Attachment 6-7

April 24, 1979

NARRATIVE TO ACCOMPANY CHRONOLOGICAL RECORD OF THE NASSAU COUNTY DEPARTMENT OF HEALTH RELATING TO THE REGULATION OF INDUSTRIAL WASTES OF THE HOOKER CHEMICAL CORPORATION PLANT (FORMERLY PLANT SITES OF INSULAR CHEMICAL CORP. & RUCO (RUBBER CORPORATION OF AMERICA) AT HICKSVILLE, NEW YORK

I. CORPORATE BACKGROUND

Department records start in 1955. Insular Chemical Company and Rubber Corporation of America (Ruco) owned adjacent properties at New South Road in Hicksville. However there is evidence to show that Ruco was at this location and discharged to a leaching basin for seven years previous to 1955. A special affiliation existed between the two companies as evidenced by their sharing a pilot plant on Insular's property in 1955 and also shared two private water supply wells. After March 3,1956 there are no references to Insular Chemical Company. There is a gap in our knowledge of corporate affiliation until August 13,1965 when a letterhead shows a new affiliation as "Rubber Corporation of America - A Hooker Chemical Corporation Subsidiary". An engineering report of May 16,1968 from H_2M to Ruco refers to "for the Hooker Chemical Corporation - Ruco Division". This corporate title continued to August 11,1977 when in a SPDES application the company was listed as "Hooker Chemical and Plastics Corporation - Ruco Division".

II PVC Production, Waste Disposal, and Permits

Apparently a pilot plant was shared by Insular and Ruco prior to and after 1955 in which various types of unknown (to NCHD) chemicals were produced. It appears that one such process involved a technique for producing PVC as evidenced by applications for discharge permits and an engineering report of 7/18/55 which describes production plans and wastes produced from the PVC manufacturing process. Wastewater was said to be

discharged to an open recharge basin on the property of Insular Chemical. Estimated wastewater discharge from the proposed production was 24,600 gpd. It was reported that vinyl chloride monomer was inherent in the waste during processing but was completely vacuum stripped prior to discharge of the wastewater. How ever, an assessment of tests of the wastewater from the pilot plant by NYSHD indicated this waste would present problems of odor and taste in the groundwater and would eventually clog the recharge basin. It is unclear whether the plans and applications from Insular Chemical in 1955 for a permit to discharge sanitary and industrial wastes were approved or denied by NYSHD.

By 1958 there is evidence that Ruco now owned and operated the Insular Chemical property and facility and were engaged in the manufacture of rubber, plastics, and kindred products such as shower curtains and upholstry materials. These products would infer a good likelihood of including PVC materials. Process wastewater discharges were at the level of 30,000 gpd but there was no mention of vinyl chloride in the discharge. In 1958 a hearing before the N.Y. State Water Power and Control Commission was held to consider Ruco's application to increase annual water pumpage from two existing wells. During the hearing Ruco was advised plans for a wastewater treatment facility would have to be submitted for approval by NYSHD unless water remained of drinking water quality. The wastewater in Ruco's processing was described at this time as containing "oily and solid materials." There was no mention of vinyl chloride or other organics in the

wastewater. There is no evidence that Ruco did indeed submit plans for wastewater treatment at this time.

Nevertheless Ruco continued some kind of processing operations with the consequent generation of waste discharges. By 1960 Ruco again requested permission to increase their water pumpage, this time more than doubling the pumping rate. Some of the wastes were being drummed for storage on site and were not identified as to composition. There is some evidence that Ruco was considering the removal of these drums by industrial scavengers at the request of NCDH.

Around the general time period 1960 - 1964 NCDH had a reduced engineering staff and was also forced to concentrate its efforts on evaluating and processing permit applications for private sewage treatment and disposal systems, in particular from realty subdivisions. Consequently little information was obtained regarding operations at Ruco, as represented by the filed records.

In 1964, as a result of inspections and a survey at Ruco, it was clear that Ruco was manufacturing PVC resin, latex, plasticizers and plastic products. Raw materials included vinyl chloride. The wastewater discharges resulted from each of the manufacturing processes. However, the discharges were not monitored on any regular basis and contaminants were therefore not identified. At this time there was no evidnece of the existence of any permits relating to the discharges.

It is important to note that in 1965 a significant development occurred in the disposal of wastes by Ruco, now identified as a subsidiary of Hooker Chemical Corp. Permission was requested of and approved by NCDH to dispose of drummed wastes at the Syosset landfill. The weekly waste disposal was described as approximately 6 drums of non-soluble coagulated latex and 12 drums of carbon black filter cake (containing 20% water soluble salts). ~~At this time it is not possible to ascertain if the~~ It was ascertained from NCDH personnel that (T) Oyster Bay gave final approval to accept these wastes at the Syosset landfill ~~nor~~ but no one now there knows the quantity and quality of the wastes.

The records do show that the Syosset landfill was abandoned in 1965 for garbage and refuse and for industrial waste in 1976 after rough grading. Final grading plans have been submitted to NCDH but no date for implementation has been established. A portion of the site is currently used for leaf composting. There are presently no known problems regarding final cover, leachate or methane gas.

As part of the recent 208 study, groundwater samples were obtained adjacent to the Syosset landfill at depths of 200, 350, and 500 feet. None of the samples analyzed for organic and inorganic chemicals exceeded the drinking water standards except for iron (0.69 mg/l) in the 350 foot well. However, the geology report indicated a 7" thick clay formation at a depth of about 65' which may prevent the vertical transport of leachate in the immediate area of the landfill. (The depth of the landfill is also approximately 65').

It should also be noted here that the present day absence of any obvious contamination problems associated with the landfill does not necessarily imply there will be no future problem. Although drummed wastes may have contained toxic contaminants, the drums may not have started to leak seriously as yet.

The most recent inspection of Hooker by NCDH on May 21, 1979, revealed that Hooker is generating miscellaneous chemical wastes amounting to 14 drums per week. Approximately 700 drums of waste were on site reportedly because of the temporary shut down of Rollins in New Jersey, the disposal site. Rollins has reopened recently and the 700 drum inventory is planned to be sharply reduced in the near future.

There is a gap in the records for the period 1965-1968. However, there is an engineering report in 1968 from H2M to the Company now identified as Hooker Chemical Company - Ruco Division. This report indicates that resins and latexes are still being manufactured and with the addition of esters. It also identifies various buildings and various waste streams without but not identifying the contaminants. From the appearance of the waste streams it was the opinion of H2M that these would impair the best usage of the groundwater and would require treatment. However, there are no records immediately following which would indicate an application for a discharge permit was made, i.e. 1968 - 1970.

Hooker was informed in 1970 by NCDH that an inspection (July, 7 1970) showed Hooker was discharging liquid wastes and in accordance with Article 12 of the NYS Public Health Law Hooker should supply an engineering report and apply for a discharge permit. Apparently as a consequence of this directive, there was ~~a period of~~ activity at Hooker over a three-year period, 1970 - 1973, which included several engineering reports. Processing and waste streams were identified and various treatment schemes were proposed. Reference was made to an increase in the drumming of various wastes from the pilot plant for treatment or disposal via industrial scavenger. No mention was made of the Syosset landfill.

It could be speculated for lack of file records that Hooker continued their evaluation, monitoring and other tests to obtain information leading to wastewater treatment until April 1975 when they finally submitted a SPDES application which contained provisions for 5 outfalls and also provided monitoring for dissolved organics and phenols. However, in a most significant move a few weeks later in May 1975 they submitted another SPDES application, form D, and a letter stating that the PVC production plant was closed and that two former outfalls were no longer discharging. By October 1975 Hooker claimed they had cleaned the PVC and ester plant sumps and also submitted a program to minimize or eliminate leaching of possible contaminants into the groundwater. No information was given as to the disposal site of the debris from the cleaned sumps. There is reference to a telecon in a handwritten note of Dec. 1976 indicating NCDH advised Hooker to dispose of PVC sludge by hauling to New Jersey or New City for incineration. However, it is not clear if this was the scrapings from the sumps.

Meanwhile on or about November 1976 the presence of vinyl chloride was detected and resulted in the shutdown of three private drinking water wells at Grumman Aerosapce Corp. (GAC). An extensive investigation of this occurrence and its relation to Hooker Chemical's

use of vinyl chloride was carried out by NCDH and NYSDH. This is discussed further in another section dealing with water quality.

A revised SPDES form "C" application was received from Hooker Chemical in August 1977 and a draft permit issued by NYSDEC in March 1978. A final permit was issued in May 1978. The permit covered sanitary and boiler blowdown discharges. Hooker's operations actually included cooling tower overflow also. The non-sanitary discharges contained special corrosion-control chemicals which are monitored but have no relation to any production processes at Hooker. Presently, all process wastes are being incinerated. There are no process wastewater discharges.

It should be summarized at this point that prior to 1978 there is no evidence in the records at NCDH that Hooker Chemical or any of the affiliated companies at their site, dating back to 1955, ever received a wastewater discharge permit. Telecon inquiries to Albany indicate corresponding lack of evidence of any permits at NYSDH and NYSDEC. There are records of valid air pollution control permits dating back to at least 1969.

III. Sampling -

Relatively few wastewater samples were taken at the Hooker Chemical site during the entire 1955 - 1979 time period. Earliest samples were concerned with taste and odor (1956) or in the case of drummed waste (1960) negative results for phenols were reported. However, in 1974 about a year prior to shutdown of the PVC process, samples of wastewater were taken for organic analysis by the EPA. Over 1000 ppb of vinyl chloride and acetic acid and larger amounts of octyl alcohol were found in the waste lagoon from Plant #2, the PVC manufacturing facility. In the Plant #1 condenser water lagoon, traces were found of trichloroethylene and tetrachloroethylene and more than 100 ppb of vinyl chloride and octyl alcohol.

About one year later in 1975, samples from several lagoons contained "high" levels of iron, zinc, silicates, ammonia and nitrites and had a musty odor and high turbidity. One sample had 0.35 mg/l phenols, which is considered a high level.

Later in 1975, after the PVC operation was closed down, a composite sample of lagoon wastewater and pre-incinerator

wastewater was found to contain 50 ppb of vinyl chloride, 80 ppb trichloroethylene and 8,000 ppb of tetrachloroethylene plus other unknown chlorinated organics.

There was no subsequent evidence of any organic contaminant discharge at Hooker. Samples from the cooling tower overflow sump in 1977 showed very low or non-detectable levels of 1,1,1 trichloroethane, trichloroethylene, and tetrachloroethylene, carbon tetrachloride, chloroform and bromodichloromethane. An analysis of a split sample by Hooker showed less than 1 ppb of vinyl chloride in their cooling tower pit, boiler blowdown sump and concrete holding tank. NYSDH labs' analyses of the split sample from the concrete holding tank showed 20 to over 390 ppb of 1,1,1 trichloroethane, trichloroethylene and tetrachloroethylene; apparently the NYSDH labs did not have a suitable analytical technique for vinyl chloride.

IV. Chemical Usage and Waste Control -

The discovery of organic contaminants in the Grumman wells in 1976 led to a program for surveying all of the industries in Nassau County for their usage of chemicals and disposition of wastes. It was found that the only Company in Nassau County to use vinyl chloride was Hooker Chemical and Plastics Corp.

In fact, there is no other evidence that any other industry in the County used vinyl chloride.

Lists of chemical usage were obtained from Hooker and showed that for the years 1970 to 1975 vinyl chloride was one of the 90 - 122 chemicals listed. A study of these chemicals revealed that 34 to 45 of them were listed as toxic in the NIOSH registry, including vinyl chloride.

Since the survey all industries using organic chemicals have been brought under SPDES permit controls. This also includes those who are generating organic wastes, not discharging them but having DEC registered industrial waste scavengers remove the wastes from the County.

V Water Quality and Effluent Wastewater Standards - Water quality standards were not always directly applicable or appropriate, and, for that matter, suitable and adequate, to control the discharge of industrial-process waters from a plant such as the Hooker Chemical Company. During the period prior to March 1967 when the groundwater classifications and standards were adopted as a new Part 703, Title 6, NYCRR, by the New York State Water Resources Commission, industrial-process discharges to the groundwater were reviewed by the NCDH and forwarded to the NYSHD for approval for conformance with the Public Health Service Drinking Water Standards, 1946, and revised in 1962, promulgated by the U.S. Department of Health, Education and Welfare. While the latter called out a standard only for phenolic compounds (less than 0.001 ppm) as far as organic chemicals were concerned, the March 1967 standards were little improved since phenols were set at 0.002 mg/l and carbon chloroform extract residue (CCE) in concentration of 0.4 was added. CCE is a mixture of organic chemicals that would be adsorbed on activated carbon and desorbed by chloroform in the laboratory analysis.

It wasn't until 1964 and revised in 1976 that Part 72, Title 10, New York State Administrative Codes, Rules and Regulations listed specific organic pesticides, herbicides and insecticides.

Effective September 1, 1978, new and modified classifications and standards for groundwaters of New York State and discharges thereto were enacted as a new Part 703, amending a 703 that was enacted in 1972 shortly after the NYSDEC was formed. The new Part 703 further clarified effluent or discharge limitations by providing a schedule of quality standards that were generally twice those of the groundwater classification for quality standards of inorganic constituents but the same for 63 listed organic chemicals. Vinyl chloride was now listed and the discharge limitation and the quality standard were set at 5.0 ug/l.

It was in Nassau County that organic chemicals were found in groundwater and drinking water supplies in the mid-1970's, but it was only until September 1978 that a State standard was promulgated for use by the Department of Environmental Conservation in reviewing and approving wastewater discharges. The State Health Department has issued interim standards and guidelines that limit single contaminants to 50 ppb and the sum not to exceed 100 ppb, except for vinyl chloride set at 10 ppb for application to drinking water supplies. Where an organic chemical is not listed in Part 703, the State Health Department limits are applied for discharge limitation purposes.

VI Groundwater Contamination -
East Central Nassau County

In December 1973, the Grumman Aerospace Corporation indicated that four of their wells had developed an odor problem, and two others were previously abandoned for the same reason. Various contaminants were thought to contribute to this problem, but as described by one sampler, a vinyl odor to the water implicated Grumman's neighbor, the Ruco Division of Hooker Chemical Company, which as far as our records indicated were the only users of vinyl chloride in the area. In sampling through 1978, 3 of 12 wells of Grumman were positive for vinyl chloride with the maximum detected level being 50 ppb.

A chemical engineer of Hooker said that two major discharges from their plant consisted of phenols and polyvinyl chloride and latex derivatives. Hooker Chemical Company's lagoons revealed several types of organics which could be the source of the taste and odor problems in the Grumman water supply wells. The Department requested assistance of the EPA laboratory to do organic analyses as well as the assistance of the NYSHD laboratory. NCDH initiated a full-scale evaluation of Hooker Chemical Corporation's usage of chemicals to provide a basis for chemical testing required.

Grumman water supply contained vinyl chloride, methane, and ethylene, based on gas chromatograph and mass spectrometer analyses.

While there were various logistic problems in getting sufficient analyses performed, the extremely difficult halogenated organic analyses had to be thoroughly researched in order to explain the source of the water supply problem and thoroughly investigate the industrial discharges from Grumman and surrounding industrial plants. Since no standards existed for the organics found in the aforementioned, the State Department of Health was solicited to provide maximum levels that would be permitted in drinking water.

No public supply wells of neighboring districts showed any vinyl chloride in 60 wells tested, although they did contain trace organics of other halogenated hydrocarbons. As far as the vinyl chloride contamination in the ground, a source other than Grumman appeared to be a reasonable explanation. However, Grumman had been using and discharging the various other organics noted in their own wells and picked up in trace quantities in some of the public water supply wells. Restriction of the use of wells with odors and the consideration by the Corporation to develop alternate water sources, as prescribed by a consulting engineer experienced in groundwater hydrology, represented some of the impacts of the areas contamination by organic chemicals.

The EPA indicated that the presence of vinyl chloride and tetrachloroethylene in high concentrations in the Grumman wells necessitated a recommendation that the water not be used for

drinking purposes unless suitably treated. The State Health Department formulated interim guidelines for organics in drinking water supply and limited any one contaminant to 50 ppb and no combination adding up to over 100 ppb. However, the guideline for vinyl chloride was more restrictive, being set at 10 ppb. Vinyl chloride is considered to be a known carcinogen, and the guideline was based on extrapolations from animal bio-assay data which would in a lifetime of exposure result in one additional cancer death per million population.

No funds were forthcoming from the EPA to finance a contamination study, and the Nassau-Suffolk 208 Management Study might be the avenue for this investigation. The Executive Director of the Nassau-Suffolk Regional Planning Board charged with the direction of the 208 Area-Wide Wastewater Management Study agreed that the matter was a proper one for their investigation, in spite of concern of others that it was too specific, affecting too small an area.

A period of extensive sampling for organic chemicals followed in conjunction with State Department of Health and USEPA support. Capability to analyze organic chemicals was increased by the State and NCDH, but the Long Island 208 Study

to assess the cause-and-effect relationship of organic contamination in Bethpage groundwaters and the development of effective management solutions was not accepted. In January of 1977, additional recommendations were made by the NCDH calling for federal and State agencies to intensify their laboratory support to the Department, the EPA consider the public funding of water quality to the Long Island area; County supply supplementary allocation to the Department to deal with the problem.

The State Health Department explained the problems in establishing guidelines for organic contaminants since little is known concerning the effects of various contaminants on human beings. They further indicated that while exposure to a large number of carcinogens occur, the goals should be to reduce concentration in drinking water to zero. They indicated that allowable limits for organics would not be established by the EPA or NYSHD and preferred that an assessment of health risks would be made for various levels encountered. However, the interim guidelines previously established are being used as drinking water standards.

Grumman's use of their private supply wells is actually cleaning up the water in the ground because in the process aeration takes place, and the discharge water is better than what was originally

pumped with no addition of contaminants, due to this aeration.

No further action was taken by Grumman to seek redress from any other industry in the area since Grumman itself had discharges of process waters containing most of the contaminants showing up in their own drinking water wells.

VII Carcinogenicity of Vinyl Chloride - A halogenated hydrocarbon, vinyl chloride is an important monomer for polymerization in the manufacture of polyvinyl chloride. As late as 1974, vinyl chloride was not listed as a carcinogen by State and Federal health and industrial hygiene agencies. There is record, however, that vinyl chloride was involved in two accidental deaths in industry with pathological findings of cyanosis, conjunctival burns, congestions of internal organs, especially lungs and kidneys, and failure of the blood to clot. Animal tests on guinea pigs and rats of vinyl chloride in air produced the same symptoms. In the 1976 National Institue of Occupational Safety and Health Register, vinyl chloride was listed as a carcinogen. Similar lists prepared by the State Health Department in 1977 and the National Academy of Sciences in 1976, and as clarified in 1977, indicated vinyl chloride as a known human carcinogen, one of few considering the large number of suspected carcinogens listed.

The "Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment" adopted by the American Conference of Governmental Industrial Hygienists has been revised downward over the last few years. The 1978 OSHA concentration

vinyl chloride

limits for gases for a maximum allowable exposure (8-hour weighted average) is 1 ppm. The NYSHD's drinking water guideline was established at 10 ppb in 1977, while other organics were set at 50 ppb. The reason for the lower level for vinyl chloride was that it had been established as a human carcinogen.

A slight inconsistency with the NYSHD 10 ppm guideline for vinyl chloride exists in Part 703, Title 6, NYCRR, adopted in 1978. Vinyl chloride standards in Part 703 were set at 5 ppb for the classification of the groundwater for drinking purposes and effluent limitation for the discharge of a contaminated liquid.

STATE OF NEW YORK DEPARTMENT OF HEALTH

MEMORANDUM

Related to Long Island P.W. wells

Attachment 6-8

To: Mr. Orndorff

From: Mr. Lister

Date: July 30, 1982

Subject: Community Water System Sources
Closed Due to Contamination

The attached list represents the most recent update on community water system source closures.

Attachment

cc: Dr. Hetling
Mr. Smith
Dr. Kim
Mr. Grossman
Section Chiefs

COMMUNITY WATER SYSTEM SOURCES CLOSED DUE TO ORGANIC CONTAMINATION, SUBSEQUENTLY REOPENED
AS OF JULY 1982

BLIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
licott	Broome	5	1/80	2/80	1,1,1-trichloroethane	Industrial Discharge
chpage WD	Nassau	9	12/13/76	3/16/78	tetrachloroethylene	Unidentified
rmingdale (V)	Nassau	2-1	12/28/76	6/13/77	trichloroethylene	Unidentified
ainview WD	Nassau	3-1	12/28/76	6/13/77	trichloroethylene 1,1,1-trichloroethane	Unidentified
Farmingdale WD	Nassau	1-1	12/28/76	6/13/77	1,1,1-trichloroethane trichloroethylene	Unidentified
		6,1,6-2	1/17/77	6/13/77	trichloroethylene	Unidentified
ty of Glen Cove	Nassau	21	6/13/77 11/14/78	10/30/78 4/11/79	tetrachloroethylene trichloroethylene	Unidentified
		2s	8/14/78	4/11/79	tetrachloroethylene	Unidentified
nhasset-Lakeville	Nassau	12	11/1/77	7/31/80	trichloroethylene tetrachloroethane	Unidentified
w York Water Supply rp.	Nassau	2s	9/20/78	5/25/79	tetrachloroethylene 1,1,1-trichloroethane dibromochloroethane	Unidentified
osevelt Field WD	Nassau	3	10/20/78[1]	6/80	trichloroethylene	Commercial and Industrial Discharge
eenport	Suffolk	6-1	8/30/79	10/80[2]	aldicarb	Agricultural Applications

ell Deepened
ranular Activated Carbon filters in operation.

COMMUNITY WATER SYSTEM SOURCES CLOSED DUE TO ORGANIC CONTAMINATION, SUBSEQUENTLY REOPENED
AS OF JULY 1982 CONTINUED

PUBLIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
Port Washington	Nassau	5	3/9/81 6/29/81	3/17/81 9/11/81	vinyl chloride	Unidentified
Jamaica WS	Nassau	28	9/20/78 12/26/80	5/16/79 6/4/81	trichloroethylene	Unidentified
Mineola	Nassau	#4	6/25/81	7/21/81	1,1,2-trichloroethylene	Unidentified
Suffolk County Water Authority	Suffolk	Green Ave. #7	1/77	10/77	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Church St. #1-Holbrook	8/15/77	1/12/78	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Mill Lane	9/77	11/77	tetrachloroethylene	Unidentified

COMMUNITY WATER SYSTEM SOURCES CLOSED DUE TO ORGANIC CONTAMINATION
AS OF JULY 1982

BLIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
stal	Broome	1-1	6/80	-	1,1,1-trichloroethane	Industrial Discharge
		4-2	2/80 11/80[2]	6/6/80[1] -	1,1,1-trichloroethane	Industrial Discharge
ean	Cattaraugus	Richmond Ave.(18M)	2/81	[3]	trichloroethylene	Industry Suspected
		Torrey Ave.(37M & 38M)	2/81	[3]	trichloroethylene	Industry Suspected
mira WD	Chemung	Kentucky Ave.	9/80	-	trichloroethylene	Industrial Discharge
hnstown	Fulton	2	4/78	[4]	taste & odor	Landfill
ledonia	Livingston	2	2/79	-	gasoline, benzene toluene, xylene	Ruptured Gas Tank
thpage WD	Nassau	6-1	12/3/76	-	trichloroethylene	Unidentified
cksville WD	Nassau	5-1	8/25/77	-	1,1,1-trichloroethane	Unidentified
		3-1	12/3/76	-	1,1,1-trichloroethane	Unidentified
richo WD	Nassau	10	5/6/77	-	1,1,1-trichloroethane	Unidentified
Water Corp.	Nassau	1-15	5/6/77	-	1,1,1-trichloroethane	Unidentified
ty of Glen Cove	Nassau	20	6/23/77	-	trichloroethylene	Industrial Discharge
		22	6/23/77	-	trichloroethylene tetrachloroethylene	Industrial Discharge
		1s	7/7/77	-	tetrachloroethylene	Unidentified

Granular Activated Carbon filter unit installed; failed 11/80.
Well water being pumped to waste.
Used only during periods of peak demand.
Voluntary closure; well may be used as last resort.

COMMUNITY WATER SYSTEM SOURCES CLOSED DUE TO ORGANIC CONTAMINATION

AS OF JUNE 1981

PUBLIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
Garden City Park WD	Nassau	5	12/2/77	-	tetrachloroethylene	Unidentified
		4	4/6/81	-	tetrachloroethylene	Unidentified
Hempstead (V)	Nassau	6	1/23/78 8/8/80	8/31/78 -	trichloroethylene	Unidentified
Roosevelt Field WD	Nassau	2	9/25/79 10/3/80	7/24/80 -	trichloroethylene	Commercial Discharge
Niagara Falls	Niagara	Emerald Channel Intake (surface source)	9/5/79	-	tetrachlorobenzene trichlorobenzene hexachlorocyclopentadiene hexachlorobutadiene	Industrial Discharge
Brewster	Putnam	Well Field #1	10/78	-	trichloroethylene tetrachloroethylene	Industrial Discharge
Jamaica WS Co.	Queens	41	11/13/80 8/80	6/80 -	trichloroethylene tetrachloroethylene	Unidentified
		54	9/80	-	tetrachloroethylene	Unidentified
		6D	11/13/79	-	tetrachloroethylene	Unidentified
		6	9/80	-	tetrachloroethylene	Unidentified
		29A	7/16/80	-	trichloroethylene tetrachloroethylene	Unidentified
		24A	11/26/79 9/80	6/80 -	tetrachloroethylene	Unidentified
Suffern	Rockland	1&2	3/79	-	1,1,1-trichloroethane	Industrial Discharge
		4	11/78	-	1,1,1-trichloroethane	Industrial Discharge

PUBLIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
Farmingdale WD	Suffolk	2-1	1/77 12/1/77	5/31/77 -	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
iversity Garden artments	Suffolk	1	5/22/78	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Commercial Discharge
Huntington WD	Suffolk	2	9/29/78	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
ffolk County Water thority	Suffolk	Albany Ave. #1	2/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Albany Ave. #2	5/20/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Albany Ave. #3	1/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Meade Dr. #1	11/4/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Meade Dr. #2	1/5/78	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Locust Ave. #2	11/4/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified

COMMUNITY WATER SYSTEMS WITH LOSS DUE TO ORGANIC CONTAMINATION
AS OF JULY 1982 CONTINUED

PUBLIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
Suffolk County Water Authority Continued	Suffolk	Locust Ave. #3	8/30/78	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Oval Dr. #1	12/21/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Oval Dr. #2	3/21/77	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		Lincoln Ave. #1	5/31/77	8/16/77	1,1,1-trichloroethane trichloroethylene	Unidentified
			7/14/78	-	tetrachloroethylene	
		Bellrose Ave. #1	6/16/80	-	trichloroethylene	Unidentified
		Long Springs Rd. #2	9/11/80	-	aldicarb	Agricultural Applic.
		Samuel St. #1	11/77	2/78	tetrachloroethylene	Unidentified
			10/80	-		
		Samuel St. #2	10/22/80	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
		E. Forks Rd. #1	10/6/80	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified
Brookhaven Nat. Lab.	Suffolk	2	3/20/80	-	tetrachloroethylene	Unidentified
Brentwood WD	Suffolk	1-1	5/80	-	benzene	Ruptured Gas Tanks
Bedford WD #1	Westchester	Katonah	1/79	-	tetrachloroethylene	Unidentified

COMMUNITY WATER SYSTEM SOURCES CLOSED DUE TO ORGANIC CONTAMINATION
AS OF JUNE 1982

LIC WATER SUPPLY	COUNTY	WELL NO.	DATE CLOSED	DATE REOPENED	CONTAMINANT	CONTAMINATION SOURCE
Water Corp.	Nassau	18-2	9/30/80 (Res.)	-	1,1,2-trichloroethylene	Unidentified
		24-1	9/30/80 (Res.)	-	1,1,2-trichloroethylene chloroform	Unidentified
len City Park WD	Nassau	#6	7/1/81	-	tetrachloroethylene	Unidentified
eola	Nassau	#5	7/9/81	-	chloroform	Unidentified
ltown WD	Nassau	#3	8/25/81	-	nitrate	Unidentified
ilia	Otsego	Clinton St. #1	1/82	-	benzene vinyl chloride	Unidentified
		Clinton St. #2	1/82	-	1,2 dichloroethane	
aica Water Supply	Nassau	16	10/20/78	-	tetrachloroethylene	Unidentified
Huntington WD	Suffolk	1	1/2/80	-	1,1,1-trichloroethane trichloroethylene tetrachloroethylene	Unidentified

15 (12/75)

CAVT

New York State Department of Environmental Conservation

Attachment 6-9

cc: Joe Slack
BYI. JR
~~BAD~~

MEMORANDUM

File: Reg #1
IPT File

RECEIVED

DEC 2 1980

BUREAU OF HAZARDOUS
WASTE MANAGEMENT PROGRAMS

TO: M. Peter Lanahan
FROM: John Greenthal
SUBJECT: Hooker (Long Island)

DATE: December 1, 1980

This memorandum will provide you with a status update of the referenced matter. Michael Tone and Vance Bryant will be visiting the Grumman Aerospace site this week in order to familiarize themselves personally with the terrain.

On November 13, 1980, at the Region 1 Office in Stony Brook, a meeting was held concerning Hooker's Hicksville operation. Present at this meeting were Joseph Schechter and Marvin Fleisher of the Nassau County Health Department, Bronius Nemickas of the U.S. Geological Survey, Morris Bruckman and Joan Scherb of DEC Region I, and John Greenthal, Vance Bryant and Michael Tone of the Hazardous Waste Compliance Team. The purpose of this meeting was to brief the members of the Compliance Team regarding the industrial waste storage and disposal practices of Hooker.

The Hooker waste storage and disposal practices may have resulted in the creation of six separate sites which present a potential hazard to public health or the environment. The extent of actual contamination and the threat of potential contamination vary from site to site. The quality and quantity of evidence which implicates Hooker as a culpable disposer of industrial waste also vary from site to site. However, the preliminary conclusion which may be drawn is that Hooker is responsible for contaminating or creating the potential for contamination of the Long Island ground water. The development or refinement of the legal case surrounding each particular site awaits further investigation and testing.

The southeast regional office of the Compliance Team has begun the field investigation with a view toward further linking Hooker to each of the landfill sites. Vance Bryant has begun to develop a specific site hydrogeological study of the Hooker/Grumman Aerospace industrial sites. The Nassau County Health Department has dedicated personnel to support any additional testing the Compliance Team deems necessary. One must keep in mind, however, that as more investigative and test data become available, the strength of the case against Hooker may be enhanced or weakened.

Information known about each site is summarized below:

GRUMMAN AEROSPACE CORP.

Polyvinyl chloride (PVC) was manufactured at Hooker from 1956 until May of 1975. The water effluent from the Hooker PVC production process was discharged into a recharge sump located on the Hooker site. Among the wastes from the PVC operation was excess vinyl chloride. In 1974, vinyl chloride was determined to be a human carcinogen. In 1975, testing revealed vinyl chloride present in the well water from the private wells located on the Grumman property, as well as in the Hooker wastewater discharged into the sump. Because of the proximity of the Hooker site and Grumman's wells, and by integrating what is generally known about the ground water flow in the area with the results of a preliminary hydrogeological study by the U.S.G.S., one may conclude the contamination of the Grumman wells occurred as a result of the Hooker waste disposal practice. The probability of Hooker's being responsible is increased when you consider that the Nassau County Health Department determined Hooker to be the only commercial producer, user or disposer of vinyl chloride on Long Island. Internal Hooker memoranda support this conclusion.

Hooker, in public hearings, as well as privately, contends that vinyl chloride is found unaccountably in drinking water as well as in the ambient air. In addition, Hooker has contested and will continue to contest the validity of the testing protocols used in measuring for the presence of vinyl chloride. In addition, Hooker will undoubtedly assert that Grumman has contributed to the contamination of its own wells.

Among the steps which must be undertaken by the Compliance Team is to obtain a site-specific hydrogeological study of the Hooker-Grumman industrial complex.

Thus far, no known public or privately instituted litigation has been commenced over this matter. The Attorney General, however, is also reviewing the existing evidence.

OLD BETHPAGE LANDFILL

An internal, confidential Hooker memorandum dated 8/21/78 reveals that Hooker disposed of industrial wastes in the Old Bethpage Sanitary Landfill. This waste stream was also identified by Hooker in the New York State Hazardous Waste Survey. In the internal memorandum, Hooker admits that: "[The] introduction of waste plasticizer into the Bethpage landfill . . . is probably the single most significant environmental pollution coming from the Hicksville site." The following table extracted from the Hooker memorandum summarizes the major chemical wastes sent to the Bethpage landfill.

	Lbs./Year
Trimellitic anhydride	10,000 lbs.
Adipic acid	27,000
Phthalic anhydride	300
Isophthalic anhydride	1,000
Maleic anhydride	1,000
PVC	400
Kane Ace	7,000
26TM & other plasticizers	240,000
Polyester	7,600
Speedi-Dri mixed organics	16,000
PVC compounds (90% PVC by content)	165,000
Spent lube oil	3,000
TOTAL	478,300 lbs.

The New York State Hazardous Waste Survey indicates that disposal of the industrial waste was performed by Mid-Island Rubbish Removal Co. In the survey filled out by Hooker, they denied knowing where their industrial waste was being disposed of. This conflicts with their internal memorandum and the information provided by the owner/operator of Mid-Island.

We are informed that the Town of Oyster Bay has just installed three monitoring wells at the landfill site. Tests of the ground water and ambient air have yet to be conducted, nor has there been any testing of ground water from neighboring wells.

As a result of an administrative notice of hearing and complaint filed August 31, 1979, negotiations were entered into with Hooker in an effort to require them to monitor the Bethpage and Syosset landfills. These negotiations were delayed while Hooker attempted to form an industrial committee to jointly sponsor the monitoring. Hooker was unable to form a committee, and the negotiations have not resumed.

The Compliance Team should initially request that testing be performed by the Nassau County Health Department on samples taken from the monitoring wells to determine if there has been ground water contamination. Also, a review of the Mid-Island, County and Town records is to be undertaken. Finally, a site specific hydrogeological study should be commenced.

SYOSSET LANDFILL

The same Hooker memorandum revealed that from 1946 until 1968 Hooker sent solid and liquid industrial waste to the Syosset Municipal Landfill. The waste was transported in drums and by tank trucks. The tank truck waste consisted of alcohols, glycols,

perchloroethylene, latex wastes, etc. According to the memorandum,

> drummed waste would include alcohol/water/ perchlor, purified latex, coagulated latex, alum, filter cake, PVC sludge, PVC floor scrapings, and reactor scrapings, vinyl chloride recovery still bottoms, spent lube oils (about 300 gallons/year) and . . . PCB therminol waste. Also drums of waste alcohol and glycol "strips" (mixture of 2-ethylhexanol and other similar alcohols, glycols such as ethylene glycol, perchloroethylene). Also some PCB therminol wastes. Solid wastes including 55 gallon drums, 5 gallon pails, pallets, 50 lb. bags, gaylords, cardboard drums, cheesecloth with latex coagulum, emptied PVC bags, emptied TMA bags, emptied adipic bags, emptied phthalic bags, emptied maleic bags. Also drums of waste filter cake (mixture of celite, decolorizing carbon, spent toluene solfonic acid catalyst, bicarbonate, and trimellitate plasticizer.) Also pallets, cardboard boxes, vinyl compound floor sweepings. Also PVC sump scrapings (combined PVC, vinyl chloride, vinyl acetate, trichloroethylene, barium and cadmium soap stabilizers). Also organic heels in drums.

No site-specific testing or monitoring has taken place, and the degree of contamination, if any, is unknown. The Compliance Team will determine the feasibility of sponsoring preliminary testing, initiate a preliminary geological and hydrogeological survey, and commence a field investigation to establish Hooker's culpability.

BRENTWOOD LANDFILL

Hooker's internal memorandum also indicates they disposed of bulk loads of solid waste scrapings taken from the PVC waste sump at a landfill in Brentwood, Long Island. Brentwood is located in the Town of Islip, Suffolk County. The Hooker memorandum indicates the name of the carters who trucked the waste, but contains no further information. To date, it has not been conclusively established which landfill was used. The possibility exists that the Brentwood Landfill, the Blydenburgh Road Landfill in Hauppauge or maybe both received the waste.

A field investigation by the Compliance Team is to be commenced to determine which landfill was used, what was disposed, when the disposal took place and what, if any, contamination resulted.

HOOKER INDUSTRIAL SITE AT HICKSVILLE

The on-site Hooker sumps have been inactive since 1975. However, core samples taken from an ester plant sump reveals organics, i.e., glycols, alcohols, perchloroethylene, adipic acid, trimellitic acid, etc.

Also, the Hicksville site contains three buried latex storage tanks and two buried latex tank trailers. In addition, there has been on-site spillage of plasticizers, alcohol, latex, PCB therminol and organics.

Nassau County Health Department personnel have occasionally observed spillage or the results of such spillage and have directed Hooker to take remedial action. However, on-site core sampling has not taken place to determine the magnitude of the contamination.

cc: Richard A. Persico
Irwin King
Eldred Rich
Donald Middleton
Joan Scherb
Norman Nosenchuck
Charles Goddard

JG/vs

7. SITE DATA

7.1 SITE SURFACE AREA FEATURES

The Hooker/Ruco Polymer Corporation site is located on New South Road, Hicksville, Town of Oyster Bay, Nassau County, New York (Attachment 7.1-1). The site is located in an industrialized area, with Grumman Aerospace Corporation located to the south and east, and Long Island Lighting Company to the northwest. The site covers an area of approximately 72 acres. The closest residential areas are to the west across New South Road, and are within 1,000 feet of the site. The surrounding topography is relatively flat. Attachment 7.1-2 shows the plant layout.

7.2 SITE HYDROGEOLOGY

The Hooker/Ruco site is located on stratified glacial deposits of sand and gravel with some thin interbedded clay lenses (see Attachment 7.2-1). There are three water bearing formations underlying the site: the Upper Glacial Aquifer (approximately 80 feet of sand and gravel), the Magothy Aquifer (approximately 580 feet of sand and some interbedded clay lenses), and the Lloyd member of the Raritan Formation (approximately 200 feet of sand) (see Attachment 7.2-2). The clay member of the Raritan Formation (approximately 150 feet) lies between the Magothy and Lloyd. There are no significant clay layers between the Upper Glacial and Magothy aquifers. For this reason, there is concern about potential contamination from surface sources.

Ground water flow is to the south and also varies seasonally due to high Grumman pumping rates (see Attachment 7.2-3). Grumman uses large quantities of ground water for cooling purposes, which influences ground water elevation and flow direction.

7.3 SUMMARY OF PAST SAMPLING AND ANALYSIS

Fourteen Grumman wells were sampled between 1974 and 1979 (Attachment 7.3-1). The list of compounds found in the ground water include vinyl chloride and six other halogenated hydrocarbons (Attachment 7.3-2). The Hooker/Ruco facility is the only known user of vinyl chloride in the area.

Ground Water

Vinyl chloride was again found in samples taken on 4 April 1980 from industrial water supply wells owned by Grumman Aerospace Corporation, whose property is adjacent to the Hooker/Ruco site (Attachment 7.3-3).

Surface Water

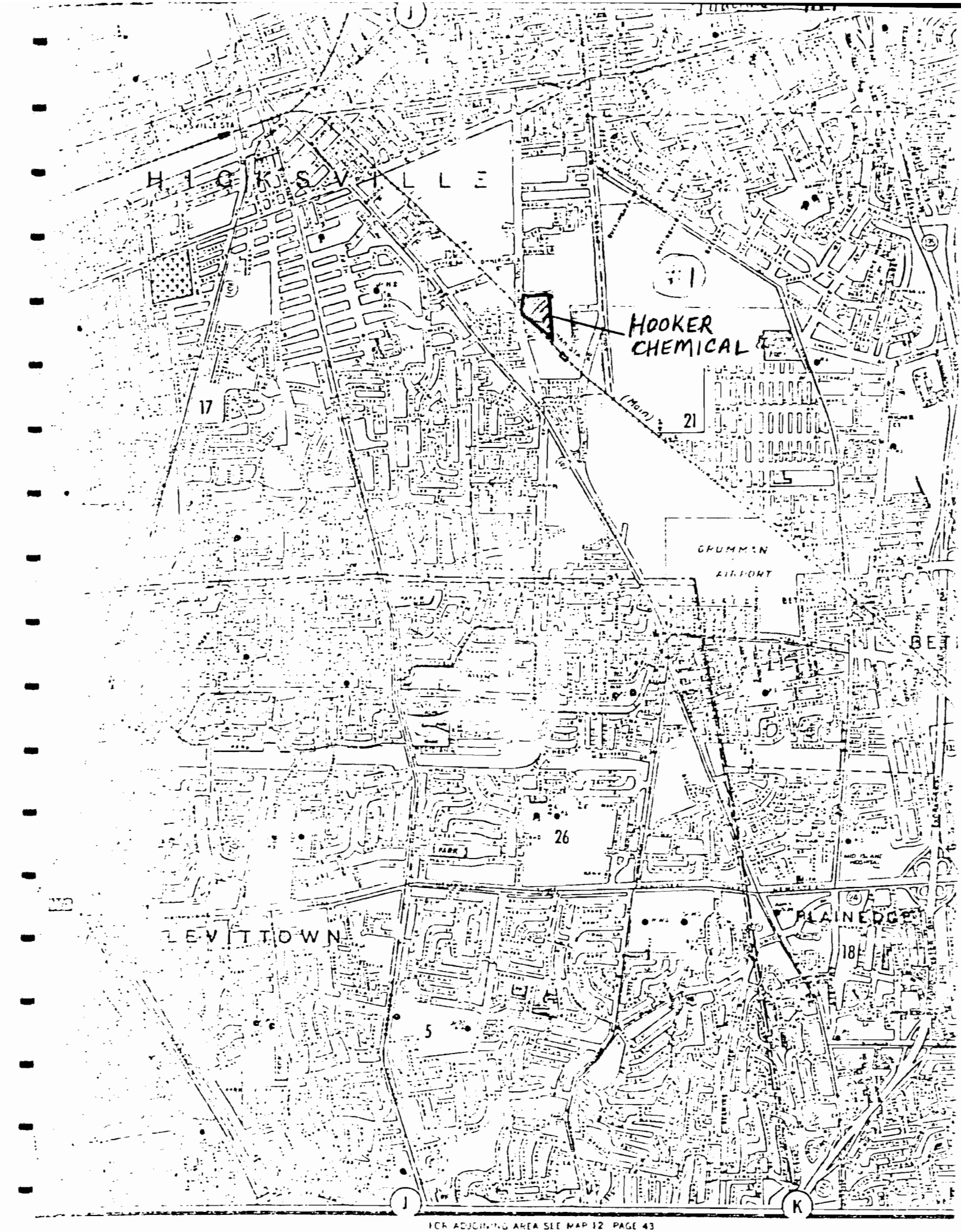
No data are available.

Air

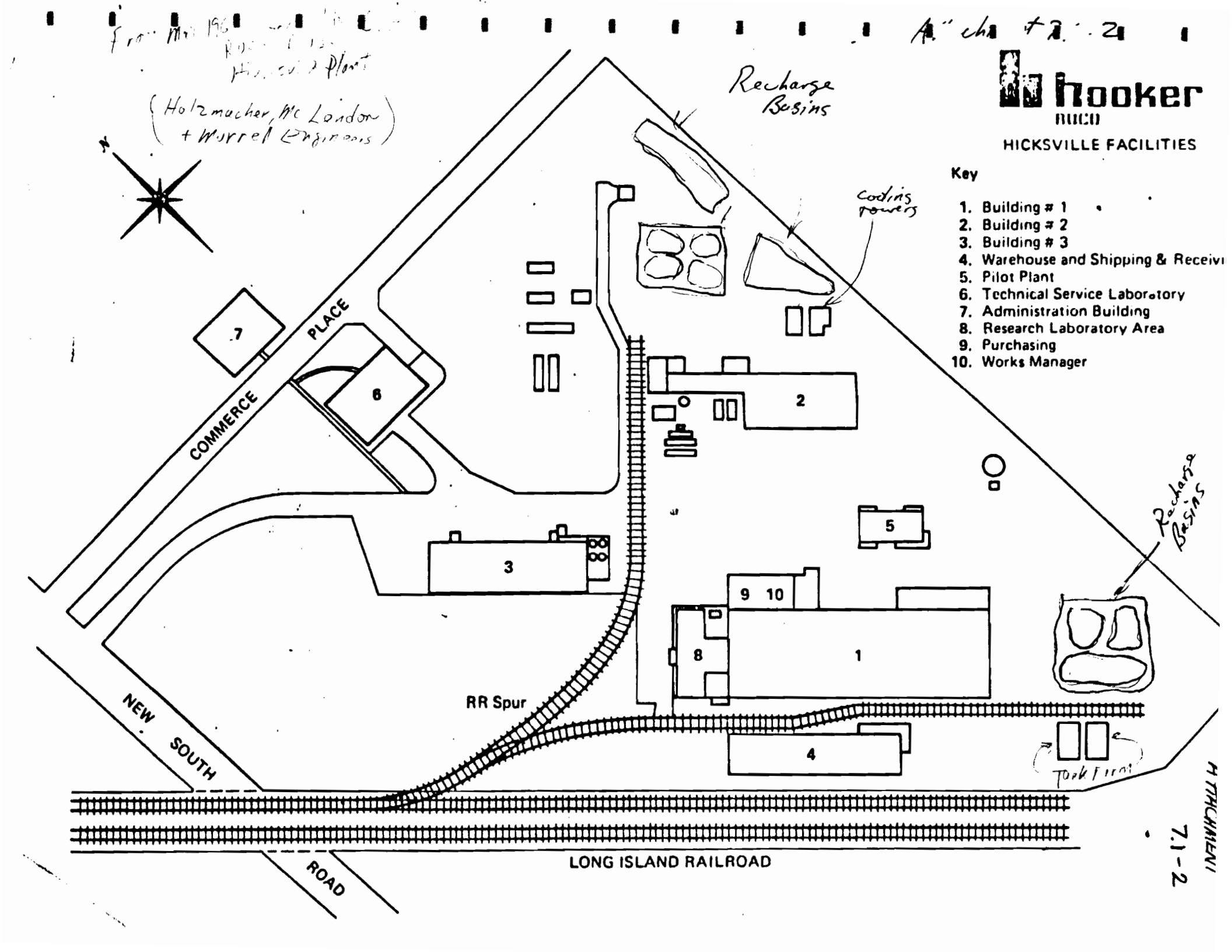
No data are available.

Soil

No data are available.



FOR ADJOINING AREA SEE MAP 12 PAGE 43



ATTACHMENT 7.1-2

HOOKER CHEMICAL - RUCO PLANT - SITE INVENTORY

Hicksville, N.Y. (Long Island)

Introduction - Public Concern:

Public concern of Hooker Chemical's Ruco Plant in Hicksville, New York (Long Island) occurred as early as December 14, 1976. Hooker was cited as a prime industrial polluter during a New York State Assembly Subcommittee hearing on Health in Mineola, N.Y. In June 1979, the Nassau County Health Department reviewed, at the request of the U.S. House of Representatives' Subcommittee on Oversight and Investigation of the Commerce Committee, Hooker's internal reports on plant operations. The County commented in July 1979 (see Appendix A*) which substances were toxic and whether their disposal in Nassau County landfills constituted a violation of prevailing law.

Public concern also exists for on-site (Ruco Plant) disposal (since the early 1950's) of waste water containing chlorinated hydrocarbons by use of sand sumps. Waste water from the sumps directly leach into the area's sole source aquifer thus creating possible potable groundwater contamination. This concern is shared in DEC's Hazardous Waste Disposal Sites Report, February 1980.

Site Description:

The Ruco Plant site covers approximately 72 acres along New South Road, 1.2 miles southeast of Hicksville, N.Y. It is shown in figure #1 as the green circle and the actual plant layout is shown in figure #2. The surface terrain is relatively flat and the area surrounding the plant is industrialized with Grumman Corporation located to the south and east, and Long Island Lighting Company (LILCO) to the northwest. In figure #1, the residential areas are outside the heavy black boundary line. The closest residential areas are to the west of Ruco across New South Road.

Site Hydrogeology:

The Plant is located on stratified deposits of sand and gravel with some thin interbedded clay lenses (see attached figure #3). There are three water bearing formations; the Upper Glacial Aquifer (about 80 feet of sand and gravel), the Magothy Aquifer (about 580' of sand and thin interbedded clay lenses), and the deep Lloyd formation (about 200' of sand). Separating the Magothy and Lloyd formations is about 150' of clay (Raritan formation). No significant clay layers exist between the Upper Glacial and Magothy Aquifers. Thus potential aquifer contamination (from surface sources) exist for both the Upper Glacial and Magothy formations.

Groundwater flow is to the south and varies seasonally partly due to Grumman pumping rates (see figures 4 and 5). Grumman uses large quantities of groundwater for cooling purposes in the summer which is illustrated in figure #4 (July 1979) by the larger enclosed contour areas and lower groundwater surface elevations than those shown in figure #5 (December 1979).

Past Plant Operations and Chemical Disposal Methods:

Some Ruco Plant operations dating back to 1951 are identified in a Hooker internal report "Identification of Environmental Problems", 8/30/78, M/A 3867-8 JBH:sg (see attached Appendix A). The report discusses environmental problems

* Appendix A contains only the first page of the document; complete document is available in the file.

HYDROGEOLOGIC SETTING

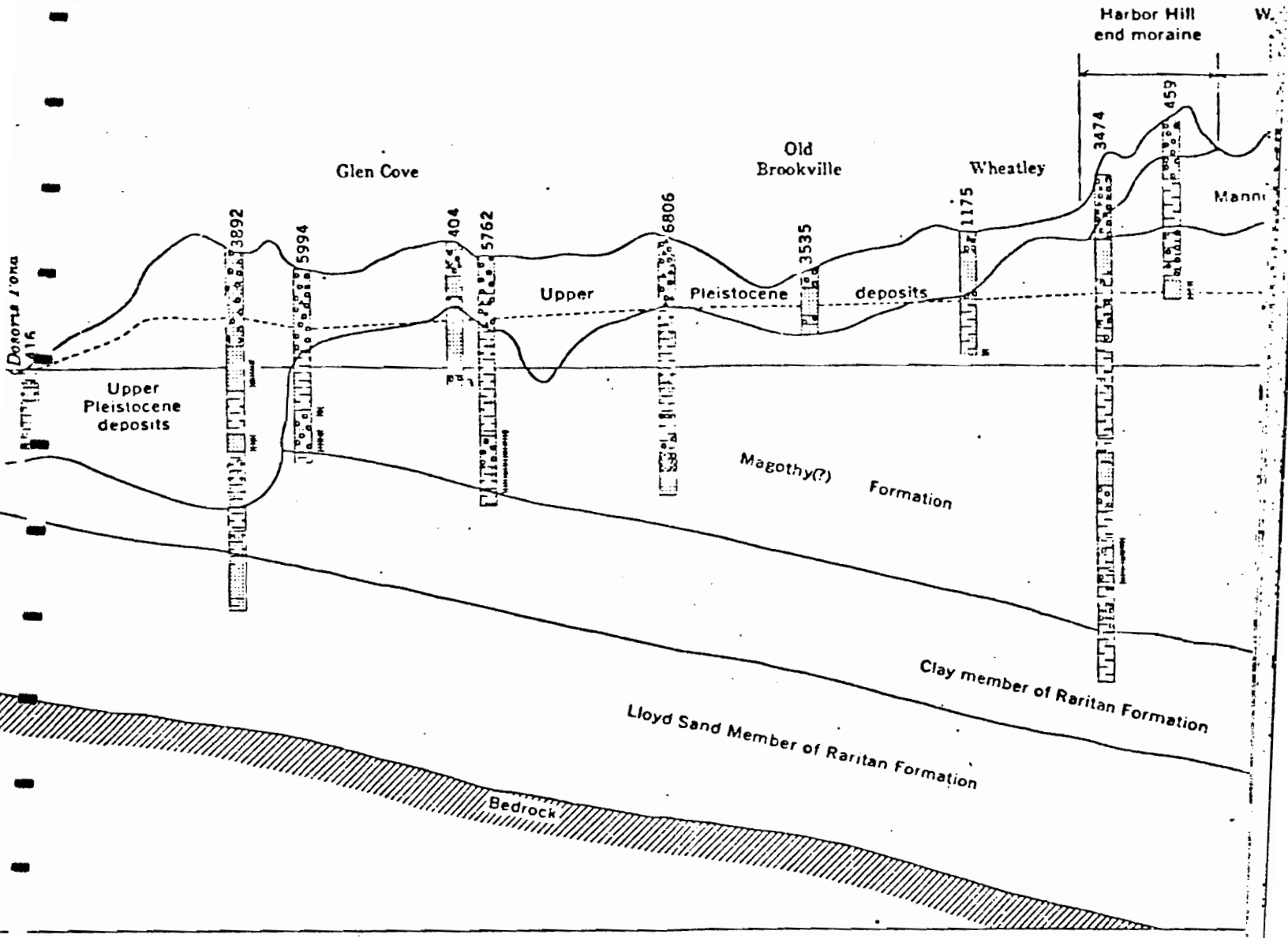
Figure 2 is a surficial geologic map of northeastern Nassau County [1/]. The Hicksville plant is located on the glacial outwash plain which consists of stratified deposits of sand and gravel with some thin interbedded clay lenses. There are three basic water-bearing units underlying the project area. These are the Upper Glacial Aquifer, the Magothy Aquifer, and the deep Lloyd Formation. The Lloyd is separated from the Magothy by thick clay. The cross section shown on figure 3 shows the interrelationship of these units [1/]. (See figure 4 for section A-A' and 5 for subsection B-B'). The logs on the cross section show no significant clay layers between the Upper Glacial Aquifer and the Magothy. This is confirmed by the geologic logs of the three Hicksville plant wells which show only thin, discontinuous clay occurrences in the upper part of the Magothy Formation (Appendix I). Heavy pumping from the Magothy in the study area suggests downward leakage from the Glacial to the Magothy Aquifer (figure 6). Ground-water flow in the Glacial Aquifer, in addition to the vertical component, is laterally to the south.

The Hicksville plant well logs indicate that the top of the Magothy Formation is about 60 feet above mean sea level. Figure 7, showing the generalized, non-pumping ground-water surface contours for the study area, indicates an elevation of about 78 feet above mean sea level at the plant. Therefore, assuming no local pumping, only about 18 feet of the Glacial Aquifer would be saturated.

[1/] Isbister J. "Geology and Hydrology of Northeastern Nassau County, Long Island, New York," U. S,. Geological Survey Water Supply Paper 1825; 1966.

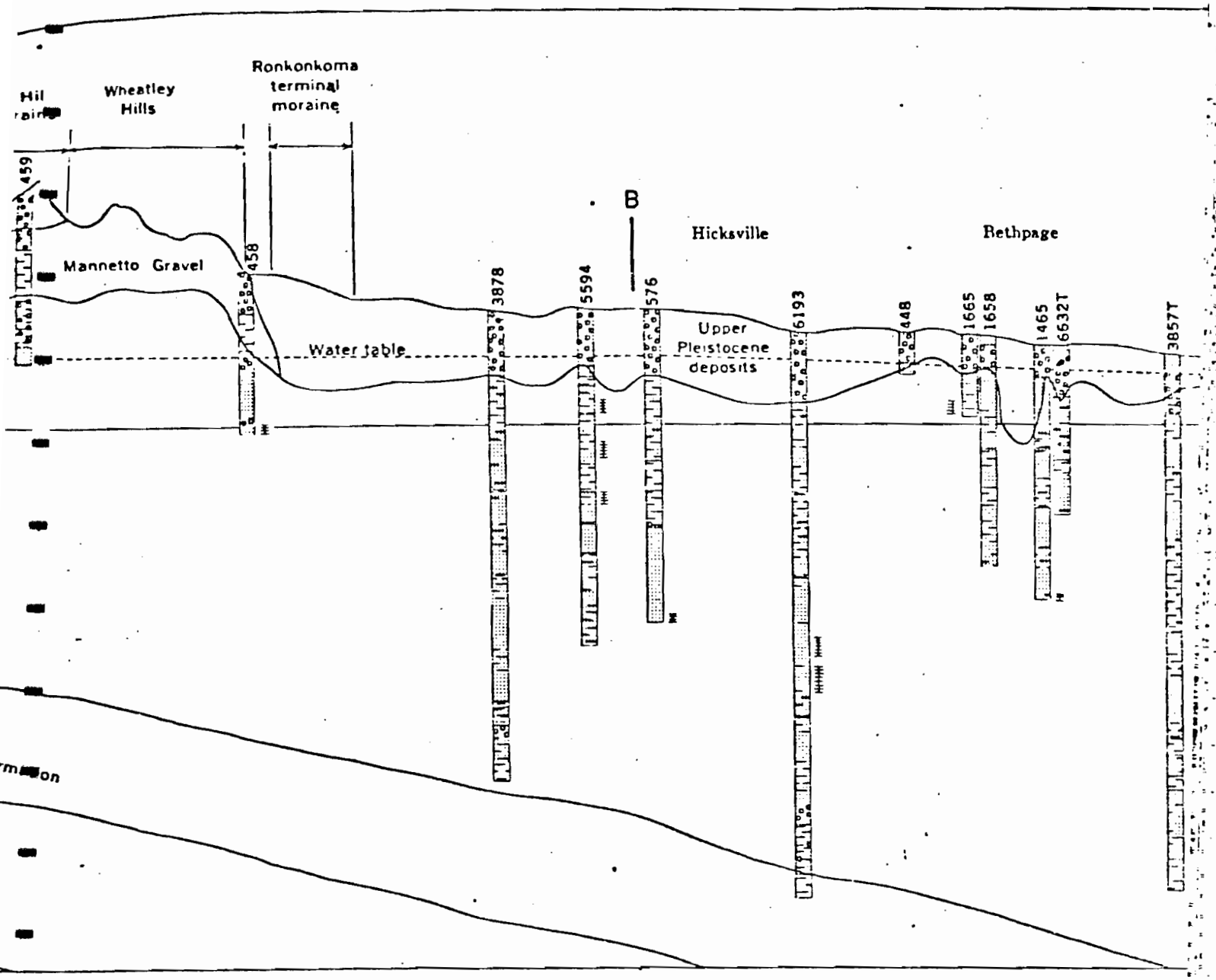
Attachment 7.2-2
1 of 3

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



SECTION A–A', FROM LONG ISLAND SOUND NEAR D

PREPARED IN COOPERATION WITH THE
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS AND THE
NEW YORK STATE WATER RESOURCES COMMISSION



AR DOSORIS POND TO NASSAU COUNTY LINE AT SOUTH FARMIN

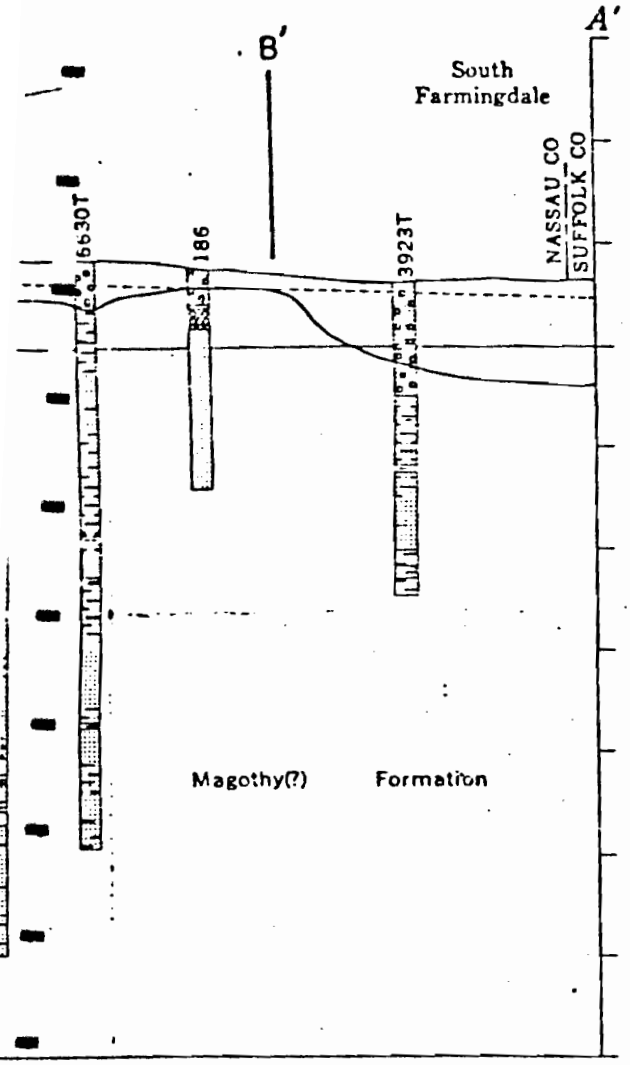
figure 3

Attachment 7.2.2

3 of 3

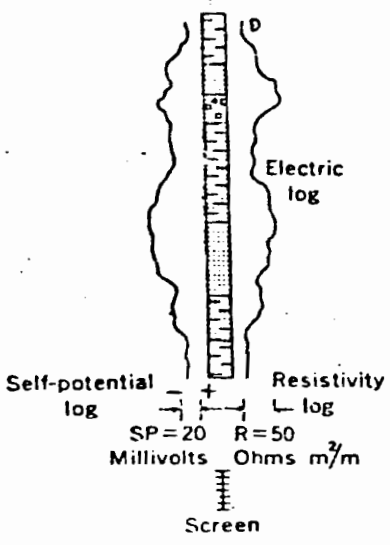
FIGURE 3

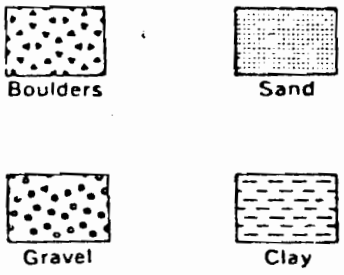
WATER-SUPPLY PAPER 1825
PLATE 3



GDALE

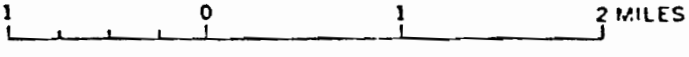
EXPLANATION





Contact
Dashed where approximate

Prefix N has been omitted from well numbers



Attachment 7.2-3

TABLE 2

Seasonal (Winter/Summer) Average of Pumpage
Quantities for Grumman Wells
(Million Gallons/Month)

Winter		Summer	
1978		1978	
January	81.1	June	425.4
February	92.1	July	339.2
March	111.4	August	453.0
		September	345.1
1979		1979	
December ('78)	80.7	June	318.6
January	119.3	July	334.7
February	103.3	August	425.0
March	103.8	September	306.1
1980		1980	
December ('79)	85.7	June	343.2
January	134.3	July	432.1
February	103.4	August	357.1
March	102.8	September	355.0
1981		1981	
December ('80)	136.8	June	290.5
January	93.2	July	369.3
February	103.5	August	324.8
March	109.1	September	335.1
TOTAL	1550.5		5805.5
AVERAGE/MONTH	103.3		362.8

The Average Monthly Summer Pumpage was Approximately 3 1/2 Times the Average Monthly Winter Pumpage Over the Past Four Years.

Hooker/Ruco Attachment 1.3-5

STATE OF NEW YORK
DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH

APPENDIX B

MEMORANDUM

April 15, 1980

To: G. Eadon, Ph.D.

From: R. S. Narang, Ph.D. RSN

Subject: Results of Analyses for Vinyl Chloride in Samples Collected 4 April, 1980 from Wells on the Property of Grumman Corp., Bethpage, LI

Analysis for Vinyl chloride in wells 5,6,8, and 14 on Grumman Property was carried out using the protocol established by NYS Dept. of Health. The presence of vinyl chloride in two samples was confirmed by mass spectrometry. Results are expressed as mean values for triplicate analyses.

WELL NO.	ACCESSION NO.	TIME	µg/L; Vinyl Chloride
5	080428-30	72 hr.	15.0
6	080400-2	Initial	0.7
6	080404-6	15 min.	1.1
6	080412-14	2 hr.	2.6
8	080396-98	26 hr.	10.4 **
8	080432-34	98 hr.	11.0
14	080388-90	Initial	80-50*
14	080392-94	15 min.	29.3
14	080408-10	3 hr.	10.0 **

* Amount of vinyl chloride in Well 14 dropped very quickly with increasing sampling time. This may indicate the presence of higher levels of vinyl chloride in the well line than in the aquifer.

** Presence of Vinyl Chloride confirmed by mass spectrometric analysis.

RSN/cj