573

REMEDIAL INVESTIGATION REPORT

FOR THE

SANDS TEXTILE SITE
100 OSER AVENUE
HAUPPAUGE, NEW YORK

PREPARED FOR THE

ANORAD CORPORATION

OCTOBER, 1992

fanning, phillips & molnar
ENGINEERS
RONKONKOMA NEW YORK

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DISCLAIMER

These findings are based upon a detailed sampling procedure that has been formulated in accordance with sound technical procedures both for sampling and for laboratory analysis (USEPA where appropriate). Conclusions from this data are limited to those areas focused on in the study and represent our best judgment 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

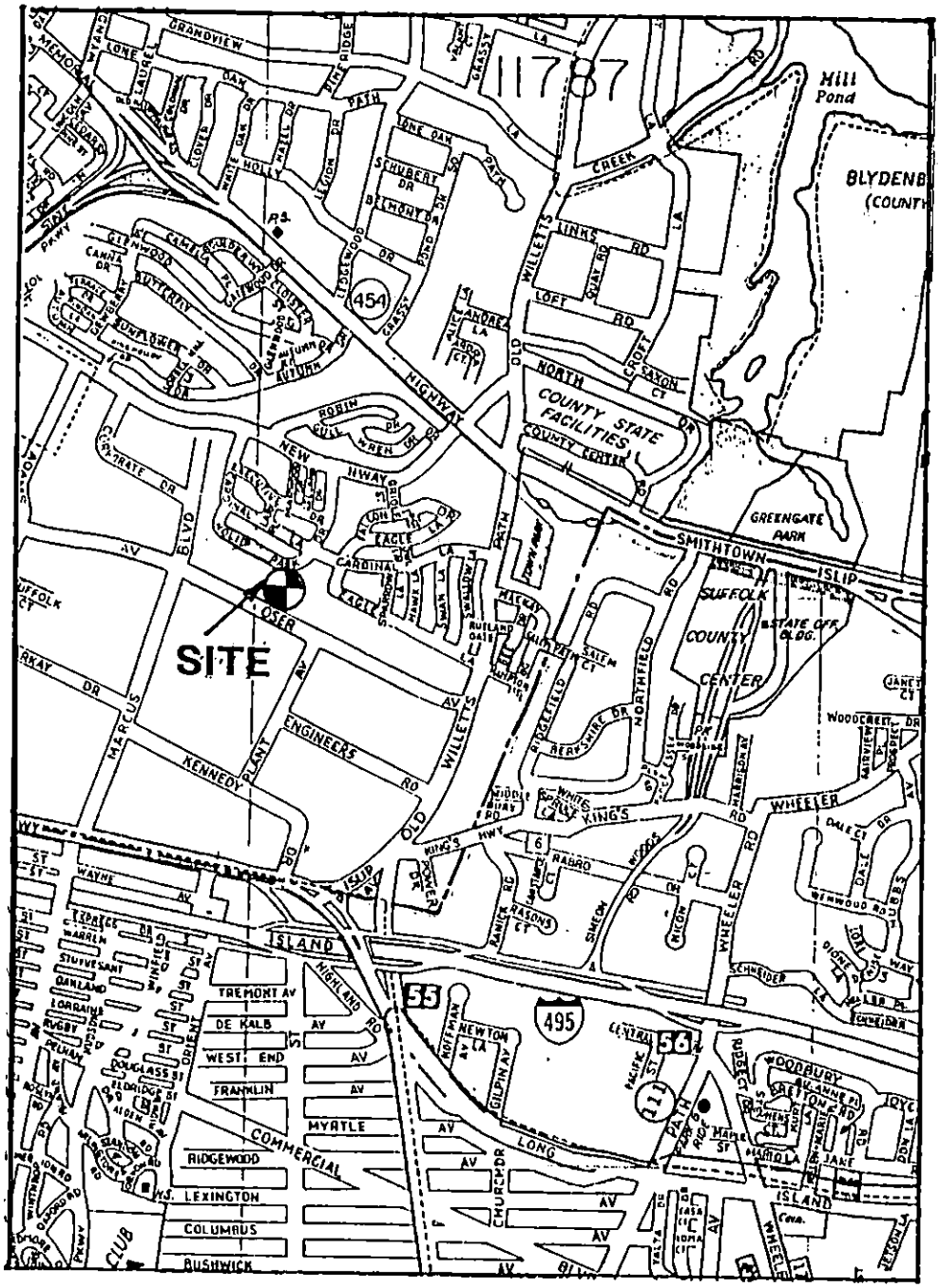
1.1 Site Background

Fanning, Phillips and Molnar (FP&M) was contracted by the Anorad Corporation (Anorad) to determine the contamination present in the groundwater and determine if contamination sources are on-site or upgradient beneath the property at 100 Oser Avenue, Hauppauge (see Figure 1.1.1 for site location).

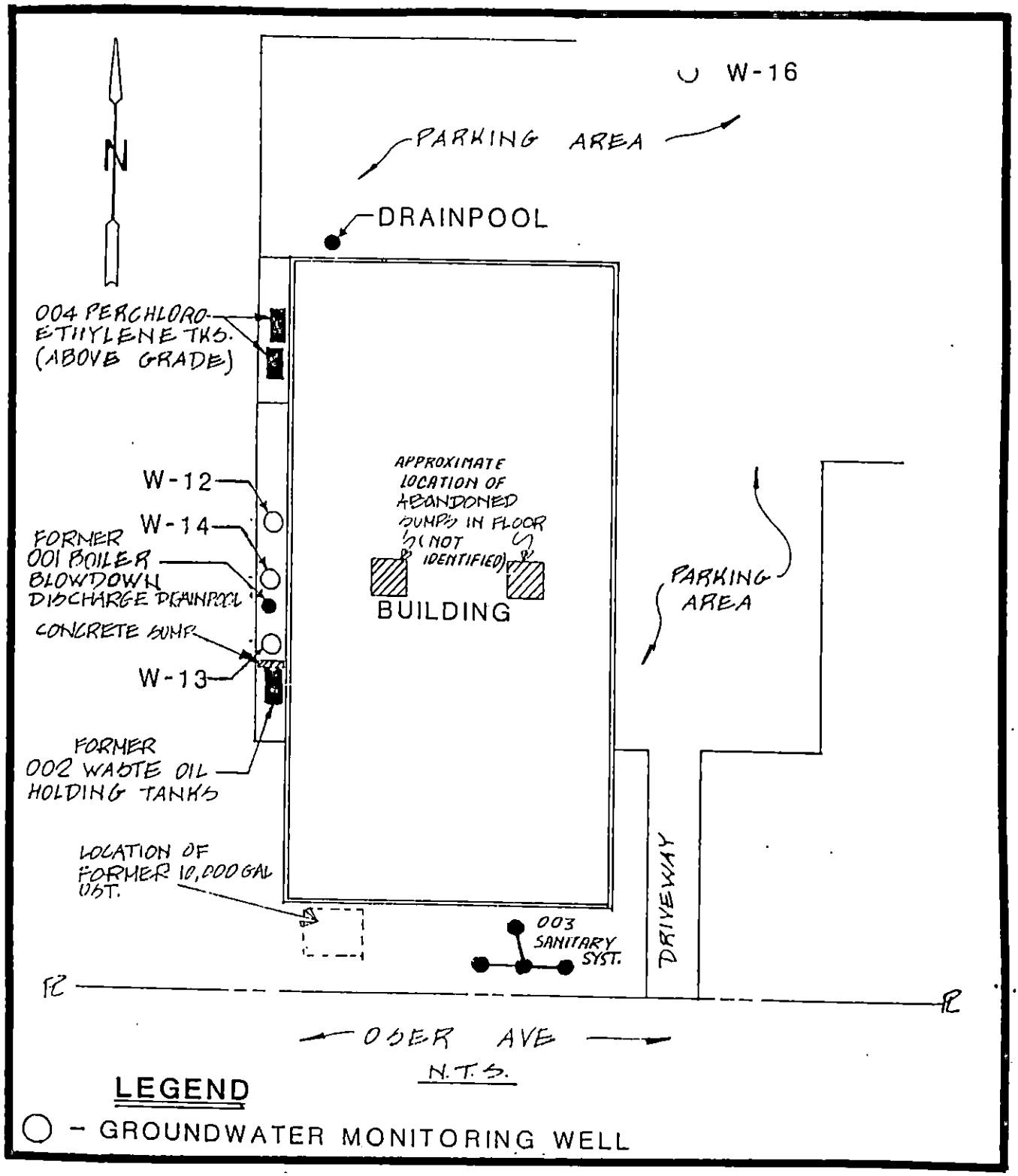
The investigation was requested by the Suffolk County Department of Health Services (SCDHS) due to groundwater contamination which was determined to have been caused by the previous site tenant, Sands Textile Corporation (Sands) during the time period that the site was owned by Vanderbilt Associates. Sands was a textile manufacturer which used tetrachloroethylene (PCE) to dry-clean finished textiles. Vanderbilt Associates sold the property to Anorad in September, 1985.

In May, 1989, PALL RAI, Inc. (PALL) requested permission from Anorad to place four groundwater monitoring wells on the 100 Oser Avenue property in response to a past chemical spill at the upgradient PALL site. Three of these wells were placed along the west side of the building at 100 Oser Avenue in the vicinity of formerly-existing, above-ground storage tanks. The locations of the on-site monitoring wells, as well as the potential source areas of the Sands-derived contamination, are presented in Figure 1.1.2.

The results of the Pall investigation indicated that the groundwater at these locations was contaminated with high concentrations of PCE, and to a lesser extent, other chemicals. Split-spoon samples obtained in the vadose zone during the well



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FIGURE 1.1.1 SITE LOCATION		
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FIGURE 1.1.2 POTENTIAL SOURCE AREAS & LOCATIONS OF ON-SITE GROUNDWATER MONITORING WELLS		
Drawn By: H.C.	Checked By: P.D.	Date: 9/29/92

installations were detected with PCE, and to a lesser extent, other chemicals which indicates an on-site source for at least a portion of the PCE contamination in the groundwater.

A subsequent investigation of groundwater contamination upgradient and at 100 Oser Avenue was performed by Fanning, Phillips and Molnar. This information is summarized in Table 1.1.1. The investigation showed that methylene chloride, carbon tetrachloride, PCE, chloroform, trichloroethene, and toluene were detected both upgradient and on the Sands site. However, of these chemicals, only PCE, chloroform, and trichloroethene are known to have been used, stored, or detected in the soils at the 100 Oser Avenue site. Therefore, methylene chloride, carbon tetrachloride, and toluene in the groundwater at the Sands site are attributed solely to upgradient sources. PCE, chloroform, and trichloroethene were detected in both upgradient groundwater and the on-site vadose zone soil which indicates that the groundwater contamination from these chemicals at Sands is due to both on-site and upgradient sources.

In addition, to the VOCs in the groundwater at the Sands site, Fanning, Phillips and Molnar sampled for selected metals: cadmium, chromium, lead, copper, silver, and zinc. The metals analyses were performed to address findings of the Fanning, Phillips and Molnar report entitled, "Investigation of Potentially Responsible Parties", January, 1992. In this report, six potentially responsible parties (PRPs) were identified: United Guardian, Inc., Color Park, Time Electronics, Computer Circuits, EMR Circuits, and Standard MicroSystems. Pall was not investigated as part of the report. The results of the investigation indicate that in addition to the

TABLE 1.1.1
COMPARISON OF COMPOUNDS DETECTED UPGRADIENT AND ON-SITE

Sands Textiles Site
Hauppauge, New York

Compounds	Detected in Groundwater Upgradient of the Sands Site		Detected in Groundwater at Sands Site		Known to have been Used, Stored, or Detected in Soils at Sands Site	Compounds Emanating Solely from Upgradient Sources	Compounds with Upgradient and On-site Sources
Methylene Chloride	X	(25,000)	X	(1,700)		X	
Carbon Tetrachloride	X	(4,500)	X	(710)		X	
Tetrachloroethene	X	(1,600)	X	(44,000)	X		X
Chloroform	X	(2)	X	(17)	X		X
Trichloroethene	X	(2)	X	(1,200)	X		X
Toluene	X	(27,000)	X	(2,800)		X	

Notes:

- Numbers in parentheses show the highest concentration at which the compound was detected (all results in ppb).
- Compounds and maximum concentrations detected at the site were compiled from 1990 and 1992 sampling rounds.

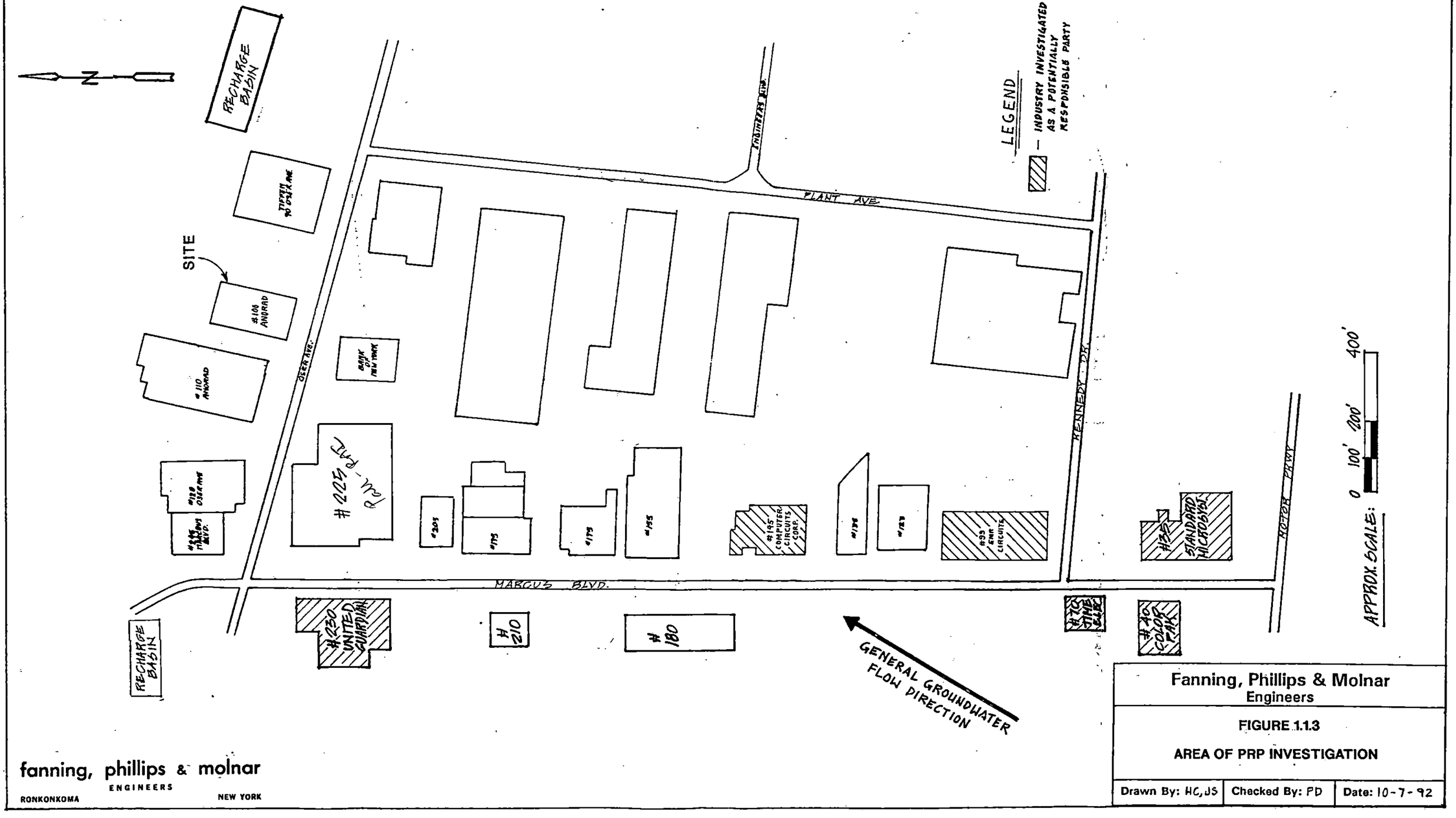
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potential contributions to the upgradient VOC plume, metals had been discharged at four of these facilities: United Guardian, Inc. allegedly discharged cadmium, lead, and copper; Computer Circuits illegally discharged chromium, lead, copper, and zinc; EMR Circuits illegally discharged lead, copper, silver, and zinc; and Time Electronics illegally discharged cadmium and silver (see Figure 1.1.3 for locations of these PRPs).

1.2 Remedial Investigation Procedures

FP&M prepared reports entitled "Phase I Investigation of Potential Sources of Contamination at 100 Oser Avenue" in June, 1990 and "Follow-Up Soil Investigation at 100 Oser Avenue" in November, 1990. Based on the findings of these reports, the SCDHS requested that FP&M prepare a proposed remedial investigation work plan on behalf of Anorad for the Sands site. This report was submitted to the SCDHS in June, 1991. The work plan was developed to determine the width and vertical extent of the groundwater plume at the Sands site. The SCDHS approved the work plan on August 14, 1991. At that time Anorad requested that they pursue alternatives to the vadose zone remediation prior to performing the groundwater investigation.

To determine the width and vertical extent of contamination at the Sands site, FP&M performed five exploratory borings on the north portion of the Sands site. A slotted leading auger was used so that groundwater samples could be obtained from three discrete depths within the same borehole. Fifteen samples (three samples at each of five boreholes) were obtained for field screening. Based on the field screening, six samples were obtained and submitted for laboratory analysis for VOCs. In addition, five samples were submitted for



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FIGURE 1.1.3 AREA OF PRP INVESTIGATION		
Drawn By: HC, JS	Checked By: PD	Date: 10-7-92

metals analysis to determine if metals, which are known to have been discharged upgradient, have migrated onto the Sands site. The results were interpreted to define the nature and extent of contamination in a cross-sectional area of the aquifer. Based on the results of this investigation, it is discovered that the organic contaminant plume is wider than anticipated, that upgradient contaminants comprise a portion of the plume, and that its depth appears to be limited to the upper 100 feet of the aquifer. Further delineation is necessary to determine its width, its leading edge, and confirm its vertical extent.

1.3 Coordination with the Vadose Zone Clean-Up

The Sands site contains contaminated soil as well as contaminated groundwater. Both soil and groundwater clean-up should be scheduled to occur simultaneously to expedite the remediation. The soil cleanup should begin with the removal of some volatile organic "hot spots". The areas paved over with asphalt to prevent precipitation from entering the vadose zone and causing the downward migration of contaminants. Deep venting wells (screened throughout the vadose zone) should be installed and are expected to be operational for a period of approximately 10 to 20 years.

The groundwater plume has yet to be fully defined but it appears likely that it extends off-site and contains not only Sands-derived contamination but upgradient-derived contamination as well. What is envisioned is the design of groundwater remediation recovery wells placed at strategic locations pumping at a rate that can effectively capture the plume. Contaminated groundwater should then be treated by way of an air stripping tower and the treated water should be

recharged back to the aquifer. The towers may require treatment for air pollution. This may either be accomplished by granular activated carbon treatment or incineration. The expected time frame for cleanup is 10 to 20 years. The estimated schedule for remediation for the vadose zone and groundwater is presented in Table 1.3.1.

TABLE 1.3.1
ESTIMATED SCHEDULE FOR VADOSE ZONE
AND
GROUNDWATER REMEDIATION
AT THE
SANDS TEXTILE SITE
HAUPPAUGE, NEW YORK

	TASKS	MONTHS																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
GROUND WATER	Delineate the Nature and Extent of Groundwater Contamination																			
	Groundwater Follow-Up (if necessary)																			
	SCDHS Review																			
	Perform Risk Assessment & Evaluate Human Health & Environmental Impacts																			
	Prepare Feasibility Study																			
	SCDHS Review																			
	Prepare and Submit Permits																			
	Install Remediation System																			
	Implement Recommendations																			→
VADOSE ZONE	Remove Volatile Organic "Hot Spots"																			
	Seal Porous Areas																			
	Install Vent Wells																			
	Implement Venting																			→
	Monitor Vent Wells																			

SECTION 2.0
ENVIRONMENTAL SETTING

The Sands site is located in Hauppauge, New York, in the Heartland Industrial Park. The surface elevation at the site is approximately 120 feet above mean sea level (MSL).

2.1 Geology

The geology in the vicinity of the Sands site was obtained from the US Geological Survey report # 1669-D entitled "Hydrogeology of the Huntington - Smithtown Area, Suffolk County, New York" (Lubke, 1964).

The site vicinity is underlain with Precambrian bedrock which occurs at approximately 1100 feet below the site. The bedrock is overlain by the Raritan Formation which consists of the Lloyd Formation and the overlying Raritan clay member. The upper surface of the Raritan Formation occurs at a depth of approximately 800 feet below the site. The Raritan Formation is overlain by the Magothy Formation. The upper surface of the Magothy Formation occurs at a depth of approximately 200 feet below land surface in the site vicinity and is approximately 600 feet thick. The upper portion of the Magothy consists mainly of layers of fine-to-medium quartz sand, generally somewhat clayey and interbedded with layers of clay and silt. Gravelly layers occur in a few places and are usually of limited areal extent. Overlying the Magothy Formation is the Upper Glacial unit of Pleistocene age. In the Smithtown area, the unit consists of the lower Pleistocene deposits, the Smithtown clay unit, and the upper Pleistocene deposits. The Pleistocene deposits are predominantly composed of stratified sand and gravel. The color of the deposits are generally brown, yellow, or grey. The Smithtown clay unit does not appear to occur beneath the

site. It does, however, occur approximately one mile to the northeast of the site.

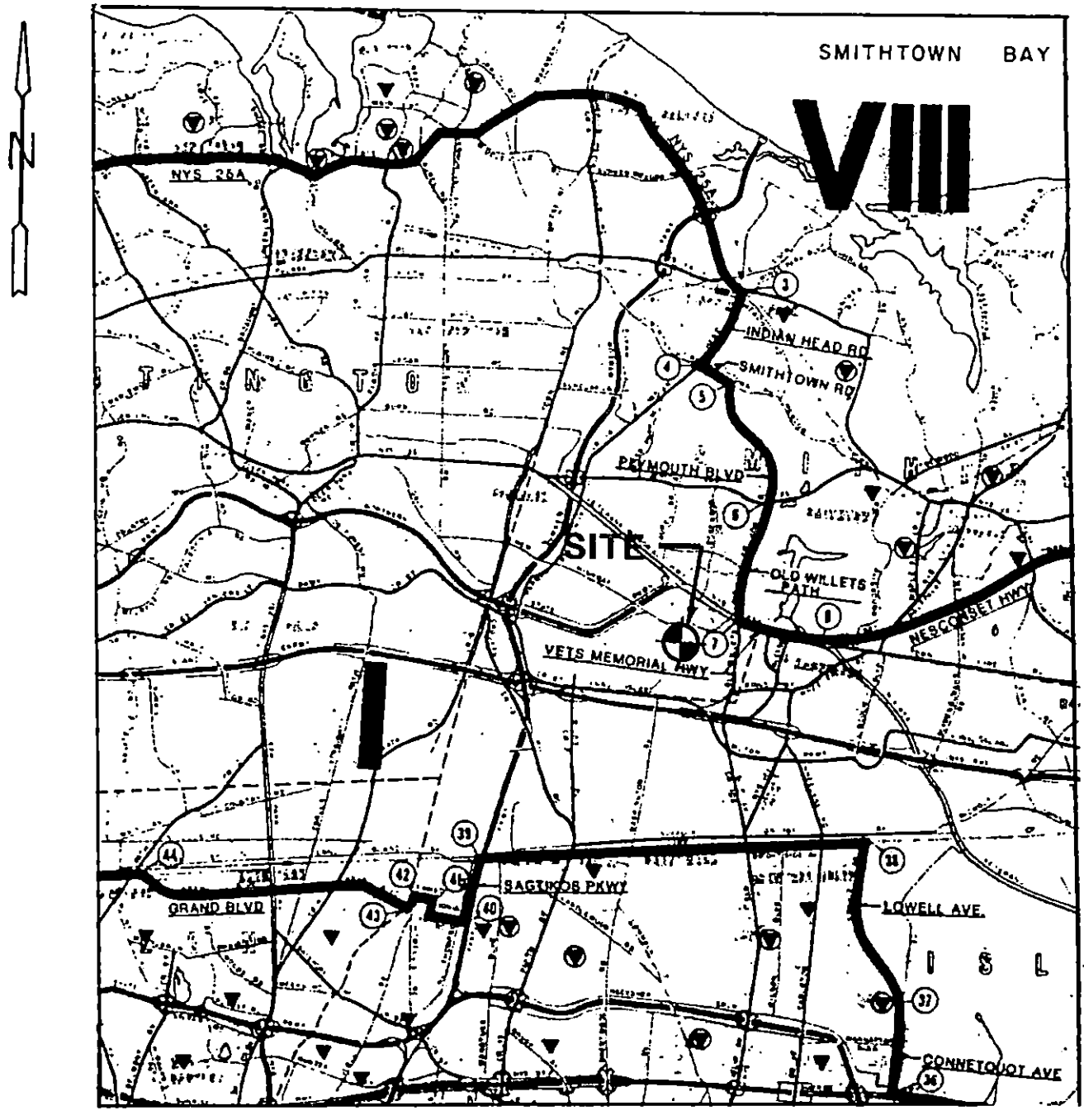
2.2 Hydrogeology

The two aquifers of concern in the site vicinity are the Upper Glacial Aquifer which is associated with the Upper Glacial Pleistocene deposits and the Magothy Formation which is associated with the Magothy deposits. The thickness of the Upper Glacial Aquifer is approximately 130 feet in the site vicinity. The depth to water at the site is approximately 70 feet.

To determine the vertical component of groundwater in the site vicinity, the site's geographic location was evaluated with respect to the Long Island Regional Planning Board's 208 Study Hydrogeologic Zones (see Figure 2.2.1 for hydrogeologic zone map). The site is located in Hydrogeologic Zone 1 which is defined as a deep-flow recharge zone. This zone is characterized by a downward component of flow. However, the site is located near the border between Zones 1 and 8. Zone 8 is defined as a discharge zone and is characterized as having an upward component of flow. It is likely that the site is located in a transition area between the recharge and discharge zones. In this transition area, flow is expected to be dominated by horizontal movement.

The regional horizontal groundwater flow direction was ascertained from the SCDHS water table elevation map from March, 1991 (see Figure 2.2.2). This map shows that during 1991, the groundwater elevation was approximately 48 feet and the flow direction was generally to the northeast.

Site-specific groundwater flow direction has not been evaluated



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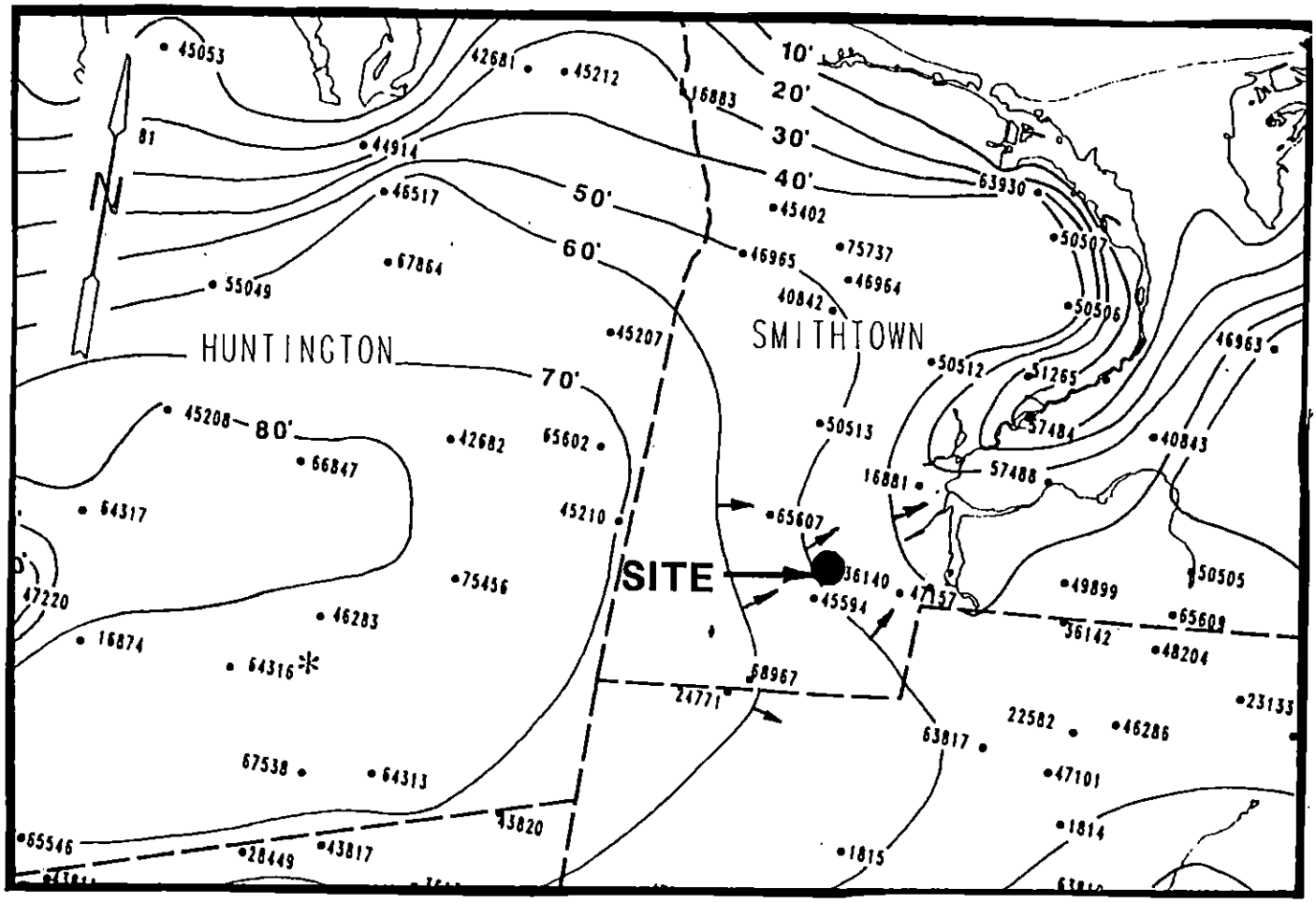
SOURCE:LIRPB 208 STUDY

LEGEND:

HYDROGEOLOGIC ZONE I: RECHARGE AREA

HYDROGEOLOGIC ZONE VIII: DISCHARGE AREA

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FIGURE 2.2.1 SITE LOCATION WITH RESPECT TO HYDROGEOLOGIC ZONES		
Drawn By: H.C.	Checked By: P.D.	Date: 9/29/92



SOURCE: SCDHS

SCALE: 1"=2 MILES

LEGEND:

50' GROUNDWATER CONTOUR LINE

GROUNDWATER FLOW DIRECTION

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FIGURE 2.2.2 GROUNDWATER FLOW DIRECTION IN THE VICINITY OF THE SITE FROM MARCH, 1991		
Drawn By: H.C.	Checked By: P.D.	Date: 9/29/92

due to the configuration of the four existing on-site wells. The lack of at least three generally equally-spaced wells prevents an accurate determination of flow. The four wells are arranged in a near-linear configuration.

2.3 Land Use History

To determine the land use history at the Sands site, several regulatory agencies were contacted and file information was obtained and interpreted. The following is summary of the information obtained.

The Smithtown Tax Assessors Department records indicate that the site is located in District 0800, Section 185, Block 1, Lot 60.2 in Hauppauge, Town of Smithtown, New York.

The Suffolk County Tax Assessors and Deeds Department was contacted and their information showed that the land was owned by Vanderbilt Industrial Park in 1973. In September, 1985, the property was sold to Anwar Chitayat (Anorad) through the Suffolk County Industrial Development Agency.

Aerial photographs were obtained from the Smithtown Planning Department for the years 1968, 1976, 1984, and 1988. The 1968 photograph shows the site to be vacant and wooded. The 1976 photo shows the existence of a building on the site (which was occupied by the previous tenant, Sands Textiles). The 1984 photo shows no significant changes on site, however, to the west, the building now also occupied by the Anorad Corporation (100 Oser Avenue) is seen. The 1988 photo shows no significant changes.

Information gained from Anorad personnel indicates that Anorad moved into the building at 110 Oser Avenue in 1980 and then expanded

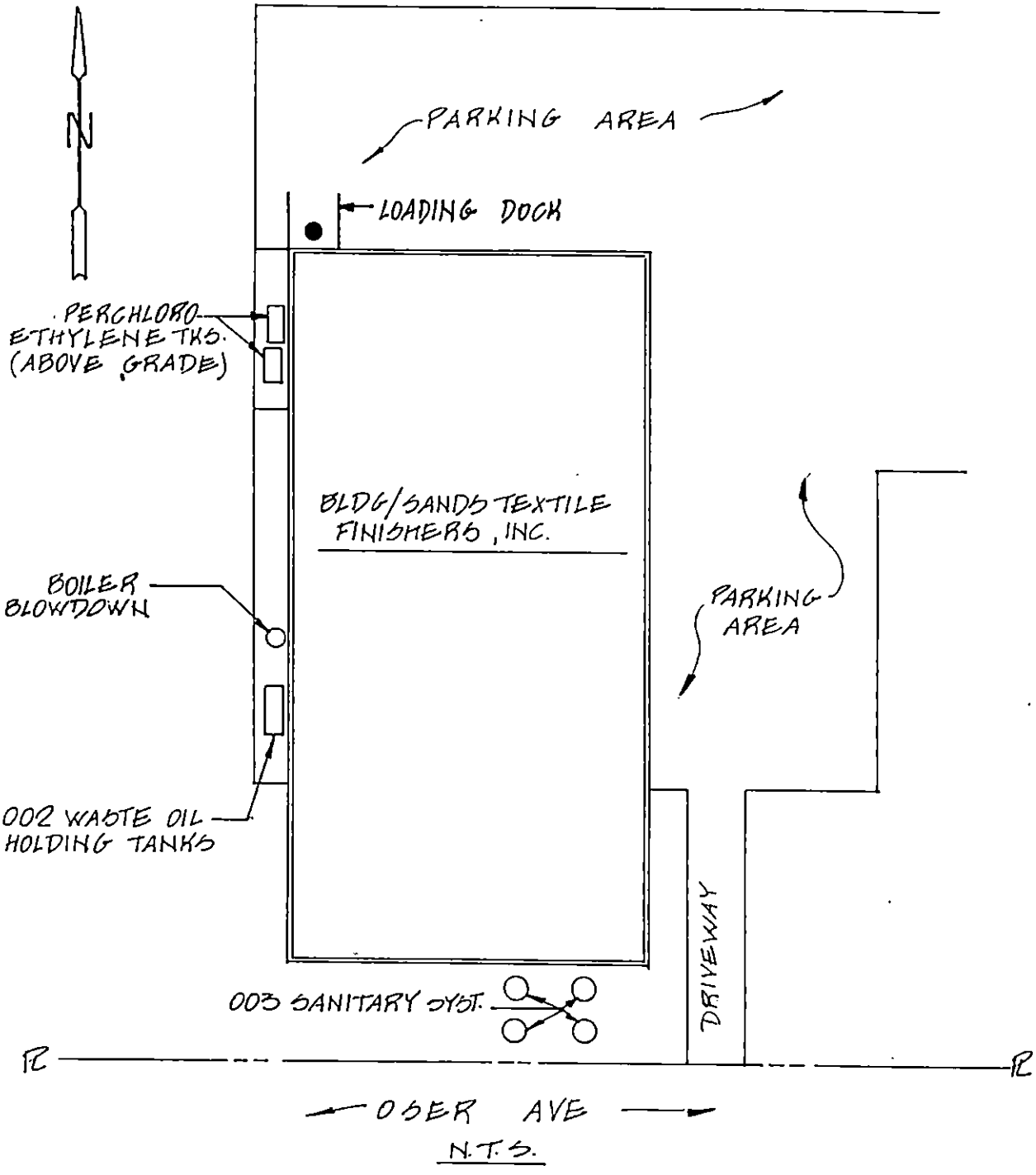
into the 100 Oser Avenue site in 1987 after the building was renovated (which began in 1985).

The New York State Department of Environmental Conservation (NYSDEC) was contacted for information concerning chemical spills on, and in the vicinity of, the site. The spill information shows that numerous spills have occurred in the vicinity of the site and one spill is recorded for the site in 1981. This spill of #2 fuel oil was the result of an oil delivery overfill in which 25 to 50 gallons were estimated to have been spilled. Suffolk County Department of Health Services (SCDHS) files concerning this spill indicated that this spill occurred on the south side of the building (front lawn) and that contaminated soil was removed.

Files were obtained from the Suffolk County Department of Health Services concerning the site at 100 Oser Avenue and the previous tenant, Sands. Two businesses have occupied the site since its construction: Anorad, which is involved in the manufacturing of technical rotational positioning equipment and has owned the site since September of 1985, and Sands which occupied the site prior to Anorad and were involved with bulk dry cleaning of textiles. There has been no evidence that Anorad has been responsible for any release at the site.

Past site history led to the first report by Fanning, Phillips and Molnar entitled, "Phase I Investigation of Potential Sources of Contamination at 100 Oser Avenue, July, 1990". The second report entitled, "Follow-Up Soil Investigation at 100 Oser Avenue, November, 1990" showed that areas of concern, based on vadose zone, organic vapor monitoring, and shallow soil sampling include the west side of

the building and the loading dock (see Figure 2.3.1 for locations of areas of concern).



SOURCE: SCDHS

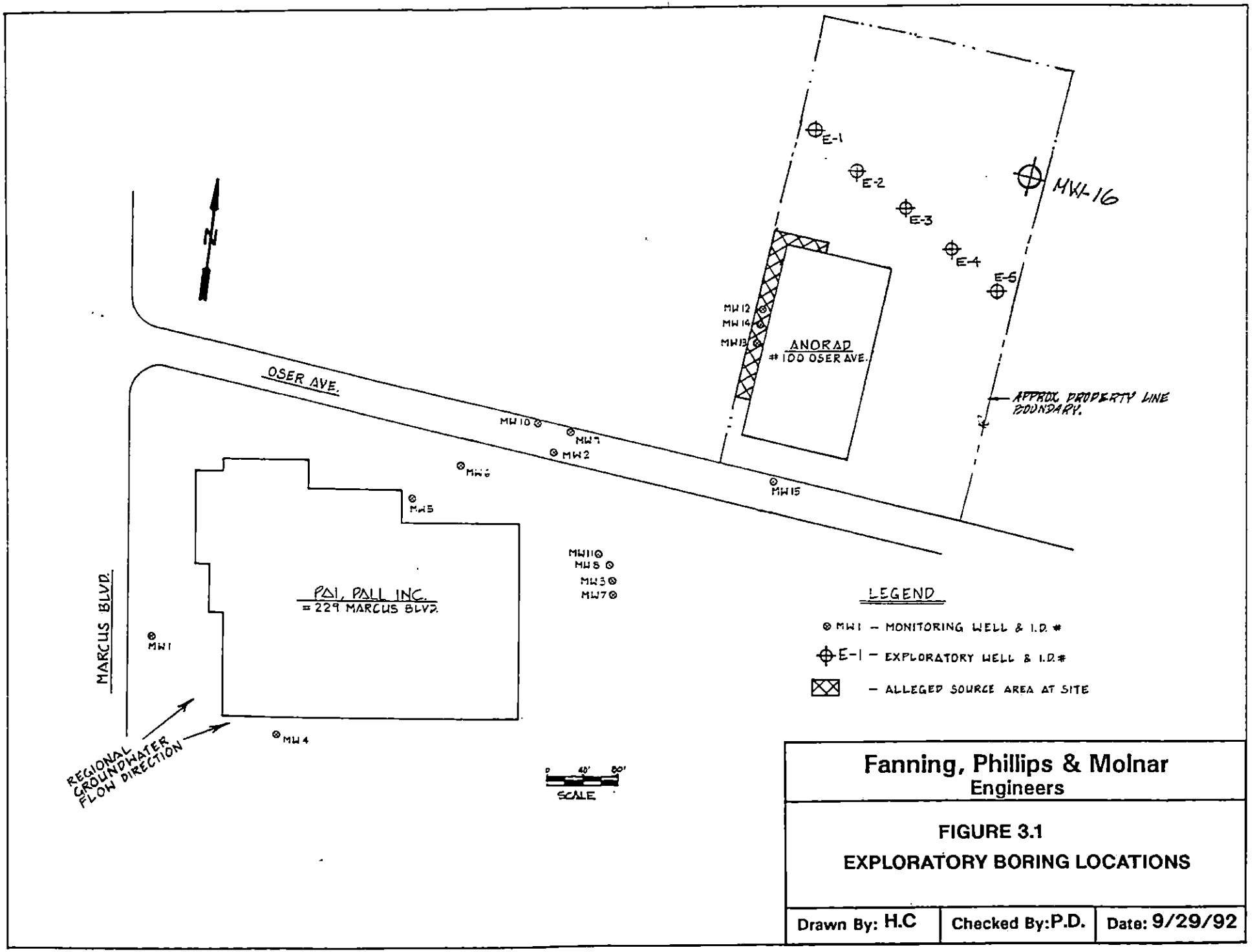
Fanning, Phillips & Molnar Engineers		
FIGURE 2.3.1 LOCATION OF AREAS OF CONCERN AT 100 OSER AVE.		
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SECTION 3.0
SUMMARY OF FIELD INVESTIGATION METHODS

Five borings were performed at the north portion of the Sands site (see Appendix A for Field Reports). The borings were placed in a straight line perpendicular to the average groundwater flow direction and generally trending northeast-southwest. The spacing between each boring is 50 feet (see Figure 3.1 for location of borings).

The borings were drilled by the hollow-stem auger method and all downhole equipment was steam cleaned prior to use at each location. The five-foot leading auger was slotted to allow the infiltration of water for the purpose of sampling (see Figure 3.2 for schematic of exploratory well drilling and sampling). The augers were advanced through the roughly 70-foot vadose zone and then five feet beneath the water table. At this point, a stainless-steel, decontaminated submersible pump was placed opposite the slotted auger. Three volumes of water were purged from the auger and the submersible pump was removed from the borehole. A decontaminated teflon bailer with dedicated polyethylene rope was then used to obtain a groundwater sample. After the sample was obtained, the leading auger was advanced to a depth interval of 25 to 30 feet below the water table. A second sample was obtained with a decontaminated teflon bailer. The leading auger was then advanced to a depth interval of 45 to 50 feet below the water table to obtain a third sample. All purge water was contained in 55-gallon drums for subsequent removal from the site.

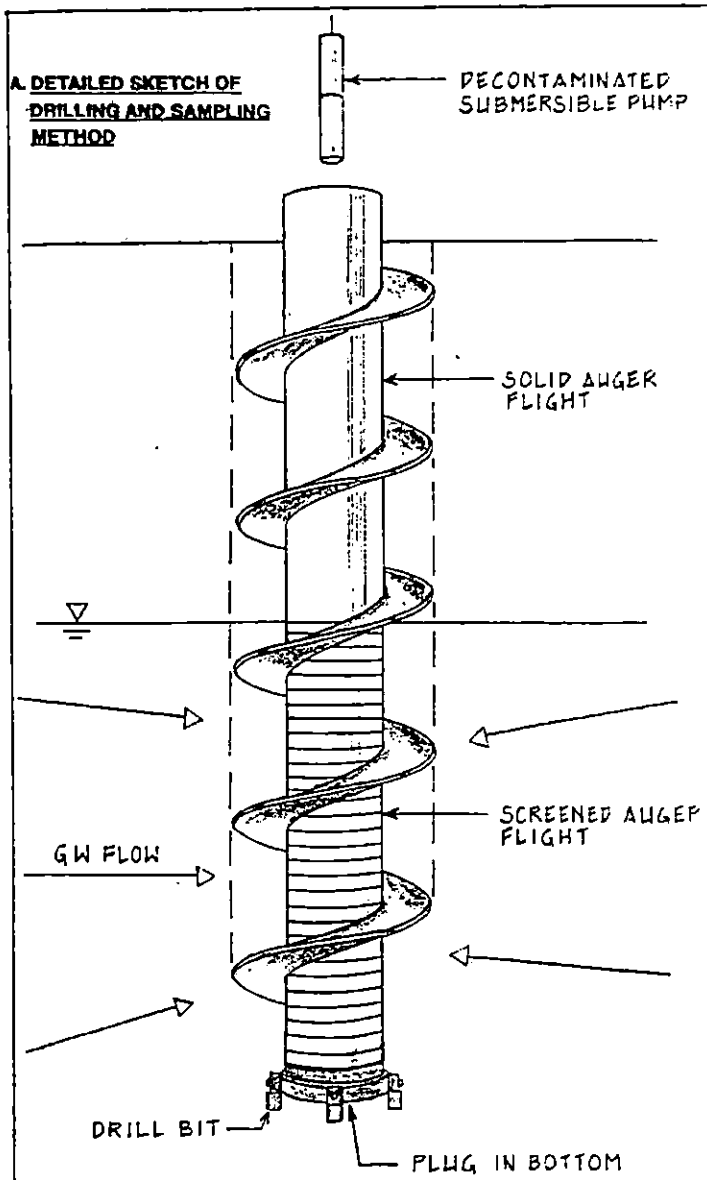
The sample obtained from each depth interval consisted of the filling of three 40-ml vials with teflon septums: two of the vials were filled to zero headspace, capped, labeled, and placed in the

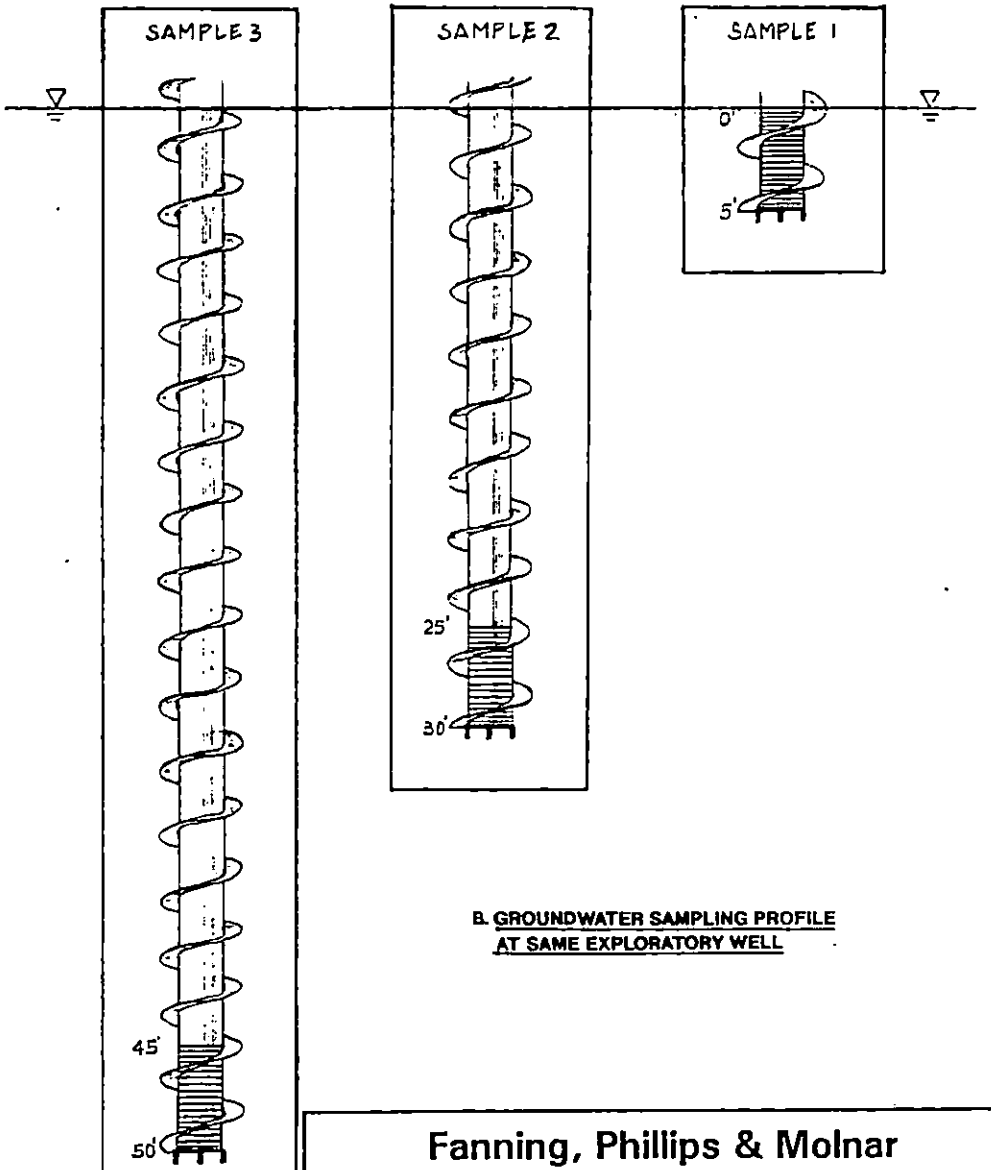


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FIGURE 3.1
EXPLORATORY BORING LOCATIONS

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B. GROUNDWATER SAMPLING PROFILE AT SAME EXPLORATORY WELL

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Engineers

FIGURE 3.2
SCHEMATIC OF EXPLORATORY WELL DRILLING AND SAMPLING

Drawn By: H.C	Checked By: P.D.	Date: 9/29/92

laboratory-supplied cooler at 4°C. The third vial was filled to the halfway mark. This half-filled vial was used for Level I field screening.

A groundwater sample from each of the three intervals was field screened with a Century 128 Organic Vapor Analyzer (OVA) in the gas chromatography (GC) mode with an attached strip chart to obtain hard copy of the GC peaks and retention times. To perform the field screening, each sealed half-filled vial was placed in a water bath and heated on a hot plate to a temperature of 150°F for approximately 15 minutes. The purpose of heating the sample was to cause the contaminants within the liquid to volatize into the vial's headspace where they could be field screened as an air sample.

The vial was removed from the bath and a clean hypodermic needle was used to pierce the vial's teflon septum and withdraw a sample of the headspace above the liquid in the vial. This sample was then injected into the OVA septum adaptor in the GC mode. However, this method was unsuccessful as the OVA exhibited "flameout" due, probably, to the high concentration of volatile organic compounds (VOCs) contained in the headspace aliquot. Therefore, since it was known that the major VOC comprising the sample was PCE, the OVA was used in the total OVA mode rather than the GC mode. Upon heating each vial, the caps were removed and the OVA intake was immediately placed in the headspace portion of the vial and the total organic vapor values were recorded.

Upon completion of the OVA field screening for each of the three depth intervals, the sample from the interval which exhibited the highest OVA reading was retained for laboratory analysis for target

compound list (TCL) VOCs. One sample was submitted for laboratory analysis from each borehole with the exception of boring E-5 for which two samples were submitted for analysis.

In addition to the organic vapor field screening, the groundwater from each depth interval at each boring location was also field screened to determine the specific conductivity of each interval. The depth interval at each boring location which exhibited the highest specific conductivity was retained and laboratory analyzed for total metals.

The results of all field screening and laboratory analyses will be presented in Section 4.0.

SECTION 4.0
FIELD INVESTIGATION/LABORATORY RESULTS AND INTERPRETATION

As described in the previous section, the field investigation entailed OVA field screening, submittal of samples for VOC analysis, and sampling for metals analysis for a cross-sectional area of the groundwater beneath this site and perpendicular to the groundwater flow direction.

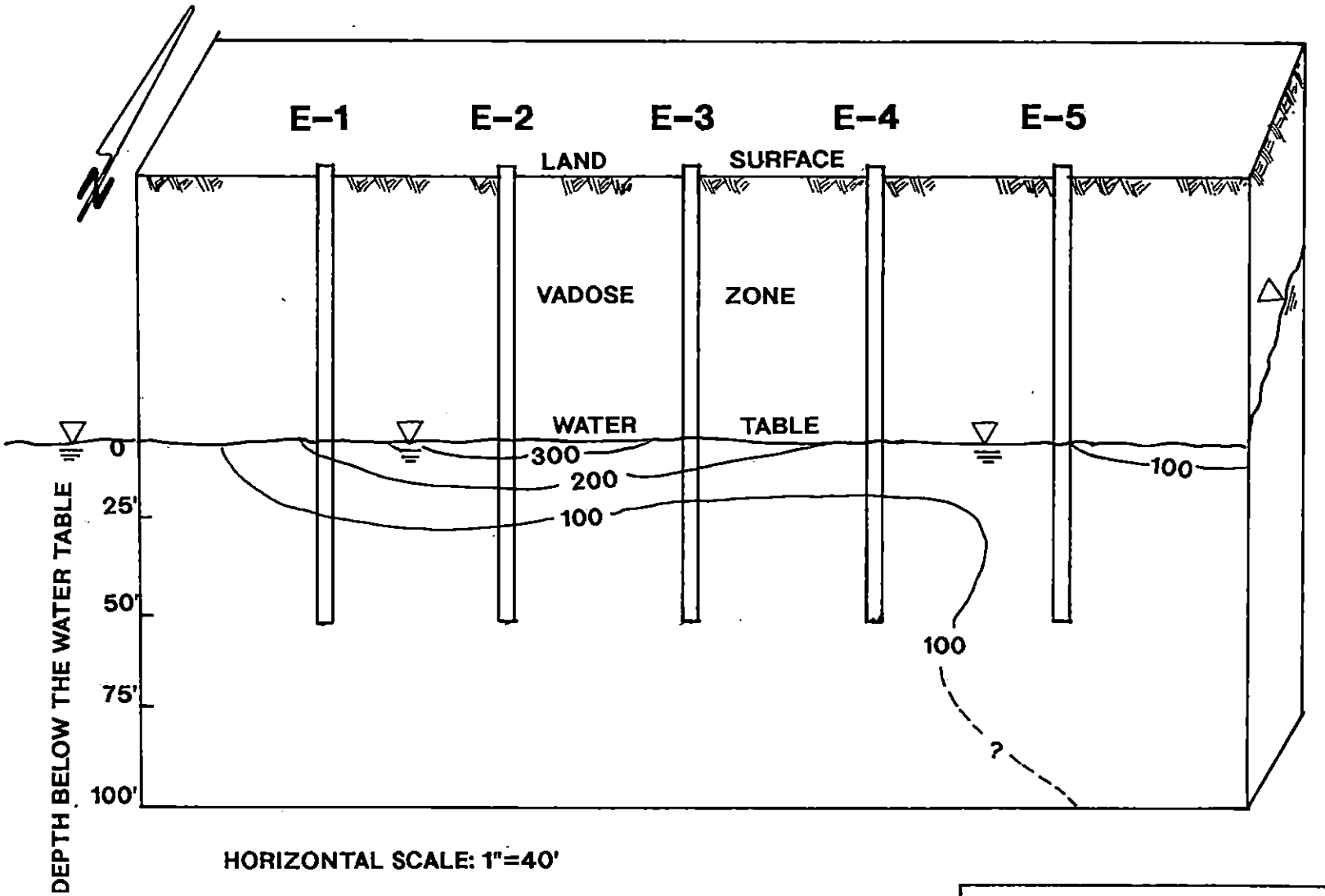
The results of the OVA field screening are presented in Table 4.1. The locations of the borings were presented previously in Figure 3.1. The results indicate that, in general, the concentration of contaminants is highest near the water table surface and decreases with depth. However, at boring E-5, and to a lesser extent, at boring E-4, the concentrations increase with depth which indicates a possible "secondary" plume and secondary source of contamination. The two highest OVA concentrations were detected at E-2 (0 to 5 feet) and E-3 (0 to 5 feet) which indicates that this area is in the central portion of the "primary" plume. The borings E-2 and E-3 are also directly downgradient of the suspected on-site source area (the west side of the building where the former PCE tanks existed).

Figure 4.1 presents an isopleth map of the width and vertical extent of contamination based on the OVA field screening. This figure shows that the horizontal width of the contamination extends beyond both ends of the line of borings. The figure also shows that the primary contaminant plume is centered in the area of boring E-2. The figure also suggests that in the vicinity of boring E-5, at depth, a secondary plume exists. This secondary plume appears to be located deeper than the primary plume. The vertical extent of the primary

TABLE 4.1
RESULTS OF OVA FIELD SCREENING
AT THE SANDS TEXTILE SITE
HAUPPAUGE, NEW YORK

	BORING LOCATION				
DEPTH INTERVAL	E-1	E-2	E-3	E-4	E-5
0 to 5 feet	240	400	270	190	100
25 to 30 feet	84	78	55	54	140
45 to 50 feet	34	18	45	72	150

mr25



HORIZONTAL SCALE: 1"=40'

LEGEND:

ISOPLETH INTERVAL IS 100 PPM

100 — ISOPLETH OF TOTAL OVA READINGS

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Engineers

FIGURE 4.1
CROSS-SECTIONAL ISOPLETH MAP OF ESTIMATED WIDTH & VERTICAL EXTENT OF CONTAMINATION

Drawn By: H.C	Checked By: P.D.	Date: 9/29/92

plume appears to be less than 100 feet beneath the water table based on the isopleth map and the rate of decrease in concentration with depth. The secondary plume's vertical extent is unknown.

To identify the volatile organic compounds present in the groundwater beneath the site, groundwater samples were submitted for laboratory analysis. One sample was selected for laboratory analysis from each borehole based on the highest OVA field screening reading. For borings E-1 through E-4, the highest OVA reading occurred at the shallowest depth interval (0 to 5 feet). However, at boring E-5, the OVA readings were increasing with depth. Therefore, two samples were submitted for this boring: at 0 to 5 feet and 45 to 50 feet. The second sample was obtained because the FP&M field hydrogeologist had indications that the increasing OVA concentration with depth suggested a possible secondary plume.

A summary of the results of the laboratory analyses are presented in Table 4.2. The laboratory report data are presented in Appendix B.

The results show that the main constituent in the groundwater at the site is PCE. The highest concentration of PCE was detected at boring E-3 (44,000 ug/l). There is a near-perfect symmetry in the PCE concentrations to either side of boring E-3. This seems to indicate that E-3 is the center line of the primary plume. Therefore, the source of the contamination appears to be directly upgradient of boring E-3. The west side of the building appears to be directly upgradient of boring E-3. However, since PCE is known to have been used and discharged upgradient of the Sands site, Pall and other off-site sources may be contributing to the primary plume. However, based on the comparison of PCE concentrations in the groundwater at the

TABLE 4.2
DETECTED ORGANIC COMPOUNDS IN GROUNDWATER DURING JUNE 1992
ANORAD CORPORATION
HAUPPAUGE, NEW YORK
(All results in ug/l)

	E1 (0-5')	E2 (0-5')	E3 (0-5')	E4 (0-5')	E5 (0-5')	E5 (45-50')	Field Blank	Trip Blank
Methylene Chloride	700DJ	1300J	1300BJ	1200J	1700J	1,200J	5J	U
1,2 Dichloroethene (total)	52	U	590E	700J	100	U	U	U
1,1,1-Trichloroethane	32	U	92	U	U	U	U	U
Carbon Tetrachloride	420E	U	310E	U	140	U	U	U
Trichloroethene (PCE)	88	U	470E	U	46J	U	U	U
Tetrachloroethene	12,000D	27,000	44,000	30,000	12,000	8,100	U	U
Chloroform	U	U	5J	U	U	U	U	U
Toluene	U	U	620BJ	U	U	U	U	U
Acetone	U	4200B	3300B	4400	4400B	5,800B	U	U
TENTATIVELY IDENTIFIED COMPOUNDS (ug/l)								
Freon 113	U	1,800JN	U	U	1300JN	2200JN	U	U
TOTAL VOCs	13,292	34,300	50,687	36,300	19,686	17,300	5	U

Notes:

U - Undetected
J - Estimate value due to concentration below mean detection limit
B - Detected in method blank
D - Concentration after dilution
E - Estimated value prior to dilution
N - Spiked sample recovery not within control limits. Value is estimated.

Undiluted detection limit was 10 ug/l with the exception of E-5 (0-5') when detection limit was 50 ug/l.

Total VOC concentration represents undiluted concentration except where a dilution was performed. In that case, the higher concentration was used. Results with a "B" flag are not included in the total VOC summation.

site, concentrations in the soils at the site, and concentrations in the groundwater upgradient, it appears that the majority of PCE in the on-site groundwater is emanating from past discharges from Sands.

Nine different VOCs and one tentatively identified compound were detected in the groundwater from the borings. Of these, three compounds are not known to have been used, stored, or detected in the soils on site. These compounds are methylene chloride (which has been detected in Pall wells at levels as high as 25,000 ug/l), carbon tetrachloride (detected at Pall wells at as high as 4,500 ug/l) and toluene (detected at Pall wells at as high as 27,000 ug/l). The combined concentrations of these three off-site-derived compounds represent an average of 6 percent of the contamination in the groundwater at the site. The highest ratio of these compounds was found at the E-5 (0 to 5 feet) boring (9.3 percent) and the lowest at E-4 (0 to 5 feet) boring (3.3 percent). However, it should be noted that these percentages do not include compounds that have upgradient as well as on-site sources (PCE, trichloroethane, and chloroform). Therefore, the percentage of upgradient contamination contribution to the on-site groundwater is likely to be higher than 6 percent.

PCE is the main constituent of the groundwater contamination at the site. For all boring samples, the average ratio of PCE to total VOCs is 74 percent. The highest ratio occurs at the E-1 (0 to 5 feet) boring (90.0 percent) and the lowest at the E-5 (45 to 50 feet) boring (46.8 percent).

Five metals samples were obtained at one depth interval for each of the five borings. The depth interval for metals analysis was selected based upon the highest specific conductivity reading of the

these depth intervals. The samples submitted for laboratory analysis were the 45 to 50 foot interval for borings E-1, E-2, and E-3, and at 0 to 5 feet for borings E-4 and E-5. The samples for metals were submitted whole and unfiltered to the laboratory. The metals selected (cadmium, chromium, copper, lead, silver, and zinc) were based on known upgradient discharges to the soils and groundwater.

The results of the metals analysis are presented in Table 4.3. These results show that of the six metals sampled for, four were detected: chromium, copper, lead, and zinc. All four of these metals were detected at levels above the NYS Class GA standards. Since neither Sands nor Anorad has ever been known to have used, stored or discharged these metals, it appears that the sources of the metals in the groundwater at the Sands site have an upgradient source. In Subsection 1.1, Fanning, Phillips and Molnar identified four upgradient PRPs for the metals contamination. Based on the results of the sampling, United Guardian, Computer Circuits, and EMR Circuits are PRPs for these metals. Time Electronics is not considered a PRP at this time due to discharges of only cadmium and silver which were not detected in the groundwater beneath the Sands site.

TABLE 4.3
DETECTED METALS IN GROUNDWATER DURING JUNE 1992
ANORAD CORPORATION
HAUPPAUGE, NEW YORK

(All results in ug/l)

METALS	E1 (45-50')	E2 (45-50')	E3 (45-50')	E4 (0-5')	E5 (0-5')	Field Blank	NYS Class "GA" Standards
Cadmium	U	U	U	U	U	U	10
Chromium	41.4	83.5	97.0	159.0	39.7	U	50
Copper	141.0	179.0	158.0	249.0	28.4	U	200
Lead	61.7	60.3	57.5	90.2	20.7 S	U	25
Silver	U	U	U	U	U	U	50
Zinc	1050 I	1260 I	1210 I	595 I	352 I	U	300

Notes:

U - Undetected

N - Spiked sample recovery not within control limits

S - The reported value was determined by Method of Standard Addition (MSA)

I - The reported value is estimated because of the presence of interference

☐ - Boxed results show exceedance of NYS Class "GA" Groundwater Standards.

ll\mr25

SECTION 5.0
QUALITY ASSURANCE/QUALITY CONTROL

Quality Assurance/Quality Control (QA/QC) measures were instituted during the field investigation to insure the integrity of the samples.

During the well installation, all QA/QC procedures described in the RI work plan were adhered to. These measures included:

- Steam cleaning of augers and all downhole equipment prior to use at each boring.
- The submersible pump used to purge the groundwater was decontaminated prior to use at each borehole and at each borehole interval by running the pump in a 55-gallon drum of Liquinox and potable water followed by a 55-gallon drum of potable water.
- A teflon, bottom-loading bailer was used to obtain all groundwater samples. The bailer was decontaminated by the following USEPA-approved method:
    1. Non-phosphate detergent and potable water wash
    2. Potable water rinse
    3. 10% Nitric acid rinse (if metals are to be sampled)
    4. Potable water rinse
    5. Methanol rinse followed by hexane
    6. Distilled water rinse
    7. Air dryo The Century 128 OVA was calibrated to a 90 ppm standard of methane prior to use at the site.
- All samples which were to be retained for analysis were placed in a cooler with ice packs to maintain a temperature of 4°C.
- A Chain-of Custody form was completed for each change in custody

and submitted to the laboratory along with the samples (see Appendix C for Chain-of-Custody forms).

A field blank was prepared by pouring laboratory-supplied deionized water over the decontaminated bailer and capturing the water in the appropriate sample container. The results of the field blank showed that methylene chloride was detected in the field blank at a concentration of 5 ug/l. This concentration is estimated as it is below the mean detection limit. Since the average concentration of methylene chloride detected in the groundwater was 1233 ug/l, the field blank represents an insignificant potential cross contamination. No metals were detected in the field blank.

A trip blank accompanied the samples in the cooler at all times. No VOCs were detected in the trip blank.

A data validator, Data Validation Services of North Creek, New York, was contracted to validate the CLP data packages. The data validation report is presented in Appendix D. Six field samples, a field blank, a trip blank, a matrix spike, and a matrix spike duplicate were evaluated for VOCs. Five field samples, a field blank, a matrix spike and a matrix spike duplicate were analyzed for six selected metals.

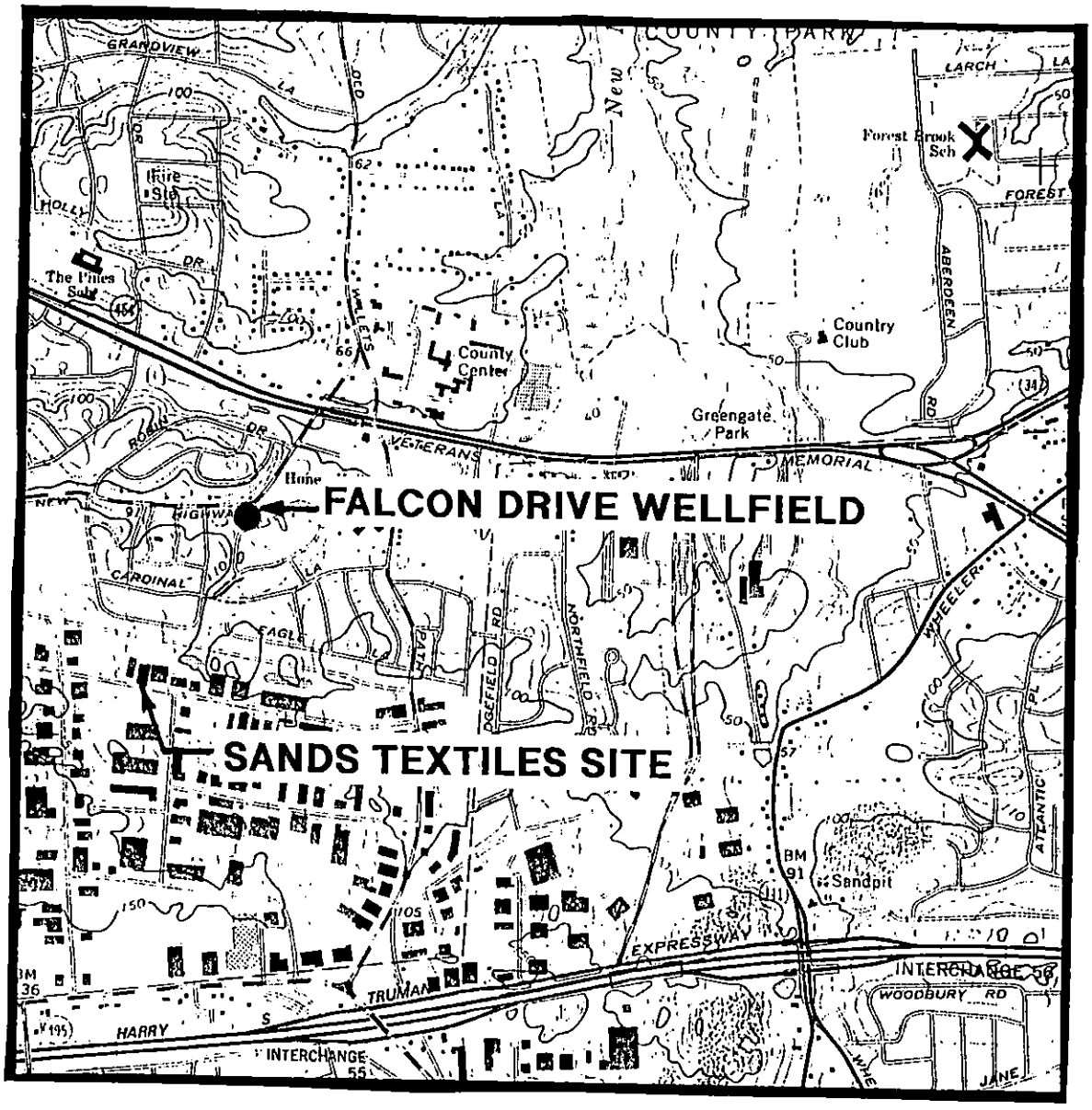
The results show that all VOC data are valid for all criteria. For the metals, all data are valid with the exception of the matrix spike for sample E-5 (0 to 5 feet) which was recovered at 62.9 percent (control limit is 75 percent). Therefore, this silver value is estimated.

SECTION 6.0
PUBLIC WATER SUPPLY

Public supply wells were evaluated with respect to potential contamination of water supply related to contamination of the Sands site. The nearest downgradient public supply well to the Sands site is the Falcon Drive wellfield (see Figure 6.1 for location of wellfield). This wellfield is located 2100 feet to the north-northeast of the Sands site.

The Falcon Drive wellfield consists of two wells: Well #1 (S-14326) is 225 feet deep and has an authorized capacity of 1,400 gallons per minute (gpm); Well #2 (S-44774) is 293 feet deep and has an authorized capacity of 2,400 (gpm).

Water quality data for this wellfield was obtained from the SCDHS and a summary of the data is presented in Table 6.1. VOCs detected at both wells consist of low levels of 1,1,1-trichlorethane, trichlorethene, PCE, dichloroethene, and freon 113. The total VOC concentration at Well #1 during December, 1991 was 17 ug/l which consisted of freon 113 (9 ug/l), PCE (7 ug/l), and trichloroethane (1 ug/l). The Falcon Drive wellfield is presently receiving granular activated carbon treatment. No source or sources have been implicated in the contamination of the wellfield.



SCALE: 1:24,000

SOURCE: USGS

Fanning, Phillips & Molnar Engineers		
FIGURE 6.1 LOCATION OF FALCON DRIVE WELLFIELD		
Drawn By: H.C.	Checked By: P.D.	Date: 9/29/92

ILE 6.1
ALCON DRIVE WELLFIELD
nic Data)
ults in ug/l

3	10/83	1/84	8/84	6/85	5/86	10/86	1/87	6/90	9/90	3/91	7/91	12/91
	5.0	4.0	7.0	6.0	4.0	5.0	6.0	5.0	4.0	3.0	2.0	1.0
.0	<2.0	<2.0	<2.0	2.0	<1.0	<1.0	<1.0	<1.0	0.7	<1.0	0.6	<1.0
.0	<2.0	<2.0	5.0	6.0	5.0	5.0	4.0	5.0	11.0	5.0	8.0	7.0
.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	0.2	<1.0	<1.0	<1.0	<1.0
.0	<2.0	<2.0	<2.0	<2.0	1.0	2.0	3.0	7.0	12.0	16.0	7.0	9.0

6	8/86	1/87	4/87	8/87	12/87	2/88	5/88	2/89	10/89	7/90	9/90	6/91	10/91
.0	4.0	<1.0	5.0	4.0	3.0	3.0	4.0	2.0	3.0	0.6	0.7	<1.0	0.6
.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0
.0	<1.0	<1.0	<1.0	2.0	1.0	2.0	2.0	3.0	2.0	1.0	2.0	<1.0	2.0
.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
.0	<2.0	<1.0	6.0	5.0	5.0	4.0	5.0	3.0	7.0	9.0	10.0	8.0	8.0

SECTION 7.0
CONCLUSIONS AND RECOMMENDATIONS

Based on the information acquired for this report, the following is concluded.

- Anorad purchased the 100 Oser Avenue site from Vanderbilt Associates in September, 1985 after the SCDHS supervised a cleanup of the septic tank and open pits within the building. In May, 1989, PALL requested access to the Sands site to install wells to track the extent of the PALL plume. During the installations, contamination was detected in the vadose zone at the Sands site due mainly to the discharge of PCE by Sands.
- Anorad does not now or did it ever use PCE.
- Anorad contracted FP&M to perform an investigation of the groundwater plume including the possible upgradient sources.
- Six VOCs have been identified in the groundwater beneath the Sands site: methylene chloride, carbon tetrachloride, PCE, chloroform, trichloroethene, and toluene. Of these, methylene chloride, carbon tetrachloride, and toluene have never known to have been used, stored, or detected in the soils at Sands. PCE, chloroform, and trichloroethene have been detected both upgradient and in the vadose zone at the Sands site.
- The geology consists of upper glacial sediments to a depth of approximately 200 feet. This unit consists of mainly stratified sand and gravel. The Smithtown clay does not appear to exist beneath the site.
- The depth to groundwater at the site is approximately 70 feet.
- The site appears to be in a transition area between a deep flow

recharge zone and a discharge zone. The vertical component of flow is expected to be minor

- The regional horizontal flow direction is generally to the northeast. Site-specific groundwater flow direction has not been established by Fanning, Phillips and Molnar.
- Field screening of 15 groundwater samples from five borings (at three depth intervals from each boring) has indicated a primary plume ostensibly due mainly to contamination derived from the west side of the Sands building. A possible secondary plume was identified in the vicinity of borings E-4 and E-5. This secondary plume appears to occur at depth whereas the primary plume occurs primarily near the water table.
- Laboratory analysis for VOCs indicates that 74 percent of the contamination detected in the borings is due to PCE.
- A portion of the site contamination is likely to be due to upgradient sources, however, since both upgradient and on-site sources exist, no estimates of respective contribution can be made for these compounds at this time.
- Metals were analyzed to determine if metals are contributing to the on-site contamination. Chromium, copper, lead, and zinc were detected above NYS Class "GA" groundwater standards. Neither Sands nor Anorad is known to have ever used or discharged these metals. Therefore, an upgradient source for these metals is suspected. Three PRPs: United Guardian, Computer Circuits, and EMR Circuits were identified based on SCDHS file information which indicates that these metals were discharged at those sites.

- o No significant QA/QC problems are associated with the field and trip blanks. All VOC data was validated by the data validator.
- o The Falcon Drive wellfield is the nearest downgradient wellfield from the Sands site. This wellfield has experienced some contamination problems due to VOCs. No data is available at this time to determine the source of the contamination at the Falcon Drive wellfield.

7.2 Recommendations

Based on the information available at this time, it is concluded that the contaminants present at 100 Oser Avenue result from a combination of the following:

a. The migration of a plume or several plumes of contaminants from upgradient sources across the property; and

b. direct releases on to the property, which were the result of practices undertaken by the former tenant of the site, Sands Textiles.

Based on the information developed to date, the respective contribution of each of these sources to the overall problem have not been ascertained. However, no evidence suggests that Anorad has caused or contributed to the contamination.

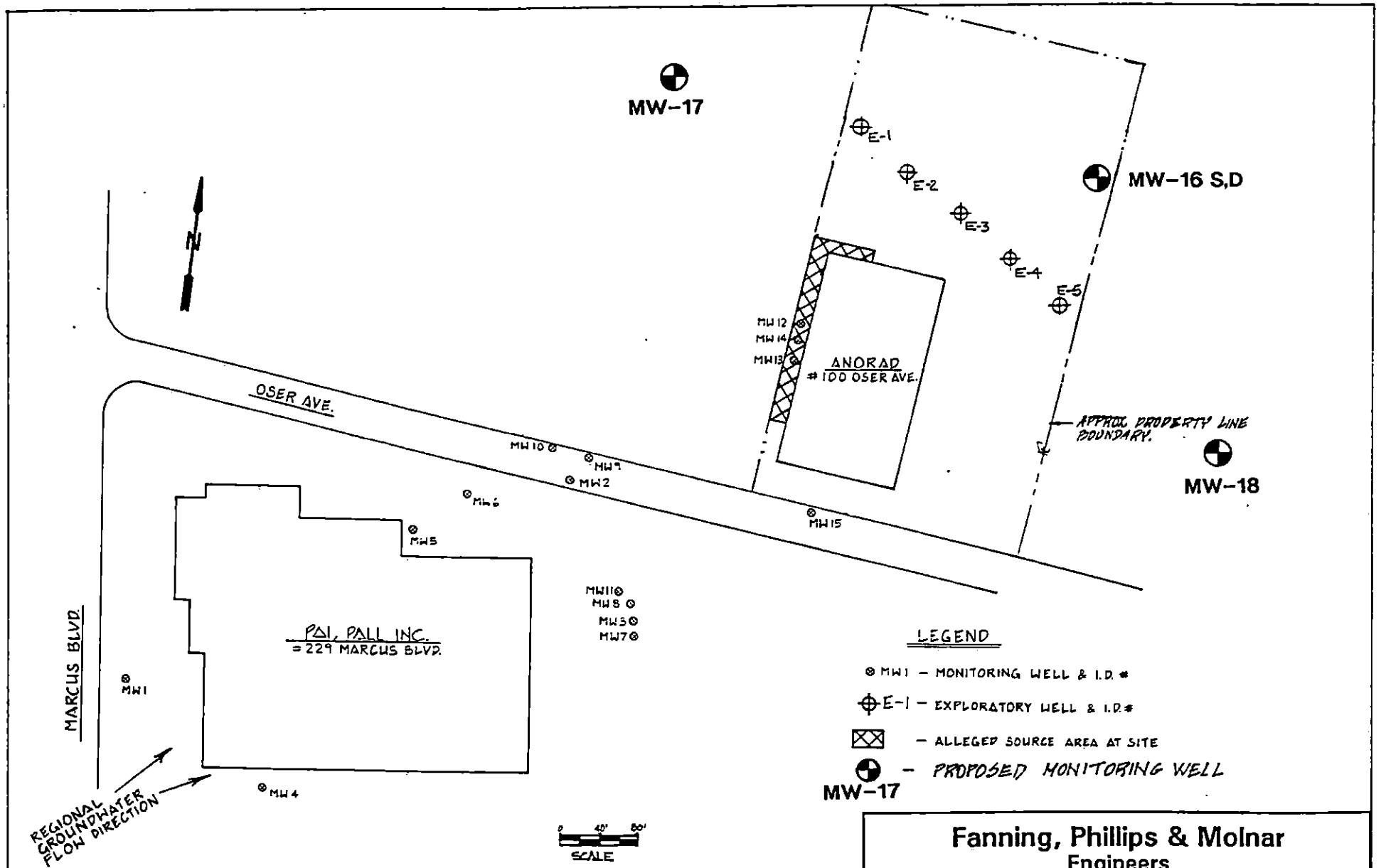
The results of our investigation have led to the identification of the following potentially responsible parties, who may have liability with respect to the release of hazardous substances at the 100 Oser Avenue site:

RAI/PALL
Sands
Vanderbilt Associates
United Guardian
Computer Circuits
EMR Circuits

Under these circumstances, it would be appropriate for the continuation of this project to be conducted by a group of potentially responsible parties. In this regard, Anorad has requested that the Suffolk County Department of Health Services assist in organizing the efforts of such a group.

Based on the characterization of the nature, width, and vertical extent of contamination in a cross-sectional area of the aquifer, the next step for this project will be to define the shape of the contaminant plume. This could allow for a determination of the placement and design of a recovery well (or wells) to begin the remediation of the groundwater.

To characterize the shape of the plume, and ultimately to determine the volume of the contaminated groundwater, FP&M proposes the installation of four additional groundwater monitoring wells. The location of three of these wells are presented in Figure 7.2.1. The fourth well location is presented in 7.2.2. Two wells depicted in Figure 7.2.1 should be used to determine the width of the plume. The cross-sectional area of contamination identified in this report showed that contamination exceeded the limit on either side of the line of borings. Therefore, well MW-17 should be installed approximately 150 to 200 feet west of boring E-1. MW-18 should be installed approximately 150-200 feet to the southwest of E-5. The property owner to the east of 100 Oser Avenue should be contacted for permission to install well MW-18. Anorad is the owner of the property on which MW-17 will be installed. These wells will be used to define the limits of the Sands plume by comparing concentrations and contaminant species to those detected in the cross-sectional area of



NOTE: WELL MW-19 (NOT SHOWN) WILL BE LOCATED APPROX. 1200' NORTHEAST OF SANDS SITE

Fanning, Phillips & Molnar
Engineers

FIGURE 7.2.1
PROPOSED WELL LOCATION AND SITE VICINITY MAP

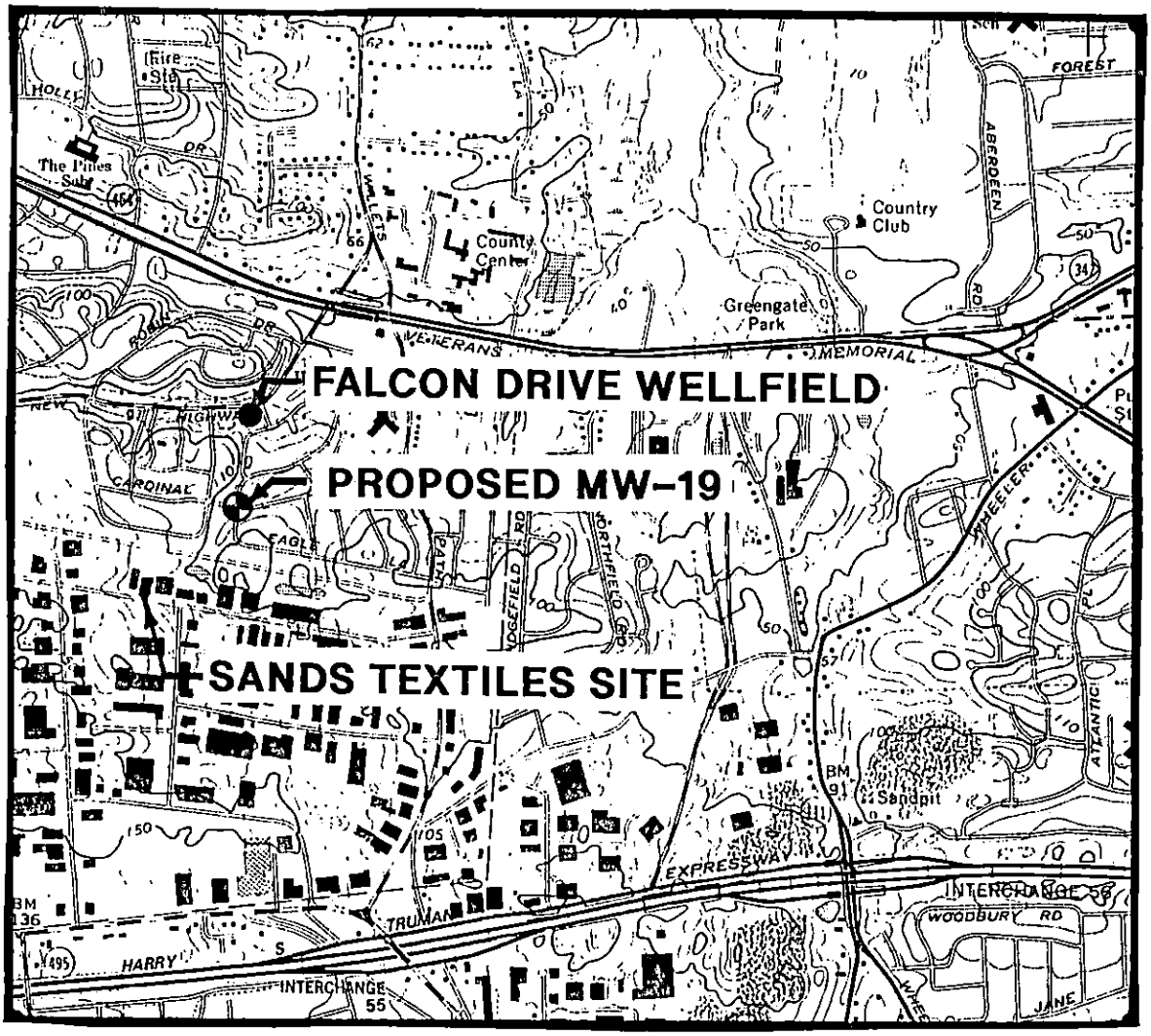
Drawn By: H.C	Checked By: P.D.	Date: 9/29/92

the Sands plume. Well MW-16D should be installed on the Sands site downgradient of the line of borings. This well should be installed as a deep well to act, in conjunction with the existing shallow well MW-16S, as paired piezometers. The purpose of these wells is twofold: 1) determine the vertical extent of contamination. This should be performed by installing MW-16D at a depth of 100 feet below the water table (total depth of the well from land surface should be approximately 170 feet). Comparison of shallow and deep concentrations and contaminant species should be used to determine the vertical extent of the Sands-derived contaminant plume; 2) determine the vertical component of flow to ascertain whether the site is in a deep-flow recharge zone or discharge zone. This should be performed by comparing head values in the shallow and deep wells.

The three proposed wells (MW-16D, MW-17, and MW-18) should be used to determine the cross-sectional contamination data necessary to interpolate plume width and vertical extent.

A fourth well should be installed downgradient at the intersection of Cardinal and Eagle Streets as shown previously in Figure 7.2.2. This well should be used to assist in determining the horizontal downgradient extent of the Sands-derived plume as well as determine potential impacts to the Falcon Drive wellfield. This well, MW-19, is to be installed approximately 1200 downgradient of the Sands site. The Falcon Drive wellfield is located approximately 2100 feet downgradient of the Sands site.

After the four wells are installed, the following work should be performed:



SCALE: 1:24,000

BASEMAP SOURCE: USGS

Fanning, Phillips & Molnar Engineers		
FIGURE 7.2.2 LOCATION OF PROPOSED DOWNGRADIENT WELL MW-19		
Drawn By:H.C.	Checked By:P.D.	Date:9/29/92

- Survey the elevations of wells MW-12, MW-13, MW-14, MW-16S, MW-16D, MW-17, MW-18, and MW-19 as well as upgradient wells MW-10, MW-9, and MW-15.
- Obtain depth-to-water measurements for all surveyed wells and construct a site-specific groundwater flow direction map as well as determine the vertical flow component from paired piezometers MW-16S and MW-16D.
- Perform slug testing to estimate hydraulic conductivity at 6 wells: MW-14, MW-16S, MW-16D, MW-17, MW-18, and MW-19. This information should be used to design the remediation system.
- Sample 8 wells: MW-9, MW-14, MW-15, MW-16S, MW-16D, MW-17, MW-18, and MW-19. This information may be used to determine the nature and extent of the Sands-derived plume as well as more accurately determine the percent contribution to the plume from upgradient sources. VOCs should be analyzed for all wells. Unfiltered select metals samples (chromium, copper, lead, and zinc) will be obtained for analysis from upgradient wells MW-9 and MW-15. The information obtained may provide evidence that the source of the metals at the Sands site is upgradient.
- If approved, a work plan should be generated for submittal to the SCDHS for the above-listed follow-up work. This work plan should include all methodologies to be followed. The results of the follow-up work may allow for the evaluation of Interim Remedial Measures and a Risk Assessment for the groundwater contamination beneath the Sands site.

APPENDIX A
FIELD REPORTS

FIELD REPORT
ANORAD
HAUPPAUGE, NEW YORK

DATE: Monday, June 15, 1992

PRESENT:

Peter Dermody	Fanning, Phillips and Molnar
Scott Stehlik	Fanning, Phillips and Molnar
Jeanne Brandewiede	Fanning, Phillips and Molnar
Rich Baumann	ADT
Jim Bitic	ADT
Sean Casey	ADT

WEATHER: 80°, Sunny

OBJECTIVE: To drill and obtain samples from testing location E-1 of work plan.

DETAILS:

Arrived on site at 8:00 a.m. and met drillers from ADT.

Peter Dermody, Scott Stehlik, and I determined the locations of the five borings. The drillers set up over location E-1 and began drilling at 9:30 a.m. A log of E-1 was obtained from a visual observation of the cuttings brought up by auger and is given in Table 1. OVA readings were taken at regular intervals, in accordance with the Health and Safety Plan as outlined in the Proposed Remedial Investigation. A summary of the OVA readings is given in Table 2.

At 11:00 a.m., the water table was encountered at a depth of 73.6'. The OVA reading taken at that depth in the auger was 0 ppm and drilling resumed to a depth of 78'. Eleven gallons of water (3 x the auger volume) were purged with a submersible pump E-1, 0-5' prior to sampling at that depth and samples were obtained with a decontaminated teflon bailer. Field tests for specific conductivity and a VOC screen were done as outlined in the workplan, the results are summarized in Table 3.

Drilling resumed at 11:15 a.m. At a depth of 103', drilling ceased in order to purge before taking samples E-1, 25'-30'. The drillers

began purging at 12:15 p.m. and were forced to stop pumping at 12:30 p.m. because of extremely slow recharge through the auger screen. The 55 gallon purge was completed at 3:15 p.m. and samples E-1, 25′-30′ were obtained.

At 4:00 p.m., the borehole reached a final depth of 123′. The drillers purged approximately 10 gallons, at which point the auger went dry. At 5:00 p.m., approximately 25-30 gallons of the proposed 110 gallon purge had been completed. Scott consulted with Peter at that point and it was decided that samples would be taken then. Sampling was completed at that depth (E-1, 45′-50′) at 5:30 p.m.

I left the site at 6:00 p.m. and returned to the office with the samples. They were kept under ice overnight. Scott remained at the site with the drillers who steam-cleaned the auger as it was withdrawn from the borehole. The auger cuttings were backfilled into the borehole and the top 2′-3′ of the hole was grouted. Scott left the site at 7:00 p.m.

Respectfully submitted,

Jeanne Brandewiede

Jeanne Brandewiede
Geohydrologist

JB:ss

ss176wp

TABLE 1
BOREHOLE LOG - LOCATION E-1

Depth (ft)	Geologic Material
0-3'	Brown medium to fine sand with some pebbles
3'-5'	Gray/black medium sand with trace pebbles
5'-12'	Brown medium sand
12'-30'	Brown medium sand with pebbles, some cobbles
30'-37'	Light brown medium sand
37'-78'	Brown medium sand with abundant pebbles
78'-123'	Light brown medium sand

ss176/p3

TABLE 2
OVA READINGS AT SELECTED INTERVALS FOR
BOREHOLE LOCATION E-1

Depth (ft)	Reading (ppm)		
	Auger Head	Cuttings	Breathing Zone
0	0	0	0
10'	0	0	0
22'	0	0	0
43'	0	0	0
52'	0	0	0
58'	0	0	0
73.6'	0	0	0
78'	0	0	0
87'	0	0	0
103'	0	0	0
113'	0	0	0
123'	0	0	0
* During auger withdrawal	0	0	0

TABLE 3
FIELD TESTS - LOCATION E-1

Depth (ft)	Specific Conductivity (μ)	OVA Screen (ppm)
0'-5'	252	240
25'-30'	278	84
45'-50'	305	34

ss176/p5

FIELD REPORT
ANORAD
HAUPPAUGE, NEW YORK

DATE: Tuesday, June 16, 1992

PRESENT:

Scott Stehlik	Fanning, Phillips and Molnar
Jeanne Brandewiede	Fanning, Phillips and Molnar
Rick Baumann	ADT
Jim Bitic	ADT
Chris	ADT

WEATHER: 80°, Sunny

OBJECTIVE: To drill and obtain samples as described in workplan at testing location E-3 and to drill to approximately 5′ above water table at E-2 in preparation for sampling at that location.

DETAILS:

Arrived on site at 7:45 a.m. and met all parties. Scott calibrated OVA to 90 ppm methane standard while the drillers set up over testing location E-3. Drilling commenced at 9:00 a.m.

OVA readings were taken at regular intervals, as set forth in the workplan, and are summarized in Table 1. Additionally, a borehole log was kept for the duration of drilling. Results are given in Table 2.

The water table was encountered at a depth of 69′ at 10:40 a.m. At that point, the drillers steam-cleaned the surge block used to clear the auger screen in preparation for purging at depth 0-5′. (It had been ascertained that the delay in purging the previous day had been caused by clogging in the screen.)

Drilling resumed to a depth of 72′ and eleven gallons were purged at 10:55 a.m. We obtained samples E-3, 0-5′ at 11:10 a.m. and completed field tests of specific conductivity and the VOC screen. [See Table 3 for results of all field tests and VOC screens.]

At 98′, the drillers steam-cleaned the surge block and purged 55

gallons. Samples E-3, 25′-30′ were obtained and field tests completed at 11:50 a.m.

At 119′, the drillers again steam-cleaned the surge block. The 110 gallon purge was completed at 12:20 p.m. and we obtained samples E-3, 45′-50 at 12:35 p.m. The drillers began taking the auger out of the borehole at 12:50 p.m and steam-cleaned the auger as it was withdrawn. The hole was backfilled with auger cuttings and the top 2′-3′ grouted to grade.

At 2:15 p.m., the drillers began setting up over testing location E-2. It was decided that they would drill to a depth of approximately 60′-65′ in preparation for the next day's sampling. Scott and I prepared the field and trip blanks. I left the site at 3:00 p.m. to get ice for the samples and to bring them to the lab. I dropped the samples off at NYTEST, Inc. at 4:00 p.m. and obtained a copy of the Chain-of-Custody document.

Scott remained at the site to log borehole E-2. Drilling stopped at 3:45 p.m. at a depth of 67′. [See Tables 4 and 5 for OVA readings and borehole log for location E-2.]

Scott left the site at 4:00 p.m.

Respectfully submitted,

Jeanne Brandewiede

Jeanne Brandewiede
Geohydrologist

JB:ss

ss176wp

TABLE 1
OVA READINGS AT SELECTED INTERVALS FOR
BOREHOLE LOCATION E-3

Depth	Reading (ppm)		
	Auger Head	Cuttings	Breathing Zone
3'	0	0	0
8'	0	0	0
22'	0	0	0
47'	0	10	0
52'	0	0	0
57'	0	0	0
62'	0	2	0
66'	0	4	0
72'	0	5	0
91'	0	20	0
98'	0	0	0
113'	0	2	0
118'	0	0	0
* During auger withdrawal	0	0	0

ss176/p3

TABLE 2
BOREHOLE LOG - LOCATION E-3

Depth	Geologic Material
0-11'	Brown medium sand with abundant gravel, pebbles, and cobbles
11'-14'	Brown medium sand
14'-23'	Brown medium sand with pebbles, and cobbles
23'-26'	Gravel and pebbles with some medium sand
26'-58'	Brown medium sand with some gravel
58'-91'	Brown medium sand with large cobbles
91'-119'	Light brown medium-to-coarse sand

ss176/p4

TABLE 3
FIELD TESTS - LOCATION E-3

Depth (ft)	Specific Conductivity (μ)	OVA Screen (ppm)
0-5'	290	270
25'-30'	212	55
45'-50'	304	45

ss176/p5

TABLE 4
OVA READINGS SELECTED INTERVALS FOR BOREHOLE LOCATION E-2

Depth	Reading (ppm)		
	Auger Head	Cuttings	Breathing Zone
2'	0	0	0
17'	0	0	0
19'	0	0	0
32'	0	0	0
60'	0	3	0
67'	0	20	0

ss176/p6

TABLE 5
BOREHOLE LOG - LOCATION E-2

Depth (ft)	Geologic Material
0-14'	Brown medium sand
14'-17'	Brown medium sand with some gravel
17'-31'	Brown medium sand with cobbles
31'-40'	Brown medium sand with pebbles
40'-47	Brown medium sand with abundant gravel, some pebbles
47'-60'	Brown medium sand with some gravel and pebbles
60'-67'	Brown medium sand with some gravel

FIELD REPORT
ANORAD
HAUPPAUGE, NEW YORK

DATE: Wednesday, June 17, 1992

PRESENT:

Scott Stehlik	Fanning, Phillips and Molnar
Jeanne Brandewiede	Fanning, Phillips and Molnar
Rich Baumann	ADT
Jim Bitic	ADT
Sean Casey	ADT

WEATHER: 80°, Sunny

OBJECTIVE: To finish drilling and obtain samples from testing location E-2; to drill and obtain samples from location E-4.

DETAILS:

Arrived on site at 8:00 AM. and met all parties.

Location E-2 had already been drilled to a depth of 67′ (see Anorad Field Report for June 16, 1992). Drilling re-commenced at 8:30 AM and the water table was encountered at a depth of 69.5′ at 8:45 AM. The borehole was drilled to 74′ and the steam-cleaned surge block was used to clear the auger screen in preparation for purging. The drillers began purging at 9:05 AM, but the borehole went dry after 2-3 gallons had been extracted. We allowed the borehole to recover for twenty minutes and completed the 11 gallon purge at 9:25 AM. Samples E-2 0-5′ were obtained; see Table 1 for a summary of results.

Drilling resumed at 10:00 AM; at a depth of 99′ the drillers cleared the auger screen with the steam-cleaned surge block and completed the 55 gallon purge. We obtained samples E-2 25′-30′ and did field tests at 10:55 AM.

At 11:10 AM, the borehole reached a depth of 119′. The drillers steam-cleaned the surge block, cleared the auger screen, and purged 110

gallons. We obtained samples E-2 45′-50′ at 11:50 AM. The drillers began withdrawing the augers and steam-cleaned them as they were removed from the borehole. The borehole was backfilled with auger cuttings to 2′-3′ below grade and then grouted to grade.

The borehole log for location E-2 is given in Table 2, and a summary of OVA readings at selected intervals can be found in Table 3.

The drillers set up over E-4 and began drilling at 1:30 PM; the water table was encountered at 3:00 PM at a depth of 70′. The 11 gallon purge at 75′ was completed and samples E-4 0-5′ were taken at 3:30 PM. Samples E-4 25′-30′ were obtained at a depth of 100′ at 4:10 PM, after a 55 gallon purge; samples E-4 40′-50′ at a depth of 120′ at 5:30 PM after a 110 gallon purge. The driller began pulling the auger from the borehole, steam-cleaning it as it was withdrawn, and backfilled the borehole with auger cuttings at 2′-3′ below grade. The borehole was then grouted to grade.

I left the site at 6:00 PM to get ice for the samples and to return them to the office; Scott remained until 7:30 PM.

The results for all field tests for location E-4 are given in Table 4. The borehole log for E-4 is summarized in Table 5, and OVA readings for selected intervals are given in Table 6.

Respectfully submitted,

Jeanne Brandewiede

Jeanne Brandewiede
Geohydrologist

JB:dd

dd/ss176wp

TABLE 1
FIELD TESTS - LOCATION E-2

Depth (ft)	Specific Conductivity (μs)	OVA Screen (ppm)
0'-5'	270	400
25'-30'	220	78
45'-50'	305	18

dd/ss176/p1

TABLE 2
BOREHOLE LOG - LOCATION E-2

Depth (ft)	Geologic Material
67'-68'	Brown medium to fine sand with some pebbles
68'-70'	Medium gravel - almost no sand
70'-72'	Pebbles - no sand or gravel
72'-99'	Brown medium sand
99'-119'	Brown medium sand

dd/ss176/p2

TABLE 3
OVA READINGS AT SELECTED INTERVALS FOR
BOREHOLE LOCATION E-2

Depth (ft)	Reading (ppm)		
	Auger Head	Cuttings	Breathing Zone
74'	0	0	0
99'	40	0	0
112'	0	5	0
* During auger withdrawal	0	0	0

dd/ss176/p3

TABLE 4
FIELD TESTS - LOCATION E-4

Depth (ft)	Specific Conductivity (μs)	OVA Screen (ppm)
0'-5'	460	190
25'-30'	337	54
45'-50'	309	72

dd/ss176/p4

TABLE 5
BOREHOLE LOG - LOCATION E-4

Depth (ft)	Geologic Material
0-15'	Brown medium sand with some pebbles
15'-25'	Brown medium sand with abundant gravel, trace pebbles
25'-30'	Gravel, pebbles - almost no sand
30'-67'	Brown medium sand with abundant gravel
67'-120'	Brown medium sand

dd/ss176/p5

TABLE 6
OVA READINGS AT SELECTED INTERVALS FOR
BOREHOLE LOCATION E-4

Depth (ft)	Reading (ppm)		
	Auger Head	Cuttings	Breathing Zone
30'	0	0	0
70'	4	0	0
115'	0	0	0

dd/ss176/p6

FIELD REPORT
ANORAD
GROUNDWATER SAMPLING

DATE: Thursday, June 18, 1992

PRESENT:

Scott Stehlik	Fanning, Phillips and Molnar
Kevin Loyst	Fanning, Phillips and Molnar
Rich	Aquifer Drilling and Testing
Jim	Aquifer Drilling and Testing
Chris	Aquifer Drilling and Testing

WEATHER: 70°, Partly Sunny

OBJECTIVE: To obtain groundwater samples from E-5 and complete sealing of borings E-1 through E-5.

DETAILS:

Arrived on site at 8:30 AM.

Set-up over location E-5 and began drilling the boring with a slotted lead auger. OVA readings were obtained at depths of 20', 45', 75', and 120'. No OVA readings registered in the breathing zone at those depths.

For a log of soil boring refer to Table 1. The soil boring E-5 was drilled in the same manner as E1 through E4. Water was encountered at 69.5'. Upon reaching the groundwater, drilled 5 more feet and purged 11 gallons from the temporary well. Purged water was contained in 55 gallon drums. The groundwater sample of E-5 0-5' was tested for specific conductivity (430 μs) and VOCs. Two 40 ml vials (half filled) were placed in a H_20 bath at 150°F for 15 minutes. A headspace was then tested with an OVA. The concentration of total volatile organic compounds was 100 ppm. Continued drilling to 25'-30' into the water table and purged 55 gallons at this depth. At E-5 25'-30' specific conductivity-360 μs and VOC screen-140 ppm. Continued drilling to the 45'-50' depth and purged 110 gallons. E-5 45'-50' specific

conductivity-312 μs VOC screen-150 ppm.

After comparing the concentrations and specific conductivity from the 3 depths the 0-5' sample was kept for lab analysis for select metals and hexavalent chromium. The 0-5' and 45'-50' samples were kept for TCL VOC analysis as per EPA Method 624. All sampling apparatus was decontaminated as per USEPA protocol prior to and between sampling efforts.

Upon completion of the sampling Kevin Loyst was sent to the lab to deliver the samples. All sample bottles were labeled and a chain of custody was filled out appropriately. Supervised the auger withdrawal and no OVA readings registered in the breathing zone. All borings were cemented to grade. Cuttings from the groundwater table were returned to the bore hole. Other excess cuttings from the vadose zone were placed at the rear of the property. Moved all drums to the area next to the loading dock. Placed pylons and buckets around borings to discourage disturbance from Anorad personnel. Left the site at 3:00 PM.

Respectfully submitted,

Scott Stehlik
Geohydrologist

SS:dd

dd/191wp

TABLE 1
DRILLERS LOG - E-5

Depth (ft)	Geologic Material
0-20'	Brown, medium sand, abundant gravel, some pebbles
20'-30'	Brown, medium sand, pebble/gravel zone
30'-60'	Brown, medium sand, abundant gravel, some pebbles
60'-75'	Brown, medium sand, some gravel, groundwater at 69.5'
75'-120'	Light brown, medium - coarse sand, some gravel

dd/191

APPENDIX B
LABORATORY REPORT DATA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

E-10-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1293201

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6518

Level: (low/med) LOW Date Received: 06/16/92

% Moisture: not dec. ____ Date Analyzed: 06/24/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	52	
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	32	
56-23-5	Carbon Tetrachloride	420	E
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	88	
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	4300	E
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0000005

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA: E-10-5DL

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1293201

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6549

Level: (low/med) LOW Date Received: 06/16/92

% Moisture: not dec. ____ Date Analyzed: 06/25/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 200.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2000	U
74-83-9	Bromomethane	2000	U
75-01-4	Vinyl Chloride	2000	U
75-00-3	Chloroethane	2000	U
75-09-2	Methylene Chloride	700	DJ
67-64-1	Acetone	2000	U
75-15-0	Carbon Disulfide	2000	U
75-35-4	1,1-Dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
540-59-0	1,2-Dichloroethene (total)	2000	U
67-66-3	Chloroform	2000	U
107-06-2	1,2-Dichloroethane	2000	U
78-93-3	2-Butanone	2000	U
71-55-6	1,1,1-Trichloroethane	2000	U
56-23-5	Carbon Tetrachloride	2000	U
75-27-4	Bromodichloromethane	2000	U
78-87-5	1,2-Dichloropropane	2000	U
10061-01-5	cis-1,3-Dichloropropene	2000	U
79-01-6	Trichloroethene	2000	U
124-48-1	Dibromochloromethane	2000	U
79-00-5	1,1,2-Trichloroethane	2000	U
71-43-2	Benzene	2000	U
10061-02-6	trans-1,3-Dichloropropene	2000	U
75-25-2	Bromoform	2000	U
108-10-1	4-Methyl-2-Pentanone	2000	U
591-78-6	2-Hexanone	2000	U
127-18-4	Tetrachloroethene	12000	D
79-34-5	1,1,2,2-Tetrachloroethane	2000	U
108-88-3	Toluene	2000	U
108-90-7	Chlorobenzene	2000	U
100-41-4	Ethylbenzene	2000	U
100-42-5	Styrene	2000	U
1330-20-7	Xylene (total)	2000	U

0000007

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

E-20-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297201

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6565

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2500	U
74-83-9	Bromomethane	2500	U
75-01-4	Vinyl Chloride	2500	U
75-00-3	Chloroethane	2500	U
75-09-2	Methylene Chloride	1300	J
67-64-1	Acetone	4200	B
75-15-0	Carbon Disulfide	2500	U
75-35-4	1,1-Dichloroethene	2500	U
75-34-3	1,1-Dichloroethane	2500	U
540-59-0	1,2-Dichloroethene (total)	2500	U
67-66-3	Chloroform	2500	U
107-06-2	1,2-Dichloroethane	2500	U
78-93-3	2-Butanone	2500	U
71-55-6	1,1,1-Trichloroethane	2500	U
56-23-5	Carbon Tetrachloride	2500	U
75-27-4	Bromodichloromethane	2500	U
78-87-5	1,2-Dichloropropane	2500	U
10061-01-5	cis-1,3-Dichloropropene	2500	U
79-01-6	Trichloroethene	2500	U
124-48-1	Dibromochloromethane	2500	U
79-00-5	1,1,2-Trichloroethane	2500	U
71-43-2	Benzene	2500	U
10061-02-6	trans-1,3-Dichloropropene	2500	U
75-25-2	Bromoform	2500	U
108-10-1	4-Methyl-2-Pentanone	2500	U
591-78-6	2-Hexanone	2500	U
127-18-4	Tetrachloroethene	27000	
79-34-5	1,1,2,2-Tetrachloroethane	2500	U
108-88-3	Toluene	2500	U
108-90-7	Chlorobenzene	2500	U
100-41-4	Ethylbenzene	2500	U
100-42-5	Styrene	2500	U
1330-20-7	Xylene (total)	2500	U

0000009

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

E-20-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297201

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6565

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	76-13-1	FREON 113	13.10	1800	JN

0000010

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

E-30-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1293202

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6519

Level: (low/med) LOW Date Received: 06/16/92

% Moisture: not dec. ____ Date Analyzed: 06/24/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	72	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	590	E
67-66-3	Chloroform	5	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	92	
56-23-5	Carbon Tetrachloride	310	E
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	470	E
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5400	E
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	24	
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0000011

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA : E-30-5DL

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1293202

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6542

Level: (low/med) LOW Date Received: 06/16/92

% Moisture: not dec. ____ Date Analyzed: 06/25/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2500	U
74-83-9	Bromomethane	2500	U
75-01-4	Vinyl Chloride	2500	U
75-00-3	Chloroethane	2500	U
75-09-2	Methylene Chloride	1300	BDJ
67-64-1	Acetone	3300	BD
75-15-0	Carbon Disulfide	2500	U
75-35-4	1,1-Dichloroethene	2500	U
75-34-3	1,1-Dichloroethane	2500	U
540-59-0	1,2-Dichloroethene (total)	2500	U
67-66-3	Chloroform	2500	U
107-06-2	1,2-Dichloroethane	2500	U
78-93-3	2-Butanone	2500	U
71-55-6	1,1,1-Trichloroethane	2500	U
56-23-5	Carbon Tetrachloride	2500	U
75-27-4	Bromodichloromethane	2500	U
78-87-5	1,2-Dichloropropane	2500	U
10061-01-5	cis-1,3-Dichloropropene	2500	U
79-01-6	Trichloroethene	2500	U
124-48-1	Dibromochloromethane	2500	U
79-00-5	1,1,2-Trichloroethane	2500	U
71-43-2	Benzene	2500	U
10061-02-6	trans-1,3-Dichloropropene	2500	U
75-25-2	Bromoform	2500	U
108-10-1	4-Methyl-2-Pentanone	2500	U
591-78-6	2-Hexanone	2500	U
127-18-4	Tetrachloroethene	44000	D
79-34-5	1,1,2,2-Tetrachloroethane	2500	U
108-88-3	Toluene	620	BDJ
108-90-7	Chlorobenzene	2500	U
100-41-4	Ethylbenzene	2500	U
100-42-5	Styrene	2500	U
1330-20-7	Xylene (total)	2500	U

0000013

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

E-40-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297202

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6555

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/25/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2500	U
74-83-9	Bromomethane	2500	U
75-01-4	Vinyl Chloride	2500	U
75-00-3	Chloroethane	2500	U
75-09-2	Methylene Chloride	1200	J
67-64-1	Acetone	4400	
75-15-0	Carbon Disulfide	2500	U
75-35-4	1,1-Dichloroethene	2500	U
75-34-3	1,1-Dichloroethane	2500	U
540-59-0	1,2-Dichloroethene (total)	700	J
67-66-3	Chloroform	2500	U
107-06-2	1,2-Dichloroethane	2500	U
78-93-3	2-Butanone	2500	U
71-55-6	1,1,1-Trichloroethane	2500	U
56-23-5	Carbon Tetrachloride	2500	U
75-27-4	Bromodichloromethane	2500	U
78-87-5	1,2-Dichloropropane	2500	U
10061-01-5	cis-1,3-Dichloropropene	2500	U
79-01-6	Trichloroethene	2500	U
124-48-1	Dibromochloromethane	2500	U
79-00-5	1,1,2-Trichloroethane	2500	U
71-43-2	Benzene	2500	U
10061-02-6	trans-1,3-Dichloropropene	2500	U
75-25-2	Bromoform	2500	U
108-10-1	4-Methyl-2-Pentanone	2500	U
591-78-6	2-Hexanone	2500	U
127-18-4	Tetrachloroethene	30000	
79-34-5	1,1,2,2-Tetrachloroethane	2500	U
108-88-3	Toluene	2500	U
108-90-7	Chlorobenzene	2500	U
100-41-4	Ethylbenzene	2500	U
100-42-5	Styrene	2500	U
1330-20-7	Xylene (total)	2500	U

0000015

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

E-50-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297203

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6568

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl Chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene Chloride	23	J
67-64-1	Acetone	96	B
75-15-0	Carbon Disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	100	
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	140	
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	46	J
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-Pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	13000	E
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylene (total)	50	U

0000017

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

E-50-5

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297203

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6568

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	13.10	36	JN

0000018

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

E-50-5DL

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297203

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6575

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2500	U
74-83-9	Bromomethane	2500	U
75-01-4	Vinyl Chloride	2500	U
75-00-3	Chloroethane	2500	U
75-09-2	Methylene Chloride	1700	DJ
67-64-1	Acetone	4400	BD
75-15-0	Carbon Disulfide	2500	U
75-35-4	1,1-Dichloroethene	2500	U
75-34-3	1,1-Dichloroethane	2500	U
540-59-0	1,2-Dichloroethene (total)	2500	U
67-66-3	Chloroform	2500	U
107-06-2	1,2-Dichloroethane	2500	U
78-93-3	2-Butanone	2500	U
71-55-6	1,1,1-Trichloroethane	2500	U
56-23-5	Carbon Tetrachloride	2500	U
75-27-4	Bromodichloromethane	2500	U
78-87-5	1,2-Dichloropropane	2500	U
10061-01-5	cis-1,3-Dichloropropene	2500	U
79-01-6	Trichloroethene	2500	U
124-48-1	Dibromochloromethane	2500	U
79-00-5	1,1,2-Trichloroethane	2500	U
71-43-2	Benzene	2500	U
10061-02-6	trans-1,3-Dichloropropene	2500	U
75-25-2	Bromoform	2500	U
108-10-1	4-Methyl-2-Pentanone	2500	U
591-78-6	2-Hexanone	2500	U
127-18-4	Tetrachloroethene	12000	D
79-34-5	1,1,2,2-Tetrachloroethane	2500	U
108-88-3	Toluene	2500	U
108-90-7	Chlorobenzene	2500	U
100-41-4	Ethylbenzene	2500	U
100-42-5	Styrene	2500	U
1330-20-7	Xylene (total)	2500	U

0000019

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

E-50-5DL

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297203

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6575

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	13.10	1300	JN

0000020

1A

EPA

VOLATILE ORGANICS ANALYSIS DATA SHEET

E-545-50

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297206

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6566

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	2500	U
74-83-9	Bromomethane	2500	U
75-01-4	Vinyl Chloride	2500	U
75-00-3	Chloroethane	2500	U
75-09-2	Methylene Chloride	1200	J
67-64-1	Acetone	5800	B
75-15-0	Carbon Disulfide	2500	U
75-35-4	1,1-Dichloroethene	2500	U
75-34-3	1,1-Dichloroethane	2500	U
540-59-0	1,2-Dichloroethene (total)	2500	U
67-66-3	Chloroform	2500	U
107-06-2	1,2-Dichloroethane	2500	U
78-93-3	2-Butanone	2500	U
71-55-6	1,1,1-Trichloroethane	2500	U
56-23-5	Carbon Tetrachloride	2500	U
75-27-4	Bromodichloromethane	2500	U
78-87-5	1,2-Dichloropropane	2500	U
10061-01-5	cis-1,3-Dichloropropene	2500	U
79-01-6	Trichloroethene	2500	U
124-48-1	Dibromochloromethane	2500	U
79-00-5	1,1,2-Trichloroethane	2500	U
71-43-2	Benzene	2500	U
10061-02-6	trans-1,3-Dichloropropene	2500	U
75-25-2	Bromoform	2500	U
108-10-1	4-Methyl-2-Pentanone	2500	U
591-78-6	2-Hexanone	2500	U
127-18-4	Tetrachloroethene	8100	
79-34-5	1,1,2,2-Tetrachloroethane	2500	U
108-88-3	Toluene	2500	U
108-90-7	Chlorobenzene	2500	U
100-41-4	Ethylbenzene	2500	U
100-42-5	Styrene	2500	U
1330-20-7	Xylene (total)	2500	U

0000021

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

E-545-50

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1297206

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6566

Level: (low/med) LOW Date Received: 06/18/92

% Moisture: not dec. ____ Date Analyzed: 06/26/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 250.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	13.10	2200	JN

0000022

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1293205

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6512

Level: (low/med) LOW Date Received: 06/16/92

% Moisture: not dec. ____ Date Analyzed: 06/23/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0000023

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 9885 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1293206

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: E6511

Level: (low/med) LOW Date Received: 06/16/92

% Moisture: not dec. ____ Date Analyzed: 06/23/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0000025

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

E14550

Lab Name: Nytest Environmental Inc. Contract: 9219130

Lab Code: 10195 Case No.: 12932 SAS No.: SDG No.: SDG675

Matrix (soil/water): WATER Lab Sample ID: 932-03

Level (low/med): LOW Date Received: 06/16/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	4.8	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	41.4			P
7440-48-4	Cobalt				
7440-50-8	Copper	141			P
7439-89-6	Iron				
7439-92-1	Lead	61.7			F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	9.3	U	N	P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc	1050		E	P
	Cyanide				

Color Before: ORANGE Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
E-1-45'-50'

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

AMPLE NO.

E24550

ab Name: Nytest Environmental Inc. Contract: 9219130

ab Code: 10195 Case No.: 12932 SAS No.: SDG No.: SDG675

atrix (soil/water): WATER Lab Sample ID: 972-07

Level (low/med): LOW Date Received: 06/18/92

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	4.8	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	83.5			P
7440-48-4	Cobalt				
7440-50-8	Copper	179			P
7439-89-6	Iron				
7439-92-1	Lead	60.3			F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	9.3	U	N	P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc	1260		E	P
	Cyanide				

r Before: ORANGE Clarity Before: CLOUDY Texture:

r After: COLORLESS Clarity After: CLEAR Artifacts:

mments:
-2 45-50

U.S. EPA - CLP

EPA SAMPLE NO.

1
INORGANIC ANALYSIS DATA SHEET

E34550

Lab Name: NYTEST ENVIRONMENTAL INC. Contract: 9219130

Lab Code: 10195 Case No.: 12932 SAS No.: SDG No.: SDG675

Matrix (soil/water): WATER Lab Sample ID: 932-04

Level (low/med): LOW Date Received: 06/16/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	4.8	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	97.0			P
7440-48-4	Cobalt				
7440-50-8	Copper	158			P
7439-89-6	Iron				
7439-92-1	Lead	57.5			F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	9.3	U		P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc	1210		E	P
	Cyanide				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

E405XX

ıb Name: Nytest Environmental Inc. Contract: 9219130

Lab Code: 10195 Case No.: 12932 SAS No.: SDG No.: SDG675

trix (soil/water): WATER Lab Sample ID: 972-08

Level (low/med): LOW Date Received: 06/18/92

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	4.8	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	159			P
7440-48-4	Cobalt				
7440-50-8	Copper	249			P
7439-89-6	Iron				
7439-92-1	Lead	90.2			F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	9.3	U	N	P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc	595		E	P
	Cyanide				

.or Before: BROWN Clarity Before: CLOUDY Texture:

.(After: COLORLESS Clarity After: CLEAR Artifacts:

ıments:
I 4 0-5

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

E505XX

Lab Name: Nytest Environmental Inc. Contract: 9219130

Lab Code: 10195 Case No.: 12932 SAS No.: SDG No.: SDG675

Matrix (soil/water): WATER Lab Sample ID: 972-09

Level (low/med): LOW Date Received: 06/18/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	4.8	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	39.7			P
7440-48-4	Cobalt				
7440-50-8	Copper	28.4			P
7439-89-6	Iron				
7439-92-1	Lead	20.7		S	F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	9.3	U	N	P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc	352		E	P
	Cyanide				

Color Before: P.YELLOW Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
0-5 0-5

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

FBLANK

ab Name: NYTEST ENVIRONMENTAL INC. Contract: 9219130

Lab Code: 10195 Case No.: 12932 SAS No.: SDG No.: SDG675

atrix (soil/water): WATER Lab Sample ID: 932-05

evel (low/med): LOW Date Received: 06/16/92

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium	4.8	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	6.5	U		P
7440-48-4	Cobalt				
7440-50-8	Copper	6.4	U		P
7439-89-6	Iron				
7439-92-1	Lead	3.0	U		F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver	9.3	U		P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc	4.3	U	E	P
	Cyanide				

olor Before: COLORLESS Clarity Before: CLEAR Texture:

lor After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

APPENDIX C
CHAIN-OF-CUSTODY FORMS

TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc

CHAIN OF CUSTODY RECORD

Page ____ of ____

SHIP TO: Nytest Environmental Inc.
60 Seaview Blvd.
Port Washington, NY 11050
(516) 625-5500
Attn. _____

REPORT TO: Client Name Fanning Phillips + Molnar
Address 909 Marconi Blvd
Ronkonkoma, NY 11779
Phone 737-6200
Attn. Peter Dermody

Project No.	Project Name Amerada	Date Shipped 6/16/92	Carrier
Sampler: (Signature) [illegible]	Analytical Protocol EPA CLP Package	Air Bill No.	Cooler No.

Sample I.D.	Date/Time Sampled		Sample Description	No. Of Containers	ANALYSIS REQUESTED
E-1	6/15/92	Noon	C-5'	2	TCL VOC EPA 624
E-1	6/15/92	5P	45'-50'	1	metals: Cd, Pb, Cu, Cr, Zn, Ag
E-1	6/15/92	5P	45-50'	1	Cr+6
E-3	6/16/92	11A	C-5'	2	TCL VOC EPA 624
E-3	"	12:30P	45'-50'	1	metals: Cd, Pb, Cu, Cr, Zn, Ag
E-3	"	"	"	1	Cr+6
FB	"	1:30P	Field Blank	2	TCL VOC 624
FB				1	metals as above
				1	Cr+6
TB			Trip Blank	2	TCL VOC 624

Relinquished by (Signature)	Date	Time	Rec'd By (Signature)	Date	Time
Print Name			Print Name		
Relinquished by (Signature)	Date	Time	Rec'd by (Signature)	Date	Time
Print Name			Print Name		
Relinquished by (Signature) Jeanne Brandewiede	Date 6-16-92	Time 16:00	Received for Laboratory by (Signature) [illegible]	Date 6/16/92	Time 16:00
Print Name Jeanne Brandewiede			Print Name Robert Fletcher		

Special Instructions/Comments CLP Package

0000348

TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc

CHAIN OF CUSTODY RECORD

Page ____ of ____

SHIP TO: Nytest Environmental Inc.
60 Seaview Blvd.
Port Washington, NY 11050
(516) 625-5500
Attn. ____

REPORT TO: Client Name Fanning, Phillips & Molnar
Address 909 Marconi Ave
Ronkonkoma, NY 11779
Phone 737-6200
Attn. Peter Dermody

Project No.	Project Name	Date Shipped	Carrier
180-92-08	Anorad	6/18/92	
Sampler: (Signature)	**Analytical Protocol**	**Air Bill No.**	**Cooler No.**
Scott Stahlik	CLP Package		

Sample I.D.	Date Sampled	Time Sampled	Sample Description	No. Of Containers	ANALYSIS REQUESTED
E-2 0-5'	6/17	930A	0-5' GW	2	TCL VOC EPA 624
E-4 0-5'	6/17	1600	0-5' GW	2	
E-5 0-5'	6/18	1000A	0-5 GW	2	
E-5 0-5' MS	6/18	1000A	Matrix Spike	2	
E-5 0-5' MSD	6/18	1000A	Matrix Spike Duplicate	2	
E-5 45-50	6/18	1135	45-50'	2	
E-2 45-50	6/17	1145	45-50'	1	Metals: Cd, Pb, Cu, Cr, Zn, Ag
E-2 45-50	6/17	1145	45-50'	1	Cr+6
E-4 0-5'	6/17	1500	0-5'	1	metals As Above
E-4 0-5	6/17	1500	0-5'	1	Cr+6
E-5 0-5	6/18	1000A	0-5'	1	metals As Above
E-5 0-5'	6/18	1000A	0-5'	1	Cr+6

Relinquished by (Signature)	Date	Time	Rec'd By (Signature)	Date	Time
Print Name			Print Name		
Relinquished by (Signature)	Date	Time	Rec'd by (Signature)	Date	Time
Print Name			Print Name		
Relinquished by (Signature)	Date	Time	Received for Laboratory by (Signature)	Date	Time
Print Name KEVIN LOYST	6/18/92	15:00	Print Name PATRICK ALVAREZ	6/18	1500

Special Instructions/Comments EPA CLP Package

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APPENDIX D
DATA VALIDATION REPORT

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Fanning, Phillips & Molnar

FROM: Judy Harry, Data Validation Services J Harry

DATE: 8-20-92

RE: Validation Report for Anorad Site data packages
Nytest Environmental Login Nos. 12932 and 12972

Review has been completed for the data packages pertaining to samples collected at the Anorad Site, and processed by Nytest Environmental, Inc. Six field samples, field and trip blanks, and matrix spikes were analysed for CLP volatiles. Five field samples, a field blank, and matrix spikes were processed for six elements (silver, cadmium, chromium, copper, lead, and zinc) and hexavalent chromium. EPA SOWs 2/88 and 3/90 methodologies were utilized.

In summary, the data was generated in compliance with the protocol, and reported values are substantiated by the raw data. Laboratory data packages were complete, and no resubmissions were required. Attached to this narrative is a summary compliancy chart, and copies of laboratory case narratives and analysis/preparation summary forms.

Specific quality concerns are outlined in the sections below:

VOLATILE ANALYSES

Holding times, surrogate recoveries, method blank, and instrumental tune protocol requirements were all met for sample processing.

Matrix spikes were performed on sample E-5 (0-5'), and resultant recoveries and correlation values were within recommended limits. Initial and continuing calibration standards met all required protocol criteria.

Sample reported quantitative values and identifications were supported by raw data area determinations and spectra.

METALS ANALYSES

All quality control requirements associated with sample processing were reviewed, and found to be acceptable and compliant with protocol.

Matrix spike and matrix duplicate analyses were performed on samples E-5 (0-5') and E-3 (45-50'). All duplicate correlations were within control limits. Matrix spikes were within recommended limits, with the exception of the recovery of silver in sample E-5 (0-5'), which recovered at 62.9% (control limit is 75%). This can imply a consideration of silver reported detection limits as estimated. The silver spike recovery in sample E-3 (45-50') was acceptable, at 78%.

Sample reported values, as well as those of associated QC samples, were substantiated by the raw data.

HEXAVALENT CHROMIUM ANALYSES

Holding times, standard calibration and recovery, and system/method blank criteria were all met for sample processing. Sample reported results are supported by the raw data.

Matrix spikes were performed on samples E-5 (0-5') and E-4 (0-5'). The spike recoveries for E-5 (0-5') were both 100%. The spike recoveries for E-4 (0-5') were only 45.7% and 42.7%, implying a low bias to the reported detection limits for associated samples (E-2 (45-50'), E-4 (0-5'), and E-5 (0-5')).

COMPLIANCY CHART

Project: Anorad Site
Fanning, Phillips & Molnar

SDG Nos: Nytest Environmental Login Nos 12932 and 12972

Protocol: EPA SOWs 3/90 and 2/88

RecDate	Sample ID	Matrix	CLP VOA	CLP Metals*	HexCr	Noncompliancy
06-16-92	E-1 (0-5')	Aqueous	OK	NR	NR	
06-16-92	E-1 (45-50')	Aqueous	NR	OK	OK	
06-18-92	E-2 (0-5')	Aqueous	OK	NR	NR	
06-18-92	E-2 (45-50')	Aqueous	NR	OK	OK	
06-16-92	E-3 (0-5')	Aqueous	OK	NR	NR	
06-16-92	E-3 (45-50')	Aqueous	NR	OK	OK	
06-18-92	E-4 (0-5')	Aqueous	OK	OK	OK	
06-18-92	E-5 (0-5')	Aqueous	OK	OK	OK	
06-18-92	E-5 (45-50')	Aqueous	OK	NR	NR	
06-16-92	Field Blank	Aqueous	OK	OK	OK	
06-16-92	Trip Blank	Aqueous	OK	NR	NR	

* Metals include Ag, Cd, Cr, Cu, Pb, and Zn

nytest environmental inc.

SDG Narrative

Log In No.: 12932, 12972

VOLATILE FRACTION

System Monitoring Compounds

All recoveries were within QC limits.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Sample E-50-5 was utilized for the MS/MSD. All spike recoveries and RPD's were within QC limits.

Method Blanks

Methylene Chloride, Acetone and Toluene were detected in VBLKE57 at concentrations within QC limits. No target compounds were detected in VBLKE55 or VBLKE56. Acetone was detected in VBLKE59 and VBLKE60 at a concentration within QC limits.

Calibrations

The initial and continuing calibrations passed QC criteria.

Internal Standards

All retention times and area responses were within QC limits.

Samples

Due to a high target compound concentration found in some samples, those samples were diluted. Samples E-50-5, E-50-5MS and E-50-5MSD were run at a 1:5 dilution. Sample E-10-5DL was run at a 1:200 dilution. Samples E-30-5DL, E-40-5, E-20-5, E-545-50 and E-50-5DL were run at 1:250 dilutions. All samples were analyzed as per EPA CLP (3/90). No analytical problems were encountered.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Douglas Sheeley

NON-CONFORMANCE SUMMARY
(Case Narrative)

Login No.: 12932

The sample was analyzed according to the required protocols.

Please Note:

Sample E34550 and the Field Blank were digested on a different date from the other samples. They were also analyzed at a later time. All raw data pertinent to these samples (and the other samples) are provided with this report.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

INORGANIC ANALYSES

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
E14550	WATER	Ag, Cd, Cr, Cu, Pb, Zn	6-18-92	7-9-92	7-13-92
E24550	↓	↓	6-16-92	7-9-92	↓
E405XX	↓	↓	↓	↓	↓
E505XX	↓	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSES

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	OIL/CONC FACTOR
932-03	WATER	ASP-CLP	CLP-ASP		
972-07	↓	CLP-ASP	↓		
972-08	↓	↓	↓		
972-09	↓	↓	↓		