REMEDIAL INVESTIGATION/FEASIBILITY STUDY
WORK PLAN
MOBIL OIL CORPORATION
WESTCHESTER COUNTY AIRPORT
HARRISON, NEW YORK

MOBIL OIL CORPORATION
Environmental Health and Safety Department
P.O. Box 1031
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May 1996

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1030-065

MOBIL OIL CORPORATION
Westchester County Airport
Harrison, New York

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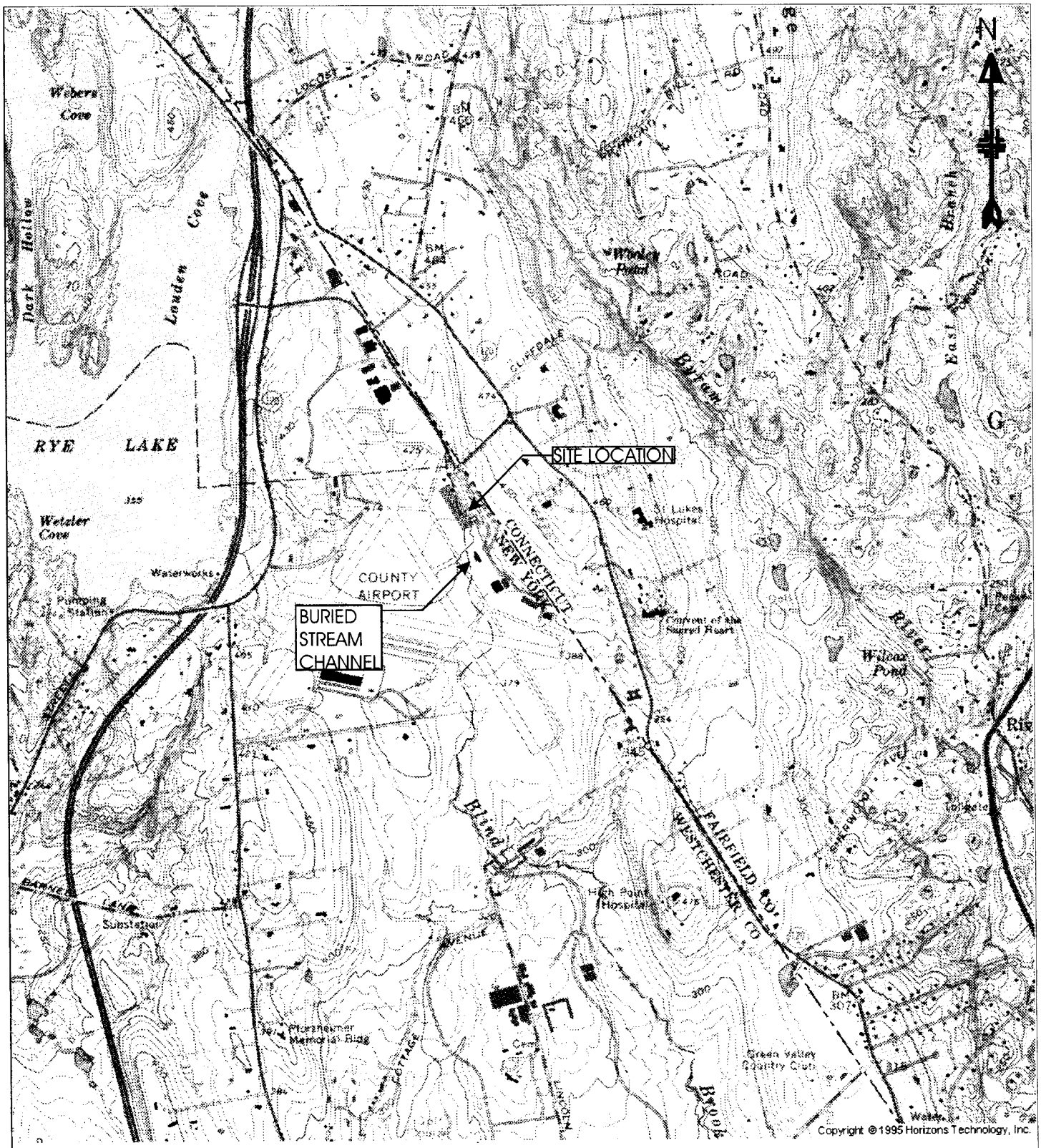
1.0 INTRODUCTION

1.1 Project Description

On March 21, 1996, Mobil Oil Corporation (Mobil) and the New York State Department of Environmental Conservation (NYSDEC) entered into an Administrative Consent Order requiring Mobil to implement a Remedial Investigation/Feasibility Study (RI/FS) at Hangar D, Bay 1 of the Westchester County Airport, Town of Harrison, New York (Figure 1-1). This hangar was formerly used by Mobil until the lease was transferred to Texaco, Inc. (Texaco) in 1990.

Because of the lease transfer, numerous environmental investigations have been implemented at the hangar. Results of these investigations show the presence of chlorinated hydrocarbons at concentrations in the soil and groundwater at concentrations above applicable NYSDEC standards. The suspected origin of the contamination appears to be in the vicinity where limited quantities of drummed chlorinated solvents were stored. The chlorinated solvents were used for routine airplane maintenance.

This RI/FS Work Plan represents the first step in the RI/FS process and is organized as follows: Section 1 presents an introduction; Section 2 presents the site conditions including the site history, site description, and physical setting; Section 3 contains the work plan rationale including the identification of Data Quality Objectives (DQOs) and the general approach to the Work Plan; Section 4 contains the proposed RI/FS scope of work; Section 5 presents a schedule of activities; and Section 6 contains the project management approach which describes the roles and responsibilities of the project personnel. This Work Plan also includes: a Sampling and Analysis Plan (SAP) that consists of a Quality Assurance Project Plan (QAPP) and a Field Sampling Plan (FSP), a Health and Safety Plan (HASP), and a Community Participation Plan (CPP).



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SOURCE:
GLENVILLE, CONN.-N.Y.
USGS QUADRANGLE
1960 PHOTOREVISED 1971

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MOBIL OIL CORPORATION
FORMER MOBIL HANGAR
WESTCHESTER COUNTY AIRPORT
SITE LOCATION MAP

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FIGURE 1-1

1.2 Purpose

This RI/FS Work Plan provides background information on the Former Mobil Oil Hangar D site and defines the level of effort and specific activities to be performed as part of the RI/FS. The purpose of this Work Plan is to describe the proposed work in sufficient detail to ensure that the RI/FS is conducted in accordance with applicable NYSDEC guidelines.

1.3 Scope

This RI/FS Work Plan includes the following components:

- The Remedial Investigation/Scope of Work describes proposed field investigation activities, sampling and analytical procedures, as well as site mapping and supplemental literature review.

- The project schedule identifies both the major milestones to be completed during the conduct of the RI/FS and estimates of the time required to perform project tasks.

- The project organization identifies the project team members and the proposed responsibility of each team member.

- The Quality Assurance Project Plan presents the policies, objectives, functional activities, and specific QA/QC activities that assure the quality and validity of data generated during the RI/FS. The Quality Assurance Project Plan is presented in Appendix A of this Work Plan.

- The Field Sampling Plan defines the sampling and data gathering methods. These methods are consistent with the Field Methods Compendium - OSWER

Directive 9285.2-11 (draft June 1993), as supplemented by the Department is also presented in Appendix A.

- The Health and Safety Plan addresses site-specific considerations for both on site personnel conducting the RI/FS as well as the community, including potential on-site hazards, decontamination procedures, and emergency procedures. The Health and Safety Plan is presented in Appendix B of this Work Plan.

- The Community Participation Plan identifies the repositories for site-specific information available for review. In addition, it provides a list of interested parties and background information for these parties. The Community Participation Plan is presented in Appendix C of this Work Plan.

2.0 SITE CONDITIONS

2.1 Background

In 1990, Mobil entered into discussions with Texaco relative to a transfer of Mobil's long term lease of Hangar D, Bay 1 at the Westchester County Airport. In response to the possible lease transfer, Texaco authorized the performance of a subsurface environmental investigation in and around the hangar. The results of the investigation revealed concentrations of total volatile chlorinated hydrocarbons (CHCs) up to 54 parts per million (ppm) in the soil beneath the concrete hangar floor, near a potential suspected source area. Based on this finding, Mobil agreed to conduct additional investigations which have been previously submitted to the NYSDEC. A summary of the two most recent assessments is provided.

In May 1995, a Preliminary Site Assessment (PSA) was implemented at the site. Groundwater samples were collected from three Power Punch probes located with Hangar D, Bay 1. In addition, three soil borings were drilled to the top of the water table within Hangar D, Bay 2. The results of this Assessment indicated that low levels 1,1-dichloroethane (1,1-DCA) and cis-1,2-dichloroethylene (cis-1,2-DCE) were detected below applicable NYSDEC standards in soil samples collected from the Hangar D, Bay 2 subsurface. However, concentrations of 1,1-DCA, 1,1,1-trichloroethane (1,1,1-TCA) and Cis-1,2-DCE were detected above applicable NYSDEC standards in each of the groundwater samples collected from the Power Punch probes located in Hangar D, Bay 1.

In November 1995, a PSA Supplement was implemented at the site. Groundwater samples were collected from nine Geoprobe boreholes and analyzed in the field using a portable gas chromatograph. Shallow bedrock was encountered at an additional six Geoprobe locations. Therefore, groundwater samples could not be collected from those locations. Results indicated that although elevated concentrations of volatile organic compounds were detected, the horizontal extent of contamination in the shallow groundwater was limited to a small area beneath Hangar D. It was concluded that the horizontal extent of

contamination had been adequately determined, as decreasing trends in contaminant concentrations that approached and/or were below NYSDEC standards were observed.

2.2 Site Description

The Westchester County Airport is located in the Town of Harrison, Westchester County, New York. The northeast boundary of the airport is adjacent to the Fairfield County, Connecticut border. Undeveloped woodlands are primarily located north, south and east of the airport property. Rye Lake is located west of the airport.

The airport began operations in 1952. Hangar D was also constructed in 1952. During the first 30 years of operation, the airport was managed by Gulf Oil under a long term lease with Westchester County.

Hangar D, Bay 1 was used by Mobil until 1990 as a base for corporate flight operations. The hangar space was used for routine aircraft maintenance. Other uses included technician labs, an electronics lab, and a small paint booth used only for touch-up painting. On-site facilities also included administrative offices, a pilot's briefing room, conference room, and an executive lounge.

2.3 Geologic Setting

Based upon the review of the United States Geologic Survey (USGS) topographic map Glenville Quadrangle (provided as Figure 1-1), it appears that a buried stream channel is located beneath the center and northeast side of the hangar. The stream channel generally trends north-south and terminates at Blind Brook, located immediately south of the airport and appears to have been the former headwaters of Blind Brook prior to airport construction.

Previous subsurface investigations appear to confirm the presence of the former stream channel. Soil borings and Geoprobes located between the center of the hangar and the northeast side of the hangar revealed fairly heterogenous subsurface soils probably

consisting of fill placed as part of the airport construction. This material consisted primarily of poorly sorted sand and silt with occasional pockets of cobbles to depths exceeding twenty feet. However, from the center of the hangar to the southwest side of the hangar, bedrock was encountered at depths ranging from one foot to eleven feet below grade. The presence of the fill material is consistent with the location and orientation of the stream channel as indicated on the USGS map.

The unconsolidated material overlies the Manhattan Schist. The Manhattan Schist is part of the Manhattan Prong Complex of rocks.

2.4 Hydrogeologic Setting

Little hydrogeologic information is available relative to the site since no permanent monitoring wells have been installed. However, based upon the contaminant distribution in the overburden fill material, it appears that the shallow groundwater follows the trend of the buried stream channel, flowing to the south-southeast. The depth to groundwater observed in the soil borings and Geoprobes was ranged from approximately 8 to 12 feet below ground surface.

3.0 WORK PLAN RATIONALE

3.1 RI/FS Objective

The primary objective of the Remedial Investigation (RI) is to provide a thorough characterization of the nature, fate, and transport of contamination originating at the site and to provide the necessary data to complete the Feasibility Study (FS). The objective of the FS will be to identify and evaluate the potential alternatives available to remediate the site, if appropriate. The FS will be used as the basis for selecting a final remedial alternative, if appropriate.

Specific objectives of the RI/FS include the following:

- Characterize the nature, fate and transport of the chlorinated hydrocarbons detected in the groundwater beneath Hangar D;
- Evaluate the concentrations of these constituents in terms of potential risk to human health or the environmental or that are in excess of levels permitted by Federal or State regulations; and
- Collect sufficient data, in terms of quality and quantity, to make a risk-based decision relative to the type (or appropriateness) of the remedial action best suited for this project and to determine site-specific cleanup goals.

3.2 Development of Data Quality Objectives

Data Quality Objectives (DQOs) are defined as qualitative and quantitative statements which the quality of the data require to support decisions regarding assessment or investigation activities. DQOs are determined based on the end uses of the data to be collected and, therefore, vary with each intended use.

The following data objective is identified for this RI/FS:

- Determine the nature (i.e. identification and concentrations) of the specific chlorinated hydrocarbon constituents in the soil and groundwater associated with the suspected source area.

Factors involved in assessing the level of chemical data quality include identifying appropriate analytical levels and appropriate detection limits. The following subsections describe the intended level of data quality for analytical levels and detection limits.

3.2.1 Analytical Level

The analytical data quality levels required for specific data uses and the type of analyses needed to achieve a particular quality level or 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** - Analyses performed in an off-site laboratory using standard documented procedures. Level III analyses may or may not use New York State Department of Health-Environmental Laboratory Approval Program (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 this RI/FS, Level I quality data will be collected for field screening of soil samples for volatile organic compounds 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 manufacturer will be used to calibrate each instrument at least once per day.

Groundwater samples submitted for laboratory analyses will be of Level IV data quality. Level IV data quality is sufficient to ensure that the data collected during the RI will be useful in meeting DQOs.

3.2.2 Detection Limit Objectives

The primary data for this RI/FS will be from Level IV analyses. The detection limits obtained from Level IV analyses are determined on a site-specific basis dependent upon the contaminants of concern and the relative concentrations. To the maximum extent practicable, detection limits for this RI/FS will be less than the appropriate NYSDEC Division of Water-Technical and Operational Guidance Series (TOGS 1.1.1) Ambient Water Quality Standards and Guidance Values dated November 1991.

3.3 Measurement of Data Quality Objectives

To measure and control the quality of analysis and to ensure that the DQOs are met, certain analytical quality assurance/analytical 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 appropriate TOGS 1.1.1 standard.

3.4 Work Plan Approach

To meet the RI/FS objectives as well as the Data Quality Objectives, a detailed Scope of Work has been developed and will be strictly adhered to during the implementation. This work includes:

- The drilling of four soil borings to facilitate the collection of soil samples for analysis of physical parameters and the installation of shallow groundwater monitoring wells;
- Collection of groundwater samples from the monitoring wells;
- Laboratory analysis of the groundwater samples for VOCs following EPA Method 8260; and
- Implementation of a Literature Review that will provide information regarding potential human or ecological receptors. This information will be useful to evaluate appropriate risk based remedial actions.

4.0 RI/FS SCOPE OF WORK

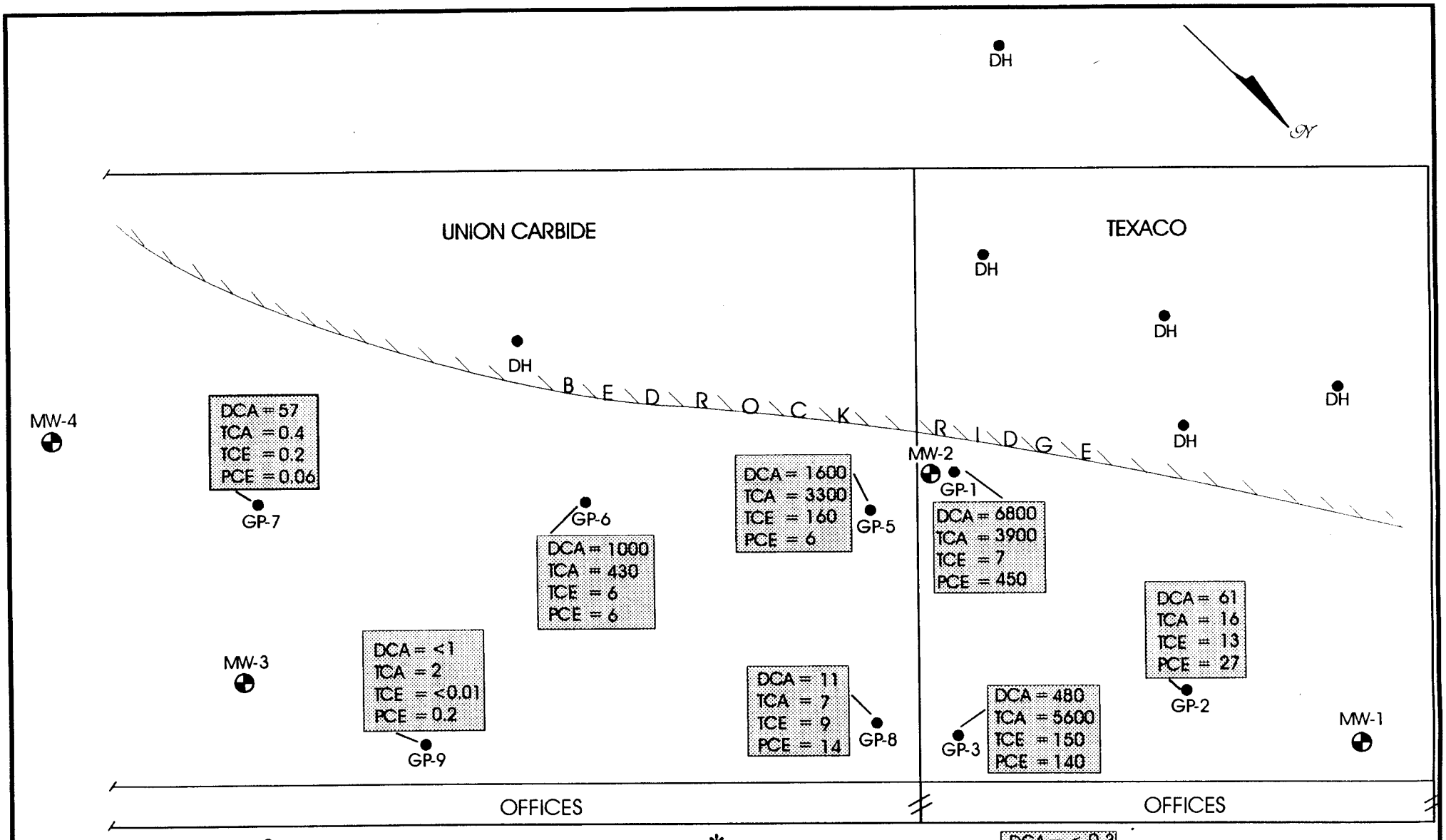
4.1 Groundwater Investigation

A groundwater investigation will be conducted as part of the RI field activities. The groundwater investigation will involve the installation and development of four overburden monitoring wells (Figure 4-1). Two rounds of groundwater samples will be collected from the wells.

The proposed locations of the monitoring wells have been situated so that monitoring well MW-1 will provide upgradient information; MW-2 will provide worst case groundwater contamination; and MW-3 and MW-4 will provide downgradient information.

The monitoring wells will be installed by advancing nominal 6-inch diameter boreholes. The boreholes will be drilled to the top of bedrock using hollow stem augers. The monitoring wells will be constructed of 2-inch diameter schedule 40 PVC screen and casing. The monitoring wells will consist of 5-feet of 0.01 slot screen with the remainder of the well consisting of casing. The screen length may be modified so that the screen bridges across the water table. Morie sand No. 1 or equivalent will be used as sand pack around the screens. The sand pack will extend 2 feet above the screen, whenever possible. The top of the sand pack will be sealed using a 3 foot layer of hydrated bentonite pellets. The remainder of the annulus will be sealed with cement grout. All monitoring wells will be completed as flush mount wells. The typical overburden monitoring well construction is shown on Figure 4-2. Upon completion, each monitoring well will be surveyed by a New York licensed surveyor to obtain a vertical and horizontal reference.

During the drilling of the boreholes, continuous split-spoon samples will be collected from the base of the concrete floor to the top of bedrock. Although the split spoon samples will be collected primarily for stratigraphic information, one saturated soil sample from each borehole will be submitted to a geotechnical laboratory for analysis of total organic carbon



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PROPOSED MONITORING WELL LOCATIONS

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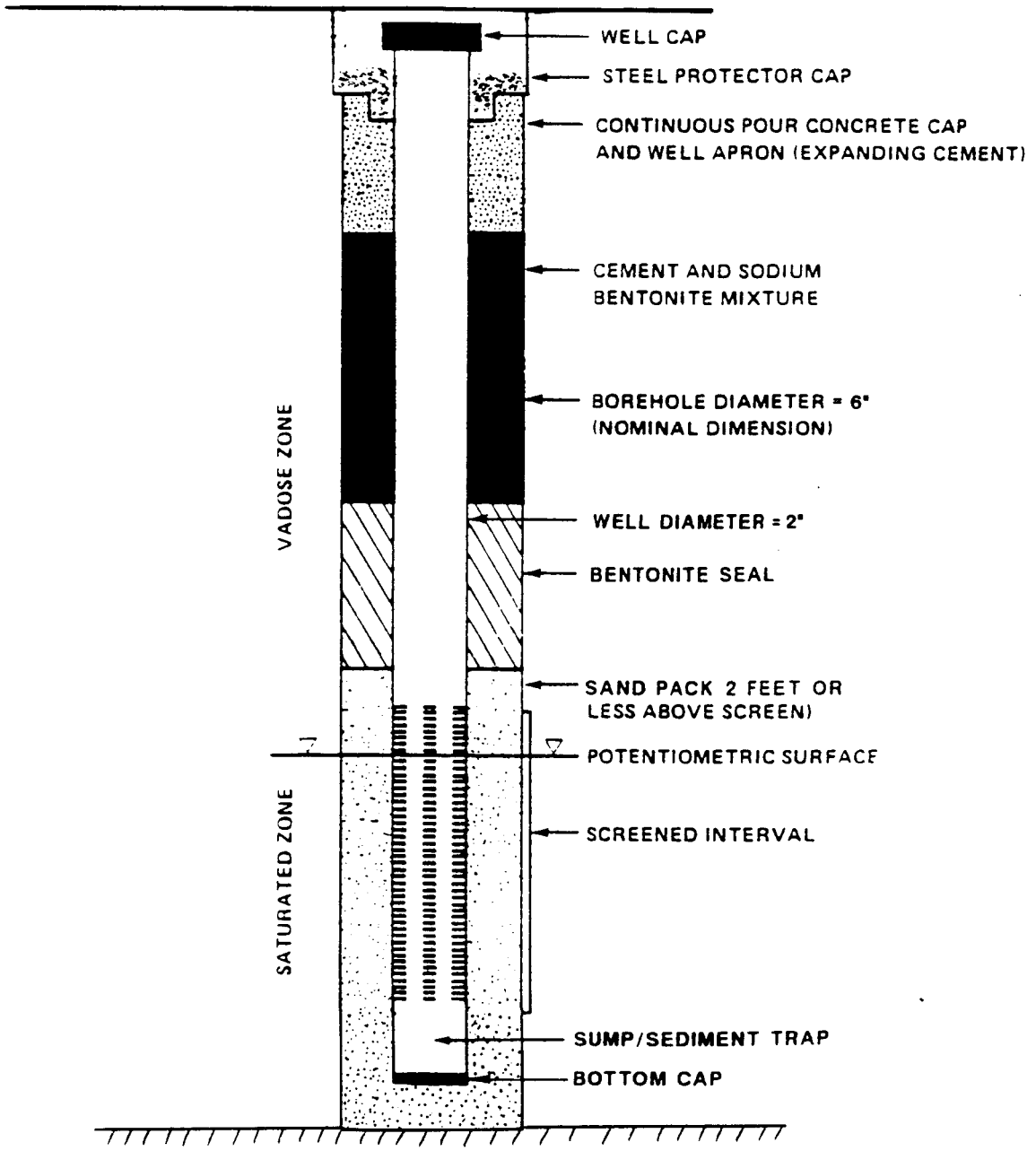
FIGURE 4-1



MALCOLM PIRNIE

FORMER MOBIL OIL CORP.
WESTCHESTER COUNTY AIRPORT
OVERBURDEN MONITORING WELL CONSTRUCTION

MALCOLM PIRNIE, INC.

FIGURE 4-2

(TOC), bulk density, and grain size distribution. This information will be used in the contaminant fate and transport analysis.

Upon completion, each monitoring well will be developed using a 2-inch diameter, stainless-steel submersible pump. The pump and electric cable will be properly decontaminated (Section 4.1.2) and dedicated discharge hose will be used. Well development will be considered complete after the turbidity of the development water is less than 50 nephelometric turbidity units (NTUs) or 1 hour, whichever occurs first.

Groundwater samples will be collected from each of the four wells, a minimum of two weeks after well development. Prior to sample collection, a synoptic round of groundwater level measurements will be obtained. A minimum of 3-5 times the standing water volume in each well will be evacuated. A sample of the well evacuation discharge water will be field tested for temperature, pH, turbidity and specific conductance.

Groundwater samples will be collected when 90 percent of the drawdown has recovered or within 2 hours, whichever occurs first. Dedicated, disposable polyethylene bailers will be used to collect the samples. All groundwater samples will be submitted to a NYSDEC-ELAP certified laboratory for chlorinated organic analysis following EPA Method 601 protocol. Each sample will be field tested for temperature, pH, turbidity, specific conductance, and dissolved oxygen. A second round of groundwater level measurements and groundwater samples will be obtained from the four monitoring wells, a minimum of 30 days after the first sampling round.

Slug tests will be completed in each of the four monitoring wells installed as part of this investigation. The slug tests will be performed as rising head tests, since the well screens will bridge the water table allowing some of the screen to be exposed to the vadose zone. The tests will be completed by removing a known volume of water using a centrifugal pump and dedicated polyethylene tubing equipped with a foot/check valve to prevent any water from re-entering the well when the pump is turned off. After the water level in the well has been lowered to within a foot of the bottom of the well, the pump will be turned off while

simultaneously starting the data logger. The data logger will be allowed to collect water level measurements, at a logarithmic frequency, until 90 percent of the drawdown has recovered to static conditions.

The data collected during the slug tests will be evaluated using either Bouwer and Rice, Cooper, Bredehoeft, and Papadopolous, or Hvorslev to yield a hydraulic conductivity of the material surrounding the well.

4.1.1 Sample Containers, Preservation and Holding Times

The laboratory will supply sample containers which are pre-cleaned and packaged according to USEPA and NYSDEC specifications. Precautions will be taken to avoid sample container contamination. The containers will be of sufficient number and volume to provide the amount of sample required for the analysis required. Groundwater samples collected for volatile organic analysis will be placed in 2 -40 ml glass vials with Teflon-lined septa lids.

Sample preservation commences with container preparation at the laboratory and will continue until analyses are performed. Groundwater samples collected for volatile organic analysis will be preserved with HCI to a pH<2. In addition, samples will be stored in a cooler with ice or frozen chemical ice packs immediately following collection to maintain a sample temperature of approximately 4°C.

The holding time of a sample is defined as the maximum allowable time between sample collection and analysis and/or extraction, based on the analyte of interest, stability factors, preservatives used, and sample matrix. Holding times are specified in USEPA SW-846 methods and in NYSDEC guidance documents. The holding time for volatile organic analysis of groundwater samples is 7 days.

4.1.2 Decontamination

All sampling equipment will be decontaminated to prevent cross-contamination of samples. The equipment will be decontaminated before entering the sample location, between

intrusive activities, and before equipment is removed from the site. All decontaminated equipment will be inspected prior to use by field personnel.

Any equipment used to collect water or soil samples for chemical analysis will be decontaminated following the procedures described (unless the equipment is dedicated for one time use):

1. Wash and scrub with nonphosphate detergent (alconox);
2. Rinse with tap water;
3. Rinse with methanol followed by hexane (pesticide grade or better);
4. Thoroughly rinse with distilled deionized water; and
5. Air dry.

Disposable gloves will be worn by the sampling personnel and changed between sampling events. 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.

4.2 Literature Review

Available information regarding potential nearby human or ecological receptors will be reviewed. These potential receptors may include municipal or private groundwater supply wells, surface water bodies, or other environmentally sensitive areas. A well inventory, among other relevant information, will be obtained from appropriate Town, county, and State officials. This information will assist in making a risk-based decision regarding the appropriateness of certain potential remedial alternatives and in the determination of site-specific cleanup goals.

4.3 Phase II Remedial Investigation

Based upon the results of the Phase I RI, it may be necessary to collect additional information to adequately evaluate the site characteristics and remedial alternatives. This may include bench or pilot-scale treatability studies of various technologies, the installation of additional soil borings or monitoring wells and the collection of additional groundwater or soil samples. If further remedial investigation activities are necessary a Phase II Remedial Investigation Work Plan will be developed and submitted to the NYSDEC. The performance of a Phase II Remedial Investigation, particularly implementing a treatability study, will impact the submission of the Feasibility Report. This potential impact is discussed further in Section 5.0.

4.4 Remedial Investigation Report

Upon completion of the Remedial Investigation, a Remedial Investigation Report will be prepared. The RI Report will present and document:

- Site History;
- Description of regional and site geology;
- Sample locations, dates, collection procedures, and observations made during field activities;
- Problems encountered while performing the work and actions taken to rectify those problems;
- Modifications to the approved Work Plan and why they were required;
- All detailed analytical results;
- Tabulated field analytical data;
- Boring logs and sample collection logs;
- Tabulated/graphed groundwater elevation data;
- Site maps showing the sampling locations, analytical results, and prepared geologic cross section lines;
- Inventory of wells in the area; and

- Raw data.

The RI sections will also provide an interpretation of the field data including:

- An assessment of the nature, fate and transport of contamination in subsurface soil and groundwater.
- An assessment of potential human health and environmental concerns.
- An interpretation of groundwater flow in the vicinity of the site and of potential factors that influence the distribution of groundwater contaminants.

4.5 Feasibility Study Report

Using the data generated during the performance of the RI, an engineering Feasibility Study (FS) will be performed. State Standards, Criteria, and Guidance Values (SCGs) for each contaminant detected will be identified and compared to the concentrations reported in each sample collected during the RI. Based upon this comparison, a list of potential remedial alternatives; if any, that may be used to remediate the site will be developed. Each of the listed potential remedial alternatives will be screened to evaluate the overall effectiveness, implementability and cost.

The analysis of each alternative will include a site plan; projected life of containment or treatment systems; and a projection of the extent to which the alternative achieves the response objectives. If necessary, modeling will be done to predict the performance of the alternatives. The analysis will evaluate the ability of each alternative to meet the following criteria:

- Overall protection of human health and the environment.
- Compliance with SCGs.
- Long term effectiveness and permanence.
- Reduction of toxicity, mobility, and volume.
- Short term effectiveness.

- Implementability.
- Cost efficiency.
- Community acceptance.

The FS report will include a discussion of each of these evaluation criteria for each of the remedial alternatives under consideration. The alternatives will be compared with each other. Also, the future use of the site will be addressed when comparing alternatives.

A recommendation of the preferred remedial alternative which is protective of public health and environment, complies to the maximum extent practicable with Applicable or Relevant and Appropriate Requirements (ARARs) and remediation objectives, reflects a preference for treatment as opposed to disposal and is cost effective, will be presented. A conceptual plan for implementation of the proposed remedy will be prepared. The Plan will include a site plan and, as appropriate, process flow diagrams, a proposed implementation schedule, equipment lists and a cost estimate.

5.0 PROJECT SCHEDULE

The proposed project schedule is summarized in Table 5-1.

Table 5-1 Mobil Oil Corporation RI/FS Project Schedule		
Activity	**Date**	**Elapsed Time**
1. Mobil/NYSDEC Sign ACO	3/21/96	
2. Submit Draft RI/FS Work Plan	5/28/96	67 days, as approved by the NYSDEC
3. Approval of Draft RI/FS Work Plan*	6/25/96	
4. Submit Final RI/FS Work Plan	7/9/96	10 days after RI/FS Work Plan Approval
5. Final RI/FS Work Plan Approval-Notice to Proceed*	7/29/96	
6. Site Mobilization/Begin Well Installation and Development	8/5/96	1 week after Notice to Proceed
7. Monitoring Well Sampling	8/26/96	2 weeks after well development
8. Completion of Field Work	8/27/96	
9. Receive Data	9/24/96	4 weeks after well sampling
10. Round II Monitoring Well Sampling	10/1/96	1 week after data receipt
11. Receive Phase II Data	10/29/96	4 weeks after well sampling
12. Submit Draft Scope of Phase II RI (if needed)	11/20/96	3 weeks after Phase II data receipt
The remainder of the schedule assumes no Phase II RI activities		
13. Submit Draft RI Report	11/25/96	8 weeks after data receipt
14. Approval of Draft RI Report*	1/6/97	
15. Submit Final RI Report	1/27/97	3 weeks after RI report approval
16. Initiate FS Report	2/3/97	
17. Submit Draft FS Report**	4/28/97	12 weeks after RI submission
18. Approval of Draft FS Report*	6/2/97	
19. Submit Final FS Report	6/30/97	4 weeks after FS Report Approval
20. Issue Record of Decision	8/25/97	

***Dates dependent upon NYSDEC review time.**
****Sufficient time must be allotted between the RI and FS submissions to allow for the potential design and performance of bench-scale treatability studies.**

6.0 PROJECT MANAGEMENT APPROACH

6.1 Project Team

Malcolm Pirnie has established a project team for the Former Mobil Oil Hangar D RI/FS whose collective qualifications and experience are strongly suited for the successful completion of the project. The proposed responsibilities of the key staff are summarized below:

Michael van der Heijden will be the Project Manager for the work. In this capacity, Mr. van der Heijden will be responsible for the successful completion of each task including coordination and supervision of engineers and scientists, and adherence to the approved scope, schedule and budget.

Charles W. Trione will be the Project Leader and will be responsible for the development of work plans, coordination of subcontractors, implementation of the RI, and the interpretation and presentation of the data. As part of Mr. Trione's responsibilities, he will:

- Maintain all quality assurance policies that pertain to sampling, sample shipment, environmental monitoring, field activities and record deliverables.
- Direct all field activities.
- Direct the preparation of the RI/FS Report

John Isbister, CPG, will serve as Technical Director and will be responsible for independent technical review of the project.

Terrance R. Haelen, Quality Assurance Officer, will work with the project manager to develop a site-specific quality assurance plan. He will conduct periodic field and sampling audits as needed, interface with the analytical laboratory to make requests and resolve

problems, interface with the data validation and develop a project specific data usability report.

6.2 Resumes

Resumes of the members of the project team have been previously submitted to the NYSDEC as part of our existing stand-by contract with NYSDEC.

Appendix A

Sampling and Analysis Plan

Appendix A
Part 1

Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)

MOBIL OIL CORPORATION
HANGAR D
WESTCHESTER COUNTY AIRPORT
HARRISON, NEW YORK

Prepared for:
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Environmental Health and Safety Department
Princeton, New Jersey 08543-1031

May 1996

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QUALITY ASSURANCE PROJECT PLAN FOR REMEDIAL INVESTIGATION
MOBIL OIL CORPORATION

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1.0 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan (QAPP) presents, in specific terms, the policies, organizations, objectives, functional activities, and specific QA and quality control (QC) activities designed to achieve the data quality goals of the Former Mobil Oil Hangar D Remedial Investigation/Feasibility Study (RI/FS). This plan describes the elements that are considered to be an essential part of a QA Plan as defined by the USEPA Office of Research and Development. These elements and their location in this document are summarized in Table 1-1.

The QA applicable to both the field sampling activities and the laboratory analysis of these samples is addressed in this document. Laboratory analyses and QA/QC procedures will be in a accordance with 1991 NYSDEC ASP Category B Protocol. A New York State Department of Health - Environmental Laboratory Approval Program certified laboratory will be used to analyze the samples collected during the RI task.

1.1 QUALITY ASSURANCE OBJECTIVES

The QA sample collection and analysis objectives are stated in terms of precision, accuracy, completeness, representativeness and comparability.

1.1.1 Accuracy and Precision

The QA objective for accuracy and precision of laboratory analytical data is in compliance with the specific requirements for these criteria defined in the NYSDEC ASP Category B Protocol. Accuracy will be determined on the basis of blank sample analysis and surrogate recoveries from spiked samples. Precision will be determined in terms of the coefficient of variance based on duplicate sample analysis.

1.1.2 Completeness

The QA objective for completeness is to collect and analyze all environmental samples in a manner such that valid data is obtained from 100% of the samples. Achieve-

TABLE 1-1

QUALITY ASSURANCE PLAN CHECKLIST

	QA Plan Element	Location
(1)	Title page with provision for approval signatures	Front Sheet
(2)	Table of contents	Table of Contents
(3)	Project description	Work Plan Section 1.0
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(7)	Sample custody	Section 1.3
(8)	Calibration procedures and frequency	Section 1.4
(9)	Analytical procedures	Section 1.5
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(11)	Internal quality control checks and frequency	Section 1.7
(12)	Performance and system audits and frequency	Section 1.8
(13)	Preventive maintenance procedures and schedules	Section 1.9
(14)	Specific routine procedures to be used to assess data precision, accuracy and completeness of specific measurement parameters involved	Section 1.10
(15)	Corrective action	Section 1.11
(16)	Quality assurance reports to management	Section 1.12

ment of this objective will rely on the use of strict sample identification and custody procedures, use of standard reference materials, proper instrument calibration and maintenance, analysis of quality control samples, performance audits, and corrective action when QC acceptance criteria are exceeded.

1.1.3 Representativeness

An objective of the RI sampling task program is the collection of samples that are representative of the matrix (i.e., groundwater, soil, etc.) from which they were collected. Achievement of this objective will rely on the use of sampling procedures, as described in Section 4.0 of the RI/FS Work Plan and in the Field Sampling Plan (FSP), that have been designed with the goal of obtaining representative samples.

1.1.4 Comparability

The QA objective for comparability is the generation of site characterization data that can be used to make valid comparisons with other data that may be generated in the future at this or other sites. The objective also involves the analysis of the environmental samples collected during the RI task in a manner that produces results comparable to the results that would be obtained by another laboratory using the same analytical procedure. This objective is achieved by the use of standard materials traceable to the National Bureau of Standards; the use of accepted procedures for well installation, sample collection and analysis, etc.; and analysis of quality control samples to validate the analytical results.

1.1.5 Data Usability

The method for evaluating data usability will be in general accordance with the procedures outlined in the USEPA publication "Guidance for Data Usability in Risk Assessment Interim Final." Malcolm Pirnie will evaluate the usability of the data based on the following criteria:

- Documentation
- Data Sources

- Analytical Methods
- Data Review
- Data Quality Indicators (completeness, comparability, representativeness, precision and accuracy)

1.2 SAMPLING PROCEDURES

The procedures that will be used for the collection, handling, preservation and analysis of samples are presented in Section 4.0 of the RI/FS Work Plan and in the FSP.

1.3 SAMPLE CUSTODY

Immediately following sample collection, each sample container will be marked with the following information:

- Sample Code
- Project Number
- Date/Time
- Sample Type
- Sampler's Initials

The sample code will indicate the site location, media sampled, and sample station.

After sample identification information has been recorded, the sample will be prepared for shipment to the off-site laboratory. All samples will be delivered to the laboratory 24 to 48 hours from the date of collection. Each sample sent to the off-site laboratory label will be covered with waterproof clear plastic tape to preserve its integrity. Samples will be recorded and tracked under strict chain-of-custody protocols. In the field, each sample will be sealed and checked for proper labeling. Samples will then be packed into coolers with ice and shipped to the laboratory. The Chain-of-Custody form will be signed and dated by the person who collected the samples, the person the samples were relinquished to for transport to the laboratory, and the laboratory sample controller/custodian

who receives the samples. Sample labeling and sample shipping/custody procedures are described in Attachment 1 to this QAPP.

1.4 CALIBRATION PROCEDURES AND FREQUENCY

The field instruments that will be used to make measurements in the field during the field investigation are the following:

- Field pH meter
- Field conductivity meter
- Hnu photoionization analyzer (10.2 eV lamp)
- Turbidity meter

The procedures that will be used to calibrate and maintain these instruments are presented in Attachment 1 to this QAPP.

Laboratory instrument calibration requirements for sample analyses are specifically defined by the NYSDEC 1991 ASP Category B Protocol.

1.5 ANALYTICAL PROCEDURES

The procedures that will be used for chemical analysis of the environmental samples collected during the RI task are presented in Section 4.0 of the RI/FS Work Plan.

1.6 DATA REDUCTION, VALIDATION AND REPORTING

1.6.1 Field Activities

The results of certain field measurements, observations, and associated calculations will be recorded on standard forms. Examples of the types of information recorded on standard forms are:

- Soil borings logs and well construction details; and
- Collection of environmental samples (i.e., groundwater and soil)

During all activities, the following general information will be recorded in each log book or field log:

1. Date
2. Crew members
3. Meteorological conditions
4. Brief description of field activities conducted for date indicated
5. Location where work is performed
6. Problems encountered and corrective actions taken
7. Field measurements or descriptions made
8. Modifications made to Work Plan

The following additional information will be recorded during drilling activities:

1. Drill rig type used
2. Documentation of types and quantities of materials used
3. Record downtime and the periods of time that work is performed at the various levels of personnel protection (i.e., level B, C, or D)
4. Description of soil or rock strata encountered
5. Diagram of well construction

The following information will be recorded by the sampling team leader and/or field technicians during the collection of samples:

1. Sample locations and summary of samples collected
2. Completeness of the sampling effort (e.g., were all the samples collected that were intended to be collected and if not, what were the reasons?)
3. Chain-of-custody information
4. Results of field measurements
5. Results of field instrument calibrations

Original forms and field notebooks will be placed in the project record file that will be maintained at the Engineer's Mahwah office.

Data Quality Objectives will be facilitated by maintaining adherence to the RI/FS Work Pln, QAPP, and the FSP.

1.6.2 Laboratory Analysis

The laboratory procedures for data reduction, validation and reporting for all chemical parameters include those listed in the particular SW-846 methodology and will be in accordance with the specific requirements identified in NYSDEC ASP Category B.

1.7 INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

Quality control sample analyses that will be performed during this project to document the acceptability of the data will include the following:

- Trip blank
- Method blank

The frequency of QC sample analysis for all analyses will be in accordance with the particular methodology requirements as summarized below.

Trip blanks will accompany sample bottles into the field and be returned to the off-site laboratory with the samples collected. One (1) aqueous trip blank will be collected and analyzed for volatile organics each day that samples to be analyzed for volatiles by the off-site laboratory are collected in the field. Preparation of trip blanks will involve the placement of analyte-free laboratory water into appropriate precleaned sample bottles. The trip blank will accompany the groundwater samples during shipment from the site to the laboratory. No soil/sediment trip blanks will be obtained.

The off-site laboratory will prepare and analyze one (1) laboratory reagent blank (method blank) for each group of samples of similar matrix (e.g., water, soil), processed by a similar method (e.g., separatory funnel or continuous liquid-liquid extraction, acid digestion, etc.), at the beginning of the day and after every 10 samples.

Quality control sample analytical results will be reported on standard forms in conjunction with data acceptance criteria. The acceptance criteria applicable to this project are specified by the NYSDEC ASP Category B protocol and are summarized on Table 1-2.

1.8 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits that will be conducted at a minimum to ascertain the potential of all analytical measurements systems to generate data that are representative, valid, and meet completeness requirements will be described in the subcontracted laboratory's QA/QC Plan.

1.9 PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES

1.9.1 Field Equipment

Maintenance procedures that will be employed to assure the proper operation of all field equipment is presented in Attachment 1 to this QAPP.

1.9.2 Laboratory Equipment

Preventive maintenance performed on critical laboratory instruments wil be described in the subcontracted laboratory's QA/QC Plan.

1.10 QUALITY CONTROL OF DATA

A number of general and specific measures will be employed to ensure that the analytical data produced during this project are generated within known and acceptable limits of accuracy and precision. Control measures will include the following:

- Proper cleaning of sample containers.
- Sample bottles for ASP-CLP analysis shall be of traceable quality.
- Use of formal written sample labeling, logging and chain-of-custody.

TABLE 1-2

QUALITY CONTROL ANALYSIS AND THE ACCEPTANCE CRITERIA FOR THE ON-SITE LABORATORY

1. **Initial Calibration** - A 3-point initial calibration will be conducted on the analytical system prior to project initiation. The instrument will be calibrated and the correlation coefficient (r) checked for each analyte. For all analytes detected the (r) value is required to be greater than 0.990 or recalibration will be performed.

2. **Internal Standards Performance** - An internal standard will be conducted at the beginning of each day. The internal standard area count will not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard will not vary more than ±30 seconds from the associated continuing calibration standard. Any values outside the control limits will be noted on the QC forms.

3. **Calibration Check Standards** - At the beginning of each day, after every 10 samples and at the end of each day a mid-point calibration check standard will be analyzed to verify that the analytical sensitivity did not change from the initial calibration. After running this standard the analyst will calculate the % Recovery (%R) value for each analyte and compare it to the 75-125% criteria. Any %R value outside the control limits will be noted on the QC form. If significant variances are observed, the system will be recalibrated.

4. **Contract-Required Detection Limit (CRDL) Standards for ICP and AA** - An ICP standard will be analyzed at a concentration two (2) times the CRDL [or at the CRDL for AA] or two times the instrument detection limit, whichever is greater. The standard will be analyzed at the beginning and end of each sample analysis run, or a minimum of twice per eight (8) hour shift, whichever is more frequent.

5. **QC Standards** - A QC standard will be analyzed on a daily basis and used to verify the accuracy of the calibration standards. The QC standard will be a standard from a second source, other than the calibration standards. %R values will be calculated and compared to the 75-125% criteria.

6. **ICP Interference Check Sample (ICS)** - An ICS will be analyzed at the beginning and end of each analytical run (or a minimum of twice per eight-hour work shift). The ICS consists of two solutions, A and AB. Solution A contains the interferents and solution AB contains the analytes mixed with the interferents. The solutions will be analyzed consecutively.

7. **Method Blanks** - A sample of analyte-free water will be processed at the beginning of the day and after every 10 sample analyses to verify that the analytical system is contaminant-free. Concentrations of detected analytes must be less than half the method detection limit. Low concentrations of contaminants that have been detected in the blank are labeled with a "B". Significant contaminant levels necessitate corrective action, i.e. cleaning of the instrument.

8. **Surrogate Standards** - Surrogate standards will be added to all samples, standards and blanks to measure the potential for matrix interferences. %R values will be calculated (appear in comments section of the data pages) and compared to the 80-120% criteria. Small deviations are marked as outside control limits while large deviations will necessitate reanalysis.

9. **Duplicates** - Ten percent (10%) of all samples will be analyzed in duplicate on a daily basis to determine the precision of the analyses. Relative Percent Difference (RPD) values will be calculated and compared to the 30% acceptance limit. Values over this level require corrective action if significant, otherwise they are highlighted as outside QC limits.

TABLE 1-2 (Continued)

QUALITY CONTROL ANALYSIS AND THE ACCEPTANCE CRITERIA FOR THE ON-SITE LABORATORY

10. **Matrix Spike Analyses** - Ten percent (10%) of the samples analyzed on each day will be spiked with a standard and %R values calculated. The %R values are compared against the 75-125% criteria.

11. **Laboratory Control Sample (LCS) Analysis** - An aqueous LCS will be prepared and analyzed for every group of aqueous and soil samples in a sample delivery group, or for each batch of samples digested, whichever is more frequent. The % recovery must fall within the control limits established by the EPA. If the % recovery does not meet criteria, the laboratory will take corrective action such as analyzing another LCS after instrument adjustment.

12. **Furnace Atomic Absorption (AA) QC Analysis** - All furnace AA analyses (As, Se, and Ph) will be duplicate injections. The duplicate injection results must agree within 20% RSD. If the results do not agree within 20% RSD, the sample will be rerun. In addition, a post-digestion spike will be run for each sample. The recovery of the analyte in each post-digestion spike will be within the control limit (85-115%). If the recovery of the analyte is outside of this criteria, the analyte will be quantitated using the Method of Standard Addition (MSA), depending on sample absorbance. If the sample absorbance is >50% of the post-digestion spike absorbance and the spike recovery is outside the 85-115% control limit, the sample result will be calculated using MSA.

- Use of USEPA-accepted methods for sample preservation.
- Use of laboratory reagents that meet or exceed American Chemical Society "Analytical Reagent Grade" quality standards.
- Use of laboratory water that meets or exceeds quality standards for Type I water.
- Use of pesticide grade solvents for sample extractions.
- Use of high purity or ultra high purity gasses for gas chromatographic procedures.
- Proper cleaning of laboratory glassware.

These measures will be addressed in the subcontracted laboratory's QA/QC Plan.

Specific QC measures will involve the analysis of QC samples and reporting of results in conjunction with applicable acceptance criteria. The QC sample analyses that will be performed are discussed in Section 1.7.

1.11 CORRECTIVE ACTION

Whenever calibration checks of field or laboratory instruments fail to compare with initial calibrations and/or laboratory data precision and/or accuracy acceptance limits are exceeded, corrective actions will be implemented. These actions will include:

- Recalibration or standardization of instruments
- Acquiring new standards
- Repairing instrumentation
- Replacing instruments that cannot be repaired
- Reanalyzing samples for which unacceptable or suspect analytical results were obtained.

If problems are encountered which require corrective action, these problems will be addressed and resolved before additional samples are analyzed in order to minimize the quantity of re-analyses required.

1.12 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Periodically during the performance of this investigation, field and laboratory personnel will be required to report the performance of all measurement systems to management. Field personnel will report to the Engineer's QA/QC Officer. Laboratory personnel reporting requirements will be defined in the lab's QA/QC Plan.

The frequency of reporting will be daily or weekly as appropriate during the period of time that measurements are being made in the field and/or laboratory. Reporting of measurement system performance will generally be verbal. However, if a problem requiring corrective action is encountered, a formal written report will be prepared. If a QC problem arises in the laboratory, the laboratory operation manager will immediately contact the Engineer's QA/QC Officer to discuss an appropriate corrective action. Whenever a laboratory QA/QC problem requiring corrective action rises, the laboratory operation manager will prepare a formal written report to document the nature of the QA/QC problem and the corrective action(s) taken to resolve the problem. This report will be submitted as soon as possible to the Engineer.

Any deviations from the analytical protocols in this work plan must have prior approval by the NYSDEC Project Manager, Keith Browne, or the designated NYSDEC Quality Assurance Officer. Malcolm Pirnie's Quality Assurance Officer is responsible for monitoring that the laboratory maintains NYSDOH ELAP Category B and general certification for the analysis required for this project.

Attachment 1

Quality Assurance Project Plan
Supporting Documentation

Appendix C: Item 12 - SAMPLE SHIPPING

Applicability: GENERAL Revision No.: 2 Date: 02/21/89

Prepared By: THF Date: 11/9/89 Approved By: KLB Date: 10/10/89

1.0 INTRODUCTION

This guideline presents a method for chain-of-custody procedures to track sample shipments, to minimize loss or misidentification of samples, and to ensure that unauthorized persons do not tamper with collected samples.

2.0 METHODOLOGY

1. Fill out the chain-of-custody form completely (see attached example) with all relevant information (the white original goes with the samples and should be placed in a "ziploc" plastic bag and taped inside the sample cooler lid; the yellow copy should be retained by the sampler).

2. Mark liquid volume and solids levels on sample bottles with grease pencil.

3. Place about 3 inches of inert cushioning material such as styrofoam peanuts or bubble pack in bottom of cooler. Place bottles in cooler with VOA vials (in a "ziploc" bag) in the center of the cooler.

4. Cover pack bottles, especially VOA vials, with ice in plastic bags. Pack cooler with blue ice in "ziploc" plastic bags and additional cushioning material.

5. Tape drain shut and wrap cooler completely with strapping tape to secure lid.

6. Place lab address on top of cooler. To protect the shipping coolers against tampering during shipment, the cooler lid will be taped to the cooler body. A chain-of-custody seal will be placed over the tape. A broken seal will indicate that the contents may have been tampered with.

7. For out-of-town laboratory shipments, specify that the contents are "Fragile" and place "This Side Up" labels on all four sides of the cooler. "This Side Up" labels are yellow labels with a black arrow with the arrow head pointing toward the cooler lid. "This Side Up" labels should not be affixed to the cooler lid or the cooler bottom.

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MALCOLM PIRNIE, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.:	SITE NAME:
SAMPLERS (SIGNATURE):	

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS							REMARKS

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE/TIME:	REMARKS:	

Distribution: Original accompanies shipment; copy to coordinator; field copy

Appendix C: Item 13 - SAMPLE LABELLING

Applicability: GENERAL Revision No.: 1 Date: 11/9/89

Prepared By: THF Date: 11/9/89 Approved By: KLB Date: 10/10/89

1.0 INTRODUCTION

This guideline presents a method for sample labelling in order to properly identify environmental samples collected during the field investigation.

2.0 METHODOLOGY

1. Assign each sample of each matrix a unique identification alpha-numeric code. An example of this code and a description of its components is presented on the following page.

2. Affix a non-removable (when wet) label to each sample container. The following information should be written on the label with permanent marker:

   - Site name
   - Sample identification
   - Project number
   - Date/time of sample collection (month, day, year)
   - Sampler's initials
   - Sample preservation
   - Analysis required

3. Wrap the label with 2-inch cellophane tape such that the label is completely covered and the tape wraps around the entire perimeter of the bottle.

Appendix C: Item 13 - SAMPLE LABELLING

Applicability: GENERAL Revision No.: 1 Date: 11/9/89

Prepared By: THF Date: 11/9/89 Approved By: KLB Date: 10/10/89

Example of Sample ID: XX-MW1D

XX
(Site Code)

D
(Monitor/Sample Type)

(S) Shallow

(I) Intermediate

(D) Deep

MW1
(Sample Location)

MW = Ground Water Installation (Well Location No. 1)

SP = Sampling Point

SW = Surface Water

SB = Soil Boring (depth designation follows alpha code)

SS = Stream Sediment (water depth designation follows alpha code).

TB = Trip Blank

RB = Field (Rinse) Blank

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Appendix C: Item 15 - CALIBRATION AND MAINTENANCE OF HNu PHOTOIONIZATION ANALYZER

Applicability: HAZARDOUS Revision No.: ___ Date: _____

Prepared By: THF Date: 10/31/89 Approved By: KLB Date: 11/1/89

1.0 INTRODUCTION

This procedure presents a method for calibration of the HNu PI 101 Photoionization Analyzer. The HNu PI 101 is a portable instrument used to detect, measure, and provide a direct reading of a variety of trace gases in the atmosphere. In order to ensure an accurate reading, the HNu must be calibrated prior to use in the field and at regular intervals while in the field.

2.0 ACCURACY

The HNu PI 101 is temperature compensated so that a 20°C change in temperature corresponds to a change in reading of less than two percent full-scale at maximum sensitivity. The useful range of the instrument is from 0.2 to 2000 ppm with an accuracy of 0.1 ppm. Response time is less than three seconds to 90 percent of full-scale.

3.0 CALIBRATION

All field test equipment will be calibrated at the beginning of each sampling day and checked and recalibrated according to the manufacturer's specifications [6NYCRR 360-2.11(a)(12)(v)(a)].

The meter will be calibrated using a cylinder of pressurized gas certified by a reputable supplier. The calibration gas will be in the same matrix in which the measurements will be taken. The span pot will be adjusted so the instrument will read the exact value of the calibration

gas. For a HNu factory-calibrated by benzene, the calibration will be made using bottled "span gas" supplied by HNu.

4.0 MAINTENANCE

1. If any of the following conditions occur, consult the trouble-shooting guide provided in the Instruction Manual:

   a. No meter response in any switch position (including BATT CHK).
   b. Meter response in BATT CHK, but reads zero or near zero for all others.
   c. Instrument reads correctly in BATT CHK and STBY, but not in measuring mode.
   d. Instrument responds in all positions, but signal is lower than expected.
   e. Erratic meter movement occurs.
   f. Instrument response slow or irreproducible.
   g. Low battery indicator.

2. Should the trouble shooting techniques fail to resolve the problem, the Equipment Maintenance Officer will send the instrument to the manufacturer for repair and maintenance.

3. Clean the light source window every four weeks during periods of continued use.

4. Check the meter battery at the beginning and end of each day. If the needle is not within or above the green battery arc on the scale-plate, recharge the battery prior to making any measurements.

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Appendix C: Item 11c - CALIBRATION AND MAINTENANCE OF PORTABLE FIELD pH/Eh METER

Applicability: GENERAL Revision No.: ___ Date: _____

Prepared By: THF Date: 12/22/89 Approved By: KLB Date: 12/22/89

1.0 INTRODUCTION

This guideline presents a method for calibration of a portable pH/Eh meter. The pH/Eh meter measures and provides a log scale reading of the hydrogen ion concentration of a water sample (pH function) or of the oxidation/reduction potential of a water sample (Eh function). In order to ensure an accurate reading, the pH/Eh meter must be calibrated prior to use in the field.

2.0 ACCURACY -

The calibrated accuracy of the pH/Eh meter will be:

pH - 0.1 pH unit, over the temperature range of -2°C to 40°C.

Eh - -1 to +1 millivolts over the range of -700 to +700 millivolts.

3.0 CALIBRATION

Calibrate all field test equipment at the beginning of each sampling day and check and recalibrate according to the manufacturer's specifications. Calibrate the pH/Eh meter by immersing the sensing probe in a container of certified pH buffer solution traceable to the National Bureau of Standards, and compare the meter reading to the known value of the buffer solution, which is stirred. If the reading obtained by the meter does not agree with the known value of the buffer solution, adjust the "standardize" control until the desired reading is obtained. In addition,

measure the temperature of the buffer solutions, and adjust the temperature setting of the meter accordingly. Typically, pH 4.0, 7.0 and 10.0 buffers will be used for calibration purposes. Two-point calibrate the meter in the field at the beginning and end of each group of measurements. Select the two points to bracket the range of expected field measurements. The narrowest range possible is desired to maximize accuracy. This procedure will apply to both the pH and Eh functions of the meter, since there is no need to standardize the Eh function to any additional buffer or to compensate for solution temperature.

4.0 MAINTENANCE

1. When not in use or between measurements, keep the pH/Eh probe immersed in or moist with buffer solution.

2. Check the meter batteries at the end of each day and recharge when needed.

3. Replace the pH/Eh probe any time that the meter response time becomes greater than two minutes or the metering system consistently fails to retain its calibrated accuracy for a minimum of ten sample measurements.

4. If a replacement of the pH/Eh probe fails to resolve instrument response time and stability problems, the equipment officer will send the instrument to its manufacturer for maintenance and repair.

5. Maintain a log for each monitoring instrument. Record all maintenance performed on the instrument on this log with date and name of the organization performing the maintenance.

Appendix C: Item 16 - CALIBRATION AND MAINTENANCE OF PORTABLE FIELD pH/Eh METER

Applicability: GENERAL Revision No.: ___ Date: _____

Prepared By: THF Date: 12/22/89 Approved By: KLB Date: 12/22/89

5.0 DATA VALIDATION

Document all instrument calibrations in the field notebook, indicating the meter readings before and after the meter has been adjusted. Also document the pH buffers used to calibrate the meter. This is important, not only for data validation, but also to establish maintenance schedules and component replacement.

Appendix C: Item 17 - CALIBRATION AND MAINTENANCE OF PORTABLE CONDUCTIVITY METER

Applicability: GENERAL Revision No.: 1 Date: 12/29/89

Prepared By: THF Date: 12/29/89 Approved By: KLB Date: 12/29/89

1.0 INTRODUCTION

This guideline presents a method for checking the calibration of a portable field conductivity meter. The conductivity meter is factory calibrated and measures and provides a direct reading of the conductivity of a water sample. In order to ensure an accurate reading, the calibration of the conductivity meter must be checked prior to use in the field.

2.0 ACCURACY

The calibrated accuracy of the specific-conductance meter is within three percent of full-scale over the temperature range of -2°C to 40°C.

3.0 CALIBRATION

The instrument has been calibrated by the manufacturer according to factory specifications. All test equipment must be field checked at the beginning of each sampling day [6NYCRR 360-2-11(a)(12)(v)(a)] using a calibration solution having a known specific conductivity and salinity. Check the factory calibration by immersing the sensor probe in a container of manufacturer-prepared standard solution of known specific conductivity. Turn the meter on and allow approximately 30 seconds for response. If the reading obtained does not agree with the known specific conductivity of the solution, proceed as follows:

- Turn the instrument off, and mechanically zero the meter in accordance with the instruction manual (if possible).

- Turn the instrument on and check the battery power. If necessary, place the meter on charge for several hours.

- Clean and dry the probe thoroughly. With the probe not in the solution, turn the meter on and adjust the range selector to the lowest range available. The meter reading should be within two minor divisions of zero. If the response is outside this range, return the meter to the manufacturer for repair.

- Place the electrode in the manufacturer-prepared solution of known salinity. Adjust the "salinity" control to match that of the standard solution.

- If the above steps fail to adequately calibrate the meter, consult the manufacturer.

4.0 MAINTENANCE

1. Check the meter batteries at the end of each day and recharge when needed.

2. Track the meter response time and stability to determine the need for instrument maintenance. When response time becomes greater than two minutes and the meter must be recalibrated more than once per day, send the instrument to the manufacturer for maintenance and repair.

3. Maintain a log for each specific-conductance meter. Record all maintenance performed on the instrument on this log with date and name of organization performing the maintenance.

5.0 DATA VALIDATION

Document all instrument calibration checks, indicating the meter readings before and after the meter has been adjusted. The standard solution used to calibrate the meter will also be documented.

Appendix C: Item 18 - CALIBRATION AND MAINTENANCE OF PORTABLE FIELD TURBIDITY METER

Applicability: GENERAL Revision No.: ____ Date: _____

Prepared By: THF Date: 2/9/90 Approved By: KLB Date: 2/9/90

1.0 INTRODUCTION

This procedure presents a method for calibration of the HACH Model 16800 portable field turbidity meter. The turbidity meter is used to measure and provide a direct reading of the cloudiness or clarity of water samples. The turbidity meter is factory calibrated. In order to ensure an accurate reading, the factory calibration must be checked prior to using the meter in the field.

2.0 ACCURACY

The calibrated accuracy of the turbidity meter will be within one percent of full-scale on all scale ranges.

3.0 CALIBRATION

All factory calibrated field test equipment must be checked at the beginning of each sampling day and recalibrated (if necessary) according to the manufacturer's specifications (Ref. 1). Check the factory calibration of the turbidity meter as follows:

1. With the instrument turned off, check the mechanical zero adjustment on the meter face. Adjust for a zero reading if necessary.
2. Turn the meter on and perform a battery check. Charge the batter pack if the meter indicates low battery charge.

3. Place the focusing template into the cell holder, press the 1.0 range switch, and adjust the ZERO control to obtain a zero NTU reading.

4. Remove the focusing template and insert a 0.9 NTU turbidity standard. Adjust the SPAN control for a corrected 0.9 NTU reading, if necessary.

5. Remove the 0.75 NTU standard and replace it with a 9 NTU standard. Press the 10 range switch. The meter should indicate 9 (± 0.02) NTU. If it does not, the 10 range potentiometer must be adjusted in accordance with the manufacturer's instructions. Adjust the SPAN control for a reading of exactly 9 NTU.

6. Remove the 9 NTU standard and replace it with the cell riser and 90 NTU standard. Press the 100 range switch. The meter should indicate 90 (± 2) NTU.

7. Remove the 90 NTU standard and cell riser and insert the 9 NTU standard. Press the 10 NTU range switch. Adjust the SPAN control for a reading of exactly 9 NTU.

8. Remove the 9 NTU standard and replace it with a 0.9 NTU standard. Press the 1.0 range switch. The meter should indicate the correct value for the 0.9 NTU standard (± 0.2). If it does not, the 1.0 range potentiometer must be adjusted in accordance with the manufacturer's instructions.

4.0 MAINTENANCE

1. Check the meter battery pack at the end of each day and recharge when needed.

2. When not in use, store the meter in a clean, dry area with the protective cover shut.

3. Clean the lens periodically with a dry cloth or tissue.

4. Maintain a log for each turbidity meter. All maintenance performed on the instrument will be recorded on this log with date and name of organization performing the maintenance.

5.0 DATA VALIDATION

Document all instrument calibrations, indicating the meter readings before and after adjustment. The calibration standard manufacturer and type will also be documented. Record any problems or malfunctions occurring during field use and present them with the instrument readings obtained.

6.0 REFERENCES

1. New York State Code of Rules and Regulations, 6NYCRR Part 360, Section 2.11(a)(12)(v)(a).

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Appendix A
Part 2

Field Sampling Plan

FIELD SAMPLING PLAN
REMEDIAL INVESTIGATION/FEASABILITY STUDY

MOBIL OIL CORPORATION
Hangar D
Westchester County Airport
Harrison, New York

Prepared for:

Mobil Oil Corporation
Environmental Health and Safety Department
Princeton, New Jersey 08543-1031

May 1996

Prepared By:

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MOBIL OIL CORPORATION
Hangar D
Westchester County Airport
Harrison, New York

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1.0 INTRODUCTION

1.1 Project Description

On March 21, 1996, Mobil Oil Corporation (Mobil) and the New York State Department of Environmental Conservation (NYSDEC) entered into an Administrative Consent Order requiring Mobil to implement a Remedial Investigation/Feasibility Study (RI/FS) at Hangar D, Bay 1 of the Westchester County Airport, Town of Harrison, New York (Figure 1-1). This hangar was formerly used by Mobil until the lease was transferred to Texaco, Inc. (Texaco) in 1990.

Because of the lease transfer, numerous environmental investigations have been implemented at the hangar. Results of these investigations show the presence of chlorinated hydrocarbons in the soil and groundwater at concentrations above applicable NYSDEC standards. The suspected origin of the contamination appears to be in the vicinity where limited quantities drummed of chlorinated solvents were stored. The chlorinated solvents were used for routine airplane maintenance.

1.2 Site Description

The Westchester County Airport is located in the Town of Harrison, Westchester County, New York. The northeast boundary of the airport is adjacent to the Fairfield County, Connecticut border. Undeveloped woodlands are primarily located north, south and east of the airport property. Rye Lake is located west of the airport.

The airport began operations in 1952. Hangar D was also constructed in 1952. During the first 30 years of operation, the airport was managed by Gulf Oil under a long term lease with Westchester County.

Hangar D, Bay 1 was used by Mobil, until 1990, as a base for corporate flight operations. The hangar space was used for routine aircraft maintenance. Other uses included

technician labs, an electronics lab, and a small paint booth used only for touch-up painting. On-site facilities also included administrative offices, a pilot's briefing room, conference room, and an executive lounge.

1.3 Site Background

In 1990, Mobil entered into discussions with Texaco relative to a transfer of Mobil's long term lease of Hangar D, Bay 1 at the Westchester County Airport. In response to the possible lease transfer, Texaco authorized the performance of a subsurface environmental investigation in and around the hangar. The results of the investigation revealed concentrations of total volatile chlorinated hydrocarbons (CHCs) up to 54 parts per million (ppm) in the soil beneath the concrete hangar floor, near a potential suspected source area. Based on this finding, Mobil agreed to conduct additional investigations which have been previously submitted to the NYSDEC. A summary of the two most recent assessments is provided.

In May 1995, a Preliminary Site Assessment (PSA) was implemented at the site. Groundwater samples were collected from three Power Punch probes located within Hangar D, Bay 1. In addition, three soil borings were drilled to the top of the water table within Hangar D, Bay 2. The results of this Assessment indicated that low levels of 1,1-dichloroethane (1,1-DCA) and cis-1,2-dichloroethylene (cis-1,2-DCE) were detected below applicable NYSDEC standards in soil samples collected from the Hangar D, Bay 2 subsurface. However, concentrations of 1,1-DCA, 1,1,1-trichloroethane (1,1,1-TCA) and Cis-1,2-DCE were detected above applicable NYSDEC standards in each of the groundwater samples collected from the Power Punch probes located in Hangar D, Bay 1.

In November 1995, a PSA Supplement was implemented at the site. Groundwater samples were collected from nine Geoprobe boreholes and analyzed in the field using a portable gas chromatograph. Shallow bedrock was encountered at an additional six Geoprobe locations. Therefore, groundwater samples could not be collected from those locations. Results indicated that although elevated concentrations of volatile organic

compounds were detected, the horizontal extent of contamination in the shallow groundwater was limited to a small area beneath Hangar D. It was concluded that the horizontal extent of contamination had been adequately determined, as decreasing trends in contaminant concentrations that approached and/or were below NYSDEC standards were observed.

Although a clear decreasing trend in contaminant concentrations was observed, the absence of groundwater monitoring wells, installed following NYSDEC guidelines, is the primary data gap that will be addressed in the RI/FS Work Plan. By following the procedures outlined in this Field Sampling Plan (FSP), the RI/FS Work Plan, the QAPP, and the HASP, the monitoring wells will be used to obtain representative groundwater samples. Laboratory analytical results of these groundwater samples will be used to meet the objectives defined in the subsequent section.

In addition, soil samples will be collected and analyzed for specific physical parameters to assist in the evaluation of the fate and transport characteristics of each contaminant.

2.0 REMEDIAL INVESTIGATION SCOPE OF WORK

2.1 Sampling Objectives

This FSP has been developed so that the analysis of soil and groundwater samples will meet the following objectives:

- Characterize the nature, fate, and transport of the chlorinated hydrocarbons detected in the groundwater beneath Hangar D;
- Evaluate the concentrations of these constituents in terms of potential risk to human health or the environment or that are in excess of levels permitted by Federal or State regulations; and
- Collect sufficient data, in terms of quality and quantity, to make a risk-based decision relative to the type (or appropriateness) of the remedial action best suited for this project and to determine site-specific cleanup goals.

2.2 Sample Location and Frequency

The RI/FS Work Plan proposes the installation of four groundwater monitoring wells (Figure 4-1 of the RI/FS Work Plan). The locations of the proposed monitoring wells were selected to provide water quality information, hydraulically upgradient and downgradient from the suspected source area. One additional monitoring well will be installed near the suspected source area. All monitoring well borings will be drilled to the top of the bedrock. Monitoring well construction will comply with appropriate NYSDEC regulations.

During the drilling of the boreholes, continuous split-spoon soil samples will be collected from the base of the concrete floor to the top of bedrock. Although the split-spoon samples will be collected primarily for stratigraphic information, one saturated soil sample from each borehole will be submitted to a geotechnical laboratory for analysis of total organic carbon (TOC), bulk density, and grain size distribution.

Groundwater samples will be collected from each of the four wells, a minimum of two weeks after well development. Prior to sample colletion, a synoptic round of groundwater level measurements will be obtained. All groundwater samples will be submitted to a NYSDEC-ELAP certified laboratory for volatile organic analysis following EPA Method 601 protocol. A second round of groundwater level measurements and groundwater samples will be obtained from the four monitoring wells, a minimum of 30 days after the first sampling round.

During each round of groundwater sampling, one trip blank will accompany the samples from the site to the laboratory. Each trip blank will be analyzed for volatile organic analysis following EPA Method 601 protocol.

2.3 Sample Designation

The locations of monitoring wells, identified as MW-1 through MW-4, are presented on Figure 4-1 of the RI/FS Work Plan. Each groundwater sample collected at the site will be designated by the number of the monitoring well from which it was collected (i.e. groundwater sample MW-1). Each soil sample collected at the site will be identified by the number of the monitoring borehole and the depth from which it was collected (i.e. a soil sample collected from monitoring well borehole MW-1 at a depth of 2-4 feet will be identified as MW-1-2-4).

Information, such as: the sampling round, sample matrix, and name of the site, will be included on the sample label and chain-of-custody form.

2.4 Sampling Equipment

Both soil and groundwater samples will be collected as part of the Remedial Investigation. The type of equipment to be used and the procedures to be followed to collect each type of sample are described below.

During the drilling of the monitoring well boreholes, continuous split-spoon soil samples will be collected from the base of the concrete floor to the top of bedrock. The split-spoon sample collection will follow the procedures provided in ASTM D 1586. Upon recovery from the borehole, each split-spoon will be opened, field screened with a PID, and the contents will be visually classified and measured with a ruler to determine the percent recovery. A portion of each split-spoon will be transferred to a labeled, pre-cleaned jar. The borehole number, sample interval, date, number of blow counts, and the project name and number will be clearly marked on the label. One soil sample, collected from the saturated zone, will be submitted under proper chain-of-custody protocol to the selected geophysical laboratory for analysis of TOC, bulk density, and grain size distribution.

Groundwater samples will be collected a minimum of two weeks after well completion and development. Prior to sample collection, a synoptic round of groundwater level measurements will be obtained. A minimum of 3-5 times the standing water volume in each well will be evacuated. A sample of the well evacuation discharge water will be field tested for temperature, pH, turbidity and specific conductance.

Groundwater samples will be collected when 90 percent of the drawdown has recovered or within 2 hours, whichever occurs first. Dedicated, disposable polyethylene bailers will be used to collect the samples. The bailers will be lowered into the well using polypropylene rope. The collected groundwater sample will be transferred from the bailer to the appropriate sample containers. Each sample will also be field tested, in a separate container, for temperature, pH, turbidity and specific conductance. A second round of groundwater level measurements and groundwater samples will be obtained from the four monitoring wells, a minimum of 30 days after the final sampling round.

2.5 Sample Handling and Analysis

The following summary table provides information relating to the sample preservaton method, sample containers, holding times, and types of analyses for each sample matrix.

Sample Matrix	Number of Samples	Analytical Parameters	Sample Containers	Preservation	Holding Times
Groundwater	4	VOC EPA 601	2-40 ml vials w/ Teflon septa lids	cool to 4°C HCl to pH <2	7 days
Soil	4	TOC	8 ounce glass	cool to 4°C	28 days
Soil	4	Bulk Density	500 ml plastic	none	none
Soil	4	Grain Size	500 ml plastic	none	none

Appendix B

Health and Safety Plan

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:	Michael vander Heijden		
PROJECT LEADER:	Charles Trione	REVISION DATE:	
SITE HEALTH & SAFETY OFFICER:	Charles Trione		
PREPARED BY:	Jennifer D'Angelo	DATE:	May 14, 1996

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 Health and Safety, Corporate.

SECTION 2: PROJECT INFORMATION

(1) SITE INFORMATION

Site Name: Mobil Hangar D, Bay 1

Address: Westchester Co. Airport

Town of Harrison, New York

Site Project Client Contact: J. Gregory Hill

Phone No.: 609-737-4940

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 and groundwater beneath concrete floor in former solvent storage area.

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

August, 1996. Locate monitoring well locations and commence drilling operations.

(4) MALCOLM PIRNIE TASKS:

1) Locate sampling locations from previous investigations.

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

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

4) Oversee drilling of all boreholes.

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

TASKS PERFORMED BY OTHERS:

1) Cut or core concrete floor for boring access.

2) Collect split spoon soil samples.

3) Install four shallow groundwater monitoring wells.

4) Develop monitoring wells.

(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	Michael vander Heijden
	SITE SAFETY OFFICER	Charles Trione
	ALTERNATE SITE SAFETY OFFICER	Jennifer D'Angelo
	SITE RECORDKEEPER	Charles Trione
	ON-SITE PERSONNEL WITH CPR/FA	Charles Trione
	FIELD TEAM LEADER	Charles Trione
	FIELD TEAM MEMBERS	Charles Trione, Jennifer D'Angelo
VISITORS:	FEDERAL AGENCY REPS	
	STATE AGENCY REPS	
	LOCAL AGENCY REPS	
SUBCONTRACTORS:TORS:	SUBCONTRACTOR(S) SITE	Summit Drilling Corporation
	SAFETY OFFICERS	N/A

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

(6) ONSITE CONTROL

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

No unauthorized person should be within this area.

The onsite Command Post and staging area have been 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

Describe other _____

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	TO	0-54 PPM	
	1,1-DCA			
GW	Chlorinated VOC's	TO	0-4 ppm	
	hydrocarbons			

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	POTENTIAL FOR CON-	METHOD OF CON-
Soil Sampling	Skin contact	low	PPE (Tyvek, gloves)
	Inhalation	moderate	Air monitoring w/PID
Sample Locating	None	none	None
GW Sampling	Skin Contact	low	PPE (Tyvek, gloves)
	Inhalation	low	Air monitoring w/ PID
Sub. Oversite	Inhalation	low	Air montioring 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 at the specified intervals.

EQUIPMENT	MONITORING PERIOD	PEL/REL/TLV	ACTION LEVEL
PID (Lamp 10.2 ev)	- continuous/hourly/daily/other	during drilling	

(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 = $\sum C_n$ / 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.)

NAME	MEDICAL (Date)	HAZWOPER TRAINING INITIAL (Hrs/Date)	HAZWOPER TRAINING REFESHER (Date)	HAZWOPER TRAINING MGR/SUPV (Date)	CPR / FA / BBP (Dates)	FIT TEST (Make/Size/Type/Date)
Michael vander Heijden		40|2/14/91	11/18/95	2/11/93		MSA /large / /3/91
Charles Trione		40| 5/27/88	11/18/95	9/10/92	6/95 | 6/95 |	MSA /med / /4/18/94
						/ / /
						/ / /
						/ / /
						/ / /

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 65 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 4.1.2 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 _____ 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 _____ 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. _____ of _____ ___ was contacted on __/__/__ 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 (South) onto Route 120 (Purchase Street). Follow approx. 1.5 miles to Anderson Hill Rd. Turn right (West) onto Anderson Hill Rd. Follow approx. 1.5 miles to White Plains Avenue. Turn left onto White Plains Avenue. 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, CET	(914) 641-2689 work
Alan Fellman, PhD Corporate Health Physicist	(609) 860-0100 work

(Branch Health & Safety Coordinator)

David L. Barnes, M.D. Elayne F. Theriault, M.D. Environmental Medicine Resources, Inc. (Corporate Medical Consultant)	(800) 229-3674 24 Hour Number

(Branch Medical Consultant)

(4) WHOM TO NOTIFY IN CASE OF ACCIDENT:

Joanny Williams, Administrative Assistant 201-529-4700 ex.243

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	N/A	N/A	T	L	S	H,N
GW Sampling	N/A	N/A	T	L	S	H,N
Drilling Oversite	N/A	N/A	T	L	S	H,N

*Same as in Section 4(2).

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:		
Branch 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

Appendix C

Community Participation Plan

COMMUNITY PARTICIPATION PLAN FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY FORMER MOBIL OIL CORPORATION HANGAR D, BAY 1

Prepared for:

MOBIL OIL CORPORATION
ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT

MAY 1996

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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

On March 21, 1996, Mobil Oil Corporation (Mobil) and the New York State Department of Environmental Conservation (NYSDEC) entered into a Administrative Consent Order requiring Mobil to implement a Remedial Investigation/Feasibility Study (RI/FS) at Hangar D Bay 1 of the Westchester County Airport, Town of Harrison, New York (Figure 1-1). This hangar was formerly used by Mobil until the lease was transferred to Texaco, Inc. (Texaco) in 1990.

Because of the lease transfer, numerous environmental investigations have been implemented at the hangar. Results of these investigations indicated the presence of chlorinated hydrocarbons at concentrations in the soil and groundwater above the applicable NYSDEC standards. The suspected source of the contamination appears to be in the vicinity where limited quantities of drummed solvents were stored.

Community participation is part of the RI/FS process. The Community Participation Program is aimed at increasing community understanding of the remedial process. Its purpose is to keep the community abreast of the activities at the site including the site investigation and remedial measures, through periodic activities such as meetings and mailings. The Community Participation Program also opens up two-way communication between the community and the appropriate State departments. This communication provides the NYSDEC with an opportunity to:

- Obtain site information from the community that will assist in implementing the design and construction of the adopted remedial action plan.
- Address questions and concerns the community may have regarding the site and the remedial process.

Under the New York State Hazardous Waste Site Remedial Program, the process begins with the discovery of a potential hazardous waste site and follows a path through investigation, enforcement, remedial action selection, design, construction, and monitoring. To keep the community informed and involved regarding activities at the site, Mobil will:

- Establish a local Document Repository which will contain all pertinent documents relating to the investigation and remediation of the site.
- Ensure that all fact sheets, meeting notifications, and other informational materials are accurate and appropriately written.
- Hold community meetings, if needed, to meet with interested parties to discuss plans, concerns, or questions about the site.

1.2 SITE DESCRIPTION

The Westchester County Airport is located in the Town of Harrison, Westchester County, New York. The northeast boundary of the airport is adjacent to the Fairfield County, on the Connecticut border. Undeveloped woodlands are primarily located north, south and east of the airport property. Rye Lake is located west of the airport.

The airport began operations in 1952. Hangar D was also constructed in 1952. During the first 30 years of operation, the airport was managed by Gulf Oil under a long term lease with Westchester County.

Hangar D, Bay 1 was used by Mobil, until 1990, as a base for corporate flight operations. The hangar space was used for routine aircraft maintenance. Other uses included technician labs, an electronics lab, and a small paint booth used only for touch-up painting. On-site facilities also included administrative offices, a pilot's briefing room, conference room, and an executive lounge.

1.3 SITE BACKGROUND

In 1990, Mobil entered into discussions with Texaco relative to a transfer of Mobil's long term lease of Hangar D, Bay 1 at the Westchester County Airport. In response to the possible lease transfer, Texaco authorized the performance of a subsurface environmental investigation in and around the hangar. The results of the investigation revealed concentrations of total volatile chlorinated hydrocarbons (CHCs) up to 54 parts per million (ppm) in the soil beneath the concrete hangar floor, near the suspected source area. Based on this finding, Mobil agreed to conduct additional investigations which have been previously submitted to the NYSDEC. However, a summary of the two most recent assessments is provided.

In May 1995, a Preliminary Site Assessment (PSA) was implemented at the site. Groundwater samples were collected from three Power Punch probes located within Hangar D, Bay 1. In addition, three soil borings were drilled to the top of the water table within Hangar D, Bay 2. The results of this Assessment indicated that low levels 1,1-dichloroethane (1,1-DCA) and cis-1,2-dichloroethylene (cis-1,2-DCE) were detected below available NYSDEC standards in soil samples collected from the Hangar D, Bay 2 subsurface. However, concentrations of 1,1-DCA, 1,1,1-trichloroethane (1,1,1-TCA), and cis-1,2-DCE were detected above applicable NYSDEC standards in each of the groundwater samples collected from the Power Punch probes located in Hangar D, Bay 1.

In November 1995, a PSA Supplement was implemented at the site. Groundwater samples were collected from nine Geoprobe boreholes and analyzed in the field using a portable gas chromatograph. Shallow bedrock was encountered at an additional six Geoprobe locations. Therefore, groundwater samples could not be collected from those locations. Results indicated that although elevated concentrations of volatile organic compounds were detected, the horizontal extent of contamination in the shallow groundwater was limited to a small area beneath Hangar D. It was concluded that the horizontal extent of

contamination had been adequately determined, as decreasing trends in contaminant concentrations that approached and/or were below NYSDEC standards were observed.

2.0 PROJECT DESCRIPTION

2.1 PROJECT OBJECTIVE

2.1.1 Project Objective

The objective of the project is to develop and implement a RI/FS as called for in the ACO. Work on the Remedial Investigation will be completed in the Spring/Summer 1996. The anticipated dates for the significant elements of the RI/FS process are listed below.

Late Winter/Early Spring 1996	Mobil/NYSDEC sign ACO.
Spring 1996	Submit Draft RI/FS Work Plan.
Summer 1996	Submit Final RI/FS Work Plan. Commence site mobilization, well installation and well development and sampling.
Fall 1996	Receive analytical results from Round I sampling. Commence Round II monitoring well sampling. Receipt of Round II analytical data.
Late Fall 1996	Prepare Draft Scope of Phase II RI, if needed. Submit Draft RI report.
Winter 1997	Submit Final RI report. Initiate FS report.
Spring 1997	Submit Draft FS report. Submit Final FS report.
Summer 1997	Issue Record of Decision.

2.1.2 Project Contact Personnel

The following individuals are available to answer your questions regarding:

General Information or Questions:

Mr. Keith Browne
New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, New York 12233-7010
(914) 255-5453

3.0 COMMUNITY PARTICIPATION ACTIVITIES

3.1 OVERVIEW

This Section describes the specific community participation activities planned to be carried out during the Mobil RI/FS. These activities will be developed in phases as the remedial program progresses, and may be supplemented as the NYSDEC Project Manager and assigned Community Participation Specialist gain insight into the community interest in the project, or as the Technical program and information on the site changes.

All information materials must be reviewed and approved by the NYSDEC Project Manager, assigned Community Participation Specialist, and appropriate NYSDOH personnel for clarity and accuracy prior to release to the community.

3.2 COMMUNITY CONTACT LISTS

Mobil has established a preliminary site mailing list. This contact list will be updated by the Mobil following each community meeting or mailing, and as additional interested tenants are identified. The current contact list for the site contains all of the tenants located in Hangar D as well as airport management since there is no evidence to suggest that the limited contamination detected has or will extend beyond the immediate vicinity of Hangar D.

3.3 DOCUMENT REPOSITORIES

Document repositories are established at the following locations, to make site documents easily accessible for the community to read and review. During the remedial process various documents will be placed in these repositories as they become available. Mobil encourages interested parties to use these repositories and review site documents prior to attending community meetings whenever possible.

The document repositories for this site are:

New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, New York 12561-1696
(914) 255-5453

Westchester County Airport
Main Terminal
White Plains, New York 10604
(914) 285-4860

3.4 SIGNIFICANT DOCUMENTS

All reports pertaining to the various investigations at the Mobil site as well as related studies and legal documents are currently available for review in NYSDEC's New Paltz, New York office.

As various documents become available during the RI/FS process, they will automatically be placed in both Document Repositories by Mobil. These documents may include:

- RI/FS Work Plan
- Fact sheets/newsletters, etc.
- Health and Safety Plans
- Testing, sampling and monitoring data
- Quality Assurance/Quality Control Plans
- Final Work Plans
- Community Participation Plan
- RI/FS Report

3.5 PROJECT COMPONENTS

The anticipated dates for the significant elements of Community Participation Plan are listed below:

Summer 1996 — Mailing of first Fact Sheet. Community information meeting to present the Work Plan.

Winter 1997 — Mailing of second Fact Sheet. Community information meeting to present RI results.

Summer 1997 — Mailing of third Fact Sheet. Community information meeting to present the proposed remedial action plan and issuance of the Record of Decision.

As previously noted, additional community participation activities may be added, and the plan revised, at the discretion of the NYSDEC to reflect changes in the status of the site or public interest in the site. Below are listed the major elements of the Mobil and the community participation activities that are currently planned for each element.

3.5.1 Development of the Scope-of-Work for the RI/FS

Mobil will prepare and mail out to the contact list the first fact sheet explaining the proposed RI/FS process for the Mobil site. The fact sheet will:

- Provide the site history.
- Identify appropriate agency contacts.
- List the document repositories.
- Summarize the proposed remedial investigation.
- Reference the Health and Safety Plan.

In addition, Mobil will prepare a community notice and hold an informal meeting to exchange information with the interested/affected community about the proposed RI/FS.

Once this is complete, one copy of the final work plan for the RI/FS will be placed in the project's document repository listed in Section 3.3, and a notice of the availability of the final RI/FS work plan will be mailed to parties identified on the contact list in Section 3.2.

3.5.2 Remedial Investigation

Upon completion of remedial investigation tasks, a copy of the Draft RI will be placed in the local document repository and community notice via a second fact sheet will be provided to summarize work performed. Notice of the availability of the draft will be mailed to parties included on the contact list.

An information meeting will be held to present the findings of the Draft RI, receive community comment, and describe future work, as necessary. A transcript of the meeting shall be prepared and made available for inspection. The community will have a minimum of 30 days for submission of written comments on the Draft RI. A brief summary of responses to the comments submitted will be prepared and mailed using the contact list. A copy of the final RI will be placed in the document repository.

3.5.3 Feasibility Study

Upon completion of the feasibility task, a copy of the Draft FS will be placed on the local document repository and public notices via a third fact sheet will be provided to summarize the activities and results of the work performed. A community meeting will be held to present the findings of the FS report; discuss possible remedial alternatives, and present the proposed remedial action plan. A transcript of the meeting shall be prepared and and made available for inspection. The meeting will be announced through notice in the local news media and a letter sent to the contact list. The community will have a minimum period of 30 days for submission of written comments on the Draft FS. A brief summary of responses to the comments submitted will be prepared and mailed using the contact list. A copy of the Final FS will be placed in the documents repository.

Further actions will be initiated as necessary and as indicated in the Final FS Report. Mobil will publish a community notice announcing proposed implementation of the remedial alternative selected. The NYSDEC will also prepare a Record of Decision (ROD) documenting the decision process used to determine the remedial actions deemed appropriate for the Mobil site. The community will have a minimum of 30 days for submission of written comments on the ROD. A brief summary of responses to the comments submitted will be prepared and mailed using the contact list.

4.0 GLOSSARY

4.1 COMMONLY USED COMMUNITY PARTICIPATION TERMS

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

Community Participation Plan: A document that describes the site-specific community 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 change.

Community Participation Specialist: A Department staff member within the Division of Hazardous Waste Remediation who provides guidance, evaluation and assistance to help the Project Manager carry out his/her site-specific Community Participation program.

Contact List: Names, addresses and/or telephone 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 NYSDEC office a 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. Environmental Management Councils (EMCs), Conservation Advisory Committees (CACs) 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 site, 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 within 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 staff, as well as Department fiscal and legal staff and the NYSDOH staff to accomplish site-related goals and objectives.

Public: The universe of individuals, groups and organizations: (a) affected (or potentially affected) by an active 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: A scheduled gathering of the Department staff and the public to give and receive information, ask questions and discuss concerns. May take one of the following forms: large-group meeting called by the Department; participation by the Department at a meeting sponsored by another organization such as a town board or Department of Health; working group or workshop; public availability session.

Public Notice: A written or verbal informational technique for telling people about an important part of a site's remedial program coming up soon (examples: announcement that the report for the RI/FS is publicly available; a public meeting has been scheduled).

The public notice may be formal, such as a paid legal advertisement in a newspaper circulated widely in the geographic area of the site.

Public notices may also be more informal (examples: paid newspaper advertisement; telephone calls to key citizen leaders; targeted mailings).

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.

4.2 SIGNIFICANT ELEMENTS AND TERMS OF THE REMEDIAL PROGRAM

NOTE: The first eight 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 an initial evaluation at the site before listing.

Preliminary Site Assessment (PSA): The first investigation of a site where hazardous waste has or may have been disposed or illegally or improperly is known as a PSA. The goal of the

PSA is to determine whether a site meets the state's definition of a hazardous waste site by confirming the presence of hazardous waste and determining if the site poses a significant threat to public health or the environment. The PSA is a three-step process that includes:

- Records Search: a thorough background review and record check into past use and disposal activity at the site.
- Sampling/Survey: sampling of exposed wastes, drums, surrounding soil and surface water, and performing geophysical and soil gas surveys, and
- Groundwater monitoring: installing monitoring wells and analyzing water samples to check for subsurface contamination.

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

Feasibility Study (FS): A process for developing, evaluating and selecting remedial actions, using data gathered during the remedial investigation to: define the 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 alternative 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 and construct the chosen remedial actions. Remedial design is prepared by consulting engineers with experience in inactive hazardous waste disposal site remedial actions.

Construction: NYSDEC or a responsible party who has entered into a consent order with the NYSDEC selects contractors and supervises construction work to carry out the designed remedial alternative. 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. Construction costs may vary from several thousand dollars, depending on the size of the site, the soil, groundwater and other conditions, and the nature of the wastes.

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 water in monitoring well; or collection of groundwater and surface water samples and analysis for factors showing the

condition of 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 cost of investigation and cleanup work at a site. The order includes a description of the remedial actions to be undertaken at the site and a schedule for implementation.

Contract: A legal document signed by a contractor and the Department or the responsible party to carry out specific site remediation activities.

Contractor: A person or firm hired to furnish materials or perform services, especially in construction projects.

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

Potentially Responsible Party (PRP) Lead Site: A hazardous waste site at which those legally liable for the site have accepted responsibility for investigating problems at the site, and for developing and implementing the site's remedial program. PRPs include: those who owned the site during the time wastes were placed, current owners, past and present operators of the site, and those who generated the wastes placed at the site. Remedial programs developed and implemented by PRPs generally result from an enforcement action taken by the State and the costs of the remedial program are generally borne by the PRP.

Responsible Parties: 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 environmental - 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 or removed from the State Registry if found not to contain hazardous wastes.

Classification 3:
A site which has hazardous waste 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.

State-Lead Site: A hazardous waste site at which the Department has responsibility for investigating problems at the site and for developing and implementing the site's remedial program. The Department uses money available from the State Superfund and the Environmental Quality Bond Act of 1986 to pay for these activities. The Department has direct control and responsibility for the remedial program.