FINAL
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY WORK PLAN
UNISYS CORPORATION
NYSDEC I.D. # 130045
GREAT NECK, NY FACILITY

September 30, 1993

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1.0 INTRODUCTION

The Unisys Great Neck, NY Facility has been placed on the NYSDEC's Inactive Hazardous Waste Disposal Site List. The facility is classified as a Class II site and was given and ID number of 130045. On December 13, 1991 Unisys entered into a Consent Order Agreement with the New York State Department of Environmental Conservation (NYSDEC). The Consent Order required certain deliverables including a RI/FS Work Plan. This document represents the latest version of the Remedial Investigation/Feasibility Study (RI/FS) Work Plan.

The RI/FS Work Plan includes a summary of the operational history, a summary of past investigation results and a discussion of proposed field activities. The Health and Safety Plan (HASP) and the Community Participation Plan (CPP) are contained in this document as Appendices A and B respectively. The Sampling and Analysis Plan (SAP) is a stand alone document that details procedures to assure the quality, quantity and validity of data collected during RI/FS field activities.

Due to the size of the site, over 98 acres, and the period of operation, 1941 to present, The RI will be conducted in two (2) phases. The first phase of the RI will characterize on and off site subsurface conditions, locate and investigate potential source areas, and determine potential exposure pathways and receptors. The RI Phase II will consist of additional studies to further characterize on and off site environmental conditions. The RI will be conducted in accordance with this Work Plan, the US. EPA " Guidance For Conducting RI/FS under CERCLA Interim Final", and appropriate NYSDEC Technical Guidance Manuals (TAGMs). A list of Applicable or Relevant and Appropriate Requirements (ARARs) (also known as Standard Criteria and Guidelines - SCGs) and To Be Considered (TBCs) is presented in Appendix C.

Shortly After the completion of the RI field activities or during the RI Phase II activities a Risk Assessment will be performed. Risk assessment is a process which evaluates the collective demographic, geographic, physical, chemical, and biological factors at a site to determine whether or not there may be a risk to public health or the environment.

The purpose of the RI will be to determine the nature and extent of contaminants present on and off msite, and evaluate the risk posed to human health and the environment. The data gathered during the RI will be used in the performance of both the Risk Assessment and the FS to be conducted subsequent to the RI.

The purpose of the FS is to evaluate methods to prevent, minimize, or eliminate release of hazardous substances from the site and to minimize the risk to human health and the environment. Data collected during the RI/FS and the Interim Remedial Measures (IRM) activities will be evaluated along with proven technologies for the Final Remediation Design. The IRM entails both groundwater and soil remediation. Groundwater will be remediated with pump and treat technologies and the soil will be remediated with soil vapor extraction technologies.

Groundwater has been used for non-contact cooling purposes since the facility was constructed. The non-contact cooling system consists of three (3) extraction wells (EW-1, 2, & 3), piping and chillers in the main building, and four (4) diffusion wells (DW-5, 6, 7, & 8). The extraction and diffusion wells are located to the north and south of the main manufacturing building respectively. Currently approximately 1,000 gpm is pumped from the extraction wells, used for non-contact cooling in the plant, and drained into the aquifer through the diffusion wells. This process occurs 24 hours a day 365 days a year. The non-contact cooling system is permitted by Nassau County for a maximum total pumping rate of 4,500 gpm.

2.2 SITE GEOLOGY

The Unisys site and surrounding area is underlain by unconsolidated surficial deposits and Precambrian age bedrock. Based upon boring logs and geologic publications of the surrounding area, the unconsolidated deposits are approximately seven hundred (700) feet thick and lie unconformably upon the bedrock. The unconsolidated deposits are comprised of the following formations (from youngest to oldest); Upper Pleistocene glacial deposits, Late Cretaceous Magothy Formation, and the Late Cretaceous Raritan Formation (see Figure 3).

The glacial deposits are comprised of stratified, fine to coarse sands and gravels interbedded with silts and thin clay lenses. Based upon boring logs, glacial deposits at this site are approximately 150 feet thick. The glacial deposits lie unconformably over the Magothy Formation which is composed primarily of fine to coarse sand with silt and clay lenses and is believed to be approximately 250 feet thick. This formation coarsens with depth and lies unconformably upon the Raritan Formation.

The Raritan Formation is composed of two members, the upper Clay Member and the Lloyd Sand. The Clay Member consists predominantly of light to dark clay with some silt and is approximately 200 feet thick in the study area. The Lloyd Sand is approximately 190 feet thick and is composed of light colored sand and gravel with, in some locations, a clayey matrix. The Lloyd sand lies unconformably upon the Precambrian bedrock which generally consists of gneiss and biotite schist. The bedrock, Magothy, and Raritan Formations gently slope (50 ft/mile) to the southeast.

2.3 REGIONAL AND SITE SPECIFIC HYDROGEOLOGY

The sands and gravels of the unconsolidated deposits have a much greater potential for yielding large quantities of water to wells than the underlying crystalline bedrock. The sands and gravels of the upper Glacial unit and the Magothy Formation contain substantial pore space between grains and can store and transmit large quantities of water. At some locales within Long Island, NY, the Magothy is confined by a clay layer that separates the Glacial and Magothy sediments, however, this condition does not exist at the site and the contact between the two units is not sharply defined. In the vicinity of the Unisys site these two aquifers are directly connected and can be thought of as a single unconfined hydrogeologic unit.

The unconfined hydrogeologic unit is the principal aquifer underlying Long Island and it is the Island's main source of water for public supply wells. Large users near the site include: Manhasset Lakeville Water District, Garden City Park Water District, and Jamaica Water Supply Company. The reported yield during the pump testing of ninety (90) wells completed in the Magothy, in the vicinity of North Hempstead, ranged between 300 gpm to 1,543 gpm with an average of 1,000 gpm.

In general, the hydraulic conductivity (K) of the Glacial Formation is greater than the K of the underlying Magothy Formation. The hydraulic conductivities for the Glacial and Magothy formations have been estimated at 270 ft/day horizontally, 27 ft/day vertically, and 50 ft/day horizontally, 1.4 ft/day vertically respectively (Franke and Cohen, 1972). Published data suggests that the regional groundwater flow direction is to the west (Doriski, 1987). However, site specific data indicates a north to northwest flow direction as shown on Figure 4. Work completed by Roux Associates in 1990 and LBG in 1991 indicate that aquifer characteristics at the project location are within published ranges. The Roux work is presented in the Site Assessment Report dated January 13, 1992 Appendix K and the LBG work is presented in this Work Plan.

The Magothy Formation is underlain by the Raritan Clay Unit. This unit is considered an aquitard due its extremely low vertical and horizontal hydraulic conductivities. Based upon permeability tests performed during previous investigations and published data, average horizontal and vertical conductivity values of the clay unit are extremely low. The Raritan Clay is considered an impermeable unit.

The Lloyd Sand is confined by the Raritan Clay and has a groundwater flow direction to the southwest. The Lloyd flow direction is in contrast with the northwesterly flow direction of the Magothy indicating that the two units are not hydraulically connected. The Lloyd, to a lesser extent than the Magothy, is used as an aquifer in the Nassau/Queens County area. Large users of the aquifer in the vicinity of the site include Jamaica Water Supply Company and Manhasset Lakeville Water District. The horizontal hydraulic conductivity of the Lloyd is estimated at 40 ft/day and the vertical is 7 ft/day

(Franke and Cohen, 1972). Based upon published data, yields during pump testing of wells completed in the Lloyd ranged between 510 gpm and 1610 gpm.

2.4 AREAS OF CONCERN

Prior to preparing this section, Unisys reviewed reports and environmental data collected from 1988 to present, aerial photographs, Nassau County Department of Health (NCDOH) groundwater quality reports, dozens of facility utility and as-built drawings, and interviewed several employees familiar with the operational history of the facility. Based upon a review of the aerial photographs no on or off site areas of concern were identified. However, upon review of facility drawings and employee interviews, two (2) potential sources of VOCs were identified including five (5) dry wells and several former underground solvent storage tanks located near the south east corner of the main manufacturing building. A description of the potential sources and other areas of concern is presented below.

2.4.1 DRY WELLS

The five (5) dry wells located in the southeastern corner of the site (see Figure 5) are suspected sources of VOCs previously detected in the soils and groundwater of the site. The dry wells were reported to have received water containing solvents from approximately 1941 to 1978 when they were decommissioned. However, due to incomplete records, the exact volume of solvent-laden water discharged to the dry wells is not known. As shown on Plate 1, the dry wells were eight (8) feet in diameter, fifteen (15) feet deep and the walls are constructed of cinder block.

A summary of correspondence between NCDOH and Unisys (Sperry) related to the dry wells is contained in Appendix D. According to a review of this correspondence, the lines leading to the dry wells (referenced as "cesspools") were plugged and the residual effluent in the dry wells was pumped out some time between June and December of 1978. In handwritten meeting notes from NCDOH it was stated that "Meanwhile the cesspool has been pumped but there is some sludge at the bottom". At present, one (1) of the dry wells is accessible the other four (4) dry wells are located in areas that are currently covered with concrete. The accessible dry well, located approximately four (4) feet south of VW-2, is backfilled with sand. Based upon interviews with Unisys employees, the other four (4) dry wells were abandoned in a similar manner.

2.4.2 PRODUCT STORAGE TANKS

Chemicals used in the past and present during manufacturing processes included solvents, cutting oil, paints and fuel oil. In the past, the virgin and spent product was stored in above grade and underground storage tanks. As shown on Table 1, 20 of the 22 storage tanks were excavated and removed from the site in the early 1980s and 1990s. The two (2) remaining 20,000 tanks were installed in 1990 and are of double walled fiberglass construction. Figure 5 is a map of the site showing the locations of the present and former storage tanks.

Six (6) 2,000 gallon solvent storage tanks were excavated and removed from the site in the early 1980s. The NYCDOH were on site to witness the removal of the 10,000 gasoline tank in 1990 and the eight (8) #6 fuel oil tanks in 1991. During the removal of the 10,000 gallon gasoline tank approximately 20 cubic yards of soil was excavated and removed from the site. Shortly after that time, four (4) soil borings were drilled in the backfilled area and eight (8) soil samples were collected. The soil samples were analyzed for total petroleum hydrocarbons (TPH) and VOCs (EPA 8240). During the removal of the #6 fuel oil USTs one composite soil sample was collected and approximately 175 yards of soil was excavated and removed from the site. The composite soil sample was analyzed for metals, BTEX, and TPH. Results of the soil analyses are contained in Appendix E.

2.4.3 CHEMICAL STORAGE AREAS

Throughout the operational history of the facility all hazardous wastes were stored in the southeast corner of the main building. From 1941 to 1988 wastes were stored in the reclamation room and from approximately 1988 to present wastes were stored in the chemical storage room. The locations of these storage areas are shown on Figure 5. A detailed history of past manufacturing processes, hazardous wastes used since 1991, and waste handling procedures is contained in the Site Assessment Report (Unisys 1992). A brief summary of waste handling practices is as follows.

Prior to 1988 all hazardous wastes were taken to the reclamation room prior to removal by a disposal firm. Prior to 1973 oils and solvents that were mixed with water were sent through a centrifuge to separate the water. The water was reportedly drained to the dry wells while the solvents were piped to the spent solvent storage tanks. Scrap metal shavings were taken to the reclamation room and a water/oil mixture was reportedly drained from the shavings to the dry wells. The scrap metal shavings were removed by a recycling contractor. Liquid wastes were allowed to remain in 55 gallon drums until they were removed by a waste hauler.

At present, hazardous wastes are stored in the chemical storage room located immediately north of the reclamation room. All appropriate RCRA procedures regarding storage, labeling, and handling of the hazardous wastes are followed prior to removal by a certified disposal firm.

2.4.4 ELECTRICAL SUBSTATIONS

Three (3) electrical substations are located on or in the vicinity of the site. Two (2) of the substations (SST1 & SST2) are located near the intersection of Lakeville Rd. and Union Turnpike, as shown on Figure 5. These substations are presently owned and operated by Long Island Lighting Company (LILCO). LILCO leased the land from Unisys until 1992 when the property was purchased from Unisys by LILCO. Prior to the purchase, LILCO owned and operated all of the equipment related to the electrical substations.

The property and equipment at the third substation (SST3), located immediately south of former foundry, has always been owned and operated by Unisys. According to employee interviews and a review of all available records, the transformers at SST3 were installed when the plant was constructed. These transformers are believed to have always contained mineral spirits.

2.4.5 SANITARY AND STORM SEWERS

The facility has been served by a sanitary sewer system since it was constructed in 1941. The sewer consists of an 18-inch line that runs adjacent to the southern and eastern edge of the main manufacturing building. This 18-inch line is connected to the sanitary sewer main located on Marcus Avenue.

The on site storm water collection system consists of a series of pipes that are connected to the three (3) drainage basins in the southeastern corner of the property. The on site storm water collection system receives runoff from the parking lot, several surrounding roads, and the roofs of the buildings; no wastes were reported to be routed to the drainage basins. In some areas of the plant, dry wells are used to drain roof runoff into the ground. There is no outlet from the drainage basins, therefore, storm water that enters the basins recharges the aquifer.

2.4.6 POTENTIAL OFF SITE SOURCES

Unisys reviewed US EPA CERCLIS records and have identified at least 10 CERCLIS facilities within a 1/2 mile radius of the site. In addition, a landfill is located approximately 1 mile southwest of the facility.

2.5 PREVIOUS INVESTIGATIONS

This section contains a summary of the results of groundwater and soil investigations performed between 1988 and 1992. In summary, the following investigative activities have taken place in the past:

- Twenty nine (29) monitor wells were installed and groundwater samples were collected on five (5) occasions.
- Thirty two (32) borings were drilled and soil samples were collected and analyzed for various parameters.
- Two (2) recovery wells were installed.
- A pump test was conducted on EW-2.
- Two (2) groundwater models were constructed.
- Downhole geophysics (gamma and spontaneous potential) logging was performed on the monitor wells.
- A vapor extraction pilot test was performed in the reclamation room area.
- A soil gas survey was performed in the reclamation room area.

2.5.1 GROUNDWATER INVESTIGATION

Twenty nine (29) monitor wells and two (2) recovery wells (RW-1 & RW-2) ranging from 90 to 395 feet below grade have been installed on the site. In addition, three extraction wells (EW-1, 2 & 3) and four diffusion wells (DW-5, 6, 7, & 8) were installed in the 1940s and 1950s. Well construction details for all of the wells are summarized in Table 2 and the locations are shown on Plate 2. These wells have all been completed in the unconfined Glacial/Magothy aquifer system.

The monitor wells have been sampled for VOCs on at least five (5) occasions and metals, PCBs/Pesticides on at least one (1) occasion. The groundwater VOC analytical data is summarized on Tables 3 and 4 and the metals, PCBs/Pesticides data is contained in the site assessment. Results of the groundwater sampling are summarized as follows:

- The most commonly detected parameters include 1,2 dichloroethene (1,2 - DCE), tetrachloroethylene (PCE), and trichloroethylene (TCE).

- Total VOCs during the 9/92 sampling effort ranged between 5 and 960 ppb.

- VOCs have been detected in all wells sampled.

- In general, total VOCs have decreased between the October 1991 and September 1992 sampling rounds.

- In general, total VOCs tend to increase with depth, peak at the 230 to 325 foot interval, and decrease with depth below 325 feet.

A well search was performed by reviewing NCDOH well records for wells located within a 1-1/2 mile radius of the site. The NCDOH records include well construction specifications, operational history, and groundwater quality. The thirty seven (37) wells located within a 1-1/2 mile radius of the site are shown on Plate 3 and well construction specifications are summarized on Table 5. The off site wells consist of monitor, industrial, and municipal wells. No domestic wells were reported to be within this area. All wells are reported to be completed in the Magothy/Glacial aquifer system with the exception of wells N1802, N1958, and N1618 which are completed in the Lloyd aquifer.

NCDOH water quality records date back to the mid 1970s, and the volume of records is to great include in this Work Plan. Therefore, the most ubiquitous VOC, PCE, was plotted with the corresponding well location as shown on Plate 4. The NCDOH water quality records are summarized as follows:

- VOCs were detected in off site wells completed in the unconfined Magothy/Glacial aquifer system. As shown on Plate 4, these wells are located downgradient, upgradient and cross gradient of the Unisys site.

- Commonly detected VOCs detected in the unconfined aquifers include: 1,2-DCE, TCE, and PCE. PCE was the most prevalent compound detected.

- VOCs have been detected in well N1802 (Lloyd well). VOCs detected in N1802 include PCE and DCE. In addition, VOCs have been detected in other Lloyd wells.

2.5.2 SOIL INVESTIGATION

In an effort to document the subsurface conditions of the soil of the site, Unisys drilled thirty two (32) borings, performed a soil gas survey, and performed a vapor extraction pilot test. The majority of this work was performed in the vicinity of the reclamation room and the former dry wells. As shown on Table 6, the borings range from 4 to 93 feet deep and soil samples were collected at various depths. Fourteen (14) of the borings were completed as vapor extraction wells. The locations of the borings and the vapor

extraction wells are shown on Figure 6 and the specifications of the vapor extraction wells are contained on Table 2.

In 1988, eight (8) borings (B6 to B13) ranging from 12 to 30 feet in depth were drilled in the vicinity of tankfields T1, T2, and T3 (see Figures 5 and 6). Soil samples collected during drilling were submitted to the laboratory to be analyzed petroleum hydrocarbons (PHC), VOCs, and metals. Analytical results indicate that VOCs were not detected in the vicinity of tankfields T1, T2, and T3. However, PHC was detected in two (2) soil samples (B-7 at 16 ppm and B-10 at 41 ppm). These soil samples were collected from borings located in the vicinity of tankfields T1 and T2 respectively; PHC was not detected in the vicinity of tank field T3.

The remainder of the soil borings, with the exception of B-14 and B-2, were installed in the vicinity of the reclamation room. These borings ranged between 4 to 93 feet in depth and soil samples were collected and analyzed for TCL VOCs, TCL semi-VOCs, TCL pesticides/PCBs, and TAL metals. A summary of the sample depths and analytical data is presented on Table 6. The area of impacted soil is illustrated on Figure 7 and VOC concentrations shown with depth are included as Figures 8, 9, and 10. Results of soil samples collected in the vicinity of the reclamation room are summarized as follows:

- Total VOC concentrations of soil samples collected in the vicinity of the reclamation room ranged from ND to 2,200 ppm. The most commonly detected VOCs were PCE, TCE and 1,2-DCE.

- PCBs in concentrations ranging from 890 to 3060 ppb were detected in three(3) of the four (4) samples analyzed for PCBs. These samples were collected from depths ranging between 12 and 80 feet in soil vapor borings (SVB) 17 and 18.

- Pesticides ranging in concentrations of 48 to 88 ppb were detected in two (2) of the four (4) samples analyzed for pesticides. These samples were collected from depths ranging between 12 and 80 feet in SVB-17 and 18.

- Semi VOCs ranging in concentrations of 1140 to 6270 ppb were detected in two (2) of the four (4) samples analyzed for semi VOCs. These samples were collected from depths ranging between 12 and 80 feet in SVB-17.

- VOCs are confined to an area of approximately 180 feet in diameter in the unsaturated soils from approximately the bottom of the dry wells to the water table (approximately 100 feet below grade) in the vicinity of the reclamation area.

- The volume of soil impacted by VOCs is estimated to be 75,000 cubic yards and an estimated 200,000 pounds of VOCs are contained in the soils.

2.5.3 SOIL GAS SURVEY

In September of 1989, a shallow soil gas survey was performed in the vicinity of the southeast corner of the main manufacturing building. During the survey a total of 43 soil gas samples were collected from 18 sample locations and analyzed with a gas chromatograph (GC) for trans-1,2-dichloroethene (1,2 - DCE), cis-1,2-dichloroethene (1,2 - DCE), trichloroethene (TCE), and tetrachloroethene (PCE). Results of the soil gas survey indicated that 1,2 - DCE was not detected in any of the samples, however, PCE and TCE were detected in concentrations ranging from .08 to 780 ppb in vapor. A report summarizing the results of the soil gas survey is presented in Appendix I of the Site Assessment Report (Unisys 1992).

2.5.4 SOIL VAPOR EXTRACTION PILOT TEST

In 1991, a soil vapor extraction pilot test was conducted using VW-1 as an extraction point. The test was conducted for a period of 72 hours at an extraction rate of approximately 400 cubic feet per minute (cfm). Results of vapor samples taken during the test indicated that chlorinated hydrocarbons were being removed from the subsurface at a rate of approximately 2500 lbs/day. It was concluded that vapor extraction is an effective means of removing VOCs from the subsurface. A more detailed discussion of the results of the vapor extraction test is contained in the IRM Operable Unit II Work Plan (Unisys 1992).

2.5.5 DRAINAGE BASINS

Environmental studies of the drainage basins have consisted of two (2) samples (type unknown) collected by NCDOH in 1978 and one (1) sediment sample collected by Geraghty and Miller (G&M) in 1988. The exact sample locations are not known, however, the NCDOH samples were reported to be collected in the southwest corner of the east basin and the southwest corner of the middle basin.

NCDOH samples were analyzed for 1,1,1-TCA, carbon tetrachloride, bromo-dichloromethane, chloroform, PCE, and TCE. TCE was detected in concentrations ranging from 10 to 18 ppb and PCE was detected at 7 ppb. The Unisys samples were analyzed for VOCs, TPH, and metals including: Cu, Pb, Ni, and Cr and results are summarized below. Results of the NCDOH samples are contained in Appendix C. Due to a lack of documentation and proper QA/QC, the results of these analyses are suspect.

Sample ID	Cr	Cu	Pb	Ni	TPH	TVOC
Basin Sediment	54 ppb	617 ppb	150 ppb	41 ppb	391 ppm	ND

3.0 PHASE I REMEDIAL INVESTIGATION

Based upon a review of historical data as discussed in Sections 2.0 the following scope of work will be performed to fully characterize the site.

- Background information review
- A soil gas survey
- Soil borings and soil sampling
- Off site sampling of existing wells
- Installation of on and off site monitor wells
- Sampling of on and off site monitor wells
- Downhole geophysical survey of the newly installed wells
- Domestic well survey
- Lloyd well (N1802) investigation
- Drainage basin investigation
- Meteorological investigation
- Groundwater flow and contaminant transport model

All field work will performed with strict adherence to the site specific Health and Safety Plan and samples will be handled as described in the SAP. A discussion of the rationale for collecting samples, sampling procedures to be employed, and the number of samples to be collected is presented below. Performance of the off site activities is based upon receiving access to sampling locations.

3.1 BACKGROUND INFORMATION REVIEW

The purpose of this task is to compile, examine , and evaluate existing available information and data pertinent to the site. Data to be reviewed will include but not be limited to: aerial photographs, facility drawings, facility waste handling records for violations or releases, facility records related to former product storage tanks, published geologic reports, published groundwater reports, NCDOH water well information for a 1 1/2 mile radius, Nassau County Department of Public Works (NCDPW) files, EPA CERCLIS database, NYSDEC Inactive Hazardous Waste Site files, sensitive receptors, waterbodies/wetlands, existing environmental data, and existing reports. Much of the work associated with this task has been completed as part of the preparation of this document or in previous investigations.

3.2 SOIL GAS SURVEY

Soil gas surveys will be conducted in five (5) areas designated SGS-1, SGS-2, SGS - 3, SGS-4, SSG-5, and SGS-6 as shown on Figure 11. The soil gas survey to be conducted at SGS-6 will be performed in the vicinity of the former solvent storage tanks and piping network. The soil gas survey to be conducted at SGS-5 will be performed on a five (5) acre lot north of the site. The purpose of the other surveys will be investigate areas adjacent to wells located on the perimeter of the property that have contained VOCs in the past. Soil gas samples will be collected from probes that will be driven a minimum of ten (10) feet below the surface. The approximate size of each grid, sample spacing, and number of samples to be collected is provided below. The dimensions provided below are only approximations, exact grid size, number of samples, and sample spacing will be determined in the field. The soil gas grids may be expanded during the survey as soil gas analytical data is obtained.

	SGS-1	SGS-2	SGS-3	SGS-4	SGS-5	SGS-6
Grid Dimensions (ft)	200 x 100	100 x 100	1,800 x 20	100 x 100	irregular	240 x 180
Grid Area (ft^2)	20,000	10,000	36,000	10,000	130,000	43,000
Sample Spacing (ft)	33	33	50	33	50	30
Approximate Number of Samples	28	16	36	16	52	63

The soil gas survey is a screening method to determine if VOCs are present or absent in the areas surveyed. Results of the soil gas surveys will be evaluated during the Phase I RI and, if necessary, well or boring locations will be altered or added to the scope of work pending NYSDEC approval. A detailed discussion of soil gas sampling procedures is presented in Section 2.4 of the SAP.

3.3 SOIL BORINGS

Soil samples will be collected from borings that will be drilled in the former dry wells. The purpose of the borings and soil sampling will be to determine if residual materials related to the former solvent recycling system exists in the backfill of the dry wells. As shown on Figure 12, one (1) boring will be advanced through each of the five (5) dry wells. The auger drilling technique will be utilized to advance the borings and continuous split spoons will be driven to a depth of twenty (20) feet; the depth of the of the former dry wells was fifteen (15) feet. In the event that residual materials are visually evident at the 18 to 20 foot interval, the boring will be advanced and split spoon samples will be collected at five (5) foot intervals until no residual materials are observed or until the water table is encountered.

A geologist will document the drilling operation and log the soil samples per the United Soil Classification System (USCS). In addition, the geologist will obtain headspace readings of each sample and collect samples as described in Section 4.2.1 of the SAP. The split spoon sample experiencing the highest headspace reading and the sample collected at the deepest interval will be submitted to the laboratory for analysis per NYSDEC 12/91 Analytical Services Protocols (ASP) as designated in Tables 7 and 8 and the SAP.

3.4 SAMPLING OF EXISTING OFF SITE WELLS

As discussed in earlier sections, VOCs have been detected in off site municipal, industrial, and monitor wells. Therefore, the existing off site wells will be sampled prior to installing the RI monitor wells. Results of this sampling effort will be utilized to adjust well locations and depths (with NYSDEC's consent). The samples will be analyzed for the parameters per NYSDEC 12/91 as designated in Tables 7 and 8. The intended use of the groundwater data and the procedures for collecting the groundwater samples are discussed in Sections 1.4 and 4.2.2 of the SAP respectively. The locations and construction of the off site wells are contained on Plate 3 and Table 5 respectively. Wells to be sampled during this task are as follows: N3905, N4243, N5710, N8821, N8358, N8499, N7512, N9948, N4390, N6073, N15, Q1909, N7560, N2576, and N8038. These wells will not be sampled until access is obtained from the well owners.

3.5 MONITOR WELLS

In an effort to determine the quality and flow direction of groundwater in the Magothy Formation, A total of nineteen (19) additional monitor wells will be installed. The monitor wells will be installed on and off site and will be completed as both shallow and deep monitor wells. Unisys will purge and sample the existing and proposed monitor wells as discussed in Section 3.5.5 and the SAP.

The current monitor well network as described in the Site Assessment Report (Unisys 1992) consists of twenty nine (29) monitor wells. The existing monitor wells are finished at three different depths and the finished depth of each well is referenced by a well number and two letters. The letters signify the presumed aquifer and the relative depth within the aquifer. The two aquifers which have been screened are designated as "M" for the Magothy Aquifer and "G" for the Glacial Aquifer. The relative depths within the aquifers are denoted as U for upper, I for intermediate, and L for lower. For example well 12MI refers to well cluster 12 completed in the Magothy Aquifer, and the screen is set at the or intermediate portion of the formation. The five (5) possible well designations are summarized below.

Designation	GU	GL	MU	MI	ML
Depth (ft)	100 to 140	141 to 181	181 to 230	231 to 325	325 to 400

3.5.1 MONITOR WELL LOCATIONS

Of the nineteen (19) monitor wells to be installed, five (5) will be installed on site and fourteen (14) will be installed off site. The on site locations are based upon a review of analytical data collected in previous investigations. The proposed off site locations are based upon a review of the 1-1/2 mile off site well survey, the groundwater flow direction in the Magothy, and analytical data collected during previous investigations. The groundwater flow direction is north to northwest and the off site wells will be located upgradient, downgradient and sidegradient of the site. The proposed on site well locations are shown on Plate 2 and the proposed off site well locations are shown on Plate 3. Well depths and rationale are included in Table 9.

Based upon a review of the data collected during the off site well sampling, the proposed off site monitor well locations may be adjusted. If Unisys proposes to adjust the well locations, a letter of intent will be submitted to NYSDEC and drilling will not commence until written approval is received by Unisys.

3.5.2 GROUNDWATER SAMPLING DURING DRILLING

Groundwater samples will be collected during the drilling of the deep wells and analyzed for parameters per NYSDEC 12/91 ASP as designated on Tables 7 and 8. The samples will be collected at fifty (50) foot intervals from the top of the water table to the bottom of the boring. Results of the analysis will be used to optimize the setting of the screens in the deep and shallow wells. The sample collection procedures are as described in the SAP.

3.5.3 SOIL SAMPLING DURING MONITOR WELL DRILLING

Soil samples will be collected during advancement of the boring using the split spoon sampling method. The split spoon and samples will be handled, decontaminated, stored etc. as described in the SAP. Based upon PID, readings at least one sample will be selected for analysis. The split spoon will be driven using the Standard Penetration Test (SPT) and results will be reported on the well log. Results will be reported as blows/6-inches and the first 6-inches will not be reported. Split Spoon Samples will be driven at the following intervals: 3' to 5', 8' to 10', 23' to 25', 48' to 50', and every 50' to the final depth of the well.

3.5.4 MONITOR WELL DRILLING AND COMPLETION

Wells will be installed under continuous observation of a geologist and will be constructed to meet NYSDEC specifications. The geologist will be responsible for documenting the drilling activities, well construction, and lithology encountered during drilling. Lithologic logs will be prepared based on drill cuttings obtained at ten foot intervals from grade level to the base of the well. The geologist will log the cuttings based upon the USCS classification method.

Exact well locations will be determined in the field and, depending on accessibility, may be altered (with NYSDEC concurrence). Off site monitor wells will be installed first and the upgradient wells will be installed prior to the downgradient wells.

The monitor wells will be installed with a combination water rotary/casing advancement drilling method. The borehole will be advanced with a rotary bit and stabilized with casing that will be driven approximately five (5) feet behind the bit. When the final depth of the well is reached, the casing will be removed as the well is constructed in the borehole. Drill cuttings will be collected and staged in a defined staging area (refer to NYSDEC's TAGM # 89-4032). If grossly contaminated cuttings are generated they will be separated and placed in 55 gallon drums which will be stored in the staging area. The contents of the drums will be analyzed for disposal parameters. To minimize the potential for cross-contamination between wells, all drilling equipment will be decontaminated as described in Section 4.5.1.2 of the SAP.

The wells will be completed using 4-inch flush thread SCH 80 PVC riser and 4-inch flush thread stainless steel screens (316SS, #20 slot). The length and exact location of the screen zones will vary depending on the local changes in lithology and groundwater analytical data collected during drilling. However, at this time, Unisys proposes to install ten (10) foot screens as indicated on Table 9. A gravel pack will be placed along the

screened zone to a point at least two (2) feet above the screen. The gravel pack will be placed with a tremie, if at all possible. If this is not possible, the screen will be installed with the gravel pack attached. The remaining annular space will be tremied grouted with bentonite grout. The well head will be completed with a locking steel surface casing set in a 2 ft x 2 ft concrete pad. Upon completion, the location and elevation of the top of the well casing will be surveyed by a licensed NY surveyor. Well construction specifications and decontamination procedures are detailed in the SAP.

3.5.5 WELL DEVELOPMENT AND SAMPLING

All newly installed wells and existing wells with low yields will be developed to ensure that relatively sediment-free groundwater samples can be obtained. The objective of well development is to remove sediments from the bottom of the well and the screened interval. The development will allow for collection of representative groundwater samples and will enable a determination of the aquifers hydraulic parameters. The wells will be developed by high velocity jetting and over pumping. Water will be jetted into the screened zone of the well at pressures ranging from 50 to 150 psi for approximately one (1) hour. After the jetting is complete, the well will be pumped until the discharge is relatively free of sediment. The well development process and the turbidity of the discharge, as measured with a NTU meter, will be observed and documented by a geologist. Well development will continue until NTU readings are below 50.

The existing and proposed monitor wells will be sampled on two occasions (Round 1 & Round 2). Round 1 will occur at least two (2) weeks after completion and development of all the proposed wells. Round 2 will occur upon NYSDEC's request and/or approval. Round 1 samples will be analyzed for the parameters as designated in Table 7 and laboratory analysis will be in accordance with 1991 NYSDEC ASP (see Table 8). Once data of demonstrated validity has been obtained, Round 2 groundwater samples will be examined for volatile organics by the low level method (ASP 12/91, 91-4) for those wells that do not reveal high enough concentrations of volatile organics which make this analysis impractical. The intent to analyze these wells in the Round 2 sampling event for volatile organics by the drinking water methods is to attempt to achieve the lowest possible detection sensitivity in consideration of health-based criteria. However, the parameters to be analyzed for during Round II are subject to the NYSDEC's approval.

Based upon the results of the Round 1 and Round 2 analysis, a revised list of parameters to be analyzed will be developed and the IRM biannual well sampling will be adjusted accordingly. The intended use of the groundwater data and the procedures for collecting the groundwater samples are discussed in Sections 1.4 and 4.2.2 of the SAP.

3.5.6 GROUNDWATER LEVEL MEASUREMENT

The depth to groundwater will be measured to the closest 0.01 foot in each monitor well from the top of casing by using an electronic water level indicator. This is presently occurring on a monthly basis as an IRM task. Newly installed wells will be added to the water level monitoring network.

3.6 MONITOR WELL DOWNHOLE GEOPHYSICAL SURVEY

The newly installed deep wells (ML wells) will be logged with the downhole gamma radiation logging technique. The gamma logs will be used as a qualitative guide for stratigraphic correlation and supplement the lithology data collected during well installation. The gamma logs previously performed on the on site wells will be correlated with the off site gamma logs on fence diagrams or cross sections. The logs and cross sections will be evaluated in an effort to determine if stratagraphic correlation exists between the on site and off site wells. This data review will aide in the evaluation of the potential for horizontal and vertical migration of groundwater and VOCs.

In gamma logging, measurements are made of naturally occurring radiation being emitted from the formation. Gamma radiation is emitted from certain elements in the geologic material that are unstable. In general, clays contain high concentrations of radioactive isotopes, chiefly potassium. On the other hand, sands and gravels contain primarily silica, a stable element, and therefore emit low levels of radiation.

3.7 OFF SITE WELL SURVEY

A domestic, industrial, and municipal well survey will be conducted as part of the RI. Maps of the public water distribution system will be reviewed to determine which residents within a 1/2 mile radius from the perimeter of the site are served by the utility as their primary source of water. Additionally, the local municipal water company engineers will be interviewed to determine which residents, if any, are not connected to the water main or are using a well as a secondary water supply source. If a potential for domestic well usage exists, then Unisys will conduct a letter survey of all residents within a 1/2 mile radius of the site. The need for this survey and the contents of the letter will be discussed with NYSDEC prior with commencement.

A municipal and industrial well survey was conducted in preparation of this document and Plate 3. The well survey was performed by reviewing NCDPW and NCDOH records of municipal and industrial wells within a 1-1/2 mile radius of the site. NCDOH does not maintain records of domestic wells.

3.8 LLOYD WELL (N1802) INVESTIGATION

NYSDEC has requested that Unisys Corporation conduct an investigation of Municipal Well N1802 owned by the Manhasset Lakeville Water District (MLWD) as part of the RI. NCDOH data indicate that VOCs are present in water collected from N1802. The purpose of this investigation is to determine if the occurrence of VOCs in N1802 is related to the known VOCs existing in the groundwaters of the Unisys facility or is present due to other existing sources.

N1802 is located adjacent to the southwest corner of the Unisys property. The well was installed in 1941 during the construction of the Unisys Great Neck facility, to a depth of 691 feet. The screen was set at a depth of 641 to 691 feet in the Lloyd Formation. Based on the well boring log and the known regional geology, the Lloyd Formation is separated from the near surface deposits and the Magothy Formation by an aquitard consisting of 200 feet of impermeable clay.

MLWD currently uses the well during the non-winter months. Granular Activated Carbon is used to remove VOCs prior to distribution. Based on data review, the treated groundwater does not exceed the EPA's drinking water maximum contaminant levels.

Unisys is proposing to investigate the integrity of the casing and grout seal at N1802. In addition, historic water quality data will be collected and reviewed for N1802 and other wells installed in the Lloyd Formation within a 2 mile radius of N1802. Furthermore, Unisys will identify known potential sources of VOCs within a 2 mile radius of N1802. Well information will be obtained from NCDOH, NYSDEC and MLWD records. A review of EPA, NYSDEC and Nassau and Queens county records and databases will also be made to identify potential VOC sources. Water quality data collected for wells installed into the Lloyd Formation will be tabulated. In addition N1802 data will be plotted versus time. Water quality from other wells will also be tabulated, and locations and water quality will be plotted on a map. The data and analysis will be presented in a separate report. The results and report will be used in the draft Remedial Investigation Report.

The integrity of the casing and grout seal will be investigated by performing a downhole color TV survey, a cement bond log, and a packer test. To perform the investigation, the well pump must be removed. Once removed, a downhole TV survey will be performed to determine if gross defects are present in the casing and the screen and will serve as a permanent record of the casing and screen condition at the time of the survey. The downhole survey will be recorded on a VCR tape.

Cement bond logging is commonly used in the petroleum industry for determining the integrity and thickness of the grout seal and the porosity of the formation. This technology measures the transit time for an ultrasonic pulse to travel through the casing,

grout seal, and 5 or 10 feet into the formation. Due to density differences (i.e. velocity differences) a careful interpreter can determine the thickness and integrity of the grout seal. Data collected during this survey will be collected digitally and downloaded on a computer for enhancement and interpretation.

After the geophysical testing is completed, packer tests will be performed on the entire cased zone, the screened zone, and areas of the casing with suspect integrity. Groundwater samples will be analyzed per NYSDEC 12/91 ASP for parameters as designated on Tables 7 and 8. Packer testing sampling protocols and QA/QC details are contained in Section 4.2.5 of the SAP.

3.9 DRAINAGE BASIN INVESTIGATION

The objectives of this task will be determine if the sediments of the drainage basins have been impacted by past industrial activities of the facility and vehicular use in the vicinity of the site. A total of ten (10) sediment and three (3) surface water samples will be collected at locations as shown on Figure 12. These samples will be analyzed per NYSDEC 12/91 ASP for parameters as designated in Table 7 and 8. Details for the collection, handling and analysis of the sediment and water samples are contained in the SAP.

3.10 METEOROLOGICAL DATA COLLECTION

Unisys will collect meteorological data for a period of at least one (1) year. The meteorological station will be installed in the vicinity of the reclamation room as part of an IRM task. Meteorological data including wind speed, wind direction, temperature, and rainfall will be collected and stored in a computer database. This data will be compiled and evaluated in the RI report.

3.11 GROUNDWATER FLOW MODEL

A groundwater flow and contaminant transport model will be generated based on pump test and environmental data collected during the IRM and RI. The model will be calibrated to accurately emulate the hydrogeologic characteristics of the Magothy and Glacial aquifer system. The purpose of the model will be to predict the fate and transport of VOCs in the subsurface, and to determine the effect of multiple off site and on site pumping wells. Unisys will evaluate previously prepared groundwater models of the site prior to generating a new model. These models include the capture zone model prepared by Roux Associates (1990) and the proposed cogeneration facility groundwater model prepared by Geraghty and Miller (1989). The Roux model is described by Todd (1990). Geraghty and Miller modeled the aquifer with Modflow, a numerical model developed by

McDonald and Harbaugh for the USGS (1984). If both of these models do not prove to be useful, Unisys will develop a new groundwater model.

The numerical groundwater flow model to be used and the size of the area to be modeled will be selected upon a review of the hydraulics of the aquifer and the extent of VOCs in the subsurface. Groundwater modeling techniques developed after the writing of this WP will be evaluated prior to committing to a technique. For example, a two-dimensional, finite element model of Long Island was recently published by Herbert Buxton and Edward Modica of the USGS (Groundwater, November-December 1992).

However, at this time the methods of characteristics (MOC) will be used in conjunction with a finite difference method as a numerical groundwater model. The MOC will be used to solve the solute transport equation and the finite difference approximations are used for the flow equation.

3.12 SURVEYING

Sampling locations and other important features will be surveyed by a NY licensed surveyor. The vertical and horizontal control will be +/- .01 feet and +/- 3 respectively. Surveying data will be downloaded to a computer and the existing CADD maps will be updated accordingly. Locations to be surveyed will be as follows:

- Soil gas survey grid areas
- Soil borings
- Existing off site wells
- Newly installed on and off site monitor wells
- Domestic wells within 1/2 mile from the perimeter of the site
- Drainage basin sediment sample locations

  Lloyd well (N1802)

3.13 FISH AND WILDLIFE IMPACT ANALYSIS

A fish and wildlife impact analysis will be performed to evaluate fish and wildlife concerns associated with the remediation of the site. This information is necessary to identify potential pathways of contaminant migration that may affect fish and wildlife. The objectives of the study will be to determine if fish and wildlife that may be affected by site-related contaminants are present and to provide appropriate information for designing a remedial investigation.

A topographic map and a cover type map will be drawn for the site. The topographic map will show the location of the site and document fish and wildlife as defined by the NYS Natural Heritage Program, habitats supporting endangered, threatened, or rare species, species of concern, regulated wetlands,, wild and scenic rivers, significant coastal zone areas, streams, lakes, and other major resources within two miles of the perimeter of the site. The cover type map will identify major vegetative communities including wetlands, aquatic habitats, NYDEC significant habitats, and areas of special concern. These maps will be evaluated to determine if contaminant migration to resources exist. If it is found that contaminant migration to resources does exist, then the information will be incorporated into the design of the remedial investigation.

3.14 SUBSTATION SOIL SAMPLING

Soil samples will be collected from locations within LILCO Substations SST1 and SST2 as shown on Figures 15, 16, and 17. The soil samples will be collected with decontaminated stainless steel hand augers and scoops. The Semi-VOC and VOC samples will be collected at the 3 to 5 foot interval and the PCB samples will be collected at the 0 to 1 foot interval. In addition, destructive samples of the concrete under the transformers will be collected and analyzed for PCBs. The exact number of samples to be collected will be determined in the field with NYSDEC approval. Samples will be collected and analyzed as designated in the SAP. However, the collection of the samples is based upon Unisys receiving acess from LILCO. In addition, sub graded high power lines, conduits and other equipment should not located within an unsafe distance from the boring.

3.15 AIR PATHWAY ANALYSIS

An Air Pathway Analysis (APA) will be performed using predictive modeling techniques. The purpose of the modeling will be to ensure the protection of human health and the environment and to determine whether the air concerns should be addressed or not. The model will be utilized to determine whether the potential exposures are within acceptable risk range for toxic air contaminants. The model will be based upon relevant EPA guidance documents including the Superfund Exposure Assessment Manual (EPA/540/1-88/001, April 1988) and EPA-450/1-92-002.

If the predictive modeling indicates significant impact, then more rigorous techniques will be employed. These will involve more rigorous air modeling, ambient air monitoring, and/or direct emissions procedures.

3.16 GEOPHYSICAL SURVEY

An electromagnetic survey will be performed within the soil gas grid location SGS-6 located adjacent to the reclamation room as shown on Figure 11. A data logger will be used with the EM-31 to collect both quadrature and in phase components of the electromagnetic field. At selected locations both horizontal and vertical dipole readings of the quadrature phase will be also collected. All data interpretation for the EM-31 is done in the field. In addition, Unisys's representative will record a minimum of four (4) station readings per survey hour and any intermediate value locations in a field logbook. The entries will include date, time, operator, station number, and vertical and horizontal dipole readings in the quadrature phase and will be checked against the data output to validate the data. Section 4.6 of the SAP should be reviewed for proper documentation of the geophysical survey.

The electromagnetic method detects lateral and vertical variations of electrical conductivity in the subsurface environment. Quadrature component measurements relate to the apparent conductivity of a material and are influenced by clay content, porosity, moisture content, pore fluid conductance and permeability. These measurements are also influenced by highly conductive materials like metals and graphite. In-phase component measurements are particularly sensitive to highly conductive materials and sometimes used for metal detection. The EM is applicable for the assessment of natural hydrogeologic conditions and the mapping of many types of contaminant plumes. Trench boundaries, buried conductive wastes, and steel drums, as well as metallic utility lines can be located with EM techniques.

EM instruments are annually calibrated over a massive rock outcrop used as a geologic standard by the manufacturer. After calibration the machine will generally retain their accuracy for long periods. On this project a reference station will be established in the field.

3.17 RECLAMATION AND CHEMICAL ROOM INSPECTION

Unisys and NYSDEC will jointly inspect the reclamation and chemical storage rooms for past potential releases to the environment. Of particular interest will be holes or cracks in the concrete, utility conduits, abandoned piping, floor drains and stained areas. Upon completion of the inspection a conceptual sampling program will be discussed, if warranted. If further action is necessary, a sampling plan will be submitted to NYSDEC

for approval. Sampling will commence upon approval and results of the investigation will be reported in the Phase I report.

3.18 DATA REDUCTION AND VALIDATION

It is anticipated that data reduction for this investigation will consist of summarizing laboratory analytical results onto tables through the use of a computerized database management system. Field and laboratory data will be validated during the RI as discussed below and in detail in Sections 8.0 and 12.0 of the SAP.

All reduced data will be assigned document control identification numbers and placed in the central file maintained by the Project Manager. All TCL VOA, TCL BNA, TCL pesticide/PCBs and TAL Inorganics data obtained for groundwater samples will be reported in ug/L. All TCL VOA, TCL BNA and TCL pesticide/PCBs soil boring samples and sediment will be reported in ug/Kg on a dry-weight basis. All TAL inorganics data obtained for soil boring and sediment samples will be reported as mg/Kg on a dry-weight basis. All laboratory analytical data will be summarized and tabulated in an Excel format.

Quality assurance for field data is accomplished through the use of approved field protocols. To ensure that the correct protocols are used, all field team members, prior to beginning site work, will be briefed by the Site Manager (SM) on their familiarity with the site-specific Field Sampling Plan. All field data, such as those generated during field measurements, observations and field instrument calibrations, will be entered in pen directly into a bound field notebook. Each project team member will be responsible for proofing all data transfers made, and the SM will proof at least ten percent of all data transfers. Any corrections or alterations of information in the field notebooks will be accompanied by the initials of the person making the changes and the date of the change. Following each task, the data collected will be evaluated for completeness and comparability.

Validation of laboratory data is the process of reviewing data and accepting or rejecting it on the basis of sound criteria. The data generated will receive both technical and editorial review. Technical review concerns itself with the analytical techniques and their effect on data validity. Editorial review ensures that the text is concise and lucid and that it contains no transpositional errors. Upon receipt of the data packages, all laboratory data will be quantitatively and qualitatively validated by Environmental Standards, Inc. in strict accordance with the "National Functional Guidelines For Organic Data Review Draft" (U.S. EPA, 1990) and the "Functional Guidelines For Evaluating Inorganics Analyses" (U.S. EPA, 1990). The data will subsequently be submitted to Unisys.

4.0 PHASE II REMEDIAL INVESTIGATION

At the conclusion of the Phase I field activities and validation of the analytical data collected, Unisys proposes to submit a report to NYSDEC. This report will include analytical data collected to date, sample location maps, and a proposal for additional activities to further characterize both the on site and off site conditions, if needed. In addition, Unisys will request a meeting to discuss the findings of the Phase I investigation and the proposed Phase II activities. At the conclusion of the Phase II, the data will be sufficient to quantify the extent of contamination and the mass of contaminants on site and in the plume. Phase II activities may include but will not be limited to:

- Additional monitor wells
- Additional soil borings and soil samples
- Additional soil gas surveys
- Additional drainage basin sediment and water samples
- Data validation

Sampling protocols described in this Work Plan and SAP will be followed for additional activities. The proposed activities will be attached to this Work Plan as an addendum.

5.0 RISK ASSESSMENT

Data collected during field and laboratory activities will be validated and used to complete a risk assessment. The approach to be used for the risk assessment is discussed below.

5.1 TECHNICAL APPROACH

Environmental risk assessment is a process which evaluates the collective demographic, geographic, physical, chemical, and biological factors at a site to determine whether or not there may be a risk to public health or the environment. Under current environmental regulation, a risk assessment can be used as to:

- Assess the human health and/or environmental risk posed by present conditions at a site.

- Compare the reduction in risk afforded by various remedial alternatives.

- Provide a defensible basis for eliminating from consideration a site or an area of a site that does not significantly threaten human health or the environment.

- Develop human health and/or environmental standards for chemicals for which no standards exist.

- Develop risk-based cleanup levels for contaminants in water or other media.

- Set management priorities, such as which of several activities should be considered first for regulatory or corrective action.

Although these distinct uses share basic risk assessment methodology and some common information, the performance of one is not dependent upon the completion of another. In addition, subtle differences exist in the level of acceptable uncertainty and communication of results. For example, EPA's *Risk Assessment Guidance for Superfund* states that in a human health evaluation for a Superfund site, "It is important to recognize that information should be developed only to help . . . determine what actions are necessary to reduce risks, and not to fully characterize site risks or eliminate all uncertainty from the analysis." The danger of oversimplification also exists in the form of worst-case estimates. In response to comments, the U.S. EPA states in the *Guidelines for Estimating Exposures* (Federal Register 24, September 1986), "The guidelines do not encourage the use of worst-case assessments, but rather the development of realistic assessments based on the best data available." The approach to be taken with regard to the Great Neck Facility risk analysis is to present potential hazards as realistically as possible within the framework of EPA's guidelines. To this end, risks will be estimated utilizing conservative assumptions consistent with EPA's recommended approach for approximating "reasonable maximum exposure". EPA recommends that "a determination of reasonable cannot be based solely on quantitative information, but also requires the use of professional judgment." As part of the uncertainty analysis, an effort will be made to quantify risks in a more realistic manner, utilizing Monte Carlo simulation techniques.

5.2 METHODOLOGY

The baseline risk assessment process involves four basic steps: data analysis, exposure assessment, toxicity assessment, and risk characterization. The analysis of data involves a detailed consideration of the detections, concentrations, and extent of hazardous substances in groundwater or other media and the identification of the chemical substances present at the site that represent the focus of the risk assessment process.

Justification for eliminating from the risk analysis chemicals that are detected at naturally occurring levels and which do not pose health hazards is provided in this initial step.

An exposure assessment is conducted to estimate the magnitude of actual and potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are possibly exposed. In the exposure assessment, reasonable maximum estimates of exposures to chemicals are developed for both current and future land-use assumptions. This process involves analyzing contaminant releases, identifying exposed populations, identifying potential pathways of exposure, estimating the upper limits of exposure point concentrations, and estimating the contaminant intakes. Lifetime (70 years) exposure will be considered when calculating reasonable maximum residential exposure.

The toxicity assessment component of the baseline risk assessment considers the types of adverse health effects associated with chemical exposures, the relationship between magnitude of exposure and adverse effects, and related uncertainties such as the weight of evidence of a particular chemical's potential carcinogenicity in humans.

With respect to contaminants found in groundwater at the site, dose-response information is essential to characterizing health hazards. One fundamental principle of toxicology that cannot be overemphasized is that exposure to a toxic substance does not necessarily result in a toxic effect. One primary purpose of the toxicity assessment is to document exposure levels which are not anticipated to result in any adverse effects in any susceptible population. For many chemicals, EPA has derived verified risk reference doses, which will be used for the purpose of the risk analysis. However, for some compounds identified at the site no such criteria or guidelines exist. For these chemicals, it is necessary to develop acceptable intake levels utilizing toxicological expertise. A protocol will be established for the determination of toxicity indices, defining a hierarchy of sources to be consulted, and the methodology for determination of toxicity values. The protocol will be developed with the intent that it follow current U.S. EPA philosophy and employ methodologies adopted and/or developed by the National Academy of Sciences. A preliminary protocol that has been successfully used and will be considered for this project defines the following hierarchy of sources:

1. EPA's on-line Integrated Risk Information System (IRIS). This database contains only those RfDs (verified risk reference doses) and cancer potency factors which have been verified by EPA's RfD and Carcinogen Risk Assessment Verification Endeavor (CRAVE) workgroups, and is thus the agency's preferred source for toxicity values. IRIS information supersedes information from all other sources. However, where appropriate, new data (e.g., for arsenic carcinogenicity) may be presented to provide a more scientifically sound risk evaluation for certain chemicals listed on IRIS.

2. Health Effects Assessment Summary Tables (HEAST), a quarterly publication from the EPA. HEAST contains interim as well as verified RfDs and slope

factors. Supporting toxicity information for interim and verified values are provided in an extensive reference section of HEAST. Toxicity information is only sought in HEAST for those compounds not listed in IRIS.

3. Toxicity values that cannot be determined in either IRIS or HEAST can be derived from data in toxicological profiles for individual compounds as compiled by the Agency for Toxic Substances and Disease Registry (ATSDR). These documents provide results of a number of toxicological studies as well as the methodologies and assumptions used in the studies. Toxicological values for a given compound are derived from the study which summarizes the best available data or the set of data which exhibited either the lowest value for Lowest-Observed-Adverse-Effect-Level (LOAEL), or the highest No-Observed-Adverse-Effect-Level (NOAEL). The LOAEL is the lowest dosage at which some effect is shown. The NOAEL is the dosage at which no observed toxic effect or response is noted. Derivation of an acceptable daily intake incorporates uncertainty factors for extrapolation of data from animals to humans, calculation of the human-equivalent dose, and to account for intraspecies variability in sensitivity to the toxicant.

4. If none of the above sources provide data, Toxline and other related databases and journals can be searched for relevant dose-response studies upon which to derive toxicity values, using sound, defensible principles of toxicology.

5. If none of the above sources provide data, toxicity values can be derived from Threshold Limit Values (TLVs). Acceptable intake levels are derived from TLVs by correcting for continuous exposure and dividing by appropriate and conservative safety factors.

6. If toxicity data do not exist in any of the above sources, LD_{50} data for a given compound can be compiled. The lowest oral LD_{50} value for any species can be used to derive a suitable acceptable daily intake, dividing by appropriate safety factors, depending upon the anticipated length of exposure.

7. For those chemicals which lack any toxicity information at all, it may be necessary to apply the concept of structure-activity relationships. This concept allows the derivation of an acceptable intake for a chemical by inference and analogy to closely related compounds. Professional judgment will be tempered with conservatism in these instance.

Risk characterization summarizes and combines outputs of the exposure and toxicity assessments to characterize upper limits of risk. This step of the evaluation also compares predicted exposure concentrations (i.e., the measured and predicted concentrations in groundwater) with applicable or relevant and appropriate regulatory requirements (e.g., New York State and federal drinking water standards for certain chemicals in groundwater). The output of this analysis provides both quantitative and

qualitative expressions of risk. To characterize potential non-cancer effects, comparisons are made between projected intakes of chemical contaminants and toxicity values or guidelines developed by U.S. EPA or provisional toxicity values derived as outlined above. To characterize the upper limit of potential carcinogenic effects, probabilities that an individual could develop cancer over a plausible duration of exposure are estimated from projected reasonable-maximum exposures and chemical-specific upper-bound cancer potency estimates developed by U.S. EPA's Carcinogen Assessment Group. Major assumptions, scientific judgments, and estimates of uncertainties embodied in the human health evaluation are documented.

5.3 MAJOR ELEMENTS OF THE RISK ASSESSMENT

The elements of the proposed scope of work and deliverable reports are briefly outlined below. The risk assessment is comprised of the following elements, which will be presented as a single comprehensive report which will be included in the RI report.

1. Introduction

    - Statement of objectives
    - Site characterization
    - Scope of the risk assessment
    - Methodologies

2. Data Presentation and Evaluation

    - General sampling locations and media (maps)
    - Evaluate sample quantitation limits that are greater than standards or criteria
        - Evaluation of QA/QC methods and significance of quantified/codified data
    - Evaluation of tentatively identified compounds
    - Comparison of site sample results with background
    - Rationale for reducing the number of chemicals of potential concern
        - Perform statistical analysis and derive upper 95% confidence limit of mean concentrations of chemicals in groundwater

3. Exposure Assessment

    - Characterization of exposure pathways and receptors
    - Evaluation of physical-chemical properties of compounds of concern
        - Estimation of current and future exposure point concentrations for groundwater contamination

- Estimation of upper-bound chemical intakes (reasonable maximum exposures) (text, tables, graphics)
- Justification for utilizing specific exposure coefficients
- Summary and presentation of exposure assessment results (tables)
- Identification of uncertainties and impact on overall assessment

4. Toxicity Assessment

- Methodologies and concepts of toxicology (risk perspectives)
- Toxicity summaries for compounds of concern
- Toxicity assessment and EPA values for non-carcinogens
- Toxicity assessment and EPA values for carcinogens
- Evaluation of chemicals for which no toxicity values are available (derivation of defensible acceptable daily intakes or risk factors)
- Uncertainty analysis related to toxicity data
- Summary and presentation of toxicity information (text, tables, graphics)

5. Risk Characterization
   - Comparisons of upper-bound exposure intakes with acceptable intakes
   - Quantification of current and future risks
     - Hazard indices for non-carcinogenic effects
     - Cancer risk estimates for carcinogens
     - Identification of reasonable exposure pathway combinations (ingestion, inhalation, dermal absorption of groundwater contaminants)
     - Evaluation of risk posed to hypothetical \residential users of affected groundwater
     - Subchronic, acute and reproductive hazards evaluation
   - Uncertainty analysis
   - Summary and presentation of site-specific hazards

6.0 REMEDIAL INVESTIGATION REPORT

The data and information collected during the Phase I and Phase II activities will be analyzed and summarized in a RI report. This report will characterize the nature and extent of soil and groundwater that has been impacted by VOCs, metals, cyanide, PCBs, pesticides, and semivolatile organic compounds. Results of the Risk Assessment will also be included in the RI report. The RI is comprised of the following elements which are briefly outlined below and will be presented in a single comprehensive report.

RI TABLE OF CONTENTS

- **Executive Summary**
- **Introduction**
  - Purpose of Report
  - Site Background
    - Site Description
    - Site History
    - Previous Investigations
- **Study Area Investigation:** Includes field activities associated with site characterization.
  - Surface Features
  - Contaminant Source Investigation
  - Meteorological Investigations
  - Surface Water Investigation
  - Sediment Investigation
  - Soil and Vadose Zone Investigation
  - Groundwater Investigation
- **Physical Characteristics of the Study Area :** Results of the field activities to determine physical characteristics.
  - Surface Features
  - Meteorology
  - Surface Water Hydrology
  - Geology
  - Soils
  - Hydrogeology
- **Nature and Extent of Contamination:** Presents the results of the site characterization.
  - Sources
  - Surface Water
  - Sediment
  - Soils and Vadose Zone
  - Groundwater
- **Contaminant Fate and Transport**
  - Potential Routes of Migration
  - Contamination Migration
    - Groundwater Model
- **Baseline Risk Assessment**
- **Summary and Conclusions**

7.0 FEASIBILITY STUDY

7.1 DEVELOPMENT OF ALTERNATIVES

Site data and other information gathered from the Phase I and Phase II activities will be reviewed to establish site condition statements for each constituent environmental medium. Based on the condition statements, a list of general response actions will be developed. General response actions address site problems and meet cleanup goals by decreasing a release, threat of release, or pathway exposure. They are broad categories defining the nature of a response without defining individual technologies. From these general response actions, lists of specific technologies will be developed for the screening process.

The list will be screened (considering site conditions, waste characteristics, and technical requirements) to eliminate or modify those technologies that may prove extremely difficult to implement, that could require unreasonable time periods, or that may rely on insufficiently developed technology. Emphasis will be given to identifying technologies that may contribute to a feasible and practical site remediation plan that meets performance goals at a minimum present worth cost.

A two phase screening technique will be used that involves a matrix comprising a comprehensive list of potential technologies plotted against the impacted environmental media at the site. Potentially feasible or applicable technologies are separated from inapplicable or infeasible technologies using binary (yes or no) decision matrix for each environmental medium. Under the second stage, the technologies remaining from the first stage screening are examined for each environmental medium and are ranked. Values are assigned based upon the levels of attainment of the following criteria:

- Is the technology commercially proven?
- Does the technology remediate the problem?
- Does the technology comply with existing regulations, and can it be permitted?, and
- How do the capital and operating costs for the technology compare to other alternatives?

The results of this screening process is a list of technologies with high rank scores, classed by general response action that address remediation of each environmental medium. The list will be further segregated into applicable technologies. For overall remediation of some media, it may be appropriate to combine several general response

actions to form an alternative. It is anticipated that the alternatives developed will include the following:

- Treatment for source control that would eliminate the need for long term management (including monitoring).
- Treatment as a principal element to reduce the toxicity, mobility, or volume of site waste.
- Containment of waste with little or no treatment, but providing protection of human health and the environment, primarily by controlling potential exposure or reducing the mobility of the waste, and
- A no action alternative.

In addition, the results will be used to identify further field data required to develop a site specific application of the technologies. These data will be collected during the RI Phase II.

7.2 INITIAL SCREENING OF ALTERNATIVES

The purpose of this initial screening is to provide sufficient information on each alternative to enable rejection of those which are shown to be infeasible, ineffective, or not cost effective. Alternatives will be evaluated in greater detail than during the screening process, by addressing actual operating characteristics and comparing against remediation requirements. Evaluation categories are summarized as follows:

Effectiveness: Alternatives will be evaluated as to whether the adequately protect human health and the environment; attain federal and state Applicable or Relevant and Appropriate Requirements (ARARs) or other criteria, advisories, or guidance; significantly and permanently reduce the toxicity, mobility, or volume of hazardous constituents; are technically reliable, or are effective in other respects. Reliability includes the potential for failure and the need for replacement of the remedy.

Implementation: Alternatives will be evaluated as to the technical feasibility and availability of the technologies each would employ; the technical and institutional ability to monitor, maintain, and replace technologies over time; and the administrative feasibility of implementing the alternative.

Cost Effectiveness: The costs of construction and long term costs necessary to operate and maintain the alternatives will be evaluated. However, detailed cost analyses will not be performed as part of this task.

7.3 DETAILED EVALUATION OF ALTERNATIVES

The alternatives will be evaluated against the broad factors of effectiveness, implementability, and cost, using appropriate and more specific measures such as protectiveness, compliance with ARARs, reliability, and technical feasibility. The detailed analysis of each alternative will include both short term and long term considerations for effectiveness, implementability, and cost effectiveness.

Alternatives will be compared using an array of evaluation factors appropriate for the site. Measures of effectiveness will include the degree to which the alternative is protective of human health and the environment. Where health based levels are established in ARARs, they will be generally adopted as the minimum level of protection needed at the site. Where such levels have not been established, risk assessments can be used to help establish risk levels appropriate at the site. The reliability of the remedy, including the potential need for and cost of replacement, is another important element of effectiveness. Specific measures may also include other health risks borne by the affected population, population sensitivities, and the impacts on environmental receptors. For groundwater response actions, the potential spread of a compound and the technical limits of aquifer restoration are necessary measures. Another important measure of effectiveness is the degree to which the mobility, toxicity, or volume of the substance is reduced.

Measures of implementability will include the technical feasibility of the alternatives, the administrative feasibility of implementing the alternative, and the availability of any needed equipment, specialists, or off-site capacity. Specific measures for groundwater response actions will include the feasibility of providing an alternative water supply to meet current groundwater needs, the potential need for groundwater, and the effectiveness and reliability of institutional controls.

Measures of cost effectiveness will include short term capital or operation costs and any long term operation or maintenance costs. Present worth analysis will be used to compare alternatives.

Measures will be tailored appropriately to the site. Where the measures are likely to be important in discriminating among the alternatives, more emphasis and detail may be appropriate to assist in the selection of a remedy.

The most appropriate alternatives for each environmental medium will be selected based upon attainment of the goal of implementing a feasible and practical action that meets performance goals. The selection will be made by ranking each alternative under the categories of effectiveness, implementation, and cost effectiveness.

The most appropriate alternatives will be recommended among those alternatives that meet the following four criteria:

- The alternative must utilize treatment technologies and permanent solutions to the maximum extent practicable as determined by technical feasibility and availability.

- The alternatives must be protective of human health and the environment. This means that the remedy meets or exceeds ARARs or health based levels established through risk assessment when ARARs do not exist or when they are not appropriate.

- Except under those circumstances listed in the NCP, the alternative must attain applicable or relevant and appropriate federal and state public health and environmental requirements that have been identified for a specific site.

- The alternative must be cost effective, accomplishing a level of protection that cannot be achieved by less costly methods.

The preferred remedies will reflect two preferences:

- Remedies that involve treatments that significantly reduce the toxicity, mobility, or volume of hazardous as a principal element while protecting human health and the environment.

- Remedies that minimize the requirement for long term management of residuals.

An alternative may be preferred that does not meet applicable or relevant and appropriate federal and state public health or environmental requirements under the following circumstances:

- The alternative is an interim remedy and will become part of a more comprehensive final remedy that will meet applicable or relevant and appropriate federal and state requirements.

- Compliance with the requirements will result in greater risk to human health and the environment than alternative options.

- Compliance with the requirements is technically impractical.

7.4 FEASIBILITY STUDY REPORT

A FS report will be prepared based upon results of the Remedial Investigation, the Feasibility Study, and the IRM activities. This report will be a stand alone document, however, it will refer to data contained in the RI report etc. The report will include a proposed site remedial action. The proposed site remedial action will be based upon results of the selection of the most appropriate alternatives for each environmental medium. The combination of these alternatives will be reviewed to ensure that the site remedial action meets or exceeds State SCG values, ARARs, and other health based levels. Additional technical information required prior to further development of the site remediation will be listed. The FS is comprised of the following elements which are briefly outlined below and will be presented in a single comprehensive report.

FS TABLE OF CONTENTS

- **Executive Summary**
- **Introduction**
  - Purpose of Report
  - Site Description and History
  - Nature and Extent of Contamination
  - Contaminant Fate and Transport
  - Baseline Risk Assessment
- **Identification of Screening Alternatives**
  - Introduction
  - Remedial Action Objectives
  - General Response Actions
  - Identification and Screening of Technology Types
- **Development and Screening of Alternatives**
  - Development of Alternatives
  - Screening of Alternatives
- **Detailed Analysis of Alternatives**
  - Introduction
  - Individual Analysis of Alternatives
  - Comparative Analysis

8.0 PROJECT ORGANIZATION AND SCHEDULE

The key individuals who are responsible for the overall coordination of efforts to be conducted, as well as the collection, validation and interpretation of data generated during the RI are identified on Figure 13. Resumes of key individuals are included as Appendix A of the SAP.

The schedule for completing the RI/FS is provided as Figure 14. The seventy (70) week schedule allows a 4 week period for the NYSDEC to review data generated during the Phase I prior to commencing Phase II activities. This schedule assumes a reasonable amount of time for obtaining access to off site sampling locations.

TABLES

TABLE 1
FORMER AND PRESENT STORAGE TANKS
UNISYS CORPORATION
GREAT NECK, NY FACILITY

Tank Location	Tankfield	Type	Number& Volume (gal)	Product	Date Removed
South of Garage	T1	UST	1 - 10,000	gasoline	1990
West of Boiler Building	T2	UST	4 - 25,000 4 - 15,000	#6 fuel oil	1991
West of Boiler Building	T2b	UST**	2 - 20,000	#6 fuel oil	existing
South of Foundry Building	T3	UST	2 - 15,000 1 - 10,000	#2 fuel oil	early 1980s
Outside Reclamation Room	T4	UST	6 - 2,000 1 - 1,000	spent & virgin solvents	early 1980s
East of Main Manufacturing Building	T5	AST	1 - 6,000	ethylene glycol	1981

**double wall fiberglass tanks.

TABLE 2
WELL CONSTRUCTION SPECIFICATIONS
(existing wells)
GREAT NECK, NY

WELL #	DATE DRILLED	TD (ft-bg)	SCREEN INTER. (ft)	SAND INTER. (ft)	CASING DIAM. (in)	SLOT#	DTW (ft)	YIELD (gpm)	Sy (gpm/ft)	3 WELL VOL
1GU	May-88	115	105..115	80..115	2	20	103.00			6
1GL	May-88	147	127..147	126..160	4	20	103.20	6	0.12	86
1MI	May-88	255	235..255	255..262	4	20	103.74	20	0.50	296
1MI/L	May-89	342	322..342	312..350	4	20	104.38	<1		465
1ML	May-91	395	390..400	390..405	4	20	104.63	<1		568
2GL	May-88	147	127..147	123..150	4	20	84.64	7		122
2MI	Apr-89	250	230..250	224..260	4	20	84.94	5		323
2MU	Jul-91	185	175..185	168..185	4	20		>20		
3GL	May-88	149	129..149	122..150	4	20	94.35	17	0.30	107
4GL	May-88	150	130..150	124..160	4	10	99.98	1	0.02	98
4MI	Mar-89	250	230..250	223..260	4	20	103.49	4	0.03	287
5GU	Jan-92	95	74..94	68..95	2	10	84.00			
5GL	Feb-89	130	110..130	105..135	4	20	85.81	7		86
5MI	Feb-89	250	239..250	222..255	4	20	86.47	2		320
6GL	Feb-89	125	105..125	98..135	4	20	83.87	20	1.00	81
6MI	Jul-91	240	215..235	175..240	4	20	80.40			
7GL	Mar-89	150	130..150	123..160	4	20	100.00	15	0.30	98
8GU	Apr-89	90	80..90	75..92	4	20	29.00	22	8.00	119
8GL	Apr-89	150	130..150	123..151	4	20	80.39	2	0.04	136
9GL	Apr-89	155	135..155	128..157	4	20	84.18	3		139
10GL	Apr-89	132	112..132	105..150	4	20	80.00	12		102
11GL	May-89	140	120..140	124..148	4	20	84.68	2	0.04	108
11MI	May-89	250	230..250	224..260	4	20	85.79	6	0.10	321
12MI	May-91	253	243..253	232..252	4	20	91.97	3	0.04	315
12ML	May-91	393	383..393	373..394	4	20	92.82			588
19GU	Jan-92	99	78..98	72..99	2	10				
19MI	Jan-92	248	229..239	211..247	4	20				
20GU	Jan-92	93	73..93	65..93	2	10				
21GU	Jan-92	98	78..98	75..98	4	20				
RW1	Sep-91	196	140..160/171..19	130..196	16	50				6138
RW2	Jul-91	215	180..210	140..215	8	30				1683
EW1	Aug-42	235	199..229	197..235	12		81.00	1051	20.20	2713
EW2	Jul-54	260	225..255	218..255	12		64.00	1190	33.06	3453
EW3	Mar-42	256	220..250	203..256	12		61.00	1300	30.23	3435
EW4	Oct-42	107	89..104	78..104	12	150	65.00	937	42.60	740
DW-5	Jul-42	267	210..260	170..267	12		74.00	1190	47.60	3400
DW-6	Sep-42	259	209..259	200..259	12		75.00	1270	22.60	3241
DW-6	Jun-54	245	199..239	187..245	12		80.00	500		2907
DW-8	Jun-42	195	140..190	62..195	12		82.00	1150	26.14	1991
DW-9	Oct-51	108	68..108	63..108	16		74.00	943	67.00	1065
VW1	Jun-90	91	41..91	38..91	4	20	81.00			20
VW2	Jun-90	40	20..40	16..40	4	20				78
VW3	Jun-90	93	73..93	67..93	4	20	82.00			22
VW4	Jun-90	90	60..90	57..90	4	20	81.00			18
VW5	Jun-90	93	63..93	60..90	4	20	82.00			22
VW6	Jun-90	91	71..91	68..91	4	20				178
VW7	Aug-91	47	37..47	31..47	2	20				23
VW8	Aug-91	88	68..88	60..88	2	20				43
VW9	Aug-91	90	70..90	65..90	2	20				44
VW10	Aug-91	90	70..90	65..90	2	20	83.40			3
VW11	Aug-91	90	70..90	65..90	2	20				44
VW12	Aug-91	90	70..90	63..90	2	20				44
VW13	Aug-91	85	45..85	40..85	2	20	83.53			1
VW14	Aug-91	40	20..40	15..40	2	20	34.35			3

note: blank indicates data not available

TABLE 3
TOTAL VOLATILE ORGANICS IN GROUNDWATER (ppb)
UNISYS CORPORATION
GREAT NECK, NY FACILITY

WELL #	DATE					SCREEN INTER. (ft)
	Sep-92	Oct-91	Sep-90	Jul-89	Aug-88	
1GU	35	21	232	4780	3770	105..115
1GL	48	126	7750	2530	6300	127..147
1MI	528	3430	914	966	–	235..255
1MI/L	500	237	1020	1007	–	322..342
1ML	33	46	28	–	–	390..400
2GL	390	1260	1800	1290	821	127..147
2MU	960	–	–	–	–	175..185
2MI	247	950	210	178	–	230..250
3GL	421	1110	2590	1710	1130	129..149
4GL	234	469	315	175	207	130..150
4MI	216	471	1220	1060	–	230..250
5GU	–	–	–	–	–	74..94
5GL	22	30	30	ND	–	110..130
5MI	103	438	95	384	–	239..250
6GL	5	15	ND	–	–	105..125
6MI	8	810	–	–	–	215..235
7GL	255	325	356	229	–	130..150
8GU	41	118	83	96	–	80..90
8GL	176	584	495	1320	–	130..150
9GL	84	169	190	160	–	135..155
10GL	388	364	175	384	–	112..132
11GL	345	3020	2490	374	–	120..140
11MI	287	720	1080	888	–	230..250
12MI	84	468	276	162	–	243..253
12ML	110	58	91	–	–	383..393

note: – = not sampled or well did not exist, ND = not detected, all concentrations in ppb.

HISTORICAL GROUND-WATER CHEMISTRY
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

Well	Date	1,1-Dichloro-ethene	1,2-Dichloro-ethene	Trichloro-ethene	Tetrachloro-ethene	Acetone	Toluene	Methylene Chloride	Additional compounds (detected concentration)
1GU	08/17/88	--	3,400	210	160	NA	<5	<5	10/31/91
	07/11/89	--	4,400	210	170	<10	<5	<5	1,1,1-Trichloroethane (5)
	09/10/90	--	190	23	19	26 B	<5	3 JB	
	10/31/91	--	21	4 J	<5	<10	<5	<5	9/04/92
	09/04/92	2	2	16	13	NA	<1	<1	1,1,1-Trichloroethane (2)
1GL	08/17/88	--	5,100	610	590	NA	47 J	210 B	
	07/11/89	--	2,200	150	180	<10	<5	<5	
	09/10/90	--	6,600	490	660	730 B	<5	84 J	
	10/31/91	--	84	23	19	<10	<5	<5	
	09/04/92	<1	1	29	18	NA	<1	<1	
1MI	07/11/89	--	680	190	96	<10	<5	<5	
	09/10/90	--	700	120	94	24 J	3 J	11 J	
	10/31/91	--	2,800	260	370	590 B	<5	<5	
	09/04/92	18	10	140	360	NA	<1	<1	
1MI/L	07/18/89	--	710	240	57	63 B	<5	9 JB	
	09/10/90	--	510	370	84	19 JB	<5	<5	
	10/31/91	--	160	190	37	<10	<5	<5	
	09/04/92	23	10	220	270	NA	<1	<1	
1ML	09/10/90	--	<5	17	11	<10	0.6 J	<5	
	10/31/91	--	19	10	17	<10	3 J	<5	
	09/04/92	<1	<1	17	16	NA	<1	<1	
2GL	08/17/88	--	620	91	83	NA	27	<5	
	07/11/89	--	1,000	170	120	<10	<5	<5	
	09/10/90	--	1,200	230	160	210	<5	31 JB	
	10/31/91	--	980	170	110	250 B	<5	<5	
	09/04/92	14	6	180	190	NA	<1	<1	
2MI	07/11/89	--	89	70	19	<10	<5	<5	9/10/90 1,1,1-Trichloroethane (1 J)
	09/10/90	--	120	56	34	<10	1 J	2 J	
	10/22/91	--	670	180	100	78 B	<5	13 JB	
	09/04/92	17	6	54	170	NA	<1	<1	
2MU	10/22/91	--	670	170	120	65 B	2 J	5 J	Chloroform (7 J)
3GL	08/17/88	--	830	180	120	NA	9 J	36 B	
	07/11/89	--	1,400	170	140	<10	<5	<5	
	09/10/90	--	1,900	280	270	140	6 JB	28 JB	
	10/31/91	--	820	180	110	31 JB	<5	<5	
	09/04/92	15	6	200	200	NA	<1	<1	

TABLE 4
(continued)

HISTORICAL GROUND-WATER CHEMISTRY
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

Well	Date	1,1-Dichloro-ethene	1,2-Dichloro-ethene	Trichloro-ethene	Tetrachloro-ethene	Acetone	Toluene	Methylene Chloride	Additional compounds (detected concentration)
4GL	08/17/88	--	120	56	21	NA	10	<5	
	07/11/89	--	99	56	20	<10	<5	<5	
	09/10/90	--	210	71	34	21 B	<5	13 B	
	10/31/91	--	320	91	58	6 JB	<5	<5	
	09/04/92	3	5	130	96	NA	<1	<1	
4MI	07/11/89	--	780	180	100	<10	<5	<5	
	09/10/90	--	820	210	190	60 JB	<5	16 JB	
	10/31/91	--	440	31	<5	15 JB	<5	<5	
	09/04/92	<1	10	46	160	NA	<1	<1	
5GL	07/11/89	--	<5	<5	<5	<10	<5	<5	
	09/10/90	--	30	9 J	5 J	9 JB	<5	8 JB	
	10/22/91	--	23	7	4 J	1 JB	<5	<5	
	09/04/92	2	2	7	11	NA	<1	<1	
5MI	07/11/89	--	110	59	12	<10	97	<5	7/11/89
	09/10/90	--	69	17	9	5 JB	2 J	<5	Benzene (8)
	10/22/91	--	300	89	49	11 JB	2 J	<5	Xylenes (72)
	09/04/92	<1	<1	65	38	NA	<1	<1	Ethylbenzene (26)
6GL	07/11/89	--	<5	<5	<5	<10	<5	<5	
	10/22/91	--	15	3 J	2 J	6 JB	<5	<5	
	09/04/92	<1	1	2	2	NA	<1	<1	
6MI	10/22/91	--	600	100	110	67 B	<5	5 J	
	09/04/92	<1	<1	4	4	NA	<1	<1	
7GL	07/11/89	--	140	66	23	<10	<5	<5	
	09/10/90	--	220	93	43	26 B	<5	4 JB	
	10/22/91	--	230	63	32	13 JB	2 J	<5	
	09/04/92	<1	5	150	100	NA	<1	<1	
8GU	07/11/89	--	55	26	15	<10	<5	<5	9/10/90, 10/22/91
	09/10/90	--	72 J	46	37	<10	<5	<5	1,1,1-Trichloroethane (4 J) (3 J)
	10/22/91	--	50	39	29	<10	<5	<5	
	09/04/92	1	1	9	30	NA	<1	<1	
8GL	07/11/89	--	910	250	160	<10	<5	<5	9/04/92 1,1,1-Trichloroethane (1)
	09/10/90	--	270	150	75	<10	<5	4 JB	
	10/22/91	--	350	140	94	22 B	<5	<5	
	09/04/92	13	3	88	72	NA	<1	<1	

TABLE 4
(continued)

HISTORICAL GROUND-WATER CHEMISTRY
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

Well	Date	1,1-Dichloro-ethene	1,2-Dichloro-ethene	Trichloro-ethene	Tetrachloro-ethene	Acetone	Toluene	Methylene Chloride	Additional compounds (detected concentration)
9GL	07/11/89	--	85	46	29	<10	0.6 JB	<5	7/11/89, 9/10/90
	09/10/90	--	100	46	38	6 JB	0.7 J	6	1,1,1-Trichloroethane (2 J) (1 J)
	10/31/91	--	82	51	36	12 B	<5	<5	
	09/04/92	4	2	41	34	NA	<1	<1	9/04/92 1,1,1-Trichloroethane (3)
10GL	07/11/89	--	86	42	220	<10	<5	<5	9/10/90, 10/22/91
	09/10/90	--	85	49	41	<10	<5	<5	1,1,1-Trichloroethane (3 J) (2 J)
	10/22/91	--	110	44	210	14 JB	<5	2 J	
	09/04/92	<1	<1	49	280	NA	59	<1	
11GL	07/11/89	--	260	57	57	<10	<5	<5	
	09/10/90	--	1,800	170	520	<10	<5	<5	
	10/31/91	--	2,300	210	510	550 B	84 J	<5	
	09/04/92	24	11	50	260	NA	<1	<1	
11MI	07/11/89	--	660	150	78	<10	<5	<5	9/04/92
	09/10/90	--	810	170	100	17 JB	<5	16 JB	1,1,1-Trichloroethane (14)
	10/31/91	--	490	120	110	110 B	4 J	<5	1,2-Dichloroethane (7)
	09/04/92	12	4	120	130	NA	<1	<1	
12MI	07/11/89	--	82	49	31	<10	<5	<5	9/10/90 Benzene (1 J)
	09/10/90	--	170	54	44	<10	2 J	8	1,1,1-Trichloroethane (2 J)
	10/22/91	--	320	75	73	6 JB	<5	<5	
	09/04/92	5	2	17	54	NA	<1	<1	9/04/92 1,1,1-Trichloroethane (6)
12ML	09/10/90	--	51	5	11	<10	0.6 J	24	
	10/22/91	--	41	5	12	6 JB	<5	<5	
	09/04/92	4	2	29	75	NA	<1	<1	
VW1	10/31/91	--	90,000	<5	11,000	<10	16,000	<5	Xylenes (4,800) Ethylbenzene (1,000 J)
VW2	10/31/91	--	3,000 J	64,000	21,000	5,600 JB	18,000	<5	Xylenes (2,300 J)
VW3	10/31/91	--	2,100	130	310	130 JB	<5	<5	
VW4	10/31/91	--	72,000	<5	<5	9,100	3,300	<5	
VW5	10/31/91	--	48,000	<5	<5	1,100 J	8,700	<5	
VW6	10/31/91	--	44	32	21	4 JB	<5	<5	
VW7	10/31/91	--	DRY	--	--	--	--	--	

TABLE 4
(continued)

HISTORICAL GROUND-WATER CHEMISTRY
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

Well	Date	1,1-Dichloro-ethene	1,2-Dichloro-ethene	Trichloro-ethene	Tetrachloro-ethene	Acetone	Toluene	Methylene Chloride	Additional compounds (detected concentration)
VW8	10/22/91	--	17,000	390 J	830	1,400 B	<5	120 JB	
VW9	10/22/91	--	2,100	260	430	380 B	13 J	<5	
VW10	10/22/91	--	30	64	60	5 JB	<5	<5	
VW11	10/31/91	--	67	39	30	2 JB	<5	<5	
VW12	10/31/91	--	1,200	200	320	20 JB	<5	<5	
VW13	10/22/91	--	18,000	220 J	770 J	3,700	5,500	<5	Xylenes (2,000) Ethylbenzene (480 J)
VW14	10/22/91	--	<5	98,000	54,000	16,000 B	19,000	1,100 J	Xylenes (4,100) Ethylbenzene (850 J) 1,1,1-Trichloroethane (750 J)

NOTE: All results in ug/l (micrograms per liter).
B - Method blank was contaminated.
J - Parameter was determined to be present below the method detection limit. The concentration is an estimated value.
NA - Not analyzed.
10/5 - Method detection limits with no dilution.

unisys.tbl/92-47

TABLE 5
OFF SITE WELLS WITHIN 1 1/2 MILE
UNISYS CORPORATION
GREAT NECK, NY FACILITY

WELL #	USE	OWNER	DISTANCE FROM SITE (ft)	FORMATION (G/M/L)	WELL DEPTH (ft)	SCREEN DEPTH (ft)	L.S. ELEVATION	YIELD (gpm)	STATUS
N-00015	SUPPLY	JAMAICA W S	5700	G	102	81	115	700	ABANDONED
N-0014	SUPPLY	JAMAICA	7500	G	106	85	100	800	OCCASIONAL
N-01102	MONITORING	NCDPW	5100	G	166	161	184	NA	OBSERVATION
N-01802	SUPPLY	MANH-LKVL	0	L	691	641	140	1050	SEASONAL
N-01804	COOLING	SPERRY	0	M	250	220	120	1300	YEARLY
N-01958	SUPPLY	JAMAICA WS	5900	L	727	667	115	1115	YEARLY
N-03905	SUPPLY	MANH-LKVL	1900	M	254	214	150	1050	YEARLY
N-04173	COOLING	SPERRY	0	M	255	225	120	1000	YEARLY
N-04243	SUPPLY	MANH-LKVL	2000	M	255	205	150	1050	SEASONAL
N-04390	SUPPLY	JAMAICA W S	2600	M	296	261	120	1400	YEARLY
N-05535	MONITORING	DEEPDALE CC	5700	M	390	330	250	500	YEARLY
N-07445	SUPPLY	JAMAICA W S	2600	M	448	388	120	1200	SEASONAL
N-07512	SUPPLY	GARDEN CITY	4300	M	375	325	120	1200	YEARLY
N-07560	MONITORING	LI JEWISH HOSP	1500	M	242	221	150	310	YEARLY
N-08038	MONITORING	LK SUCC G C	5000	M	295	271	210	700	YEARLY
N-08499	MONITORING	WERE ASSOC	4000	M	270	160	140	1200	SEASONAL
N-08564	MONITORING	WERE ASSOC	4000	M	320	170	140	1200	SEASONAL
N-09948	MONITORING	NCDPW	2200	G	114	109	125	NA	OBSERVATION
N-10056	MONITORING	TNH LANDFILL	6200	G	120	110	109	NA	OBSERVATION
N-10057	MONITORING	TNH LANDFILL	6300	G	95	85	110	NA	OBSERVATION
N-10058	MONITORING	TNH LANDFILL	5700	G	100	90	122	NA	OBSERVATION
N-10059	MONITORING	TNH LANDFILL	7000	G	95	85	109	NA	OBSERVATION
N-10060	NA	TNH LANDFILL	7100	G	114	104	110	NA	OBSERVATION
N-1618	SUPPLY	MANH-LKVL	7100	L	550	470	175	1500	YEARLY
N-2219	COOLING	PAERDEGAT	5750	G	76	NA	NA	150	NA
N-2576	IRRIGATION	N.SHORE TWR	1900	M	132	NA	NA	325	NA
N-3672	SUPPLY	GARDEN CITY	7500	M	447	407	100	1000	NOT USED
N-3673	SUPPLY	GARDEN CITY	7600	M	429	389	100	1000	NOT USED
N-5603	SUPPLY	GARDEN CITY	7500	M	415	365	110	NA	NOT USED
N-5710	SUPPLY	MANH-LKVL	3700	M	385	325	160	1400	SEASONAL
N-6073	COOLING	DEAN FURNITR	1600	G	105	NA	NA	160	NA
N-8358	COOLING	WERE ASSOC	1600	M	396			900	NA
N-8585	NA		6900	G	107	102	108	NA	OBSERVATION
N-8821	COOLING	TREE REALEST	1400	M	295	NA	NA	150	NA
N-9983	MONITORING	NCDPW	7600		99	94	107	NA	OBSERVATION
Q-1666	COOLING	GRUMMAN	5250	G	108	81	122	1000	ABANDONED
Q-1909	COOLING	LI JEWISH	2250	M	244	NA	NA	800	NA

Table 6
Soil Boring Analytical Data

Boring	Boring Depth	Date Drilled	Sample Number	Sample Depth (ft)	PHC (ppm)	Total VOCs	Total Semivols	Total Pest./ PCBs	Parameters	Source
B-1	4	1/13/88	B-1	10..12	ND	ND	--	--	vocs, phc, metals	--
B-2	20	3/31/88	B-2	10..12	+	+	--	--	vocs, phc, metals	G&M
B-3	29	3/31/88	B-3	25..27	+	+	--	--	vocs, phc, metals	G&M
B-4	35	4/5/88	B-4	20..22	+	+	--	--	vocs, phc, metals	G&M
"	"	"	B-4	30..32	+	+	--	--	vocs, phc, metals	G&M
"	"	"	B-4	35..37	+	+	--	--	vocs, phc, metals	G&M
B-5	18	4/5/88	B-5	15..17	+	+	--	--	vocs, phc, metals	G&M
B-6	30	4/11/88	B-6	25..27	ND		--	--	vocs, phc, metals	G&M
B-7	30	4/11/88	B-7	30-32	16	ND	--	--	vocs, phc, metals	G&M
B-8	30	4/11/88	B-8	30..32	ND	ND	--	--	vocs, phc, metals	G&M
B-9	32	4/12/88	B-9	30..32	ND	ND	--	--	vocs, phc, metals	G&M
B-10	12	4/12/88	B-10	5..7	41	ND	--	--	vocs, phc, metals	G&M
B-11	30	3/31/88	B-11	30-32	ND	ND	--	--	vocs, phc, metals	G&M
B-12	30	3/31/88	B-12	30-32	ND	ND	--	--	vocs, phc, metals	G&M
B-13	30	3/31/88	B-13	25..27	ND	ND	--	--	vocs, phc, metals	G&M
B-14	30	4/12/88	B-14	25..27	ND	ND	--	--	vocs, phc, metals	G&M
SVB1	50	6/12/90	--	--	--	--	--	--	not sampled	--
SVB2	91	6/14/90	SVB2-50-51.5	50-51.5	--	18	--	--	vocs	Roux
"	"	"	SBVB2-85-86.5	85-86.5	--	94,000	--	--	vocs	Roux
SVB3	45	6/18/90	--	--	--	--	--	--	not sampled	--
SVB4	93	6/18/90	SVB4-80-81.5	80-81.5	--	ND	--	--	vocs	Roux
SVB5	80	6/21/90	SVB5-60-61.5	60..61.5	--	*	--	--	vocs	Roux
"	"	"	SBV5-50-51.5	50..51.5	--	6300	--	--	vocs	Roux
"	"	"	SVB5-12	12	--	*	--	--	vocs	Roux
"	"	"	SVB5-70-71.5	70-71.5	--	*	--	--	vocs	Roux
"	"	"	SVB5-80-81.5	80-81.5	--	8400	--	--	vocs	Roux
SVB6	37	6/21/90	SVB6-12	12	--	--	--	--	#2 fuel oil (ND)	--
SVB7	93	--	--	--	--	--	--	--	NA	
SVB8	25	6/25/90	--	--	--	--	--	--	NA	--
SVB9	90	--	--	--	--	--	--	--	NA	

Table 6
(continued)
Soil Boring Analytical Data

Boring	Boring Depth	Date Drilled	Sample Number	Sample Depth (ft)	PHC (ppm)	Total VOCs	Total Semivols	Total Pest./ PCBs	Parameters	Source
SVB10	48	7/30/91	SVB102022	20..22	--	*	--	--	tcl vocs	LBG
"	"	"	SVB104042	40..42	--	5	--	--	tcl vocs	LBG
SVB11	90	7/24/91	SVB112022	20..22	--	ND	--	--	tcl vocs	LBG
"	"	"	SVB114042	40..42	--	59	--	--	tcl vocs	LBG
"	"	"	SVB116062	60..62	--	ND	--	--	tcl vocs	LBG
"	"	"	SVB118082	80..82	--	27	--	--	tcl vocs	LBG
SVB12	3	7/25/90	--	--	--	--	--	--	not sampled	--
SVB13	90	7/26/91	SVB132022	20..22	--	*	--	--	tcl vocs	LBG
"	"	"	SVB134042	40..42	--	*	--	--	tcl vocs	LBG
"	"	"	SVB136062	60..62	--	*	--	--	tcl vocs	LBG
"	"	"	SVB138082	80..82	--	65	--	--	tcl vocs	LBG
SVB14	90	8/16/91	SVB142022	20..22	--	*	--	--	tcl vocs	LBG
"	"	"	SVB144042	40..42	--	*	--	--	tcl vocs	LBG
"	"	"	SVB146062	60..62	--	*	--	--	tcl vocs	LBG
"	"	"	SVB148082	80..82	--	15	--	--	tcl vocs	LBG
SVB15	90	8/6/91	SVB152022	20..22	--	*	--	--	tcl vocs	LBG
"	"	"	SVB154042	40..42	--	*	--	--	tcl vocs	LBG
"	"	"	SVB156062	60..62	--	*	--	--	tcl vocs	LBG
"	"	"	SVB158082	80..82	--	ND	--	--	tcl vocs	LBG
SVB16	90	8/14/91	SVB162022	20..22	--	7	--	--	tcl vocs	LBG
"	"	"	SVB164042	40..42	--	6	--	--	tcl vocs	LBG
"	"	"	SVB166062	60..62	--	6	--	--	tcl vocs	LBG
"	"	"	SVB168082	80..82	--	30	--	--	tcl vocs	LBG
SVB17	90	8/22/91	SVB17	20..22	--	1,330,000	--	--	tcl vocs	LBG
"	"	"	SVB-17	60-62	--	308,000	--	--	tcl vocs	LBG
"	"	"	SVB-17	40-42	--	*	--	--	tcl vocs	LBG
"	"	"	SVB-17	80-82	--	130,000	--	--	tcl vocs	LBG
"	"	"	SVB-17B	20-22	--	1,899,000	--	--	tcl vocs	LBG
"	"	"	SVB-17 011	40-42	--	--	--	--	tcl vocs	LBG
"	"	"	SVB-17 RE	60-62	--	348,000	--	--	tcl vocs	LBG
"	"	"	SVB-17 RE	80-82	--	130,000	--	--	tcl vocs	LBG

Table 6
(continued)
Soil Boring Analytical Data

Boring	Boring Depth	Date Drilled	Sample Number	Sample Depth (ft)	PHC (ppm)	Total VOCs	Total Semivols	Total Pest./ PCBs	Parameters	Source
"	"	"	SVB-17B RE	20-22	--	2,200,000	--	--	tcl vocs	LBG
"	"	"	SVB-17 002 RE	40-42	--	15.500	--	--	tcl vocs	LBG
"	"	"	SVB-17 011 RE	40-42	--	*	--	--	tcl vocs	LBG
"	"	"	SVB-17	12-20	--	--	1140	48/890	tcl sem-voc,pest/PCB	LBG
"	"	"	SVB-17 RE	12-20	--	--	1640	--	tcl semi-vols	LBG
"	"	"	SVB-17	30-40	--	--	ND	ND/ND	tcl sem-voc,pest/PCB	LBG
"	"	"	SVB-17	50-60	--	--	6270	--	tcl sem-voc	LBG
"	"	"	SVB-17	70-80	--	--	5370	ND/2730	tcl sem-voc,pest/PCB	LBG
"	"	"	SVB-17	12-20	--	--	--	--	tcl pest/PCB	LBG
"	"	"	SVB-17	30-40	--	--	--	--	tcl pest/PCB	LBG
SVB-17	"	"	SVB-18	50-60	--	--	--	--	tcl pest/PCB	LBG
"	"	"	SVB-17	70-80	--	--	--	--	tcl pest/PCB	LBG
"	"	"	SVB-17	12-20	--	--	--	--	tal metals plus cyanide	LBG
"	"	"	SVB-17	30-40	--	--	--	--	tal metals plus cyanide	LBG
"	"	"	SVB-17	50-60	--	--	--	--	tal metals plus cyanide	LBG
"	"	"	SVB-17	70-80	--	--	--	--	tal metals plus cyanide	LBG
SVB18	42	8/23/91	--	--	--	--	--	88/3060--	tcl pest/PCB	--

note: all results in ppb unless noted otherwise, -- = not analyzed or not sampled, * = analyte detected in the blank or below the mdl, ND = not detected, + = data not available

TABLE 7
SAMPLING PLAN
UNISYS CORPORATION
GREAT NECK, NY FACILITY

Matrix	Field Parameters	Number of Samples	Chemical Analysis					Field QA Samples												Lab QA Samples			Total Matrix
								Duplicate/Replicate			Trip Blanks(1)			Field Blanks(1)			Performance Evaluations(2)			Matrix Spike/Matrix Spike Duplicate(3)			
			A	B	C	D	E	No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	No.	Freq.	Total	
Soil (SB)	PID Screenings	12	12	12	12	12	12	1	1	1	1	1	1	1	1	1	0	0	0	2	1	2	17
Soil (SST)	PID Screenings	9	9	9	9	0	0	1	1	1	1	1	1	1	1	1	0	0	0	2	1	2	14
Soil (MW)	PID Screenings	19	19	19	19	19	19	1	1	1	1	1	1	1	1	1	0	0	0	2	1	2	24
Water (OSW)	Cond., Turb., pH, & Temp.	15	15	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	2	1	2	20
Water (MW)	Cond., Turb., pH, & Temp.	48	48	48	48	48	48	1	2	2	1	2	2	1	2	2	1	2	2	2	3	6	62
Water (DB)	Cond., Turb., pH, & Temp.	3	3	3	3	3	3	1	1	1	1	1	1	0	0	0	0	0	0	2	1	2	7
Water (LI)	Cond., Turb., pH, & Temp.	6	6	6	6	6	6	1	1	1	1	1	1	1	1	1	0	0	0	2	1	2	11
Water (DD)	Cond., Turb., pH, & Temp.	60	60	0	0	0	0	0	0	0	1	12	12	1	2	2	0	0	0	2	2	4	78
Water (PW)	Cond., Turb., pH, & Temp.	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Sediment (DB)	PID Screenings	10	10	10	10	10	10	1	1	1	1	1	1	1	1	1	0	0	0	2	1	2	15

NOTES:

A TCL volatile organics (plus 10 TICs)
B TCL semivolatile organics (plus 20 TICs)
C TCL pesticides/PCBs
D TAL Metals (Total)
E Cyanide
OSW Existing Off Site Well
MW Monitor Well
LI Lloyd Well
SST Sub Station Sample
SB Soil Borings
PW Potable Water Sample
DD During Drilling; samples collected at 50' foot intervals during drilling of ML wells.
DB Drainage Basin
1 Additional blanks may be collected depending on the number of samples collected on any one day.
2 PE to be prepared and certified by an independent laboratory for volatile organics and metals.
3 Additional MS/MSDs may be performed if medium-level samples are encountered.

TABLE 8
ANALYTICAL PROCEDURES
UNISYS CORPORATION
GREAT NECK, NY FACILITY

Fraction/Parameter	Method
TCL Volatile Organics (plus 10 TICs)	ASP Method 91-1
TCL Semi-volatile Organics (plus 20 TICs)	ASP Method 91-2
TCL Pesticides/PCB's - Soils	ASP Method 91-3
TCL Pesticides/PCB's - Water	EPA Method 608
TAL Inorganics (Metals as Total - Round 1)	ASP 1991 - Superfund CLP Inorganics
TCL Low Level Volatile Organics (plus 10 TICs)	ASP Method 524.2

note: - All deliverables will be Superfund Category.
- For non CLP Methods reporting and deliverables will conform to category B NYSDEC ASP 12/91.
- The laboratory should achieve a detection limit of 0.1 ppb for PCB's.

TABLE 9
PROPOSED MONITOR WELL RATIONALE
UNISYS CORPORATION
GREAT NECK, NY FACILITY

WELL	ON/OFF SITE	SCREEN SETTING	LOCATION RATIONALE
2 ML	ON	325..335	adjacent to cluster #2 in the lower Magothy
3ML	ON	325..335	south boundary in the lower Magothy
5 ML	ON	325..335	adjacent to N1802 in the lower Magothy
7ML	ON	325..335	northeast corner of site in the lower Magothy
8ML	ON	325..335	northwest corner of site in the lower Magothy
13GL	OFF	150..160	sidegradient in the lower glacial
13ML	OFF	325..335	sidegradient in the lower Magothy
14GL	OFF	150..160	upgradient in the lower glacial
14ML	OFF	325..335	upgradient in the lower Magothy
15GL	OFF	150..160	upgradient in the lower glacial
15ML	OFF	325..335	upgradient in the lower Magothy
16GL	OFF	150..160	downgradient in the lower glacial
16ML	OFF	325..335	downgradient in the lower Magothy
17GL	OFF	150..160	downgradient in the lower glacial
17ML	OFF	325..335	downgradient in the lower Magothy
18GL	OFF	150..160	downgradient in the lower glacial
18ML	OFF	325..335	downgradient in the lower Magothy
22GL	OFF	150..160	sidegradient in the lower glacial
22ML	OFF	325..335	sidegradient in the lower Magothy

FIGURES

IANGLES
OK, NY

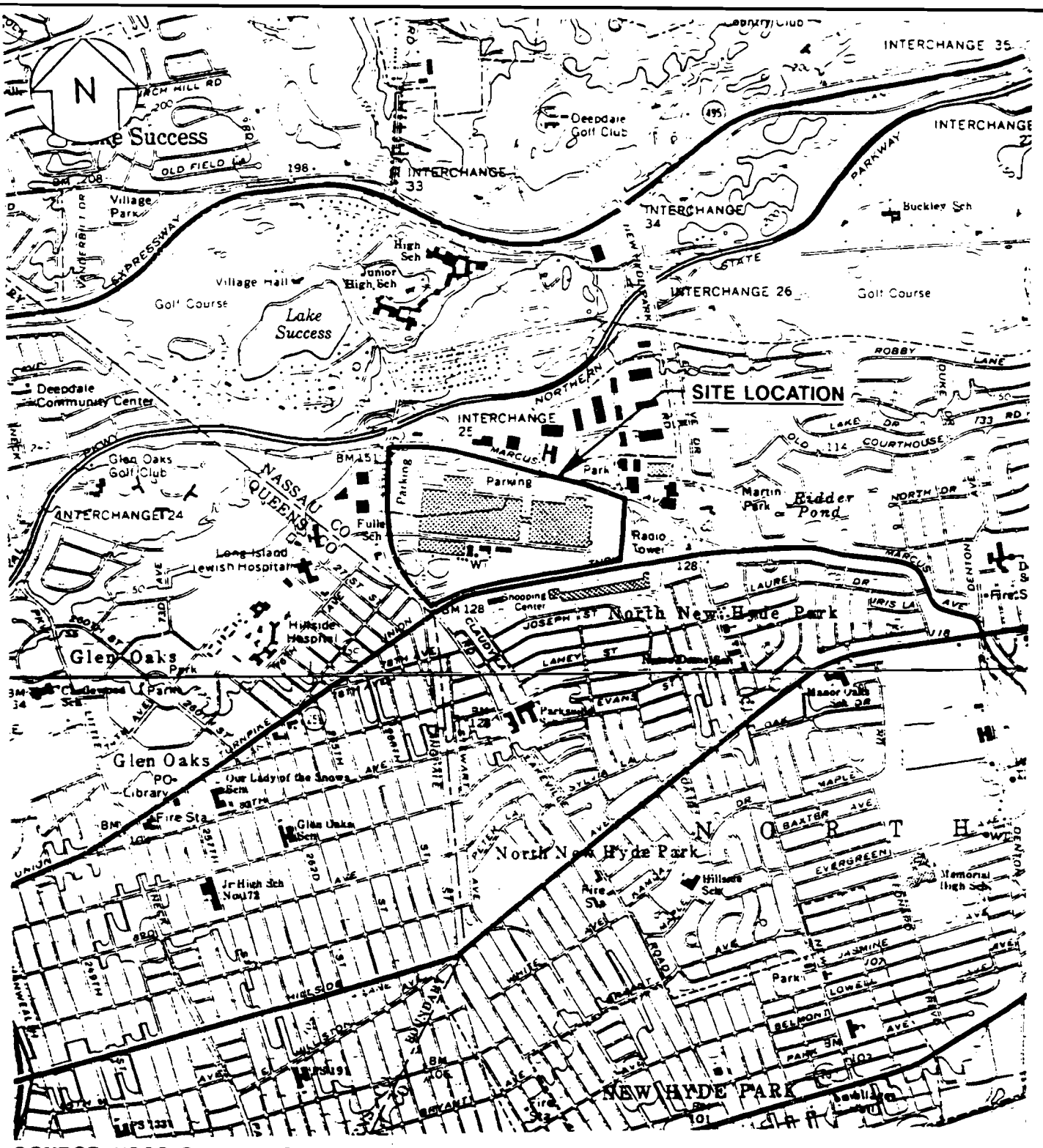
UNISYS CORP TION
GREAT NECK, NEW YORK FACILITY

SITE LO MAP

DATE	REVISED	BY

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT

0 2,000



SOURCE: USGS QUADRANGLES
SEA CLIFF & LYNBROOK, NY

0 2,000

SCALE IN FEET

UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

SITE LOCATION MAP

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/14/92 FIGURE 1

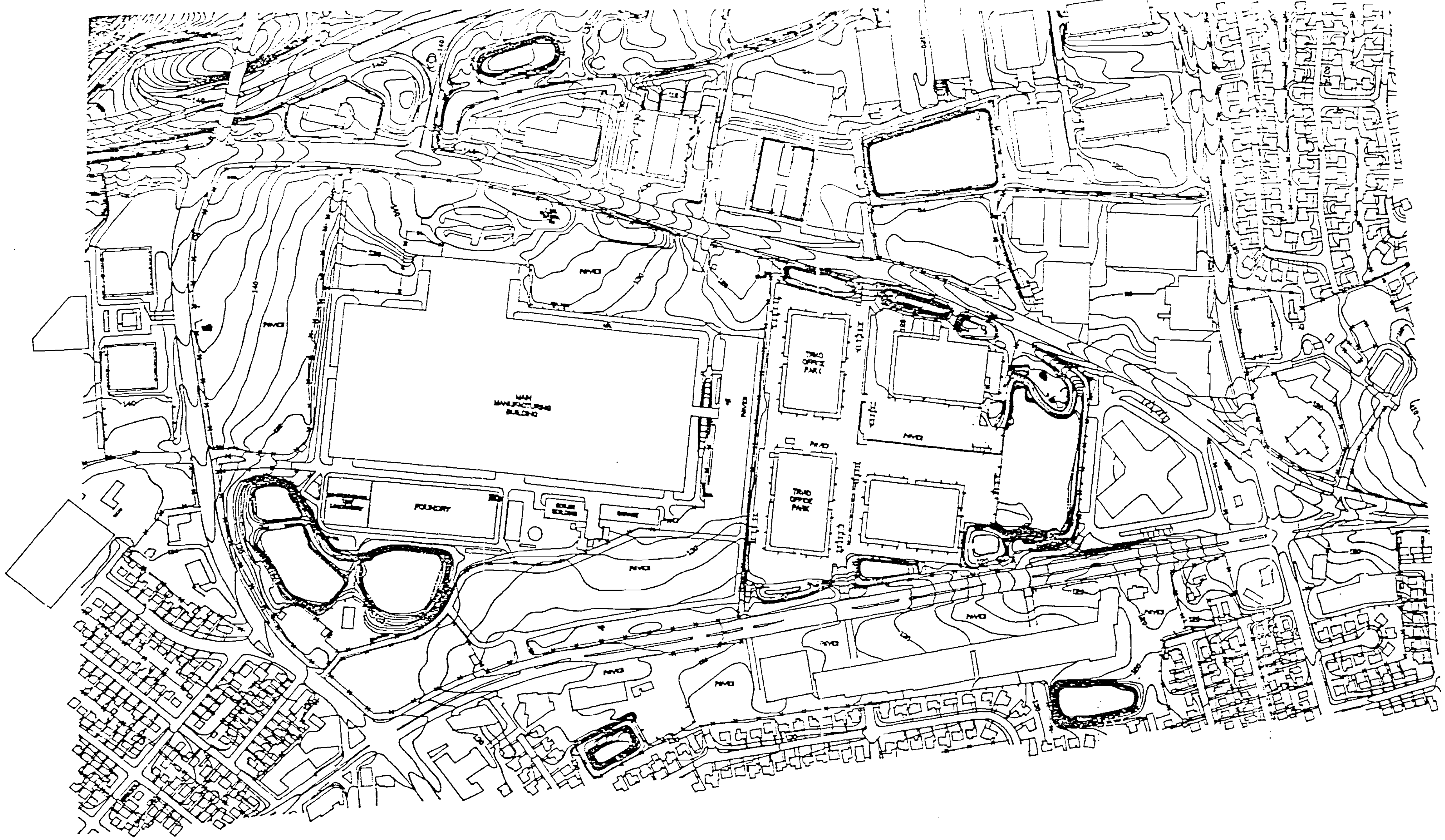


FIGURE 2

UNISYS

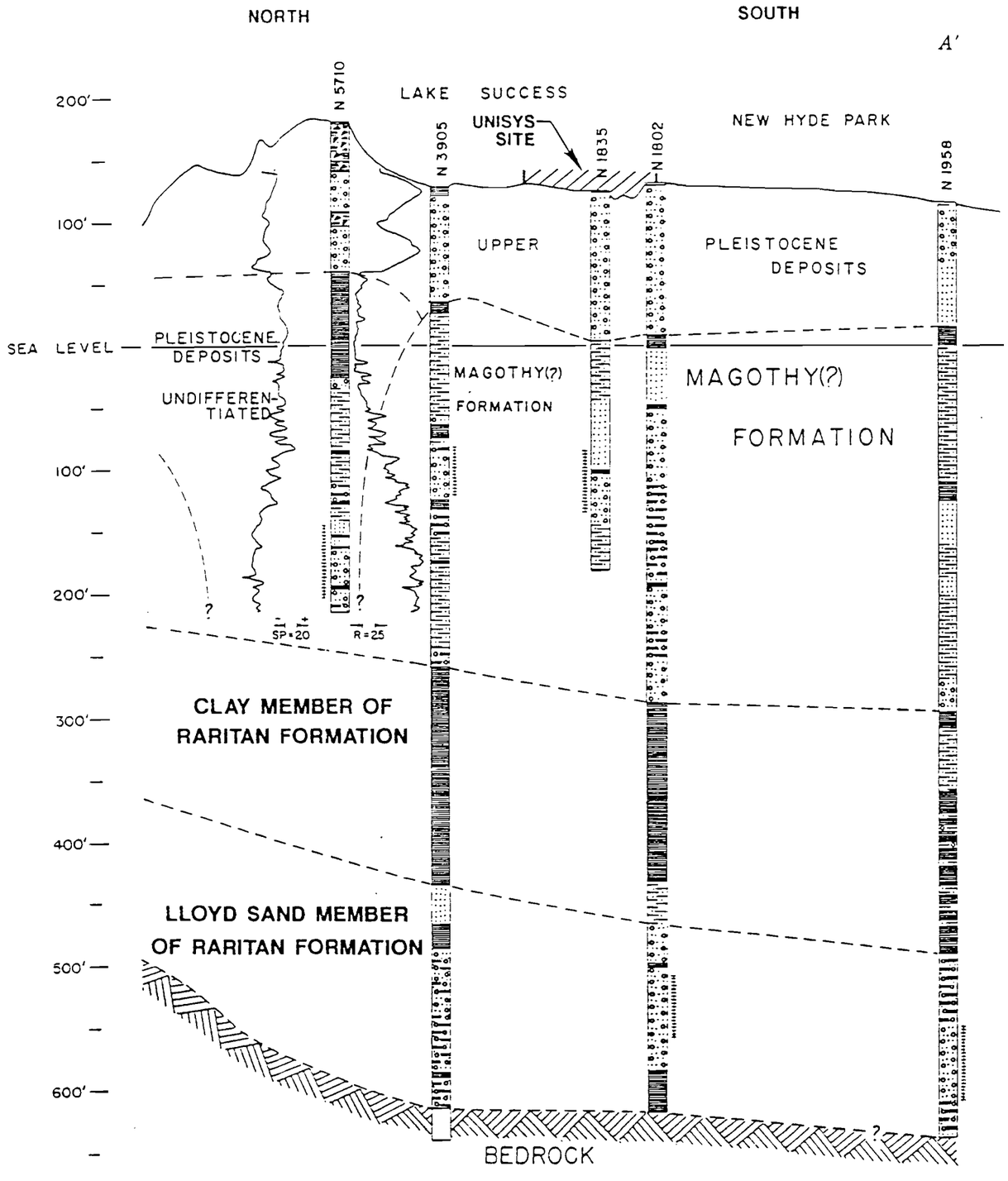
PLANT ENGINEERING

UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

Site Topography

REV	BY	DATE	JOB NO.	CHANGE NO.	DESCRIPTION OF CHANGE	DRAWN BY	DATE	APPROVED BY	DATE
						N.T.S. SCALE		DRAWING NUMBER	

TABLE OF ADDITIONS AND REVISIONS
USE ONLY PRINCE OF LATEST DATE AND CHANGE



EXPLANATION

- Shells and (or) Foraminifera
- Electrical log
- SP=20 millivolts, R=50 OHMS m^2/m
- Screen
- Boulders, till
- Sand and gravel
- Sand
- Clay and sand
- Clay

SCALE 1:24 000

0 1 MILE

(For location of section see plate 8)

SOURCE: HYDROGEOLOGY OF NASSAU-QUEENS COUNTIES, N.Y., USGS WATER-SUPPLY PAPER 1657.

UNISYS CORPORATION

GREAT NECK, NEW YORK FACILITY

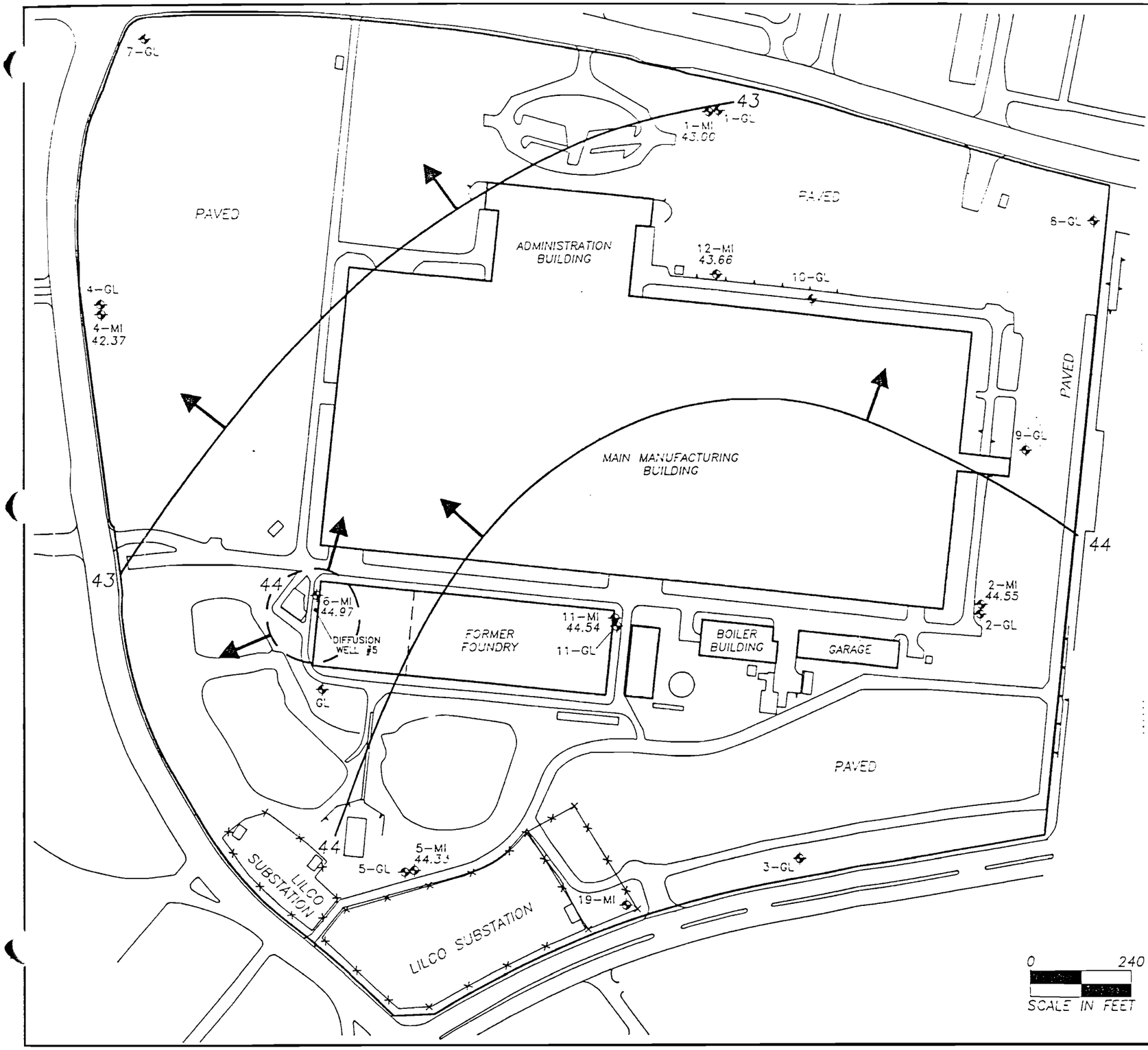
REGIONAL GEOLOGIC CROSS-SECTION

DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/17/92 FIGURE 3



LEGEND

- 2-MI — MONITOR WELL
- 44.55 — WATER TABLE ELEVATION IN FEET
- 44 — WATER ELEVATION CONTOUR IN FEET (DASHED WHERE INFERRED)
- DIRECTION OF GROUND-WATER FLOW

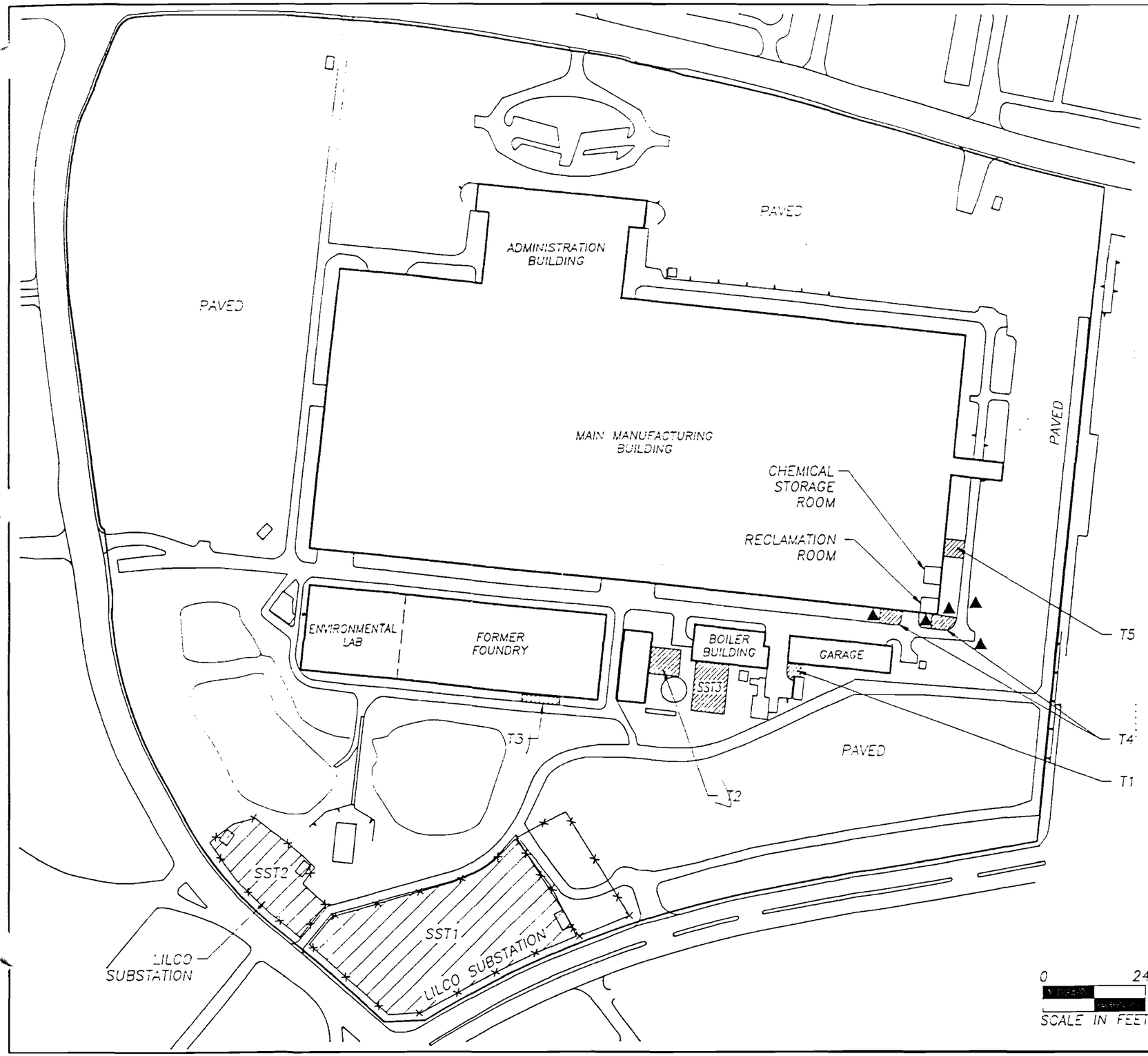
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

GROUNDWATER GRADIENT IN THE MAGOTHY
NOVEMBER 4, 1992

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 1/21/93 FIGURE: 4



LEGEND

▲ FORMER DRY WELL

T1 TANK FIELD LOCATION

SST1 SUBSTATION LOCATION

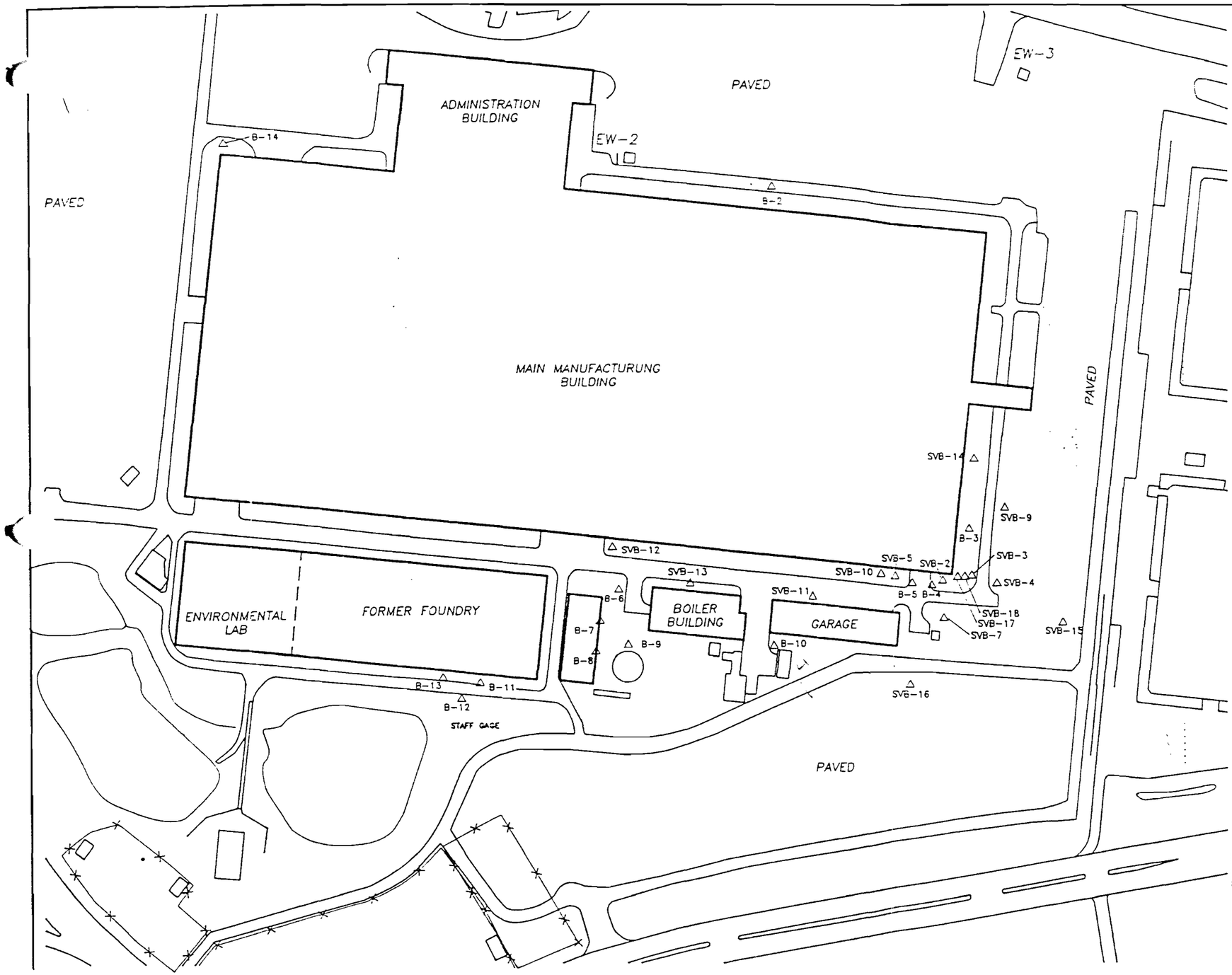
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

AREAS OF CONCERN

DATE	REVISED
1/15/93	ADDED DRY WELLS

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/15/92 FIGURE: 5



LEGEND

△ SOIL BORING LOCATION

UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

FORMER BORING LOCATIONS

DATE	REVISED
1/15/93	ADDED BORING LOCATIONS

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/15/92 FIGURE: 6

NOTE:

REMEDIATION AREA SHOWN IS FOR 0 TO 80 FEET BELOW GRADE. REFER TO CROSS SECTIONS FOR VERTICAL DISTRIBUTION.

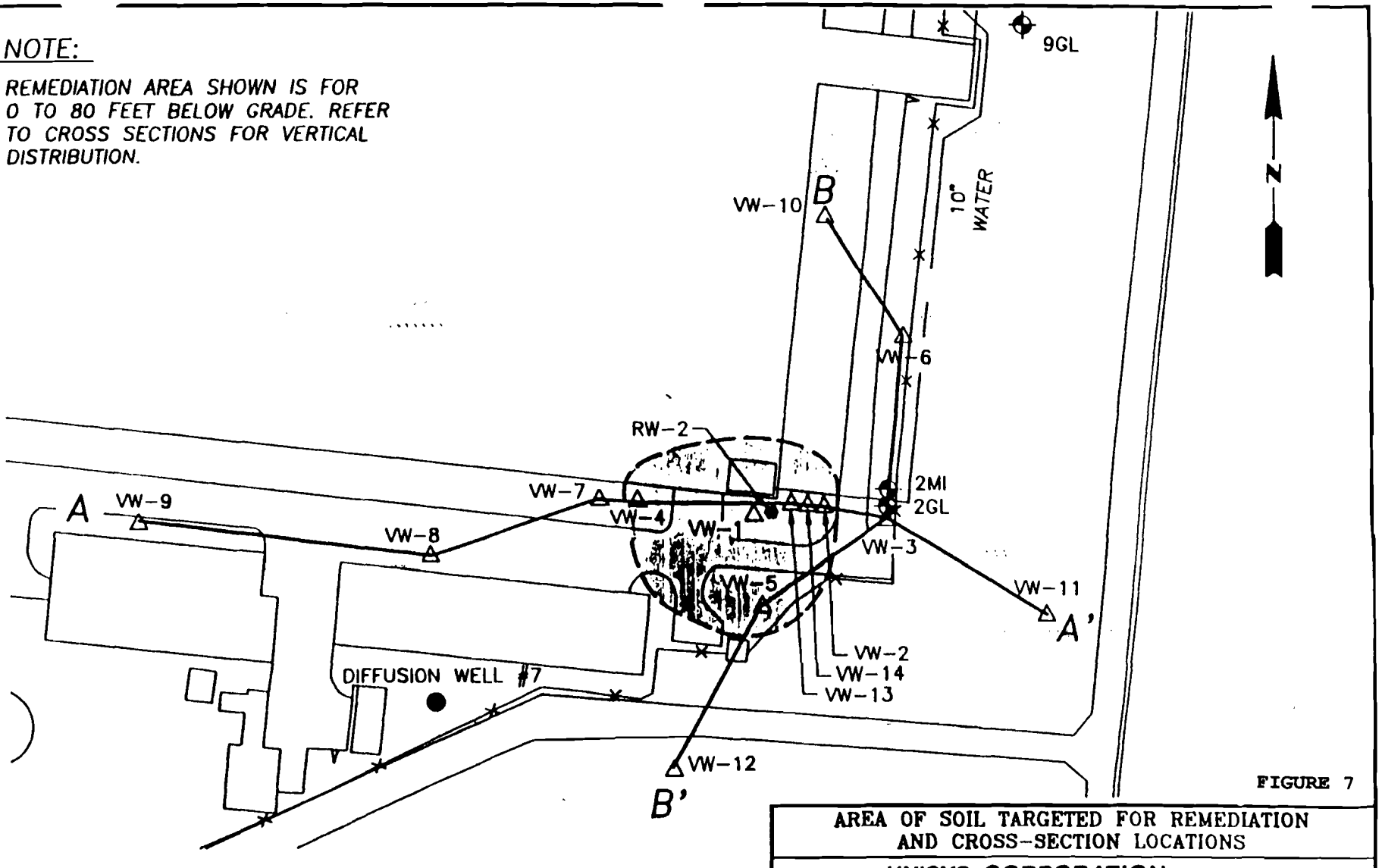


FIGURE 7

AREA OF SOIL TARGETED FOR REMEDIATION AND CROSS-SECTION LOCATIONS

UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

LEGEND

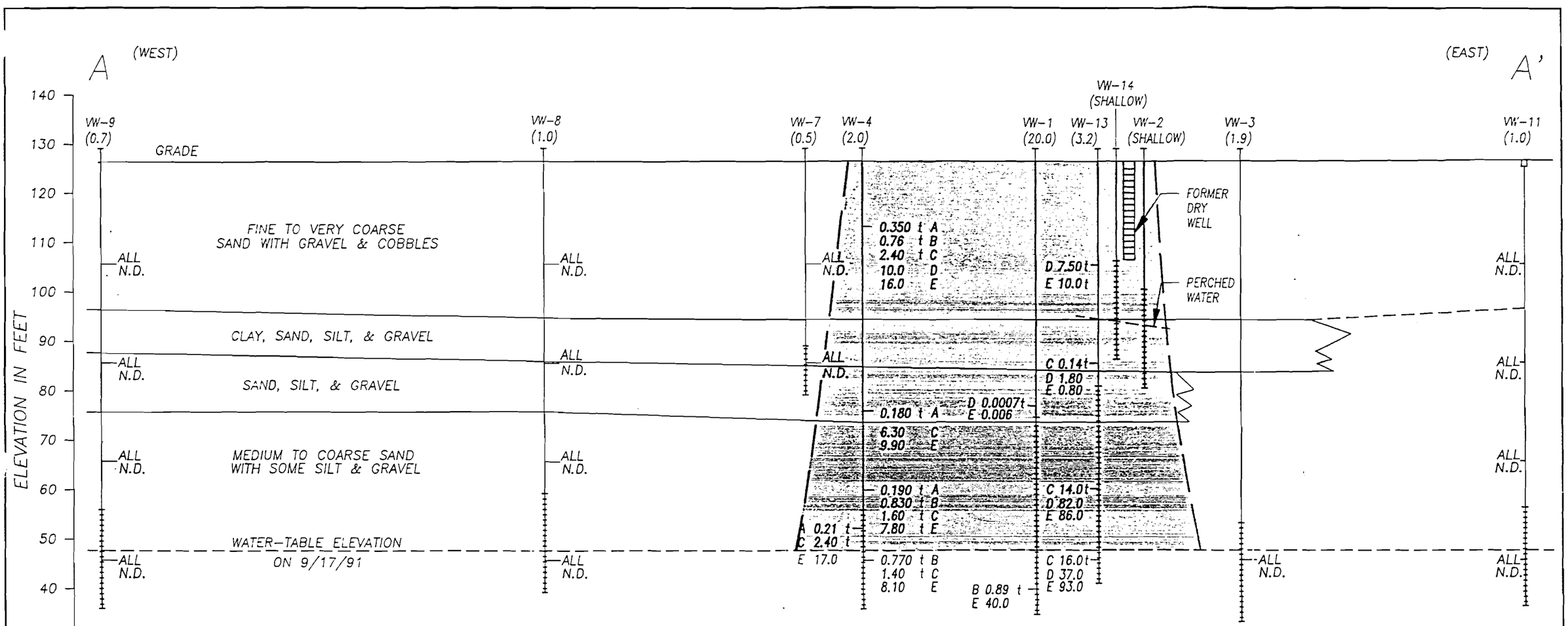
- VW-8 — VAPOR EXTRACTION WELL
- A—A' — CROSS-SECTION LOCATION
- — — BOUNDARY OF AREA TARGETED FOR REMEDIATION

0 120
SCALE IN FEET

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 1/27/92



LEGEND

VW-1	VENT WELL
A	BENZENE
B	CHLOROBENZENE
C	ETHYLBENZENE
D	TOLUENE
E	XYLENE
N.D.	NOT DETECTED
(0.7)	VACUUM READING IN INCHES OF WATER ON 10/7/91 (VAPOR EXTRACTION RATE APPROXIMATELY 410 cfm)
t	DETECTED BELOW MINIMUM DETECTABLE LEVEL, VALUE IS ESTIMATED
— —	EXTENT OF SOILS TARGETED FOR REMEDIATION

NOTE: ALL RESULTS ARE IN mg/kg (MILLIGRAMS PER KILOGRAM)

0 20 SCALE IN FEET VERTICAL

0 50 SCALE IN FEET HORIZONTAL

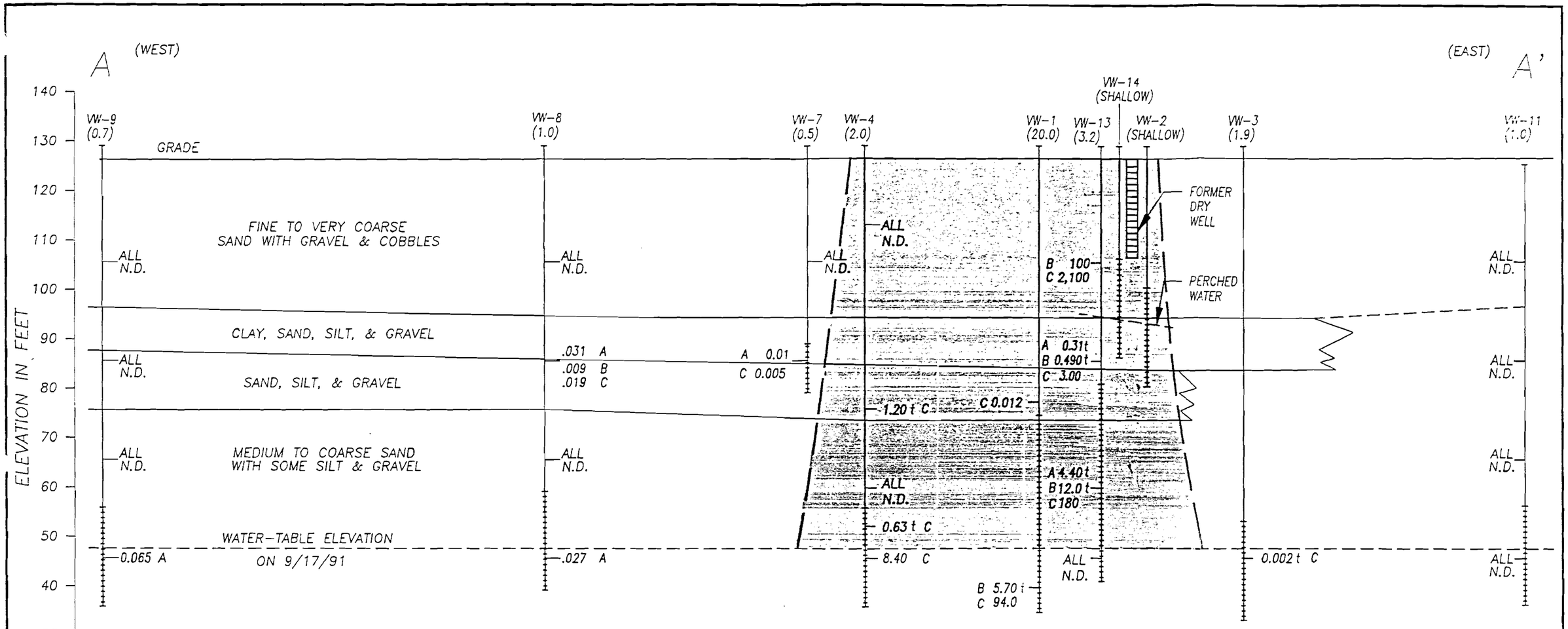
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

GEOLOGIC CROSS-SECTION A-A'
SOIL QUALITY I

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 1/20/93 FIGURE: 8



LEGEND

VW-1 VENT WELL

A 1,2 DICHLOROETHENE

B TRICHLOROETHENE

C TETRACHLOROETHENE

N.D. NOT DETECTED

(0.7) VACUUM READING IN INCHES OF WATER ON 10/7/91 (VAPOR EXTRACTION RATE APPROXIMATELY 410 cfm)

t DETECTED BELOW MINIMUM DETECTABLE LEVEL, VALUE IS ESTIMATED

— — EXTENT OF SOILS TARGETED FOR REMEDIATION

NOTE: ALL RESULTS ARE IN mg/kg (MILLIGRAMS PER KILOGRAM)

0 20 SCALE IN FEET VERTICAL

0 50 SCALE IN FEET HORIZONTAL

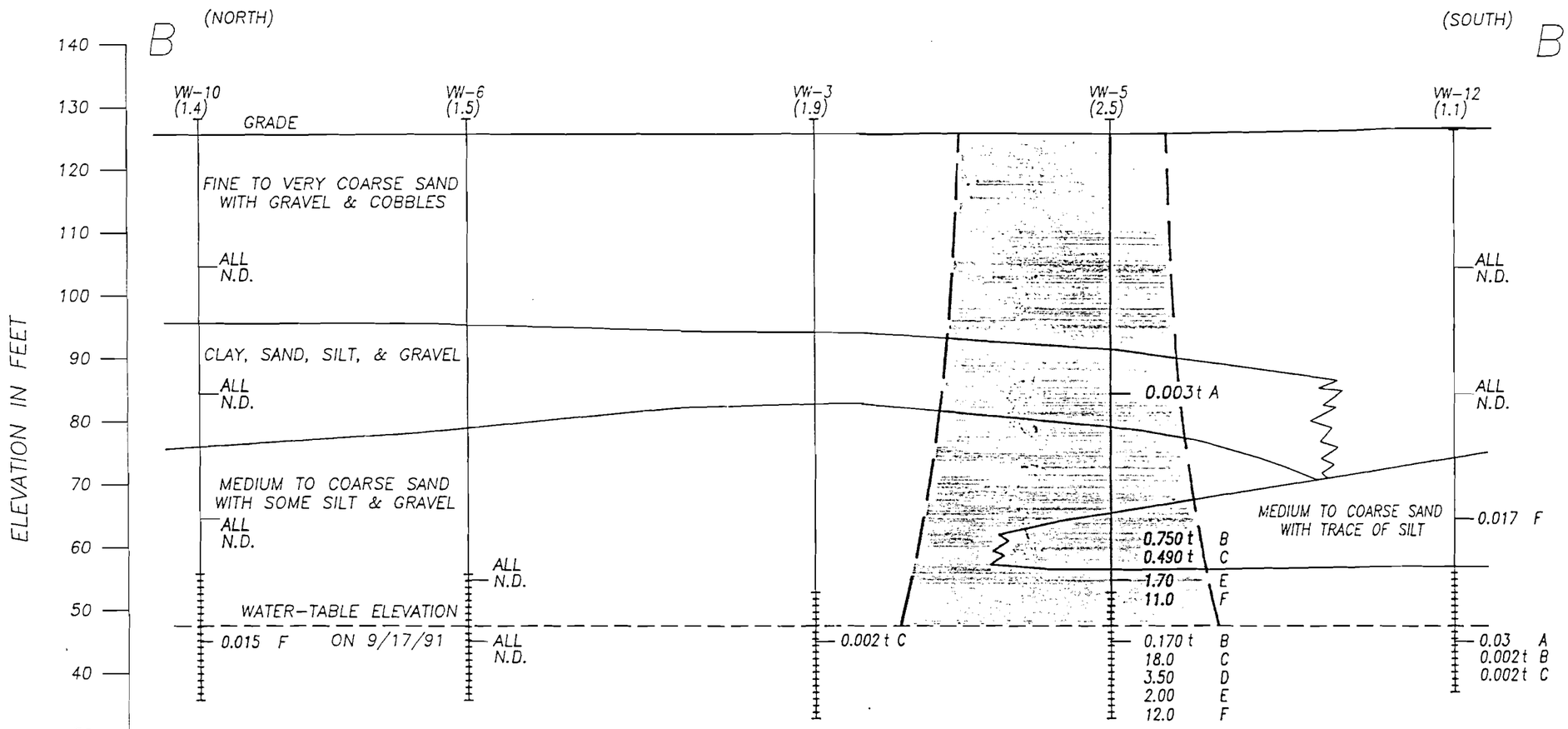
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

GEOLOGIC CROSS-SECTION A-A'
SOIL QUALITY II

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 1/20/93 FIGURE: 9



LEGEND

VW-1 VENT WELL

A	1,2 DICHLOROETHENE	D	TOLUENE
B	TRICHLOROETHENE	E	ETHYLBENZENE
C	TETRACHLOROETHENE	F	XYLENE

N.D. NOT DETECTED

t DETECTED BELOW MINIMUM DETECTABLE LEVEL, VALUE IS ESTIMATED

(1.5) VACUUM READING IN INCHES OF WATER ON 10/7/91 (VAPOR EXTRACTION RATE APPROXIMATELY 410 cfm)

— — EXTENT OF SOILS TARGETED FOR REMEDIATION

NOTE: ALL RESULTS ARE IN mg/kg (MILLIGRAMS PER KILOGRAM)

0 20 SCALE IN FEET VERTICAL

0 50 SCALE IN FEET HORIZONTAL

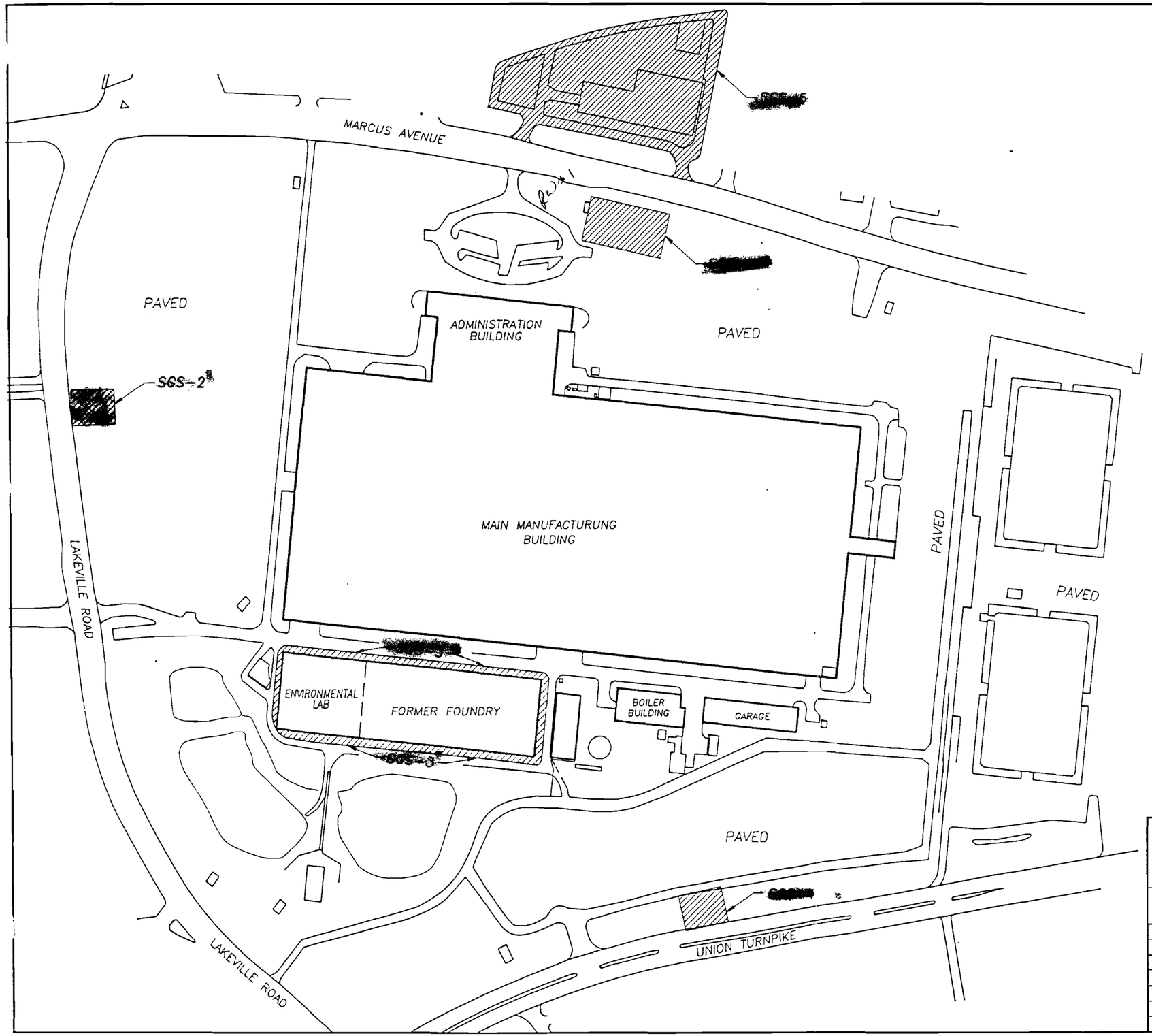
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

GEOLOGIC CROSS-SECTION B-B'
SOIL QUALITY

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 1/20/93 FIGURE: 10



N

LEGEND

SGS-1 — PROPOSED SOIL GAS SURVEY LOCATIONS

0 260

SCALE IN FEET

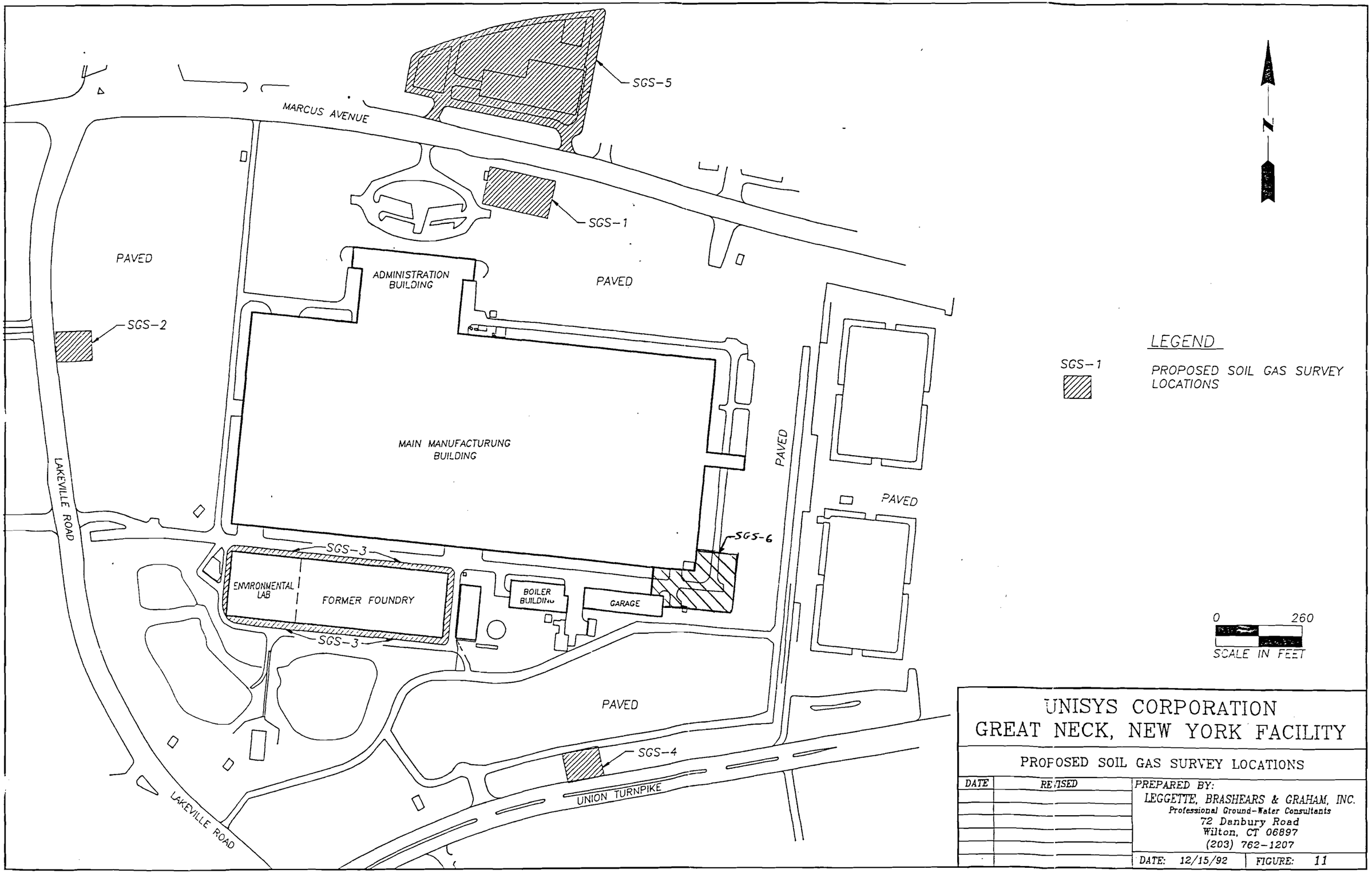
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

PROPOSED SOIL GAS SURVEY LOCATIONS

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/15/92 FIGURE: 11



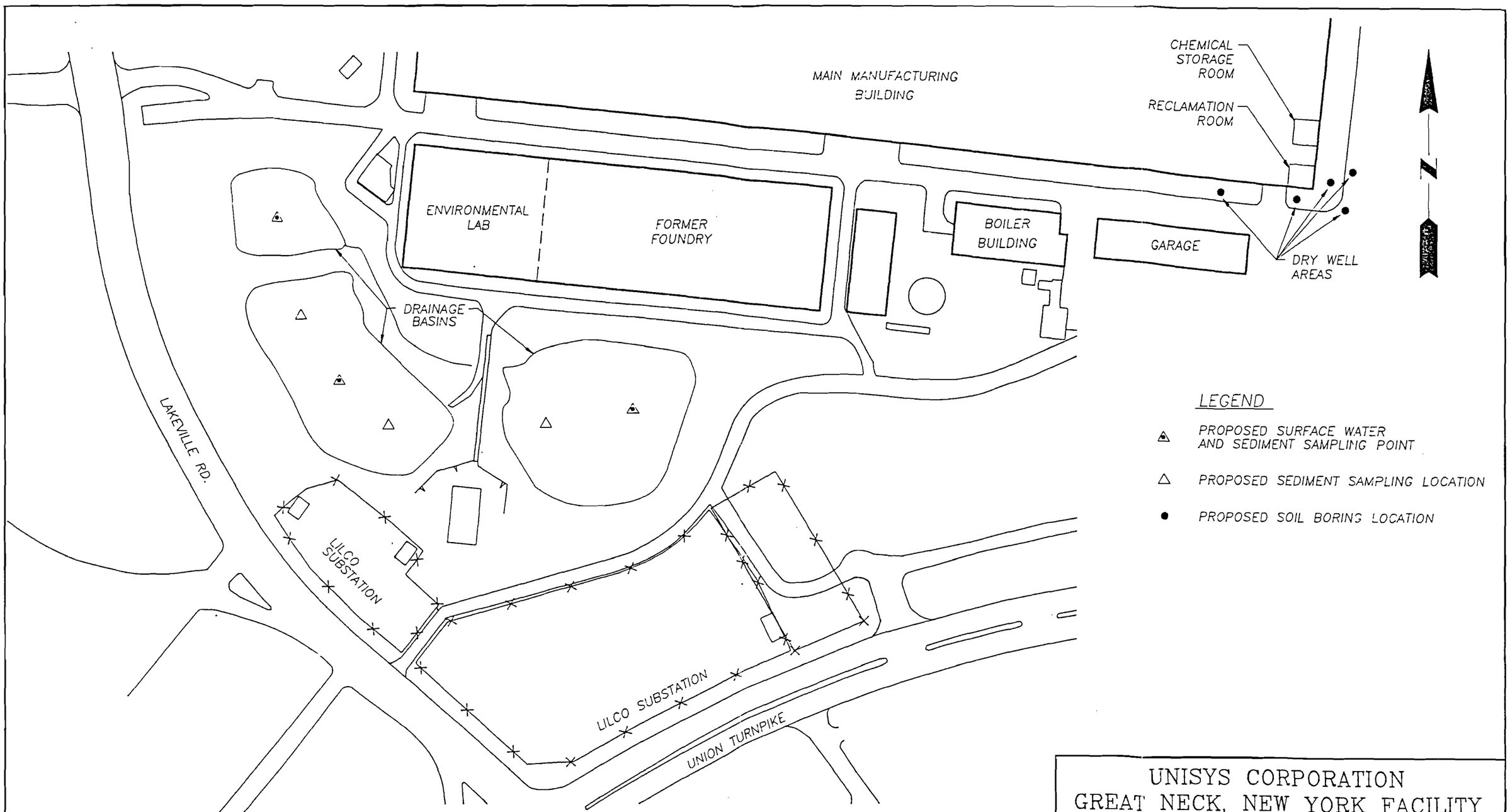
UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

PROPOSED SOIL GAS SURVEY LOCATIONS

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/15/92 FIGURE: 11



UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

PROPOSED BORINGS AND DRAINAGE BASIN SAMPLING LOCATIONS

DATE	REVISED
1/15/93	WELLS & BORINGS

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1207

DATE: 12/15/92 FIGURE: 12

FIGURE 13
PROJECT ORGANIZATION
UNISYS CORPORATION
GREAT NECK, NY FACILITY

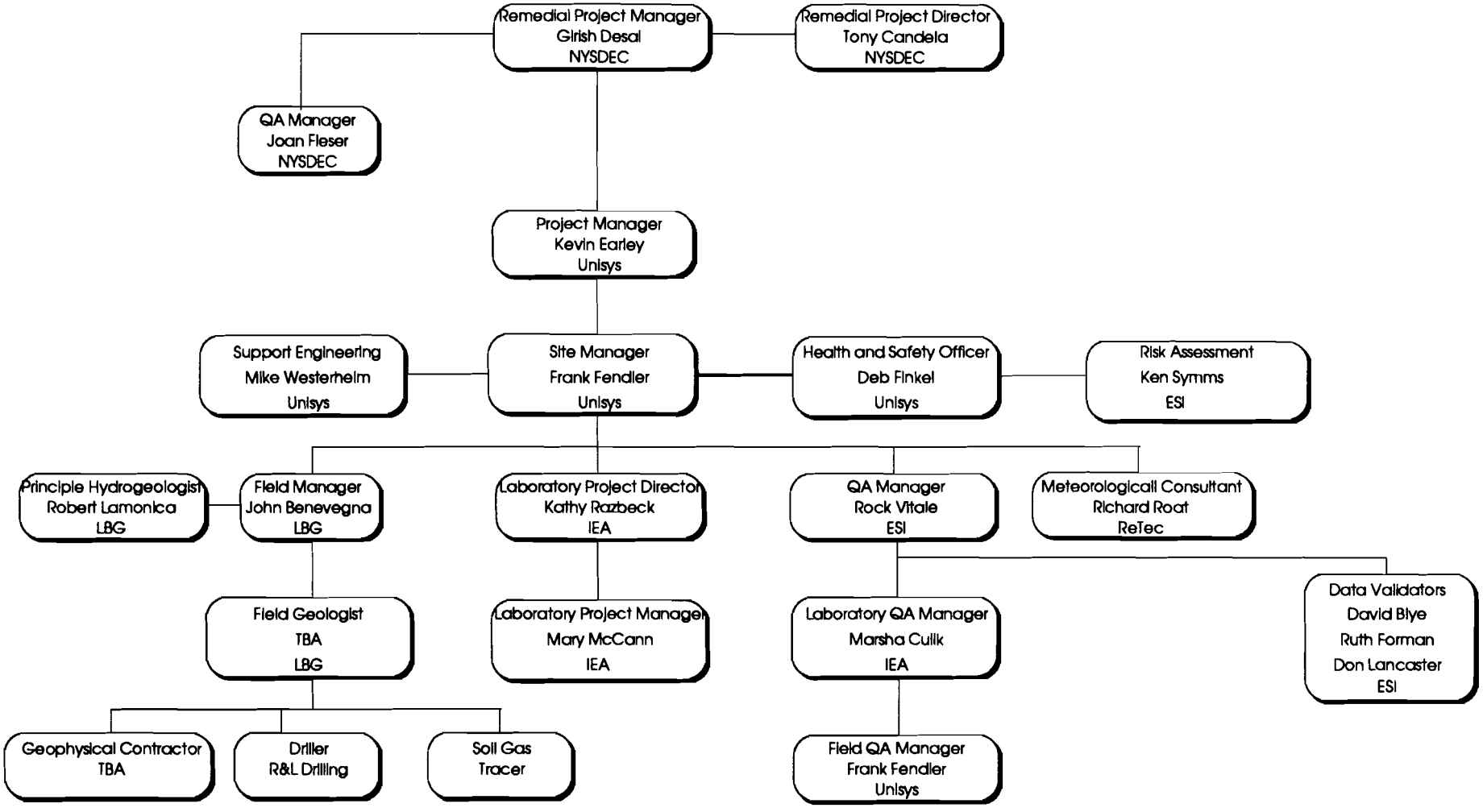


FIGURE 14
PROJECT SCHEDULE
UNISYS CORPORATION
GREAT NECK, NY FACILITY

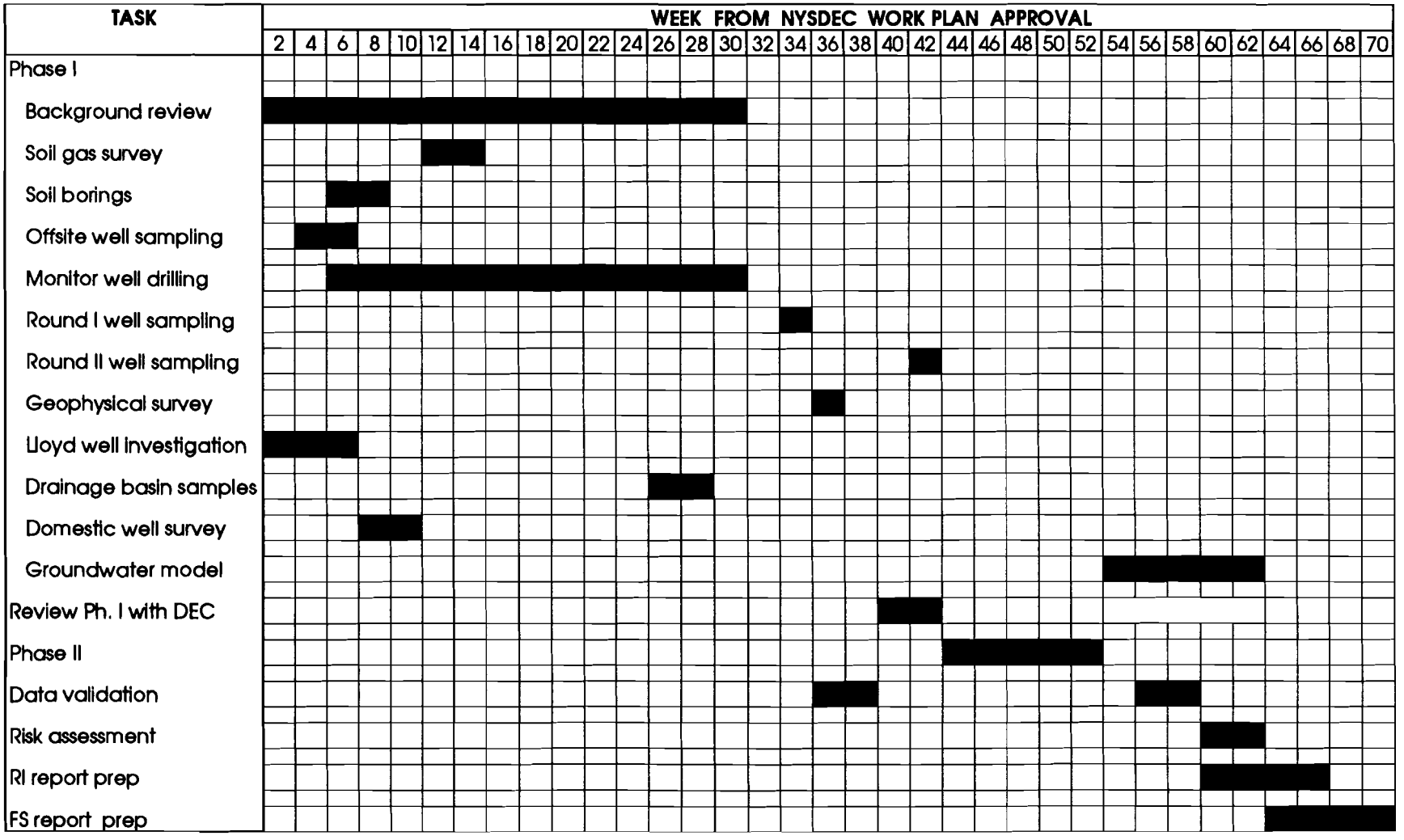


Figure 15

Substation SST-2 Soil Sample Locations

⊗1A — VOC, Semi-VOC + PCB sample Location

DETAIL "A"

DETAIL "D"

Conduit Termination at Transf. Bank #2

Note - Installation is similar at Bank #1 except 6" cond. #105 will require a 2" to 1½" reducer.

DETAIL "G"

(NTS)

NOTES:

1. [illegible] SHEET 2
2. [illegible] SWITCH #2, #22, #32 & #42 SHALL CORRESPOND WITH DETAIL "D" ON DWG. F-39775 SHT. #1.
3. ELECTRONIC MARKERS ARE TO BE PLACED AT 25' INTERVALS UNLESS REQUIRED TO LOCATE POINTS SUCH AS WATER & TELEPHONE SERVICES OR CABLE BOX. MARKERS TO BE PLACED FLAT & LEVEL WITH FINISH GRADE AND 3" ABOVE CABLES.
4. COVER DIRECT BURIAL CABLES WITH "TERRATAPE" COLOR YELLOW, 6" TO 12" BELOW GRADE.
5. ALL CONDUITS & DUCTS TO BE SEALED WITH THIOKOL POLYSULFIDE, CAST ONE PART SELF LEVELING COMPOUND WITH INSTRUCTIONS PRINTED ON TUBE.

NOTE: FOR TERMINATION OF DIR. BUR. CABLES AT ELEC. EQUIP. SEE DET. "E" OIL DWG. F-39775

NOTE: CABLES LISTED ON 138KV SWITCH CABLE & CONN. SCHEDULE DWG. F-42193

NOTE: TERMINATE TEL. COND. AT BASE OF POLE (HANDHOLE) WITH 2" PVC ELBOW (LAP) (INSTALL A B.C.S. PULL WIRE)

REVISIONS			
0	5/6/69	A-132	ADDED 2
27	5/20/71	A1000	1

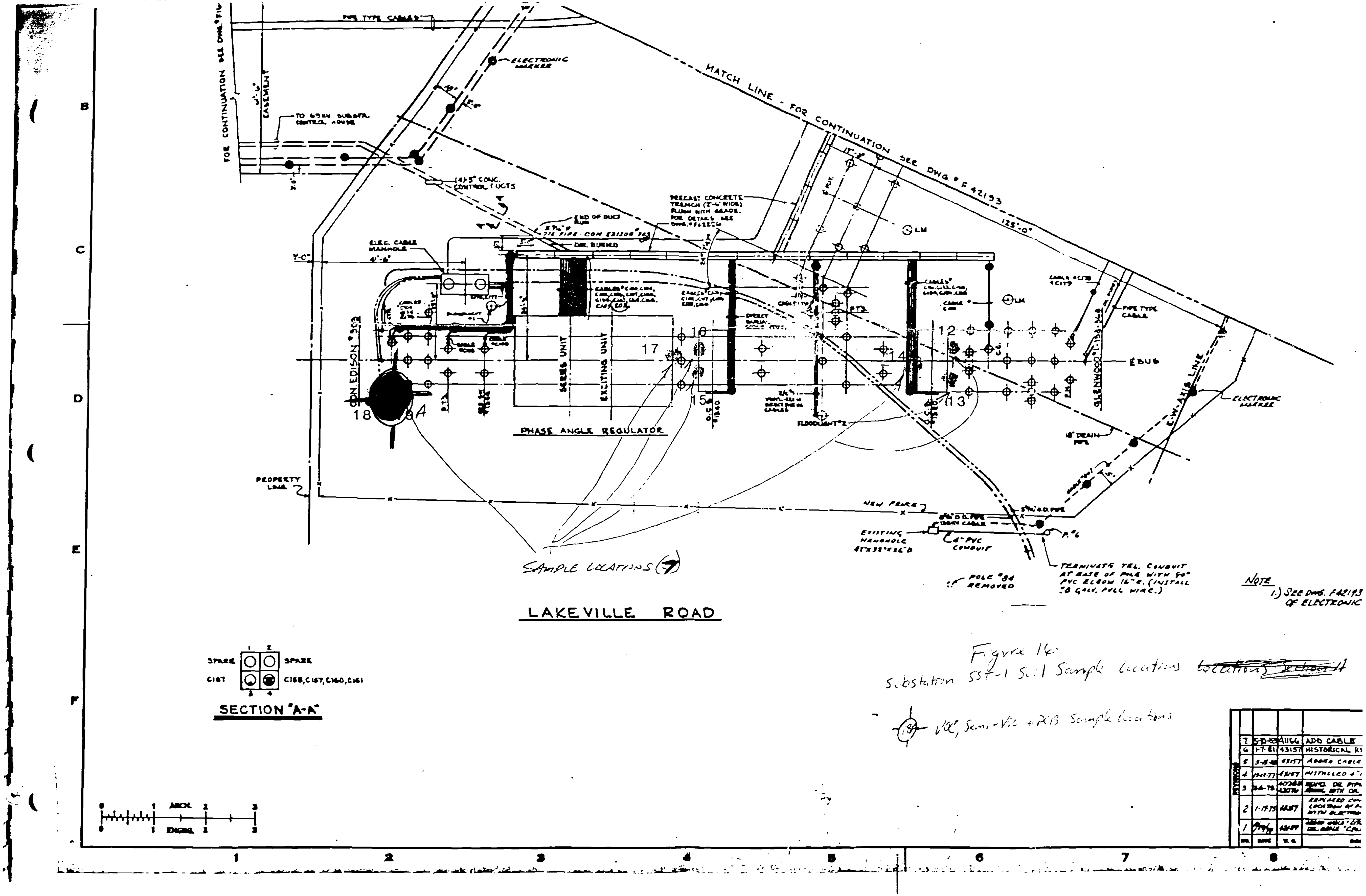


Figure 16
Substation SST-1 Soil Sample Locations ~~Locations Section A~~

(18) VOC, Semi-VOC + PCB Sample Locations

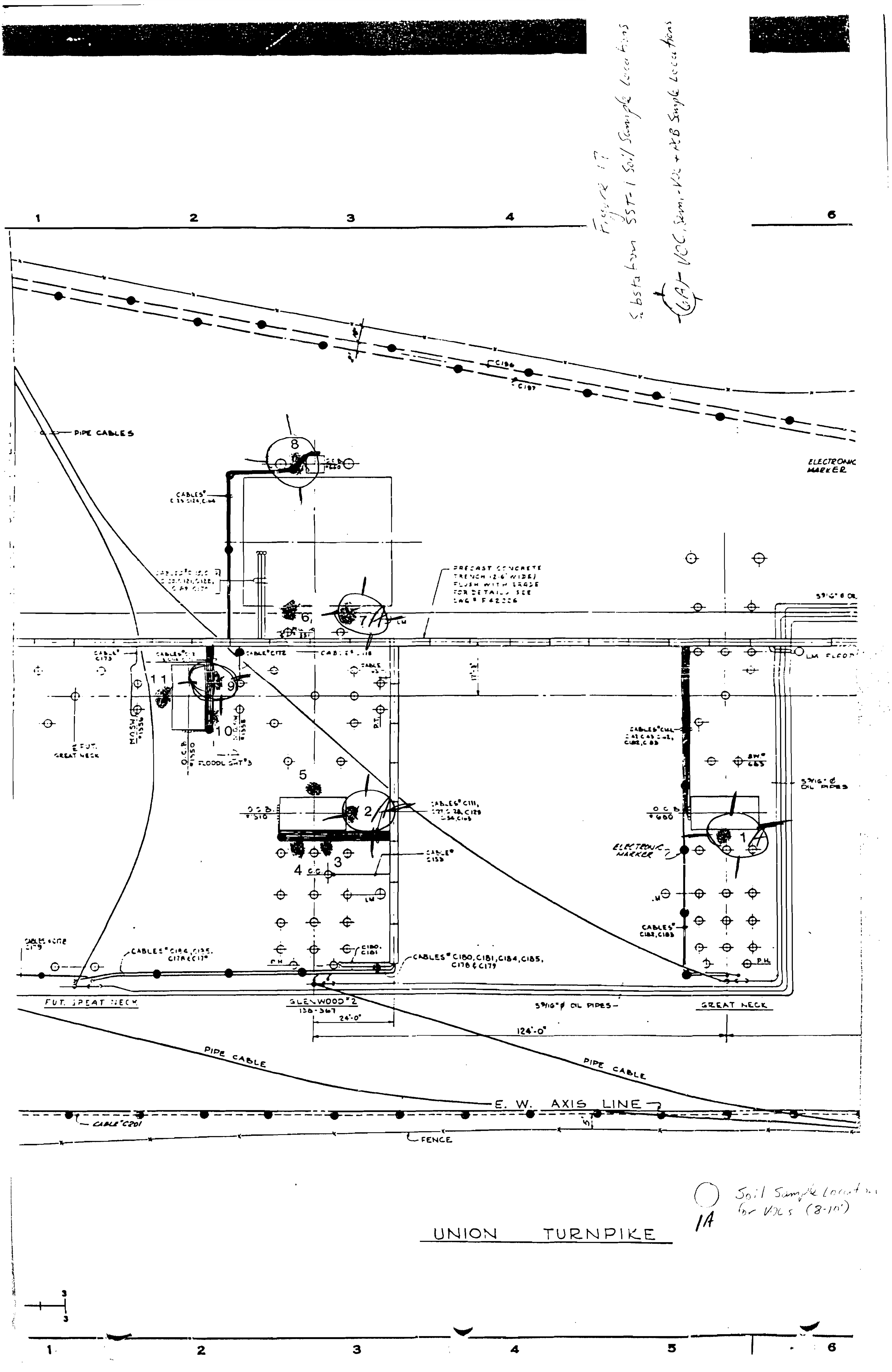


Figure 17
Substation SST-1 Soil Sample Locations
(6A) – VOC, Semi-VOC + PCB Sample Locations

APPENDIX A

HEALTH AND SAFETY PLAN

RI/FS
HEALTH AND SAFETY PLAN
UNISYS CORPORATION ID # 130045
GREAT NECK, NY

January, 1993

Prepared For:

NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
State University of New York
Building 40
Stony Brook, New York

Prepared by:

Unisys Corporation
365 Lakeville Rd.
Great Neck, NY

TABLE OF CONTENTS

1.0 INTRODUCTION

This document describes the Health & Safety (H&S) protocols developed for the Paramax Facility site, located in Great Neck, New York This plan was developed to protect onsite personnel, visitors, and the public from known or suspected health and safety hazards. The procedures and guidelines contained herein are based on the most up-to-date information available at the time of the drafting of this document. Specific sections of this plan will be changed or revised when additional information is received or when conditions at the site change. Any changes or revisions to this plan will be by a written amendment which will become a permanent part of this plan and placed in Appendix A. Where appropriate, specific OSHA or other standards will be cited.

1.1 SITE SAFETY PLAN ACKNOWLEDGMENT & ACCEPTANCE

The project manager, site engineer, site health & safety officer or other designated representative shall be responsible for informing all individuals assigned to or visiting the site of the contents of this plan and ensuring that each person signs the Safety Plan Acknowledgment Form in Appendix B. By signing the Safety Plan Acknowledgment Form, individuals are recognizing the Health & Safety hazards, known or suspected onsite and the protocols required to minimize exposure to such hazards.

1.2 SITE HEALTH & SAFETY MEETINGS

An initial "Kick-Off" Health & Safety meeting shall be held prior to the commencement of IRM and RI/FS activities;.drilling, well sampling, groundwater remediation etc. Mandatory attendance is required for all personnel initially assigned to the site. At the conclusion of the "Kick-Off" meeting, personnel are to sign the Safety Plan Acknowledgment Form in Appendix B indicating their attendance and understanding of the Health & Safety protocols. As additional personnel are assigned to the site, it is the responsibility of the project manager/site engineer to ensure that the personnel are briefed on health & safety protocols and that they also sign the Safety Plan Acknowledgment Form.

1.3 TRAINING REQUIREMENTS

Personnel assigned to IRM and RI/FS field activities must have completed 40 hours training for hazardous waste site work in accordance with OSHA 29 CFR 1910.120(e)(3) and be current with their 8-hour refresher training in accordance with OSHA 29 CFR 1910.120(e)(8). Documentation of OSHA training is required prior to personnel performing field activities.

1.4 MEDICAL MONITORING REQUIREMENTS

Personnel assigned to the water treatment unit, well sampling, well drilling, and the vapor treatment unit and approved to wear a respirator must be enrolled in a medical

surveillance program meeting the requirements of OSHA 29 CFR 1910.120(f). Documentation of personnel being enrolled in a medical surveillance program is required prior to personnel being permitted to work onsite.

1.5 FIT TESTING REQUIREMENTS

Personnel assigned to the site who are aproved to wear a respirator must have successfully passed a respirator fit test within the past 12 months. Documentation of a successful respirator fit test for the appropriate type of respirator needed for work on this specific site (half-face or full-face) will be required. The project manager, project site engineer, or site health & safety officer is to ensure that the respirator being worn by personnel is the same size, make, and model as that specified on any respirator fit test records from the past twelve month period.

1.6 RESPONSIBILITIES

The project manager or Site Engineer is responsible for overall project administration and for coordinating health & safety protocols and procedures for all personnel involved with IRM and RI/FS field activies. All U.S. EPA health & safety requirements and all applicable OSHA standards shall be applicable. This health & safety plan covers all personnel onsite, however, each sub-contractor is also responsible for the health & safety of its employees. If there is a dispute with regards to health & safety, the following procedures shall be followed:

(1)Project manager or site engineer shall attempt to resolve the issue with a complete wr

(2)If the issue cannot be resolved, the project manager shall consult the Corporate Healtl

Any persons who observes health & safety problems or infractions should immediately report the problem or infraction to the appropriate personnel.

1.7 ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS

The Occupational Safety & Health Act provides employees and their designated representatives a right of access to relevant exposure and medical records (29 CFR 1910.20). The "notification" of access to employee exposure and medical records (Appendix H) is to be posted in a prominent location in the Unisys office.

GENERAL INFORMATION

CLIENT: Unisys	PROJ. NO.:
SITE NAME: Paramax Facility	
SITE LOCATION: Great Neck, New York	
PURPOSE OF VISIT: Installation and Operation of a groundwater remediation system and a soil venting extraction system.	
DATES OF FIELD ACTIVITIES: August, 1992 - August, 1994	
PROJECT MANAGER: Kevin Earley	
SITE ENGINEER/MANAGER: Frank Fendler	
DESIGNATED SITE H&S OFFICER: Frank Fendler	

PERSONNEL ASSIGNED TO SITE

NAME	OFFICE	OSHA TRNG. DATE			PHYSICAL DATE	RESPIRATOR FIT TEST DATE	
		40 HR	Super -visor Trng.	8 HR		HF	FF
Frank Fendler	Great Neck, NY	3/86		10/92			
Debbi Finkel	Great Neck, NY	6/90		10/92			
Frank Kelly	Great Neck, NY	8/92					
Pat Judge	Great Neck, NY	8/92					
Pardeep Kumar	Great Neck, NY	8/92					
Joe Paolini	Great Neck, Ny	8/92					
Tom Kerrigan	Great Neck, NY	8/92					
Mike Troise	Great Neck, NY	8/92					
Owen Wheby	Great Neck, NY	8/92					

SUB-CONTRACTOR PERSONNEL ONSITE

NAME	SUBCON-TRACTOR	OSHA TRNG.			PHYSICAL DATE	RESPIRATOR FIT TEST DATE	
		40 HR	Super -visor Trng.	8 HR		HF	FF

BACKGROUND

OVERALL HAZARD IS:			
HIGH:	LOW:	MODERATE: X	UNKNOWN:

FACILITY DESCRIPTION:

Interim remedial measures will be implemented to initiate recovery of volatile organic compounds which are present in the soil and dissolved in the groundwater at the site. A carbon recovery system will be used to remediate the groundwater and a catalytic oxidizer will be used to remediate the soils.

STATUS:

UNUSUAL FEATURES (containers, dikes, buildings, power lines, terrain, etc.):

The Paramax is an active plant with approximately 3000 employees.

SITE HISTORY (worker injury, complaints, regulatory agency action):

Unisys is operating under a consent order which has been signed between Unisys and the New York State Department of Environmental Conservation.

WASTE TYPES: volatile organic compounds			
LIQUID: X	SOLID: X	SLUDGE:	GAS: X
CHARACTERISTICS:			
CORROSIVE:	IGNITABLE: X	VOLATILE: X	TOXIC:
REACTIVE:	UNKNOWN:	RADIOACTIVE:	
OTHER (name):			

HAZARDS POSED BY SITE ACTIVITIES:

General hazards associated with working around heavy machinery. Hazards associated with pressure build-up in the water and vapor lines. Care should be taken when changing the bag filters on the water filtration system.

UNUSUAL HAZARDS:

None.

2.0 HEALTH & SAFETY RISK ANALYSIS

This analysis identifies the general hazards associated with specific site operations and presents an analysis of documented or potential chemical hazards that exist at the site. Every effort must be made to reduce or eliminate these hazards. Those which cannot be eliminated must be guarded against by use of engineering controls and/or personal protective equipment.

2.1 HAZARDS ASSOCIATED WITH WORKING AROUND HEAVY EQUIPMENT

·All equipment must have back-up alarms.

·Personnel must make eye contact with the operator before approaching the equipment.

·Operators must be aware of personnel in the area and use proper hand signals before maneuvering.

·Operators must wear hard hats when operating machines unless equipment has an enclosed cab or cage cover.

·Operators must wear hard hats when going to and from their equipment.

·Operators must be cautious when maneuvering equipment near overhead power lines.

2.2 GENERAL SITE HAZARDS

Lighting

Work areas must have adequate lighting for employees to see to work and identify hazards (5-foot candles minimum, comparable to a single 75-100 watt bulb). Personnel should carry flashlights in all dark areas for use in the event of a power failure. Applicable OSHA standards for lighting 29 CFR 1910.120(m) shall apply.

Electrical Power

All electrical power must have a ground fault circuit interrupter as part of the circuit. All equipment must be suitable and approved for the class of hazard. Applicable OSHA standards for electric 29 CFR 1910 Subpart S shall apply.

Lockout/Tagout

Operations where the unexpected energization or start-up of equipment or release of stored energy could cause injury to personnel, will be protected by the implementation of a lockout/tagout program meeting the requirements of 29 CFR 1910.147.

Fall Protection

Fall accidents can result in an injury or fatality. Requirements to help prevent falls will be implemented. Elevated work where a fall potential exists will be performed using appropriate ladders and/or fall protection (i.e., body harness or lifeline). Applicable OSHA standards for fall protection 29 CFR 1910.21 through 29 CFR 1910.32, and 29 CFR 1910.104 through 29 CFR 1910.107 shall apply.

Drum Handling

The movement and opening of drums will be done in accordance with 29 CFR 1910.120(j).

Cold Stress

When the temperature falls below 40°F, cold stress protocols shall be followed. Employees must be supplied with adequate clothing to maintain core temperature. Cold stress is discussed in detail in Appendix C.

Heat Stress

When the temperature exceeds 70°F, and personnel are wearing personal protective clothing, a heat stress monitoring program shall be implemented. Employees shall have frequent breaks periods and access to drinking water. Heat stress is discussed in detail in Appendix D.

Eye Wash Protection

All operations involving the potential for eye injury, splash, etc., must have approved eye wash units locally available as per 29 CFR 1910.151(c).

Hearing Protection

When the noise level of any operation exceeds the 8 hr. TWA of 85 decibels, Unisys will implement a hearing protection program meeting the requirements of 29 CFR 1910.95.

Fire Protection/Fire Prevention

Operations involving the potential for fire hazards shall be conducted in a manner as to minimize the risk. Non-sparking tools and fire extinguishers shall be used or available as required. Sources of ignition shall be removed. When necessary, explosion-proof instruments and/or bonding and grounding will be used to prevent fire or explosion.

Utilities

Overhead and underground utility hazards shall be identified and/or inspected prior to conducting operations involving potential contact.

Confined Space Entry

If any operation is conducted in an area classified as a confined space by OSHA, a "Confined Space" entry permit will be completed and all applicable procedures meeting the requirements of 29 CFR 1910.146 will be implemented.

Excavation/Trenching

Any excavation/trench greater than four feet in depth in which personnel must enter, will be designed and constructed meeting all applicable requirements of 29 CFR 1926, Subpart P.

2.3 CHEMICAL HAZARDS

Previous sampling and analytical data or previous site history and investigation have indicated that the following chemical hazards, either documented or suspected, exist at the site. Detailed hazard information for these chemicals is available through MSDS sheets in Appendix E.

CONTAMINANT	SKIN HAZ.	PEL [1]	TLV [2]	REL [3]	LIMIT	STEL[4]	IDLH[5]	ODOR THRES-HOLD	IP[6]
methylene chloride	x	500	100	75		2000	5000		11.35
acetone	x	10^3	750	250			20000		9.69
1,2 dichloroethane		200					4000		
1,1,1-trichloroethane		10					500		
trichloroethane (TCE)									
benzene	x	10	10	1		1	2000		9.25
tetrachloroethene (PCE)		5	1	low			150		11.1
toluene	x	200	100	100		500	2000		8.82

NOTE:

[1] OSHA Permissible Exposure Limit (PEL)
[2] ACGIH Threshold Limit Value (TLV)
[3] NIOSH Recommended Exposure Limit (REL)
USE LOWEST FIGURE OF THE THREE LIMITS.

[4] Short-Term Exposure Limit
[5] Immediately Dangerous to Life & Health
[6] Ionization Potential

3.0 PERSONAL PROTECTIVE EQUIPMENT

The following is a brief description of the personal protective equipment which may be required during various phases of the project. The U.S. EPA terminology for protective equipment will be used: Levels A, B, C, and D.

Respiratory protective equipment shall be NIOSH approved and use shall conform to OSHA 29 CFR 1910.134.

3.1 LEVEL A

Level A protection shall be used when:

- The hazardous substance requires the highest level of protection for skin, eyes, and the respiratory system;
- Substances with a high degree of hazard to the skin are known or suspected;
- Chemical concentrations are known to be above the IDLH levels; or
- Biological hazards requiring Level A are known or suspected.

LEVEL A PPE TO BE UTILIZED (Check Appropriate PPE)

	Positive-pressure (pressure demand), self-contained or in-line breathing apparatus (MSHA/NIOSH approved) (REQUIRED)
	Fully Encapsulating Chemical-Resistant Suit (Selected for resistance to chemicals at the site.) (REQUIRED) **FABRIC TYPE:**
	Disposable chemical-resistant inner gloves (REQUIRED)
	Disposable chemical-resistant outer gloves (REQUIRED) **MATERIAL TYPE:**
	Chemical-resistant boots with steel toe and shank (depending on suit boot construction, worn over or under suite boot) (REQUIRED) **MATERIAL TYPE:**
	Two-way radio communication (intrinsically safe) (REQUIRED)
	Knife strapped to body for emergency egress from suite (REQUIRED)
	Hearing Protectors (REQUIRED if site noise levels are greater than 85 dB based on an 8 hr. TWA.)
	Hard hat (under suit) (OPTIONAL)
	Coveralls and/or long cotton underwear (OPTIONAL)
	Escape/egress mask/bottles (OPTIONAL)
	Modifications:

NOTE: Maximum distance personnel are allowed to travel from air source to an in-line system is 300 feet.

3.2 LEVEL B

Level B protection shall be used when:

- The substance(s) has been identified and requires a high level of respiratory protection but a lesser degree of skin protection;

- Concentrations in the air are IDLH or above the maximum use limit of APR with full face mask;

- Oxygen deficient or potentially oxygen deficient atmospheres (<19.5%) are possible; or

- Confined space entry requires Level B PPE.

LEVEL B PPE TO BE UTILIZED: (Check Appropriate PPE)

	Positive pressure (pressure demand), self-contained or on-line breathing apparatus (MSHA/NIOSH approved) (REQUIRED)
	Chemical-resistant clothing (overalls, and long-sleeved jacket, coveralls, hooded, two-piece, chemical splash suit, or disposable chemical-resistant coveralls (i.e., Saranex) (REQUIRED) **FABRIC TYPE:**
	Disposable inner gloves (surgical) (REQUIRED)
	Disposable chemical-resistant outer gloves (REQUIRED) **MATERIAL TYPE:**
	Chemical-resistant boots with steel toe and shank (REQUIRED) **MATERIAL TYPE:**
	Sleeves to be duct-taped over gloves and pants to be duct-taped over boots. Duct tape to be used over zippers and any other area where the potential for exposure exists (REQUIRED)
	Two-way radio communication (intrinsically safe) (REQUIRED)
	Hearing Protectors (REQUIRED if site noise levels are greater than 85 dB based on an 8 hr. TWA.)
	Hard hat (OPTIONAL)
	Coveralls under splash suit (OPTIONAL)
	Long cotton underwear (OPTIONAL)
	Escape/egress mask/bottles (OPTIONAL)
	Modifications:

NOTE: Maximum distance personnel are allowed to travel from air source on to in-line system is 300 feet.

3.3 LEVEL C

Level C protection shall be used when:

- Substance(s) require the same level of skin protection as Level B, but a lesser level of respiratory protection;

- The types of air contaminants have been identified, concentrations measured, and respirator decision logic indicates that APR's are sufficient to remove the contaminants; or

- The substance has adequate warning properties and all criteria for the selection of APR has been met.

LEVEL C PPE TO BE UTILIZED: (Check Appropriate PPE)

X	Half-face APR (MSHA/NIOSH Approved) (REQUIRED) or
	Full-face APR (MSHA/NIOSH Approved) (REQUIRED)
	TYPE OF CARTRIDGES TO BE USED:
	Dust Mist Filter (OPTIONAL) or
X	HEPA Filter (OPTIONAL)
X	Chemical-resistant clothing (one-piece coverall; hooded, two-piece, chemical splash suit, chemical-resistant hood and apron, disposable chemical-resistant coveralls (i.e., Tyvek) (REQUIRED) **FABRIC TYPE: Tyvek**
X	Disposable inner gloves (surgical) (REQUIRED)
X	Disposable chemical-resistant outer gloves (REQUIRED) **MATERIAL TYPE:**
X	Chemical-resistant boots with steel tow and shank or disposable boot covers; booties (REQUIRED) **MATERIAL TYPE:**
	Sleeves to be duct-taped over gloves and pants to be duct-taped over boots (REQUIRED)
	Safety goggles/glasses (REQUIRED) or
	Hard hat with face shield (REQUIRED)
	Hearing Protectors (REQUIRED if site noise levels are greater than 85 dB based on an 8 hr. TWA.)
	Two-way radio communication (intrinsically safe) (OPTIONAL)
	Hard hat (OPTIONAL)
	Long cotton underwear (OPTIONAL)
	Modifications:

3.4 LEVEL D

Level D protection will be used when:

·The atmosphere contains no known hazard;

·Work functions preclude splashes, immersions, or the potential for unexpected inhalation of, or contact with, hazardous concentrations of chemicals.

·Atmospheric concentrations of contaminants are less than the TLV.

LEVEL D PPE (Minimum Work Uniform Permitted)

X	Standard work uniform/coveralls (REQUIRED)
X	Work boots with steel tow and shank (REQUIRED)
X	Work gloves (REQUIRED)
X	Safety goggles/glasses (REQUIRED) or
	Hearing Protectors (REQUIRED if site noise levels are greater than 85 dB based on an 8 hr. TWA.)
	Hard hat with face shield (OPTIONAL)
	Hard hat (OPTIONAL)
	Two-way radio communication (intrinsically safe) (OPTIONAL)
	Long cotton underwear (OPTIONAL)
	Modifications:

ACTIVITY VS. LEVEL OF PROTECTION

ACTIVITY	LEVEL OF PPE	SPECIAL REQUIREMENTS
Water Treatment System Operation	D	Upgrade to Level C if HNu>10 ppm
SVE Treatment System Operation	D	Upgrade to Level C if HNu>10 ppm
Water Sampling	D	Upgrade to Level C if HNu>10 ppm
Drilling	D	Upgrade to Level C if HNu>10 ppm

4.0 AIR MONITORING & ACTION LEVELS

According to 29 CFR 1910.120(h), air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection required for personnel working onsite.

4.1 ROUTINE AIR MONITORING REQUIREMENTS:

·Upon initial entry to rule out IDLH conditions;

·When the possibility of an IDLH condition or flammable atmosphere has developed;

·As an on-going check of the levels of contaminants in the breathing zone;

·When work is initiated on a different portion of the site;

·Contaminants other than those previously identified are encountered;

·A different operation is initiated;

·Work involves the handling of leaking drums or containers or working in areas with obvious liquid contamination; and

·During confined space entry.

Air monitoring will consist at a minimum of the criteria listed below. All air monitoring data will be documented and submitted to the Corporate Health & Safety Officer on a regularly scheduled basis. The data will also be made available in the command post site files for review by all interested persons. Air monitoring instruments will be calibrated and maintained in accordance with the manufacturer's specifications.

4.2 INSTRUMENTS (Check Appropriate Instrumentation)

	COMBUSTIBLE GAS INDICATOR (CGI)

USE: ..... Detection of Explosive/Flammable Atmospheres

ACTION LEVEL: ..... <10% LEL -Continue Work
10-25% LEL - Continue Work with Caution
>25% LEL - Explosion Hazard—Excavate Site Immediately

FREQUENCY: .....

•	**OXYGEN METER**

USE: ..... Detect Percent Oxygen Content in Air

ACTION LEVEL: ..... <19.5% Oxygen -Monitor Wearing SCBA
19.5-25% Oxygen - Continue Work
>25% Oxygen - Fire Hazard—Excavate Site Immediately

FREQUENCY: .....

X	**HNu MODEL:**					
	Bulb Size (Please Check):					
		9.5 eV		**10.2 eV**	X	**11.7 eV**
	TIP MODEL:					
	OVA MODEL:					

USE: ..... Detection of Organic Gases and Vapors

ACTION LEVEL:10 ppm .....

FREQUENCY: once per day .....

	OTHER:

NAME: .....
ACTION LEVEL: .....

FREQUENCY: .....

•	**OTHER:**

NAME: .....
ACTION LEVEL: .....

FREQUENCY: .....

NOTE: The designated site health & safety officer is to complete the "Record of Hazardous Waste Field Activity" Form (Appendix F) and return it to the Corporate Health & Safety Officer on a regularly scheduled basis, but in no case shall more than one month elapse between submittals.

5.0 SITE CONTROL

5.1 WORK ZONES

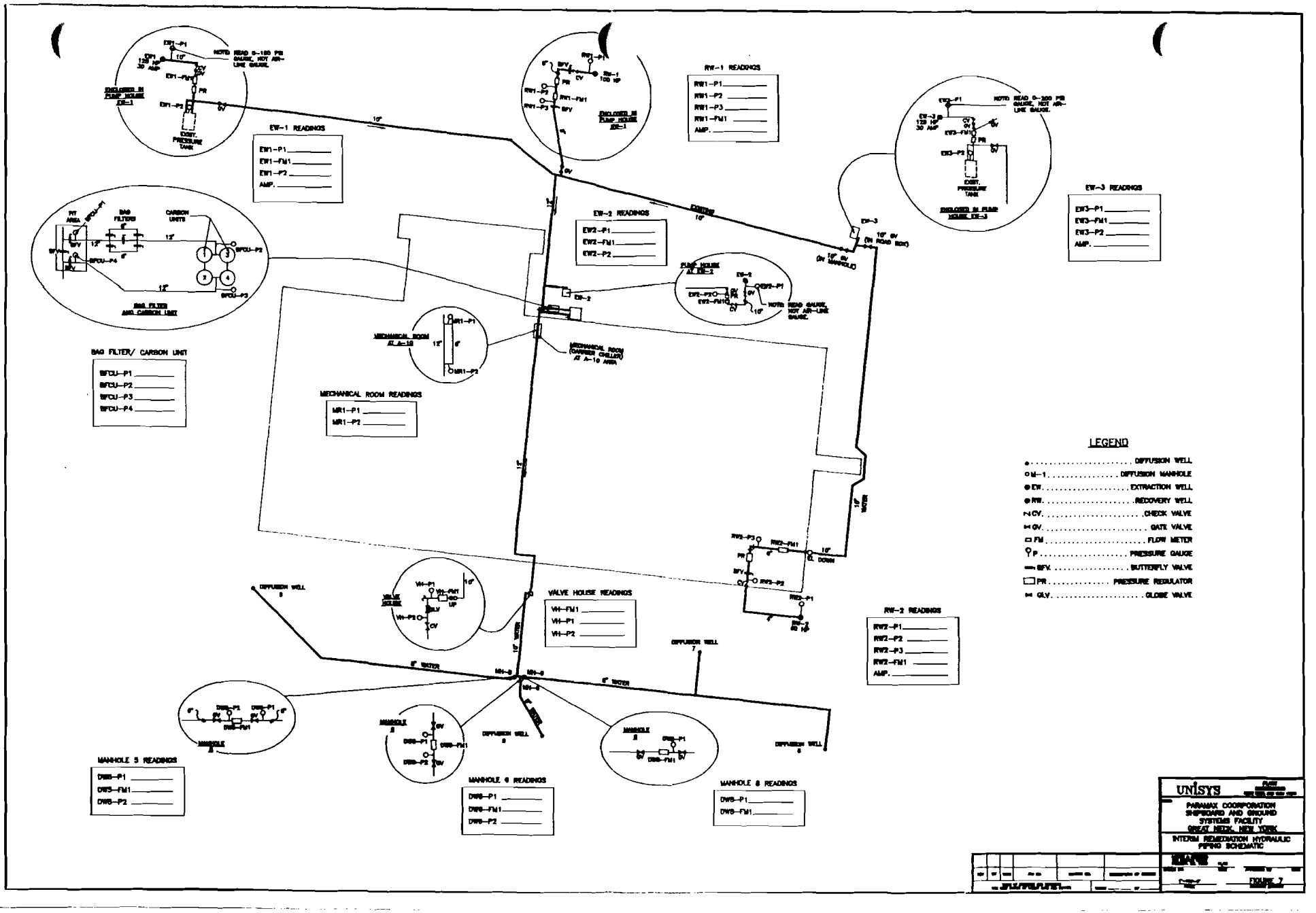
The primary purpose for site controls is to establish the hazardous area perimeter, to reduce migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized personnel. At the end of each workday, the site should be secured or guarded to prevent unauthorized entry. Site work zones will include:

- **Clean Zone/Support Zone**. This uncontaminated zone will be the area outside the exclusion and decontamination zone and within the geographic perimeters of the site. This area is used for staging of materials, parking of vehicles, office and laboratory facilities, sanitation facilities, and receipt of deliveries. Personnel entering this zone may include delivery personnel, visitors, security guards, etc., who will not necessarily be permitted in the exclusion zone. All personnel arriving in the support zone will report to the command post and sign a site entry/exit log. There will be only one controlled entry/exit point from the clean zone to the decontamination zone.

- **Decontamination Zone**. The decontamination zone will provide a location for removal of contaminated personal protective equipment and final decontamination of personnel and equipment. All personnel and equipment should exit via the decon area. A separate decontamination area will be established for heavy equipment.

- **Exclusion Zone/Hot Zone**. The exclusion zone will be the "hot zone" or contaminated area inside the site perimeter. Entry to and exit from this zone will be made through a designated point, and all personnel will be required to sign the hot zone entry/exit log located at the decon area. Appropriate warning signs to identify the exclusion zone should be posted (i.e., "DANGER—AUTHORIZED PERSONNEL ONLY", "PROTECTIVE EQUIPMENT BEYOND THIS POINT", etc.) Exit from the exclusion zone must be accompanied by personnel and equipment decontamination.

A site map depicting location of site and the delineation of the various work zones is shown on the next page.


EW-1 READINGS
EW1-P1
EW1-FM1
EW1-P2
AMP.
RW-1 READINGS
RW1-P1
RW1-P2
RW1-P3
RW1-FM1
AMP.
EW-2 READINGS
EW2-P1
EW2-FM1
EW2-P2
EW-3 READINGS
EW3-P1
EW3-FM1
EW3-P2
AMP.
BAG FILTER/ CARBON UNIT
BFCU-P1
BFCU-P2
BFCU-P3
BFCU-P4
MECHANICAL ROOM READINGS
MR1-P1
MR1-P2
VALVE HOUSE READINGS
VH-FM1
VH-P1
VH-P2
RW-2 READINGS
RW2-P1
RW2-P2
RW2-P3
RW2-FM1
AMP.
MANHOLE 5 READINGS
DWS-P1
DWS-FM1
DWS-P2
MANHOLE 6 READINGS
DWS-P1
DWS-FM1
DWS-P2
MANHOLE 8 READINGS
DWS-P1
DWS-FM1
LEGEND
DIFFUSION WELL
DIFFUSION MANHOLE
EXTRACTION WELL
RECOVERY WELL
CHECK VALVE
GATE VALVE
FLOW METER
PRESSURE GAUGE
BFV. BUTTERFLY VALVE
PR. PRESSURE REGULATOR
GLV. GLOBE VALVE
UNISYS
PARAMAX COORPORATION
SHIPBOARD AND GROUND
SYSTEMS FACILITY
GREAT NECK, NEW YORK
INTERIM REMEDIATION HYDRAULIC
PIPING SCHEMATIC
FIGURE 7

5.2 GENERAL FIELD SAFETY AND STANDARD OPERATING PROCEDURES

·The "Buddy System" will be used at all times by all field personnel in the exclusion zone. No one is to perform field work alone. Maintain visual, voice, or radio communication at all times.

·Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces. Walk around (not through) puddles and discolored surfaces. Do not kneel or set equipment on the ground. Stay away from waste drums unless it is necessary to sample or handle the drums. Protect equipment from contamination by bagging.

·Eating, drinking and/or smoking is only permitted in designated areas in the support zone.

·Hands and face must be thoroughly washed upon leaving the decon area.

·Beards or other facial hair that interferes with respirator fit will preclude admission to the exclusion zone.

·All equipment must be decontaminated or properly discarded upon exit from the exclusion zone as determined by the project manager.

·All personnel exiting the exclusion zone must go through the decontamination procedures as described in this H&S Plan.

·PPE as described in this H&S Plan will be required for all field personnel working onsite.

·No contact lenses are permitted to be worn onsite.

6.0 DECONTAMINATION

In general, everything that enters the exclusion zone must either be decontaminated or properly discarded upon exit from the exclusion zone. All personnel, including any state or local officials, must enter and exit the exclusion zone through the decon area. Prior to demobilization, contaminated equipment will be decontaminated and inspected by the project manager/site engineer before it is moved into the clean zone. Any material that is generated by decontamination procedures will be stored in a designated area in the exclusion zone pending disposal approvals and disposition.

The type of decontamination solution to be used is dependent on the type of chemical hazards. The decontamination solution for this project is soap and water. Decontamination solutions will be changed as required and collected and stored onsite until disposal approvals are secured and the arrangements for its final disposition are finalized.

6.1 PERSONNEL DECONTAMINATION

Personnel may become contaminated in a number of ways including:

- contacting vapors, gases, mists, or particulates in the air;
- being splashed by materials while sampling open containers;
- walking through puddles of liquids or on contaminated soil; or
- using contaminated instruments or equipment.

Even with safeguards, contamination may occur. Harmful materials can be transferred into clean area, exposing unprotected personnel. In removing contaminated clothing, personnel may contact contaminants on clothing or inhale them. To prevent such occurrences, decontamination procedures must be developed and established before anyone enters the site and must continue throughout site operation.

Personnel decontamination procedures will be based on the contaminant associated with the specific site and the level of protection being worn by site personnel.

6.2 SAMPLING EQUIPMENT

Sampling devices when used onsite, require special cleaning procedures which are delineated in the chart in Section 6.7.

6.3 EQUIPMENT DECONTAMINATION

Heavy equipment will be decontaminated by moving the equipment to the designated decon area and brushing off the heavy contamination with a broom, etc. The equipment will then be steam cleaned with the decon waters collected for proper disposition. Following the decontamination and prior to exiting the decontamination zone, the project manager/site engineer will inspect the equipment, and if properly decontaminated make note of the date, time, method, and name of decon personnel in the field notebook. The

equipment will then be tagged by the project manager/site engineer using a tag containing the same information as that entered into the field log.

6.4 DISPOSAL OF CONTAMINATED MATERIALS

All materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, crushes, and all other equipment that is contaminated must be properly packaged and stored onsite until disposal arrangements are finalized. Clothing not completely decontaminated onsite should be secured in plastic bags before being removed from the site.

The proper disposal methods for the site are outlined in the chart in Section 6.7.

6.5 EMERGENCY DECONTAMINATION

Personnel with medical problems or injuries may also require decontamination. There is the possibility that the decontamination may aggravate or cause more serious health effects. If prompt lifesaving, first aid, and medical treatment is required, decontamination procedures will be omitted. In either case, a member of the site management team will accompany contaminated personnel to the medical facility to advise on matters involving decontamination.

Emergency decontamination procedures for this site are discussed in the chart in Section 6.7.

6.6 SANITIZING OF PERSONNEL PROTECTIVE EQUIPMENT

Respirator, reusable protective clothing, and other personnel articles not only must be decontaminated before being reused, but also sanitized. The inside of masks and clothing becomes soiled due to exhalation, body oils, and perspiration. Manufacturer's instructions should be used to sanitize the respirator masks. If practical, reusable protective clothing should be machine washed after a thorough decontamination; otherwise it must be cleaned by hand.

6.7 DECONTAMINATION PROCEDURES

	LEVEL A: Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/hard hat removal, SCBA removal, inner glove wash, inner glove removal, inner glove removal, inner clothing removal, field wash, re-dress. Modifications:
	LEVEL B: Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot wash, suite/SCBA/boot/glove rinse, (tank change), safety boot removal, splash suit removal, SCBA removal, inner glove wash, inner glove rinse, face piece removal, inner glove removal, inner clothing removal, field wash, re-dress. Modifications:
X	**LEVEL C:** Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, boot cover removal, outer glove removal, suit/safety boot wash, suite safety boot rinse, (canister or mask change), safety boot removal, splash suit removal, inner glove wash, face piece removal, inner glove removal, inner clothing removal, field wash, re-dress. Modifications:
X	**LEVEL D:** Segregated equipment drop, boot and glove wash, boot and glove rinse. Modifications:
X	**SAMPLING EQUIPMENT:** soap and water
X	**HEAVY EQUIPMENT DECONTAMINATION:** steam clean
	DECONTAMINATION DISPOSAL PROCEDURES: bag filters will be stored in appropriate drums for off-site disposal and treated as hazardous waste.
	EMERGENCY DECONTAMINATION EQUIPMENT/PROCEDURES: Long Island Jewish Hospital is across the street from the site.

7.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

It is essential that site personnel be prepared in the event of an emergency. Emergencies can take many forms: illnesses or injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in weather. The following outlines the general procedures for emergencies.

7.1 EMERGENCY CONTACTS/TELEPHONE NUMBERS

FIRE:	(516) 466-4412	
POLICE:	(516) 466-4600	
AMBULANCE:	(516) 466-4412	
Capable of Transporting Contaminated Personnel?	**YES:** x	**NO:**
HOSPITAL:	L.I. Jewish Medical Center	
Address:	Lakeville Road Lake Success, New York	
Chemical Trauma Capabilities?	**YES:** x	**NO:**
Decontamination Capabilities?	**YES:** x	**NO:**
Directions From Site to Hospital:	cross the street	
NOTE: See attach map for route to hospital. The route to the hospital was verified by: Distance from the site to the hospital is: 0.25 (miles) The approximate driving time is: 1 minute		
POISON CONTROL CENTER:		
ELECTRIC COMPANY:		
GAS COMPANY:		
WATER COMPANY:		
AIRPORT:	L.I. MacArthur Field (516) 466-6161	
NATIONAL RESPONSE CENTER:	(800) 424-8802	
CENTER FOR DISEASE CONTROL:	(404) 488-4100 (24-hour)	
AT&F (explosion information)	(800) 424-9555	
CHEMTREC:	(800) 424-9300	
STATE ENVIRONMENTAL AGENCY: NYDEC	(516) 751-7900	
U.S. EPA REGION NAME: Girish Desai	REGION NUMBER: II	
Unisys CORPORATE OFFICE: Kevin Earley	(215) 993-7210	
Unisys PERSONNEL OFFICE (local): Great Neck, NY	(516) 574-9600	
Unisys CORPORATE HEALTH & SAFETY OFFICER:	Abe Hyman (516) 574-3718	
Unisys SITE HEALTH & SAFETY COORDINATOR:	Frank Fendler (516) 574-2823	
Unisys MEDICAL CONSULTANT		
Unisys PERSONNEL MEDICAL CONSULTANT (local)		
Unisys PROJECT MANAGER:	Kevin Earley (215) 993-7210	

The following individuals are current with their certifications in First Aid/CPR:

NAME	FIRST AID DATE	CPR DATE

EMERGENCY EQUIPMENT AVAILABLE ONSITE:

COMMUNICATION EQUIPMENT	
x	PUBLIC TELEPHONES
x	PRIVATE TELEPHONES
	CELLULAR TELEPHONES
x	TWO-WAY RADIO (WALKIE TALKIE)
	EMERGENCY ALARMS/HORNS
MEDICAL EQUIPMENT	
x	FIRST AID KITS
x	STRETCHER
x	EYE WASH STATION
x	SAFETY SHOWER
x	BLANKETS
	OTHER:
FIRE FIGHTING EQUIPMENT	
x	FIRE EXTINGUISHER TYPES:
	OTHER:
SPILL/LEAK EQUIPMENT	
x	ABSORBENT BOOM PADS
x	DRY ABSORBENT
ADDITIONAL SAFETY EQUIPMENT:	

7.2 PERSONNEL RESPONSIBILITIES DURING EMERGENCIES

The project manager/site engineer, as the site administrator for the project, has primary responsibility for responding to and correcting emergency situations. The onsite project manager/site engineer will:

- Take appropriate measures to protect personnel including withdrawal from the exclusion zone, total evacuation and securing of the site, or upgrading or downgrading the level of protective clothing and respiratory protection.

·Take appropriate measures to protect the public and the environment including isolating and securing the site, preventing run-off to surface waters and ending or controlling the emergency to the extent possible.

·Ensure that the appropriate Federal, State and Local agencies are informed, and emergency response plans are coordinated. In the event of a fire or explosion, the local fire department should be summoned immediately. In the event of an air release of toxic materials, the local authorities should be informed in order to assess the need for evacuation. In the event of a spill, sanitary districts and drinking water systems may need to be alerted.

·Ensure that appropriate decon treatment or testing for exposed or injured personnel is obtained.

·Determine the cause of the incident and make recommendations to prevent recurrence.

·Ensure that all required reports have been prepared.

· If an injury has occurred, depending on the type and severity, notify Paramax's medical consultant and/or occupational physician.

·Notify Unisys's Corporate Health & Safety Officer.

·Notify the injured person's regional office.

·Prepare an *Injury/Exposure Report* (Appendix G) and submit the report to the Site and Corporate Health & Safety Officer.

7.3 MEDICAL EMERGENCIES

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and, if possible, first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must be reported to the project manager/site engineer.

Any person transporting an injured/exposed person to a hospital for treatment should take directions to the hospital with them, and information on the chemicals involved.

Any vehicle used to transport contaminated personnel, will be cleaned or

decontaminated as necessary.

7.4 FIRE OR EXPLOSION

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival the project manager/site engineer will advise the fire commander of the location and nature of the fire, and the location and identification of all hazardous materials onsite.

If it is safe to do so, site personnel may use fire fighting equipment available onsite or remove or isolate flammable or other hazardous materials which may contribute to the fire.

7.5 SPILL OR LEAKS

In the event of a spill or leak, site personnel will locate the source of the spillage and stop the flow, if it can be done safely, and begin containment and recovery of the spilled material.

7.6 EVACUATION ROUTES AND RESOURCES

Evacuation routes have been established by work area locations for the site. Evacuation should be conducted immediately, without regard for equipment under conditions of extreme emergency. See site map for evacuation routes.

- Evacuation notification will be a continuous blast on a air horn, vehicle horn, or by verbal communication via radio.

- Keep upwind of smoke, vapors, or spill location.

- Exit through the decontamination corridor if possible.

- If evacuation is not via the decontamination corridor, site personnel should remove contaminated clothing once they are in a location of safety and leave the clothing near the exclusion zone or in a safe place.

- The project manager/site engineer will conduct a head count to insure all personnel have been evacuated safely.

- In the event that the a site evacuation is necessary, all personnel are to:

  - Escape the emergency situation;
  - Decontaminate to the maximum extent practical; and
  - Meet at Paramax's command post or some other pre-arranged location.

8.0 LOCKOUT/TAGOUT

Does this project involve the operation of machines and/or equipment in which the unexpected energization or start up of the machinery or equipment, or release of stored energy, could cause injury to personnel?

NO:	YES: X

If the answer is **NO**, proceed to the next section. If the answer is **YES**, OSHA regulations for Lockout/Tagout (29 CFR 1910.147) must be implemented and personnel must comply with all Lockout/Tagout procedures.

To assure personnel are protected from equipment accidently operating during maintenance and servicing, OSHA requires the utilization of lockout/tagout procedures. These procedures apply to maintenance and/or servicing of equipment and not to normal operations.

These procedures apply to operations when guards are removed or bypassed, or other safety devices are bypassed, or any part of the body is in a danger zone for the servicing and/or maintenance of the equipment. The procedures do not apply to cord and plug connected equipment which is under the control of the operator.

Some of the common energy sources which require lockout/tagout procedures include, but are not limited to:

- electrical,
- hydraulic,
- pneumatic,
- chemical, or
- thermal.

Tags. Tags are only warning devices and do not provide physical restraint. Tags **MUST NOT** be removed without authorization of the person responsible for its attachment and never bypassed or ignored. Tags must be legible, understandable, and used as part of the overall lockout/tagout program. Tagout devices shall warn against hazardous conditions and shall include verbiage such as:

- DO NOT START
- DO NOT OPEN
- DO NOT CLOSE
- DO NOT ENERGIZE
- DO NOT OPERATE

Locks. Locks are used as a positive means to hold energy isolating devices in the safe or off position. Locks prevent removal without excessive force or unusual techniques such as bolt cutters etc.

The lockout/tagout procedure requires the utilization of a lockout device on all energy isolating devices which can be locked out, unless it can be demonstrated that a tagout device provides the equivalent amount of protection. If tagouts are authorized, they must be placed in the same location where the lock would be placed. All lockout/tagout devices shall be singularly identified, used only for controlling energy, durable, standardized, and identifiable.

8.1 PROCEDURES

·Prepare. Notify affected personnel that work requiring lockout/tagout will be performed.

·Shutdown. Turn off or shutdown the equipment by following an orderly shutdown procedure.

·Isolation. Locate and isolate the equipment energy isolating devices.

·Lockout/Tagout. Lockout/tagout each energy isolating device in a "safe" or "off" position. If the tagout device is utilized, affix it at the same point where the lock would be used or as close as possible.

·Stored Energy. Assure all potentially hazardous or residual energy is relieved or otherwise made safe. Make sure the stored energy will not reaccumulate by locking a vent valve in the open position.

·Verify. Verify proper isolation and/or de-energization by testing the start button to ensure that the equipment will not operate. Make sure you push the **STOP** button after activating the start button.

·Perform Work. After lockout/tagout procedures have been implemented, execute the maintenance and/or servicing work.

·Release. Ensure that all non-essential items (tools, etc.) have been removed and the equipment is operationally intact. Ensure that personnel are safely positioned and affected personnel have been notified.

·Removal. Lockout/tagout devices must be removed only by the authorized employee who applied the devices.

·Notification. Notify affected personnel that the maintenance and/or servicing is complete, the lockout/tagout devices have been removed, and the equipment is released for operation.

Testing or positioning may be required for some equipment. Before removing lockout/tagout devices, clear the machine, remove personnel, remove devices, energize, and proceed with testing. After testing, de-energize and reapply the lockout/tagout procedures.

Outside personnel, such as contractors, and Paramax personnel shall inform each other of their lockout/tagout procedures to assure all lockout/tagout procedures are complied with.

Some jobs may require lockout/tagout of numerous energy isolation devices. A group lockout/tagout is then used which provides equal protection. Group lockout/tagout must be under the primary responsibility of an authorized employee. Each group member must apply his/her own personal lockout/tagout device.

During shift changes, special procedures must be utilized to assure the continuity of lockout/tagout protection. There must be an orderly transfer between off-going and on-coming personnel.

EMERGENCY ACTION PLAN

AND

ENVIRONMENTAL CONTROL PROCEDURES

UNISYS S&GSG
Great Neck, NY
July 1991

EMERGENCY ACTION PLAN
AND
ENVIRONMENTAL CONTROL PROCEDURES

TABLE OF CONTENTS

EMERGENCY ACTION PLAN

ENVIRONMENTAL CONTROL PROCEDURES

APPENDICIES

I. INTRODUCTION

A. Policy

It is the policy of Unisys S&GSG to provide initial response to any type of foreseeable emergency situation in order to protect the safety of Unisys employees, to minimize damage to Unisys property and to prevent injury or damage within the surrounding community. The emergency situations addressed include fire, explosion, chemical release, medical, severe weather, bomb threat and building system failures.

B. Purpose

This plan has been developed to serve the following purposes:

1. To provide a general reference for any Unisys employee who must provide initial communication response to an identified emergency.
2. To provide a specific guide to those employees providing initial response to certain types of emergencies.
3. To familiarize outside response agencies with internal emergency response mechanism.
4. To fulfill the requirements of the Resource Conservation and Recovery Act (RCRA) Contingency Plan.

It is very important that all employees be familiar with actions required of them for each type of emergency referenced in this plan. The basic knowledge of what to do in an emergency will reduce confusion and panic and minimize consequences of the emergency.

C. Responsibilities

It will be the responsibility of Plant Protection to coordinate the activities of all response personnel during an emergency within the facility. Plant Protection will oversee the emergency activities, the Hazardous Material Team will evaluate and direct chemical responses, with necessary support from Facilities and Safety as they become involved in the emergency response. The call lists for all these personnel are provided in Appendix I. In the event that an emergency situation poses a threat to the outside environment or surrounding community, the Hazardous Material Emergency Coordinator shall direct the activities of all response personnel.

II. EMPLOYEE EMERGENCY RESPONSE

Any person identifying a real or potential emergency situation should immediately report the situation by taking the following actions:

a. Remove yourself from danger.

b. Go the the nearest phone.

c. Dial x3333 (Dial x4444 to report bomb threats.)

d. Report the nature of the emergency, i.e., fire, chemical spill, injury, etc.

e. Report the specific location of the emergency, giving building name and column number.

f. Give your name and the number of the phone you are using.

g. Do not hang up first. Stay by the phone so you can be contacted if additional information is needed.

Dialing th mergency numbers will put a c. er in contact with the Plant Protection guard (all shifts and weekends). It is the responsibility of the Security Officer to summon emergency response personnel. Refer to Appendix I and II for lists of the emergency response personnel and outside organizations with their work phone numbers, home phone numbers and beeper numbers. The following sections describe the actions required of all employees in various emergency situations.

A. Emergency Evacuations

There are two types of emergency evacuations for the building depending on the nature of the emergency. Each of these emergency evacuations is described in the following. Employees should familiarize themselves with their work area exits and the posted evacuations routes.

1. Area Evacuation

   a. Events which might require an orderly area evacuation include large chemical spills.

   b. An orderly area evacuation will be initiated with a <u>verbal</u> Public Address announcement instructing all occupants to exit the area.

   c. Assist handicapped personnel out of area as designated.

   d. All occupants upon exiting the area should report to the cafeteria or other location as designated by the supervisor. Remain in the designated area until further notice.

   e. No action is required by employees outside of the involved area.

2. Building Evacuation

a. Events which might necessitate the evacuation of the building include: bomb threat, fire, or explosion.

b. A building evacuation will be initiated with a verbal public address announcement. All building occupants should immediately stop work, walk to the nearest emergency exit, and move at least 300 feet from the building. Assist in evacuation of handicapped personnel if so designated. Securing classified material or powering down equipment should be done only if at no risk to the employee.

c. Proceed to the employee parking lot, maintaining the 300 foot interval unless directed otherwise.

d. Report to your supervisor so that he/she can determine if any of your co-workers have been left behind in the building. (Supervisors are encouraged to designate specific locations within the employee parking lot where their group is to meet.)

e. Do not re-enter the facility until instructed to do so by the local Fire Department, Plant Protection or supervisor.

f. All evacuation routes for the building are shown in Appendix VIII and area evacuation routes are posted throughout the building.

B. Building F or Explosion

1. During a building fire or explosion, personnel should call x3333 to notify the Plant Protection Department, and assist in the evacuation of handicapped or injured personnel from the immediate area.
2. The Plant Protection Department will announce an evacuation over the Public Address System if warranted and notify the local Fire Department and appropriate personnel.
3. It is Unisys corporate policy that no employee will be expected to attempt to control or extinguish structural fire. Employees should evacuate immediately.

C. Hazardous Chemical Release

1. Unisys Plant Operations utilizes a variety of potentially hazardous chemicals and compressed gases. Some of these chemicals and gases may, upon exposure, be corrosive or toxic to personnel. Additionally, a flammable solvent or flammable gas release could lead to a fire.
2. Recognizing a chemical or gas release:
   a. Unusual substance found on floor around chemical operations. The substance may be reacting, fuming, or giving off noticeable odor.
   b. A pungent or irritating odor.
   c. Loss of supply of a particular gas at a process point.
   d. Unusual odor in a chemical storage area.
   e. Cloud of gas or "hissing" sound emanating from compressed gas cylinder.

3. Employe actions upon discovering a che cal or gas release:

   a. Leave the immediate vicinity, warning other personnel to vacate the area. Assist injured personnel out of the area.

   b. Call x3333.

   c. Prevent others from entering area until Plant Protection arrives to barricade off area.

4. First aid for chemical or gas exposure:

   a. Call x3333 and report medical emergency.

   b. Liquids

      i. Flush contacted area with large quantities of water for at least 15 minutes.

      ii. Remove contaminated clothing or shoes while under water flow.

      iii. Report to Medical.

   c. Gases

      i. If without danger to yourself, get victim out of contaminated area to fresh air. Do not re-enter a contaminated area without proper protective equipment.

      ii. If the victim is not breathing, artificial respiration should be administered by a trained employee.

      iii. If victim's breathing is difficult, a qualified person should administer oxygen.

iv. If gas exposed was corrosive, full scale body flushing with water should be conducted for at least 15 minutes, pay particular attention to proper flushing of eyes.

Remove contaminated clothing and shoes.

v. Obtain medical help immediately.

d. Cryogenic Liquids

i. Flush exposed area, particularly eyes, with large quantities of tepid water. (DO NOT APPLY DIRECT HEAT TO AFFECTED AREAS.)

ii. Report to Medical.

D. Medical Emergency

1. A medical emergency is defined as a situation which is life threatening, potentially life threatening, or crippling, and requires medical evaluation. Non-emergency medical assistance should be obtained by calling the Medical Department at x3323.

2. General procedures applicable in a medical emergency situation are:

a. Activate internal emergency system by dialing x3333.

i. Identify yourself and your location.

ii. Identify the type of emergency (fall, burn, etc.).

iii. If chemical is involved, identify name of chemical(s) if known.

iv. Identify how many persons need help.

v. Identify what is being done for the victim(s).

NOTE: YOU HANG-UP LAST! Let the person you called hang-up first to ensure all information has been conveyed.

b. Maintain open airway, breathing, and circulation; control bleeding.

c. Plant Protection is responsible for calling Paramedic-Ambulance service and will guide the paramedics to the scene of the emergency.

E. Severe Weather

Should severe weather occur, Plant Protection will monitor and advise as required.

F. Bomb Threat

1. An employee who receives a bomb threat should attempt to obtain the information identified on the Bomb Threat Form at the end of this section. Contact x4444 immediately and forward as many details concerning the call as possible. Remain available for any further assistance.
2. Based upon available information, upon receipt of a bomb threat, Plant Protection and Management will determine whether there will be an area or total evacuation or whether there will be a search for an expolosive device.

G. Building Systems Failures

An employee discovering a problem with any building system (leaks, trash, etc.) should contact x1826 during first shift, or x3512 during evening hours. In the event of a building system failure such as electric, water or sewage, Facilities will notify Plant Protection, Communications, and appropriate utilities of the problem. Facilities will obtain an estimate of when service will be restored and will perform necessary system shut-downs and start-ups. Employees will be notified of the appropriate actions over the Public Address System.

FBI BOMB DATA PROGRAM

PLACE THIS CARD UNDER YOUR TELEPHONE

QUESTIONS TO ASK:

1. When is bomb going to explode?
2. Where is it right now?
3. What does it look like?
4. What kind of bomb is it?
5. What will cause it to explode?
6. Did you place the bomb?
7. Why?
8. What is your address?
9. What is your name?

EXACT WORDING OF THE THREAT:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Sex of caller: _____ Race: _____

Age: _____ Length of call: _____

Number at which call is received:

_____

Time: _____ Date: __/__/__ FBI/DOJ

BOMB THREAT

CALLER'S VOICE:

____ Calm	____ Nasal
____ Angry	____ Stutter
____ Excited	____ Lisp
____ Slow	____ Raspy
____ Rapid	____ Deep
____ Soft	____ Ragged
____ Loud	____ Clearing throat
____ Laughter	____ Deep breathing
____ Crying	____ Cracking voice
____ Normal	____ Disguised
____ Distinct	____ Accent
____ Slurred	____ Familiar

If voice is familiar, who did it sound like?

_____

_____

BACKGROUND SOUNDS:

____ Street noises	____ Factory machinery
____ Crockery	____ Animal noises
____ Voices	____ Clear
____ PA System	____ Static
____ Music	____ Local
____ House noises	____ Long distance
	____ Booth
____ Motor	Other _____
____ Office machinery	_____
	_____

THREAT LANGUAGE:

____ Well spoken (educated)	____ Incoherent
	____ Taped
____ Foul	____ Message read by threat maker
____ Irrational	

REMARKS: _____

_____

_____

_____

Report call immediately to:

_____ .

Phone number _____ .

Date __/__/__ .

Name _____ .

Position _____ .

Phone number _____ .

In the event of an electrical failure, the Emergency Lighting System will automatically be activated, as will the back-up for the Sprinkler System if needed.

III EMERGENCY RESPONDER RESPONSIBILITIES

A. Emergency Evacuation Coordination

1. There are two types of emergency evacuations for the building:
   a. Area evacuation - Occupants exit to the cafeteria or other designated area.
   b. Building evacuation - All occupants exit the building through nearest emergency exits.

   Plant Protection will announce the necessary evacuation over the Public Address System.
2. Action Sequence
   a. Area occupants
      i. When notified to evacuate, if not in any immediate danger, shut down any process or equipment which would become a hazard or be severely damaged if left unattended. If you are not in the area designated for evacuation, no action is required.
      ii. Evacuate the area (and building if required) according to notification received (see A.1 above). If you have been selected to assist in the evacuation of a handicapped person, ensure prompt evacuation of that person.
      iii. For area evacuations, report to the cafeteria or other designated areas until further notice.

iv. For building evacuations, move outside to a distance at least 300 feet from the building and proceed to the closest employee parking area maintaining the 300 foot interval. Report to supervisor and await further instructions.

b. Supervisors

i. For area evacuations, assist in assuring that equipment has been shut down as necessary to prevent damage or injury. Activate the Emergency Power Off buttons where applicable.

ii. Ensure that those employees selected to assist in the evacuation of handicapped personnel were able to evacuate successfully.

iii. Instruct visitors and personnel who are temporarily assigned from another work area to proceed to the nearest emergency exit.

iv. Report to the designated area (cafeteria, parking area, other). Determine whether or not your employees have evacuated the building. Report any employees that you can not account for to Plant Protection.

iv. Await instructions for further actions.

c. Wardens

i. Ensure that all employees have vacated your zone.

ii. If an area evacuation was required, ensure that no unauthorized employees attempt to enter the area and keep aisles clear for any emergency traffic.

iii. Ensure the shutdown of electrical equipement when possible.

d. Plant Protection

i. Communicate with outside services based on specific emergency response.

ii. Rope-off area as required to limit access by unauthorized personnel.

iii. Designate Command Center, Med-A-Vac and Triage areas as necessary based on situation and weather conditions. Possible locations are shown in Appendix VIII.

iv. Receive and respond to reports on employee headcounts to ensure all have evacuated.

v. Determine and announce "all clear" when appropriate.

e. Facilities Department

i. Supply blueprints and other information to assist in emergency evaluation and response planning.

f. Occupational Health Nurse

i. Report to Security at Command Post to determine medical needs and identify treatment requirements.

ii. Coordinate medical response of internal personnel and outside medical responders.

g. Safety Department

i. Report to Security at Command Post

ii. Assist in any medical or chemical response activities

h. Power House

Shut-down procedures for equipment in the Power House will vary depending on severity of emergency situation and location of same.

Fire, disaster, flood-type emergency situations must be classified into major or area confined at the time of each crisis.

1. Major

Stationary Engineers on duty and Air Conditioning and Heating Supervisor, if available, will make every effort to keep Power House functioning until given orders to shut-down from Plant Security.

While awaiting word from Plant Security, Stationary Engineer shall immediately shut down auxiliary gas line going to main building from the Power House. If the order to shut down is received, all equipment operating in the Power House building shall be secured in an orderly fashion. Equipment includes boilers and auxiliary pumps, air compressors and refrigeration equipment. Fuel shall be shut off at the source: fuel oil at pump room, and gas from meter room in yard.

If Facilities personnel are given an order from Plant Security to evacuate the Power House, all equipment must be shut down, including all electrical

distribution for the entire Great Neck complex. This can be accomplished in three ways:

(1) Trip breakers on second level of Power House.

(2) Trip breakers in Sub-Station.

(3) Call Lilco and trip breakers remotely.

2. Air Handling

Large air handling blowers shall be shut down in all areas of main building in case of a major fire to eliminate movement of smoke within building. If the fire is confined to one area and building is not being evacuated air handling blowers will be shut down as required.

Local air conditioning units in affected areas will also be shut down. Air conditioning personnel will be responsible for shutting down equipment.

Utilize fans to move smoke out of building as directed by Fire Fighting personnel.

3. Electrical Distribution

Depending on severity of emergency, all power to entire building complex can be cut off immediately from main distribution center on second level of Power House.

Electrical Systems Operator and Electrical Supervisor assigned to the area will make the disconnects as required.

If emergency is confined to a specific area, power can be cut off by tripping breakers in vault of local area or all power to the vault can be tripped in Power House to affected vault.

4. Sound Room - Paging Area

Electrical personnel familiar with sound room will stand by for emergency repairs as required in sound room.

Paging system is in service at all times, 24 hours a day, from one to two points: Telephone Operation Room and Security Office.

5. Emergency Generators

We have five main emergency generators which function automatically in case of power failure.

Locations: A-3

P-6

A-14

P-14

Power House

Emergency generators supply power for lighting throughout all buildings. If no service is connected in a particular area, a battery-operated light is installed. Back-up power for paging system comes from unit installed at A-3.

B. Fire or Explosion

1. Action Sequence

a. All Building Occupants

i. Report any fire or explosion by calling x3333.

b. Plant Protection Department

Upon receipt of a fire or explosion notice:

i. Get specific location and nature/extent of fire or explosion from caller.

ii. Call Fire Department directing them to the appropriate entrance.

iii. Summon Guard to scene of emergency to evaluate.

iv. Arrange to meet Fire Department at the designated entrance to direct them to the emergency site.

v. Announce evacuation over PA, as necessary.

vi. Assist in evacuation, if necessary.

vii. Work with Fire Chief to provide a coordinated effort.

c. Wardens

Upon notification of fire/explosion:

i. Report to emergency site as directed.

ii. Evacuate designated area per evacuation procedure.

iii. Assist in shut-down of equipment, systems or gases, as necessary.

d. Supervisory Personnel

i. Assess the situation. If it is a small incipient contained fire and you have been trained, you may elect to extinguish the fire with a fire extinguisher.

ii. Assist in evacuation of employes as directed.

iii. Report missing employees to Plant Protection.

e. Occupational Health Nurse

i. Report to Command Center to receive reports of any injuries.

ii. Have paramedics called if injuries require.

iii. Set up first-aid station remote from potential danger for treatment of minor injuries.

C. Chemical Spill - In-plant

1. This procedure will apply to any situation involving the release of spillage of a chemical or gas within the building, which may lead to personal injury, fire, explosion or release of toxic gases or vapors.

2. Action Sequence

a. All Building Occupants

i. Upon discovery of any size chemical spill, inform the area supervisor or call x3333.

b. Supervisors

i. Upon notice of a chemical spill, report to the scene (if without danger) to evaluate extent of spill.

ii. Remove any injured personnel from the contaminated area (if without danger) and see that first aid is rendered. If necessary, call x3333 for medical assistance.

iii. If spill is too large for area employees to contain and/or clean up, call x3333.

c. Plant Protection

i. Upon notification of a chemical spill incident, summon the Hazardous Material Coordinator and Safety Department and report the nature and specific location of the emergency

ii. Dispatch a Plant Protection Representative to the scene of the spill to barricade the spill area or initiate an evacuation of the area, if necessary.

iii. Stand ready to contact outside emergency assistance if necessary.

d. Hazardous Material Coordinator

i. Upon notification of a hazardous material release, the Hazardous Material Coordinator will implement the procedures detailed in Section 1 - General Overview, within the Contingency Plan.

e. Safety

i. Report to scene and evaluate.

ii. Assist in assessing problem and determining corrective action.

iii. Ensure that an accident investigation is completed, and recommended actions to prevent future occurrences are implemented by the responsible supervisor.

D. **Medical Emergency**

1. This procedure is to be used in response to any medical emergency situation such as chemical inhalation, chemical contact, electric shock, trauma, heart attack, etc.

2. Action Sequence

a. All Building Occupants

i. Report any medical emergency by calling x3333.

ii. Provide assistance if qualified.

b. Plant Protection Department

i. Upon receipt of a medical emergency report, contact the Occupational Health Nurse and Safety Department.

ii. Dispatch a representative to the scene as requested by the Nurse.

iii. If additional treatment or follow-up is necessary (consult with Occupational Health Nurse and/or supervisor) call Paramedic-Ambulance Service and report nature and specific location of the emergency. Dispatch Plant Protection representative to the appropriate building entrance to meet the Paramedics and direct them to the emergency location.

iv. During evening hours and weekends, dispatch a representative to the scene to evaluate and determine need for treatment by outside sources. If necessary, follow item iii. above.

c. Occupational Health Nurse

i. Upon receipt of medical emergency report, go to the scene to provide emergency care.

ii. If additional or follow-up treatment is necessary, instruct Plant Protection to call Paramedic Ambulance Service.

iii. Remain at emergency scene until Paramedics arrive.

iv. If injury is associated with chemical contact, inhalation, or ingestion, attempt to identify name of chemical(s) and provide this information to paramedics in writing. Obtain copy of MSDS from Safety Department if not available at scene of emergency.

v. Ensure that appropriate accident reports are completed by the employee and supervisor and that all OSHA recordkeeping is updated.

d. Safety Department

i. Report to scene and evaluate situation.

ii. Assist in assessing problem and determing corrective action.

iii. Ensure that an accident investigation is completed, and recommended actions to prevent future occurrences are implemented by the responsible supervisor.

E. Severe Weather

1. Action Sequence

a. All Building Occupants

i. Upon hearing the public address announcement of a severe weather warning, all building occupants should remain alert and listen for further instructions.

b. Plant Protection Department

i. Monitor the weather band radio at the main guard post.

ii. Upon receipt of a severe weather or road condition alert, make an announcement over the PA system to inform employees that a severe weather threat exists and to alert them to the possible hazards and any other instructions.

iii. Notify Occupational Nurse if employees sustain injury.

iv. Notify outside emergency agencies as required.

c. Facilities Department

i. Respond to any building system problems created by severe weather conditions.

ii. In the event the facililty sustains damage:

(1) Assist in evacuation of damaged areas.

(2) Direct outside utility company personnel to affected areas.

(3) Notify Plant Protection when damaged area is clear for occupancy.

F. Bomb Threat

1. Action Sequence

a. All Employees

i. After receipt of a bomb threat:

(1) Immediately call x4444 to report as many details concerning the call as possible.

(2) Remain alert for evacuation signals or PA announcements to take action.

b. Plant Protection

i. Upon notification that a bomb threat was received, pass along all available details to the Manager of Plant Protection.

ii. Based upon available information, the Manager of Plant Protection will initiate a total or area evacuation or a search for the explosive device as deemed appropriate.

iii. If an evacuation is found to be necessary, initiate the evacuation of the building.

iv. Advise company officials per Plant Protection Procedures.

c. Wardens

i. Upon notification that the building must be evacuated (PA announcement) assist in orderly evacuation following Building Evacuation Procedure

ii. Report any unusual object/device immediately to Plant Protection Department (x4444) but do not touch or move object.

IV. PERSONNEL TRAINING

Numerous training programs exist to instruct employees on the safe procedures for performing their jobs, handling hazardous materials and providing emergency response. These programs include:

Hazard Communication
First Line Supervisor Training
Respirator Protection
Boiler Maintenance
OSHA/RCRA Emergency Response
Forklift Training
Safety Lockout/Tagout
Hoist/Crane Operation

The Safety Department is responsible for ensuring that the appropriate personnel receive regular training and that the training is documented. Supervisors, the Training Department and outside services in addition to the Safety Department, conduct the specific training programs.

No employees are required to fight fires or provide first aid (other than the Nurse); therefore no training programs exist in these areas. Numerous Plant Protection personnel have had training through outside sources for one or both of these functions and therefore could respond in emergency situations.

Appendix II

Emergency Response Organizations

The following emergency organizations are to be contacted in the event of an emergency involving hazardous waste as deemed necessary by the Hazardous Waste Coordinators:

Police Department Nassau 3rd Precinct	(516) 535-6300 (inside bldg)
Police Department Village of Lake Success	(516) 482-4600 (parking lots)
Fire Department, Manhasset/Lakeville	(516) 466-4412
L.I. Jewish Medical Center	(212) 470-2891
Hospital, Unisys (8:00 AM - 4:42 PM)	x3323
Plant Protection, Unisys (24 hrs)	x3512
EPA National Response Center	(516) 261-6868

State of New York

Department of Natural Resources State of New York	(516) 671-5573
New York State Police	(516) 756-1170 (516) 756-3369

Spill Clean-up Companies

AETC	(516) 433-9101 (201) 691-7386

WO-4

B. Emergency Spill Cart

1. Location : M-18

2. Description and contents:

a. Janitor type cart on four wheels to be used for small lab spills.

b The cart contains: mop wringer and bucket, 25-gallon rigid liner for waste, coveralls and rubber boots in medium and large size, rubber gloves, safety glasses, clean-up neutralizing kits for caustic, acid and mercury spills, mop, lab broom, floor broom, whisk broom, dust pan and squeegee, also general purpose absorbent pads, chemical spill signs and protective barrier tape.

C. Vacuum cleaner, wet or dry with 16 gallon tank.

1. Location: M-18

2. Convert 'A' collar to adapt vacuum cleaner head to a 55-gallon drum.

D. Haz-Mat Response Vehicle

1. Location: M-18

2.. Contents:

a. 2 "Danger" Chemical Spill Keep Away Stands
b. 1 Glendale Optical Face Shield
c. 1 Pair Tingley Extra Large Rubber Boots
d. 2 Disposable Masks
e. 2 Industrial Glasses
f. 1 Can Nepseal 30 Electrical Plastic Insulating Compound Type HF
g. 2 Bundles 999 Nibroc 9 1/4 x 9 1/2 Towels, Paper
h. 1 Kimtowels - Kimberly - Clark
i. 1 Gallon Speedi-Dry
j. 1 Flashlight
k. 2 Lab-Supply Tyvec Suits
l. 2 Disposable Spill Suits
m. 12 Large Garbage Bags
n. 2 SMR Mercury Spill Control Box w/ Mercury Hg Absorb Sponges
o. 1 Vacuum Pistol (Hg Vac)
p. 1 Plastic Shovel, Sml
q. 1 Pair Plastic Gloves
r. 1 Pair Safety Glasses

ECP	Rev
37009-VI	
Page 1 of 5	
Detail Description: Chemical & Hazardous Material Emergency Response Procedure	Ref: 40 CFR 117, 263, 264, 265 761:6 NYCRR Subpart 373-2.4
Engineer / Date	Approval / Date

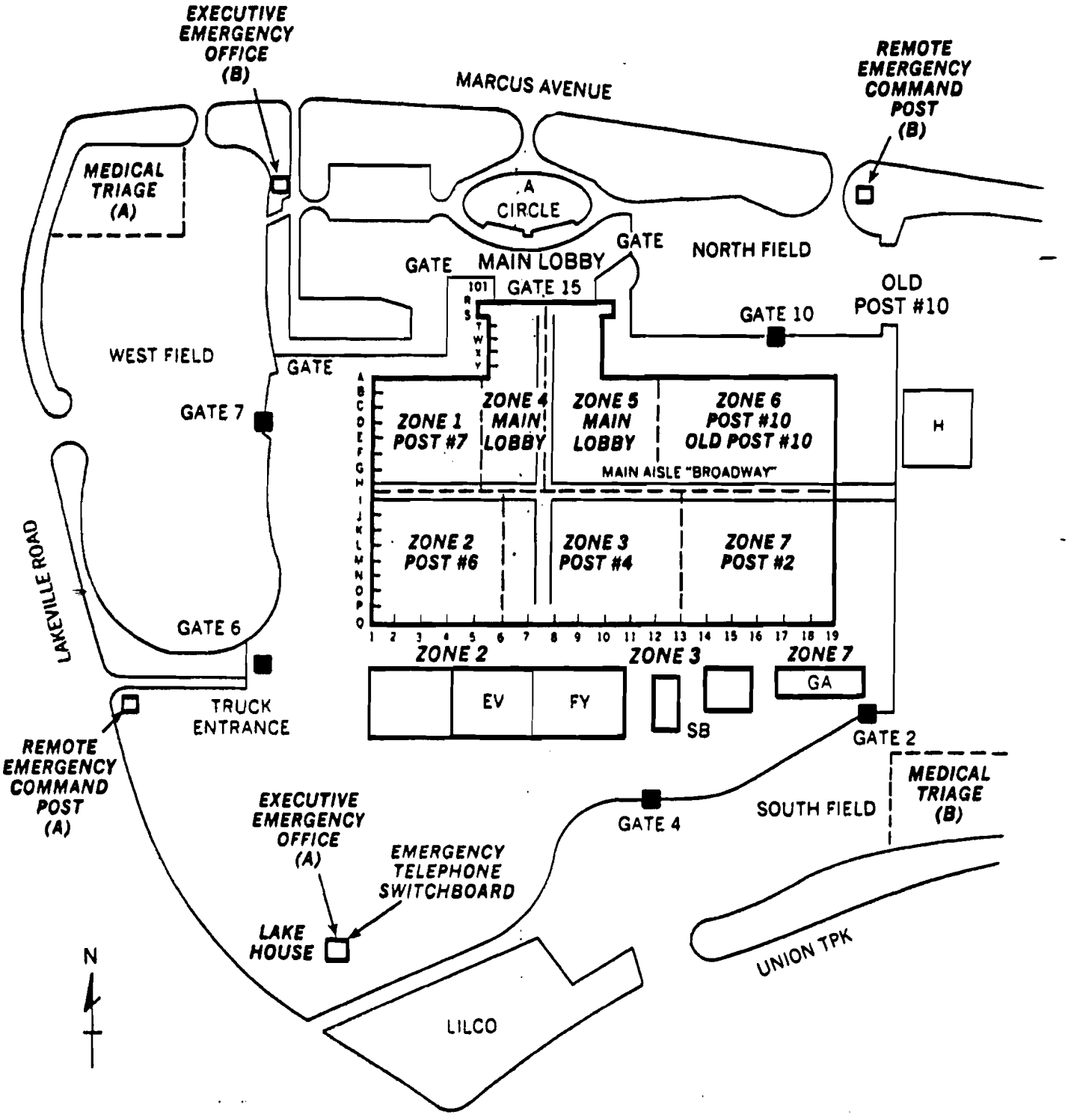
Appendix VI
(attached)

Facilities Layouts Hazardous Material Locations

1. Main Manufacturing Building
2. Boiler House
3. Environmental Test Building and South Building
4. Garage
5. Site Plan

WO-4

UNISYS S&GSG
SITE PLAN



Community Air Monitoring Plan

Real-time air monitoring for volatile compounds and particulate levels at the perimeter of the exclusion zone is necessary.

The plan must include the following:

- Volatile organic compounds must be monitored at the downwind perimeter of the exclusion zone daily at 2 hour intervals. If total organic vapor levels exceed 5 ppm above background, drilling/excavation activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings must be recorded and be available for State (DEC & DOH) personnel to review.
- Particulates should be continuously monitored downwind of the exclusion zone with a portable particulate monitor that would have an alarm set at 150 $\mu g/m^3$. If downwind particulate levels, integrated over a period of 15 minutes, exceed 150 $\mu g/m^3$, than particulate levels upwind of the survey or work site would be measured. If the downwind particulate level is more than 100 $\mu g/m^3$ greater than the upwind particulate level, then drilling/excavation activities must be stopped and corrective action taken. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the Exclusion Zone, drilling/excavation activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, drilling/excavation activities can resume but more frequent intervals of monitoring, as directed by the Safety Officer, must be conducted. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the Exclusion Zone, drilling/excavation activities can resume provided:

- the organic vapor level 200 ft. downwind of the Exclusion Zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background, and
- more frequent intervals of monitoring, as directed by the Safety Officer, are conducted.

If the organic vapor level is above 25 ppm at the perimeter of the Exclusion Zone work activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the Survey Site or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the Exclusion Zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria are exceeded in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be implemented:

- Organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes.
- Organic vapor levels greater than 10 ppm above background for any time period.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.
2. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.
3. All Emergency contacts will go into effect as appropriate.

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Appendix B

RI/FS
CITIZEN PARTICIPATION PLAN
UNISYS CORPORATION
NYSDEC ID # 130045
GREAT NECK, NY FACILITY

September 30, 1993

Prepared For:

NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
State University of New York
Building 40
Stony Brook, New York

Prepared by:

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Site Manager/Hydrogeologist

Approved by:

Kevin Earley
Project Manager

Unisys Corporation
365 Lakeville Rd.
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FIGURES

FIGURE

1.0 INTRODUCTION

Unisys Corporation (Unisys) in cooperation with the New York State Department of Environmental Conservation (NYSDEC), the State and County departments of Health, and the Nassau County Department of Public Works (NCDPW), is committed to a citizen participation plan as part of a Remedial Investigation/Feasibility Study (RI/FS) and corrective actions at the Unisys Facility located in the Incorporated Village of Lake Success and the Town of North Hempstead, Long Island.

Preliminary environmental information from the Unisys Facility (Site) was gathered as part of the Corporation's proactive company wide environmental plan which was put into effect following the formation of Unisys by the merger of Burroughs and Sperry Corporations. The preliminary information was voluntarily presented to NYSDEC who subsequently placed the site on the New York State list of inactive hazardous waste disposal sites. The site has been assigned site code 1-30-045 for identification and is designated as a class 2 site. An explanation of class designations is provided in the glossary of terms.

The results of the preliminary assessment indicate that further investigation of the site is warranted. Unisys has negotiated an Order on Consent with the State of New York by which the site investigation and any remedial activities would proceed. As part of the investigation and remediation process, Unisys, along with the State and County, will encourage citizen awareness and comment. This document will serve as a framework for citizen interaction prior to and during site activities so public input can be used to develop a comprehensive program which is protective of the public health and environment.

2.0 SITE BACKGROUND AND HISTORY

The Unisys property consists of several large buildings on 98 acres of land located at the intersection of Marcus Avenue and Lakeville Road between the Village of Lake Success and the Town of North Hempstead in Nassau County, New York (Figure 1). The property consists of a 1.5 million ft^2 main manufacturing building and six smaller buildings located immediately south of the main building. Three (3) small drainage basins are located in the southwest corner of the property adjacent to Lakeville Road. The drainage basins collect snow melt and rain runoff from the roof and parking lots. The majority of the remaining property is used for parking.

The site is an active manufacturing facility which has been in operation since shortly after it was constructed in 1941. The facility was originally designed and built by the United States Government and was operated under contract by the Sperry Gyroscope Company, a division of Sperry Rand Company, from 1941 until 1951. In 1951 the government sold the property to Sperry and in 1986 Sperry merged with Burroughs Corporation and became Unisys Corporation. The facility is currently operated by Paramax, a whole-owned subsidiary of Unisys Corporation. Originally, the property included an additional 55 acres with a large manufacturing building immediately to the east of the present property. However, this building was demolished, the property was sold to a developer in the 1970s and the present day Triad Business Park was constructed.

At present, the facility houses administration offices, engineering departments, and manufacturing facilities. In the past, and to a minor degree at present, the facility has been used to manufacture a wide range of defense related products. Manufacturing processes used in the past included a foundry, etching, degreasing, plating, painting, machining, and assembly. Chemicals used during manufacturing at the plant included halogenated and non-halogenated hydrocarbon solvents, cutting oil, paints and fuel oils. In the past these chemicals were stored in both above and below grade tanks.

Spent solvents from the degreasing operations were routed through a series of pipes to several tanks located adjacent to the southeastern corner of the main manufacturing building. Oils and solvents that were mixed with water were sent through a centrifuge to separate the water. The water was reportedly drained to the dry wells while the solvents were piped to the solvent storage tanks. In 1978 this process was discontinued and in 1980 the spent solvent tanks were excavated and removed. Currently, all process chemicals are stored in 55 gallon drums located in the chemical storage area and are handled per RCRA/EPA requirements.

Groundwater has been used for non-contact cooling purposes since the facility was constructed. The non-contact cooling system consists of three (3) extraction wells (EW-1, 2, & 3), piping and chillers in the main building, and four (4) diffusion wells (DW-5, 6, 7, & 8). The extraction and diffusion wells are located to the north and south of the main manufacturing building respectively. Currently, approximately 1,000 gpm is pumped from the extraction wells, used for non-contact cooling in the plant, and recharged into the aquifer through the diffusion wells. This process occurs 24 hours a day 365 days a year. The non-contact cooling system is permitted by Nassau County for a maximum total pumping rate of 4,500 gpm.

3.0 RI/FS PROJECT DESCRIPTION

3.1 OBJECTIVE AND OVERVIEW

The RI/FS process consists of the following elements: an Interim Remedial Measure (IRM), a Remedial Investigation (RI), and a Feasibility Study (FS). The IRM will be implemented to provide rapid preliminary remediation to groundwater and soils of the site. These measures are not meant as a final solution but to give early relief to the environment and to gather data which will be used to generate a final remedial plan.

The RI will commence after the IRM is approved by NYSDEC and initiated by Unisys. The purpose of the RI is to determine the characteristics and locations of waste disposed on the site; to characterize and evaluate the soil, groundwater, and surface water pathways for potential contaminant migration; and to identify the potential for impact on receptors and provide a preliminary evaluation of available remedial alternatives. The data gathered during the RI will be used in the performance of both the Risk Assessment and the FS to be conducted subsequent to the RI. An environmental risk assessment is a process which evaluates the collective demographic, geographic, physical, chemical, and biological factors at a site to determine whether or not there may be a risk to public health or the environment.

The purpose of the FS is to evaluate methods to prevent, minimize, or eliminate release of hazardous substances from the site and to minimize the risk to human health and the environment. Data collected during the RI/FS and the IRM activities will be evaluated along with proven technologies for the final remedial design. The final remedial design will be proposed and implemented after a public comment period and NYSDEC approval. The final design will include long term monitoring procedures so that the remediation can be quantified and evaluated leading to eventual project completion and closure.

3.2 REMEDIAL INVESTIGATION

Based upon environmental data collected in previous investigations, Unisys has proposed to NYSDEC the following scope of work to fully characterize the site during the RI:

- Background information review
- A soil gas survey
- Soil borings and soil sampling
- Off site sampling of existing wells
- Installation of on and off site monitor wells

- Sampling of on and off site monitor wells
- Downhole geophysical survey of the newly installed wells
- Domestic well survey
- Lloyd well (N1802) investigation
- Drainage basin investigation
- Meteorological investigation
- Groundwater flow and contaminant transport model

Due to the size of the site, and the period of operation, 1941 to present, Unisys proposes to conduct the RI in two (2) phases. The first phase of the RI will characterize on and off site subsurface conditions, locate and investigate potential source areas, and determine potential exposure pathways and receptors. The RI Phase II will consist of additional studies to further characterize on and off site environmental conditions, if necessary. The schedule for completing the RI/FS is seventy (70) weeks. This schedule assumes a reasonable amount of time for obtaining access to off site sampling locations. Detailed descriptions of the above listed tasks are contained in the RI/FS Work Plan dated January 28, 1993 (see Section 5.0).

3.3 FEASIBILITY STUDY

The FS will identify, evaluate, and recommend appropriate remedial measure(s) to protect the public health and environment. The FS will begin as soon as the preliminary data from the RI Phase I and Phase II is reviewed and validated. From this information remedial techniques will be identified which could possibly affect the organic substances identified in the RI. A screening process will choose several remedial techniques that appear to be the most promising in providing the necessary remediation. The remaining techniques will be reviewed in more depth and evaluated against the following criteria so that one or a combination of several techniques can be recommended for a final remedial plan.

The criteria for the FS are as follows:

- Overall protection of human health and environment
- Compliance with applicable Federal, State, and local regulations
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume

- Short-term effectiveness
- Implementability
- Cost Effectiveness
- State acceptance
- Community acceptance

Following a public comment period and the approval of NYSDEC, the final remedial plan will be implemented. This plan will include specific long term monitoring which will be used to quantify the effectiveness of the remediation and lead to project closure once the threat to the public health and environment has been abated.

4.0 CONTACT LIST

Residents in the Area of the Site

- Residents within and adjacent to the boundaries as designated on Figure 1. This list will be dynamic and will be updated with parties who express an interest in the future.

New York State:

- State Senator - Michael J. Tully, Jr.
- State Assembly - Thomas DiNapoli

Nassau County:

- Department of Public Works - Peter Witkowski, Kurtis Stokes
- Department of Health - Joseph Scheckter, Laurie Lutzker
- County Executive - Thomas S. Gullotta

Town of North Hempstead:

- Town Supervisor - Benjamin L. Zwrin
- Councilman - Gerard Cunningham, Anthony D' Urso, Barbara Johnson, & Maynew Burger
- Director of Solid Waste - Paul Roth

Village of Lake Success:

- Mayor - Albert Zimbalist
- Village Clerk - John Dominsky

Village of Great Neck Plaza:

- Mayor - Robert Rosegarten
- Village Clerk - Patricia Wolf

Public Interest Groups:

- Long Island Citizen Advisory Committee on Hazardous Waste
- Lake Success Civic Organization
- Lake Success Jewish Center
- Long Island Medical Center
- American Jewish Congress
- New Hyde Park Civic Association
- State Superfund Management Board

Manhasset-Lakeville Water District

- Michael Steban

Great Neck Public Schools

- Superintendent - William A. Shine

Media

- Great Neck Record
- Great Neck News
- Nassau Illustrated
- Newsday

Federal:

- United States Senator - Daniel Moynihan
- United States Senator - Alfonse De' Amato
- United States Congressman - Gary L. Ackerman

4.1 STATE AND COUNTY AGENCY CONTACTS:

NYS Department of Environmental Conservation

- Project Manager - Girish Desai (516) 751-4078
- Citizen Participation Specialist Joshua Epstein (516) 751-4078

NYS Department of Health - Bureau of Environmental Exposure Investigation

- Maureen Reynolds (518) 458-6310 or (800) 458-1158
- Nina Knapp (518) 458-6402 or (800) 458-1158

Nassau County Department of Health

- Laurie Lutzker (516) 535-2037

4.2 UNISYS CONTACTS

- Project Manager - Kevin Earley (215) 993-7210
- Site Manager - Frank Fendler (516) 574-2823

5.0 DOCUMENT REPOSITORY

Documents relevant to the RI/FS will be stored in a public library near the site and at the NYSDEC at Stony Brook, NY. The addresses of these repositories are as follows:

New Hyde Park Public Library
1950 Hillside Ave.
New Hyde Park, NY 11040
(516) 488-3316

NYSDEC
SUNY - Building #40
Stonybrook, NY 11790
(516) 751-7900

The following documents will be stored at the repositories as they become approved and available:

1. Order on Consent

2. Initial Workscope

3. Interim Remedial Measures Work Plan

4. RI/FS Work Plan
    a. Quality Assurance Program Plan (QAPP)
    b. Health and Safety Plan
    c. Citizen's Participation Plan

5. Remedial Investigation Report
    a. Test Results
    b. Monitoring Data

6. Interim Remedial Measures Report

7. Feasibility Study Report

8. Record of Decision

9. Remedial Design

10. All fact sheets newsletters etc.

6.0 DESCRIPTION OF CITIZEN PARTICIPATION ACTIVITIES

Affected or interested citizens or groups are encouraged to participate in the project. Individuals or groups can contact NYSDEC at any time with questions or concerns regarding the project. A list of mailings and meetings for this project are as follows:

Draft Final RI/FS Work Plan Fact Sheet: A project introduction fact sheet and notice of the availability of the Work Plan will be mailed to the entire public contact list. At this time the Draft RI Work Plan will be available in the repositories.

Draft Final RI/FS Work Plan Briefing: Prior to the commencement of RI field activities, an informal project introduction briefing will be held with local government officials and public interest groups. The following organizations will receive a written invitation/notification at least two weeks in advance:

- Village of Lake Success
- Town of North Hempstead
- Great Neck Public Schools
- Long Island Citizen Advisory Committee on Hazardous Waste
- Lake Success Civic Organization
- New Hide Park Civic Organization
- Manhasset Lakeville Water District
- NYSDEC
- NCDOH
- NYSDOH
- NCDPW
- Unisys Corporation

RI Completion Fact Sheet: A fact sheet including an invitation to attend a public meeting will be mailed to the contact list at least two weeks prior to the meeting date. The fact sheet will briefly summarize the results of the RI field work.

RI Completion Public Meeting: A meeting will be held at the completion of Phase I and Phase II of the RI to present the results of the RI and answer questions. This meeting will be held prior to the completion of the RI/FS report and the public will be notified through the use of the public contact list etc.

Final Draft RI/FS Report Fact Sheet: A fact sheet including an invitation to attend a public meeting will be mailed to the contact list at least two weeks prior to the meeting date. The fact sheet will explain the various remediation alternatives that were considered and the basis for the recommended alternative.

Legal Notice: A legal notice for the public meeting will be placed in Newsday at least two weeks before the scheduled meeting date. The notice will provide a brief analysis of the proposed remedial program and summarize the reasons for selecting the program.

Final Draft RI/FS Report Public Meeting: A meeting will be held at the completion of the RI to present the results of the RI and answer questions. This meeting will be open to the public which will be notified as described above.

Public Meeting Transcript: A transcript of the public meeting will be prepared, placed in the repositories, and the public will be notified thereof.

Responsiveness Summary: A brief responsiveness summary will be prepared, placed in the repositories, and may be distributed more widely as feasible and appropriate.

Any additional citizen participation activities will proceed as per the State's 375 Regulation and the State's Citizen Participation Plan for inactive hazardous waste sites.

7.0 GLOSSARY

Availability Session - Scheduled gathering of the Department staff and the public in a setting less formal than a public meeting. Encourages "one-to-one" discussions in which the public meets with Department staff on an individual or small group basis to discuss particular questions or concerns.

Citizen Participation - A process to inform and involve the interested/affected public in the decision making process during identification, assessment and remediation of inactive hazardous waste sites. This process helps to assure that the best decisions are made from environmental, human health, economic, social and political perspectives.

Citizen Participation Plan - A document that describes the site-specific citizen participation activities that will take place to complement the "technical" (remedial) activities. It also provides site background and rationale for the selected citizen participation program for the site. A plan may be updated or altered as public interest or the technical aspects of the program changes.

Citizen Participation Specialist - A Department staff member within the Division of Hazardous Waste Remediation who provides guidance, evaluation and assistance to help the Project Manager.

Contact List - Names, addresses, and/or phone numbers of individuals, groups, organizations and media interested and/or affected by a particular hazardous waste site. Compiled and updated by the Department. Interest in the site, stage of remediation and other factors guide how comprehensive the list becomes. Used to assist the Department to inform and involve the interested/affected public.

Document Repository - Typically a regional DEC office and/or public building, such as a library, near a particular site, at which documents related to remedial and citizen participation activities at the site are available for public review. Provides access to documents and items at a location convenient to the public. Environmental Management Councils (EMC's), Conservation Advisory Committees (CAC's) as well as active local groups often can serve as supplemental document repositories.

Information Sheet - A written discussion of a site's remedial process, or some part of it, prepared by the Department for the public in easily understandable language. May be prepared for the "general" public or a particular segment. Uses may include, for example: discussion of an element of the remedial program, opportunities for public involvement, availability of a report or other information, or announcement of a public meeting. May be mailed to all or part of the interested public, distributed at meetings and availability sessions or sent on an "as requested" basis.

Project Manager - A Department staff member with the division of Hazardous Waste Remediation (usually an engineer, geologist or hydrogeologist) responsible for the day-to-day administration of activities and ultimate disposition of, one or more hazardous waste sites. The Project Manager works with the Citizen Participation Specialist and with the fiscal and legal staff to accomplish site-related goals and objectives.

Public - The universe of individuals, groups and organizations: a) affected (or potentially affected) by an inactive hazardous waste site and/or its remedial program; b) interested in the site and/or its remediation c) having information about the site and its history.

Public Meeting - An informational technique for exchanging information about an important part of site's remedial program.

The public notice may be formal and meet legal requirements (for example: what it must say, such as announcing beginning of a public comment period; where, when and how it is published).

Publish - For purposes of 6NYCRR Part 3757.7, at a minimum requires publication of a legal notice in a newspaper of general circulation; telephone calls to key citizen leaders; targeted mailings, etc.

Responsiveness Summary - A formal or informal written or verbal summary and response by the Department to public questions and comments. Prepared during or after important elements in a site's remedial program. The responsiveness summary may list and respond to each question or summarize and respond to questions in categories.

Toll-Free "800" Telephone Information Number - Provides cost-free access to the Department by members of the public who have questions, concerns or information about a particular hazardous waste site. Calls are taken and recorded 24 hours a day and a Department staff member contacts the caller as soon as possible (usually the same day). **1-800-324-9296**

DEFINITIONS OF SIGNIFICANT ELEMENTS AND TERMS OF THE REMEDIAL PROGRAM

note: The first nine definitions represent major elements of the remedial process. They are presented in the order in which they occur, rather than in alphabetical order, to provide a context to aid in their definition.

Site Placed on Registry of Inactive Hazardous Waste Sites - Each inactive site known or suspected of containing hazardous waste must be included in the Registry. Therefore, all sites which state or county environmental or public health agencies identify as known or suspected to have received hazardous waste should be listed in the Registry as they are identified. Whenever possible, the Department carries out on initial evaluation at the site before listing.

Phase I Investigation - Preliminary characterizations of hazardous substances present at a site; estimates pathways by which pollutants might be migrating away from the original site of disposal; identifies population or resources which might be affected by pollutants from a site; observes how the disposal area was used or operated; and gathers information regarding who might be responsible for wastes at a site.

Involves a search of records from all agencies known to be involved with a site, interviews with site owners, employees and local residents to gather pertinent information about a site. Information gathered is summarized in a Phase I report.

After a Phase I investigation, DEC may choose to initiate an emergency response; to nominate the site for the National Priorities List; or, where additional information is needed, to determine site significance, to conduct further Phase II Investigation.

Interim Remedial Measures (IRM) - Measures taken to provide immediate relief to the environment and to provide much needed real time information concerning the effectiveness of the preliminary remediation. These initial remedial measures are not designed to totally remediate the problem, but to quickly address known problems while additional information is gathered during Phase I and II Investigations so that a final comprehensive remedial plan can be enacted.

Phase II Investigation - Ordered by DEC when additional information is still needed after completion of Phase I to properly classify the site. A Phase II investigation is not sufficiently detailed to determine the full extent of the contamination, to evaluate remedial alternatives, or to prepare a conceptual design for construction. Information gathered is summarized in a Phase II report and is used to arrive at a final hazard ranking score and to classify the site.

Remedial Investigation (RI) - A process to determine the nature and extent of contamination by collecting data and analyzing the data. It includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for, and proposed extent of a remedial program for the site.

Feasibility Study (FS) - A process for developing, evaluating and selecting remedial actions, suing data gathered during the remedial investigation; to define objectives of the remedial program for the site and broadly develop remedial action alternatives; perform an initial screening of these alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

Remedial Design - Once a remedial action has been selected, technical drawings and specifications for remedial construction at a site are developed, as specified in the final RI/FS report. Design documents are used to bid consulting engineers with experience in inactive hazardous waste disposal site remedial sections.

Construction - Construction may be as straightforward as excavation of contaminated soil with disposal at a permitted hazardous waste facility. On the other hand, it may involve drum

sampling and identification, complete encapsulation, leachate collection, storage and treatment, groundwater management, or other technologies.

Monitoring/Maintenance - Denotes post-closure activities to insure continued effectiveness of the remedial actions. Typical monitoring/maintenance activities include quarterly inspection by an engineering technician; measurement of level of water in monitoring wells; or collection of groundwater and surface water samples and analysis for factors showing the condition of the water, presence of toxic substances, or other indicators of possible pollution from the site. Monitoring/maintenance may be required indefinitely at many sites.

Consent Order - A legal and enforceable negotiated agreement between the Department and responsible parties where responsible parties agree to undertake investigation and cleanup or pay for the costs of investigation and cleanup work at the site. The order includes a description of the remedial actions to be undertaken at the site and schedule for implementation.

Delisting - Removal of a site from the State Registry based on study which shows the site does not contain hazardous wastes.

Potentially Responsible Party (PRP) Lead Site - An inactive hazardous waste site at which those legally liable for the site have accepted responsibility for investigation problems at the site, and for developing and implementing the site's remedial program. PRP's include: those who owned the site during the time wastes were placed, current owners, pst and present operators of the site, and those who generated the wastes placed at the site. Costs for remediation are generally borne by the PRP.

Ranking System - The United States Environmental Protection Agency uses a hazard ranking system (HRS) to assign numerical scores to each inactive hazardous waste site. The scores express the relative risk or danger from the site.

Responsible Parties (RP) - Individuals, companies (e.g. site owners, operators, transporters or generators of hazardous waste) responsible for or contributing to the contamination problems at a hazardous waste site. PRP is a potentially responsible party.

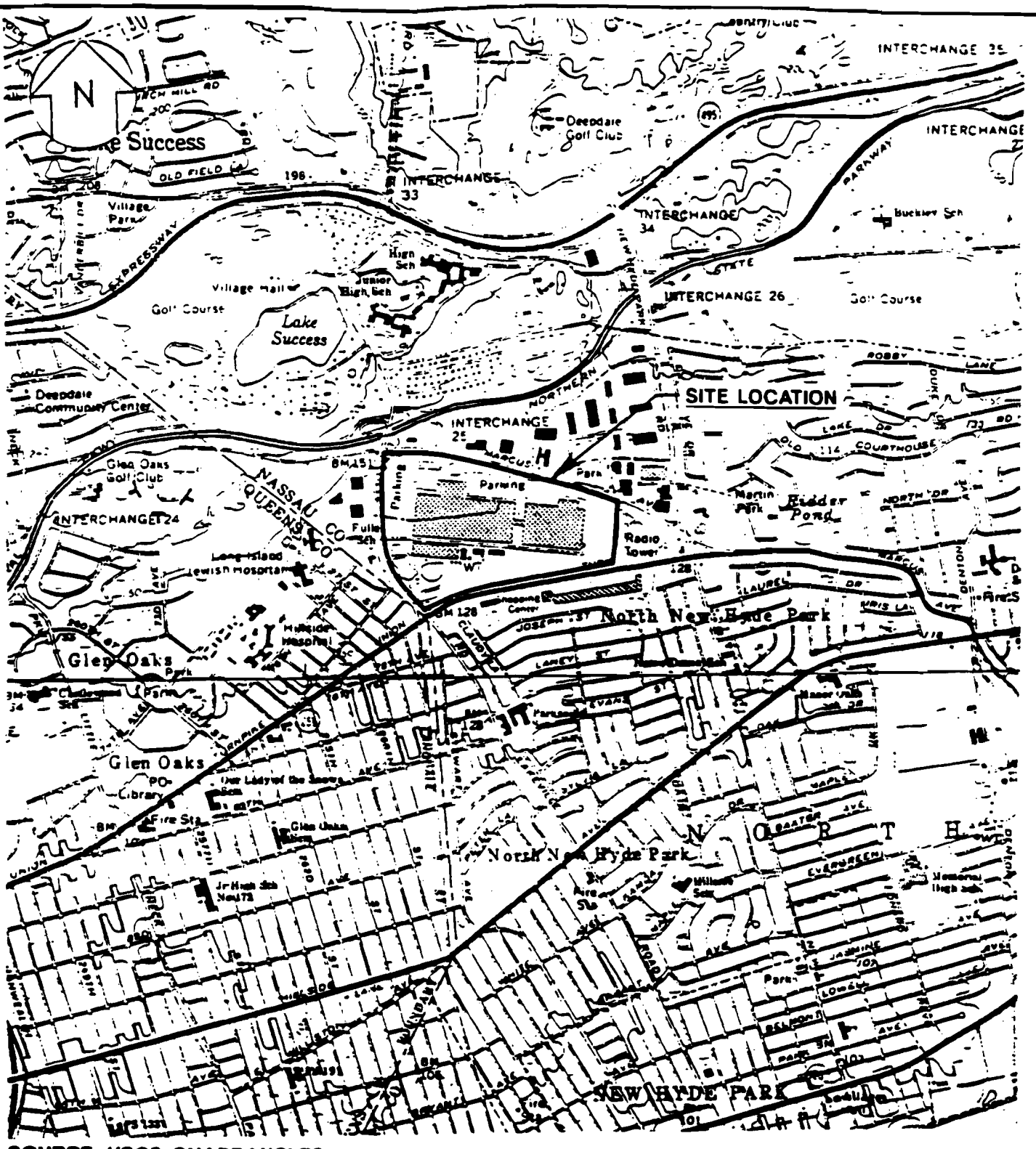
Site Classification - The Department assigns sites to classifications established by state law, as follows:

> classification 1- a site causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment - immediate action required
>
> classification 2 - a site posing a significant threat to the public health or environment - action required.
>
> classification 2a - a temporary classification for a site known or suspected to contain hazardous waste. Most likely the site will require a Phase I and Phase II investigation to obtain more information. Based on the results, the site then would be reclassified.

classification 3 - a site which at which hazardous waste is confirmed but not a significant threat to the public health or environment - action may be deferred.

classification 4 - a site which has been properly closed - requires continued management.

classification 5 - a site which has been properly closed with no evidence of present or potential adverse impact - no further action required.



SOURCE: USGS QUADRANGLES
SEA CLIFF & LYNBROOK, NY

0 2,000
SCALE IN FEET

UNISYS CORPORATION
GREAT NECK, NEW YORK FACILITY

SITE LOCATION MAP

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
72 Danbury Road
Wilton, CT 06897
(203) 762-1287

DATE: 12/14/92 FIGURE 1

APPENDIX C

ARARs and TBCs

1.0 Applicable or Relevant and Appropriate Requirements
1.1 ARARs for Groundwater Cleanup Criteria
1.1.1 Federal Regulations

The following sources of ARARs have been identified for site groundwater:

40 CFR	Part 141	National Primary Drinking Water Regulations
	Subpart B	Maximum Contaminant Levels
	Section 141.11	Maximum Contaminant Levels for Inorganic Chemicals
	Section 141.12	Maximum Contaminant Levels for Organic Chemicals
	Subpart F	Maximum Contaminant Level Goals
	Section 141.50	Maximum Contaminant Level Goals for Inorganic Chemicals
	Section 141.51	Maximum Contaminant Level Goals for Inorganic Chemicals
	Subpart G	National Revised Drinking Water Regulations: Maximum Contaminant Levels
	Section 141.61	Maximum contaminant Levels for Organic Contaminants
40 CFR	Part 143	National Secondary Drinking Water Regulations
	Section 143.3	Secondary Maximum Contaminant Levels

1.1.2 New York Regulations

The following sources of ARARs have been identified for site groundwater:

6 NYCRR	Part 701	Classification - Surface Waters and Ground Waters
	Section 701.15	Class GA Fresh Ground Waters
	Part 702	Derivation and Use of Standards and Guidance Values
	Section 702.1	Basis for Derivation of Water Quality Standards and Guidance Values
	Section 702.2	Standards and Guidance Values for Protection of Human Health and Sources of Potable Water Supplies
	Part 703	Surface Water and Ground Water Quality Standards and Ground Water Effluent Standards
	Section 703.5	Water Quality Standards for Taste, Color and Odor-Producing, Toxic and Other Deleterious Substances
10 NYCRR	Part 5	Drinking Water Supplies
	Subpart 5-1	Public Water Systems
	Section 5-1.51	Maximum Contaminant Levels

	Section 5-1.52	Tables; Table 1 - Inorganic Chemicals and Physical Characteristics Maximum Contaminant Level Determination, Table 3 - Organic Chemicals Maximum Contaminant Level Determination

1.1.3 Specific ARARs for Groundwater Cleanup Criteria

The specific ARARs for groundwater cleanup criteria are listed in table 1.1.

1.2 ARARs for Groundwater Discharge Criteria

1.2.1 Federal Regulations

The following sources of ARARs have been identified for site groundwater discharge:

40 CFR	Part 141	National Primary Drinking Water Regulations
	Subpart B	Maximum Contaminant Levels
	Section 141.11	Maximum Contaminant Levels for Inorganic Chemicals
	Section 141.12	Maximum Contaminant Levels for Organic Chemicals
	Subpart F	Maximum Contaminant Level Goals
	Section 141.50	Maximum Contaminant Level Goals for Inorganic Chemicals
	Section 141.51	Maximum Contaminant Level Goals for Inorganic Chemicals
	Subpart G	National Revised Drinking Water Regulations: Maximum Contaminant Levels
	Section 141.61	Maximum Contaminant Levels for Organic Contaminants
40 CFR	Part 143	National Secondary Drinking Water Regulations
	Section 143.3	Secondary Maximum Contaminant Levels

1.2.2 New York Regulations

The following sources of ARARs have been identified for site groundwater discharge:

6 NYCRR	Part 701	Classifications - Surface Waters and Ground Waters
	Section 701.15	Class GA Fresh Ground Waters
	Part 702	Derivation and Use of Standards and Guidance Values
	Section 702.1	Basis for Derivation of Water Quality Standards and Guidance Values

	Section 702.2	Standards and Guidance Values for Protection of Human Health and Sources of Potable Water Supplies
	Section 702.16	Derivation and Implementation of Effluent Limitations
	Part 703	Surface Water and Ground Water Quality Standards and Ground Water Effluent Standards
	Section 703.5	Water Quality Standards for Taste, Color and Odor-Producing, Toxic and Other Deleterious Substances
	Section 703.6	Ground Water Effluent Standards and Limitations for Discharges to Class GA Waters
10 NYCRR	Part 5	Drinking Water Supplies
	Subpart 5-1	Public Water Systems
	Section 5-1.51	Maximum Contaminant Levels
	Section 5-1.52	Tables; Table 1 - Inorganic Chemicals and Physical Characteristics Maximum Contaminant Level Determination, Table 3 - Organic Chemicals Maximum Contaminant Level Determination

1.2.3 Specific ARARs for Groundwater Discharge Criteria

The specific ARARs for groundwater discharge criteria are listed in table 1.2.

1.3 ARARs for Air Emission Discharge Criteria

1.3.1 Federal Regulations

The EPA has established guidance values on the control of air emissions through the Clean Air Act at CERCLA sites for groundwater treatment (EPA, 1989). This guidance indicates that the sources most in need of controls are those with an actual emissions rate in excess of 3 lbs/hr or 15 lbs/day, or a calculated annual rate of 10 tons/year of total VOCs. The calculated annual rate assumes 24-hour operation, 365 days per year.

1.3.2 New York Guidelines

The New York State DEC Division of Air Resources has issued draft guidelines for the control of toxic ambient air contaminants in New York State. These guidelines are presented in the New York State Air Guide-1. State guidance values pertaining to potential air emissions from treatment equipment to be used at the site are listed in table 1.3.

1.4 ARARs for Transport and Disposal Criteria

1.4.1 Federal Regulations

The following sources of ARARs have been identified for treatment, transportation and disposal of hazardous byproducts:

40 CFR	Part 261	Identification and Listing of Hazardous Waste
	Part 262	Standards Applicable to Generators of Hazardous Waste
	Part 263	Standards Applicable to Transporters of Hazardous Waste
	Part 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
	Subpart B	General Facility Standards
	Subpart E	Manifest System, Record keeping and Reporting
	Subpart N	Landfills
	Subpart O	Incinerators
	Part 265	Interim Status Standards of Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
	Subpart B	General Facility Standards
	Subpart E	Manifest System, Record keeping and Reporting
	Subpart N	Landfills
	Subpart O	Incinerators
	Subpart P	Thermal Treatment
	Subpart Q	Chemical, Physical and Biological Treatment
	Part 268	Land Disposal Restrictions
49 CFR	Part 172	Hazardous Material Regulations of the Department of Transportation, Hazardous Materials Tables and Hazardous Communications Requirements and Emergency Response Information Requirements
	Part 173	Hazardous Material Regulations of the Department of Transportation, Shippers, General Requirements for Shipping and Packaging
	Part 178	Hazardous Material Regulations of the Department of Transportation's, Shipping Container Specifications
	Part 179	Hazardous Material Regulations of the Department of Transportation, Specifications for Tank Cars

1.4.2 New York Regulations

The following sources of ARARs have been identified for treatment, transportation and disposal of hazardous byproducts:

6 NYCRR	Part 360	Solid Waste Management Facilities
	Part 370	Hazardous Waste Management System - General
	Part 371	Identification and Listing of Hazardous Waste
	Part 372	Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
	Part 373	Hazardous Waste management Facilities
	Subpart 373.1	Hazardous Waste treatment, Storage and Disposal Facility Permitting Requirements
	Subpart 373.2	Final Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
	Subpart 373.3	Interim Status Standards Regulation for Owners and Operators of Hazardous Waste Facilities
	Part 376	Land Disposal Restrictions

1.5 ARARs for Soil Cleanup Criteria

State guidance values pertaining to soil cleanup objectives are continued in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) (HWR-924046), date November 16, 1992. The TAGM is a TBC and provides numerical soil cleanup standards for volatile, semivolatile, pesticide, herbicide, PCBS and heavy metal constituents.

TABLE 1.1

Chemical-Specific ARARs for Groundwater Cleanup Criteria (1)

Compound	Federal Standards			State Standards		Mimimum ARAR-Based Groundwater Cleanup Criteria
	MCL (2)	MCLGs (3)	SMCLs (4)	Groundwater Quality Standards (5)	Drinking Water Standards (6)	
Carbon disulfide	NR	NR	NR	NR	50 u	50
Chlorobenzene	NR	NR	NR	5	5 p	5
Chloroform	100	NR	NR	7	100	7
Chloromethane	NR	NR	NR	NR	5 p	5
Dieidrin	NR	NR	NR	ND 2.5	50 u	ND 2.5
1,2-Dichloroethylene Total (2)	70	70	NR	5	5 p	5
Di-n-butyl-phthalate	NR	NR	NR	NR	50 u	50
Di-n-octyl-phthalate	NR	NR	NR	NR	50 u	50
Ethylbenzene	700	700	NR	5	5 p	5
Heptachlor epoxide	NR	0*	NR	ND 2.2	50 u	ND 2.2
4-Methly-2-pentanone	NR	NR	NR	NR	50 u	50
Naphthalene	NR	NR	NR	NR	50 u	50
Tetrachloroethylene	5	0*	NR	5	5 p	5
Trichloroethylene	5	0*	NR	5	5 p	5
Vinyl chloride	2	0*	NR	2	2	2
Xylenes	10,000	10,000	NR	5	5 p	5
TICs	NR	NR	NR	NR	50 u	50
Aluminum	NR	NR	50	NR	NR	NR
Antimony	6	3	NR	NR	NR	6
Arsenic	50	NR	NR	25	50	25
Barium	1,000	2,000	NR	1,000	1,000	1,000
Beryilium	1	0*	NR	NR	NR	1
Cadmium	10	5	NR	10	10	5
Calcium	NR	NR	NR	NR	NR	NR
Chromium	50	100	NR	50	50	50
Cobalt	NR	NR	NR	NR	NR	NR
Copper	NR	1,300	1,000	200	1,000	200
Iron	NR	NR	300	300 +	300 +	300
Lead	50	O*	NR	25	50	25
Magnesium	NR	NR	NR	NR	NR	NR
Manganese	NR	NR	50	300 +	300 +	300
Nickel	NR	NR	NR	NR	NR	NR
Potassium	NR	NR	NR	NR	NR	NR
Silver	50	NR	NR	50	50	50
Sodium	NR	NR	NR	20,000	NR	20,000
Vanadium	NR	NR	NR	NR	NR	NR
Zinc	NR	NR	5,000	300	5,000	300

(1) Micrograms per liter.
(2) 40 CFR 141.11, 141.12, 141.61.
(3) 40 CFR 141.51.
(4) 40 CFR 143.3.
(5) 6 NYCRR 703.5
(6) 10 NYCRR 5-1.52.
NR Not Regulated
P Principle Organic Compound; each cannot exceed 5 ug/l.
U Unspecified Organic Compound; each cannot exceed 50 ug/l/
NDx Not detected at or above X.
* The EPA believes that an MCLG of zero is not an appropriate setting for cleanup levels, and the corresponding MCL will be the potentially relevant and appropriate requirement (EPA, 1990)
+ The total of iron and manganese cannot exceed 500 ug/l.

August 18, 1993

TABLE 1.2

Chemical-Specific ARARs for Groundwater Discharge Criteria (1)

Compound	Federal Standards			State Standards			ARAR-Based Groundwater Discharge Criteria (8)
	MCL (2)	MCLGs (3)	SMCLs (4)	Groundwater Quality Standards (5)	Drinking Water Standards (6)	Groundwater Effluent Standards Class GA (7)	
Carbon Disulfide	NR	NR	NR	NR	50 u	NR	50
Chlorobenzene	NR	NR	NR	5	5 p	NR	5
Chloroform	100	NR	NR	7	100	7	7
Chloromethane	NR	NR	NR	NR	5 p	NR	5
Dieldrin	NR	NR	NR	ND	50 u	ND	ND 2.5
1,2-Dichloroethylene total (2)	70	70	NR	5	5 p	NR	5
Di-n-butyl-phthalate	NR	NR	NR	NR	50 u	770	770
Di-n-octyl-phthalate	NR	NR	NR	NR	50 u	NR	50
Ethylbenzene	700	700	NR	5	5 p	NR	5
Heptachlor epoxide	NR	0*	NR	ND	50 u	ND	ND 2.2
4-Methyl-2-pentanone	NR	NR	NR	NR	50 u	NR	50
Naphthalene	NR	NR	NR	NR	50 u	NR	50
Tetrachloroethylene	5	0*	NR	5	5 p	NR	5
Trichloroethylene	5	0*	NR	5	5 p	10	10
Vinyl chloride	2	0*	NR	2	2	5	5
Zylenes	10000	10000	NR	5	5 p	NR	5
TICs	NR	NR	NR	NR	50 u	NR	50 ++
Aluminum	NR	NR	50	NR	NR	2000	2000
Antimony	6	3	NR	NR	NR	NR	6
Arsenic	50	NR	NR	25	50	50	50
Barium	1000	2000	NR	1000	1000	2000	2000
Beryllium	1	0*	NR	NR	NR	NR	1
Cadmium	10	5	NR	10	10	20	20
Calcium	NR	NR	NR	NR	NR	NR	NR
Chromium	50	100	NR	50	50	100	100
Cobalt	NR	NR	NR	NR	NR	NR	NR

TABLE 1.3

New York State Draft Guidelines for Air Emissions (1)

Compound	Short-Term Guideline Concentration	Annual Guideline Concentration
Chlorobenzene	11,000.0	20.0
Chloroform	980.0	23.0
Chloromethane	22,000.0	770.0
Dieidrin	NR	NR
1,2-Dichloroethylene total	190,000.0	1,900.0
Di-n-butyl-phthalate	NR	NR
Di-n-octyl-phthalate	NR	NR
Ethylbenzene	100,000.0	1,000.0
Heptachlor epoxide	NR	NR
4-Methyl-2-pentanone	NR	NR
Naphthalene	12,000.0	120.0
Tetrachloroethylene	81,000.0	7.5E-02
Trichloroethylene	33,000.0	4.5E-01
Vinyl chloride	1,300.0	2.0E-02
Zylenes	100,000.0	300.0
TICs	NR	NR
Aluminum	NR	NR
Antimony	120.0	1.2
Arsenic	2.0E-01	2.34E-04
Barium	120.0	5.0E-01
Beryllium	5.0E-02	4.0E-04
Cadmium	2.0E-01	5.0E-04
Calcium	NR	NR
Chromium	1.0E-01	2.0E-5
Cobalt	12.0	1.2E-01
Copper	240.0	2.4
Iron	NR	NR
Lead	NR	NR
Magnesium	NR	NR
Manganese	240.0	3.0E-01
Nickel	1.5	2.0E-02
Potassium	NR	NR
Silver	NR	NR
Sodium	NR	NR
Vanadium	100.0	2.0E-01
Zinc	NR	NR

(1) Mircograms per cubic meter.
NR Not Regulated

TABLE 1.2

Chemical-Specific ARARs for Groundwater Discharge Criteria (1)

Compound	Federal Standards			State Standards			ARAR-Based Groundwater Discharge Criteria (8)
	MCL (2)	MCLGs (3)	SMCLs (4)	Groundwater Quality Standards (5)	Drinking Water Standards (6)	Groundwater Effluent Standards Class GA (7)	
Copper	NR	1300	1000	200	1000	1000	1000
Iron	NR	NR	300	300 +	300 +	600 #	600 #
Lead	50	0*	NR	25	50	50	50
Magnesium	NR	NR	NR	NR	NR	NR	NR
Manganese	NR	NR	50	300 +	300 +	600 #	600 #
Nickel	NR	NR	NR	NR	NR	2000	2000
Potassium	NR	NR	NR	NR	NR	NR	NR
Silver	50	NR	NR	50	50	100	100
Sodium	NR	NR	NR	20000	NR	NR	20000
Vanadium	NR	NR	NR	NR	NR	NR	NR
Zinc	NR	NR	5000	300	5000	5000	5000

(1) Micrograms per liter.
(2) 40 CFR 141.11, 141.12, 141.61.
(3) 40 CFR 141.51.
(4) 40 CFR 143.3.
(5) 6 NYCRR 703.5.
(6) 10 NYCRR 5-1.52.
(7) 6 NYCRR 703.6.
(8) 6 NYCRR 702.16.
NR Not Regulated

P Principle Organic Compound; each cannot excee 5 ug/l
U Unspecified Organic Compound ; each cannot exceed 50 ug/l.
NDx Not detected at or above X.
* The EPA believes that an MCLG of zero is not an appropriate setting for cleanup levels, and the corresponding MCL will be the potentially relevant and appropriate requirement (EPA, 1990)
++ Applies to each individual compound.
+ The total of iron and manganese cannot exceed 500 ug/l/
Combined concentration of iron and manganese shall not exceed 1,000 ug/l.

APPENDIX D

NCDOH/UNISYS CORRESPONDENCE

Historical Correspondence between NCDH and Unisys (Sperry)

1/4/78: Handwritten memo to Stan Aranson (574-2314) from NCDOH.

Although all plant processing areas are hooked up to sanitary sewer system the chemical storage area has floor drains which go to an oil separator and then to a dry well (cesspool) at the S.E. corner. The chemical waste storage area on the east would drain into the outside underground pipe system (storm drain) into the two lagoons on the S.W. side of the building. The loading dock is also connected to these lagoons through the same system. Accordingly it is planned to sample the dry well and the two lagoons. The lagoons also take roof run-off where all degreaser exhaust systems may deposit. There is a third lagoon on the west side which is most northerly. This takes only parking lot run-off.

5/4/78: Results of Sample taken from cesspool southeast corner of plant on 1/13/78.
Type of sample: 34 IND, WASTE, UNCHLOR.

1,1,1-trichloroethane	2000 mcg/l
trichloroethylene	40000 mcg/l
tetrachloroethylene	30000 mcg/l

Sample taken from recharge basin southwest cor east basin

1,1,1-trichloroethane	5 mcg/l
carbon tetrachloride	5 mcg/l
bromodichloromethane	5 mcg/l
chloroform	5 mcg/l
trichloroethylene	10 mcg/l

Sample taken from drainage basin southwest cor middle basin

1,1,1-trichloroethane	5 mcg/l
carbon tetrachloride	5 mcg/l
bromodichloromethane	5 mcg/l
chloroform	5 mcg/l
trichloroethylene	18 mcg/l
tetrachloroethylene	7 mcg/l

6/9/78: Memo from Michael Mangino (Chief, Abatement Section Bureau of Wastewater Management to Stan Aranson (Sperry).

Please be advised that the results of samples taken from the drainage cesspool at the southeast corner of the plant show a very high potential of groundwater pollution from such organic chemicals as trichloroethane, trichloroethylene and tetrachloroethylene. These chemicals have already been detected in several drinking water wells in Nassau.

As we discussed at our meeting June 8, 1978, the Department is currently undertaking a comprehensive program to abate these potential sources of groundwater pollution. Therefore, it is mandatory that you investigate this matter and advise us in writing within 14 days as to what steps you and your employees are taking to eliminate this type of discharge.

6/19/78: Letter from Stan Aronson, Facilities Manager, to Mr. E. Jerabek and Mr. A. Ficocella.

As previously discussed, attached find copy of letter from Nassau County Dept. of Health regarding disposal of organic chemicals within the Oil Storage Room. It is again requested that no liquids be poured into the floor drains lead to the drainage cesspool mentioned in the attached letter.

It is further requested that a properly marked 55 gal. drum be provided for disposal of such liquids. When this drum is filled, Mr. Al Ficocella will remove it for proper disposal thru an approved waste chemical company.

11/30/78: Letter to Stan Aronson, Facilities Manager, from L. Sama, NCDOH.

...the restriction in use of a second drinking water well in the Lake Success area near Sperry further emphasizes the need for precautionary measures to prevent contamination of the groundwater, even by accidental spills. Since your drainage cesspool is recognized to exist primarily as a catch basin for accidental spills, a further precaution is considered necessary to completely minimize the consequences of such spills. The only way to do this is to prevent a spill from reaching the ground. For example, it can be accomplished by lining the pool with an impermeable liner or by replacing it with an impervious underground tank...

12/8/78: Reply to L. Sama, Public Health Engineer, from Stan Aronson, Facilities Manager Sperry.

...please be advised that we had already plugged the line leading to the cesspool, thereby preventing any discharge. We had also pumped out the residual effluent in the cesspool. It is our intent, as per your suggestion, to investigate lining the pool to prevent runoff. In the meantime, however, we will leave the line plugged.

1/18/79: Handwritten meeting notes from L.S. (NCDOH), attendees from Sperry included Tony Neglia (x2514) and Kieran Hoar

Meeting was requested by Mr. S. Aronson of Sperry. Purpose was to discuss reporting requirements under S&R permit and to inform us of developments related to permit. Has many more chemicals than reported in original survey; is putting in S&R semiannual report. Also had questions regarding alternate disposal site. Indicated Gel-Ray waste oil was somewhat guarded in answering site question. Took 24 hours for G-K to indicate dispose of wastes through fuel oil companies, concrete firms for paving compound use, and for dust control. Told Mr. Aronson would be advisable to switch scavengers - he had alternate, All County and City Sewer and Cesspool Services who claim to have disposal site in East Rockaway (NYC). Promised list of scavengers.

Sperry also has certain amount of disposal of chemicals or losses to the sinks and then to sewer. Told them DPW would be concerned. They have special permit and claim not exceeding limits of permit. We discussed these points at length.

Also discussed emergency cesspool situation. They have closed off the line to this cesspool until they can figure out how to line cesspool to prevent groundwater discharges. Meanwhile cesspool has been pumped but there is some sludge at bottom.

3/8/79: Handwritten meeting notes from L.S.

As part of compliance inspection met with Mr. S. Aronson and Bob Naglia. Inspected four of the areas where solvents were used and waste solvents generated. (1) this included the surface finishing area where water based cleaning solutions were used and a solvent vapor degreaser was used. When fully depleted the water bath chemicals are pumped out directly to a scavenger tank truck. (2) (3) Small parts processing and ansig (?) depts. and (4) a machine shop had small spray booths where parts were spray

down and the waste solvents drained into a drum below the booth floor. All operations appeared to be very clean with good housekeeping and storage.

Also inspected the fresh and used solvent storage areas. The emergency drain from the storage area had been plugged so that no accidental spills would end up in the cesspool.

11/6/89: Letter to Kevin Krueger, Manager Environmental Planning CEA, Unisys Corp., from Peter Witkowski, Director of Hazardous Waste Services, NCDOH (516-997-8282)

...From our analysis of past and current data generated by County and Unisys investigations, it would appear that the Lake Success groundwater contamination identified in monitoring wells off the Unisys site are the result of activities that historically occurred on the Unisys property. It is the County's position that Unisys expand their groundwater investigations in order to delineate the impacted area outside the Unisys property and to begin planning for the selection of appropriate remedial measures. In addition, I strongly recommend that Unisys begin discussions with the NYDEC...

APPENDIX E

UST SOIL ANALYSIS

Environmental Testing Laboratories, Inc.

208 Route 109, Farmingdale, NY 11735 · Fax: 516-249-8344 · Phone: 516-249-1456

ANALYSIS REPORT - Total Pet. Hydrocarbons

06/22/90

Review by: D Sp

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/14/90

Sample ID	Location	Analyte	( ) MDL	Concentration
A587401.....	B - 1 @ 10'	Total Recoverable Petroleum Hydrocarbon	1-10	116 ppm
Sample phase: S				
Remarks:				
A587402.....	B - 1 @ 20'	Total Recoverable Petroleum Hydrocarbon	1-10	114 ppm
Sample phase: S				
Remarks:				
A587403.....	B - 2 @ 10'	Total Recoverable Petroleum Hydrocarbon	1-10	212 ppm
Sample phase: S				
Remarks:				
A587404.....	B - 2 @ 20'	Total Recoverable Petroleum Hydrocarbon	1-10	50 ppm
Sample phase: S				
Remarks:				
A587405.....	B - 3 @ 10'	Total Recoverable Petroleum Hydrocarbon	1-10	5.8 ppm
Sample phase: S				
Remarks:				
A587406.....	B - 3 @ 20'	Total Recoverable Petroleum Hydrocarbon	1-10	3.7 ppm
Sample phase: S				
Remarks:				
A587407.....	B - 4 @ 10'	Total Recoverable Petroleum Hydrocarbon	1-10	150 ppm
Sample phase: S				
Remarks:				

Environmental Testing Laboratories, Inc.

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ANALYSIS REPORT - Total Pet. Hydrocarbons

06/22/90

Review by: DSP

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/14/90

Sample ID	Location	Analyte	( ) MDL	Concentration
A587408.....	B - 4 @ 20'	Total Recoverable Petroleum Hydrocarbon	1-10	86 ppm

Sample phase: S
Remarks:

ppb=ug/L,ug/Kg; ppm=mg/L,mg/Kg; ND= Not Detected; B=in blank
NA = Not Analyzed; MDL varies by dilution; nd=Not Determined

Environmental Testing Laboratories, Inc.

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ANALYSIS REPORT - Volatile Organics-8240

06/22/90

Review by: _____

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
A587401.....	B - 1 @ 10'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	35 ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	38 ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb

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Client
Unisys
Lakeville Road
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Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	33 ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb

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Review by: _____

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	76 ppb
		Toluene	5	78 ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	4910 ppb
A587402.....	B - 1 @ 20'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	104 ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb

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Client
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Lakeville Road
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Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	9.2 ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb

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Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

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Review by: D S

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		Tetrachloroethene	5	ND ppb
		Toluene	5	155 ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	14766 ppb
A587403.....	B - 2 @ 10'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	ND ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	61 ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

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Review by: _____

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

 06/22/90

Review by: _____

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	ND ppb
		Toluene	5	ND ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		Vinyl chloride	10	ND ppb
		Total Xylene	5	ND ppb
A587404.....	B - 2 @ 20'	Acetone	100	ND ppb
Sample phase: S		Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	ND ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	ND ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	ND ppb
		Toluene	5	ND ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	ND ppb
A587405.....	B - 3 @ 10'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		Benzene	5	ND ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	9.0 ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

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Review by: D Sp

Client
Unisys
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Dates
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Sample ID	Location	Analyte	( ) MDL	Concentration
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	502 ppb
		Toluene	5	ND ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	ND ppb
A587406.....	B - 3 @ 20'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	20 ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	37 ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

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Review by: D S

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
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Sample ID	Location	Analyte	( ) MDL	Concentration
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	ND ppb
		Toluene	5	ND ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	ND ppb
A587407.....	B - 4 @ 10'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	ND ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	ND ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb

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Dates
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Sample ID	Location	Analyte	( ) MDL	Concentration
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb

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Sample ID	Location	Analyte	( ) MDL	Concentration
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	ND ppb
		Toluene	5	ND ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	ND ppb
A587408.....	B - 4 @ 20'	Acetone	100	ND ppb
Sample phase:	S	Acetonitrile	100	ND ppb
Remarks:		Acrolein	nd	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

06/22/90

Review by: D Sy

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		Acrylonitrile	nd	ND ppb
		Allyl alcohol	nd	ND ppb
		Allyl chloride	5	ND ppb
		Benzene	5	63 ppb
		Benzyl chloride	100	ND ppb
		Bromoacetone	nd	ND ppb
		Bromochloromethane (I.S.)	5	ND ppb
		Bromodichloromethane	nd	52 ppb
		4-Bromoflourobenzene(sur)	nd	ND ppb
		Bromoform	5	ND ppb
		Bromomethane	10	ND ppb
		2-Butanone	100	ND ppb
		Carbon disulfide	100	ND ppb
		Carbon tetrachloride	5	ND ppb
		Chlorobenzene	5	ND ppb
		Chlorobenzene-d5(I.S.)	nd	ND ppb
		Chlorodibromomethane	5	ND ppb
		Chloroethane	10	ND ppb
		2-Chloroethanol	nd	ND ppb
		2-Chloroethyl vinyl ether	10	ND ppb
		Chloroform	5	ND ppb
		Chloromethane	10	ND ppb
		Chloroprene	5	ND ppb
		3-Chloropropionitrile	nd	ND ppb
		1,2-Dibromo-3-chloropropa	100	ND ppb
		1,2-Dibromoethane	5	ND ppb
		Dibromomethane	5	ND ppb
		1,4-Dichloro-2-butene	100	ND ppb
		Dichlorodifluoromethane	5	ND ppb
		1,1-Dichloroethane	5	ND ppb

Environmental Testing Laboratories, Inc.
208 Route 109, Farmingdale, NY 11735 · Fax: 516-249-8344 · Phone: 516-249-1456

ANALYSIS REPORT - Volatile Organics-8240

 06/22/90

Review by: DSp

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		1,2-Dichloroethane	5	ND ppb
		1,2-Dichloroethane-d4	nd	ND ppb
		1,1-Dichloroethene	5	ND ppb
		trans-1,2-Dichloroethene	5	ND ppb
		1,2-Dichloropropane	5	ND ppb
		1,3-Dichloro-2-propanol	5	ND ppb
		cis-1,3-Dichloropropene	5	ND ppb
		trans-1,3-Dichloroprene	nd	ND ppb
		1,2:3,4-Diepoxybutane	nd	ND ppb
		1,4-Difluorobenzene	nd	ND ppb
		1,4-Dioxane	nd	ND ppb
		Epichlorohydrin	nd	ND ppb
		Ethanol	nd	ND ppb
		Ethylbenzene	5	ND ppb
		Ethylene oxide	nd	ND ppb
		Ethyl methacrylate	5	ND ppb
		2-Hexanone	50	ND ppb
		2-Hydroxypropionitrile	nd	ND ppb
		Iodomethane	nd	ND ppb
		Isobutyl alcohol	100	ND ppb
		Malononitrile	nd	ND ppb
		Methacrylonitrile	100	ND ppb
		Methylene chloride	5	ND ppb
		Methyl iodide	5	ND ppb
		Methyl methacrylate	5	ND ppb
		4-Methyl-2-pentanone	50	ND ppb
		Pentachloroethane	10	ND ppb
		2-Picoline	nd	ND ppb
		Propargyl alcohol	nd	ND ppb
		b-Propiolactone	nd	ND ppb

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ANALYSIS REPORT - Volatile Organics-8240

 06/22/90

Review by: D Sp

Client
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Rick Doxey

Dates
Collected: 06/06/90
Received: 06/06/90
Analyzed: 06/12/90

Sample ID	Location	Analyte	( ) MDL	Concentration
		Propionitrile	100	ND ppb
		n-Propylamine	nd	ND ppb
		Pyridine	nd	ND ppb
		Styrene	5	ND ppb
		1,1,1,2-Tetrachloroethane	5	ND ppb
		1,1,2,2-Tetrachloroethane	5	ND ppb
		Tetrachloroethene	5	ND ppb
		Toluene	5	ND ppb
		Toluene-d8	5	ND ppb
		1,1,1-Trichloroethane	5	ND ppb
		1,1,2-Trichloroethane	5	ND ppb
		Trichloroethene	5	ND ppb
		Trichlorofluoromethane	nd	ND ppb
		1,2,3-Trichloropropane	5	ND ppb
		Vinyl acetate	50	ND ppb
		Vinyl chloride	10	ND ppb
		Total Xylene	5	ND ppb

ppb=ug/L,ug/Kg; ppm=mg/L,mg/Kg; ND= Not Detected; B=in blank
NA = Not Analyzed; MDL varies by dilution; nd=Not Determined

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ANALYSIS REPORT - Flash Point; Ignitability

06/07/91

Reviewed by: _____

Project Location
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Larry Trotta

Dates
Collected: 05/28/91
Received: 05/30/91
Analyzed: 06/04/91

Sample ID	Location	Analyte	( ) MDL	Concentration
A875301.....	Composite of Stockpiles	Flash Point	1	>100 deg C
Sample phase:	Composite	Flash Point	1	>212 deg F
Remarks:				

ppb=ug/L,ug/Kg; ppm=mg/L,mg/Kg; ND= Not Detected; B=in blank
NA=Not Analyzed;MDL=Method Detection Limit;nd=Not Determined

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ANALYSIS REPORT - EP Toxicity for Metals

06/07/91

Reviewed by: _____

Project Location
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Larry Trotta

Dates
Collected: 05/28/91
Received: 05/30/91
Analyzed: 06/03/91

Sample ID	Location	Analyte	( ) MDL	Concentration
A875301.....	Composite of Stockpiles	Arsenic (As)	0.005	<.005 ppm
Sample phase:	Composite	Barium (Ba)	0.1	<.200 ppm
Remarks:		Cadmium (Cd)	0.02	<.005 ppm
		Chromium (Cr)	0.05	<.010 ppm
		Lead (Pb)	0.01	.010 ppm
		Mercury (Hg)	.001	<.001 ppm
		Selenium (Se)	0.005	<.005 ppm
		Silver (Ag)	0.01	<.010 ppm

ppb=ug/L,ug/Kg; ppm=mg/L,mg/Kg; ND= Not Detected; B=in blank
NA=Not Analyzed;MDL=Method Detection Limit;nd=Not Determined

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ANALYSIS REPORT - Benzene,Tol.,Ethyl,Xyls

06/07/91

Reviewed by: FBVargo

Project Location
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Larry Trotta

Dates
Collected: 05/28/91
Received: 05/30/91
Analyzed: 06/05/91

Sample ID	Location	Analyte	( ) MDL	Concentration
A875301.....	Composite of Stockpiles	Benzene	0.2	<5 ppb
Sample phase:	Composite	Toluene	0.2	467 ppb
Remarks:		Ethylbenzene	0.2	115 ppb
		Xylenes	0.2	629 ppb

ppb=ug/L,ug/Kg; ppm=mg/L,mg/Kg; ND= Not Detected; B=in blank
NA=Not Analyzed;MDL=Method Detection Limit;nd=Not Determined

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ANALYSIS REPORT - Total Pet. Hydrocarbons

06/07/91

Reviewed by: _____

Project Location
Unisys
Lakeville Road
New Hyde Park, NY
Sampled by: Larry Trotta

Dates
Collected: 05/28/91
Received: 05/30/91
Analyzed: 06/03/91

Sample ID	Location	Analyte	( ) MDL	Concentration
A875301.....	Composite of Stockpiles	Total Recoverable Petroleum Hydrocarbon	1	3450 ppm
Sample phase:	Composite			
Remarks:				

ppb=ug/L,ug/Kg; ppm=mg/L,mg/Kg; ND= Not Detected; B=in blank
NA=Not Analyzed;MDL=Method Detection Limit;nd=Not Determined

For Plates 1-4 and Figure 3, see Project Manager.