received: 09/16/88

% Solids : 97.3

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4000			P
7440-36-0	Antimony	3.1	U		P
7440-38-2	Arsenic	78		+	F
7440-39-3	Barium	13.0	B		P
7440-41-7	Beryllium	.41	B		P
7440-43-9	Cadmium	.21	U		P
7440-70-2	Calcium	620	B		P
7440-47-3	Chromium	11.0		*	P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	4.9	B	*	P
7439-89-6	Iron	7900			P
7439-92-1	Lead	11.0			F
7439-95-4	Magnesium	530	B		P
7439-96-5	Manganese	79			P
7439-97-6	Mercury	0.1	U		CV
7440-02-0	Nickel	2.3	B	*	P
7440-09-7	Potassium	300	B		AA
7782-49-2	Selenium	5.2	U		F
7440-22-4	Silver	2.5			P
7440-23-5	Sodium	1600			P
7440-28-0	Thallium	0.6	U		F
7440-62-2	Vanadium	8.0	B		P
7440-66-6	Zinc	23.0		*	P
	Cyanide	0.50	U		C

COMMENTS:

Date Reported: 10/12/88

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

SD 1
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 2.745 g
Level: LOW
% Moisture: not dec. 60 dec.
Column: (pack/cap) PACK

Lab Sample ID: 874726
Lab File ID: PU9564
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
74-87-3	Chloromethane	46	U
74-83-9	Bromomethane	46	U
75-01-4	Vinyl Chloride	46	U
75-00-3	Chloroethane	46	U
75-09-2	Methylene Chloride	55	B
67-64-1	Acetone	200	B
75-15-0	Carbon Disulfide	23	U
75-35-4	1,1-Dichloroethene	23	U
75-34-3	1,1-Dichloroethane	23	U
540-59-0	1,2-Dichloroethene (total)	23	U
67-66-3	Chloroform	23	U
107-06-2	1,2-Dichloroethane	23	U
78-93-3	2-Butanone	31	J,B
71-55-6	1,1,1-Trichloroethane	23	U
56-23-5	Carbon Tetrachloride	23	U
108-05-4	Vinyl Acetate	46	U
75-27-4	Bromodichloromethane	23	U
78-87-5	1,2-Dichloropropane	23	U
10061-01-5	cis-1,3-Dichloropropene	23	U
79-01-6	Trichloroethene	23	U
124-48-1	Dibromochloromethane	23	U
79-00-5	1,1,2-Trichloroethane	23	U
71-43-2	Benzene	23	U
10061-02-6	trans-1,3-Dichloropropene	23	U
75-25-2	Bromoform	23	U
108-10-1	4-Methyl-2-Pentanone	46	U
591-78-6	2-Hexanone	46	U
127-18-4	Tetrachloroethene	6	J
79-34-5	1,1,2,2-Tetrachloroethane	23	U
108-88-3	Toluene	21	J,B
108-90-7	Chlorobenzene	23	U
100-41-4	Ethylbenzene	23	U
100-42-5	Styrene	23	U
1330-20-7	Xylene (total)	23	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SD 1
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 2.745 g
Level: LOW
% Moisture:not dec. 60 dec.
Column:(pack/cap) PACK

Lab Sample ID: 874726
Lab File ID: PU9564
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

Number TICs found: 8

CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		UNKNOWN HYDROCARBON	20:33	300	J
2		UNKNOWN ALKENE	21:12	150	J
3		UNKNOWN HYDROCARBON	22:24	24	J
4		UNKNOWN CYCLOHEXANE	25:24	81	J
5		UNKNOWN	27:21	78	J
6		UNKNOWN	28:33	70	J
7		UNKNOWN	31:18	220	J
8		UNKNOWN ESTER	33:18	130	J
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

R-88

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

SD 2
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 3.158 g
Level: LOW
% Moisture: not dec. 75 dec.
Column: (pack/cap) PACK

Lab Sample ID: 874727
Lab File ID: PU9562
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

CONCENTRATION UNITS: ug/Kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	63	U
74-83-9	Bromomethane	63	U
75-01-4	Vinyl Chloride	63	U
75-00-3	Chloroethane	63	U
75-09-2	Methylene Chloride	33	B
67-64-1	Acetone	110	B
75-15-0	Carbon Disulfide	45	
75-35-4	1,1-Dichloroethene	32	U
75-34-3	1,1-Dichloroethane	32	U
540-59-0	1,2-Dichloroethene (total)	46	
67-66-3	Chloroform	16	J
107-06-2	1,2-Dichloroethane	32	U
78-93-3	2-Butanone	10	J,B
71-55-6	1,1,1-Trichloroethane	32	U
56-23-5	Carbon Tetrachloride	32	U
108-05-4	Vinyl Acetate	63	U
75-27-4	Bromodichloromethane	32	U
78-87-5	1,2-Dichloropropane	32	U
10061-01-5	cis-1,3-Dichloropropene	32	U
79-01-6	Trichloroethene	15	J
124-48-1	Dibromochloromethane	32	U
79-00-5	1,1,2-Trichloroethane	32	U
71-43-2	Benzene	32	U
10061-02-6	trans-1,3-Dichloropropene	32	U
75-25-2	Bromoform	32	U
108-10-1	4-Methyl-2-Pentanone	63	U
591-78-6	2-Hexanone	63	U
127-18-4	Tetrachloroethene	29	J
79-34-5	1,1,2,2-Tetrachloroethane	32	U
108-88-3	Toluene	78	B
108-90-7	Chlorobenzene	32	U
100-41-4	Ethylbenzene	32	U
100-42-5	Styrene	32	U
1330-20-7	Xylene (total)	32	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

R-89

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SD 2
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 3.158 g
Level: LOW
% Moisture:not dec. 75 dec.
Column:(pack/cap) PACK

Lab Sample ID: 874727
Lab File ID: PU9562
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

Number TICs found: 9 CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		UNKNOWN	08:54	370	J
2		UNKNOWN ALKENE	20:27	230	J
3		UNKNOWN ALKANE	20:51	150	J
4		UNKNOWN ALKENE	21:09	230	J
5	4923-77-7	1-ETHYL-2-METHYL-CIS-CYCLOHEXANE	22:18	180	J
6		UNKNOWN ALKANE	25:15	570	J
7	6874-28-8	2,6-DIMETHYL-3-OCTENE	27:06	500	J
8		UNKNOWN ALKANE	28:27	660	J
9		7-METHYL-(E)-4-DECENE	33:06	500	J
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

SD 3
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 3.218 g
Level: LOW
% Moisture: not dec. 26 dec.
Column: (pack/cap) PACK

Lab Sample ID: 874728
Lab File ID: PU9567
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
74-87-3	Chloromethane	21	U
74-83-9	Bromomethane	21	U
75-01-4	Vinyl Chloride	21	U
75-00-3	Chloroethane	21	U
75-09-2	Methylene Chloride	20	B
67-64-1	Acetone	38	B
75-15-0	Carbon Disulfide	8	J
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	5	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	14	J,B
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
108-05-4	Vinyl Acetate	21	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	21	U
591-78-6	2-Hexanone	21	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	68	B
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SD 3
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 3.218 g
Level: LOW
% Moisture: not dec. 26 dec.
Column: (pack/cap) PACK

Lab Sample ID: 874728
Lab File ID: PU9567
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

Number TICs found: 10

CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		UNKNOWN ALKANE	18:33	110	J
2		UNKNOWN ALKANE	19:21	100	J
3	16789-46-1	3-ETHYL-2-METHYL HEXANE	21:18	87	J
4		UNKNOWN ALKANE	23:36	190	J
5		UNKNOWN ALKANE	25:21	160	J
6		UNKNOWN ALKENE	27:15	140	J
7		UNKNOWN	27:57	99	J
8	15869-93-9	3,5-DIMETHYL OCTANE	29:36	89	J
9		UNKNOWN	31:39	180	J
10		UNKNOWN	33:18	390	J
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

R-92

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID:
Lab File ID: PU9549
Date Received:
Date Analyzed: 12/30/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	9	
67-64-1	Acetone	12	
75-15-0	Carbon Disulfide	3	J
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	5	
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE

Lab Name: H2M LABS, INC.
Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID:
Lab File ID: PU9549
Date Received:
Date Analyzed: 12/30/88
Dilution Factor: 1

Number TICs found: 0

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
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24					
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27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PACK

Lab Sample ID:
Lab File ID: PU9561
Date Received:
Date Analyzed: 12/31/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	4	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	[illegible]
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLK
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: WATER
Sample vol: 5 mL
Level: LOW
% Moisture: not dec. - dec.
Column: (pack/cap) PAC

Lab Sample ID:
Lab File ID: PU9561
Date Received:
Date Analyzed: 12/31/88
Dilution Factor: 1

Number TICs found: 0

CONCENTRATION UNITS: ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		NO TICs FOUND			
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
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22					
23					
24					
25					
26					
27					
28					
29					
30					

Date Reported: 01/31/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

SD 1 MS
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 2.71 g
Level: LOW
% Moisture: not dec. 60 dec.
Column: (pack/cap) PACK

Lab Sample ID: 874726 MS
Lab File ID: PU9565
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
74-87-3	Chloromethane	46	U
74-83-9	Bromomethane	46	U
75-01-4	Vinyl Chloride	46	U
75-00-3	Chloroethane	46	U
75-09-2	Methylene Chloride	75	B
67-64-1	Acetone	250	B
75-15-0	Carbon Disulfide	23	U
75-35-4	1,1-Dichloroethene	*	
75-34-3	1,1-Dichloroethane	23	U
540-59-0	1,2-Dichloroethene (total)	23	U
67-66-3	Chloroform	11	J
107-06-2	1,2-Dichloroethane	23	U
78-93-3	2-Butanone	54	B
71-55-6	1,1,1-Trichloroethane	23	U
56-23-5	Carbon Tetrachloride	23	U
108-05-4	Vinyl Acetate	46	U
75-27-4	Bromodichloromethane	23	U
78-87-5	1,2-Dichloropropane	23	U
10061-01-5	cis-1,3-Dichloropropene	23	U
79-01-6	Trichloroethene	*	
124-48-1	Dibromochloromethane	23	U
79-00-5	1,1,2-Trichloroethane	23	U
71-43-2	Benzene	*	
10061-02-6	trans-1,3-Dichloropropene	23	U
75-25-2	Bromoform	23	U
108-10-1	4-Methyl-2-Pentanone	12	J
591-78-6	2-Hexanone	46	U
127-18-4	Tetrachloroethene	9	J
79-34-5	1,1,2,2-Tetrachloroethane	23	U
108-88-3	Toluene	*	
108-90-7	Chlorobenzene	*	
100-41-4	Ethylbenzene	23	U
100-42-5	Styrene	23	U
1330-20-7	Xylene (total)	23	U

Date Reported: 01/31/89

*Analyte found in spiking solution

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

SD 1 MSD
LEROY CALLENDER, P.C.
CANTOR BROTHERS SITE
SOIL SAMPLES

Lab Name: H2M LABS, INC. Contract: GIBBS & HILL

Matrix: SOIL
Sample vol: 2.942 G
Level: LOW
% Moisture: not dec. 60 dec.
Column: (pack/cap) PACK

Lab Sample ID: 874726 MSD
Lab File ID: PU9566
Date Received: 12/28/88
Date Analyzed: 12/31/88
Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
74-87-3	Chloromethane	42	U
74-83-9	Bromomethane	42	U
75-01-4	Vinyl Chloride	42	U
75-00-3	Chloroethane	42	U
75-09-2	Methylene Chloride	67	B
67-64-1	Acetone	130	B
75-15-0	Carbon Disulfide	28	
75-35-4	1,1-Dichloroethene	*	
75-34-3	1,1-Dichloroethane	21	U
540-59-0	1,2-Dichloroethene (total)	21	U
67-66-3	Chloroform	10	J
107-06-2	1,2-Dichloroethane	21	U
78-93-3	2-Butanone	30	J,B
71-55-6	1,1,1-Trichloroethane	21	U
56-23-5	Carbon Tetrachloride	21	U
108-05-4	Vinyl Acetate	42	U
75-27-4	Bromodichloromethane	21	U
70-87-5	1,2-Dichloropropane	21	U
10061-01-5	cis-1,3-Dichloropropene	21	U
79-01-6	Trichloroethene	*	
124-48-1	Dibromochloromethane	21	U
79-00-5	1,1,2-Trichloroethane	21	U
71-43-2	Benzene	*	
10061-02-6	trans-1,3-Dichloropropene	21	U
75-25-2	Bromoform	21	U
108-10-1	4-Methyl-2-Pentanone	27	J
591-78-6	2-Hexanone	42	U
127-18-4	Tetrachloroethene	10	J
79-34-5	1,1,2,2-Tetrachloroethane	21	U
108-88-3	Toluene	*	
108-90-7	Chlorobenzene	*	
100-41-4	Ethylbenzene	21	U
100-42-5	Styrene	21	U
1330-20-7	Xylene (total)	21	U

Date Reported: 01/31/89

*Analyte found in spiking solution

John J. Molloy, P.E.
Laboratory Director

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H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX:(516)694-8122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-1

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726

Sample wt/vol: 1.0401 (g/mL) G Lab File ID: :P5411

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	24000.	U
111-44-4	bis(2-Chloroethyl)Ether	24000.	U
95-57-8	2-Chlorophenol	24000.	U
541-73-1	1,3-Dichlorobenzene	24000.	U
106-46-7	1,4-Dichlorobenzene	24000.	U
100-51-6	Benzyl alcohol	24000.	U
95-50-1	1,2-Dichlorobenzene	24000.	U
95-48-7	2-Methylphenol	24000.	U
39638-32-9	bis(2-chloroisopropyl)ether	24000.	U
106-44-5	4-Methylphenol	24000.	U
621-64-7	N-Nitroso-Di-n-propylamine	24000.	U
67-72-1	Hexachloroethane	24000.	U
98-95-3	Nitrobenzene	24000.	U
78-59-1	Isophorone	24000.	U
88-75-5	2-Nitrophenol	24000.	U
105-67-9	2,4-Dimethylphenol	24000.	U
65-85-0	Benzoic acid	120000.	U
111-91-1	bis(2-Chloroethoxy)methane	24000.	U
120-83-2	2,4-Dichlorophenol	24000.	U
120-82-1	1,2,4-Trichlorobenzene	24000.	U
91-20-3	Naphthalene	24000.	U
106-47-8	4-Chloroaniline	24000.	U
87-68-3	Hexachlorobutadiene	24000.	U
59-50-7	4-Chloro-3-methylphenol	24000.	U
91-57-6	2-Methylnaphthalene	3300.	J
77-47-4	Hexachlorocyclopentadiene	24000.	U
88-06-2	2,4,6-Trichlorophenol	24000.	U
95-95-4	2,4,5-Trichlorophenol	120000.	U
91-58-7	2-Chloronaphthalene	24000.	U
88-74-4	2-Nitroaniline	120000.	U
131-11-3	Dimethylphthalate	24000.	U
208-96-8	Acenaphthylene	9400.	J
606-20-2	2,6-Dinitrotoluene	24000.	U

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John T. Kelly, III
Laboratory Director

R-99

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-7200

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-1

Lab Name: H2M LABS INC. Contract: ----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726

Sample wt/vol: 1.0401 (g/mL) G Lab File ID: >P5411

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	120000.	U
83-32-9	Acenaphthene	5800.	J
51-28-5	2,4-Dinitrophenol	120000.	U
100-02-7	4-Nitrophenol	120000.	U
132-64-9	Dibenzofuran	6600.	J
121-14-2	2,4-Dinitrotoluene	24000.	U
84-66-2	Diethylphthalate	24000.	U
7005-72-3	4-Chlorophenyl-phenylether	24000.	U
86-73-7	Fluorene	33000.	
100-01-6	4-Nitroaniline	120000.	U
534-52-1	4,6-Dinitro-2-methylphenol	120000.	U
86-30-6	N-Nitrosodiphenylamine (1)	24000.	U
101-55-3	4-Bromophenyl-phenylether	24000.	U
118-74-1	Hexachlorobenzene	24000.	U
87-86-5	Pentachlorophenol	120000.	U
85-01-8	Phenanthrene	340000.	
120-12-7	Anthracene	200000.	
84-74-2	Di-n-butylphthalate	24000.	U
206-44-0	Fluoranthene	540000.	E
129-00-0	Pyrene	430000.	E
85-68-7	Butylbenzylphthalate	24000.	U
91-94-1	3,3'-Dichlorobenzidine	48000.	U
56-55-3	Benzo(a)anthracene	180000.	
218-01-9	Chrysene	340000.	
117-81-7	bis(2-Ethylhexyl)phthalate	380000.	B
117-84-0	Di-n-octylphthalate	24000.	U
205-99-2	Benzo(b)fluoranthene	230000.	
207-08-9	Benzo(k)fluoranthene	73000.	
50-32-8	Benzo(a)pyrene	65000.	
193-39-5	Indeno(1,2,3-cd)pyrene	35000.	
53-70-3	Dibenzo(a,h)anthracene	11000.	J
191-24-2	Benzo(g,h,i)perylene	27000.	

(1) - Cannot be separated from Diphenylamine. [illegible]

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R-100

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FBK (516) 694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SD-1

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 87472c

Sample wt/vol: 1.0401 (g/mL) G Lab File ID: >P5411

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

Number TICs found: 20

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	832713	Phenanthrene, 3-methyl- (8CI	27.17	22000.	J
2.		Unknown	27.42	82000.	J
3.	612942	Naphthalene, 2-phenyl- (8CI9	28.08	75000.	J
4.		Unknown PAH	28.94	26000.	J
5.		Unknown	29.72	9600.	J
6.	57114	Octadecanoic acid (9CI)	30.30	12000.	J
7.	243425	Benzo[b]naphtho[2,3-d]furan	30.40	14000.	J
8.	2381217	Pyrene, 1-methyl- (8CI9CI)	31.10	48000.	J
9.	243174	11H-Benzo[b]fluorene (8CI9CI	31.31	26000.	J
10.	238846	11H-Benzo[a]fluorene (8CI9CI	31.39	9600.	J
11.		Unknown	31.47	12000.	J
12.		Unknown	32.69	19000.	J
13.	205436	Benzo[b]naphtho[1,2-d]thioph	32.99	19000.	J
14.		Unknown	33.12	31000.	J
15.		Unknown	33.24	9600.	J
16.	82053	7H-Benz[de]anthracen-7-one (	33.34	12000.	J
17.		Unknown	34.13	14000.	J
18.		Unknown PAH	35.08	12000.	J
19.	1090137	5,12-Naphthacenedione (8CI9C	35.22	9600.	J
20.	192972	Benzo[e]pyrene (8CI9CI)	37.69	100000.	J
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

Date Reported: 2/26/89

John J. Mullov, P.E.
Laboratory Director

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R-101

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SD-1 DL

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 DL

Sample wt/vol: 1.0401 (g/mL) G Lab File ID: >P5446

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/18/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 2.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	48000.	U
111-44-4	bis(2-Chloroethyl)Ether	48000.	U
95-57-8	2-Chlorophenol	48000.	U
541-73-1	1,3-Dichlorobenzene	48000.	U
106-46-7	1,4-Dichlorobenzene	48000.	U
100-51-6	Benzyl alcohol	48000.	U
95-50-1	1,2-Dichlorobenzene	48000.	U
95-48-7	2-Methylphenol	48000.	U
39638-32-9	bis(2-chloroisopropyl)ether	48000.	U
106-44-5	4-Methylphenol	48000.	U
621-64-7	N-Nitroso-Di-n-propylamine	48000.	U
67-72-1	Hexachloroethane	48000.	U
98-95-3	Nitrobenzene	48000.	U
78-59-1	Isophorone	48000.	U
88-75-5	2-Nitrophenol	48000.	U
105-67-9	2,4-Dimethylphenol	48000.	U
65-85-0	Benzoic acid	240000.	U
111-91-1	bis(2-Chloroethoxy)methane	48000.	U
120-83-2	2,4-Dichlorophenol	48000.	U
120-82-1	1,2,4-Trichlorobenzene	48000.	U
91-20-3	Naphthalene	48000.	U
106-47-8	4-Chloroaniline	48000.	U
87-68-3	Hexachlorobutadiene	48000.	U
59-50-7	4-Chloro-3-methylphenol	48000.	U
91-57-6	2-Methylnaphthalene	48000.	U
77-47-4	Hexachlorocyclopentadiene	48000.	UD
88-06-2	2,4,6-Trichlorophenol	48000.	U
95-95-4	2,4,5-Trichlorophenol	48000.	U
91-58-7	2-Chloronaphthalene	240000.	U
88-74-4	2-Nitroaniline	48000.	U
131-11-3	Dimethylphthalate	240000.	U
208-96-8	Acenaphthylene	48000.	U
606-20-2	2,6-Dinitrotoluene	11000.	J
		48000.	U

R-102

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SD-1 DL

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 DL

Sample wt/vol: 1.0401 (g/mL) G Lab File ID: >P5446

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/18/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 2.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	240000.	U
83-32-9	Acenaphthene	5500.	J
51-28-5	2,4-Dinitrophenol	240000.	U
100-02-7	4-Nitrophenol	240000.	U
132-64-9	Dibenzofuran	8100.	J
121-14-2	2,4-Dinitrotoluene	48000.	U
84-66-2	Diethylphthalate	48000.	U
7005-72-3	4-Chlorophenyl-phenylether	48000.	U
86-73-7	Fluorene	32000.	J
100-01-6	4-Nitroaniline	240000.	U
534-52-1	4,6-Dinitro-2-methylphenol	240000.	U
86-30-6	N-Nitrosodiphenylamine (1)	48000.	U
101-55-3	4-Bromophenyl-phenylether	48000.	U
118-74-1	Hexachlorobenzene	48000.	U
87-86-5	Pentachlorophenol	240000.	U
85-01-8	Phenanthrene	300000.	
120-12-7	Anthracene	200000.	
84-74-2	Di-n-butylphthalate	48000.	U
206-44-0	Fluoranthene	740000.	
129-00-0	Pyrene	500000.	
85-68-7	Butylbenzylphthalate	48000.	U
91-94-1	3,3'-Dichlorobenzidine	96000.	U
56-55-3	Benzo(a)anthracene	180000.	
218-01-9	Chrysene	390000.	
117-81-7	bis(2-Ethylhexyl)phthalate	520000.	B
117-84-0	Di-n-octylphthalate	48000.	U
205-99-2	Benzo(b)fluoranthene	240000.	
207-08-9	Benzo(k)fluoranthene	150000.	
50-32-8	Benzo(a)pyrene	80000.	
193-39-5	Indeno(1,2,3-cd)pyrene	12000.	J
53-70-3	Dibenzo(a,h)anthracene	19000.	J
191-24-2	Benzo(g,h,i)perylene	42000.	J

(1) - Cannot be separated from Diphenylamine

Date Reported: 2/26/89

John J. M[illegible], P.E.
Laboratory Director

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R-103

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4122

9 IF

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SD-1 DL

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 DL

Sample wt/vol: 1.0401 (g/mL) G Lab File ID: P5446

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/18/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	1961962	1H-Indene, 1-phenyl- (9CI)	27.18	34000.	J
2.		Unknown	27.40	110000.	J
3.		Unknown	28.08	82000.	J
4.		Unknown	29.72	53000.	J
5.		Unknown	30.25	58000.	J
6.	243425	Benzo[b]naphtho[2,3-d]furan	30.40	38000.	J
7.	1210124	9-Anthracenecarbonitrile (9C	30.46	19000.	J
8.	238846	11H-Benzo[a]fluorene (8CI9CI	31.10	96000.	J
9.	243174	11H-Benzo[b]fluorene (8CI9CI	31.28	58000.	J
10.		Unknown	31.38	19000.	J
11.		Unknown	31.47	24000.	J
12.		Unknown	32.68	43000.	J
13.	239350	Benzo[b]naphtho[2,1-d]thioph	32.99	48000.	J
14.	203123	Benzo[ghi]fluoranthene (8CI9	33.11	62000.	J
15.	82053	7H-Benz[de]anthracen-7-one (	33.34	24000.	J
16.	2498773	Benz[a]anthracene, 1-methyl-	35.07	29000.	J
17.		Unknown	35.19	24000.	J
18.		Unknown	35.99	34000.	J
19.	205823	Benzo[j]fluoranthene (8CI9CI	37.21	38000.	J
20.	192972	Benzo[e]pyrene (8CI9CI)	37.66	120000.	J
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

~~Date Reported: 2/26/89~~

John J. Malloy, P.E.
Laboratory Director

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R-104

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-2

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874727

Sample wt/vol: 1.0832 (g/mL) G Lab File ID: /F5413

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.75 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	37000.	U
111-44-4	bis(2-Chloroethyl)Ether	37000.	U
95-57-8	2-Chlorophenol	37000.	U
541-73-1	1,3-Dichlorobenzene	37000.	U
106-46-7	1,4-Dichlorobenzene	37000.	U
100-51-6	Benzyl alcohol	37000.	U
95-50-1	1,2-Dichlorobenzene	37000.	U
95-48-7	2-Methylphenol	37000.	U
39638-32-9	bis(2-chloroisopropyl)ether	37000.	U
106-44-5	4-Methylphenol	37000.	U
621-64-7	N-Nitroso-Di-n-propylamine	37000.	U
67-72-1	Hexachloroethane	37000.	U
98-95-3	Nitrobenzene	37000.	U
78-59-1	Isophorone	37000.	U
88-75-5	2-Nitrophenol	37000.	U
105-67-9	2,4-Dimethylphenol	37000.	U
65-85-0	Benzoic acid	190000.	U
111-91-1	bis(2-Chloroethoxy)methane	37000.	U
120-83-2	2,4-Dichlorophenol	37000.	U
120-82-1	1,2,4-Trichlorobenzene	37000.	U
91-20-3	Naphthalene	37000.	U
106-47-8	4-Chloroaniline	37000.	U
87-68-3	Hexachlorobutadiene	37000.	U
59-50-7	4-Chloro-3-methylphenol	37000.	U
91-57-6	2-Methylnaphthalene	37000.	U
77-47-4	Hexachlorocyclopentadiene	37000.	U
88-06-2	2,4,6-Trichlorophenol	37000.	U
95-95-4	2,4,5-Trichlorophenol	190000.	U
91-58-7	2-Chloronaphthalene	37000.	U
88-74-4	2-Nitroaniline	190000.	U
131-11-3	Dimethylphthalate	37000.	U
208-96-8	Acenaphthylene	8000.	J
606-20-2	2,6-Dinitrotoluene	37000.	U

John J. Malloy, PE

R-105

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX#(516)694-8122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-2

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874727

Sample wt/vol: 1.0832 (g/mL) G Lab File ID: >P5413

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.75 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	190000.	U
83-32-9	Acenaphthene	7900.	J
51-28-5	2,4-Dinitrophenol	190000.	U
100-02-7	4-Nitrophenol	190000.	U
132-64-9	Dibenzofuran	37000.	U
121-14-2	2,4-Dinitrotoluene	37000.	U
84-66-2	Diethylphthalate	37000.	U
7005-72-3	4-Chlorophenyl-phenylether	37000.	U
86-73-7	Fluorene	8800.	J
100-01-6	4-Nitroaniline	190000.	U
534-52-1	4,6-Dinitro-2-methylphenol	190000.	U
86-30-6	N-Nitrosodiphenylamine (1)	37000.	U
101-55-3	4-Bromophenyl-phenylether	37000.	U
118-74-1	Hexachlorobenzene	37000.	U
87-86-5	Pentachlorophenol	190000.	U
85-01-8	Phenanthrene	34000.	J
120-12-7	Anthracene	35000.	J
84-74-2	Di-n-butylphthalate	6400.	J
206-44-0	Fluoranthene	190000.	
129-00-0	Pyrene	160000.	
85-68-7	Butylbenzylphthalate	37000.	U
91-94-1	3,3'-Dichlorobenzidine	74000.	U
56-55-3	Benzo(a)anthracene	52000.	
218-01-9	Chrysene	120000.	
117-81-7	bis(2-Ethylhexyl)phthalate	350000.	B
117-84-0	Di-n-octylphthalate	37000.	U
205-99-2	Benzo(b)fluoranthene	110000.	
207-08-9	Benzo(k)fluoranthene	67000.	
50-32-8	Benzo(a)pyrene	30000.	J
193-39-5	Indeno(1,2,3-cd)pyrene	18000.	J
53-70-3	Dibenzo(a,h)anthracene	4900.	J
191-24-2	Benzo(g,h,i)perylene	15000.	J

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(1) - Cannot be separated from Diphenylamine

Date Reported: 2/26/89 John T. Mollow PE

R-106

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SD-2

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874727

Sample wt/vol: 1.0832 (g/mL) G Lab File ID: >P5413

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.75 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

Number TICs found: 14

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	12.99	52000.	J
2.		Unknown Acid	24.53	18000.	J
3.		Unknown Acid	27.30	130000.	J
4.	203645	4H-Cyclopenta[def]phenanthre	27.40	52000.	J
5.	84651	9,10-Anthracenedione (9CI)	28.07	37000.	J
6.	112629	9-Octadecenoic acid (Z)-, me	29.49	37000.	J
7.		Unknown	29.55	33000.	J
8.	2381217	Pyrene, 1-methyl- (8CI9CI)	31.07	30000.	J
9.	203123	Benzo[ghi]fluoranthene (8CI9	33.09	22000.	J
10.	2050773	Decane, 1-iodo- (8CI9CI)	35.85	15000.	J
11.	192972	Benzo[e]pyrene (8CI9CI)	37.64	78000.	J
12.	629970	Docosane (8CI9CI)	39.60	41000.	J
13.		Unknown	39.97	63000.	J
14.		Unknown	40.49	15000.	J
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.		Date Reported: 2/26/89			
29.					
30.					

John Malov, P.E.
Laboratory Director

R-107

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-0220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-3

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874728

Sample wt/vol: 1.0251 (g/mL) G Lab File ID: :P5414

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.26 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/14/89

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	13000.	U
111-44-4	bis(2-Chloroethyl)Ether	13000.	U
95-57-8	2-Chlorophenol	13000.	U
541-73-1	1,3-Dichlorobenzene	13000.	U
106-46-7	1,4-Dichlorobenzene	13000.	U
100-51-6	Benzyl alcohol	13000.	U
95-50-1	1,2-Dichlorobenzene	13000.	U
95-48-7	2-Methylphenol	13000.	U
39638-32-9	bis(2-chloroisopropyl)ether	13000.	U
106-44-5	4-Methylphenol	13000.	U
621-64-7	N-Nitroso-Di-n-propylamine	13000.	U
67-72-1	Hexachloroethane	13000.	U
98-95-3	Nitrobenzene	13000.	U
78-59-1	Isophorone	13000.	U
88-75-5	2-Nitrophenol	13000.	U
105-67-9	2,4-Dimethylphenol	13000.	U
65-85-0	Benzoic acid	65000.	U
111-91-1	bis(2-Chloroethoxy)methane	13000.	U
120-83-2	2,4-Dichlorophenol	13000.	U
120-82-1	1,2,4-Trichlorobenzene	13000.	U
91-20-3	Naphthalene	13000.	U
106-47-8	4-Chloroaniline	13000.	U
87-68-3	Hexachlorobutadiene	13000.	U
59-50-7	4-Chloro-3-methylphenol	13000.	U
91-57-6	2-Methylnaphthalene	13000.	U
77-47-4	Hexachlorocyclopentadiene	13000.	U
88-06-2	2,4,6-Trichlorophenol	13000.	U
95-95-4	2,4,5-Trichlorophenol	65000.	U
91-58-7	2-Chloronaphthalene	13000.	U
88-74-4	2-Nitroaniline	65000.	U
131-11-3	Dimethylphthalate	13000.	U
208-96-8	Acenaphthylene	13000.	U
606-20-2	2,6-Dinitrotoluene	13000.	U

John T. Molloy, P.E.

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R-108

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX:(516) 694-1220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-3

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil water) SOIL Lab Sample ID: 874728

Sample wt/vol: 1.0251 (g/mL) G Lab File ID: .F5414

Level: (low/med) ~~LOW~~ MED Date Received: 12/26/88

% Moisture: not dec.20 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/14/89

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	65000.	U
83-32-9	Acenaphthene	13000.	U
51-28-5	2,4-Dinitrophenol	65000.	U
100-02-7	4-Nitrophenol	65000.	U
132-64-9	Dibenzofuran	13000.	U
121-14-2	2,4-Dinitrotoluene	13000.	U
84-66-2	Diethylphthalate	13000.	U
7005-72-3	4-Chlorophenyl-phenylether	13000.	U
86-73-7	Fluorene	13000.	U
100-01-6	4-Nitroaniline	65000.	U
534-52-1	4,6-Dinitro-2-methylphenol	65000.	U
86-30-6	N-Nitrosodiphenylamine (1)	13000.	U
101-55-3	4-Bromophenyl-phenylether	13000.	U
118-74-1	Hexachlorobenzene	13000.	U
87-86-5	Pentachlorophenol	65000.	U
85-01-8	Phenanthrene	3200.	J
120-12-7	Anthracene	13000.	U
84-74-2	Di-n-butylphthalate	13000.	U
206-44-0	Fluoranthene	6600.	J
129-00-0	Pyrene	5900.	J
85-68-7	Butylbenzylphthalate	13000.	U
91-94-1	3,3'-Dichlorobenzidine	26000.	U
56-55-3	Benzo(a)anthracene	2400.	J
218-01-9	Chrysene	4500.	J
117-81-7	bis(2-Ethylhexyl)phthalate	43000.	B
117-84-0	Di-n-octylphthalate	13000.	U
205-99-2	Benzo(b)fluoranthene	4200.	J
207-08-9	Benzo(k)fluoranthene	3700.	J
50-32-8	Benzo(a)pyrene	2200.	J
193-39-5	Indeno(1,2,3-cd)pyrene	1800.	J
53-70-3	Dibenzo(a,h)anthracene	13000.	U
191-24-2	Benzo(g,h,i)perylene	1500.	J

(1) - Cannot be separated from Diphenylamine

Date Reported: 2/26/89

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R-109

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SD-3

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874728

Sample wt/vol: 1.0251 (g/mL) G Lab File ID: >P5414

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.26 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/14/89

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00000

Number TICs found: 17

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	141797	3-Penten-2-one, 4-methyl- (8	6.21	150000.	JBA
2.		Unknown	6.25	9200.	J
3.		Unknown	7.51	170000.	J
4.	3074713	Heptane, 2,3-dimethyl- (8CI9	7.86	18000.	J
5.		Unknown	7.94	16000.	J
6.	921471	Hexane, 2,3,4-trimethyl- (8C	8.11	55000.	J
7.	2216333	Octane, 3-methyl- (8CI9CI)	8.31	51000.	J
8.	107700	2-Pentanone, 4-methoxy-4-met	9.35	33000.	J
9.	98828	Benzene, (1-methylethyl)- (9	9.66	22000.	JB
10.		Unknown	9.84	36000.	J
11.	4436753	3-Hexene-2,5-dione (8CI9CI)	10.57	28000.	JB
12.		Unknown	12.43	16000.	J
13.	112403	Dodecane (8CI9CI)	17.77	11000.	J
14.	55045084	Dodecane, 2-methyl-6-propyl-	22.78	7900.	J
15.	1921706	Pentadecane, 2,6,10,14-tetra	24.35	5300.	J
16.		Unknown	29.55	24000.	J
17.		Unknown	36.73	9200.	JB
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.		Date Reported: 2/26/89			
29.					
30.					

John J. Molloy, P.E.
Laboratory Director

R-110

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-8020

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK 447

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW 4

Matrix: (soil/water) WATER Lab Sample ID: SBLK 447

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P5396

Level: (low/med) LOW Date Received: -------

% Moisture: not dec.-- dec. -- Date Extracted: 12/29/88

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

John J. Mallow, P.E.
Laboratory Director

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R-111

2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6122

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK 447

Name: H2M LABS INC. Contract: -----

Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

rix: (soil/water) WATER Lab Sample ID: SBLK 447

ple wt/vol: 1000 (g/mL) ML Lab File ID: >P5396

el: (low/med) LOW Date Received: --------

oisture: not dec.-- dec. -- Date Extracted: 12/29/88

raction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 1/12/89

Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	10.	U
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	50.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	16.	
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

John J. Molloy, P.E.
Laboratory

Date Reported: 2/26/89

R-112

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-1286

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SELK 447

1. Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: MW A

Matrix: (soil/water) WATER Lab Sample ID: SELK 447

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P539c

Level: (low/med) LOW Date Received: -------

% Moisture: not dec.-- dec. -- Date Extracted: [illegible]

Extraction: (Sep/Cont/Sonc) SEP Date Analyzed: [illegible]

GPC Cleanup: (Y/N) N pH: [illegible] Dilution Factor: [illegible]

Number TICs found: CONCENTRATION UNITS: (ug/L or ug/g) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	21964-98	1,13-Tetradecadiene (8CIPCI)	29.38	180.	J
2.		Unknown	36.76	34.	J
3.					
4.					
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28.					
29.					
30.					

Date Reported: 2/26/89

John J. Mullov, P.E.
Laboratory Director

R-113

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-1220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK 448

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: SBLK 448

Sample wt/vol: 250 (g/mL) ML Lab File ID: >P5409

Level: (low/med) LOW Date Received: --------

% Moisture: not dec.-- dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	330.	U
111-44-4	bis(2-Chloroethyl)Ether	330.	U
95-57-8	2-Chlorophenol	330.	U
541-73-1	1,3-Dichlorobenzene	330.	U
106-46-7	1,4-Dichlorobenzene	330.	U
100-51-6	Benzyl alcohol	330.	U
95-50-1	1,2-Dichlorobenzene	330.	U
95-48-7	2-Methylphenol	330.	U
39638-32-9	bis(2-chloroisopropyl)ether	330.	U
106-44-5	4-Methylphenol	330.	U
621-64-7	N-Nitroso-Di-n-propylamine	330.	U
67-72-1	Hexachloroethane	330.	U
98-95-3	Nitrobenzene	330.	U
78-59-1	Isophorone	330.	U
88-75-5	2-Nitrophenol	330.	U
105-67-9	2,4-Dimethylphenol	330.	U
65-85-0	Benzoic acid	1700.	U
111-91-1	bis(2-Chloroethoxy)methane	330.	U
120-83-2	2,4-Dichlorophenol	330.	U
120-82-1	1,2,4-Trichlorobenzene	330.	U
91-20-3	Naphthalene	330.	U
106-47-8	4-Chloroaniline	330.	U
87-68-3	Hexachlorobutadiene	330.	U
59-50-7	4-Chloro-3-methylphenol	330.	U
91-57-6	2-Methylnaphthalene	330.	U
77-47-4	Hexachlorocyclopentadiene	330.	U
88-06-2	2,4,6-Trichlorophenol	330.	U
95-95-4	2,4,5-Trichlorophenol	1700.	U
91-58-7	2-Chloronaphthalene	330.	U
88-74-4	2-Nitroaniline	1700.	U
131-11-3	Dimethylphthalate	330.	U
208-96-8	Acenaphthylene	330.	U
606-20-2	2,6-Dinitrotoluene	330.	U

John J. Molloy, P.E.
Laboratory Director

057

R-114

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK 448

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: SBLK 448

Sample wt/vol: 250 (g/mL) ML Lab File ID: [illegible]

Level: (low/med) LOW Date Received: --------

% Moisture: not dec.-- dec. -- Date Extracted: 12 30 88

Extraction: (Sept/Cont/Sonc) SONC Date Analyzed: 1/17/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	1700.	U
83-32-9	Acenaphthene	330.	U
51-28-5	2,4-Dinitrophenol	1700.	U
100-02-7	4-Nitrophenol	1700.	U
132-64-9	Dibenzofuran	330.	U
121-14-2	2,4-Dinitrotoluene	330.	U
84-66-2	Diethylphthalate	330.	U
7005-72-3	4-Chlorophenyl-phenylether	330.	U
86-73-7	Fluorene	330.	U
100-01-6	4-Nitroaniline	1700.	U
534-52-1	4,6-Dinitro-2-methylphenol	1700.	U
86-30-6	N-Nitrosodiphenylamine (1)	330.	U
101-55-3	4-Bromophenyl-phenylether	330.	U
118-74-1	Hexachlorobenzene	330.	U
87-86-5	Pentachlorophenol	1700.	U
85-01-8	Phenanthrene	330.	U
120-12-7	Anthracene	330.	U
84-74-2	Di-n-butylphthalate	330.	U
206-44-0	Fluoranthene	330.	U
129-00-0	Pyrene	330.	U
85-68-7	Butylbenzylphthalate	330.	U
91-94-1	3,3'-Dichlorobenzidine	660.	U
56-55-3	Benzo(a)anthracene	330.	U
218-01-9	Chrysene	330.	U
117-81-7	bis(2-Ethylhexyl)phthalate	170.	J
117-84-0	Di-n-octylphthalate	330.	U
205-99-2	Benzo(b)fluoranthene	330.	U
207-08-9	Benzo(k)fluoranthene	330.	U
50-32-8	Benzo(a)pyrene	330.	U
193-39-5	Indeno(1,2,3-cd)pyrene	330.	U
53-70-3	Dibenzo(a,h)anthracene	330.	U
191-24-2	Benzo(g,h,i)perylene	330.	U

(1) - Cannot be separated from Diphenylamine

John J. Nimlos, P.E.
Laboratory Director

Date Reported: 2/26/89

358

R-115

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-1220

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK 448

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ---- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) WATER Lab Sample ID: SBLK 448

Sample wt/vol: 250 (g/mL) ML Lab File ID: :P5409

Level: (low/med) LOW Date Received: --------

% Moisture: not dec.-- dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0000

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	141797	3-Penten-2-one, 4-methyl- (8	6.22	170.	JB
2.		Unknown	7.61	4700.	J
3.	1069530	Hexane, 2,3,5-trimethyl- (8C	7.93	830.	J
4.	922281	Heptane, 3,4-dimethyl- (8C19	8.00	430.	J
5.	2213232	Heptane, 2,4-dimethyl- (8C19	8.16	2000.	J
6.	540841	Pentane, 2,2,4-trimethyl- (8	8.36	1900.	J
7.	79345	Ethane, 1,1,2,2-tetrachloro-	9.38	230.	J
8.	98828	Benzene, (1-methylethyl)- (9	9.69	700.	J
9.	4436753	3-Hexene-2,5-dione (8C19O)	10.58	170.	J
10.	2196449	1,13-Tetradecadiene (8C19O)	29.43	430.	J
11.		Unknown	36.73	300.	J
12.					
13.					
14.					
15.					
16.					
17.					
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19.					
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27.					
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29.					
30.					

Date Reported: 2/26/89

John J. Miller, P.E.
Laboratory Director

R-116

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-4120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SD-1 MS

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 MS

Sample wt/vol: 1.0188 (g/mL) G Lab File ID: >P5410

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/Kg	Q
111-44-4	bis(2-Chloroethyl)Ether	24000.	U
541-73-1	1,3-Dichlorobenzene	24000.	U
100-51-6	Benzyl alcohol	24000.	U
95-50-1	1,2-Dichlorobenzene	24000.	U
95-48-7	2-Methylphenol	24000.	U
39638-32-9	bis(2-chloroisopropyl)ether	24000.	U
106-44-5	4-Methylphenol	24000.	U
67-72-1	Hexachloroethane	24000.	U
98-95-3	Nitrobenzene	24000.	U
78-59-1	Isophorone	24000.	U
88-75-5	2-Nitrophenol	24000.	U
105-67-9	2,4-Dimethylphenol	24000.	U
65-85-0	Benzoic acid	120000.	U
111-91-1	bis(2-Chloroethoxy)methane	24000.	U
120-83-2	2,4-Dichlorophenol	24000.	U
91-20-3	Naphthalene	24000.	U
106-47-8	4-Chloroaniline	24000.	U
87-68-3	Hexachlorobutadiene	24000.	U
91-57-6	2-Methylnaphthalene	24000.	U
77-47-4	Hexachlorocyclopentadiene	24000.	U
88-06-2	2,4,6-Trichlorophenol	24000.	U
95-95-4	2,4,5-Trichlorophenol	120000.	U
91-58-7	2-Chloronaphthalene	24000.	U
88-74-4	2-Nitroaniline	120000.	U
131-11-3	Dimethylphthalate	24000.	U
208-96-8	Acenaphthylene	14000.	U
606-20-2	2,6-Dinitrotoluene	24000.	U

FORM I SV-1

Date Reported: 2/26/89

[signature]

1 8 Re

R-117

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-6200

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-1 MS

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 MS

Sample wt/vol: 1.0188 (g/mL) G Lab File ID: >P5410

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec. 60 dec. -- Date Extracted: 12/30/88

Extraction: (Sept./Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	120000.	U
51-28-5	2,4-Dinitrophenol	120000.	U
132-64-9	Dibenzofuran	12000.	J
84-66-2	Diethylphthalate	24000.	U
7005-72-3	4-Chlorophenyl-phenylether	24000.	U
86-73-7	Fluorene	48000.	
100-01-6	4-Nitroaniline	120000.	U
534-52-1	4,6-Dinitro-2-methylphenol	120000.	U
86-30-6	N-Nitrosodiphenylamine (1)	24000.	U
101-55-3	4-Bromophenyl-phenylether	24000.	U
118-74-1	Hexachlorobenzene	24000.	U
85-01-8	Phenanthrene	290000.	
120-12-7	Anthracene	390000.	ED
84-74-2	Di-n-butylphthalate	24000.	U
206-44-0	Fluoranthene	470000.	ED
85-68-7	Butylbenzylphthalate	24000.	U
91-94-1	3,3'-Dichlorobenzidine	48000.	U
56-55-3	Benzo(a)anthracene	190000.	
218-01-9	Chrysene	310000.	
117-81-7	bis(2-Ethylhexyl)phthalate	90000.	B
117-84-0	Di-n-octylphthalate	24000.	U
205-99-2	Benzo(b)fluoranthene	180000.	
207-08-9	Benzo(k)fluoranthene	230000.	
50-32-8	Benzo(a)pyrene	61000.	
193-39-5	Indeno(1,2,3-cd)pyrene	35000.	
53-70-3	Dibenzo(a,h)anthracene	12000.	J
191-24-2	Benzo(g,h,i)perylene	26000.	

(1) - Cannot be separated from Diphenylamine

R-118

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX (516) 694-1286

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-1 MSD

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 MSD

Sample wt/vol: 1.0195 (g/mL) G Lab File ID: :PF412

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.60 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
111-44-4	bis(2-Chloroethyl)Ether	24000.	U
541-73-1	1,3-Dichlorobenzene	24000.	U
100-51-6	Benzyl alcohol	24000.	U
95-50-1	1,2-Dichlorobenzene	24000.	U
95-48-7	2-Methylphenol	24000.	U
39638-32-9	bis(2-chloroisopropyl)ether	24000.	U
106-44-5	4-Methylphenol	24000.	U
67-72-1	Hexachloroethane	24000.	U
98-95-3	Nitrobenzene	24000.	U
78-59-1	Isophorone	24000.	U
88-75-5	2-Nitrophenol	24000.	U
105-67-9	2,4-Dimethylphenol	24000.	U
65-85-0	Benzoic acid	120000.	U
111-91-1	bis(2-Chloroethoxy)methane	24000.	U
120-83-2	2,4-Dichlorophenol	24000.	U
91-20-3	Naphthalene	24000.	U
106-47-8	4-Chloroaniline	24000.	U
87-68-3	Hexachlorobutadiene	24000.	U
91-57-6	2-Methylnaphthalene	24000.	U
77-47-4	Hexachlorocyclopentadiene	24000.	U
88-06-2	2,4,6-Trichlorophenol	24000.	U
95-95-4	2,4,5-Trichlorophenol	120000.	U
91-58-7	2-Chloronaphthalene	24000.	U
88-74-4	2-Nitroaniline	120000.	U
131-11-3	Dimethylphthalate	24000.	U
208-96-8	Acenaphthylene	13000.	J
606-20-2	2,6-Dinitrotoluene	24000.	U

FORM I SV-1 1 SD Rev.

Date Reported: 2/26/89

R-119

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX:(516)694-6120

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SD-1 MSD

Lab Name: H2M LABS INC. Contract: -----

Lab Code: ----- Case No.: ----- SAS No.: ----- SDG No.: SD-1

Matrix: (soil/water) SOIL Lab Sample ID: 874726 MSD

Sample wt/vol: 1.0195 (g/mL) G Lab File ID: >P5412

Level: (low/med) ~~LOW~~ MED Date Received: 12/28/88

% Moisture: not dec.e0 dec. -- Date Extracted: 12/30/88

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 1/13/89

GPC Cleanup: (Y/N) ~~N~~ Y pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	120000.	U
51-28-5	2,4-Dinitrophenol	120000.	U
132-64-9	Dibenzofuran	3900.	J
84-66-2	Diethylphthalate	24000.	U
7005-72-3	4-Chlorophenyl-phenylether	24000.	U
86-73-7	Fluorene	12000.	J
100-01-6	4-Nitroaniline	120000.	U
534-52-1	4,6-Dinitro-2-methylphenol	120000.	U
86-30-6	N-Nitrosodiphenylamine (1)	24000.	U
101-55-3	4-Bromophenyl-phenylether	24000.	U
118-74-1	Hexachlorobenzene	24000.	U
85-01-8	Phenanthrene	75000.	
120-12-7	Anthracene	69000.	
84-74-2	Di-n-butylphthalate	24000.	U
206-44-0	Fluoranthene	290000.	~~E~~ GKB
85-68-7	Butylbenzylphthalate	24000.	U
91-94-1	3,3'-Dichlorobenzidine	48000.	U
56-55-3	Benzo(a)anthracene	100000.	
218-01-9	Chrysene	220000.	
117-81-7	bis(2-Ethylhexyl)phthalate	55000.	B
117-84-0	Di-n-octylphthalate	24000.	U
205-99-2	Benzo(b)fluoranthene	170000.	
207-08-9	Benzo(k)fluoranthene	100000.	
50-32-8	Benzo(a)pyrene	34000.	
193-39-5	Indeno(1,2,3-cd)pyrene	22000.	J
53-70-3	Dibenzo(a,h)anthracene	7700.	J
191-24-2	Benzo(g,h,i)perylene	8000.	J

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

Date Reported: 2/26/89

John J. Molloy, P.E

R-120

H2M LABS, INC.

575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

CATCH BASIN #1

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): SOIL Lab Sample ID: 859385

Level (low/med): LOW Date Received: 10/06/88

% Solids : 47

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4500		*	P
7440-36-0	Antimony	17			P
7440-38-2	Arsenic	11	U	W	F
7440-39-3	Barium	33	B		P
7440-41-7	Beryllium	0.64	B		P
7440-43-9	Cadmium	0.43	U		A
7440-70-2	Calcium	21600		*	P
7440-47-3	Chromium	26		*E	P
7440-48-4	Cobalt	19		* N	P
7440-50-8	Copper	340		*	P
7439-89-6	Iron	8700		*	P
7439-92-1	Lead	300			F
7439-95-4	Magnesium	7700		*	P
7439-96-5	Manganese	87		*	P
7439-97-6	Mercury	0.42			CV
7440-02-0	Nickel	8.7	B		A
7440-09-7	Potassium	520	B		A
7782-49-2	Selenium	11	U		F
7440-22-4	Silver	3.4			P
7440-23-5	Sodium	1300			P
7440-28-0	Thallium	1.1	U	WN	F
7440-62-2	Vanadium	24		* N	P
7440-66-6	Zinc	340		N*	P
	Cyanide	2.0	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

R-121

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

CATCH BASIN #2

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): SOIL Lab Sample ID: 859386

Level (low/med): LOW Date Received: 10/06/88

% Solids : 58

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2600		*	P
7440-36-0	Antimony	26			P
7440-38-2	Arsenic	2.8		W	F
7440-39-3	Barium	47	B		P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	0.69	B		A
7440-70-2	Calcium	7160		*	P
7440-47-3	Chromium	38		*E	P
7440-48-4	Cobalt	24		*N	P
7440-50-8	Copper	170		*	P
7439-89-6	Iron	4640		*	P
7439-92-1	Lead	160			F
7439-95-4	Magnesium	1640		*	P
7439-96-5	Manganese	35		*	P
7439-97-6	Mercury	0.34			CV
7440-02-0	Nickel	9.0	B		A
7440-09-7	Potassium	310	B		A
7782-49-2	Selenium	1.7	U	W	F
7440-22-4	Silver	6.9			P
7440-23-5	Sodium	2030			P
7440-28-0	Thallium	1.7	U	WN	F
7440-62-2	Vanadium	19		*N	P
7440-66-6	Zinc	360		N*	P
	Cyanide	1.7	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Director

R-122

H2M LABS, INC. 575 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747 • 516-694-3040
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL SERVICES

INORGANIC ANALYSIS DATA SHEET

CATCH BASIN #3

Lab Name: H2M LABS, INC. Contract: G & H

Matrix (soil/water): SOIL Lab Sample ID: 859387

Level (low/med): LOW Date Received: 10/06/88

% Solids : 74

Concentration Units (ug/L or mg/kg dry weight) mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3200		*	P
7440-36-0	Antimony	18			P
7440-38-2	Arsenic	1.6			F
7440-39-3	Barium	37	B		P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	0.54	U		A
7440-70-2	Calcium	21700		*	P
7440-47-3	Chromium	29		*E	P
7440-48-4	Cobalt	4.9	B	*N	P
7440-50-8	Copper	53		*	P
7439-89-6	Iron	10300		*	P
7439-92-1	Lead	430			F
7439-95-4	Magnesium	12000		*	P
7439-96-5	Manganese	88		*	P
7439-97-6	Mercury	0.13	U		CV
7440-02-0	Nickel	15			A
7440-09-7	Potassium	430	B		P
7782-49-2	Selenium	1.4	U	W	F
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	1600			P
7440-28-0	Thallium	1.4	U	WN	F
7440-62-2	Vanadium	26		*N	P
7440-66-6	Zinc	200		N*	P
	Cyanide	1.4	U		C

COMMENTS:

Date Reported: 10/26/88

John J. Molloy, P.E.
Laboratory Director

R-123

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Catch Basin #1DL
Leroy Callender
Cantor Bros. Site

Lab Name: H2M LABS, INC. Contract: _____

Matrix: Soil
Sample Wt: 15.05
Level: LOW
% Moisture: not dec. 49 dec. ___
Extraction: SONC
GPC Cleanup: Y pH: 6.7

Lab Sample ID: 869382
Lab File ID: 118/17
Date Received: 10-6-88
Date Extracted: 10-10/88
Date Analyzed: 10-21-88/10-25-88
Dilution Factor: 10

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/kg	Q
319-84-6	alpha-BHC	160	U
319-85-7	beta-BHC	160	U
319-86-8	delta-BHC	160	U
58-89-9	gamma-BHC (Lindane)	160	U
76-44-8	Heptachlor	160	U
309-00-2	Aldrin	160	U
1024-57-3	Heptachlor epoxide	160	U
959-98-8	Endosulfan I	130	J
60-57-1	Dieldrin	320	U
72-55-9	4,4'-DDE	320	U
72-20-8	Endrin	180	J
33213-65-9	Endosulfan II	320	U
72-54-8	4,4'-DDD	320	U
1031-07-8	Endosulfan sulfate	320	U
50-29-3	4,4'-DDT	96	J
72-43-5	Methoxychlor	1600	U
53494-70-5	Endrin ketone	320	U
5103-71-9	alpha-Chlordane	1600	U
5103-74-2	gamma-Chlordane	1600	U
8001-35-2	Toxaphene	3200	U
12674-11-2	Aroclor-1016	1600	U
11104-28-2	Aroclor-1221	1600	U
11141-16-5	Aroclor-1232	1600	U
53469-21-9	Aroclor-1242	1600	U
12672-29-6	Aroclor-1248	1600	U
11097-69-1	Aroclor-1254	3200	U
11096-82-5	Aroclor-1260	3200	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

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R-124

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Catch Basin #2DL
Leroy Callender
Cantor Bros. Site

Lab Name: H2M LABS, INC. Contract: _____

Matrix: Soil
Sample Wt: 15
Level: LOW
% Moisture: not dec. 42 dec. ___
Extraction: SONC
GPC Cleanup: Y pH: 6.7

Lab Sample ID: 869383
Lab File ID: 127/610
Date Received: 10-6-88
Date Extracted: 10-10/88
Date Analyzed: 10-21-88/10-25-88
Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/kg	Q
319-84-6	alpha-BHC	70	U
319-85-7	beta-BHC	70	U
319-86-8	delta-BHC	70	U
58-89-9	gamma-BHC (Lindane)	70	U
76-44-8	Heptachlor	70	U
309-00-2	Aldrin	70	U
1024-57-3	Heptachlor epoxide	70	U
959-98-8	Endosulfan I	70	U
60-57-1	Dieldrin	140	U
72-55-9	4,4'-DDE	140	U
72-20-8	Endrin	140	U
33213-65-9	Endosulfan II	140	U
72-54-8	4,4'-DDD	140	U
1031-07-8	Endosulfan sulfate	140	U
50-29-3	4,4'-DDT	140	U
72-43-5	Methoxychlor	700	U
53494-70-5	Endrin ketone	140	U
5103-71-9	alpha-Chlordane	700	U
5103-74-2	gamma-Chlordane	700	U
8001-35-2	Toxaphene	1400	U
12674-11-2	Aroclor-1016	700	U
11104-28-2	Aroclor-1221	700	U
11141-16-5	Aroclor-1232	700	U
53469-21-9	Aroclor-1242	700	U
12672-29-6	Aroclor-1248	700	U
11097-69-1	Aroclor-1254	1400	U
11096-82-5	Aroclor-1260	1400	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

R-125

H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122

ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: H2M LABS, INC. Contract: _____

Catch Basin #3DL
Leroy Callender
Cantor Bros. Site

Matrix: Soil
Sample Wt: 15.03
Level: LOW
% Moisture: not dec. 26 dec. ___
Extraction: SONC
GPC Cleanup: Y pH: 7.0

Lab Sample ID: 869384
Lab File ID: 130/611
Date Received: 10-6-88
Date Extracted: 10-10/88
Date Analyzed: 10-21-88/10-25-88
Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/kg	Q
319-84-6	alpha-BHC	55	U
319-85-7	beta-BHC	55	U
319-86-8	delta-BHC	55	U
58-89-9	gamma-BHC (Lindane)	55	U
76-44-8	Heptachlor	55	U
309-00-2	Aldrin	67	
1024-57-3	Heptachlor epoxide	55	U
959-98-8	Endosulfan I	130	
60-57-1	Dieldrin	120	
72-55-9	4,4'-DDE	110	U
72-20-8	Endrin	240	
33213-65-9	Endosulfan II	110	U
72-54-8	4,4'-DDD	110	U
1031-07-8	Endosulfan sulfate	110	U
50-29-3	4,4'-DDT	340	
72-43-5	Methoxychlor	550	U
53494-70-5	Endrin ketone	110	U
5103-71-9	alpha-Chlordane	550	U
5103-74-2	gamma-Chlordane	550	U
8001-35-2	Toxaphene	1100	U
12674-11-2	Aroclor-1016	550	U
11104-28-2	Aroclor-1221	550	U
11141-16-5	Aroclor-1232	550	U
53469-21-9	Aroclor-1242	550	U
12672-29-6	Aroclor-1248	550	U
11097-69-1	Aroclor-1254	1100	U
11096-82-5	Aroclor-1260	1100	U

Date Reported: 3/15/89

John J. Molloy, P.E.
Laboratory Director

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R-126

LeRoy
Callender
PC

VOLUME II

CANTOR BROTHERS, INC.

FIELD LOG BOOK

MONITORING WELLS

DRILLING & SAMPLING
OF GROUNDWATER & SOIL

* * *

SEPTEMBER 13, THROUGH
OCTOBER 6, 1988

R-127

Date: Sept. 13, 1988 Weather: Raining, Windy
Time arrived on site: 8:25 A.M.

Contractor's Rep. : Joe Kaufman, M.P.C.
Consultant's Rep.: S. Nabavi & L. Naraysingh, LC/PC
NYSDEC Rep. : M. O'Brien

Met with Mr. D. Maze, Caster Brothers, and informed him that no drilling would be done today, due to rain.

Met with NYSDEC Rep. and concurred that there would not be any drilling today.

Around 9:00 A.M. We left the site to go to H2M Labs for a meeting with Lab personnel to go over the sampling procedure.

Mr. Stancampiano of H2M asked for a written contract agreement between LC/PC and H2M Labs, on the basis of Gibbs & Hill contract agreement with the Lab. In addition, he asked for a written confirmation regarding the sampling protocol for the soil samples from the catch basins, which required a field blank and a trip blank if they were to be taken on a separate day from the groundwater samples.

2

DRILLER'S CREW	VEHICLES
JOE KAUFMAN	1 DRILL RIG
KENNY REYNOLDS	2 SUPPORT TRUCKS
SALIP RANSE	1 DOC VAN
JOAN FLINT	1 CONSULTANT'S CAR

Driller's crew had arrived on the site and were taking over their staging and support areas.

Since the rain had stopped, the Driller's crew unloaded the supplies and provisions which they would need for starting the drilling operations.

We went over the well locations with the Driller's Rep., and later on with NYSDEC Rep. and it was decided to shift the proposed location of MW-3 a short distance to the SE, to move it away from the paved area. The NYDEC Rep. was in agreement with this new location, which was marked on the copy of the Work Plan Update (Revised version.)

At 13:00 Hours, the Driller's crew had unloaded all their supplies and materiel needed for tomorrows operation, and we left the site.

SIROUS H. NABAVI
S. H. Nabavi

LARRINGTON NARAYSINGH
Narayingh

Date: Sept 14, 1988 Weather: Sunny

see page 30 Time arrived on site: 9:50 AM (S. Nabavi had car accident).

Contractor's Rep: John Goff
Consultant's Rep: S. Nabavi & L. Narayasingh, LC/PC
NYSDEC Rep: M. O'Brien

Met with Mr. M. Miller of Cantor's Brothers to obtain potable water source for steam cleaning and drilling operation.

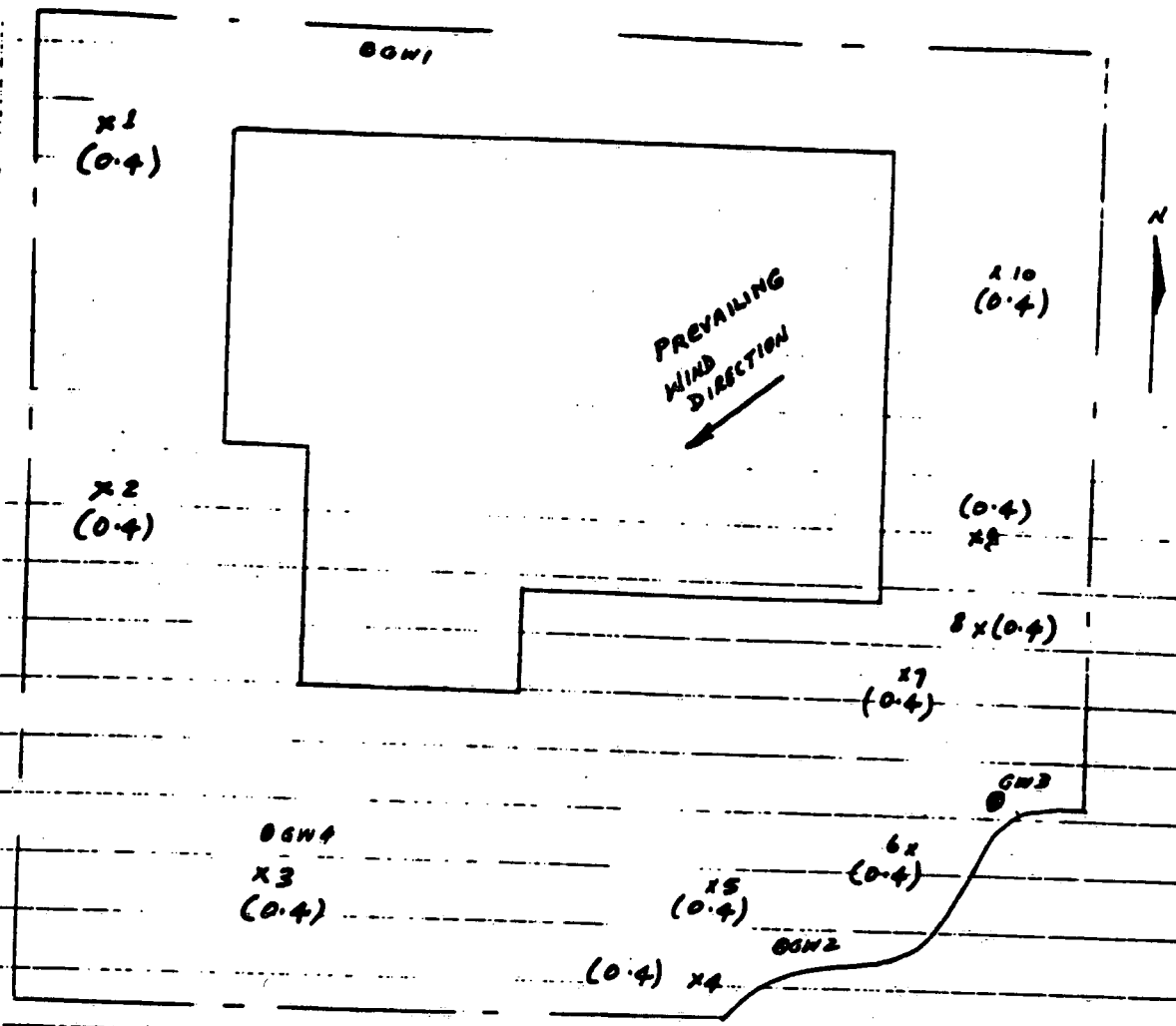
Contractor began steam cleaning equipment to be used in drilling operation in the decon. area, while 2 of his men placed temporary taped barrier around working area of well No. 1. Contractor stopped for 10 minutes to correct inefficiency of steam jenny.

Sirous Nabavi went on to do HNu survey of the perimeter of the plant area. Results and locations are shown on p. 7. A reading of 0.4 was recorded for all locations.

Contractor set drill rig and equipment to be used in working area of well No. 1 then break for lunch at 1:30 PM

Contractor resumed working at 2:00 PM and started drilling operations at 2:15 PM.

Wed. Sept. 14, 1988 7



DRAWING 1 READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED SEPTEMBER 14, 1988

A record of the physical description and HNu readings of the cuttings are shown in table #1 below. For HNu calibration, the zero adjustment was made before each reading

BLOW COUNT FOR 6" DEPTH 140 lb/in² hammer	SAMPLE NUMBER	GEOLOGY DESCRIPTION	DEPTH	HNu READING
3-6-13-16	1	fine to coarse sand, some pebbles (light brown)	0-2	0.2
1-4-10-21	2	fine to coarse sand, some pebbles	2-4	0.2
2-10-12-16	3	fine to coarse sand	4-6	0.4 0.8 HNu reading near mouth of well
3-6-6-14	4	fine to coarse sand, some fine gravel	6-8	0.5
2-5-11-9	5	white sand and fine gravel	8-10	0.4
4-4-10-16	6	fine to coarse sand with round pebbles	10-12	0.4
2-5-3-5	7	brown/light brown fine to coarse sand	12-14	0.4
3-6-5-11	8	brown/light brown fine to coarse sand	14-16	0.4
2-4-3-10	9	brown/light brown fine to coarse sand with some pebbles and damp	20-22	0.4
2-6-8-14	10	damp, brown/light brown, fine to coarse sand with boulders	25-27	0.6

TABLE 1. HNu READINGS AND GEOLOGY DESCRIPTION OF CUTTINGS MW4L

(CONT'D THUR. SEPT 15 p. 13)

10

ep.5 Contractor given 1½ hr standby for time he waited before Consultant's rep. arrived.

DRILLER'S CREW

JOHN GOFF

JOE KAUFMAN

JOAN FLINT

SALIF BANSE

KENNY REYNOLDS

R-134

At 25 foot deep contractor took break at 4:45 PM. Contractor returned at 5:10 and said that to complete well would take until 9:00 PM and there would not be enough light.
Well was protected by,

- Making auger trim with ground level.
- placing wooden pallet over auger.
- Cover on top of pallet and around with sand
- placing 55 gal drum filled with sand on top.
- placing 4 other 55 gal drums filled with sand adjacent to center drum.

Crew returned to decon. area, got rid of protective clothing and left site at 6:10 PM.

SIROUS H NABAVI
Sirous H. Nabavi

LARRY NARAYSINGH
Larry Naraysingh.

Thur. Sept. 15, 1988.

(see p. 13)

FOR GRAIN SIZE ANALYSIS SAMPLES, (2) 400ml JAR WAS USED. THIS WAS FILLED USING A PUTTY KNIFE WHICH WAS STEAM CLEANED BEFORE AND AFTER EACH USE.

FOR CHEMICAL ANALYSIS OF SOIL SAMPLES, 2 1000ml GLASS JARS, AND 2 SMALL GLASS VIALS WERE PROVIDED. THE SAMPLE WERE PUT IN THE JARS USING A PUTTY KNIFE WHICH WAS STEAM CLEANED BEFORE AND AFTER EACH USE.

Date: Thursday Sept. 15, 1988 Weather: sunny & windy
Time arrived on site: 8:25 AM

Contractor unload equipment in decon. area to be steamcleaned, start steam cleaning. We did calibration of HNu meter and surveyed perimeter of work area. Results are shown on page 21.

Contractor then move to location of Well No. 1 to complete well. A continuation of HNu readings and Geology description are shown in table 1 below.

	BLOW COUNT 6" per depth 140 lb/in² hammer	SAMPLE No.	GEOLOGY DESCRIPTION	DEPTH	HNU READING
	8-13-6-5	11	EMPTY	30-32	—
10:15 AM GRAIN SIZE ANALYSIS (see p. 12)	4-5-8-10	12	medium brown, sandy material, few pebbles	30-32	0.6
10:30 AM CHEMICAL ANALYSIS	5-16-18-20	13	medium brown, ferrous looking material at some places; boulders (1½" & over); damp material.	35-37	0.6
10:45 AM CHEMICAL ANALYSIS (see p. 12)	4-6-29-21	14	same as "13"	35-37	0.5
10:55 AM CHEMICAL ANALYSIS	4-6-14-13	15	same as "13"	35-37	0.5
GROUND WATER 40'-0"	8-6-5-12	16	empty & wet	40-42	—
GRAIN SIZE ANALYSIS	8-12-6-6	17	wet brown sand with pebbles	45-47	0.5
	13-20-21-7	18	very wet brown, fine sand with granite pebbles	50-52	0.5

(CONT FROM PAGE 9)

TABLE 1. HNu READINGS AND PHYSICAL DESCRIPTION OF CUTTINGS

R-137

(See page 27)
Permission was granted by DEC's Rep. M. O'Brien to place screen 1 foot above ground water table, so products that may float at the top of the water table may enter into the well.

After the last split spoon, sample No. 18, was taken, contractor broke for lunch at 12:30 PM
Back from lunch at 1:00 PM

1:30 PM At the completion of the drilling of bore hole No1, Marine Pollution Control (MPC) indicated to us that they have provided 20 slot screen to be used with 8-12 sand pack, based on previous agreement between MPC and Gibbs & Hill (G&H). We checked the information with Mr. Richard Barbour of G&H. He told us that a choice had been given to MPC to use either a 10 slot or 20 slot screen and added that MPC's decision to use a 20 slot screen would mean a longer development time and nothing else, so G&H stated that if MPC is willing to take responsibility of achieving the state spec. (below 50 NTU turbidity in the water sample) with a 20 slot screen, approval should be given to MPC to use a 20 slot screen. This call was necessary because we had suggested a size 10 slot screen and 10-20 sand pack based on the physical features of the material found in the ground water table, and information sent from G&H. When this decision was transmitted to Mr. Joe Kaufman of MPC, he stated that he contacted his superiors at MPC and would wait until his superiors at MPC had reached a final decision on the matter.

1:50 PM After J. Kaufman contacted his superiors (John

Goff) he related that in their contract with G&H they are suppose to provide 2 size screens (10&20) unless they are aware of the nature of the soil. In this case they said that they were aware of the nature of the soil so they provided 20 slot screens and would take full responsibility of developing the well below 50 N.T.U. Work resumed. (see page 34)

2:10 P.M. Contractor was not using tremie to put sand pack around the screened portion of casing so we stopped the operation since spec. called for tremie. Joe Kaufman said that he was told that the sand & bentonite pellets would not be tremied, he then left to call his boss. He returned and said he was told by his boss (John Goff) that there was a revision that allowed them not to use a tremie for the sand and pellets.

3:00 P.M. Sirous Vakani contacted Richard Barbour of G&H who said material should be tremied and if there are any problems, MPC should contact him. Joe Kaufman left to contact his office.

DEC's Rep. Margaret O'Brien said the DEC was flexible on replacing tremiing as long as it can be demonstrated that there is no bridging and that a good seal has been achieved and placed where required.

3:46 P.M. Joe Kaufman said John Goff confirmed with

DRILLER'S CREW

JOE KAUFMAN

KENNY REYNOLDS

SAUF BANSE

JOAN FLINT

DEC REP. MARGARET O'BRIEN

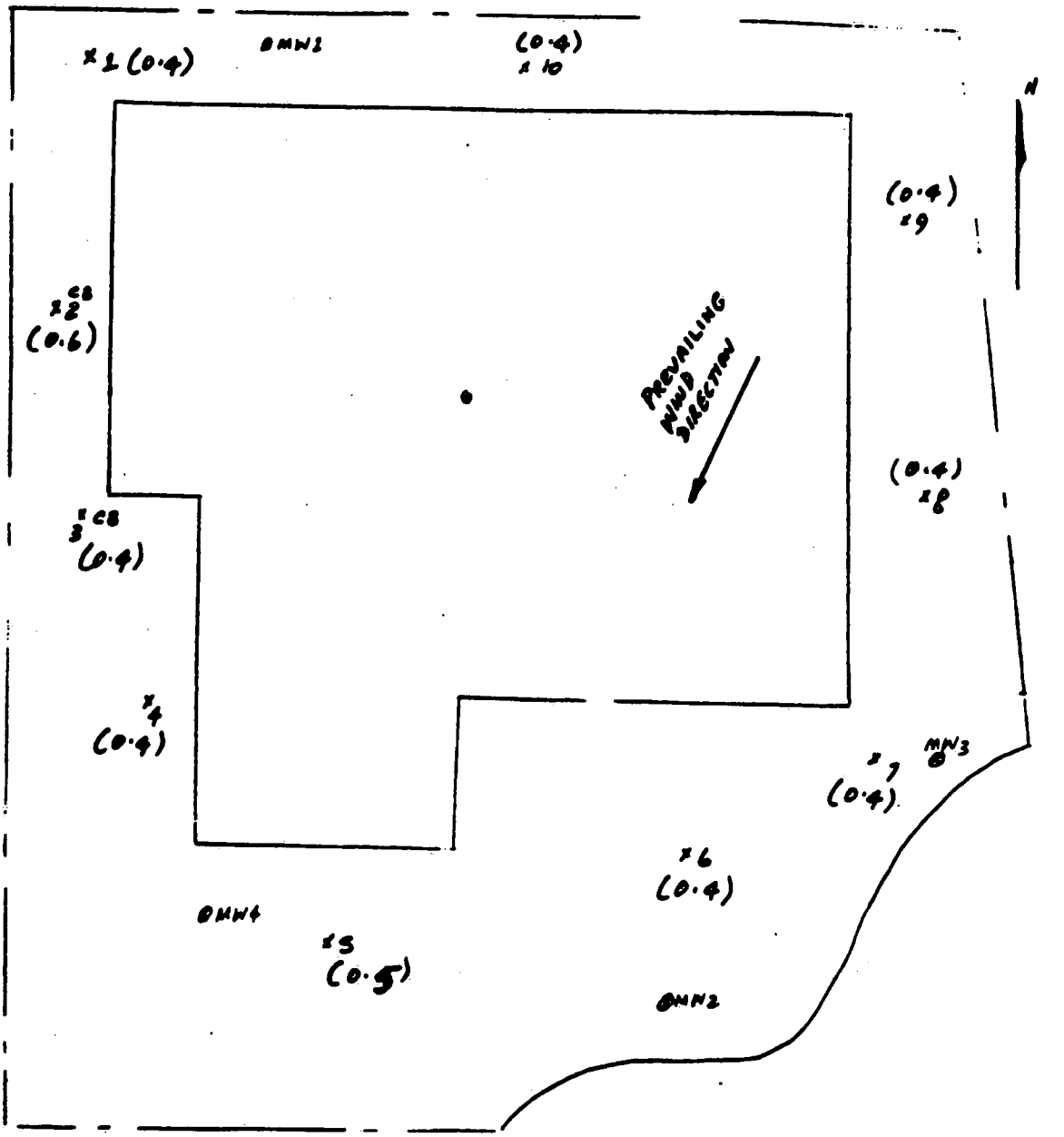
G&H that all material should be tremied.
Contractor resumed work.

5:00 PM Contractor stopped for 1 hour to allow bentonite pellets to set after pouring water.

6:00 P.M. Contractor started to tremie the cement/bentonite grout to 3½ feet from the mouth of the well.

7:30 P.M. Contractor stopped with the cement/bentonite grout at elevation 3'-10" below ground. Contractor started to use soil from the well to mix concrete for surface seal and we instructed him to stop. He was told to bring aggregate for the concrete the next day.

8:00 P.M. Contractor went to decon area to steam clean equipment.
Stop working at 8:30 P.M.



DRAWING 2 READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED ON SEPTEMBER 15, 1988.

 Thur. Sept. 15, 1988

Materials used by contractor for MW #1
sand pack 2 - 100 lb bags size 8-12 sand
bentonite slurry 5 lb bentonite powder, 3½ gal. WATER
bentonite pellets 5 GAL
cement/bentonite grout:
1ST BATCH: 26 gal WATER
4 (94 lb) bags portland cement
20 lb bentonite powder

2ND batch: 39 gal. water
6 (94 lb) bags cement
30 lb bentonite powder

cement/sand/water (surface seal)
done on Fri. Sept. 16, 1988.
1½ (94 lb) bags cement
2 (100 lb) bags gravel

MONITOR WELL CONSTRUCTION REPORT

THUR. SEPT. 15, 1988

Site I.D # 152021

Well No. 1

Total Depth _____ Surface Elev. _____ Top Riser Elev. _____

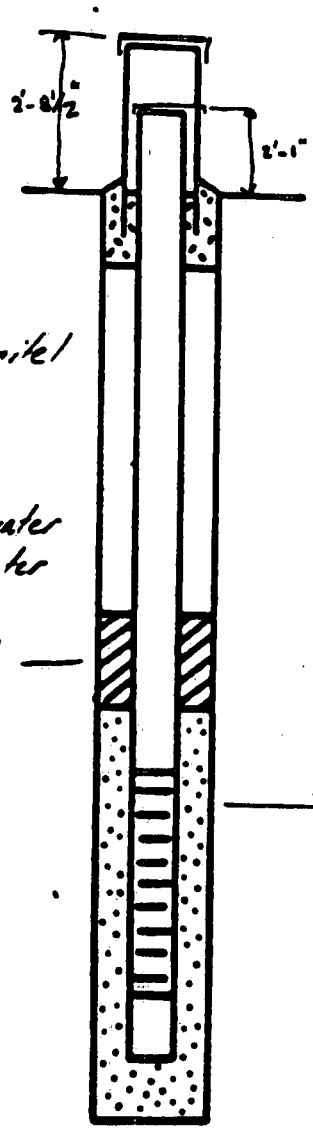
Water Levels (Depth, Date, Time) _____

Date Installed SEPT 15, 1988

Riser:	Dia.		Material		Length
Screen:	Dia.	2"	Material		Length
Prot. Csg:	Dia.		Material		Length

Slot Size 20

SCHEMATIC



2'-8½" Prot. Csg stickup

2'-1" Riser stickup

Ground Surface

Surface Seal Type concrete (sand/cement)

3'-10" Bottom Surface Seal

cement/bentonite/water

Grout Type CEMENT/BENTONITE

Seal Type bentonite pellets/water
bentonite/bender/water

33'-4" Top Seal

TOP OF SLURRY 34'-4"

35'-6" Top Sand Pack

39'-0" Top Screen

40'-0" GROUND WATER

Sand Pack Type/Size 8-12

DRAWING 2A

49'-0" Bottom Screen

49'-2" Bottom Sump/Wellpoint

50' Total Depth of Boring

SIROUS H. NABAVI

Sirous H. Nabavi

L. D. NARAYSINGH

R-145

Date: Fri. Sept. 16, 1988 Weather, sunny, cool, 60°F
Time to arrive on site: 8:05 AM calm

Driller arrived on site 8:30 AM. Started in two places. At MW#1 site, he cleaned the work area and prepared for placing concrete around the 4" protective casing. In his decon. area, he steam-cleaned his working tools that will be used in drilling MW#2. The augers which had been cleaned the previous night were steam cleaned and water-jet cleaned once more. Then he started setting up his work area around MW#2 At the site of MW#1, Driller was still waiting for his development pump to develop the well. The cap on top of the 2" PVC casing was broken, so he was asked to provide a new cap. The concrete mound around the top of the well was placed 6" deep all around sloping away from the 4" protective casing. The lock provided for the top of the well was not available, so the driller placed a temporary lock on it and gave its key to Miss O'Brien, NYSDEC supervisor.

9:00 A.M. The HNu meter was calibrated by adjusting the zero ajustment and a perimeter survey of the plant was made. The results are shown on page 32

12:00 Contractor break for lunch.

12:30 Contractor back from lunch.

R-146

12:15 We took samples for chemical analysis for M.W. No. 1 at H2M labs.

1:10 PM Contractor started drilling, after setting up at work area for monitoring well No. 2.

Zero adjustment was made for HNU calibration before each reading.

BLOW COUNT 6" PER DEPTH 140 lb/in² HAMMER	SAMPLE No.	GEOLOGY DESCRIPTION	DEPTH (FT)	HNU
2-6-9-8	1	dark/light; fine brown sand, layered	0-2	1.0
30-20-30-34	2	Dark/light/white fine sand & rock particles	2-4	1.0
4-6-8-20	3	white/light brown fine sand	4-6	0.8
2-5-5-6	4	light/dark, fine brown sand	6-8	0.6
4-11-15-19	5	light/dark fine sand	8-10	0.6
4-5-11-9	6	light/dark; fine to coarse with dark brown organic soil and white pebbles	10-12	0.7
4-6-8-8	7	same as '6' with some plant mat, dark brown soil sandwiched with fine granular sand	12-14	0.8
6-19-9-22	8	same as '7'	14-16	0.7
3-9-9-8	9	light brown fine sand with organic material	20-22	0.7
5-6-9-12	10	same as '9'	25-27	0.7

DRILLER'S CREW DEC REP M. O'BRIEN

JOE KAUFMAN

KENNY REYNOLDS

SALIF BANGE

JOAN PLINT

	BLOW COUNT 6" PER DEPTH 140 lb/in² HAMMER	SAMPLE No	GEOLOGY DESCRIPTION	DEPTH (FT)	HNU
3:30 PM GRAIN SIZE ANALYSIS	7-7-10-8	11	Light brown fine sand with organic material	30-32	0.8
3:55 PM CHEMICAL ANALYSIS	4-8-12-22	12	SAME AS 11	35-37	0.8
4:05 PM CHEMICAL ANALYSIS (CONT ON PAGE 35)	5-5-7-6	13	SAME AS 11	35-37	0.7

TABLE 2. HNU READINGS AND PHYSICAL DESCRIPTION OF SAMPLES MW42

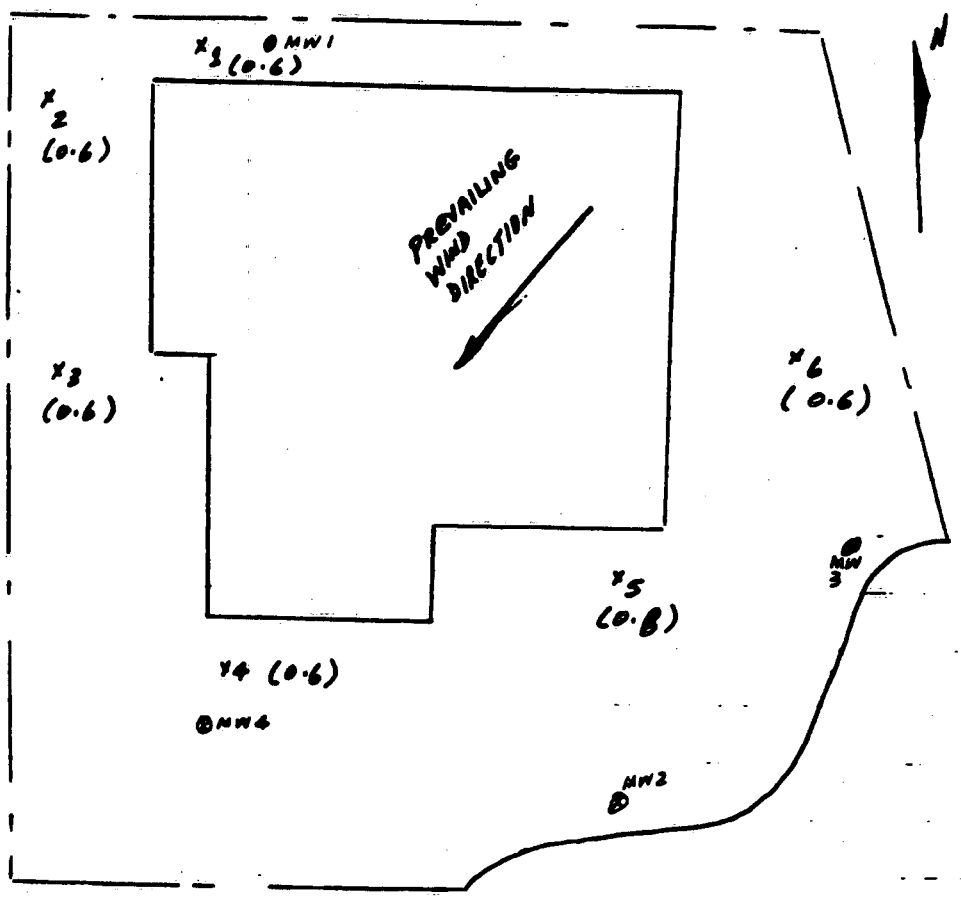
4:10 PM Driller took break, depth stopped: 35 feet.

Contractor decided to stop for the day bearing in mind that he had not gotten to the ground water table.

Contractor secure hole by:-

- Making auger trim with ground level
- placing wooden pallet over auger
- Cover on top of, and around pallet with sand.
- placing 55 gal. drum filled with drill cuttings on pallet.
- placing 4 other 55 gal drums filled with drill cuttings adjacent to center drum.

5:00 P.M. Contractor left site.



DRAWING 3. READINGS AND LOCATION OF HNU SURVEY CONDUCTED SEPTEMBER 16, 1988.

SIROUS H. NABAVI
Sirous H. Nabavi

L. D. NARAYSINGH
Narayansingh

Monday Sept. 19, 1988 Weather: Cloudy, hazy, calm. 65°F

Time arrived on site: 7:35 AM

8:10 A.M. At 8:10 before the drilling rig arrived, a long tanker truck parked in front of MW No. 2 was blocking the drilling rig's location. Sirous Nabavi contacted the plant personnel and asked them to expedite the off loading in order to move the tanker truck out of the way, and was told that it would take ½ hour to unload.

8:30 A.M. Drilling rig arrived on site and Si Nabavi told Joe Kaufman (Driller's super) to start setting up his equipment in the decon-area to be steam cleaned.

8:45 A.M. HNu reading was done after zero adjustment was made for calibration. Readings and locations are shown on page 41.

9:00 A.M. The driller connected the water hose and started steam cleaning his augers, and other well-inserted tools and piping. The driller had brought in a new steam-jenny, and he is getting much drier and hotter steam (max. capacity Temp. 325°F.

9:15 AM Contractor finished steam cleaning and moved to set up at well No. 2. The drilling rig moved to well No. 2 at 9:30 AM.

(See page 35)
At 1:30 Sirous Nabavi called John Goff of M.P.C. since Joe Kaufman had not been very co-operative during the morning's work period. John Goff said he would be there by 3:00 P.M. He never showed up.

9:50 AM. Contractor started drilling. The bore hole for MW 2 was found in the same secured fashion as left on friday Sept 16, 1988. HNU adjustment was done before each reading.

	BLOW COUNT 6" PER DEPTH 140 lb/in² HAMMER	SAMPLE No.	GEOLOGY DESCRIPTION	DEPTH (FT)	HNU
GROUND WATER AT 39 FEET	6-10-6-6	14	dark/light Brown, fine to coarse sand wet with rounded pebbles	40-42	1.2
10:40 AM GRAIN SIZE ANALYSIS NO HYDROMETER ANALYSIS NECESSARY	7-6-4-5	15	fine to coarse sand with pebbles, wet, dark/light brown	45-47	1.1
	3-4-2-1	16	light brown, coarse sand,	50-52	1.4

TABLE 2. HNU READINGS AND PHYSICAL DESCRIPTION OF SAMPLES MW82

(CONT'D FROM) P. 29

11:00 AM Contractor stopped for coffee break

11:30 AM Contractor resumed working.

Contractor started to introduce well casing. Since ground water was found at 39 feet below ground level, in order to have the screen, not above the water table, the bottom of the casing was placed at 48 feet below ground level.

1:00 P.M. Contractor introduced bentonite slurry into 1½" tremie pipe

1:20 P.M. Contractor finished introducing bentonite pellets to complete 2' seal.

(see page 24)

1:40 P.M. Contractor break for lunch

2:15 P.M. Contractor back from lunch.
D.E.C. Rep. T. S. Manickam arrived on site.

Contractor prepared site location of MW No. 3 by laying plastic and barricading area while waiting for 1 hr. waiting period to be up for bentonite seal.

3:20 P.M. Contractor mix cement/bentonite grout and started to introduce it through the tremie. Contractor placed too much of the mixture in the augers and it started overflowing. Contractor displaced screen and casing of MW No. 2 when he tried to remove his auger by raising. Contractor hit on casing to put it back to its original position, but the bentonite seal was already broken when the casing moved. The well was declared lost.

D.E.C. Rep. T.S. Manickam left to contact his office of the problem. When he came back, he related that the bore hole should be filled with cement/bentonite grout up to 2 FEET below the ground level, then completed with concrete.

Upon removing his augers, contractor found end of last auger to be sealed with bentonite. Contractor had to saw-cut casing while removing augers. Contractor placed grout in hole and secure in same manner as previous day.

DRILLER'S CREW

JOE KAUFMAN

DON KLAUS

JOAN FLINT

SALIF BANSE

DEC. REP. T.S. MANICKAM

R-155

5:30 P.M. Contractor went to decon area to steam clean augers and other down-hole equipments.

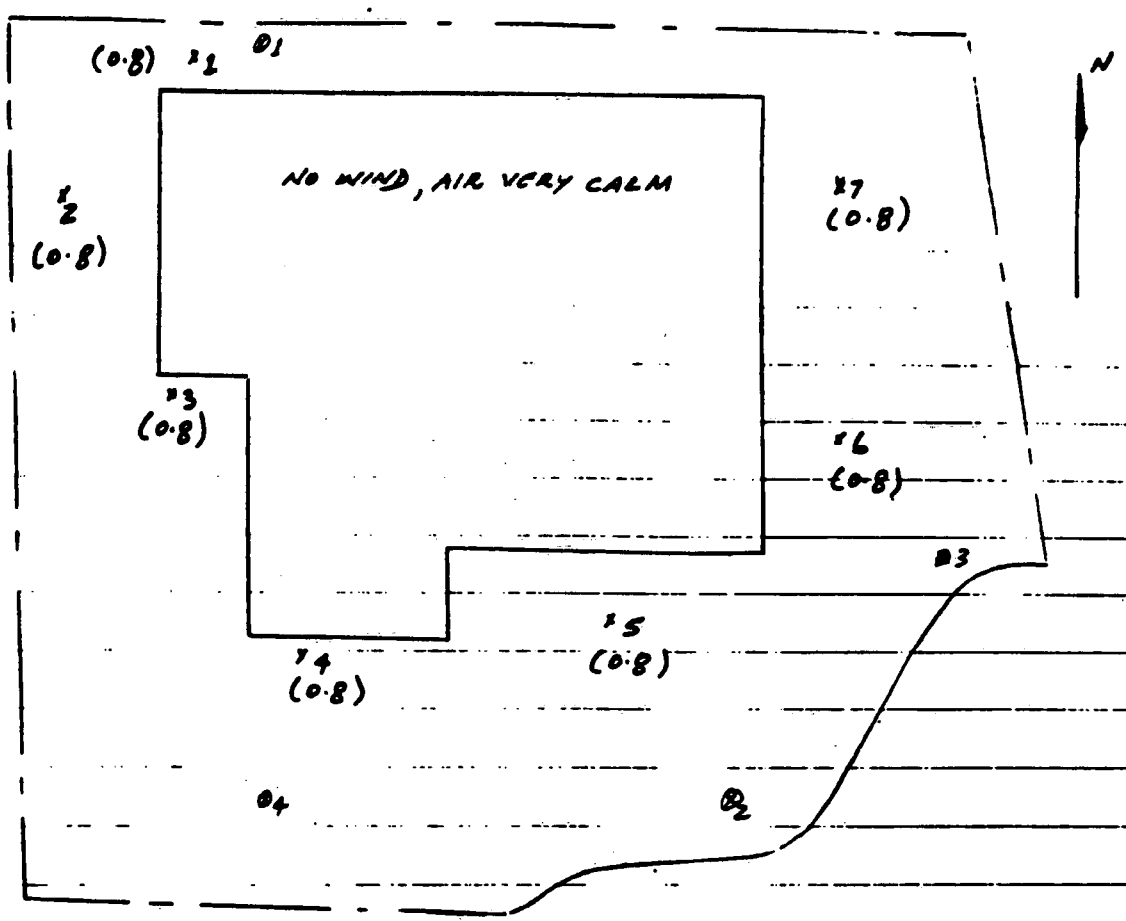
6:00 P.M. Steam Jenny ran out of fuel, one of contractors crew went to get fuel.

6:40 P.M. Contractor resumed steam cleaning

7:00 P.M. Contractor left site.

Mon. Sept. 19, 1988.

Materials used by contractor for last MW #2
Sand pack 2 (100 lb) bags 8-12 sand
bentonite slurry 4 gal (including water) - 5 lb powder, 4 gal H_2O
bentonite pellets 3 1/2 gal
cement/bentonite grout:
1ST BATCH
10 bags (94 lb) cement
65 gal water
50 lb bentonite powder



DRAWING 4. READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED ON SEPTEMBER 19, 1988

Mon. Sept. 19, 1988

Elevation Back up.

ELEVATION OF MATERIAL IN BORE HOLE	ELEVATION OF BOTTOM OF AUGERS

After pouring sand through tremie, the following measurements were observed, after removing 3 five feet length of augers.

TAPE STARTS AT 3' SHORT	① 42'-10" / 3-00 / 39-10" ← TOP OF AUGER ABOVE GROUND TO SAND	39-10" / 2'-2" ← AUGER STICK-UP / 37-8"
	① 35'-0" ← 7 pieces of 5' auger / 2'-2" ← auger stick up / 32-8"	

IGNORING OUR OBJECTION CONTRACTOR CONTINUE TO RAISE AUGER

② 42'-9" / 3 / 39-9"	39-9 / 2-9 / 37'-0
② 35-0 / 2-9" / 32-3"	
③ 43'-9" / 3-0 / 40-9	40-9 / 3-5 / 37-4
③ 35-0 / 3'-5" / 31'-7"	

CONTRACTOR NEEDED 1'-6" OF SAND TO ACHIEVE 35'-10" FOR EL. OF SAND

④ 44'-1" / 3-0 / 41-1"	41-1 / 4-1 / 37-0
④ 35-0 / 4-1 / 30-11	
⑤ 43-1 / 3' / 40'-1"	40'-1" / 4'-1" / 36-0"
⑤ 35-0 / 4-1 / 30-11	
⑥ 42-9 / 3 / 39-9	39-9 / 4-4 / 35-5 ← TOP OF SAND
⑥ 35-0 / 4-4 / 30-8	CONTRACTOR REMOVE ANOTHER AUGER AGAINST OUR OBJECTION SAYING THE SLURRY PELLETS WILL SWELL UP TO 3 TIMES THE AMOUNT.
⑦ 38-6 / 3-0 / 35-6	35-6 / 4" / 35-1
⑦ 30-0 / 0-4 / 29-8"	
⑧ 37-6 / 3-0 / 34-6	34-6 / 4 / 34-2
⑧ 30-0 / 0-4 / 29-8	
⑨ 36-8 / 3 / 33-8	33-8 / 1-3 / 32-5
⑨ 30-0 / 1-3 / 28-9	⑩ 30-0 / 1-8 / 28-4
⑩ 36-9 / 3 / 33-9	33-9 / 1-8 / 32-1 ← TOP OF PELLETS

R-159

Mon. Sept. 19, 1988.

MONITOR WELL CONSTRUCTION REPORT

Site ID # 152021

Well No. 2 (LOST WELL)

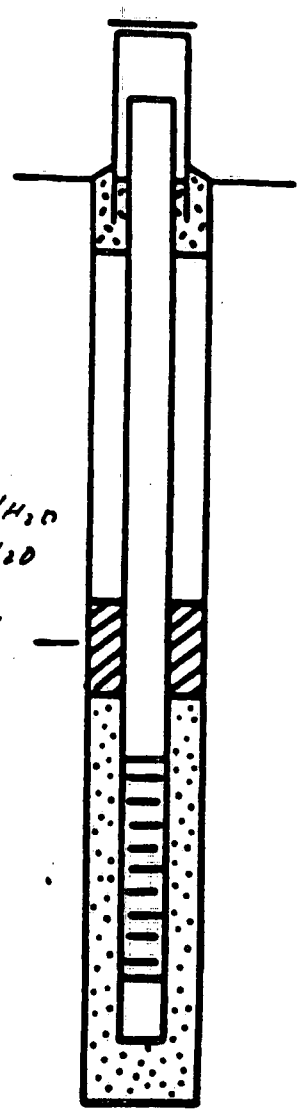
Total Depth _____ Surface Elev. _____ Top Riser Elev. _____

Water Levels (Depth, Date, Time) _____

Date Installed SEPT 29, 1988

Riser: Dia. _____ Material _____ Length _____
Screen: Dia. _____ Material _____ Length _____ Slot Size 20
Prot. Csg: Dia. _____ Material _____ Length _____

SCHEMATIC



_____ Prot. Csg stickup

2'-2" Riser stickup (LATER REMOVED)

Ground Surface

Surface Seal Type CONCRETE (CEMENT/SAND)

3'-0" Bottom Surface Seal

Grout Type CEMENT/ BENTONITE POWDER

Seal Type BENTONITE PELLETS/H_2O BENTONITE POWDER/H_2O

32'-1" Top Seal

TOP OF SLURRY 34'-2"

35'-5" Top Sand Pack

37'-10" Top Screen

GROUND WATER AT 39'

Sand Pack Type/Size 8-12

47'-10" Bottom Screen

48'-0" Bottom Sump/Wellpoint

50' Total Depth of Boring

DRAWING 4A

SIROUS H. NABAVI
Sirous H. Nabavi

L D NARAYSINGH
Narayansingh

R-160

Tuesday September 20, 1988 Weather: cloudy, chance of rain. 69°F

Time arrived on site 7:45 A.M.

8:10 A.M. Completed HNU perimeter survey of site after setting the zero adjustment before each reading. The locations and readings are shown on page 53

8:20 AM Driller's crew arrived on site. Started steam cleaning.

9:00 AM Driller was ready to start drilling bore hole for the new MW No. 2 at the revised location, but since the owner was not available to get his consent, we told the driller to start MW No. 3 near the approved alternate location, in the edge of the grassed strip of plant. (see page 55)

9:30 A.M. Contractor started drilling. For calibration zero adjustment was made before each HNU reading.

BLOW COUNT 6" PER DEPTH 140#/30" HAMMER	SAMPLE NO.	GEOLOGY DESCRIPTION	DEPTH (FT)	HNU READING
8-9-7-9	1	fine to coarse sand, with pebbles, with organic soil	0-2	0.6
4-3-4-4	2	fine brown sand with pebbles and organic soil, multi-layed.	2-4	0.55
2-3-5-4	3	fine brown sand with organic soil	4-6	0.55
6-20-16-24	4	fine brown sand, coarse white sand with pebbles, boulders, organic soil.	6-8	0.40

* See p. 47.
We did not take any soil samples for chemical analysis because DEC rep said if samples HNU readings were below 5.0 it was not necessary.

	BLOW COUNT 6" PER DEPTH 140 lb/in² HAMMER	SAMPLE No.	GEOLOGY DESCRIPTION	DEPTH (FT)	HNU READING
	2-12-10-11	5	light/dark brown sand fine to coarse	8-10	0.4
	14-10-11-11	6	same as '5'	10-12	0.4
	2-4-12-9	7	same as '5'	12-14	0.4
	4-6-10-11	8	same as '5'	14-16	0.4
	9-14-8-7	9	same as '5'	20-22	0.4
	11-8-8-18	10	same as '5'	25-27	0.4
11:25 AM	Contractor took break, contractor steam cleaned his split spoons, well casing and screen because they were not properly placed on pallets				
12:00	Contractor resumed drilling.				
	13-7-8-9	11	fine to coarse sand with some pebbles	30-32	0.4
12:30 PM GRAIN SIZE ANALYSIS	7-8-12-33	12	fine to coarse sand with brown pebbles	35-37	0.4
GROUND WATER AT 42 FEET.	6-13-9-7	13	same material with some dark brown medium fine grain sand. ~~and clay~~	40-42	0.3
	3-6-5-7	14	same material, wet.	45-47	0.2
	3-6-5-4	15	SAME AS "14"	50-52	0.2
see p. 46 *	TABLE 3. HNU READINGS AND PHYSICAL DESCRIPTION OF SAMPLES. MW13				
1:30 PM	Contractor broke for lunch				
2:00 PM	Contractor returned from lunch.				

There was descrepancy between contractor and us about the level of the ground water table in order to place screen 1 foot above. Joe Kaufman said that ground water was reached at 50 feet but could not account for the dryness of the split spoon sample at 40-42 feet below the ground. This was resolved when DEC rep. called his office and spoke to M. Chen who said that the depth of the water table should be measured. Driller proceed to measure depth with steel rods used to support ~~auger~~ split spoon and found the depth of ground water to be 42 feet below ground level. Contractor proceed to introduce well screen and casing so as to allow for a foot of screen above the water table. The casing did not go all the way down since there was a plug at the bottom of the auger formed by material from the ground.

2:45 P.M. Contractor introduced water into the well to eliminate plug. After this was done contractor started pouring sand pack through tremie around screen.

3:25 PM Chain used to pull augers above ground get broken.

4:00 PM State rep stopped job since amount of sand

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CONTRACTOR'S CREW

DEC. REP. T.S. MANICKAM

JOE KAUFMAN

JOANNE FLINT

SALIF BANSE

ERIC JENNINGS

calculated was ~~less~~ more than amount used to pack 12' of sand. Contractor could not account for difference.

4:15 PM Contractor resumed working.

4:25 PM State Rep. stopped job to call office to find out what should be done about discrepancy.

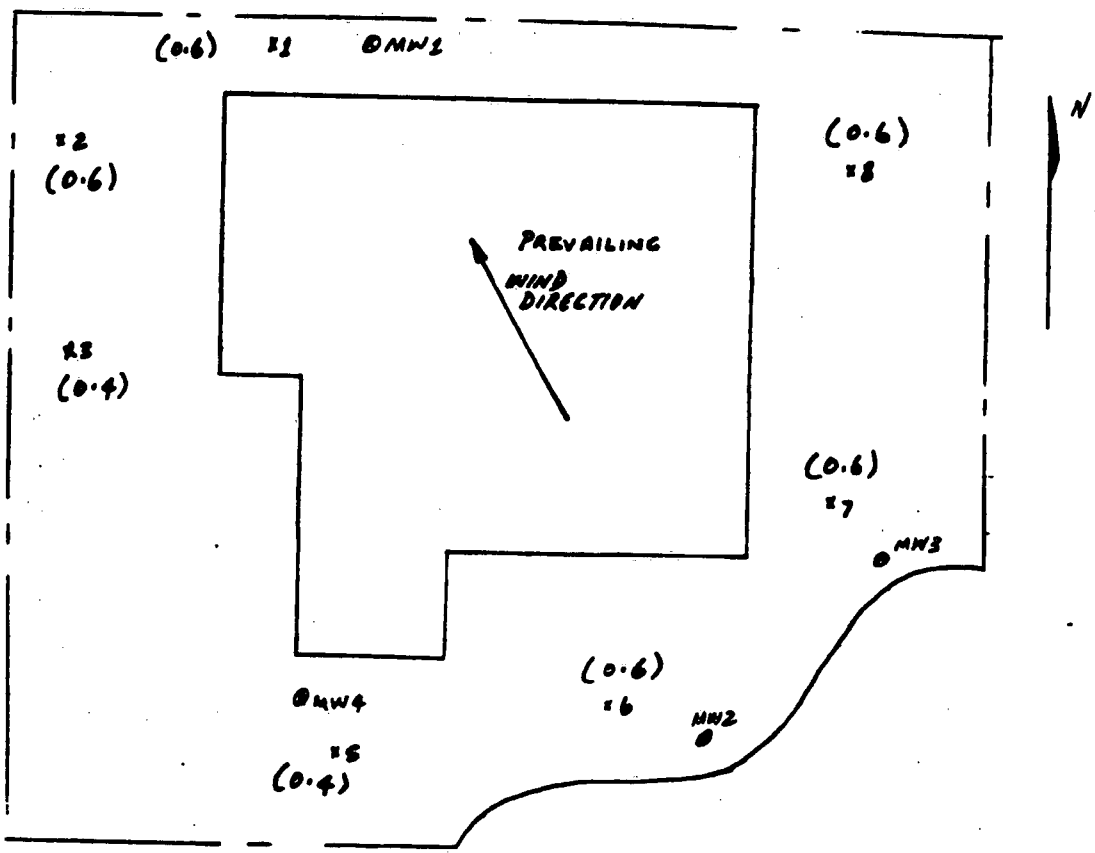
4:40 P.M. State Rep. said that he did not get in touch with superior so job would have to be stopped until next day. He then went on to explain how the bentonite slurry should be introduced into the bore hole.

4:55 P.M. Contractor started to pack up. We labelled the drums with waste water and drill cuttings. Contractor secure well by:-
- placing empty drum over augers and casing,
- placing 4 drums with drill cuttings adjacent to center drum.
- place sand bags on top of center drum.

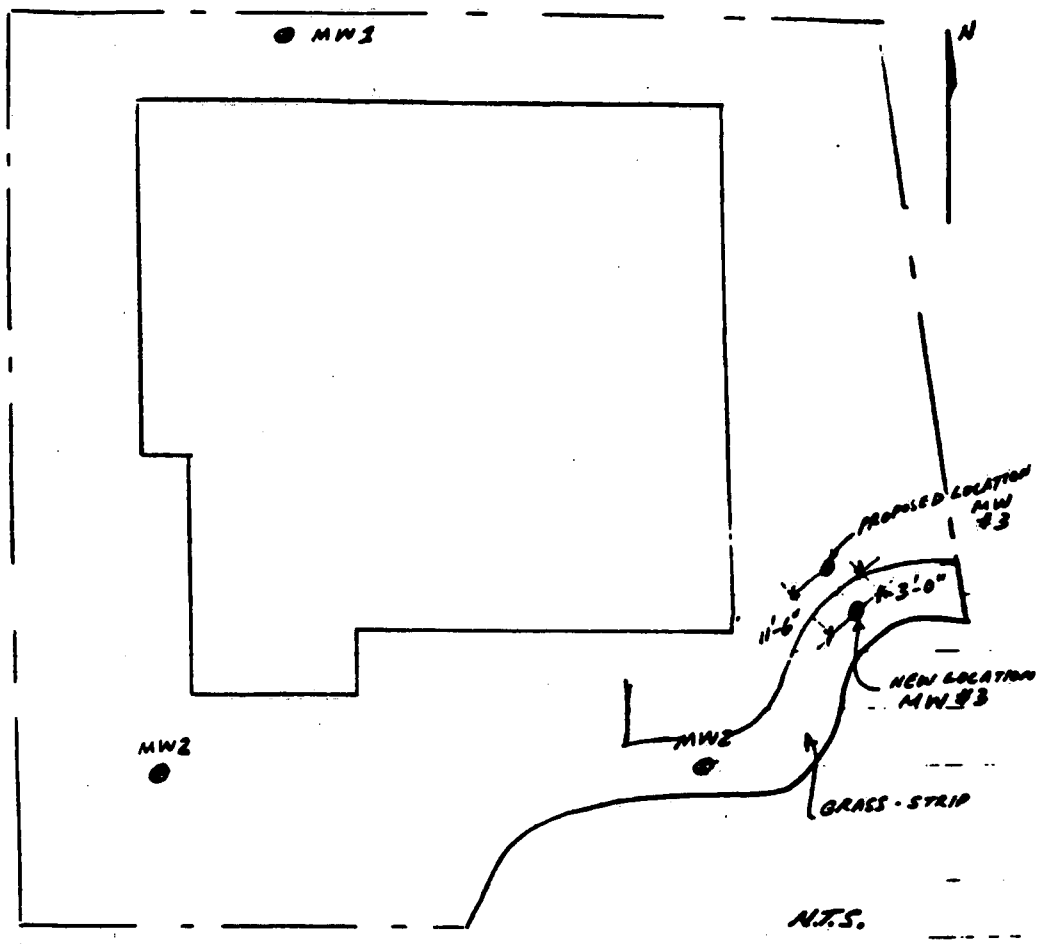
(This was done since site was not secure, and contractor could not leave his drill rig on augers)

5:20 P.M. Contractor started steam cleaning equipment

5:40 P.M. Contractor finished steam cleaning and left site.



DRAWING 5 . READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED ON SEPTEMBER 20, 1988.



DRAWING 5A. NEW LOCATION OF MW#3.
(Proposed location was on paved area. It was decided that a location in the grass strip would be better, because trucks that enter the plant may run it over since it had a stick-up).

SIROUS H. NABAVI
Sirous H. Nabavi

LD NARAYSINGH
Narayansingh

Wednesday Sept. 21, 1988 Weather: Sunny; mild calm winds.

Time arrived on site: 7:50 AM

8:00 AM. Contractor arrived on site. Sirous Nabavi did perimeter survey with HNU meter of plant after making calibration with the zero adjustment knob. Results are shown on page 63. (Plant Closed)

8:15 AM Driller started to empty his mud water pan into 55 gallon drums and prepare for steam cleaning.

8:30 AM Steam cleaning started

9:00 AM Steam cleaning ended. A measurement of the temperature of the steam was made and found to be 208°F.

9:45 AM Drill rig moved to well No. 3 to continue completion of well. An initial depth was taken for the sand and bottom of auger. Both were found to be 39'-4" below ground level. The desired top of sand elevation was not achieved as yet so contractor started pouring sand.

10:15 AM John Errington of MPC arrived on site. Richard Barbour who was present had private meeting with him. Joe Kaufman (drill master) became much more cooperative.

The bentonite slurry was mixed to a thickness approved by the D.E.C.'s rep. then introduced into bore hole.

11:15 A.M. Water was poured on bentonite tablets

11:30 A.M. Contractor broke for lunch. The bottom of the auger was 1 foot above the level of the pellets but only 4" above the level of the water which formed a slurry in the bore hole.

12:30 PM Contractor back from lunch

Contractor made his first batch of cement/bentonite grout and introduced into tremie tube, by centrifugal pump. Only half the estimated amount (of volume) was filled by the grout.

2:00 PM John Emington left site

2:45 P.M. Contractor had problem pulling his augers out resulting in a number of bolts being broke on his drill rig (these were replaced). The difficulty was caused from the first batch of grout flowing up on the outside of the bottom 10' of augers and hardening. This was also the reason why the first batch did not

CONTRACTOR'S CREW

JOE KAUFMAN

JOANNE FLINT

SALIF BANSE

ERIC JENNINGS

DEC. REP. T.S. MANICKAM

fill the estimated amount. It was concluded that in future, contractor should pump at a slower rate and in smaller quantities to avoid problems.

4:40 PM When last auger was taken out, approximately 2" of soil fell into the bore hole. Contractor did not have post hole digger on truck or any other means to remove soil, so he was not able to complete well with concrete mound.

Contractor secured well by:-
- Placing empty drum over casing
- placing 4 drums with drill cutting adjacent to center drum
- Place wooden pallet on top of center drum
- Place drum filled with drill cutting on top of pallet.

5:00 PM Contractor began steam cleaning augers and other equipment used in bore hole. Contractor had problems cleaning augers with grout.

6:05 PM Contractor finished steam cleaning and left site.

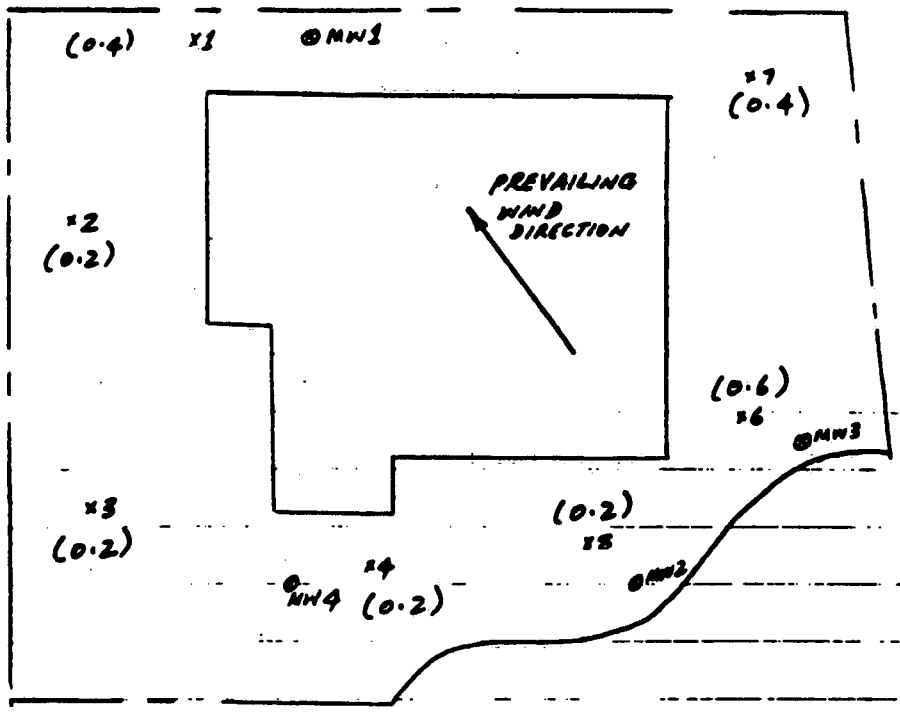
Wed. Sept 21, 1988

Materials used by contractor for MW#3
Sand pack 18 1/2 gal
bentonite slurry: 5 lb bentonite ; 4 gal H_2O
Bentonite pellets : 3/4 of 5 gal bucket
Cement / bentonite / water grout:-
1st Batch
8 (94 lb each) bags cement
32 lb bentonite
52 gal. water

2nd Batch
8 bags cement
32 lb bentonite
52 gal. water

3rd Batch
4 bags cement
16 lb bentonite
26 gal H_2O

4th Batch
2 1/2 bags cement
10 lb bentonite
16 gal water



DRAWING 6. READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED ON SEPTEMBER 21, 1988

Wed. Sept. 21, 1988

Elevation back-up

	ELEVATION OF MATERIAL IN BORE HOLE	ELEVATION OF BOTTOM OF AUGERS
INITIAL MEASUREMENT BEFORE STARTING →	40'-7" / 1'-3 / 39'-4"	INITIAL 40'-2" / -10" / 39'-4"
①	40'-6" / 1'-6" / 39'-0	① 40'-2" / 1'-1" / 39'-1"
②	40'-10 / 2'-3 / 38'-7" ← TOP OF SAND PACK	② 40'-2" / 1'-10" / 38'-4"
③	40'-2" / 3'-1" / 37'-1" ← TOP OF BENTONITE SLURRY	③ 40'-6" / 3'-6" / 37'-0"
④	41-8½ / 5'-2 / 36'-6½" ← TOP OF BENTONITE PELLETS	④ 40'-2" / 4'-6" / 35'-8"
	AFTER 1 HOUR ELEVATION OF PELLETS REMAINED THE SAME AFTER ADDING WATER	
⑤	24'-0" / 2-5" / 21-7"	⑤ 25'-2" / 3'-5" / 21'-9"
⑥	22-8 / 4'-6" / 17'-6"	⑥ 20'-2" / 4'-6" / 15'-8"
⑦	14'-0" / 3'-6" / 10'-8"	⑦ 15'-2" / 3'-6" / 11'-8"
⑧	10'-10" / 2'-10" / 8'-0"	⑧ 10'-2" / 2'-8" / 7-6"
⑨	AFTER ALL AUGERS WERE REMOVED, A FINAL MEASUREMENT WAS TAKEN AND FOUND TO BE 3'-2" ← TOP OF CEMENT/BENTONITE GROUT	

Wed. Sept. 21, 1988

9/21/88

MONITOR WELL CONSTRUCTION REPORT

Site CANTOR BROTHERS

Well No. 3

Total Depth _____ Surface Elev. _____ Top Riser Elev. _____

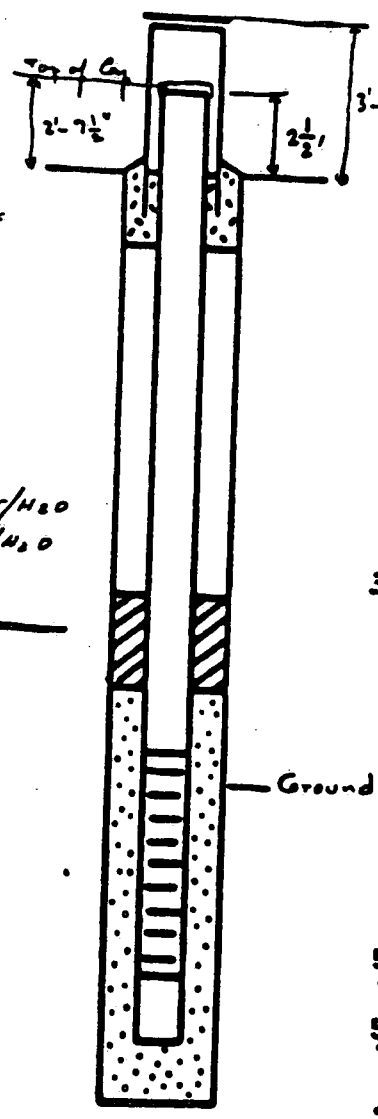
Water Levels (Depth, Date, Time) _____ Date Installed _____

Riser: Dia. _____ Material _____ Length _____

Screen: Dia. _____ Material _____ Length _____ Slot Size 20

Prot. Csg: Dia. _____ Material _____ Length _____

SCHEMATIC



3'-2" Prot. Csg stickup

2½' Riser stickup

Ground Surface

3'-2" Bottom Surface Seal

Surface Seal Type CONCRETE

Grout Type CEMENT/ BENTONITE POWDER

Seal Type BENTONITE PELLETS/H_2O BENTONITE POWDER/H_2O

37'-1" Top of Slurry

36'-6½" Top Seal

38'-7" Top Sand Pack

40'-9" Top Screen

Sand Pack Type/Size _____

50'-9" Bottom Screen

50'-11" Bottom Sump/Wellpoint

52' Total Depth of Boring

DRAWING 6A

SIROUS H. NABAVI

Sirous H. Nabavi

L D NARAYSINGH

Naraysingh

Thursday Sept 22, 1988 Weather: Clear, Sunny, mild wind
Time arrived on site: 7:45

7:45AM HNu survey conducted, readings shown on page 75.

8:30 AM Contractor arrived on site. Part of crew prepared for steam cleaning while others started clearing around MW No. 3 – removing the barrels with the boom truck and taking it to storage area.

8:45 AM Contractor started steam cleaning back of drill rig.

9:05 AM Contractor finished steam cleaning drill rig and move to set up at new location for MW No. 2 which was not yet approved by Mr. Matthew Miller, Owner.

9:10 AM Contractor finished steam cleaning down hole equipment for well. State Rep., T Minicken, raised a question on steam cleaning. The present practice is for the Driller to steam clean his equipment once at the end of the day, and once the next morning. State Rep says the one at the end of the day should only consist of washing, not steam cleaning because the equipment has to be clean, not steam cleaned. Driller said that he have to steam clean his augers of cement before he takes it out of the site, so it does not hardens. State Rep said that he would

check with his superiors.

9:15 AM Joe Kaufman started to cut branches of tree to make room for his drill rig. (See sketch on page 77 for new location).

9:45 AM Joe Kaufman left the site to check on the following criteria:

1. The centrifugal pump that was sent to him to deliver the bentonite slurry down the tremie was not the right type. He said that it would not work because it had a 3" ø opening and, 15 feet of hose would not deliver the bentonite slurry.
2. He was required to use a side-delivery tremie pipe for the bentonite slurry. He does not have an elbow nor does he agree to cap off the bottom of the tremie pipe and saw cut an opening at the side of the pipe.

The operations stopped since the driller does not have proper equipment as per specs.

10:15 Joe Kaufman returned. He had discussed the above items with his supervisor John Errington. On the elbow at the end of the tremie pipe, driller agreed to provide 45° elbow; but on the centrifugal pump, driller does not have the proper type of pump for delivering the bentonite slurry and if he orders it, he will not get it overnight.

State Rep. then contacted Larry Alden

to report to them and to ask for information as to what should be done.

10:20 AM T. Manickam and Joe Kaufman both left to contact their headquarters for instructions. At this time the driller's crew started placing concrete for well seal on MW No. 3 and lost MW No. 2 sand in the inside of the protective casing of MW No. 1 to bring it up to ground level.

10:40 AM State rep. return

10:50 AM A call was made to GEH by Si Wakani about the necessity of getting a daily report signed by the contractor and us as to times of essence and/or any other events that have to be recorded. Daily sign-out sheets should be provided by the contractor with the amount of material and time spent.

1:30 PM Break for lunch

2:00 PM. Back from lunch

3:05 PM. Contractor finished cleaning site area and left.
We attempted to sample the drill cuttings that were already in drums

CONTRACTOR'S CREW

JOE KAUFMAN

JOANNE FLINT

SALIF BANSE

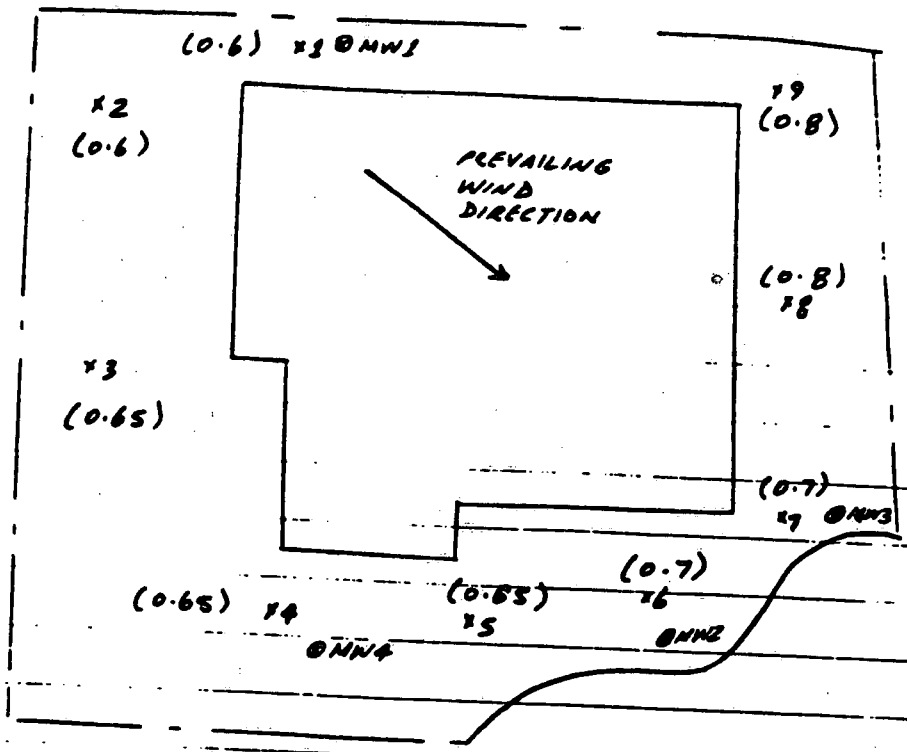
ERIC JENNINGS

DEC. REP. T.S. MANICKAM

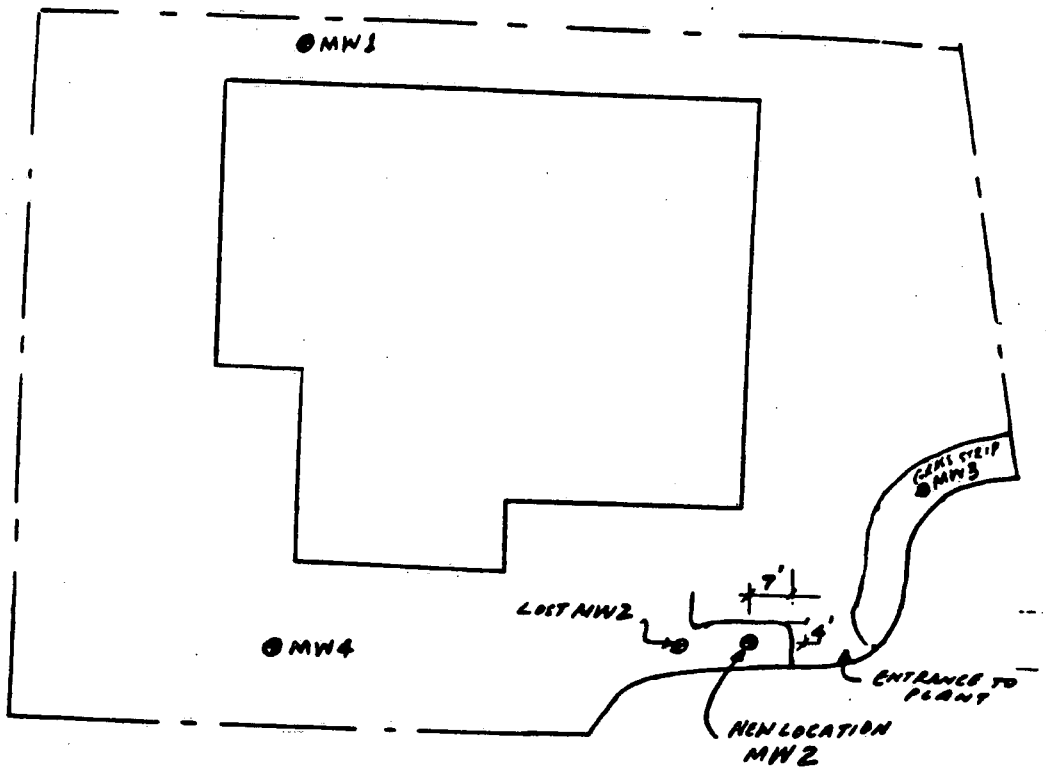
Thur. Sept. 22, 1988

but did not have the right tools to take a sample half way in drums as required by D.E.C. Rep.

Time left site : 4:30 P.M.



DRAWING 7. READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED SEPTEMBER 22, 1988.



DRAWING 7A. LOCATION OF NEW M.W. #2

SIROUS H. NABAVI

L D NARASINGH

Friday Sept 23, 1988 Weather: Cloudy & cool
Time arrived on site 8:30 AM
No DEC rep. present.

Driller is not working today because they did not have the centrifugal pump needed to deliver the bentonite slurry into the borehole.

We purchased the tools necessary for taking samples of drill cuttings and waste water from drums.

3:00 P.M. Called driller's rep. (John Emington) to find out if they had received the centrifugal slurry pump. John Emington stated that they had ordered the pump on the 22nd Sept., 1988 but they had not received it by Friday, therefore he suggested we call him Monday Sept 26, 1988 in the afternoon to find out if driller had received the pump, in which case they would be able to start Tues Sept 27, 1988.

Time left the site: 4:00 PM

SIROUS H. NABAVI
Sirous H. Nabavi

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Monday Sept 26, 1988 Weather: Sunny & Mild
Time arrived on site 9:00 AM
No DEC rep present.

Driller is not working today because they have not gotten the centrifugal pump for delivering slurry to the top of sand pack.

We started sampling of drill cuttings from drums for chemical analysis, making a composite sample from every 5 full 55 gal drums.

10:30 A.M. Composite sample No. 1 from 5 drums was collected. Drums were labelled with time and date of sampling.

10:30 A.M. Two men of the driller's crew arrived on site to load their cement mixing tank and the tool used for preventing the augers from sinking into the bore hole.

12:50 PM Composite sample No. 2, from 5 drums, was collected.

1:00 PM Break for lunch
1:30 PM Back from lunch
After lunch S. Nabavi made phone calls to MPC and G&H.
Telephone call to MPC was made in

order to find out if they had received the centrifugal pump for bentonite slurry so that they would be able to resume the drilling on Tuesday Sept. 27, 1988. MPC officer J. Emington told S. Nabavi that firstly they had not yet received the pump, and, secondly MPC had asked for a meeting with G&H in order to discuss and resolve the progress of Monitoring well drilling on Cantor Brothers site. Therefore MPC should not be able to resume the drilling operation on Tuesday Sept. 27, 1988.

S. Nabavi called G&H and talked to N. Hensey, Project manager for NYSDEC Phase II investigation project. He indicated that on Tuesday Sept 27, 1988, a meeting would be held at G&H with MPC and consultant rep. to go over the progress so far achieved at Cantor Brothers site and discuss several remaining matters which MPC had problems with.

Time left site 4:30 PM

SIROUS H. NABAVI

Sirous H. Nabavi

L. D. NARAYSINGH

R-186

Thursday September 29, 1988 Weather: Sunny, Brisk; 49°F
Time arrived on site 7:50 AM
No field work done on Tues Sept 27 & Wed Sept 28, 1988
Did HNU survey of plant. Readings and locations are shown on page 95.

8:10 AM Contractor arrived on site.
8:15 - 8:30 Driller prepared for steam cleaning
8:35 AM. Driller started steam cleaning bulk of drill rig and augers to be used for Well No. 2.
8:55 AM. Contractor completed steam cleaning.

9:00 AM. Contractor moved to new location of MW #2 and started drilling operations.
No split spoon samples will be taken from this borehole, because it is very close to lost MW #2. Only one split-spoon sample will be taken from the screened zone for grain size analysis.
At a depth of 5'6"10", there were more rocks and boulders than were found at original location of MW #2.

9:20 AM NYDEC Rep. arrived on site.

The soil coming out of the borehole is generally defined as fine-medium to coarse sand and gravel with rounded cobbles. Very similar to lost well #2.

9:30 AM John Ennington of MPC is experimenting

See 10:47 AM p.87

Driller is not charging stand by time since drilling operation was in process

with centrifugal slurry pump. The rate of flow for the pump is 4640 gal/hr (= 77 gal/min)

The mixture used for testing was 5 lbs of bentonite and 4 gal of water. The first mixture came out with too many lumps because all the bentonite power was poured at once.

10:00 Contractor prepared another ~~of~~ mixture of the same quantities as before. The thickness of the mixture was approved by the DEC's Rep. Margaret O'Brien.

The slurry was poured into a pipe leading to the centrifugal pump, but nothing was pumped out. Contractor added water to pump as a primer but still the slurry was not pumped.

The slurry was too thick, as it had stopped the impellers of the pump from turning. This was the same mixture that was used for MW #3 and was able to be gravity fed through the trenie..

10:45 see bottom of p. 86

DEC rep was uncertain of decision to make concerning slurry - if it should be mixed ~~to~~ be pumped or mixed to be thick enough then gravity fed. If mixed to be pumped, it would be of less thickness. Went to make call.

When Ms. O'Brien returned, she stated that DEC's rep. T. Manickam had done research about a pump that can pump 2 lb of bentonite powder to 1 gal of water.

She said that for today the slurry will be gravity fed after being mixed to a thickness approved by her. After ~~tremie~~ being introduced the slurry will be tapped to avoid voids.

10:05 Meanwhile this was being done, Si Nabavi was covering happenings at MW#2.

One split spoon sample was taken

	BLOW COUNT PER 6" OF DEPTH 140 lb/in² HAMMER	SAMPLE No.	DEPTH	DESCRIPTION OF MATERIAL
G.S. ANALYSIS	3-9-10-20	1	40-42	WET, FINE-MEDIUM, BROWN SAND to COARSE SAND ~~with some rounded~~ PEBBLES and boulders

TABLE 2.A. HNU READINGS AND PHYSICAL DESCRIPTION OF SAMPLES

10:20 Driller took break

10:30 Driller resumed auger drilling. 2½ drums filled with drill cuttings until now

11:10 Driller completes drilling and uses potable water to flush out sand plug in lead auger.

11:20 Driller started delivering sand pack through tremie pipe ~~only~~ using ~~using~~ a funnel on top of the tremie pipe. The sand gets caught in annular space so driller used potable water to flush down sand. Driller has difficulty with the sand sticking to the tremie pipe because it is wet.

1:25PM Contractor started preparing batch of slurry mixture

Guidelines on delivering slurry mixture (on relocated MW#2)

Thur. Sept. 29, 1991

1. Density: as judged by NYSDEC Rep. - 'Pudding'.
2. No pumping - Gravity Fed through tremie tube with side-delivery Elbow.
3. Tap the slurry delivered all around annular space.
4. Quantity: 4 gallons of water - 5 pounds of Bentonite Powder.

1:55 PM Contractor finished pouring slurry and introduced 3/4 of 5 gal bucket of pellets into borehole.

2:15 PM Contractor finished with pellets and time for setting starts.
NYSDEC Rep. waived the necessity to make measurement during the one-hour setting of the Bentonite Pellets.

2:30 P.M. S. Nabavi checked with Mr. Matthew Miller about leaving a clear area in the western parking lot so contractor would be able to start drilling operations at MW #4 tomorrow.

4:00 P.M. Contractor introduced first batch of bentonite/cement grout mixture. (78 gals)

5:00 Contractor placed second batch in annular space and pulled his auger by 5' lengths at a time. (32.5 gals)

5:20 P.M. Driller introduces third batch of grout in hole after taking measurement (13 gal)

CONTRACTOR'S CREW

JOHN EMINGTON

JOE KAUFMAN

SALIF BANSE

DAN ONSRUD

DON KLAUS

DEC. REP. M. O'BRIEN

Quantity of materials used around well casing.

Sand pack 30 gallons

Bentonite powder slurry: 5 lb powder; 4 gals. water.

Bentonite pellets 3/4 (5 gal) bucket; 4 gal water.

Cement/Bentonite grout:-

1st Batch

12 (94 lb each) bags cement

60 lb bentonite powder

78 gal. of water.

2nd Batch

5 bags cement

25 lbs bentonite powder

32.5 gal of water.

3RD BATCH.

2 bags cement

10 lbs bentonite powder

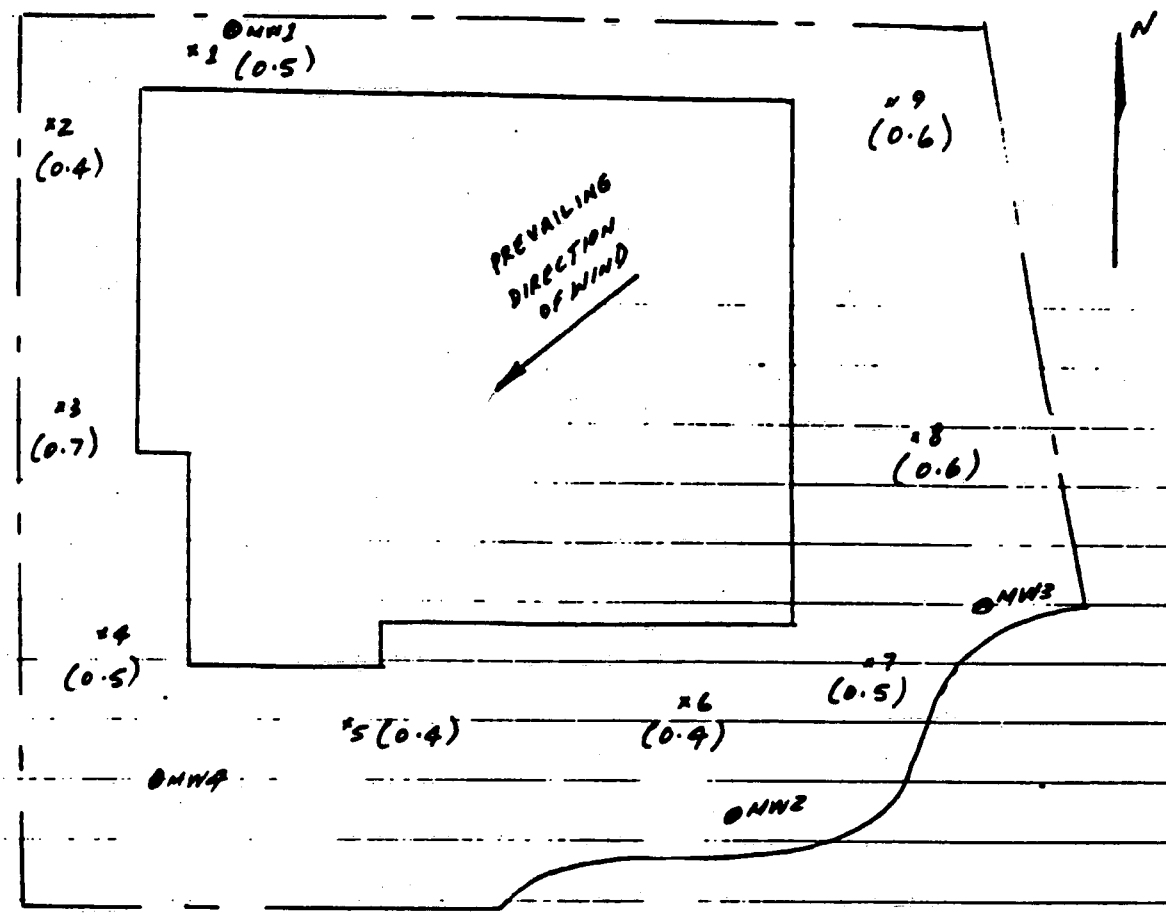
13 gal of water

Cement/Sand seal (done on Fri. Sept 30, 1988)

1 1/2 (100 lb) bags sand

3/4 (94 lb) bag cement

4 drums of drill cuttings removed.



DRAWING 8. READINGS AND LOCATION OF HNU SURVEY CONDUCTED ON SEPTEMBER 29, 1988.

Backup Elevations

ELEVATION OF TOP OF MATERIAL BELOW GROUND LEVEL

① 45'-5"
6" ← STICK UP
44'-11"

② 40'-11"
10
40'-1"

③ 40'-8"
1'-10"
38'-10"

④ 40'-7"
3'-8"
36'-11" ← TOP OF BENTONITE SLURRY

⑤ 39'-2" CONTRACTOR REMOVED 5' AUGER
4'-10"
34'-4"

⑥ 40'-6"
2'-0"
38'-6"

⑦ 40'-4"
2'-4"
38'-0"

⑧ 40'-8"
2'-9"
37'-11" → TOP OF SAND PACK

⑨ 36'-7"
1'-6"
35'-1" ← TOP OF BENTONITE PELLETS

⑩ 28'-0"
3'-6
19'-6"

⑪ 3'-9"
3'-0"
9"

⑫ 19'-8"
3'-6"
15'-6"

⑬ 1'-0"
3'-9
-2'-9" ← GROUT ABOVE GROUND IN AUGER

⑭ 10'-0"
3'-2"
6'-10"

AFTER LAST AUGER WAS REMOVED THE DEPTH OF THE CEMENT BENTONITE GROUT WAS 2'-8" BELOW GROUND LEVEL.

ELEVATION OF BOTTOM AUGER BELOW GROUND LEVEL

① 45'-2"

② 40'-2"
1'-6"
38'-8"

③ 40'-2"
6"
39'-8"

④ 40'-2"
1'-4"
38'-10"

⑤ 40'-2"
3'-3"
36'-11"

⑥ 40'-2"
4'-5"
35'-9"

⑦ 40'-2"
1'-10"
38'-4"

⑧ 40'-2"
2'-4"
37'-10"

⑨ 35'-2"
1'-1"
34'-1"

⑩ 30'-2"
3'-6"
26'-8"

⑪ 25'-2"
3'-6"
21'-8"

⑫ 20'-2"
3'-6
16'-8"

⑬ 15'-2"
3'-6"
11'-8"

⑭ 10'-2"
2'-9"
7'-5"

R-195

Thur. Sept. 29, 1988

MONITOR WELL CONSTRUCTION REPORT

Site CANTOR BROTHERS

Well No. 2 (RELOCATED)

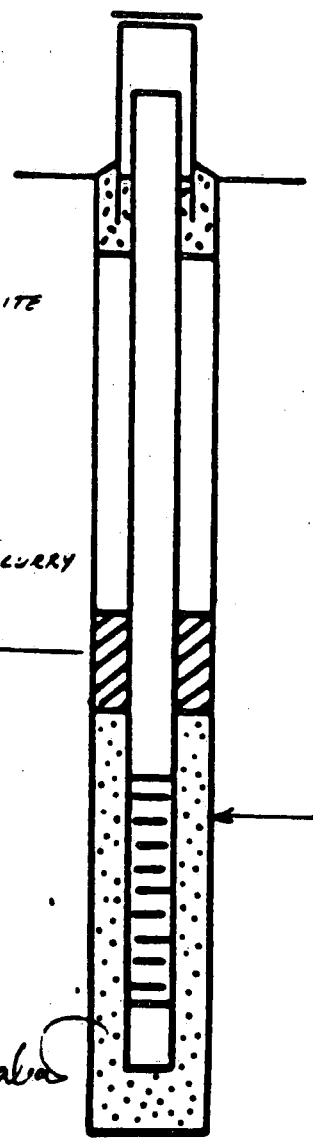
Total Depth _____ Surface Elev. _____ Top Riser Elev. _____

Water Levels (Depth, Date, Time) _____

Date Installed SEPT. 29, 1988

Riser:	Dia.	Material		Length	
Screen:	Dia.	Material		Length	Slot Size 20
Prot. Csg:	Dia.	Material		Length	

SCHEMATIC



3'-½" Prot. Csg stickup

2'-6" Riser stickup

Ground Surface

Surface Seal Type CONCRETE

2'-8" Bottom Surface Seal

CEMENT/BENTONITE POWDER GROUT

Grout Type CEMENT/BENTONITE

Seal Type BENTONITE PELLETS
BENTONITE POWDER SLURRY

35'-8" Top Seal

TOP OF SLURRY 36'-11"

37'-11" Top Sand Pack

40'-0" Top Screen

41'-0" WATER LEVEL

Sand Pack Type/Size 8-12

DRAWING 8A

50'-0" Bottom Screen

SH NABAVI Sirous H. Nabavi

50'-2" Bottom Sump/Wellpoint

52'-0" Total Depth of Boring

L D NARAYSINGH

R-196

Friday Sept. 30, 1988 Weather: cloudy, warm, mild winds.

Time arrived on site: 7:45 AM.
Si Nabani conducted HNU survey of plant.

8:40 Driller's crew arrived on site.

8:45-9:15 AM Driller ~~steamed~~ cleaned all equipment needed for MW #4., and then moved to work area of MW #4.

9:40 AM Contractor installed auger to start drilling.

BLOW COUNT PER 6" DEPTH 140 lb/in²	SAMPLE NUMBER	DEPTH	DESCRIPTION OF MATERIAL	HNU READING
4-7-15-16	1	0-2	light to dark brown fine sand, with pebbles	0.6
20-20-24-32	2	2-4	same as '1' with boulders and gravel	0.6
1-6-8-14	3	4-6	fine light brown sand with boulders, large cobbles.	1.0
4-13-9-14	4	6-8	same as '3'; also organic matter	0.6
4-18-9-14	5	8-10	light brown sand with pebbles; with traces of white clay	0.5
6-14-5-6	6	10-12	white/light brown; fine/medium/coarse sand.	0.5
4-4-8-9	7	12-14	white/light brown ~~coarse sand~~	0.6

Fri. Sept. 30, 1988

	BLOW COUNT PER 6" DEPTH 140 lb/in²	SAMPLE NUMBER	DEPTH	DESCRIPTION OF MATERIAL	HNU READING
	8-9-15-15	8	14-16	same as '7' (not much soil in sample, due to blockage by large cobble)	0.4
	7-8-8-10	9	20-22	fine/medium; white/brown sand	0.5
	5-7-13-15	10	25-27	same as '9' w/some quartz pebbles	0.5
	2-3-5-8	11	30-32	fine to coarse, brown/light brown sand	0.4
11:55 AM GRAIN SIZE ANALYSIS	5-9-14-16	12	35-37	same as '11' but with some pebbles	0.5

CONTRACTOR TOOK 10 MIN BREAK AT 11:55 AM

HIT WATER TABLE AT 40'-0"	5-5-6-6	13	40-42	fine to medium, dark brown/brown sand with quartz pebbles (wet)	0.4

12:30 PM Contractor break for lunch

1:00 PM Contractor back from lunch.

1:20 PM GRAIN SIZE ANALYSIS; NO HYDROMETER ANALYSIS NECESSARY	8-7-6-5	14	45-47	same as '13'.	0.4
	6-3-2-1	15	50-52	water, few pebbles and boulders	0.3

TABLE 4. HNU READINGS AND DESCRIPTION OF SPLIT SPOON SAMPLES FOR MW#4

2:10 PM Contractor complete drilling and took break.

2:15 PM Contractor started placing sand pack in bore hole.

3:20 Bottom of auger is at 37'-8" and bottom of sand is at 37'-8". If contractor adds more sand,

DRILLER'S CREW

JOE KAUFMAN

SALIF BANSE

EDWARD TOOMY

DON KRAUS

DEC REP. M. O'BRIEN

he will have to raise his augers and he would not be able to secure well with 55 gal. drum over auger. He was permitted by NYS DEC rep. M. O'Brien to finish sand-packing on Monday, and secure the top of the well at the present position, with an auger stick-up of 2'-10".

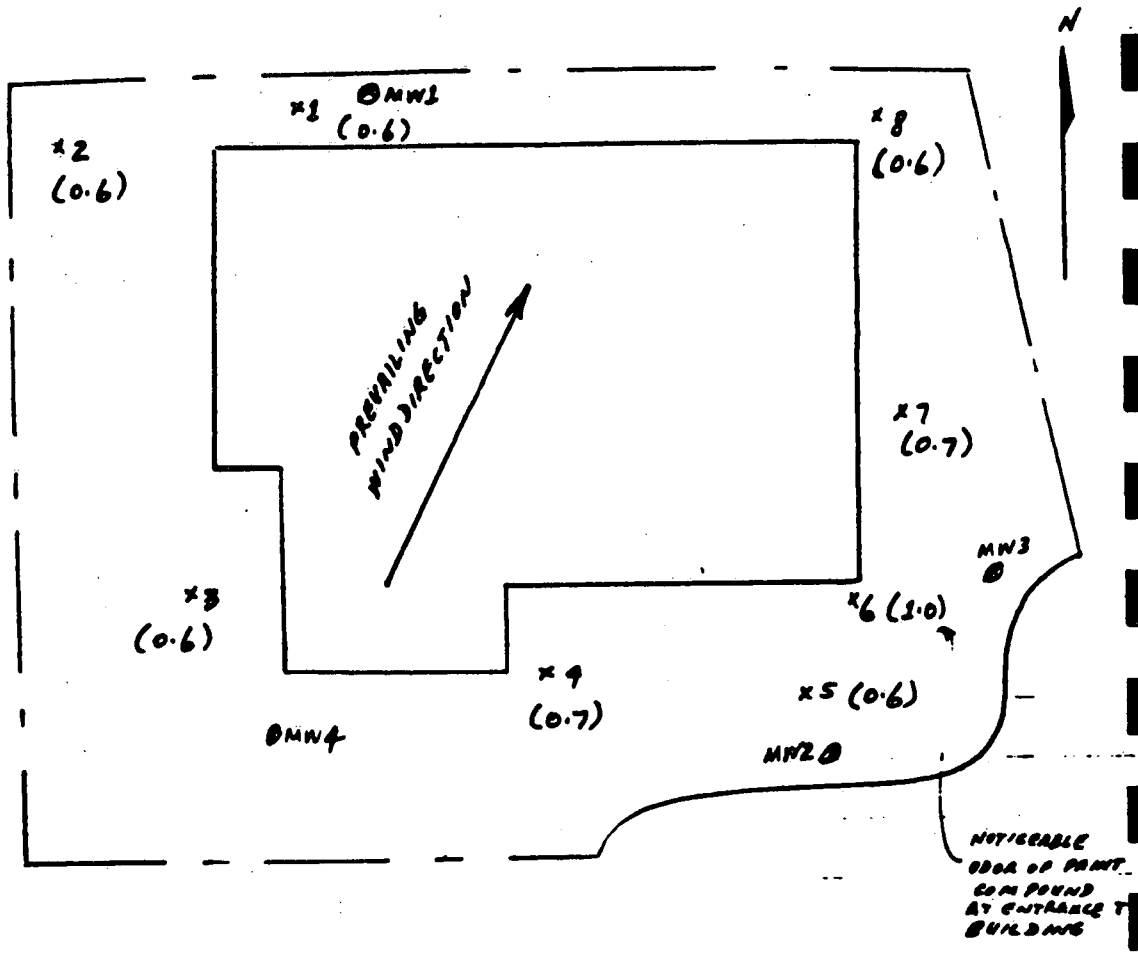
Contractor secure hole by:-

1. placing empty 55 gal drum over hole with auger stick up.
2. place 4 drums filled with sand around center drum
4. Place drum fill with sand on top of center drum.

4:00 P.M. Contractor starts steam cleaning.
4:10 PM Contractor finishes steam cleaning.

4:30 P.M. Contractor left site.

Fri Sept. 30, 1988



DRAWING 9. READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED ON SEPTEMBER 30, 1988.

(A HNU calibration gas was obtained and calibration was done both with the gas and zero adjustment before use.)

SIROUS H. NABAVI

Sirous H. Nabavi

LARRY D. NARAYSINGH

Monday October 3, 1988 Weather: partly cloudy 57°

Time arrived on site: 7:50 AM

8:10 AM. Driller arrived on site.

Si Nabavi did HNu perimeter survey of plant. Reading and locations are shown on page 115.

8:20 Driller started pumping out wash-water from his decon pan into drums. Three drums were filled.

8:40 AM. Contractor started steam cleaning back of drill rig, and frenie pipe.

8:45 AM. Contractor finished steam cleaning and moved truck to location of MW#4.

9:20 Contractor had removed drums that were placed around MW#4, unload bags of cement to be used; remove excess drill cuttings from around bore hole, and, set his drill rig into position to resume work.

9:25 MPCS well development pump was brought to the site, John Emington started running it experimentally.

Driller cannot find chain to raise auger.

10:00 Driller finds chain and resume work.

10:12 AM Contractor completed gravel pack.

10:20 AM Driller made mixture of bentonite slurry

10:55 Contractor completed bentonite seal including pellets.

11:30 A.M. Contractor take measurement of pellets after 1/2 hr and proceed to prepare cement/bentonite grout mixture.

12:05 Contactor started pouring grout mixture down tremie. (78 gal)

1:40 PM After a second batch of grout (39 gal) was added, the final elevation of the top of the grout below ground level was 2'-2"

2:30 PM Contractor started mixing concrete for upper seal and mound.

3:20 Contractor completed seal and cleaned work area of MW#4. Contractor went back to decon. area and started steam cleaning.

4:15 End of steam cleaning.

During the time MW#4 was being completed, Si Mabani was covering well development operations at MW#2. The report is as follows.

10:00AM A measurement of the static water level was made with the electric level indicator before starting development. A depth of 40'-2" was recorded.

The development pump was made by GEO-GUARD, and have a capacity of 36 gpm at 50' head. The suction tube that was inserted was 7 ft. of stainless steel tubing and the rest polyethylene tube on a reel. While the compressor started the pump did not pump any water. The stainless steel tube was pulled out and it
11:50AM was dry. It was decided to use half the length of stainless steel (3½') and lower back into the well.

12:00 The pump was working but the regulator pressure went up to 50 psi, and the air flow broke, the pump stopped pumping water. Adjustments were made to the pump's pressure and exhaust time. The pressure time is when pressure is applied to the water, pumping it out, and the exhaust time is when the well is recharging.

12:30PM The pressure time is set to the maximum and the exhaust time decreased. The output pressure is regulated at 20 psi (the pump catalog recommends 0.5 psi for every ft. of depth - water table is at 40' of depth

DRILLER'S CREW

JOE KAUFMAN

JOAN FLINT

SALIF BANSE

ERIC JENNINGS } WELL DEVELOP-
JOHN EMINGTON } MENT

DEC REP. LARRY ALDEN

1:00 P.M. The pump is pumping at 1.5 GPM for 8 seconds and then it has to wait until the suction pipe is full before pumping again. Exhaust time = 13.0 seconds.

2:45 P.M. Well development of MW #3 was completed. The turbidity of the water at this time was 2.5 NTU. Total time for well development was 2½ hours. Capacity calculated at 1.5 GPM.
The pump was taken ~~back~~ back to the decon area. The stainless steel tube was washed with alonox solution, and distilled water. It was then steam cleaned along with the polyethylene tube. A final measurement of the water level showed 40'-0" ~~above~~ below ground level. One drum of dec. water was obtained.

4:30 left site.

Mon. Oct 3, 1988

QUANTITIES OF MATERIALS USED AROUND WELL CASING.

Sand pack : 32 gals.
Bentonite slurry : 5 lb bentonite powder, 4 gals. water.
Bentonite pellets : 4 gals pellets ; 5 gal water.
Cement / bentonite grout :-

1ST BATCH :

12 (94 lb each) bags cement
60 lbs. bentonite
78 gals. of water

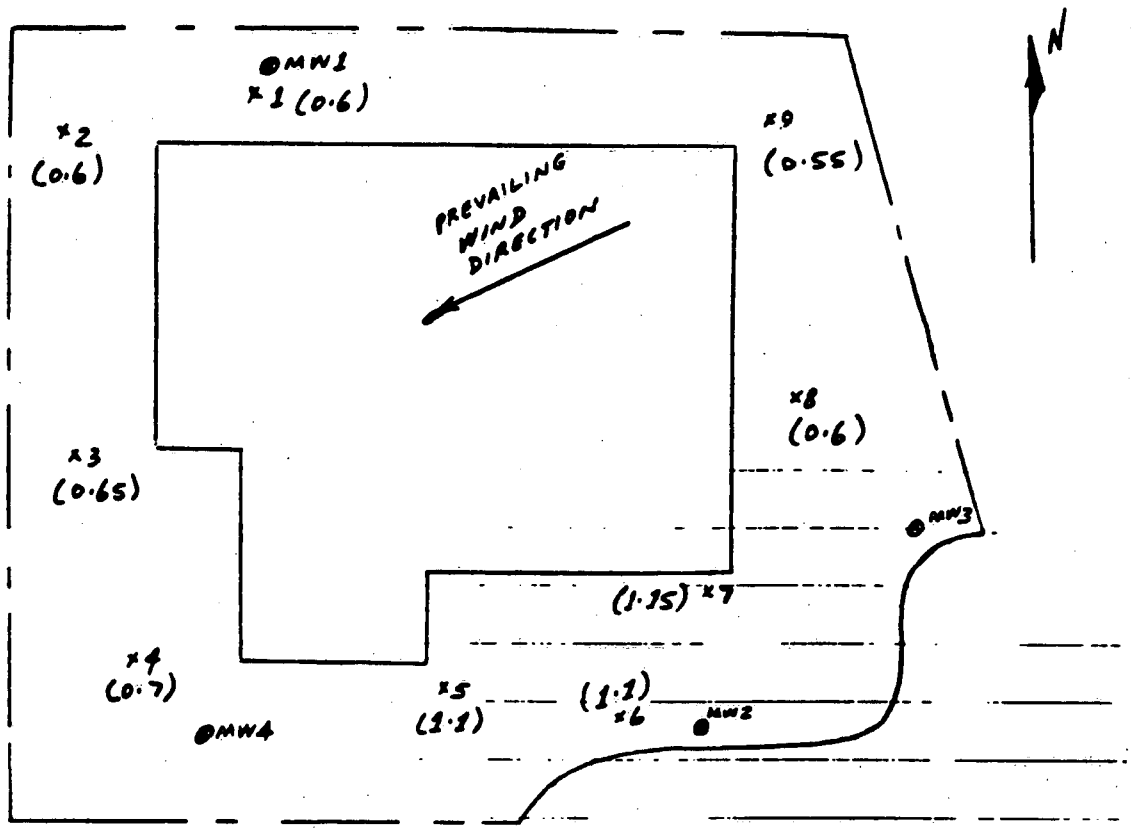
2ND BATCH

6 bags cement
30 lb bentonite
39 gal. of water

Concrete seal

1½ bag of sand (100 lb each)
¾ bag of cement (94 lb each)

Mon. Oct. 3, 1988



DRAWING 20. READINGS AND LOCATIONS OF HNU SURVEY CONDUCTED ON OCTOBER 3, 1988.

(Calibration was done before survey, both with calibration gas and the zero adjustment.)

Elevation Backup

TOP OF MATERIAL BELOW GROUND LEVEL

(Done on Sept 30)

① 40'-3 - tape
2'-8 ← stick up
37'-7"

② 40'-10"
3-2
37'-8" ← DEPTH OF SAND PACK AT END OF WORK DAY SEPT 30, 1988.

③ DRILLER RESUMES WORK AND RAKES HIS AUGERS
41'-2
3'-5"
37'-9"

④ 40'-9"
4'-0"
36'-9"

⑤ 41'-0"
4'-2"
36'-10" ← TOP OF SAND PACK

⑥ 36-10
1-0
35'-10" ← TOP OF BENTONITE SLURRY

⑦ 40'-0
STICK UP OF TREMIE TUBE → 5'-3"
34'-9" ← TOP OF BENTONITE PELLETS

⑧ 20'-0"
3'-7"
16'-5"

WHEN ALL THE AUGERS WERE PULLED, THE CEMENT/BENTONITE GROUT WAS AT 2'-1" BELOW GROUND LEVEL.

BOTTOM OF AUGERS BELOW GROUND LEVEL.

① 40'-4" — Auger + 2" metal + 2" teeth (lead auger)

② 40'-4
2'-8
37'-8"

③ 40'-4"
3'-1"
37'-3"

④ 40'-4"
3'-6"
36'-10"

⑤ 40'-4"
3'-9"
36'-7"

⑥ 35'-4"
6"
34'-10"

⑦ 35'-4
1'-2
34'-2"

⑧ 20'-4"
3'-7"
16'-9"

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Mon. Oct. 3, 1988

MONITOR WELL CONSTRUCTION REPORT

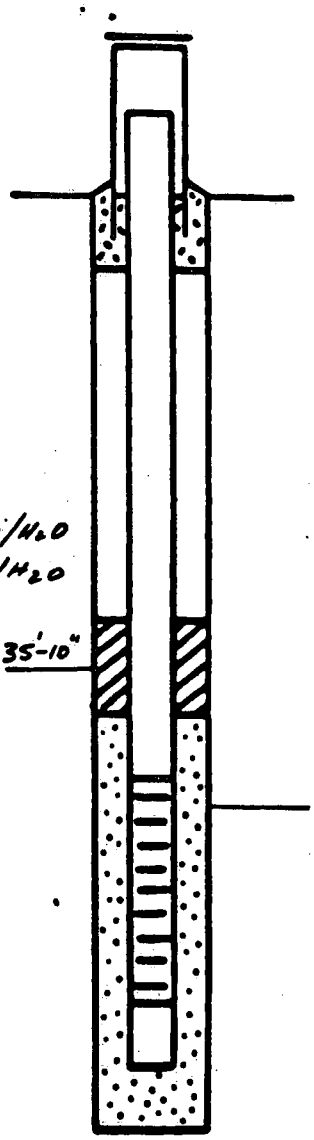
Site CANIDR BROTHERS Well No. 4

Total Depth _____ Surface Elev. _____ Top Riser Elev. _____

Water Levels (Depth, Date, Time) _____ Date Installed _____

Riser:	Dia.	Material	Length			
Screen:	Dia.	Material	Length	Slot Size 20		
Prot. Csg:	Dia.	Material	Length			

SCHEMATIC



S.H. NABAVI L.D. NARAYSINGH

Tues. October 4, 1988 Weather: cloudy, lingering showers; 57°F

Time arrived on site 8:00 A.M.

9:00 AM Driller's crew arrived on site.

9:20 Start steam cleaning

9:45 End of steam cleaning operation.
Contractor's men began cleaning decon, and reduction area of excess material to be carried off site.

9:55 Well development of MW #3 started. The full 7' of stainless steel pipe was used.
Initial water level before development was 41'-10" below ground level.

11:00 Development pump stopped for refueling. During the previous hour the pump was pumping 18-23 seconds, recharge time: 10-13-18 seconds

11:15 Development pumping started again. To determine pump rate a five gallon bucket was filled and timed. Time to fill 4 gal was 25 min; pumping rate 0.16 gal/min (4/25)
The pumping cycle was 20 seconds
The recharge cycle was 13 seconds
Adjustments have been made with both ~~both~~ cycles, becoming equal.

12:25 Turbidity meter was not working. A lamp inside the meter was not lighting so it was assumed to be burned out. It was agreed with NYSDEC rep., Larry Alden, that a visual observation would have to be made to judge the turbidity of the well water. A visual observation was made with NYSDEC rep. and it was concluded that the water was less than 50 NTU. Ground water measurement was now 41'-8" below ground level.

12:35 The development pump was removed from the well. Total development time 2:40 min.

1:30 Development of MW#2 started, after decontamination of development pump. Measurement of static water level before pumping was 40'-10" below ground level. The water level indicator was rinsed in alconox solution and then washed with distilled water before using.

2:00 PM Pumping stopped; pulled pump out to check foot valve. The foot valve was cleaned, contractor wanted to use 13½' of stainless steel at end, DEC rep. argued against this, so all 7' was installed in well.

2:07 PM Pumping resumed. Water gets murkier; cycles are 18 sec recharge; 8 sec pumping

2:40 Water is getting clear. Well is being surged with

suction tube; water gets more turbid.

3:45 Pumping had stop, so contractor pulled out discharge tube and suction pipe. He checked the foot valve; some sand was in the foot valve. Contactor cleaned foot valve and suction air pipe with distilled water.

4:20 PM Contractor resumed pumping.

4:18 Stopped to clean suction pipe and foot valve again.

4:26 Resumed pumping. The regulated pressure had been increased to 60 PSI

5:05 PM A visual observation was made of ~~the~~ a sample of the well water by us and Larry Alden and it was agreed that the turbidity was less than 50 NTU. Contractor stopped pumping and withdrew his equipment from well. A measurement of the water level after development showed the level to be 40'-11" below ground level.

Total development time ~~was~~ 2 hours and 55 minutes.

Meanwhile the well development was in progress, L. Naragon was supervising the demobilization of the drilling crew over by the decon area.

Contractor took up his excess ~~bags~~ of sand,

CONTRACTOR'S CREW — DEC, REP. L.J. ALDEN

JOE KAUFMAN } DEMOB.
SALIF BANSE
ERIC JENNINGS

JOHN EMINGTON } WELL DEV.
PAUL SMYTH

cement and bentonite powder. He also took up excess plastic that was in area. While contractor was pumping out decon water from his pan into 55 gal drums, his pump stopped working, so he was not able to pump all out. We labelled the drums as to the material they contained and date collected. The contractor had not taken all his drums away because his truck was filled, so he left them with the other drums for the DEC. A count of the labelled drums to date showed:-

23 drill cuttings
3 development water (MW# 1, 2, 3)
7 equipment decon water
7 drums of Marine Pollution Control waste*
40

MPC waste contains, wash water slurry containing cement that he used to clean his pump; plastic used in working area of wells; disposed protective clothing; contaminated sandpacks; and hardened cement from his mixing tank.

Time left site: 5:30 PM

S.H. NABAVI
Siamak H. Nabavi

L. D. NARAYSINGH
Narayansingh

Wednesday October 5, 1988. Weather: Cloudy, Brisk.
Time Arrived on site: 7:45 AM

8:00 AM Contractor arrived on site.

8:30 Started steam cleaning.

8:40 Driller steam cleaned hose and bailers to be used in wells, but could not dismantle stainless steel tube so it could be steam cleaned. After an unsuccessful attempt with wrenches contractor soaked joints of tube in alcanox solution. He later was able to take it apart and have each section steam cleaned.

10:25 Static water level measurement was made of MW#4. The reading was 40'-2" below ground level.

11:00 Started bailing out water at MW#2 before sample is taken.
Development of MW#4 started.

1:15 Well development stopped, since a visual observation proved that the sample was less than 50 NTU. This observation was made by us and NYDEC rep. DEV. TIME: 2 HR 15 MIN.

1:15-1:45 Break for lunch. Final measurement of the el. of water showed 40'-0" below ground level.

2:07 PM Ground water was collected from MW#4 for

Wed. Oct. 5, 1988

(See p.129)

For chemical analysis 7 containers were provided by the lab. (H_2M) for each sample.

2 small glass vials (HCL) pres.
3 1000ml. glass jars (unpreserved)
1 plastic bottle (NaOH) pres.
1 qt cubic (HNO_3) pres.
7

Samples were collected into containers by pouring direct from bailers used in wells. (steam cleaned before and after each use). ~~When~~ The samples for volatiles were always taken first. These were filled to the top then tightly sealed; after we observed to see that there were no bubbles present.

For sampling of catch Basins, 4 containers were provided by the lab for each sample.

2 1000ml glass jar
2 small glass vials.
4

The samples were taken using disposable gloves to put them into the containers. Gloves were changed before and after each use.

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(see p. 128) chemical analysis and conductivity temperature and PH readings taken. We were permitted by the state to take samples using bailer after well development of MW#4

TEMP OF WATER SAMPLE : 15°C
PH : 5.33
CONDUCTIVITY : 106 μ MHOS
} MW#4

(see p. 128) Sampling of catch Basin No. 2 was attempted by using a split spoon attached to PVC piping. The catch basin was filled with water, so it was mostly water that came up in the sample. Only the 2 glass vials and ½ of the other 2 bottles provided for the sample was able to be filled. The state rep said that if the sample was not enough, then the lab should only sample for volatiles and BNA and should not do for pesticides and PCB's

5:30 PM After bailing 13 gals of water from well No. 1 a sample was obtained for chemical analysis. The following readings were taken:

TEMP. OF WATER : 15°C
PH : 6.80
CONDUCTIVITY : 828 μ MHOS ?
} MW#1

6:00 PM Contractor had used pump to pump water out of well before sample was taken for MW#2. After about 20 gals was pumped,

CONTRACTOR'S CREW

JOHN EMINGTON

SALIF BANSE

PAUL SMITH

DEC REP. L.J. ALDEN

DEC rep said pumping should continue until the water becomes clear. After this samples were obtained by using a bailer. One set of sample was taken for chemical analysis, one for matrix spike sample, one for matrix spike duplicate, and one duplicate sample. The DEC rep said that the matrix spike duplicate and the duplicate were seperate samples, so a total of 4 sets of samples were taken from MW#2. The duplicate was labelled MW#0 and the matrix S/MSD labelled MW#2.

The measurements were as follows:

TEMP. OF WATER : 14°C
pH : 4.91
CONDUCTIVITY : 278 uMHOS
} MW#2

We were not able to take a sample from MW#3 because there were no more set of sampling containers left. It was too late to get in touch with the lab so we decided to do so the next day. A bailer and rope fell down MW#2, but was retrieved before the end of the day, after taking samples.

6:50PM left site

SIROUS H NABAVI
Sirous H. Nabavi

LARRY D. NARAYSINGH
Narayansingh

R-220

Thursday October 6, 1988 Weather: Sunny, cool 50°F.

Time arrived on site: 7:45 A.M.
No DEC rep. present.

10:45 Contractor arrived on site.
Before the contractor arrived, we started bailing out water from MW#3 in order to take sample.
No one was available when we made a call to H2M Lab at 8:00 AM but we succeeded at 11:00 and told them that we were short of a set of containers for sampling. Si Nakani went to pick up this set of containers so MW#3 could be sampled.

11:00 Contractor started steam cleaning spring sampler, split spoons and bailers.
11:10 End of steam cleaning

11:15 Contractor move to location of catch basin No. 3 and proceed to take sample with spring sampler after removing grating. Only water and a small amount of soil was collected. The soil was placed into one of the glass vials for volatiles, but, it was not able to fill it.
Contractor then used his split spoon. He had metal rods to lower the spoon into the well so he was able to

hammer the spoon into the sediment at the bottom of the basin. We were able to collect enough sample material for the jars provided after 3 other split spoons. The material was very black and oily and smells of gasoline.

12:10 Complete sampling C.B #3
Contractor put back cover on catch basin and proceeds to decon area to steam clean sampling equipment.

12:15 PM Contractor completed steam cleaning of ~~our~~ equipment and moved to location of SD-1 to set up.

12:20 Sampling of SD-1 started. It was done in the same manner as SD-3, using the split spoon. Contractor had to stand on pallets and go very deep into sediment since the entire area was covered with water, from previous rain.

1:30 PM Completed sampling of SD-1. Material was black and oily and had a stink smell.
Contractor took short break

1:45 PM After contractor steam cleaned his split spoon sampler, we made our field blank samples ~~from~~ by pouring water obtained from the lab over split spoon and bailers.

2:15 PM Contractor's crew left site.

3:00 PM. When we had bailed 15 gals. of water out of MW#3 we took samples to be sent to the lab for chemical analysis. The following readings were also noted.

TEMP. OF WATER : 15°C

pH : 9.10

CONDUCTIVITY : 255 μ MHOS

3:15 We completed our measurements and Si Nabani took samples back to H_2M lab, while L. Narayasingh made final check to see that all drums had been labelled, now that the contractor had removed all his equipment off site.

Final count and labelling of the 55 gal drums are as follow:

ITEM	NO. OF DRUMS
DRILL CUTTINGS	23
DECON WATER	8
DECON SEMI-SOLIDS (½ filled)	1
WELL DEVELOPMENT WATER	7
* MARINE POLLUTION CONTROL PROPERTY	14
	53 TOTAL

* This includes used plastic, cement slurry wash water, cement solids, sand bags, disposed clothing and 5 empty drums.

MPC was again reminded today to remove the drums that belong to them off site.

R-223

CONTRACTOR'S CREW

PAUL SMYTH

JOHN PANNBURST

When Si Nabavi returned from H2M lab he stated that the lab supervisors could not see the necessity of taking 2 seperate sets of samples for matrix spike and matrix spike duplicate. The lab discarded one set, letting the total sets of water samples to be 6.

4:20 P.M. Left site.

SIROUS H NABAVI
Sirous H. Nabavi

LARRINGTON D NARAYSINGH
Narayansingh

REFERENCE NO. 20

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

VOLUME III

Cantor Brothers, Inc.
Town of Babylon

Site No. 152021
Suffolk County

Final Report

JUN 11 1990

BUREAU OF
HAZARDOUS SITE CONTROL
DIVISION OF HAZARDOUS
WASTE REMEDIATION

Prepared for :

New York State
Department of
Environmental Conservation

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

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

by:
LeRoy Callender, P.C.
Subcontractor to :
Gibbs & Hill, Inc.

LeRoy
Callender
PC

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

VOLUME III

CANTOR BROTHERS, INC.

NYS SITE I.D. NO. 152021

TOWN OF BABYLON

SUFFOLK COUNTY

NEW YORK STATE

Prepared For:

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

50 WOLF ROAD

ALBANY, NEW YORK 12233

THOMAS C. JORLING, COMMISSIONER

DIVISION OF HAZARDOUS WASTE REMEDIATION
MICHAEL J.O'TOOLE, P.E. DIRECTOR

Prepared By:
LEROY CALLENDER, P.C.

Subcontractor to:
GIBBS & HILL, INC.

PROFESSIONAL ENGINEER
LeROY N. CALLENDER
No. 041607
UNIVERSITY OF THE STATE OF NEW YORK

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Callender
PC

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PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

* * *

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PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

SUFFOLK COUNTY DEPARTMENT
OF HEALTH SERVICES

RECORD DATA & CORRESPONDENCE,
(6/2/82 THRU 10/19/88)

1982 a,b, & c;
1983 a,b,c,d,e, & f;
1984 a,b,c,& d;
1985 a;
1986 a;
1987 a;
1988 a,b,c,& d.

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SCDHS

1982a

1/2

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
65 JETSON LA., PO BOX G, CENTRAL ISLIP, NY 11722
(516) 234-2622

NAME OF FACILITY: Canton Bros Inc	OWNER/OFFICER: PRE E CANTOR SR. MARTIN CANTOR	PAGE 1 OF	
COMPANY NAME: S/A/A	CONTACT: S/A/A	TEL 694 6666	
PLANT ADDRESS: Engineers Lane	VILLAGE: Farmingdale	TOWN: Babylon	ZIP 11735
MAILING ADDRESS: S/A/A			

DATE	TIME	ORIG.	PERIODIC	RE.	WASTE	NO WASTE	H&H	SEWAGE SYSTEM	PUBLIC / PRIVATE
6/2/82									

INDUSTRY: Distributor of Paint Solvents

POES OR POES PERMIT? YES NO PERMIT NO. | 360 PERMIT? YES NO PERMIT NO

SCAVENGER | TEL.

SCAVENGER APPROVED YES NO | PICK UP RECORDS AVAILABLE YES NO | RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION YES NO

HEATING SYSTEM-MFG NAME	FUEL TYPE	FIRING RATE

INCIN. NAME	WASTE BURNED	RATE

STORAGE YES NO | NUMBER OF DRUMS STORED Numerous | TYPE OF MATERIAL STORED WASTE RAW BOTH

TANK STORAGE YES NO | ABOVE GROUND | UNDER GROUND | BOTH | TYPE OF MATERIAL STORED WASTE RAW BOTH

HAVE TANKS BEEN REGISTERED YES NO | CONDITION OF ABOVEGROUND TANKS GOOD FAIR POOR | ANY ART. XII VIOLATIONS YES NO

5/26/82 REVISED INSPECTION TODAY APPOINTMENT MADE FOR 6/2 IN THE AFTERNOON
6/2/82 (1) 13 solvent tanks in front lawn tank farm 1 gasoline tank (4000 gal) west side of property in violation of Article 12
(2) Spill S.E. corner of building (white substance) into storm drain
(3) 5000 gal tank truck back stored in parking lot containing creosote
(4) 35/55 gal open drums unknown substance stored outside east side of building. 30/55 gal drums stored outside east side building containing creosote some drums are leaking large (≈500 gal) creosote not stored in parking lot 55/55 gal drums of unknown stored at north side of building

PERMISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF POOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

REINSPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY RESULT IN A HEARING AND/OR FINE.

SIGN. OF PERSON REC. REPORT	TITLE	INSPECTOR
Matthew Stalter	Gen. Mgr.	Bruce Charles Stark

d-155 6/81

R-9

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS 1982 a

2/2

(5) Four large mixing and packaging units in work area with floor drains at doors.
(6) Work area has numerous vats + drums of chemical with no containment structures
(7) Loading dock 25/30 gal drums lacquer and 45/55 gal drums of lacquer with no provisions for spill containment
(8) Note Building has water sprinkler system for fire control.

8/24/82 The problems noted on 6/2/82 remain unchanged except lacquer drums were removed from loading dock
The following new violations were noted
(1) 16/55 gal drums stored by east door
(2) 47/55 gal drums containing white fluid stored in front of east door (Mat Miller) stated contents wash water from mixing vats
(3) Green tanker truck back East side of building Mat Miller stated contained creosote and fuel oil. Piping from truck to building was leaking.
The documents were delivered to Mat Miller
(1) copy of 6/2/82 inspection report
(2) Revised copy of Article 12 date 7/28/82
(3) Scavenger List from State of New York
(4) List of tank testing contractors.

R-10

SCDHS

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
65 JETSON LA., P.O. BOX G, CENTRAL ISLIP, NY 11722
(516) 234-2622

1982b 1/2

NAME OF FACILITY: CANTOR BROS INC.		OWNER/OFFICER: E CANTOR	
COMPANY NAME: SAME AS ABOVE		CONTACT: MATTHEW MILLER	PAGE 1 OF 2
PLANT ADDRESS: ENGINEERS LANE	VILLAGE: FARMINGDALE	TOWN: BABYLON	TEL. 694-6666
MAILING ADDRESS: SAME AS ABOVE			ZIP 11735

DATE 8/24/82 | TIME | ORIG. | PERIODIC | RE. | WASTE | NO WASTE | H&H | SEWAGE SYSTEM | PUBLIC | PRIVATE

INDUSTRY: DISTRIBUTOR OF PAINT SOLVENTS

SPDES OR NPDES PERMIT? YES NO NOT APPLICABLE PERMIT NO. | 360 PERMIT? YES NOT APPLICABLE NO PERMIT NO

SCAVENGER: HOME USED

SCAVENGER APPROVED YES NOT APPLICABLE NO | PICK UP RECORDS AVAILABLE YES NOT APPLICABLE NO | RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION YES NOT APPLICABLE NO | TEL. NOT APPLICABLE

HEATING SYSTEM-MFG NAME | FUEL TYPE | FIRING RATE

INCIN. NAME | WASTE BURNED | RATE

DRUM STORAGE YES NO | NUMBER OF DRUMS STORED SEE ENCLOSED REPORT | TYPE OF MATERIAL STORED WASTE RAW BOTH

TANK STORAGE YES NO | ABOVE GROUND UNDER GROUND BOTH | TYPE OF MATERIAL STORED WASTE RAW BOTH

TANKS REGISTERED YES NO | CONDITION OF ABOVEGROUND TANKS GOOD FAIR POOR | ANY ART. XII VIOLATIONS YES NO

15 SOLVENT TANKS IN FRONT LAWN } NO REQUIRED
1 FUEL TANK WEST SIDE OF PROPERTY } TANK TEST BY 12/82
WHITE SUBSTANCE SPILLED FROM SOUTH EAST CORNER OF BUILDING INTO STORM DRAIN.
GREEN TANK TRUCK BACK STORED EAST SIDE OF BUILDING. MATTHEW MILLER STATED UNIT CONTAINED CREOSOTE AND FUEL OIL. PIPING FROM TRUCK BACK TO BUILDING WAS LEAKING, FLOWING TOWARDS STORM DRAIN IN LOADING DOCK AREA.

CONTINUED

PERMISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF CESSPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

INSPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY RESULT IN A HEARING AND/OR FINE.

NAME OF PERSON REPORT	TITLE	INSPECTOR
6/81		Bruce C Stark

R-11

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

(4) LARGE CREOSOTE VAT STORED IN PARKING LOT
(5) 16/55 GAL EMPTY DRUMS STORED EAST SIDE OF BUILDING ADJACENT TO LOADING DOCK
47/55 GAL DRUMS STORED IN PARKING LOT ON EAST SIDE OF BUILDING. THESE DRUMS CONTAINED LATEX WASH WATER AND BEING WITHOUT TOPS WERE OVER FLOWING FROM RAIN WATER.
30/55 GAL DRUMS STORED IN REAR OF PARKING LOT ON EAST SIDE OF BUILDING. MOST DRUMS WERE ON THEIR SIDES AND APPEARED TO BE LEAKING CREOSOTE FOR SOME TIME.
50/55 GAL EMPTY CREOSOTE DRUMS STORED ALONG NORTH PROPERTY LINE. SOME DRUMS WERE OBSERVED RAIN WATER AND CREOSOTE MIXTURE.
(6) FOUR LARGE MIXING AND PACKAGING UNITS IN WORK AREA WITH FLOOR DRAINS AT DOORS
(7) WORK AREA HAS NUMEROUS VATS AND DRUMS OF CHEMICAL WITH NO CONTAINMENT STRUCTURE

NOTE THE FOLLOWING DOCUMENTS WERE DELIVERED TO MATTHEW MILLER
(1) COPY OF 6/2/82 INSPECTION REPORT
(2) REVISED COPY OF ARTICLE 12 DATED 7/28/82
(3) SCAVENGER LIST PRINTED BY THE STATE OF NEW YORK
(4) TANK TESTING CONTRACTOR LIST PRINTED BY SUFFOLK COUNTY

COUNTY OF SUFFOLK

DEPARTMENT OF HEALTH SERVICES

SCDHS
1982 C

Aug. 30, 1982

1/5

Mr. Matthew Miller, General Manager
Cantor Bros., Inc.
Engineers Lane
Farmingdale, N.Y. 11735

Re: Storage and Handling of
Toxic or Hazardous Materials

Dear Mr. Miller:

On Aug. 24, 1982 Mr. Bruce Stark of this Department and I conducted a reinspection of your facility for compliance with Article 12 of the Suffolk County Sanitary Code. This reinspection was conducted at your request since you were not present during Mr. Stark's initial inspection on June 2, 1982.

After the inspection we discussed with you the violations that were found and the corrective actions that will be necessary to eliminate the violations. The purpose of this correspondence is to enumerate these violations and to clarify the corrective actions that should be taken as follows:

1. Outside Drum Storage - During the inspection it was noted that you were storing drums containing waste materials outdoors unprotected in violation of Section 1215 of Article 12. Specifically, there were 4 separate areas where drums were being stored:

   a. Approximately 16 apparently empty drums stored along the east side of the building adjacent to the unloading dock.
   b. Approximately 47 drums on the east side of the building containing washwater from the cleaning of your latex caulk mixing tanks. Many of these drums had no tops and contained rainwater in addition to the washwater.
   c. Approximately 30 "empty" drums of creosote laying on their sides on the east side of the building. From the condition of the asphalt in this area it appears

15 Horseblock Pl. Farmingville, N.Y. 11738 • 516/451-4649

R-13

1982 C

2/5

that creosote has leaked on the ground and, in fact, some of these drums may still have creosote residue in them.

d. Approximately 50 empty creosote drums along the north property line. Most of these drums contained rainwater that had been contaminated with residual creosote.

Article 12 requires that drums of toxic or hazardous materials be stored in a roofed area, on a concrete pad surrounded by a dike to contain any spillage. Empty drums containing no visible residue may be stored outdoors provided that they are capped and covered to exclude rainwater.

You indicated to me during the inspection that the creosote drums have been on your property for the last 2 or 3 years. This condition cannot be allowed to continue because of the possibility of groundwater contamination. Within the next 30 days you should provide this Department with the name of the firm that has been contracted to remove these drums. Because rainwater contaminated with creosote is a toxic material, it must be removed by a N.Y.S. licensed industrial waste hauler. A list of these haulers was given to you after our inspection. Within 60 days from the date of this letter all these drums must be removed.

EVAPORATES ≈ 20 GAL MONTH OF WASHWATER

The drums containing washwater from the caulking tank must also be removed or stored in an indoor protected area. You should investigate the possibility of recycling or evaporating this wastewater in order to reduce the amount that must be disposed of. You may want to contact a consulting engineer who can recommend a recirculating or evaporation system. These drums must also be removed or relocated within the next 60 days,

2. Interior Storage - During the inspection it was noted that you have several mixing and dispensing areas inside your facility for creosite, caulking compound, paints and thinners. Floor drains are located in several areas of your plant and trough drains are located at some of the entranceways. Drums of various chemicals are also stored in this area.

R-14

Article 12 requires that indoor storage of toxic or hazardous materials be on a concrete surface surrounded by a dike or curb for spill control. For indoor storage, tanks or mixing tanks, Section 1214 of Article 12 requires that a dike be constructed to contain 110% of the volume of materials being stored. For drum storage, a dike is required to contain 30% of the total volume of drums being stored.

Within the next 30 days you should submit plans and applications to upgrade the inside of your plant. Application instructions and construction requirements can be found in the material that was enclosed with my letter of July 8, 1982.

No modifications to your facility are allowed until your plans have been approved by the Department.

Your plans should show that all floor drains and trough drains will be permanently sealed with concrete. Your plans should also show that dikes or curbs will be constructed around the tanks and drum areas in accordance with Departmental standards. In lieu of diking each individual area, you may want to consider constructing ramps at all the entranceways to contain any spillage. You should also provide some means of spill control your warehouse and loading dock areas.

3. Tanker Truck Storage - During the inspection it was noted that a 6000 gallon tanker truck body is being used to hold creosote and oil along the east side of the building. At the time of the inspection a valve was visibly leaking creosote and/or oil onto the surface of the ground. This area is pitched towards a storm drain adjacent to the loading dock. From the appearance of the pavement this leak has been continuing for quite some time.

Article 12 requires that above ground tanks be situated on a concrete pad surrounded by a dike to contain 110% of the tank volume. The tank must be fitted with a high level alarm to detect an overfill condition. All piping must be of non-corrosive material and must be within the diked area.

1982 C

4/5

Within the next 30 days you should submit plans to replace or upgrade this tank and associated piping. Plans for installation of a new tank must be submitted by a N.Y.S. licensed professional engineer. A $100 filing fee is required for review of new plans. No upgrading or replacement is allowed until your plans have been approved by this Department.

4. Underground Tanks - In 1981 you submitted a tank registration form to this Department which showed that you have 16 underground storage tanks on your property. Article 12 requires that these tanks be periodically leak-tested by an approved firm.

The registration form shows that most of these tanks were installed in 1964. These tanks must be tested by the end of 1982. Any tanks found to be leaking must be emptied and removed from service. Leaking tanks cannot be repaired unless they meet construction standards for new installations. By 1987 all underground tanks containing materials other than those with a specific gravity of less than one and which are only slightly soluble in water must be replaced with tanks that meet new construction standards. Tanks that contain materials such as oils and gasoline do not have to be replaced until 1995.

mostly petroleum products

Section 1213 of Article 12 also regulates truck fill stands that are used to transfer toxic or hazardous materials. These areas must be paved and curbed with an impervious material and roofed to exclude rainwater. The height of the curb must be adequate to contain any spill that could reasonably be expected to occur during normal operation. Within the next 30 days you should submit plans to upgrade your truck fill stand area in accordance with these requirements.

I have tried to outline the most obvious violations that were observed during my inspection and the necessary corrective actions. This outline is not meant to be complete. You are still responsible for each and every requirement under Article 12 of the Suffolk County Sanitary Code that applies to your facility. In addition, this Department has made arrangements to procure samples from the storm drains on your

R-16

1982 C

5/5

property which may indicate the need for pump-out and clean-up.

If you have any questions please do not hesitate to contact me.

Very truly yours,

Peter R. Akras
Hazardous Materials Management

PRA/rt
cc: B. Stark

R-17

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS
For the Record

SCDHS
1983a

Cantor Bros. Inc (694-6666)
Engineers Lane, Farmingdale
20 April 83 9:00 am

1/14

I arrived at Cantor Bros. Inc, Engineers Lane, Farmingdale at approximately 9:00 am to conduct a routine reinspection and to obtain samples at the request of Messrs. Finkenberg and Akras.

Previous to visiting this site, I had reviewed their file and noted on the most recent inspection reports, (see file for inspection reports of 6/2/82 and 8/24/82 Bruce Stark) that numerous violations of Article 12 Suffolk County Sanitary Code had been documented. A letter from Mr Akras (see file for letter to Mr Miller dated 30 August 82 Peter Akras) was then sent to Mr Miller restating the conditions noted on the two above mentioned inspections, and the corrective actions that would be necessary to eliminate the noted violations.

Mr Akras then sent a certified letter to Mr Miller on 1 October 82 (see file for letter of 1 Oct 82 Peter Akras) advising Mr Miller that there had been no response to the 30 Aug 82 letter, and an additional copy of this letter was enclosed.

Mr Miller responded to Mr Akras' letter on 5 October 82 outlining corrective actions he planned to impliment with approval from this department. (see file for letter 5 Oct 82 Miller)

Mr Akras responded on 1 November 82 to Mr Millers letter after reviewing Mr Millers plans, and explained that the plans were not feasible in regard to compliance with article 12 (see letter 1 Nov 82 Akras). Mr Akras also requested an update on the facilities status in regard to compliance with Article 12, in regard to violations not mentioned in Mr Millers letter.

Mr Miller responded on 24 November 82 stating Mr Akras suggestions to be "impractical" (see letter 24 Nov 82 Miller)

No correspondance has been sent to Mr Miller in response to his 24 Nov 82 letter as of this date.

JoAnne Johnson
20 April 83

8-234: 2/82

0-18

The following information was noted upon arriving at the Cantor Bros site on 20 April 83. 9:00 am.

① Numerous 55 gallon drums with black stains noted that apparently had spilled from these drums. (Strong odor of cresote noted)

② The loading dock area was completely filled with liquid. (Some portions appeared cloudy white.)

③ Black substance noted along east wall and ground adjacent to the loading dock. Black substance appeared to be emitting from "scuppers" along east wall.

④ Tanker truck still present on site on east side of the building in loading dock area. (Black stains also noted around tanker truck.

⑤ Large wooden vat still on site with black stains around it, emitting strong odor of cresote. (Will not sample without assistance & respirator)

After observing the above violations, I entered the building to speak to Mr Miller about the above mentioned conditions, and to notify him that I was there to collect phenol samples.

I spoke to Ms Lia Coos (Receptionist) who asked me if I had an appointment. When I told her that I did not, Ms Coos stated that Mr Miller did not speak to anyone without an appointment. I then explained that the department is interested in seeing a facility in its natural state & that Mr Akras had informed Mr Miller that someone would be back to his facility to procure samples.

Ms. Coos then went to speak to Mr Miller (apparently) & when she returned she said Mr Miller never heard of or spoke to Mr Akras & that he was a very busy man & would not see me without an appointment.

On 21 April 83 I met Mr Finkenberg at the Cantor Bros site at approximately 8:30 am. At this time it was noted that:

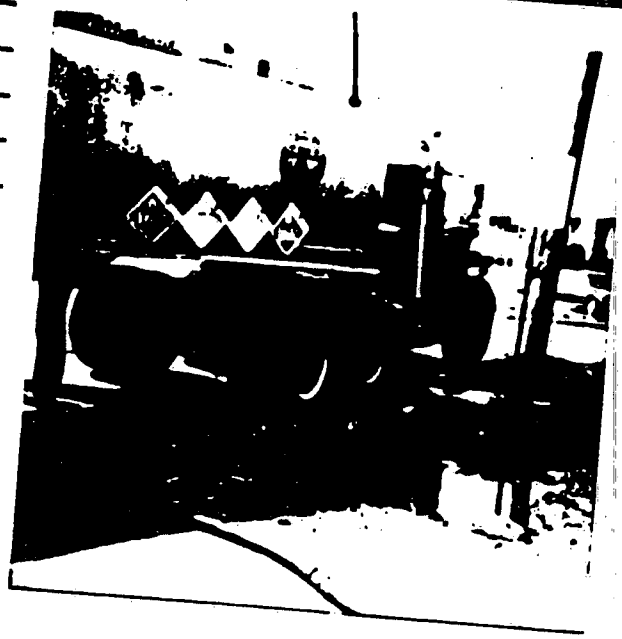
① A tanker truck was making a delivery at the fill station in front of the building. Black 5 gallon pails were being used for containment of spillage (Delivery truck labeled (1255) (According to hazardous material manual, 1255 is identified as naptha) (see Photos

CONTINUED. INSPECTORS OBSERVATIONS OR INTERVIEWS

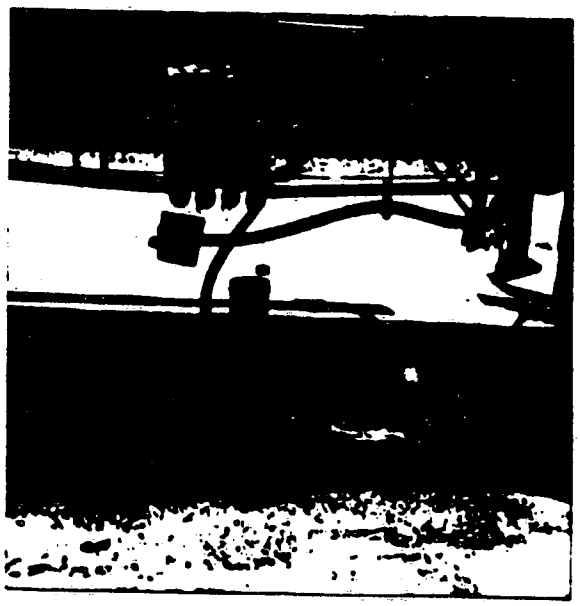
1983 a

(1JJ421, 2JJ421, 3JJ421)

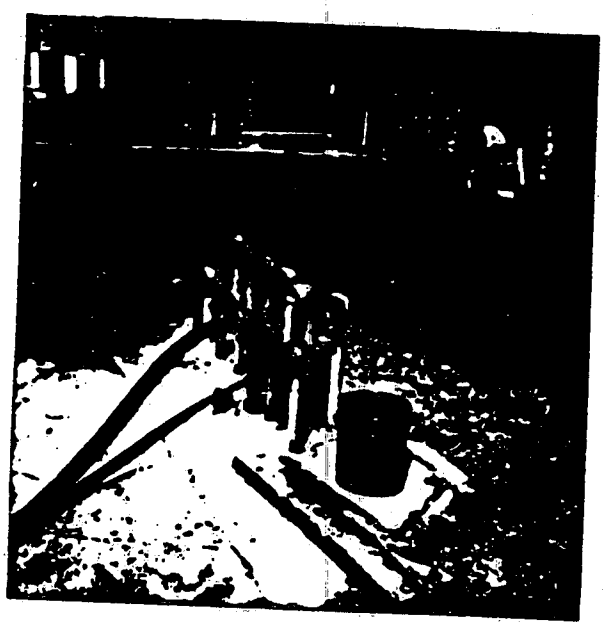
3/14



(1JJ421)



(2JJ421)



3JJ421

R-20

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

1983 a

4/14

② evidence of inground tanks noted on front lawn. (photo 4JJ421)
③ Person (possibly an employee?) noted to be applying dirt to area around storm drain, front of the building approximately 15 ft NE of front entrance to Cantor Bros. (see upper right hand portion of photo labeled 3JJ421)

(4JJ421)

④ ≅6000 gallon blue tanker truck still present on east side of building. (see photos labeled 5JJ421; 6JJ421)
⑤ "Scuppers" on east wall of Cantor Bros building appear to be discharging black substance to ground. (see photos 7JJ421) This area is in close proximity to loading dock area. Loading dock houses a storm drain.
⑥ Loading dock previously filled with white cloudy material pumped out. Storm drain was also pumped dry, clean fill noted both in the storm drain and around area of storm drain. (see photos 9JJ421 & 10JJ421)
⑦ Large wooden vat still present on east side of building. I was unable to remove cover to ascertain if the vat contained material but concluded it did when I noted a very strong odor of creosote emitting from it. Black stains also noted around area of the vat. Vat appears to be leaking. (see photo 11JJ421)
⑧ Drums storage on east side of building (photo 12JJ421)
⑨ Numerous 55 gallon drums on east side of building, lying on their sides, mostly open topped. Black material appears to have spilled from them. Area around the drums black. (see photos 13JJ421, 14JJ421, 15JJ421)
⑩ Inspected site around storm drain & noted there had obviously been a spill. Clean fill had been placed over ground apparently saturated with a "[illegible]

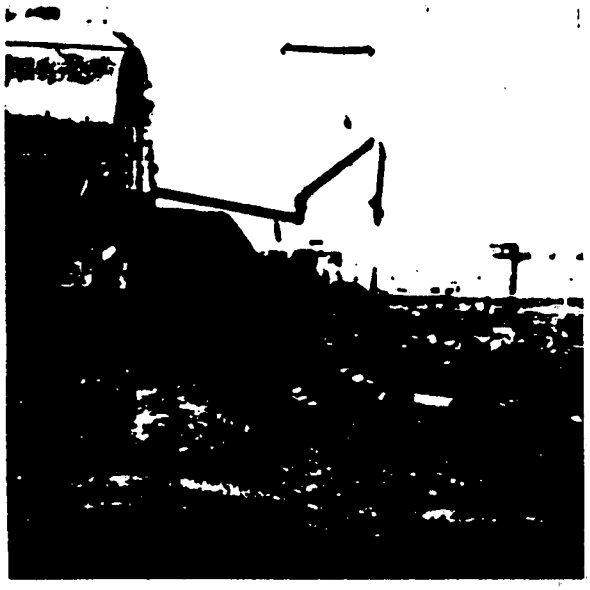
R-21

odor. (Sample procured from the storm drain & delivered to H2M for analysis.)

(11) Hand delivered a copy of Article 12 and six notices of violation to Ms Coms (Receptionist) and asked her to deliver the material to Mr Miller. I also ask Ms Coms to have Mr Miller call the Dept. for an appointment to discuss the multiple violation conditions noted.

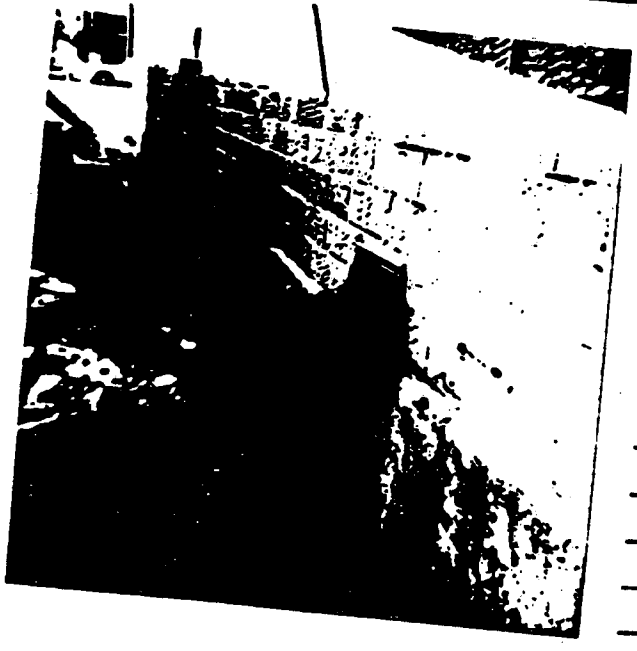
JoAnne Johnson
22 April 83

* 27 April 83
Mr Miller has not to this date contacted dept.



5JJ421

6JJ421



7JJ421

8JJ421

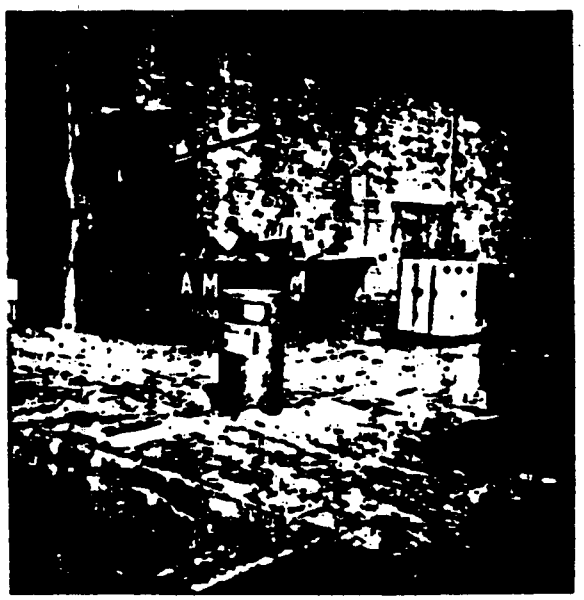
9 JJ421

1983 a

7/14

10 JJ421

11 JJ421



12 JJ421

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

1983 a

8/14

13 JJ421

14 JJ421

15 JJ421

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1983 a

9/1

NOTICE OF VIOLATION

Issued to (Company) Cantor Brothers Inc

(address) Engineers LA, Farmd

delivered to Lia Cons (Receptionist)

On (date, time) 21 April 83 9^45 AM

TAKE NOTICE THAT, on 21 April 83 at 9^45 in the (fore) (after) noon, at the location of Engineers LA, Farmd

you were found to be in violation of Article 12 Section 1217 of the Suffolk County Sanitary Code in that:

① Spill on south side of building to storm drain ≅ 10 ft north of front entrance

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provision of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by JoAnne Johnson

0-26

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1983 a

10/

NOTICE OF VIOLATION

Issued to (Company) CANTOR BROS INC

(address) ENGINEERS LA, FARMD

delivered to LIA CONS (Receptionist)

On (date, time) 20 APRIL 83 9:00 AM

TAKE NOTICE THAT, on 20 APRIL 83 at 9:00 in the (fore) noon, at the location of ENGINEERS LA, FARMD you were found to be in violation of Article 12 Section 1217 of the Suffolk County Sanitary Code in that:

① NOTED BLACK SUBSTANCE EMANATING FROM SCUPPERS ALONG EAST WALL OF BUILDING. MATERIAL HAS TRAVELED TO GROUND THEN TO STORM DRAIN.

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provision of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by [illegible]

R-27

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1983 a

11/14

NOTICE OF VIOLATION

Issued to (Company) CANTOR BROS INC

(address) ENGINEERS LA, FARMD

delivered to [illegible] (Receptionist)

on date time [illegible] 9:00 AM

TAKE NOTICE THAT, on 20 APRIL 83 at 9:00 in the afternoon, at the location of ENGINEERS LA, FARMD

you were found to be in violation of Article 12 Section 1217 of the Suffolk County Sanitary Code in that:

① FAILURE TO REPORT SPILLS ② EAST SIDE OF BUILDING, OVERTURNED DRUMS, AREA AROUND [illegible] ③ [illegible]

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provisic of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by [illegible]

18-1

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SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1983 a

NOTICE OF VIOLATION

12/14

Issued to (Company) CANTOR BROS INC

(address) ENGINEERS LANE, FARMD

delivered to LIA COMS (RECEPTIONIST)

On (date, time) 20 APRIL 83 9:00 AM

TAKE NOTICE THAT, on 20 APRIL 83 at 9:00 in the (fore) (after) noon, at the location of ENGINEERS LA, FARMD you were found to be in violation of Article 12 Section 1213 of the Suffolk County Sanitary Code in that:

TRANSFER FACILITY NOT IN COMPLIANCE WITH ARTICLE 12 SECTION 1213. ① NO SPILL PROTECTION ② NO MEANS OF MONITORING TRANSFER FACILITY FOR LEAKAGE OR SPILLAGE, INCLUDING A WARNING DEVICE

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provision of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by Joanne Johnson

18-148 5/81

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SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

NOTICE OF VIOLATION

1983 a

13/1.

Issued to (Company) CANTOR BROS INC

(address) ENGINEERS LA, FARMD

delivered to LIA CONS (Receptionist)

On (date, time) 20 APRIL 83 9:00 AM

TAKE NOTICE THAT, on 20 APRIL 83 at 9:00 in the (fore) (after) noon, at the location of ENGINEERS LA, FARMD you were found to be in violation of Article 12 Section 1215 of the Suffolk County Sanitary Code in that:

① OUTDOOR DRUM STORAGE of 40 x 55 GAL drums MATERIAL SPILLED ALL AROUND AREA of DRUMS ② NO CHEMICAL RESISTANT PAD ③ NO impervious CONTAINMENT ③ UNPROTECTED FROM VANDALISM, UNAUTHORIZ ACCESS, damage from TRAFFIC, MACHINERY & FALLING OBJECTS ④ UNPROTECTED FROM HEAT COLD RUST & OTHER WEATHER RELATED CON

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provision of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by Johanne Johnson

18-148: 5/81 R-30

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1983 a

14/14

NOTICE OF VIOLATION

Issued to (Company) CANTOR BROS INC

(address) ENGINEERS LA, FARMD

delivered to LIA COOS (RECEPTIONIST)

On (date, time) 20 APRIL 83 9^00 AM

TAKE NOTICE THAT, on 20 APRIL 83 at 9^00 in the (fore) (after) noon, at the location of ENGINEERS LA, FARMD

you were found to be in violation of Article 12 Section 1215 of the Suffolk County Sanitary Code in that:

① LARGE WOODEN VAT STORED IN PARKING LOT ON EAST SIDE OF BLDG. IN VIOLATION OF ALL SECTIONS OF ART. 12 SECTION 1215

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provision of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by JoAnne Johnson

R-31.

18-148 5/81

DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

Art XII Sample
Air File

NAME OF FACILITY	CANTOR BROTHERS INC	OWNER/OFFICER	M. Miller
COMPANY NAME		CONTACT	
PAGE 1 OF			
PLANT ADDRESS	Engineers LA	VILLAGE	Farmingd.
TOWN	Babylon	TEL.	694-6666
MAILING ADDRESS		ZIP	11735
DATE	9 June 83	TIME	3:10 pm
ORIG. PERIODIC	RE.	WASTE	NO WASTE
H&H		SEWAGE SYSTEM	PUBLIC PRIVATE
INDUSTRY	Repackages Chemical Materials		
SPDES OR NPDES PERMIT?	YES NO	PERMIT NO.	
360 PERMIT?	YES NO	PERMIT NO	
SCAVENGER	Marine Pollution Control		
SCAVENGER APPROVED	YES NO	PICK UP RECORDS AVAILABLE	YES NO
RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION	YES NO	TEL.	
HEATING SYSTEM MFG NAME		FUEL TYPE	#2 Fuel
FIRING RATE			
INCIN. NAME		WASTE BURNED	
RATE			
DRUM STORAGE	YES NO	NUMBER STORED	OVER 200
INDOORS	OUTDOORS	TYPE OF MATERIAL STORED	WASTE RAW
STORAGE TANKS	YES NO	NUMBER OF TANKS	READ BACK
ABOVEGROUND	≈16	UNDERGROUND	≈15
TYPE OF MATERIAL STORED	WASTE RAW		
OPEN PROCESS TANKS	YES NO	NUMBER OF OPEN PROCESS TANKS	—
ANY ART. XII VIOLATIONS	YES NO		

(1) All creosote soaked ground on east side of building & area around storm drain soaked with #2 Fuel oil must be cleaned & scavenged.
(2) Tanks are in process of being Kent Moore tested by Island Tank.
(3) Receipts attached for cleanups. (Caulk wash, ≈ 200 gal a month is evaporated)
(4) Troughs & floor drains still present in plant. Mr. Miller states that the fire dept. requires them.
(5) It is suggested that Peter Akras be contacted immediately & appointment be made to resolve the Article 12 problems. (All violations still exist)

MISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF SPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.
INSPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY ULT IN A HEARING AND/OR FINE.

OF PERSON RE...	Mathew J. Miller	TITLE Gen Mgr.
INSPECTOR	JoAnne Johnson	

R-32

5/81 TJK 1/12

SCDHS
1983 b&c

R-33

1983 b&c 2/12

INDUSTRIAL WASTE PROCESS

PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHARGE TO
North Side of Bldg. All storage of Finished Product			
6x Mixing Liquids	4x 150 gal; 2x 210 gal, 1 x 300 gal	N/A	N/A
4x Mass Cmpds	(1 stainless; all others steel)	N/A	N/A
Liquid Packaging Machines	Varies	N/A	N/A
15 x Underground Tanks	(List of Tank Contents & Capacity in file)	N/A	N/A
Storage Vat For Creosote	(Wooden, ≅ 300 gals)	N/A	N/A
Caulking Filling Machine	Caulking Material	N/A	N/A
Putty & Glazing Cmpd.	Putty	N/A	N/A
Putty Mixer	Putty	N/A	N/A
2x Mixers (300 gal)	Caulking	N/A	N/A
1x Fillermachine	Caulking	N/A	N/A
Large Putty Mixing Machine	Putty	N/A	N/A
Soy Bean Oil Tanks (2x750 gal)	Soy Bean Oil	N/A	N/A
2x 1500 gal Tanks	Raw Lindseed, Poly Butene	N/A	N/A
1x 3000 gal Creosote Tank			

AIR POLLUTION SOURCES

18-155:

PROCESS	CONTROL TYPE	EP'S	CHEMICALS OR PRODUCTS USED	AMOUNT CONSUM.	HOURS OF OPERA.	TYPE OF EMISSION
(None)						

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

FOR THE RECORD

1983 b & c

CANTOR BROTHERS

ENGINEERS IA, FARMINGDALE

9 JUNE 83

3/12

A REINSPECTION OF THE CANTOR BROTHERS INC. FACILITY WAS CONDUCTED ON 9 JUNE 83 AT 3^10 pm. THE following information is AN UPDATE ON their STATUS with REGARD to ARTICLE 12 compliance.

INTERIOR OF FACILITY

(A) According to Mr Miller, A SMALL AREA NEAR the loading dock on the WEST SIDE OF the building is being sublet to CARDINAL PETROCHEMICAL (MITCHEL ELSNER) for STORAGE OF VARIOUS GRADES OF LACQUER THINNERS (both 55 gal drums, 5 gallon CANS AND 15 gallon CANS), LACQUER REDUCERS AND E.Z. KLEAN. THERE ARE OVER 519 x 5 gallon CANS, 75 x 15 gallon CANS and 67 x 55 gallon drums. BECAUSE of the way the various drums & CANS ARE STACKED, AND BECAUSE the MATERIALS ARE ALSO BOXED in SOME INSTANCES, (E2 KLEAN for example) it WAS impossible to GET AN EXACT COUNT. Mr Miller STATES that CANTOR BROS. PUTS the FORMULATIONS INTO the CANS & DRUMS for CARDINAL, BUT STATES THAT ANY ART. 12 CORRESPONDENCE should be DIRECTED to Mr ELSNER. The MATERIAL is only STORED in this AREA since the MATERIALS ARE SOLD APPROXIMATELY 1 MONTH AFTER they ARE STORED in this AREA (In OTHER words, THERE is A turnover of MATERIALS EVERY month)

* PLEASE ADVISE AS to how I should PROCEED in DIRECTING ARTICLE 12 compliance in writing)

(II) As far AS the CANTOR BROTHERS operation is concerned, the following CORRECTIVE ACTIONS HAVE BEEN TAKEN:

(A) All 55 gallon CREOSOTE drums HAVE BEEN SCAVENGED by A lisc. hauler, (RECEIPTS ARE ATTACHED) AS REQUESTED.

(B) CAULKING WASHWATER HAS ALSO BEEN SCAVENGED by A lisc. hauler (RECEIPTS ARE ATTACHED) AS REQUESTED.

(C) The WASHWATER OPERATION HAS BEEN REVISED. VATS are no longer washed out with previous volume of WATER. MATERIAL is now dried (naturally) and ≅ 20 gallons of WATER is used for cleaning a month. This WATER is evaporated & dried MATERIAL is scraped

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS 1983 b&c

4/12

(d) Island Tank is now in the process of conducting Kent More Tests on the in ground tanks. Mr Santino has been advised of this information.

As far as any other Article 12 violations are concerned, Mr Miller states that he is still waiting for a response to his 24 Nov 82 letter to Mr Akras. No other corrective actions have taken place except for those stated above. (The violation condit are all previous mentioned in the file.)

As far as the phenol sampling that was requested by Mr Akras, a period of time elapsed before the bottles were given to me, & I was also advised not to hand them in (by Ken Hill) unless a noticable odor was noted upon procuring the sample. Numerous attempts were made to obtain samples but no odor was ever noted. (odor of the creosote was the odor to be detected)
There was a sample taken out of a storm drain located ≈ 15 ft NE of the front entrance on the 21st of April 83 which was over in organics. (see the file) Because of the length of time that elapsed before the results were received in this office, Cantor Brothers was not notified for quite some time. On 25 April 83, Mr Miller had this storm drain pumped by George Cooper, (see attached) (Mr Cooper is not a lisc. scavenger.) Mr Miller received a violation for a spill on 21 April 83 because of the extremely noxious odor of fuel that was noted both in the surrounding soil & procured sample.

(e) Mr Miller was advised to have all the creosote soaked ground on the east side of the building, & the area around the above mentioned storm drain, cleaned & scavenged (see insp. report 9 June 83 in file)

R-35

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

1983 b&c

5/12

(F) Because these Article 12 problems have been recorded by previous inspections, and the facility has been sent correspondence outlining corrective actions, and to date has not corrected them, a hearing should be set up to resolve the situation. Continual inspections & the procuring of samples in regard to this facilities status, is a complete waste of time, since nothing is being done by the facility.

JoAnne Johnson
10 June 83

R-36

265-2291

1983 b&c
6/12

GEORGE COOPER
14 DUDLEY LANE
KINGS PARK, N. Y. 11754

April 25, 1983

Cantor Bros Inc.
Engineers Lane
P. O. Box 126
Farmingdale, N. Y. 11735

Job: Above location

Pumped and cleaned two (2) drywells, by hydraulic truck crane of all muck and debris.

Debris loaded on our truck and taken from job site.

Drywells refilled with clean bankrun to bottom of section to provide maximum drainage.

TOTAL PRICE FOR ABOVE.....$500.00

PAID
APR 27 1983

R-37

1983 b&c

7/12

Part B:

Transporter—FILL OUT

TRANSPORTER NO 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment"

GEN EPA ID#

DATE DELIVERED Mo. Day Yr

TRANSPORTER NO 2 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."

TRANSPORTER NO 2 PERMIT NUMBER NY1A0A1

DATE RECEIVED Mo. Day Yr

TRANSPORTER NO 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment"

DATE DELIVERED Mo Day Yr

TSD Facility—FILL OUT

TREATMENT STORAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT OR LISTING OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS

HANDLING METHOD

1	T	6	5	2		
3				4		
5				6		

TREATMENT STORAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual inspection, I certify that the contents of this shipment conform with the description on the manifest except those discrepancies noted on this form."

SIGNATURE

Please print or type name also

DATE RECEIVED 12 03 8 Mo Day

In case of emergency or spill immediately call the National Response Center (800) 424 8802 and the N Y Department of Transportation (518) 457 7362

DOCUMENT NO. NY103036

COPY 3 Generator—Mailed by TSD Facility

R-38

14-1 (11/80)

1983 b&c

a cover sheet for instructions

PLEASE TYPE

8/12

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
HAZARDOUS WASTE MANIFEST

Part A:

DOCUMENT NO. NY 103036

GENERATOR NAME: CANTOR BROS., INC. PHONE: 516-694-6666 EPA ID NO.: NY D 6 3 5 4 1 - NY 0 1

SITE ADDRESS: ENGINEERS LANE, FARMINGDALE, L.I., N.Y. 11735

TRANSPORTER NO 1: MARINE POLLUTION CONTROL, INC. PHONE: 516-654-4900 NY D 0 7 5788831

SITE ADDRESS: 375 DUFFON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

TRANSPORTER NO 2: PHONE:

SITE ADDRESS:

TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: EWR, ENVIRONMENTAL WASTE REMOVAL, INC. PHONE: 203-755-2283 CT-D072138969

SITE ADDRESS: 130 FREIGHT STREET, WATERBURY, CT., 06702

THIS FORM IS NO ____ OF A TOTAL OF ____ THE FIRST MANIFEST DOCUMENT NO. IS NY

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
CREOSOTE RESIDUE	COMBUSTIBLE	NA 1993	01	1112	D	009	DR		

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION OR IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE: Matthew J. Miller

Please type name also

TRANSPORTER NO 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."

TRANSPORTER NO 1 PERMIT NUMBER: NY1A041

DATE SHIPPED: 12 02 82 (Mo. Day Yr.)

EXPECTED ARRIVAL DATE: 12 03 82 (Mo. Day Yr.)

DATE RECEIVED: Mo. Day Yr.

COPY 3 Generator--Retained by Generator

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LING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A
JS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

1983

9/12

'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in
ion for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were
the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also
n all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

SIGNATURE

ew J. 'illor
also

DATE SHIPPED			EXPECTED ARRIVAL DATE		
12	02	82	12	03	82
Mo.	Day	Yr.	Mo.	Day	Yr.

O 1 SIGNATURE "To the best of my knowledge the con-
ment I have accepted for transport conforms with the
s manifest."

TRANSPORTER NO. 1
PERMIT NUMBER

DATE RECEIVED
Mo. Day Yr.

COPY 5 Transporter No. 1—Retained by Transporter No. 1

Tear at this Perforation

GEN EPA ID#

O 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED
Mo Day Yr

O 2 SIGNATURE "To the best of my knowledge the contents
have accepted for transport conforms with the description on

TRANSPORTER NO 2
PERMIT NUMBER

DATE RECEIVED
Mo. Day Yr

O 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED
Mo. Day Yr

RAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT
EASONS FOR AND DISPOSITION OF REJECTED MATERIALS

HANDLING METHOD

1	T	6	6	2			
3				4			
5				6			

RAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual in-
that the contents of this shipment conform with the descrip-
est except those discrepancies noted on this form."

SIGNATURE

Please print or type name also

DATE RECEIVED
Mo Day Yr.

ncy or spill immediately call the National Response Center
the N.Y. Department of Transportation (518) 457-7362.

DOCUMENT NO. NY10303

COPY 5 Transporter No. 1—Retained by Transporter No. 1

R-40

7531 1983b4

sheet
structions
EASE TYPE

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
HAZARDOUS WASTE MANIFEST

10/12

Part A:

DOCUMENT NO. NY 103035

GENERATOR NAME: CANTOR BROS., INC. PHONE: 516-694-6666 EPA ID NO.: NY 0 6 3 5 4 N Y 0 1

SITE ADDRESS: ENGINEERS LANE, FARMINGDALE, L.I. N.Y. 11735

TRANSPORTER NO. 1: MARINE POLLUTION CONTROL, INC. PHONE: 516-654-4900 NY D 075788831

SITE ADDRESS: 375 DUNTON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

TRANSPORTER NO. 2 PHONE

SITE ADDRESS

TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: SWR ENVIRONMENTAL WASTE REMOVAL, INC. PHONE: 203-755-2283 CT-D072138969

SITE ADDRESS: 130 FREIGHT STREET, WATERBURY, CT. 06702

THIS FORM IS NO _____ OF A TOTAL OF _____ THE FIRST MANIFEST DOCUMENT NO. IS NY

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
CREOSOTE RESIDUE, N.O.S.	COMBUSTIBLE, NA LIQUID	1993	01		01	001	02		D001
ACRYLIC LATEX CAULKING COMPOUND WASH WATER	N/A	N/A			01	001	02		

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

GENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE: Matthew J. Miller

Please type name also

DATE SHIPPED: 12 02 82 (Mo. Day Yr.)

EXPECTED ARRIVAL DATE: 12 03 82 (Mo. Day Yr.)

TRANSPORTER NO. 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."

TRANSPORTER NO. 1 PERMIT NUMBER: [illegible]

DATE RECEIVED: Mo. Day Yr.

COPY 5 Transporter No. 1—Retained by Transporter No. 1

Tear at this Perforation

Part B:

TRANSPORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of the ...

GEN EPA ID#

R-41

[redacted] Sheet
[redacted]uctions
[redacted]SE TYPE
[redacted]A:

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
HAZARDOUS WASTE MANIFEST

1983 b&c 11/12

DOCUMENT NO. NY 103035

[redacted]ERATOR NAME: [redacted]NTOR BROS., INC. PHONE 516-694-6666 EPA ID NO. NY 0 6 3 5 [redacted] N Y-0 1 1
[redacted]ESS: [redacted]GINEERS LANE, FARMINGDALE, L.I.N.Y. 11735

[redacted]SPORTER NO. 1: [redacted]MARINE POLLUTION CONTROL, INC. PHONE 516-654-4900 NY D 075788831
ADDRESS: 375 DUNTON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

[redacted]SPORTER NO. 2: PHONE
ADDRESS:

[redacted]MENT, STORAGE OR DISPOSAL (TSD) FACILITY: [redacted]EWR ENVIRONMENTAL WASTE REMOVAL, INC. PHONE 203-755-2283 CT-D072138969
[redacted]DDRESS: 130 FREIGHT STREET, WATERBURY, CT. 06702

[redacted]ORM IS NO. ____ OF A TOTAL OF ____ THE FIRST MANIFEST DOCUMENT NO. IS NY

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA HAZ CODE	EPA WASTE TYPE
[redacted]EOSOTE RESIDUE, N.O.S.	COMBUSTIBLE LIQUID	NA 1993	01	[redacted]	01	D 0 1	D 2		
[redacted]CRYLIC LATEX CAULKING [redacted]MPOUND WASH WATER	N/A	N/A		2500	01	D 0 1	D 2		
				2500					

[redacted] HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A [redacted]ZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)
[redacted] A0 7532
[redacted] A0 7531

[redacted]RATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in [redacted]r condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were [redacted]gned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also [redacted]rms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge

[redacted]TOR'S SIGNATURE: [redacted]tthew J. Miller [redacted]

DATE SHIPPED: 1 2 / 1 2 / 8 3 (Mo. Day Yr.) EXPECTED ARRIVAL DATE: 1 2 / 1 3 / 8 2 (Mo. Day Yr.)

[redacted]RTER NO. 1 SIGNATURE "To the best of my knowledge the con- [redacted]e shipment I have accepted for transport conforms with the [redacted]on this manifest"

TRANSPORTER NO. 1 PERMIT NUMBER: NY1A04

DATE RECEIVED: ___ (Mo. Day Yr.)

COPY 3 Generator--Retained by Generator

Tear at this Perforation

GEN EPA ID#

[redacted]TER NO 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED: ___ (Mo Day Yr)

[redacted]TER NO 2 SIGNATURE To the best of my knowledge the contents [redacted]nent I have accepted for transport conforms with the [redacted]

TRANSPORTER NO 2

DATE RECEIVED

2509+

PECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A ONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

Waste Stream #
AO 7532
AO 7531

1983 b&c

12/12

GENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were consigned to the transporter named. The TSD Facility can and will accept the shipment of hazardous waste, and has a valid permit to do so. This shipment also conforms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge.

GENERATOR'S SIGNATURE: Matthew J. Miller
Please type name also

DATE SHIPPED: 12 02 82 (Mo. Day Yr.)

EXPECTED ARRIVAL DATE: 12 03 82 (Mo. Day Yr.)

TRANSPORTER NO. 1 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."

TRANSPORTER NO. 1 PERMIT NUMBER: NY1A041

DATE RECEIVED: Mo. Day Yr.

COPY 3 Generator--Retained by Generator

Tear at this Perforation

Part B:

GEN EPA ID#

TRANSPORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED: Mo. Day Yr.

TRANSPORTER NO. 2 SIGNATURE "To the best of my knowledge the contents of the shipment I have accepted for transport conforms with the description on this manifest."

TRANSPORTER NO. 2 PERMIT NUMBER

DATE RECEIVED: Mo. Day Yr.

TRANSPORTER NO. 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED: Mo. Day Yr.

TREATMENT STORAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT LISTING OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS

HANDLING METHOD

1				2			
3				4			
5				6			

TREATMENT STORAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual inspection, I certify that the contents of this shipment conform with the description on the manifest except those discrepancies noted on this form."

SIGNATURE
Please print or type name also

DATE RECEIVED: 12 02 82 (Mo. Day Yr.)

In case of emergency or spill immediately call the National Response Center 424-8802 and the N.Y. Department of Transportation (518) 457-7362.

DOCUMENT NO. NY103035 6

COPY 3 Generator--Mailed by TSD Facility

R-43

SCDHS
1983 d

1/2

DEPARTMENT OF HEALTH SERVICES

David Harris, M.D., M.P H
Commissioner

July 13, 1983

CERTIFIED MAIL - R.R.R.

Cantor Brothers, Inc.
Engineers Lane
Farmingdale, N.Y. 11735

Gentlemen:

The records of this office indicate that you have violated Article 12 of the Suffolk County Sanitary Code in that:

On 6/9/83, 4/21/83, 4/20/83, 8/24/82, 6/2/82, 11/7/80 and 5/5/80 you did store toxic or hazardous materials; without a valid permit in violation of Article 12, Section 1207 and in a manner not designe to prevent the discharge of toxic or hazardous materials in violatio of Article 12, Section 1215.

On 6/9/83, 4/21/83, 4/20/83, 8/24/82, 6/2/82 and 5/5/80 you did discharge toxic or hazardous materials to the ground and/or a storm drain in violation of Article 12, Section 1205.

In order to resolve the foregoing violations, a preliminary hearing is being scheduled at this office on August 10, 1983 at 9:30 a.m. You may appear at this hearing with or without counsel; you may produce witnesses and evidence, but no sworn testimony will be taken or recorded.

Please be advised that each violation of the Suffolk County Sanitary Code is punishable by a civil penalty not to exceed $500 for each day or part thereof that such violation continues. Therefore, it would be in your best interest to appear at the preliminary hearing. A failure to appear will result in the scheduling of a formal hearing by the Department.

If you are unable to meet the above-mentioned scheduling requirements or if you have any questions regarding this proceeding, please do not hesitate to contact this office.

Very truly yours,

TO CHECK AUTHENTICITY OF THIS LETTER, YOU MAY CALL MR. A.M. SANTINO, SCDHS, 15 HORSEBLOCK PL., FARMINGVILLE, N.Y., TEL. NO. (516) 451-4640.

Patrick Perrella
Environmental Enforcement

PP/rt
cc: J. Finkenberg

CANTOR BROS. INC

2. Principal officers of firm; partners if a partnership; owner:
MATHEW J. MILLER, GENERAL MGR

3. Address of firm to be charged. Indicate address of alleged violating facility and main office if not the same, mailing address if different:
ENGINEERS LANE
FARMINGDALE, L.I. NY 11735

4. Violations alleged - check those you believe applicable and include dates of alleged occurrance:

I. Industrial Wastes and Hazardous Materials

a. acted as a scavenger without a proper license
(b) hired unlicensed scavenger
(c) discharged hazardous material
d. discharged industrial waste without a SPDES Permit
e. discharged industrial waste in violation of SPDES Permit
f. storage of hazardous material without a permit (Pt. 360)
(g) improper storage of hazardous materials
(1) portable containers
(2) underground tanks
3. above-ground tanks
4. indoor tanks
5. other
(h) failure to report a leak or spill of hazardous material
i. failure to report leak or spill of material likely to pollute groundwater where at the time of leak or spill at least 1500 gallons of such material was on the site
j. discharge in excess of groundwater standards
k. other

II. Public Nuisance - Liquid Discharges; Sewage Plants

a. overflowing cesspools
b. overflowing sewage treatment plant
c. STP - discharge in violation of SPDES Permit
d. other

III. Air Pollution

a. construction of source without a permit
b. operation of source without a permit
c. nuisance conditions [illegible] emission
d. opacity violation
e. operation in violation of permit (i.e. improper maintenance of equipment
f. open burning
g. auto emission violations
h. fugitive dust
i. emissions in excess of applicable standards
j. other
NB - make sure no exemptions apply

5. Brief discription of nature of proof to support allegation
(1) 6-18-75 INSPECTION. A EISNER DENIED ACCESS 2 TIMES
(2) 6-11-79 INSPECTION L. COPERTINO SPILLS NOTED
(3) 5 MAY 80 SPILL REPORT J FINKENBERG CHEMICAL SPILLS
(4) 7-31-80 INSPECTION E. GOVERNALE. ART 12 VIOLATIONS

6. Recommendation for Consent Order (OVER)

a. by Inspectional Services
1- PUMP OUT + CLEAN STORM DRAIN USING LICENSED SCAVENGER
2- SITE WELLS
3- COMPLETE ENGINEERING REPORT 4- FINE
b. by applicable Engineering Section

AS large as possible
-WCR

[illegible] Cantor notified [illegible]

[illegible] 3, 1983

Signed 16 JUNE 83 J FINKENBERG

R-45

[illegible] (Art. 12)
J. Pim (Art. 12)
J. Maloney (Art. 10)
WCR W. Roberts
1983 d
2/2

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

SCDHS

1983e

1/3

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

Cantor Brothers, Inc.
Engineers Lane
Farmingdale, New York 11735

Date June 1, 1983
SPDES NO.
Lab. No. 352464
Field No. R1 JJ 4

Gentlemen:

On 21 April 1983 samples of industrial waste were taken from your storm drain south side of bldg. approx. 10 feet east of front entrance. Upon analysis, the following parameters were found in concentrations above the maximum allowed in your SPDES Permit or in groundwater effluent standards:

1. Benzene 330.0 ppb
2. toluene & unknown organic 4800.0 ppb
3. m-xylene 114.0 ppb
4. o-xylene 90.0 ppb
5.
6.
7.
8.
9.
10.

Please be advised that these unsatisfactory conditions constitute violations of the N.Y.S. Environmental Conservation Law and/or the Suffolk County Sanitary Code. Please be further advised that the discharge of any water from an industrial process to the groundwater of Suffolk County without having first obtained a State Pollutant Discharge Elimination System (SPDES) Permit for that discharge is also a violation of the N.Y.S. E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

If you do not already possess a valid SPDES Permit for the above discharge, then you should apply immediately through this office for said permit.

Since the above-noted violations may subject you to legal action, it is expected that these violations cease immediately. Violations of the Suffolk County Sanitary Code are subject to the imposition of a civil penalty of up to Five Hundred ($500) dollars per violation. E.C.L. violations are also subject to a civil penalty. A reinspection in the near future will determine your compliance in this matter.

Very truly yours,

John H. Finkenberg, Sr. Sanitarian
Environmental Pollution Control

orseblock p1

R-46

1983 c

2/3

COUNTY OF SUFFOLK

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

ENT OF HEALTH SERVICES

David Harris, M.D., M.P.H.
Commissioner

antor Brothers, Inc.
Engineers Lane
armingdale, New York 11735

June 1, 1983

CERTIFIED MAIL

tlemen:

21 April 1983 samples taken from the storm drain on the south
of your building approximately 10 feet east of entrance.
e collected by a representative in this Department. The laboratory
lysis performed by this Department revealed that 330.0 ppb of
enzene, 4800.0 ppb of toluene and an unknown organic, 114.0 ppb of m-xylene
nd 90.0 ppb of o-xylene has been discharged to this storm drain.

the excessive nature of this discharge, you are directed to
these leaching pools/ holding tanks/ storm drains pumped of all
uids and sludge by an approved industrial waste scavenger. A list
pproved scavengers may be obtained by calling James Heil, P.E.,
york State Department of Environmental Conservation, 751-7900.

are also directed to notify this office when these pools are pumped
hat an inspector may witness this operation.

ou have any questions, please call me at 451-4635.

y truly yours,

H. Finkenberg
ironmental Pollution Control

/wb

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300
COUNTY OF SUFFOLK
TMENT OF HEALTH SERVICES
MENTAL POLLUTION CONTROL
15 Horseblock Place
ingville, New York 11738

inkenberg
ame of Sender)

reet or P.O. Box)

State, and ZIP Code)

R-47

1983 e
Canlar Bros.

HOLZMACHER, McLENDON and MURRELL, P.C.
H2M CORP.
575 BROAD HOLLOW ROAD, MELVILLE, NEW YORK 11747
Tel. (516) 694-3040

LABORATORY REPORT

LAB TO 03

CLIENT NAME AND ADDRESS

S.C. Dept. of Health Services
15 Horseblock Pl.
Farmingville, NY 11738

LAB. NO. 352464
TYPE WATER Miscellaneous
SAMPLING PT. I.D. #R-1-JJ-4-21

DATE SAMPLED 4/21/83
TIME SAMPLED
RUN TIME (WELL)
COLLECTED BY JJ 99

VOLATILE HALOGENATED	ug/l
methylene chloride	
1,1-dichloroethylene	
1,1-dichloroethane	
* trans-1,2-dichloroethylene	
cis-1,2-dichloroethylene	
chloroform	
1,1,2-trichlorotrifluoroethane	
1,2-dichloroethane	
1,1,1-trichloroethane	
carbon tetrachloride	
bromodichloromethane	
* 1,2-dichloropropane	
2,3-dichloropropene	
trans-1,3-dichloropropene	
trichloroethylene	
1,1,2-trichloroethane	
* chlorodibromomethane	
cis-1,3-dichloropropene	
* bromoform	
1,1,1,2-tetrachloroethane	
* tetrachloroethylene	
1,1,2,2-tetrachloroethane	
vinylchloride	
* dichlorodifluoro methane	
chlorobenzene	

VOLATILE NON-HALOGENATED	
benzene	330
toluene. & Unknown	4,800
m-xylene	114
p-xylene	35
o-xylene	90
ethylbenzene	31

PESTICIDES	ug/l
lindane	
heptachlor	
aldrin	
heptachlor epoxide	
dieldrin	
endrin	
o,p'DDT	
p,p'DDT	
methoxychlor	
toxaphene	
chlordane	

HERBICIDES	
2,4-D	
2,4,5-TP (silvex)	

OTHERS	

RUN NO. (S)

*Reported value represents total

RECEIVED
MAY 23 1983
SUFFOLK COUNTY DEPT. HEALTH SERVICES

5/9/83 DATE REPORTED

LC McLENDON P.E., LAB DIRECTOR

R-48

SCDHS
1983

Sales, Service and Installation of Service Station Equipment

Petrol

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.
One Grange St. - P.O. Box 124, Greenlawn N.Y. 11740
Phone: (516) 261-1549

October 4, 1983

Re: Cantor Brothers
Engineers Lane
E. Farmingdale, N.Y.

Dear Sirs:

The underground storage tanks at the above location were Petro-Tite tested on 10-3-83.

The tank designated as #6 on the test report and has a capacity of 5,000 gallons was tested as a system with lacquer thinner, and showed a net volume change of -.661 gallons per hour during the last hour of the critical testing period. This tank is not tight.

The tank designated as # 12 on the test report and has a capacity of 2,000 gallons was re-tested with kerosene with no piping attached. The tank showed a net volume change of -.267 gallons per hour during the last hour of the critical testing period. This tank is not tight.

The National Fire Prevention Association certification for a tight tank system is that with a leakage rate of less than .050 gallons per hour. This is a calculated mathematical tolerance only, and is not meat to indicate the permission of any leakage.

Very truly yours,

Robert Nedwick

Robert Nedwick

cc: Cantor Brothers
Town of Babylon Fire Prevention
Suffolk County Health Department
N.Y.S. Dept. of Transportation-letter only

R-49.

SCDHS
1983 f

2/8

Sales, Service and
Installation of
Service Station
Equipment

[illegible]

October 10, 1983

Re: Cantor Brothers
Engineers Lane
E.Farmingdale, New York

Dear Sirs:

The 3,000 gallon underground storage tank at the above location was Petro-Tite tested on 10-7-83.

The tank designated as tank 'A' on the test report was re--tested by itself, with no piping attached, using regular gasoline. The tank showed a net volume change of -1.365 gallons per hour during the last hour of the critical testing period. This tank is <u>not</u> tight.

The National Fire Prevention Association certification for a tight tank system is that with a leakage rate of less than .050 gallons per hour. This is a calculated mathematical tolerance only, and is not meant to indicate the permission of any leakage.

Very truly yours,

Robert Nedwick

Robert Nedwick

cc: Cantor Brothers
Suffolk County Dept. of Health
Town of Babylon Fire Prevention
N.Y.S.Dept. of Transportation-letter only

R-50

1983 f
3/8

Sales, Service and Installation of Service Station Equipment

Island

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.
One Grange St. - P.O. Box 124, Greenlawn, N.Y. 11740
Phone: (516) 261-1590

September 16, 1983

Re: Cantor Bros., Inc.
Engineers Lane
E. Farmingdale, N.Y.

Dear Sirs:

The storage tanks at the above location were Petro-Tite tested on 9-13-83.

The tank designated as #1 on the test report, which has a capacity of 2000 gallons was tested with lacquer thinner as a system. This tank showed a net volume change of -.008 gallons per hour during the last hour of the critical testing period. This tank is tight.

The tank designated as #11 on the test report, which has a capacity of 2000 gallons was tested with benzine as a system. This tank showed a net volume change of -.797 gallons per hour during the last hour of the critical testing period. This tank is <u>not</u> tight.

The National Fire Prevention Association certification for a tight tank system is that with a leakage rate of less than .050 gallons per hour. This is a calculated mathematical toler--ance only, and is not meant to indicate the permission of any leakage.

Very truly yours,

Robert Nedwick

Robert Nedwick

cc: Cantor Bros.
Town of Babylon Fire Prevention
Suffolk County Health Department
N.Y.S. Dept. of Transportation-letter only

R-51

1983 f

4/8

Sales, Service and Installation of Service Station Equipment

Island

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.
One Grange St. - P.O. Box 124, Greenlawn, N.Y. 11740
Phone: (516) 261-1590

September 16,1983

Re: Cantor Bros., Inc.
Engineers Lane
E. Farmingdale, N.Y.

Dear Sirs:

On 9-15-83 two underground storage tanks were Petro-Tite tested at the above location.

The tank designated as #9 on the test report and has a capacity of 2000 gallons was re-tested with lacquer thinner. The tank was tested by itself with no piping attached, and showed a net volume change of -.628 gallons per hour during the last hour of the critical testing period. This tank is not tight.

The tank designated as #10 on the same test report, which has a capacity of 2000 gallons was tested with lacquer thinner as a system. The tank showed a net volume change of -.687 gallons per hour of the last hour of the critical testing period. This tank is not tight.

The National Fire Prevention Association certification for a tight tank system is that with a leakage rate of less than .050 gallons per hour. This is a calculated mathematical tolerance only, and is not meant to indicate the permission of any leakage.

Very truly yours,

Robert Nedwick

cc: Cantor Bros., Inc.
Town of Babylon Fire Prevention
Suffolk County Health Dept.
N.Y.S. Dept. of Transportation

R-52.

1983 f

5/8

Sales, Service and Installation of Service Station Equipment

Island

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.
One Grange St. - P.O. Box 124, Greenlawn, N.Y. 11740
Phone: (516) 261-1590

September 14, 1983

Re: Cantor Bros. Inc.
Engineers Lane
E. Farmingdale, N.Y.

Dear Sirs:

The underground storage tanks at the above location were Petro-Tite tested on 9-12-83.

The tank designated as #8 on the test report, which has a capacity of 3,000 gallons, was tested as a system and showed a net volume change of -.410 gallons per hour of the last hour of the critical testing period. This tank is not tight.

The tank designated as #3 on the test report, which has a capacity of 2,000 gallons, was re-tested with benzine. The tank was tested by itself with no piping attached and showed a net volume change of -.315 gallons per hour of the last hour of the critic l testing period. This tank is not tight.

The National Fire Prevention Association certification for a tight tank system is that with a leakage rate of less than .050 gallons per hour. This is a calculated mathematical tolerance only, and is not meant to indicate the permission of any leakage.

Very truly yours,

Robert Nedwick

cc: Cantor Bros. Inc.
Town of Babylon Fire Prevention
Suffolk County Dept. of Health
N.Y.S. Dept. of Transportation - letter only

R-53

1983 f

6/c

Sales, Service and Installation of Service Station Equipment

Island

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.

One Grange St. - P.O. Box 124. Greenlawn, N.Y. 11740

Phone: (516) 261-1590

August 30,1983

Re: Cantor Bros. Inc.
Engineers Lane
E. Farmingdale,N.Y.

Dear Sirs:

Three storage tanks at the above location were Petro--Tite tested on 8-26-83 and 8-29-83.

The tank designated as #15 on the test report and has a stor--age capacity of 5,000 gallons was re-tested using #2 fuel oil and showed a net volume change of -.168 gallons per hour. This tank is not tight. The above tank was tested with no piping attached.

The tank designated as #5 on the test report and has a capacity of 5,000 gallons was also re-tested using kerosene and showed a net volume change of -.615 gallons per hour. This tank is not tight. The above tank was tested with no piping attached.

The tank designated as #2 on the test report and has a capacity of 2,000 gallons was re-tested using mineral spirits and showed a net volume change of -.022 gallons per hour. This tank is tight.

Very truly yours,

Robert Nedwick

Robert Nedwick

cc: Cantor Brothers
Suffolk County Health Dept.
Town of Babylon Fire Prevention
N.Y.S. Dept. of Trans. - Letter only

R-54

1983 f

7/8

JUN 16 1983
S.C. DEPT. OF
HEALTH SERVICES

R-55

1983 f

8/8

Sales, Service and Installation of Service Station Equipment

Island

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.

One Grange St. - P.O. Box 124, Greenlawn, N.Y. 11740

Phone: (516) 261-1590

June 14, 1983

Re: Cantor Brothers
Engineers Lane
Farmingdale, N.Y.

Dear Sirs:

The Storage tanks at the above location were Petro-Tite tested on 6-7-83 and 6-8-83.

The tank designated #2 on test report, which has a capacity of 2000 gallons, was tested with general spirits and showed a net volume change of -.262 per hour of the last hour of the critical testing period, this tank is not tight.

The tank designated 'A' tank which has a capacity of 3000 gallons was tested with gasoline and showed a net volume change of -4.393 per hour of the last hour of the critical testing period, this tank is not tight.

The tank designated # 15 on test report, which has a capacity of 5000 gallons was tested with #2 Fuel oil and showed a net volume change of -.131 per hour of the last hour of the critical testing period, this tank is not tight.

The tank designated #4 on test report, which has a capacity of 5,000 gallons was tested with 2N kerosene and showed a net volume change of -.[illegible] per hour of the last hour of the critical testing period, this tank is tight.

The tank designated #5 on test report, which has a capacity of 5,000 gallons was tested with 2N-kerosene and showed a net volume change of -.393 per hour of the last hour of the critical testing period, This tank is not tight.

0-56

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

SCDHS
1984 b
1/5

CERTIFIED MAIL-R.R.R.

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

Date September 14, 1984
SPDES NO.
Lab. No. IW 684007
Field No. 1-JJ-6-6

Cantor Brothers
Engineers Lane
Farmingdale, New York 11735

Gentlemen:

On 6/6/84 samples of industrial waste were taken from your monitoring well number one. Upon analysis, the following parameters were found in concentrations above the maximum allowed in your SPDES Permit or in groundwater effluent standards:

1. 1,1,1 Trichloroethane 7.0 ppb
2. 1,1,2 Trichloroethylene 42.0 ppb
3. Tetrachloroethylene 51.0 ppb
4.
5.
6.
7.
8.
9.
10.

Please be advised that these unsatisfactory conditions constitute violations of the N.Y.S. Environmental Conservation Law and/or the Suffolk County Sanitary Code. Please be further advised that the discharge of any water from an industrial process to the groundwater of Suffolk County without having first obtained a State Pollutant Discharge Elimination System (SPDES) Permit for that discharge is also a violation of the N.Y.S. E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

If you do not already possess a valid SPDES Permit for the above discharge, then you should apply immediately through this office for said permit.

Since the above-noted violations may subject you to legal action, it is expected that these violations cease immediately. Violations of the Suffolk County Sanitary Code are subject to the imposition of a civil penalty of up to Five Hundred ($500) dollars per violation. E.C.L. violations are also subject to a civil penalty. A reinspection in the near future will determine your compliance in this matter.

Very truly yours,

John H. Finkenberg, Sr. Sanitarian
Environmental Pollution Control

Horseblock Pl.
mingville, NY 11738
51 451-4622

(SEE REVERSE SIDE FOR STANDARDS)

R-58

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

1984 b

CERTIFIED MAIL-R.R.R.

2/5

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

Date September 13, 1984
SPDES NO.
Lab. No. IW 684008
Field No. 2-JJ-6-6

Cantor Brothers
Engineers Lane
Farmingdale, New York 11735

Gentlemen:

On 6/6/84 samples of industrial waste were taken from your monitoring well number two.
Upon analysis, the following parameters were found in concentrations above the maximum allowed in your SPDES Permit or in groundwater effluent standards:

1. 1,1,1 Trichloroethane	7.0 ppb	6.	
2. 1,1,2 Trichloroethylene	39.0 ppb	7.	
3. Tetrachloroethylene	230.0 ppb	8.	
4. CisDichloroethylene	61.0 ppb	9.	
5. Xylene(s)	57.0 ppb	10.	

Please be advised that these unsatisfactory conditions constitute violations of the N.Y.S. Environmental Conservation Law and/or the Suffolk County Sanitary Code. Please be further advised that the discharge of any water from an industrial process to the groundwater of Suffolk County without having first obtained a State Pollutant Discharge Elimination System (SPDES) Permit for that discharge is also a violation of the N.Y.S. E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

If you do not already possess a valid SPDES Permit for the above discharge, then you should apply immediately through this office for said permit.

Since the above-noted violations may subject you to legal action, it is expected that these violations cease immediately. Violations of the Suffolk County Sanitary Code are subject to the imposition of a civil penalty of up to Five Hundred ($500) dollars per violation. E.C.L. violations are also subject to a civil penalty. A reinspection in the near future will determine your compliance in this matter.

Very truly yours,

John E. Finkenberg, Sr. Sanitarian
Environmental Pollution Control

5 Horseblock Pl.
rmingville, NY 11738
.6) 451-4628

(SEE REVERSE SIDE FOR STANDARDS)

R-59

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

19

3/5

CERTIFIED MAIL-R.R.R.

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES
Cantor Brothers
Engineers Lane
Farmingdale, New York 11735

Date September 14, 1984
SPDES NO.
Lab. No. IW 684009
Field No. 3-JJ-6-6

Gentlemen:

On 6/6/84 samples of industrial waste were taken from your monitoring well number three.
Upon analysis, the following parameters were found in concentrations above the maximum allowed in your SPDES Permit or in groundwater effluent standards:

1.	1,1,1 Trichloroethane	3.0 ppb	6.	
2.	1,1,2 Trichloroethylene	470.0 ppb	7.	
3.	Tetrachloroethylene	2600.0 ppb	8.	
.	Cis Dichloroethylene	350.0 ppb	9.	
5.	Xylene(s)	12.0 ppb	10.	

Please be advised that these unsatisfactory conditions constitute violations of the N.Y.S. Environmental Conservation Law and/or the Suffolk County Sanitary Code. Please be further advised that the discharge of any water from an industrial process to the groundwater of Suffolk County without having first obtained a State Pollutant Discharge Elimination System (SPDES) Permit for that discharge is also a violation of the N.Y.S. E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

If you do not already possess a valid SPDES Permit for the above discharge, then you should apply immediately through this office for said permit.

Since the above-noted violations may subject you to legal action, it is expected that these violations cease immediately. Violations of the Suffolk County Sanitary Code are subject to the imposition of a civil penalty of up to Five Hundred ($500) dollars per violation. E.C.L. violations are also subject to a civil penalty. A reinspection in the near future will determine your compliance in this matter.

Very truly yours,

John H. Finkenberg, Sr. Sanitarian
Environmental Pollution Control

Horseblock Pl.
ningville, NY 11738
(SEE REVERSE SIDE FOR STANDARDS)
) 451-4628

R-60

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

1984 b

CERTIFIED MAIL-R.R.R.

4/5

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

Cantor Brothers
Engineers Lane
Farmingdale, New York 11735

Date September 14, 1984
SPDES NO.
Lab. No. IW 684010
Field No. 4-JJ-6-6

Gentlemen:

On 6/6/84 samples of industrial waste were taken from your monitoring well number four. Upon analysis, the following parameters were found in concentrations above the maximum allowed in your SPDES Permit or in groundwater effluent standards:

1.	Chloroform	12.0 ppb	6.	Toluene	73.0 ppb
2.	1,1,2 Trichloroethylene	230.0 ppb	7.	Ethylbenzene	65.0 ppb
3.	Tetrachloroethylene	7.0 ppb	8.	Xylene(s)	120.0 ppb
4.	p-Ethyltoluene	98.0 ppb	9.	1,3,5 Trimethylbenzene	81.0 ppb
5.	Cis Dichloroethylene	1900.0 ppb	10.	p-Diethylbenzene	24.0 ppb
			11.	1,2,4,5 Tetramethylbenzene	23.0 ppb

Please be advised that these unsatisfactory conditions constitute violations of the N.Y.S. Environmental Conservation Law and/or the Suffolk County Sanitary Code. Please be further advised that the discharge of any water from an industrial process to the groundwater of Suffolk County without having first obtained a State Pollutant Discharge Elimination System (SPDES) Permit for that discharge is also a violation of the N.Y.S. E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

If you do not already possess a valid SPDES Permit for the above discharge, then you should apply immediately through this office for said permit.

Since the above-noted violations may subject you to legal action, it is expected that these violations cease immediately. Violations of the Suffolk County Sanitary Code are subject to the imposition of a civil penalty of up to Five Hundred ($500) dollars per violation. E.C.L. violations are also subject to a civil penalty. A reinspection in the near future will determine your compliance in this matter.

Very truly yours,

John H. Finkenberg, Sr. Sanitarian
Environmental Pollution Control

Rose block Pl.
Hauppauge, NY 11788

(SEE REVERSE SIDE FOR STANDARDS)

R-61

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

1984 b

CERTIFIED MAIL-R.R.R.

5/5

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

Cantor Brothers
Engineers Lane
Farmingdale, New York 11735

Date September 14, 1984
SPDES NO.
Lab. No. IW 684011
Field No. 5-JJ-6-6

Gentlemen:

On 6/6/84 samples of industrial waste were taken from your monitoring well number five.
Upon analysis, the following parameters were found in concentrations above the maximum allowed in your SPDES Permit or in groundwater effluent standards:

1. 1,1,1 Trichloroethane	6.0 ppb	6.	
2. 1,1,2 Trichloroethylene	70.0 ppb	7.	
3. Tetrachloroethylene	350.0 ppb	8.	
4. Cis Dichloroethylene	85.0 ppb	9.	
5.		10.	

Please be advised that these unsatisfactory conditions constitute violations of the N.Y.S. Environmental Conservation Law and/or the Suffolk County Sanitary Code. Please be further advised that the discharge of any water from an industrial process to the groundwater of Suffolk County without having first obtained a State Pollutant Discharge Elimination System (SPDES) Permit for that discharge is also a violation of the N.Y.S. E.C.L. and/or the Suffolk County Sanitary Code, Article 12.

If you do not already possess a valid SPDES Permit for the above discharge, then you should apply immediately through this office for said permit.

Since the above-noted violations may subject you to legal action, it is expected that these violations cease immediately. Violations of the Suffolk County Sanitary Code are subject to the imposition of a civil penalty of up to Five Hundred ($500) dollars per violation. E.C.L. violations are also subject to a civil penalty. A reinspection in the near future will determine your compliance in this matter.

Very truly yours,

John H. Finkenberg, Sr. Sanitarian
Environmental Pollution Control

Horseblock Pl.
Hauppauge, NY 11788

(SEE REVERSE SIDE FOR STANDARDS)

R-62.

HM84-7Rad. #2

SCDHS
1984c

1/11

ENGINEERING REPORT
(ADDENDA No.2)

RECOMMENDATIONS

FOR THE

STORAGE and HANDLING
(UNDERGROUND STORAGE)

OF

TOXIC and HAZARDOUS MATERIALS

CANTOR BROTHERS, INC.

FARMINGDALE SUFFOLK COUNTY, N.Y.

ALLEN & GRANT, P.C.
CONSULTING ENGINEERS

50 ELM STREET
HUNTINGTON NEW YORK

NOVEMBER 1984

R-63

ADDENDUM NO. 2

ENGINEERING REPORT CONCERNING RECOMMENDATIONS FOR THE STORAGE AND HANDLING OF TOXIC AND HAZARDOUS MATERIALS AT

CANTOR BROTHERS, INC.

FARMINGDALE, NEW YORK

UNDERGROUND STORAGE

1.0 INTRODUCTION

An engineering report entitled "Recommendations for the Storage and Handling of Toxic and Hazardous Materials at Cantor Brothers, Inc., Farmingdale, Suffolk County, N.Y.," was prepared and submitted in January 1984 as the first step in bringing Cantor Bros., Inc.'s facility into compliance with Article 12 of the Suffolk County Sanitary Code and Consent Order #IW 83-46.

Questions and comments by the Suffolk County Department of Health Services have led to a revised conceptual plan for containment of possible spills or leakage of hazardous or toxic liquids at this facility. Addendum No. 1, submitted in October, 1984, dealt with the factory area of the building. This Addendum No. 2 supplements the original report and supersedes the description contained in Section 2.2 and the recommendations in Section 3.2, for the underground storage. A separate addendum, submitted at a later date, will address other questions by the Department concerning the truck transfer station to fill the underground storage tanks.

2.0 DESCRIPTION OF EXISTING FACILITIES

2.2 Underground Tank Storage

The locations of existing underground tanks are shown on Exhibit No. 1, Revision No. 1. Fifteen of the total of sixteen tanks are located adjacent to the southeast corner of the building. The other tank is located in the parking area on the west side of the building.

The tanks were tested in 1983 in accordance with the requirements of Article 12 of the Suffolk County Sanitary Code. The results of the tank testing are shown in Table 2-2. Also included in this table are the tank capacities and the products stored in the tanks prior to and after testing.

Fifteen of the sixteen tanks were tested. Tank No. 7, which previously had been removed from service, was not tested. Of the tanks tested, only five (5) were found to be tight. The remainder were found to have leaks of varying severity. Copies of the certificates of completion for each of the tests were included in the Appendices to the original January 1984 report.

The tanks failing the leakage test were subsequently removed from service. The remaining five tanks are presently being used to store turpentine, naptha, No. 2 fuel oil, mineral spirits and grade 2 kerosene. The installation of new tanks to store various products is discussed in Section 3.2 of this report.

TABLE 2-2

UNDERGROUND STORAGE TANKS
TEST RESULTS

Tank	Capacity (Gal.)	Former Use	Test Results	Current Use
1	2,000	Lacquer Thinner	Tight	Turpentine
2	2,000	(Varnish) Mineral Spirits	Tight	Naptha (after cleaning)
3	2,000	Naptha (benzene)	N.G.	Out of Service
4	5,000	Grade 2 Kerosene	Tight	#2 Fuel Oil
5	5,000	Grade 2 Kerosene	N.G.	Out of Service
6	5,000	Denatured Alcohol	N.G.	Out of Service
7	5,000	Out of Service	not tested	Out of Service
8	3,000	Lacquer Thinner	N.G.	Out of Service
9	2,000	Grade 1 Kerosene	N.G.	Out of Service
10	2,000	Lacquer Thinner	N.G.	Out of Service
11	2,000	Lacquer Thinner	N.G.	Out of Service
12	2,000	Lacquer Thinner	N.G.	Out of Service
13	10,000	Mineral Spirits	Tight	Mineral Spirits
14	10,000	Turpentine	Tight	Grade 2 Kerosene
15	5,000	#2 Fuel Oil	N.G.	Out of Service
A	3,000	Gasoline	N.G.	Out of Service

3.0 DESCRIPTION OF PROPOSED MODIFICATIONS AND ADDITIONS

The various modifications to existing and proposed facilities, which are necessary to bring the site into compliance with Article 12, are discussed in this Section.

3.1 Underground Tank Storage

Of the fifteen existing underground tanks located adjacent to the southeast corner of the building, only five were found to be tight and are presently the only tanks in service. The remaining ten (10) tanks were found to be defective and are out of service. One other tank, used to store gasoline under the west parking lot, has been found to be defective as well, and has similarly been removed from service.

In order to replace some of the capacity lost when these tanks were removed from service, several new tanks are proposed for installation. The new tanks are proposed to store the following products and will have a maximum capacity of 8,000 gallons each. The proposed locations of the new tanks are shown on Exhibit No. 1, Revision No. 1.

Table 3-2.1 presents a schedule of proposed underground tank storage, for both the existing tanks remaining in service, as well as for the proposed replacement tanks. The chemicals to be stored are annotated with their specific gravities and their solubilities in water relative to gasoline's solubility in water (Article 12's reference solubility).

1984 C 6/11

TABLE 3-2.1
PRODUCTS TO BE STORED IN UNDERGROUND TANKS

Product	Total Number	Specific Gravity(1)	Relative Solubility In Water(3)
	New Tanks		
Denatured Alcohol(190°)	16	0.82	+
Turpentine $C_{10}H_{16}$	17	0.86	-
Lacquer Thinner	18	0.82	o
	Existing Tanks to Remain in Service(5)		
Lacquer Thinner	1	0.82	o
Mineral Spirits	2	0.78	-
No. 2 Fuel Oil	4	< 1	o
Mineral Spirits	13	0.78	-
Grade 2 Kerosene	14	0.81	o

(1) Source: Fire Protection Guide on Hazardous Materials 6th Edition, National Fire Protection Association, Boston, Massachus

(2) Source: Tests by Pedneault Assoc., Inc., Dec. 7, 1984, included as Appendix A
Gasoline: 2400 parts per billion
Lacquer Thinner: 2400 parts per billion
Turpentine: < 1500 parts per billion
Mineral Spirits: < 2400 parts per billion

(3) + Greater Solubility than gasoline or oil
o Equivalent solubility to gasoline or oil
- Less solubility than gasoline or oil

(4) By definition of Article 12

(5) Planned usage after installation of new tanks.

R-68

Solubilities in water of Cantor Brother's non-petroleum chemicals, except denatured alcohol (whose solubility in water is very large), were determined by Pedneault Associates, Inc., a laboratory approved by SCDHS. Their report is included as Appendix A.

All of the products listed above have specific gravities less than 1.0. Two of the three products to be stored in the proposed new tanks (No. 17-turpentine and No. 18-lacquer thinner) have solubilities in water that are equal to or less than that of gasoline. These will be stored in appropriate single walled tanks, protected from corrosion in accordance with Article 12. Tanks will be monitored for leakage by a U-tube system.

The third liquid, denatured alcohol, will be stored in a suitable, corrosion protected, double walled tank. The annular space will be regularly monitored for indications of leakage.

also dbl wall FP

Choice of cathodically protected steel, fiberglass reinforced plastic (FRP) or coated steel tanks will be made based upon material compatibility and cost effectiveness.

Each tank will be equipped with an approved over-fill protective device in the vent pipe. In addition, the double walled tank will be equipped with a high level float switch and alarm.

Plans and specifications will be submitted for approval, giving details of the proposed tanks' construction, installation and protective systems.

The five existing tanks remaining in service, are all to store materials that are equal to or less soluble in water than gasoline or oil. These tanks will be periodically retested, as required by Article 12, in accordance with the following schedule:

Table 3.2-2

EXISTING TANK RETEST SCHEDULE

Tank Nos.	Maximum Age in 1980	1985	1986	1987	1988	1989
1,2,4	16 yrs	X		X		X
13,14	9 yrs				X	

By the end of 1989, or earlier if leakage is detected, these tanks will be retired from service.

The eight underground storage tanks will be additionally monitored by careful, regular inventory control, as required by Article 12.

Additional supplementary features planned by Cantor Brothers, Inc., for all tanks, to assure no spills during filling operations include:

1. Whistles on vent pipes, which will provide an audible tone change as the tanks become full.

2. Check valve on the fill pipe, to prevent backflow upon hose disconnection, should the tank be overfilled to the vent pipe, above the hose connection elevation.

3. Ball valve on the end of the hose from the truck, to assure a dry disconnect. Hose will then be drained into a container.

4. In accordance with Town of Babylon regulations, delivery tanker wagons will not be permitted to transfer products via pumping. Only gravity flow will be permitted.

At a later date, application may be made to install additional tanks not now proposed.

The 11 existing tanks which failed the test, and which were subsequently removed from service, are deemed abandoned and will be removed from the site in accordance with the provisions of Article 12 at the time of installation of the new tanks. SCDHS will be given timely notification of commencement of this work.

4.0 SUMMARY

Existing underground storage tanks at Cantor Brothers, Inc. which did not pass the standard leakage test have been removed from service and will be removed from the site. The five remaining storage tanks which were sound will remain in service and will be periodically tested for leakage under the requirements of Article 12.

Three new storage tanks are proposed for denatured alcohol, turpentine and lacquer thinner service. The tanks' construction and installation will comply with the provisions of Article 12.

Upon approval of this Addendum, Cantor Brothers, Inc. plans implementation. Details will be submitted to SCDHS for approval.

1984 C
APPENDIX A
10/11

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE P O BOX 205 BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 PM (516) 567-5570

December 7, 1984

Mr. Norman R. Woliner
Allen and Grant, P. C.
50 Elm Street
Huntington, New York 11743

Dear Norman:

As per your letter of September, 1984, we are pleased to submit the following:

Goal: To determine whether Cantor Brothers, Inc., by virtue of the solubility of their turpentine and lacquer thinner products can be considered similar to a gasoline station.

Methodology: One milliliter samples of lacquer thinner, turpentine and a locally obtained regular unleaded gas were added to 1000 milliliters of laboratory demineralized water in a 2 liter separatory funnel. The mixture was shaken for sixty seconds than allowed to settle. The water layer was then removed and purged into charcoal absorption tubes. The charcoal was then desorbed into carbon disulfide and injected into a gas chromatograph equipped with a flame detector.

Results: On a comparative basis, lacquer thinner and gasoline are almost identical in solubility. Furthermore, these two products are very similar in chemical composition. We found with the above methodology about 2400 ug/l of analytes. 2.4 ppm
Turpentine, on the other hand, didn't exceed 1500 ug/l of solubility, and the chromatographic scans were very different from gasoline or lacquer thinner. Mineral spirits, from our experience, is somewhat less soluable in water than any of the other products, but tends to vary in composition too much to predict. 1.5 ppm

Sincerely,

John Pedneault

John Pedneault
Laboratory Director

R-73

1984 c

11/

COUNTY OF SUFFOLK
DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL POLLUTION CONTROL
15 Horseblock Place
Farmingville, New York 11738

RECEIVED
DEC 14 1984
S.C. DEPT. OF
HEALTH SERVICES

R-74

For Pollution ☐
Hazardous Material & Industrial Waste ☒
Internal Ventilation ☐
Sewage Treatment ☐
Assigned to Zone No. 1

SCDHS No. _____ Letter ☐
SPILL No. 1984-484 Telephone ☒
DOT No. _____ Person ☐
Date 12/21/84 Time 12:15 pm

Referred by: Norman Woliner, Allen & Grant Phone 549-2600 12:30
Complainant # 84-2567 DOT NUMBER
Address _____ (T.V.H.) _____ Phone _____

Complaint Against Cantor Bros.
Address _____ (T.V.H.) L. Farmingdale Phone _____

Nature of Request on this date approx. 450 gal. of #2 fuel oil spilled into storm drain & adjacent sump. Pressure gauge failed; pipe broke - fuel line. DOT notified (Spill # 84-2567) Marine Pol. Cntrl. cleaned up oil to DOTs
RCV'D by Deb Assigned to Finkenberg Date 12/21/84

Persons Interviewed	Address	Phone
MAT MILLER	ENGINEERS LA, FARMD	516/694-6666
AVE MILLER	MARINE POLL'N CONTROL	645-4900

Information Obtained from Interviewed Individuals:
Satisfaction:
MAT MILLER STATED THAT A PRESSURE GAUGE BROKE, CAUSING OVERFILLING OF #2 FUEL OIL, WHICH SPILLED OVER FROM THE BOILER ROOM TO A STORM DRAIN OUTSIDE. MR. MILLER ALSO STATED THAT UNDERGROUND, FEEDING BOILER WAS 5,000 GAL CAPACITY, AND THAT HE WAS UNAWARE OF ANY TANK REGISTRATION. SPILL RESPONSE INCLUDED CONTACTING MPC (MARINE POLL'N CONTROL) AND INSTALLING A NEW PRESSURE GAUGE. THE BAGS CONTAINING CONTAMINATED SOIL HAVE NOT YET BEEN DISPOSED OF & ARE STORED OUTDOORS PENDING APPROVAL TO LANDFILL THEM.
AVE MILLER STATED THAT BAGS WERE REMOVED W. DEC APPROVAL TO BABYLON TOWN LANDFILL

INDW-1 18-1095 3/81

SCDHS 1984d

R-75

STATED THAT THE BAGS CONTAIN CONTAMINATED SOIL.
THE BOILER ROOM WAS UNBERMED GROUND/SO
BY THE BOILER RM LOOKED DISTURBED/B FROM
DIGGING - THERE WAS NO FUEL-LIKE ODOR OBSERVE
A RECEIPT FROM MARINE POLLUTION CONTROL
LISTED "436 GALS OIL-WATER TO SBBW; 2 YDS
OILED SAND AND SPEEDI DRY STORED ON SITE
FOR LATER DISPOSAL" THE STORM DRAIN BY
THE BOILER RM CONTAINED NO VISIBLE LIQUID.

1-9-85 BAGS ARE NOT ON SITE BY BOILER RM. MAT
MILLER STATED THAT MPC PROBABLY REMOVED BAGS
& HAVE NOT SENT A RECEIPT.

Name of Responsible Individuals: MAT MILLER

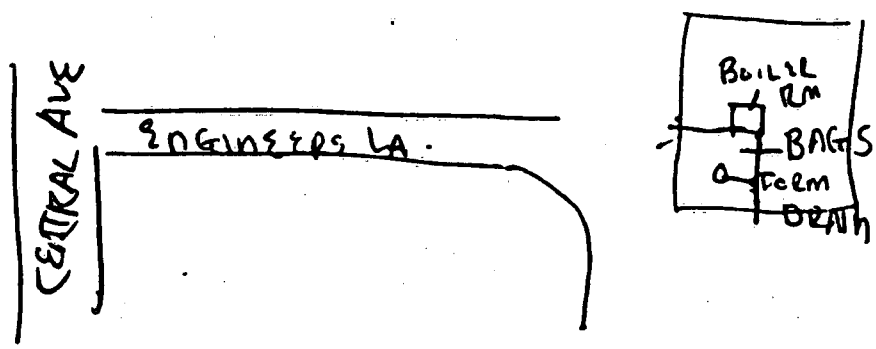
Address: CANTOR BROS.

Tel. No.: 694-6666

Inspector's Recommendation to Persons Concerned: TO RETAIN RECEIPTS OF FINAL DISPOSAL FOR RECORD-KEEPING, TO CONTACT SCDHS W/IN 2 HRS OF KNOWLENGE OF A SPILL.

Information Related by Inspector to Complainant

Sketch:



1984 d

Inspectors Signature: [signature]

Date: 12-24-84

R-76

SCDHS
1985 a

INTER-OFFICE COMMUNICATION
County of Suffolk

Date 12/31/85 1/2

TO: Mike Komorofske
NYSDEC

FROM: Eileen Governale
(~~To Line Phone No. 77~~)

Subject: Cantor Bros. Farmingdale

Enclosed Please find the information you requested regarding the above-named firm.

Best Regards for a happy + healthy New Year to Everyone in your office -

Eileen.

file
#
152 021

RECEIVED
JAN 0 1988
BUREAU OF ...

RECEIVED
JUL 20 1988
LEROY CALLENDER

R-77

LAB. NO. IW 1185008
REC'D 11-6-85 by FA
FIELD NO. IEJ 11-6

DATE MPLETED 12-3-85
EXAMINED BY KH FA
ERE 12/4/85 o.c.

1985
2/2

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC HEALTH LABORATORY

TRACE ORGANIC ANALYSIS OF INDUSTRIAL WASTE

Name CANTOR BROS

Location ENGINEERS LA, FARMINGDALE

Point of Collection Leaking Dumpster/Compactor

Remarks Reddish liquid running into STORM DRAIN IN PARKING LOT

Compound	ppb	Compound	ppb
1,2 Dichloroethane		Chlorobenzene	
1,1 Dichloroethane		p-Diethylbenzene	
Chloroform		p-Ethyltoluene	
1,1,2,2, Tetrachloroethane		1,3,5 Trimethylbenzene	
Methylene Chloride	2,700	1,2,4 Trimethylbenzene	
1,1 Dichloroethylene		Chlorotoluene(s)	
1,2 Dichloroethylene			
		1,2,4,5 Tetramethylbenzene	
1,1,1 Trichloroethane	40,000	m,p-Dichlorobenzene	
1,1,2 Trichloroethane		o-Dichlorobenzene	
Carbon Tetrachloride		Bromobenzene	
1,1,2 Trichloroethylene	120,000	1,2,4 Trichlorobenzene	
Freon 113		1,2,3 Trichlorobenzene	
Tetrachloroethylene			
		Octane	
Benzene	3000	Nonane	
Toluene	27,000	Decane	
Styrene		Undecane	
Ethylbenzene			
Xylene(s)			

Note: Not all compounds reported.

During transport of the sample from collection point to laboratory, th chain of custody must not be broken. The sample should be delivered by the sample collector or a designated representative who will sign for the receipt, integrity, and transfer of the sample during shipment.

	SIGNATURE	AFFILIATION	DATE	TIME
1. Collected by	Eric Jangelund	SCDHS	11-6-85	10 AM
2. Transfered to	Francis J Amendola	SCDHS-DHL	11-6-85	3:20PM
3. Transfered to				
4. Transfered to				

R-78

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

SCDHS
1986 a

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

1/9

CERTIFIED MAIL - RRR

June 4, 1986

Re: Name of Facility Center Brothers, Inc.
S.C. Facility I.D. # (01122)
Address Engineers Lane, Farmingdale
Spill # (1986-264)

Gentlemen:

This office has been informed by Island Pump & Tank Corp. that the following tank (s) failed the tank system tightness test on 5/27/86.

4 West 5,000 gal. fuel oil

Section 1210.e of Article 12 of the Suffolk County Sanitary Code states that any underground storage facility or part thereof, when found to be leaking, must immediately be emptied of all contents and removed from service. It is unlawful to permit a leaking underground storage facility or part thereof to remain in service or to continue to retain its toxic or hazardous contents after the underground storage facility has been determined to be leaking.

If the underground storage tank(s) at your location failed the initial tank system tightness test, then you have 10 days from the receipt of this letter to make the necessary repairs to any piping associated with the particular tank(s) and retest the tank(s) and the piping as a system to show that the underground storage facility is tight. Repairs to the tank(s) itself are, however, prohibited by law.

(over)

15 HORSEBLOCK PLACE • FARMINGVILLE, NEW YORK 11738 • (516) 451-4633

R-79

Sales. Service and Installation of Service Station Equipment

Island

Serving the Petroleum Industry Since 1940

Pump and Tank Corp.

One Grange St. - P.O. Box 124. Greenlawn. N.Y. 11740

Phone: (516) 261-1590

1986 a

2/2

May 29, 1986

1986-364

(01122)

pg. 1-9

Re: Cantor Brothers, Inc.
Engineers Lane
Farmingdale, N.Y.

Dear Sir:

The underground fuel storage tanks at the above location were Petro-Tite tested on May 27, 1986.

The turpentine tank designated #1-East on the test report, which has a capacity of 2,000 gallons, was tested with turpentine and showed a net volume change of -.026 gallons per hour during the last hour of the critical testing period. This system is tight.

The fuel oil tank designated #2 Center on the test report, which has a capacity of 2,000 gallons, was tested with fuel oil and showed a net volume change of -.048 gallons per hour during the last hour of the critical testing period. This system is tight.

The fuel oil tank designated #4 West on the test report, which has a capacity of 5,000 gallons, was tested with fuel oil and showed a net volume change of -.452 gallons per hour during the last hour of the critical testing period. This system is <u>not</u> tight.

The National Fire Protection Association Code 329.30 criteria for a tight tank system is a maximum loss of .050 gallons per hour. Because of the almost infinite variables involved, this is not intended to be a mathematical tolerance and is not the permission of actual leakage.

Very truly yours,

Arisilio DiAndrea

Arisilio DiAndrea
Vice President

AD/eg

cc: Cantor Brothers, Inc.
Suffolk County Dept. of Health
Town of Babylon Dept. of Fire Prevention
N.Y.S. Dept. of Environmental Conservation

R-80

Data Chart for Tank System Tightness Test

petro Tite
TANK TESTER

1986 a
3/9

1. OWNER Property ☐ Tank(s) ☒	CANTOR Brothers INC ENGINEERS LANE FARMINGDALE NY Name / Address / Representative / Telephone
2. OPERATOR	SAME Name / Address / Telephone
3. REASON FOR TEST (Explain Fully)	As per state & County Code
4. WHO REQUESTED TEST AND WHEN	MR. M. MILLER GENERAL MANAGER · CANTOR Brothers. Name / Title / Company or Affiliation / Date Address / Telephone
5. WHO IS PAYING FOR THIS TEST?	CANTOR BROS Company, Agency or Individual / Person Authorizing / Title / Telephone Billing Address / City / State / Zip Attention of: / Order No. / Other Instructions

6. TANK(S) INVOLVED	Identify by Direction	Capacity	Brand/Supplier	Grade	Approx. Age	Steel/Fiberglass
	#1 - EAST	2000		Turps	20 YEARS	Steel
	#2 - CENTER	2000		Fuel Oil	20 YEARS	
	#4 - WEST	5000		Fuel oil	20 YEARS	

7. INSTALLATION DATA	Location	Cover	Fills	Vents	Siphones	Pumps
	South of Building	EARTH - OPEN	2" remote - direct	2"	N/A	TRANSFER - Suction
	North inside driveway, Rear of station, etc.	Concrete, Black Top, Earth, etc.	Size, Title/fill make, Drop tubes, Remote Fills	Size, Manifolded	Which tanks?	Suction, Remote, Make if known

8. UNDERGROUND WATER — Depth to the Water table MIN 12' — Is the water over the tank? ☐ Yes ☐ No

9. FILL-UP ARRANGEMENTS — Tanks to be filled 0930 hr. 5-27-86 Date — Arranged by CANTOR BROS. Name / Telephone

Extra product to "top off" and run TSTT. How and who to provide? Consider NO Lead.

Terminal or other contact for notice or inquiry — Company / Name / Telephone

10. CONTRACTOR, MECHANICS, any other contractor involved — ISLAND Pump & TANK

11. OTHER INFORMATION OR REMARKS — Specific gravity by hydrometer

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test etc.

12. TEST RESULTS — Tests were made on the above tank systems in accordance with test procedures prescribed for petro Tite as detailed on attached test charts with results as follows:

Tank Identification	Tight	Leakage Indicated	Date Tested
#2 - CENTER	-.048 G.P.H.		5-27-86
#1 - EAST	-.026 G.P.H.		5-27-86
#4 - WEST	—	-.452 G.P.H.	5-27-86

13. CERTIFICATION — This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association Pamphlet 329.

5-27-86 Date

E 40-262 Serial No. of Thermal Sensor

R. Nedwick / J. Diana Technicians

ISLAND PUMP & TANK CORP Testing Contractor or Company. By: R. [illegible] Signature

P.O. 124 GREENLAWN N.Y. 11740 Address

R-81

1986 41

R-82

petro Tite TANK TESTER

14. CANTOR BROS. INC. — Name of Supplier Owner or Dealer
ENGINEERS LANE — Address No. and Street(s)
FARMINGDALE — City
N.Y. — State
5-27-86 — Date of Test

15. TANK TO TEST

#4 - WEST — Identity by position

#2 FUEL OIL — Brand and Grade

16. CAPACITY

Nominal Capacity 5000 Gallons

By most accurate capacity chart available 5076 Gallons

Is there doubt as to True Capacity? ☐

See Section "DETERMINING TANK CAPACITY"

From
- ☒ Station Chart
- ☐ Tank Manufacturer's Chart
- ☐ Company Engineering Data
- ☐ Charts supplied with petro tite
- ☐ Other

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up -0- to ⅛ in. -0- Gallons

	Stick Readings to ⅛ in.	Gallons	Total Gallons ea. Reading
Inventory			5076
Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY			
	Add to piping & equip		10
Tank Diameter 72"	Product in full tank (up to fill pipe)		5086

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK

See manual sections applicable. Check below and record procedure in log (26).

☐ Water in tank ☐ High water table in tank excavation ☐ Line(s) being tested with LVLLT

VAPOR RECOVERY SYSTEM
- ☐ Stage I
- ☐ Stage II

Island Pump and Tank

ONE GRANGE ST. · P.O. BOX 124 GREENLAWN NY 11740

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY

Bottom of tank to Grade* ..... 121 "

Add 30" for 4" L ..... "

Add 24" for 3" L or air seal ..... "

Total tubing to assemble Approximate ..... 13' "

20. EXTENSION HOSE SETTING

Tank top to grade* ..... 50" "

Extend hose on suction tube 6" or more below tank top ..... 6" "

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK

Is Today Warmer? [ ] Colder? [ ] ___°F Product in Tank ___°F Fill-up Product on Truck ___°F Expected Change (+ or −)

22. Thermal-Sensor reading after circulation 13675 digits 63° Nearest °F

23. Digits per °F in range of expected change 324 digits

24. 5086 (total quantity in full tank (16 or 17)) × 0.00044680 (coefficient of expansion for involved product) = 2.2724248 gallons (volume change in this tank per °F) USE .0070

25. 2.2724248 (volume change per °F (24)) ÷ 324 (Digits per °F in test Range (23)) = 0.0070136 (Volume change per digit. Compute to 4 decimal places.) This is test factor (a)

26. LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGES EACH READING	39. ACCUMULATED CHANGE
27. DATE / TIME (24 hr)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	Product Replaced (−) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) × (a) = Expansion + Contraction −	Temperature Adjustment / Volume Minus Expansion (+) or Contraction (−) #33(V) − #37(T)	At High Level record Total End Deflection / At Low Level compute Change per Hour (NFPA criteria)
1645	Pump over complete - equipment assembled & full - pump primed & running											
	& visable leaks at this time - con nue circulation											
1725	Hydrometer reading - 71° @ 33.7 → 32.2 → 32.4 [illegible]											

5·27·86 DATA CHART #4 1986 a 5

1745	#4 tank	2	38.1	42	.645	.400	-.245	671	-4	-.028	-.217	
1800	#4 tank	3	38.0	42	.400	.140	-.260	662	-9	-.063	-.197	
1815	#4 tank	4	38.5	42	.910	.675	-.235	655	-7	-.049	-.186	
1830	#4 tank	5	39.0	42	.675	.480	-.195	653	-2	-.014	-.181	
1845	#4 tank	6	38.7	42	.480	.265	-.215	649	-4	-.028	-.187	
1900	#4 tank	7	10.3	12	.265	.165	-.100	643	-6	-.042	-.058	
1915	#4 tank	8	9.5	12	.795	.645	-.150	639	-4	-.028	-.122	-.122
1930	#4 tank	9	10.0	12	.645	.520	-.125	637	-2	-.014	-.111	-.233
1945	#4 tank	10	10.0	12	.520	.390	-.130	633	-4	-.028	-.102	-.335
2000	#4 tank	11	9.8	12	.390	.245	-.145	629	-4	-.028	-.117	-.452 G.P.H.

#4 tank & system does not test tight - -.452 G.P.H.

1986 a 6/9

DATA CHART #1

5-27-86

[illegible]	[illegible]	1		2				12 81				
1355	#1 tank	2	42.1	42	.880	.890	+.010	917	+29	+.081	-.071	
1410	#1 tank	3	41.9	42	.890	.880	-.010	946	+29	+.081	-.091	
1425	#1 tank	4	42.1	42	.875	.890	+.015	972	+26	+.073	-.058	
	Low level test											
1440	#1 tank	5	14.9	12	.420	.555	+.135	13 000	+28	+.078	+.057	
1455	#1 tank	6	13.1	12	.555	.620	+.065	025	+25	+.070	-.005	-.005
1510	#1 tank	7	13.0	12	.615	.665	+.050	045	+20	+.056	-.006	-.011
1525	#1 tank	8	13.0	12	.655	.705	+.050	*065	+20	+.056	-.006	-.017
* Enter new thermal range 'A' factor remains												
1540	#1 tank	9	13.0	12	.705	.755	+.050	086	+21	+.059	-.009	-.026 G.P.H.
#1 tank & system tests tight - - .026 G.P.H.												

1986 a

R-85

Petro Tite TANK TESTER

14. Cantor Brothers Inc ENGINEERS LA. FARMINGDALE N.Y. 5·27·86
Name of Supplier, Owner or Dealer — Address, No. and Street(s) — City — State — Date of Test

15. TANK TO TEST
#1 - EAST
Identity by position
Turpintine
Brand and Grade

16. CAPACITY
Nominal Capacity 2000 Gallons
By most accurate capacity chart available 2000 Gallons
Is there doubt as to True Capacity? ☐
See Section "DETERMINING TANK CAPACITY"

From
☒ Station Chart
☐ Tank Manufacturer's Chart
☐ Company Engineering Data
☐ Charts supplied with petro tite
☐ Other

17. FILL-UP FOR TEST
Stick Water Bottom before Fill-up -0- to ⅛ in. -0- Gallons

	Stick Readings to ⅛ in.	Gallons	Total Gallons ea. Reading
Inventory			2000
Fill up. STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY			
Tank Diameter 64"			
Product in full tank (up to fill pipe)			2010

Add to piping & Equip 10

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK
See manual sections applicable. Check below and record procedure in log (26).
☐ Water in tank ☐ High water table in tank excavation ☐ Line(s) being tested with LVLLT

VAPOR RECOVERY SYSTEM
☐ Stage I
☐ Stage II

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to Grade* 89"
Add 30" for 4" L
Add 24" for 3" L or air seal
Total tubing to assemble Approximate 11'

20. EXTENSION HOSE SETTING
Tank top to grade* 25'
Extend hose on suction tube 6" or more below tank top 10"

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK
Is Today Warmer? [ ] Colder? [ ] ___°F Product in Tank ___°F Fill-up Product on Truck ___°F Expected Change (+ or −)

22. Thermal-Sensor reading after circulation 12888 digits 61° Nearest °F

23. Digits per °F in range of expected change 322 digits

24. 2010 total quantity in full tank (16 or 17) × 0.00044905 coefficient of expansion for involved product = 0.90249 volume change in this tank per °F gallons

USE .0028

25. 0.90249 volume change per °F (24) ÷ 322 Digits per °F in test Range (23) = 0.0028027 Volume change per digit. Compute to 4 decimal places. This is test factor (a)

26. LOG OF TEST PROCEDURES

27. Date / Time (24 hr)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	30. Hydrostatic Pressure Control: Standpipe Level in Inches — Beginning of Reading	Level to which Restored	31. Volume Measurements (V) Record to .001 Gal.: 32. Product in Graduate — Before Reading	After Reading	Product Replaced (−) / Product Recovered (+)	34. Temperature Compensation Use Factor (a): 35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) × (a) = Expansion + Contraction −	38. Net Volume Changes Each Reading: Temperature Adjustment / Volume Minus Expansion (+) or Contraction (−) #33(V) − #37(T)	39. Accumulated Change: At High Level record Total End Deflection / At Low Level compute Change per Hour (NFPA criteria)
1320	Equipment Assembled & Full pump primed & running - no visable											

Island Pump and Tank
ONE GRANGE ST. · P.O. BOX 124
GREENLAWN, NY 11740

1986 a 8/9

DATA Chart #2 -

5.27.86

R-86

	2000 gallon #2 tank - product has to be transferred to #4 tank (5,000) after testing - water table checked via site wells.											
1120	Equipment Assembled & Fuel on #2 tank & system pump primed & running - no visable leaks at this time											
1145	Hydrometer reading - 77° @ 34.2 → 32.8 → 33.0 = 0.00044550											
1150	Begin HIGH LEVEL TESTING											
1150	First sensor reading #2 tank	1		42		.960		13 629				
1205	#2 tank	2	41.8	42	.960	.945	-.015	649	+20	+.056	-.071	
1220	#2 tank	3	41.8	42	.945	.935	-.010	668	+19	+.053	-.063	
1235	#2 tank	4	41.8	42	.935	.915	-.020	693	+25	+.070	-.090	
1250	#2 tank	5	41.8	42	.995	.985	-.010	*711	+18	+.050	-.060	
*	ENTER NEW THERMAL RANGE 'A' FACTOR REMAINS - LOW LEVEL TESTING BEGINS											
1305	#2 tank	6	13.0	12	.375	.425	+.050	732	+21	+.059	-.009	
1320	#2 tank	7	12.2	12	.425	.455	+.030	751	+19	+.053	-.023	-.023
1335	#2 tank	8	12.5	12	.455	.495	+.040	771	+20	+.056	-.016	-.039
1350	#2 tank	9	12.5	12	.495	.535	+.040	788	+17	+.048	-.008	-.047
1405	#2 tank	10	12.4	12	.205	.240	+.035	801	+13	+.036	-.001	-.048 G.P.H.

#2 tank & system tests tight - .048 G.P.H. remove equipment & begin over.

1986 a
9/9

R-87

petro TI TANK TESTER

Island Pump and Tank
ONE GRANGE ST. · P.O. BOX 124
GREENLAWN, NY 11740

14. Cantor Brothers Inc. — Engineers Lane — Farmingdale — N.Y. — 5-27-86
Name of Supplier, Owner or Dealer — Address No. and Street(s) — City — State — Date of Test

15. TANK TO TEST
#2 - South Center
Identity by position
#2 Fuel Oil
Brand and Grade

16. CAPACITY
Nominal Capacity 2000 Gallons
By most accurate capacity chart available 2000 Gallons
Is there doubt as to True Capacity? ☐
See Section "DETERMINING TANK CAPACITY"

From
☐ Station Chart
☒ Tank Manufacturer's Chart
☐ Company Engineering Data
☐ Charts supplied with petro tite
☐ Other

17. FILL-UP FOR TEST

	Stick Readings to ⅛ in.	Gallons	Total Gallons ea. Reading
Stick Water Bottom before Fill-up -0- to ⅛ in. -0- Gallons	Inventory		2000
Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY	Add to piping & Equip.		18
Tank Diameter 64"	Product in full tank (up to fill pipe)		2010

18. SPECIAL CONDITIONS AND PROCEDURES TO TEST THIS TANK
See manual sections applicable. Check below and record procedure in log (26).
☐ Water in tank ☐ High water table in tank excavation ☐ Line(s) being tested with LVLLT

VAPOR RECOVERY SYSTEM
☐ Stage I
☐ Stage II

19. TANK MEASUREMENTS FOR TSTT ASSEMBLY
Bottom of tank to Grade* ..... 88" "
Add 30" for 4" L ..... "
Add 24" for 3" L or air seal ..... "
Total tubing to assemble Approximate ..... 11' "

20. EXTENSION HOSE SETTING
Tank top to grade* ..... 24" "
Extend hose on suction tube 6" or more below tank top ..... 10" "

*If Fill pipe extends above grade, use top of fill.

21. TEMPERATURE/VOLUME FACTOR (a) TO TEST THIS TANK
°Is Today Warmer? [ ] Colder? [ ] ___°F Product in Tank ___°F Fill-up Product on Truck ___°F Expected Change (+ or −)

22. Thermal-Sensor reading after circulation 13629 digits 63° Nearest °F

23. Digits per °F in range of expected change 324 digits

24. 2010 (total quantity in full tank (16 or 17)) × 0.00044550 (coefficient of expansion for involved product) = 0.903495 (volume change in this tank per °F) gallons
use .0028

25. 0.903495 (volume change per °F (24)) ÷ 324 (Digits per °F in test Range (23)) = 0.0027885 (Volume change per digit. Compute to 4 decimal places.) This is test factor (a)

26. LOG OF TEST PROCEDURES			30. HYDROSTATIC PRESSURE CONTROL		31. VOLUME MEASUREMENTS (V) RECORD TO .001 GAL.			34. TEMPERATURE COMPENSATION USE FACTOR (a)			38. NET VOLUME CHANGES EACH READING	39. ACCUMULATED CHANGE
27. Date / Time (24 hr.)	28. Record details of setting up and running test. (Use full length of line if needed.)	29. Reading No.	Standpipe Level in Inches: Beginning of Reading	Standpipe Level in Inches: Level to which Restored	32. Product in Graduate: Before Reading	32. Product in Graduate: After Reading	Product Replaced (−) / Product Recovered (+)	35. Thermal Sensor Reading	36. Change Higher + Lower − (c)	37. Computation (c) = (a) = Expansion + Contraction −	Temperature Adjustment / Volume Minus Expansion (+) or Contraction (−) #33(V) − #37(T)	At High Level record Total End Deflection / At Low Level compute Change per Hour (NFPA criteria)
2300	Arrive at test site - Transport Arrives stick tanks and tube measurements											
[illegible]	[illegible]											

SCDHS
1987a.

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SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

NOTICE OF VIOLATION

Issued to (Company) Cantor Brothers

(address) Engineers Ln., E. Farmingdale

delivered to Mathew Miller

On (date, time) August 26, 1987

TAKE NOTICE THAT, on August 26th 1987 at 3:30 in the (~~fore~~) (after) noon, at the location of Cantor Brothers Engineers Ln., E. Farmingdale

you were found to be in violation of Article 12 Section 1210 of the Suffolk County Sanitary Code in that:

Failure to properly notify S.C.D.H.S. of removal of underground storage tank and the abandonment of an underground storage tank.

TAKE FURTHER NOTICE THAT, pursuant to Article 3 of the New York State Public Health Law, Article 2 of the Suffolk County Sanitary Code provides that any non-compliance or non-conformance with any provision of the Suffolk County Sanitary Code shall constitute a violation, punishable on conviction by a fine not exceeding $250 or by imprisonment for not exceeding 15 days or by both.

TAKE FURTHER NOTICE THAT, Article 2 of the Suffolk County Sanitary Code provides that any person violating its terms or a lawful order or regulation made thereunder, shall be subject to a civil penalty of not more than $500 per violation for each day such violation continues.

Issued by Thomas K. [illegible]

rcvd. by: [illegible]

R-88

1987 a

2/

...MINATION OF WATER, SEWAGE, INDUSTRIAL WASTE

FIELD NO. 1EJ 2-5 m LAB NO. 2-86-529 DATE COMPLETED 2-11-86 [illegible]

NAME OR FIRM CANTOR BROS.

ADDRESS OR LOCATION ENGINEERS LA, FARMINGDALE

POINT OF COLLECTION STORM DRAIN - ABOUT 50' from DUMPSTER

REMARKS/INSTRUCTIONS

	TEST	RESULTS		TEST	RESULTS		TEST	RESULTS
	pH (LAB)			TOTAL SOLIDS	Mg/l	X	COPPER	.12 Mg/l
	CHLORIDE	Mg/l		SUSPENDED SOLIDS		X	IRON	.7
	CYANIDE			DISSOLVED SOLIDS			MANGANESE	
	MBAS					X	CHROMIUM-TOT	<.02
	COD					X	NICKEL	<.1
	TOC					X	ZINC	.2
						X	LEAD	<.2
						X	CADMIUM	<.02
	NITRATE-N					X	SILVER	
	NITRITE					X	CHROMIUM-+6	<.02
	AMMONIA-N							
	TKN			pH (FIELD)	6			
				TEMP. (FIELD)				

METHOD OF PRESERVATION ☐ HNO_3 TO pH <2 ☐ COOL 4°C

CUSTODY OF SAMPLE

DURING TRANSPORT OF THE SAMPLE FROM SAMPLING SITE TO LABORATORY, THE CHAIN OF CUSTODY MUST BE UNBROKEN. GENERALLY THIS WILL REQUIRE THAT THE SAMPLE BE DELIVERED BY THE SAMPLE COLLECTOR OR HIS DESIGNATED REPRESENTATIVE WHO WILL SIGN FOR THE RECEIPT, INTEGRITY AND TRANSFER OF THE SAMPLE DURING SHIPMENT.

	NAME	AFFILIATION	DATE	TIME
1. COLLECTED BY	~~JOUNGBLOOD~~	~~SCDHS~~	2-5-86	12:10 PM
2. POSSESSION BY			2-5 12:10	2-5 2:40 PM
3. POSSESSION BY				
4. RECEIVED LAB BY	G. Mattern		2/5 2:45	
5. POSSESSION BY				
6. POSSESSION BY				

1987 a

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SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC HEALTH LABORATORY

TRACE ORGANIC ANALYSIS OF INDUSTRIAL WASTE

Name CANTOR BROS.

Location ENGINGERS LA, FARMINGDALE

Point of Collection STORM DRAIN - NEAR DUMPSTER/COMPACTOR

Remarks

Compound	ppb	Compound	ppb
1,2 Dichloroethane	<20	Chlorobenzene	<20
1,1 Dichloroethane	<20	p-Diethylbenzene	<20
Chloroform	<20	p-Ethyltoluene	<20
1,1,2,2, Tetrachloroethane	<20	1,3,5 Trimethylbenzene	<20
Methylene Chloride	20	1,2,4 Trimethylbenzene	<20
1,1 Dichloroethylene	<20	Chlorotoluene(s)	<20
Cis 1,2 Dichloroethylene	<20		
1,1,1 Trichloroethane	81	1,2,4,5 Tetramethylbenzene	<20
1,1,2 Trichloroethane	<20	m,p-Dichlorobenzene	<20
Carbon Tetrachloride	<20	o-Dichlorobenzene	<20
1,1,2 Trichloroethylene	<20	Bromobenzene	<20
Freon 113	<20	1,2,4 Trichlorobenzene	<20
T rachloroethylene	<20	1,2,3 Trichlorobenzene	<20
		Octane	<20
nzene	<20	Nonane	<20
uene	<20	Decane	<20
rene	<20	Undecane	<20
ylbenzene	<20		
ene(s)	<20		

During transport of the sample from collection point to laboratory, the chain of custody must not be broken. The sample should be delivered by the sample collector or a designated representative who will sign for the receipt, integrity, and transfer of the sample during shipment.

	SIGNATURE	AFFILIATION	DATE	TIME
1. Collected by	[illegible]	SCDHS	2-5-86	12:10PM
2. Transfered to	Francis [illegible]	SCDHS Lab	2-5-86	3:10PM
3. Transfered to				
4. Transfered to				

R-90

SCDHS

SUFFOCK COUNTY DEPARTMENTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

FILE/W 1/

1988a

I.D. No 7 C

NAME OF FACILITY: Cantor Bros. INC
OWNER/OFFICER: Gen Mgr. Mat Miller
VIOLATIONS NOTED: YES NO
COMPANY NAME:
CONTACT: Mat Miller
TEL: 694-666
PLANT ADDRESS: Engineer La
VILLAGE: E. Farmingdale
TOWN: Babylon
ZIP: 11735
MAILING ADDRESS:
INSP.
HYDRO.
MAP COORD.
PROPERTY OWNER: Firm owns property.
DATE: 1/22/88
TIME:
ORIG PER. RE. SAMPLE
ART. 7 YES NO
ART. 10 No
ART. 12 No H22
INDUSTRY: Paint + Thinners -
SPDES OR NPDES PERMIT YES NO PERMIT NO.
HEATING SYSTEM - MFG NAME:
FUEL TYPE: GAS
FIRING RATE:
TANK SIZE:
NUMBER OF DRUMS INDOORS 3 OUTDOORS
NUMBER OF TANKS ABOVEGROUND UNDERGROUND
NUMBER OF OPEN PROCESS TANKS
SEWAGE SYSTEM PUBLIC PRIVATE
SCAVENGER TEL.
PICK UP RECORDS AVAILABLE YES NO
VOLUME GENERATED

(1) 55, gal drums stored in Art XII containment area stacked 4 pallets high. 50+ drums of a more viscous contents used in making chaulking compounds are indoors but outside of Art XII containment area. Owner claims this above material is non tox

(2) 2-3 drums outdoors with unknown contents 1/2 full - completely full. must be moved indoors or disposed of in a proper manner. This is a violation of Art XII sec 1215 of the suffolk County Sanitary Code.

(3) See attached updated tank inventory

INDUSTRIAL WASTES MUST NOT BE DISCHARGED TO THE GROUND OR DISPOSED O IN A DUMPSTER, BUT MAY ONLY BE TRANSPORTED AND DISPOSED OF BY A LICENSE INDUSTRIAL WASTE SCAVENGER FOR AN APPROVED LIST CONTACT THE N.Y.S. D.E.C. AT 751 - 7900

REINSPECTION SCHEDULED ON OR AFTER 1/29/88 FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY RESULT IN A HEARING AND OR FINE.

PERMISSION IS GRANTED BY THIS FACILITY TO THE SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES TO CONDUCT ROUTINE SAMPLING OF CESSPOOLS, STORMDRAINS, AND OTHER DISCHARGE POINTS AT THE FACILITY.

SIGN. OF PERSON REC. REPORT: Matthew J Miller
TITLE: Gen. Mgr.
INSPECTOR: [signature]

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHA 'E LIQUID	AIR CONTROL TYPE	EP
1	ware house area	paint products packaged in 5 gal containers or less			
2	Packaging area.	40" working drums of 111 Tri, Paint thinner, laquer thinner.			
3	ware house area.	≈ 50 drums of chaulking type chemicals - visous - - no art XII			

1/25/88 WITHIN CONTAINMENT AREA

2200 GAL DRUM STORAGE REGISTERED.

1988 a 2/4

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
Office of Environmental Engineering & Pollut . Control
N.Y. State CRR Part 230 and S.C. Sanitary Code Article 12
Gasoline Station Inspection Form

1988 a

3/

Facility Name	No.	Street	Comm.	Phone No.
ANTLER BROS. INC		ENGINEERS LANE FARMINGDALE		
Facility Owner	No.	Street	Comm.	Phone No.
Facility Operator	No.	Street	Comm.	Phone No.
Land Owner	No.	Street	Comm.	Phone No.
Tank Owner	No.	Street	Comm.	Phone No.

Facility I.D. Number: 4 7 2 0 0 0 2 A 1 1

Air Certificates: YES NO Exp. Dte.:

Permits: Tanks Registered (YES) NO Reg. Number: 1 1 2 2 Exp. Date:

Tax No. Dist. Sec. Block Lot Map Quad

Gasoline Annual Throughput: N/A How Determined:

(If annual throughput not available): Date of Last Delivery: Volume (gal):

Super Unleaded: Unleaded: Reg Leaded:

Approximate Frequency of Delivery:

Brand of Fuel Displayed: Fuel Distributor:

Number of nozzles:

Tank ID	Tank Capacity	Type of Fuel	Date Tank Installed	Above/ Below	Type of Controls: 2 Point System	Co-Axial	Submerged Fill	No Controls
1	2000 ✓	ORG SOLV.	64	B/O				✓
2	2000 ✓	ORG SOLV.	64	B/O				✓
3	2000 ✓	ORG. SOLVENT	64	B/O				✓
4	5000 ✓	KEROSENE	64	B/O				✓
5	5000 ✓	ORG SOLVENT	64	B/O				✓
6	5000 ✓	ORG. SOLV.	64	B/O				✓
7	5000	ORG SOLV.	64	B/O	Removed			
8	3000 ✓	ORG. SOLV.	64	B/O				✓
9	2000 ✓	ORG. SOLV.	64	B/O				✓
10	2000 ✓	ORG. SOLV.	64	B/O				✓
11	2000 ✓	ORG. SOLV.	64	B/O				✓

all remote fills

all remote fills

Id. anks

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SUFFOLK COUNTY DEPARTMENT OF HEALTH S[illegible]ICES
Office of Environmental Engineering & Pollution Control
N.Y. State CRR Part 230 and S.C. Sanitary Code Article 12
Gasoline Station Inspection Form

1988 a

[illegible]y Name [illegible]TOK Dros. Inc	No.	Street	Comm.	Phone No.
[illegible]lity Owner	No.	Street	Comm.	Phone No.
[illegible]cility Operator	No.	Street	Comm.	Phone No.
Land Owner	No.	Street	Comm.	Phone No.
Tank Owner	No.	Street	Comm.	Phone No.

Facility I.D. Number: 4 7 2 0 0 0 2 A 1 1 Air Certificates: YES NO Exp. Dte.:

Permits: Tanks Registered: YES NO Reg. Number: 1 1 2 2 Exp. Date:

Tax No. Dist. Sec. Block Lot Map Quad

Gasoline Annual Throughput: How Determined:

(If annual throughput not available): Date of Last Delivery: Volume (gal):

Super Unleaded: Unleaded: Reg Leaded:

Approximate Frequency of Delivery:

Brand of Fuel Displayed: Fuel Distributor:

Number of nozzles:

Tank ID	Tank Capacity	Type of Fuel	Date Tank Installed	Above/ Below	Type of Controls: 2 Point System	Co-Axial	Submerged Fill	No Controls
12	2000	ORG SOLV.	64	B/O	Removed			
13	10000 ✓	Kerosene	69	B/O				✓
14	10000 ✓	ORG SOLV.	69	B/O				✓
15	3000		64	B/O				✓
16	100	PAINT	64	A/I				✓
17	2000	DRUM STORAGE	85	A/I	N	A		✓
18	5000	NL FUEL	64	B/O	Removed			
Add. Tanks								

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SCDHS
1988 b

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

1/11

July 13, 1988
CERTIFIED MAIL - R.R.R.
P 895 449 063

Cantor Brothers
Engineers Lane
Farmingdale, N.Y. 11735

Re: Order on Consent No. IW 88-42

Gentlemen:

Enclosed please find copy of the above-referenced executed Order on Consent.

This copy is for your records.

Very truly yours,

John V. Soderberg, P.E.
Environmental Enforcement Services

JVS:das

Enclosure

cc: A. Machlin, P.E., NYSDEC (w/enclosure)
G. Watt, SCDHS (w/enclosure)

ENDERSON HOCK PLACE • FARMINGVILLE, NEW YORK 11738 (516) 451-4143

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COUNTY OF SUFFOLK

1988 b

2/11

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

MEMORANDUM

TO: OLIVER SCHEPERS
Assistant Commissioner

FROM: JOHN V. SODERBERG, P.E.
Environmental Enforcement

DATE: June 3, 1988

RE: RESPONDENT - Cantor Brothers
ORDER ON CONSENT NO. IW 88-42

Attached please find an Order on Consent which has been duly executed by the above-named Respondent. Kindly have this Order presented to Dr. Harris for his signature and then return same to this office.

For your information, this Order on Consent reflects the results of an informal hearing and/or conference held by our unit with the Respondent. Subsequent to and as a result of this meeting, Respondent was mailed the aforementioned Order for his consideration and review by his counsel if he so desired. The Respondent has indicated his acceptance of this agreement by the signing and return of this document.

Civil Penalty: Attached is a check in the amount of $250 which represents the non-suspended portion of civil penalty.

Case Outline: Respondent failed to properly abandon an underground storage facility for toxic or hazardous materials (removal of underground fuel storage tank) in that you did not notify the department of said removal in writing, in violation of Section 760-1210(h)(2) of Article 12 of the Suffolk COunty Sanitary Code.

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15 HORSEBLOCK PLACE ■ FARMINGVILLE, NEW YORK 11738 ■ (516) 451-4600

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THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND - NOT A WHITE BACKGROUND

CANTOR BROS., INC.
ENGINEERS LANE - EAST FARMINGDALE, NEW YORK 11735

NATIONAL WESTMINSTER BANK USA
600 BROAD HOLLOW RD.
MELVILLE, NY 11747

1 - 32
260

DATE May 26 1988

№ 0054742

CANTOR BROS. PAY $250.00 DOLLARS

CANTOR BROS., INC.

TO THE ORDER OF Department of Health Services

Matthew J. Mills

THE BACK OF THIS DOCUMENT CONTAINS AN ARTIFICIAL WATERMARK - HOLD AT AN ANGLE TO VIEW

⑈54742⑈ ⑆028000325⑆ 2263⑈50 9623⑈

102596

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
CASH RECEIPT

RECEIVED Two hundred fifty dollars AMOUNT [$250-] DATE 6/6/88 19

FOR

NAME

REFERENCE NO. IW 88 42

☐ PAYMENT FOR PREVIOUS SERVICE

CENTER PROVIDING SERVICE

FROM

Cantor Bros.
NAME

Engineers Lane
ADDRESS

E. Farmingdale, NY 11735
CITY STATE ZIP CODE

☐ HEALTH CENTER ☐ HHS ☐ MH CENTER
☒ ENVIRONMENTAL ☐ DA ☐ TB
☐ PHCP ☐ FP ☐ OPR

OTHER

FORM OF PAYMENT 0054742
☐ CERTIFIED CHECK ☒ CHECK ☐ CASH

REC'D.
X
BY G. Holly

COPY 1 PAYER COPY 2 ADMINISTRATION COPY 3 PAYEE

0-97

1988 b

4/1

ONTY OF SUFFOLK
EPARTMENT OF HEALTH SERVICES

In the Matter of the Alleged Violation of Article 12 of the Suffolk County Sanitary Code by

Cantor Brothers
Engineers Lane
Farmingdale, NY 11735

Respondents.

ORDER ON CONSENT
NO. IW 88-42

DATE: May 24, 1988

GENERAL PROVISIONS

This Department alleges that the above-named Respondents have failed to comply with the provisions of the Suffolk County Sanitary Code as specified below. Because of such alleged non-compliance, the above-named Respondents consent and agree to the issuance of this Order on Consent, and agree to be bound by the terms, conditions and provisions stated herein.

Respondents understand that by entering into the Order on Consent with the Department, they are affirmatively and voluntarily waiving their right to a formal adjudicatory proceeding with respect to the matters herein addressed. Although the Department will not pursue further enforcement action with respect to the specific alleged violations of law set forth below if the above-named Respondents enters into this Order and abides by its terms, Respondents understand that the Department is not agreeing to forbearance from pursuing enforcement action regarding alleged violations not addressed by this Order. Moreover, Respondents understand that notwithstanding the execution of this Order on Consent, the failure to strictly comply with all of the terms, conditions and provisions herein contained will revive the Department's rights regarding the violations alleged as set forth below subject to a set-off for any penalties already paid pursuant to this Order on Consent. Furthermore, Respondents are hereby advised that this Order on Consent, duly executed by the Respondents' agent and the Commissioner or a duly authorized representative has the force and effect of a Commissioner's Order, the violation of which is subject to penalties as provided in Section 218 of Article 2 of the Suffolk County Sanitary Code.

A modification of any of the provisions of this Order on Consent may be obtained by a timely written request demonstrating good and sufficient cause of the change or extension requested. No modification of this Order shall be effective unless and until it is specifically set forth in writing by the Department.

R-98

Cantor Brothers
Order on Consent No. IW 88-42

Specification of Alleged Violations

It is alleged that the Respondent above-named failed to comply with the following provisions of the Suffolk County Sanitary Code as indicated below:

On or about August 26, 1987 you did fail to properly abandon an underground storage facility for toxic or hazardous materials (removal of an underground fuel storage tank) in that you did not notify this department of said removal in writing, in violation of Section 760-1210(h)(2) of Article 12 of the Suffolk County Sanitary Code.

Specific Terms and Conditions

In satisfaction of the above-named Respondent's alleged violations of the Suffolk County Sanitary Code, Respondent agrees to the entering and issuance of this Order of the Commissioner of the Suffolk County Department of Health Services, and the Respondent agrees to be bound by the terms, provisions and conditions following as well as by the above-named General Provisions.

1. Immediately, Respondent shall submit, in approvable form, a plot plan showing the location of the groundwater monitoring wells presently located at Respondent's Engineers Lane, East Farmingdale, New York facility.

2. Any questions or submissions pertaining to item 1 above should be directed to Mr. John Gladysz of the department at telephone number (516) 451-4632.

3. This Order on Consent shall not waive or abridge any remedy the department may seek with respect to cleanup of contaminated groundwater, nor shall this Order on Consent obligate Respondent to undertake any corrective action with respect to the groundwater.

Continued . . .

1988 b
6/11

Cantor Brothers
Order on Consent No. IW 88-42

4. In satisfaction of the alleged violations contained herein, in addition to the terms, provisions and conditions, Respondent agrees to pay the sum of Five Hundred ($500) dollars, but that Two Hundred-Fifty ($250) dollars of the sum shall be suspended and ultimately discharged contingent upon Respondent's compliance with the term, provisions and conditions of this Order on Consent. The remaining Two Hundred-Fifty ($250) dollar portion of the sum shall be paid to the Department of Health Services and shall be remitted with the return of this Order on Consent duly executed (signed and notarized) by Respondent.

R-100

CONSENT BY RESPONDENT

The Respondent herein named acknowledges the authority and jurisdiction of the Commissioner of the Suffolk County Department of Health Services to issue the foregoing Order on Consent, and Respondent voluntarily waives public hearing in this matter and agrees to be bound by the terms, conditions and provisions of this Order of the Commissioner.

Dated: 5/26/88

Respondent: Cantor Brothers Matthew J. Miller

By: (signature) MATTHEW J. MILLER

(printed) _____

Title: General Mgr.

Telephone: 691666

STATE OF NEW YORK)
)SS.:
COUNTY OF SUFFOLK)

On the 26th day of May, 1988, before me personally came Matthew J. Miller to me known, who being duly sworn, deposed and said that she/he resides at 37 Key St E Huntington Sta, NY 11746, that she/he is General Manager of Respondent corporation, and that she/he signed her/his name as authorized by said corporation wiht full authority to do so.

LAURIE J. GIAIMIS
Notary Public, State of New York
No. 4876664
Qualified in Suffolk County
Commission Expires November 10, 1988

Laurie J. Giaimis
Notary Public

CONSENT BY COMMISSIONER

The Commissioner of the Suffolk County Department of Health Services agrees to waive further administrative enforcement action against the Respondent named herein, and the Commissioner agrees to accept the Respondent's consent to the entry and issuance of this Order in full satisfaction of the Department's allegations herein listed, PROVIDED THAT the Respondent duly executes this order and strictly adheres to all of its terms, conditions and provisions.

Dated: 6/6/88

Hauppauge, New York

David Harris, M.D., M.P.H.
Commissioner
Suffolk County Department
of Health Services

By:

R-101

COUNTY OF SUFFOLK

1988 b

8/11

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

May 24, 1988

IW 88-42

Cantor Brothers Inc.
Engineers Lane
Farmingdale, NY 11735

Gentlemen:

Attached herewith please find a proposed Order on Consent which reflects the results of conversations and discussions with your General Manager, Mr. Matthew Miller, on May 3, 1988. If this is acceptable, please have it executed by a corporate officer or other principal as appropriate.

This order, duly executed, should be returned to my attention by June 7, 1988.

If it has not been received by this office on or before the date assigned, then it will be deemed to have been rejected, and the department will then institute formal hearing proceedings to resolve any violations of law alleged.

If you have any questions regarding this Order, please do not hesitate to contact me.

Very truly yours,

John V. Soderberg, P.E.
Environmental Enforcement
JVS:das
Enclosure
cc: S. Giordano
J. Gladysz
R. Seyfarth

19 HORSEBLOCK PLACE ■ FARMINGVILLE, NEW YORK 11738 ■ (516) 451-46

0-102

CONSENT BY RESPONDENT

The Respondent herein named acknowledges the authority and jurisdiction of the Commissioner of the Suffolk County Department of Health Services to issue the foregoing Order on Consent, and Respondent voluntarily waives public hearing in this matter and agrees to be bound by the terms, conditions and provisions of this Order of the Commissioner.

Dated: _____

Respondent: _____

By: (signature) _____

(printed) _____

Title: _____

Telephone: _____

STATE OF NEW YORK)
)SS.:
COUNTY OF SUFFOLK)

On the _____day of _____, 19___, before me personally came _____ to me known, who being duly sworn, deposed and said that she/he resides at _____ that she/he is _____of Respondent corporation, and that she/he signed her/his name as authorized by said corporation wiht full authority to do so.

_____
Notary Public

CONSENT BY COMMISSIONER

The Commissioner of the Suffolk County Department of Health Services agrees to waive further administrative enforcement action against the Respondent named herein, and the Commissioner agrees to accept the Respondent's consent to the entry and issuance of this Order in full satisfaction of the Department's allegations herein listed, PROVIDED THAT the Respondent duly executes this order and strictly adheres to all of its terms, conditions and provisions.

Dated: _____

Hauppauge, New York

David Harris, M.D., M.P.H.
Commissioner
Suffolk County Department
of Health Services

By:

1988 b
10/11
7/12 /W

Paid

June 30, 1988

Cantor Brothers, Inc.
Engineers Lane
Farmingdale, NY 11735

Re: Order on Consent No. IW 88-42

Gentlemen:

The above-referenced Order on Consent was submitted to you for your approval and return to this office duly executed if acceptable.

Since this office is not in receipt of this Order on Consent duly executed by you, and since the time allotted for your submittal to this office has expired, I must assume that you have elected not to accept the submitted Order on Consent. Therefore, I have no alternative but to institute formal administrative hearing proceedings.

Should you reconsider your acceptance of the Order and submit it to this office within the next ten (10) days, signed and notarized along with the civil penalty, if applicable, I will cancel the formal hearing request.

Very truly yours,

John V. Soderberg, P.E.
Environmental Enforcement
JVS:das

R-104

COUNTY OF SUFFOLK

1988 b

5/3 11

9 30

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

April 13, 1988

IW 88-27

CERTIFIED Mail - R.R.R.

- Rec Tank -
- Removal Agent -

Cantor Brothers Inc.
Engineers Lane
East Farmingdale, NY 11735

Gentlemen:

The records of this office indicate that you have violated Article 12 of the Suffolk County Sanitary Code in that:

On or about August 26, 1987 you did fail to properly abandon an underground storage facility for toxic or hazardous materials (removal of an underground fuel storage tank) in that you did not notify this department of said removal in writing, in violation of Section 760-1210(h)(2) of Article 12 of the Suffolk County Sanitary Code.

In order to resolve the foregoing violations, a preliminary hearing is being scheduled at this office on May 3, 1988 at 9:30 a.m. You may appear at this hearing with or without counsel; you may produce witnesses and evidence, but no sworn testimony will be taken or recorded.

Please be advised that each violation of the Suffolk County Sanitary Code is punishable by a civil penalty not to exceed $500 for each day or part thereof that such violation continues. Therefore, it would be in your best interest to appear at the preliminary hearing. A failure to appear will result in the scheduling of a formal hearing by the department.

If you are unable to meet the above-mentioned scheduling requirements, or if you have any questions regarding this proceeding, please do not hesitate to contact this office.

Very truly yours,

John V. Soderberg, P.E.
Environmental Enforcement
JVS:das
cc: S. Giordano (Blk. St.)
A. Santino
J. Gladysz
R. Seyfarth

15 HORSEBLOCK PLACE FARMINGVILLE, NEW YORK 11738 (516) 451-

R-105

REQUEST FOR LEGAL ACTION

1988 b

RANDALL
PIM (Art. 12)

J. MALONEY (Art. 10)
MCR W. ROBERTS

ACTION REQUESTED
STATE
✓ LOCAL

Exact corporate or other name of firm to be charged:
CANTOR BROTHERS

2. Principal Officers of firm; partners of the partnership: 11/11
~~[illegible]~~, MATT. MILLER - OWNER.

3. Address of firm to be charged. Indicate address of alleged violating facility and main office if not the same; mailing address if different (For Art. 12 discharge violations, include Dist.____, Sec.____, Blk.____, Lot____). ENGINEERS LANE, E. FARMINGDALE

4. Violations Alleged - check those you believe are applicable and include dates of alleged occurrence:

Article(s) XII, Section(s) 1210 and/or NYSDEC Part(s)____

5. Summary of nature of proof to support each allegation (attach proof of actual violation(s) notice to firm and firm's failure to voluntarily cure).

VIOLATION of 8-26-87
See attached.

6. Recommendation for Order on Consent:

a. by ~~Inspectional Services~~ HAZARDOUS WASTE - 1) FINE ←
2) ~~[illegible]~~ / TESTING / INSTALLATION
(ARE PREVIOUSLY INSTALLED WELLS STILL OPERATIONAL

b. by applicable engineering section -

c. penalty (by Bureau Chief)
On Consent: 250

Payable on Stipulation: 500

Person(s) to be notified of compliance conference
T. NANOS, A. SANTINO, JOHN GLADYSZ, R. Sorforth

Other actions pending (if known)

OCS
4/11/88

SIGNED: [signature]
JOHN GLADYSZ

DATED: 9-2-87

COUNTY OF SUFFOLK

SCDHS

1988c

1/1

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

September 29, 1988

Cantor Brothers
Engineers Lane
Farmingdale, NY 11735

Attention: Mr. Matthew J. Miller

Re: Order on Consent No. IW 88-42

Gentlemen:

After a review of our records and after consultation with the appropriate field and engineering staffs, this department acknowledges satisfactory compliance with each provision of the above-referenced Order on Consent. The department appreciates the cooperation and good faith evidenced by your actions in this matter.

Should you have any questions regarding this situation, or pertaining to any other existing or potential environmental problem, please do not hesitate to contact this office.

Very truly yours,

TO CHECK AUTHENTICITY OF THIS LETTER, YOU MAY CALL MR. A.M. SANTINO, SCDHS, 15 HORSEBLOCK PL., FARMINGVILLE, N.Y., TEL. NO. (516) 451-4640.

William C. Roberts, P.E.
Chief
Office of Environmental Engineering
and Pollution Control
WCR:cas
cc: L. Riley, Esq. - NYSDEC
A. Machlin, P.E. - NYSDEC
S. Giordano - SCDHS

R-107

REF. #23

SCDHS 1988d

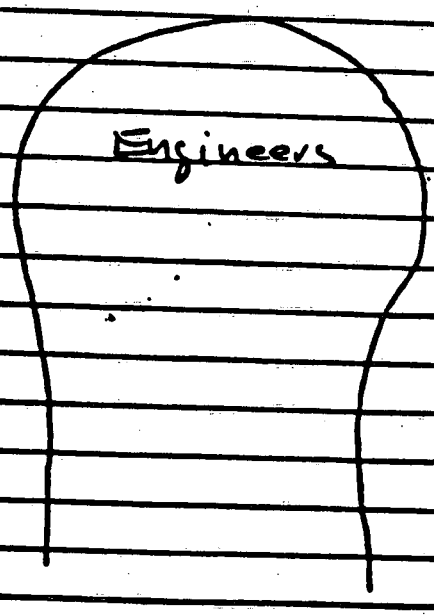
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

NAME OF FACILITY	Cantor Brothros INC.	OWNER/ OFFICER	PAGE ___ OF 1/2
COMPANY NAME	"Nankee"	CONTACT	TEL.
PLANT ADDRESS	Engineers Dr.	VILLAGE Farmingdale TOWN Babylon	ZIP 11735
MAILING ADDRESS			

DATE	TIME	ORIG. PERIODIC RE.	WASTE	NO WASTE	H&H	SEWAGE SYSTEM	PUBLIC PRIVATE
10/19/88		SAMPLE					

Sampled storm drain at east side of building near loading dock. Sample was for organic parameters 2RM 10-19.

Robert P. Moran



RECEIVED
DEC 21 1988
LEROY CALLENDER/P.C.

R-108

ERP 11/3/88

1988 d

2

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY

ORGANIC & FLASHPOINT ANALYSIS OF INDUSTRIAL & HAZARDOUS MATERIALS

Lab. No. IW- 108832 701
Field No. 2RM-10-19

Date Completed 10-27-88
Method EPA 8240/EPA 1010/

Name Cantor Brothers

Remarks Storm drain

Compound	ppb	Compound	ppb
☐ Purgeable Halocarbons1			
Dichlorodifluoromethane		Dibromochloromethane	<40
Chloromethane		Tetrachloroethylene	<40
Vinyl Chloride		Bromoform	<40
Bromomethane		1,1,2,2 Tetrachloroethane	<40
Chloroethane		Benzene	<40
Trichlorofluoromethane		Toluene	<40
2-Chloroethyl vinyl ether		Chlorobenzene	<40
☒ Purgeable Halocarbons2/Aromatics		Ethylbenzene	<40
1,1 Dichloroethylene	<40	Xylene(s)	<40
Methylene Chloride	<40	Styrene	<40
Freon 113	<40	Bromobenzene	<40
1,1 Dichloroethane	<40	Chlorotoluene(s)	<40
cis-1,2 Dichloroethylene	<40	p-Ethyltoluene	<40
Chloroform	<40	1,3,5 Trimethylbenzene	<40
1,2 Dichloroethane	<40	1,2,4 Trimethylbenzene	<40
1,1,1 Trichloroethane	<40	m-Dichlorobenzene	<40
Carbon Tetrachloride	<40	p-Dichlorobenzene	<40
1,2 Dichloropropane	<40	o-Dichlorobenzene	<40
Bromodichloromethane	<40	p-Diethylbenzene	<40
1,1,2 Trichloroethylene	<40	1,2,4,5 Tetramethylbenzene	<40
trans-1,3 Dichloropropene	<40	1,2,4 Trichlorobenzene	<40
cis-1,3 Dichloropropene	—	1,2,3 Trichlorobenzene	<40
1,1,2 Trichloroethane	<40		<100

Analyst [illegible]

☐ Polychlorinated Biphenyls

PCB 1016		PCB 1254	
PCB 1221		PCB 1260	
PCB 1232		PCB 1262	
PCB 1242			
PCB 1248			

Analyst

☐ Flash Point

Pensky-Martens Closed Cup Flash Point _____ °C= _____ °F

Analyst

R-109

LeRoy
Callender
PC

PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

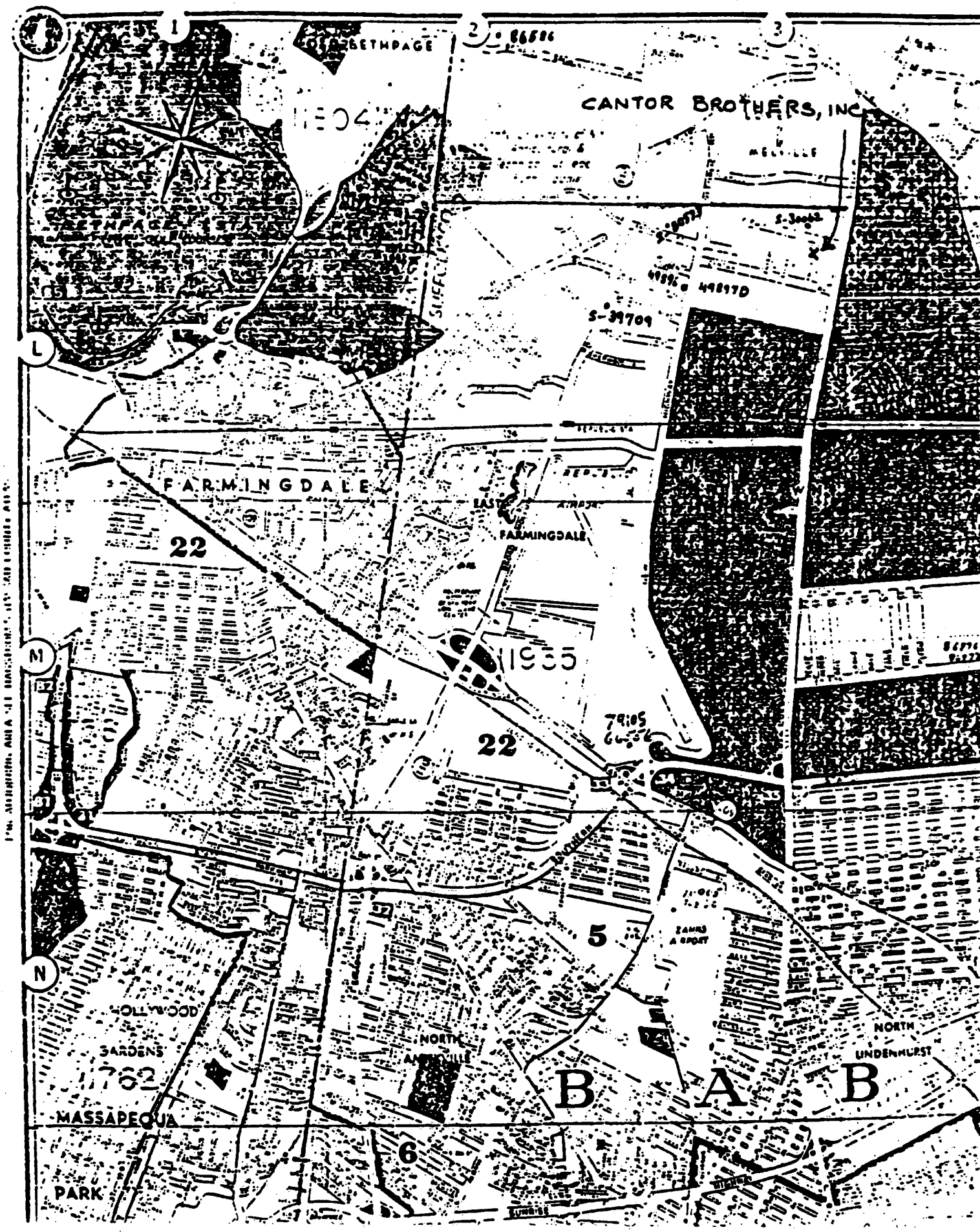
APPENDIX D:

WELL LOCATIONS & PERMIT DATA

R-110

APPENDIX D

PUBLIC & PRIVATE WELLS



LEGEND

- Main Through Roads
- Highways Under Construction
- Proposed Highways
- Other Roads and Streets
- Parkways
- Highway Route Numbers (State 27, County 38)
- Interchange Numbers (40)
- Railroad Lines and Stations (Passenger, Freight, Dair)
- Parks & Camps
- Golf Courses
- Cemeteries
- Hospitals
- Airports
- State and Federal Lands
- School Districts (2)
- Schools
- Zip Code Areas (11792)
- State Boundaries
- County Boundaries
- Town Boundaries
- Village Boundaries

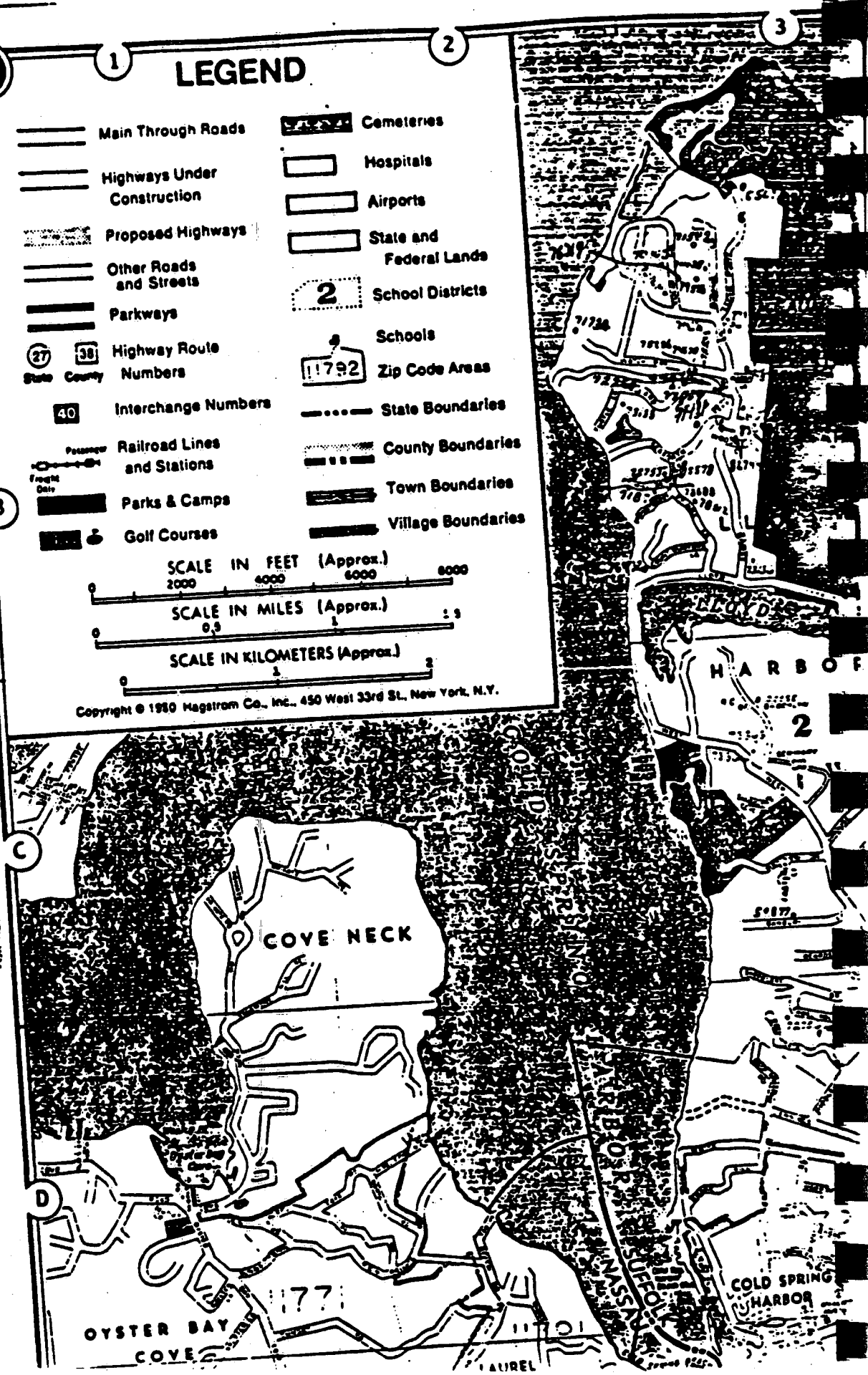
SCALE IN FEET (Approx.)
0 2000 4000 6000 8000

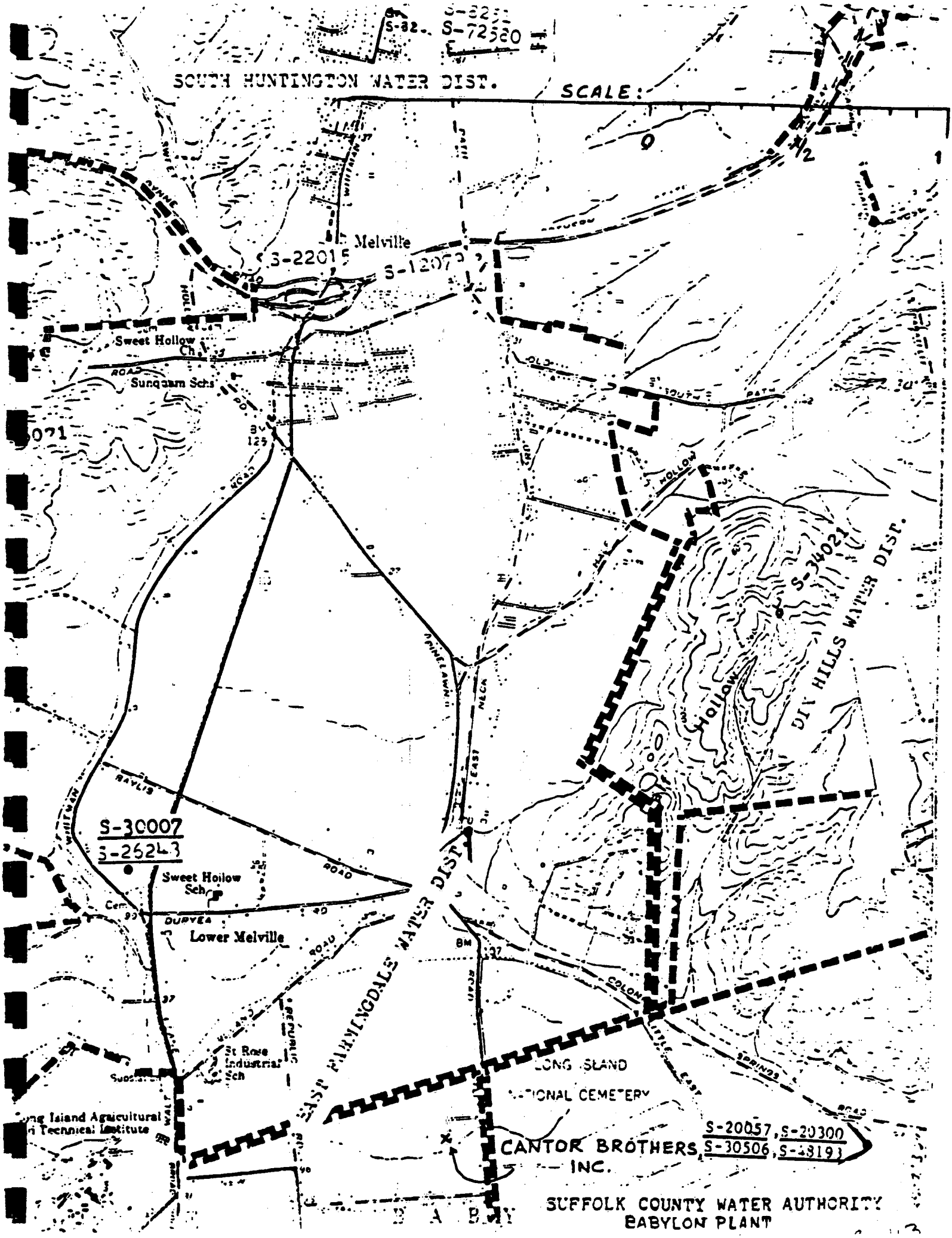
SCALE IN MILES (Approx.)
0 0.5 1 1.5

SCALE IN KILOMETERS (Approx.)
0 1 2

Copyright © 1950 Hagstrom Co., Inc., 450 West 33rd St., New York, N.Y.

FOR ADJOINING AREA SEE HAGSTROM'S NASSAU COUNTY ATLAS




S-72580
SOUTH HUNTINGTON WATER DIST.
SCALE:
Melville
S-22015
S-12079
Sweet Hollow Ch
Sunquam Schs
S-34021
DIX HILLS WATER DIST.
S-30007
S-26243
Sweet Hollow Sch
Lower Melville
EAST FARMINGDALE WATER DIST.
St Rose Industrial Sch
LONG ISLAND NATIONAL CEMETERY
S-20057, S-20300
S-30506, S-48193
CANTOR BROTHERS INC.
SUFFOLK COUNTY WATER AUTHORITY
BABYLON PLANT

County Suffolk

ORIGINAL—TO COMMISSION

Vol No. [illegible]

COMPL[illegible] WELL

Owner GUILD [illegible]

Pump Installed:

Type [illegible]

Motor power [illegible] HP

Capacity 45 gpm [illegible]

No. bowls or stages 9

Discharge Line:

Diameter 1½"

Length 90'

Suction Line:

Use of water Plant Process Cooling Supply

Work started 2/24/67 Completed [illegible]

Date 5/1/67 Driller [illegible]

License No. 133

Note: Show log of well—materials encountered, [illegible] below water bearing beds and [illegible] tional pumping tests and other [illegible]

See Instructions as to Well Drillers' Licenses and Reports—[illegible]

RECEIVED

JAN 25 1989

LEBOY CALLENDER/P.C.

County Suffolk ORIGINAL S-30062

Well No. S-30062

Water Resources Commission—State of New York

PRELIMINARY REPORT ON PROPOSED WELL

Owner Guild Arts & Crafts, Inc.

Mail Address 495 Smith Str. Farmingdale, NY

Well Location Same as above

Depth 200 ft. Diam. Casings 6 in.

Pump Capacity 45 g.p.m. Type Subm.

Purpose Plant Process Cooling Supply

Date 2/10/67 19__ List of Existing Wells S-22304 to be abandoned S-22305D

Driller (Signature) MATHIES WELL & PUMP CO., INC. No. 153

WATER RESOURCES COMMISSION

By [signature] Engineer in Charge

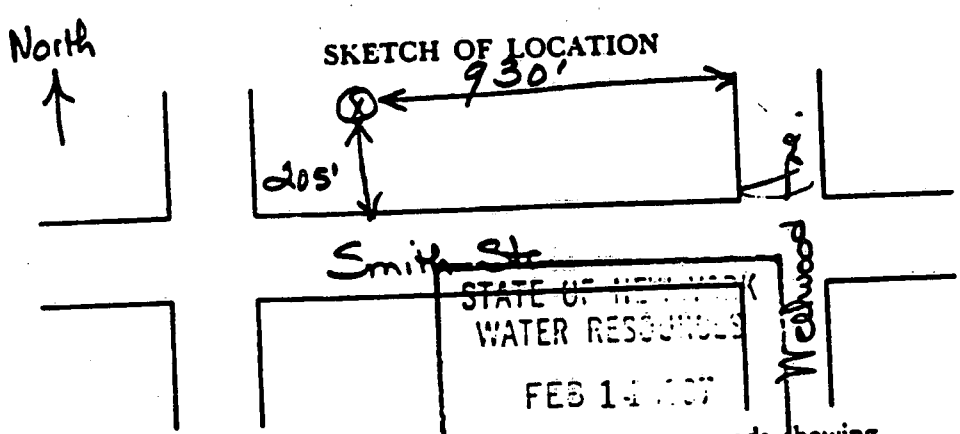
PERMIT TO SINK WELL

FEB 14 1967

Date

R-115

SKETCH OF LOCATION



STATE OF NEW YORK
WATER RESOURCES
FEB 14 1997
RECEIVED

Locate well with respect to at least two streets on roads, showing distance from corner and front of lot.

Show North Point

R-116

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Suffolk
County

7.

Y 3424

S-80573
Well No.

COMPLETION REPORT - LONG ISLAND WELL

OWNER: Efcor, Inc.	* LOG
ADDRESS: 123 Smith St., Farmingdale, N.Y. 11753	Ground Surface El. _____ ft. above sea
LOCATION OF WELL: Same (Replacement #S-19538)	A / V _____ ft.
DEPTH OF WELL BELOW SURFACE: 200 ft.	DEPTH TO GROUND WATER FROM SURFACE: 30 ft.

TOP OF WELL

CASINGS

DIAMETER: 8 in.	in.	in.	in.
LENGTH: 164 ft.	ft.	ft.	ft.

SEALING: Cement Grout	CASINGS REMOVED: None

SCREENS

MAKE: Johnson Division - UOP	OPENINGS: #60

DIAMETER: 8 in.	in.	in.	in.
LENGTH: 35' ft.	ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING: 164'

PUMPING TEST

DATE: 9/10/85	TEST OR PERMANENT PUMP?: Test
DURATION OF TEST: days 4 hours	MAXIMUM DISCHARGE: 305 gallons per min.
STATIC LEVEL PRIOR TO TEST: 30 ft. in. below top of casing	LEVEL DURING MAXIMUM PUMPING: 45 ft. in. below top of casing
MAXIMUM DRAWDOWN: 15 ft.	Approximate time of return to normal level after cessation of pumping: 1 hrs. min.

PUMP INSTALLED

TYPE: Submersible	MAKE: Pleuger	MODEL NO.: QN64-7
MOTIVE POWER: Electric Motor	MAKE: Pleuger	H.P.: 25

CAPACITY: 300 g.p.m. against	230 ft. of discharge head
NUMBER BOWLS OR STAGES: 7	230 ft. of total head

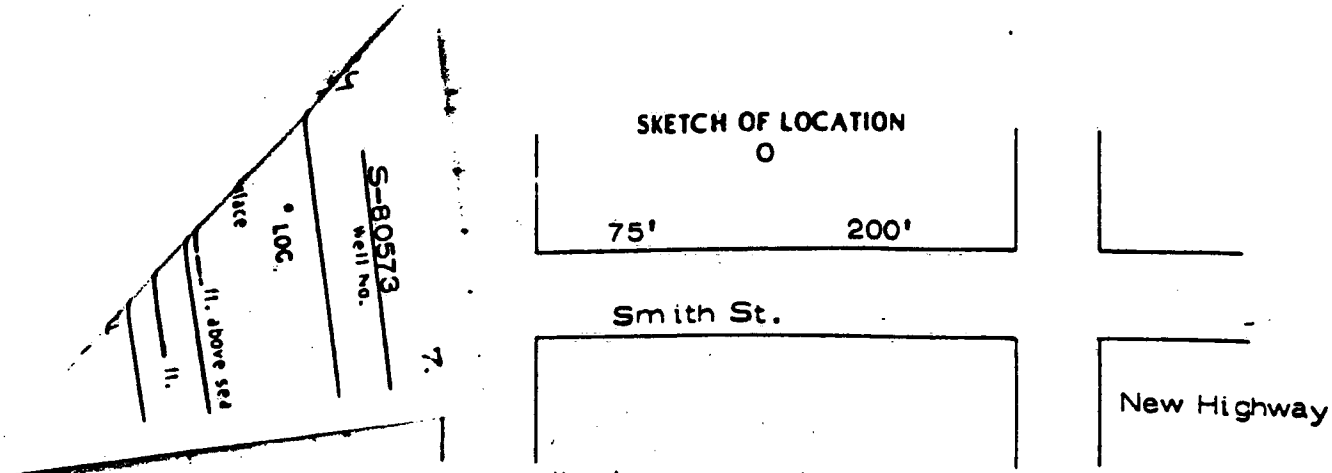
DROP LINE	SUCTION LINE
DIAMETER: in.	DIAMETER: in.
LENGTH: ft.	LENGTH: ft.
METHOD OF DRILLING: ☒ rotary ☐ cable tool ☐ other _____	USE OF WATER:
WORK STARTED: 8/17/85	COMPLETED: 9/13/85

DATE	DRILLER	REGISTRATION NO.
9/13/85	R.H. Lauman Associates, Inc.	13

*NOTE: Show log of well - materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job. See Instructions as to Well Drillers' Certificates of Registration and Reports. Pages 5 - 7.

ORIGINAL - Environmental Conservation Copy

0-117



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.
Show North Point

Check the Town in which the project is located:

Nassau County:

- ☐ Hempstead
- ☐ North Hempstead
- ☐ Oyster Bay

Suffolk County:

- ☒ Babylon
- ☐ Brookhaven
- ☐ East Hampton
- ☐ Huntington
- ☐ Islip
- ☐ Riverhead
- ☐ Shelter Island
- ☐ Smithtown
- ☐ Southampton
- ☐ Southold

DRILLER'S LOG:

0' - 6"	Asphalt
6" - 3'	Loam
3' - 55'	Coarse Brown Sand, Gravel, Stones
55' - 140'	Medium Coarse Brown Sand, Gravel
140' - 150'	Medium Coarse Brown Sand, Some Brown Clay
150' - 155'	Medium Coarse Brown Sand, Layers Gray Clay
155' - 202'	Fine to Medium Brown Sand, Some Brown Clay

STOP

County SUFFOLK

WSA-5917

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

Well No. S-39709
(on preliminary report)

LOG
Ground Surf., El. ____ ft. above sea
^ ____ ft.
v
Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner EAST FARMINGDALE WATER DISTRICT (3-1)

Address 200 E. SUNRISE HIGHWAY, N. LIMBERHURST

Location of well ROUTE 110, MELVILLE

Depth of well below surface 711'-9 1/2" feet

Depth to ground water from surface 36'-1 1/2" (7/20/71) feet

CASINGS:

Diameter 20 in. 10 in. RISER in. ____ in.
Length 642 ft. 90 ft. ____ ft. ____ ft.
Sealing CEMENT GROUT
Casings removed NONE

SCREENS: Make COAK Openings .055"
Diameter 12 in. NONE in. ____ in. ____ in.
Length 55 ft. NET SHT ft. ____ ft. ____ ft.
Depth to top from top of casing 650' ± ft.
TOP OF RISER 571' ±

SEE ATTACHED

PUMPING TEST: Date 7/20/71 Test or permanent pump? TEST
Duration of Test ____ days 6 hours
Maximum Discharge 1421 gallons per minute
Static level prior to test 36 ft. 1 1/2 in. below top of casing
Level during Max. Pumping 105 ft. 7 in. below top of casing
Maximum Drawdown 69'-5 1/2" ft.
Approx. time of return to normal level after cessation of pumping 1 hours ____ minutes

PUMP INSTALLED:
Type DWT Make TAIT-A.C. Model No. 12 HBC
Motive power ELEC. Make U.S. H.P. 125
Capacity 1400 g.p.m. against 165 ft. of discharge head
No. bowls or stages 6 278 ft. of total head

DROP LINE: SUCTION LINE:
Diameter 10" in. 10" in.
Length 120 ft. 10' ft.

Method of Drilling (Rotary, cable tool, etc.) REVERSE ROTARY

Use of Water MUNICIPAL SUPPLY

Work started MAY 15, 1971 Completed 4/28/72

Date 5/2/72 Driller STATE WELL CORP.

License No. 1000

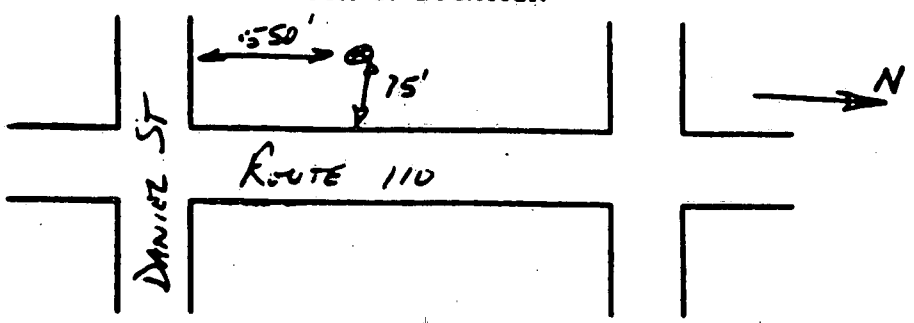
RESOURCE MGT. SERV.
MAY 4 1972
SUP. WATER RES.
WESTBURY
REC'D.

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

R-119

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

Repair
7/16/82 Layne-N.Y. Co, Inc. – Repaired Tait pump. Added 20' of setting
Depth to water noted @ 33'10".

COUNTY Suffolk ORIGINAL

WELL No. S-498970

Water Resources Commission—State of New York

PRELIMINARY REPORT ON PROPOSED WELL

OWNER Monitor Boxart Co.

MAIL ADDRESS 171 Milbar Blvd., Farmingdale, N.Y.

WELL LOCATION Same

DEPTH 60 ± FT. DIAM. CASING 4" IN.

PUMP CAPACITY _____ G.P.M. TYPE None

PURPOSE Diffuser

DATE 9/27 19 73 LIST OF EXISTING WELLS: _____

DRILLER (SIGNATURE) The Lauman Company Inc. LIC. NO. 13

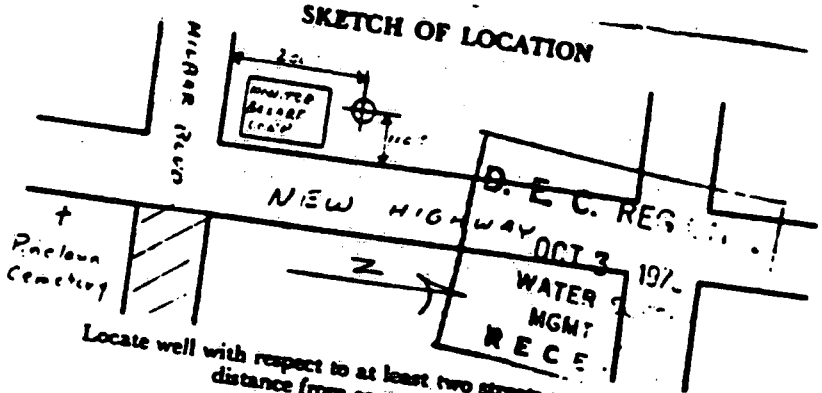
WATER RESOURCES COMMISSION PERMIT TO SINK WELL

BY _____ ENGINEER IN CHARGE

OCT 3 1973 DATE

R-121

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

R-122

County Suffolk

WSA-6144

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

Well No. S-48193
(on preliminary report)

LOG
Ground Surf., El. ____ ft. above sea
^ ____ ft.
v
Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner Suffolk County Water Authority

Address Oakdale, N.Y.

Location of well 195' E/O Circle Dr., 566' S/O Colonial Springs Rd. (East Neck Rd.) Wyandanch,

Depth of well below surface 533'-9 3/4" feet

Depth to ground water from surface 29' feet

SEE ATTACHED

Casings:

Diameter 20 in. 10 in. ____ in. ____ in.
Length 455 ft. 70 ft. ____ ft. ____ ft.
Sealing Grout
Casings removed No

Screens: Make Johnson Openings #60
Diameter 10 in. ____ in. ____ in. ____ in.
Length 71 ft. ____ ft. ____ ft. ____ ft.
Depth to top from top of casing 400' to top of 10" riser top slot at 470' ft.

Pumping Test: Date 12/21/73 Test or permanent pump? Test
Duration of Test ____ days 8 hours
Maximum Discharge 1725 gallons per minute
Static level prior to test 29 ft. ____ in. below top of casing
Level during Max. Pumping 69 ft. ____ in. below top of casing
Maximum Drawdown 40 ft.
Approx. time of return to normal level after cessation of pumping 2 hours ____ minutes

Pump Installed: BY OTHERS
Type ____ Make ____ Model No. ____
Motive power ____ Make ____ H.P. ____
Capacity ____ g.p.m. against ____ ft. of discharge head
No. bowls or stages ____ ft. of total head

Drop Line: Suction Line:
Diameter ____ in. ____ in.
Length ____ ft. ____ ft.

Method of Drilling (Rotary, cable tool, etc.) Reverse Rotary
Use of Water Municipal
Work started 5/21/73 Completed 1/7/74
Date 3/15/74 Driller Delta Well Co., Inc.
License No. 1299

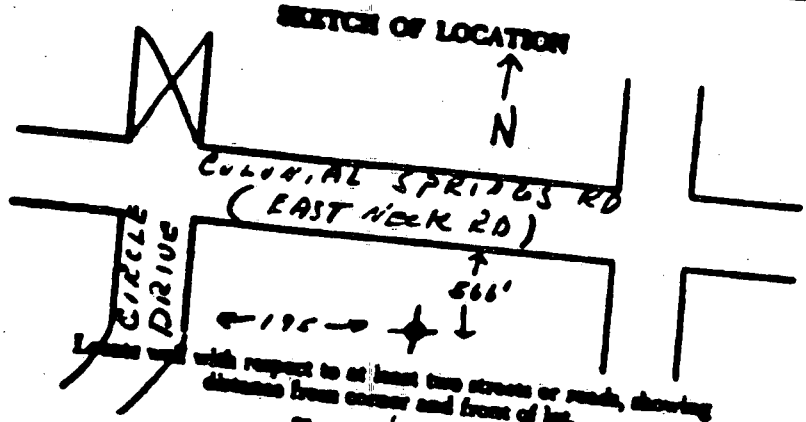
Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pumps, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 3-2.

D.E.C. REGIONAL ENVIRONMENTAL ANALYSIS UNIT
MAR 18 1974
RECEIVED

R-123

SKETCH OF LOCATION



with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

R-124

County SUFFOLK

WSA 5343

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

Well No. S-30506 (on preliminary report)

LOG
Ground Surf. El. 75.48 ft. above sea
0 ft.
Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner SUFFOLK COUNTY WATER AUTHORITY

Address OAKDALE N.Y

Location of well CIRCLE DR. WYANDANAH, N.Y

Dept of well below surface 614 feet

Depth to ground water from surface 26 27'0" feet

SEE DRAWING

Casings:

SEE DRAWING

Diameter 16 in. 12 in. in. in.

Length 258 ft. 287 ft. ft. ft.

Sealing

Casings removed

Screens: Make Cook Openings 70

SEE DRAWING

Diameter 10 in. in. in. in.

Length 60 ft. ft. ft. ft.

Depth to top from top of casing ft.

STATE OF NEW YORK
WATER RESOURCES
AUG 25 1967
COMMISSION
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Pumping Test: Date 7/25/67 Test or permanent pump? Perm TEST

Duration of Test days 8 8 hours

Maximum Discharge 1248 1060 gallons per minute

Static level prior to test 2627 ft. in. below top of casing

Level during Max. Pumping 5653 ft. in. below top of casing

Maximum Drawdown 30 26 ft.

Approx. time of return to normal level after cessation of pumping hours 30 5 minutes

Pump Installed: BY OWNER

Type RKAH Make Layne Model No. 57910

Motive power Elect Make G.E. H.P. 100

Capacity 1060 g.p.m. against 217.14 ft. of discharge head

No. bowls or stages 4 243.14 ft. of total head

Drop Line: Suction Line:

Diameter BY OWNER 10 in. 10 in.

Length 75'3" ft. 4'10" ft.

Use of water MUNICIPAL

Work started 5/5/67 8/17/67 Completed 7/30/67 5/16/68

Date 8/24/67 Driller STRATA WELL CORP. (HYATT) Layne N.Y. Co. Inc.

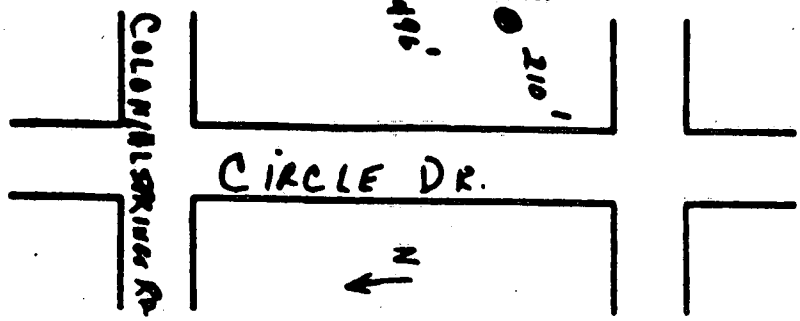
License No. 1000 5

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

R-125

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

U.S.G.S. - McCormack's - 9/1/67

Well S-30,506

TD - 630 ft below lsd.
Elev. +80 ft- above msl.
Yield 1250 gpm; dd: 30 ft.
Sp. Cap. - 42 gpm/ft of dd.

FOR ADMINISTRATIVE USE ONLY
Provisional, Subject to Revision

Correlation (mostly to Gr-18 Bull)
U.P. 0 to 74 ft below lsd.
Magothy ? 74 to 115 ft below lsd.
Magothy 115 to 538 " "
Basal ? Magothy 538 to 630 ft. below lsd. (bottom of log).
(Correlation fairly good)
(Raritan clay should be about 830 ft below lsd)

R-126

17.

ORIGINAL—TO COMMISSION

County Suffolk

State of New York
Department of Conservation
Division of Water Power and Control

Well No. S20300 (on preliminary)
S20300 LOG
Ground Surf., El. ft.
ft.
Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner Colonial Springs Water Co.

Address 272 Sunrise Highway Lindenhurst L.I., N.Y.

Location of well Babylon

Depth of well below surface 232 feet

Depth to ground water from surface 7 feet

Casings:
Diameter 12 in. in. in. in.
Length 201 ft. ft. ft. ft.
Sealing Welded Joint
Casings removed None

Screens: Make Johnson Stainless Steel Openings #50 Slot
Diameter 10 in. in. in. in.
Length 31 ft. ft. ft. ft.
Depth to top from top of casing 201 ft.

Pumping Test: Date 11/20/61 Test or permanent pump? T
Duration of Test days 4 hours
Maximum Discharge 554 gallons per minute
Static level prior to test 8 ft. in. below top of casing
Level during Max. Pumping 35 ft. in. below top of casing
Maximum Drawdown 27 ft.
Approx. time of return to normal level after cessation of pumping hours minutes

Pump Installed:
Type D.W.T. Make Worthington Model No. 10M50
Motive power Electric Make U.S. H.P. 20
Capacity 500 g.p.m. against } ft. of discharge head
No. bowls or stages 4 } 192 ft. of total head

Drop Line: **Suction Line:**
Diameter 6 in. 6 in.
Length 40 ft. 10 ft.

Use of water Public Supply

Work started 10/12/61 Completed 11/20/61

Date 5/8/62 Driller C. W. Lauman & Co., Inc.

License No. 13

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

STATE
WATER
MAY 10 196
COMMISSION
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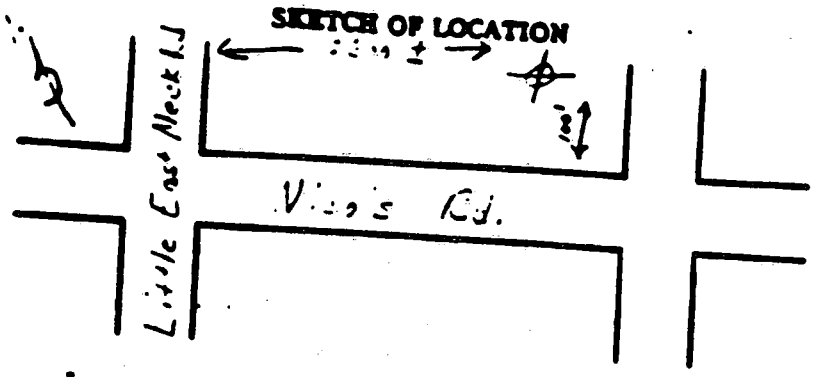
2.177

S20300

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

Coe Br Sd Gravel L. Stones	0 - 40
Coe Sd and Grits	40 - 62
Fi Gr Sd Large Stones G Clay	62 - 72
Fi Gr Sd	72 - 104
Sld Multi-Colored Clay	104 - 111
Fi Br Sd Multi-Colored Clay	111 - 121
Sld Black Clay	121 - 130
Fi Br Sd Hardpn Some Clay	130 - 147
Med. Br Sd Hrdpn Some Clay	147 - 155
Fi Gr Sd and Mica	155 - 164
Sdy and Sld Multi-Colored Clay	164 - 169
Fi Br Sd and Hrdpn	169 - 176
Sdy and Sld Multi-Colored Clay	176 - 180
Fi Br Sd Some Clay Hrdpn	180 - 184
Layers Fi Sd Layers Sld Clay Hrdpn-Pyrite	184 - 188
Sdy and Sld White Clay and Hrdpn	188 - 191
Layers Multi-Colored Clay Hrdpn	191 - 195
Fi Br Sd Hrdpn	195 - 202
Fi Br Sd Streaks Clay and Mica	202 - 212
Fi Br Sd and Mica	212 - 232

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County Suffolk

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Power and Control

Well No. 8-20057
(on preliminary report)

LOG

Ground Surf., El. ___ ft. above sea

___ ft.

Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Well #1

Owner Colonial Springs Water Co. (New Suff Cty W.A.)

Address 272 Sunrise Highway, Lindenhurst, L.I.

Location of well Babylon

Depth of well below surface 200 feet

Depth to ground water from surface 22 feet

CASINGS:
Diameter 12 in. ___ in. ___ in. ___ in.
Length 170 ft. ___ ft. ___ ft. ___ ft.
Sealing welded joint
Casings removed none

SCREENS: Make Johnson S.S. Openings 50 slot
Diameter 10 in. ___ in. ___ in. ___ in.
Length 30 ft. ___ ft. ___ ft. ___ ft.
Depth to top from top of casing 170 ft.

PUMPING TEST: Date ___ Test or permanent pump? T
Duration of Test ___ days 4 hours
Maximum Discharge 526 gallons per minute
Static level prior to test 22 ft. ___ in. below top of casing
Level during Max. Pumping 39 ft. ___ in. below top of casing
Maximum Drawdown 17 ft.
Approx. time of return to normal level after cessation of pumping ___ hours ___ minutes

PUMP INSTALLED: Combination Drive - Gasoline Engine
Type ~~DHP~~ RXEHC Make Worthington Layne Model No. 36995 10M50
Motive power Elec. Make U.S. H.P. ~~30~~ 60
Capacity ~~500~~ 650 g.p.m. against 139 ft. of discharge head
No. bowls or stages ~~4~~ 6 193 ft. of total head

DROP LINE: Diameter 6 in. Length ~~61'6"~~ 55' 6" ft.

SUCTION LINE: Diameter 6 in. Length ~~10~~ 9' 7" ft.

Use of water public supply

Work started 8/7/61 4-30-68 Completed 12/26/61 5-8-68

Date 1/22/62 Driller C. W. Lauman & Co., Inc. Layne-NY Co.

License No. 13

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

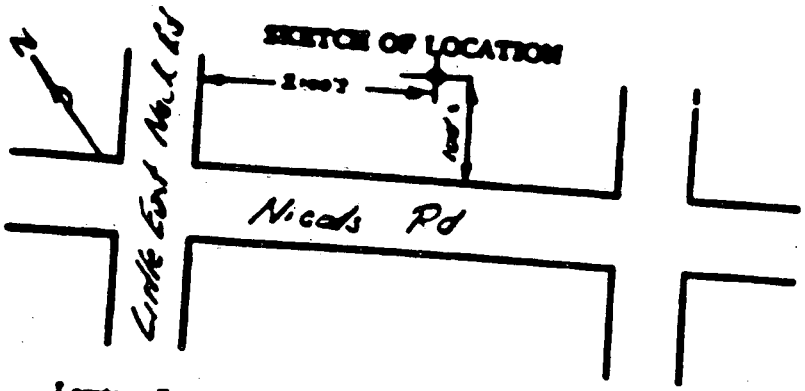
See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

STATE OF NEW YORK
WATER POWER
JAN 24 1962
COMMISSION

R-129

S20057

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

0-25	Gse S&G
25-42	Cse sd, grits, grvl, lge stones
42-60	Med fi brn sd, grits, lge stones
60-79	Fi brn sd, grits, bldrs
79-84	Fi gry sd, lge stones, gry cl
84-94	Blk cl
94-103	Cse gry sd
103-125	Fi gry sd & muck
125-155	" " " "
155-165	Fi wh. sd str cl & hdpn
165-176	Sd & cl
176-183	Brn sd, med
183-200	Med brn sd, reddish cl

R-130

LeRoy
Callender
PC

PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

ENVIRONMENTAL PROTECTION AGENCY
NATIONAL DRINKING WATER REGULATIONS

PRIMARY - 40 CFR 141

SECONDARY - 40 CFR 143

(7-1-87 EDITION)

R-131

ENVIRONMENTAL PROTECTION AGENCY
NATIONAL DRINKING WATER REGULATIONS

PRIMARY - 40 CFR 141
SECONDARY - 40 CFR 143

MCL - Maximum Contaminant Level (40 CFR 141 B and G)
"maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system"

MCLG - Maximum Contaminant Level Goal (40 CFR 141 F)
"nonenforceable health goal"

SMCL - Secondary Maximum Contaminant Level (40 CFR 143)
same as MCL except "not Federally enfoceable but intended as guidelines for the States"

All levels are milligrams per liter [mg/l]

INORGANIC

Arsenic	0.05	MCL
Barium	1.	MCL
Cadmium	0.010	MCL
Chloride	250.	SMCL
Chromium	0.05	MCL
Copper	1.	SMCL
Flouride	4.0	MCL & MCLG
Flouride	2.0	SMCL
Foaming Agents	0.5	SMCL
Iron	0.3	SMCL
Lead	0.05	MCL
Manganese	0.05	SMCL
Mercury	0.002	MCL
Nitrate (as N)	10.	MCL [1]
Selenium	0.01	MCL
Silver	0.05	MCL
Sulphate	250.	SMCL
Total Dissolved Solids	500.	SMCL
Zinc	5.	SMCL

NOTES

[1] 20. MCL if "water will not be available to children under six months of age."

RECEIVED
FEB 06 1989
TROY CALLENDER/RC

R-132

ENVIRONMENTAL PROTECTION AGENCY
NATIONAL DRINKING WATER REGULATIONS

All levels are milligrams per liter [mg/l]

ORGANIC		
Benzene	0.005	MCL
Benzene	0	MCLG
Carbon tetrachloride	0.005	MCL
Carbon tetrachloride	0	MCLG
Chlorinated hydrocarbons		
Endrin	0.0002	MCL
Lindane	0.004	MCL
Methoxychlor	0.1	MCL
Chlorophenoxys		
2,4 -D	0.1	MCL
2,4,5 - TP Silvex	0.01	MCL
para-Dichlorobenzene	0.075	MCL & MCLG
1,2-Dichloroethane	0.005	MCL
1,2-Dichloroethane	0	MCLG
1,1-Dichloroethylene	0.007	MCL & MCLG
Trihalomethanes		
Bromodichloromethane	[2]	MCL
Dibromochloromethane	[2]	MCL
Bromoform (Tribromomethane)	[2]	MCL
Chloroform (Trichloromethane)	[2]	MCL
1,1,1-Trichloroethane	0.20	MCL & MCLG
Trichloroethylene	0.005	MCL
Trichloroethylene	0	MCLG
Vinyl Chloride	0.002	MCL
Vinyl Chloride	0	MCLG

OTHER		
Color	15 color units	SMCL
Corrosivity	Noncorrosive	SMCL
Odor	3 threshold number	SMCL
pH	6.5 - 8.5	SMCL

NOTES

[2] 0.1 MCL for total trihalomethanes for community water systems greater than 10,000 which add a disinfectant (oxidant) to the water.

LeRoy
Callender
PC

PHASE II INVESTIGAION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

N.Y.S.-D.E.C. WATER QUALITY CRITERIA

(1985)

R-134

SUBSTANCE [CAS No.]	WATER CLASSES	STANDARDS micrograms/liter	NOTES
Zinc [NA]			
	AA;AA-s;A;A-s (Human)	300	10 NYCRR Part 170
	AA;AA-s;A;A-s (Aquatic)	30	I
	B;C	30	I
	D	*	H
	SA;SB;SC	58	H
	SD	170	H

Remarks: * - exp (0.83 [ln(ppm hardness)] + 1.95)
- all standards except (Human) apply to acid-soluble form

PART 703

GROUND WATER CLASSIFICATIONS, QUALITY STANDARDS, AND EFFLUENT STANDARDS AND/OR LIMITATIONS

(April 2, 1972; Amended August 2, 1978, Effective September 1, 1978; November 5, 1984)

703.1 Definitions: The terms, words or phrases used in Part 703 shall have the following meaning:

(a) *Administrator* shall mean the Administrator of the United States Environmental Protection Agency.

(b) *Best usage of waters* as specified for each class shall be those uses as determined by the Commissioner in accordance with the considerations prescribed by the Environmental Conservation Law.

(c) *Commissioner* shall mean the Commissioner of Environmental Conservation.

(d) *Consolidated rock or bed rock* is the compact or solid hard rock exposed at the surface of the earth or overlain by the unconsolidated deposits.

(e) *Department* shall mean the New York State Department of Environmental Conservation.

(f) *Disposal System* means a system for disposing of sewage, industrial waste or other wastes, and including sewer systems and treatment works.

(g) *Effluent standard and/or limitation* shall mean any restriction on quantities, quality, rates and concentrations of chemical, physical, biological, and other constituents of effluents which are discharged or allowed to run from an outlet, point source or any other discharge within the meaning of ECL 17-0501 into the unsaturated or saturated zones.

(h) *Fresh Water* is that water having a chloride concentration equal to or less than 250 mg/l, or a total dissolved solids concentration equal to or less than 1000 mg/l.

(i) *Ground waters* are those waters in the saturated zone, including perched water areas.

(j) *Industrial waste* means any liquid, gaseous, solid or waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business or from the development or recovery of any natural resources, which may cause or might reasonably be expected to cause pollution of the waters of the State in contravention of the standards adopted as provided in ECL, Article 17.

(k) *Land application techniques* include the following three basic methods of waste discharge application: irrigation, infiltration-percolation; overland flow.

(l) *Land utilization practices* entails the use of plants, the soil surface, and soil matrix for removal of certain wastewater constituents.

(m) *Micrograms per liter, ug/l,* is the weight in micrograms of any specific substance or substances contained in one liter of solution.

(n) *Milligrams per liter, mg/l,* is the weight in milligrams of any specific substance or substances contained in one liter of solution.

(o) *Other wastes* means garbage, refuse, decayed wood, sawdust, shavings, bark, sand, lime, cinders, ashes, offal, oil, tar, dyestuffs, acids, chemicals, leachate, sludge, salt, and all other discarded matter not sewage or industrial waste which may cause or might reasonably be expected to cause pollution of the waters of the State in contravention of the standards adopted as provided in ECL, Article 17.

(p) *Outlet* means the terminus of a sewer system, or the point of emergence of any water-borne sewage, industrial waste or other wastes or the effluent therefrom, into the saturated or unsaturated zones.

(q) *Pathogenic organism* shall mean any disease-

R-135

703.4 Tests or analytical determinations. Tests or analytical determinations to determine compliance or non-compliance with standards shall be made in accordance with:

(a) *Standard Methods for the Examination of Water and Wastewater (see section 705.2 of this Title);*

(b) *Methods for Chemical Analysis of Water and Wastes (see section 705.2 of this Title);*

(c) *Water standards of the American Society for testing and Materials (see section 705.2 of this Title); or*

(d) by other methods approved by the Commissioner as giving results equal to or superior to methods listed above.

703.5 Classes and quality standards for ground waters. *(a) Class GA* (1) The best usage of Class GA waters is as a source of potable water supply. Class GA waters are fresh ground waters found in the saturated zone of unconsolidated deposits and consolidated rock or bed rock.

(2) Quality standards for class GA waters shall be the most stringent of:

(i) the items and specifications applicable to such waters found in this section;

(ii) the maximum contaminant levels for drinking water promulgated by the Commissioner of Health as found in 10 NYCRR Subpart 5-1, *Public Water Supplies* or any subsequent revision thereto or replacement thereof;

(iii) the maximum contaminant levels for drinking water promulgated by the Administrator under the Safe Drinking Water Act (see section 705.1 of this Title) and 40 CFR Part 141, effective July 1, 1978 (see section 705.1);

(iv) the standards for raw water quality promulgated by the Commissioner of Health as found in 10 NYCRR Part 170, *Sources of Water Supply* or any subsequent revision thereto or replacement thereof.

(3) The following quality standards shall be applicable to Class GA Water:

Items	*Specifications*
(a) Sewage, industrial waste or other wastes, taste or odor producing substances, toxic pollutants, thermal discharges, radioactive substances or other deleterious matter.	1. None which may impair the quality of the ground waters to render them unsafe or unsuitable for a potable water supply or which may cause or contribute to a condition in contravention of standards for other classified waters of the State.
(b) The concentration of the following substances or chemicals:	2. Shall not be greater than the limit specified, except where exceeded due to natural conditions:
(1) Arsenic (As)	(1) 0.025 mg/l
(2) Barium (Ba)	(2) 1.0 mg/l
(3) Cadmium (Cd)	(3) 0.01 mg/l
(4) Chloride (Cl)	(4) 250 mg/l
(5) Chromium (Cr) Hexavalent	(5) 0.05 mg/l
(6) Copper (Cu)	(6) 1.0 mg/l
(7) Cyanide (CN)	(7) 0.2 mg/l
(8) Fluoride (F)	(8) 1.5 mg/l
(9) Foaming Agents[1]	(9) 0.5 mg/l
(10) Iron (Fe)[2]	(10) 0.3 mg/l
(11) Lead (Pb)	(11) 0.025 mg/l
(12) Manganese (Mn)[2]	(12) 0.3 mg/l
(13) Mercury (Hg)	(13) 0.002 mg/l
(14) Nitrate (as N)	(14) 10.0 mg/l
(15) Phenols	(15) 0.001 mg/l
(16) Selenium (Se)	(16) 0.02 mg/l
(17) Silver (Ag)	(17) 0.05 mg/l
(18) Sulfate (SO_4)	(18) 250 mg/l
(19) Zinc (Zn)	(19) 5 mg/l
(20) pH Range	(20) 6.5-8.5
(21) Aldrin, or 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-*endo*-1 4-exo-5, 8-dimethanonaphthalene.	(21) not detectable[3]

Items	*Specifications*
(22) Chlordane, or 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-4,7-methanoindene.	(22) 0.1 ug/l
(23) DDT, or 2,2-bis-(*p*-chlorophenyl)-1,1,1-trichloroethane and metabolites.	(23) not detectable[3]
(24) Dieldrin, or 6,7-epoxy aldrin.	(24) not detectable[3]
(25) Endrin, or 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-*endo*-1,4-*endo*-5,8-dimethanonaphthalene.	(25) not detectable[3]
(26) Heptachlor, or 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene and metabolites.	(26) not detectable[3]
(27) Lindane and other Hexachlorocyclohexanes or mixed isomers of 1,2,3,4,5,6-hexachlorocyclohexane.	(27) not detectable[3]
(28) Methoxychlor, or 2,2-bis-(*p*-methoxyphenyl)-1,1,1-trichloroethane.	(28) 35.0 ug/l
(29) Toxaphene (a mixture of at least 175 chlorinated camphene derivatives).	(29) not detectable[3]
(30) 2,4-Dichlorophenoxyacetic acid (2,4-D)	(30) 4.4 ug/l
(31) 2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP) (Silvex)	(31) 0.26 ug/l
(32) Vinyl chloride (chloroethene)	(32) 5.0 μg/l
(33) Benzene	(33) not detectable [3]
(34) Benzo(a) pyrene	(34) not detectable [3]
(35) Kepone or decachlorooctahydro-1,3,4-metheno-2H - cyclobuta (*cd*) pentalen - 2 - one (chlordeone).	(35) not detectable [3]
(36) Polychlorinated biphenyls (PCB) (Aroclor)	(36) 0.1 μg/l
(37) Ethylene thiourea (ETU)	(37) not detectable [3]
(38) Chloroform	(38) 100 μg/l
(39) Carbon tetrachloride (tetrachloromethane)	(39) 5 μg/l
(40) Pentachloronitrobenzene (PCNB)	(40) not detectable [3]
(41) Trichloroethylene	(41) 10 μg/l
(42) Diphenylhydrazine	(42) not detectable [3]
(43) bis (2 - chloroethyl) ether	(43) 1.0 μg/l
(44) 2,4,5 - Trichlorophenoxyacetic acid (2,4,5-T)	(44) 35 μg/l
(45) 2,3,7,8 - Tetrachlorodibenzo - *p* - dioxin (TCDD)	(45) 3.5×10^{-5} μg/l
(46) 2 - Methyl - 4 - chlorophenoxyacetic acid (MCPA)	(46) 0.44 μg/l
(47) Amiben, or 3 - amino -2,5 - dichlorobenzoic acid (chloramben)	(47) 87.5 μg/l
(48) Dicamba, or 2 - methoxy - 3, 6 - dichlorobenzoic acid	(48) 0.44 μg/l
(49) Alachlor, or 2 - chloro - 2', 6' - diethyl - *N* - (methoxymethyl) - acetanilide (Lasso)	(49) 35.0 μg/l
(50) Butachlor, or 2 - chloro - 2', 6' - diethyl - N - (butoxymethyl) - acetanilide (Machete)	(50) 3.5 μg/l
(51) Propachlor, or 2 - chlor - N - isopropyl - N - acetanilide (Ramrod)	(51) 35.0 μg/l
(52) Propanil, or 3', 4' - dichloropropionanilide	(52) 7.0 μg/l
(53) Aldicarb, [2 - methyl - 2 - (methylthio) propionaldehyde O - (methyl carbamoyl) oxime] and methomyl [1 - methylthioacetaldhyde O - (methyl - carbamoyl) oxime]	(53) 0.35 μg/l
(54) Bromacil or 5 - bromo - 3 - *sec* - butyl - 6 - methluracil	(54) 4.4 μg/l

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Items	*Specifications*
(55) Paraquat, or 1,1' dimethyl - 4,4' - dipyridylium	(55) 2.98 μg/l
(56) Trifluralin, or *a, a, a* trifluoro - 2, 6 - dinitro - N - dipropyl - *p* - toluidine (Treflan)	(56) 35.0 μg/l
(57) Nitralin, or 4 - (methylsulfonyl) — 2, 6 - dinitro - N, N - dipropylaniline (Planavin)	(57) 35.0 μg/l
(58) Benefin, or N - butyl — N - ethyl - *a, a, a* - trifluoro - 2,6 - dinitro - *p* - toluidene (Balan)	(58) 35.0 μg/l
(59) Azinphosmethyl, or O, O - dimethyl - *S* - 4 - oxo - 1,2,3 - benzotriazin - 3(4H) - ylmethylphosphoro - dithioate (Guthion)	(59) 4.4 μg/l
(60) Diazinon, or O, O-diethyl O-(2-isopropyl-4-methyl - 6 - pyrimidinyl) - phosphorothioate.	(60) 0.7 μg/l
(61) Phorate (also for Disulfoton), or O, O - diethyl - *S* - [(ethylthio)methyl] - phosphoro - dithioate (Thimet R), and disulfoton, or O, O-diethyl-S-[(2-ethylthio)ethyl] phosphorodithioate (Di-System R)	(61) not detectable [a]
(62) Carbaryl, or 1 - naphthyl - N - methylcarbamate	(62) 28.7 μg/l
(63) Ziram, or zinc salts of dimethyl - dithiocarbamic acid.	(63) 4.18 μg/l
(64) Ferbam, or iron salts of dimethyl - dithiocarbamic acid.	(64) 4.18 μg/l
(65) Captan, or *N* - trichloromethylthio - 4 - cyclohexene - 1, 2 - dicarboxmide.	(65) 17.5 μg/l
(66) Folpet, or N - trichloromethylthiophthalimide.	(66) 56.0 μg/l
(67) Hexachlorobenzene (HCB)	(67) 0.35 μg/l
(68) Paradichlorobenzene (PDB) (also orthodichlorobenzene)	(68) 4.7 μg/l
(69) Parathion (and Methyl parathion), or (O, - O - diethyl O *p* - nitrophenylphosphorothioate, and methyl parathion, or O, O - dimethyl - O - *p* - nitrophenylphosphorothioate.	(69) 1.5 μg/l
(70) Malathion, or *S* - 1, 2 - *bis* (ethoxycarbonyl) ethyl O, O - dimethylphosphorodithioate.	(70) 7.0 μg/l
(71) Maneb, or - manganese salt of ethylene - bis - dithiocarbamic acid.	(71) 1.75 μg/l
(72) Zineb, or zinc salt of ethylene - bis - dithiocarbamic acid.	(72) 1.75 μg/l
(73) Dithane, or zincate of manganese ethylene - bis - dithiocarbamate.	(73) 1.75 μg/l
(74) Thiram, or tetramethylthiuramdisulfide	(74) 1.75 μg/l
(75) Atrazine, or 2 - chloro - 4 - ethylamino - 6 - isopropylamino - S - triazine.	(75) 7.5 μg/l
(76) Propazine, or 2 - chloro - 4, 6 - diisopropyl - amino - S - triazine.	(76) 16.0 μg/l
(77) Simazine, or 2 - chloro - 4, 6 - diethylamino - S - triazine.	(77) 75.25 μg/l
(78) di - n - butylphthalate	(78) 770 μg/l
(79) Di (2 - ethylhexyl) phthalate (DEHP)	(79) 4.2 mg/l
(80) Hexachlorophene, or 2,2' - methylene - bis (3,4,6 - trichlorophenol)	(80) 7 μg/l
(81) Methyl methacrylate	(81) 0.7 mg/l
(82) Pentachlorophenol (PCP)	(82) 21 μg/l
(83) Styrene	(83) 931 μg/l

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PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

N.Y.S.- D.E.C. GUIDELINES, TABLE #1,

LAND APPLICATION OF SEWAGE SLUDGE

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NEW YORK SOLID WASTE MANAGEMENT FACILITIES RULES

(New York Compilation of Rules and Regulations, Title 6, Chapter 360 — Solid Waste Management Facilities; Approved by the Environmental Review Board May 17, 1977; Amended effective January 12, 1981; March 9, 1982; October 3, 1983; November 5, 1984; May 4, 1985; July 14, 1985; April 24, 1986; April 1, 1987; Revised effective December 31, 1988)

SUBPART 360-1 — GENERAL PROVISIONS

Section 360-1.1 Purpose and applicability.

(a) Purpose. The purpose of this Part is to regulate solid waste management facilities, other than hazardous waste management facilities that are subject to Part 373 or Part 374 of this Title and facilities managing low-level radioactive waste that are subject to Part 382 of this Title, located partially or wholly within the State of New York. Hence, except where the context indicates otherwise, the term "solid waste management facility" refers to one other than one subject to Part 373, 374, or 382 of this Title.

(b) Applicability. All solid waste other than low-level radioactive waste as defined in Part 382 of this Title which is required to be disposed of at a land disposal facility subject to regulation under Part 382 of this Title and other than hazardous waste as defined in Part 371 which is required to be managed at a facility subject to regulation under Part 373 or 374 of this Title must be transferred, processed, recovered, stored, reclaimed or disposed of in a manner consistent with this Part. However, the management of non-hazardous solid waste in a portion of a facility that also handles hazardous waste is subject to the requirements of Part 373 of this Title unless exempted under that Part. Any facility permitted under Part 373, 374, or 382 of this Title or having interim status under Part 373 is not regulated under this Part. Regulations governing collection and transportation of industrial-commercial waste, septage, sludges and waste oil are set forth in Part 364 of this Title; however, disposal activities involving those wastes are regulated under this Part and Part 373 of this Title.

Section 360-1.2 Definitions.

The following terms have the following meanings when used in this Part:

(a) "Solid waste" and related terms.

(1) "Solid waste" means all putrescible and non-putrescible materials or substances, except as described in paragraph four of this subdivision, that are discarded or rejected as being spent, useless, worthless or in excess to the owners at the time of such discard or rejection, including but not limited to garbage, refuse, industrial and commercial waste, sludges from air or water treatment facilities, rubbish, tires, ashes, contained gaseous material, incinerator residue, construction and demolition debris, discarded automobiles, and offal.

(2) A material is discarded if it is abandoned by being:

(i) disposed of;

(ii) burned or incinerated, including being burned as a fuel for the purpose of recovering usable energy; or

(iii) accumulated, stored, or physically, chemically, or biologically treated (other than burned or incinerated) instead of or before being disposed of.

(3) A material is disposed of if it is discharged, deposited, injected, dumped, spilled, leaked, or placed into or on any land or water so that such material or any constituent thereof may enter the environment or be emitted into the air of discharged into groundwater or surface water.

(4) The following are not solid waste for the purposes of this Part:

(i) domestic sewage;

(ii) any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly owned treatment works for treatment, except for any material that is introduced into such system in order to avoid the provisions of this Part;

(iii) industrial wastewater discharges that are actual point source discharges subject to permits under ECL Article 17. Industrial wastewaters while they are being collected, stored, or treated before discharge, and sludges that are generated by industrial wastewater treatment are solid wastes and are regulated by this Part;

(iv) irrigation return flows;

(v) radioactive materials which are source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (see subdivision 360-1.3[a] of this Part);

(vi) materials subject to in-situ mining techniques which are not removed from the ground as part of the extraction process; and

(vii) materials that the department has determined are being beneficially used, including the following:

(a) materials that are incorporated into a manufacturing process to produce a marketable product;

(b) compost that meets the criteria for Class I — public distribution and agricultural usage identified in Subpart 360-5 of this Part;

(c) wood chips used for mulch, landscaping, or erosion control purposes;

(d) ash generated from the combustion of coal if the ash has been tested for toxicity pursuant to a testing protocol approved by the department and certified to be non-toxic and used as follows:

(1) coal combustion bottom ash used as a traction agent on roadways, parking lots, and other driving surfaces;

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Section 360-4.4 Sewage sludge and septage: operational requirements.

In addition to the operational requirements identified in section 360-1.14 of this Part, the following requirements apply:

(a) Sewage sludge and septage destined for land application must not exceed the following contaminant concentrations:

Parameter	Maximum Concentration ppm, dry weight basis
Mercury (Hg)	10
Cadmium (Cd)	25
Nickel (Ni)	200
Copper (Cu)	1000
Lead (Pb)	1000
Chromium (Cr)	1000
Zinc (Zn)	2500
Total PCBs	10

Since other contaminants may be present in the sewage sludge as indicated by discharge monitoring and other industrial pretreatment requirements, the department, on a case specific basis, may determine the maximum allowable concentrations of these contaminants in the sewage sludge to be used for landspreading.

(1) If a sewage sludge or septage contains heavy metals or other pollutants at concentrations greater than those set forth in this subdivision, a permit to operate a land application facility will not be issued until the sewage treatment plant or septage manager has implemented an identification and abatement program and compliance has been achieved to assure that the sewage sludge or septage has continuously met the quality parameters of this subdivision for a period of at least six months.

(b) All sewage sludge and septage must be stablized before land application. Land application of sewage sludge or septage that has been stabilized by chlorine oxidation is prohibited. One of the following methods must be conducted to significantly reduce pathogens in the stabilization process:

(1) Aerobic digestion. This is conducted by agitating the sewage sludge or septage with air or oxygen to maintain aerobic conditions at residence times ranging from 60 days at 15 degrees Celsius to 40 days at 20 degrees Celsius, with a volatile solids reduction of at least 38 percent.

(2) Air drying. Liquid sewage sludge or septage must be allowed to drain or dry on underdrained sand beds, or paved or unpaved basins, in which the sewage sludge or septage must not exceed a depth of nine inches. The sewage sludge or septage must remain in the drying bed a minimum of three months. During at least two of the three months, the ambient air temperatures must average, on a daily basis, above zero degrees Celsius.

(3) Anaerobic digestion. The sewage sludge or septage is digested in the absence of air at residence times ranging from 60 days at 20 degrees Celsius to 15 days at 35 to 55 degrees Celsius, with a volatile solids reduction of at least 38 percent.

(4) Composting. Using the within-vessel, static aerated pile, or windrow composting methods, the sewage sludge or septage must be maintained at a minimum operating condition of 40 degrees Celsius for five consecutive days. For at least four hours during this period, the temperature must exceed 55 degrees Celsius.

(5) Lime stabilization. Sufficient lime must be added to the sewage sludge or septage to produce a pH of 12 throughout the sewage sludge or septage after two hours of contact. Such sludge or septage must be thoroughly mixed with the lime.

(6) Other methods. Other methods or operating conditions may be acceptable if pathogens and vector attraction of the waste are reduced to an extent equivalent to the reduction achieved by any of the above methods and it is approved by the department.

(c) Annual septage testing is required. The sampling frequency, number of analyses, and parameters are the same as found in paragraph 360-4.3(h)(2) of this Part. Sewage sludge must be sampled and analyzed in accordance with the following:

Sewage Sludge

Parameters: TKN, NH_3, NO_3, NO_2, total phosphorous, total potassium, pH, total solids, total volatile solids, cadmium, copper, total chromium, mercury, nickel, lead, zinc, and total PCBs.

Sewage Treatment Plant Capacity	Number of Analyses	Frequency of Analysis
Greater than 5 MGD	Twelve	One per month
1-5 MGD	Six	One every two months
Less than 1 MGD	Four	One every three months

Each sample that is destined for analysis must consist of a composite of at least five separate grab samples with no more than one grab sample collected in a 24 hour period. Analysis of nitrogen series (TKN, NH_3, NO_2, and NO_3) must be performed on either grab samples or samples that are immediately frozen and remain frozen throughout the storage period. With the exception of pH, total solids, and total volatile solids, all results must be reported on a dry weight basis.

(d) The minimum horizontal distance from the perimeter of the site to be used for land application of sewage sludge or septage must meet or exceed the following:

Item	Minimum horizontal separation distance in feet
property line	50
residence* or place or business	500
potable water well or supply	200
surface water body	200
drainage swale	25

*The landowner's or operator's residence is excluded from this separation distance requirement.

(e) Land application must not occur on land with a slope exceeding 15 percent. Land applying septage or sewage sludge with a total solids content of less than 20 percent is prohibited on land with a slope greater than eight percent, unless applied by subsurface injection along paths parallel to contours.

(f) The hydraulic loading must not exceed 16,000 gallons per acre in a 24 hour period.

(g) The annual cadmium application rate must not exceed 0.45 pound per acre (one-half kilogram per hectare) and the cumulative loading limit of metals must not exceed the following:

Metal	Cumulative Loading Limit in pounds per acre: Agricultural Soils Groups 1-3	Agricultural Soils Groups 4-10	Non-agricultural Lands (forested areas, etc)
Cadmium (Cd)	3	4	10
Nickel (Ni)	30	45	150
Copper (Cu)	75	112	250
Zinc (Zn)	150	223	500
Lead (Pb)	300	446	1000
Chromium (Cr)	300	446	*

*In addition to the above metals, total chromium (Cr) and mercury (Hg) may be limited based upon their potential effect on groundwater quality.

(h) The heavy metal loading must not exceed 20 percent of the cumulative metal loading limit in any one year.

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(i) Land application and subsequent vegetation must be in accordance with soil conservation practices that minimize run-off and soil loss through erosion. Land application must be controlled to prevent contravention of groundwater and surface water standards provided in Parts 700 through 704 and Parts 750 through 757 of this Title. The available nitrogen loading must not exceed the nitrogen needs of the crop grown.

(j) Land application facilities and practices in floodplains must not restrict the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, or pose a hazard to human life, wildlife, or land or water resources. Land application is prohibited in floodplain areas designated as floodways as defined in Part 500 of this Title.

(k) Land application is prohibited in areas where bedrock lies less than two feet below the ground surface.

(l) All sewage sludge and septage must be incorporated into the soil within a 24 hour period following application to the soil.

(m) Dikes, berms, or other pollution protection devices or techniques must be used as required by the department to prevent run-off entering surface waters.

(n) Soil pH must be adjusted to 6.5 standard units or higher during periods of sewage sludge or septage application.

(o) Proper soil conservation practices must be used, and sewage sludge and septage application and subsequent vegetation must minimize run-off and soil loss through erosion.

(p) Sewage sludge and septage must not be applied on snow, frozen or saturated ground, or during rainfall.

(q) Public access to the land application facility is prohibited for at least 12 months after the last application of sewage sludge or septage, and must be controlled during that period by the use of fences and gates, signs, or posted signs. Dairy cattle must not graze for at least 12 months after the last application and grazing by other animals, excluding wild game, must not graze for at least one month after the last application.

(r) No crop for direct human consumption may be grown on sewage sludge or septage amended soil for at least 18 months after the last application.

(s) Before land application of sewage sludge or septage each spring, as part of the annual report, a management plan must be submitted to the department. The plan must include: crops to be grown, fields to be used, schedules and methods of application and harvesting, and loading rates. Loading rates must be determined based on the quantity of and the heavy metal, nutrient, and persistent organic concentrations of the sewage sludge or septage and the site characteristics, previous waste applications, and nitrogen uptake requirements of the plants to be grown.

(t) Land application is permitted only when the beneficial value of the sewage sludge or septage as a supply of nutrients or as a soil conditioner can be demonstrated.

(u) Land application of sewage sludge must not occur in areas where the seasonal high groundwater is within 24 inches of the ground surface and land application of septage must not occur in areas where the seasonal high groundwater is within 48 inches of the ground surface. Land application of sewage sludge or septage must not occur in areas where an aquifer or wellhead protection area is within 60 inches of the ground surface.

(v) Spray irrigation of sewage sludge may be acceptable provided all health, environmental, and nuisance impacts are controlled to the satisfaction of the department, and the spray irrigation complies with all applicable provisions of the ECL. Spray irrigation of septage is prohibited.

(w) Land application is allowed only on soil having those characteristics identified in subparagraphs 360–4.2(e)(2)(i) and (ii) of this Part. Annual soil sampling is required. The number of soil samples and analyses are outlined in subparagraphs 360–4.3(i)(1)(i) through (iv) of this Part.

(x) An annual report must be submitted to the department's central office and appropriate regional office within 120 calendar days after the anniversary of the facility's operating permit, and must include, as a minimum:

(1) the location of the landspreading fields used;

(2) the crops grown on each field;

(3) the total quantity of sewage sludge or septage applied, including land application dates and quantity applied during each application on each field;

(4) the loading rates (hydraulic, nutrient, and cumulative heavy metal) for the sites used;

(5) sewage sludge or septage and soil sample analyses, including copies of all laboratory reports.

(6) a description of any problems, complaints, etc. arising as a result of the land application operation, the corrective actions taken; and

(7) the revised sewage sludge or septage loading rates for the next year based on previous loadings on the sites. In addition, the management plan for the next year must identify the acreage proposed to be used and crops proposed to be grown.

(y) Septage must not be used for land reclamation.

(z) Groundwater monitoring may be required for surface reclamation projects that involve land application of sewage sludge to reclaim disturbed land from mining, erosion, etc. as determined by the department. Such projects must meet the following requirements:

(1) A detailed site investigation must be performed before land application of sewage sludge. The requirements for the site investigation will be determined by the department on a case specific basis.

(2) Vegetation must be established as quickly as possible.

(3) The type of vegetation planted must remove as much available nitrogen as possible from the land applied sewage sludge to minimize the potential for groundwater contamination.

(4) A minimum of one upgradient monitoring well and two downgradient monitoring wells is required for groundwater monitoring. Their location must be determined by a hydrogeologic investigation of the site. This will include, as a minimum, determination of groundwater flow direction, groundwater depth, and bedrock location.

(5) Quarterly sampling of the monitoring wells must be conducted for the following parameters during the period governed by the operating permit: chloride, nitrate, sulfate, specific conductivity, total hardness, alkalinity, and total organic carbon or chemical oxygen demand. Annual sampling must be conducted for the following parameters: Cd, Hg, Pb, Cu, Zn, Ni, total Cr, pH, and persistent organic compounds as directed by the department.

Section 360–4.5 Sludge and other solid waste: applicability and department review.

(a) This section and sections 360–4.6 and 360–4.7 of this Part pertain exclusive-

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CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

POLYCYCLIC AROMATIC HYDROCARBONS IN THE TERRESTRIAL ENVIRONMENT

BY:
EDWARDS, N.T.

JOURNAL OF ENVIRONMENTAL QUALITY

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REVIEWS AND ANALYSES

Polycyclic Aromatic Hydrocarbons (PAH's) in the Terrestrial Environment—A Review[1]

NELSON T EDWARDS[2]

ABSTRACT

This review, while touching on sources of polycyclic aromatic hydrocarbons (PAH's) and their degradation, emphasizes research that addresses their fate in the terrestrial environment. Typical endogenous concentrations of PAH's in soil and vegetation range from 1 to 10 μg/kg and from 10 to 20 μg/kg, respectively. Endogenous PAH's are due to plant synthesis, forest and prairie fires, volcanoes, etc. Anthropogenic sources are primarily from fossil fuel burning. Estimated annual release of benzo(a)pyrene (BaP) from fossil fuel combustion is 4.6 × 10⁶ kg. Concentrations of PAH's in air, soil, and vegetation vary with distances from known sources. Reported BaP concentrations in air of nonurban areas of the United States ranged from 0.01 to 1.9 μg/m³; concentrations in urban areas ranged from 0.1 to 61.0 μg/m³. Concentrations of BaP in soil may typically reach 1000 μg/kg, and values exceeding 100 000 μg/kg have been reported near known sources. Typically, concentrations for total PAH's (usually the sum of 5 to 20 PAH's) exceed BaP concentrations by at least one order of magnitude. The maximum PAH concentration in vegetation growing near a known source was 25 000 μg/kg, but values more typically range from 20 to 1000 μg/kg. Reported BaP concentrations in vegetation ranged from 0.1 to 150 μg/kg. Concentrations in vegetation were generally less than those in soil where the plants were growing. Concentration ratios (concentration in vegetation/concentration in soil) ranged from 0.0001 to 0.33 for BaP and from 0.001 to 0.18 for the sum of 17 PAH's tested. However, laboratory experiments demonstrated that plants can concentrate PAH's above those found in their environment. Controlled experiments with a few PAH's demonstrated uptake by both leaves and roots and subsequent translocation to other plant parts. Washing leaves of vegetation contaminated with PAH's removes no more than 25% of the contamination. There is some evidence that plants can catabolize PAH's, but metabolic pathways have not been defined well.

Additional Index Words: Benzo(a)pyrene, carcinogens, vegetation, soil plant uptake, sources.

Edwards, N T 1983 Polycyclic aromatic hydrocarbons (PAH's) in the terrestrial environment—a review J Environ Qual 12:427-441

Polycyclic aromatic hydrocarbons (PAH's) occur naturally in the environment, primarily as a result of synthesis by some plants and formation during natural forest and prairie fires. However, by far the greatest amounts of PAH's released into the environment are formed during fossil fuel combustion and during anthropogenic forest and agricultural fires. The carcinogenic nature of some PAH's led to considerable research into their behavior in the aquatic environment, but relatively little research has been conducted on their fate in the terrestrial environment. Results of research on the movement of PAH's into vegetation directly from the atmosphere and indirectly from soil is somewhat contradictory. However, recent findings indicate that there is a potential for their accumulation in the terrestrial food chain. Most of the research has been on benzo(a)pyrene (BaP), a known carcinogen. The need for more research on a number of carcinogenic PAH's in the environment and an evaluation of research already conducted becomes increasingly important as the combustion of fossil fuel increases to keep pace with

[1] Research sponsored by the Ecological Research Division, Office of Health & Environmental Research, U S Department of Energy, under contract W-7405-eng-26 with Union Carbide Corp Publication no. 2192. Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37830 Received 7 Mar. 1983

[2] Research staff, Environ Sci Div, Oak Ridge Natl Lab

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These collection and extraction problems have implications for all the data presented in this review. Also, the use of BaP as a model PAH has been so prevalent that BaP and PAH are often thought of synonymously. Suess (1976) emphasized that BaP constitutes only 1-20% of the total carcinogenic PAH's. We must be careful about general implications concerning PAH's, based on interpretations of BaP data. Katz and Chan (1980) pointed out that the use of BaP as an index of airborne PAH's may be subject to problems, especially in areas where motor vehicle traffic is one of the primary sources of air pollution. In Los Angeles, for example, the dominant PAH is benzo(ghi)perylene, a PAH with carcinogenic potential.

CONCENTRATIONS IN AIR

Concentrations of PAH's in air vary greatly, both spatially and temporally. Sawicki et al. (1960) examined the BaP content of air in 131 urban and nonurban areas of the United States. In nine large cities, the highest levels of BaP occurred during winter months and the lowest levels occurred during summer. Concentrations of BaP in the air of nonurban areas ranged from 0.01 to 1.9 ng/m³, while concentrations in urban areas ranged from 0.1 to 61.0 ng/m³. Pierce and Katz (1975) sampled five locations in the Toronto, Ontario, Canada area and found concentrations of BaP in air to range from 0.11 to 0.83 ng/m³, with the highest concentrations in urban and suburban areas and the lowest concentrations in suburban-rural and rural areas. Lunde and Bjorseth (1977) and Bjorseth et al. (1979) analyzed air from a sampling station in southern Norway for 22 PAH's and determined the origins of air masses containing the PAH's from trajectories calculated from meteorological data. They found that concentrations were higher in air samples originating in England/France and northern England/Scotland (32 and 28 ng/m³, respectively) than in air pollutants originating in northern and southern Norway (1.1 and 2.4 ng/m³, respectively). Values for BaP ranged from 3 to 7% of the total PAH. Gordon (1976) reported the annual geometric mean concentration of 15 PAH's in air samples collected from 13 areas in Los Angeles County, Calif., to be 10.9 ng/m³. Concentrations of BaP accounted for only 4.2% of the total. Bombaugh et al. (1981) reported maximum ambient concentrations of BaP downwind from a coal gasification plant in Yugoslavia to be ≈80 ng/m³. The EPA's ambient multimedia environmental goal for BaP is 0.05 ng/m³ (Bombaugh et al., 1981).

CONCENTRATIONS IN SOIL AND VEGETATION

Relatively few studies quantified PAH concentrations in soil and vegetation at various distances from known sources. Most of the studies examined concentrations in soil or vegetation, but not both.

Typical concentrations of BaP in soils of the world ranged from ≈100 to 1000 μg/kg. A typical range for total PAH's (i.e., those quantified in the papers examined) was about 10 times the value for BaP alone. The actual measured range of BaP concentrations, including data from very highly polluted areas and from protected remote regions, is 0.4 μg/kg (Shabad et al., 1971) to 650 000 μg/kg (Fritz, 1971). However, BaP concentrations exceeding 1300 μg/kg were very close to known sources (Shabad, 1968; Shabad et al., 1971; Fritz, 1971). These investigators did not analyze the soil for total PAH's. Only 10–15 PAH's were known or suspected to be present in soils in the late 1960's, but with recently developed analytical techniques, these numbers have increased by at least two orders of magnitude (Blumer, 1976). The highest total PAH concentration reported was 300 000 μg/kg for a soil near a highway in Switzerland (Blumer et al., 1977). Shabad et al. (1971) suggest that endogenous BaP concentrations in soil are 1–3 μg/kg and never exceed 10 μg/kg.

The first reported PAH compounds isolated from vegetation was by Guddal (1959), who extracted a mixture of PAH from roots of *Chrysanthemum vulgare* Bernh. grown in the vicinity of a gas works facility in Norway. Three PAH's were identified in the mixture as pyrene, fluoranthene, and anthracene. The concentration of the PAH (12 300 μg/kg of root tissue) was much too great to have been accounted for by plant synthesis. The only concentration reported in the literature that exceeded 12 300 μg/kg was 25 000 μg anthracene/kg orange rind collected near a heavily traveled highway in California (Gunther et al., 1967).

Concentrations of PAH's in vegetation are generally less than concentrations in the soil where they grow. Concentration ratios (conc in vegetation/conc in soil) ranged from 0.002 to 0.33 for BaP. Concentrations of BaP in vegetation ranged from 0.1 (Kolar et al., 1975) to 150 μg/kg (Fritz, 1971), with typical concentrations of 1–10 μg/kg. Only one paper reported PAH data (other than just BaP data) for both plants and soil from the same location. Wang and Meresz (1981) analyzed onions, beets, tomatoes, and soil for 17 PAH's, including BaP. They found most of the PAH contamination in the "peels." Their vegetation/soil concentration ratios ranged from 0.0001 to 0.085 for BaP and 0.001 to 0.183 for total PAH's. Graf and Diehl (1966) suggested that actively growing green plant material has an endogenous concentration of BaP of about 10–20 μg/kg and that plant storage tissues usually contain only 1–10% of that found in the green portions of the plant. Both BaP and total PAH concentrations appeared to be higher in oils extracted from plants (Stevcevska & Jovanovic-Kolar, 1974; Grimmer & Hildebrandt, 1967) than from plant tissues. This finding, if true, would have implications for certain crops growing near PAH sources, because plant organs such as seeds are important in the human diet and also contain relatively high concentrations of oils.

The amounts and kinds of PAH's ingested by humans and other animals from vegetation are partially dependent on whether particular PAH's are absorbed vs. adsorbed and how easily they are rinsed off with water. Kveseth et al. (1981) suggested that lower molecular weight PAH's are adsorbed on leaves, while higher molecular weight particulated compounds are washed off by rain. Kolar et al. (1975) found that washing vegetables removed a maximum of 25% of PAH contamination and generally less. More detailed data on concentrations of PAH's in soil and vegetation are pre-

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CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

APPLIED SOIL TRACE ELEMENTS

BY:

BRIAN E. DAVIES

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CHAPTER 8

Essential Micronutrients IV: Copper, Iron, Manganese, and Zinc

BERNARD D. KNEZEK AND BOYD G. ELLIS

I. INTRODUCTION

The addition of 4 kg/ha zinc (Zn) to pea beans (*Phaseolus vulgaris*) increased the yield from 590 to 2230 kg/ha. (Judy *et al.*, 1964). Such spectacular increases are also common with the micronutrients manganese (Mn), iron (Fe), and copper (Cu). The concentrations in soils vary from a few ppm Cu or Zn to very large quantities of Fe (see Table 8.1). In general the Cu content of soils varies from 10 to 80 ppm, Zn from 10 to 300 ppm, Mn from 20 to 3000 ppm, and Fe from 10,000 to 100,000 ppm (Mitchell, 1964). Thus, from the soil content view only Zn and Cu would be considered micronutrients. But the low solubility and availability and the small requirement of most plants for these four elements places them in the category of micronutrients (Table 8.1).

The soil chemistry of micronutrients is complex. Few 'pure' compounds exist

Table 8.1. Concentration Range of Mn, Fe, Cu, and Zn in Soils and Plants

Element	Soil content	Plant content
	Range (mg/kg)	Range (mg/kg)
Mn	20–3000	31–100
Fe	10,000–100,000	25–500
Cu	10–80	7–30
Zn	10–300	21–70

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APPENDIX D:

HANDBOOK ON THE TOXICOLOGY
OF METALS

BY:

FRIBERG, L.; NORDBERG, G.F.; AND VOUK, V.B.
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Handbook on the Toxicology of Metals

edited by
LARS FRIBERG, GUNNAR F. NORDBERG
and VELIMIR B. VOUK

1979

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aging material. About one-third of the world production of aluminum is now used in the transport industry, and about half that amount in electrical engineering. The building industry in various industrialized countries utilizes from 10 to 20% of the world production; from 10 to 15% is utilized in packaging (Baudart, 1975). Aluminum compounds are utilized in the processing, packaging and preservation of food and as food additives for various purposes. Aluminum sulfate is widely utilized for sedimenting particles in the treatment of drinking water. Aluminum and aluminum compounds are used therapeutically to prevent hyperphosphatemia in renal disease, and in the prevention of silicosis. Other therapeutic uses of aluminum compounds are as antacid, as antidote, as antiperspirant and as adjuvant for vaccines, toxoids and for aluminum penicillin.

5 Environmental levels and exposures

5.1 *General environment*

Al

5.1.1 *Food and daily intake*

Most unprocessed food items contain less than 10 mg Al/kg. Use of aluminum in the processing and storing of food increases the aluminum content, but not to a toxicologically significant extent. Some vegetables and fruits may contain up to about 150 mg Al/kg. The daily intake of aluminum from food may thus show a considerable variation dependent on the diet (Schlettwein-Gsell and Mommsen-Straub, 1973; Sorensen et al., 1974). Total daily intake of aluminum may amount to about 80 mg/day, as reviewed by Sorensen et al. (1974).

5.1.2 *Water, soil and ambient air*

Aluminum in ocean water generally is reported up to about 1 mg/l, this value being one-tenth of the concentration reported in rivers and lakes. The activities of man increase the aluminum content in surface water, but aluminum is generally not regarded as a water pollution problem. Concentrations of aluminum as high as 150–600 g/kg have been reported in soil. Aluminum content in urban air is reported up to about 10 $\mu g/m^3$; in non-urban areas values lower than 0.5 $\mu g/m^3$ are usually reported (Sorensen et al., 1974).

5.2 *Working environment*

Occupational exposure to aluminum and aluminum compounds is widespread, but the exposure has only to a limited degree turned out to be of toxicological importance. Exposure to aluminum oxide-containing dust in the production of abrasives from bauxite has been described as a hazard (Shaver and Riddell, 1947), but exposure levels have not been reported.

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(Friberg, 1977)

mal German diets (Schleutz, 1977, neutron activation) to 250–1250 µg in a U.S.A. study on institutional diets for children, using atomic absorption spectrophotometry without extraction (Murthy et al., 1971). There is reason to believe that the AAS method may have given too high values. In freshwater fish antimony concentrations have been reported to be in the order of 3 µg/kg wet weight (Uthe and Bligh, 1971). Levels of 3 and 8 µg/kg have been found in milk and potato powder (Schleutz, 1977).

Antimony

5.1.2 *Water, soil and ambient air*

In the Rhine River, antimony averages 0.1 µg/l; 0.2 µg/l has been reported from the northeastern Pacific Ocean (Schmidt, 1968; Spencer et al., 1970).

In soil antimony usually ranges from 0.1 to 10 mg/kg dry weight (Bowen, 1966; Khatamov et al., 1967).

Brar et al. (1970) and Dams et al. (1970) using neutron activation reported concentrations of antimony in Chicago air ranging from 1.4 to 55 ng/m^3 and an average of 32 ng/m^3, respectively.

5.1.3 *Tobacco*

Antimony in cigarettes has been studied by means of neutron activation by Nadkarni and Ehman (1970). The tobacco, on the average, contained 0.1 mg Sb/kg dry weight. The amount of inhaled antimony was estimated to 20%.

5.2 *Working environment*

Air concentrations of antimony in the order of 1–10 mg/m^3 have been reported from different smelter operations. Renes (1953) found average working zone concentrations of antimony ranging from 4.7 to 10.2 mg/m^3 in smelting works. In an abrasives plant studied by Brieger et al. (1954), the average air concentration was 3.0 mg/m^3.

Stibine (SbH_3) was found to have evolved during charging of lead storage batteries in which antimony was a compound of the negative grid (Haring and Compton, 1935).

6 Metabolism

Antimony is considered a non-essential metal.

6.1 *Absorption*

6.1.1 *Inhalation*

Data on respiratory absorption of antimony are lacking.

6.1.2 *Ingestion*

About 15% of a single oral dose of labelled antimony potassium tartrate to mice is absorbed, i.e. recovered in urine and tissues (Waitz et al., 1965). The absorption might, however, be higher since simultaneous gastrointestinal excretion takes place. Thus, Gellhorn et al. (1946), following intraperitoneal administration of antimony potassium tartrate to hamsters, observed a fecal excretion of 50% of the given dose (0.43 mg) in 24 h.

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(Friberg, 1979)

The amount of arsenic ingested daily by humans via food is greatly influenced by the content of seafood in the diet. In a study in the U.S.A., a special diet excluding seafood gave an average intake of 0.04 mg arsenic per person and day, while a more typical diet gave 0.19 mg per person and day (Schroeder and Balassa, 1966). Jelinek and Corneliussen (1977) noted that foods belonging to the meat, fish and poultry group contributed most of the arsenic ingested. They estimated the average daily intake of arsenic from food in the U.S.A. in the early seventies to be 0.01–0.02 mg. This seems to be somewhat low when compared with the excretion of arsenic (see Section 7.2). The daily intake of total arsenic in Japan is reported to be 0.07–0.37 mg per person (Nakao, 1960; Ishinishi et al., 1974).

5.1.2 *Water and soil*

Arsenic

The arsenic content of the earth's crust is generally less than 2 mg/kg (NAS, 1977). Some minerals, e.g. pyrite, may contain as much as 5% arsenic. Uncontaminated soil generally contains less than 40 mg As/kg, whereas contaminated soil may contain several hundreds of milligrams per kilogram (Walsh et al., 1977).

Sea water generally contains 0.001–0.005 mg As/l (Kappanna et al., 1967; Ferguson and Gavis, 1972). The arsenic concentrations of rivers and lakes vary considerably. Most levels are well below 0.01 mg/l, but in some instances they may even be as high as about 1 mg/l (Durum et al., 1971; Sagner, 1973; Andreae, 1978).

Braman and Foreback (1973) and Crecelius (1974) noted several different forms of arsenic in natural waters: arsenate, arsenite, methylarsonic acid and dimethylarsinic acid, the methylated forms generally in lower concentrations than the inorganic ones. Andreae (1978) reported that arsenate is generally the dominant form in sea water.

Clement and Faust (1973) found that about 8% of the total arsenic in well aerated stream water was in the form of As(III), while all of the arsenic in anaerobic reservoirs appeared to be in the form of As(III).

The natural concentration of total arsenic in ground water is dependent on the arsenic content of the bed rock. About 13% of ground water samples from 800 wells in an area in Nova Scotia, Canada, where the arsenic content in the bed rock is high, had concentrations exceeding 0.05 mg As/l (Grantham and Jones, 1977). High carbonate spring waters in California, Romania, Kamchatka in the U.S.S.R., and New Zealand have been stated to contain 0.4–1.3 mg As/l (Schroeder and Balassa, 1966). In Japan concentrations of up to 1.7 mg As/l have been recorded in hot-spring water (Kawakami, 1967). In Cordoba, Argentina, ground water levels of up to 3.4 mg/l arsenic have been reported (Arguello et al., 1938), and in Taiwan, artesian well water has been shown to contain up to 1.8 mg/l (Kuo, 1968).

The chemical form of arsenic in different ground waters is largely unknown. Clement and Faust (1973) found that 25–50% of the total arsenic in a few ground waters was in the form of As(III).

The average daily intake of arsenic via drinking water can probably vary widely depending on the source of the water. McCabe et al. (1970) reported that less than 1% of more than 18 000 community water supplies in the U.S.A. had concentrations exceeding 0.01 mg/l arsenic. With an assumed daily intake of 1.5 l drinking water, a concentration

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5 Environmental levels and exposures

5.1 *General environment*

5.1.1 *Food and daily intake*

Barium content in edible crops ranges from about 10 mg/kg in wheat and corn grain to several grams per kg in brazil nuts (Beeson, 1941). Generally, barium content of food parallels calcium content, in a ratio of $1 : 10^2-10^3$. Expressed as mg Ba/kg Ca, typical values in milk were 45–136; in wheat flour, 1300; and in oatmeal, 2320–8290 (Henderson et al., 1962).

In an American hospital diet the daily intake of barium was estimated at 0.375 mg while in the diet of the general population it may be as high as 1.33 mg (Schroeder et al., 1972). Grummitt (1961) estimated that average dietary barium intake originated 25% from milk, 25% from flour, 25% from potatoes and 25% from miscellaneous high-barium foods consumed in minor quantities, especially nuts.

Barium

5.1.2 *Water, soil, plants and ambient air*

Barium constitutes about 0.04% of the earth's crust, mostly confined to certain rock types. Agricultural soils contain Ba^{2+} in the mg/kg range. Concentration of the element in sea water is 0.006 mg/l and in fresh waters, 0.007–15.0 (average 0.05) mg/l (Schroeder et al., 1972). Municipal waters of the United States ranged 0.0017–0.38 (average 0.043) mg/l and of Sweden, 0.001–0.02 mg/l (Bostrom and Wester, 1967). In urban air, the average concentration was 5 (range 0–1500) ng per m^3 in 18 U.S. cities (Schroeder et al., 1972).

Barium has been found in all biological material where assayed. Marine animals concentrate the element 7–100 times and marine plants 1000 times from sea water. Among land plants, oak, ash, Douglas fir, walnut and particularly brazil nuts are the strongest accumulators of soil barium. Soybeans and tomatoes also accumulate soil barium 2–20 times (Robinson et al., 1950).

5.1.3 *Tobacco*

Barium content of dry tobacco leaves was found as 88–293 mg/kg by McHargue (1913); more recent measurements yielded 24–170 (average 105) mg/kg (Voss and Nicol, 1960). Most of this barium content is likely to remain in the ash during burning. There are no values reported on smoke.

5.2 *Working environment*

The industrial uses of soluble barium are such that hazardous conditions from atmospheric contamination are uncommon. Hyatt (1971) has applied a limit of 0.5 mg Ba/m^3 for a number of years at the Los Alamos Laboratories with satisfactory results for the control of exposure to barium nitrate. It is not known what degree of added safety this limit incorporates.

(Friberg, 1979)

5 Environmental levels and exposures

5.1 *General environment*

5.1.1 *Food and daily intake*

Petzow and Zorn (1974) have recently measured beryllium concentrations in food in Western Germany. They found in polished rice 0.08, in toasted bread 0.12, in potatoes 0.17, in tomatoes 0.24 and in head lettuce 0.33 mg Be/kg substance (dry weight basis). Total intake figures for beryllium have not been published, but may be estimated as around 20 μg/day of which only a minor fraction is intake by inhalation.

5.1.2 *Water, soil, plants and ambient air*

Beryllium

Beryllium occupies the 35th place in the terrestrial abundance list of elements and its overall concentration in the lithosphere is estimated at 5 mg/kg.

Ordinary agricultural soils and natural waters contain beryllium in the μg/kg or μg/l range. In birch, aspen and willow, beryllium content may rise as high as 3 mg/kg (Nikonova, 1967).

Early reports on 'neighborhood cases' of pulmonary berylliosis at a frequency of 1–3% in the general population living within about a mile of the plant (Eisenbud et al., 1949) led to investigations disclosing that beryllium was emitted in the stack gases resulting in ambient concentrations of about 100 ng/m³ around the plant. Average beryllium content of general urban air was reported by Sterner and Eisenbud (1951) as follows: Boston 0.3, New York 0.5, Brookhaven 0.7, Cleveland 1.3, and Pittsburgh 3.0 ng Be/m³. Much of this probably originated from the burning of bitminuious coal, which contains 0.1–3.0 mg/kg of beryllium.

5.1.3 *Tobacco*

In three brands of West German cigarettes, beryllium levels were 0.47, 0.68 and 0.74 μg/cigarette, with 4.5, 1.6 and 10.0% of the beryllium content, respectively, escaping into the smoke during smoking (Petzow and Zorn, 1974).

5.2 *Working environment*

Beryllium production in quantity commenced in the 1930's, and because of the early ignorance regarding its toxicity, no environmental controls were practiced until the late 1940's. Few measurements exist regarding the pre-1950 in-plant levels of beryllium to which workers were exposed, but they are retrospectively estimated as very high. Breslin and Harris (1959) reviewed early reports and concluded that inhalable beryllium in ore treatment rooms, around baking furnaces, in the neighborhood of lathes, or at the sites of fluorescent phosphor blending, milling, and salvaging, must have been around 1 mg/m³.

In 1949, the U.S. Atomic Energy Commission, a major consumer of beryllium products, adopted the first occupational exposure standard at 2 μg Be/m³ which in 1955 was adopted as the ACGIH threshold limit value. This resulted in substantial and widespread improvement of conditions, with average air concentrations in well-monitored plants dropping to below 2 and sometimes to as low as 0.1 μg Be/m³ (Mitchell and Hyatt, 1957). In less well-monitored plants, breathing zone concentrations sometimes were

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(Friberg, 1979)

1974 for 15–20-year-old males (the period of highest caloric intake) have varied between 26 and 61 μg with an average of 39 μg (Mahaffey et al., 1975). In rural 'uncontaminated' areas of Japan the daily cadmium intake has been estimated at 59–113 μg (Japanese Association of Public Health, 1970).

Measurement of cadmium in feces gives an approximate of the daily intake since 90–95% of ingested cadmium remains unabsorbed. Studies performed on this material agree with the range estimated above for daily cadmium intake (Wester, 1974; Tatu et al., 1976; Kjellström et al., 1978). Daily cadmium intake varies with age in a way similar to daily caloric intake (Kjellström et al., 1978).

5.1.2 *Water and soil*

Cadmium

In natural water cadmium is found mainly in bottom sediments and suspended particles, whereas the concentration in the water phase is low. Cadmium concentrations in non-polluted natural waters usually are lower than 1 μg/l. Contamination of drinking water may occur as a result of cadmium impurities in the zinc of galvanized pipes or of cadmium-containing solders in fittings, water heaters, water coolers and taps. Leaking of cadmium to ground water from dumped cadmium oxide sludge has also occurred.

Concentrations up to 16 mg/kg have been reported in fruit juices which had been in contact with cadmium-containing parts in vending machines (Nordberg et al., 1973). Regular drinking water usually does not have concentrations of cadmium exceeding 5 μg/l. Sea water contains between 0.04 and 0.3 μg/l.

Both waterborne and airborne cadmium can cause an increased concentration of cadmium in soil. In non-polluted areas the cadmium concentrations in soil will usually be less than 1 mg/kg. In certain areas of Japan where cadmium pollution has been suspected, levels of between 1 and 69 mg/kg have been found in the top soil of ricefields. The cadmium associated with the epidemic of Itai-itai disease (see below) came mainly from ricefield soil contaminated by cadmium-polluted irrigating water. The use of cadmium-containing sewage sludge and superphosphate as fertilizers in agriculture may also contaminate the soil. Sewage sludge may contain 100 mg cadmium/kg dry weight (Berrow and Webber, 1972). Information concerning the factors determining the uptake of cadmium in plants is scarce, but it has been shown that pH and concentrations of other minerals are of importance (Linnman et al., 1973). Both rice and wheat can take up considerable quantities of cadmium from soil. Chemical treatment of soil can considerably decrease uptake (Takijima and Katsumi, 1973; Takijima et al., 1973; Kobayashi et al., 1974).

5.1.3 *Ambient air*

Cadmium in ambient air occurs in particulate form. Its exact chemical form has seldom been reported but it is probable that cadmium oxide is an important part.

Annual averages during 1969 in larger cities of the U.S.A. ranged from 0.006–0.036 μg/m³ (National Air Sampling Network, U.S.A., see Friberg et al., 1974). In European countries, urban values of 0.002–0.05 μg/m³ have been reported. In Tokyo, mean values over several months varied from 0.01 to 0.053 μg/m³. In nonurban areas lower values were found, 0.001–0.003 μg/m³. Higher values, weekly means of 0.2–0.6 μg/m³, have been recorded around certain cadmium-emitting industries (Friberg et al., 1974). Cad-

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(Friberg, 1979)

5 Environmental levels and exposures

5.1 *General environment*

5.1.1 *Food and daily intake*

The daily intake of chromium from food has been estimated to be in the range of 0.03–0.1 mg (Schlettwein-Gsell and Mommsen-Straub, 1973). Since other sources contribute only minor amounts in relation to these values they represent also en estimate of the total daily intake of chromium for the general population. Food items vary considerably in concentration of chromium. Among large sources are meat, vegetables and unrefined sugar, while fish, vegetable oil and fruits contain smaller amounts. Values are reported from non-detectable to about 0.5 mg/kg wet weight for various food items.

The glucose tolerance factor is predominantly found in yeast, liver and meats. Of all forms of chromium, this has the highest biological availability to man.

5.1.2 *Water, soil and ambient air*

The chromium concentration in rivers and lakes is usually between 1 and 10 μg/l, that in sea water being considerably less, from <0.1 to about 5 μg/l (NAS, 1974). Municipal drinking water has been reported to contain higher amounts of chromium than river water.

Soil content ranges from trace to 250 mg/kg with occasionally higher values. The average chromium concentration in the earth's crust is 125 mg/kg. Chromium in phosphates used as fertilizers may be an important source of chromium in soil, in water, and in some foods.

Urban air concentrations of chromium have been reported from less than 10 ng/m³ up to about 50 ng/m³. Annual mean values for rural stations seldom reached 10 ng/m³ (NAS, 1974).

5.1.3 *Tobacco*

Cigarettes have been reported to contain 390 μg/kg of chromium (Schroeder et al., 1962), but no estimates of the inhaled amount from smoking have been published.

5.2 *Working environment*

Potentially hazardous exposures are incurred in the production of dichromate, in the use of chromates in the chemical industry, in the stainless steel industry, in the production and use of alloys, in refractory work, and in the chromium plating industry.

In the last-mentioned industry, the health hazard is related to the chromium-containing mist. Chromium exposure in welders may constitute a health hazard, both because chromium is an important constituent in stainless and acid-stable steel, and because chromate is extensively used in anticorrosive paints (Ruf, 1970; Gylseth et al., 1977).

Chromium levels in industry have been reported to only a limited degree. Mancuso (1951) reported exposure levels up to 1 mg/m³ of chromium in a chromate plant. Most values were in the range of 0.26–0.51 mg/m³. A 5-day, 8-h mean value of 1.35 mg/m³ of chromates in air was reported for a sack-filling operation in an old chromate plant by

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(Friberg, 1979)

intake of cobalt is 5–45 μg (Harp and Scouler, 1952; Ripak, 1961; Hubbard et al., 1966; Wester, 1974a; Schleutz, 1977). Whilst there is reason to believe that these values represent an average normal daily intake, some contradictory data, showing considerably higher values, have emerged in some studies employing emission spectroscopy and AAS (Tipton et al., 1966; Schroeder et al., 1967). Certain seafoods contain higher than average concentrations of cobalt (Schroeder et al., 1967).

In 15 commercial beers analyzed by Stone (1965) using a colorimetric method, cobalt usually measured well below 0.1 mg/l unless the metal had been added in processing, up to 1.1 mg/l being recorded in such cases.

5.1.2 *Water, soil and ambient air*

Drinking water has shown low concentrations of cobalt, usually between 0.1–5 μg/l (Schroeder et al., 1967; Punsar et al., 1975). In inland waters, about the same concentrations will be found (Nix and Goodwin, 1970; Paus, 1971). Sea water has been shown to contain less cobalt than fresh water (Vinogradova and Prokhorova, 1968; Piper and Goles, 1969).

In U.S. soil, cobalt ranges from 0.1 to 13 mg/kg (Schroeder et al., 1967).

In ambient air the concentration of cobalt is usually low. Tabor and Warren (1958) found detectable amounts of cobalt (>0.3 ng/m^3) in only 90 out of 750 air samples taken from 28 sampling stations in the U.S., using a semiquantitative spectrographic method. Using neutron activation, Brar et al. (1970) found cobalt in Chicago air ranging from 0.3 to 23 ng/m^3.

5.1.3 *Tobacco*

Cobalt in cigarettes has been studied by means of neutron activation by Nadkarni and Ehmann (1970). The tobacco, on an average, contained 0.5 mg Co/kg dry weight. When the cigarettes were smoked in a standard smoking machine, 0.5% was found in the mainstream.

5.2 *Working environment*

Cobalt may be released into the air during the production of cobalt oxide and in the processing of hard metals. From the U.S.S.R., Kaplun (1963) reported occupational air concentrations reaching 10 and even 100 mg/m^3 in a cobalt oxide plant. The highest average in a tungsten carbide industry studied by Fairhall et al. (1949) was 1.7 mg/m^3.

6 Metabolism

Cyanocobalamin or vitamin B_{12}, a cobalt-containing tetrapyrrolic ring, is essential in mammalian nutrition. The recommended daily intake of B_{12} for an adult is 3 μg, corresponding to 0.12 μg of cobalt (Food and Nutrition Board, 1974). Ruminant animals in contrast to man and some other monogastric mammals have intestinal microflora which utilize cobalt in the formation of vitamin B_{12}. Deficiency states among ruminants have

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(Friberg, 1977)

5 Environmental levels and exposures

5.1 *Food and daily intake*

The daily intake of copper from food generally varies from about 1 to about 3 mg, corresponding to about 15–45 μg/kg b.w. in adults (Adelstein and Vallee, 1961; Schroeder et al., 1966; Tipton et al., 1966, 1969; Robinson et al., 1973; Alexander et al., 1974; Klevay, 1975). Some low-protein and low-calorie diets may give less than 1 mg (Klevay, 1975). The daily requirements have been estimated to be about 30 μg/kg b.w. for adults, 40 μg/kg b.w. for older children and 80 μg/kg b.w. for infants (WHO, 1973). Meat, internal organs, fish and green vegetables are good sources of copper.

Cereals contain less copper and milk is relatively poor in copper (WHO, 1973). Concentrations in food are generally around 1 mg/kg. Copper-poor items such as milk usually contain less than 0.1 mg/kg.

5.2 *Water, soil and ambient air*

In seawater, most reports have indicated concentrations from 1–5 μg/l (Abdullah et al., 1972; Rojahn, 1972; Preston et al., 1972). In American rivers concentrations ranging from 0.83 to 105 μg/l (median 5.3) have been reported (Durum et al., 1971). In drinking water very large variations may occur depending on type of water, e.g. hardness and pH, and types of pipes and taps. Concentrations from a few μg to more than 1 mg/l have been reported (Schroeder et al., 1966; Stegavik, 1975), meaning that drinking water may sometimes add a considerable amount of copper to the daily intake obtained via food. Natural copper concentrations in soil vary from 2 to 100 mg/kg dry weight (Bowen, 1966). Air levels of copper in the U.S. have been reported to vary from 10–570 ng/m^3, the highest values being found in urban areas (Schroeder, 1970; Kneip et al., 1970). At the South Pole the average copper concentration in air was 0.036 ng/m^3 (Zoller et al., 1974).

6 Metabolism

6.1 *Absorption*

6.1.1 *Inhalation*

There are no data on absorption rates of copper compounds after inhalation from animal or human studies.

6.1.2 *Ingestion*

The gastrointestinal absorption is normally regulated by the copper status in the body. Studies using radioactive copper on rats indicated that small doses (<1 μg) were absorbed to more than 50%, but that increasing doses were absorbed to a relatively lesser extent (Owen, 1964). In contrast to most other metals copper seems to be absorbed to a large extent in the stomach, as shown in rats (Van Campen and Mitchell, 1965).

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(Friberg, 1977)

exceeded 50 μg/l, the U.S. Public Health Service standard (NAS, 1972). This is supported by Durfor and Becker (1964) who found that lead in water supplies in about 100 large American cities ranged from trace amounts to about 60 μg/l. However, when lead pipes or tanks are used and the water is soft, lead concentrations may be so high (up to 3000 μg/l, Goldberg, 1974) as to cause lead poisoning (Beattie et al., 1972). Plastic pipes containing lead stearate may also contaminate drinking water (WHO, 1977).

Surface water usually contains lead in concentrations below 100 μg/l (Kopp and Kroner, 1970) and in unpolluted areas in the range of about 1 μg/l (Zukovickaja et al., 1966). A recent survey of the rivers in the Midi-Pyrenees region, France, showed mean dissolved lead concentrations of about 7–10 μg/l (Servant, 1973). Lead concentration in deep ocean water is about 0.01–0.02 μg/l, but in surface ocean water 0.3 μg/l (Chow and Patterson, 1966).

5.1.3 *Soil and plants*

The natural concentration of lead in soil is in the range of 2–200 mg/kg (NAS, 1972) with mean values of about 16 mg/kg, but the variation from one location to another is considerable (Waldron and Stöfen, 1974). The concentration of lead in street dust and surface soil may sometimes be extremely high and represents a hazard to children. For example, the mean lead concentration in street dust from residential and commercial areas in 77 Mid-Western cities in the U.S.A. amounted from about 1600 to 2400 mg/kg (NAS, 1972), and Kennedy (1969) reported that lead in soil near a lead mining area in Idaho reached 20 000 mg/kg.

Grass samples may show high lead concentrations near roads with heavy traffic, the mean values ranging from about 250 mg/kg at the roadside to about 100 mg/kg at a distance of 25 m (NAS, 1972). This is mostly due to external contamination, because the uptake of lead by plants from soil does not seem to be influenced much by the concentration of lead in soil (Ter Haar, 1970).

5.1.4 *Ambient air*

The lead concentrations in ambient air range from about 0.02 μg/m³ to about 10 μg/m³ (means of 24-h samples) (Waldron and Stöfen, 1974; Tepper and Levin, 1975; Tsuchiya et al., 1975). These figures do not necessarily indicate the exposure throughout the entire year and the sampling sites were not all at the same distance from the ground. A good picture of lead concentration in ambient air is obtained from the data collected in 1971–1972 in a number of European cities, as shown in Table 1. In contrast, the lead concentrations in air above the north-central Pacific Ocean and south Indian Ocean are on the order of 0.001 μg/m³ (Chow and Bennet, 1969; Egorov et al., 1970).

5.1.5 *Special exposures*

Concentrations of lead in whiskey illicitly distilled using old car radiators ('Moonshine') may be above 1 mg/l, and there are reports of chronic poisoning from this source (Patterson and Jernigan, 1969; Whitfield et al., 1972). Wine is another possible source of lead intake for some people. In some wines the average concentrations ranged from 130 to 190 μg/l (Boudène et al., 1975).

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(Friberg, 1979)

Alloys with other metals are used in electrical industry and for ship propellers. Manganese dioxide is used for dry cell batteries. The chemical industry uses manganese compounds for many different purposes. The organic compound MMT has been suggested as a substitute for lead in gasoline.

5 Environmental levels and exposure

5.1 *General environment*

5.1.1 *Food and daily intake*

Daily intake of manganese from food varies considerably in different areas of the world. Intakes from 5.8 to 12.4 mg have been reported from various regions in India (Soman et al., 1969), whereas in New Zealand (Guthrie and Robinson, 1977), the U.S. (Schroeder et al., 1966; Greger et al., 1978), Canada (Méranger and Smith, 1972; Srivastava et al., 1978) and West Germany (Schelenz, 1977) average intake by adults has been estimated from 2.7 to 4.1 mg/day. In West Germany the daily intake for children 3–5 years old averaged 1.4 mg and for children 9–13 years old 2.18 mg/day (Schlage and Wortberg, 1972).

The highest manganese concentrations are found in some foods of plant origin, especially wheat and rice, where concentrations between 10 and 100 mg/kg have been reported (Schroeder et al., 1966; Guthrie, 1975). Polished rice and wheat flour contain less since most manganese is in the bran. High concentrations have also been found in tea leaves. Eggs, milk, fruits and meat generally contain less than 1 mg/kg. Peas and beans contain a few mg/kg (Guthrie, 1975). In a Canadian study by Méranger and Smith (1972) it was estimated that of a total intake of 4.1 mg, 2.2 mg (54%) came from cereals. The second largest source was potatoes, which gave 0.6 mg (14%), whereas meat, fish and poultry only provided 0.1 mg (2%). Thus, variations in manganese intake can to a large extent be explained by differences in nutritional habits. In populations with cereals and rice as main sources of food, the intake will be higher compared to areas where meat and dairy products take up a larger part of the diet. The manganese intake can also be higher in populations with a high tea consumption. WHO (1973) has estimated an intake of 2–3 mg of manganese per day to be adequate.

5.1.2 *Water, soil and ambient air*

Concentrations of about 2 μg/l have been reported in sea water (Goldberg, 1965; Shigematsu et al., 1975), whereas concentrations in fresh water vary from less than one to several hundred μg/l (Durum and Haffty, 1961; NAS, 1973; Shigematsu et al., 1975). Drinking water generally contains less than 100 μg/l. In 100 cities in the U.S. the median level was 5 μg/l (Durfor and Becker, 1964).

In soil the average manganese content has been reported to be 600–900 mg/kg, with variations from 1 to 7000 mg/kg depending on geological background, mining activities, etc. (NAS, 1973; WHO, 1979).

In ambient air, background corrections of 0.05 to 5.4 ng/m^3 over the Atlantic Ocean

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photometry and arrived at an estimate of 258 μg/day, which agrees very well with the data by Nodiya. Since the absorption of nickel is very low, 258 μg/day probably correspond to the daily intake as well. These data also agree fairly well with the earlier estimate by Schroeder et al. (1962). In a recent study, Myron et al. (1978) determined the nickel content of nine institutional diets in the U.S. and calculated an average intake of 165 μg. The average content per 1000 kcal was 75 μg.

5.1.2 *Water, soil and ambient air*

The nickel concentration in sea water usually ranges from 0.1 to 0.5 μg/l. Nickel has seldom been identified in ground water. In U.S. drinking water, 97% of all samples (n = 2053) contained less than 20 μg Ni/l, while about 80% had less than 10 μg Ni/l. In exceptional cases, values up to 75 μg/l were found (NAS, 1975). In areas where nickel is mined, as much as 200 μg Ni/l has been recorded in drinking water (McNeely et al., 1972). It seems reasonable to conclude that drinking water contributes less than 10 μg to the daily intake of nickel in most areas.

Farm soil around the world contains from 3 to 1000 mg Ni/kg. The wide range depends on the mineral content of the top soil (NAS, 1975).

In the U.S. average ambient air levels of nickel have been reported to be 6 ng/m³ in non-urban areas, whereas in urban areas a yearly average of 25 ng/m³ was found during the cold season and 17 ng/m³ during the warm season. The highest values were found in heavily industrialized areas and in large cities, e.g. New York, which had a yearly average value of around 150 ng/m³ (NAS, 1975). Nickel occurs in both coal and oil. Concentrations of up to 20 mg/kg have been reported (NAS, 1975).

5.1.3 *Tobacco*

In cigarettes Sunderman and Sunderman (1961) and Szadkowski et al. (1969) found an average nickel content of 2.2 and 2.3 μg per cigarette, respectively, with a range of 1.1–3.1. The latter authors also showed that 10–20% of the nickel in cigarettes was released into the main stream smoke, most nickel was in the gaseous phase. It is not yet known in what form nickel occurs in the main stream smoke, but some data indicate that it might be nickel carbonyl (Stahly, 1973). Pipe tobacco, cigars, and snuff have been reported to have nickel levels of the same magnitude as in cigarettes (NAS, 1975).

5.2 *Working environment*

Norseth (1975) measured nickel concentrations in various parts of a nickel refinery. In the roasting and smelting department, the average level was 1.3 mg/m³, whereas in the electrolysis department it was 0.4 mg/m³. In 2 other industries average levels of 0.11 and 0.6 mg/m³ were found in the electrolysis departments (NIOSH, 1977). In a factory producing cadmium–nickel batteries Friberg (1950) found that the nickel concentration in air varied between 10 and 150 mg/m³. After installation of exhaust equipment, the concentration dropped to 0.2–0.3 mg/m³.

NIOSH (1977) has compiled data on nickel concentrations in alloy industries, welding operations, battery production, etc. The range is fairly wide, from a few micrograms per m³ to several milligrams per m³.

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LeRoy
Callender
PC

PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

APPENDIX D:

USGS 7.5' SERIES
TOPOGRAPHIC MAPS
FOR
AMITYVILLE
HUNTINGTON
GREENLAWN, &
BAY SHORE WEST
QUADRANGLES
(1979)

(Will be submitted later)

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ATTACHMENT 2

SITE ASSESSMENT PHASES

1. PRELIMINARY ASSESSMENT/RCRA PRELIMINARY ASSESSMENT

   * Quick, Low Cost Review of Readily Accessible Records and Reports

   * Undertaken to Determine the Existence of a Problem and the Need for Further Action at a Site by Characterizing:
     - Magnitude of the Hazard
     - Source and Nature of the Release or Potential Release
     - Identity of Potentially Responsible Party(s) (PRP)

   * Does Not Include On-Site Visits or Sample Collection

2. SITE INSPECTION

   * The Purpose of the Site Inspection is to:
     - Determine the Necessity of Further Action
     - Further Define and Characterize the Problem
     - Provide Data for the Hazard Ranking System (HRS) Scoring and Compute Initial Score

   * The Site Inspection Involves an On-Site Visit and Sampling (10+/- Samples)

   * A Site Inspection is not an Extent of Contamination Study

   * A Site Inspection Avoids Use of More Sophisticated Analysis
     - Geophysical Survey

3. SITE INSPECTION PRIORITIZATION

   * Quick, Low Cost Review of Readily Accessible Records and Reports

   * Undertaken to Determine the Validity and Update Background Conditions Under the New HRS Model, and the Need for Further Action at a Site by Characterizing:
     - Magnitude of the Hazard
     - Source and Nature of the Release or Potential Release

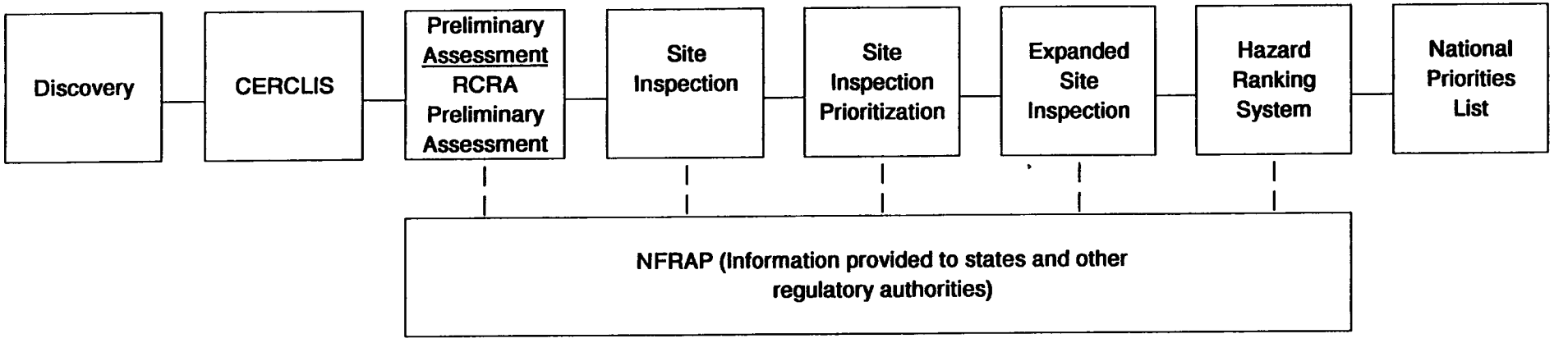
   * Included On-Site Visits or Sample Collection
     - Analyze Samples/Limited Analytical Resources
     - Account for Significant Safety Hazards On-Site

4. EXPANDED SITE INSPECTION

   A Follow-Up Inspection May Be Recommended After the SI To:

   * Gather Additional Data Necessary to Strengthen or Substantiate the Initial HRS Score
     - Geophysical Surveys
     - Installation of Groundwater Monitoring Wells
     - Additional Sampling

SITE ASSESSMENT PHASES

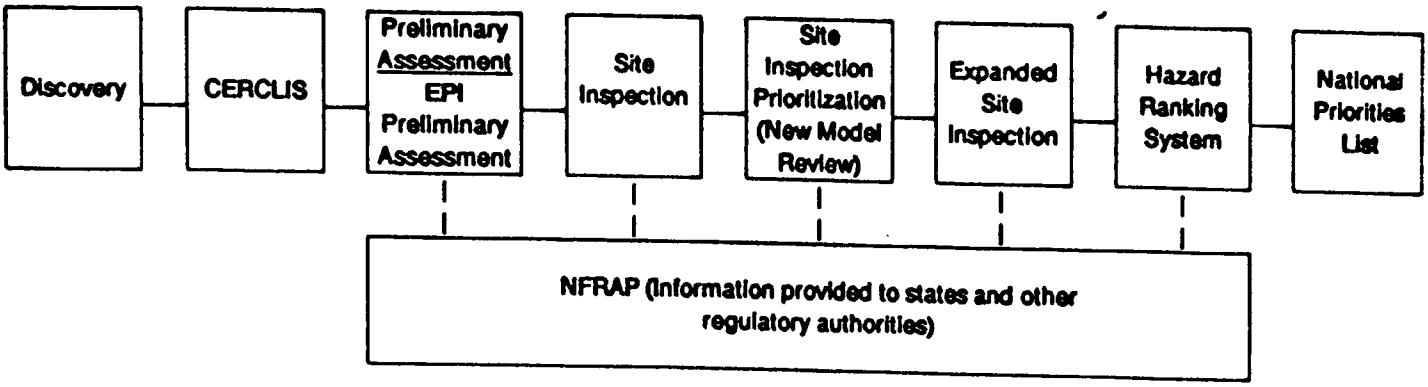


Review of Analytical Data

If previous analytical data are available, they should be reviewed for information which supports the design of the sampling and analysis program, tests site hypotheses, and documents the site score. The SI investigator should review all previous analytical data. While analytical data collected for other purposes may not meet SI objectives, site-specific analytical data are generally helpful in better understanding the nature of the problem at the site, regardless of data sources or data quality. The depth of the review depends on the overall quality and quantity of data, the intended use of the data, and whether they are representative of current site conditions and comparable to SI data. Determining whether available data can be applied as SI-generated data requires the professional judgement of an experienced reviewer. Both validated and non-validated analytical data may be available. Previous SI data will be validated and of CLP-quality. Non-validated data may contain false positives and false negatives, as well as quantitation, transcription, and calculation errors. If data of unknown or questionable quality are used for decision-making, the investigator should review all available information to assess the level of certainty associated with the data. If these data are used for HRS documentation, data validation may be necessary. The investigator may be able to determine the general quality of the data set by reviewing QC data. False positives can occur when blanks are contaminated or spike recoveries are very high. False negatives can occur if spike recoveries are very low. If hazardous substances are found in one duplicate but not the other, results may be false positive or negative.

ATTACHMENT B

SUPERFUND SITE ASSESSMENT PROGRAM



SITE ASSESSMENT REPORTS

1. **PRELIMINARY ASSESSMENT**
   - Quick Review of Readily Accessible Records and Reports
   - Undertaken to Determine the Existence of a Problem and the Need for Further Action at a Site by Characterizing:
     - Magnitude of the Hazard
     - Source and Nature of the Release or Potential Release
     - Identification of Targets
   - Does Not Include Sample Collection
2. **SITE INSPECTION**
   - The Purpose of the Site Inspection is to:
     - Further Define and Characterize the Problem
     - Provide Data for the Hazard Ranking System (HRS) Scoring and Compute Initial Score
     - Identification of Targets
     - Determine the Necessity of Further Action
   - The Site Inspection Involves an On-Site Visit and Sampling (10+/- Samples)
   - A Site Inspection is not an Extent of Contamination Study
3. SITE INSPECTION PRIORITIZATION
   - Quick Review of Readily Accessible Records and Reports
   - Undertaken to Determine the Validity and Update Background Conditions Under the New HRS Model, and the Need for Further Action at a Site by Characterizing:
     - Magnitude of the Hazard
     - Source and Nature of the Release or Potential Release
   - Included On-Site Visits or Sample Collection as needed
     - Analyze Samples/Limited Analytical Resources
     - Account for Significant Safety Hazards On-Site
4. EXPANDED SITE INSPECTION

   A Follow-Up Inspection May Be Recommended After the SI To:
   - Gather Additional Data Necessary to Strengthen or Substantiate the Initial HRS Score
     - Geophysical Surveys
     - Installation of Groundwater Monitoring Wells
     - Additional Sampling

Review of Analytical Data

If previous analytical data are available, they should be reviewed for information which supports the design of the sampling and analysis program, tests site hypotheses, and documents the site score. The SI investigator should review all previous analytical data. While analytical data collected for other purposes may not meet SI objectives, site-specific analytical data are generally helpful in better understanding the nature of the problem at the site, regardless of data sources or data quality. The depth of the review depends on the overall quality and quantity of data, the intended use of the data, and whether they are representative of current site conditions and comparable to SI data. Determining whether available data can be applied as SI-generated data requires the professional judgement of an experienced reviewer. Both validated and non-validated analytical data may be available. Previous SI data will be validated and of CLP-quality. Non-validated data may contain false positives and false negatives, as well as quantitation, transcription, and calculation errors. If data of unknown or questionable quality are used for decision-making, the investigator should review all available information to assess the level of certainty associated with the data. If these data are used for HRS documentation, data validation will be necessary. The investigator should be able to determine the general quality of the data set by reviewing QC data for evaluation under the Superfund Program.

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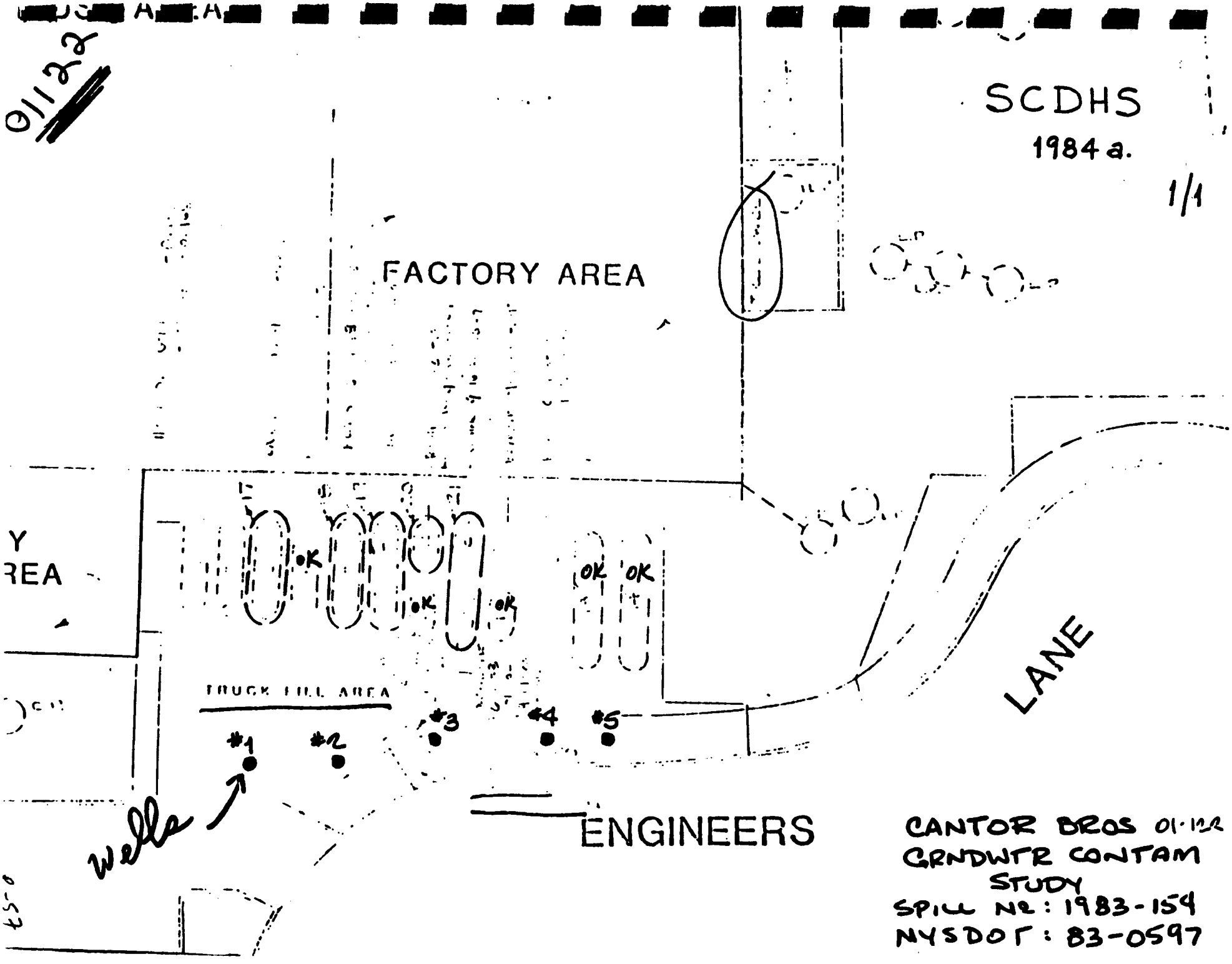

CANTOR BROS 01-122
GRNDWTR CONTAM
STUDY
SPILL NO: 1983-154
NYSDOT: 83-0597

TITLE:	FOUR-MILE VICINITY MAP
SITE NAME:	CANTOR BROTHERS, INC. EAST FARMINGDALE, TOWN OF BABYLON, NY
DATE: 03/03/92	SCALE: 1" = 2000'
REPORT NUMBER:	YO30-SP
USGS TOPO NAME:	HUNTINGTON, NEW YORK