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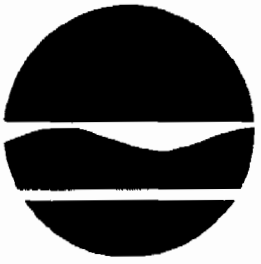
SUPERFUND STANDBY PROGRAM
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

FIELD ACTIVITY PLAN
FOCUSED REMEDIAL INVESTIGATION
PALL CORPORATION SITE

Site No. 1-30-053B
Work Assignment Number
D003060-19



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FIELD ACTIVITY PLAN
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1.00 INTRODUCTION

This field activity plan pertains to a Focused Remedial Investigation and Feasibility Study (FRI/FS) at the Pall Corporation (Pall) Inactive Hazardous Waste Site (NYSDEC Site No. 1-30-053B) located at 30-36 Sea Cliff Avenue, Glen Cove, North Hempstead, Nassau County, New York (Figure 1).

1.10 WORK ASSIGNMENT OBJECTIVES

This field activity plan describes the planned activities and schedule to complete a FRI/FS of the Pall Site. This work is being performed under the TAMS Consultants Inc. (TAMS)/GZA GeoEnvironmental of New York (GZA) New York State Department of Environmental Conservation (NYSDEC) Superfund Standby Contract Work Assignment No. D003060-19.

The FRI/FS is to be designed and conducted in general accordance with the United States Environmental Protection Agency (USEPA) Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA, October 1988) and the NYSDEC Guidelines for Remedial Investigations/Feasibility Studies, Technical and Administrative Guidance Memorandum (TAGM) #4025 (March 31, 1989) and TAGM #4030, Selection of Remedial Activities at Inactive Hazardous Waste Sites.

The objective of the FRI is to provide a sufficient characterization of the nature and extent of contamination on-site in order to provide the data for completing the FS. The FS will identify and evaluate alternatives available for remediation of the site and will be used as the basis for final selection of the appropriate remedial response.

This is a focused feasibility study with a limited number of alternatives identified for consideration. The actual alternatives will be determined in conjunction with consultation with the NYSDEC.

1.20 SITE DESCRIPTION AND LOCATION

The Pall Corporation Site consists of approximately 5 ½ acres of property. The Site is mostly covered with asphalt pavement except for small landscaped areas around the Site building and parking area. Grass and trees border Glen Cove Creek along its entire length where it is present on the Site. The Site topography is relatively flat with an estimated slope across the Site of less than 3 percent. Locally, the Site is situated in a low valley at an approximate elevation of 60 feet above mean sea level (MSL). East and west of the Site, the topography rises to elevations of 160 to 180 feet above MSL. A locus plan is included as Figure 1.

The site is bordered to the north by the Carney Well Field, a childcare facility and another industrial facility, the August Thomsen portion of the site. [Note: The August Thomsen property was once owned by the Pall Corporation. Additional detail on the August Thomsen property is contained in following sections]. The site is bordered to the east by the Glen Cove Arterial Highway and residences and commercial areas situated further to the east. The site is bordered to the south by Sea Cliff Avenue. Industrial property, the Photocircuits Corporation site and the Pass and Seymour site, are south of Sea Cliff Avenue. The west side of the site borders on Glen Cove Creek. An industrial facility, Associated Draperies, is situated west of the Creek.

1.30 SITE HISTORY

The Site is located in the Sea Cliff Avenue Industrial Area which has been documented as an area of variable industrial use from the 1940s to the present. Pall Corporation has operated the facility at Sea Cliff Avenue since the early 1950s. The Pall Corporation facility is currently used as a research and development facility for the manufacture of filtration products. The August Thomsen property was owned by the Pall Corporation until 1971, when August Thomsen bought the property. During the period that the Pall Corporation owned the August Thomsen property, it was used by its subsidiary, Glen Components, Inc., as a precision machine shop providing parts to Pall's other divisions, primarily Aircraft Porous Media, Inc.

Based on a Pall report, there are no chlorinated solvents currently being used at the Site. In the past, chlorinated solvents were used at the Site until approximately 1971.

Industrial activities have occurred in the past and are currently occurring on neighboring properties which include Photocircuits Corporation, Pass and Seymour (currently owned by Photocircuits), and Associated Draperies. These industrial properties are subject to NYSDEC regulatory enforcement action. The Pall Corporation, Photocircuits Corporation, and the former Pass and Seymour properties are listed as Class 2 Inactive Hazardous Waste Disposal Sites (IHWDS) by the NYSDEC. Associated Draperies is listed as a NYSDEC Spills site. Known site history of the Pall Corporation Site is summarized in Section 1.40.

1.40 PREVIOUS ENVIRONMENTAL REPORTS

Review of the reports described below was completed to focus the investigations.

- Source Area Investigation, Sea Cliff Industrial Area Glen Cove, New York, September, 1992. Prepared by H2M Group.

- Groundwater Sampling and Analysis Report, Pall Corporation, 30 Sea Cliff Avenue, Glen Cove, New York. GT Engineering, P.C., March 13, 1996.

- Groundwater Sampling and Analysis Report, Pall Corporation, 30 Sea Cliff Avenue, Glen Cove, New York. Flour Daniel GTI, Inc., December 30, 1996.

- Engineering Investigations at Inactive Hazardous Waste Sites Preliminary Site Assessment, Prepared by Nassau County Department of Public Works, dated March, 1994.

The results of these reports were utilized to assess potential areas of concern (PAOCs) on both the Pall Site and August Thomsen portion of the site. In addition, PAOCs were also identified based upon NYSDEC input. Figure 2 shows nine identified PAOCs. These areas were located based upon review of several maps. As such, their locations are approximate and subject to onsite observation of the pertinent site features relative to these maps. Below are summaries of the report findings.

Monitoring well installation logs are included in Appendix A for the wells on the Pall, August Thomsen, and Associated Drapery Sites. The monitoring well screen depths are presented below.

Monitoring Well Number	Screened Depth (ft bgs)
MW-1P	5 to 15
MW-2P	4 to 14
MW-3P	3 to 14
MW-4P	13 to 23
MW-5P	3 to 13
MW-6P	50 to 60
MW-7P	3 to 18
MW-1A	3 to 13
MW-2A	3 to 13
MW-1H	7 to 27
MW-2H	7 to 27

Notes:
1. bgs is below ground surface.

Groundwater samples have been collected from on-site monitoring wells (MW-1P to MW-7P), wells on the August Thomsen property (MW-1a and MW-2a), and Associated Draperies property (MW-1H and MW-2H). The results of volatile organic compound (VOC) testing are summarized on Table 1. VOCs, such as perchloroethylene (PCE), trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE), were detected at elevated concentrations in groundwater from these wells.

Soil gas data were generated for the Pall and August Thomsen sites. This survey used an organic vapor monitor to screen soil gas samples collected. The results indicate certain

unsaturated soil gas areas of the sites contained organic vapors or other compounds that can be detected by the measurement procedure. Sampling and analysis of the unsaturated zone shallow soils were also done by H2M. Sample analysis identified elevated concentrations of halogenated and non-halogenated VOCs, including tetrachloroethene (PCE), cis/trans 1,2-dichloroethene (1,2-DCE) and trichloroethene (TCE). These are not naturally-occurring compounds.

Carney Street Wellfield

The Carney Street Wellfield was used as a water supply for public drinking water until abandonment in 1977. H2M performed investigations at this site and identified potential VOC source areas within the soils. The compounds detected include halogenated and non-halogenated VOCs. The halogenated VOCs detected in soil include PCE, 1,2-DCE, and TCE.

This information described above will be further reviewed in context of the work to be completed as described in Section 2 of this Field Activities Plan. A revised presentation of this summary will be included in the FRI Report.

1.50 CURRENT SITE CONDITIONS

On November 13, 1997, Mr. Edmund Knyfd, Jr. of GZA and Mr. Allen Burton of TAMS visited the site to become familiar with site conditions and make preliminary observations. The TAMS/GZA team was accompanied by Mr. Chittibabu Vasudevan, Chief - Eastern Projects Section of NYSDEC, Mr. Richard Gaborow, Case Project Manager of NYSDEC, and Mr. Joe Jones, of NYSDEC. Ms. Carol Gladkowski, Environmental Health and Safety Manager for the Pall Corporation, accompanied the TAMS/GZA team and NYSDEC personnel around the Site.

The Site is currently used by the Pall Corporation as a research and development facility for the manufacturing of filtration products. According to Ms. Gladkowski, chlorinated solvents currently are not used on the Site. As stated previously in Section 1.20, the Site is asphalt paved except for small landscaped areas around the facility, and tree and grass covered areas along Glen Cove Creek as it flows through the Site. On the day of the Site visit, Glen Cove Creek appeared as a small creek with a water depth of less than one foot. The flow of water in the creek was barely perceptible. Other than oil-like staining observed on the asphalt cover, normally associated with a vehicle parking lot, no other areas of staining were observed on Site. No obvious odors were observed during the Site visit.

GZA identified seven monitoring wells on-site (MW-1P through MW-7P) and two monitoring wells (MW-1A, MW-2A) on the August Thomsen property. Visually, all the wells appeared to be in good condition except for well MW-1P. Well MW-1P was missing its cap. The top of the PVC casing appeared to be slightly damaged and leaves covered the PVC well casing. The integrity of this well may have been compromised. Asphalt pavement

surrounding some of the wells was slightly depressed relative to the rest of the parking lot area.

A drum storage area exists immediately north of the Pall Corporation facility building, and consists of a small drum storage building with an attached covered and fenced drum storage area, an additional small storage shed and adjacent truck trailer. Staining of the asphalt pavement was observed around a 20 cubic yard dumpster located along the western wall of the drum storage building.

The August Thomsen building is located north-northwest of the Pall Corporation facility building. No obvious staining or odors were observed around the August Thomsen property.

1.60 PRELIMINARY EVALUATION OF REMEDIAL ALTERNATIVES

Soil boring logs from previous investigations indicate that the subsurface geology consists of silts and sands. The thickness of the deposits is over 100 feet. Depth to groundwater is approximately 4 to 8 ft below ground surface. Contamination, including perchloroethylene (PCE), trichloroethene (TCE), and their degradation products(e.g., dichloroethene, and vinyl chloride), have been identified in the saturated soils and groundwater at the site. Previous groundwater investigations have reported an onsite groundwater contaminant plume.

Given these general conditions, the preliminary list of remedial alternatives for this site would include:

1. No-action with monitoring (natural attenuation);

2. Source remediation consisting of hot spot soil excavation with and without groundwater remediation;

3. Source remediation consisting of soil vapor extraction with and without groundwater remediation;

4. Addition of oxygen releasing compounds to assist natural biodegradation for the degradation products.

5. Groundwater remediation consisting of air sparging with vacuum extraction; and,

6. Groundwater pump and treatment with treatment technologies consisting of carbon absorption, ultraviolet oxidation, and air stripping.

2.00 SCOPE OF WORK

The following scope of work has been developed to further evaluate known contamination at the site, potential rates of migration of contaminants, potential risks to human health and the environment and the feasibility of the likely remedial alternatives described above. The scope is divided into three tasks: Task 1 Work Plan Development (Phase A and Phase B); Task 2 Focused Remedial Investigation; Task 3 Post-Screening Field Investigations; and Task 4 Focused Feasibility Study. The Scope of Work does not include Task 5 Interim Remedial Measures (IRM). The need for Tasks 3 & 5 will be evaluated following completion of Tasks 1 & 2 described herein.

Completion of the work plan constitutes Task 1, Phase B of this work assignment.

2.10 TASK 2 - FOCUSED REMEDIAL INVESTIGATION

The Focused RI is intended to obtain site-specific data pertaining to the extent of contamination and the extent to which releases or potential releases from the site pose a threat to human health and the environment. The specific objectives of this project, as defined by the NYSDEC, are as follows:

- Assess site geology;
- Assess hydrogeology;
- Evaluate areal and vertical extent of contamination, including transport mechanisms;
- Assess the source(s) of contamination and determine if this source(s) has impacted off-site properties; and,
- Identify potential pathways for human exposure as part of a qualitative risk assessment.

To accomplish the above stated objectives, the field sub tasks discussed below are proposed. Additional methodology information will be provided in the Quality Assurance Project Plan (QAPjP). Unless otherwise noted, it is assumed that all field work will be completed at USEPA level D personal protection in accordance with the Health and Safety Plan. All field activities will be monitored by a TAMS/GZA representative(s).

2.10.1 General Field Activities

General Field Activities include mobilization, implementing the Health and Safety Plan, and decontamination and handling of investigation wastes. Upon NYSDEC approval

of the final site-specific field activities plan, QAPjP and HASP, subcontracts will be executed.

Mobilization

Following authorization to proceed with the field investigation from NYSDEC, the TAMS/GZA team and its subcontractors will mobilize necessary materials and equipment to the site. Underground Facilities Protection Organization (UFPO) will be contacted to clear exploration locations. Utility clearance will require three working days by UFPO.

A project kick-off meeting will be held prior to initiating field work to orient field team members and subcontractors with the site and to familiarize all site workers with site background, potential dangers, health and safety requirements and emergency contingencies and other field procedures.

Health and Safety

It is anticipated that the work to be completed at the Pall Corporation site will be done at Level D personal protection with the potential to upgrade to Level C. Field workers will be instructed to keep Level C equipment available should it be needed. Should health and safety monitoring during field activities indicate a threat to field personnel or warrant an upgrade beyond Level C protection, work will stop and site conditions will be re-evaluated by NYSDEC and TAMS/GZA. An upgrade to Level B protection will require modification of the HASP.

Decontamination and Handling of Investigation Derived Waste

The sampling methods and equipment have been selected to limit both the need for decontamination and the volume of waste material to be generated. Decontamination procedures specific to each of the field activities are described in the QAPjP. Personal protective equipment and disposable sampling equipment will be placed in plastic garbage bags for disposal as a solid waste.

The types of waste to be generated include: purge water from the wells; and decontamination water from the Geoprobe rig and equipment. Monitoring well purge water, and decontamination water will be disposed into the onsite sanitary sewers. Soil materials are not expected to be generated at the site.

2.10.2 Interviews and Historic Data Review

Initial site studies will be completed to obtain additional information regarding site history and current conditions. These initial studies will include a historical review of Local and State Government agency files to identify features of the Site such as possible UST locations, industrial supply well locations, injection well locations, etc. It is necessary to

obtain information from the Pall Corporation and Associated Draperies on subsurface utilities to assist in locating borings. A detailed plan showing underground utilities from Pall Corporation would be helpful to enable GZA/TAMS and the drillers to adjust boring locations in the field to allow for an efficient and cost effective sampling program.

A database report will be requested from an environmental database provider including lists of certain State and Federal databases and Sanborn Maps to identify potential contaminant sources. The databases to be searched include the following:

New York: NY Spills, LUST, SHWS, UST and SWF/LF.

Federal: NPL, CERCLIS, ERNS, RCRIS, and CORRACTS.

2.10.3 Groundwater Sampling

Groundwater sampling will be done to evaluate the extent of groundwater contamination. A sample of groundwater will be collected from the seven on-site wells, the two wells on the August Thomsen property, and the two Associated Draperies site wells [Note: Sampling of the Draperies wells only can be done if the wells are in satisfactory state of repair].

Samples from three of the existing wells (MW-2P, MW-6P and MW-7P - see Figure 2) will be tested for an extended list of parameters since they were most recently found to contain elevated levels of VOCs.

Auger Probes

Rationale and Exploration Locations

The nature and extent of soil contamination beneath the floor slab of the Pall Site building will be completed. This will be assessed by completing 6 to 8 auger probes at locations to be determined during completion of the work described in Section 2.10.2 Interviews and Historic Data Review. The auger probes will be located in the field by GZA and NYSDEC personnel. The intent of this work is to complete this work during one eight hour work day to limit disruptions to the Pall Corporation's facility operations.

Auger Probe Methodology

Drilling through the floor slab will be completed with a rotary hammer drill. The hammer drill will make a nominal 1-1/4 inch diameter hole through the concrete. A 1 inch auger will then be used to retrieve subgrade materials from a depth of approximately 1 to 2 feet below the slab. A soil sample will be attempted every two feet from the surface immediately below the slab to the top of the water table. If we are able to reach the water table, a ground water sample will be collected, if practical. Water samples will be collected

using the same procedure described for the Geoprobe groundwater sampling effort.

Soil samples will be classified by TAMS/GZA in the field by visual examination in accordance with the New York State Department of Transportation Soil Description Procedure as appropriate. A log of each probe hole will be prepared with appropriate stratification lines, sample identification, sample depth interval and recovery, and date.

Selected overburden samples, estimated at 6, will be retained for analytical testing. These samples will be placed in certified clean sample containers, placed in an iced cooler and handled in accordance with appropriate Chain-of-Custody protocols as described in the QAPjP.

The auger probe holes will be backfilled with a mix of soil and bentonite clay pellets. The floor slab will be repaired with concrete.

Geoprobes

Rationale and Exploration Locations

The nature and extent of subsurface soil contamination will be further assessed by completing approximately seven (7) "deep" Geoprobe boring (DGB) clusters and thirty-four (34) shallow Geoprobe® soil borings on-Site. Tentative locations are shown on Figures 4 and 5. However, the locations may be adjusted depending upon TAMS/GZA observations, field screening results, additional data collection, utility clearance, and consultation with the NYSDEC. The actual number of borings may be reduced if deeper sampling is necessary at the "shallow" Geoprobe boring locations. The determination of the "shallow" boring depths will be made following the completion of the "deep" borings. The locations have been selected to compliment the work previously completed.

Geoprobe Methodology

Vertical Extent of Contamination

This work is to assess whether deeper contamination is present at the site for the purposes of targeting the appropriate depth for sampling of groundwater at the site for the "shallow" Geoprobes. At each of the seven DGB locations, install three Geoprobe borings to depths of about 8, 23 and 38 feet (See Figure 5 for the DGB locations). Sample groundwater at these depths. Samples to be field screened for VOCs on a portable GC. Certain samples, estimated to be 7, will be retained for additional testing at the analytical laboratory for VOCs. Field screening is considered important in order to target an appropriate depth and to limit the time spent on-site (i.e. allow for the Geoprobe program to continue uninterrupted). The rationale for the Geoprobe program is summarized in Table 2 and Table 3.

Lateral Extent of Contamination

Shallow Geoprobe borings will be completed at the site to depths determined by the deep Geoprobe borings to evaluate the lateral extent of the contamination. Tentative boring locations are shown on Figure 4. Actual locations will be determined upon completion of the above work. We have assumed that approximately 34 "shallow" locations will be completed. The probe depths are summarized in Table 2 and Table 3.

General Geoprobe Boring Procedure

Boreholes will be advanced into the overburden and soil samples will be collected using a truck mounted Geoprobe unit equipped with a two inch OD by four foot long sampler. The Geoprobe unit includes a hydraulic push/hammer that is used to advance the sampler. Geoprobe borings will be advanced to depths of approximately 10 to 20 feet or targeted depths as determined from the deep Geoprobe boring investigation.

Soil samples will be classified by TAMS/GZA in the field by visual examination in accordance with the New York State Department of Transportation Soil Description Procedure as appropriate. At the completion of this project, the soil samples will become the property of the NYSDEC. A log of each probe hole will be prepared with appropriate stratification lines, sample identification, sample depth interval and recovery, and date.

Selected overburden samples, estimated at 34, will be retained for analytical testing. These samples will be placed in certified clean sample containers, placed in an iced cooler and handled in accordance with appropriate Chain-of-Custody protocols as described in the QAPjP.

The Geoprobe boreholes will be backfilled with a mix of soil and bentonite clay pellets. If asphalt or concrete was penetrated at the surface than it will be repaired with cold patch asphalt mix.

Soil Sample Field Screening Methodology

A TAMS/GZA field representative will observe each soil sample for visual or olfactory evidence of contamination. The headspace of each soil sample jar will be screened using a PID. The PID will be calibrated daily, in accordance to manufacturer's requirements using a standard gas. Prior to screening, the samples will be allowed to equilibrate to ambient conditions. A hole will be made in the lid of the sample jar and 30 ml of sample air will be withdrawn from the headspace using a gas tight syringe. The test sample will be immediately injected into the PID and the peak substantial response (i.e., >1 ppm) will be recorded. A syringe blank will be run between test samples to limit cross contamination.

2.10.4 Groundwater Investigations

This sub-task includes studies related to evaluating on-site and off-site groundwater quality using the existing wells and the piezometers.

Piezometers

Exploration Rationale and Locations

In addition to the eleven existing wells located on-site, on the August Thomsen property, and the Associated Draperies site, nine additional piezometers are proposed to be installed. The locations of the proposed piezometers are shown on Figure 3. The quantity and location of piezometers and deep wells has been developed assuming that the underlying subsurface conditions are relatively homogenous and significant variations of groundwater flow direction is not expected with depth.

Surface Water Monitoring

Two surface water level monitoring stations will be established to assist in evaluating the relationship between surface and groundwater. Also, three surface water and sediment samples are to be collected at locations, SWS-1 to SWS-3 (See Figure 2). Samples are to be tested for TCL VOCs.

Hydrogeologic Assessment

This task includes development and completion of hydraulic conductivity testing on the wells installed during previous investigations in order to assist in evaluating groundwater velocities and access potential cleanup options.

In order to assess groundwater flow direction, groundwater and surface water elevation measurements will be made.

Rationale

Hydraulic conductivity testing will be done to assess the hydraulic conductivity of the overburden materials near the wells.

Hydraulic Conductivity Testing Methodology

Hydraulic conductivity testing will be done using a rising head test method. The rising head tests will be completed using a stainless steel or pre-cleaned PVC slug to displace water within the well or by removing water from the well with a bailer. The recovery of the initial water level is measured with respect to time. Data obtained using these test procedures will be evaluated using accepted procedures identified in the QAPjP to

provide an estimate of hydraulic conductivity. Test results will be recorded on a Hydraulic Conductivity Test Form.

Water Level Survey Methodology

Three rounds of water level data will be collected. The first round will occur as part of the initial sampling event. These data will be used to assist in locating the proposed piezometers. The following two rounds of water level data will be collected from the on-site wells, the new piezometers and the surface water level monitoring stations.

The survey will include measuring the depth of water within the wells, piezometers and surface water level monitoring stations from a monitoring point of known elevation. The water elevations will then be calculated based on the known elevation and measured depth to water. Wells will be allowed to equilibrate a minimum of 24 hours after purging or testing prior to measuring the water level. The water level round will include all properly functioning wells at the site. Water level measurements will be recorded on the Field Measurement Form.

2.10.5 Environmental Sampling Program

Samples of soil and groundwater will be collected and submitted for analytical testing as part of the FRI. The sampling program for the site is summarized on Table 4. Samples will be analyzed in accordance with ASP protocol. Test results will be validated. Specific test methods are included within the QAPjP.

Sampling Rationale, Test Parameters and Locations

Geoprobe Soils

An estimated 34 soil samples may be collected to characterize subsurface soils while completing the Geoprobes. The samples will be tested for the following:

- Target Compound List Volatile Organic Compounds (TCL - VOC);
- Soil samples from Geoprobe borings GP-1, GP-7 and GP-9 will be tested for TCL semi volatile organic compounds (SVOCs).
- Five samples will be analyzed for TAL Inorganics. Three samples will be collected from on-site borings to assess soils for the presence of inorganic contamination. Two samples will be selected from either apparent uncontaminated soils on-site or from the August Thomsen property. The determination will be made in the field based upon observations of the soil samples.

Groundwater

Groundwater samples will be collected from the Pall Corporation site wells on one occasion. This sampling event is described in Section 2.10.3.

Groundwater Sample Collection Methodology

Groundwater samples will be collected using low flow sampling techniques to limit the amount of suspended sediment within the sample. The volume of water in the monitoring wells will be calculated based on measurement of the water column in the well. A minimum of three times this well volume of water will be evacuated from the well. This will be done using a pump or bailer, as appropriate. Measurements of pH, turbidity, specific conductance and temperature will be made after each well volume is removed. The samples will be placed into laboratory supplied containers and transported to the analytical laboratory in accordance with the procedures and chain-of-custody requirements in the QAPjP. Insitu groundwater will be obtained from the geoprobe boring as described in Section 2.10.3.

Soil Sample Collection Methodology

Soil samples will be collected from the Geoprobe borings. Specific procedures for collecting soil sample is included within the QAPjP. Soil samples will be collected using disposable sampling equipment cleaned at the site as described in the QAPjP.

2.10.6 Site Survey

A licensed land surveyor will be subcontracted to measure the vertical and horizontal locations of the new and existing monitoring wells and borings, surface water/sediment sample locations, piezometers, stream gauges and the limits of the property. TAMS/GZA will also identify other site features, structures, tanks, etc. where horizontal and/or vertical measurements are required. These locations will be flagged by TAMS/GZA. Vertical measurements will include the ground surface, top of casing and top of riser. The top of riser will serve as the water level monitoring point. Vertical measurements will be made relative to the National Geodetic Vertical Datum. Monitoring point measurements and top of protective casing measurements will be accurate to within 0.01 foot. Horizontal measurements will be accurate to within 0.1 foot.

2.10.7 Baseline Qualitative Health Risk Assessment

The Baseline Qualitative Health Risk Assessment will provide an evaluation of the potential threat to human health and the environment in the absence of any remedial action. This assessment will consist of the following.

- Contaminant Identification - Based on the information gathered regarding contamination on the site, the data will be reviewed with respect to the contaminants toxicological properties, quantity present and potential critical exposure pathways (e.g. drinking water supplies). If a wide range of chemicals is present on the site, a list of "indicator parameters" may be developed to focus the assessment process. Based upon the currently available information, the principal contaminant of concern is believed to be PCE.

- Exposure Assessment - The exposure assessment will identify actual or potential exposure pathways, characterize the potentially exposed populations and assess the extent of exposure. Initially and if possible, the contaminant source and the release mechanism(s) will be identified followed by an analysis of the environmental fate and transport. Based on this information, potential exposure routes will be identified and the actual or potential contaminant concentrations at the point of exposure will be quantified.

- Qualitative Risk Characterization - The concentration of contaminants at the point of exposure will be compared to published standards, criteria and guidelines (SCGs). These may include drinking water standards, surface soil guidance values, and surface water standards.

The results of the risk assessment will be presented in the Phase I FRI Report.

2.10.8 QA/QC / Review and Data Evaluation

A detailed evaluation of the data through independent review and validation, and subsequent TAMS/GZA data usability reports, is described in the QAPjP.

2.10.9 Identification of NYS Standards, Criteria and Guidelines (SCG)

Based on the results of the tasks completed, TAMS/GZA will identify applicable and relevant and appropriate New York State SCGs. The SCGs are intended to provide a listing of standards, requirements, criteria or limitations that legally apply to remedial work to be completed at the site.

SCGs to be reviewed can be divided into three categories.

1. Chemical-specific SCGs define acceptable exposure levels to be used in evaluating remedial alternatives. These can include groundwater standards, surface soil cleanup guidance, and other relevant sources.

2. Action-specific SCGs may set controls or restrictions for particular treatment and disposal activities related to the management of hazardous waste, such as

RCRA minimum technology standards.

3. Location-specific SCGs may set restrictions on activities within specific locations, such as work in flood plains and wetlands.

SCGs identified at this stage of the project will be from a variety of regulatory agencies which may or may not impact future site work. For example, some action-specific SCGs may not be relevant to a remedial action, subsequently proposed at the site. The final list of SCGs will depend on the results of the FS work.

2.10.10 FRI Report

The results of the above-listed tasks will be presented in the FRI report. This report will include: a description of site field activities (including site maps, boring logs, sampling logs, etc.); physical characteristics of the site area (surface features, meteorology, geology, hydrogeology, etc.); the nature and extent of contamination in the various environmental media sampled; contaminant fate and transport information; the baseline risk assessment; the fish and wildlife assessment; and summary and conclusions. Appendices to the report will likely include analytical data, QA/QC review and data evaluation and other appropriate information.

Six copies of the bound draft FRI Report will be provided to the NYSDEC. TAMS/GZA will meet with the NYSDEC in their Albany, New York office to discuss the results of the RI. Two representatives from TAMS/GZA will attend this meeting. Following NYSDEC's review, comment and approval, six copies of the final FRI will be submitted to the NYSDEC.

2.10.11 Public Information Meetings

TAMS/GZA understands the importance of providing the public with significant and timely information regarding the FRI. Some of the information will be provided through implementation of the Citizen Participation Plan (CPP). TAMS/GZA anticipates that the NYSDEC will only require TAMS/GZA to participate in a supporting role during implementation of the CPP (i.e., providing additional copies of reports.)

2.10.12 IRM Screening

Based on data from the existing database and those collected as part of the FRI, TAMS/GZA will determine the need for interim remedial measures. If directed by NYSDEC, TAMS/GZA will prepare and present a report which substantiates the need for and describes the proposed interim remedial measures. IRM activities, if any, will be conducted under Task 5.

2.20 TASK 3 - POST SCREENING FIELD INVESTIGATION (PHASE II RI)

The FRI has been designed to reduce the possibility that a Phase II RI will be necessary. The need for Phase II work will be addressed at or near the conclusion of the Phase I FRI. No scope or budget is assumed for this task. A comprehensive off-site groundwater investigation is possible following analysis of the FRI.

2.30 TASK 4 - FOCUSED REMEDIAL INVESTIGATION AND FEASIBILITY STUDY REPORT

A Focused RI and Feasibility Study (FFS) Report will be completed for the site as part of Task 3. Once the draft FFS has been reviewed by the NYSDEC, it will be revised pursuant to NYSDEC comments and resubmitted as the Final FFS Report. This report will include final recommendations for the selection of a remedial alternative for the site.

Data from the existing database and the FRI will be used to develop and refine remedial action objectives as well as to identify site-specific SCGs. Prior to the development of the remedial action objectives, significant site problems and contaminant pathways will be assessed. Considering these problems and pathways, the remedial response objective that would eliminate or minimize substantial risk to public health and the environment will be developed further. The volumes or areas of contamination to which the general response actions apply will also be identified.

The FFS will be limited to further assess the feasibility of the alternatives discussed in Section 1.50 rather than explore the full range of available treatment technologies. The evaluation of remedial alternatives will be performed in accordance with the procedures recommended in the Division of Hazardous Waste Remediation TAGM#4025 - *"Guidelines for Remedial Investigations/Feasibility Studies"* dated March 31, 1989, and in accordance with the Division of Hazardous Waste Remediation TAGM#4030 - *"Selection of Remedial Actions at Inactive Hazardous Waste Sites"* dated September 11, 1989, as revised on May 15, 1990.

The remedial alternatives discussed in Section 1.50 will be evaluated to provide an appropriate quantity and quality of information supportive of the selection of a remedy. The following criteria have been developed to assist in the evaluation of remedial alternatives.

Compliance with Applicable New York State Standards, Criteria and Guidelines

This criterion is used to determine how each alternative complies with applicable or relevant and appropriate New York State Standards, Criteria and Guidelines (SCGs).

Overall Protection of Human Health and the Environment

This criterion provides a final check to assess whether each alternative meets the requirement that it is protective of human health and the environment. The overall assessment of protection is based on a composite of factors assessed under the evaluation criteria, especially long-term effectiveness and performance, short-term effectiveness, and compliance with SCGs.

Short-Term Impacts and Effectiveness

This criterion assesses the effects of the alternatives during the construction and implementation phase until remedial objective are met. Each identified alternative is evaluated with respect to its effects on the community and on-site workers during the remedial action, environmental impacts resulting from implementation, and the amount of time until protection is achieved.

Long-Term Impacts and Permanence

This criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual remaining at the site after response objectives have been met. The primary focus of this evaluation is the extent and effectiveness of the controls that may be required to manage the waste or residual remaining at the site and associated with the operating system for the remedy to remain effective. The factors to be evaluated include the magnitude of remaining risk (measured by numerical standards such as cancer risk levels), and the adequacy, suitability and long-term reliability of management controls for providing continued protection from residuals (i.e., assessment of potential failure of the technical components).

Reduction of Toxicity, Mobility, or Volume

This criterion assesses the remedial alternative's use for treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the contaminants. The factors to be evaluated include the amount of hazardous material destroyed or treated, the degree of reduction expected in toxicity, mobility, or volume, the degree to which the treatment is irreversible, and the type and quantity of treatment residuals.

Implementability

This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and material required during its implementation. The factors to be evaluated include technical feasibility which considers construction and operational difficulties, reliability, ease of undertaking additional remedial action (if required) and the ability to monitor its effectiveness. Administrative feasibility considers activities needed to coordinate with other agencies in regard to obtaining permits

or approvals for implementing remedial actions.

Cost

This criterion assesses the capital costs, annual operation and maintenance costs, future capital costs, cost of future land use, and present worth analysis. Capital costs consist of direct (construction) and indirect (non-construction and overhead) costs. Direct costs include expenditures for the equipment, labor and material necessary to perform remedial actions. Indirect costs include expenditures for engineering, financial and other services that are not part of actual installation activities but are required to complete the installation of remedial alternatives. Annual operation and maintenance costs are post construction costs necessary to ensure continued effectiveness of a remedial action. Future capital costs must be considered when there is a reasonable expectation that a major component of the remedial alternative will fail and require replacement to prevent significant exposure to contaminants. Cost of future land use addresses remedial alternatives which leave hazardous wastes at a site, thereby affecting future land use. This cost is associated with the economic loss attributable to such use. These costs will be estimated to provide an accuracy of +50 percent to -30 percent.

A present worth analysis is used to evaluate expenditures that occur over different time periods by discounting all future costs to a common base year, usually the current year. This allows the cost of remedial action alternatives to be compared on the basis of a single figure representing the amount of money that would be sufficient to cover all costs associated with remedial action over its planned life.

The results of the evaluation will be presented in a narrative form that will allow decision makers to select a site remedy. In addition, TAMS/GZA will submit draft FFS documentation presenting the results of the detailed analysis of alternatives to the NYSDEC. TAMS/GZA will meet with the NYSDEC project manager, if necessary, to discuss the detailed evaluation.

2.40 TASK 5 - INTERIM REMEDIAL MEASURES

As noted in Section 2.10.12 above, TAMS/GZA will review the data from the FRI/FFS on an ongoing basis and will recommend implementation of interim remedial measures, if appropriate. Upon NYSDEC concurrence, a separate scope and budget for this task could be prepared.

3.00 PROJECT SCHEDULE

The project schedule is presented in Figure 6.

4.00 STAFFING PLAN

The general responsibilities of key project personnel are listed below:

Project Advisor	R. Bruce Fidler, P.E. (TAMS), Program Manager will have responsibility for overall program management and coordination of subcontractors to complete the work.
Project Manager	Mr. Ray Laport, P.E. (GZA), Project Manager, will have responsibility for overall project management and coordination with NYSDEC.
RI Task Leader	Mr. Ed Knyfd, C.P.G. (GZA), will have overall responsibility of implementing and coordinating the Remedial Investigation (Task 2) project activities.
RI Field Team	Mr. Steve Vallianos (GZA), will have overall responsibility for on-site implementation of the Remedial Investigation (Task 2) project activities.
FS Task Manager	Mr. Raymond Laport, P.E. (GZA), will be responsible for management, coordination and implementation of the Task 3 Feasibility Study.
QA Officer	Mr. Allen Burton (TAMS) will serve as Quality Assurance Officer, and will be responsible for laboratory and data validation, subcontractor procurement and assignment, as well as data usability reports.
H & S Officer	Mr. Donald Redpath (GZA) will be responsible for the preparation of the project health and safety plan, and tracking of its implementation.
Community Participation Coordinator	Ms. Karen Coghlan (TAMS) will oversee the preparation of the community participation plan and its implementation.

An Organization Chart is provided as Figure 7. Resumes for TAMS and GZA personnel have previously been submitted to the Contract Development Section.

TABLES

TABLE 1
PALL CORPORATION SITE
SUMMARY OF HISTORIC VOC GROUNDWATER DATA
FRI FIELD ACTIVITY PLAN

Compounds	Pall Corporation Wells																		Associated Drapery Wells		August Thomsen Wells	
	MW-1P			MW-2P			MW-3P			MW-4P			MW-5P			MW-6P		MW-7P	MW-1H	MW-2H	MW-1a	MW-2a
Date	Feb-92 [a]	Oct-95 [b]	Nov-96 [b]	Feb-92 [a]	Oct-95 [b]	Nov-96 [b]	Feb-92 [a]	Oct-95 [b]	Nov-96 [b]	Feb-92 [a]	Oct-95 [b]	Nov-96 [b]	Feb-92 [a]	Oct-95 [b]	Nov-96 [b]	Oct-95 [b]	Nov-96 [b]	Nov-96 [b]	Oct-93 [a]	Oct-93 [a]	Feb-92 [a]	Feb-92 [a]
Vinyl Chloride	7 j			130		2 j	120		7 j	110		94	840		73		4 j				130	180
Chlorobenzene																						12
Chloroethane									3 j				2 j						1			
Chloroform																						28
Methylene Chloride							3 j		3 j										6 Bj	4	2	2
Acetone			26						71			52			11				44	17		
2-Butanone			2 j																			
1,1-Dichloroethene	2 j		26	22			6						7		1 j	9.2 B	5 j				9	3 j
1,1-Dichloroethane	11			33			13		8 j	8		7 j	10		5 j	8.9	8 j			1	15	6
1,2-Dichloroethene (total)	25	8.6 B		2500	8.2 B	39	480		8 j	140		230	3500	220 B	510	47 B	30	1 j	Note 4		480	620
1,1,1-Trichloroethane	1 j			4 j												47	23				16	3
1,2-Dichloroethane																	1 j			14		
Trichloroethene	12			480	7.1	62	65			19		3 j	1600		11	18	12			4 j	380	65
1,1,2-Trichloroethane							4 j															
Benzene				2 j						1 j		2 j									2	8
Perchloroethylene				85	420	280	24			18		7 j	880		3 j	9.8	7 j				410	160
Ethylbenzene																						13
Styrene																						10
Toluene							5		1 j	2 j		3 j	3 j									12
Xylenes				3 j			22			4 j		2 j	5 j									39

Notes:
1) Concentration in parts per billion (ppb).
2) "j" indicates concentration is estimated.
3) "B" indicates compound also reported in the blanks.
4) Results presented in H2M report indicate "J" as the concentration. It is not known whether this compound was detected.

a) Data from the report "Source Area Investigation Sea Cliff Industrial Area" Glen Cove, New York; prepared by H2M Group, September, 1992.

b) Data from the report "Groundwater Sampling and Analysis Report" Pall Corporation 30 Sea Cliff Avenue, Glen Cove, New York, December, 1996. Report prepared by Fluor Daniel GTI.

TABLE 2

PURPOSE OF GEOPROBE BORINGS

PALL CORPORATION
FRI/FS FIELD ACTIVITY PLAN

BORING NUMBER	PURPOSE
DGB-1 and 2	Upgradient boring clusters, assess contamination near the former dispersing well. [Potentail Area of Concern (PAOC) A-8.]
DGB-3	Assess contamination near PAOC Area A-6.
DGB-4	Assess contaminaton near PAOC Area A-5.
DGB-5	Assess contamination downgradient of PAOC Areas A-5 & 6.
DGB-6	Assess contamination near PAOC Areas A-1 & 2.
DGB-7	Assess contamination downgradient of the site
SGB-1, 6 & 15	Assess contamination near on Associated Draperies property.
SGB-2	Assess contamination near the former water supply well location
SGB-3,4,5 & 11	Assess contamination near PAOC Area A-9.
SGB-7,8,9 & 10	Assess contamination near PAOC Area A-7.
SGB-13 & 14	Assess contaminaton near PAOC Area A-5.
SGB-12, 16, & 17	Assess contaminaton near PAOC Area A-6.
SGB-18, 24, 31, 32, 33 & 34	Coverage downgradient
SGB-19	Assess contaminaton near PAOC Area A-3.
SGB-20, 21, 22, 23, 25 & 26	Assess contaminaton near PAOC Area A-4.
SGB-27, 28, 29, & 30	Assess contaminaton near PAOC Areas A-1 & 2.

TABLE 3
PALL CORPORATION SITE
FRI/FS FIELD ACTIVITY PLAN

SUMMARY OF GEOPROBE DRILLING PROGRAM

Boring Number	Depth (ft)	Comments
DGB-1 TO DGB-7 Three borings at each location	69 feet at each cluster Estimated total of about 483 feet	Shallow boring to 8 feet Intermediate boring to 23 feet Deep boring to 38 feet
SGB-1 to SGB-34	10 to 20 feet at each boring assume 15 feet average Estimated total 510 feet.	Actual depth to be determined based upon the DGB borings.

TABLE 4

ANALYTICAL TESTING PROGRAM
PALL CORPORATION
FRI/FS FIELD ACTIVITY PLAN

SAMPLE LOCATION	TEST PARAMETERS		
	VOCs	SVOCS	TAL Inorganics
SOIL SAMPLES			
GEOPROBE BORINGS	34	3	5
AUGER PROBE BORINGS	6		
GROUNDWATER			
MONITORING WELLS	11	3	3
DEEP GEOPROBE BORINGS	7		
SHALLOW GEOPROBE BORINGS	34	3	3
Auger Probes	6		
SURFACE WATER	3		
SEDIMENT	3		
QA/QC SAMPLES			
SOIL SAMPLES			
TRIP BLANKS			
EQUIPMENT RINSATE BLANKS	2		
DUPLICATES	2		
MS/MSD	4		
MONITORING WELLS (water)			
TRIP BLANKS	1		
EQUIPMENT RINSATE BLANKS	1	1	1
DUPLICATES	1	1*	1*
MS/MSD	2	2*	2*
DEEP GEOPROBE BORINGS (water)			
TRIP BLANKS	5		
EQUIPMENT RINSATE BLANKS			
DUPLICATES	1		
MS/MSD	2		
SHALLOW GEOPROBE BORINGS (water)			
TRIP BLANKS	9		
EQUIPMENT RINSATE BLANKS	3**	1**	1**
DUPLICATES	2		
MS/MSD	4		
SURFACE WATER			
TRIP BLANKS			
EQUIPMENT RINSATE BLANKS			
DUPLICATES	1		
MS/MSD	2		
SURFACE WATER SEDIMENT			
TRIP BLANKS			
EQUIPMENT RINSATE BLANKS	1		
DUPLICATES	1		
MS/MSD	2		
TOTALS	**150**	**14**	**16**

Notes: * The monitoring well field duplicate and MS/MSD covers the aqueous matrix.
** Geoprobe rinsate blanks @1 per week, assumes SVOC/inorganics all same week.
1) One trip blank is required per cooler. The actual number of trip blanks will be determined in the field at the time of sampling.

FIGURES

DRAWN BY: DEW

DATE: DECEMBER 1997

GZA GeoEnvironmental of New York

SCALE IN FEET

0 1000 2000 4000

PALL CORPORATION
FOCUSED RI/FS
GLEN COVE, NEW YORK

WORK PLAN

LOCUS PLAN

NOTE:

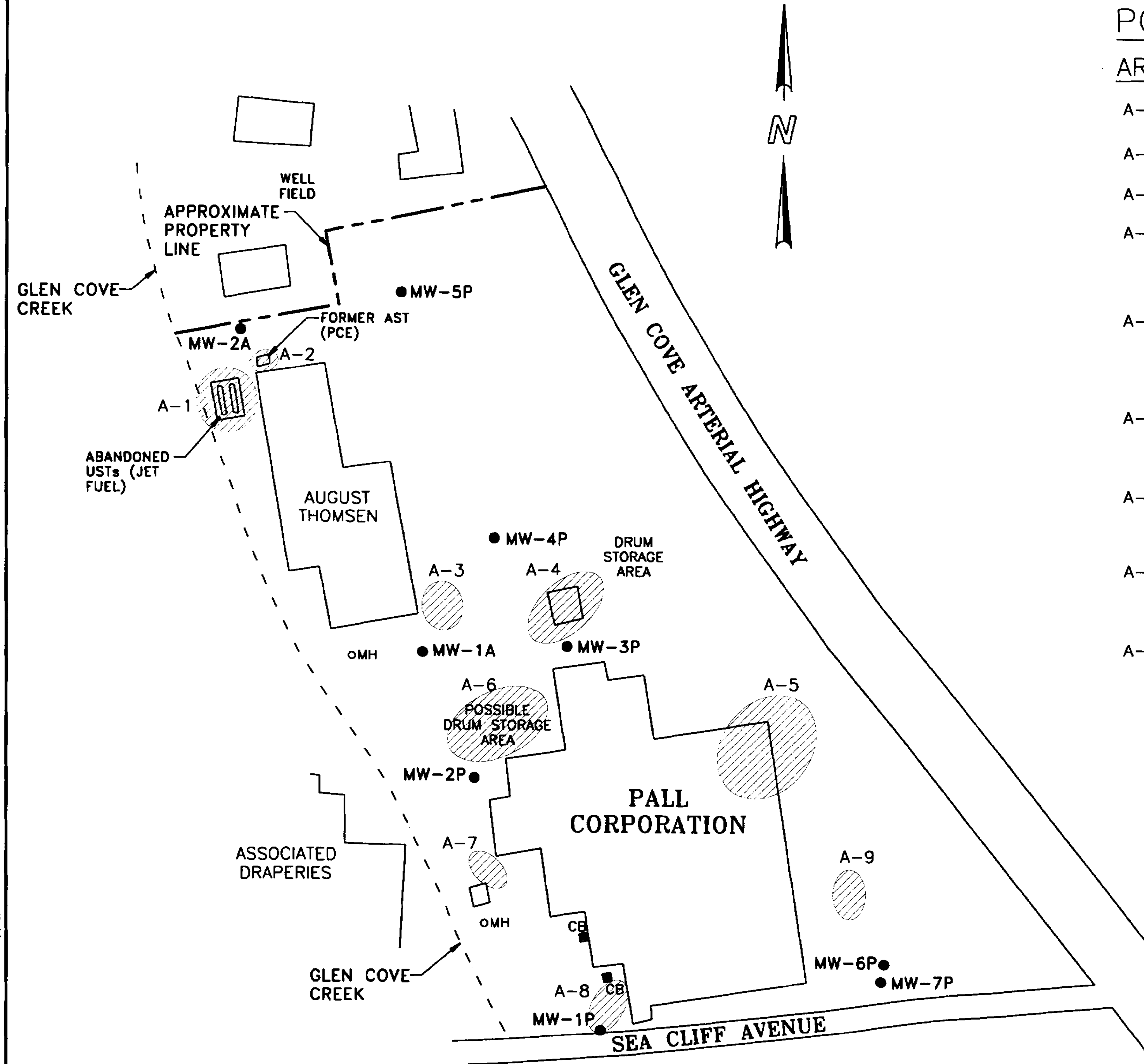
BASE MAP ADAPTED FROM U.S.G.S. QUADRANGLE MAPS SEA CLIFF, N.Y. – 1979 AND HICKSVILLE, N.Y. – 1979.

N

NEW YORK

PROJECT No. 55189

FIGURE No. 1



POTENTIAL SOURCE AREAS

AREA	RATIONALE
A-1	FORMER UST LOCATION & SOIL GAS DATA
A-2	FORMER PCEAST & SOIL GAS DATA
A-3	SOIL GAS DATA FROM LOCATIONS 44 & 45
A-4	DRUM STORAGE AREA & SOIL GAS DATA FROM LOCATION 30
A-5	INFORMATION FROM NYSDEC REGARDING POOR MATERIAL HANDLING PRACTICES
A-6	POSSIBLE DRUM STORAGE AREA AND GROUNDWATER DATA FROM MW-2P
A-7	SOIL GAS DATA FROM LOCATIONS 25 & 26
A-8	FORMER DISPERSING WELL AREA
A-9	SOIL GAS DATA FROM LOCATIONS 46 & 47

LEGEND:

● MW-1P APPROXIMATE LOCATION AND DESIGNATION OF EXISTING MONITORING WELL

oMH APPROXIMATE LOCATION AND DESIGNATION OF EXISTING MANHOLE

■ CB APPROXIMATE LOCATION AND DESIGNATION OF EXISTING CATCH BASIN

A-5 APPROXIMATE LOCATION AND DESIGNATION OF POTENTIAL SOURCE AREA

NOTES:

1. BASE MAP ADAPTED FROM A PLAN ENTITLED, "PALL CORPORATION/AUGUST THOMSON; SITE PLAN", PREPARED BY GROUNDWATER TECHNOLOGY, DATED 12/20/95.
2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.
3. SOIL GAS DATA FROM H2M GROUP FIGURE DATED JANUARY 13,1992.

REV No.	DESCRIPTION	BY	DATE

DRAWN BY: DEW
DATE: DECEMBER 1997

SCALE IN FEET
0 50 100 200

GZA GeoEnvironmental of New York

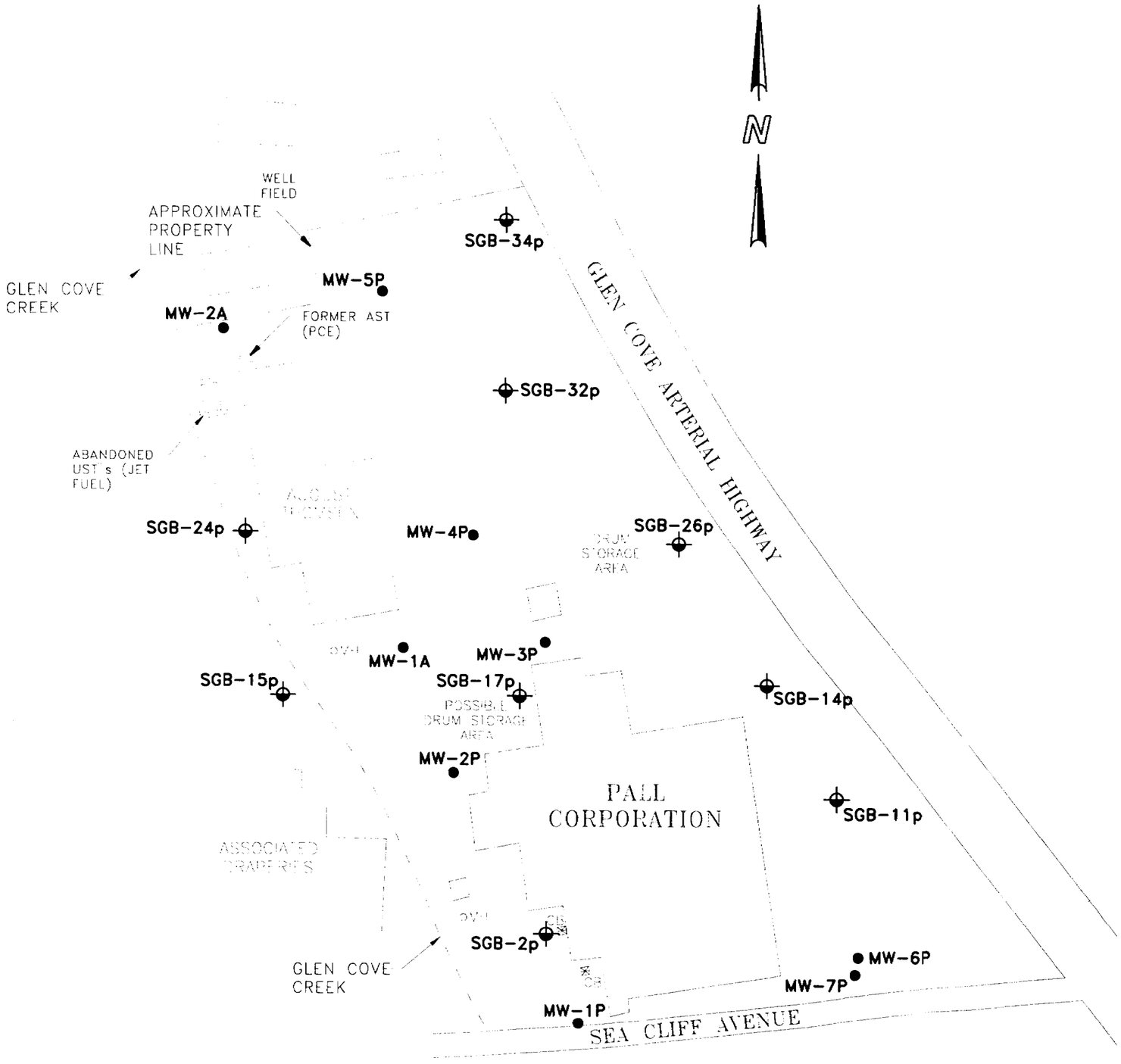
PALL CORPORATION
FOCUSED RI/FS
GLEN COVE, NEW YORK

WORK PLAN

SITE PLAN AND POTENTIAL SOURCE AREAS

PROJECT No. 55189

FIGURE No. 2



LEGEND:

- SGB-1p — APPROXIMATE LOCATION AND DESIGNATION OF PROPOSED "SHALLOW" GEOPROBE SOIL BORING. DEPTH OF THE GEOPROBE TO BE BASED ON FINDINGS IN THE "DEEP" GEOPROBE SOIL BORINGS.

  NOTE: THE LETTER "p" FOLLOWING THE GEOPROBE DESIGNATION INDICATES PIEZOMETER TO BE INSTALLED AT THAT LOCATION.

- MW-1P — APPROXIMATE LOCATION AND DESIGNATION OF EXISTING MONITORING WELL

NOTES:

1. BASE MAP ADAPTED FROM A PLAN ENTITLED, "PALL CORPORATION/AUGUST THOMSON; SITE PLAN", PREPARED BY GROUNDWATER TECHNOLOGY, DATED 12/20/95.
2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

REV No.	DESCRIPTION	BY	DATE

DRAWN BY: DEW

DATE: DECEMBER 1997

GZA GeoEnvironmental of New York

SCALE IN FEET: 0, 50, 100, 200

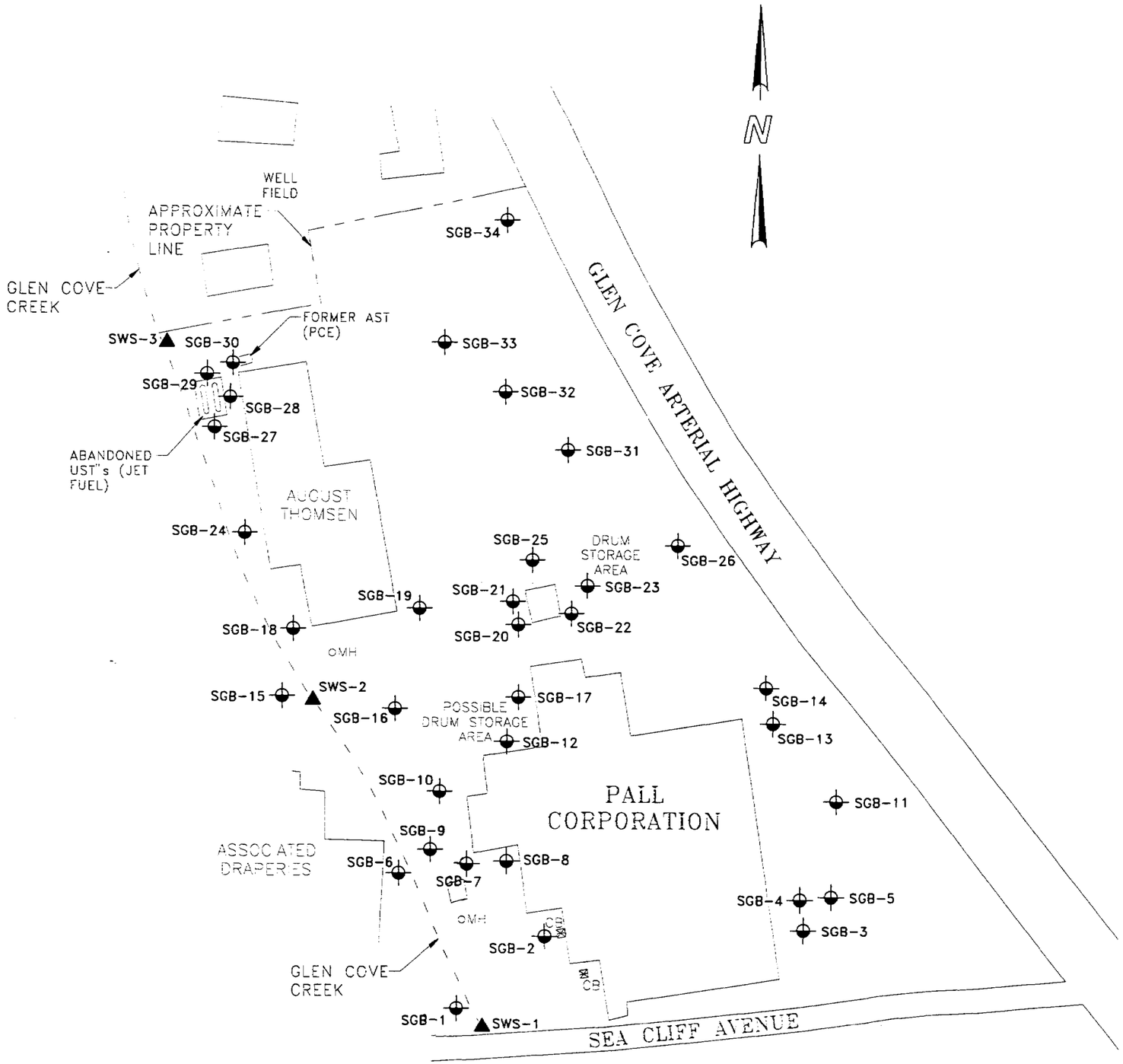
PALL CORPORATION
FOCUSED RI/FS
GLEN COVE, NEW YORK

WORK PLAN

EXISTING MONITORING WELL AND PROPOSED PIEZOMETER LOCATION PLAN

PROJECT No. 55189

FIGURE No. 3



LEGEND:

- SGB-1 — APPROXIMATE LOCATION AND DESIGNATION OF PROPOSED "SHALLOW" GEOPROBE SOIL BORING. DEPTH OF THE GEOPROBE TO BE BASED ON FINDINGS IN THE "DEEP" GEOPROBE SOIL BORINGS.
- ▲ SWS-1 — APPROXIMATE LOCATION AND DESIGNATION OF PROPOSED SURFACE WATER AND SEDIMENT SAMPLE

NOTES:

1. BASE MAP ADAPTED FROM A PLAN ENTITLED, "PALL CORPORATION/AUGUST THOMSON; SITE PLAN", PREPARED BY GROUNDWATER TECHNOLOGY, DATED 12/20/95.
2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

DESCRIPTION | BY | DATE

DRAWN BY: DEW

DATE: DECEMBER 1997

GZA GeoEnvironmental of New York

REV No.

SCALE IN FEET: 0, 50, 100, 200

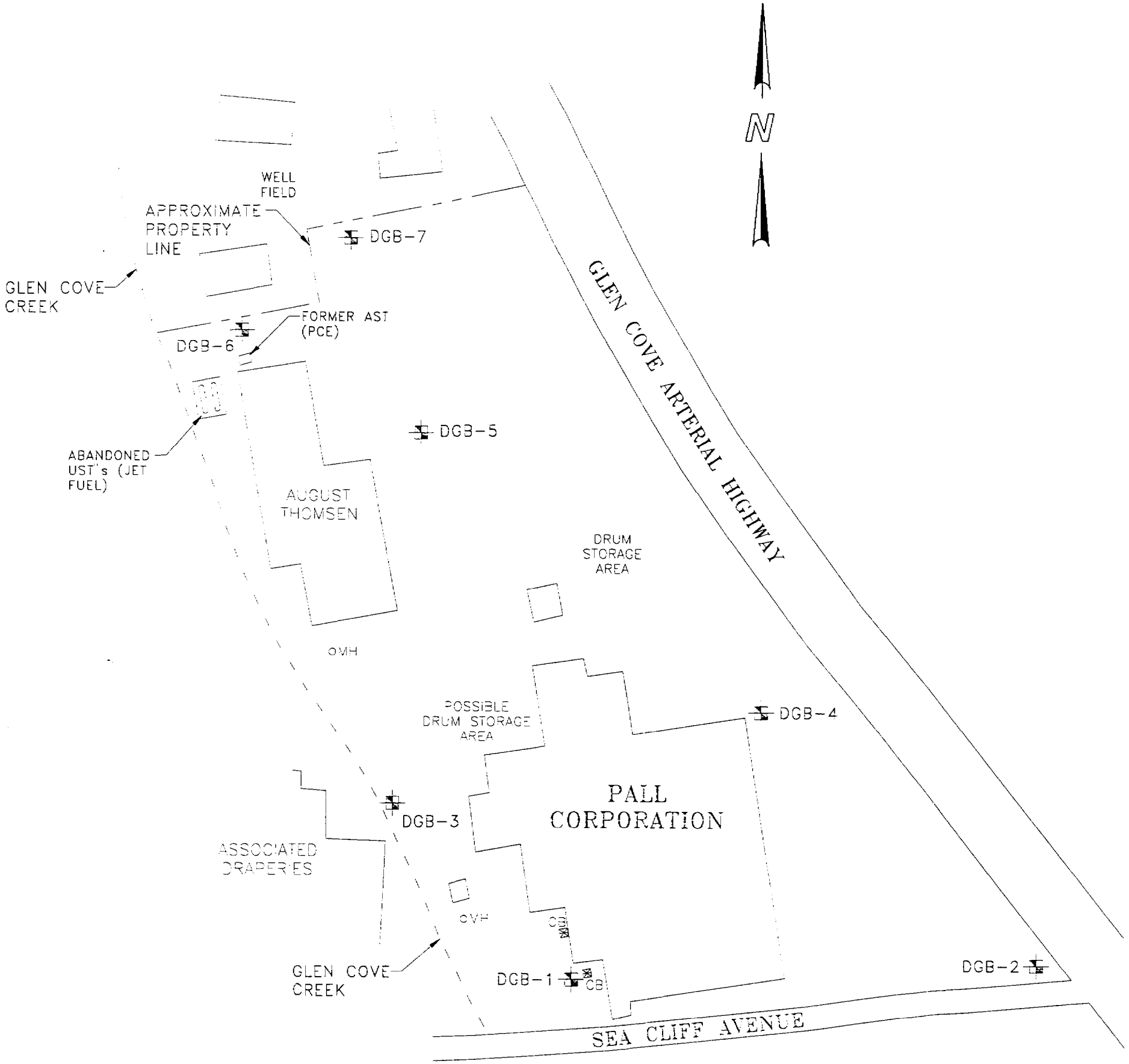
PALL CORPORATION
FOCUSED RI/FS
GLEN COVE, NEW YORK

WORK PLAN

PROPOSED "SHALLOW" GEOPROBE AND SURFACE WATER SAMPLE LOCATION PLAN

PROJECT No. 55189

FIGURE No. 4



LEGEND:

DGB-1 — APPROXIMATE LOCATION AND DESIGNATION OF PROPOSED "DEEP" GEOPROBE SOIL BORING. 3 BORINGS TO BE COMPLETED AT EACH LOCATION TO NOMINAL DEPTHS OF 20, 40 AND 60 FEET DEEP. THE TOTAL DEPTH OF THE DEEP GEOPROBE BORING WILL BE DETERMINED BASED ON THE SITE CONDITIONS.

NOTES:

1. BASE MAP ADAPTED FROM A PLAN ENTITLED, "PALL CORPORATION/AUGUST THOMSON; SITE PLAN", PREPARED BY GROUNDWATER TECHNOLOGY, DATED 12/20/95.
2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

REV No.	DESCRIPTION	BY	DATE

DRAWN BY: DEW

DATE: DECEMBER 1997

GZA GeoEnvironmental of New York

SCALE IN FEET 0 50 100 200

PALL CORPORATION
FOCUSED RI/FS
GLEN COVE, NEW YORK

WORK PLAN

PROPOSED "DEEP" GEOPROBE SOIL BORING LOCATION PLAN

PROJECT No. 55189

FIGURE No. 5

FIGURE 6
PALL CORPORATION FRI/FS
GLEN COVE, NEW YORK
PLANNED WORK SCHEDULE

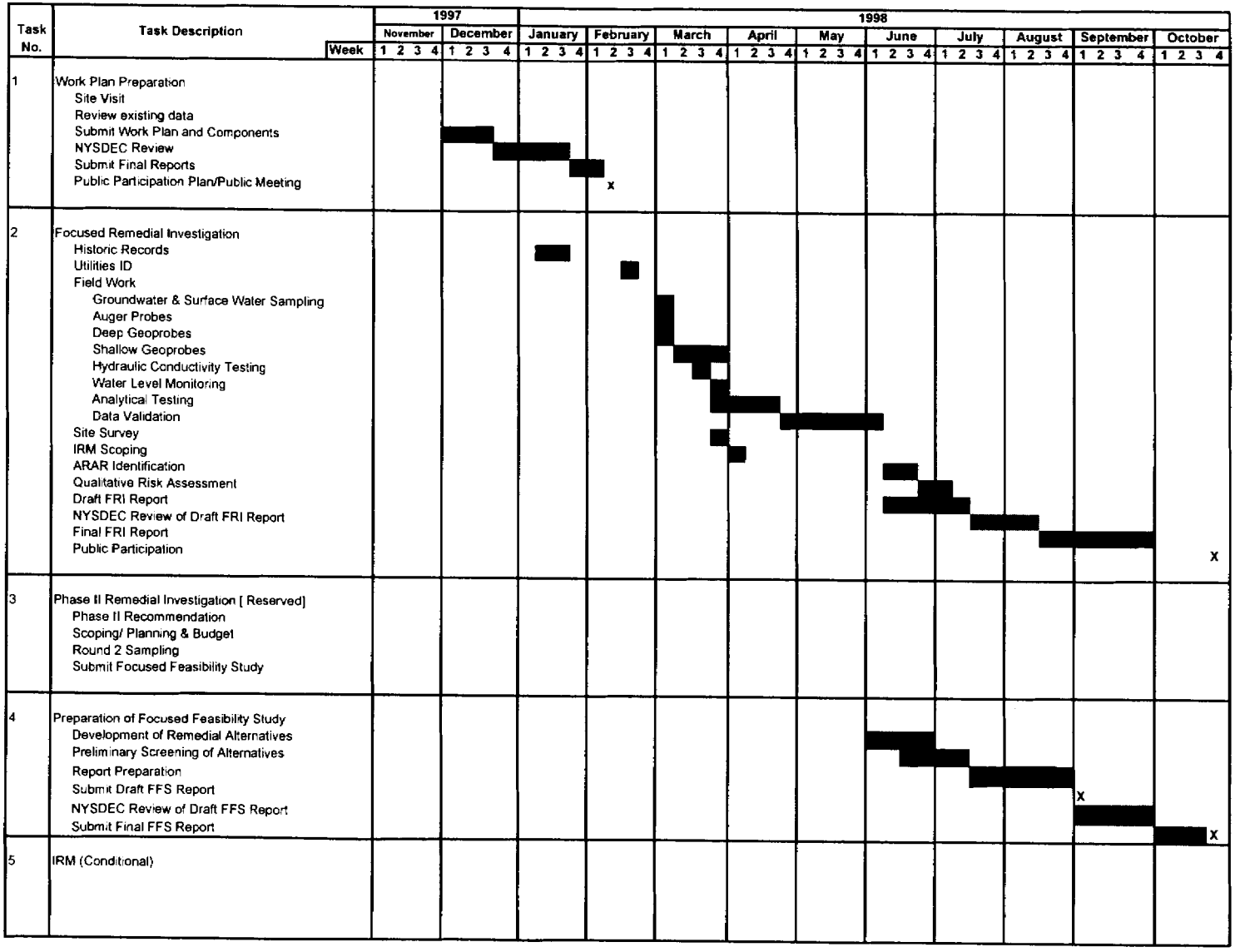
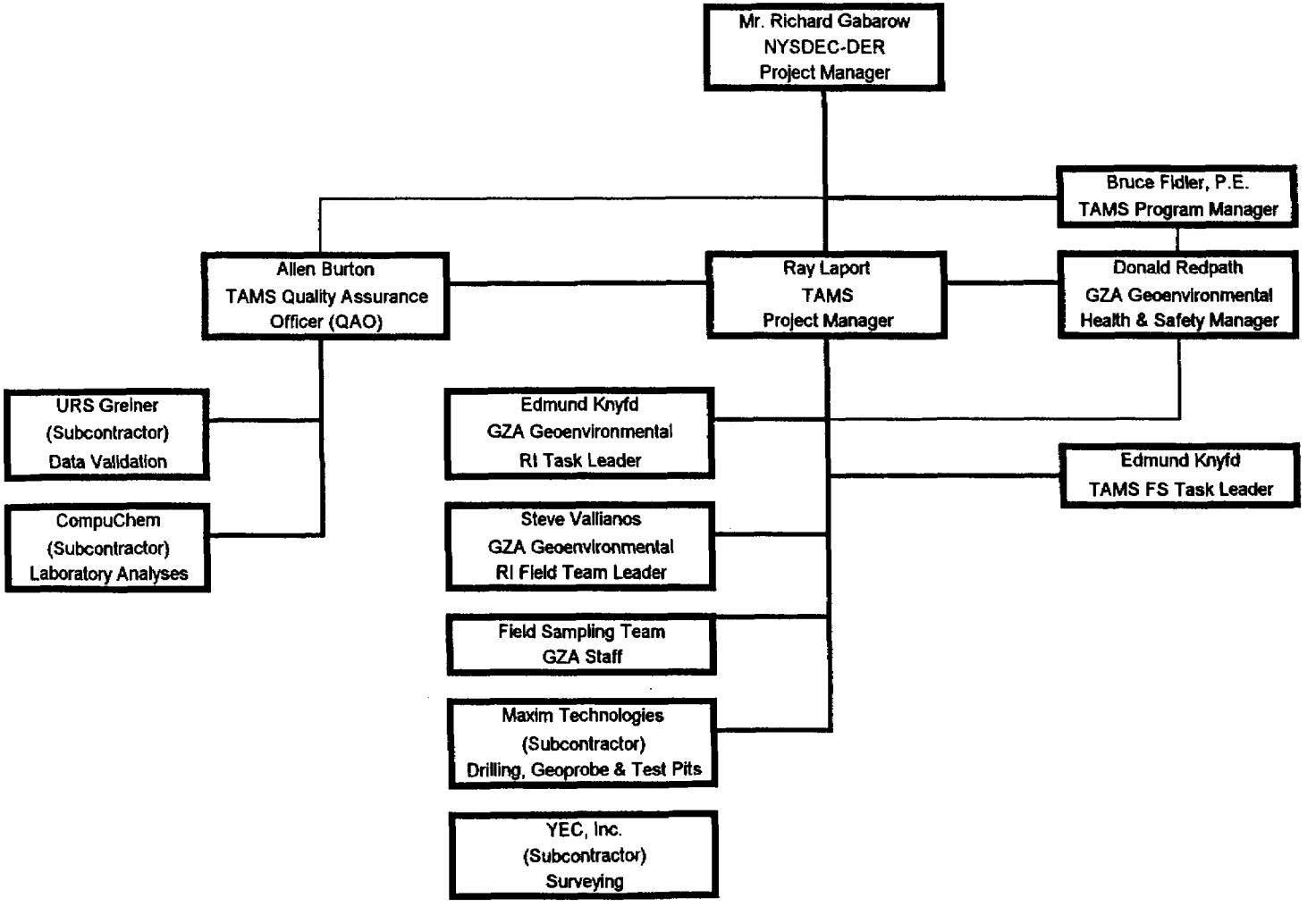


FIGURE 7
PALL CORPORATION FRI/FS
ORGANIZATION CHART



APPENDIX A

MONITORING WELL INSTALLATION LOGS

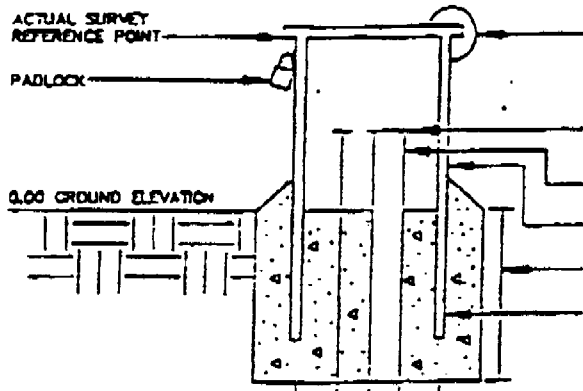
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: Pall Corp. PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/21/92 WELL NO.: MW-1P

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OF ROAD BOX (1'-0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	- 6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	1'
PROTECTIVE CASING	8" (DIAMETER (I.D.)) 1' (LENGTH)
[INDICATE ALL SCALE SHOWING DEPTH THICKNESS AND TYPE]	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC (MATERIAL) 4" (DIAMETER (I.D.))
TYPE OF BACKFILL AROUND RISER	N/A
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	1'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	3'
DEPTH OF BOTTOM OF RISER	5'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN CAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	15'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	16'

(L1) LENGTH OF RISER 4.5' (L2) LENGTH OF SCREEN 10' REFERENCE POINT Top of Casing GROUND ELEV. 56.45'
*ACTUAL ELEVATIONS - WHERE AVAILABLE

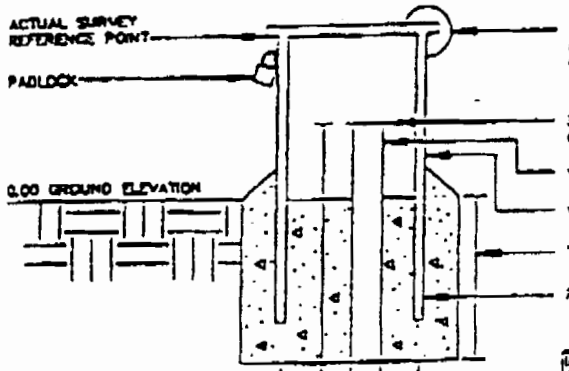
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: Pall Corp. PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/22/92 WELL NO.: MW-2P

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OR ROAD BOX (1'=0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	-6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	1.0'
PROTECTIVE CASING	8" DIAMETER (I.D.) 1' LENGTH
[INDICATE ALL SEALS SHOWING DEPTH THICKNESS AND TYPE]	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC MATERIAL 4" DIAMETER (I.D.)
TYPE OF BACKFILL AROUND RISER	N/A
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	1.0'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	2.0'
DEPTH OF BOTTOM OF RISER	4'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN GAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	14'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	15'

(L1) LENGTH OF RISER 3.5' (L2) LENGTH OF SCREEN 10' REFERENCE POINT Top of Casing GROUND ELEV. 54.97
ACTUAL ELEVATIONS - WHERE AVAILABLE

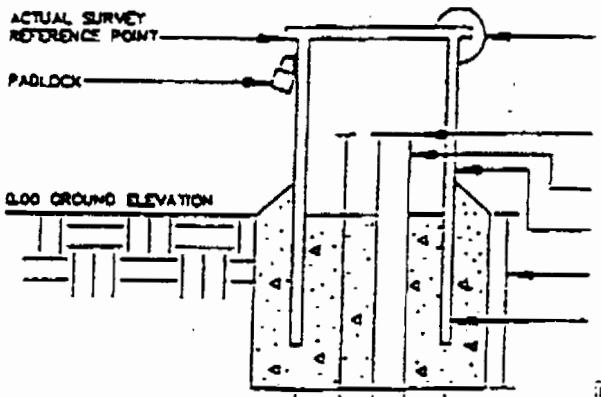
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: Pall Corp PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/21/92 WELL NO.: MW-3P

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OR ROAD BOX (1'-0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	-6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	1'
PROTECTIVE CASING	8" DIAMETER (I.D.) 1' LENGTH
INDICATE ALL SCALE SHOWING DEPTH THICKNESS AND TYPE	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC 4" MATERIAL DIAMETER (I.D.)
TYPE OF BACKFILL AROUND RISER	N/A
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	1.0'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	2.0
DEPTH OF BOTTOM OF RISER	3'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN GAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	14'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	15'

(L1) LENGTH OF RISER 2.5' (L2) LENGTH OF SCREEN 11' REFERENCE POINT Top of Casing GROUND ELEV. 54.16'
ACTUAL ELEVATIONS - WHERE AVAILABLE

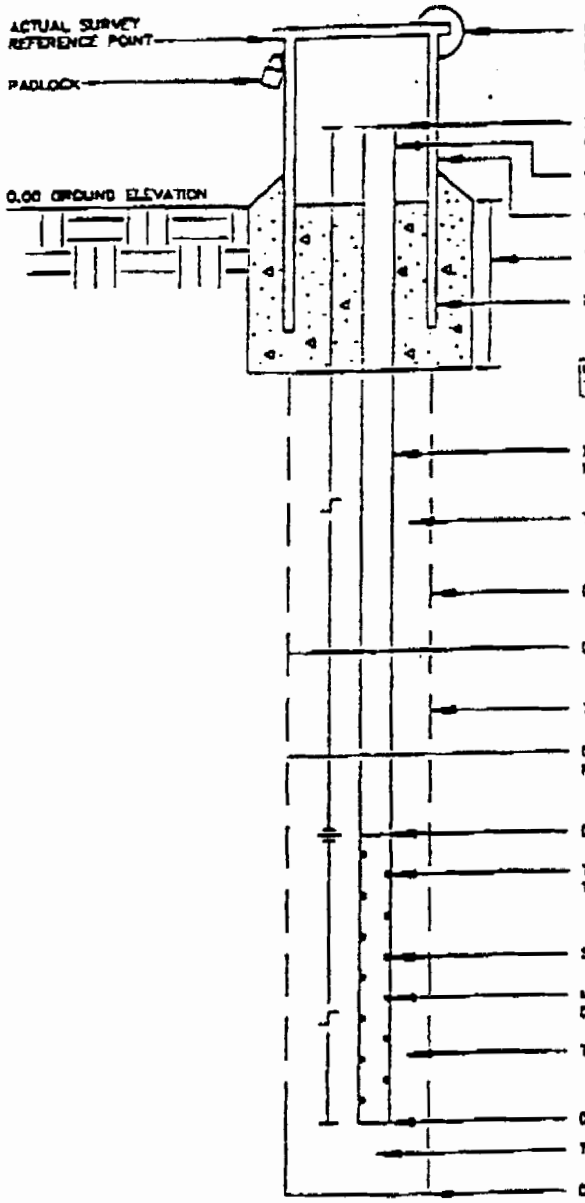
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: Pall Corp PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/20/92 WELL NO.: MW-4P

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OR ROAD BOX (1'-0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	-6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	2'
PROTECTIVE CASING	8" DIAMETER (I.D.) 1' LENGTH
INDICATE ALL SEALS SHOWING DEPTH THICKNESS AND TYPE	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC MATERIAL 4" DIAMETER (I.D.)
TYPE OF BACKFILL AROUND RISER	Bentonite Grout Slurry
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	9'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	11'
DEPTH OF BOTTOM OF RISER	13'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN CAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	23'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	24'

(L1) LENGTH OF RISER 12.5' (L2) LENGTH OF SCREEN 10' REFERENCE POINT Top of Casing GROUND ELEV. 53.35
ACTUAL ELEVATIONS - WHERE AVAILABLE

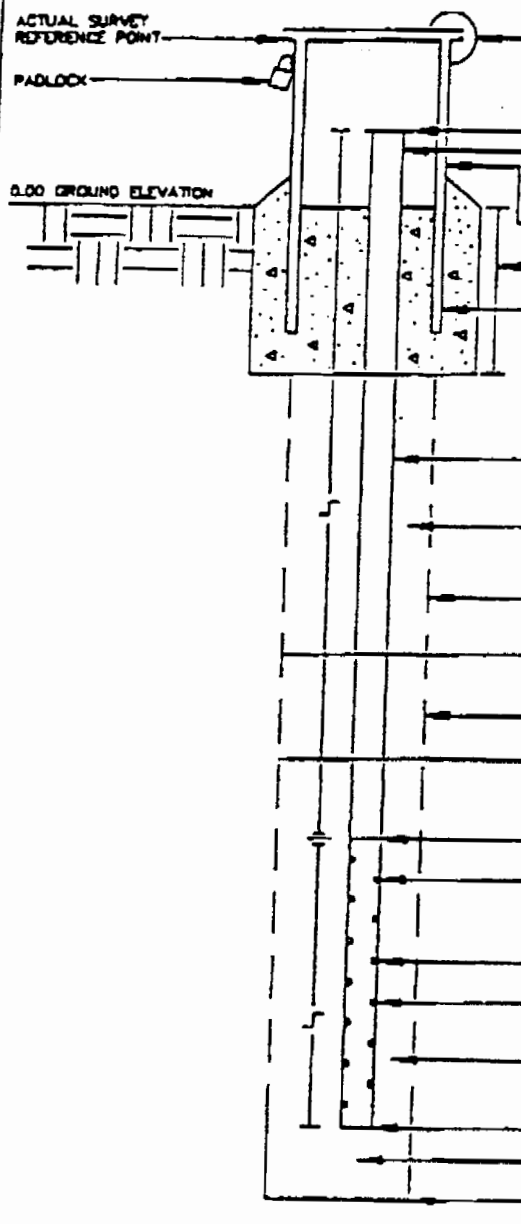
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: Pall Corp. PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/20/92 WELL NO.: MW-5P

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



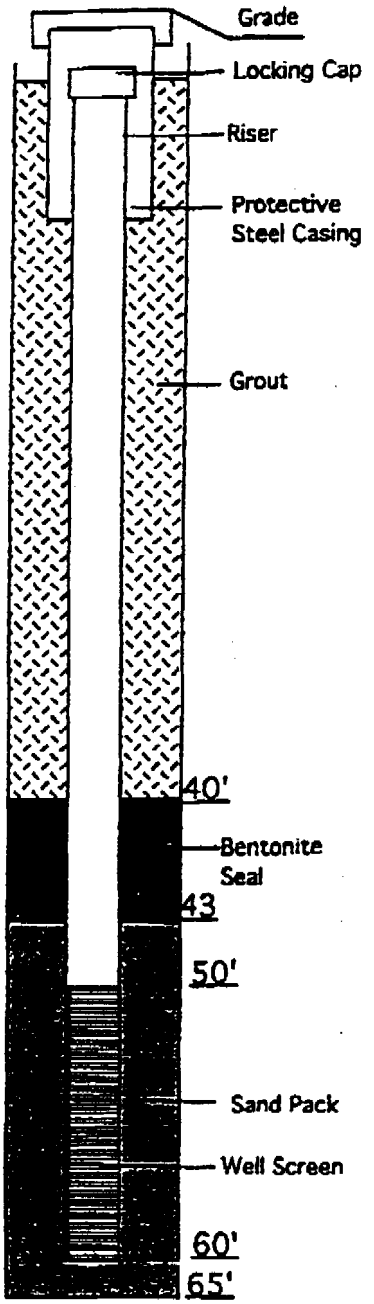
DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OR ROAD BOX (1'-0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	-6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	1.0'
PROTECTIVE CASING	8" (DIAMETER (I.D.)) 1' (LENGTH)
[INDICATE ALL SCALE SHOWING DEPTH THICKNESS AND TYPE]	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC (MATERIAL) 4" (DIAMETER (I.D.))
TYPE OF BACKFILL AROUND RISER	N/A
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	1.0'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	2.0'
DEPTH OF BOTTOM OF RISER	3'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN CAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	13'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	14'

(L1) LENGTH OF RISER 2.5' (L2) LENGTH OF SCREEN 10' REFERENCE POINT T-P of Casing GROUND ELEV. 52.09 ACTUAL ELEVATIONS - WHERE AVAILABLE

#6

CA RICH CONSULTANTS, INC.

Certified Ground-Water and Environmental Specialists



PROJECT: Pall Corporation, Glen Cove, NY WELL I.D.: MW-6P

DRILLING SUMMARY

Drilling Co: Delta Well & Pump Co. Drillers: Joe Guggino
Drill Rig Make/Model: Failing F-10
Borehole Diameters: 8"
Total Depth: 65'
Drilling Fluid: None
Depth to Water: 4.8'
Supervisory Geologist: Steven Sobstyl

WELL DESIGN

Casing Material: PVC	Diameter: 4"	Length: 50'
Screen Material: PVC	Diameter: 4"	Length: 10'
Slot Size: 20 (0.020)	Setting: 60-50	
Filter Material: Morie #2	Setting: 60-43	
Seals Material: Bentonite	Setting: 43-40	
Grout: Portland cement/bentonite	Setting: 40- 1	
Surface Casing Material: Flush	Setting: Flush	

TIME LOG

	Started	Completed
Drilling:	8-13-92	8-13-92
Installation:	8-14-92	8-14-92
Development:	8-17-92	8-17-92

WELL DEVELOPMENT

Method: Centrifugal Pump
Static Depth to Water: 2.2'
Pumping Depth to Water: 32'
Pumping Rate: .5 GPM
Volume Pumped: 110 Gallons

FIGURE 3-1

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MW-7P**

Project Pall Corporation/August Thomsen Owner Pall Corporation
Location Sea Cliff Avenue, Glen Cove, N.Y. Proj. No. 04100-0297
Surface Elev. ____ Total Hole Depth 20 ft. Diameter 8.75 in.
Top of Casing 56.52 ft. Water Level Initial 5.5 ft. Static ____
Screen: Dia 4 in. Length 15 ft. Type/Size .020 pvc in.
Casing: Dia 4 in. Length 3 ft. Type pvc
Fill Material #1 Morie gravel pack Rig/Core ____
Drill Co. ____ Method Hollow stem auger
Driller Carl Log By Daniel Smith Date 11/18/98 Permit # ____
Checked By Daniel Smith License No. ____

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Hand-dug to 5 feet.
2					SP	Dark brown, dry, medium to fine SAND, some cobbles, some gravel, little clay.
4						
6					SW	Dark brown, wet, medium to fine SAND and SILT. No odor.
8						
10						
12					SW	Dark brown/gray, very wet, medium to fine SAND, very homogenous.
14						
16						
18					SW	Dark brown/gray, very wet, fine SAND and SILT.
20						End of exploration at 20 feet.
22						
24						

12/23/1996 lithlog-June,96

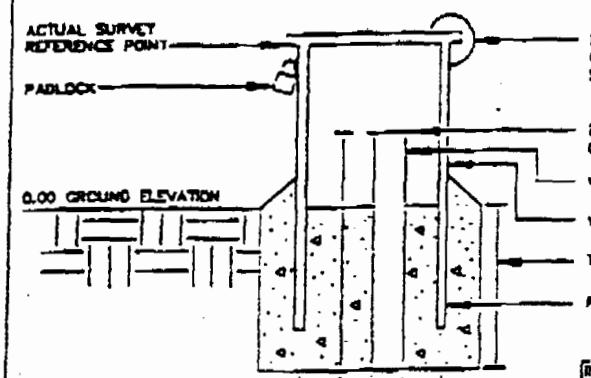
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: August Thiessen PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/23/92 WELL NO.: MW-1A

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OF ROAD BOX (1'-0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	-6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	1'
PROTECTIVE CASING	8" DIAMETER (I.D.) 1' LENGTH
[INDICATE ALL SEALS SHOWING DEPTH THICKNESS AND TYPE]	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC MATERIAL 4" DIAMETER (I.D.)
TYPE OF BACKFILL AROUND RISER	N/A
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	2'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	2'
DEPTH OF BOTTOM OF RISER	3'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN CAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	13'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	14'

(L1) LENGTH OF RISER 2.5' (L2) LENGTH OF SCREEN 10' REFERENCE POINT Top of Casing GROUND ELEV. 54.47'
ACTUAL ELEVATIONS - WHERE AVAILABLE

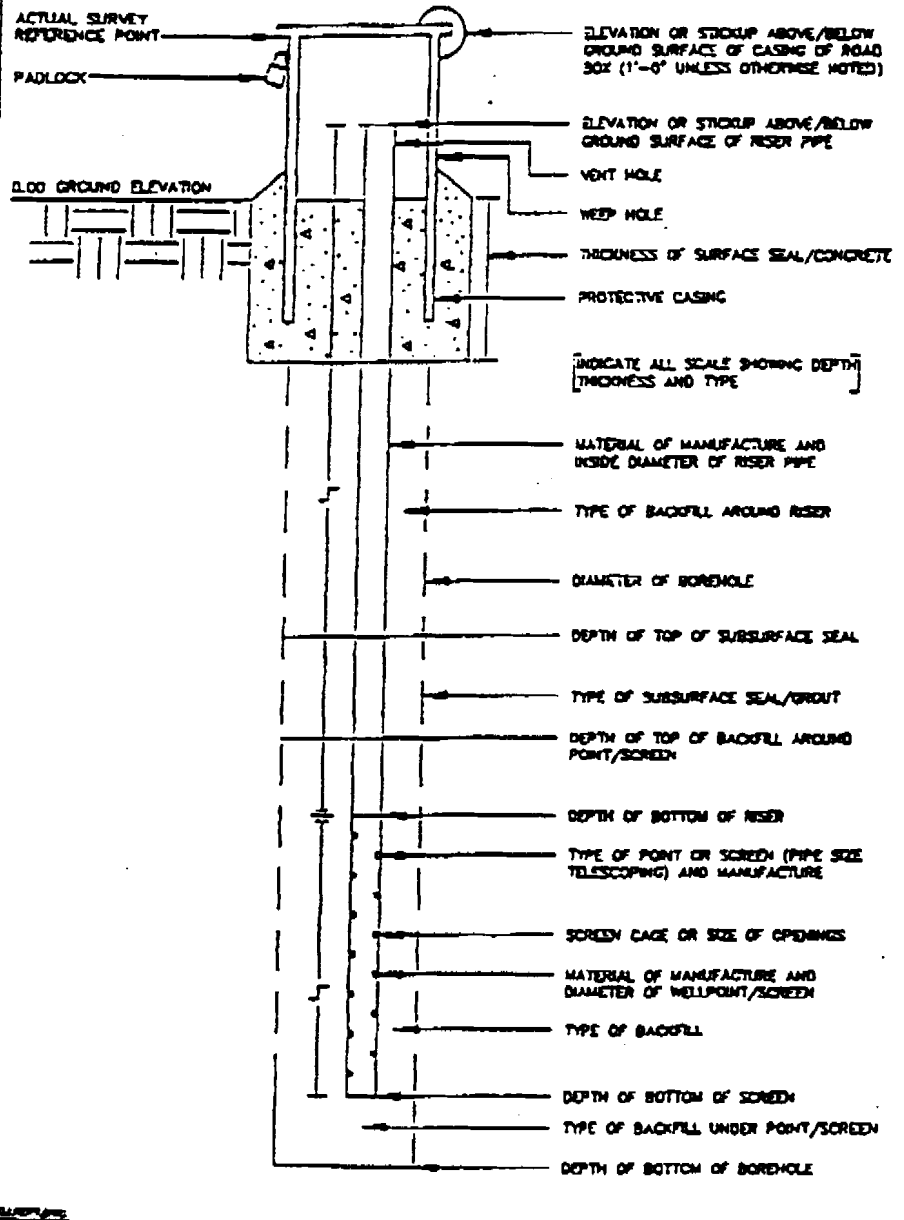
GROUNDWATER MONITORING WELL REPORT

SITE: Third Party Investigation LOCATION: August Thomsen PROJECT NO.: CROW9102

CONTRACTOR: Water Resources Inc. DRILLER: John Barnes

INSPECTOR: MNG/MSC INSTALLATION DATE: 1/23/92 WELL NO.: MW-2A

NOTE: UNLESS OTHERWISE DESIGNATED ALL DEPTHS ARE BASED ON A 0.00 GROUND ELEVATION



DRILLING METHOD	Hollow Stem Auger
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF CASING OR ROAD BOX (1'-0" UNLESS OTHERWISE NOTED)	Flush Mount
ELEVATION OR STICKUP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	-6"
VENT HOLE	
WEEP HOLE	
THICKNESS OF SURFACE SEAL/CONCRETE	1'
PROTECTIVE CASING	8" DIAMETER (I.D.) 1' LENGTH
INDICATE ALL SCALE SHOWING DEPTH THICKNESS AND TYPE	
MATERIAL OF MANUFACTURE AND INSIDE DIAMETER OF RISER PIPE	PVC 4" MATERIAL DIAMETER (I.D.)
TYPE OF BACKFILL AROUND RISER	N/A
DIAMETER OF BOREHOLE	8.0 INCHES
DEPTH OF TOP OF SUBSURFACE SEAL	1'
TYPE OF SUBSURFACE SEAL/GROUT	Bentonite Pellets
DEPTH OF TOP OF BACKFILL AROUND POINT/SCREEN	2'
DEPTH OF BOTTOM OF RISER	3'
TYPE OF POINT OR SCREEN (PIPE SIZE TELESCOPING) AND MANUFACTURE	Schedule 40 PVC
SCREEN CAGE OR SIZE OF OPENINGS	0.010
MATERIAL OF MANUFACTURE AND DIAMETER OF WELLPOINT/SCREEN	PVC 4 INCHES
TYPE OF BACKFILL	#2 Sand Pack
DEPTH OF BOTTOM OF SCREEN	13'
TYPE OF BACKFILL UNDER POINT/SCREEN	#2 Sand Pack
DEPTH OF BOTTOM OF BOREHOLE	14'

(L1) LENGTH OF RISER 2.5' (L2) LENGTH OF SCREEN 10' REFERENCE POINT Top of Casing GROUND ELEV. 51.22'

ACTUAL ELEVATIONS - WHERE AVAILABLE

DEPARTMENT OF PUBLIC WORKS
DIVISION OF SANITATION & WATER SUPPLY
NASSAU COUNTY, NEW YORK

UPPER GLACIAL MONITORING WELL CONSTRUCTION DETAIL

1H & 2H

Figure 12