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HAZARDOUS WASTE REMEDIATION
NYSDEC REGION 1

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EXECUTIVE SUMMARY

On April 25, 1989 a public hearing was held at Hempstead Town Hall as part of the State Environmental Quality Review Act and preparation of a Final Environmental Impact Statement for the proposed development of a 10.7 acre shopping center located on Jerusalem Avenue, in Uniondale, Town of Hempstead, Nassau County, New York. During the public hearing, the people of the local community offered information concerning the site history, which included a number of statements attesting to the careless dumping of toxic materials in the former landfill located in the northeast portion of the property.

A site contamination study was conducted for the site in 1986. A thorough review of Nassau County Health Department, New York State Department of Environmental Protection, and Nassau County Fire Marshal files showed no evidence of hazardous waste activity. Tests on site showed little, if any, contamination and tests directly in the fill showed undetected levels of contamination.

However, based upon the concern expressed by the people of the community, this sampling effort was undertaken to further characterize the soils and groundwater at the site in order to determine whether this site poses a threat to human health and safety.

A total of five (5) wells were installed to investigate the groundwater quality upgradient, within, and downgradient of the fill. Each well was surveyed to determine the upper glacial aquifer gradient and to determine groundwater movement. To further characterize the hydrodynamics of the fill area, a paired piezometer was installed in the fill (2 wells were installed, one shallow and one deep, in the fill).

In addition, soils within the fill were investigated at 2

unsaturated and 3 saturated zones. All groundwater and soil samples were tested by a USEPA and NYSDEC contract laboratory for full target compound parameters (149 parameters).

The results of the sampling indicate that there are substances present in the groundwater within the fill at both shallow and deeper zones apparently derived from the fill.

Groundwater quality within the fill was characterized to be slightly tainted and exceeded the NYSDEC Class "GA" groundwater standards. However, groundwater quality directly downgradient of the fill was acceptable. Thus, based upon the results of this investigation, it can be concluded that this site does not pose a threat to drinking water supplies of Nassau County.

DISCLAIMER

These findings are based upon a detailed sampling procedure that has been formulated in accordance with U.S. E.P.A. procedures both for sampling and for laboratory analysis. Conclusions from this data are limited to those areas focused on in the study and represents our best judgement using analytical techniques and our past experience. Even though our investigation has been scientific and thorough, it is possible that certain areas of this site may pose environmental concerns that as yet are undiscovered. In addition, environmental regulations may change in the future and could have an effect on our conclusions.

SECTION 1.0

Introduction

On April 25, 1989 a public hearing was held at Hempstead Town Hall as part of the SEQR Act process and preparation of a Final Environmental Impact Statement (FEIS) for a shopping center located on Jerusalem Avenue, in Uniondale, Town of Hempstead, Nassau County, New York (See Figure 1.1 for site location).

During the public hearing, the issue of soil quality at the old landfill was raised by a number of residents of the local community. Statements regarding toxic dumping and negligent behavior by the former owners of the property, dating back to the early 1960's, were the main focus of this portion of the public argument. Statements were made with reference to the dumping of gasoline, hospital wastes, paint thinner, and miscellaneous domestic dumping in the landfill.

This report presents a summary of the past site contamination study (Section 2.0), regional groundwater quality in the vicinity of the site (Section 3.0), monitoring well installation and sampling procedures (Section 4.0), soil and groundwater sampling results (Section 5.0), discussions of results (Section 6.0), and finally, the conclusions and recommendations (Section 7.0).

F,P&M

FIGURE 1.1-SITE LOCATION

SECTION 2.0

Summary of Past Site Contamination Study

A site contamination study was conducted in 1986 by Fanning, Phillips and Molnar in order to determine the site history with regard to ownership, land use, chemical storage and dumping, underground storage tanks, or any other information that would indicate a potential source and/or pathway of contamination on the site through time. In addition, a field inspection was performed to identify the present condition of the site. Areas of concern were followed up with soil sampling and lab testing.

As part of the Scope of Work for this study, a comprehensive file search was completed at the following agencies:

Nassau County Tax Assessors

Nassau County Department of Health, Sanitation Department

Nassau County Department of Health, Industrial and Hazardous Waste Management Division

Nassau County Department of Health, Bureau of Water Pollution Control

Nassau County Planning Commission

Nassau County Fire Marshal

New York State Department of Environmental Conservation

The file search information provided an effective means of reconstructing the site history dating back to 1930. In summary, the site was developed soley as a cement manufacturing plant from 1930 up to 1962. Due to the excavation of sand in the northern portion of the site, a large pit was created and subsequently filled with groundwater. In 1962, a bowling alley was constructed in the

southwest portion of the property while the cement plant was still in operation. By 1973 the pit had begun to be filled in with construction and demolition debris, and by 1975 a golf driving range was constructed to utilize the area of the former pit. From 1975 to 1986 the site was functioning as a bowling alley and golf driving range.

There were no underground storage tanks nor evidence of chemical spills on the site in the files. The closest chemical spills on record occurred at the Holly Paterson Nursing Home located approximately 1/2 mile west of the site.

A site field inspection was performed in order to determine the present setting. Soil sampling and analysis were performed to further investigate areas of concern that were identified during the site field inspection. Sediment from eight (8) drain pools and seven (7) soil borings were sampled and tested in the field with an organic vapor analyzer (OVA) equipped with a gas chromatograph (GC). The results of the OVA/GC testing showed six (6) drain pools and two (2) soil samples from borings to be detected with high concentrations of organic vapors (methane). Sediment samples from four (4) drain pools and one (1) soil boring (with the highest organic vapors) were laboratory tested for total petroleum hydrocarbons (TPHC). The laboratory results showed high concentrations of TPHC in all of the samples tested. As a follow up to the high concentrations of TPHC detected in the sediment in the drain pools and the soil sample obtained on site, a more definitive sampling effort was conducted. Samples were tested for priority pollutant volatile organics in an attempt to identify the source of the organic vapor detected and TPHC

in the samples. The laboratory results showed no priority pollutant VOCs detected in any of the samples. It was concluded that there were VOCs present on the site but not EPA priority pollutants. The soils with concentrations of TPHC in the pools were recommended to be removed. Other conclusions and recommendations were made regarding the USTs, Natural gas lines, sanitary pools, and domestic dumping on the site. It should be noted that these recommendations are routinely made for most property transfers.

SECTION 3.0

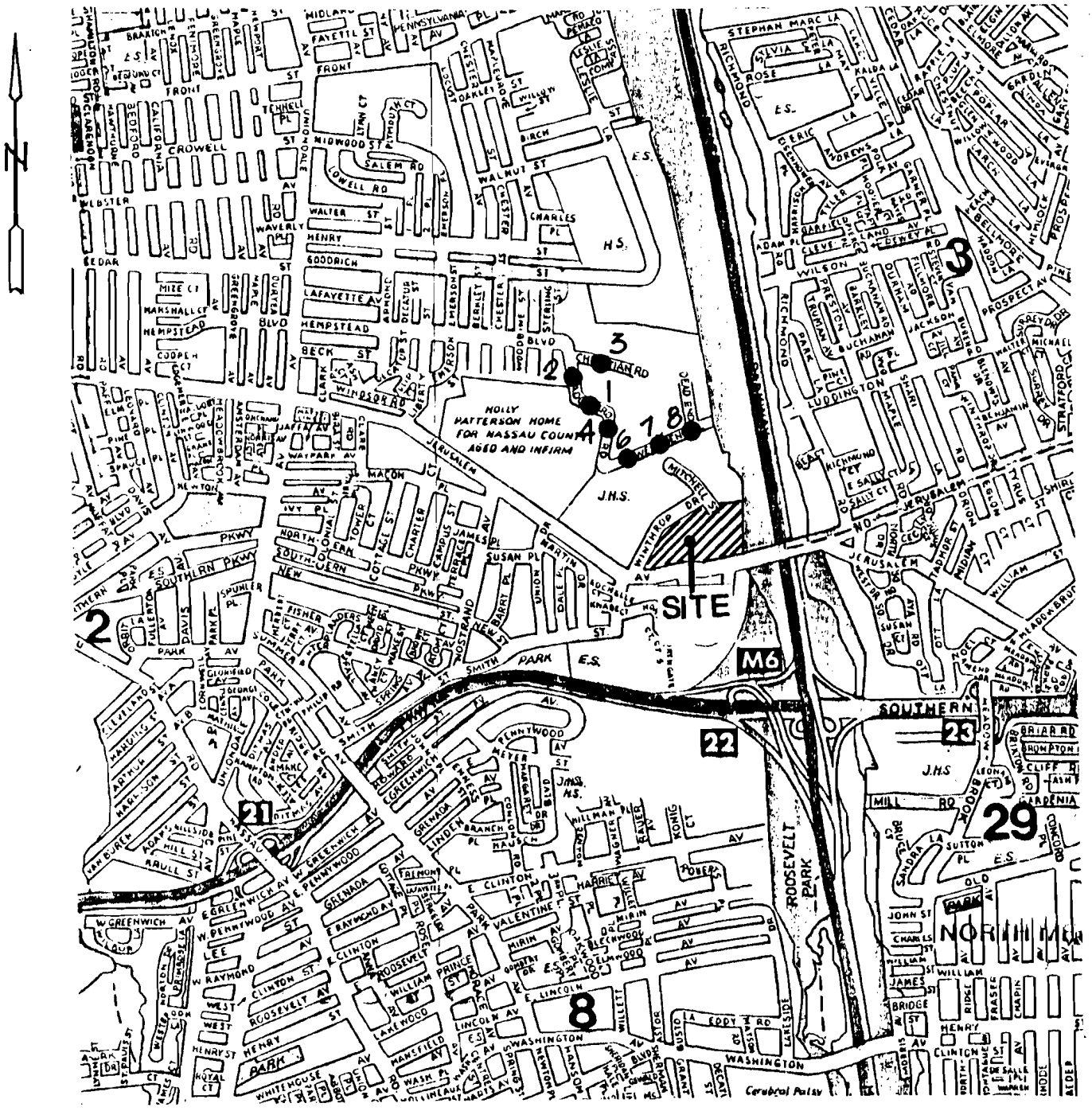
Regional Groundwater Quality in the Vicinity of the Site

To establish the ambient groundwater quality in the vicinity of the site, data was obtained for the public supply wells and monitoring wells in the vicinity of the site.

3.1 Public Supply Wells

There are seven (7) public supply wells in the vicinity of the site (see Figure 3.1). Wells 1, 2, 3, and 4 are under the jurisdiction of the Uniondale Water District. Wells 6, 7, and 8 are East Meadow Water District Wells. Of these wells, all are currently operating with the exception of East Meadow Well #7, which was shut down in 1977 due to iron content (0.86 mg/l) in excess of New York State Class "GA" Groundwater Standards (0.3 mg/l). Data on the remaining six wells can be found in Table 3.1 and 3.2. Table 3.1 shows detected organic compounds for the year 1989. Table 3.2, shows inorganic constituents for the years from 1984 to 1988. The organic analysis shows all wells to be relatively clean (one compound, 1,1,2,2 Tetrachloroethane was detected in Well #2 at a concentration of 0.5 ug/l). No organic compounds were detected in any of the other wells.

The inorganic constituents results (Table 3.2) show that all results were satisfactory (concentrations below N.Y.S. Class "GA" Standards) with the exception of Well #4 which exceeds N.Y.S. standards for iron in 1985 (0.52 mg/l) and Well #6 which exceeded N.Y.S. standards for iron in 1984 (0.42 mg/l). Iron is a naturally occurring mineral in Long Island waters.



LEGEND:

● 6 - PUBLIC SUPPLY WELL LOCATION (APPROX.) & WELL I.D. NUMBER

SCALE (approx.)

0 1 Miles

FIGURE 3.1-LOCATION OF PUBLIC SUPPLY WELLS IN THE VICINITY OF THE SITE

TABLE 3.1
DETECTED ORGANIC COMPOUNDS
IN PUBLIC SUPPLY WELLS IN VICINITY OF SITE
FROM 1989 ANALYSES

WATER DISTRICT & WELL NUMBER	DATE SAMPLED	COMPOUNDS DETECTED	CONCENTRATION
Uniondale #1	3-28-89	None Detected	--(1)
Uniondale #2	3-28-89	1,1,2,2 Tetrachloro-ethane	0.5 ug/l
Uniondale #3	3-28-89	None Detected	--
Uniondale #4	3-28-89	None Detected	--
East Meadow #6	3-28-89	None Detected	--
East Meadow #8	3-28-89	None Detected	--

(1) -- Represents not applicable.

TABLE 3.2
INORGANIC CONSTITUENTS
OF PUBLIC SUPPLY WELLS
IN VICINITY OF SITE (1984-1989)
(ALL RESULTS IN mg/l)

UNIONDALE WELL #1

	NYSDEC CLASS GA STANDARDS	1984	1985	1986	1987	1988
Iron	0.3	0.04	0.06	<0.02	0.04	<0.02
Manganese	0.3	<0.02	<0.02	<0.02	<0.02	<0.02
Hexavalent Chromium	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate	250	6	6	<5.0	<5.0	<5.0
Copper	1	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	5	<0.02	<0.02	<0.02	<0.02	<0.02
Sodium	--(1)	2.6	8.7	4.1	3	2.6
Nitrites	--	0.05	<0.05	<0.05	<0.05	<0.05
Nitrates	--	0.28	0.23	0.19	0.15	0.32
Chlorides	250	7.1	8	6.1	4.1	3.4
Total Dissolved Solids	--	46	47	24	22	35

UNIONDALE WELL #2

	NYSDEC CLASS GA STANDARDS	1984	1985	1986	1987	1988
Iron	0.3	0.06	<0.02	<0.02	<0.02	<0.02
Manganese	0.3	<0.02	<0.02	<0.02	<0.02	<0.02
Hexavalent Chromium	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate	250	<5.0	6	<5.0	<5.0	<5.0
Copper	1	0.06	<0.02	<0.02	<0.02	<0.02
Zinc	5	<0.02	<0.02	<0.02	<0.02	<0.02
Sodium	--	4.5	2.9	5.8	3	2.1
Nitrites	--	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrates	--	0.34	0.26	0.34	0.19	0.7
Chlorides	250	5.9	6.9	6	4.4	5.6
Total Dissolved Solids	--	21	27	28	20	33

(1) - Represents not applicable.

TABLE 3.2 CON'T
INORGANIC CONSTITUENTS
OF PUBLIC SUPPLY WELLS
IN VICINITY OF SITE (1984-1989)
(ALL RESULTS IN mg/l)

UNIONDALE WELL #3

	NYSDEC CLASS GA STANDARDS	1984	1985	1986	1987	1988
Iron	0.3	0.04	0.06	<0.02	<0.02	<0.02
Manganese	0.3	<0.02	<0.02	<0.02	<0.02	<0.02
Hexavalent Chromium	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate	250	<5.0	5	<5.0	<5.0	<5.0
Copper	1	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	5	<0.02	<0.02	<0.02	<0.02	<0.02
Sodium	--	3	1.6	7	3	2
Nitrites	--	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrates	--	0.21	0.16	0.42	0.13	0.66
Chlorides	250	5.8	8	6	5.4	3.6
Total Dissolved Solids	--	41	27	29	17	30

UNIONDALE WELL #4

	NYSDEC CLASS GA STANDARDS	1984	1985	1986	1987	1988
Iron	0.3	0.04	0.52	<0.02	0.04	<0.02
Manganese	0.3	<0.02	<0.02	<0.02	<0.02	<0.02
Hexavalent Chromium	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate	250	10	8	<5.0	<5.0	<5.0
Copper	1	<0.02	<0.02	<0.02	<0.02	0.02
Zinc	5	<0.02	<0.02	<0.02	<0.02	<0.0
Sodium	--	2.2	4.7	4.2	3	2
Nitrites	--	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrates	--	0.06	<0.05	0.44	0.34	0.46
Chlorides	250	6.8	8.2	6.3	5.6	3.1
Total Dissolved Solids	--	19	14	17	15	14

TABLE 3.2 CON'T
INORGANIC CONSTITUENTS
OF PUBLIC SUPPLY WELLS
IN VICINITY OF SITE (1984-1989)
(ALL RESULTS IN mg/l)

EAST MEADOW WELL #6

	NYSDEC CLASS GA STANDARDS	1984	1985	1986	1987	1988
Iron	0.3	0.42	0.26	<0.02	0.1	<0.02
Manganese	0.3	<0.02	<0.02	<0.02	<0.02	<0.02
Hexavalent Chromium	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate	250	6	7	<5.0	7	<5.0
Copper	1	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	5	<0.02	<0.02	<0.02	<0.02	<0.02
Sodium	--	7.6	1.2	2.5	3.3	2.3
Nitrites	--	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrates	--	0.11	0.15	0.13	0.1	0.24
Chlorides	250	6.2	5.9	6.9	4.7	3.6
Total Dissolved Solids	--	25	30	18	17	40

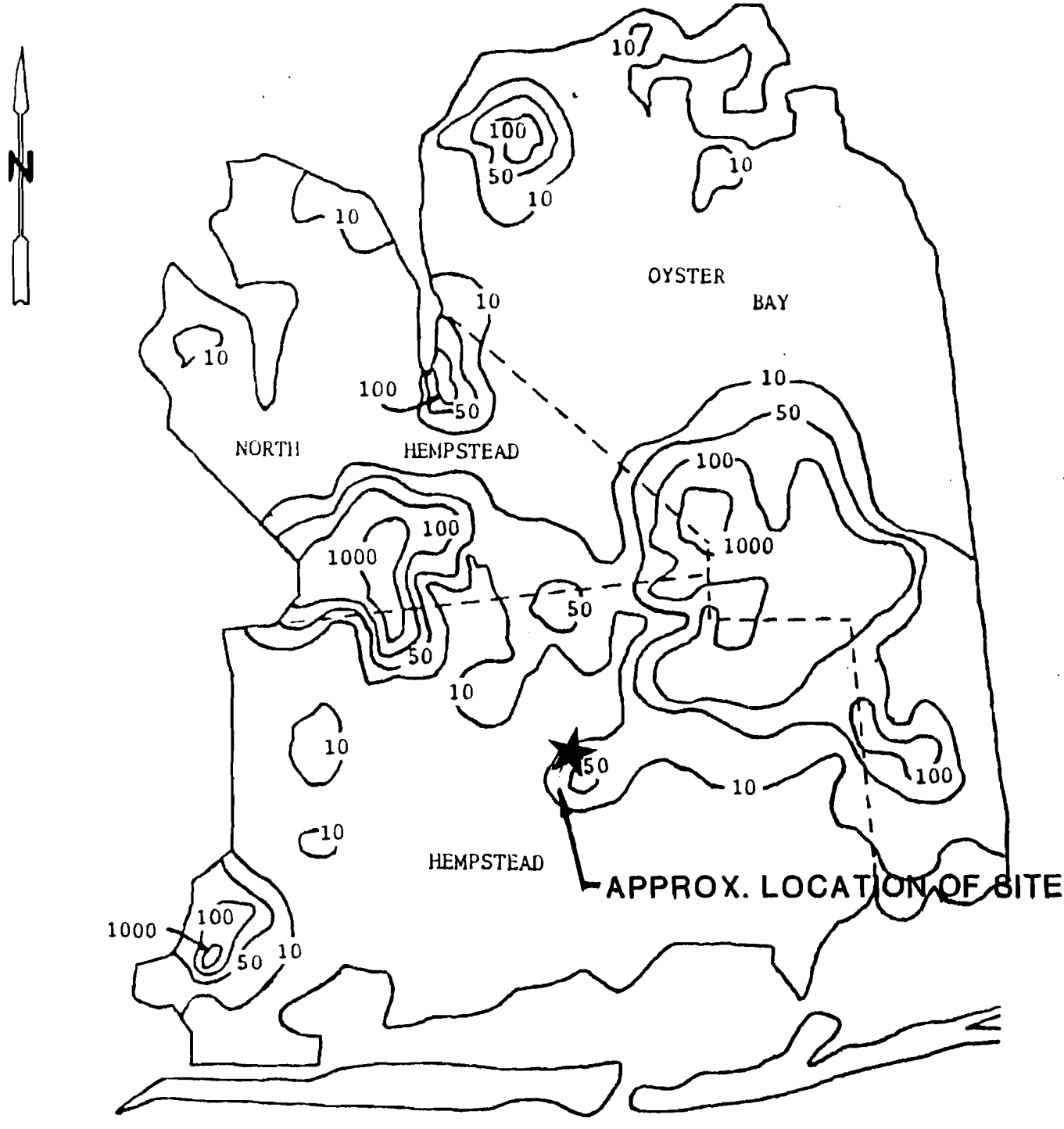
EAST MEADOW WELL #8

	NYSDEC CLASS GA STANDARDS	1984	1985	1986	1987	1988
Iron	0.3	0.1	0.04	<0.02	<0.02	<0.02
Manganese	0.3	<0.02	<0.02	<0.02	<0.02	<0.02
Hexavalent Chromium	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate	250	<5.0	5.0	<5.0	<5.0	<5.0
Copper	1	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	5	<0.02	<0.02	0.03	0.02	0.03
Sodium	--	8.9	1	2.5	3	2.6
Nitrites	--	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrates	--	0.22	0.12	0.12	0.07	0.12
Chlorides	250	6.3	5.5	6.2	4.6	2.9
Total Dissolved Solids	--	18	29	17	22	36

(1) -- Represents not applicable.

3.2 Monitoring Wells

Groundwater in the Upper Glacial Aquifer has been contaminated by volatile organic compounds from a variety of sources including industrial discharges, underground storage tank leaks, industrial spills, and domestic cesspools. The most common volatile organic compounds detected in water from the Upper Glacial Aquifer were 1,1,1-trichloroethane, tetrachloroethylene, trichloroethylene, and 1,2-dichloroethylene. These contaminants are possibly derived from industrial solvents and cesspool cleaners; chloroform, possibly derived from the oxidation of humic substances by chlorine; and benzene, possibly derived from gasoline, other fuels, or solvents (USGS Paper 86-4142, 1989). Figure 3.2 shows total volatile organics in the Upper Glacial Aquifer from 1979. This figure shows that the site lies in an area within the 10 ug/l (micrograms per liter) contour and just to the south is an area of higher (50 ug/l) concentrations.



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LEGEND:

— 10 — LEVELS ARE IN UG/L

SOURCE: NASSAU COUNTY DEPT. OF HEALTH (WATER SUPPLY BRIEFING REPORT, NOV. 1981)

FIGURE 3.2 -TOTAL VOLATILE ORGANIC CHEMICALS IN THE UPPER GLACIAL AQUIFER IN NASSAU COUNTY-1979

SECTION 4.0

Monitoring Well Installation and Sampling Procedures

In an effort to characterize the vertical extent of potential contamination present in the soils in the central portion of the old fill area and the effects on the groundwater quality in this area, a sampling plan was prepared and presented to the Nassau County Department of Health (NCDH) (the lead agency for this investigation) for approval. The plan was then implemented (See Appendix A for lead agency determination).

4.1 Monitoring Well Installation

A total of five (5) monitoring wells were installed for this investigation. Two (2) of the wells (MW-1 and MW-2) were installed upgradient of the site (along Winthrop Drive), one (1) well (MW-4) was installed down gradient of the fill (on site), and two (2) wells (MW-3 and MW-5) was installed in the central portion of the fill and screened at different depths (See figure 4.1 for well locations). Appendix B presents the field reports which outline the details of the activities that transpired during the well installation.

The drilling method employed for the monitoring well construction was the hollow stem auger method. Six (6) inch diameter augers were steam cleaned prior to drilling at each location. Wells MW-1 through MW-4 were constructed according to the New York State Environmental Conservation monitoring well specifications as shown in Appendix C. Well MW-5 was constructed slightly different to sample the deeper groundwater within the fill zone. The only difference in this well (MW-5) construction was the length and depth of the screen. MW-5 penetrates the deeper fill zone and is screened from a depth of 26-49 feet.

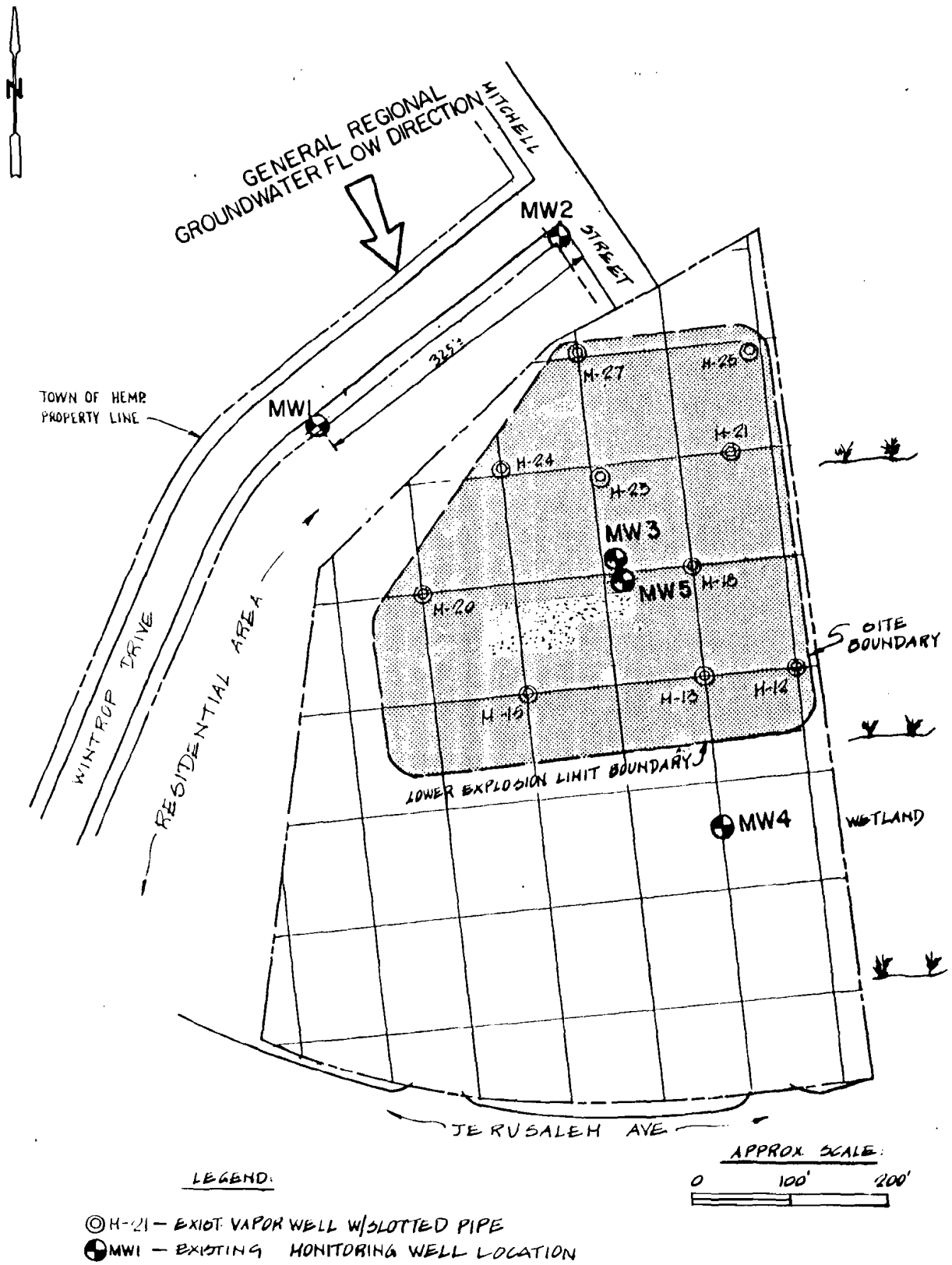


FIGURE 4.1-MONITORING WELL LOCATIONS

F,P&M

A summary of the well construction for each well is presented in table 4.1. Important to point out from table 4.1 are the pump rates during well development and the water table elevations at each well. Each well was allowed to rest one week to reach equilibrium following well development.

During the week of rest, the well point elevations were surveyed by a NYS licensed surveyor. The depth to water in each well was measured prior to sampling and the water table elevations calculated. All elevations are tied into the Nassau County Datum Bench Mark 18N12.

Based upon the calculations of the water table elevation, groundwater flow is in a south-southeast direction (See Figure 4.2). The groundwater flow gradient was calculated to be approximately 0.002 feet in a south-southeast direction away from the Uniondale wells.

4.2 Soil Sampling Procedures

A total of four (4) composite soil samples were obtained during soil boring for well MW-5. The objective of the soil sampling was to determine the vertical extent of contamination in the fill zone. The fill zone was estimated to be approximately 50' thick based upon previous test borings that have been done on the site in this area.

All soil samples were obtained by use of a cleaned split spoon sampler. Each split spoon was cleaned by the following procedure:

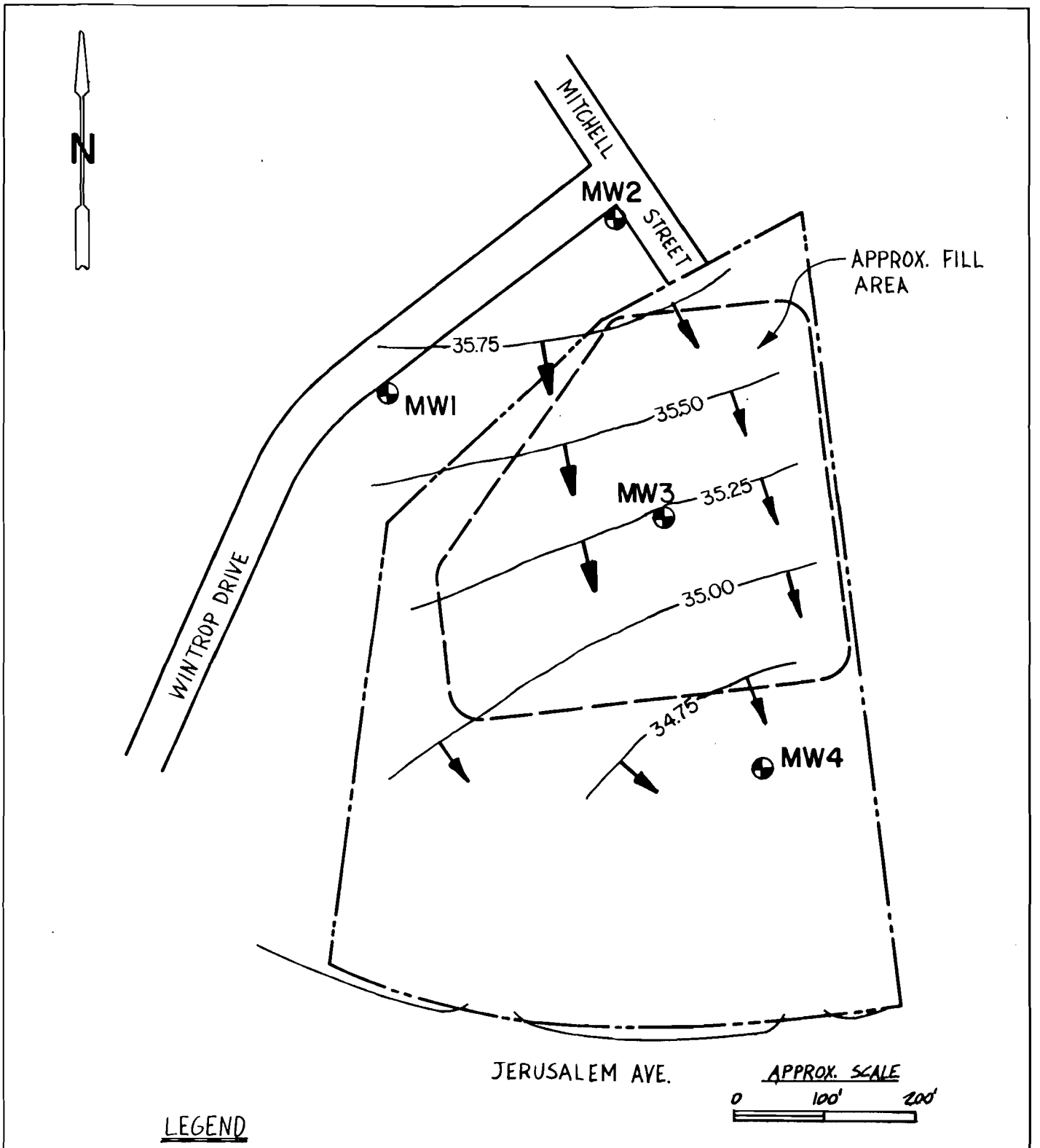
1. Physical removal of visible debris
2. Wash in bath containing liquid dishwashing soap
3. Rinse with deionized water
4. Air dry
5. Rinse with methanol, then hexane, air dry
6. Rinse with nitric acid

TABLE 4.1*
Monitoring Well Construction and Measurements

Well ID#	Total Depth of Well	Depth to Water Prior to Development	Pump Rate During Development	Depth to Water After Development	Depth to Water Prior to Sampling	Elevation of Water Table
MW-1	21'1 1/8"	17'8"	3 GPM & then 5 GPM after 30 minutes	17'8"	17'8 1/2"	+35.68'
MW-2	20'2 1/8"	16'2"	5 GPM	16'2"	16'1"	+36.01'
MW-3	24'4 3/4"	16'4"	5 GPM	16'4"	16'2 1/2"	+35.22'
MW-4	22'6 1/8"	16'0"	.25 GPM & then increased to 3 GPM after 1 hr. 40 min.	19'1"	15'8"	+34.50'
MW-5	50'5 1/2"	16'2"	5 GPM	16'2"	16'2 1/2"	+35.25'(1)

* All monitoring wells were constructed with 4" ø PVC, threaded flush joint, .020 inch slotted screen, schedule 40 casing, gravel packed, bentonite sealed, and grouted to the surface.

(1) The water table elevation for this well is not applicable for the construction of a groundwater contour map (figure 4.2) as it is the only deep well intercepting different flow lines. Indeed, this well may be reflecting up flow condition typical of a discharge zone (Meadowbrook).



F,P&M

FIGURE 4.2-GROUNDWATER CONTOUR MAP

7. Rinse with deionized water

8. Air dry

During the soil sampling, a new pair of disposable plastic gloves were used for each sample. Soil samples were composited at 3'-9', 15'-21', 25'-31', and 48'-52'. The composite samples were contained in laboratory supplied sample jars, labeled, and stored in a cooler at 4°C. All composite soil samples were tested for Target Compound List base neutral extractables plus Tentatively Identified Compounds (TIC), acid extractables plus TIC, pesticides, PCBs, and metals. In addition, a grab sample was obtained from 6', 19', 29', and 48', contained in laboratory supplied sample jars, labeled and stored in a cooler at 4°C. The grab samples were tested for Target Compound List volatile organics plus TIC (see table 4.2 for soil sample details).

All laboratory procedures were directed to comply with USEPA contract laboratory procedures. A chain of custody form was maintained during the entire transportation of the empty sample jars from the lab to the sampling site and the full sample jars from the site to the lab (see Appendix D for chain of custody). In addition, a field blank was prepared between samples by running deionized water over the cleaned split spoon and then captured in lab supplied jars. The field blank was tested for all TCL parameters.

Table 4.2

Summary of Soil Sampling at MW-5

Soil Sample	Type of Sample	Physical Description of Sample	Laboratory* Parameter Tested
3-9 feet	Composite	fine sand with gravel, asphalt & wood	BN/AE, pesticides, PCBs, & metals
6 feet	Grab	fine sand with gravel	VOCs
15-21 feet	Composite	dark brown, fine, moist sand with gravel, plastic bags, wood, brick, & ceramic chips	BN/AE, pesticides, PCBs, & metals
19 feet	Grab	moist, dark brown to black sand with gravel & wood fragment	VOCs
25-31 feet	Composite	moist, dark brown, fine sand with gravel, wood, oil odor, & plastic bags	BN/AE, pesticides, PCBs, & metals
29 feet	Grab	moist, dark brown fine sand & plastic	VOCs
48-52 feet	Composite	moist brown sand with gravel, wood, & silt	BN/AE, pesticides, PCBs, & metals
48 feet	Grab	brown sand with gravel, & wood	VOCs

* All parameters are Target compounds and analyzed in accordance with CLP protocol.

4.3 Groundwater Sampling Procedures

A total of five (5) groundwater samples were obtained from the monitoring wells on and upgradient of the site. Prior to obtaining the samples, a minimum of 3 well volumes of water were removed by use of a clean stainless steel bailer (for the shallow wells) and a clean submersible pump (for the deeper well). Stabilization parameters were measured after each well volume was removed to assure that aquifer water was being sampled. Once the ph, specific conductance, and temperature stabilized (within 10% of last reading), the groundwater was sampled. Table 4.3 presents the parameters measured prior to sampling and a summary of the sampling.

A cleaned stainless steel Johnson bailer with a nylon cord was then used to obtain each groundwater sample. The bailer was cleaned in the same manner as the split spoon sampler discussed in subsection 4.2 of this report.

All groundwater samples were contained in laboratory prepared sample jars, labeled, and stored in a cooler at 4°C. Samples were labeled to be tested for full TCL parameters following USEPA CLP protocol. The samples that were tested for metals were filtered to assure that only dissolved metals would be represented. Samples for metals were preserved with nitric acid, and samples for cyanide were preserved with sodium hydroxide.

Sample MW-4 was split with another NYS certified laboratory and tested for full TCl in order to check the accuracy of the laboratory performing the analysis. In addition, one (1) field blank was prepared and tested for full TCL. One (1) trip blank was also submitted with the samples.

A chain of custody form was maintained throughout the sampling process.

Table 4.3

Summary of Groundwater Sampling

Well ID#	Date of Sampling	Stabilization Parameters ph	Specific Conductance (umho/cc)	Temp (°F)
MW-2	6/7/89	5.86	422	59
		5.73	410	58
		5.71	420	58
MW-1	6/7/89	5.71	229	59
		5.70	262	58
		5.66	252	59
MW-3	6/7/89	6.06	479	59
		5.89	481	59
		5.91	511	59
MW-4*	6/7/89	6.26	735	58
		6.27	733	57
		6.36	745	57
		6.36	741	57
MW-5	6/8/89	6.80	1453	59
		6.97	1455	59
		6.98	1462	59
		7.10	1448	59
		7.02	1468	59
		7.04	1457	59

* This sample was split with another NYSDEC contract lab for analysis.

SECTION 5.0

Soil and Groundwater Sampling Results

All samples were analyzed by a USEPA and NYSDEC contract laboratory and tested in accordance with contract laboratory procedures.

5.1 Soil Sampling Results

A total of four (4) soil samples were tested for full TCL parameters. The analytical results are presented in Tables 5.1 and 5.2.

Discussions of the soil sample results are presented in Section 6.0 of this report.

5.2 Groundwater Sampling Results

A total of five (5) groundwater samples were tested for full TCL parameters. The analytical results are presented in Tables 5.3 and 5.4.

Discussions of the groundwater sample results are presented in Section 6.0 of this report.

5.3 Quality Assurance/Quality Control (QA/QC)

In addition to the strict QA/QC procedures followed by the contract laboratory (York) and the blanks submitted by Fanning, Phillips and Molnar during sampling, one (1) groundwater sample was split for the purpose of checking the accuracy of the laboratory. This was accomplished by splitting sample MW-4 between York Laboratories and H2M Labs, Inc. Both contract laboratories analyzed sample MW-4 for the full TCL parameters. The results are presented in Tables 5.5 and 5.6.

TABLE 5.1
LABORATORY RESULTS FOR ORGANIC COMPOUNDS
MW-5 SOIL SAMPLES (ug/kg)

COMPOUND DETECTED	3-9 ft.	15-21 ft.	25-31 ft.	48-52 ft.	FIELD BLANK
TCL[1] VOLATILE ORGANIC COMPOUNDS (VOCs)					
Acetone	22B	12B	67B	21B	U
Carbon Disulfide	U	3J	20	50	1J
2 - Butanone	U	U	15	U	U
Benzene	U	U	26	7	U
Toluene	U	U	5J	55	U
Chlorobenzene	U	8	16	8	U
Ethylbenzene	U	U	7J	5J	U
Xylene (total)	U	U	140	38	U
TOTAL TCL VOCs	22	23	296	184	1
TOTAL TENTATIVELY IDENTIFIED VOCs[2]	U	33	637	485	U
TOTAL VOCs	22	56	933	669	1
TCL SEMIVOLATILE ORGANICS					
Naphthalene	10J	290J	320	U	U
2 - Methylnaphthalene	U	100J	520	U	U
Acenaphtylene	12J	U	48J	U	U
Acenaphthene	U	66J	100J	U	U
Dibenzofuran	U	U	71J	U	U
Diethylphthalate	22JB	41JB	34JB	15JB	U
Flourene	U	61J	200J	U	U
N-Nitrosodiphenylamine	U	U	2,000	U	U
Phenanthrene	44J	210J	640	U	U
Anthracene	16J	29J	110J	U	U
Di -n- Butylphthalate	36JB	90JB	150JB	45JB	U
Flouranthene	76J	150J	460	12J	U
Pyrene	57J	180J	370J	8J	U
Butylbenzylphthalate	U	U	1,900	9J	U
Benzo (a) Anthracene	49J	U	180J	U	U
Bis (2- Ethylhexyl) Phtalate	5,000B	1,000B	1,800B	89JB	1JB
Di -n- Octylphthalate	7J	U	31J	U	0.6J
Benzo (b) Fluoranthene	33J	U	95J	U	U
Benzo (a) Pyrene	36J	U	130J	U	U
Indeno (1,2,3 -cd) Pyrene	12J	U	U	U	U
Benzo (g,h,i) Perylene	15J	U	U	U	U
TOTAL TCL SEMI-VOCs	5,425	2,217	9,159	178	1.6
TOTAL TENTATIVELY IDENTIFIED SEMI-VOCs	25,839	27,710	58,320	22,290	U
TOTAL SEMI-VOCs	31,264	29,927	67,479	22,468	1.6
TCL PESTICIDES					
Gamma BHC	U	27	U	U	U
Heptachlor	U	41	U	U	U
Dieldrin	U	78	13J	U	U
4, 4' DDE	U	9.5J	29	U	U
4, 4' DDD	U	7.2J	140	U	U
4, 4' DDT	U	U	680	U	U
Alpha Chlordane	U	69J	U	U	U
Gamma Chlordane	U	100	U	U	U
TOTAL TCL PESTICIDES	U	331.7	862	U	U
TCL PCBs					
Aroclor 1248	U	U	210	U	U
Aroclor 1254	1,000	U	U	U	U
TOTAL TCL PCBs	1,000	U	210	U	U

(1) TCL is an abbreviation for Target Compound List.
(2) See Appendix D for Tentatively Identified Compounds listing in laboratory results.
B - Represents that this compound was also detected in the lab method blank.
U - Represents the compound was undetected.
J - Represents the compound was detected below the detection limits of the lab.

TABLE 5.2
LABORATORY RESULTS*
FOR INORGANIC COMPOUNDS
MW-5 SOIL SAMPLES (ug/kg)

DETECTED METAL	MW-5 3'-9'	MW-5 15'-21'	MW-5 25'-31'	MW-5 48'-52'	MW-5 FIELD BLANK
Aluminum	3,900	1,950	5,690	179	344
Arsenic	0.96B	2.4B	3.3	1.2B	U
Barium	152	110	227	2.2B	11.5B
Beryllium	0.44B	U	U	U	U
Cadmium	U	U	1.7	U	U
Calcium	24,200	8,410	24,000	94.3B	2,130B
Chromium	5.8	22.3	38.7	2.7	12.9
Copper	3.3B	18.9	101	1.3B	8.6B
Iron	5,160	5,140	11,200	1,580	3,300
Lead	11.2	160	445	20.6	14.6
Magnesium	2,360	959B	2,630	16.6B	152B
Manganese	655	85.9	123	3.9	29.4
Mercury	U	U	0.20	U	U
Nickel	3.0B	4.5B	15.4	1.5B	9.1B
Potassium	277B	245B	312B	U	U
Sodium	192B	201B	205B	122B	1,570B
Thallium	0.08B	U	U	U	0.40B
Vanadium	5.4B	7.4B	11.0B	U	U
Zinc	44.2	126	363	3.2B	48.6
Selenium	U	U	0.12B	U	U
Cyanide	U	U	U	U	U

* See Appendix D for laboratory results.
U Represents the compound was undetected.
B Represents the compound was also detected in the lab method blank.

TABLE 5.3
LABORATORY RESULTS FOR ORGANIC
COMPOUNDS IN GROUNDWATER SAMPLES (ug/l)

DETECTED COMPOUNDS	NYSDEC GROUNDWATER STANDARDS	MW-1	MW-2	MW-3	MW-4	MW-5	FIELD BLANK	TRIP BLANK
TCL(2) VOLATILE ORGANIC COMPOUNDS (VOCs)								
Acetone	---(1)	U	U	6.0JB	U	39B	U	U
Benzene	ND	U	U	**30.0**	**4.0J**	**31.0**	U	U
Chlorobenzene	---	U	U	33.0	15.0	35.0	U	U
Toluene	---	U	U	U	U	31B	U	U
Ethylbenzene	---	U	U	U	U	2J	U	U
Xylene (total)	---	U	U	9.0	U	16.0	U	U
TOTAL TCL VOCs	---	U	U	78.0	19.0	154.0	U	U
TOTAL IDENTIFIED IDENTIFIED VOCs	---	7.0	U	224.0	77.0	116.0	36.0	U
TOTAL VOCs	---	7.0	U	302.0	96.0	270.0	36.0	U
TCL SEMI-VOLATILE ORGANICS								
4 - Methylphenol	---	U	U	U	U	2J	*	NA
Isophorone	---	U	U	U	U	0.8J	*	NA
Benzoic Acid	---	U	U	7J	U	5J	*	NA
Naphthalene	---	U	U	7J	2J	9J	*	NA
2 - Methylnaphthalene	---	U	U	2J	18	2J	*	NA
Acenaphthylene	---	U	U	0.6J	U	U	*	NA
Acenaphthene	---	U	U	2J	U	U	*	NA
Dibenzofuran	---	U	U	U	1J	0.7J	*	NA
Diethylphthalate	---	IJB	1JB	2JB	2JB	4J	*	NA
Flourene	---	U	U	3J	3J	1J	*	NA
N - Nitrosodiphenylamine	---	U	U	U	U	6J	*	NA
Phenanthrene	---	U	U	17	5J	3J	*	NA
Anthracene	---	U	U	3J	U	0.7J	*	NA
Di - N - Butylphthalate	770	U	U	4J	1J	2JB	*	NA
Flouranthene	---	U	U	19	U	2J	*	NA
Pyrene	---	U	U	20	0.5J	2J	*	NA

TABLE 5.3 (Continued)
LABORATORY RESULTS FOR ORGANIC
COMPOUNDS IN GROUNDWATER SAMPLES (ug/l)

DETECTED COMPOUNDS	NYSDEC GROUNDWATER STANDARDS	MW-1	MW-2	MW-3	MW-4	MW-5	FIELD BLANK	TRIP BLANK
Butylbenzylphthalate	---	U	U	0.7J	U	0.6J	*	NA
Benzo (a) Anthracene	---	U	U	11	U	U	*	NA
bis (2-Ethylhexyl) Phthalate	4,200	0.7JB	1JB	19JB	1JB	7JB	*	NA
Chrysene	---	U	U	12	U	U	*	NA
Benzo (b) Fluoranthene	---	U	U	6J	U	U	*	NA
Benzo (a) Pyrene	ND	U	U	9J	U	U	*	NA
Indeo (1,2,3-cd) Pyrene	---	U	U	3J	U	U	*	NA
Dibenzo (a,h) anthracene	---	U	U	0.7J	U	U	*	NA
TOTAL TCL SEMI-VOCs	---	1.7	2.0	148.0	33.5	47.8	*	NA
TOTAL TENTATIVELY IDENTIFIED SEMI-VOCs	---	19	40	727.0	523.0	341.0	*	NA
TOTAL SEMI-VOCs	---	20.7	42.0	875.0	556.5	388.8	*	NA
TCL PESTICIDES	---							
4,4' DDD	---	U	U	0.57	U	U	U	NA
Dieldrin	**ND**	U	U	**0.26**	U	U	U	NA
Alpha Chlordane	**0.1**	U	U	**0.88**	U	U	U	NA
Gamma Chlordane	**0.1**	U	U	**0.83**	U	U	U	NA
TOTAL TCL PESTICIDES	---	U	U	2.54	U	U	U	NA
TCL PCBs	0.1	U	U	U	U	U	U	NA

(1) --- Represents no standard
(2) TCL stands for Target Compound List
U - Undetected
J - Detected below mean detection limit of lab
B - Compound detected in lab method blank
* - Portion of sample lost - unable to test for semi-vocs
NA - Stands for not applicable.
ND - Stands for non detectable. From a regulatory guideline the level is set as the detection limit of the method used for analysis. The detection limiation for benzene is contract lab procedures is 5 mg/l.

TABLE 5.4
LABORATORY RESULTS FOR
INORGANIC COMPOUNDS
GROUNDWATER SAMPLES (ug/l)

METALS	NYSDEC GROUNDWATER STANDARDS	MW-1	MW-2	MW-3	MW-4	MW-5	FIELD BLANK A
TCL METALS (FILTERED)	---						
Aluminum	---	1,109.0	671.0	218.0	537.0	155B	63.9B
Antimony	---	U	U	19.0B	37.2B	U	U
Arsenic	25.0	U	U	1.8B	3.7B	U	U
Barium	1,000.0	9.0B	37.0B	442.0	249.0	497.0	U
Beryllium	---	U	U	U	U	U	U
Cadmium	10.0	U	U	U	U	U	U
Calcium	---	17,300.0	36,700.0	99,700.0	189,000.0	124,000.0	221.0B
Chromium	50.0(1)	U	U	U	U	U	U
Cobalt	---	U	U	9.7B	U	U	U
Copper	1,000.0	7.4B	U	U	U	U	U
Iron	**300.0**	**438.0**	**911.0**	**29,500.0**	**14,300.0**	**31,800.0**	U
Lead	25.0	1.5B	3.6B	10.4	1.96	5.8	0.5B
Magnesium	---	3,830.0B	7,410.0	11,900.0	22,200.0	12,700.0	120.0B
Manganese	**300.0**	72.2	89.0	**710.0**	**980.0**	**735.0**	0.97B
Mercury	2.0	U	U	U	U	0.2	U
Nickel	---	6.8B	U	9.4B	U	U	U
Potasium	---	2,180.0B	2,630.0B	7,550.0	17,500.0	8,450.0	U
Selenium	20.0	0.6B	1.0B	U	0.8B	U	U
Silver	50.0	2.9B	U	U	U	U	U
Sodium	---	30,900.0	30,800.0	19,900.0	21,000.0	20,500.0	643.0B
Thallium	---	U	U	0.3B	0.4B	U	U
Vanadium	---	U	U	U	U	U	U
Zinc	5,000.0	9.9B	10.9B	26.7	19.1B	173.0	7.6B
Cyanide	200.0	U	17.5	U	U	U	U

(1) - The NYSDEC standard for Chromium (Hexavalent) is 50.0 ug/l.
There is no standard for Chromium.
U - Represents undetected.
--- - Represents no standard for this compound.
B - Represents compound detected in method blank.

TABLE 5.5
LABORATORY RESULTS FOR ORGANIC COMPOUNDS
IN SPLIT GROUNDWATER SAMPLE MW-4 (ug/l)

DETECTED COMPOUNDS	YORK MW-4	HZM MW-4
TCL[1] VOLATILE ORGANIC COMPOUNDS (VOCs)		
Benzene	4.0J	U
Chlorobenzene	15.0	3.0J
TOTAL TCL VOCs	19.0	3.0
TCL SEMI-VOLATILE ORGANICS		
Naphthalene	2.0J	U
2 - Methylnaphthalene	18.0	7.0J
Dibenzofuran	1.0J	U
Diethylphthalate	2.0JB	U
Flourene	3.0J	U
Phenanthrene	5.0J	U
Di - N - Butylphthalate	1.0J	U
Pyrene	0.5J	U
bis (2-Ethylhexyl) Phthalate	1.0JB	8.0JB
TOTAL TCL SEMI-VOCs	33.5	15.0
TCL PESTICIDES	U	U
TCL PCBs	U	U

(1) TCL stands for Target Compound List
U - Undetected
J - Detected below mean detection limit of lab
B - Compound detected in lab method blank

TABLE 5.6
LABORATORY RESULTS FOR INORGANIC
COMPOUNDS IN SPLIT GROUNDWATER
SAMPLE MW-4 (ug/l)

TCL METALS (filtered)	MW-4	MW-5
Aluminum	537.0	680.0
Antimony	37.2B	U
Arsenic	3.7B	U
Barium	249.0	230.0
Beryllium	U	U
Cadmium	U	U
Calcium	189,000.0	154,000.0
Chromium	U	U
Cobalt	U	U
Copper	U	U
Iron	14,300.0	12,300.0
Lead	1.9	5.8
Magnesium	22,200.0	18,300.0
Manganese	980.0	880.0
Mercury	U	U
Nickel	U	U
Potasium	17,500.0	14,900.0
Selenium	0.8B	U
Silver	U	U
Sodium	21,000.0	18,100.0
Thallium	0.4B	U
Vanadium	U	U
Zinc	19.1B	U
Cyanide	U	U

U - Represents undetected.
B - Represents compound detected in method blank.

SECTION 6.0

Discussion

The purpose of this section is to summarize the soil and ground water test results from the June 1989 sampling. Subsection 6.1 presents a discussion of the guidelines and standards used for the assessment of the contamination in the soils and groundwater on the site. Subsection 6.2 includes the discussion for the soil sampling. Subsection 6.3 includes the discussion for each of the groundwater sampling locations.

6.1 Discussion Of Guidelines And Standards Used For The Assessment Of The Contamination In The Soils And Groundwater At The Site

Soils:

The laboratory data for soils on this site will be compared to USEPA "Natural" soils, New Jersey Department of Environmental Protection (NJDEP) ECRA Standards, the United States Environmental Protection Agency (USEPA) Superfund Records on Decision (ROD) range for similar sites (which established clean up levels at other sites located over an aquifer).

It is the intent of Fanning, Phillips and Molnar to determine the long term health implications of the contamination that has been detected in the soils at the Uniondale site. Because there are no health based soil standards for New York State, we are using three guidelines; USEPA "Natural" soils (Table 6.1), the NJDEP ECRA Standards (Table 6.2), USEPA Records on Decision (RODs) clean up levels for superfund sites (Table 6.2).

All soil sample results for metal analysis were compared individually with each of these three guidelines. Soil samples exceeding all three guidelines were noted as areas of concern in that

Table 6.1

Inorganic Concentrations of Compounds in "Natural" Soils*

Compound	Range From[1] Various Sources	Mean Ambient[2] Background Soils in Eastern U.S.	USEPA[3] Natural Soils Common Range
Arsenic	(0.1-194)	5.4	(1.0-50)
Cadmium	(2.0-130)	1.0	(.01-0.7)
Chromium	(5.0-3,000)	36.0	(1.0-1,000)
Chromium (Hex)	--	--	--
Copper	(2.0-100)	14.0	(2.0-100)
Lead	(<1.0-888)	14.0	(2.0-200)
Mercury	(.01-4.6)	0.096	(.01-0.3)
Nickel	(0.1-1,530)	13.0	(5.0-500)
Silver	(.01-8.0)	--	(.01-5.0)
Zinc	(10-2,000)	36.0	(10-300)

* All concentrations are in mg/kg (ppm).

(1) The range from various sources is referenced to: McClanahan 847C, revised June 22, 1984.

(2) The mean ambient background soils in Eastern United States is referenced to: Geochemistry of some rocks, soil, plant and vegetables in conterminous United States Geological Survey professional paper 574 F, 1975.

(3) The USEPA Natural Soils common range is referenced to: USEPA office of solid waste and emergency response, HAZARDOUS WASTE LAND TREATMENT, SW-874 (April, 1983) page 273, Table 6.46.

-- No listing

TABLE 6.2

NJDEP AND USEPA (RODS) GUIDELINES FOR CONTAMINANTS IN SOILS

Compound	NJDEP ECRA Guidelines	USEPA Superfund[1] Rods Range
Metals (Mg/Kg)		
Arsenic	20	20
Cadmium	3	3
Chromium	100	(15-100)
Chromium (Hex)	--	--
Copper	170	(9.7-170)
Lead	250-1,000	(100-1000)
Mercury	1	1
Nickel	100	(18-100)
Silver	5	(.6-5)
Zinc	350	(53-350)
Total Cyanides	12	--
VOLATILE ORGANIC COMPOUNDS (mg/kg)		
Benzene	--	1
TOTAL VOCs	1	1
TOTAL POLYCYCLIC AROMATIC HYDROCARBONS (mg/kg)	--	(2.94-100)
Benzo (a) Pyrene	10	
TOTAL BASE NEUTRAL EXTRACTABLE (mg/kg)	10	100
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	100	10
POLYCHLORINATED BIPHENYLS (mg/kg)	1-5	(1-10)
TOTAL ORGANIC PESTICIDES (mg/kg)	--	--

(1) The USEPA Superfund Records on Decision (ROD) range was developed through review of case related USEPA site cleanups throughout the Region I, II, and III.

-- No listing

they are above health based guidelines; USEPA and NJDEP, and "Natural" soils.

All soil sample results for organic compound analysis, which includes volatile organic compounds (VOCs), base neutral and acid extractables (BN/AE), polychlorinated biphenyls (PCBs), and pesticides, were also compared individually with New Jersey ECRA standards and USEPA Records On Decision.

Table 6.1 shows concentrations of compounds in "Natural" soils. This table has been constructed of several sources and can be useful to evaluate what is "natural". For the purposes of evaluation of this site, we have used the USEPA "Natural Soils Common Range". The other sources are listed to support the USEPA natural soils range. The USEPA natural soils common range represents a common range for metals in the natural soils of the Continental United States. In Table 6.1, the USEPA concentration range for metals in natural soils is widespread. For example, the full concentration range for chromium in soils is between 1.0 and 1,000 ppm. This full concentration range brackets concentrations at three orders of magnitude. Concentrations listed for Mercury indicate the range to be 0.01 to 0.3 (ppm). This range brackets concentrations at one order of magnitude. It is therefore shown on Table 6.1 that there is quite a diverse range of metal compounds occurring in natural soils in the Continental United States.

Table 6.2 shows the USEPA Superfund RODs range. The range of concentration listed in Table 6.2 was derived from thirty-five (35) RODs with heavy metal contamination in Regions I, II, and III (northeast U.S.). The range for USEPA Superfund RODs was meant to

shows what was acceptable by the EPA as clean up levels throughout the Northeast U.S. The concentration ranges are indicated on Table 6.2. It is important to note that each of the USEPA Superfund ROD metal concentrations were based upon risk assessment studies.

In summary, the three (3) guidelines used by Fanning, Phillips and Molnar for the Uniondale site are expected to focus on the soils of the fill to determine whether there is significant concern. The methodology is as follows: First, determine the contaminant levels in soils that exceed the NJDEP ECRA standards. Second, look further to see if it falls out of the USEPA "natural" soil concentration range (upper limit) and third, test to see if that level will cause a health problem USEPA (RODs). This will allow us to focus on the serious concerns of the site. The soil samples that were detected with concentrations of compounds exceeding the three (3) guidelines were noted as such in the text, and will be followed up with recommendations for remediation alternatives.

Groundwater:

The laboratory data for groundwater were compared to the NYSDEC groundwater standards (Water Quality Regulations NYS Codes, Rules, and Regulation, Title 6, Chapter X, Part 703.5). Groundwater samples detected with contaminant concentrations exceeding standards were noted as such (See Tables 5.3 and 5.4 for results).

6.2 Discussion Of The Soil Sample Results

This subsection will present discussion of the laboratory results for each of the soil samples that were tested. Contaminant concentrations will be discussed in regard to the guidelines set forth in the preceding Subsection (6.1).

MW-5 (3'-9')

The laboratory results of the composite soil sample obtained at 3'-9' [redacted] Aroclor 1254 was detected at 1 ppm which is at the lower end of both the USEPA RODs and the NJDEP ECRA ranges. The detected concentrations of metals in the sample were below levels of concern.

MW-5 (15'-21')

The laboratory results of the composite soil sample obtained at 15'-21' indicated low concentrations of [redacted] Concentrations were not high enough to be a concern.

MW-5 (25'-31')

The laboratory results of the composite soil sample obtained at 25'-31' indicated low concentrations of [redacted] Concentrations of lead and zinc were slightly elevated. However, these concentrations do not indicate concern. Among the VOCs detected, benzene and other gasoline-type constituents were detected at low concentrations.

MW-5 (48'-52')

The laboratory results of this composite soil sample obtained at 48'-52' indicated low concentration of [redacted]. Among the VOCs, benzene and other gasoline-type constituents were detected at low concentrations.

In summary, [redacted] These results show evidence of minor gasoline spillage, low concentrations of PCBs and metals, and pesticides which may be the result of past farming of the area and dumping of landscaping debris. In all cases, the detected

concentrations of the compounds in the fill were not high enough to cause a threat to human health and safety and are below action levels for State and EPA guidelines.

6.3 Discussion Of The Groundwater Sample Results

Groundwater:

The laboratory results for the groundwater samples obtained on the Uniondale site were compared to the groundwater standards as defined in the NYSDEC groundwater standards (Water Quality Regulation New York State Codes, Rules and Regulations, Title 6, Chapter X, Part 703.5). Groundwater samples detected with contaminant concentrations exceeding the standards were noted as such (See Tables 5.3 and 5.4).

The laboratory results of the shallow groundwater samples obtained from monitoring wells MW-1 and MW-2 (both upgradient of the site) show low concentrations of organic and inorganic compounds. However, concentrations of iron in the groundwater upgradient of the site is in violation of state groundwater standards. The slightly elevated concentrations of iron as well as manganese are common for Long Island groundwaters and represent aesthetic criteria rather than health based. Because of this, other violations of iron and manganese will not be discussed further.

The laboratory results of the groundwater samples obtained from monitoring wells MW-3 and MW-5 (both in fill) show slightly elevated concentrations of volatile organics. In addition, the NYSDEC standard for benzene is not detected, (5 ug/L) and therefore, it is slightly exceeded.

The laboratory results of the groundwater samples obtained from monitoring well MW-4 (down gradient of the fill) shows slightly

elevated concentrations of VOCs. However, the concentration of benzene detected in one sample is below the mean detection limit of the laboratory, and therefore, is not in violation of NYSDEC standards. This is supported by the split sample (MW-4) results, which indicate undetected concentrations of benzene by H2M Labs. Three (3) pesticides, although all below one part per billion, exceed NYSDEC standards for "GA" groundwater in the top layer of groundwater but not deeper and not down gradient.

In summary, the results of the groundwater testing indicates minor contamination of petroleum based compounds that are present in the fill. The concentrations of benzene detected in the groundwater are above the NYSDEC standards for Class "GA" groundwaters. However, the direction of groundwater flow beneath the site is south-southeast, towards Meadowbrook. There are no public water supply wells down gradient of the site, thus eliminating the pathway of this contamination to a receptor. The concentration of benzene detected in the groundwater, down gradient of the fill, shows a significant decrease to below GA standards. This may be due to biodegradation or dispersion. In either case, the source of the contamination is apparently limited due to the low concentrations detected. Finally, the gradient observed in the paired piezometers in the fill shows an upward movement indicating a discharge area. This is consistent with its proximity to Meadow Brook. This shows that hydrodynamically the water within the fill is not moving downward, but rather latterally into Meadow Brook.

SECTION 7.0

Conclusions and Recommendations

7.1 Conclusions

In conclusion, site contamination studies have shown a number of areas of concern on the site, particularly the past landfilling practices in the central and northeast portion of the site. Initial soil sampling throughout the site has shown contamination of petroleum hydrocarbons. A supplemental soil and groundwater investigation was conducted in order to uncover any unknowns that may have been dumped in the old cement manufacturing plant pit. Vertical soil samples were obtained from a boring in the central portion of the fill area in order to determine contamination concentration with depth and to obtain a vertical profile of contamination throughout the fill layer. The laboratory results of the soil samples show low levels of target compounds. Concentrations in the fill do not exceed action levels of State or USEPA.

A total of five (5) groundwater monitoring wells were installed; two (2) upgradient, two (2) in the central portion at different depths, and one (1) downgradient of the fill. The purpose of the wells was to determine the effects of the fill on the groundwater quality of the area. Well elevations were surveyed and tied into the Nassau County datum and water table elevations were calculated. The groundwater flow direction is in a south-southeast direction and the goundwater flow gradient was then calculated to be 0.002, away from the Uniondale wells, with a slight upward movement.

Out of the 149 parameters tested, the laboratory results of the groundwater samples show groundwater in the fill to be slightly above

state standards for benzene and three (3) pesticides. However, downgradient water quality is within standards, a rarity for the shallow glacial aquifer as shown by past county-wide studies.

7.2 Recommendations

Throughout this and previous site investigations, a number of environmental concerns were identified on the site and were addressed through soil and groundwater sampling. The discussions and conclusions of this report enabled Fanning, Phillips and Molnar to formulate the following recommendations:

1. Install two (2) additional monitoring wells downgradient on the property borders in the shallow aquifer, and the developer will maintain the right to sample these wells.
2. Prepare an annual report to the Nassau County Department of Health and Uniondale water district on the status of the shallow groundwater.
3. Dedicate these wells to the Nassau County Monitoring Network.

APPENDIX A

LEAD AGENCY DETERMINATION

TOWN OF HEMPSTEAD
DEPARTMENT OF CONSERVATION AND WATERWAYS

Inter-Departmental Memo RECEIVED JUN 2 6 1989

TO: Presiding Supervisor Joseph N. Mondello
Supervisor Gregory P. Peterson, and
FROM: Members of the Town Board
Gino N. Aiello, P.E., Commissioner

DATE: May 15, 1989

SUBJECT: **DRAFT ENVIRONMENTAL IMPACT STATEMENT**
UNIONDALE SHOPPING CENTER
PUBLIC HEARING APRIL 25, 1989

You may recall that at the subject public hearing before the Town Board, certain allegations were made by a consultant hired by the Winthrop Mitchell Block Association to the effect that there were toxic substances dumped at this location.

In a report entitled "Uniondale's Love Canal," the consultant went so far as to suggest that the entire site qualify as a Superfund Clean-up Site.

As a result of this report, I convened a meeting on May 5, 1989 with the applicant, his consultant, and the Nassau County Health Depatment (N.C.H.D.) to address these allegations. It was determined that the applicant would prepare a plan to drill wells down to the groundwater at various locations within the site. Under the auspices of the N.C.H.D. (Industrial and Hazardous Waste Management Division), water samples will be taken and analyzed in order to determine whether or not the parcel is indeed a hazardous waste site, as alleged.

It is estimated that it will take 4-6 weeks to make this determination.

Gino N. Aiello

GNA:go

5-5-89.

NAME	ADDRESS	REPRESENTING
PETER MINEO	120 MINEOLA BLVD MINEOLA, NY 11501	APPLICANT
KONSTANTINE FOTOS	417 FIFTH AVENUE N.Y., N.Y. 10016	APPLICANT
NORMAN WAX	144 GROVE AVE, CEDARHURST	ARCH.
MARVIN B FLEISHER	240 OLD COUNTRY RD Mineola	NCDH
SUSAN G. KING	240 Old Country Rd. Mineola	NC Dept of Health
KEVIN V. Phillips	909 MARCONI AVE RONKONKOMA N.Y.	FANNING PHILLIPS & MOLNAR
Andrew P. Ritchie	909 Marconi Ave. Ronkonkoma NY	Fanning, Phillips and Molnar.
RUTH BALKIN	TOWN BOARD, TOWN OF HEMPSTEAD	
COMM GINO AIELLO	CONSERVATION & WATERWAY - TOH	
COMM BERT MAYER	BUILDING DEPT. - TOH	

APPENDIX B

FIELD REPORTS

COMPOSITE FIELD REPORT

UNIONDALE SHOPPING CENTER SITE

PHILIPS INTERNATIONAL

DESCRIPTION: This document composites the field exercises encountered at the proposed Uniondale Shopping Center site. It will include several separate field reports describing the installation, development and sampling of monitoring wells 1 (MW-1) through monitoring wells 5 (MW-5). The field report breakdown is shown below.

DATE	LOCATION	ACTIVITY
May 16	MW-4	Monitoring Well Installation
May 17	MW-3	Monitoring Well Installation
May 18	MW-2, 1	Monitoring Well Installation
May 19	MW-1-4	Well Development
May 25	MW-5	Soil Sampling
May 26	MW-5	Monitoring Well Installation
June 1	MW-5	Well Development
June 7	MW-1-4	Shallow Well Sampling
June 8	MW-5	Deep Well Sampling

MAY 16, 1989

PRESENT:	Martin Klein	Hydrologist	Fanning, Phillips and Molnar
	Andrew Ritchie	Engineer	Fanning, Phillips and Molnar
	Dennis Page	Driller	Soil Mechanics
	Robert	Driller	Soil Mechanics
	George Tyrone	Helper	Soil Mechanics
	Helper (Name Unknown)		Soil Mechanics
	Angela Pettinelli	Inspector	NCDH

WEATHER: Heavy rain, 60°F

7:00 a.m.: Left office in Ronkonkoma for the project site.

8:15 a.m.: Arrived at the Plander Lanes site and unlocked the gate. All monitoring well locations were marked out on site while we waited for the drillers.

8:50 a.m.: Called drillers to confirm that they were coming.

9:00 a.m.: Soil Mechanics arrived on the site. Also arriving on the site was Angela Pettinelli, Nassau County Department of Health. The monitoring well locations were discussed with the Soil Mechanics representative and Angela. Other topics discussed with Angela included the process of developing the wells. She suggested that the water collected from future development should be contained until laboratory results are obtained. In addition, she noted that we needed to either obtain a permit to discharge the development of the upgradient water into the sewer or we needed to containerize and dump on site.

9:30 a.m.: Soil Mechanics notified us that they forgot an auger extension and had to go back to the shop. Drilling was delayed.

10:35 a.m.: They arrived back at the site and drilling began at MW-4. See Figure 1 for MW-4's location.

Table 1 describes the geology encounter at the monitoring well location at MW-4.

The following is a verbal description of the as-built of the monitoring well:

1. Total depth below grade was approximately 22 feet.
2. The well extends 1 foot above grade.
3. Static water level was noted at approximately 16 1/2 feet below grade.
4. Ten (10) feet of four inch diameter PVC screen was installed between 12 and 22 feet below grade.
5. Gravel packed occurred from 22 to 10 feet below grade followed by a 1 to 2 feet of benonite pellets, and finally

TABLE 1

FOOT RANGE	DESCRIPTION
0 - 12 ft.	Black gray ash Stones up to 1/2" in diameter
12 - 20 ft.	Gray silty clay Petroleum Hydrocarbon odor
Ground water was encountered at 16 ft.	

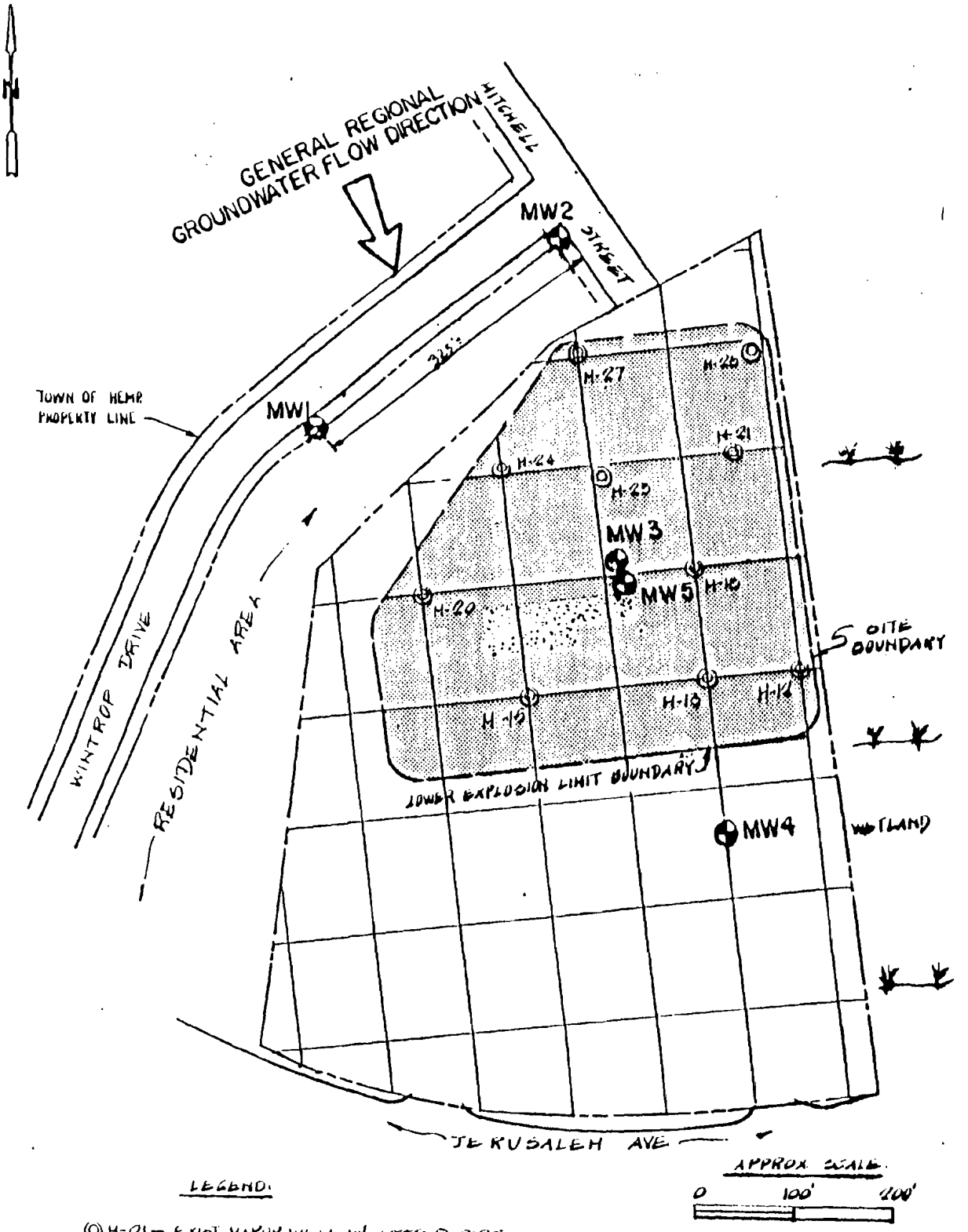


FIGURE 1-MONITORING WELL LOCATIONS

F,P&M

Figure 2 shows the as-built as well as the general geology encountered.

Drillers work hours was from approximately 10:30 a.m. until 2:30 p.m. The drillers and Fanning, Phillips and Molnar Representatives left the site at 2:45 p.m. and the gate was locked.

fanning, phillips & molnar
ROCHESTER ENGINEERS NEW YORK

Drilling Log

Project UNIONDALE SHOPPING CENTER Owner PHILLIPS INTERNATIONAL

Location UNIONDALE. N.Y W.O. Number

Well Number MW 4 Total Depth 22' Diameter 4"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia 4" Length 10' Slot Size

Casing: Dia 4" Length 12" Type SCH. 40 PVC

Drilling Company SOIL MECHANICS Drilling Method HOLLOW STEM AUGER

Driller DENNIS PAGE Log By M. KLEIN Date Drilled 5/16/89

Sketch Map

SEE FIG. 1 FOR MW 4 LOCATION

Notes NO SOIL SAMPLES OBTAINED

DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0				TOP SOIL
2				
4				
6				BLACK GRAY ASH
8				< 1/2" ϕ STONES, GRAVEL
10				
12				
14				
16				▽ GRAY SILTY CLAY
18				
20				(PETROLEUM HYDROCARBON ODOR)
22				
24				REFUSE- LANDFILL
26				

FIGURE 2-MW 4 WELL CONSTRUCTION AND GEOLOGY

MAY 17, 1989

WEDNESDAY

WEATHER: Rain, 60°F in the a.m. and sunny and warm in the p.m.

PRESENT:

Martin Klein	Hydrologist	Fanning, Phillips and Molnar
Andrew Ritchie	Engineer	Fanning, Phillips and Molnar
Dennis Page	Driller	Soil Mechanics
Robert	Driller	Soil Mechanics
George Tyrone	Helper	Soil Mechanics
Name Unknown	Helper	Soil Mechanics

7:00 a.m.: Andrew Ritchie, Marty Klein left the office for the project site.

8:15 a.m.: Unlocked the gate and traveled to Winthrop Drive to check the progress of the utility markouts.

9:00 a.m.: Two (2) Nassau County Department of Health Sanitation Representatives arrived and we discussed the sewer markings on Winthrop Drive. On the northeast side of Winthrop Drive, six (6) houses were marked and on the northwest side five (5) houses were marked.

9:30 a.m.: Two (2) helpers arrived still waiting for drilling.

9:50 a.m.: Rig Master Dennis arrives and the installation of MW-3 begins. All augers were steamed cleaned prior to arriving on site.

Table 2 gives a description of the geology where the well was installed.

Figure 3 shows the soil boring profile of the geology of monitoring well 3.

The monitoring well is located approximately 24 feet deep and the water table was noted at 18 feet. Thus, the well was screened 6 feet into the water table and 4 feet above the water table.

At approximately 3:45 Angela Pettinelli arrived at the site and we discussed the progress of the project. Monitoring well # 3 was being constructed at that time of her arrival.

TABLE 2

VERTICAL GEOLOGY DESCRIPTION AT MW - 3

DEPTH	DESCRIPTION
0 - 2 feet	Black/dark brown organic fill. Stones less than 2 inches in diameter.
2 - 3 feet	Black/dark brown organic fill stones less than 1/2 diameter.
3 - 6 feet	Medium sand with stones less than 1 inch in diameter.
6 - 8 feet	Black organic fill/sand with wood fragments and intermediate large stones. The OVA was run on the bore hole during drilling and registered a 4 - 500 ppm reading.
8 - 10 feet	Same as above with cloth fragments. OVA at the bore hole showed a non-steady state of 200 ppm of methane. Photo 2 was taken at the 8 foot zone.
10 - 12 feet	Black organic material, wood pieces (six inches long), wood fragments, petroleum odor was noted, metal fragments (i.e., aluminum, steel or iron) and, plastic. Metal pieces appear to be thin thickness, such as a soda can. At the bore hole an OVA analysis was conducted at 10 feet. The OVA read greater than 1000 ppm of methane.
12 - 14 feet	Rags, wood and paper were noted. The auger was jammed from the rags and paper.
14 - 24 feet	Silty fine sand with gravel 1/4 inch stones. Water table was noted at approximately 18 feet.

fanning, phillips & molnar
ENGINEERS
HONKONKOMA NEW YORK

Drilling Log

Project UNIONDALE SHOPPING CENTER Owner PHILLIPS INTERNATIONAL

Location UNIONDALE, N.Y W.O. Number

Well Number MW3 Total Depth 24' Diameter 4"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia 4" Length 10' Slot Size

Casing: Dia 4" Length 14" Type SCH. 40 PVC

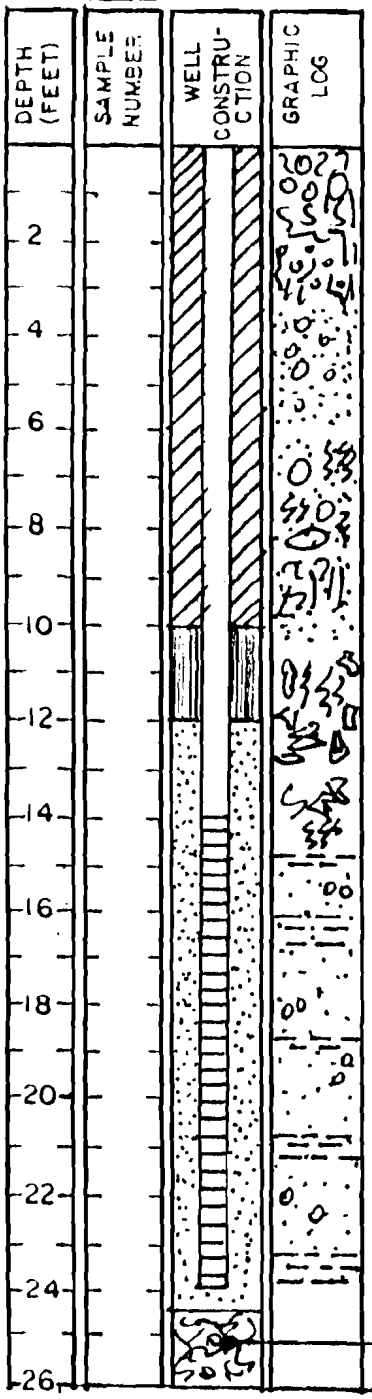
Drilling Company SOIL MECHANICS Drilling Method HOLLOW STEM AUGER

Driller DENNIS PAGE Log By M. KLEIN Date Drilled 5/17/89

Sketch Map

SEE FIG. 1 FOR MW 3 LOCATION

Notes NO SOIL SAMPLES OBTAINED



DESCRIPTION/SOIL CLASSIFICATION
(COLOR, TEXTURE, STRUCTURES)

TOP SOIL, BLACK/BROWN ORGANIC FILL STONES < 2"ϕ

MEDIUM SAND, STONES < 1"ϕ

BLACK ORGANIC FILL/SAND W/WOOD FRAGMENTS, INTERMITANT LARGE STONES (OVA 4-500 PPM)

BLACK ORGANIC FILL/SAND W/CLOTH FRAGMENTS (OVA-NONSTEADY STATE OF 200 PPM OF METHANE)
BLACK ORGANIC MATERIAL, WOOD PIECES (6" LONG), WOOD FRAGMENTS, METAL FRAGMENTS (SODA CAN), PETROLEUM ODOR. OVA SHOWED METHANE > 1000 PPM

RAGS, WOOD & PAPER WERE NOTED. AUGER JAMMED W/RAGS & PAPER

SILTY FINE SAND W 1/4"ϕ STONES

REFUSE - LANDFILL

FIGURE 3-MW3 WELL CONSTRUCTION AND GEOLOGY

MAY 18, 1989

THURSDAY

PRESENT: Andrew Ritchie
Mostafa ElSehamy
Dennis Page
Tyrone
and Tommy who are helpers

7:30 a.m.: Left Fanning, Phillips and Molnar's office for project site.

8:15 a.m.: Drillers arrived at site at approximately 8:15 a.m. for drilling of monitoring wells 1 and 2 on Winthrop Drive.

8:45 a.m.: Drilling began at monitoring well 2. Prior to drilling the monitoring well, it should be noted that the location was changed for the well to be located at the southeast portion Mitchel Street and of Winthrop Drive. This change was necessary due to overhead utilities and underground water mains.

Table 3 discusses the physical description and geology at monitoring well number 2. Figure 4 shows a detail of the soil profile.

During the installation of monitoring well 2, Mrs. Pinckney, who lives on the corner of Winthrop and Mitchel Street came out to discuss the construction with Andrew (her exact address if 592 Mitchel Street). Initially Mrs. Pinckney was very upset that drilling was being conducted in her front yard without her consent, however, it was explained to her that the drilling was actually on the Town of Hempstead's property (between the sidewalk and curb). After showing Mrs. Pickney the permit to excavate she seemed very cooperative. I gave her a card and if she had any complaints of the well construction or final appearance of the land to give me a call and we would do the best we could to make the landscaping better.

The installation of monitoring well 2 as shown Figure 4 shows some interesting points. First of all, Soil Mechanics Rig Master had pulled out the last five feet of auger in order to remove an extension prior to installing the well. This allowed the saturated zone to collapse resulting in the well only penetrating the water table by 3 feet and 10 inches (or 6'2" of screen above the water table). The Rig Master, Dennis Page, questioned Andrew whether this well would be sufficient. The following reflects my response to Dennis in the field:

1. The screen was only 3' 10" into the water table at the initial readings, thus the well does not meet our specifications of minimum of 5 feet into the water table.

2. Since we are installing wells in a residential community who

TABLE 3

SUBSURFACE GEOLOGY OF MONITORING WELL 2

DEPTH	DESCRIPTION
0 - 2 feet	Topsoil
2 - 8 feet	Coarse to medium sand light brown in color with stones less than 1 inch in diameter.
8 - 16 feet	Medium to fine sand very little or no stones. The material is well sorted.
16 - 23 feet	Light brown coarse medium sand with stones less than a 1/2 inch in diameter. Groundwater was noted to be approximately 20 feet below grade.

fanning, phillips & molnar
ENGINEERS
HONKONKOMA NEW YORK

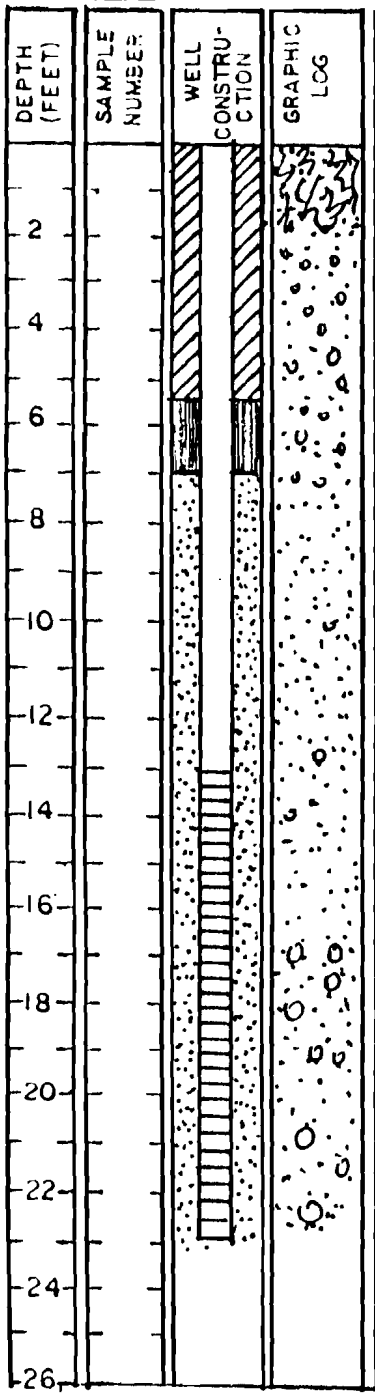
Drilling Log

Project UNIONDALE SHOPPING CENTER Owner PHILIPS INTERNATIONAL
Location UNIONDALE N.Y. W.O. Number
Well Number MW 2 Total Depth 23' Diameter 4"
Surface Elevation Water Level: Initial 24-hrs
Screen: Dia 4" Length 10' Slot Size
Casing: Dia 4" Length 13' Type SCH. 40 PVC
Drilling Company SOIL MECHANICS Drilling Method HOLLOW STEM AUGER
Driller DENNIS PAGE Log By M. ELSEHAMY Date Drilled 5/18/89

Sketch Map

SEE FIGURE 1 FOR MW2 LOCATION

Notes NO SOIL SAMPLES WERE OBTAINED.



DESCRIPTION/SOIL CLASSIFICATION
(COLOR, TEXTURE, STRUCTURES)

GRASS, TOPSOIL

COARSE TO MEDIUM SAND, LIGHT BROWN & STONES < 1"ϕ

MEDIUM TO FINE LIGHT BROWN SAND W/LITTLE TO NO STONES

LIGHT BROWN COARSE MEDIUM SAND W/ STONES < 1½"ϕ

FIGURE 4-MW2 WELL CONSTRUCTION AND GEOLOGY

has already expressed opposition to the project I elected to allow the wells to be completed despite only being 3' 10" into the water table. However, the following conditions must be understood:

- If at a future date the well was dry due to the water table lowering, then Soil Mechanics would be responsible to install a new well at no cost to the Owner or Engineer.

3. Dennis Page, the Rig Master, agreed that this was acceptable that he would notify Carl Vernic, President of Soil Mechanics on this issue.

Thus the well was completed by 11:00 a.m.. The specifics of the well showed screening 3' 10" into the water table, 6'2" screening above the water table. Gravel pack the screen portion of the well as well as 2'6" above the screen well, 1/2 inch benonite pellets 1'6" above the gravel pack followed by a grout mixture 5'6" above the benonite pellets above grade. An 8" diameter frame and cover universal valve company #60 was used to secure the well from grade. The well was locked by a standard locking key.

Monitoring well 2 was completed at 11:00 a.m.. Following the construction of the well the augers were power washed and steam cleaned. However, the power washer was only able to complete three 5 foot lengths before the steam clean machine broke down. Thus three of the five augers were steam cleaned. The final two augers were cleaned by by hand with the scrub brush. Fanning, Phillips and Molnar indicated to the driller to use the first three steamed cleaned augers in the bottom of the well followed by the hand cleaned augers on top. The drilling and monitoring well 1 began at 11:45 a.m..

The location of monitoring well was adjusted due to overhead tree branches and underground utilities. The exact location was 323 street from the corner of Winthrop Drive and Mitchel Street.

Table 4 is a description of the geology at monitoring well 1.

Figure 5 shows the well construction of MW-1 as shown the monitoring well penetrated the water table, the screen portion of the monitoring well only penetrated the water table only 2' 10". Thus the screen portion of the monitoring well was 7' 2" above the water table. Once again, the message was relayed to the Rig Master that this well was not according to our specifications and that Soil Mechanics would be responsible to return to the site if the wells were to be dry at any time in the future.

During the construction of MW-1, Andrew had a brief discussion with Patrick Fenner, who parents reside at 6206 Winthrop Drive. He stated that many of the residents in the area were for the project and if they became more aware of the scope of the project, most likely attend any future public hearing.

TABLE 4

SUBSURFACE GEOLOGY AT MW - 1

FEET	DESCRIPTION
0 - 2 feet	Topsoil
2 - 4 feet	Well sorted sand with gravel.
4 - 8 feet	Well sorted brown sand with some gravel. Gravel less than 1 inch in diameter.
8 - 15 feet	Fine to medium brown sand with some small size gravel.
15 - 25 feet	Well sorted sand with gravel. Moisture was noted at approximately 23 feet.

fanning, phillips & molnar
ENGINEERS
HONKONGMA NEW YORK

Drilling Log

Project UNIONDALE SHOPPING CENTER Owner PHILIPS INTERNATIONAL

Location UNIONDALE, N.Y WO Number

Well Number MW1 Total Depth 22'6" Diameter 4"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia 4" Length 10' Slot Size

Casing: Dia 4" Length 13' Type SCH. 40 PVC

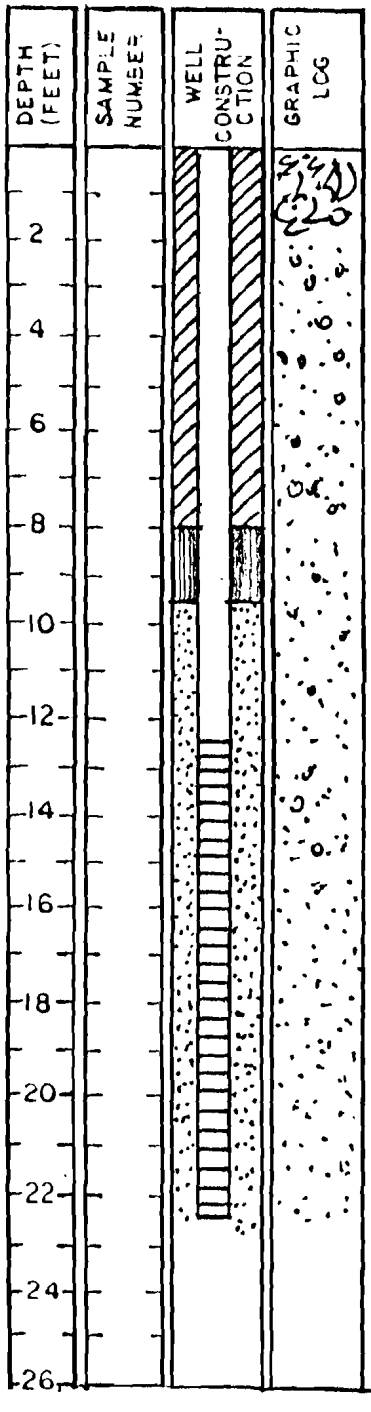
Drilling Company SOIL MECHANICS Drilling Method HOLLOW STEM AUGER

Driller DENNIS PAGE Log By M. ELSEHAMY Date Drilled 5/18/89

Sketch Map

SEE FIGURE 1 FOR MW 1 LOCATION

Notes NO SOIL SAMPLES WERE OBTAINED.



DESCRIPTION/SOIL CLASSIFICATION
(COLOR, TEXTURE, STRUCTURES)

GRASS, TOP SOIL

WELL SORTED SAND W/GRAVEL

FINE TO MEDIUM BROWN SAND W/SOME SMALL SIZE GRAVEL

WELL SORTED SAND

FIGURE 5-MW1 WELL CONSTRUCTION AND GEOLOGY

At approximately 2:30 p.m., Angela Pettinelli arrived from the Nassau County Department of Health. She stated that the Health Department felt that a representative soil sample could not be obtained by soil boring methods proposed. In fact, she had spoken directly with Bill Spitz with the New York State DEC, who felt that an alternative proposal of a cluster of wells inside the fill at various depths would be more appropriate. This would allow every zone to be sampled and identified more appropriately. For instance, if the fill is fifty (50) feet deep, one (1) well should be 40 - 50 foot screen. Another 35 - 25 and the existing well at 11 - 21. Thus, Angela felt that the project should stop and a new proposal should be submitted to the County. She instructed that this proposal would be reviewed for a couple of days and a meeting to be scheduled before any more drilling should commence.

FIELD REPORT
PROPOSED UNIONDALE SHOPPING CENTER SITE

DATE: 5-19-89

WEATHER: Sunny, 70°F

PRESENT: Mostafa ElSehamy FP&M
Charies Nehrig Soil Mechanics

OBJECTIVE: Well development of MW-1 - MW-4

DETAILS:

- Arrived on site at 8:00 a.m.
- Soil Mechanics representative arrived at 9:00 a.m.
- Located observation wells # MW-1, MW-2, MW-3, and MW-4
- Well development method:
  - o Jet pump (3Hp)
  - o Plastic dedicated hose

MW-3:

- MW-3 was developed for approximately one (1) hour
- In the beginning of the development, the water was black and after two (2) minutes the water was clear.
- Measured the water table, depth of the well, and flow rate as following:

	W.T. Elev Before	W.T. Elev After	Depth of Well	Flow Rate
MW-3	16'4"	16'4"	24'7"	5 GPM

MW-4:

- This well was developed for two (2) hours.
- The well had low recovery and was clogged in the beginning of the development.
- The flow rate increased to 3 GPM after 1 1/2 hour.
- The water was cleared after one hour and forty minutes.

- Measured the water table, depth of the well, and the flow rate as the following:

	W.T. Elev Before	W.T. Elev After	Depth of Well	Flow Rate
W-4	16'	19'1"	22'1"	.25 GPM - After one hour and forty minutes the flow rate increased to 3 GPM.

MW-2:

- The water was rusty at the beginning of the development.
- After 7 minutes the water was clear.
- This well was developed for 1 hour.
- Measured the water table, depth of well, and the flow rate as following:

	W.T. Elev Before	W.T. Elev After	Depth of Well	Flow Rate
W-2	16'2"	16'2"	20'3"	5 GPM

MW-1:

- This well was developed for 1 hour.
- The water was very rusty in the beginning, and after 15 mins, the water was clear.
- The flow rate increased from 3 GPM to 5 GPM.
- Measure the water table, depth of well, and flow rate as following:

	W.T. Elev Before	W.T. Elev After	Depth of Well	Flow Rate
MW-1	17'8"	17'8"	21'2"	3 GPM 5 GPM after 1/2 hour

Conclusions:

- Discharge water from the four (4) wells was stored in 55 gallon drums. These drums were clearly marked and stored adjacent to the bowling alley on site.
- The day ended at 2:30 p.m.

May 25, 1989

PRESENT:	Kevin Phillips	Principal	Fanning, Phillips & Molnar
	Andrew Ritchie	Engineer	Fanning, Phillips & Molnar
	Mostafa ElSehamy	Hydrogeologist	Fanning, Phillips & Molnar
	Robert	Driller	Soil Mechanics
	Mark Stimtfle	Helper	Soil Mechanics
	Brad Vernik	Helper	Soil Mechanics
	Angela Pettinelli	Engineer	NCDOH

WEATHER: Sunny, 78°F a.m.
Sunny, 82°F p.m.

7:00 a.m.: Left office in Ronkonkoma for the project site.

8:00 a.m.: Arrived at site and unlocked fence. Marked out the location for MW 5.

8:30 a.m.: Drillers arrived on site. All of the augers were steam cleaned and placed on polypropylene plastic bags.

FPM representatives set up a decontamination area up wind from the drilling operations. All decontamination supplies, tubs and materials were placed on a polypropylene tarp. The typical decontamination procedure consisted of the following:

(1) Removal of physical debris
(2) Wash in bath containing liquid dishwashing soap
(3) Rinse with deionized water
(4) Air dry
(5) Rinse with methonal, then hexane, followed by nitric acid
(6) Rinse with deionized water
(7) Air dry

This decontamination procedure was followed throughout cleaning operations.

Soil mechanics representatives began drilling with hollow stem augers until the desired sample depth was reached. The hollow stem augers used were 6 1/4 inch outer diameter with a 2 1/4 inside diameter. A 1 inch diameter 2 foot split spoon was introduced to obtain samples. Table 5 is a description of the sample depths and parameters.

After each split spoon was soiled, FPM decontaminated the split spoon by the procedure earlier discussed.

The VOC samples were collected at 6, 19, 29, and 48 feet respectively. In the approved proposal, the VOC sample was to be selected by an OVA screening process. However, due to a low yield of soil in each split spoon, this method was not used. Instead, the sample was taken at a depth in the middle of each composite sample.

The last composite sample was obtained between 48-52 feet. The depth of 48 feet was selected and approved in the field by a NCDOH

Table 5

Sample Depth	Type of Sample	Parameter
3-9 feet	Composite	BNE, AE, Pesticides, PCBs, and Metals
6 feet	Grab	VOC
15-21 feet	Composite	BNE, AE, Pesticides, PCBs, and Metals
19 feet	Grab	VOC
25-31 feet	Composite	BNE, AE, Pesticides, PCBs, and Metals
29 feet	Grab	VOC
48-52 feet	Composite	BNE, AE, Pesticides, PCBs, and Metals
48 feet	Grab	VOC

Table 6
Geology Encountered at MW5

Depth (feet)	Description
0-10	Fill primarily consisting of wood, small gravel, and asphalt.
10-20	Fill containing: plastic, dark black sand with gravel, wood and ceramic pieces. Groundwater encountered around 16 feet below grade.
20-30	Fill containing: dark silty sand with < 1/2 inch diameter gravel, bricks, wood, plastic bags, some petroleum base odor.
30-40	Fill containing: dark sand, wood, plastic bags. Petroleum odor.
40-49	Fill containing: dark sand, wood, plastic bags.
49-52	Natural material consisting of: fine brown sand with gravel < 1/2 inch diameter.

Table 7
Fill Description from Split Spoons

Foot Range	Description
3-5	Fine sand with gravel, asphalt
5-7	Fine moist sand with gravel
7-9	Wood, fine sand, moist gravel
15-17	Dark, fine moisture sand with gravel, plastic bags, woods, and ceramic pieces
17-19	Dark black sand with gravel, wood, moisture
19-21	Fine, silty sand with 1/2 inch gravel, bricks, wood, moisture
25-27	Dark fine sand with gravel, 7 inches of wood
27-29	Fine sand, wood, odor of oil
29-31	Very dark fine sand, plastic bags, moisture
48-50	Brown sand with gravel, wood
50-52	Clean fine, brown sand with silt

representative. This sample was limited due to the interception of natural material of approximately 49 feet below grade.

While boring the sample hole, a general classification of the geology was conducted. Table 6 represents a visual inspection of the material augured from the hole.

Table 7 represents an accurate description of the various split spoons obtained. As noted, petroleum odor was encountered at various levels. This odor maybe from petroleum products or a decomposition odor. At each of the split spoon sample depths the bore hole was monitored with the explosimeter. Each sample range was characteristic of methane levels from 20% LEL to > 100% LEL.

At the end of the day the hole was plugged with an upside down bucket. MW 5 will be installed in the same bore hole at a later date.

May 26, 1989

PRESENT:	Mostafa ElSehamy	Hydrogeologist	Fanning, Phillips & Molnar
	Robert	Driller	Soil Mechanics
	Mark Stimtfle	Helper	Soil Mechanics
	Brad Vernick	Helper	Soil Mechanics

WEATHER: Sunny, 80°F

This field report reflects the work associated with the installation of MW 5. On May 25, 1989, soil samples were obtained with a 6 1/4 inch (outside diameter) hollow stem auger and a 2 inch diameter split spoon diameter. MW 5 will be installed with a 10 1/4 inch outside diameter (6 1/4 inch inside diameter) hollow stem auger. The hole created yesterday will be reaugered for MW 5. Thus, MW 5 was installed within the void created from yesterday's sampling activities.

Figure 6 reveals the well construction of MW 5. In addition, the soils description, soil classification, and characteristics are noted. This information has been extracted from the May 25, 1989, field report.

fanning, phillips & molnar
ENGINEERS
HONKONKOMA NEW YORK

Drilling Log

Project UNIONDALE SHOPPING CENTER Owner PHILLIPS INTERNATIONAL

Location UNIONDALE N.Y. W.O. Number

Well Number MW5 Total Depth Diameter 4"

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia 4" Length 30ft. Slot Size

Casing: Dia 4" Length Type

Drilling Company SOIL MECHANICS Drilling Method HOLLOWSTEM AUGER

Driller Robert Log By ELSEHAMY Date Drilled 5/26/89

Sketch Map

SEE FIGURE 1 FOR MW5 LOCATION

Notes SOIL SAMPLES WERE OBTAINED AS DESCRIBED IN THE 5/26/89 FIELD REPORT

DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
2				GRASS, TOPSOIL MATERIAL
4				FINE SAND WITH GRAVEL. FILL PRIMARILY CONSISTED OF WOOD AND ASPHALT
6				
8				
10				DARK FINE SAND WITH GRAVEL FILL CONTAINS: GRAVEL, WOOD CERAMIC PIECES & BRICK
12				
14				
16				
18				
20				
22				DARK BLACK SAND WITH GRAVEL. FILL CONSISTS OF: BRICKS, WOOD AND PLASTIC BAGS
24				
26				

FIGURE 6 MW-5 WELL CONSTRUCTION AND GEOLOGY

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ENGINEERS
RONKONKOMA NEW YORK

Drilling Log

Project UNIONDALE SHOPPING CENTER Owner PHILLIPS INTERNATIONAL

Location UNIONDALE N.Y. W.O. Number

Well Number MW 5 Total Depth Diameter 4"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia 4" Length 30FT Slot Size

Casing: Dia 4" Length Type

Drilling Company SOIL MECHANICS Drilling Method HOLLOW STEM AUGER

Driller Robert Log By ELSEHAMY Date Drilled 5/26/89

Sketch Map

SEE FIGURE 1 FOR MW 5 LOCATION

Notes SOIL SAMPLES WERE OBTAINED AS DESCRIBED IN THE 5/25/89 FIELD REPORT

DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
28				ODOR OF PETROLEUM PRODUCT (POSSIBLY A DEGRADATION ODOR)
30				
32				
34				DARK FINE SAND. FILL CONSISTS OF: WOOD PLASTIC MATERIALS
36				(SAME ODOR AS NOTED ABOVE)
38				
40				
42				
44				
46				DARK SAND WITH WOOD AND PLASTIC
48				
50				NATURAL MATERIAL CONSISTING OF CLEAN FINE BROWN SAND WITH GRAVEL < 1/2" IN DIA.
52				

FIGURE 6 MW-5 WELL CONSTRUCTION AND GEOLOGY

FIELD REPORT

PROPOSED UNIONDALE SHOPPING CENTER SITE

DATE: June 1, 1989

WEATHER: Sunny, 75°F

PRESENT:

Mostafa ElSehamy	Fanning, Phillips and Molnar
Kurt Shoblom	Soil Mechanics
Gary Roger	Soil Mechanics

OBJECTIVE: Well development of MW-5

DETAILS:

- Arrived on site at 7:30 a.m.
- Soil Mechanics representative arrived at 9:00 a.m.
- Located observation well M-5.
- Well development method:
  - o jet pump (8hp)
  - o plastic dedicated hose
- Kurt Shoblom told me that the pump did not start and he needs time to work on it.
- After one hour working on the pump to try to get it to start, I told Kurt to stop working on it and to go to the shop to get another one, or to reschedule for the next day.
- At 11:30 Kurt brought another pump from the shop.
- In the beginning of the development and after, the water was clear.
- Measured the water table, depth of the well, and flow rate.

	Water Table Elevation Before	Water Table Elevation After	Depth of Well	Flow Rate
MW-5	16' 2"	16' 2"	50'	5 gpm

- Discharge water from MW-5 was stored in 55 gallon drums. These drums were clearly marked and stored adjacent to the bowling alley on site.
- The day ended at 1:30 p.m.

FIELD REPORT
PHILLIPS INTERNATIONAL GEOHYDROLOGICAL

DATE: June 7, 1989

PRESENT: Ravi Korlipara (Engineer)
Martin Klein (Hydrogeologist)

WEATHER: Periods of rain, 65°F

DETAILS:

- See Figure 1 for well locations
- Located MW-2 (Winthrop Drive)
  - o Depth to water = -16' 1" (Average of 3 measurements)
  - o Total depth of well 20' 2 1/8"
  - o Table 1 summarizes the stabilization parameters measured following each well volume exhausted.
  - o Contained sample in Laboratory, prepared sample jars, labeled, and stored in cooler at 4°C.
- Located MW-1 (Winthrop Drive)
  - o Depth to water = -17' 8 3/8" (Average of 3 measurements)
  - o Total depth of well = 21' 1 1/8"
  - o Table 1 summarizes the stabilization parameters measured following each well volume exhausted.
  - o Contained sample in Laboratory prepared sample jars, labeled, and stored in cooler at 4°C.
- Prepared a field blank
- Located MW-4 (Down gradient of fill)
  - o Depth of water = -15' 8" (Average of 3 measurements)
  - o Total depth of well = 22' 6 1/8"
  - o Table 1 summarizes the stabilization parameters measured following each well volume exhausted.
  - o Contained sample in Laboratory prepared sample jars, labeled, and stored at 4°C.
  - o Split this sample with another lab (H2M)
- Located MW-3 (in central portion of landfill)

TABLE 1
SUMMARY OF STABILIZATION
PARAMETER MEASUREMENTS

WELL ID #	WELL VOLUME EXHAUSTED	pH	SPECIFIC CONDUCTANCE (umho/cc)	(TEMP °F)	NOTES
MW-2	1	5.86	422	59	Water was cloudy with brownish color.
	2	5.73	410	58	
	3	5.71	420	58	
MW-1	1	5.71	229	59	Water was cloudy with brownish color.
	2	5.70	262	58	
	3	5.66	252	59	
MW-4	1	6.26	735	58	Water was gray-brown in color with slight petroleum odor.
	2	6.27	733	57	
	3	6.36	745	57	
	4	6.36	741	57	
MW-3	1	6.06	479	59	Water was blackish in color with an organic odor (decomposing).
	2	5.89	481	59	
	3	5.91	511	59	

- o Depth to water = -16 2 1/2" (Average of 3 measurements)
- o Total depth of well = 24' 4 3/4"
- o Table 1 summarizes the stabilization parameters measured following each well volume exhausted.
- o Contained sample in laboratory, prepared sample jars, labeled, and stored at 4°C.

- Labeled Trip Blank and set in cooler.
- Sealed all sample jars.
- Filled out chain of custody.
- Samples will be hand delivered to laboratory personnel on June 8, 1988 (am)

June 8, 1989

PRESENT: Andrew Ritchie (Engineer)
Martin Klein (Hydrogeologist)

WEATHER: Sunny, 75°F

DETAILS:

- See Figure 1 for well location
- Located well MW-5
  - o Depth to water = -16'2" (Avg. of 3 measurements)
  - o Total depth of well = 50'5 1/2"

    Well stabilization parameters measured after each well volume that was removed. (A clean submersible pump was used to remove all well volumes). Sample was obtained using stainless steel bailer.
  - o The sample was contained in laboratory prepared sample jars, labeled, sealed, and stored in a cooler at 4°C.
  - o A chain of custody form was filled out.
  - o The sample was federal expressed the same day (to be delivered to the lab by the following morning).

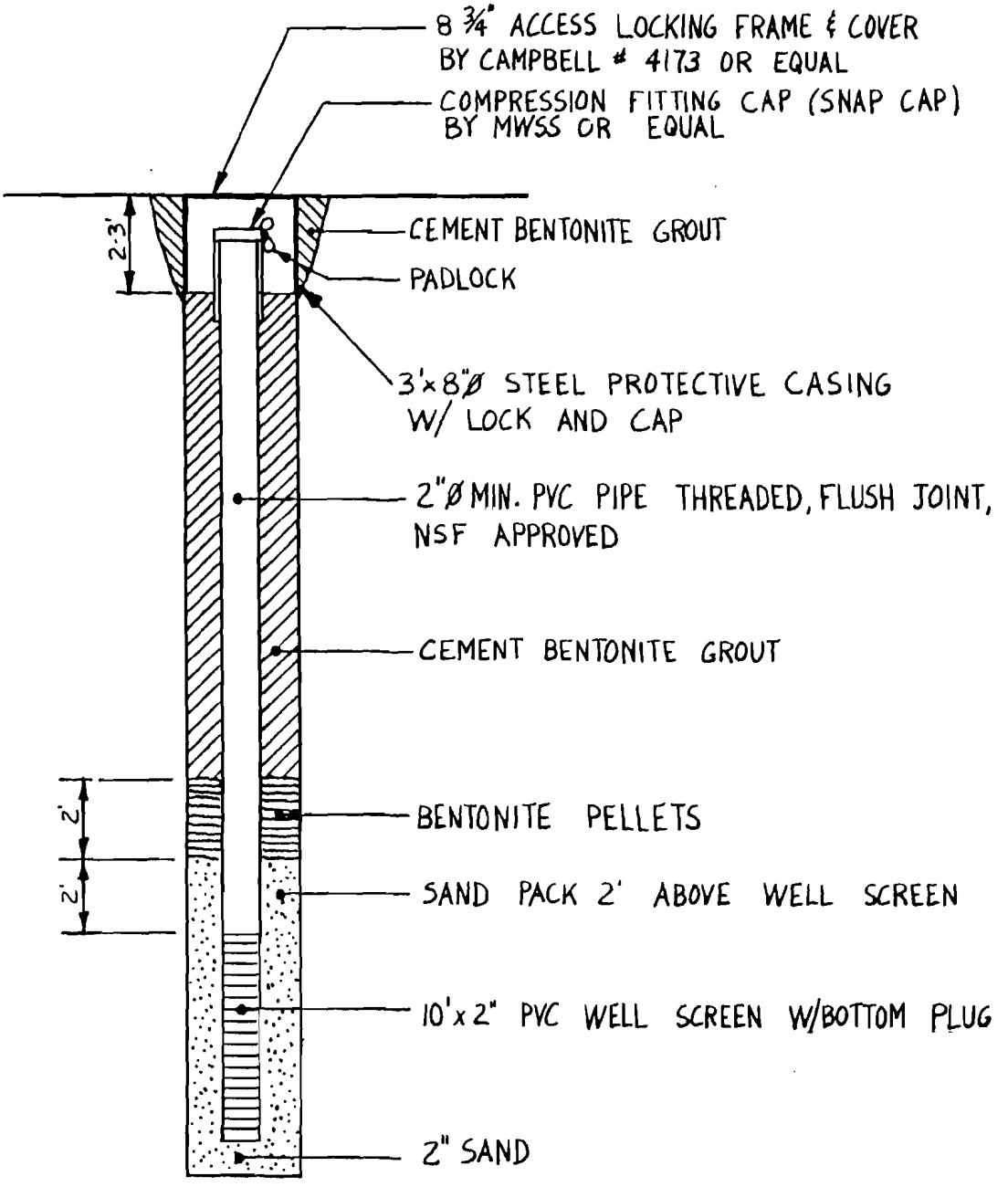
TABLE 1

WELL ID#	WELL VOLUME	PH	SPEC. COND. (umch/cc)	TEMP (°F)	NOTES
MW-5	1	6.80	1,453	59	The water from this
MW-5	2	6.97	1,455	59	well was slightly
MW-5	3	6.98	1,462	59	cloudy.
MW-5	4	7.10	1,448	59	
MW-5	5	7.02	1,468	59	
MW-5	6	7.04	1,457	59	

APPENDIX C

NYSDEC WELL CONSTRUCTION SPECIFICATIONS

NYSDEC WELL CONSTRUCTION SPECIFICATIONS



OVERBURDEN WELL

fanning, phillips & molnar
ENGINEERS
RONKONKOMA NEW YORK

APPENDIX D

CHAIN OF CUSTODY AND LABORATORY REPORTS

YORK LABORATORIES

REPORT TRANSMITTAL

REPORT NUMBER 30890-0984

DATE June 5, 1989

CLIENT Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

ATTENTION Mr. Andrew Ritchie

The above referenced report is enclosed. Copies of this report and supporting data will be retained in our files in the event they are required for future reference.

If there are any questions concerning this report, please do not hesitate to contact us.

Any samples submitted to our Laboratory will be retained for a maximum of sixty (60) days from receipt of this report, unless other arrangements are desired.

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June 5, 1989

30890-0984
FANNING, PHILLIPS & MOLNAR
909 Marconi Avenue
Ronkonkoma, New York 11779

Attention: Mr. Andrew Ritchie

PURPOSE

Four (4) samples and one field blank were submitted to York Laboratories Division of YWC, Inc. by Fanning, Phillips & Molnar for analysis. The client requested the samples be analyzed for a full TCL list analysis plus a library search for non-target compounds in the volatile and semi-volatile fractions.

METHODOLOGY

Volatile organics were determined using purge and trap GC/MS. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5995C GC/MS/DS.

Semi-volatile organics were determined using capillary GC/MS. The instrumentation used was a Hewlett-Packard Model 5890 gas chromatograph interfaced with a Model 5970 Mass Selective Detector.

Pesticides and polychlorinated biphenyls (PCB's) were determined using GC/ECD. The instrumentation used was a Perkin Elmer Model Sigma 3 gas chromatograph equipped with an electron capture detector (Ni^{63}).

Metals were determined by ICP using either a JA61 simultaneous ICAP or a PE 6500 ICAP or a PE 6500XR sequential ICP. Graphite furnace elements were determined using either a PE Zeeman 5100 or PE Zeeman 3030 GFAAS. Mercury was determined by the cold vapor technique utilizing the Spectro Products Model HG-4 mercury analyzer.

Cyanide was determined colorimetrically after preliminary distillation.

All analyses were conducted according to NYSDEC Contract Laboratory Program Protocols, November 1987.

DISCUSSION

Semi-Volatiles - Sample MW5 15-21' was found to have suppression of the Internal Standard Perylene d_{12}. The sample was reanalyzed with the same result confirming a matrix interference. Both sets of data are included with the package.

Pesticides/PCB's - The reference peak for aroclor 1248 was repeatedly out on OV-1 column in sample MW5 25-31'. It is a multiresponse compound in the analyst's judgement it is considered a hit. Dieldrin and 4,4'DDE co-eluted on column OV-1 in samples MW5 15-21' and MW5 25-31'. Third column confirmation was not done

due to the coelution of the standard compounds. 4,4'DDT was calculated off column OV-1 for the sample MW5 25-31' since the area exceeded the calibration curve on column I.

The following standards were not with QC acceptance criteria. After each linked standard either the run was stopped or the samples run after the affected standard were reanalyzed.

Date	Time	GC	Standard	Comments
5/31/89	06:28	4A	Ind B	Comp. out of RT windows
6/01/89	08:06	4A	Ind A	C_f>15% Difference
6/03/89	04:44	4A	Ind B	C_f>15% Difference
5/31/89	17:32	2	Ind A	C_f>20% Difference
6/02/89	02:10	2	Eval B	Confined breakdown >20%

4,4DDT percent RSD was greater than 10% on GC4B on 6/02/89. No DDT series were calculated out off this run. Lindane was not present in the 0526-B04 MS/MSD. The MS/MSD were rerun proving matrix interference. There was a system clock error on 6/5/89 printing out incorrectly as 6/03/89. The time was manually corrected.

Metals - In both sample digestions for the water and soil samples the LCS's failed, requiring re-digestions and re-analysis for ICP analytes.

IEC's have currently been updated and are applied by computer for the JA61. However, the ICSA is used as a daily monitoring device to identify any further adjustments that may be necessary as a results of instrument drift. Any such modifications are calculated and applied manually. They are noted on the raw data.

Two "N" flags resulted during spike recovery analysis of the soil samples. The elements out of control limits are cyanide and selenium. Since all other analytes recovered within the control limit parameters it would appear that the low recoveries could be due to a matrix effect.

RESULTS

The results are presented in the following Tables. Also enclosed as Appendix A is the data package containing all relevant QA/QC and raw data.

Prepared by: Jeffrey C. Curran

Jeffrey C. Curran
Laboratory Manager

JCC/tma

The liability of YWC, Inc. is limited to the actual dollar value of this project.

Soil

TABLE 1.0
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL VOLATILE ORGANICS

All values are ug/Kg.

	Sample Identification					
Dilution Factor	1.00	1.06	1.23	1.18	1.52	
Method Blank I.D.	>B5842	>B5842	>B5842	>B5842	>B5842	
Compound	Method Blank	MW5 (3-9')	MW5(48 -52')	MW5(15 -21')	MW5(25 -31')	Method Detection Limits with no Dilution
chloromethane	U	U	U	U	U	10
bromomethane	U	U	U	U	U	10
vinyl chloride	U	U	U	U	U	10
chloroethane	U	U	U	U	U	10
methylene chloride	U	U	U	U	U	5
acetone	14	22B	21B	12B	67B	10
carbon disulfide	U	U	50	3J	20	5
1,1-dichloroethene	U	U	U	U	U	5
1,1-dichloroethane	U	U	U	U	U	5
1,2-dichloroethene (total)	U	U	U	U	U	5
chloroform	U	U	U	U	U	5
1,2-dichloroethane	U	U	U	U	U	5
2-butanone	U	U	U	U	15	10
1,1,1-trichloroethane	U	U	U	U	U	5
carbon tetrachloride	U	U	U	U	U	5
vinyl acetate	U	U	U	U	U	10
bromodichloromethane	U	U	U	U	U	5
1,2-dichloropropane	U	U	U	U	U	5
cis-1,3-dichloropropene	U	U	U	U	U	5
trichloroethene	U	U	U	U	U	5
dibromochloromethane	U	U	U	U	U	5
1,1,2-trichloroethane	U	U	U	U	U	5
benzene	U	U	7	U	26	5
trans-1,3-dichloropropene	U	U	U	U	U	5
bromoform	U	U	U	U	U	5
4-methyl-2-pentanone	U	U	U	U	U	10
2-hexanone	U	U	U	U	U	10
tetrachloroethene	U	U	U	U	U	5
1,1,2,2-Tetrachloroethane	U	U	U	U	U	5
toluene	U	U	55	U	5J	5
chlorobenzene	U	U	8	8	16	5
ethylbenzene	U	U	5J	U	7J	5
styrene	U	U	U	U	U	5
xylene (total)	U	U	38	U	140	5

U, J, B - See Appendix for Definition.
Note: Sample Detection Limit = MDL x Dilution factor.

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TABLE 1.1
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

	Sample Identification		
Dilution Factor	1.0	1.0	
Method Blank I.D.	>G9209	>G9209	
Compound	Method Blank	MW5 FB	Method Detection Limits with no Dilution
chloromethane	U	U	10
bromomethane	U	U	10
vinyl chloride	U	U	10
chloroethane	U	U	10
methylene chloride	2J	U	5
acetone	U	U	10
carbon disulfide	U	1J	5
1,1-dichloroethene	U	U	5
1,1-dichloroethane	U	U	5
1,2-dichloroethene (total)	U	U	5
chloroform	U	U	5
1,2-dichloroethane	U	U	5
2-butanone	U	U	10
1,1,1-trichloroethane	U	U	5
carbon tetrachloride	U	U	5
vinyl acetate	U	U	10
bromodichloromethane	U	U	5
1,2-dichloropropane	U	U	5
cis-1,3-dichloropropene	U	U	5
trichloroethene	U	U	5
dibromochloromethane	U	U	5
1,1,2-trichloroethane	U	U	5
benzene	U	U	5
trans-1,3-dichloropropene	U	U	5
bromoform	U	U	5
4-methyl-2-pentanone	U	U	10
2-hexanone	U	U	10
tetrachloroethene	U	U	5
1,1,2,2-Tetrachloroethane	U	U	5
toluene	U	U	5
chlorobenzene	U	U	5
ethylbenzene	U	U	5
styrene	U	U	5
xylene (total)	U	U	5

U, J, B - See Appendix for Definition.
Note: Sample Detection Limit = MDL x Dilution factor.

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TABLE 2.0
30890-0984
FANNING, PHILLIPS & MOLNAR
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank >B5842

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	None detected		

Sample Identification: MW5(3-9')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	None detected		

Sample Identification: MW5(48-52')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
58037879	Bicyclo(3.1.0)Hexane, 4-Me...	21.73	180J
	Unknown C_{10} H_{16}	22.18	34J
	Unknown C_{10} H_{16}	22.83	40J
	Unknown C_3 Alkyl Benzene	23.25	27J
13466789	3-Carene	23.42	36J
	Unknown C_4 Alkyl Benzene	23.78	130J
	Unknown Aromatic C_9H_{10}	24.23	13J
	Unknown Tetramethyl Benzene	25.53	11J
	Unknown MW=132 Aromatic	26.12	14J

Sample Identification: MW5(15-21')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Ethyl Methyl Benzene Isomer	23.22	24J
	Unknown Aromatic (C_9H_{10})	24.20	9J

J - See Appendix for Definition.

TABLE 2.1
30890-0984
FANNING, PHILLIPS & MOLNAR
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: MW5(25-31')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
58037879	Bicyclo (3.1.0) hexane, 4-Me...	21.73	120J
	Unknown Bicyclic $C_{10}H_{16}$	22.80	61J
	Unknown C_3 Alkyl Benzene	23.26	120J
	Unknown C_4 Alkyl Benzene	23.78	75J
	Unknown C_3 Alkyl Benzene	23.91	38J
	Unknown Aromatic	24.20	33J
	Unknown C_4 Alkyl Benzene	24.79	50J
	Unknown C_4 Alkyl Benzene	24.89	42J
	Unknown C_4 Alkyl Benzene	25.54	41J
	Unknown Aromatic $C_{10}H_{12}$	26.12	57J

Sample Identification: Method Blank >G9209

CAS #	Compound	RT	Estimated Concentration, ug/L
603510	Hydrazine Carboxamide, ...	25.81	35J

Sample Identification: MW5 FB

CAS #	Compound	RT	Estimated Concentration, ug/L
	None detected		

J - See Appendix for Definition.

TABLE 3.0
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/L.

	Sample Identification		
Dilution Factor	1.00	1.28	
Method Blank I.D.	>C3860	>C3860	
Compound	Method Blank	MW5 FB	Method Detection Limits with no Dilution
phenol	U	U	10
bis(2-Chloroethyl)ether	U	U	10
2-Chlorophenol	U	U	10
1,3-Dichlorobenzene	U	U	10
1,4-Dichlorobenzene	U	U	10
Benzyl Alcohol	U	U	10
1,2-Dichlorobenzene	U	U	10
2-Methylphenol	U	U	10
bis(2-chloroisopropyl)ether	U	U	10
4-Methylphenol	U	U	10
N-Nitroso-Di-n-propylamine	U	U	10
Hexachloroethane	U	U	10
Nitrobenzene	U	U	10
Isophorone	U	U	10
2-Nitrophenol	U	U	10
2,4-Dimethylphenol	U	U	10
Benzoic Acid	U	U	50
bis(-2-Chloroethoxy)Methane	U	U	10
2,4-Dichlorophenol	U	U	10
1,2,4-Trichlorobenzene	U	U	10
Naphthalene	U	U	10
4-Chloroaniline	U	U	10
Hexachlorobutadiene	U	U	10
4-Chloro-3-methylphenol	U	U	10
2-Methylnaphthalene	U	U	10
Hexachlorocyclopentadiene	U	U	10
2,4,6-Trichlorophenol	U	U	10
2,4,5-Trichlorophenol	U	U	50
2-Chloronaphthalene	U	U	10
2-Nitroaniline	U	U	50
Dimethyl Phthalate	0.9J	U	10
acenaphthylene	U	U	10
2,6-Dinitrotoluene	U	U	10

U, J, B - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

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TABLE 3.1
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS

Soil

All values are ug/Kg.

	Sample Identification						
Dilution Factor	1.00	1.06	1.18	1.18	1.39	1.23	
Method Blank I.D.	>C3862	>C3862	>C3862	>C3862	>C3862	>C3862	
Compound	Method Blank	MW5 (3-9')	MW5(15 -21')	MW5 (15-21'RE)	MW5(25 -31')	MW5(48 -52')	Method Detection Limits with no Dilution
phenol	U	U	U	U	U	U	330
bis(2-Chloroethyl)ether	U	U	U	U	U	U	330
2-Chlorophenol	U	U	U	U	U	U	330
1,3-Dichlorobenzene	U	U	U	U	U	U	330
1,4-Dichlorobenzene	U	U	U	U	U	U	330
Benzyl Alcohol	U	U	U	U	U	U	330
1,2-Dichlorobenzene	U	U	U	U	U	U	330
2-Methylphenol	U	U	U	U	U	U	330
bis(2-chloroisopropyl)ether	U	U	U	U	U	U	330
4-Methylphenol	U	U	U	U	U	U	330
N-Nitroso-Di-n-propylamine	U	U	U	U	U	U	330
Hexachloroethane	U	U	U	U	U	U	330
Nitrobenzene	U	U	U	U	U	U	330
Isophorone	U	U	U	U	U	U	330
2-Nitrophenol	U	U	U	U	U	U	330
2,4-Dimethylphenol	U	U	U	U	U	U	330
Benzoic Acid	U	U	U	U	U	U	1,600
bis(-2-Chloroethoxy)Methane	U	U	U	U	U	U	330
2,4-Dichlorophenol	U	U	U	U	U	U	330
1,2,4-Trichlorobenzene	U	U	U	U	U	U	330
Naphthalene	U	10J	290J	380J	320J	U	330
4-Chloroaniline	U	U	U	U	U	U	330
Hexachlorobutadiene	U	U	U	U	U	U	330
4-Chloro-3-methylphenol	U	U	U	U	U	U	330
2-Methylnaphthalene	U	U	100J	100J	520	U	330
Hexachlorocyclopentadiene	U	U	U	U	U	U	330
2,4,6-Trichlorophenol	U	U	U	U	U	U	330
2,4,5-Trichlorophenol	U	U	U	U	U	U	1,600
2-Chloronaphthalene	U	U	U	U	U	U	330
2-Nitroaniline	U	U	U	U	U	U	1,600
Dimethyl Phthalate	U	U	U	U	U	U	330
Acenaphthylene	U	12J	U	U	48J	U	330
2,6-Dinitrotoluene	U	U	U	U	U	U	330

U, J, B - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

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TABLE 3.1
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/Kg.

			Sample Identification				
Dilution Factor	1.00	1.06	1.18	1.18	1.39	1.23	
Method Blank I.D.	>C3862	>C3862	>C3862	>C3862	>C3862	>C3862	
Compound	Method Blank	MW5 (3-9')	MW5(15 -21')	MW5 (15-21'RE)	MW5(25 -31')	MW5(48 -52')	Method Detection Limits with no Dilution
3-Nitroaniline	U	U	U	U	U	U	1,600
Acenaphthene	U	U	66J	65J	100J	U	330
2,4-Dinitrophenol	U	U	U	U	U	U	1,600
4-Nitrophenol	U	U	U	U	U	U	1,600
Dibenzofuran	U	U	U	U	71J	U	330
2,4-Dinitrotoluene	U	U	U	U	U	U	330
Diethylphthalate	10J	22JB	41JB	41JB	34JB	15JB	330
4-Chlorophenyl-phenylether	U	U	U	U	U	U	330
Fluorene	U	U	61J	58J	200J	U	330
4-Nitroaniline	U	U	U	U	U	U	1,600
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	1,600
N-Nitrosodiphenylamine (1)	U	U	U	U	2,000	U	330
4-Bromophenyl-phenylether	U	U	U	U	U	U	330
Hexachlorobenzene	U	U	U	U	U	U	330
Pentachlorophenol	U	U	U	U	U	U	1,600
Phenanthrene	U	44J	210J	200J	640	U	330
Anthracene	U	16J	29J	27J	110J	U	330
Di-n-Butylphthalate	10J	36JB	90JB	85JB	150JB	45JB	330
Fluoranthene	U	76J	150J	140J	460	12J	330
Pyrene	U	57J	180J	160J	370J	8J	330
Butylbenzylphthalate	U	U	U	U	1,900	9J	330
3,3'-Dichlorobenzidine	U	U	U	U	U	U	660
Benzo(a)Anthracene	U	49J	U	U	180J	U	330
Chrysene	U	U	U	U	U	U	330
bis(2-Ethylhexyl)Phthalate	96J	5,000B	1,000B	890B	1,800B	89JB	330
Di-n-Octyl Phthalate	U	7J	U	U	31J	U	330
Benzo(b)fluoranthene	U	33J	U	U	95J	U	330
Benzo(k)fluoranthene	U	U	U	U	U	U	330
Benzo(a)pyrene	U	36J	U	U	130J	U	330
Indeno(1,2,3-cd)pyrene	U	12J	U	U	U	U	330
Dibenzo(a,h)anthracene	U	U	U	U	U	U	330
Benzo(g,h,i)perylene	U	15J	U	U	U	U	330

(1) - Cannot be separated from Diphenylamine.
U, J, B - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

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TABLE 4.0
30890-0984
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank >C3860

CAS #	Compound	RT	Estimated Concentration, ug/L
	None detected		

Sample Identification: MW5 FB

CAS #	Compound	RT	Estimated Concentration, ug/L
	None detected		

Sample Identification: Method Blank >C3862

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	7.19	570J
	Unknown	7.26	730J
111659	Octane	7.54	200J
	Unknown	8.05	1,200J
	Aldol Condensation Product	8.72	12,000JA
	Unknown	9.32	440J
	Unknown	10.36	900J
	Unknown	10.41	320J
	Unknown	10.50	320J
123795	Hexanedioic acid, dioctyl ester	29.96	160J

Sample Identification: MW5 (3-9)'

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	6.45	220J
	Unknown	7.19	840J
	Unknown	7.26	680J
111659	Octane	7.54	190JB
	Unknown	8.04	1,300J
	Aldol Condensation Product	8.68	14,000JA
	Unknown	10.36	1,400J
	Unknown	10.40	320J
	Unknown	10.95	190J

J, A, B - See Appendix for Definition.

TABLE 4.1
30890-0984
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: MW5 (3-9)' (Continued)

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	20.93	430J
	Unknown Alkane	25.00	84J
	Unknown Ketone	25.22	150J
	Unknown Ester	25.65	520J
	Unknown Alkane	27.07	170J
	Unknown	27.64	1,600J
	Unknown Alkane	28.95	45J
	Unknown Alkane	29.90	140J
	Unknown Alkane	30.93	130J
	Unknown Alkane	32.07	120J
	Unknown Alkane	33.42	190J
	Unknown Alkane	35.01	210J
7225641	Heptadecane, 9-octyl	36.94	1,100J
	Unknown Alkane	39.25	860J
	Unknown Alkane	42.10	950J

Sample Identification: MW5 (15-21')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	6.32	240J
	Unknown	7.17	400J
	Unknown	7.27	320J
141797	3-Penten-2-one, 4-methyl	7.54	690J
	Unknown	8.02	1,400J
	Aldol Condensation Product	8.65	19,000JA
	Unknown	10.32	1,500J
	Unknown Cyclodiene	10.81	470J
	Unknown	10.92	260J
	Unknown Alkane	11.30	270J
	Unknown Trimethyl benzene isomer	12.07	380J
	Unknown Benzene isomer	12.67	970J
	Unknown Alkane	12.83	690J
	Unknown Alkane	13.21	180J
	Unknown Naphthalene isomer	13.36	210J
	Unknown	16.24	160J
	Unknown Alkane	18.42	180J
	Unknown Alkane	19.62	170J
	Unknown Alkane	22.75	220J

J, A - See Appendix for Definition.

TABLE 4.2
30890-0984
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: MW5 (15-21'RE)

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown Amine	7.17	590J
	Unknown Carboxylic Acid	7.26	540J
	Dimethyl-2-pentene isomer	7.53	420J
	Unknown Peroxide	8.02	1,500J
	Aldol Condensation Product	8.67	18,000JA
96480	Butyrolactone	10.32	1,600J
	Unknown alkane	10.38	320J
	Unknown cyclodiene	10.81	470J
	Unknown	10.92	290J
	Unknown Alkane	11.31	250J
	Trimethyl benzene isomer	12.07	360J
	Methyl-(methyl ethyl) benzene isomer	12.68	880J
	Unknown Alkane	12.83	720J
	Trimethyl docane isomer	13.21	180J
	Unknown	16.24	160J
	Trimethyl dedecane isomer	18.42	160J
	Unknown Alkyl benzene	20.08	440J
	Unknown Decane	22.76	270J

Sample Identification: MW5 (25-31')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	7.21	2,300J
	Unknown	8.04	1,700J
	Aldol Condensation Product	8.71	18,000JA
	Unknown	10.36	1,800J
74645980	Dodecane,2,7,10-trimethyl	18.43	950J
74663857	Cyclopropane, nonyl-	19.86	5,300J
294622	Cyclododecane	20.82	1,000J
	Unknown Alkane	21.47	1,800J
	Unknown Alkane	22.79	800J
544638	Tetradecanoic Acid	23.42	630J
	Unknown cycloalkane	24.87	550J
	Unknown	25.69	1,100J
	Unknown Alkane	26.08	430J
	Unknown	26.86	2,500J
	Unknown Alkane	27.09	2,100J
	Unknown	27.68	2,000J
	1,2-benzenedicarboxylic acid isomer	28.82	360J
	Unknown	28.95	2,100J
	Unknown Alkane	28.98	2,000J

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J, A - See Appendix for Definition.

TABLE 4.3
30890-0984
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: MW5 (25-31') (Continued)

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown Alkane	30.95	1,900J
	Unknown Alkane	32.11	2,300J
	Unknown Alkane	33.47	1,700J
	Unknown Alkane	35.08	1,600J
	Unknown Alkane	37.03	3,400J

Sample Identification: MW5 (48-52')

CAS #	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	7.20	1,100J
	Unknown	7.27	860J
	Unknown Cycloalkane	7.55	240J
	Unknown	8.04	1,300J
	Aldol Condensation Product	8.69	16,000JA
	Unknown	9.32	350J
	Unknown	10.35	1,300J
	Unknown	10.40	430J
	Unknown	10.95	270J
	Unknown	31.48	440J

J, A - See Appendix for Definition.

Soil

TABLE 5.0
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL PESTICIDES/PCB's

All values are ug/Kg.

	Sample Identification					
Dilution Factor	1.00	1.06	1.18	1.39	1.22	
Method Blank I.D.	0526 -B04	0526 -B04	0526 -B04	0526 -B04	0526 -B04	
Compound	Method Blank	MW5 (3-9')	MW5(15 -21')	MW5(25 -31')	MW5(48 -52')	Method Detection Limits with no Dilution
alpha BHC	U	U	U	U	U	8.0
beta BHC	U	U	U	U	U	8.0
delta BHC	U	U	U	U	U	8.0
gamma BHC	U	U	27	U	U	8.0
Heptachlor	U	U	41	U	U	8.0
Aldrin	U	U	U	U	U	8.0
Heptachlor Epoxide	U	U	U	U	U	8.0
Endosulfan I	U	U	U	U	U	8.0
Dieldrin	U	U	78	13J	U	16
4,4' DDE	U	U	9.5J	29	U	16
Endrin	U	U	U	U	U	16
Endosulfan II	U	U	U	U	U	16
4,4' DDD	U	U	7.2J	140	U	16
Endosulfan Sulfate	U	U	U	U	U	16
4,4' DDT	U	U	U	680	U	16
Methoxychlor	U	U	U	U	U	80
Endrin Ketone	U	U	U	U	U	16
alpha Chlordane	U	U	69J	U	U	80
gamma Chlordane	U	U	100	U	U	80
Toxaphene	U	U	U	U	U	160
Aroclor - 1016	U	U	U	U	U	80
Aroclor - 1221	U	U	U	U	U	80
Aroclor - 1232	U	U	U	U	U	80
Aroclor - 1242	U	U	U	U	U	80
Aroclor - 1248	U	U	U	210	U	80
Aroclor - 1254	U	1,000	U	U	U	160
Aroclor - 1260	U	U	U	U	U	160

U, J - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

Aqueous

TABLE 5.1
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL PESTICIDES/PCB's

All values are ug/L.

	Sample Identification		
Dilution Factor	1.00	1.43	
Method Blank I.D.	>C3860	>C3860	
Compound	Method Blank	MW5 FB	Method Detection Limits with no Dilution
alpha BHC	U	U	0.05
beta BHC	U	U	0.05
delta BHC	U	U	0.05
gamma BHC	U	U	0.05
Heptachlor	U	U	0.05
Aldrin	U	U	0.05
Heptachlor Epoxide	U	U	0.05
Endosulfan I	U	U	0.05
Dieldrin	U	U	0.10
4,4' DDE	U	U	0.10
Endrin	U	U	0.10
Endosulfan II	U	U	0.10
4,4' DDD	U	U	0.10
Endosulfan Sulfate	U	U	0.10
4,4' DDT	U	U	0.10
Methoxychlor	U	U	0.50
Endrin Ketone	U	U	0.10
alpha Chlordane	U	U	0.50
gamma Chlordane	U	U	0.50
Toxaphene	U	U	1.0
Aroclor - 1016	U	U	0.50
Aroclor - 1221	U	U	0.50
Aroclor - 1232	U	U	0.50
Aroclor - 1242	U	U	0.50
Aroclor - 1248	U	U	0.50
Aroclor - 1254	U	U	1.0
Aroclor - 1260	U	U	1.0

U - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 6.0
30890-0984
FANNING, PHILLIPS & MOLNAR
TAL METALS PLUS CYANIDE

All values are mg/Kg.

Parameter	MW5(3-9')	MW5(15-21')	MW5(25-31')	MW5(48-52')
Aluminum	3,900	1,950	5,690	179
Antimony	3.5U	4.5U	4.1U	3.8U
Arsenic	0.96B	2.4B	3.3	1.2B
Barium	152	110	227	2.2B
Beryllium	0.44B	0.05U	0.05U	0.05U
Cadmium	0.35U	0.45U	1.7	0.39U
Calcium	24,200	8,410	24,000	94.3B
Chromium	5.8	22.3	38.7	2.7
Cobalt	1.7U	2.2U	2.0U	1.9U
Copper	3.3B	18.9	101	1.3B
Iron	5,160	5,140	11,200	1,580
Lead	11.2S	160	445*	20.6
Magnesium	2,360	959B	2,630	16.6B
Manganese	655	85.9	123	3.9
Mercury	0.09U	0.09U	0.20	0.05U
Nickel	3.0B	4.5B	15.4	1.5B
Potassium	277B	245B	312B	116U
Selenium	0.08UN	0.10UN	0.12BN	0.09UN
Silver	0.43U	0.56U	0.50U	0.48U
Sodium	192B	201B	250B	122B
Thallium	0.08B	0.08U	0.07U	0.07U
Vanadium	5.4B	7.4B	11.0B	1.3U
Zinc	44.2	126	363	3.2B
Cyanide	0.57UN	0.73UN	0.71UN	0.65UN

U, S, N, B, * - See Appendix for Definition.

TABLE 6.1
30890-0984
FANNING, PHILLIPS & MOLNAR
TAL METALS PLUS CYANIDE

All values are ug/L.

Parameter	MW5 FB
Aluminum	344
Antimony	16.9U
Arsenic	0.30U
Barium	11.5B
Beryllium	0.20U
Cadmium	1.7U
Calcium	2,130B
Chromium	12.9
Cobalt	8.4U
Copper	8.6B
Iron	3,300
Lead	14.6
Magnesium	152B
Manganese	29.4
Mercury	0.51U
Nickel	9.1B
Potassium	509U
Selenium	0.40UW
Silver	2.1U
Sodium	1,570B
Thallium	0.40B
Vanadium	5.9U
Zinc	48.6
Cyanide	10.0U

U, B, N - See Appendix for Definition.

APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

X - Matrix spike compound.

(1) - Cannot be separated from diphenylamine.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

APPENDIX/METALS DATA

C - Concentration qualifiers

U - Indicates analyte result less than instrument detection limit (IDL)

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

TABLE 3.0
30890-0984
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/L.

	Sample Identification		
Dilution Factor	1.00	1.28	
Method Blank I.D.	>C3860	>C3860	
Compound	Method Blank	MW5 FB	Method Detection Limits with no Dilution
3-Nitroaniline	U	U	50
Acenaphthene	U	U	10
2,4-Dinitrophenol	U	U	50
4-Nitrophenol	U	U	50
Dibenzofuran	U	U	10
2,4-Dinitrotoluene	U	U	10
Diethylphthalate	U	U	10
4-Chlorophenyl-phenylether	U	U	10
Fluorene	U	U	10
4-Nitroaniline	U	U	50
4,6-Dinitro-2-methylphenol	U	U	50
N-Nitrosodiphenylamine (1)	U	U	10
4-Bromophenyl-phenylether	U	U	10
Hexachlorobenzene	U	U	10
Pentachlorophenol	U	U	50
Phenanthrene	U	U	10
Anthracene	U	U	10
Di-n-Butylphthalate	U	U	10
Fluoranthene	U	U	10
Pyrene	U	U	10
Butylbenzylphthalate	U	U	10
3,3'-Dichlorobenzidine	U	U	20
Benzo(a)Anthracene	U	U	10
Chrysene	U	U	10
bis(2-Ethylhexyl)Phthalate	1J	1JB	10
Di-n-Octyl Phthalate	U	0.6J	10
Benzo(b)fluoranthene	U	U	10
Benzo(k)fluoranthene	U	U	10
Benzo(a)pyrene	U	U	10
Indeno(1,2,3-cd)pyrene	U	U	10
Dibenzo(a,h)anthracene	U	U	10
Benzo(g,h,i)perylene	U	U	10

(1) - Cannot be separated from Diphenylamine.
U, J, B - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

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YORK LABORATORIES
A DIVISION OF YWC

REPORT TRANSMITTAL

REPORT NUMBER 30890-1039

DATE June 20, 1989

CLIENT Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

ATTENTION Mr. Andrew Ritchie

The above referenced report is enclosed. Copies of this report and supporting data will be retained in our files in the event they are required for future reference.

If there are any questions concerning this report, please do not hesitate to contact us.

Any samples submitted to our Laboratory will be retained for a maximum of sixty (60) days from receipt of this report, unless other arrangements are desired.

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June 20, 1989

30890-1039
FANNING, PHILLIPS & MOLNAR
909 Marconi Avenue
Ronkonkoma, New York 11779

Re: Uniondale

Attention: Mr. Andrew Ritchie

PURPOSE

Four (4) samples, one field blank and one trip blank were submitted to York Laboratories Division of YWC, Inc. by Fanning, Phillips & Molnar for analysis. The client requested the samples and field blank be analyzed for a full TCL list analysis, plus a library search for non-target compounds in the volatile and semi-volatile fractions. The trip blank was analyzed for TCL volatile organics plus a library search for non-target compounds only.

METHODOLOGY

Volatile organics were determined using purge and trap GC/MS. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5995C GC/MS/DS.

Semi-volatile organics were determined using capillary GC/MS. The instrumentation used was a Hewlett-Packard Model 5890 gas chromatograph interfaced with a Model 5970 Mass Selective Detector.

Pesticides and polychlorinated biphenyls (PCB's) were determined using GC/ECD. The instrumentation used was a Perkin Elmer Model Sigma 3 gas chromatograph equipped with an electron capture detector (Ni^{63}).

Metals were determined by ICP using either a JA61 simultaneous ICAP or a PE 6500XR sequential ICP. Graphite furnace elements were determined using either a PE Zeeman 5100 or PE Zeeman 3030 GFAAS. Mercury was determined by the cold vapor technique utilizing the Spectro Products Model HG-4 mercury analyzer.

Cyanide was determined colorimetrically after preliminary distillation.

All analyses were conducted according to NYSDEC Contract Laboratory Program Protocols, November 1987.

DISCUSSION

Semi-Volatiles - Sample FB-A was lost during extraction. No results are therefore reported and the client will not be billed for this analysis.

Upon initial anaysis of MW-4, it showed to have suppression of the internal standard perylene-d_{12}. The reanalysis of MW-4 also showed suppression of the same internal standard perylene-d_{12}, confirming a matrix interferencne. Both sets of data are submitted.

Pesticides/PCB's - It was necessary to do mercury cleanup on samples MW-2, MW-3 and MW-4. Permission to do this cleanup was requested, and agreed to by the client. (See attached telephone log).

The following standards were not within QC acceptance criteria. After each listed standard, the run was stopped and no further samples were analyzed.

Date	Time	GC	Std	Comment
6/9/89	06:24	4A	Ind B	Standard not within RT windows
6/9/89	06:48	2	Ind B	% Difference >20%

Metals - IEC's have currently been updated on the JA61. The ICSA is used as a monitoring device for any additional IEC's that may be necessary due to slight instrument drift. Any such modifications are calculated and applied manually. The are noted on the raw data.

The spike analysis of sample MW-1 resulted in an "N" flag indicating that the aluminum recovered out of the control limits. It is difficult to ascertain why this occurred, especially since the post digest spike recovered within the limits. The low spike recovery could be attributed to sample inconsistancy or perhaps a matrix effect.

All other data appears to be consistent.

RESULTS

The results are presented in the following Tables. Also enclosed as Appendix A is the data package containing all relevant QA/QC and raw data.

Prepared by: Jeffrey C. Curran

Jeffrey C. Curran
Laboratory Manager

JCC/tma

The liability of YWC, Inc. is limited to the actual dollar value of this project.

In Reference to Case No(s):
#3089-1039

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: 6/8/89

Laboratory Name: York Labs
Lab Contact: Stephanie Nold

Region:
Regional Contact:

Call Initiated By: X Laboratory ___ Region

In reference to data for the following sample number(s):

all samples for job 3089-1039

Summary of Questions/Issues Discussed:

Due to the rush turn around time, Marty Klein was contacted and permission was requested to perform mercury clean ups on any or all samples requiring clean up.

Summary of Resolution:

Permission was granted to perform mercury clean up at the discretion of the lab should they be required a note to that effect should be made in the case narrative

Signature Stephanie A Nold Date 6/8/89

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

TABLE 1.0
30890-1039
FANNING, PHILLIPS & MOLNAR
EPA TCL VOLATILE COMPOUNDS

All values are ug/L.

	Sample Identification							
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Method Blank I.D.	>G9361	>G9361	>G9361	>G9361	>G9361	>G9361	>G9361	
Compound	Method Blank	TB-A	FB-A	MW-1	MW-2	MW-4	MW-3	Method Detection Limits with no Dilution
chloromethane	U	U	U	U	U	U	U	10
bromomethane	U	U	U	U	U	U	U	10
vinyl chloride	U	U	U	U	U	U	U	10
chloroethane	U	U	U	U	U	U	U	10
methylene chloride	2J	U	U	U	U	U	U	5
acetone	15	U	U	U	U	U	6JB	10
carbon disulfide	U	U	U	U	U	U	U	5
1,1-dichloroethene	U	U	U	U	U	U	U	5
1,1-dichloroethane	U	U	U	U	U	U	U	5
1,2-dichloroethene (total)	U	U	U	U	U	U	U	5
chloroform	U	U	U	U	U	U	U	5
1,2-dichloroethane	U	U	U	U	U	U	U	5
2-butanone	U	U	U	U	U	U	U	10
1,1,1-trichloroethane	U	U	U	U	U	U	U	5
carbon tetrachloride	U	U	U	U	U	U	U	5
vinyl acetate	U	U	U	U	U	U	U	10
bromodichloromethane	U	U	U	U	U	U	U	5
1,2-dichloropropane	U	U	U	U	U	U	U	5
cis-1,3-dichloropropene	U	U	U	U	U	U	U	5
trichloroethene	U	U	U	U	U	U	U	5
dibromochloromethane	U	U	U	U	U	U	U	5

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 1.0
30890-1039
FANNING, PHILLIPS & MOLNAR
EPA TCL VOLATILE COMPOUNDS

All values are ug/L.

	Sample Identification							
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Method Blank I.D.	>G9361	>G9361	>G9361	>G9361	>G9361	>G9361	>G9361	
Compound	Method Blank	TB-A	FB-A	MW-1	MW-2	MW-4	MW-3	Method Detection Limits with no Dilution
1,1,2-trichloroethane	U	U	U	U	U	U	U	5
benzene	U	U	U	U	U	4J	30	5
trans-1,3-dichloropropene	U	U	U	U	U	U	U	5
bromoform	U	U	U	U	U	U	U	5
4-methyl-2-pentanone	U	U	U	U	U	U	U	10
2-hexanone	U	U	U	U	U	U	U	10
tetrachloroethene	U	U	U	U	U	U	U	5
1,1,2,2-tetrachloroethane	U	U	U	U	U	U	U	5
toluene	U	U	U	U	U	U	U	5
chlorobenzene	U	U	U	U	U	15	33	5
ethylbenzene	U	U	U	U	U	U	U	5
styrene	U	U	U	U	U	U	U	5
xylene (total)	U	U	U	U	U	U	9	5

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 2.0
30890-1039
FANNING, PHILLIPS & MOLNAR
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank >G9361

CAS #	Compound	RT	Estimated Concentration, ug/L
	None Detected		

Sample Identification: MW-1

CAS #	Compound	RT	Estimated Concentration, ug/L
96140	Pentane, 3-methyl	7.51	7J

Sample Identification: MW-2

CAS #	Compound	RT	Estimated Concentration, ug/L
	None Detected		

Sample Identification: MW-3

CAS #	Compound	RT	Estimated Concentration, ug/L
	Unknown	20.67	17J
	Unknown Cyclo alkane	21.10	21J
	Unknown Aromatic	22.30	17J
	Benzene, ethyl-methyl-isomer	22.82	40J
	Benzene, C_4 Alkyl-isomer	23.38	21J
496117	1H-Indene,2,3-dihydro	23.86	16J
	Napthalene,-dimethyl isomer	26.11	26J
	Napthalene,-dimethyl isomer	26.57	33J
	Napthalene,-dimethyl isomer	26.70	19J
	Napthalene,-dimethyl isomer	27.25	14J

Sample Identification: MW-4

CAS #	Compound	RT	Estimated Concentration, ug/L
	Benzene,ethyl-dimethyl isomer	24.62	7J
	Benzene,ethyl-dimethyl isomer	25.17	6J
	Unknown 1H-Indene	25.89	15J
	Unknown aromatic	26.41	12J

J - See Appendix for Definition.

TABLE 2.1
30890-1039
FANNING, PHILLIPS & MOLNAR
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: MW-4 (Continued)

CAS #	Compound	RT	Estimated Concentration, ug/L
	Unknown aromatic	26.57	12J
	Unknown alkane	26.86	8J
	Unknown aromatic	27.06	7J
	Unknown 1H-Indene	27.35	10J

Sample Identification: FB-A

CAS #	Compound	RT	Estimated Concentration, ug/L
107835	Pentane-2-methyl	6.47	7J
	Unknown alkane	6.96	6J
96140	Pentane, 3-methyl	7.51	10J
96377	Cyclopentane,methyl	8.82	13J

Sample Identification: TB-A

CAS #	Compound	RT	Estimated Concentration, ug/L
	None Detected		

J - See Appendix for Definition.

TABLE 3.0
30890-1039
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS
All values are ug/L.

	Sample Identification						
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	
Method Blank I.D.	0608 -B02	0608 -B02	0608 -B02	0608 -B02	0608 -B02	0608 -B02	
Compound	Method Blank	MW-1	MW-2	MW-3	MW-4	MW-4 RE	Method Detection Limits with no Dilution
Phenol	U	U	U	U	U	U	10
bis(2-Chloroethyl)Ether	U	U	U	U	U	U	10
2-Chlorophenol	U	U	U	U	U	U	10
1,3-Dichlorobenzene	U	U	U	U	U	U	10
1,4-Dichlorobenzene	U	U	U	U	U	U	10
Benzyl Alcohol	U	U	U	U	U	U	10
1,2-Dichlorobenzene	U	U	U	U	U	U	10
2-Methylphenol	U	U	U	U	U	U	10
bis(2-chloroisopropyl)ether	U	U	U	U	U	U	10
4-Methylphenol	U	U	U	U	U	U	10
N-Nitroso-Di-n-propylamine	U	U	U	U	U	U	10
Hexachloroethane	U	U	U	U	U	U	10
Nitrobenzene	U	U	U	U	U	U	10
Isophorone	U	U	U	U	U	U	10
2-Nitrophenol	U	U	U	U	U	U	10
2,4-Dimethylphenol	U	U	U	U	U	U	10
Benzoic Acid	U	U	U	7J	U	U	50
bis(-2-Chloroethoxy)Methane	U	U	U	U	U	U	10
2,4-Dichlorophenol	U	U	U	U	U	U	10
1,2,4-Trichlorobenzene	U	U	U	U	U	U	10
Naphthalene	U	U	U	7J	2J	2J	10
4-Chloroaniline	U	U	U	U	U	U	10

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 3.0
30890-1039
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS
All values are ug/L.

	Sample Identification						
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	
Method Blank I.D.	0608 -B02	0608 -B02	0608 -B02	0608 -B02	0608 -B02	0608 -B02	
Compound	Method Blank	MW-1	MW-2	MW-3	MW-4	MW-4 RE	Method Detection Limits with no Dilution
Hexachlorobutadiene	U	U	U	U	U	U	10
4-Chloro-3-methylphenol	U	U	U	U	U	U	10
2-Methylnaphthalene	U	U	U	2J	18	16	10
Hexachlorocyclopentadiene	U	U	U	U	U	U	10
2,4,6-Trichlorophenol	U	U	U	U	U	U	10
2,4,5-Trichlorophenol	U	U	U	U	U	U	50
2-Chloronaphthalene	U	U	U	U	U	U	10
2-Nitroaniline	U	U	U	U	U	U	50
Dimethyl Phthalate	U	U	U	U	U	U	10
Acenaphthylene	U	U	U	0.6J	U	U	10
3-Nitroaniline	U	U	U	U	U	U	50
Acenaphthene	U	U	U	2J	U	U	10
2,4-Dinitrophenol	U	U	U	U	U	U	50
4-Nitrophenol	U	U	U	U	U	U	50
Dibenzofuran	U	U	U	U	1J	1J	10
2,4-Dinitrotoluene	U	U	U	U	U	U	10
2,6-Dinitrotoluene	U	U	U	U	U	U	10
Diethylphthalate	0.5J	1JB	1JB	2JB	2JB	1JB	10
4-Chlorophenyl-phenylether	U	U	U	U	U	U	10
Fluorene	U	U	U	3J	3J	U	10
4-Nitroaniline	U	U	U	U	U	U	50
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	50

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 3.0
30890-1039
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS
All values are ug/L.

	Sample Identification						
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	
Method Blank I.D.	0608-B02	0608-B02	0608-B02	0608-B02	0608-B02	0608-B02	
Compound	Method Blank	MW-1	MW-2	MW-3	MW-4	MW-4 RE	Method Detection Limits with no Dilution
N-Nitrosodiphenylamine	U	U	U	U	U	U	10
4-Bromophenyl-phenylether	U	U	U	U	U	U	10
Hexachlorobenzene	U	U	U	U	U	U	10
Pentachlorophenol	U	U	U	U	U	U	50
Phenanthrene	U	U	U	17	5J	5J	10
Anthracene	U	U	U	3J	U	U	10
Di-n-Butylphthalate	U	U	U	4J	1J	1J	10
Fluoranthene	U	U	U	19	U	U	10
Pyrene	U	U	U	20	0.5J	U	10
Butylbenzylphthalate	U	U	U	0.7J	U	U	10
3,3'-Dichlorobenzidine	U	U	U	U	U	U	20
Benzo(a)Anthracene	U	U	U	11	U	U	10
bis(2-Ethylhexyl)Phthalate	6J	0.7JB	1JB	19B	1JB	2JB	10
Chrysene	U	U	U	12	U	U	10
di-n-Octyl Phthalate	U	U	U	U	U	U	10
Benzo(b)fluoranthene	U	U	U	6J	U	U	10
Benzo(k)fluoranthene	U	U	U	U	U	U	10
Benzo(a)pyrene	U	U	U	9J	U	U	10
Indeno(1,2,3-cd)pyrene	U	U	U	3J	U	U	10
Dibenzo(a,h)anthracene	U	U	U	0.7J	U	U	10
Benzo(g,h,i)perylene	U	U	U	U	U	U	10

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 4.0
30890-1039
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank >C3964

CAS #	Compound	RT	Estimated Concentration, ug/L
	None Detected		

Sample Identification: MW-1

CAS #	Compound	RT	Estimated Concentration, ug/L
60322	6-amino-hexanoic acid	16.49	11J
	Unknown alkyl benzene	18.24	8J

Sample Identification: MW-2

CAS #	Compound	RT	Estimated Concentration, ug/L
60322	6-amino-hexanoic acid	16.49	31J
	Unknown alkyl benzene	18.24	9J

Sample Identification: MW-3

CAS #	Compound	RT	Estimated Concentration, ug/L
	Unknown cylcodiene	10.60	26J
	Trimethyl benzene isomer	11.86	30J
	Methylethyl toluene isomer	12.46	23J
	Unknown Decane	19.90	11J
	Unknown	20.22	46J
	Unknown	20.75	37J
	Unknown Carboxylic acid	20.85	12J
	Unknown Decane	22.52	22J
	Unknown carboxylic acid	25.37	21J
	Unknown	25.93	43J
	Unknown	26.23	58J
	Unknown alkyl benzene	26.54	40J
	Polynuclear aromatic hydrocarbon	26.76	11J
	Polynuclear aromatic hydrocarbon	27.34	25J
	Unknown carboxylic acid	27.41	16J
	Polynuclear aromatic	28.58	120J
	Unknown	29.11	16J
123795	Dioctyl ester hexanedioic acid	29.64	12J
	Unknown alkane	31.67	12J

J - See Appendix for Definition.

TABLE 4.1
30890-1039
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: MW-3 (Continued)

CAS #	Compound	RT	Estimated Concentration, ug/L
	Unknown alkane	32.94	19J
	Unknown Decane	34.45	23J
	Unknown alkane	36.26	47J
	Unknown alkane	38.44	31J
	Unknown cosane	41.11	26J

Sample Identification: MW-4

CAS #	Compound	RT	Estimated Concentration, ug/L
	Unknown alkyl benzene	14.88	10J
	Unknown alkene	16.25	9J
	Unknown	16.50	14J
	Unknown alkane	16.63	27J
	Polynuclear aromatic hydrocarbon	17.22	41J
	Polynuclear aromatic hydrocarbon	17.60	35J
	Unknown cycloalkane	17.84	9J
	Unknown decane	18.20	30J
	Unknown alkyl benzene	18.74	11J
	Dimethyl-naphthalene isomer	18.97	41J
	Dimethyl-naphthalene isomer	19.25	40J
	Unknown decane	19.40	32J
	Dimethyl napthalene isomer	19.49	10J
	Dimethyl napthalene isomer	19.73	12J
	Unknown	19.98	32J
	Unknown polynuclear aromatic hydrocarbon	20.52	11J
	Trimethyl-naphthalene isomer	20.71	14J
	Trimethyl-naphthalene isomer	20.95	39J
	Unknown decane	22.53	58J
	Unknown alkyl benzene	23.07	12J
	Unknown decane	23.73	24J
	Unknown polynuclear aromatic hydrocarbon	25.36	12J

J - See Appendix for Definition.

TABLE 5.0
30890-1039
FANNING, PHILLIPS & MOLNAR
EPA TCL PESTICIDES/PCB's

Aqueous

All values are ug/L.

	Sample Identification						
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	
Method Blank I.D.	0608 -B03	0608 -B03	0608 -B03	0608 -B03	0608 -B03	0608 -B03	
Compound	Method Blank	MW-1	MW-2	MW-3	MW-4	FB-A	Method Detection Limits with no Dilution
alpha BHC	U	U	U	U	U	U	0.05
beta BHC	U	U	U	U	U	U	0.05
gamma BHC	U	U	U	U	U	U	0.05
delta BHC	U	U	U	U	U	U	0.05
Heptachlor	U	U	U	U	U	U	0.05
Aldrin	U	U	U	U	U	U	0.05
4,4' DDE	U	U	U	U	U	U	0.05
Dieldrin	U	U	U	0.26	U	U	0.10
4,4' DDD	U	U	U	0.57	U	U	0.10
Methoxychlor	U	U	U	U	U	U	0.50
Endrin Ketone	U	U	U	U	U	U	0.10
4,4' DDT	U	U	U	U	U	U	0.10
alpha Chlordane	U	U	U	0.88	U	U	0.50
gamma Chlordane	U	U	U	0.83	U	U	0.50
Endosulfan I	U	U	U	U	U	U	0.10
Endosulfan II	U	U	U	U	U	U	0.10
Endosulfan Sulfate	U	U	U	U	U	U	0.10
Endrin	U	U	U	U	U	U	0.10
Heptachlor Epoxide	U	U	U	U	U	U	0.10
Toxaphene	U	U	U	U	U	U	1.0
PCB - 1016	U	U	U	U	U	U	0.5
PCB - 1221	U	U	U	U	U	U	0.5
PCB - 1232	U	U	U	U	U	U	0.5
PCB - 1242	U	U	U	U	U	U	0.5
PCB - 1248	U	U	U	U	U	U	0.5
PCB - 1254	U	U	U	U	U	U	1.0
PCB - 1260	U	U	U	U	U	U	1.0

U - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 6.0
30890-1039
FANNING, PHILLIPS & MOLNAR
TAL METALS AND CYANIDE

All values are ug/L.

Parameter	MW-1	MW-2	MW-3	MW-4	FB-A
Aluminum	1,110N	671N	218N	537N	63.9BN
Antimony	16.9U	16.9U	19.0B	37.2B	16.9U
Arsenic	0.30U	0.30U	1.8B	3.7B	0.30U
Barium	9.0B	37.0B	442	249	1.7U
Beryllium	0.20U	0.20U	0.20U	0.20U	0.20U
Cadmium	1.7U	1.7U	1.7U	1.7U	1.7U
Calcium	17,300	36,700	99,700	189,000	221B
Chromium	2.1U	2.1U	2.1U	2.1U	2.1U
Cobalt	8.4U	8.4U	9.7B	8.4U	8.4U
Copper	7.4B	4.9U	4.9U	4.9U	4.9U
Iron	438	911	29,500	14,300	64.9U
Lead	1.5BW	3.6B	10.4	1.9B	0.50B
Magnesium	3,830B	7,410	11,900	22,200	120B
Manganese	72.2	89.0	710	980	0.97B
Mercury	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	6.8B	6.0U	9.4B	6.0U	6.0U
Potassium	2,180B	2,630B	7,550	17,500	509U
Selenium	0.60B	1.0B	0.40U	0.80B	0.40U
Silver	2.9B	2.1U	2.1U	2.1U	2.1U
Sodium	30,900	30,800	19,900	21,000	643B
Thallium	0.30U	0.30U	0.30B	0.40B	0.30U
Vanadium	5.9U	5.9U	5.9U	5.9U	5.9U
Zinc	9.9B	10.9B	26.7	19.1B	7.6B
Cyanide	10.0U	17.5	10.0U	10.0U	10.0U

APPENDIX/METALS DATA

.C - Concentration qualifiers

U - Indicates analyte result less than instrument detection limit (IDL)

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

X - Matrix spike compound.

(1) - Cannot be separated from diphenylamine.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

YORK LABORATORIES
A DIVISION OF YWC

REPORT TRANSMITTAL

REPORT NUMBER 30890-1060

DATE June 26, 1989

CLIENT Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

ATTENTION Mr. Andrew Ritchie

The above referenced report is enclosed. Copies of this report and supporting data will be retained in our files in the event they are required for future reference.

If there are any questions concerning this report, please do not hesitate to contact us.

Any samples submitted to our Laboratory will be retained for a maximum of sixty (60) days from receipt of this report, unless other arrangements are desired.

200 MONROE TURNPIKE • MONROE, CONNECTICUT 06468 • (203) 261-4458

June 26, 1989

30890-1060
FANNING, PHILLIPS & MOLNAR
909 Marconi Avenue
Ronkonkoma, New York 11779

Re: Uniondale

Attention: Mr. Andrew Ritchie

PURPOSE

One sample was submitted to York Laboratories Division of YWC, Inc. by Fanning, Phillips & Molnar for analysis. The client requested the sample be analyzed for a full TCL list analysis plus a library search for non-target compounds in the volatile and semi-volatile fractions.

METHODOLOGY

Volatile organics were determined using purge and trap GC/MS. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5995C GC/MS/DS.

Semi-volatile organics were determined using capillary GC/MS. The instrumentation used was a Hewlett-Packard Model 5890 gas chromatograph interfaced with a Model 5970 Mass Selective Detector.

Pesticides and polychlorinated biphenyls (PCB's) were determined using GC/ECD. The instrumentation used was a Perkin Elmer Model Sigma 3 gas chromatograph equipped with an electron capture detector (Ni^{63}).

Metals were determined by ICP using either a JA61 simultaneous ICAP or a PE 6500XR sequential ICP. Graphite furnace elements were determined using either a PE Zeeman 5100 or PE Zeeman 3030 GFAAS. Mercury was determined by the cold vapor technique utilizing the Spectro Products Model HG-4 mercury analyzer.

Cyanide was determined colorimetrically after preliminary distillation.

All analyses were conducted according to NYSDEC Contract Laboratory Program Protocols, November 1987.

DISCUSSION

Per the client's request, batch QC is provided for all parameters.

Pesticides/PCB's - 4,4'DDT had an RSD>10% on the following runs. Any 4,4'DDT was calculated from Col 2 which was within acceptable criteria.

Date Started	Date Ended	GC#
6/12/89	6/13/89	4A
6/13/89	6/14/89	4A
6/21/89	6/22/89	3

The following standards were not within QC acceptance criteria. After each listed standard either the run was stopped or the samples run after the affected standard were reanalyzed.

Date	Time	GC	Std	Comments
6/13/89	00:25	4A	IndB	C_f 15% Difference
6/14/89	15:16	4A	IndA	C_f 15% Difference
6/21/89	11:14	2	IndA	Cf 20% Difference

Metals - IEC's have currently been updated on the JA61. The ICSA is used as a monitoring device for any additional IEC's that may be necessary due to slight instrument drift. Any such modifications are calculated and applied manually. They are noted on the raw data.

An "E" flag resulted during serial dilution of sample MW-1. Sodium was out of control limit parameters. Since unusually high sodium occurred in the blanks it would seem apparent that this additive effect on the reagent H_2O caused the dilution to be out of the control limits.

All other data appears to be consistent.

RESULTS

The results are presented in the following Tables. Also enclosed is the data package containing all relevant QA/QC and raw data.

Prepared by: Jeffrey C. Curran
Laboratory Manager

JCC/tma

The liability of YWC, Inc. is limited to the actual dollar value of this project.

TABLE 1.0
30890-1060
FANNING, PHILLIPS & MOLNAR
EPA TCL VOLATILE ORGANICS

Aqueous

All values are ug/L.

	Sample Identification		
Dilution Factor	1.0	1.0	
Method Blank I.D.	>G9390	>G9390	
Compound	Method Blank	MW-5	Method Detection Limits with no Dilution
chloromethane	U	U	10
bromomethane	U	U	10
vinyl chloride	U	U	10
chloroethane	U	U	10
methylene chloride	U	U	5
acetone	15	39B	10
carbon disulfide	U	U	5
1,1-dichloroethene	U	U	5
1,1-dichloroethane	U	U	5
1,2-dichloroethene (total)	U	U	5
chloroform	U	U	5
1,2-dichloroethane	U	U	5
2-butanone	U	U	10
1,1,1-trichloroethane	U	U	5
carbon tetrachloride	U	U	5
vinyl acetate	U	U	10
bromodichloromethane	U	U	5
1,2-dichloropropane	U	U	5
cis-1,3-dichloropropene	U	U	5
trichloroethene	4J	U	5
dibromochloromethane	U	U	5
1,1,2-trichloroethane	U	U	5
benzene	U	31	5
trans-1,3-dichloropropene	U	U	5
bromoform	U	U	5
4-methyl-2-pentanone	U	U	10
2-hexanone	U	U	10
tetrachloroethene	U	U	5
1,1,2,2-Tetrachloroethane	U	U	5
toluene	2J	31B	5
chlorobenzene	U	35	5
ethylbenzene	U	2J	5
styrene	U	U	5
xylene (total)	U	16	5

U, J, B - See Appendix for Definition.
Note: Sample Detection Limit = MDL x Dilution factor.

200 MONROE TURNPIKE • MONROE, CONNECTICUT 06468 • (203) 261-4458

TABLE 2.0
30890-1060
FANNING, PHILLIPS & MOLNAR
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank >G9390

CAS #	Compound	RT	Estimated Concentration,ug/L
	None Detected		

Sample Identification: MW-5

CAS #	Compound	RT	Estimated Concentration,ug/L
107835	2-Methyl-pentane	6.53	7J
	Unknown Alkane	7.54	10J
	Unknown Cycloalkane	8.91	17J
	Unknown	20.75	12J
	Unknown C3 alkyl benzene	21.95	9J
	Unknown C3 alkyl benzene	22.90	27J
	Unknown C4 alkyl benzene	23.45	5J
	Unknown	23.81	13J
	Unknown Aromatic	23.94	16J

J - See Appendix for Definition.

TABLE 3.0
30890-1060
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS

Aqueous
Page 1 of 2

All values are ug/L.

	Sample Identification		
Dilution Factor	1.0	1.0	
Method Blank I.D.	>C3971	>C3971	
Compound	Method Blank	MW-5	Method Detection Limits with no Dilution
Phenol	U	U	10
bis(2-Chloroethyl)Ether	U	U	10
2-Chlorophenol	U	U	10
1,3-Dichlorobenzene	U	U	10
1,4-Dichlorobenzene	U	U	10
Benzyl Alcohol	U	U	10
1,2-Dichlorobenzene	U	U	10
2-Methylphenol	U	U	10
bis(2-chloroisopropyl)ether	U	U	10
4-Methylphenol	U	2J	10
N-Nitroso-Di-n-propylamine	U	U	10
Hexachloroethane	U	U	10
Nitrobenzene	U	U	10
Isophorone	U	0.8J	10
2-Nitrophenol	U	U	10
2,4-Dimethylphenol	U	U	10
Benzoic Acid	U	5J	50
bis(-2-Chloroethoxy)Methane	U	U	10
2,4-Dichlorophenol	U	U	10
1,2,4-Trichlorobenzene	U	U	10
Naphthalene	U	9J	10
4-Chloroaniline	U	U	10
Hexachlorobutadiene	U	U	10
4-Chloro-3-methylphenol	U	U	10
2-Methylnaphthalene	U	2J	10
Hexachlorocyclopentadiene	U	U	10
2,4,6-Trichlorophenol	U	U	10
2,4,5-Trichlorophenol	U	U	50
2-Chloronaphthalene	U	U	10
2-Nitroaniline	U	U	50
Dimethyl Phthalate	U	U	10
Acenaphthylene	U	U	10
3-Nitroaniline	U	U	50

U, J, B - See Appendix for definition.
Note: Sample Detection Limit = MDL x Dilution factor.

201 MONROE TURNPIKE • MONROE, CONNECTICUT 06468 • (203) 261-4458

TABLE 3.0
30890-1060
FANNING, PHILLIPS & MOLNAR
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/L.

	Sample Identification		
Dilution Factor	1.0	1.0	
Method Blank I.D.	>C3971	>C3971	
Compound	Method Blank	MW-5	Method Detection Limits with no Dilution
Acenaphthene	U	U	10
2,4-Dinitrophenol	U	U	50
4-Nitrophenol	U	U	50
Dibenzofuran	U	0.7J	10
2,4-Dinitrotoluene	U	U	10
2,6-Dinitrotoluene	U	U	10
Diethylphthalate	U	4J	10
4-Chlorophenyl-phenylether	U	U	10
Fluorene	U	1J	10
4-Nitroaniline	U	U	50
4,6-Dinitro-2-methylphenol	U	U	50
N-Nitrosodiphenylamine	U	6J	10
4-Bromophenyl-phenylether	U	U	10
Hexachlorobenzene	U	U	10
Pentachlorophenol	U	U	50
Phenanthrene	U	3J	10
Anthracene	U	0.7J	10
Di-n-Butylphthalate	0.5J	2JB	10
Fluoranthene	U	2J	10
Pyrene	U	2J	10
Butylbenzylphthalate	U	0.6J	10
3,3'-Dichlorobenzidine	U	U	20
Benzo(a)Anthracene	U	U	10
bis(2-Ethylhexyl)Phthalate	1J	7JB	10
Chrysene	U	U	10
Di-n-Octyl Phthalate	0.4J	U	10
Benzo(b)fluoranthene	U	U	10
Benzo(k)fluoranthene	U	U	10
Benzo(a)pyrene	U	U	10
Indeno(1,2,3-cd)pyrene	U	U	10
Dibenzo(a,h)anthracene	U	U	10
Benzo(g,h,i)perylene	U	U	10

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

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TABLE 4.0
30890-1060
FANNING, PHILLIPS & MOLNAR
SEMI-VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank >C3971

CAS #	Compound	RT	Estimated Concentration,ug/L
	None Detected		

Sample Identification: MW-5

CAS #	Compound	RT	Estimated Concentration,ug/L
	Unknown Alkane	10.24	15J
	Isomer of trimethyl benzene	11.84	24J
	Unknown	12.41	13J
	Unknown alkane	13.01	15J
	Unknown alkyl benzene	14.86	7J
60322	6-amino-hexanoic acid	16.51	39J
501520	Benzene propanoic acid	17.60	19J
	Unknown	19.55	61J
	Unknown	19.78	20J
	Unknown	20.19	63J
	Unknown Ketone	20.24	10J
	Polynuclear aromatic hydrocarbon	28.55	13J
	Unknown	31.03	30J
	Unknown cosane	32.35	12J

J - See Appendix for Definition.

Aqueous

TABLE 5.0
30890-1060
FANNING, PHILLIPS & MOLNAR
EPA TCL PESTICIDES/PCB's

All values are ug/L.

	Sample Identification		
Dilution Factor	1.0	1.0	
Method Blank I.D.	0609 -B03	0609 -B03	
Compound	Method Blank	MW-5	Method Detection Limits with no Dilution
alpha BHC	U	U	0.05
beta BHC	U	U	0.05
delta BHC	U	U	0.05
gamma BHC	U	U	0.05
heptachlor	U	U	0.05
aldrin	U	U	0.05
heptachlor epoxide	U	U	0.05
endosulfan I	U	U	0.05
dieldrin	U	U	0.10
4,4' DDE	U	U	0.10
endrin	U	U	0.10
endosulfan II	U	U	0.10
4,4' DDD	U	U	0.10
endosulfan sulfate	U	U	0.10
4,4' DDT	U	U	0.10
methoxychlor	U	U	0.50
endrin Ketone	U	U	0.10
alpha chlordane	U	U	0.50
gamma chlordane	U	U	0.50
toxaphene	U	U	1.0
PCB - 1016	U	U	0.5
PCB - 1221	U	U	0.5
PCB - 1232	U	U	0.5
PCB - 1242	U	U	0.5
PCB - 1248	U	U	0.5
PCB - 1254	U	U	1.0
PCB - 1260	U	U	1.0

U, J, B - See Appendix for definition.

Note: Sample Detection Limit = MDL x Dilution factor.

TABLE 6.0
30890-1060
FANNING, PHILLIPS & MOLNAR
TAL METALS AND CYANIDE

All values are ug/L.

Parameter	MW-5
Aluminum	155B
Antimony	16.9U
Arsenic	0.3U
Barium	497
Beryllium	0.18U
Cadmium	1.7U
Calcium	124,000
Chromium	2.1U
Cobalt	8.4U
Copper	4.9U
Iron	31,800
Lead	5.8
Magnesium	12,700
Manganese	735
Mercury	0.2
Nickel	6.0U
Potassium	8,450
Selenium	0.4U
Silver	2.1U
Sodium	20,500
Thallium	0.2U
Vanadium	5.9U
Zinc	173
Cyanide	10.0U

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APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

X - Matrix spike compound.

(1) - Cannot be separated from diphenylamine.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

APPENDIX/METALS DATA

C - Concentration qualifiers

U - Indicates analyte result less than instrument detection limit (IDL)

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

VOLATILE ORGANICS ANALYSIS DATA SHEET

Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

Sample Lab No. 959814
Date Collected: 6/7/89
Date Received: 6/8/89
Type: Misc.
Point: Grab Sample #MW4
Uniondale Shopping Center
Collected By: CL 99

C.A.S. Number	Compound	Concentration	Unit: ug/l
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-02-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-02-6	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-01-5	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2,Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	3	J
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Date Analyzed: 6/15/89
Date Reported: 6/22/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

Sample Lab No. 959814
Date Collected: 6/7/89
Date Received: 6/8/89
Type: Misc. TCL Parameters
Point: Grab Sample #MW4
Uniondale Shopping Center
Collected By: CL 99

ANALYTICAL RESULTS FOR ACID EXTRACTABLES

		Concentration Unit ug/l	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	50	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	7	J
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
	Benzidine	10	U

Date Extracted: 6/9/89
Date Analyzed: 6/21/89
Date Reported: 6/30/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

Sample Lab No. 959814
Date Collected: 6/7/89
Date Received: 6/8/89
Type: Misc. TCL Parameters
Point: Grab Sample #MW4
Uniondale Shopping Center
Collected By: CL 99

ANALYTICAL RESULTS FOR BASE NEUTRAL EXTRACTABLES

CAS NO.	Compound	Concentration Unit ug/l	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	8	JB
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

Date Extracted: 6/8/89
Date Analyzed: 6/21/89
Date Reported: 6/30/89

John J. Molloy, P.E.
Laboratory Director

H2M LABS, INC.
575 Broad Hollow Road, Melville, N.Y. 11747
(516) 694-3040 FAX: (516) 694-4122
ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

Fanning, Phillips & Molnar
909 Marconi Avenue
Ronkonkoma, NY 11779

Sample Lab No. 959814
Date Collected: 6-7-89
Date Received: 6-8-89
Type: Grab Sample #MW4
Point: Uniondale Shopping Center
Collected By: CL 99

ANALYTICAL RESULTS FOR PESTICIDES AND PCB'S

Compound	ug/l
lindane	< 0.05
heptachlor	< 0.05
aldrin	< 0.05
heptachlor epoxide	< 0.05
dieldrin	< 0.10
endrin	< 0.10
p,p'DDT	< 0.10
methoxychlor	< 0.05
toxaphene	< 1.0
chlordane	< 0.50
beta-BHC	< 0.05
delta-BHC	< 0.05
alpha-BHC	< 0.05
p,p' -DDD	< 0.10
p,p' -DDE	< 0.10
endosulfan I	< 0.05
endosulfan II	< 0.05
endosulfan sulfate	< 0.10
endrin aldehyde	< 0.10
o,p DDT	< 0.10
aroclor 1016	< 1.0
aroclor 1221	< 1.0
aroclor 1232	< 1.0
aroclor 1242	< 1.0
aroclor 1248	< 1.0
aroclor 1254	< 1.0
aroclor 1260	< 1.0

Date Extracted: 6-12-89
Date Analyzed: 6-29-89
Date Reported: 7-7-89

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John J. Molloy, P.E.
Laboratory Director

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO OF CONTAINERS	40ml VOA	1L amb. plastic w/HNO3	1L clear glass - unpreserved	1qt cubitainer w/NaOH	REMARKS
	Uniondale Shopping Center / FP&M						

SAMPLERS: (Signature) M. O. K

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION							
MW-4	6/6	PM		X	MW-4	8	2	1	4	1			Test for Full TCL parameters — ~~Full CLP~~

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
			M O K	6/8/89 1350	Richard [illegible]
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
[illegible]	6/7/89 12:20	M O K	6/7/89 12:20		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

H2M LABS, INC.
Environmental Testing Laboratories
575 Broad Hollow Road, Melville, New York 11747-5076 • (516) 694-3040

Water/Waste Water Laboratory • Hazardous Waste Laboratory • Air Testing Laboratory
Pilot Plant Studies and Other Analytical Services

LABORATORY REPORT

LAB NO. 959815
PROJECT NO. DEG

CLIENT'S NAME AND ADDRESS

FANNING, PHILLIPS & MOLNAR

909 MARCONI AVE.

RONKONKOMA, NY 11779

TYPE OF SAMPLE - MISCELLANEOUS COLLECTED BY CL 99
DATE COLLECTED - 6/ 7/89 DATE RECEIVED - 6/ 8/89

FULL CLP + ODC
GRAB SAMPLE #MW4
UNIONDALE SHOPPING CENTER

PARAMETER	RESULT	PARAMETER	RESULT	PARAMETER	RESULT
ALUMINUM	0.68	IRON	12.3	SODIUM	18.1
ANTIMONY	<0.06	LEAD	5.80#	THALLIUM	<10.0 #
ARSENIC	<10.0 #	MAGNESIUM	18.3	VANADIUM	<0.05
BARIUM	0.23	MANGANESE	0.88	ZINC	<0.02
BERYLLIUM	<5.00#	MERCURY	<0.20#	CALCIUM	154.
CADMIUM	<3.00#	NICKEL	<0.04	CYANIDE	<10.0 #
CHROMIUM	<0.01	POTASSIUM	14.9		
COBALT	<0.05	SELENIUM	<5.00#		
COPPER	<0.02	SILVER	<0.01		

ALL RESULTS IN (MG/L) EXCEPT AS NOTED BY # (UG/L) OR % (PERCENT) AND
T.COLI BACT. & FECAL COLI (MPN/100ML)
COLOR, ODOR, TURBIDITY & PH (UNITS)
APC & FECAL STREP (COUNTS/ML)
SPEC.COND. (UMHOS) SETT.SOLIDS(ML/L)

DATE REPORTED 7/ 7/89

LABORATORY DIRECTOR

THE LIABILITY OF H2M LABS, INC. SHALL BE LIMITED TO THE PRICE OF THE SERVICE RENDERED AND PAID.

YORK LABORATORIES
CHAIN OF CUSTODY RECORD

CLIENT ID: [illegible]
CLIENT PROJ. ID:

FOR CLIENT USE

SAMPLE BOTTLE DESCRIPTION

SAMPLE SET	SAMPLE ID (12 Characters)	DATE SAMPLED	LAB SMP. #										TOTAL BOTTLES	COMMENTS
1	[illegible]	[illegible]												
2	[illegible] 2	[illegible]												
3	[illegible]	[illegible]												
4	[illegible]	[illegible]												
5		/ /												
6 FB	[illegible]	[illegible]												
7 TB	[illegible]	/ /												
		/ /												
		/ /												
		/ /												
		/ /												
		/ /												
		/ /												
		/ /												
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		/ /												
		/ /												
		/ /												

* NOTE : For Lab Use Only REF. # : = TOTAL # OF BOTTLES

BOTTLES PREPPED BY: [illegible] DATE: [illegible] TIME: [illegible] CUSTODY TRANSFERRED TO: [illegible] DATE: [illegible] TIME: [illegible]
COOLER SEALED ? YES NO
SIGNATURE: [illegible] SEAL #: [illegible] SIGNATURE: [illegible]

COOLER OPENED BY: DATE: / / TIME: [illegible] COOLER RE-SEALED BY: [illegible] DATE: [illegible] TIME: [illegible]
SEAL INTACT ? YES NO N/A
SIGNATURE: SEAL #: SIGNATURE: [illegible] SEAL #:

SAMPLES COLLECTED BY: [illegible] DATE: [illegible] TIME: [illegible] RECEIVED IN LAB BY: [illegible] DATE: [illegible] TIME: [illegible]
SEAL INTACT? YES NO N/A
SIGNATURE: SAMPLES SEALED? YES NO SIGNATURE: [illegible] SEAL #:

WERE SAMPLES SPLIT WITH ANOTHER PARTY? [ ] YES [ ] NO
IF YES IDENTIFY: COOLER ID: PAGE ___ OF ___

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ENVIRONMENTAL and INDUSTRIAL ANALYTICAL LABORATORY

DATA REPORTING QUALIFIERS

Value - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g., 10U) based on necessary concentration/dilution actions. (This is not necessarily the instrument detection limit). The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J - Indicates as estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g.: If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J).

C - This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides >= 10 ng/ul in the final extract should be confirmed by GC/MS.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

Other - Other specific flags and footnotes may be required to properly defined the results. If used, they must be fully described and such description attached to the data summary report.