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PRELIMINARY SITE ASSESSMENT WORK PLAN

FORMER MOBIL OIL HANGAR D, BAY 1
WESTCHESTER COUNTY AIRPORT
TOWN OF HARRISON, WESTCHESTER COUNTY

MARCH 1994

MALCOLM PIRNIE, INC.

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1.0 INTRODUCTION

1.1 OVERVIEW

In 1990, Mobil Corporation (Mobil) entered into discussions with Texaco, Inc., relative to a transfer of Mobil's long-term lease of Hangar D, Bay 1 at the Westchester County Airport, Town of Harrison, New York (Figure 1-1). In response to the possible lease transfer, Texaco hired an environmental consultant to perform a subsurface investigation in and around the hangar. The analytical results detected up to 54 ppm of total volatile chlorinated hydrocarbons (CHC) concentrations in the soil below the hangar concrete floor in an area where a cleaning solvent, LPS Instant Super Cleaner/Degreaser, had been stored (solvent storage area). Based on this finding, Mobil agreed to conduct additional investigations to characterize subsurface contamination at the hangar.

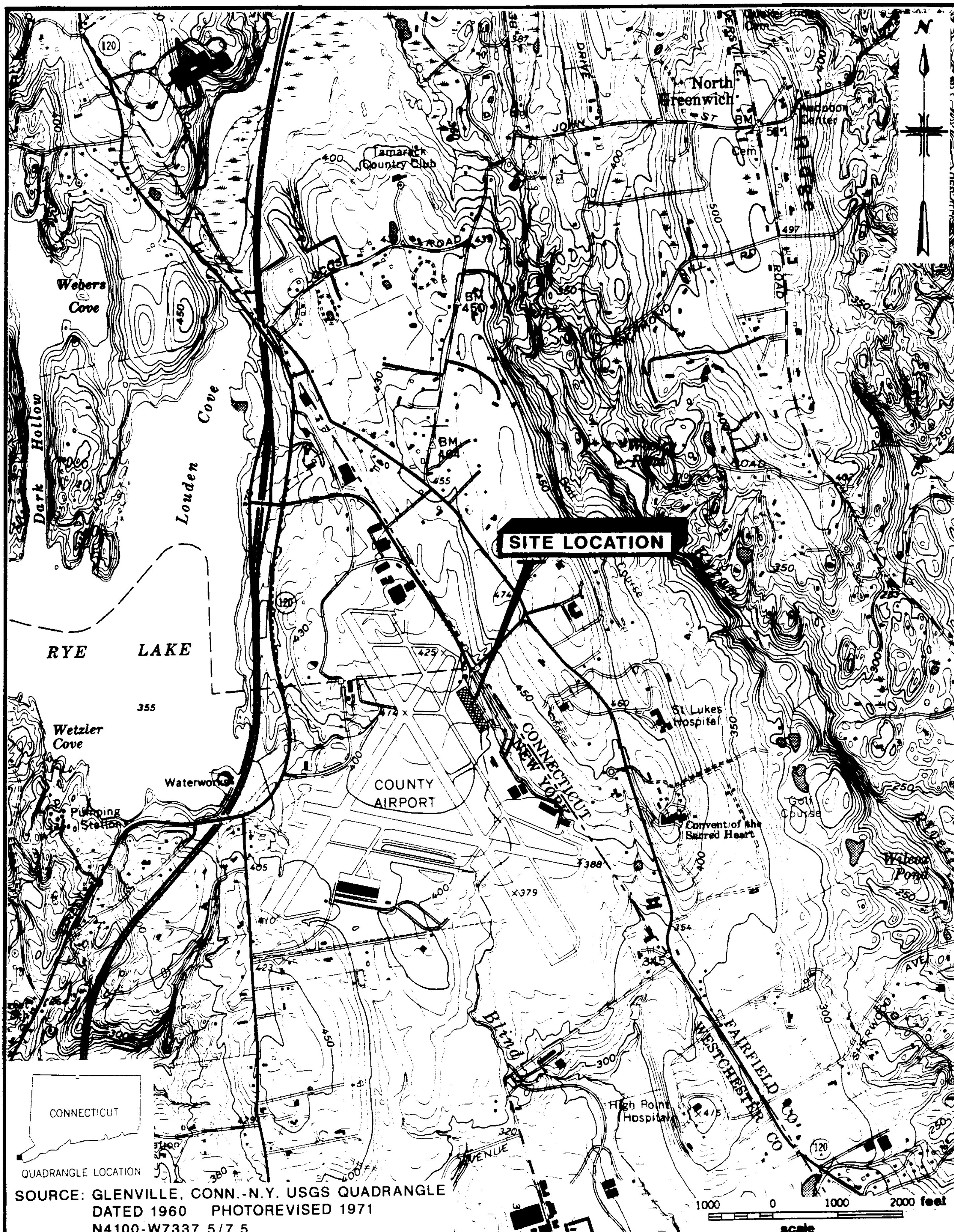
Three additional investigations were performed including a soil gas survey and two subsurface soil sampling programs. The results of all four investigations have been previously submitted to the New York State Department of Environmental Conservation (NYSDEC) and are also summarized in the Site Assessment Summary submitted to the NYSDEC on November 12, 1993. A summary of findings to date is presented below and more detailed discussions of the data are presented in the Site Assessment Summary.

The soil beneath the hangar consists of fine sand, with a little silt and angular gravel to a depth of approximately 12 feet, at which depth weathered schist is encountered. Groundwater is encountered at a depth of approximately 10 feet below grade.

Concentrations of total chlorinated hydrocarbons (CHCs) above 10 ppm were detected in soils beneath the hangar floor near the solvent storage area. The CHCs detected include primarily 1,1,1-trichloroethane and tetrachloroethene, with minor amounts of trichloroethene and 1,1-dirchloroethane also detected. Concentrations decrease rapidly with depth (typically to non-detect or less than 1 ppm below 24 inches). Concentrations also decrease rapidly with distance from the solvent storage area (typically to 1 ppm or less at 40 feet from the source). Benzene, toluene, ethylbenzene, and total xylenes (BTEX) were not detected.

WHAT ABOUT OTHER SIDE of BAY ?

On January 25, 1994, Mobil entered into a consent order with the NYSDEC, which requires that a preliminary site assessment be conducted to collect data to enable the



SOURCE: GLENVILLE, CONN.-N.Y. USGS QUADRANGLE
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SITE LOCATION MAP

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FIGURE 1-1

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NYSDEC to characterize hazardous substances which may be present at the site and to enable the NYSDEC to determine whether such substances constitute a significant threat to public health or the environment and necessitate remediation. ADDITIONALLY, THE C.O. ALLOWS PAP TO PROPOSE AN IRM.

1.2 WORK PLAN DEVELOPMENT

This Preliminary Site Assessment (PSA) Work Plan has been prepared in accordance with current NYSDEC requirements for Phase II investigations identified in the Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandums 4007 and 4008, and the following documents:

- Data Quality Objectives for Remedial Response Activities: Developmental Process, EPA/540/G-87/003, OSWER Directive 9355.0-7B, March 1987.
- Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, OSWER Directive 9355.0-14, December 1987, as supplemented by the NYSDEC.
- Occupational Safety and Health Administration (OSHA) requirements contained in 29 CRF Part 1910 and 1926 including the final rule contained in 29 CRF Park 1910.120

Preparation of the PSA was based upon a review and consideration of data and information presented in the site investigation reports already submitted to NYSDEC, as follows:

- Pilko & Associates (Pilko) January 1991 - "Phase II, III, and IV Pre-Leasing Environmental Assessment of Mobil Flight Operations Hangar, Westchester County Airport"
- Target Environmental Services, Inc. Target), (January 1991) - "Soil Gas Survey, Mobil Hangar, Westchester County Airport, New York"
- Leggette, Brashears and Graham (LBG) (May 1991) - "Mobil Oil Corporation, Subsurface Investigation of the Mobil Hangar, Westchester County Airport"

* LBG, August 1991 - Letter report to Greg Hill, Mobil Oil Corporation; from Keith Yocis and Charles Olmsted, LBG; dated August 14, 1991

After the identification of the possible contamination as documented in the Pilko Report, Mobil undertook additional investigations to assess the nature and extent of contamination associated with the chlorinated hydrocarbons beneath the hangar floor. The objective of the Target soil gas survey was to determine the horizontal extent of CHCs, as reported in their January 1991 report. Based on the results of the soil gas survey, LBG performed a systematic subsurface soil sampling program to quantify contaminant concentrations and to assess the horizontal and vertical extent of CHC contamination. The results are reported on their 5/91 report. To assess further the extent of vertical migration, LBG performed an additional, deeper soil boring to the water table, as documented in their 8/91 report.

The data collection and analysis activities conducted during the previous site investigations listed above are of a sufficient quality to be considered usable for the NYSDEC's preliminary site assessment. QA/QC procedures are documented in each of the above reports as follows:

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* Pilko Report - Attachment 5
* Target Report - Pages 3,4,6, and 10,
* 5/91 LBG Report - Page 2 and Appendix C
* 8/91 LBG Report - Appendix

Therefore, it will not be necessary to duplicate any previous sampling and analysis activities. Instead, this PSA Work Plan has been developed to address the data gaps identified during evaluation of the previous investigations and will supplement the data collected to date in order to provide the NYSDEC with a more complete picture of the current site conditions.

1.3 OBJECTIVES AND SCOPE OF WORK

The objectives of the PSA are to evaluate the possible impact to groundwater quality beneath the former Mobil hangar, and to assess whether chlorinated hydrocarbons have migrated through the soil beneath the hangar's south wall and are present in the subsurface soil of the adjacent hangar. To achieve these two objectives the PSA field investigation will involve collecting three groundwater samples using the HydroPunch method in the former Mobil hangar in the solvent storage area, and collecting six subsurface soil samples from

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three soil borings inside the adjacent hangar closest to the solvent storage area. This scope of work assures that the area of interest in the adjacent hanger will be accessible and an agreement of access will be reached.

The soil borings will be drilled using a small hollow stem auger drilling rig. Continuous split-spoon samples will be collected from the base of the concrete to the water table. Based on previous soil boring data, the water table is assumed to be approximately 10 feet below grade. Each soil sample will be screened at the hangar for headspace VOCs using a photoionization detector. The ionization potentials of the chlorinated solvents identified to date fall well within the effective operating range of an HNu Photoionization Detector with a 10.2 eV lamp. Two soil samples from each boring will be selected for laboratory analyses; the sample showing the greatest headspace concentration and the sample from just above the water table. A New York State certified laboratory will analyze the samples only for volatile organic compounds using EPA Method 8010.

The same small hollow stem auger drilling rig will be used to obtain the three groundwater samples from within the former Mobil hangar using the HydroPunch technique. The technique involves drilling with hollow stem augers to a depth just above the water table. A small diameter probe is then advanced beyond the lead auger and into the water table. The probe is fitted with a screen to allow entry of groundwater. The groundwater samples will be collected through these probes in accordance with QA/QC procedures to assure representative analyses. The groundwater samples will be analyzed for volatile organic compounds using EPA Method 601.

This drilling and sampling method will assure that shallow soil contamination will not be carried downward. Since split-spoon samples will be collected and field screened for the presence of VOCs in advance of the augers, drilling can be stopped at the base of the contaminated soil zone. The groundwater sampling probe will then be inserted through the inside of the augers and will not contact the shallow contaminated soil. This technique will not bring contaminated soil into contact with the water table, and will allow for the collection of representative groundwater samples. In addition, all of the sampling tools will be thoroughly decontaminated prior to use at each sampling location to avoid cross-contamination between sampling locations.

Upon completion of sampling, the HydroPunch tool and the augers will be removed from the ground and the holes will be properly abandoned with cement grout and the concrete floor patched at the surface.

2.0 SAMPLING AND ANALYSIS PLAN

2.1 PURPOSE

The Sampling and Analysis Plan (SAP) provides the details for the investigative activities discussed in the PSA Work Plan objectives. The SAP consists of two parts: the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan (FSP). The purpose of the QAPP is to ensure the quality and integrity of all data collected for the PSA. The purpose of the FSP is to assure that samples are properly collected, handled, and transported to the laboratory, and that sampling and handling procedures are fully documented. A summary of the field sampling program is presented in Table 2-1.

2.2 DATA QUALITY OBJECTIVES

The data quality objectives (DQOs) are specific, pre-determined goals for data quality that must be achieved for the data to be useful to the investigation. The DQOs have been developed to ensure that the various sampling activities and analyses produce data that are valid and useful to this program. The DQOs must be supported by a certain level of quality that varies depending on the intended use of the data. For example, field screening data are not required to be of the same quality as laboratory analyses because the field screening is typically used only to decide where samples should be collected for laboratory analyses. The data quality levels required for specific data uses and the type of analyses needed to achieve a particular quality level are defined as follows:

1. **Level I** - Field screening or analysis using portable instruments. Results are often not compound specific and typically not quantitative, but collection of data of this quality is important because results are available in real-time.

2. **Level II** - Field analyses using more sophisticated portable analytical instruments; in some cases the instruments may be set up in a mobile on-site laboratory. There is a wide range in the quality of the data that can be generated, depending upon the use of suitable calibration standards, reference materials, sample preparation equipment and the training of the instrument operator(s). Results are available in real-time or within several hours.

3. ~~Level III~~

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TABLE 2-1

SUMMARY OF FIELD SAMPLING PROGRAM

MEDIA	TYPE OF INVESTIGATION	LOCATION OF INVESTIGATION	NUMBER OF SAMPLES	PARAMETERS AND ANALYTICAL METHODS	DATA USES
Soil	Subsurface Soil Sampling	• Adjacent Hangar south of former Mobil Hangar (See Figure 2-1)	6 soil samples (3 soil borings, 2 samples each) <u>QA/QC</u> 1 Field Duplicate 1 Field Blank	Volatile Organics (EPA Method 8010)	• Site Characterization • Cleanup Objective Determination
Groundwater	Groundwater Sampling	• Former Mobil Hangar (see Figure 2-1)	3 HydroPunch water samples <u>QA/QC</u> 1 Field Duplicate 1 Field Blank 1 Trip Blank	Volatile Organics (EPA Method 601)	• Site Characterization • Cleanup Objective Determination

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3. **Level III** - Analyses performed in an off-site laboratory using standard documented procedures. Level III analyses may or may not use NYSDOH-ELAP procedures, but do usually use the validation or documentation procedures required of ELAP Level IV analysis. The analytical laboratory may or may not be ELAP certified.

4. **Level IV** - All analyses requiring DQO Level IV will be performed by a NYSDOH-ELAP certified laboratory. Level IV is characterized by rigorous QA/QC protocols and documentation.

5. **Level V** - Non-standard methods. Analyses may require method modification and/or development. Method development or method modification may be required for specific constituents or detection limits.

For the Mobil Hangar Site Assessment Level I quality data will be collected for field screening of soil samples for VOC contaminants and to monitor ambient air concentrations of VOCs for health and safety purposes. The instrument used for this screening, the photoionization detector (PID), is capable of measuring organic vapors in the hundreds ppb to thousands ppm range. Calibration gas supplied by the PID instrument manufacturer will be used to calibrate each instrument at least once per day.

Soil and groundwater samples submitted for laboratory analyses will be of Level IV data quality. Level IV data quality should ensure that the data collected during this investigation will be useful in meeting the objectives of this site assessment.

2.3 QUALITY ASSURANCE/QUALITY CONTROL

To measure and control the quality of analysis, and to ensure that the DQOs are met, certain analytic quality assurance/analytic quality control parameters are defined and utilized in data analysis activities for this site. They are defined as follows:

Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a measurement of the variability of a group of measurements compared to their average value.

Accuracy

Accuracy measures the bias in a measurement system. Sources of error include the sampling process, field contamination, preservation, handling, shipping, sample matrix, sample preparation and analysis techniques. In this project, sampling accuracy will be evaluated through the results of field duplicates and trip blanks, while analytical accuracy will be assessed through surrogate spike and matrix spike recoveries.

Comparability

Comparability expresses the confidence with which one data set can be compared with another. By using standard sampling, analytical and reporting procedures, this allows the comparability of all data generated in this project with historical data bases and data that may be required in later phases.

Completeness

The completeness objectives for this project will require that at a minimum, 90 percent of the analytical data meet the data quality objectives.

Representativeness

The representativeness of samples will be assured by the collection procedures outlined in this plan and the equipment maintenance procedures included in the appendices and by the selection of appropriate environmental monitoring points.

Sensitivity

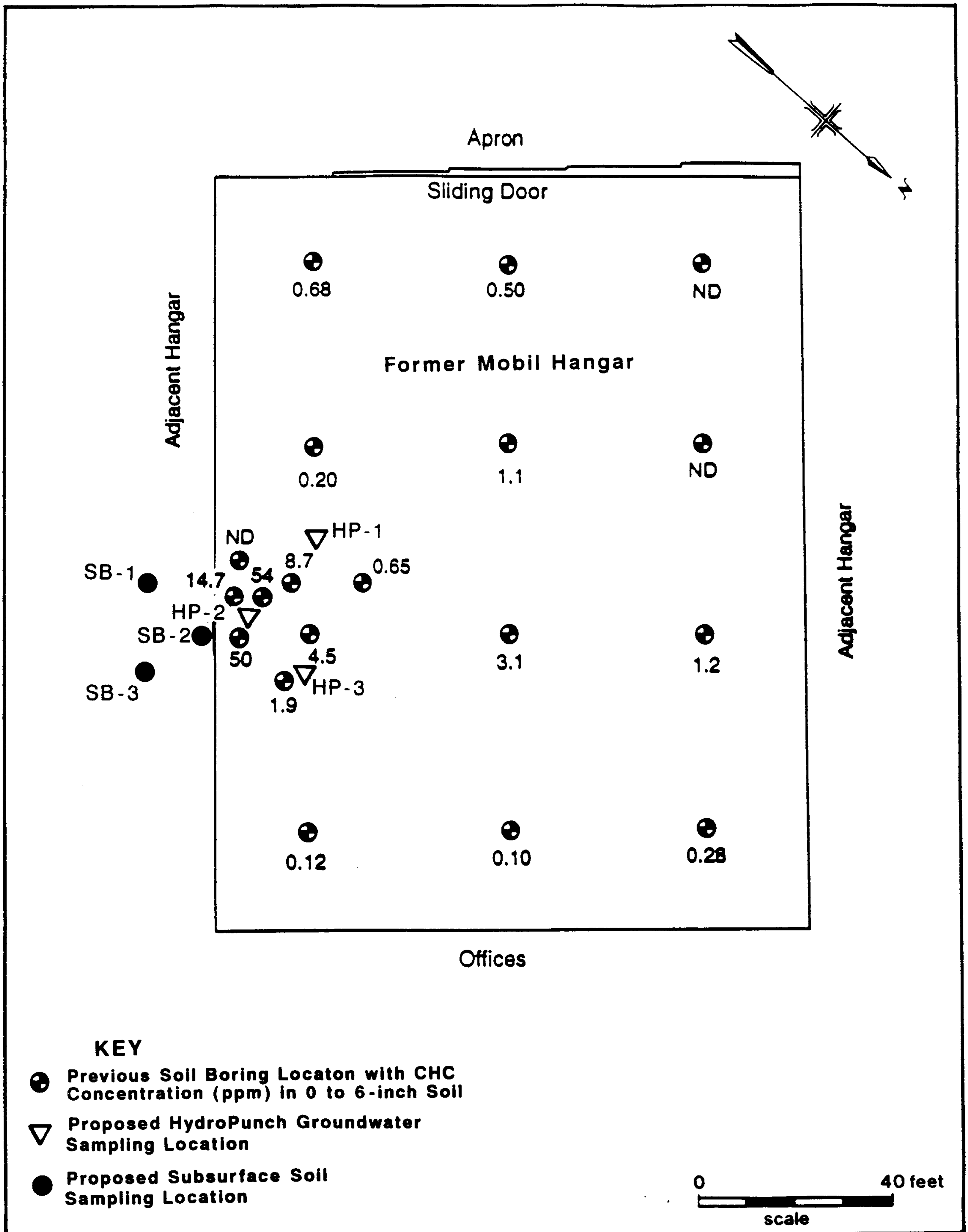
The data generated during the sampling activities will be sensitive enough to meet the NYSDEC groundwater quality criteria.

2.4 FIELD SAMPLING PROCEDURES

2.4.1 Soil Boring Drilling Procedures

A total of six borings will be drilled during the field investigation. Three borings will be drilled for soil sample collection and three additional borings will be drilled for groundwater sample collection using the HydroPunch sampler. The proposed locations of these borings are described in Sections 2.4.2 and 2.4.3 and shown in Figure 2-1.

Each boring will be drilled in an area overlain by concrete; therefore, each borehole will be started by coring the concrete to the base of the concrete slab. Continuous split-



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PROPOSED SOIL AND GROUNDWATER SAMPLING LOCATIONS

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FIGURE 2-1

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spoon samples will be collected from the top of soil layer to the water table. Boreholes for soil samples are anticipated to extend to approximately 10 feet below grade. While advancing the split-spoon samplers, penetration tests, in accordance with ASTM Standard D 1586-84, will be used to estimate the in-situ characteristics of the soils. These tests involve the use of a two-inch diameter split-spoon sampler driven into the soil by dropping a 140-pound hammer from a height of 30 inches. The number of blows required to advance the sampler in six-inch increments is recorded.

It is anticipated that the hole created by driving the split-spoon samplers will not collapse and the hole will be continued to the desired depth by advancing successive split-spoon samplers. If hole collapse is a problem due to poorly cohesive soils, drilling will be accomplished using a small hollow stem auger drilling rig and 3-1/2 inch diameter augers. In this event, split-spoon soil samples will be collected in each boring in advance of the augers, from the top of the soil to the water table.

Augers, drill rods, and any other tools which will enter the borehole will be thoroughly decontaminated with a steam cleaner before drilling each soil boring, as described in Section 2.4.6. Upon completion of drilling and sampling activities, each borehole will be properly abandoned with cement grout and the hole in the concrete slab will be patched with new concrete. Drill cuttings and soils will be placed in DOT-approved 55-gallon drums. The following equipment will be needed for the soil boring drilling program:

- Small skid-mounted or trailer-mounted drilling rig with hollow stem augers
- 2-inch diameter, 2-foot long split-spoon samplers
- Glass bottles for archiving soil samples
- Field notebook and field logs
- Personnel protective equipment (hardhat, safety boots, ear protection)
- Camera

2.4.2 Soil Sampling Procedures

Soil samples will be collected using split-spoon samplers as described above. A summary of the soil sampling program is presented in Table 2-1. The split-spoon samplers and other sampling equipment, such as trowels, spoons and bowls will be decontaminated before using for soil sampling, as described in Section 2.4.6.

Each split-spoon soil sample will be opened and laid on a piece of clean polyethylene sheeting. Field personnel will screen the sample for organic vapors by passing the probe of a photoionization detector (PID) over the length of the sample. Soil samples will immediately be placed in two labelled 40-ml VOA vials and placed in a cooler at 4°C and held for possible laboratory analysis. Remaining soils from the split-spoon sampler will be emptied into a clean glass jar. The top of the jar will be sealed with aluminum foil, taped, and allowed to stand to allow time for the organic vapors to off-gas and accumulate in the jar. After 15 minutes, the air headspace in the jar will be monitored for organic vapors by piercing the aluminum foil with the probe of the PID and recording the instrument meter's peak reading.

Two soil samples from each of the three borings will be submitted for laboratory analysis. One sample will be chosen from each of the deepest split-spoon samples (i.e., just above the water table); one sample that exhibits the highest degree of contamination in each boring, based on soil headspace screening, will also be submitted. If headspace screening does not reveal contamination in any soils from a particular boring, the second sample selected for laboratory analysis will be from the split-spoon sample collected at approximately one-half the depth to the water table. In addition to the six soil samples, a duplicate soil sample will be collected for laboratory analysis. The duplicate sample will be selected from a split-spoon sample that exhibits VOC contamination, based on headspace screening. Duplicate samples will be collected by filling the sample containers from the same soil interval as the primary sample in order to minimize sample heterogeneity from affecting the analytical results.

Photographs will be taken of selected samples. Each photograph will include a card showing the site name, sample identification number, date, and initials of the sampling team and a scale for comparison. Soils will be visually classified according to both the Unified Soils Classification System (USCS) and the Modified Burmister System.

Samples submitted for laboratory analysis will be wrapped carefully to prevent breakage and stored in a cooler at 4°C. At the end of the day all samples will be transported to EnviroTest Laboratories, Inc. in Newburgh, New York (NYSDOH ELAP No. 10142). Soil samples will be analyzed for VOCs by EPA Method 8010. The sample container, preservation, and holding time requirements are shown in Table 2-2.

Soil samples which are not submitted for laboratory analysis will be sealed in labelled glass jars placed in cardboard boxes and archived on-site. Excess soils will be placed in DOT-approved 55-gallon drums along with other drill cuttings.

Data to be recorded in the field notebook and/or boring log will include the

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TABLE 2-2 SAMPLE CONTAINER, PRESERVATION AND HOLDING TIME REQUIREMENTS					
Matrix	Analysis	Procedure	Container	Preservation	Holding Time
Groundwater	Volatile Organics	EPA Method 601	2-40 ml glass VOA vials	Cool to 4°C	14 days ?
Soil	Volatile Organics	EPA Method 8010	2-40 ml glass VOA vials	Cool to 4°C	14 days

g:/Mobil/Table

DO NOT USE PRESERVATIVES

following:

- Name and location of job
- Sample identification numbers
- Date of drilling
- Method of drilling and sample acquisition
- Blow counts
- Soil description
- Time, method and results of PID calibration
- Photograph numbers
- Organic Vapor Concentrations (by HNu calibration gas equivalent units)

The following equipment will be needed for the soil sampling program:

- Stainless steel trowels or spoons
- Sample containers
- Coolers and ice
- Roll of polyethylene sheeting
- HNu PI-101 photoionization detector (10.2 eV)
- Field notebook and field logs
- Personnel protective equipment (Tyvex overalls, gloves, etc.)
- Camera

2.4.3 HydroPunch Sampling Procedures

The HydroPunch groundwater sampling technique will be used to collect groundwater samples for chemical analysis of volatile organic compounds. Three HydroPunch sampling locations are shown on Figure 2-1. Analyses of groundwater samples from these locations will be used to assess whether the VOC contamination of shallow soils in this area has affected groundwater quality. A summary of the groundwater sampling program, QA/QC sampling and analytical methods is presented in Table 2-1.

The HydroPunch is a stainless steel probe with a screened interval that is contained within the probe housing. When this probe is advanced to the selected depth, the outer steel casing of the probe is retracted exposing the inner screened section. The probe then fills with water which is brought to the surface using a 1-inch diameter bailer.

At each proposed HydroPunch location, continuous split-spoon soil samples will be collected from the base of the concrete slab to the water table. Split-spoon samples collected from the unsaturated zone of HydroPunch borings will be screened for VOCs using the jar headspace method in the manner described in Section 2.4.2. Samples will be placed in labelled jars and archived on-site with other soil samples.

As with the borings for soil sample collection, if the holes created after extracting the split-spoon samplers remain open, successive split-spoon samples will be collected by re-entering the same hole. The HydroPunch sampler can also be driven to the desired depth in this same manner. However, if a hole collapses, the borehole will be drilled using hollow stem augers and successive split-spoon samples and HydroPunch samples will be collected in advance of the augers.

When the water table has been reached by either drilling or repeated split-spoon sampling, the HydroPunch device will be driven several feet below the water table, until the top of bedrock is encountered. The outer sleeve of the unit will then be pulled back, exposing the screen intake, allowing groundwater to pass through the screen and enter the sample chamber. It is anticipated that the HydroPunch will require approximately fifteen minutes to fill with formation water. At the end of this period, a decontaminated bailer will be inserted down the drill rods into the HydroPunch device and a groundwater sample will be collected.

Groundwater samples will be immediately poured into two labelled, 40-ml VOA vials, preserved by adjusting to pH less than 2 with laboratory grade hydrochloric acid, and capped with no visible headspace. The samples will then be placed in a cooler maintained at 4°C; samples will be delivered at the end of the day to EnviroTest Laboratories, Inc., in Newburgh, New York for VOCs analysis using USEPA Method 601. The sample container, preservation, and holding time requirements are shown in Table 2-2.

The following equipment will be needed for the HydroPunch sampling program:

- HydroPunch sampling tool with replaceable screens
- Decontaminated bailer
- Laboratory sample bottles
- Coolers and ice
- Preservative (HCl)
- Field notebook
- Personal protective equipment (Tyvex overalls, gloves, etc.)
- Camera

2.4.4 Collection of Quality Control Samples

Quality control samples will be collected to check that decontamination, sampling, transportation, and laboratory activities do not bias sample quality. Trip blanks, equipment rinsate blanks, and field duplicate samples will provide a quantitative basis for validating the analytical data. A summary of the QA/QC samples is discussed below.

Blank Water

Blank water used to collect quality control samples will be demonstrated analyte-free prior to the start of sample collection through the performance of analytical testing. For the sampling at the facility, the blank water will be deionized water obtained from an NYSDOH-ELAP laboratory. The laboratory will provide analytical results for each lot of deionized water demonstrating that the water meets NYSDOH-ELAP requirements. The blank water will be obtained from the laboratory in certified clean containers and will be stored in coolers which will be kept separate from sources of possible contamination. A copy of the analytical results will be retained in the files.

Trip Blanks

Trip blanks will be taken for each aqueous medium being sampled for volatile analysis at a minimum frequency of one per day. A trip blank will be prepared at the laboratory by filling two 40-ml vials (with Teflon-lined septums) with demonstrated analyte-free blank water, leaving no head space or air bubbles. The trip blank will accompany the sample containers at all times. One trip blank will be returned to the laboratory with each day's shipment of samples scheduled for analysis. The trip blank will be analyzed for volatile organic compounds to detect possible contamination during shipment.

Equipment Rinsate Blanks

An equipment rinsate blank will be collected as a check that the decontamination procedure has been adequately carried out and that there is no cross-contamination of samples occurring due to the equipment itself. A equipment rinsate blank is prepared by starting with an empty set of sample containers. At the field location, demonstrated analyte-free blank water is poured over decontaminated sampling equipment and into the empty set of sample containers for analysis of the same set of parameters as the environmental samples. One equipment rinsate blank will be collected for each type of equipment used each day a decontamination event is carried out. The equipment rinsate blank will be collected at the beginning of the day prior to the sampling event and the blank will accompany those samples which were taken that day.

Field Duplicate Samples

For each sample matrix, a field duplicate sample will be collected at a frequency of one sample per 20 environmental samples. The duplicate sample is collected at the same location as an environmental sample. The field duplicate sample is then given a false identification in order that the identity of the field duplicate is not revealed to the laboratory. The analytical results of the environmental sample will be compared to those of the field duplicate sample to evaluate the precision of the field sampling procedures.

2.4.5 Sample Shipping and Chain-of-Custody

The sample handling and sample custody procedures described below will be followed during all sampling events. A chain-of-custody form will be initiated at the laboratory and will accompany the sample bottles from the laboratory into the field. Upon receipt of the bottles and cooler, the sampler will sign and date the first "received" blank space. After each sample is collected and appropriately identified, entries will be made on the chain-of-custody form which will include: sampler names and signatures, sampling station identification, date, time, type of sample, and the required analysis.

After sampling has been completed, the sample containers will be cleaned and the containers will be placed into coolers. Ice packs will be placed in the coolers to keep the samples cold(4°C). Packing material will be placed in the coolers and around the containers to prevent the sample containers from moving and breaking. The sampler will sign and date the next "relinquished" blank space on the chain-of-custody form.

The samples will either be transported to the laboratory under custody of sampling personnel or they will be shipped by an overnight air express service. If the samples are shipped by an air express service, the name of the carrier will be entered under the next "received" blank and the airbill number will be entered on the form. The chain-of-custody form will be placed in a plastic bag and attached to the inside cover of the cooler. Whether transported by sampling personnel or shipped, two or more custody seals will be signed, dated, and placed on each shipping container, located in a manner that would indicate if the container were opened in transit. Wide, clear plastic tape will be placed over the seals to ensure that seals are not accidently broken during shipment.

All samples will be received by the laboratory with 24-hours of collection. Samples will be received by laboratory personnel, who will assume custody of the samples, and sign and date the next "received" blank on the chain-of-custody form.

2.4.6 Decontamination Procedures

Sampling Equipment

Any equipment, such as bailers, spoons, trowels, and split-spoon samplers used to collect water or soil samples for chemical analysis will be decontaminated following the procedures described below:

1. Wash and scrub with nonphosphate detergent (Alconox);
2. Rinse with tap water (from potable water supply);
3. Rinse with 10 percent HNO_3, ultrapure rinse;
4. Rinse with tap water (from potable water supply);
5. Rinse with methanol followed by hexane (pesticide grade or better);
6. Thoroughly rinse with deionized, demonstrated analyte-free water (volume used during this rinse must be 3 to 5 times the volume of solvent used in Step 5);
7. Air dry; and
8. Wrap in aluminum foil for transport.

When using a split-spoon sampler, made of carbon steel instead of stainless steel, the nitric acid rinse will be lowered to a concentration of 1 percent instead of 10 percent in order to reduce the possibility of leaching metals from the spoon itself, or the split-spoon samplers will be decontaminated by steam cleaning.

Disposable gloves will be worn by the sampling personnel and changed between sampling events. While performing any equipment decontamination, phthalate-free gloves (neoprene or natural rubber) will be worn in order to prevent phthalate contamination of the sampling equipment by interaction between the gloves and the organic solvent(s). Non-interfering containers (such as those made of glass, stainless steel, teflon, or nalgene polyethylene) will be used to transport the decontamination rinse fluids (methanol and hexane) to the site.

Drilling Equipment

The drilling rig and down-hole drilling equipment will be decontaminated prior to the start of drilling operations, between each borehole, and before leaving the site. Decontamination will be accomplished with a steam cleaner and will consist of spraying the rig and equipment with high pressure steam. Condensate from the steam cleaning operations will be properly managed on-site.

2.5 LABORATORY PROCEDURES

All laboratory analysis will be performed by a laboratory currently certified under the appropriate approval categories by the New York State Department of Health's Environmental Laboratory Approval Program (ELAP).

EnviroTest Laboratories, Inc., a NYSDOH-ELAP approved laboratory has been designated for this project. The groundwater and soil samples will be analyzed for Purgable Halocarbons (which include all the chlorinated hydrocarbons of concern) using EPA methods 601 and 8010, respectively. The standard operating procedures of laboratory activities related to the environmental monitoring plan will be forwarded to the NYSDEC upon request.

2.6 DATA QUALITY ASSESSMENT

All analytical data received from the analytical laboratories will be assessed to determine to what extent the data can be used in the water quality monitoring program. The goal of data assessment is to characterize the data so that decisions are made using only those data that is of a sufficient quality to support those decisions.

2.6.1 Data Validation

The data validation for those sampling events for which only routine parameters are analyzed will be performed by the NYSDOH-ELAP approved laboratory that conducted the sample analysis. For those sampling events for which baseline or expanded parameters are analyzed, the data validation will be performed by personnel other than the laboratory that performed the analyses. The data validation will be performed on a minimum of 20 percent of the data generated, and will consist of checking the items listed for the following types of parameters:

Field Parameters

- Field Records
- Calibration
- Completeness

CHECK

Organic Parameters

- Sample Holding Times
- GC Tuning and Performance
- Calibration
- Blanks
- Duplicates
- Surrogate Recovery
- Compound Identification
- Internal Standards Performance
- System Performance
- Overall Assessment of Data

Data review and validation reports shall be generated to describe the validation and any problems encountered, as well as to provide data summaries in which the data is appropriately qualified. These reports will be used in applying the data as part of the water quality monitoring program.

2.6.2 Data Usability Analysis

The data usability analysis will be performed on all analytical data for the facility and will consist of the following:

- An assessment to determine if the data quality objectives were met;
- Evaluation of field duplicate results to indicate the samples are representative;
- Comparison of the results of all field blanks, trip blanks, equipment rinsate blanks, and method blanks with full data sets to provide information concerning contaminants that may have been introduced during sampling, shipping, or analyzing.
- Evaluation of matrix effects to assess the performance of the analytical method with respect to the sample matrix, and determine whether the data have been biased high or low due to matrix effects;

- Comparison of precision, accuracy, representativeness, comparability, completeness, and defensibility of the data generated with that required to meet the data quality objectives established in the site analytical plan.

MALCOLM PIRNIE

3.0 PROJECT ORGANIZATION

3.1 PROJECT TEAM

Summaries of relevant experience for key project team members are provided below. These individuals have been selected because of their expertise in the technical areas necessary to successfully complete this project. A project organization chart illustrating the key staff assigned to the PSA is presented in Figure 3-1.

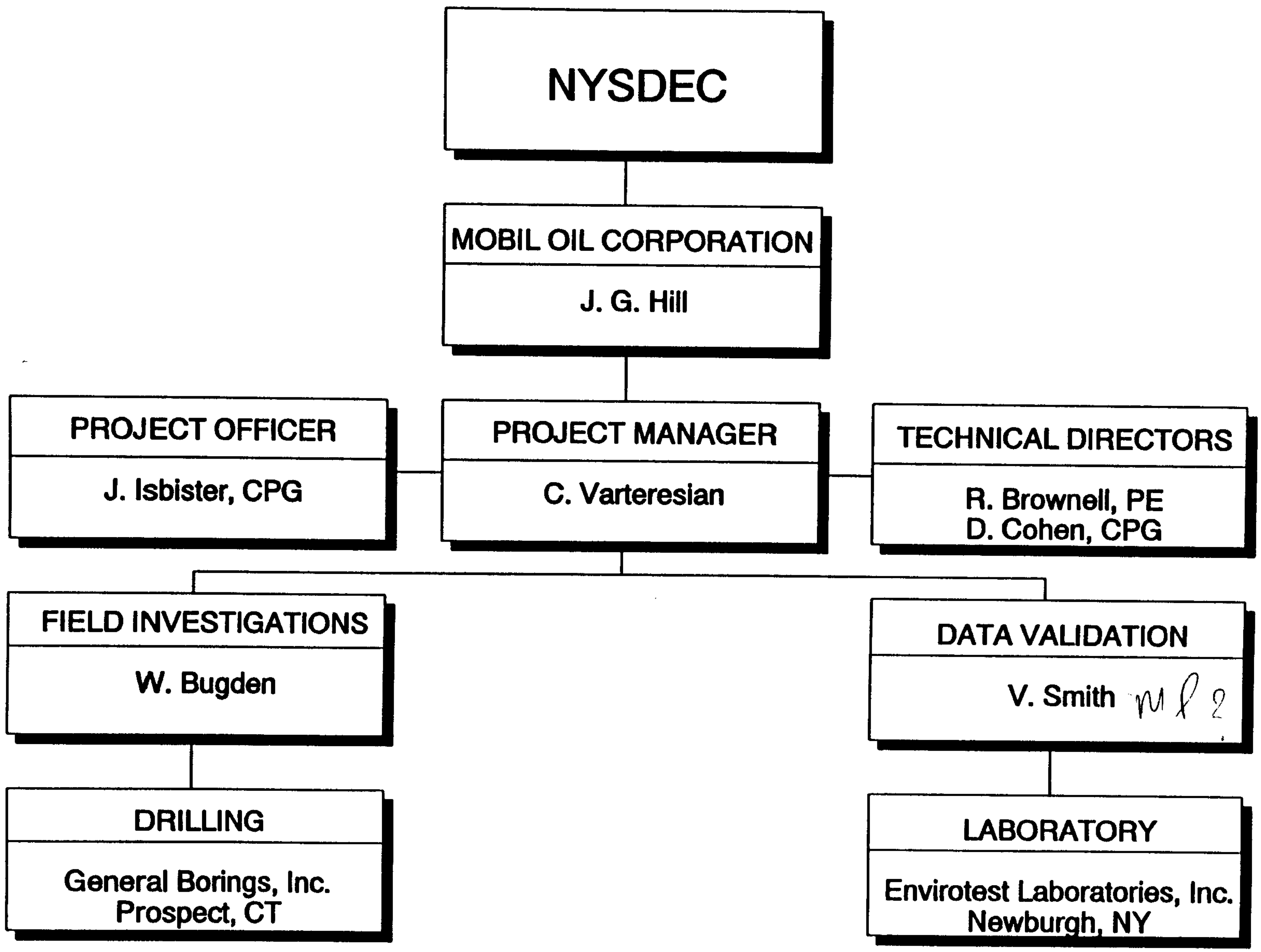
John Isbister, CPG
Project Officer

Mr. Isbister is an expert groundwater geologist and hydrogeologist with nearly 40 years of experience. He has worked on numerous contamination projects and is presently responsible for the organization, direction, and evaluation of complex groundwater quality investigations and groundwater development projects conducted for major industrial clients and large groundwater developers. He has conducted hundreds of remedial investigations and site evaluations throughout the country. Mr. Isbister specializes in the investigation of contamination incidents and the development of cost-effective measures to control, contain, and abate groundwater contamination. He has prepared documents for litigation and delivered expert testimony on the behalf of clients.

As Vice President and Technical Director of Hydrogeology, Mr. Isbister is responsible for the administration and technical direction of corporate services in hydrogeology, providing technical review and quality control of hydrogeological work performed throughout the firm. Mr. Isbister has directed or provided technical review services for projects that include:

- A complex project at the Nassau County Fire Service Academy on Long Island, a New York State Superfund Site. Directed a Remedial Investigation/Feasibility Study (RI/FS) of contamination consisting of several areas of petroleum product, a highly concentrated solvent plume, and a more dilute downgradient plume. Project included investigations of subsurface combustible gases, as well as design and construction of remedial facilities.

074945



MALCOLM PIRNIE

MOBIL OIL CORPORATION
FORMER MOBIL HANGAR
WESTCHESTER COUNTY AIRPORT

PROJECT TEAM

MALCOLM PIRNIE, INC

FIGURE 3-1

- Directed a hydrogeological evaluation in connection with a landfill siting on an industrial site in Rockland County, NY. Involved the installation of monitoring wells for water level and background chemical quality evaluation and preparation of a report in satisfaction of NYS Part 360 regulations.

- Managed a hydrogeological assessment of a Superfund site in Southern New York State in which the contamination from a landfill threatened a fresh water pond and marsh, included remedial investigation (RI) and the groundwater sections of a feasibility study (FS).

- Conducted a remedial investigation/remedial design project on and industrial site in southeastern Pennsylvania. Initial stages of the project included the characterization of plumes from historical solvent spills and the recommendation of remedial facilities. Remediation will include contaminant recovery through soil vapor extraction, air sparging and possibly groundwater pumping and recovery.

Richard P. Brownell, PE
Technical Director

As Vice President in charge of Malcolm Pirnie's industrial waste group, Mr. Brownell's involvement bridges problem identification and problem solving. He has directed projects on site evaluation, groundwater pollution, remedial measures for hazardous waste problems, leachate, wastewater process design, odor and air emissions, and detailed design for hazardous and industrial wastewaters and landfill closure. All significant hazardous waste work performed by the firm is reviewed by Mr. Brownell. As Technical Director, Mr. Brownell will meet periodically with the Project Officer and Manager to review project progress. Mr. Brownell's relevant project experience includes:

- Directed many groundwater and/or site investigations for industrial clients where remedial measures considered included: relining lagoons, groundwater, soil and sludge recovery, air stripping, vacuum extraction from soils, biotreatment activated carbon treatment, landfill closure, slurry walls, surface water diversions.

- Developed remedial measures for Superfund and hazardous waste sites from New England (gas emissions from waste piles, metal fixation in soils, groundwater contamination to the southern US (extensive pesticide contamination of river sediments) to the Far West (Volatile organic chemical (VOC) removal). Responsible for the design of stripping towers and granular activated carbon systems for VOC removal; also directed contaminated soils removal, landfill closures and leachate treatment system improvements at various sites. Project Officer on environmental evaluations for portions of the Upper Hudson River polychlorinated biphenyls (PCB) project and bench scale and pilot treatability studies on PCB wastes for the New York State Department of Environmental Conservation.

MALCOLM PIRNIE

Donald K. Cohen, CPG
Technical Director Delegate

Mr. Cohen, an expert in subsurface investigations, has over fifteen years of experience evaluating and managing environmental investigations. Currently, as Senior Associate, Mr. Cohen is responsible for managing large multidisciplinary environmental projects. He currently oversees a staff of hydrogeologists and works with engineering personnel in other disciplines. He is responsible for tracking budgets and schedules, regulatory interface, and technical review for all hydrogeology work done by the firm. As a specialist in contaminant dispersion geochemistry he has assessed soils and groundwater contamination, compiled and evaluated data on aquifer characteristics and water quality, and conducted groundwater flow and contaminant transport modeling. Mr. Cohen specializes in managing and conducting Remedial Investigations and designing groundwater remediation systems. Mr. Cohen's project experience includes:

- Managing an RI/FS of a former coal gasification plant for a major utility company in Suffolk, NY. Involved preparation of project planning documents, supervision of field personnel, and client relations. Field and analytical data were interpreted and alternative remedial options were screened and evaluated. Presently, in-situ bioremediation is under evaluation.

- Conducted numerous remedial investigation studies under the direction of the NYSDEC, the USEPA, and the NJDEPE by assessing specific subsurface and hydrogeologic conditions with direct application to remedial design alternatives.

- Currently involved in an RI/FS on a Superfund site to determine the extent of groundwater contamination, and associated risk to local homeowners from an inactive site in New Jersey.

- Contributed to hydrogeological and remedial investigation of contamination consisting of several areas of petroleum product, a highly concentrated solvent plume and a more dilute downgradient plume, and investigated subsurface combustible gases for the Nassau County Fire Service Academy, Long Island NY. Project included design and construction of remedial facilities.

- Managed a major remedial site investigation and cleanup at a large coal gasification and coal-fired power plant for a confidential client in Southern New Jersey.

- Conducted preliminary subsurface site investigation for a proposed resource recovery facility in northern New Jersey to determine the presence and extent of hazardous waste.

- Conducted subsurface investigation to determine the extent of groundwater contamination at a major petrochemical facility in central Connecticut.

Carl Varteresian
Project Manager

ENGR or A GEOLOGIST ?

Mr. Varteresian has eight years of experience managing complex groundwater and soil contamination projects, during which he has developed, implemented, and completed numerous groundwater and soil investigations, environmental site assessments and groundwater sampling and monitoring programs. His projects include ECRA/ISRA, RCRA, and state-lead or USEPA-lead CERCLA sites for public and private clients throughout the northeast. Mr. Varteresian routinely interacts with local, state, and federal regulatory agencies, and legal and environmental consulting firms. His writing experience includes preparing project planning documents (i.e., work plans, sampling and analysis plans, quality assurance plans, and health and safety plan), final reports (i.e., Phase I and Phase II investigation reports, and RI/FS reports) and remedial action and corrective action plans. His field experience encompasses all aspects of environmental site investigations, including inspecting monitoring well drilling, test pit excavating and underground storage tank removals; performing surface geophysical surveys; conducting aquifer pumping tests and slug tests; and collecting groundwater, surface water, sediment, soil, and soil gas samples. Mr. Varteresian's interests include the application of bioremediation at hazardous waste sites and innovative methods to enhance groundwater pump and treat systems.

- Project Leader of an RI/FS of a former coal gasification plant for a major utility company in Suffolk County, NY. Involved preparation of project planning documents, supervision of field personnel, and client relations. Field and analytical data were interpreted and alternative remedial options were screened and evaluated. Presently, in-situ bioremediation is under evaluation.

- Project Manager of a remedial investigation/feasibility study (RI/FS) for a United States Environmental Protection Agency (USEPA) Superfund site in New Jersey. Responsible for all aspects of this $1.5 million project, including preparation of all the project planning documents, including the work plan, field sampling plan, quality assurance project plan, health and safety plan, and the subcontractor bid specifications. Responsible for all field activities including monitoring well installation, soil, groundwater, surface water, and sediment sampling, and aquifer testing. Involved in data quality assurance/quality control (QA/QC), interpretation and report preparation.

- Project Manager of the oversight team for a remedial investigation/feasibility (RI/FS) and remedial design/remedial action (RD/RA) for a USEPA Superfund site in New Jersey. Responsible for the review and comments on all project planning documents, reports, and field activities prepared/performed by the PRP contractors.

- Project Leader of the groundwater treatability study for the development of a treatability system and design of a treatment plant for a New Jersey client. Included preparation of work plan documents and subcontractor bid specifications, design and installation of pumping well, observation wells, sampling during pump tests and interpretation of pump tests.

- Field supervisor for several RCRA facility assessments for the New York State Department of Environmental Conservation (NYSDEC). Included review of available information, on-site inspection of each facility, and selective confirmatory sampling of soil and surface waters.

Wayne Bugden
Hydrogeology

Mr. Bugden's experience includes: planning and implementing groundwater monitoring strategies at contaminated sites; collecting and analyzing water, soil and soil gas samples to determine chemical, physical and hydrogeologic parameters; designing and constructing wells, multi-level samplers and various specialized equipment for groundwater evaluation, conducting hydraulic and geotechnical testing of aquifers and wetlands; investigating chemical and hydrologic interaction of surface water and groundwater to assess the migration of pollutants; preparing reports of investigations at hazardous waste sites, including five US Environmental Protection Agency (USEPA) Superfund sites.

- Responsible for field hydrogeologic investigations in New York, New Jersey and Florida. Tasks included installation of monitoring wells and geologic logging of boreholes at industrial, landfill and underground storage tank (UST) sites; sampling of groundwater using wells and HydroPunch methods; conducting pump tests; and collecting soil samples in accordance with USEPA Contract Laboratory Program (CLP) protocol.

- Analyzed hydraulic test data and hydrogeologic information to determine groundwater flow conditions and contaminant fate and transport.

MALCOLM PIRNIE

Valerie Smith
Data Validation

Ms. Smith has eight years experience in the various fields of environmental science, computer information systems, hazardous waste site field sampling, sample management, and data validation. She is certified by the U.S. EPA in the validation of Organic and Inorganic produced by the CLP and other sources. Ms. Smith routinely performs technical review and assessment of organic and inorganic data produced by the USEPA Contract Laboratory Program (CLP) or other sources and prepare reports summarizing results of the data review. She also trains and assists personnel for certification in CLP data validation for organic and inorganic analysis.

- Developed and implements a computerized database to track Alternative Remedial Contracts Strategies (ARCS II) CLP data as it goes through the sampling and review process.
- Responsible for acquisition of Contract Laboratory and Non-Contract Laboratory through the Regional Sampling Control Center (RSCC) under Routine and Special Analytical Services (RAS and SAS).
- Responsible for submittal of a written monthly progress report describing various activities and functions of the Malcolm Pirnie, Inc. (MPI), Central New Jersey (CNJ), to the RSCC.

4.0 HEALTH AND SAFETY PLAN

4.1 PURPOSE

A Site Specific Safety and Health Plan (SSSHP) has been developed to address the safety and health hazards of the preliminary site assessment field activities. Included in the SSSHP are project information, physical and chemical hazards information, environmental and personnel monitoring information, assignment of responsibilities, personnel protection minimum requirements, safe work practices, and emergency response procedures. This document is based on available site information and the assessment of potential physical and chemical hazards associated with the site and activities related to the planned investigation.

Real-time environmental monitoring will be performed as necessary during the course of the field investigation activities to evaluate ambient levels of airborne contaminants. The SSSHP will be modified as appropriate to address changes in site conditions and to present corrective procedures.

The SSSHP is presented on the following pages.

MALCOLM PIRNIE

SITE SPECIFIC SAFETY AND HEALTH PLAN

SECTION 1: GENERAL INFORMATION & DISCLAIMER

CLIENT NAME: Mobil Oil Corporation	PROJECT NAME: Mobil Hangar Subsurface Investigation
PROJECT MANAGER: Carl Varteresian	
PROJECT LEADER: Wayne Bugden	REVISION DATE:
SITE HEALTH & SAFETY OFFICER: Wayne Bugden	
PREPARED BY: Wayne Bugden	DATE: 3/1/94

NOTE: This Site Specific Safety and Health Plan (SSSHP) has been prepared for use by Malcolm Pirnie, Inc. employees for work at this site. Malcolm Pirnie, Inc. is not responsible for its use by others. **The plan is written for the specific site conditions, purposes, tasks, dates and personnel specified and must be amended and reviewed by those named in Section 16 if these conditions change.**

Subcontractors shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations. In accordance with 1910.120(b)(1)(iv) and (v), Malcolm Pirnie, Inc. will inform subcontractors of the site emergency response procedures, and any potential fire, explosion, health, safety or other hazards by making this Site Specific Safety and Health Plan and site information obtained by others available during regular business hours. All contractors and subcontractors are responsible for: (1) developing their own Health and Safety Plan including a written Hazard Communication Program and any other written hazard specific programs required by federal, state and local laws and regulations; (2) providing their own personal protective equipment; (3) providing documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations; (4) providing evidence of medical surveillance and medical approvals for their employees; and (5) designating their own site safety officer responsible for ensuring that their employees comply with their own Health and Safety plan and taking any other additional measures required by their site activities.

If an upgrade to Level "C" or above is anticipated, this Site Specific Safety and Health Plan must be reviewed/approved by Malcolm Pirnie's Corporate Manager, Health and Safety.

SECTION 2: PROJECT INFORMATION

(1) SITE INFORMATION

Site Name:	Mobil Hangar D, Bay 1	Site Project Contact:	J. Gregory Hill
Address:	Westchester Co. Airport	Phone No.:	609-737-4940
	Town of Harrison, New York	Site Health & Safety Contact:	
		Phone No.:	

(2) SITE CLASSIFICATION: (check and circle all that apply)

X	Hazardous (RCRA)	
	Construction	
	Sanitary or C and D Landfill	
	First Entry	
	Hazardous (CERCLA/State Superfund)	
	UST/LUST	
	Manufacturing	
X	Previously Characterized	
	Active	
X	Inactive	
	Other	

Explain: Chlorinated hydrocarbons including 1,1,1-TCA, PCE, TCE, 1,1-DCA detected in shallow soils beneath concrete floor in former solvent storage area. Concentrations of fall off to < 1 ppm below 24 inches depth. No other VOCs detected.

(3) ENTRY OBJECTIVES AND DATES OF FIELD VISIT(S):

Day 1: Collect soil samples for field screening and select samples for laboratory analysis.

Collect shallow groundwater samples for laboratory analysis using HydroPunch sampler.

(4) MALCOLM PIRNIE TASKS:

1) Locate soil sampling locations from previous investigations.

2) Collect subsurface soil samples and filed screen with HNu for VOC contaminant.

3) Select soil samples for laboratory analysis; package and ship selected samples to lab.

4) Collect groundwater and QA/QC samples; package and ship lab.

5) Oversee drilling and abandonment of all boreholes.

TASKS PERFORMED BY OTHERS:

1) Cut or core concrete floor for boring access.

2) Collect split spoon soil samples.

3) Operate HydroPunch sampling apparatus.

4) Backfill borings and restore concrete slabs.

(5) PROJECT ORGANIZATION AND COORDINATION - The following Malcolm Pirnie personnel are designated to carry out the stated project job functions on site. (Note: One person may carry out more than one job function.)

PROJECT MANAGER	Carl Varteresian
SITE SAFETY OFFICER	Wayne Bugden
ALTERNATE SITE SAFETY OFFICER	Carl Varteresian
SITE RECORDKEEPER	Wayne Bugden
ON-SITE PERSONNEL WITH CPR/FA	Wayne Bugden
FIELD TEAM LEADER	Wayne Bugden
FIELD TEAM MEMBERS	Wayne Bugden

VISITORS:

FEDERAL AGENCY ______________

(i.e, EPA, OSHA) ______________

____

STATE AGENCY REPS ______________

____

LOCAL AGENCY REPS ______________

____

SUBCONTRACTORS:

SUBCONTRACTOR(S)	General Borings, Inc.
SITE SAFETY OFFICER	N/A

All personnel arriving or departing the site should log in and out with the Recordkeeper.

(6) ONSITE CONTROL

Wayne Bugden has been designated to coordinate access control and security for Malcolm Pirnie operations on site. A safe perimeter will be established at the Hangar D entrance.

No unauthorized person should be within this area.

The onsite Command Post and staging area will be established at the Hangar D entrance.

The prevailing wind conditions are not relevant to the work being conducted because all work will be conducted indoors.

Control boundaries have been established and Exclusion Zone(s) (the contaminated area) have been identified. (Attach site map)

These boundaries are identified by: Caution tape and traffic cones.

SECTION 3: PHYSICAL HAZARDS INFORMATION

(1) IDENTIFY POTENTIAL PHYSICAL HAZARDS TO WORKERS:

	Confined Space		Steep/uneven terrain		Surface water
X	Heavy equipment		Heat stress		Drum handling
X	Moving parts		Extreme cold	X	Noise
	Heavy Lifting		Ionizing Radiation		Non-Ionizing Radiation
	Electrical		Traffic		Falls
X	Overhead Hazards		Biological Hazards		

Describe other unsafe environments ____________________

(2) SAFETY EQUIPMENT REQUIRED FOR MALCOLM PIRNIE EMPLOYEES

	Explosimeter		Eye Wash		Snake Bite Kit
	Fall Protection Equipment		Emergency Shower		Floatation Device (USCG Type III)
			Barrier Tape		Emergency Air Horn
	Confined Space Equipment		Traffic Cones		Lights
			Stretcher		Lights - emergency
	Ladder		A-B-C Fire Extinguisher		Communications - On Site
X	First Aid Kit		Tick Repellant		Communications - Off Site

SECTION 4: CHEMICAL HAZARDS INFORMATION

(1) IDENTIFIED CONTAMINANTS

Known or suspected hazardous/toxic materials (attach historical information, physical description, map of contamination and tabulated data, if available)

Media	Substances Involved	Characteristics	Estimated Concentrations	PEL
SL	1,1,1-TCA, PCE, TCE 1,1-DCA	TO	0-54 ppm	
GW	Chlorinated VOCs hydrocarb	TO	Unknown, but suspected to	

Media types: GW (ground water), SW (surface water), WW (wastewater), AIR (air), SL (soil), SD (sediment), WL (waste, liquid), WS (waste, solid), WD (waste, sludge), WG (waste, gas), OT (other).

Characteristics: CA (corrosive, acid), CC (corrosive, caustic), IG (ignitable), RA (radioactive), VO (volatile), TO (toxic), RE (reactive), BIO (infectious), UN (unknown), OT (other, describe)

(2) DESCRIBE POTENTIAL FOR CONTACT WITH EACH MEDIA TYPE FOR EACH OF THE MPI TASKS LISTED IN SECTION 2.4:

MPI TASK #	ROUTE OF EXPOSURE	POTENTIAL FOR CONTACT	METHOD OF CONTROL
Soil sampling	Skin contact	low	PPE (gloves, Tyvek)
	Inhalation	moderate	Air monitoring w/PID
Sample locating	None	None	None
GW Sampling	Skin Contact	Low	PPE (gloves, Tyvek)
	Inhalation	Low	Air monitoring w/PID
Sub. Oversight	Inhalation	Low	Air monitoring w/PID

The Site Safety Officer will brief the MPI field team on symptoms and signs of overexposure to chemical hazards.

SECTION 5: HAZARD COMMUNICATION PROGRAM

If chemicals are introduced to the site by Malcolm Pirnie, Inc. (e.g., decontamination liquids, preservatives, etc.), bring a copy of the Malcolm Pirnie, Inc. Hazard Communication Program and Material Safety Data Sheets (MSDSs) to the site. The Site Safety Officer will review this information with all field personnel prior to the start of the project. The Comprehensive List of Chemicals for this site is:

HCl - VOC sample preservative

Hexane - Decontamination liquid

Methanol - Decontamination liquid

Nitric Acid - Decontamination liquid

SECTION 6: ENVIRONMENTAL MONITORING

(1) The following environmental monitoring instruments shall be used on site (cross out if not applicable) at the specified intervals.

EQUIPMENT		MONITORING PERIOD		PEL/REL-/TLV	ACTION LEVEL
	-	continuous/hourly/daily/other		25%	10%
	-	continuous/hourly/daily/other		19.5 - 25%	19.5
	-	continuous/hourly/daily/other			
	-				
PID (Lamp 10.2 eV)	-	continuous/hourly/daily/other	during drilling		
	-	continuous/hourly/daily/other			
	-	continuous/hourly/daily/other			
(Type)	-	continuous/hourly/daily/other			
Other	-	continuous/hourly/daily/other			
	-	continuous/hourly/daily/other			

(2) Monitoring equipment is to be calibrated according to manufacturers' instructions. Record calibration data and air concentrations in the Health and Safety on-site log book.

(3) Recommended Action Levels for Upgrade or Downgrade of Respiratory Protection or Site Shutdown and Evacuation. These are average values. Consideration should be given to the potential for release of highly toxic compounds from the waste or from reaction by-products. Levels are for persistent (> 10 min) breathing zone measurements.

	Uncharacterized Airborne Vapors or Gases	Characterized Gases, Vapors, Particulates*
Level D	Background*	Up to 50% of PEL, REL or TLV
Level C	Up to 5 ppm above background	Up to 25 times PEL, REL or TLV
Level B	5 ppm to 500 ppm above background	Up to 500 times PEL, REL or TLV
Level A	500 ppm to 1000 ppm above background	Up to 1000 times PEL, REL or TLV

*Off-site "clean" air measurement.

*Use mixture calculations (% allowed = ΣC_n / PEL_n) if more than one contaminant is present.

Oxygen Deficiency

Concentration	Action Taken
< 19.5% O_2	Leave Area. Reenter only with supplied-air respirators.
19.5 % to 25% O_2	Work may continue. Investigate changes from 21%.
> 25% O_2	Work must stop. Ventilate area before returning.

Flammability

Concentration	Action Taken
< 10% of LEL	Work may continue. Consider toxicity potential.
10% to 25% LEL	Work may continue. Increase monitoring frequency.
> 25% LEL	Work must stop. Ventilate area before returning.

Radiation

Intensity	Action Taken
< .5 mR/hr	Work may continue.
< 1 mR/hr	Work may continue. Continue to monitor. Notify Corporate Health and Safety and Corporate Health Physicist.
5 mR/hr	Radiation work zone. Work must stop.

SECTION 7: HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING PROGRAM

The project staff is included in the Malcolm Pirnie Health and Safety training and medical monitoring programs. (See the Health and Safety Procedures Manual, Sections 3, 4 and 5.)

HAZWOPER

MEDICAL CURRENT NAME	40 HR/REF TRAINING (Date)	MGR/SUPV TRAINING (Date)	CPR/FA (Date)		FIT TEST Current (Include type/date)
Carl Varteresian	11/13/93	5/27/88	7/93	6/92	MSA lg 12/17/93
Wayne Budgen	11/13/93	1/31/94	7/93	6/92	MSA med/ 12/17/93

SECTION 8: PERSONAL MONITORING

The following personal monitoring will be in effect on site:

Personal exposure sampling:

Medical monitoring: The expected air temperature will be 60°F. If it is determined that heat stress monitoring is required (mandatory for heavy exertion in PPE at temperatures over 70°F) the following procedures shall be followed (describe procedures in effect, i.e., monitoring body temperature, body weight, pulse rate):

A copy of personal monitoring results is to be sent to Corporate Health and Safety for inclusion in the Employee's Confidential Exposure Record File.

SECTION 9: CONFINED SPACE ENTRY

(1) WILL CONFINED SPACE ENTRY TAKE PLACE? Yes ______ No X

If yes, attach **Confined Space Entry Program** available from your Branch Health and Safety Coordinator and complete the **Pre-Entry Inspection Checklist** and **Confined Space Entry Permit** prior to entering each confined space, each work shift. The Confined Space Permit must be posted outside the confined space.

Permits will be saved and logged with project documentation.

SECTION 10: COMMUNICATIONS PROCEDURES

The following standard hand signals will be used in case of failure of radio communications:

Hand gripping throat	-	Out of air, can't breathe
Grip partner's wrist or both hands around wrist	-	Leave area immediately
Hands on top of head	-	Need assistance
Thumbs up	-	OK, I am all right, I understand
Thumbs down	-	No, negative

If applicable, telephone communication to the Command Post should be established as soon as practicable. The stationary and/or mobile phone number(s) are ________________ and ________________.

SECTION 11: DECONTAMINATION PROCEDURES

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. The Site Safety Officer is responsible for monitoring adherence with this decontamination plan. The standard level ______ decontamination protocol shall be used with the following decontamination stations*:

(1) See Section 2.4.6 of Work Plan

(2) ____________________

(3) ____________________

(4) ____________________

(5) ____________________

(6) ____________________

(7) ____________________

(8) ____________________

(9) ____________________

(10) ____________________

Other ____________________

*See the Malcolm Pirnie Health and Safety Procedures Manual, Section 8, Personal Protective Equipment, for sample decontamination station descriptions.

The following decontamination equipment is required:

____

____

____

____

____________________ will be used as the decontamination solution.

SECTION 12: EMERGENCY PROCEDURES

The following standard emergency procedures will be used by onsite personnel. The Site Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury in the Exclusion Zone: Upon notification of an injury in the Exclusion Zone, the designated emergency signal Air Horn shall be sounded. All site personnel shall assemble at the decontamination line. An outside rescue team summoned by the field team leader or SSO will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The Site Safety Officer and Field Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. The onsite CPR/FA personnel shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated medical facility (if required). No persons shall reenter the Exclusion Zone until the cause of the injury or symptoms is determined.

Personal Protective Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal Air Horn shall be sounded and all site personnel assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Field Team Leader and Site Safety Officer shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

The following emergency escape routes are designated for use in those situations where egress from the Exclusion Zone can not occur through the decontamination line (attach map if available):

____

____

____

____

In all situations, when an onsite emergency results in evacuation of the Exclusion Zone, personnel shall not reenter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed by the SSO.
3. The Site Safety Plan has been reviewed by the SSO and Corporate Health and Safety Manager.
4. Site personnel have been briefed on any changes in the Site Safety Plan by the SSO.

SECTION 13. EMERGENCY INFORMATION

TO BE POSTED IN SITE-TRAILER/OFFICE AND IN FIELD VEHICLES

(1) LOCAL RESOURCES

Ambulance (name):	Abby Richmond	Phone:	(914) 949-7788
Hospital (name):	St. Agnes Hospital	Phone:	(914) 681-4500
Police (local or state):	Westchester County	Phone:	(914) 741-4400
Fire Dept. (name):	Westchester County	Phone:	(914) 593-5900
HAZ MAT Responder:	Steven Maslansky	Phone:	(914) 593-5900
Nearest phone:			
On-Site CPR/FA(s):			

The hospital is 10 minutes from the site and the ambulance response time is 10/15 minutes. Richard Haywood of St. Agnes Hospital was contacted on 3 / 2 / 94 and briefed on the situation, the potential hazards, and the substances involved. When IDLH conditions exist, arrangements should be made for onsite standby of emergency services.

(2) DIRECTIONS TO NEAREST HOSPITAL - ATTACH MAP: Leave Airport via access road. Turn left (S) onto Route 120 (Purchase St.). Follow approx. 1.5 miles to Anderson Hill Rd. Turn right (W) onto Anderson Hill Rd. Follow approx. 1.5 miles to White Plains Ave. Turn left onto White Plains Ave. Follow approx. 0.2 miles, crossing over Interstate 287. Turn left onto North Street (Rte 127). St. Agnes Hospital entrance (see attached map) is 0.3 mile on right.

(3) CORPORATE RESOURCES

Mark A. McGowan, CIH, CSP Manager, Corporate Health & Safety	(914) 641-2484 work (203) 350-2186 home
Catherine Bobenhausen, CIH	(914) 641-2647 work
Angelo Musone, CSP	(914) 641-2689 work
Alan Fellman, PhD Corporate Health Physicist	(609) 860-0100 work
Robert Kerbel (Regional Health & Safety Coordinator)	201-529-4700 (work)
David L. Barnes, M.D. Environmental Medicine Resources, Inc. (Corporate Medical Consultant)	(800) 229-3674 24 Hour Number
(Regional Medical Consultant)	

(4) WHOM TO NOTIFY IN CASE OF ACCIDENT:
Denise Textor, Administrative Assistant

Also notify: Brenda Verdesi, MPI Benefits Administrator (914) 641-2551
MPI Legal Department (914) 694-2100

SECTION 14: PROTECTIVE EQUIPMENT LIST

TASK*	RESPIRATORS & CARTRIDGE*	USE	CLOTHING	GLOVES	BOOTS	OTHER
Soil Sampling	NA	NA	T	L	S	H,N
GW Sampling	NA	NA	T	L	S	H,N
Drilling Oversight	NA	NA	T	L	S	H,N

*Same as in Section 2(4).

RESPIRATORS	APR CARTRIDGES	USE	CLOTHING	GLOVES	BOOTS	OTHER
B = SCBA	O = Organic vapor	Cont = Continuous	T = Tyvek	B = Butyl	F = Firemans	F = Face Shield
APR = APR	G = Organic vapor/acid gas	UP = Upgrade	P = PE Tyvek	L - Latex	L = Latex	G = Goggles
D = N/A	A = Asbestos (HEPA)		S = Saranex	N = Neoprene	N = Neoprene	L = Glasses
E = Escape	P = Particulate		C = Coveralls	T = Nitrile	S = Safety	H = Hardhat
AL = Airline	C = Combination organic vapor & particulate			V = Viton		N = Hearing Protection
	OTH = Other			CN = Cotton		
				P = PVC		
				PA = Polyvinyl Alcohol		
				SS = Silvershield		

SECTION 15: SAFE WORK PRACTICES

THE FOLLOWING PRACTICES MUST BE FOLLOWED BY PERSONNEL ON SITE

1. Smoking, eating, chewing gum or tobacco, or drinking are forbidden except in clean or designated areas.
2. Ignition of flammable liquids within or through improvised heating devices (e.g., barrels) is forbidden.
3. Contact with samples, excavated materials, or other contaminated materials must be minimized.
4. Use of contact lenses is prohibited at all times.
5. Do not kneel on the ground when collecting samples.
6. If drilling equipment is involved, know where the 'kill switch' is.
7. All electrical equipment used in outside locations, wet areas or near water must be plugged into ground fault circuit interrupter (GFCI) protected outlets.
8. A "Buddy System" in which another worker is close enough to render immediate aid will be in effect.
9. Good housekeeping practices are to be maintained.
10. Where the eyes or body may be exposed to corrosive materials, suitable facilities for quick drenching or flushing shall be available for immediate use.
11. In the event of treacherous weather-related working conditions (i.e., thunderstorm, limited visibility, extreme cold or heat) field tasks will be suspended until conditions improve or appropriate protection from the elements is provided.

Site Specific Safe Work Practices: ______________________________

SECTION 16: EMPLOYEE ACKNOWLEDGEMENTS

PLAN REVIEWED BY:

		DATE
Corporate Health & Safety:	______________________	__________
Regional H&S Coordinator:	______________________	__________
Project Manager:	______________________	__________
Project Leader:	______________________	__________

I acknowledge that I have read the information on this Site Safety Plan Short Form and the attached Material Safety Data Sheets (MSDSs). I understand the site hazards as described and agreed to comply with the contents of this Plan.

EMPLOYEE (print name)	SIGNATURE	DATE

5.0 PROJECT SCHEDULE

Table 5-1 presents the proposed project schedule for the PSA. The schedule assumes that the NYSDEC will require approximately three weeks to review and approve of the PSA Work Plan, and that the analytical data will be received from the laboratory within four weeks after shipment of samples. The schedule also assumes that an access agreement with the occupant of the adjacent hanger will be reached in a timely manner.

TABLE 5-1

PROPOSED PROJECT SCHEDULE

TASK	DESCRIPTION	START DATE	END DATE
PSA Work Plan	Preparation of PSA Work Plan in accordance with Consent Order	02/28/94	03/28/94
NYSDEC Review	NYSDEC Review of PSA Work Plan	03/28/94	04/15/94
Field Investigation	Collect subsurface soil samples at three soil borings, and HydroPunch groundwater samples at three soil borings	04/26/94	04/26/94
Laboratory Analysis	Standard 4-week turnaround for VOC analysis	04/27/94	05/25/94
Data Validation	Validate laboratory data	05/25/94	05/27/94
PSA Report	Prepare PSA Report in accordance with Consent Order	05/30/94	06/17/94
Meeting with NYSDEC	Meeting to discuss PSA Report	06/20/94	06/20/94