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



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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.

Remediation

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LeRoy
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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:

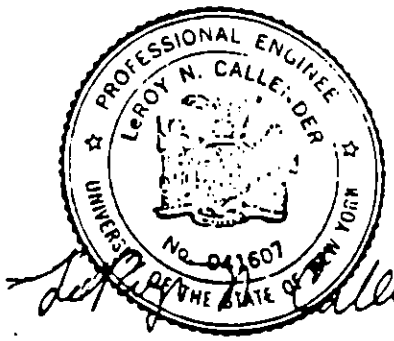
NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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.

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PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

VOLUME III

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* * *

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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.

SCDHS

1982 a

1/2

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
65 JETSON LA., P.O. BOX G, CENTRAL ISLIP, N.Y. 11722
(516) 234-2622

NAME OF FACILITY: Canton Bros Inc	OWNER/ OFFICER: PRES CANTOR SEC. MARTIN CANTOR		PAGE 1 OF
COMPANY NAME: S/A/A	CONTACT: S/A/A		TEL. 6946666
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			(PERIODIC)						

INDUSTRY: Distributor of Paint Solvents

PDES OR PDES PERMIT? YES NO	PERMIT NO.	360 PERMIT? YES NO	PERMIT NO

SCAVENGER

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	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
SAVE 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 set cause of building (unlisted substance) into storm drain
③ 5000 gal tank truck back stored in parking lot containing Creosote
④ 35/55 gal type 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 50/55 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

SW-155: 6/81

Items i, l, z 5/81 TJK

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 noted
① 16/55 gal drums stored by east door
② 47/55 gal drums containing white fluid stored in front of east door (met miller stated contents wash water from mixing vats
③ Green tanker truck back east side of building met Miller stated contained creosote and fuel oil Pitting from truck to building was leaking.
The documents were delivered to met miller
① copy of 6/2/82 inspection report
② Receipt copy of Certified 12 date 7/20/82
③ Seavenger Permit from State of New York
④ List of Tank testing contractors.

SCDHS

1982 b 1/2

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
65 JETSON LA., P.O. BOX G, CENTRAL ISLIP, N.Y. 11722
(516) 234-2622

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

DOES OR DOES PERMIT? NOT APPLICABLE (YES / NO) PERMIT NO. | 360 PERMIT? NOT APPLICABLE (YES / NO) PERMIT NO

SCAVENGER: HOME USED

SCAVENGER APPROVED: NOT APPLICABLE (YES / NO) | PICK UP RECORDS AVAILABLE: NOT APPLICABLE (YES / NO) | RECORDS CONSISTENT WITH EXPECTED WASTE GENERATION: NOT APPLICABLE (YES / NO)

TEL: NOT APPLICABLE

HEATING SYSTEM - MFG NAME | FUEL TYPE | FIRING RATE

[redacted]

FIRM 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

(1) IS SOLVENT TANKS IN FRONT LAWN } NOT REQUIRED
1 FUEL TANK WEST SIDE OF PROPERTY } TANK TEST BY 12/82

(2) WHITE SUBSTANCE SPILLED FROM SOUTH EAST CORNOR OF BUILDING INTO STORM DRAIN.

(3) 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 SUMPS, DRYWELLS, 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: Bruce C Stark

5/81 TJK

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

1/5

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

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.

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

1982 C

Mr. Matthew Miller
Cantor Bros., Inc.

Aug. 30, 1982

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

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

FOR THE RECORD

SCDHS
1983a

1/14

CANTOR BROS. INC (694-6666)
ENGINEERS LANE, FARMINGDALE
20 APRIL 83 9^00 AM

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 MSSRS. 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

18-234: 2/82

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 creosote 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 creosote. (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 Fiorenberg at the Cantor Bros site at approximately 8^30 am. At this time it was noted that:

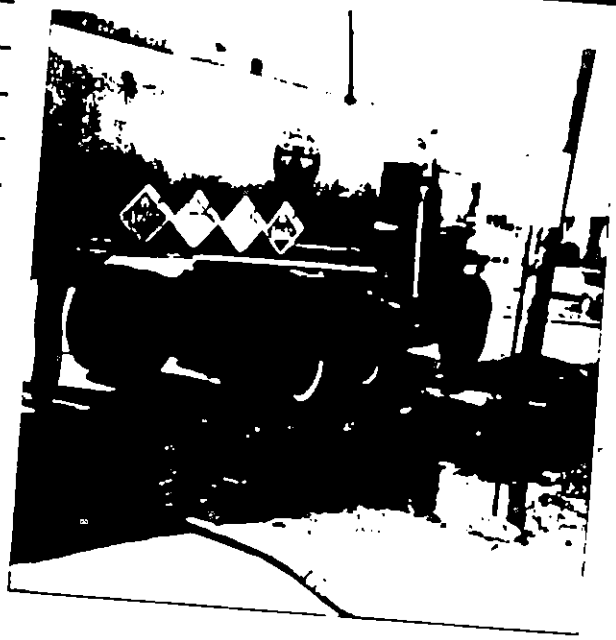
① A tanker truck was making a delivery at the fill station in front of the building. Black 5 gallon pails were being used for containment of spillage. (Delivery truck labeled (1255) (According to hazardous material manual, 1255 is identified as NAPTHA) (See Photos

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

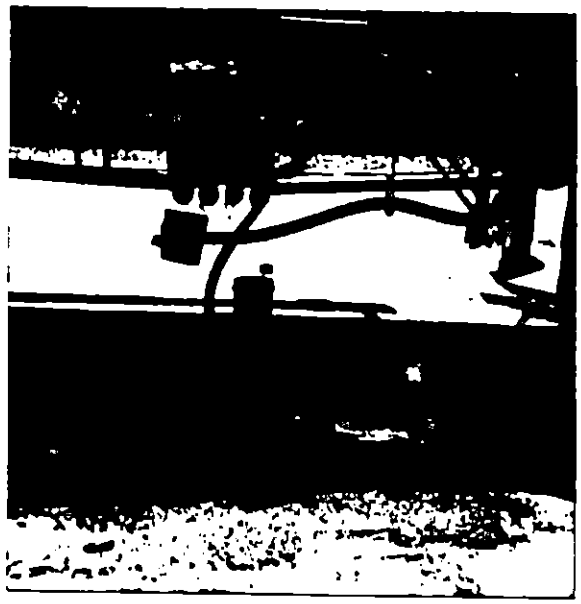
1983 a

(1JT421, 2JT421, 3JT421)

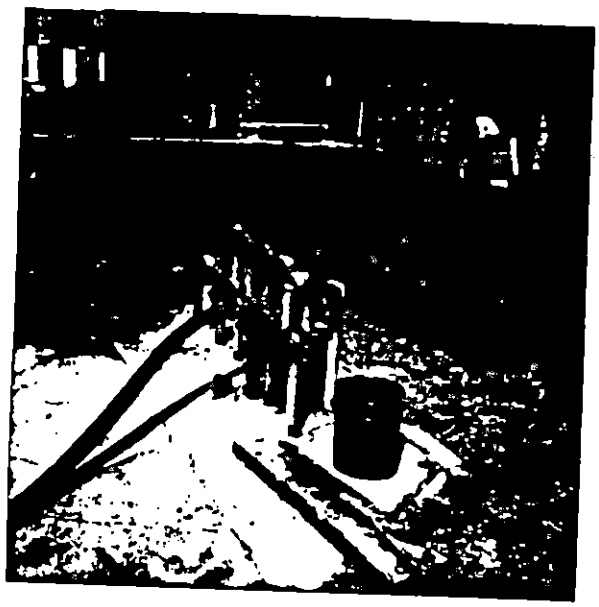
3/14



(1JT421)



(2JT421)



3JT421

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS

1983 a

4/14

② evidence of inground tanks noted on front lawn. (4JJ421 PHOTO)
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)
⑩ Inspected site around storm drain & noted there had obviously been a spill. Clean fill had been placed over ground apparently saturated with a "solventy smelling

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 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.

18-34 2/82

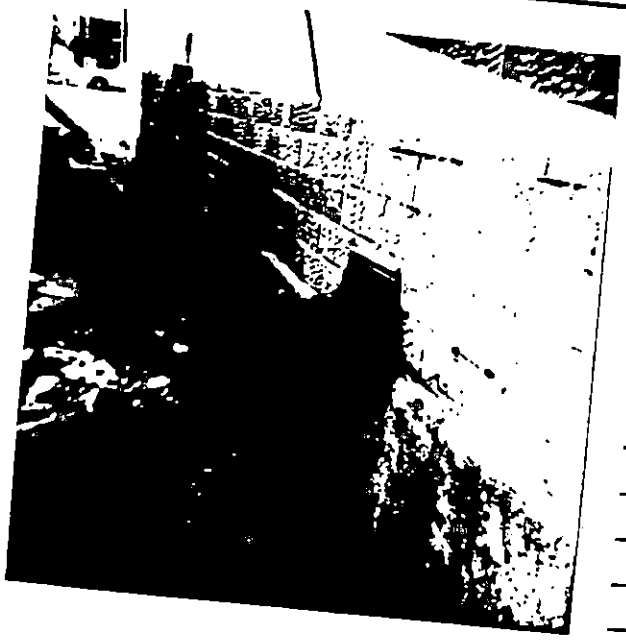
1983



5JJ421



6JJ421



7JJ421



xJJ421



9 JJ421



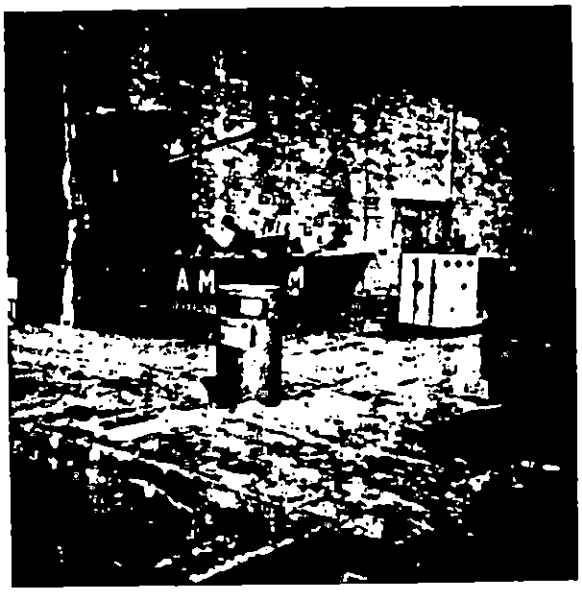
1983 a

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 COOS (Receptionist)

On (date, time) 21 APRIL 83 9^45 AM

TAKE NOTICE THAT, on 21 APRIL 83 at 945 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:

C 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

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL 1983 a

NOTICE OF VIOLATION 10/14

Issued to (Company) CANTOR BROS INC
(address) EAQUEERS LA, FARMD
delivered to LIA CONS (Receptionist)
On (date, time) 20 APRIL 83 9°°AM

TAKE NOTICE THAT, on 20 APRIL 83 at 9°° in the (fore) noon, at the location of EAQMEERS LA, FARMD
you were found to be in violation of Article 12 Section 1217 of the Suffolk County Sanitary Code in that:

① DOTED 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]

SUFF COUNTY DEPARTMENT OF HE[illegible] 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)

at the time [illegible] 9:00 AM.

TAKE NOTICE THAT, on 20 APRIL 23 at 9:00 in the forenoon, 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]

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 [signature]

18-1-

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 Cons (Receptionist)

On (date, time) 20 April 83 9°° am

TAKE NOTICE THAT, on 20 April 83 at 9°° 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

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1983 a

13/1.

NOTICE OF VIOLATION

Issued to (Company) CASTOR 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 ② NO IMPERVIOUS CONTAINMENT ③ UNPROTECTED FROM VANDALISM, UNAUTHORIZED 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 Joanne Johnson

18-148: 5/81

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:

A 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

...DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
35 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4833

Date _____ Art XII Waste Sample _____
Air _____ File _____

NAME OF FACILITY: CANTOR BROTHERS INC	OWNER/ OFFICER: M. Miller		
COMPANY NAME	CONTACT		PAGE 1 OF
ANT 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 | FIRING RATE

#2 Fuel

NCIN. NAME | WASTE BURNED | RATE

RUM STORAGE (YES) NO NUMBER STORED OVER 200 (INDOORS) OUTDOORS TYPE OF MATERIAL STORED WASTE (RAW)

TORAGE TANKS (YES) NO NUMBER OF TANKS ABOVEGROUND ≈16 READ BACK UNDERGROUND ≈15 TYPE OF MATERIAL STORED WASTE (RAW)

PEN ROCESS 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 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.

SPECTION SCHEDULED ON OR AFTER _____. FAILURE TO CORRECT UNSATISFACTORY CONDITIONS BY REINSPECTION DATE MAY ULT IN A HEARING AND/OR FINE.

OF PERSON RE[illegible]T.	TITLE	INSPECTOR
Marlene J. Miller	Gen. Mgr.	JoAnne Johnson

5/81 TJK 1/12

SCDHS
- 1983 b&c...

INDUSTRIAL WASTE PROCESS

PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE	DISCHARGE TO
North Side of Bldg. All Storage of Finished Product			
6x Mixing Liquids	4x150 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 Filler Machine	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 Linseed, Poly Butene	N/A	N/A
1x 3000 GAL Creosote Tank			

1983 b4c 2/12

CONTINUED - INSPECTIONS OBSERVATIONS OR VIOLATIONS

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 CARNIVAL PETROCHEMICAL (MITCHEL ELSDER) 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 CARNIVAL but states that any ART. 12 correspondence should be directed to Mr ELSDER. 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

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 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.

(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)

CONTINUED: INSPECTORS OBSERVATIONS OR INTERVIEWS 1983 64C

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

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

APR 27 1983

1983 b & c

7/12

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 NYA

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 OR LISTING OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS

HANDLING METHOD

1	T	10	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 01 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

TSD Facility—FILL OUT Transporter—FILL OUT

14-1 (11/80)

1983 b&c

8/12

e cover sheet for instructions

PLEASE TYPE

Part A:

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
HAZARDOUS WASTE MANIFEST

DOCUMENT NO. NY 103036

GENERATOR NAME: CANTOR BROS., INC. PHONE: 516-694-6666 EPA ID NO.: NY D 1 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 0 7 5 7 8 8 3 1

SITE ADDRESS: 375 DUNTON 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
2	CREOSOTE RESIDUE	COMBUSTIBLE	NA 1993	01	1 1 1 1 2	D	0 0 9	D P		
4										

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: NY 1 A 0 4 1

DATE SHIPPED: 1 2 (Mo.) 0 2 (Day) 8 2 (Yr.)

EXPECTED ARRIVAL DATE: 1 2 (Mo.) 0 3 (Day) 8 2 (Yr.)

DATE RECEIVED: (Mo.) (Day) (Yr.)

COPY 3 Generator--Retained by Generator

ECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

1983

9/12

ENERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were ...ned 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.

ERATOR'S SIGNATURE

...attlew J. ...illor
Type name also

DATE SHIPPED: 8 12 83 (Mo. Day Yr.)

EXPECTED ARRIVAL DATE: 8 12 8 13 8 12 (Mo. Day Yr.)

PORTER NO. 1 SIGNATURE "To the best of my knowledge the con- ... the shipment I have accepted for transport conforms with the ...ion 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

ORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

GEN EPA ID#

ORTER NO. 2 SIGNATURE "To the best of my knowledge the contents ...pment I have accepted for transport conforms with the description on ...fest"

TRANSPORTER NO. 2 PERMIT NUMBER

DATE DELIVERED: Mo. Day Yr.

DATE RECEIVED: Mo. Day Yr.

ATER NO. 2 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED: Mo. Day Yr.

NT STORAGE OR DISPOSAL FACILITY INDICATION OF ANY DIFFERENCES BETWEEN MANIFEST AND SHIPMENT ...G OF REASONS FOR AND DISPOSITION OF REJECTED MATERIALS

HANDLING METHOD

1	T	W	2		
3			4		
5			6		

...T STORAGE OR DISPOSAL FACILITY SIGNATURE "Upon visual in- ...rtify that the contents of this shipment conform with the descrip- ...nifest except those discrepancies noted on this form."

SIGNATURE

Please print or type name also

DATE RECEIVED: Mo. Day Yr.

...ergency or spill immediately call the National Response Center ... the N.Y. Department of Transportation (518) 457-7362.

DOCUMENT NO. NY 10303

COPY 5 Transporter No. 1—Retained by Transporter No. 1

sheet
structions
EASE TYPE

7531 1983b4

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 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 DURTON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

TRANSPORTER NO. 2 PHONE

SITE ADDRESS

TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: CHR 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
1 CREOSOTE RESIDUE, N.O.S. LIQUID	COMBUSTIBLE	NA 1993	01	1 1 1 1	01	0 0 1	0 2		P001
2 ACRYLIC LATEX CAULKING COMPOUND WASH WATER	N/A	N/A		0 0 5 1	01	0 0 1	0 2		
3									
4									
5									
6									

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 83 (Mo. Day Yr.)

EXPECTED ARRIVAL DATE: 12 03 83 (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

DATE RECEIVED (Mo. Day Yr.)

COPY 5 Transporter No. 1—Retained by Transporter No. 1

Tear at this Perforation

B:

TRANSPORTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of

GEN EPA ID#

[redacted] Sheet
[redacted] tructions
ASE TYPE
rt A:

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
HAZARDOUS WASTE MANIFEST

1983 b&c

DOCUMENT NO. NY 103035 11/12

ENERATOR NAME: CANTOR BROS., INC. PHONE: 516-694-6666 EPA ID NO.: NY 0 1 6 3 5 4 N Y 0 1 1
TE ADDRESS: ENGINEERS LANE, FARMINGDALE, L.I.N.Y. 11735

ANSPORTER NO. 1: MARINE POLLUTION CONTROL, INC. PHONE: 516-654-4900 NY D 075788831
TE ADDRESS: 375 DUNTON AVE. EAST PATCHOGUE, N.Y. 11772, N.Y.

ANSPORTER NO. 2 PHONE
TE ADDRESS

EATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: EWR ENVIRONMENTAL WASTE REMOVAL, INC. PHONE: 203-755-2283 CT-D072138969
E ADDRESS: 130 FREIGHT STREET, WATERBURY, CT. 06702

S 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. ACRYLIC LATEX CAULKING COMPOUND WASH WATER	COMBUSTIBLE LIQUID	1993	01	2500	01	001	12		
	N/A	N/A		2500	01	001	12		
				2500					

AL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A AZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)
STE STORAGE NY
AO 1532
AO 7531

ERATOR'S CERTIFICATION. This is to certify that the herein named materials are properly classified, described, packaged, marked and labeled and are in er condition for transportation according to the applicable regulations of the Department of Transportation and the EPA. The wastes described herein were igned 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 orms with all applicable State regulations. I certify that the foregoing is true and correct to the best of my knowledge

ATOR'S SIGNATURE
tthew J. Miller
ype name also

DATE SHIPPED: 12 02 83 (Mo. Day Yr.) EXPECTED ARRIVAL DATE: 12 03 83

ORTER NO. 1 SIGNATURE "To the best of my knowledge the con- the shipment I have accepted for transport conforms with the n on this manifest."

TRANSPORTER NO. 1 PERMIT NUMBER: NY1A041

DATE RECEIVED: Mo. Day Yr.

COPY 3 Generator--Retained by Generator

Tear at this Perforation

GEN EPA IDs

RTER NO. 1 SIGNATURE "I certify that I have not tampered with or materially altered the contents of this shipment."

DATE DELIVERED: Mo Day Yr

RTER NO. 2 SIGNATURE "To the best of my knowledge the contents ment I have accepted for transport conforms with the description on

TRANSPORTER NO 2 PERMIT NUMBER

DATE RECEIVED

6			215019+						

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)

Waste Stream A0 1532
Container No. A0 1531

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	EXPECTED ARRIVAL DATE
12 12 84 (Mo. Day Yr.)	12 13 84 (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 12 84 (Mo. Day Yr.)

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. NY 103035 E

COPY 3 Generator--Mailed by TSD Facility

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 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, 6/2/82 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

15 Horseblock Pl. • Farmingville, N.Y. 11738 • 516/451-4643

CANTOR BROS. INC

2. Principal officers of firm: partners if a partnership: owners
MATHEW J. MILLER, CHAIRMAN BOARD

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 FISHER DENIED ACCESS 2 TIMES
(2) 6·11·79 INSPECTION L. CAPURTINO 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 -WH

Signed 16 JUNE 83 J FINKENBERG

(Art. 12)
J. Pim
(Art. 12)
J. Maloney
(Art. 10)
W. Roberts
1983 d
2/2

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

SCDHS
1983 e

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. Pinkenberg, Sr. Sanitarian
Environmental Pollution Control

1983 e

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
e 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.

o 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.

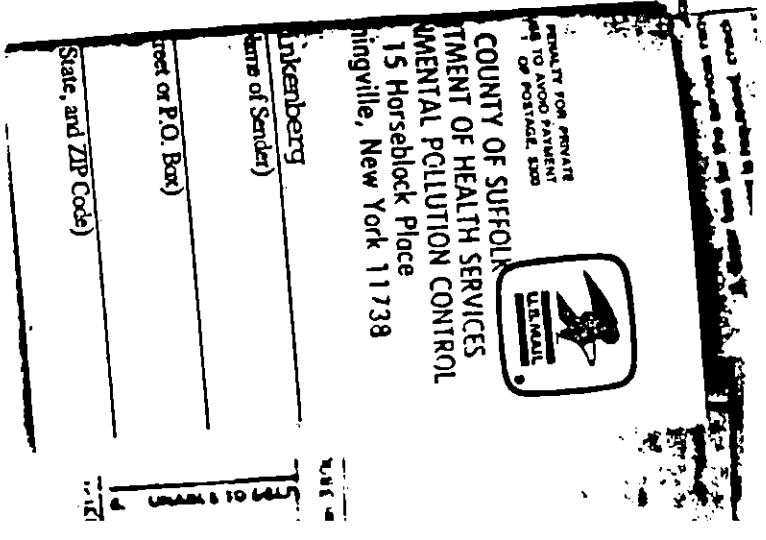
are also directed to notify this office when these pools are pumped
hat an inspector may witness this operation.

ou have any questions, please call me at 451-4635.

v truly yours,

H. Finkenberg
ironmental Pollution Control

/wb



1983 e
Contar Bros.

HOLZMACHER, McLENDON and MURRELL, P.C.
H2M CORP.
575 BROAD HOLLOW ROAD, MELVILLE, NEW YORK 11747
Tel. (516) 694-3040

LABORATORY REPORT

LAB ID 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	
*	1,1,2,2-tetrachloroethane	
*	tetrachloroethylene	
*	1,1,2,2-tetrachloroethane	
*	vinylchloride	
*	dichlorodifluoro methane	
	chlorobenzene	

	VOLATILE NON-HALOGENATED	ug/l
	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

S.C. McLENDON, P.E., LAB DIRECTOR

SCDHS
1983 f

1/8

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) 261-1599

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

cc: Cantor Brothers
Town of Babylon Fire Prevention
Suffolk County Health Department
N.Y.S. Dept. of Transportation-letter only

SCDHS
1983 f

2/8

Sales, Service and Installation of Service Station Equipment

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 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 Brothers
Suffolk County Dept. of Health
Town of Babylon Fire Prevention
N.Y.S.Dept. of Transportation-letter only

1983 ?
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 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 toler--ance only, and is not meant to indicate the permission of any leakage.

Very truly yours,

Robert Nedwick

cc: Cantor Bros.
Town of Babylon Fire Prevention
Suffolk County Health Department
N.Y.S. Dept. of Transportation-letter only

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

1983 f

5/8

Sales, Service and Installation of Service Station Equipment



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 charge 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

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 storage 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

cc: Cantor Brothers
Suffolk County Health Dept.
Town of Babylon Fire Prevention
N.Y.S. Dept. of Trans. - Letter only

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.

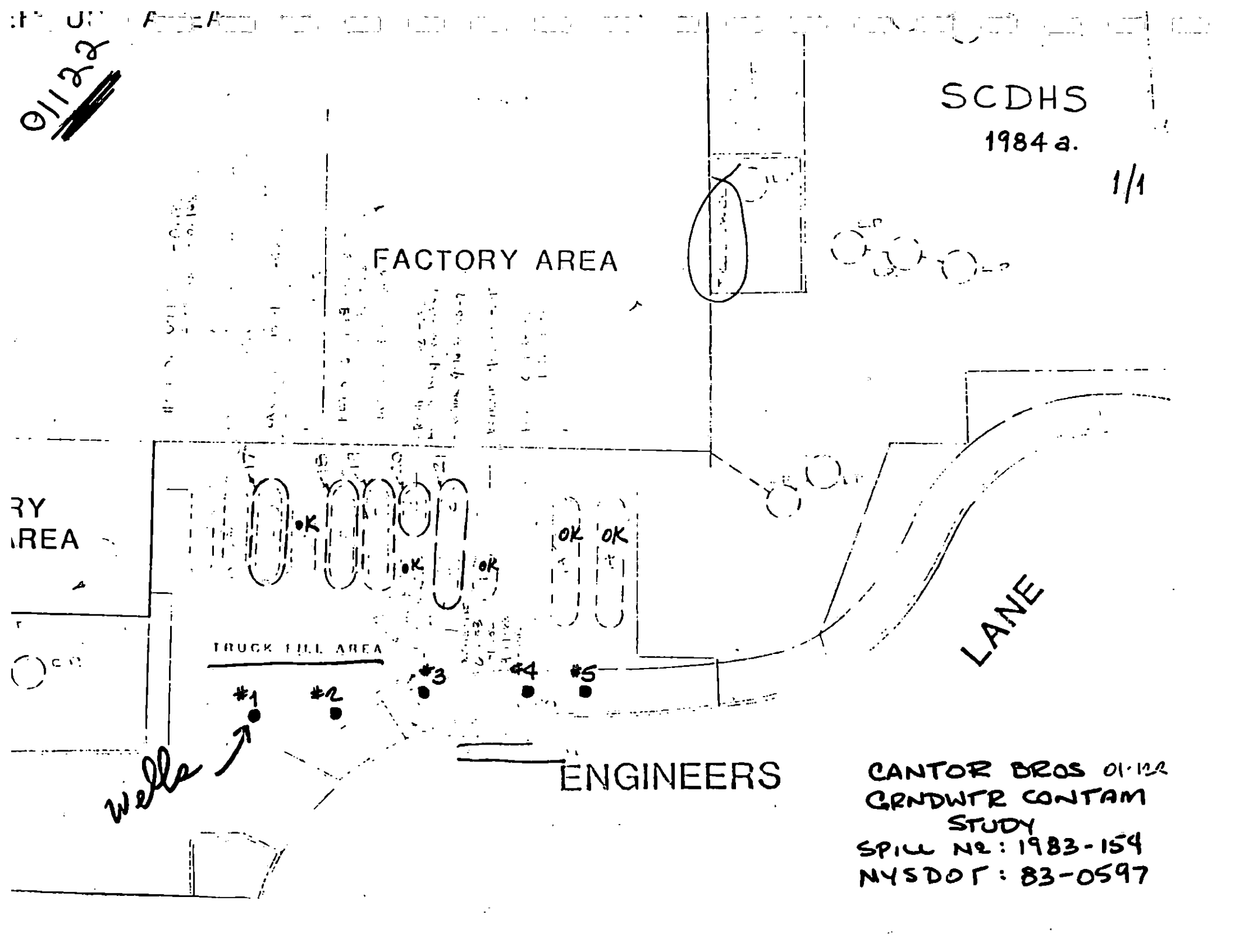
The tank designated #2 on test report, which has a capacity of 2000 gallons, was tested with general spirits and showed a net volume change of -.262 per hour of the last hour of the critical testing period, this tank is not tight.

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 -.... 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.


01122
SCDHS
1984 a.
1/1
FACTORY AREA
RY
REA
OK
OK
OK
OK
OK
TRUCK FILL AREA
#1
#2
#3
#4
#5
wells
LANE
ENGINEERS
CANTOR BROS 01-122
GRNDWTR CONTAM
STUDY
SPILL NO: 1983-159
NYSDOT: 83-0597

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	6.
2.	1,1,2 Trichloroethylene	42.0 ppb	7.
3.	Tetrachloroethylene	51.0 ppb	8.
4.			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. (SEE REVERSE SIDE FOR STANDARDS)
rmingville, NY 11738
16) 451-4620

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

(SEE REVERSE SIDE FOR STANDARDS)

5 Horseblock Pl.
rmingville, NY 11738
6) 451-4628

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

1984 b

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. (SEE REVERSE SIDE FOR STANDARDS)
rmingville, NY 11738
16) 451-4628

NOTICE OF VIOLATION

COUNTY OF SUFFOLK

1984 b

4/5

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 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

(SEE REVERSE SIDE FOR STANDARDS)

rseblock Pl.
ngville, NY 11738
) 451-4628

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

(SEE REVERSE SIDE FOR STANDARDS)

Horseblock Pl.
mingville, NY 11738
6) 451-4628

H7184- Rad. #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

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 (benzine)	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

1984 C 4/1

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

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	+	(1)
Turpentine $C_{10}H_{16}$	17	0.86	-	(2)
Lacquer Thinner	18	0.82	o	(2)
	Existing Tanks to Remain in Service(5)			
Lacquer Thinner	1	0.82	o	( )
Mineral Spirits	2	0.78	-	(2)
No. 2 Fuel Oil	4	< 1	o	(4)
Mineral Spirits	13	0.78	-	( )
Grade 2 Kerosene	14	0.81	o	(4)

(1) Source: Fire Protection Guide on Hazardous Materials 6th Edition, National Fire Protection Association, Boston, Massachuset

(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.

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.

dbl wall pipe

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
1815 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M (516) 567-5579

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.
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.

Sincerely,

John Pedneault

John Pedneault
Laboratory Director

Air 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 Wolinier, Allen & Grant Phone 549-2600 12:30
Complainant # 84-2567 DOT NUMBER
Address _____ (T.V.H.) _____ Phone _____

Complaint Against Conto Bros.
Address _____ (T.V.H.) L. Bronxville Phone _____

Nature of Request On this date Approx. 40 gal. of #2 fuel oil spilled into storm drain & adjacent sump. Pressure gauge failed; caused overfill line. DOT notified (Spill # 84-2567) Marine Pol. Contr. cleanup oil to DOT's

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 POLLN CONTROL	1247-4733

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 5000 GAL CAPACITY, AND THAT HE WAS UNAWARE OF ANY TANK REGISTRATION. SPILL RESPONSE INCLUDED CONTACTING MPC (MARINE POLLN 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

1/2

INDW-1 18-1095: 3/81

SCDHS 1984d

2 of 2 L-4844

ALLEN & GRANT / CONSULTING ENGINEERS / SURVEYORS

STATED THAT THE BAGS CONTAIN CONTAMINATED SOIL. THE BOILER ROOM WAS UNBERMED GROUND/SOIL BY THE BOILER RM LOOKED DISTURBED (FROM DIGGING) - THERE WAS NO FUEL-LIKE ODOR OBSERVED. 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.

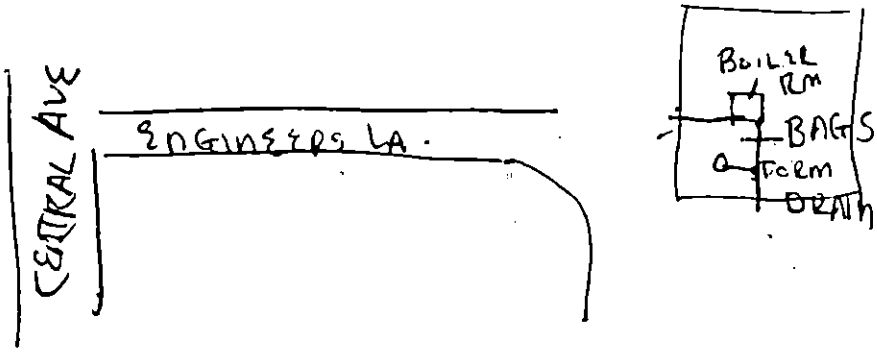
1-9-85 BAGS ARE NOT ON SITE BY BOILER RM. MAT MILLER STATED THAT MPC PROBABLY REMOVED BAGS & HAVE NOT SENT A RECEIPT.

Name of Responsible Individuals	Address	Tel. No.
MAT MILLER	CANTOR BROS.	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 KNOWLEDGE OF A SPILL

Information Related by Inspector to Complainant

Sketch:



1984 d 2/2

Inspectors Signature [signature] Date 12-24-84

PLEASE YELLOW DISH - OWNER BOILER

SCDHS
1985 a

INTER-OFFICE COMMUNICATION
County of Suffolk

Date 12/31/85 1/2

TO: Mike Komorofske
NYSDEC

FROM: Eileen Governale
(~~Tie 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 6 1986
BUREAU OF
D

RECEIVED
JUL 29 1988
LEROY CALLENDER

LAB. NO. IW 1185008
REC'D 11-6-85 by FA
FIELD NO. IEJ 11-6

DATE MPLETED 12-3-85
EXAMINED BY FA
EEC 12/4/85 o.c.

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC HEALTH LABORATORY

1985

2/2

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			
1,1,1 Trichloroethane	40,000	1,2,4,5 Tetramethylbenzene	
1,1,2 Trichloroethane		m,p-Dichlorobenzene	
Carbon Tetrachloride		o-Dichlorobenzene	
1,1,2 Trichloroethylene	120,000	Bromobenzene	
Freon 113		1,2,4 Trichlorobenzene	
Tetrachloroethylene		1,2,3 Trichlorobenzene	
Benzene	3000	Octane	
Toluene	27,000	Nonane	
Styrene		Decane	
Ethylbenzene		Undecane	
Xylene(s)			

Note: Not all compounds reported.

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	Eric Jaeger	SCDHS	11-6-85	10 AM
2. Transfered to	Francis J. Amendola	SCDHS-PHL	11-6-85	3:20 PM
3. Transfered to				
4. Transfered to				

PETER F. COHALAN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

SCDHS
1986 a

1/9

CERTIFIED MAIL - RRR

June 4, 1986

Re: Name of Facility Carter 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)

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

2/9

May 29, 1986

1986-25#

(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 not 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
Vice President

AD/eg

cc: Cantor Brothers, Inc.
Suffolk County Dept. of Health
Town of Babylon Dept. of Fire Prevention

Island Pump and Tank

Data Chart for Tank System Tightness Test

petro tite
TANK TESTER

1986 a
3/9

1. OWNER Property ☐ Tank(s) ☒
Name: CANTOR Brothers INC. Address: ENGINEERS LANE FARMINGDALE N.Y. Representative: Telephone:
Name: Address: Representative: Telephone:

2. OPERATOR
Name: SAME Address: Telephone:

3. REASON FOR TEST (Explain Fully)
As per state & County Code

4. WHO REQUESTED TEST AND WHEN
Name: MR. M. Miller Title: GENERAL MANAGER Company or Affiliation: CANTOR Brothers Date:
Address: Telephone:

5. WHO IS PAYING FOR THIS TEST?
Company, Agency or Individual: CANTOR Bros 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		Turbs	20 years	All 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, Tiefill 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 0830 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
10-262 Serial No. of Thermal
R. Nedwick
J. Dinn Technicians
Island Pump & TANK Corp Testing Contractor or Company. By: R. [illegible] Signature
P.O. 124 Greenlawn N.Y. 11740

1986 a 4/

Petro Tite TANK TESTER

14. CANTOR BROS. 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

#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

From
- [x] Station Chart
- [ ] Tank Manufacturer's Chart
- [ ] Company Engineering Data
- [ ] Charts supplied with petro tite
- [ ] Other

Is there doubt as to True Capacity? [ ]
See Section "DETERMINING TANK CAPACITY"

17. FILL-UP FOR TEST

Stick Water Bottom before Fill-up — 0 — to ⅛ in. — 0 — Gallons

Fill up STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Tank Diameter 72 "

	Stick Readings to ⅛ in.	Gallons	Total Gallons ea. Reading
Inventory			5076
Add to p.p.w.l & exp			10
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

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 d-gits — 63° Nearest °F

23. Digits per °F in range of expected change 324 d-gits

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	Level to which Restored	32. Product in Graduate: Before Reading	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 (−) ø33(V) − ø37(T)	At High Level record Total End Reflection / At Low Level compute Change per Hour (NFPA criteria)
1645	Pump over complete - Equipment ok 5.5 GPM 6100 # full - pump primed & rowing											
	& visible leaks at this time - Con. duo circulation											

5/1986 @ 5.27.86 DATA CHART #4

						.673		673				
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.M.

#4 tank & system does not test tight - ÷.452 G.P.H.

#4 TANK A FACTOR .0070

1986 a 6/

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
	#1 TANK & SYSTEM TESTS TIGHT - - .026 G.P.H.											G.P.H.

#1 DATA CHART 5-27-86

TEST FACTOR .0028

1986 a 7/9

Petro Tite TANK TESTER

14. Name of Supplier, Owner or Dealer: CANTOR Brothers INC ENGINEERS LA. Address No. and Street(s): FARMINGDALE City: N.Y. State: 5-27-86 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
Add tu pipe & equip			10
Product in full tank (up to fill pipe)			2010

Fill up. STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Tank Diameter 64"

Island Pump and Tank
ONE GRANGE ST. - P.O. BOX 124
GREENLAWN, NY 11740

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 gallons volume change in this tank per °F 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			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	Level to which Restored	32. Product in Graduate: Before Reading	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 Line Deflection / At Low Level compute Change per Hour (MFR criteria)
1320	Equipment Assembled & Fuel pump primed & running - no visable											
	4" with line Co Inc											

1986a 8/9

DATA Chart #2 - 5.27.86

'A' Factor #2 tank .0028

	2000 gallon #2 tank: product has been transferred to #1 tank (5,000) Water testing: Water table checked with 3.0 ft. wooden											
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 = 0.000 445.50											
1150	Begin HIGH LEVEL TESTING											
1150	First Sensor readings #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.
1420	#2 tank & system tests light - .048 G·P·H. remove equipment & begin pump over.											

1986 a 9/9

14. Canter 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

Petro Tite TANK TESTER

Island Pump and Tank
ONE GRANGE ST. - P.O. BOX 124
GREENLAWN, NY 11740

15. TANK TO TEST

#2 - South Center
Identity by position

#2 Fuel O.L
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

Fill up. STICK BEFORE AND AFTER EACH COMPARTMENT DROP OR EACH METERED DELIVERY QUANTITY

Tank Diameter 64"

	Stick Readings to ⅛ in.	Gallons	Total Gallons ea. Reading
Inventory			2000
Add to piping & equip.			10
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 (Use ■)	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	Level to which Restored	32. Product in Graduate: Before Reading	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 Line Deflection / At Low Level compute Change per Hour (API criteria)
2200	Arr at test site - Transport Arrives											
	Tanks - Equipment [redacted] test [redacted] Tanks											

SCDHS

1987a.

DIVISION OF ENVIRONMENTAL HEALTH SERVICES
BUREAU OF ENVIRONMENTAL POLLUTION CONTROL

1/3

NOTICE OF VIOLATION

Issued to (Company) Cantor Brothers

(address) Engineers Ln., E. Farmingdale

delivered to Mathew Miller

On (date, time) August 21, 1987

TAKE NOTICE THAT, on August 21st 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 12.10 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 A. Ma...

Received by: _____

1987 a

2/3

...ANALYSIS OF WATER, SEWAGE, INDUSTRIAL WASTE

FIELD NO. IEJ 2-5 m LAB NO. 2-86-29 DATE COMPLETED 2-11-86

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	TO	DATE - TIME
1. COLLECTED BY	JOUNGBLOOD	SCDHS	2-5-86 12 10 PM		
2. POSSESSION BY			2-5 DATE 12 10	TO	2-5 TIME 2 40 PM
3. POSSESSION BY			DATE - TIME	TO	DATE - TIME
4. RECEIVED LAB BY	B. Mathews		2/5 DATE 2:45 TIME		
5. POSSESSION BY			DATE - TIME	TO	DATE - TIME
6. POSSESSION BY			DATE - TIME	TO	DATE - TIME

1987 a

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC HEALTH LABORATORY

3/

TRACE ORGANIC ANALYSIS OF INDUSTRIAL WASTE

Name CANTOR BROS.

Location ENGINEERS 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		
		1,2,4,5 Tetramethylbenzene	<20
1,1,1 Trichloroethane	81	m,p-Dichlorobenzene	<20
1,1,2 Trichloroethane	<20	o-Dichlorobenzene	<20
Carbon Tetrachloride	<20	Bromobenzene	<20
1,1,2 Trichloroethylene	<20	1,2,4 Trichlorobenzene	<20
Freon 113	<20	1,2,3 Trichlorobenzene	<20
T rachloroethylene	<20		
		Octane	<20
Benzene	<20	Nonane	<20
Toluene	<20	Decane	<20
Styrene	<20	Undecane	<20
Ethylbenzene	<20		
Xylene(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	Eric Jamieson	SCDHS	2-5-86	12:10PM
2. Transfered to	Francis J. McBride	SCDHS-FLC	2-5-86	3:10PM
3. Transfered to				
4. Transfered to				

SCDHS

FILE IN 1/4 File

SUFFOCK COUNTY DEPARTMENTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

1988a

I.D. NO 7 C

NAME OF CILITY Cantor Bros. INC — OWNER/OFFICER Gen Mgr. Mat Miller — VIOLATIONS NOTED YES NO

COMPANY NAME — CONTACT Mat Miller — TEL 694-6661

PLANT ADDRESS Engineer La — VILLAGE E. Farmingdale Babylon — ZIP 11735

MAILING ADDRESS — INSP. — HYDRO. — MAP COORD.

PROPERTY OWNER Firm owns property.

DATE 11/22/88 TIME — ORIG (PER.) RE SAMPLE — ART. 7 YES NO — ART. 10 NO — ART. 12 NO. 422

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 5 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 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 12/5/88 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 Miller — TITLE Gen. Mgr. — INSPECTOR R. P. Morel

18-1442 (7/29) TJK 12/86

NO.	PROCESS	CHEMICALS USED AND APPROXIMATE QUANTITY	DISCHARGE		
			LIQUID	AIR	
				CONTROL TYPE	EP
1	Ware house area	paint products packaged in 5gal containers or less			
2	Packaging area.	40 "working drums of 111 Tri, Paint thinner, lquer thinner.			
3	ware house area.	x 50 drums of chaulking type chemicals - visous - = no art XII			

1/25/88 WITHIN CONTAINMENT AREA

2200 GAL DRUM STORAGE REGISTRED.

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	all remote fills			✓
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			✓

Add. tanks

Inspectors Name: Mc[illegible] Inspection Date: 1 2 88

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
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

	No.	Street	Comm.	Phone No.
Facility Name: STOK Bros. Inc.				
Facility Owner				
Facility Operator				
Land Owner				
Tank Owner				

Facility I.D. Number: 472000211 Air Certificates: YES NO Exp. Dte.:

Permits: Tanks Registered: YES NO Reg. Number: 1122 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 ✓	REGULAR	69	B/U				✓
14	10000 ✓	ORG SOLV.	69	B/U				✓
15	5000		64	B/U				✓
16	100	PAINT	64	A/I				✓
17	2000	DRUM SOLVENT	85	A/I	N/A			✓
18	5000	M.FUEL	64	B/U	Removed			

SCDHS
1988 b

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

EPARTMENT 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)

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.

4(

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
595 BROAD HOLLOW RD.
MELVILLE, NY 11747

1-32
260

DATE May 26 1988

№ 0054742

PAY CANTOR BROS. $250.00 DOLLARS

CANTOR BROS., INC.

TO THE ORDER OF Department of Health Services

Matthew Gillis

THE BACK OF THIS DOCUMENT CONTAINS AN ARTIFICIAL WATERMARK - HOLD AT AN ANGLE TO VIEW

⑈054742⑈ ⑆028000325⑆ 2263⑈50 9823⑈

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. BY J. Hollo

COPY 1 PAYER COPY 2 ADMINISTRATION COPY 3 PAYEE

COUNTY OF SUFFOLK
DEPARTMENT OF HEALTH SERVICES

1988 b
4/1

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.

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 . . .

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.

1988 b

7/1

Cantor Brothers
Order on Consent No. IW 88-4

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 Inc

By: (signature) MATTHEW J. MILLER

(printed) _____

Title: General Mgr.

Telephone: 667-6666

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 Kay 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. 4875664
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:

1988 b

8/11

COUNTY OF SUFFOLK

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

JUN 1988

15 HORSEBLOCK PLACE ■ FARMINGVILLE, NEW YORK 11738 ■ (516) 451-46

1988 b

Cantor Brothers 9/11
Order on Consent No. IW 88-

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

1988 b
5/3 11
930

COUNTY OF SUFFOLK

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

April 13, 1988

IW 88-27

- Rec Tank
- Removal Agmt

CERTIFIED Mail - R.R.R.

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-

REQUEST FOR LEGAL ACTION

1988 b

RANDALL
PIM (Art. 12)

J. MALONEY (Art. 10)
W. ROBERTS

ACTION REQUESTED
STATE
LOCAL

1. Exact corporate or other name of firm to be charged:
CANTOR BROTHERS

2. Principal Officers of firm; partners of the partnership:
~~Engineering Land~~, MATT. MILLER - OWNER.

11/1

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) Install~~ 2) TESTING/INSPECTION
(ARE PRESENTLY INSTALLED WELLS STILL OPERATIVE

b. by applicable engineering section -

c. penalty (by Bureau Chief)
On Consent: (250 Payable on Stipulation: 500

7 Person(s) to be notified of compliance conference
T. NANOS, A. SANTINO, JOHN GLADYSZ, R. Sofarth DEC

8 Other actions pending (if known)

9/11/88

SIGNED: [signature]
JOHN GLADYSZ

DATED: 9-2-87

COUNTY OF SUFFOLK

SCDHS

1988 c

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

REF. #23

SCDHS
1988d

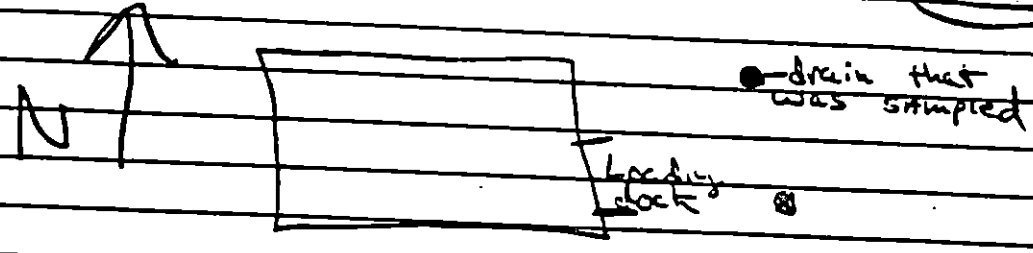
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
INDUSTRIAL WASTE AND HAZARDOUS MATERIALS CONTROL
15 HORSEBLOCK PLACE, FARMINGVILLE, N.Y. 11738
(516) 451-4633

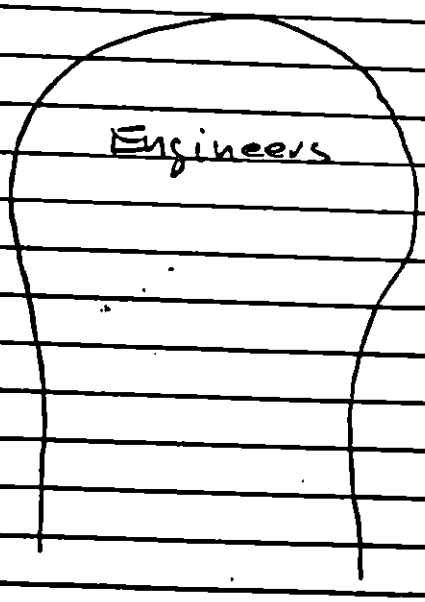
NAME OF FACILITY: Cantor Brothers INC.	OWNER/ OFFICER		PAGE 1 OF 2
COMPANY NAME: "Nankee"	CONTACT		TEL.
PLANT ADDRESS: Engineers Dr.	VILLAGE: Farmingdale	TOWN: Babylon	ZIP: 11735
MAILING ADDRESS			

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 2 RM 10-19.

Robert P. Mc...





RECEIVED
DEC 21 1988
LEROY GALLENDER/P.C.

CLP, 11/3/88 o.

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES 1988 d
DIVISION OF MEDICAL LEGAL INVESTIGATIONS & FORENSIC SCIENCES
PUBLIC & ENVIRONMENTAL HEALTH LABORATORY 2/2

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	< 100
1,1,2 Trichloroethane	< 40		

Analyst [signature]

☐ Polychlorinated Biphenyls

PCB 1016			
PCB 1221		PCB 1254	
PCB 1232		PCB 1260	
PCB 1242		PCB 1262	
PCB 1248			

Analyst

☐ Flash Point

Pensky-Martens Closed Cup Flash Point ____ °C= ____ °F

Analyst

LeKoy
Callender
PC

PHASE II INVESTIGATION

CANTOR BROTHERS, INC.

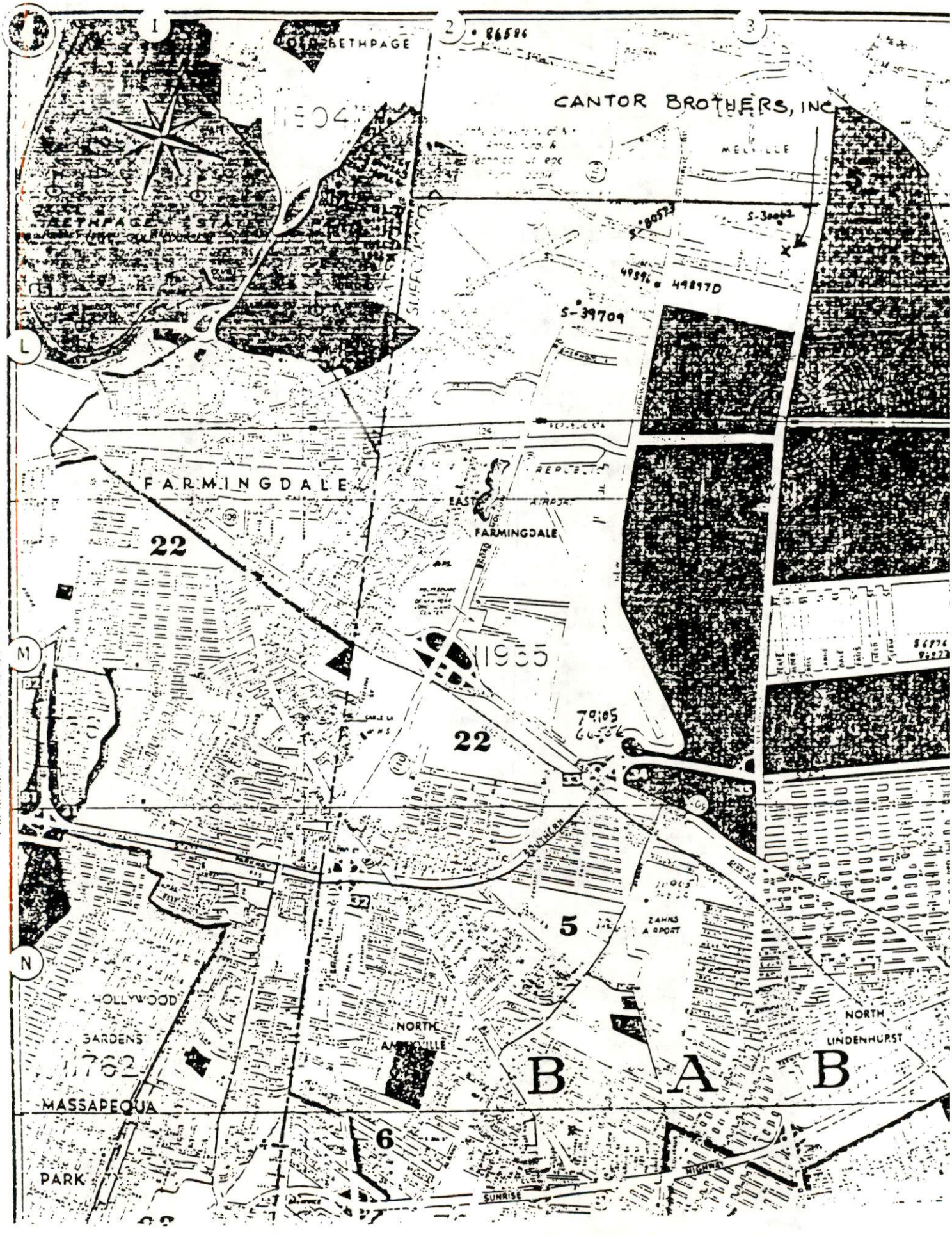
VOLUME III

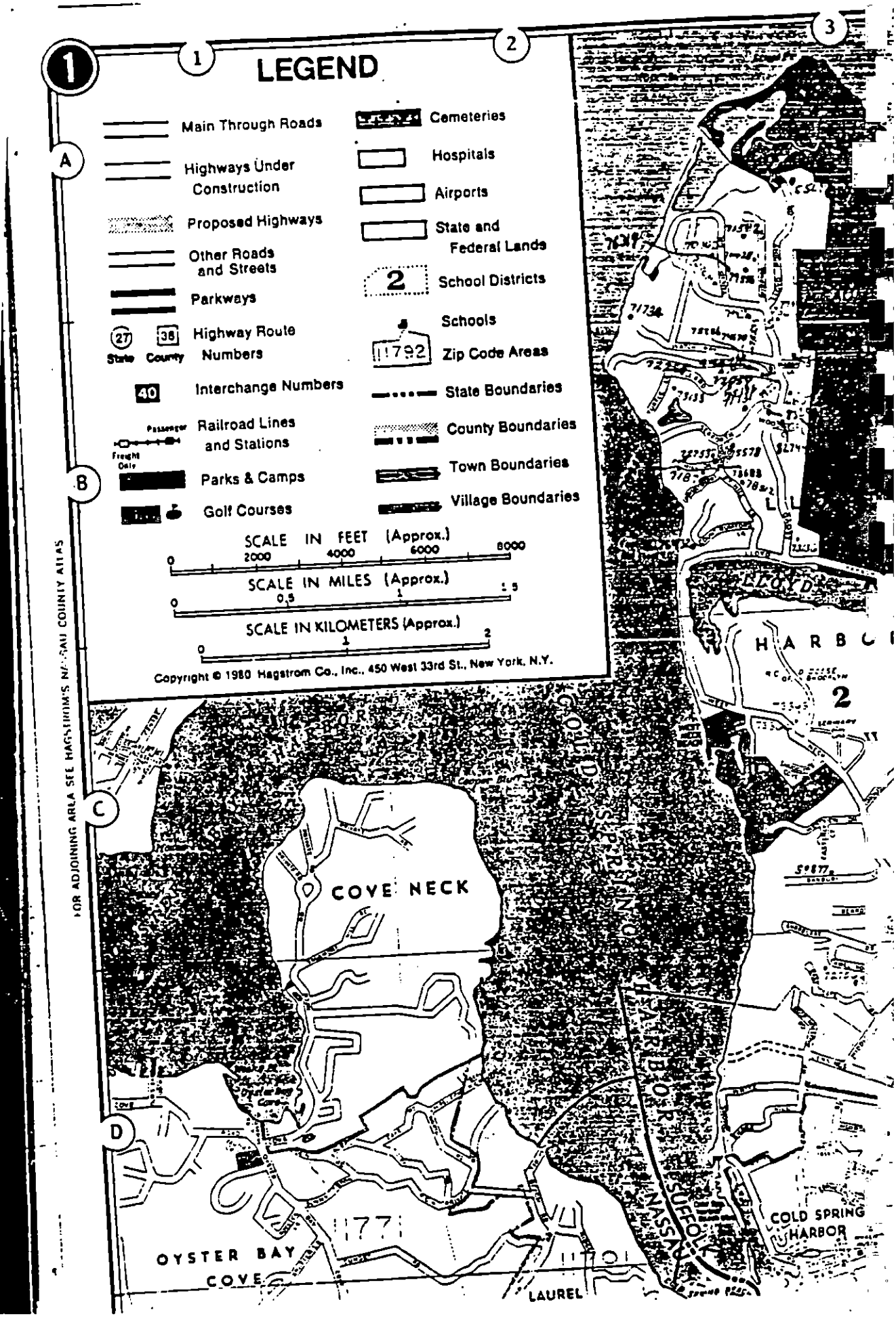
APPENDIX D:

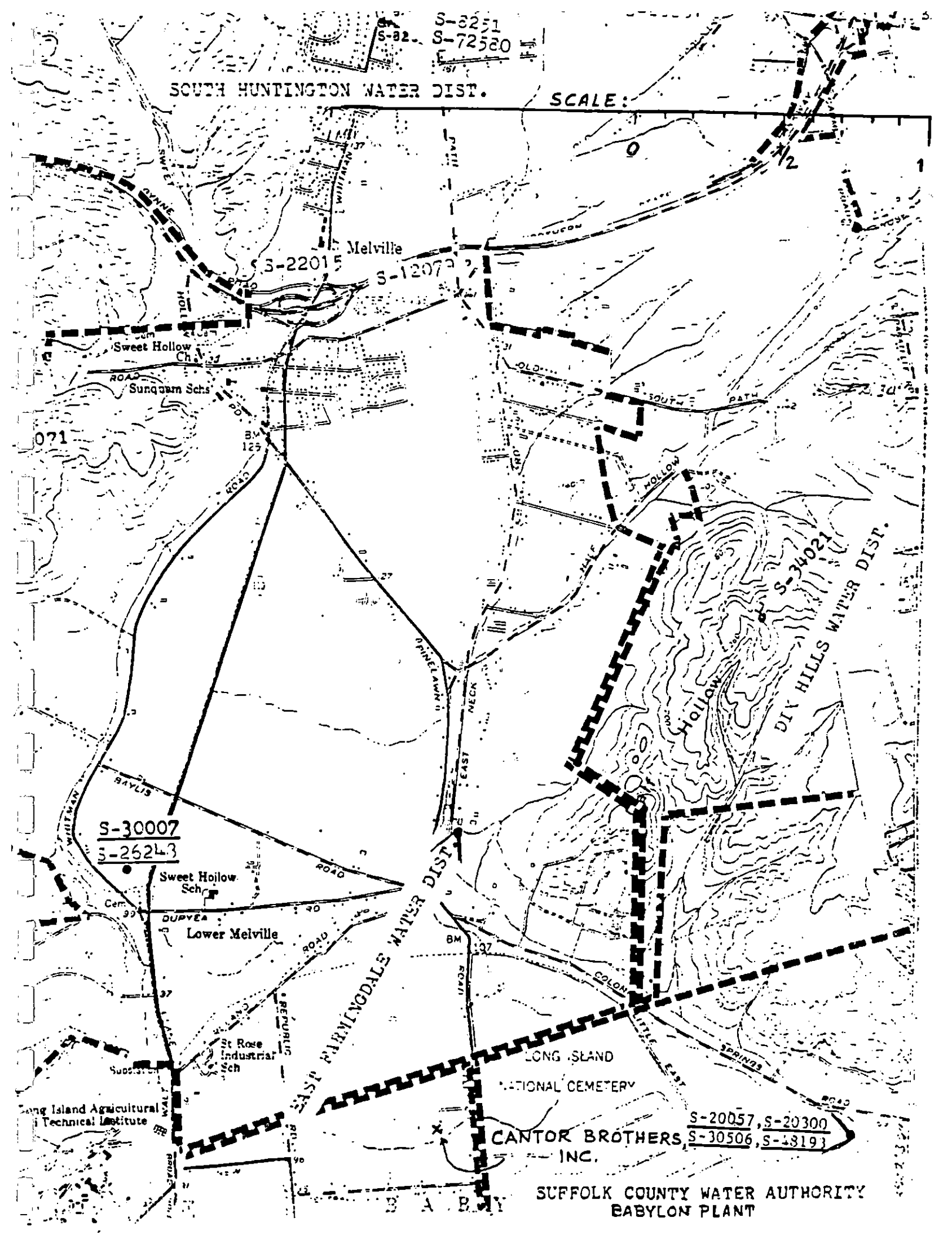
WELL LOCATIONS & PERMIT DATA

APPENDIX D

PUBLIC & PRIVATE WELLS




LEGEND
Main Through Roads
Highways Under Construction
Proposed Highways
Other Roads and Streets
Parkways
Highway Route Numbers
Interchange Numbers
Railroad Lines and Stations
Parks & Camps
Golf Courses
Cemeteries
Hospitals
Airports
State and Federal Lands
School Districts
Schools
Zip Code Areas
State Boundaries
County Boundaries
Town Boundaries
Village Boundaries
SCALE IN FEET (Approx.)
SCALE IN MILES (Approx.)
SCALE IN KILOMETERS (Approx.)
Copyright © 1980 Hagstrom Co., Inc., 450 West 33rd St., New York, N.Y.
FOR ADJOINING AREA SEE HAGSTROM'S NASSAU COUNTY ATLAS
COVE NECK
OYSTER BAY COVE
COLD SPRING HARBOR
LAUREL
11771
11701


S-8251
S-72520
SOUTH HUNTINGTON WATER DIST.
SCALE:
0
1/2
1
Melville
S-22015
S-12079
Sweet Hollow Ch
Sunquam Schs
SOUTH PATH
OLD
HOLLOW
ROAD
BM 125
071
S-34021
DIX HILLS WATER DIST.
Hollow
PRINCE LAWN
NECK
EAST
HALF
BAYLIS
WHITMAN
S-30007
S-26243
Sweet Hollow Sch
Cem
DUPUEA
Lower Melville
ROAD
BM 97
COLONIAL
SPRINGS
EAST FARMINGDALS WATER DIST
REPUBLIC
St Rose Industrial Sch
LONG ISLAND
NATIONAL CEMETERY
Long Island Agricultural & Technical Institute
S-20057, S-20300
S-30506, S-48193
CANTOR BROTHERS, INC.
BABYLON
SUFFOLK COUNTY WATER AUTHORITY
BABYLON PLANT

ORIGINAL—TO COMMISSION

County Suffolk

Well No. [illegible]

COMPLETED WELL

Owner GUILD [illegible]

[illegible]

Pump Installed:

Type [illegible] Lake Veda [illegible]

Motive power [illegible] Elec. [illegible] HP

Capacity 45 g.p.m. [illegible]

No. bowls or stages 9 [illegible]

Drop Line: Suction Line:

Diameter 1¼" in [illegible]

Length 90' ft [illegible]

Use of water Plant Process Cooling Supply

Work started 2/24/67 Completed [illegible]

Date 5/1/67 Driller [illegible]

License No. 153

Note: Show log of well—materials encountered, [illegible] water bearing beds and water levels at [illegible] dional pumping tests and other matters of interest [illegible]

See Instructions as to Well Drillers' Licenses and Reports—pp. [illegible]

RECEIVED

JAN 25 1989

LEROY CALLENDER/P.C.

ORIGINAL S-30062

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

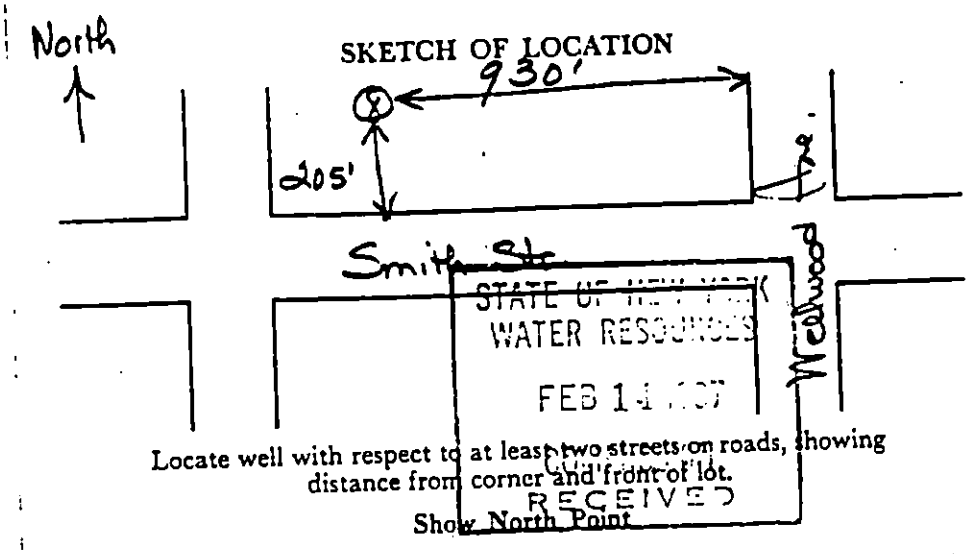
DATE 2/10/67 19 LIST OF EXISTING WELLS S-22304 to be abandoned S-22305D

DRILLER (SIGNATURE) CHARLIES WELL & PUMP CO., INC. No. 153

WATER RESOURCES COMMISSION PERMIT TO SINK WELL

BY [signature] ENGINEER IN CHARGE FEB 14 1967 DATE

1585 4-13-7 12



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Suffolk
County

V 3424

S-80573
Well No.

COMPLETION REPORT – LONG ISLAND WELL

OWNER
Efcor, Inc.

ADDRESS
123 Smith St., Farmingdale, N.Y. 11753

LOCATION OF WELL
Same (Replacement #S-19538)

* LOG
Ground Surface
El. _____ ft. above sea

A
V
_____ ft.
TOP OF WELL

DEPTH OF WELL BELOW SURFACE	DEPTH TO GROUND WATER FROM SURFACE
200 ft.	30 ft.

CASINGS

DIAMETER	8 in.	in.	in.	in.
LENGTH	164 ft.	ft.	ft.	ft.

SEALING	CASINGS REMOVED
Cement Grout	None

SCREENS

MAKE	OPENINGS
Johnson Division – UOP	#60

DIAMETER	8 in.	in.	in.	in.
LENGTH	35' ft.	ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING
164'

PUMPING TEST

DATE	TEST OR PERMANENT PUMP?
9/10/85	Test

DURATION OF TEST	MAXIMUM DISCHARGE
days 4 hours	305 gallons per min.

STATIC LEVEL PRIOR TO TEST	LEVEL DURING MAXIMUM PUMPING
30 ft. in. below top of casing	45 ft. in. below top of casing

MAXIMUM DRAWDOWN	Approximate time of return to normal level after cessation of pumping
15 ft.	1 hrs. min.

PUMP INSTALLED

TYPE	MAKE	MODEL NO.
Submersible	Pleuger	QN64-7

MOTIVE POWER	MAKE	H.P.
Electric Motor	Pleuger	25

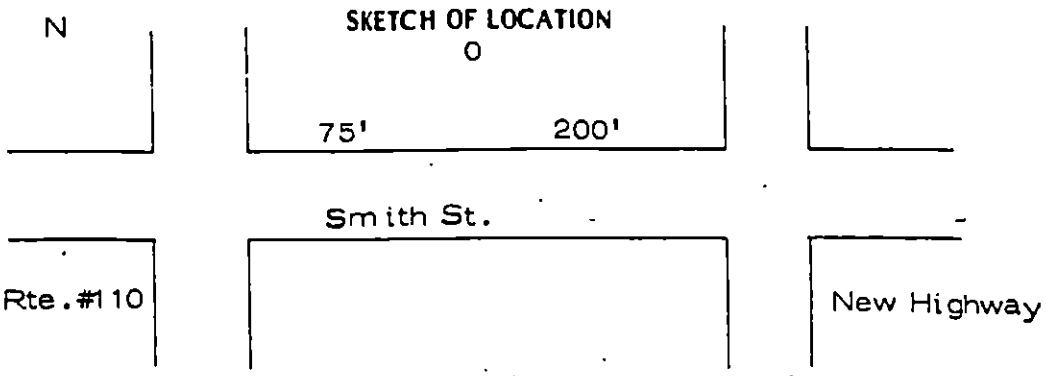
CAPACITY	
300 g.p.m. against	230 ft. of discharge head
NUMBER BOWLS OR STAGES 7	230 ft. of total head

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



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

COMPLETION REPORT—LONG ISLAND WELL

Owner EAST FARMINGDALE WATER DISTRICT (3-1)

Address 200 E. SUNRISE HIGHWAY, N. LYNBROOK

Location of well ROUTE 110, MELVILLE

Depth of well below surface 711'-9½" feet

Depth to ground water from surface 36'-1½" (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 COOK Openings .055"

Diameter	12 in.	NONE in.	in.	in.
Length	55 ft.	NET SIZE ft.	ft.	ft.
Depth to top from top of casing	650' ±			ft.

TOP OF RISER 571' ±

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. 1½ in. below top of casing

Level during Max. Pumping 105 ft. 7 in. below top of casing

Maximum Drawdown 69'-5½" 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 4/20/72

Date 5/2/72 Driller STATE WELL CORP.

License No. 1000

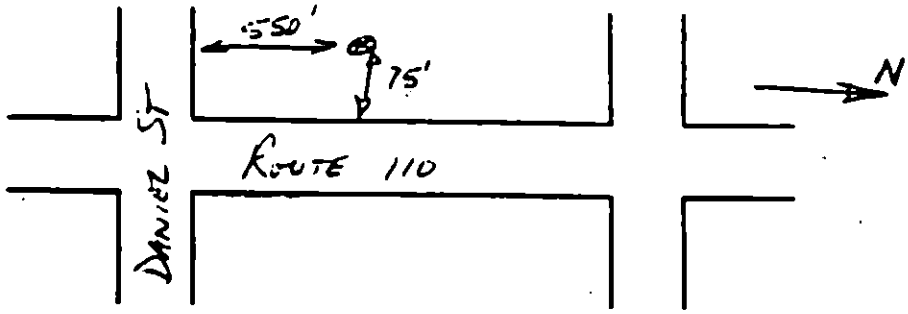
NOTE: Show log of well—materials encountered, with depth below ground [illegible] water bearing beds and water levels in each, casings, screens, pumps, [illegible] tional pumping tests and other matters of interest. Describe repair [illegible]

See Instructions as to Well Drillers' Licenses and Reports—pp. 3-7.

See Attached

RESOURCE MGT. SECT.
MAY 4 1972
SWEST DIST.
REC'D

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.C., Inc. – Repaired Tait pump. Added 20' of setting. Depth to water noted @ 33'-10".

COUNTY Suffolk ORIGINAL

WELL No 5-49897D

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:

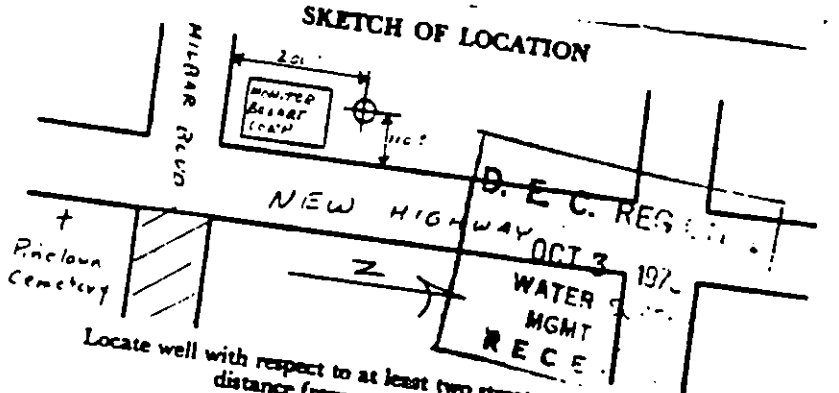
DRILLER (SIGNATURE) The Lauman Company Inc. LIC. No. 13

WATER RESOURCES COMMISSION PERMIT TO SINK WELL

BY [signature] ENGINEER IN CHARGE

OCT 3 1973 DATE

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

County Suffolk

WSA-644

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

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

DISCH. 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.

1299
License No. .....

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casing, screens, pump, and diesel pumping tests and other matters of interest. Describe repairs.

See Instructions as to Well Drillers' Licenses and Reports—pp. 3-4.

D.E.C. REGIONAL OFFICE
ENVIRONMENTAL QUALITY UNIT
MAR 18 1974

RECEIVED

SKETCH OF LOCATION
N
CULVER AL SPRINGS RD
(EAST NECK RD)
DRIVE
Please write with respect to at least two streets or roads, showing
distances from corner and front line of lot.
Show Yards Plans

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 75.18 ft. above sea

^ 0 ft.
v Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner SUFFOLK COUNTY WATER AUTHORITY

Address OAKDALE N.Y

Location of well CIRCLE DR. WYANDANCH, N.Y

Dept of well below surface 618 feet

Depth to ground water from surface 26 27'0" feet

SEE DRAWING

Casings:

SEE DRAWING

Diameter	16 in.	12 in.	in.	in.
Length	358 ft.	282 ft.	ft.	ft.
Sealing				
Casings removed				

Screens: Make Cook Openings 20

Diameter	10 in.	in.	in.	in.
Length	60 ft.	ft.	ft.	ft.
Depth to top from top of casing				ft.

SEE DRAWING

STATE OF NEW YORK
WATER RESOURCES
AUG 25 1967
COMMISSION
RECEIVED

Pumping Test: Date 7/25/67 Test or permanent pump? TEST

Duration of Test 8 days 8 hours

Maximum Discharge 1248 1060 gallons per minute

Static level prior to test 26.27 ft. in. below top of casing

Level during Max. Pumping 56.53 ft. in. below top of casing

Maximum Drawdown 30.26 ft.

Approx. time of return to normal level after cessation of pumping 30 hours 5 minutes

Pump Installed: BY OWNER

Type TURB Make LAYNE Model No. 5790

Motive power Elect Make G.E. H.P. 100

Capacity 1060 g.p.m. against 217.19 ft. of discharge head

No. bowls or stages 4 243.19 ft. of total head

Drop Line: BY OWNER, 10 in. 25 3" ft.

Suction Line: 10 in. 4'10" ft.

Use of water MUNICIPAL

Work started 5/5/67 8/8/67 Completed 7/30/67 5/16/68

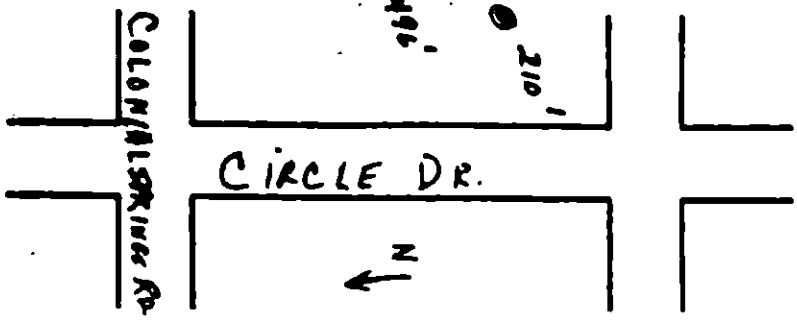
Date 8/24/67 Driller STRATFORD WELL (WYATT) Layne N.Y. Co. Inc.

License No. 1000 S

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. 3-7.

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. - McClymonds - 9/1/67

Well S-30,506

TD - 630 ft below lsd.
Elev. +80 ft- above msl.
Yield - 1250 gpm; dd: 30 ft.
Cap. - 42 gpd/ft of dd.

FOR ADMINISTRATIVE USE ONLY
Provisional, Subject to Revision

Correlation (mostly to GW-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)

ORIGINAL—TO COMMISSION

County Suffolk

State of New York
Department of Conservation
Division of Water Power and Control
COMPLETION REPORT—LONG ISLAND WELL

Well No. S20330 (on preliminary S2e30e LOG
Ground Surf., El.....ft.
A .....ft.
V Top of 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. 30
Capacity 500 g.p.m. against ..... ft. of discharge head
No. bowls or stages 4 ..... 192 ft. of total head

DROP LINE: Diameter 6 in. Length 40 ft.
SUCTION LINE: 6 in. 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

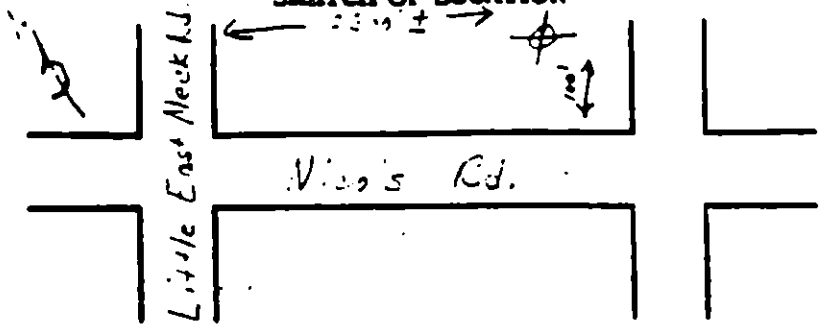
STATE OF NEW YORK
MAY 10 1962
CONSERVATION
RECEIVED

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.

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

Cse Br Sd Gravel L. Stones	0 - 40
Cse Sd and Grits	40 - 62
Fi Gr Sd Large Stones & 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

County Suffolk

ORIGINAL—TO COMMISSION

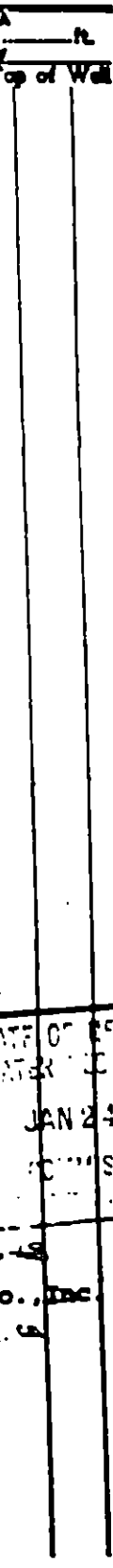
Well No. S-20057
(on preliminary report)

State of New York
Department of Conservation
Division of Water Power and Control

LOG

Ground Surf., El. ____ ft. above mn

COMPLETION REPORT—LONG ISLAND WELL
Well #1



Owner Colonial Springs Water Co. (Now Southyke W.)

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

Casing:
Diameter 12 in. ____ in. ____ in. ____ in.
Length 170 ft. ____ ft. ____ ft. ____ ft.
Sealing welded joint
Casings removed none

Screen: 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 Deep Well Make Worthington Layne Model No. 10M50 5995
Motive power Elec. Make U.S. H.P. 30-40
Capacity 500-530 g.p.m. against 139 ft. of discharge head
No. bowls or stages 5 & 6 193 ft. of total head

Discharge Line: Diameter 6 in. Length 61'6" ft.
Suction Line: Diameter 6 in. Length 10-9'7" ft.

Use of water public supply
Work started 8/7/61 4-30-62 Completed 12/26/61 5-8-62

Date 1/22/62 Driller C. W. Layman & Co., Inc.
License No. 13 Layne-NY Co.

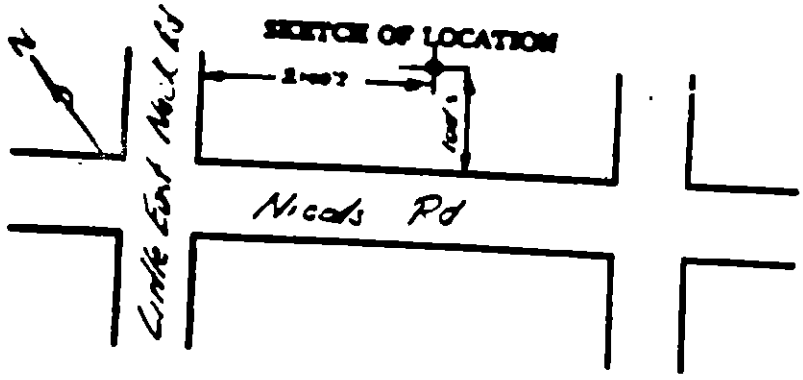
STATE OF NEW YORK
WATER POWER & CONTROL COMMISSION
JAN 24 1962
RECEIVED

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.

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 SFG
25-42	Cse sd, grits, grvl, lge stones
42-60	Med fi brn sd, grits, lge stones
60-79	Fi brn sd, grits, blders
79-84	Fi gry sd, lge stones, gry cl
84-94	BLK cl
94-103	Cse gry sd
103-125	Fi gry sd & rock
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

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)

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
LEROY CALLENDER/P.E.

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.

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APPENDIX D:

N.Y.S.-D.E.C. WATER QUALITY CRITERIA

(1985)

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-

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[2]
(24) Dieldrin, or 6,7-epoxy aldrin.	(24) not detectable[2]
(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[2]
(26) Heptachlor, or 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene and metabolites.	(26) not detectable[2]
(27) Lindane and other Hexachlorocyclohexanes or mixed isomers of 1,2,3,4,5,6-hexachlorocyclohexane.	(27) not detectable[2]
(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[2]
(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

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 [3]
(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

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;

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.

(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 numbe· 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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APPENDIX D:

POLYCYCLIC AROMATIC HYDROCARBONS IN THE TERRESTRIAL ENVIRONMENT

BY:
EDWARDS, N.T.

JOURNAL OF ENVIRONMENTAL QUALITY

OCTOBER-DECEMBER 1983

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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 4.6×10^6 kg. Concentrations of PAH's in air, soil, and vegetation vary with distances from known sources. Reported BaP concentrations in air of suburban areas of the United States ranged from 0.01 to 1.9 μg m^3; concentrations in urban areas ranged from 0.1 to 61.0 μg/m^3. 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. Contrasted 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.

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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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APPENDIX D:

APPLIED SOIL TRACE ELEMENTS

BY:

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Applied Soil Trace Elements

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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.
(1979)

Handbook on the Toxicology of Metals

edited by
LARS FRIBERG, GUNNAR F. NORDBERG
and VELIMIR B. VOUK



1979

ELSEVIER/NORTH-HOLLAND BIOMEDICAL PRESS
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(Fr·····, 1979)

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.

(Friberg, 1977)

ral 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, Khatsnov 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.

(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).

Arsenic

5.1.2 *Water and soil*

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

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 $1 : 10^3-10^5$. 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 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 Stemer 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 bitmunious 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

(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; Tati et al., 1976; Kjellstrom 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/m^3 (National Air Sampling Network, U.S.A., see Friberg et al., 1974). In European countries, urban values of 0.002–0.05 μg/m^3 have been reported. In Tokyo, mean values over several months varied from 0.01 to 0.053 μg/m^3. In nonurban areas lower values were found, 0.001–0.003 μg/m^3. Higher values, weekly means of 0.2–0.6 μg/m^3, have been recorded around certain cadmium-emitting industries (Friberg et al., 1974). Cad-

(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

(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

(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, interal 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).

(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).

(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

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 corresponds 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.

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.)