EBASCO

REM III PROGRAM

REMEDIAL PLANNING ACTIVITIES AT SELECTED UNCONTROLLED HAZARDOUS SUBSTANCE DISPOSAL SITES

[redacted]

EPA CONTRACT 68-01-7250

EBASCO SERVICES INCORPORATED

EPA WORK ASSIGNMENT NUMBER: 224-2L2K
EPA CONTRACT NUMBER: 68-7250
EBASCO SERVICES INCORPORATED

FINAL

REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN CLAREMONT POLYCHEMICAL SITE OLD BETHPAGE, NEW YORK

JANUARY, 1989

NOTICE

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EBASCO SERVICES INCORPORATED

FINAL WORK PLAN
CLAREMONT POLYCHEMICAL
OLD BETHPAGE, NEW YORK

JANUARY, 1989

Prepared by:

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8099b

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January 13, 1989
RMOII-89-11

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Regional Project Officer
US Environmental Protection Agency
New York, NY 10278

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Remedial Project Manager
US Environmental Protection Agency
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New York, NY 10278

SUBJECT: REM III PROGRAM-EPA CONTRACT NO. 68-01-7250
WORK ASSIGNMENT NO. 224-2L2K
CLAREMONT POLYCHEMICAL SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FINAL WORK PLAN, DECEMBER

Gentlemen:

Ebasco Services Incorporated (Ebasco) is pleased to submit the subject Final Work Plan (20 copies). It is the third revision of the Work Plan submitted for review July 25, 1988 (RMO-II-80-248). The Work Plan presents Ebasco's technical scope and schedule for field activities and preparation of Remedial Investigation/Feasibility Study (RI/FS) Reports for the Claremont Polychemical Site. This Work Plan is influenced by two agreements which EPA Region II is undertaking. One is with New York State Department of Law, Nassau County and the Town of Oyster Bay to pursue groundwater remediation for the Claremont site in combination with that for Old Bethpage landfill. The Department of Law has been in favor of such an approach since this Work Assignment started. In addition, EPA intends to attempt delineation of the contaminant plume attributable to Claremont from contaminants originating from known, eg Old Bethpage Landfill, Captree Chemical property, and unknown sources.

The other agreement is with a potential buyer of the site; it involves soil sampling and analysis in order to determine the availability of the site. In addition, comments from reviewers of the original revised versions have been considered and incorporated as appropriate. This Final Work Plan presents Ebasco's understanding of the problem at the site and the rationale for our technical approach.

The planning schedule calls for finalization of the Work Plan by the end of January (Work Plan Section 8). We expect that by then a strategy for site security and field operations during the RI will be agreed to among affected parties, i.e., EPA, Ebasco and the two businesses operating at the site: L&L Excavating Corp., and Maniac Leasing. It has been determined that no conflict of interest exists for the Regional or Site Manager, nor is there an organizational conflict of interest for Ebasco.

The Optional Form 60 for Ebasco and its subcontractors will be submitted under separate cover. A Work Plan Receipt Form has been included in Mr. Ramos' copy of the Work Plan as a means of providing your acknowledgement of receipt of the documents. Please return the signed copy.

Please let us know if we can be of assistance during your review. If you have any questions or comments regarding the Draft Work Plan or this letter, please do not hesitate to call Martha McCullough (201) 460-6111.

Very truly yours,

Dev R. Sachdev

Dev R. Sachdev, Ph.D., P.E.
Regional Manager, Region II

cc: D.J. Sarno (EPA) (w/att)
M.K. Yates (ZPMO) (w/att)
W. Mendez (ZPMO) (w/att)
M. McCullough (w/att)

January 13, 1989

Mr. M Shaheer Alvi
Mr Carlos Ramos

SUBJECT: REM III PROGRAM-EPA CONTRACT 68-01-7250
WORK ASSIGNMENT NO.: 224-2L2K
FINAL WORK PLAN
CLAREMONT POLYCHEMICAL SITE
OLD BETHPAGE, NEW YORK

ACKNOWLEDGEMENT OF RECEIPT

Please acknowledge receipt of the enclosure, on the duplicate copy of this letter and return it to the sender.

M Shaheer Alvi, PE
Regional Project Officer

Date

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

APPENDIX

LIST OF TABLES

LIST OF TABLES (Cont'd)

LIST OF FIGURES

1.0 INTRODUCTION

This Work Plan describes a Remedial Investigation/Feasibility Study (RI/FS) for the Claremont Polychemical Site located in the Town of Old Bethpage, Nassau County, Long Island, New York (Figure 1-1). The RI/FS is being performed for the United States Environmental Protection Agency (EPA) as authorized under EPA Work Assignment Number 224-2L2K, Contract Number 68-01-7250.

1.1 WORK PLAN DESCRIPTION

This work plan has been prepared using information provided by the EPA Region II, New York State, and Nassau County and information obtained subsequently by Ebasco. A history of the site was constructed and existing analytical data reviewed in order to understand as fully as possible present conditions at the site. Because of the complex and confusing history of the site, the entire site is under consideration in this plan, not only the locations of historic spill events or previous sampling. The existence of potential off-site influences on the site (e.g., Old Bethpage Landfill) and on the RI have been investigated and factored into the field program.

Information used as the basis for the Work Plan was obtained from the following sources.

New York State Department of Law (NYDOL)

Nassau County Health Department (NCHD)

Nassau County Clerk's Office

Lockwood, Kessler and Bartlett (LKB)

Geraghty & Miller, Inc.

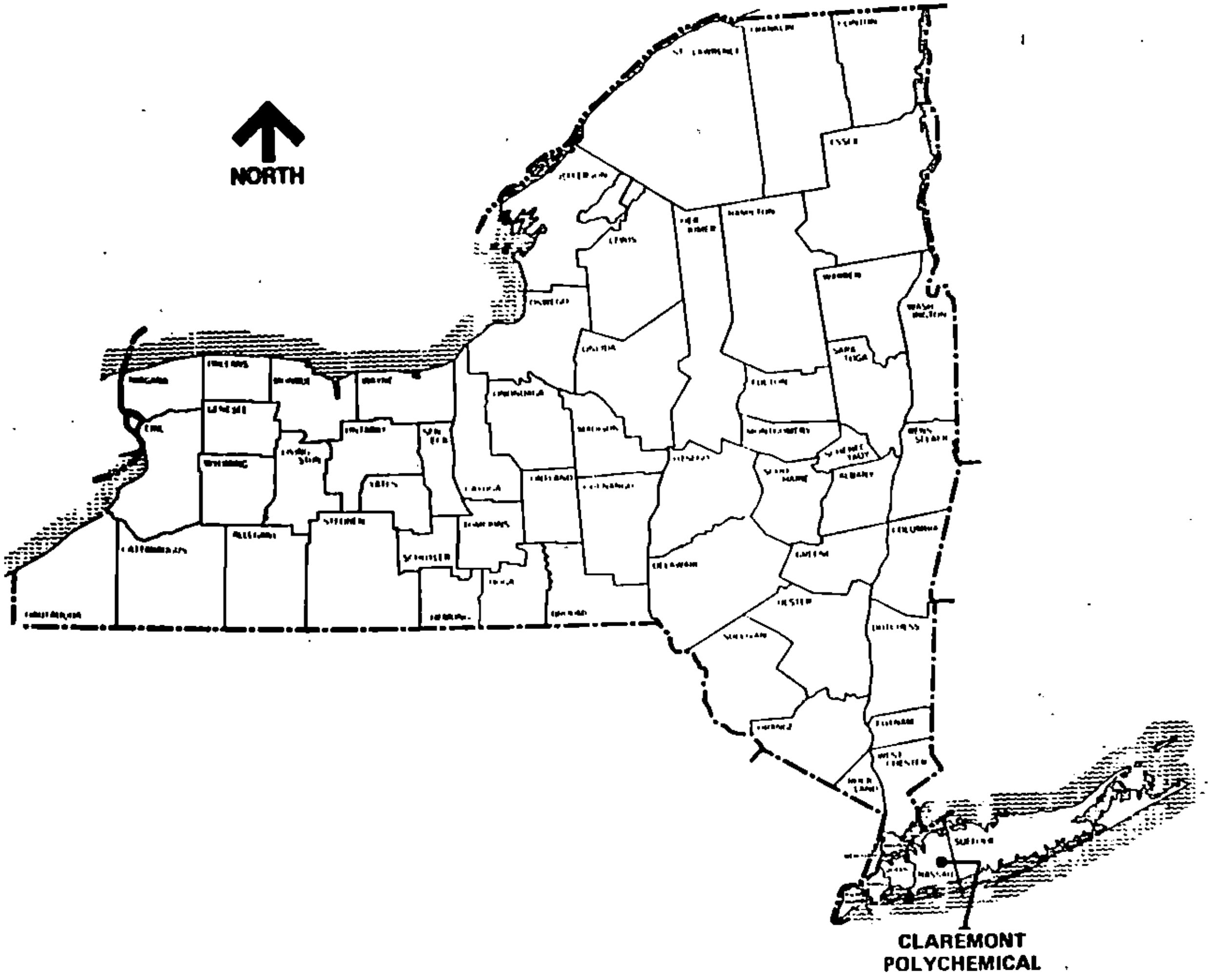
Oyster Bay Planning Department

Mark Neitlich, principal, former Claremont Polychemical Corporation, and extant Winding Road Properties, Winding Road Estates.

Velzy Associates

L&L Excavating, Inc.

This work plan is organized in 10 major sections. The description of the site and its surroundings is in Section 2.0. The manufacturing processes and historical events, including previous studies at the site and in surrounding areas, are described in Section 3.0. Geologic/hydrologic and chemical characterization of the site and the preliminary assessment of risks and remediation follows in Section 4.0. The RI/FS rationale is explained in Section 5.0. Task descriptions are in Section 6.0. Costs, schedule and management structure/ responsibilities are covered in Sections 7.0, 8.0 and 9.0, respectively. References are furnished in Section 10.0.



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 1-1

REGIONAL LOCATION

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2.0 SITE BACKGROUND AND SETTING

2.1 SITE LOCATION AND SURROUNDINGS

The Claremont Polychemical site, located in central Long Island at 501 Winding Road, Old Bethpage, New York, (Figure 2-1), is a 9 acre site, consisting of 4 property lots in Nassau County Section 47, Block A. These lots, numbered 267, 283, 295 and 296 are contiguous and bounded to the west and northwest by the Oyster Bay Solid Waste Disposal Complex (OBSWDC), which includes the Old Bethpage landfill; to the east by SUNY Agricultural and Technical College, Farmingdale; to the south by Bethpage State Park (with golf courses) and to the north by a light industrial area, including the County Line Commercial Center. Adjacent to the site at its southwest corner is Park Stables where privately boarded horses and publicly available mounts are maintained. Bridle paths exist in the state park. The Suffolk County line is approximately 800 feet east of the site.

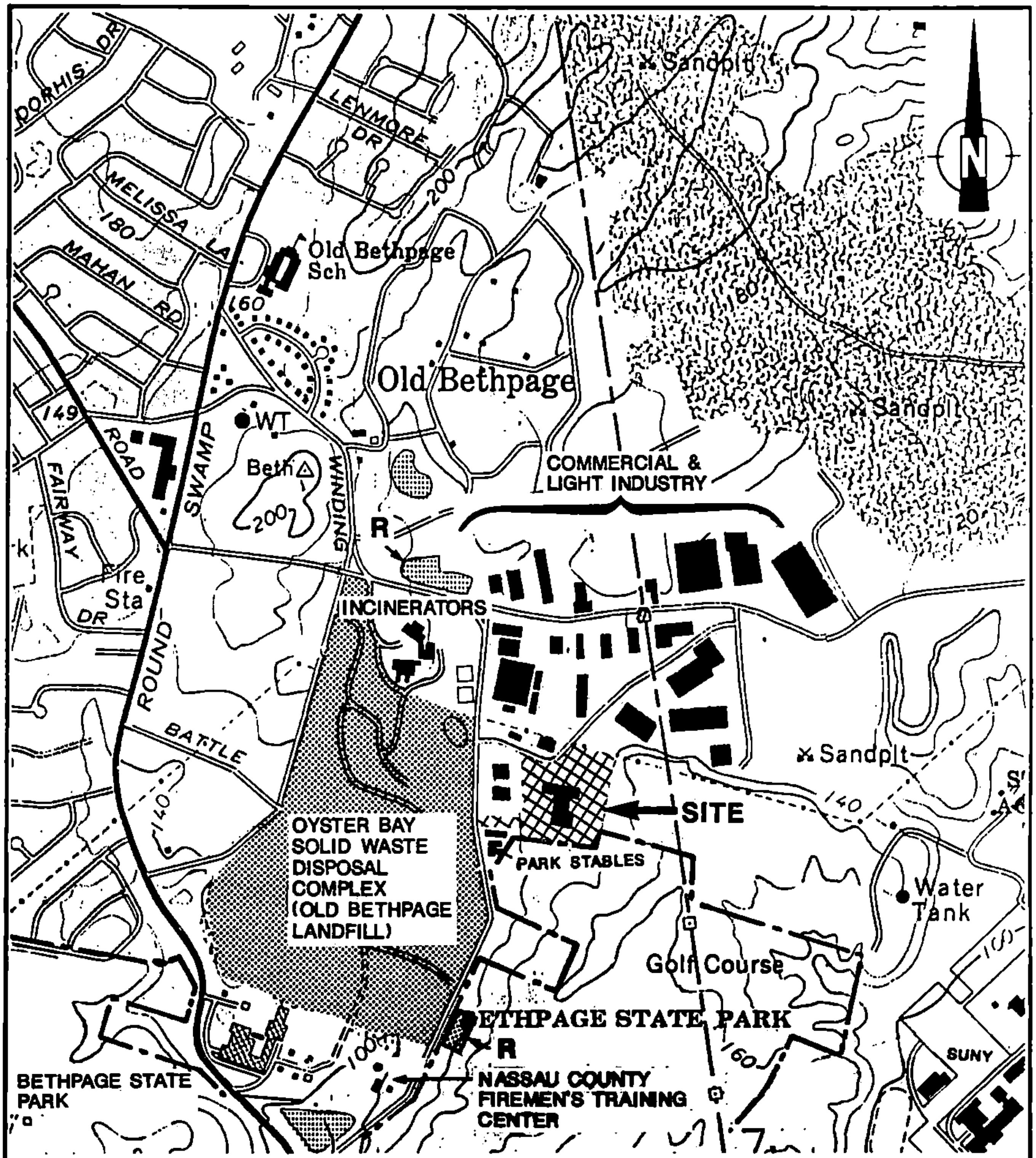
The town of Oyster Bay previously operated 2 incinerators approximately 1/2 mile from the site and north of the landfill. According to the NCHD, quench water from the incinerators was discharged to the ground when the incinerators were operational.

The closest residences are less than 1/2 mile away on the west side of the landfill. The nearest public water supply well is located 3,500 feet northwest of the site. Farmingdale water district wells, N1937, N6644 and N7852, are located more than 7000 feet south, and possibly downgradient, of the site. Groundwater recharge basins are located 1800 and 2500 feet north (upgradient) of the site, and 1000 feet south of the site.

The community of Old Bethpage is located within the town of Oyster Bay. Old Bethpage is best known for its restored historical village representing the Colonial era. In 1985, Old Bethpage had a population of 5,881 persons and Oyster Bay had a population of 305,750 persons, according to the Current Population Report (U.S. Bureau of the Census, 1987).

The area of Old Bethpage where the site is located is mostly industrial. Industrial operations include warehousing, manufacturing, and waste treatment. A home for senior citizens is located on the property of the OBSWDC and Northside Elementary School is in the immediate vicinity.

Long Island is located between 40° and 42° north latitude in a temperate climate belt. The mean annual temperature on the island, approximately 51°F (11°C), is several degrees higher than the average for all of New York State because of the tempering influence of the bordering Atlantic Ocean and Long Island Sound. Minimum average monthly temperatures on Long Island occur in February and range from 28°F (-2°C) to 32°F (0°C); maximim average monthly temperatures occur in July and range from about 69°F (21°C) to 75°F (24°C). Average temperatures increase from south to north. Maximum and minimum



1000 0 1000

SCALE IN FEET

R = RECHARGE BASIN

ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL FACILITY

FIGURE 2-1

SITE LOCATION

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temperatures of record on Long Island are 103°F (39°C) and -14°F (-26°C) respectively (Soil Conservation Service, 1975).

Precipitation averages about 44 inches per year and is fairly well distributed throughout the year on Long Island. The prevailing wind direction is northwest during most of the year, except during the summer months when south and southwest winds are predominant (Franke and McClymonds, 1972).

2.2 SITE DESCRIPTION

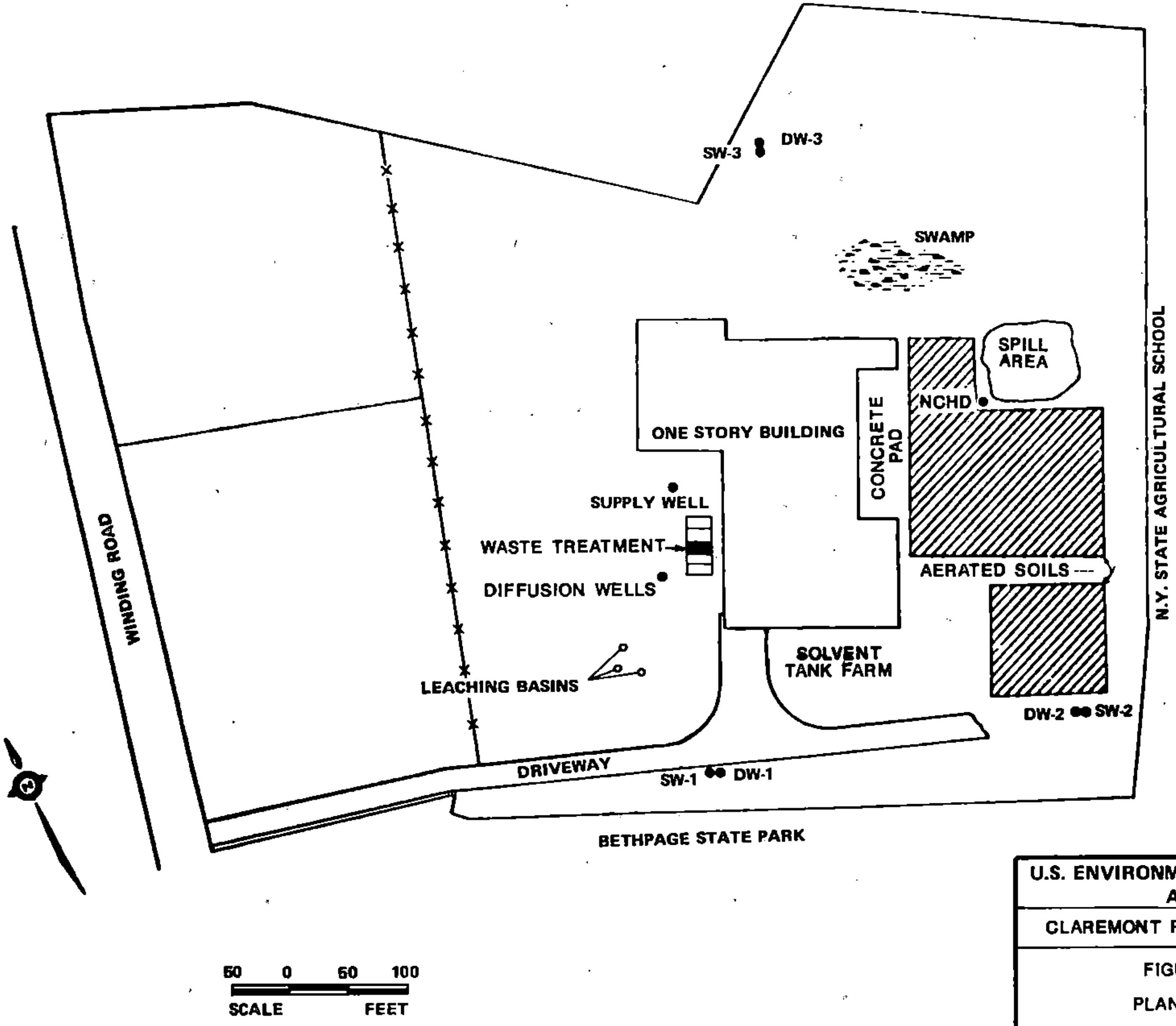
The Claremont Polychemical site is situated in a broad, low-lying valley which trends north-south. The valley is approximately two miles wide and slopes gently southward toward the Great South Bay. The site is relatively flat with elevations ranging from 160 to 117 feet above mean sea level along the eastern and southwestern boundaries, respectively. Steep slopes, approximately 20 to 25 feet high, bound the site to the east and south suggesting that the property was once a borrow pit of some kind. The Old Bethpage landfill creates approximately 200 feet of relief to the west of the site.

Figure 2-2 presents a plan map of the Claremont Polychemical site. Entrance to the site is via Winding Road, to the west. An asphalt drive runs from the entrance along the periphery of the site. The eastern and northern portions of this drive are inaccessible due to the presence of debris.

A one-story, 35,000 sq. ft. building is located in the center of the site. This building, once the process plant for Claremont Polychemical, is presently vacant with the exception of approximately 700 drums, bags and containers of raw materials and finished products. Tenant operations occupy one room of the building.

West of the process building, a wastewater treatment tank system, 3 leaching basins, a number of dry wells, a water supply well with an associated underground storage tank, two diffusion wells and a single underground fuel tank are present. The wastewater treatment system, located immediately adjacent to the building, is a 4-section concrete structure approximately 10' x 24' x 12'. Underground pipes connect the wastewater treatment tanks to 3 leaching basins to the southwest. These basins are concrete-walled structures with open bottoms, approximately 3 feet in diameter and 10 feet deep (Neitlich, 1988). The leaching basins are accessed through manhole covers.

The water supply well, north of the wastewater treatment system, is approximately 337 feet deep and screened at 300 to 330 feet below grade. A 10,000 gallon underground water storage tank, oriented north-south, is situated adjacent to the well.



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 2-2

PLAN OF SITE

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The diffusion wells, used to create a closed-loop water cooling system for plant operations, are located south of the wastewater treatment tanks. One of the wells is presently filled with sediment. The other is 130 feet deep and screened from 80 to 130 feet below grade. A 10,000 gallon, underground fuel storage tank is located adjacent to the southwest corner of the building, although its exact location is unknown.

An underground tank farm, comprised of approximately 14 tanks, is located to the south of the building. Tank meters and fill ports are present aboveground in this area. The tanks were used to store solvents. According to M. Neitlich (personal communication, 1988), the tanks sit side-by-side and are oriented north-south. Underground piping runs from these storage tanks into the process building.

North of the building, a swampy area, once the site of an asphalt parking lot whose drainage wells became clogged, is present. Standing water was observed in this area during a site visit on April 20, 1988.

A concrete pad utilized as a drum staging area is located immediately east of the building. There are presently 10 severely corroded drums of unknown solids situated on the concrete pad. The remainder of the property east of the building is littered with excavated underground tanks, old drums (empty), automobile tires, sand piles and construction debris.

Only intermittent surface water occurs on site, in the swampy area (Figure 2-2). The nearest downslope natural surface water is Massapequa Creek, approximately three miles to the south. Various artificial water bodies are in the vicinity: recharge basins up and downgradient and a pond south and adjacent to the Nassau County Firemen's Training Center (Figure 2-1). On aerial photographs, a pool of water is situated in the northeast corner of the Old Bethpage landfill.

An intermittent stream on the east side of Winding Road in the vicinity of the site is shown on 1947 and 1952 topographic maps. It originated north of the site and is shown extending southwest of the site. It is not present now.

3.0 SITE HISTORY

3.1 MANUFACTURING PROCESSES AND WASTE PRODUCTION

The plant on Winding Road was the second such facility operated by Claremont Polychemical for the manufacture of pigments for plastics and inks, coated metallic flakes, and vinyl stabilizers. The original Claremont facility was located at 39 Powerhouse Road in Roslyn, New York. Construction of the Winding Road facility occurred between 1966 and 1968 (Table 3-1). Operations commenced in 1968. Pigments were produced in dry, paste and chip forms. Organic solvents, resins and wash wastes (mineral spirits) were the principal wastes generated. A summary of chemicals known to be used and/or produced on site is presented on Table 3-2. A solvent recovery system was employed at the site (Neitlich, 1988). Solid wastes and treatment sludges were deposited in drums. Two pigment dust collectors are located on the roof.

Durogold, one of the main products manufactured at Claremont Polychemical, is a coated bronze flake formed with copper and zinc compounds. Waste fluid generated from the Durogold process was treated by pH adjustment with soda ash and phosphoric acid in the wastewater treatment tanks west of the process building. Sludges of precipitated metals were drummed while liquid waste generated by the treatment process was discharged to the 3 leaching basins to the southwest.

Figure 3-1 is a schematic drawing of the process building. Production operations which occurred in each room within the building are indicated. In general, sludges and solid wastes generated at Claremont were removed to the Old Bethpage landfill until the late 1970's when access to that facility was terminated (Neitlich, 1988). Thereafter, sludges were deposited in drums or old metal tanks located above ground on the eastern side of the site. The tanks had once been underground storage tanks at the Roslyn facility. Plant floor drains are connected to the wastewater treatment system. Rain water is drained from the roof to dry wells located west of the building.

3.2 PROPERTY TRANSFER

By mortgages and agreements in 1969 and 1973, Claremont Polychemical Corporation granted and released ownership of its real and capital properties to Winding Road Estates (land) and Winding Road Properties (land, building and contents). Claremont ceased to operate in 1980. Winding Road Properties entered into Chapter 11 proceedings in 1980. Most equipment used by Claremont has been removed from the building. Under supervision of the New York Bankruptcy Court, two tenant businesses, L&L Excavating Corporation and Maniac Leasing have been operating at the site for the past 4-5 years.

TABLE 3-1 (Sheet 1 of 2)

HISTORICAL SUMMARY OF ACTIVITIES

	Property	Activity	Regulatory Action
1966		Fabrication/erection of structural steel on lot 267	
1967	Profit Sharing Plan & Trust Agreement of Claremont Polychemical Corp aquires mortgage for lot 267 ($31,254)	fabrication/construction on on lot 267	NY State Dept. of Health discharge permit issued.
1968	Winding Rd Properties Inc. becomes owner in fee of lot 267	Claremont Polychemical operations commence at Winding Rd facility	
1969	Claremont Polychemical Corp releases/assigns to Winding Rd Estates, Inc., land, buildings and improvements: parts of lot 267 & 286 ($1.)	Claremont Polychemical operations continue: waste water treatments - sanitary and metals from Durogold process; discharges via septic and leaching systems, respectively; buried tanks & piping used for process solvents;	
1973	Claremont Polychemical Corp. grants/releases to Winding Rd. Estates, Inc. lots 283 & 295 ($10).		
1975			SPDES Permit NY0076163 issued April 4
1977		Leaching pools sampled (Bureau of Water Pollution Control.)	
1979		2000-3000 drums of solvents, resins, inks discovered on site.	
1980	Winding Rd Estates Inc. & Winding Rd. Properties Inc. enter into mortgage with William Otte (trustee to secure payments ($55,754.62) to creditors by Winding Rd Recycling Corp., involving lots 267 and 296 (receivership)	October: Excavation of discolored soil layer (75 x 75 x 10 ft) and spreading of it on plastic sheeting; Nassau County Health Dept. Sampling (soil, groundwater); Excavation stopped due to receivership.	Nassau County Health Dept. notifies Claremont Polychemical of its responsibility to clean-up site. 1980 SPDES Permit renewal.
1981			Consent order directing clean-up June 1st, no clean-up activity after October 1980.
1983	L&L Excavating & Maniac Leasing establish operations on site (Approximate)	Woodward-Clyde Consultants investigation of spill area for NY State DEC hazard ranking.	
1984		Velzy Associates investigation of spill area for Winding Rd. properties	NY State & "company" sign administrative Order requiring site clean-up (August)
1986		CA Rich Consultants hydrogeologic investigation of Claremont Polychemical Facility for NY State Dept. of Law; Nassau County Health Dept. sampling (soils)	First notification regarding initiation of clean-up to NY State Clearing house (July 86)

TABLE 3-1 (Sheet 2 of 2)

HISTORICAL SUMMARY OF ACTIVITIES

	Property	Activity	Regulatory Action
1987			Second notice to NY State Clearinghouse; site ranked 614 on the National Priorities List (November 87) Walter Neitlich notified by certified mail of: USEPA intention to clean-up site; his position as probable PRP: opportunity to respond within 60 days with a good faith proposal for clean-up.
1988			USEPA assigns RI/FS work to Ebasco (April)

TABLE 3-2

CHEMICALS INVOLVED WITH MANUFACTURING PROCESSES[1]

PRODUCT	RAW MATERIALS	WASTE PRODUCTS	WASTE TREATMENT
pigments & ink	phthalates vinyl resins polyethylene resins ketones alcohol high flash naptha	mineral spirits vinyl resins solvents solids	solvent recovery
durogold	copper zinc	zinc bronze	phosphoric acid, soda ash for neutralization produced Cu & Zn carbonates & phosphates
coated aluminum powder	aluminum sodium silicate	solids in low volume	none-dry process
vinyl stabilizers	barium oxide cadmium oxide high flash naptha ethyl-hexanoic acid para, tertiary-butyl benzoic acid toluene tetrachloroethylene	"none"	--

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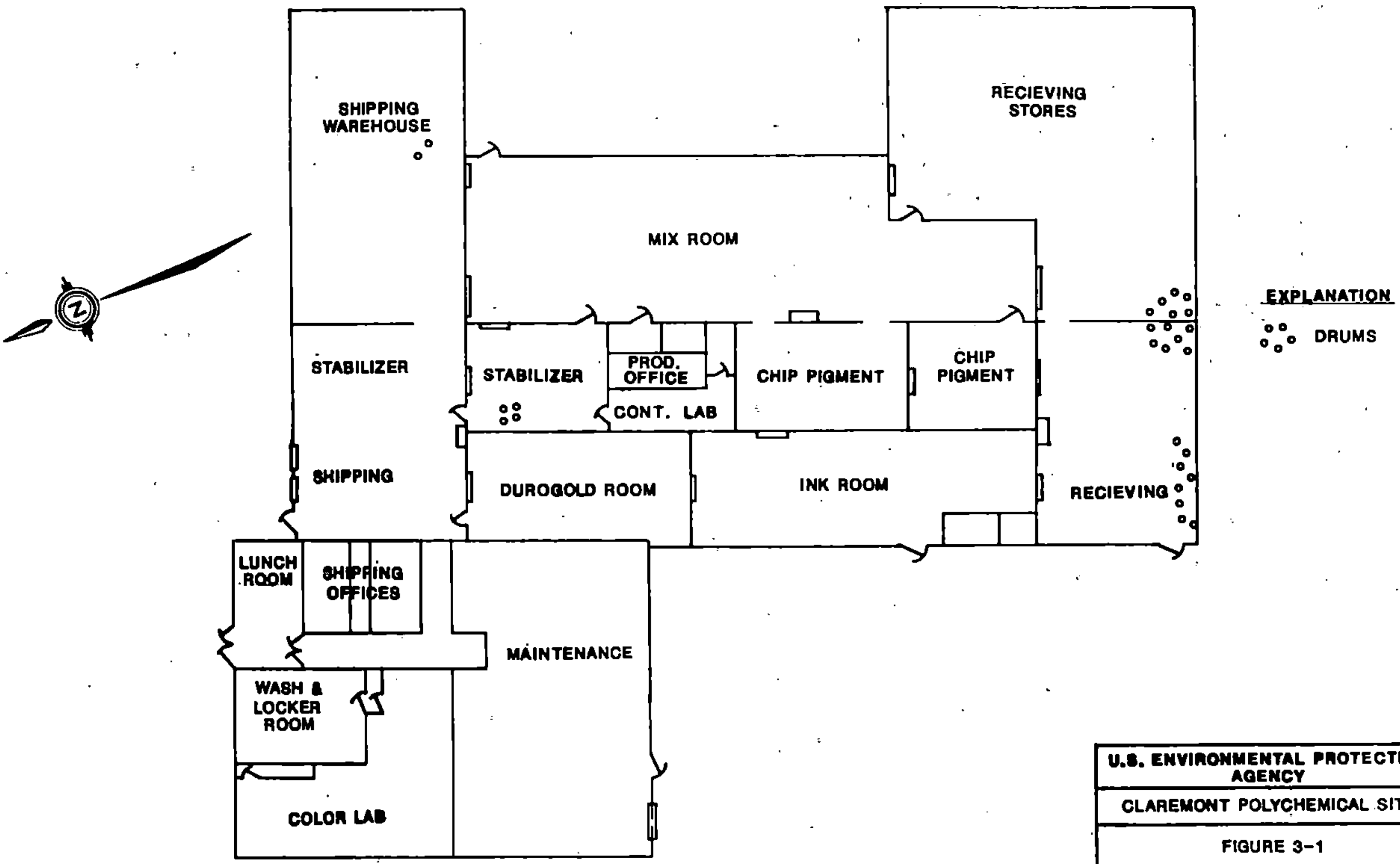
[1] Source: M Neitlich, vice-president, meeting of 6/20/88.



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 3-1

PROCESS BUILDING

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3.3 PREVIOUS INVESTIGATION OF THE SITE

Concern regarding the Claremont Polychemical uncontrolled hazardous waste site was originally linked to the discovery in 1979 by the NCHD of numerous drums of chemical waste on site.

Leakage from the apparently neglected drums raised concern for groundwater contamination. The principal public water supply for Long Island, the Magothy Aquifer, is found close to the surface in the vicinity of the Claremont site. Inspections and limited sampling by NCHD occurred from 1979 to the present. Overflowing wastewater treatment tanks and 6 drums in various stages of decay were noted during inspections.

From November 1979 to April 1980, the NCHD noted 2,000 to 3,000 drums containing resins, inks and organic solvents present in the eastern portion of the site. They were gone in September, 1980 when NCHD inspectors discovered a 75' x 75' area (herein referred to as the "spill area") of visibly contaminated soils (e.g. red inks and solvents) also in the eastern portion of the site (Figure 2-2). In October 1980, NCHD ordered a remedial action involving excavation of soils in the spill area. Soils were removed from the spill area to a depth of 10 feet. Excavated soils were spread on plastic sheets in the eastern portion of the site for volatilization of organics (aerated soils area in Figure 2-2). The excavated spill area was partially backfilled with native soils. A monitoring well south (downgradient) of the spill area was installed by Claremont Polychemical per direction from NCHD in November of 1980 (identified as NCHD in Figure 2-2). Groundwater samples from this well indicated the presence of groundwater contamination under the site.

In 1983, Woodward-Clyde Consultants, under direction of the New York State Department of Environmental Conservation (NYSDEC), conducted a preliminary investigation of the site. This investigation was limited to a literature search and site walkover and resulted in a draft hazardous ranking determination for the spill area only.

In 1984, Velzy Associates was contracted by Winding Road Properties, Inc. to further investigate the spill area. This effort included limited soil borings and the installation of 3 monitoring wells in the vicinity of the spill area. The Velzy Study, while limited in scope, served to characterize the volatile contaminants in a limited portion of site soils and to confirm the presence of groundwater contamination under the Claremont Site.

In response to a request for information by the United States Bankruptcy Court, C. A. Rich Consultants conducted a limited hydrogeologic investigation of the Claremont Polychemical site in 1986. This investigative effort included the installation of three monitoring well clusters on site (Figure 2-2), groundwater sampling and limited soil sampling.

The geologic/hydrologic descriptions (Section 4.1) and chemical characterization (Section 4.2) of the site area are based on information obtained from the above mentioned previous investigations. Data have been used as available.

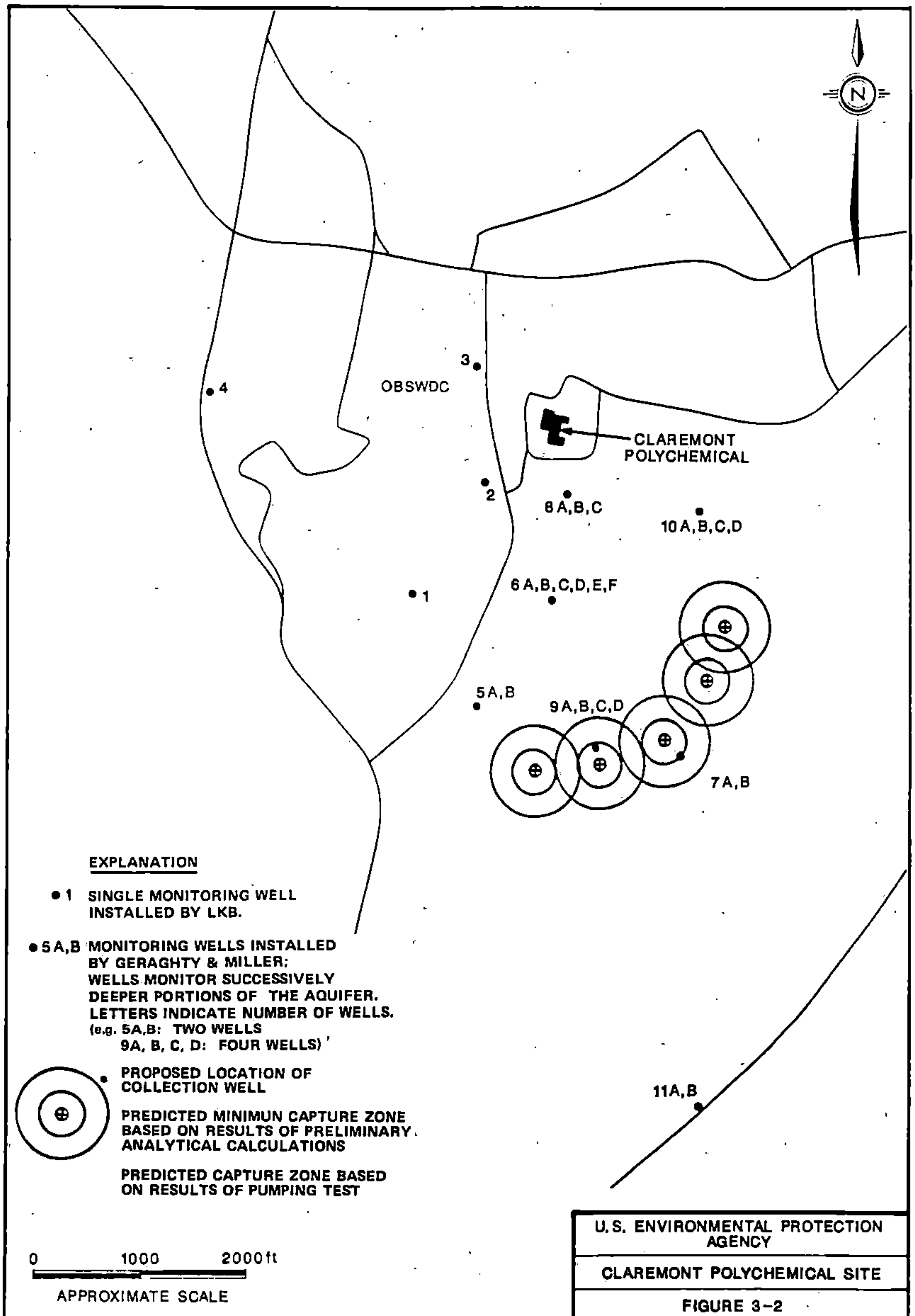
3.4 INVESTIGATIONS ADJACENT TO THE SITE

Groundwater monitoring conducted for remediation of the Old Bethpage landfill located west of the site started in 1983. Thirty-two PVC monitoring wells, screened at selected intervals from the water table to as deep as 350 feet were installed downgradient of the landfill and Claremont site (Figure 3-2). Two wells were installed upgradient of the landfill. Upgradient supply wells were sampled to determine regional background concentrations of chemical constituents in the groundwater. Findings from these investigations were used in developing this work plan.

In September 1988, a signed Consent Decree was issued by the United States District Court, Eastern District of New York documenting the selected pump and treat remedial action for the Old Bethpage landfill. Five groundwater recovery wells, located along the eastern edge of Bethpage State Park (southeast and downgradient of the Claremont site), will be pumped at a rate of 1.5 million gallons per day in order to create a hydraulic barrier for contamination containment. Figure 3-2 presents the locations of the five recovery wells and the extent of each well's predicted capture zone. The recovery wells have been designed to recover the relatively deep landfill plume within the 750 foot thick Magothy Aquifer. They will be screened so as to draw groundwater from a depth of 150 to 250 feet below ground surface (Geraghty & Miller, 1988). Pumped water will be treated via an air stripper and possibly a carbon filtration system and then transported through underground pipes to a recharge basin in the northern portion of the Old Bethpage landfill Complex (upgradient of the Claremont site). With the addition of landfill capping and the previously installed landfill leachate collection system (installed in 1983), containment of the landfill plume is anticipated to occur within ten years. Operation of the pump and treat system is expected to start by September 1989.

Remediation studies have started regarding contamination emanating from the Nassau County Firemans Training Center. Data from this work will be incorporated in this RI/FS as appropriate.

Hospital waste incinerators were previously operated upgradient of the Claremont site (Energy Combustion Corp). Ash disposal occurred in trenches on the site and leachate was stored in a buried tank. In February 1987, the Nassau County Department of Health (NCDH) took 2 soil samples from a trench area and attempted to sample the buried tank. The tank was not sampled because it was determined to be empty. Both soil samples showed negative EP toxicity results. NCDH analyses for volatile organic compounds produced no results above minimum reportable concentrations.



SOURCE: GERAGHTY & MILLER, INC. 1988

U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 3-2

EXISTING LANDFILL MONITORING WELLS AND PROPOSED OLD BETHPAGE LANDFILL COLLECTION WELLS

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Split sample analysis by Ecotest laboratories measured toluene levels of 79 ppb and 71 ppb and xylene levels of 28 ppb in one sample. Metals results from Ecotest showed zinc (800 ppm and 900 ppm) to be present above typical United States soil levels, but well within the range (10-2,000 ppm). Cadmium (12 ppm and 13 ppm) and copper (180 ppm and 620 ppm) were above the upper range values of 7 ppm and 100 ppm, respectively. The copper levels were explained by installation of copper water pipes, but no explanation was found for the cadmium levels.

Information recently obtained by the NCHD has prompted initiation of a preliminary investigation into the potential for groundwater contamination by the Captree Chemical Company located immediately to the west of the site. Groundwater samples from a well located on this property will be obtained shortly by the NCHD.

3.5 CURRENT USE OF SITE PROPERTY

Under reorganization proceedings administered by the New York State Bankruptcy Court, property included in the Claremont Polychemical site has been leased to two businesses for the past 4-5 years. The businesses are L&L Excavating Corporation and Maniac Leasing; they frequently work together.

L&L Excavating maintains trailer offices in the southwestern part of the site and uses several other locations on the site. The Claremont maintenance room (Figure 3-1) serves as a maintenance shop for L&L. Welding and repair of such items as vehicles and engines occur there. Oil has been observed leaking from vehicles parked in front of the building by REM team staff during site visits on April 20 and May 10, 1988. The ground is stained in various locations. L&L uses sand and gravel during its operations. On-site, large stocks (10-15 feet high) of these materials have been piled, especially in northwestern areas (June 14, 1988 observation). In addition, L&L deposits large quantities of demolition debris north of the Claremont building (May 10, 1988 observation) and uses that area to pulverize the large-sized pieces of building debris prior to disposal off site. As a result, the quantity and location of debris are variable, sometimes changing daily. Scrap iron (sewer grating, pipe, manhole covers) is accumulated in several locations on the west side of the site. Other scrap (tires, metal) is scattered on site.

Between the initial site visit on April 20, 1988 and the inspection by EPA's Emergency Response Team, May 10, 1988, asphalt debris was deposited in the vicinity of the leaching basins southwest of the plant. More asphalt debris was added between May 10th and June 14th. Rearrangement of scrap iron and the asphalt debris has blocked access to a previously accessible basin. More than 10 truck loads of soil extended from the southeast corner of the building to the southeast corner of the site during June 1988, effectively blocking access to the spill area. Sometime during mid-day on May 10, 1988 a pile of blue crystalline material appeared in the spill area. Additional piles of debris were present by June 14, 1988.

Maniac Leasing uses the southern and southeastern portions of the site to park large trucks and store roll-off containers.

4.0 INITIAL EVALUATION

4.1 GEOLOGIC/HYDROLOGIC CHARACTERIZATION

4.1.1 Regional Geology

Long Island is underlain by more than 1000 feet of Cretaceous and Pleistocene sediments that rest unconformably on southeasterly-dipping bedrock (McClymonds and Franke, 1972). A generalized geologic cross-secton of Long Island is presented in Figure 4-1. The unconsolidated sediments, described as a series of sands, gravels, silts and clays, are of glacial, fluvial and deltaic origin and have been divided into five main units. In ascending order they are the Raritan Formation (consisting of the Lloyd Sand and Raritan Clay Members), the Magothy Formation, the Manetto Gravel, the Jameco Formation, the Gardiners Clay and the Upper Glacial Formation. The Gardiners Clay and the Jameco Formation, limited to the southern portion of Long Island, are not present in the study area (Isbister, 1966).

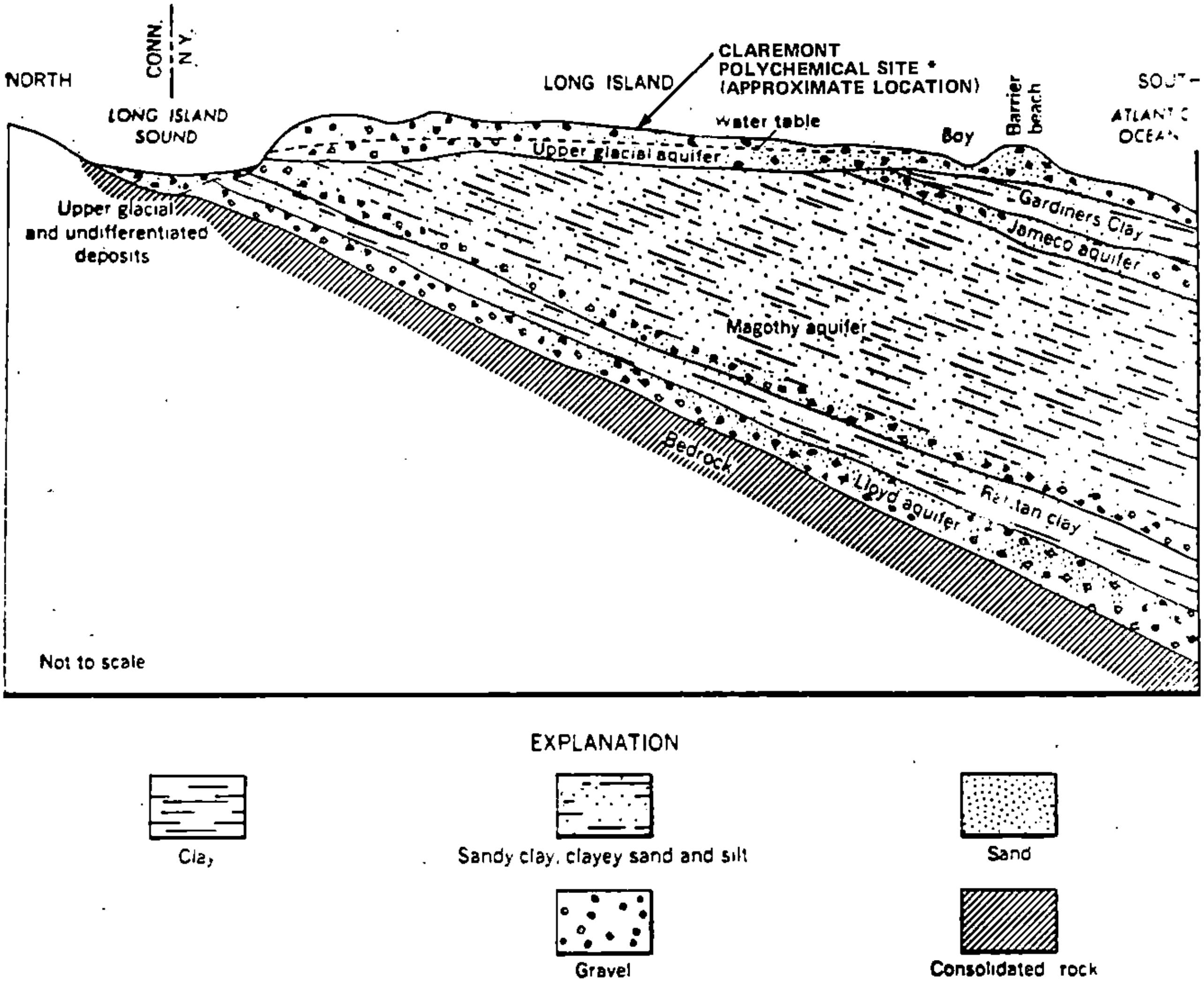
A summary of rock units and their water-bearing properties in the vicinity of the site is presented in Table 4-1. The Raritan Formation is approximately 800 feet thick and is comprised of approximately 500 feet of Lloyd Sand and 300 feet of Raritan Clay. The Raritan Clay acts as a confining layer between the overlying Magothy Formation and underlying Lloyd Sand resulting in predominantly artesian conditions in the Lloyd Sand Member (Isbister, 1966).

The Magothy Formation, an important aquifer in Central Long Island, is comprised of more than 1100 feet of fine sands and silty sands with some clay and gravel. The gravel is concentrated in the lower portions of the Formation. Municipal supply wells generally tap the coarser intermediate and deep zones of the Magothy.

The Upper Glacial Formation is comprised of gravel, sand, and clay and lies unconformably over the Magothy. Glacial materials were deposited on Long Island as moraines and outwash deposits and, in places, reach thicknesses up to 600 feet. The Manetto Gravel, a highly permeable deposit of fine to coarse gravel with lenses of sand is commonly included with the Upper Glacial Formation. The Manetto Gravel occurs in central Long Island near the Nassau-Suffolk County line, in the vicinity of Claremont Polychemical.

4.1.2 Site Geology

Geologic investigations by Isbister (1966) indicate that the Claremont Polychemical site is underlain by less than 20 feet of Upper Glacial/Manetto Gravel deposits, approximately 750 feet of



NOTE: UPPER GLACIAL AQUIFER INCLUDES MANETTO GRAVEL.
* THICKNESS OF THE UPPER GLACIAL AQUIFER IS VARIABLE ACROSS LONG ISLAND AND IS RELATIVELY THIN BENEATH THE SITE.

SOURCE: USGS PROFESSIONAL PAPER 627-E

U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 4-1

GENERALIZED GEOLOGIC CROSS-SECTION OF LONG ISLAND

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TABLE 4-1

SUMMARY OF ROCK UNITS AND THEIR WATER-BEARING PROPERTIES IN THE VICINITY OF CLAREMONT POLYCHEMICAL BETHPAGE, LONG ISLAND

System	Series	Geologic Unit[1]		Hydro-geologic Unit	Approx-imate maximum thickness (feet)	Depth from land surface to top (feet)	Character of Deposits	Water-bearing Properties
Quaternary	Pleistocene	Upper Plesitocene Deposits		Upper glacial aquifer	600	0-50	Till (mostly along north shore and in moraines) composed of clay, sand, gravel, and boulders forms Harbor Hill and Ronkonkoma terminal moraines. Outwash deposits (mostly between and south of terminal moraines, but also interlayered with till) consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Glaciolacustrine deposits (mostly in central and eastern Long Island) and marine clay (locally along south shore) consist of silt, clay, and some sand and gravel layers; includes the "20-foot clay" in southern Nassau and Queens Counties. Colors are mainly gray, brown, and yellow; silt and clay locally are grayish green. Contains shells and plant remains, generally in finer grained beds; also contains Foraminifers. Contains chlorite, biotite, muscovite, bornblende, olivine, and feldspar as necessary minerals; "20-foot clay" commonly contains glauconite.	Till is poorly permeable; commonly causes perched-water bodies and impedes downward percolation of water to underlying beds. Outwash deposits are moderately to highly permeable; specific capacities of wells tapping them range from about 10 to more than 200 gpm per ft (gallons per minute per foot) of drawdown. Good to excellent infiltration characteristics. Glaciolacustrine and marine clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel; generally retard downward percolation of ground water. Contains fresh water except near the shore lines. Till marine deposits locally retard salt-water encroachment.
Tertiary (?)	Pliocene(?)	Unconformity Mannetto Gravel		(Commonly included with upper glacial aquifer.)	300	0-120	Gravel, fine to coarse, and lenses of sand; scattered clay lenses. Colors are white, yellow, and brown. Occurs only near Nassau-Suffolk County border near center of island.	Highly permeable, but occurs mostly above water table. Excellent infiltration characteristics.
		Unconformity Magothy(?) Formation[2]		Magothy aquifer	1,100	0-600	Sand, fine to medium, clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal 50-200 feet. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common; contains muscovite, magnetite, rutile, and garnet as accessory minerals. Colors are gray, white, red, brown, and yellow.	Most layers are poorly to moderately permeable; some are highly permeable locally. Specific capacities of wells in the Magothy generally range from 1 to about 30 gpm per ft of drawdown, rarely are as much as 80 gpm per ft of drawdown. Water is unconfined in uppermost parts, elsewhere is confined. Water is generally of excellent quality but has high iron content locally along north and south shores. Constitutes principal aquifer for public-supply wells in western Long Island except Kings County, where it is mostly absent. Has been invaded by salty ground water locally in southwestern Nassau and southern Queens Counties and in small areas along north shore.
Cretaceous	Upper Cretaceous	Unconformity Raritan Formation	Clay Member	Raritan clay	300	70-1,500	Clay, solid and silty; few lenses and layers of sand; little gravel. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated.	Poorly to very poorly permeable; constitutes confining layer for underlying Loyd aquifer. Very few wells produce appreciable water from these deposits.
			Lloyd Sand Member	Lloyd aquifer	500	200-1,800	Sand, fine to coarse, and gravel, commonly with clayey matrix; some lenses and layers of solid and silty clay; locally contains thin lignite layers and iron concretions. Locally has gradational contact with overlying Raritan clay. Sand and most of gravel are quartzose. Colors are yellow, gray, and white; clay is red locally.	Poorly to moderately permeable. Specific capacities of wells in the Lloyd generally range from 1 to about 25 gpm per ft of drawdown, rarely are as much as 60 gpm per ft of drawdown. Water is confined under artesian pressure by overlying Raritan clay; generally of excellent quality but locally has high iron content. Has been invaded by salty ground water locally in necks near north shore, where aquifer is mostly shallow and overlying clay is discontinuous. Called "deep confined aquifer" in some earlier reports.
Precambrian		Unconformity Bedrock		Bedrock		0-2,700	Crystalline metamorphic and igneous rocks; muscovite-biotite schist, gneiss, and granite. A soft, clayey zone of weathered bedrock locally is more than 100 feet thick.	Poorly permeable to virtually impermeable; constitutes virtually the lower boundary of ground water reservoir. Some hard, fresh water is contained in joints and fractures but is impractical to develop at most places; however, a few wells near the western edges of Queens and Kings Counties obtain water from the bedrock.

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[1] Names are those used in reports by the Geological Survey.

[2] The use of the term "Magothy(?) Formation" has been abandoned. The post-Raritan Cretaceous deposits are divided into the Magothy Formation and Matawan Group undifferentiated and the Monmouth Group undifferentiated.

SOURCE: USGS PROFESSIONAL PAPER 627-E

the Magothy Formation, approximately 150 feet of the Raritan Clay and approximately 250 feet of the Lloyd Sand. These sediments overlie southeasterly-dipping bedrock located at a depth of approximately 1200 feet.

Site-specific geologic information is furnished by a limited number of borings which penetrated the upper 110 feet of the stratigraphic column (e.g., Upper Glacial and Magothy Formations) (C.A. Rich, 1986).

The majority of the site is underlain by well-stratified, orange-brown, yellow-brown, brown and light gray fine to medium sand with silty horizons. Abundant peat laminae and discontinuous sand layers are also present.

In the north-central portion of the site, silt and clay horizons are most abundant. Boring logs from on-site supply and diffusion wells and monitoring wells installed during previous investigations describe these soils as orange-brown and gray, fine to medium sand interbedded with tan clay, silt and fine sand (C.A. Rich, 1986). These alternating clay and sand beds range in thickness from 2 to 18 feet. A lack of correlation from boring to boring suggests that the clay beds are discontinuous. Boring logs from municipal supply wells north of the site reveal a similar stratigraphy of alternating clays and sands (C.A. Rich, 1986), suggesting that Claremont Polychemical is located on or near a contact between a predominantly sandy portion of the Magothy Formation to the south, and an alternating sand and clay portion to the north.

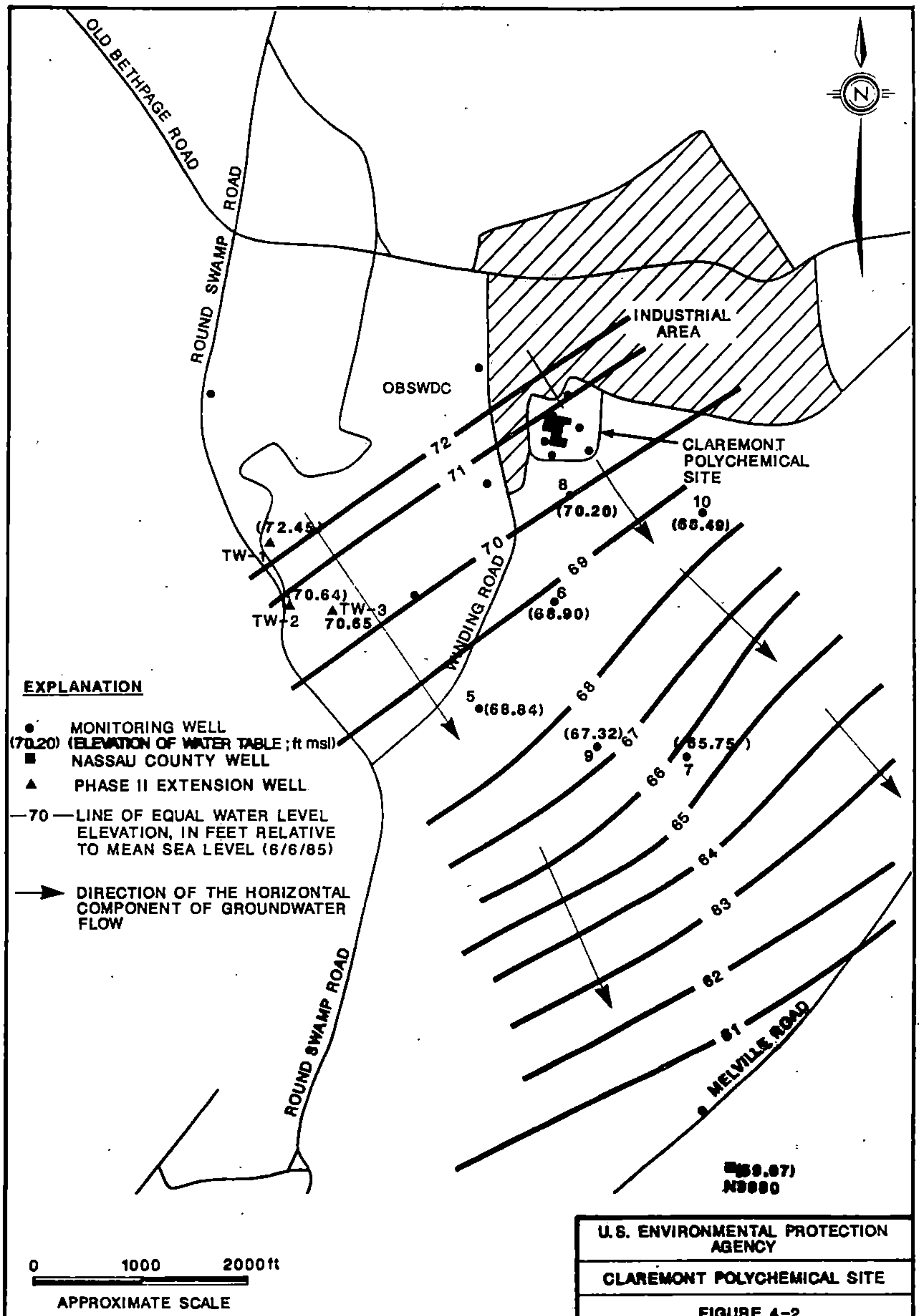
4.1.3 Hydrology

The water table in the study area is within the Magothy Formation, 62 to 70 feet below ground surface. Reported seasonal variations in water table elevation are less than two feet (C.A. Rich, 1986).

Regional groundwater flow is to the south-southeast. Water level measurements taken in monitoring wells on and downgradient of the site indicate the same groundwater flow direction locally (Geraghty & Miller, 1985; C.A. Rich, 1986). Figure 4-2 presents a potentiometric surface map generated from water level measurements taken in monitoring wells which screen the water table. A shallow horizontal flow gradient of 0.0024 feet/foot has been calculated based on groundwater contours (C.A. Rich, 1986).

The aquifers underlying the site are the Lloyd Sand and the Magothy Formation. The Magothy, 750 feet thick in this area and separated from the underlying Lloyd Sand by 150 feet of Raritan Clay, is the aquifer of concern to this study.

The Magothy, considered a "sole source" aquifer and the main water bearing unit on Long Island, supplies the majority of potable water to Long Island residents. The Magothy is



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 4-2

POTENTIOMETRIC SURFACE MAP (WATER LEVEL CONTOURS)

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SOURCE: GERAGHTY & MILLER, 1986

generally under water table conditions, although discontinuous silt and clay beds may result in confining conditions locally e.g., the north-central portion of the site (Isbister, 1966; C.A. Rich, 1986).

A compilation and analysis of aquifer and specific capacity test results for Long Island aquifers by McClymonds and Franke (1972) report a hydraulic conductivity and transmissivity of 400 gpd/ft^2 and 250,000 gpd/ft, respectively, for the Magothy Formation in the Bethpage area. In other areas the Magothy Formation has been reported to have a hydraulic conductivity as high as 3,600 gpd/ft^2.

As a means of confirming results of flow and transport modeling conducted for the Old Bethpage landfill Feasibility Study, Geraghty & Miller (1987) conducted a 120-hour aquifer test in a test production well located in Bethpage State Park, downgradient of the Claremont facility. The test production well was screened in the Magothy, 140 to 245 feet below grade. Analysis of the aquifer test data resulted in average transmissivity and storage coefficient values of 240,128 gpd/ft and 0.05, respectively, for the Magothy Formation downgradient of the Claremont site.

Based on a hydraulic conductivity of 400 gpd/ft^2, a horizontal flow gradient of 0.0024, and an estimated effective porosity of 25%, a horizontal velocity of 183 ft/yr for the Magothy in the Bethpage area can be estimated. Vertical flow gradients within the Magothy appear to be negligible as head differentials in monitoring well clusters downgradient of the site (screening the water table to 350 feet below ground surface) differ by less than two-tenths of a foot (C.A. Rich,1986; Geraghty & Miller, 1985).

4.2 CHEMICAL CHARACTERIZATION

4.2.1 Sources of Contaminants

The past history of Claremont operation suggests several possible on site sources of contaminants. These include the leaching basins, treatment tanks, diffusion wells and buried tanks. The diffusion wells screened from 80 to 130 feet may provide conduits for migration of contaminants to deeper portions of the aquifer. Improper disposal in the past, could have led to surface and subsurface contamination of soils. Summary of the chemicals known to be used or produced on site, and the history of spills and clean-up operation is discussed in Section 3.0.

Two operations on site, L&L Excavating and Maniac Leasing, are active and use fuel operated equipment. Stains from likely oil and fuel spills have been observed on site.

Other possible sources of contamination are several industrial operations upgradient of the site, including printing facilities and metal plating operations in the light industry/commercial zone (Figure 2-1). The Old Bethpage landfill, located west of the site, is a confirmed source of contamination to the deep (250 feet) portion of the Magothy Aquifer, south of the site (Geraghty & Miller, 1985; C.A. Rich, 1986).

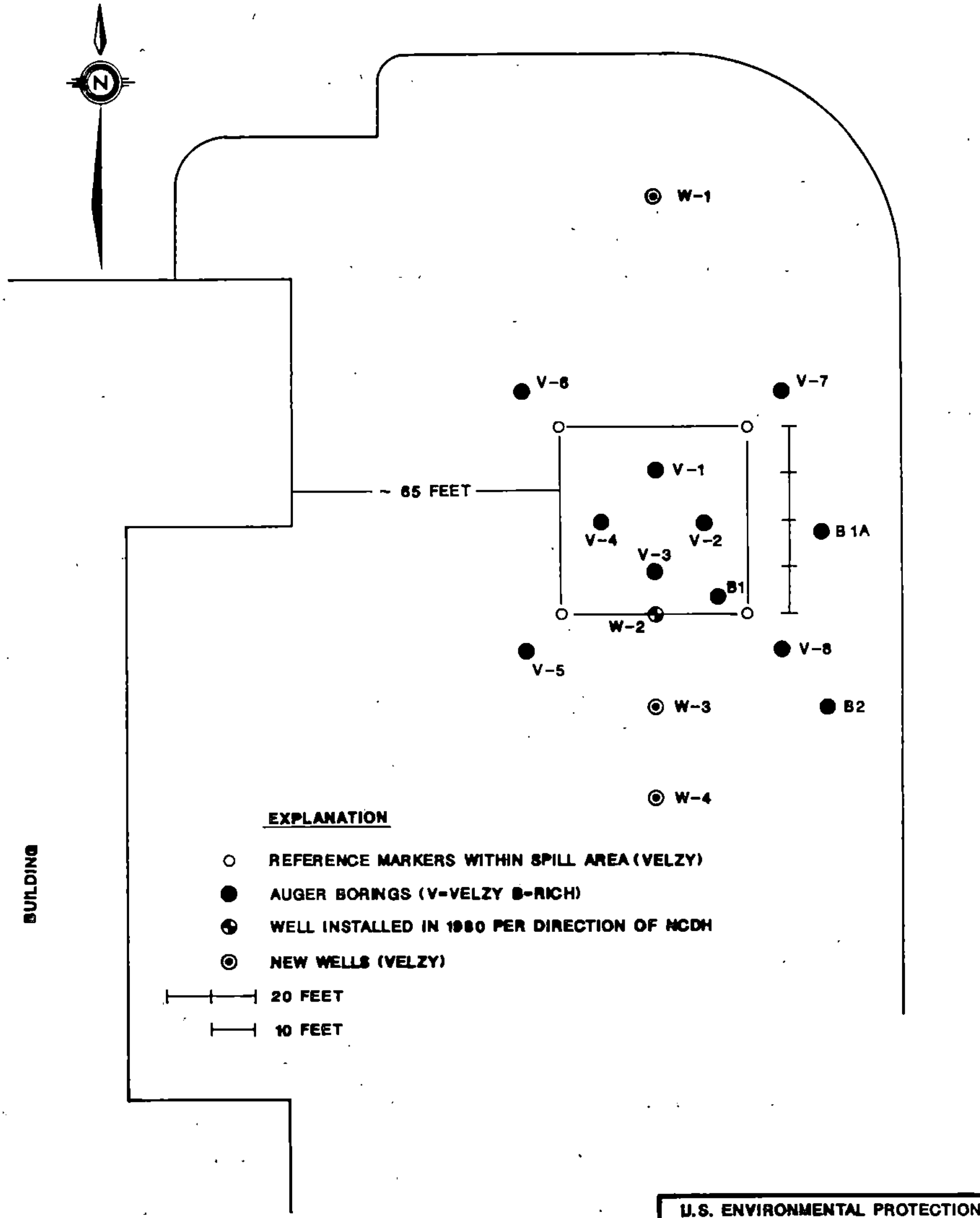
4.2.2 Chemical Characterization of Soil

In 1984, soils were excavated to a depth of 10 feet in the identified 75' x 75' spill area (Velzy, 1984), and redistributed on plastic sheets for volatilization of organics in two areas south of the spill location (Figure 2-2). No treatment to reduce metal contaminants was undertaken. The plastic sheets are no longer impermeable because of obvious decay (C.A. Rich, 1986).

Figure 4-3 presents the locations of soil borings and monitoring wells installed on site adjacent to the spill area. Significant levels of both inorganic and organic contaminants were measured at various depths in soil boring B-2, located at the southern edge of the spill area (Table 4-2). Soil samples from B-2 showed antimony (Sb), arsenic (As), and cadmium (Cd) above average soil background levels. C.A. Rich (1986) reported 40 mg/kg Sb and 25 mg/kg As at 20-22 feet, and 18.3 mg/kg Cd at 0-2 feet. Soils at other locations within the spill area (B-1 and B-1a) and in the vicinity of the leaching basins (B-3) were contaminated to a lesser extent with As, Cd, and Sb at various depths (Table 4-2). Composite scoop soil samples above (CS-1) and below (CS-2 and CS-3) the buried plastic sheets showed levels of Sb, Cd, and mercury (Hg) above average concentrations (Table 4-2). Sample CS-2 below the plastic sheeting was the only sample containing copper (Cu) and zinc (Zn) above background (Table 4-2). These concentrations respectively are, 97.2 and 76.7 mg/kg.

Sludge samples from the leaching basins (Figure 2-2) contained levels of metals as high as 25,000 ppm Zn, 164 ppm Pb, and 42 ppm Cd (NCHD, 1986). While, none of the sludge samples exhibited hazardous characteristics based on EP Toxicity testing (C.A. Rich, 1986), the sludge is still considered hazardous waste because it results from wastewater treatment associated with production of inorganic pigments (40 CFR 261.32). EP Toxicity Testing does not include measurement of Zn and Cu. The extractable Zn and Cu values were as high as 52.2 and 23.1 ppm, respectively (C.A. Rich, 1986).

Different concentrations of various organic compounds were measured at various depths in soil samples from soil borings (Table 4-2). The most commonly detected compounds were tetrachloroethylene (PCE), 2-ethylhexyl phthalate, dibutyl phthalate, methylene chloride, acetone, and phenols. Boring B-2 at the southern edge of the spill area (Figure 4-3) showed the highest number of contaminants and highest concentrations in general. Volatile organic compounds (VOC) were detected below 15 feet. For example, 9 ppm PCE, 1 ppm methylene chloride and 20 ppm acetone were detected in B-2 respectively at 20-22 feet,



SOURCE: MODIFIED FROM VELZY ASSOCIATES (1984)

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CLAREMONT POLYCHEMICAL SITE

FIGURE 4-3
CLAREMONT POLYCHEMICAL SPILL AREA
BORING AND WELL LOCATIONS

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TABLE 4-2 (Sheet 2 of 2)

SUMMARY OF ANALYTICAL PARAMETERS DETECTED IN SOIL SAMPLES AT THE FORMER CLAREMONT POLYCHEMICAL FACILITY OLD BETHPAGE, NEW YORK (RICH, 1986)

Sample	B-2	B-2	B-2	B-2	B-3	B-3	B-3	B-3	B-3	B-3	CS-1	CS-2	CS-3
Depth	#7	#8	#10	#11	#2	#4	#6	#8	#9	#10			
(ft)	35-37	45-47	65-67	75-77	5-7	15-17	30-32	50-52	60-62	70-72	Surf.	1	1
Parameter													
Cyanide, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenols, Total	3.292	18.879	5.286	0.615	2.544	0.562	4.935	0.414	0.860	0.318	0.449	0.356	0.743
Antimony	25.0	ND	ND	ND	ND	35.0	ND	ND	ND	ND	40.0	35.0	39.0
Arsenic	1.00	2.60	0.50	0.10	2.80	ND	ND	0.10	ND	0.30	4.50	4.80	6.40
Beryllium	0.70	0.40	0.50	0.60	0.90	0.40	1.10	ND	ND	0.70	ND	ND	ND
Cadmium	ND	ND	ND	0.70	0.50	0.40	0.90	ND	ND	0.90	3.70	2.50	1.80
Chromium	3.00	3.00	ND	ND	5.00	ND	ND	ND	ND	ND	ND	ND	ND
Copper	1.50	2.50	2.20	1.20	4.00	2.80	6.50	2.70	3.90	2.90	17.2	97.2	16.9
Lead	ND	3.10	10.8	4.50	ND	8.50	ND	ND	ND	6.20	6.10	4.50	5.50
Mercury	ND	0.06	ND	ND	ND	ND	ND	ND	ND	ND	0.089	0.060	0.130
Nickel	ND	ND	3.40	3.00	6.90	3.00	4.70	ND	3.90	3.90	6.90	7.30	6.60
Selenium	0.60	ND	0.10	0.10	ND	0.10	0.10	ND	ND	0.10	0.90	0.30	0.70
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	8.0	6.30	7.70	5.20	10.8	5.60	11.0	3.40	5.90	7.90	26.7	76.7	13.7
Iron	1221	1938	1737	1327	2361	910	1061	301	1310	1222	2519	4421	26.6
Manganese	10.4	13.6	10.1	6.00	56.7	5.70	5.30	2.50	8.20	7.10	25.5	48.7	20.1
Aluminum	419.0	968	1024	532	2870	907	817	158	277	1316	1550	3114	25.7
Methylene Chloride	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Ethylhexyl phthalate	ND	ND	3	ND	ND	ND	1	ND	ND	2	29	3	8
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DiButylphthalate	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Napthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	ND	ND	20	ND	13	ND	2	3	ND	ND	ND	ND	ND
2-Butanone	ND	ND	3	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnapthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

20-22 feet, and 65-67 feet depths. Semivolatiles, 2-ethylhexyl phthalate (3 ppm) and dibutylphthalate (2 ppm), were also detected in B-2 at 65-67 and 35-37 feet, respectively. Multiple occurrences of organic pollutants in other soil borings were measured (Table 4-2). Two parameters were detected in the organic fraction of the Priority Pollutant analysis of composite soil samples (C.A. Rich, 1986). These are 2-ethylhexyl phthalate, and phenols (Table 4-2).

In 1986 toluene was not detected in soil borings analyzed by C.A. Rich. However in 1980, before soil excavation, NCHD reported 12,000 ppb toluene at a depth of 6 feet. An earlier study by Velzy (1984) also reported high concentrations of methylene chloride (80 ppb at a depth of 55 feet and 11 ppb at a depth of 35 feet) in boring V-2 (Figure 4-3). Methylene chloride was also detected upgradient of the spill area (21 ppb in V-6 and 10 ppb in V-7, at a depth of 15 feet). Tetrachloroethylene (15 ppb at V-1 and 11 ppb at V-2 at a depth of 35 feet) and trichloroethylene (12 ppb at V-2, 55 feet depth, and 13 ppb at V-7, 15 feet depth) were also detected in soil borings (Velzy, 1984).

4.2.3 Chemical Characterization of Groundwater

Several volatile and semivolatile organic compounds have been detected in groundwater samples, with PCE exhibiting the highest concentration. The locations of off-site and on-site monitoring wells which furnish groundwater sampling points are presented in Figures 3-2, and 2-2, respectively. Table 4-3 presents the construction data for these wells. The monitoring wells sampled by NHCD in 1980 and 1982 (NCDH/W-2) and by Velzy in 1984 (W1, W2, W3, W4) are shown on Figure 4-3. Groundwater data (Table 4-4) show differences in PCE concentration with time in monitoring well W-2 on the southern edge of the spill area (267 ppb in 1980, 90 ppb in 1982 and 330 ppb in 1984). PCE measurements increased with distance downgradient among these wells during sampling in May 1984: 208 ppb, 330 ppb, 428 ppb and 492 ppb, respectively, for wells W-1, W-2, W-3, and W-4 (Table 4-4). Although well W-1 is upgradient of the spill area, its proximity (50 feet) causes uncertainty regarding the source of contaminants measured there.

Data in Tables 4-5a and 4-5b show the results of two rounds of groundwater samples completed by C.A. Rich (1986) at the Claremont site. Samples were obtained from well clusters installed at three locations and screened at the water table and 20-30 feet below; and also from the NCHD well and the Claremont diffusion well (Figure 2-2). Analysis of the first round of samples taken in March 1986 during high recharge conditions showed comparatively high levels of VOCs and metal pollutants (Table 4-5a) compared with samples collected during low recharge conditions in June (Table 4-5b). While various organic pollutants exceeded New York State Technical Operations Guidance Series (TOGs) levels during both rounds, fewer metals (3) were out of compliance in the June samples than in the March samples (5).

TABLE 4-3

WELL CONSTRUCTION DATA FOR EXISTING WELLS

Well No.	Land Surface Elevation (ft. msl)	Screened Interval (ft below land surface)	Elevation of Screened Interval (MSL)	Well Material	Diameter (inches)
Off-site Wells[(a)]					
1	-	97-102	-	PVC	6
2	-	105-110	-	PVC	6
3	-	105-110	-	PVC	6
4	-	113-118	-	PVC	6
5A	135.9	85-90	50.9-45.9	PVC	4
5B	136.9	112-117	24.9-19.9	PVC	4
6A	158.8	100-105	58.8-53.8	PVC	4
6B	158.7	135-140	23.7-18.7	PVC	4
6C	158.5	155-160	3.5-(-1.5)	PVC	4
6D	158.9	185-190	(-26.1)-(-31.1)	4	
6E	159.3	245-250	(-85.7)-(-90.7)	PVC	4
6F	158.5	345-350	(-186.5)-(-191.5)	PVC	4
7A	146.9	75-90	71.9-56.9	PVC	4
7B	146.7	230-235	(-83.3)-(-88.3)	PVC	4
8A	133.5	85-90	48.5-53.5	PVC	4
8B	132.8	155-160	(-22.2)-(-27.2)	4	
8C	134.3	245-250	(-110.7)-(-115.7)	PVC	4
9A	152.0	78-93	74-59	PVC	4
9B	152.1	163-168	(-10.9)-(-15.9)	PVC	4
9C	152.1	220-225	(-67.9)-(-72.9)	PVC	4
9D	151.5	311-316	(-159.5)-(-164.5)	PVC	4
10A	159.8	100-105	59.8-54.8	PVC	4
10B	160.0	173-178	(-13)-(-18)	PVC	4
10C	159.9	273-278	(-113.1)-(-118.1)	PVC	4
10D	159.8	309-314	(-149.2)-(-154.2)	PVC	4
11A	78.6	135-140	(-56.4-(-61.4)	PVC	4
11B	78.5	230-235	(-151.5)-(-156.5)	PVC	4
On site wells:[(b)]					
SW-1	131.50	65-70	66.5-61.5	PVC	4
DW-1	131.39	93.98.5	38.39-32.89	PVC	4
SW-2	138.10	63-73	75.1-65.1	PVC	4
DW-2	137.35	95-100	42.35-37.35	PVC	4
SW-3	136.84	63-73	73.84-63.84	PVC	4
DW-3	136.74	90-95	46.74-41.74	PVC	4
NCHD (a.k.a. w-2)	134.00	50-70	84-64	PVC	4
Diffusion Well	135.13	80-130	55.13-5.13	Steel	10/8*
W-1	screened so as to monitor the upper 10 feet of groundwater (c)				2
W-3	(exact well construction data not available)				2
W-4					2

(a) Geraghty & Miller, 1985
(b) C.A. Rich, 1986
(c) Velzy, 1984
* Casing diameter/screen diameter

TABLE 4-4

VOLATILE ORGANIC COMPOUNDS OBSERVED IN GROUNDWATER MONITORING WELLS NEAR SPILL AREA

Concentrations in parts per billion (ppb)

Compounds	Sample Wells					
	5/84				(6/82)*	(11/80)*
	W-1	W-2	W-3	W-4	W-2	W-2
tetrachloroethylene	208	330	428	492	90	267
trichloroethylene	29	31	38	47	5	4
1,1,1-trichloroethane		14	21	15	4	9
toluene			15			160
1,2-dichloroethylene					42	

* Sampled by Nassau County Health Department

SOURCE: VELZY ASSOCIATES, 1984

TABLE 4-5a

SUMMARY OF ANALYTICAL PARAMETERS (PPB) DETECTED IN SPLIT WATER SAMPLES AT THE FORMER CLAREMONT POLYCHEMICAL FACILITY OLD BETHPAGE, NEW YORK FIRST SAMPLING ROUND (MARCH 1986) (RICH, 1986)

COMPOUND	Detection Limit[1]	SW-1		SW-2	SW-3	DW-1		DW-2		DW-3		Diffusion Well		NCDOH Well		"TOGS" Standard
		(a)	(b)		(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	
1,1-Dichloroethane	1	ND		ND	ND		ND		ND		ND	7.3	ND	4.4	ND	*
1,2-Dichloroethane	1	ND	ND	154	ND		ND		ND		ND	3.4	ND		ND	0.8
1,1-Dichloroethylene	1	ND	220	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	2.1	ND	0.07
Trans-1,2-Dichloroethylene	1	340	ND	ND	ND	ND	ND	ND	ND	ND	ND	23	ND	2200	2592	50
Tetrachloroethylene	1	130	55	2161	ND		ND		ND		ND	7	8	140	199	0.7
Toluene	1	ND	1	ND	ND		ND		ND		ND	7.1	ND	2.1	1	50
1,1,1-Trichloroethane	1	2.1	ND	1557	ND	ND	ND	ND	ND	ND	ND	4.5	5	7.0	11	50
Trichloroethylene	1	35	13	620	ND		ND		ND		ND	27	20	20	24	10
2-Ethylhexyl phthalate	1		14	37	20		36		40		21		ND		142	4200
DiButyl phthalate	1		ND	ND	ND		ND		ND		ND		ND		6	700
Di-n-octyl phthalate	1	30	ND	3077	786	trace	168	trace	262	35	44	trace	ND	28	77	50
Isophorone	1		ND	ND	ND		ND		ND		ND		ND		9	50
n-Nitrosodi phenylamine	1		4	ND	ND		ND		5		ND		ND		3	50
Phenanthrene	1		ND	ND	ND		ND		ND		ND		ND		5	50
Benzene	1	ND	ND	40	ND		ND		ND		ND	50	ND		ND	1.0
Acetone	—		ND	ND	ND		ND		ND		132		7		25	*
2-Butanone	—	ND	1	10	ND		ND		ND		ND		ND		ND	*
Total Phenols	5		5	35	41		18		9		13		7		17	1
Arsenic	1		1	6	5		3		ND	15	ND	<10	ND	25	16	25
Beryllium	5		5	5	5		ND		<5	<2	ND	<2	ND	<2	ND	3
Cadmium	5		ND	6	8		19		<5	1	107	<1	26	48	ND	10
Chromium	50		ND	<50	ND		ND		ND	12	<50	<5	<50	73	<50	50
Copper	20		38	148	149		67		30	24	38	51	73	310	691	1000
Lead	100		ND	2550	114		ND		163	15	<100	18	108	62	179	25
Mercury	0.2		ND	1.1	1.4		0.4		1.0	<0.2	ND	<0.2	0.8	<0.2	1.3	2
Nickel	40		<40	95	60		31		65	<10	64	<10	43	21	57	*
Selenium	2		4	11	7		<2		2		3		5		5	20
Silver	10		ND	ND	ND		ND		ND		ND		ND		ND	50
Zinc	5		88	1051	410		200		112		153		104		431	5000
Iron	—		300	5877	3578		600		210		410		8900		52400	300
Barium	—		<50	90	<50		<50		<50		<50		65		513	1000
Manganese	—		212	1722	485		728		1496		130		715		2340	300
Aluminum	—		175	1190	3888		283		<0.10		875		<100		2491	*
Specific Conductance (umhos/cm)	—		231	393	440		515		479		554		332		225	*
pH	—		6.41	7.07	7.24		6.12		6.15		8.19		6.63		6.20	*

1 = Detection limits uncertain due to lack of documentation re: analytical methodologies.
* No standard or guideline established.
TOGS = New York State Technical Operation Guidance
(a) Split samples analyzed by ERCO.
(b) Samples analyzed by NY Test Environmental.

TABLE 4-5b

SUMMARY OF ANALYTICAL PARAMETERS (PPB) DETECTED IN SPLIT WATER SAMPLES AT THE FORMER CLAREMONT POLYCHEMICAL FACILITY OLD BETHPAGE, NEW YORK SECOND SAMPLING ROUND (JUNE 1986) (RICH 1986)

COMPOUND	Detection Limit[1]	SW-1		SW-2		SW-3		DW-1		DW-2		DW-3		Diffusion Well		NCDOH Well		"TOGS" Standard
		(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND	ND	ND	*
1,1 Dichloroethane	1	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	15	11	ND	8	50
1,1 Dichloroethylene	1	21J	ND	ND	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	0.07
Trans 1,2 Dichloroethylene	1	900	982	ND	58	ND	ND	ND	ND	ND	ND	ND	ND	29	ND	2000	3158	50
Tetrachloroethylene	1	250	178	6700	6197	2.6J	1	ND	ND	5	3	3J	ND	10	8	64J	118	0.7
Toluene	1	80J	1	ND	ND	ND	ND	ND	ND	ND	ND	3J	ND	150	ND	ND	ND	50
Trichloroethylene	1	68	40	150J	180	ND	ND	ND	ND	ND	ND	2J	2	140	115	ND	28	10
Vinyl chloride	1	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1,1 Trichloroethane	1	ND	ND	430	633	ND	ND	ND	ND	ND	ND	ND	ND	40	60	ND	7	50
Benzene	1	21J	ND	ND	ND	ND	ND	ND	ND	13	ND	1J	ND	150	6	ND	ND	1.0
Acetone	—	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	9JB	ND	8JB	ND	57JB	ND	*
2-Butanone	—	ND	14	ND	5	ND	ND	ND	21	ND	21	ND	19	ND	18	ND	ND	*
2-Ethylhexyl phthalate	1		227		NA		469		24		109		92		262		NA	4200
Dibutyl phthalate	1		ND		NA		ND		ND		70		65		ND		NA	770
Di-n-octyl phthalate	1		ND		NA		ND		ND		<1		<1		ND		NA	50
Total Phenols	5		16		NA		ND		ND		16		15		29		NA	1
Total xylenes		ND		ND		ND		ND		ND		ND						
M-xylene		ND		ND		ND		ND		ND		ND		88		ND		
O,P-xylene		ND		ND		ND		ND		ND		ND		170		ND		
Ethylbenzene			ND	ND	ND	ND	ND	ND	ND	ND	ND	3J	ND	110	ND	ND	ND	
Napthalene		ND		ND		ND		ND		ND		ND		12		ND		
Carbon disulfide		ND		ND		ND		ND		ND		2J		ND		ND		
Arsenic	1		ND		NA		19		4		ND		ND		ND		NA	25
Beryllium	5		ND		NA		4		5		6		ND		ND		NA	3
Selenium	2		19		NA		ND		ND		ND		ND		ND		ND	20
Zinc	5		71		NA		15		83		79		110		64		NA	5000
Iron	—		1368		NA		193		343		213		50		2230		NA	300
Manganese	—		351		NA		168		604		1602		265		1239		NA	300
Aluminum	—		ND		NA		301		ND		ND		ND		ND		NA	*
Specific Conductance	—		277		604		570		620		603		805		565		581	*
pH	—		6.14		6.31		6.50		5.04		5.22		7.02		5.10		6.58	*

1 = Detection limits uncertain due to lack of documentation re: analytical methodologies
ND = Not Detected; NA = Not Analyzed; * = No standard or guideline established; J = estimated; B = compound also was detected in laboratory blanks.
TOGS = New York State Technical Operation Guidance
(a) Split samples analyzed by Compuchem Labs.
(b) Samples analyzed by NY Test Environmental.

This inconsistency in analytical results may be due to different techniques of sample filtration and preservation employed during the different sampling rounds. In the first sampling round, sample filtration and preservation was done in the laboratory. In the second round samples were filtered in the field and preserved before being sent to the laboratory for analysis.

The wells screened at the water table showed multiple organic contaminants. Well SW-2 (Figure 2-2) located approximately 300 feet downgradient of the spill area, yielded highest concentrations for 8 of 12 organic compounds measured during the first sampling round and 6 of 10 during the second round. This well showed the highest PCE concentrations, 2161 ppb in the first round and 6197 ppb in the second round, and also the highest trichloroethylene (TCE) concentrations 620 ppb in the first round and 180 ppb in the second round. High concentrations of di-n-octylphthalate and 1,1,1-trichloroethane were also detected in SW-2 samples. The monitoring well W-2 showed highest concentrations of 1,2-dichloroethylene (DCE) in both sampling rounds. Vinyl chloride was detected only in SW-1, downgradient of the leaching basins (Figure 2-2). C.A. Rich (1986) reported 12 ppb in the second sampling round. Few other organic contaminants were detected in SW-1 (Tables 4-5a and b). Levels of PCE detected in SW-1 were 55 ppb in the first sampling round and 178 ppb in the second sampling round (Tables 4-5a and b).

Other contaminants detected in groundwater downgradient of the spill area, were benzene, toluene, 1,2-dichloroethane, 2-ethylhexylphthalate, acetone, 2-butanone, and phenols (Tables 4-5a and b). Only di-n-octyl phthalate and phenols in SW-3 upgradient of the spill area, exceeded "TOGS" Standards. Toluene was measured by the NCHD in 1980 from monitoring well W-2 south of the spill area at 160 ppb (Figure 3-2 and Table 4-4). Measurements in 1982 showed concentrations less than 4 ppb. In 1984, Velzy measured 15 ppb of toluene in W-3. In W-1 and W-2, however, concentrations of toluene were below the detection limit of 10 ppb.

Splits of water samples taken during the second sampling round (Table 4-5b) showed inconsistancies. For example, one analysis showed the presence of 13 ug/l benzene in monitoring well DW-2, and the other analysis (Table 4-5b) showed no benzene. A similar discrepancy was evident for another deep well (DW-3) for which one analysis showed organic compounds, tetrachloroethylene, toluene, ethylbenzxene, and carbon disulfide and the other did not. The reported data are estimated values. The summary of the analytical data in Table 4-5b also shows high levels of organic contaminants in the diffusion well. For example, in addition to the compounds reported by Rich (1986) and shown in Table 4-5b, the following compounds in ug/l were detected: 150 benzene, 150 toluene, 170 o-p-xylene, 88 m-xylene, 110 ethylbenzene, 29 trans 1,2 dichloroethylene, and 12 naphthalene.

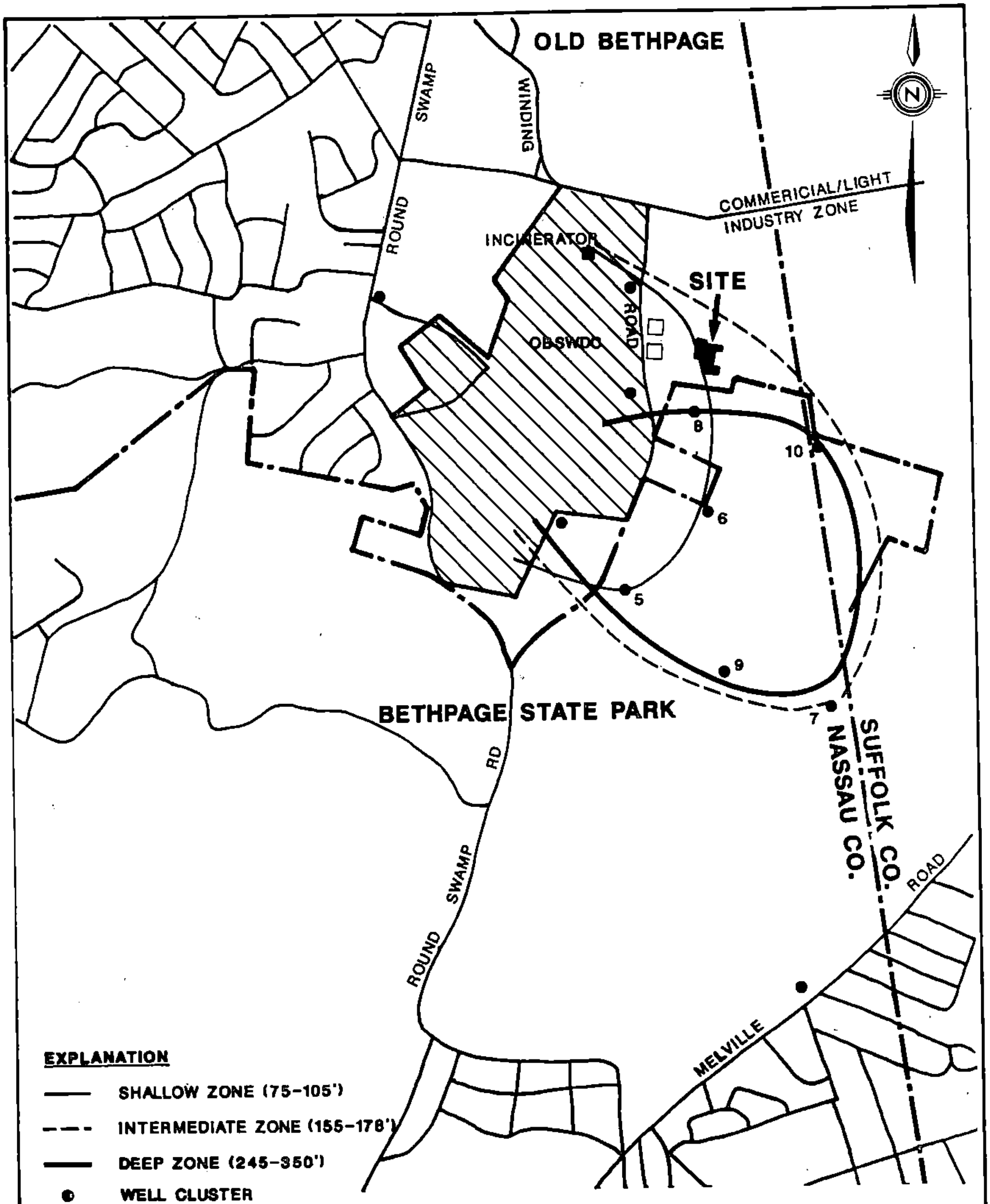
Wells screened 20-30 feet below the water table, DW-1, DW-2, and DW-3 (Figure 2-2), showed relatively less contamination with respect to organic parameters. However, these wells showed higher values of specific conductance which may suggest that leachate from the Old Bethpage landfill is affecting deeper groundwater quality under the site (C.A. Rich, 1986). Of note, well DW-2 yielded 13 ug/l benzene, whereas no benzene was detected in SW-2 screened at the water table.

Data on groundwater contamination off site was furnished by studies regarding the Old Bethpage landfill by Geraghty & Miller in 1985 and 1986. Off-site wells yielded high levels of organic contaminants. Highest levels of PCE were found at well 8A approximately 250 feet south of the Claremont site (Figure 3-2). This well, screened at the water table (85-90 feet below land surface), yielded 110 and 140 ug/l PCE on 10/24/86 and 5/1/86, respectively. TCE was also detected in this well at concentrations of 50 and 34 ug/l, respectively. Deeper in the aquifer (245-250 feet below land surface) at the same location (well 8C), PCE was detected at 42 and 25 ug/l. However, an intermediate depth well (well 8B: 155-160 feet below land surface), showed PCE concentrations of only 1 ug/l.

Well cluster 7, 2500 feet downgradient of well cluster 8, produced high levels of PCE (120 ug/l) only at depth (well 7B: 230-234 feet below land surface). PCE was not detected in well 7A which screens the water table. Well cluster 6, located in between and to the west of clusters 7 and 8 yielded PCE levels of 21, 3 and 4 ug/l at depths of 245-250, 135-140 and 100-105 feet below land surface, respectively. Elevated levels of TCE (14, 53 and 100 ug/l respectively) were also detected in these samples. Well cluster 9, west of cluster 7, showed low levels up to 5 ug/l of PCE.

The PCE distribution in well cluster 8 suggests the presence of 2 contamination plumes, one at the water table and a second at depth. The absence of PCE from well 8B (intermediate depth) may suggest the presence of more than one source of PCE contamination. The Old Bethpage landfill is one possible source. High levels of leachate parameters (e.g., specific conductivity) associated with the deeper PCE contamination in well 8C might support this hypothesis. However, it is also possible that a change in lithology, such as the presence of clay lenses, diverts the direction of groundwater flow and the migration of contaminants from Claremont and/or other source(s). It is also quite possible that some of the contaminants introduced at Claremont sink deeper in the aquifer at the source location. Therefore, in addition to the shallow plume, another deeper plume may have been developed at the site from the sinking contaminants.

The extent of the landfill leachate plume within three hydrologic zones was plotted by Geraghty and Miller (1986) as shown in Figure 4-4. This was done by delineating the area in which the landfill leachate parameters, ammonia alkalinity,



* DETERMINED BY DELINEATING THE AREA IN WHICH THE LANDFILL LEACHATE PARAMETERS (AMMONIA, ALKALINITY, HARDNESS, CHLORIDE, PH, SPECIFIC CONDUCTANCE, FE, K, MN, AND ZN) ARE PRESENT ABOVE NATURAL BACKGROUND.

0 1000 2000ft

APPROXIMATE SCALE

SOURCE: GERAGHTY & MILLER, INC; (1986)

U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 4-4

APPROXIMATE EXTENT OF LANDFILL LEACHATE PLUME *

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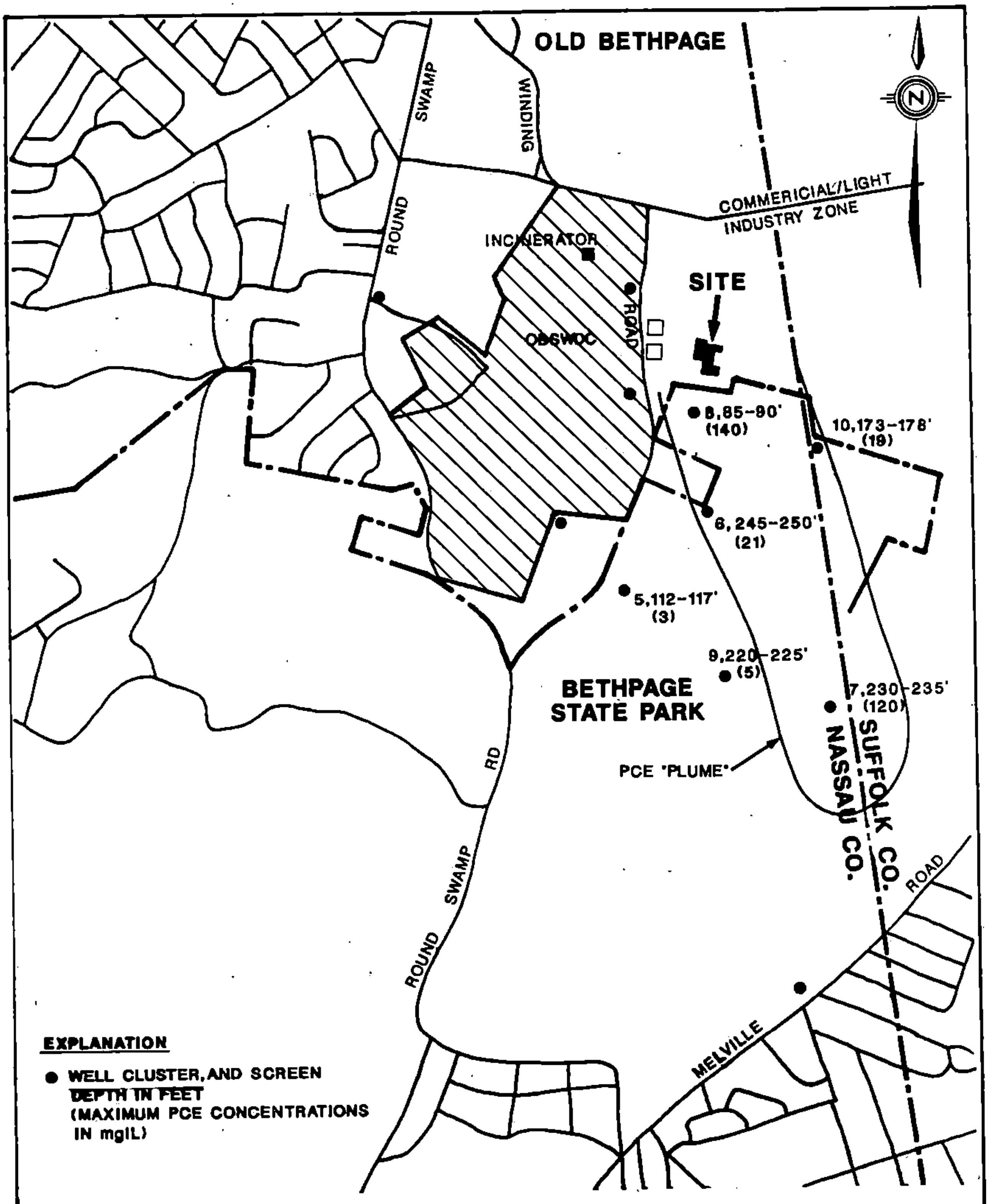
hardness, chloride, pH, specific conductance, iron, potassium, manganese and zinc, are present above natural background. The plume delineation suggests that landfill leachate may affect the deep groundwater quality under the site. Geraghty and Miller (1986) also plotted the distribution of PCE (Figure 4-5). The screen depth in feet and maximum PCE concentrations (ug/l) detected in each well cluster are included in Geraghty and Miller's 1986 PCE plume delineation (Figure 4-5). These data suggest that the PCE plume is shallower than the landfill leachate plume. Based on PCE distribution and the regional direction of groundwater flow, Geraghty and Miller (1986) suggested a source for PCE contamination other than the landfill. The Claremont site is a possible source.

Other contaminants detected in off-site wells included volatile halogenated organics, and volatile and non-halogenated aromatic hydrocarbons. For example, well sampling by Geraghty and Miller between June 1985 and September 1986 showed benzene as high as 200 ug/l in well 6B screened at 135-140 feet. This well also yielded high concentrations of DCE, 840 ug/l; ethyl-benzene, 580 ug/l; o-p xylene, 120 ug/l; toluene, 26 ug/l; chlorobenzene, 13 ug/l; vinyl chloride, 160 ug/l; 1,1-dichloroethane, 370 ug/l; and methylene chloride, 10 ug/l. Well 6E, in the same cluster, screened at 245-250 feet, also yielded high concentrations of these compounds. Concentrations detected in this well were: benzene, 40 ug/l; ethyl-benzene, 410 ug/l; o+p xylene, 510 ug/l; toluene, 18 ug/l; chlorobenzene, 210 ug/l; vinyl chloride, 85 ug/l; methylene chloride, 300 ug/l; 1,1-dichloroethane, 110 ug/l; and 570 ug/l DCE. Other off-site wells (9B) yielded high concentrations of vinyl chloride, methylene chloride, 1,1-dichloroethane, and DCE.

In summary, the Claremont Polychemical site and the Old Bethpage Landfill share a common list of contaminants. The chemicals of concern at both sites are summarized in Table 4-7. An attempt to identify sources of these numerous contaminants based on the existing data would be extremely difficult and uncertain at this time. Although the wells at the Old Bethpage landfill did not yield high concentrations of organic contaminants, the plume delineation of these contaminants suggests that the landfill may be a source. Other possible sources for some of these contaminants may be the light industrial zone upgradient of the site. The data in hand show that PCE, and possibly DCE, TCE, 1,1,1 trichloroethane, toluene, benzene, xylene and phthalate compounds may have originated at Claremont. However, a source upgradient, of the Claremont site cannot be eliminated.

4.2.4 Conceptual Site Model

Groundwater. Groundwater at the site is contaminated with VOCs, particularly PCE, semivolatile organics, and to a much lesser degree with metals.



0 1000 2000ft

APPROXIMATE SCALE

SOURCE: GERAGHTY & MILLER, INC. (1986)

U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 4-5

APPROXIMATE DISTRIBUTION OF TETRACHLOROETHYLENE

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TABLE 4-6 (Sheet 1 of 3)

CHEMICALS OF CONCERN AT CLAREMONT POLYCHEMICAL SITE AND OLD BETHPAGE LANDFILL

Inorganics	Claremont(1) Polychemical	Old Bethpage(2) Landfill
Aluminum	X	
Antimony	?	
Arsenic	X	
Barium		X
Beryllium	X	
Cadmium	X	X
Chloride		X
Chromium	X	X
Copper	X	X
Cyanide	?	X
Iron	X	X
Lead	X	X
Magnesium		X
Manganese	X	X
Mercury	X	X
Nickel	X	
Nitrate		X
Phenols (Total)	X	X
Selenium	X	
Silver	?	X
Sulfate		X
Zinc	X	X

TABLE 4-6 (Sheet 2 of 3)

CHEMICALS OF CONCERN AT CLAREMONT POLYCHEMICAL SITE AND OLD BETHPAGE LANDFILL

Organics	Claremont(1) Polychemical	Old Bethpage(2) Landfill
Halogenated Aliphates:		
Vinyl Chloride	X	X
Methylene Chloride	?	X
1,1 Dichloroethane	X	X
1,2 Dichloroethane	X	X
1,1 Dichloroethylene	X	X
Tras-1,2 Dichloroethylene	X	X
Trichloroethylene	X	X
1,1,1 Trichloroethane	X	X
Chloroform		X
Carbon Tetrachloride		X
1,2 Dichloropropane		X
Bromodichloromethane		X
Tetrachloroethylene	X	X
Chlorodibromomethane		X
Chloroethane	*	X
Bromoform		X
Organic Sulfides		
Carbon Disulfide	X	
Ketones		
Acetone	X	
2-Butanone	X	
Monocyclic Aromatics		
Benzene	X	X
Phenol	X	
Toluene	X	X

TABLE 4-6 (Sheet 3 of 3)

CHEMICALS OF CONCERN AT CLAREMONT POLYCHEMICAL SITE AND OLD BETHPAGE LANDFILL

Organics	Claremont(1) Polychemical	Old Bethpage(2) Landfill
Monocyclic Aromatics (Cont'd)		
Xylene (all isomers)	X	X
Ethylbenzene	X	X
Chlorobenzene	*	X
Dichlorobenzene	X	X
Isophorone	X	
N-Nitrosodi Phenylamine	X	
Phthalate Esters:		
Bis(2-ethylhexyl)phthalate	X	
Di-n-butylphthalate	X	
Butylbenzylphthalate	?	
Di-n-octylphthalate	X	
Polycyclic Aromatic Hydrocarbons:		
Fluorene	?	
Naphthalene	X	
Phenanthrene	X	
2-Methylnaphthalene	?	

(1) Based on analytical results presented in Rich (1986) and those of the split samples with Nassau County Department of Health (1986).
X = detected in groundwater (maybe also in soils)
? = detected only in soils and not in groundwater.
* = Not detected, but it is possible to form via dechloronation of other detected compounds.

(2) Based on applicable or relevant and appropriate requirements identified for the Old Bethpage landfill (ARARs), for groundwater, Table 1, Record of Decision, 198?

A. First Hypothesis: there is or was a subsurface source of organic contaminants, particularly PCE and metal pollutants on site resulting in shallow groundwater contamination. A possible location is within the vicinity of the spill area.

Evidence:

1) Among the solvents reported to be used on site were PCE, toluene, MET, and MIBK. Phthalate compounds, vinyl and metals were also reported to be used on site.

2) Wells on site, especially SW-2 (approximately 300 feet downgradient of the spill area), yield contaminated water. SW-2 shows, in general, the highest concentrations of organic contaminants, particularly PCE. The diffusion well also yielded several contaminants.

3) Off-site distribution of PCE suggests a contamination source upgradient from Geraghty and Miller well cluster 8 (OSEB4).

4) The 1986 boring, B-2, on the southern edge of the spill area shows the highest levels of organic and metallic contamination down to 15 feet below surface. PCE was detected in soil samples from 20-22 feet and 35-37 feet at 9 ppm and 2 ppm, respectively. Dibutyl phthalate and 2-ethylhexyl phthalate were also detected.

B. Second Hypothesis: the source of organic contaminants, particularly PCE, is located upgradient of the site. Possible locations are the light industrial area, where printing facilities and other industries are active, or the northern portion of the Old Bethpage landfill.

Evidence:

1) PCE distribution in well cluster 8 suggests the presence of 2 contaminant plumes one at the water table and a second at depth. This distribution may suggest more than one source of PCE or a change in lithology which can divert the direction of groundwater flow and pollutant migration. However, development of a deeper plume from the same source as the shallow plume can not be precluded.

2) There are insufficient data to determine local directions of groundwater flow; whether it follows the regional regime or is diverted by changes in lithology (e.g., clay lenses).

3) There are no on-site monitoring wells screened at a 250 foot depth to show if PCE distribution is similar to that observed in well cluster 8 is present.

4) There are insufficient monitoring wells upgradient of the site to identify other possible sources, particularly for the deep PCE plume.

Soil. Site soils are contaminated with VOCs, semivolatile organics and metals.

A. First Hypothesis: Soil contamination is limited to the spill area and leaching basins. Soils have not been excavated from the latter. In the first, soil removal may have missed localized areas deeper than the depth of excavation. These areas may act as source areas, where mobilization of metals down in the soil profile continues to occur. Organic contaminants in the soil may represent the fraction adsorbed on clays.

Evidence:

Soil analysis, in general, showed the highest pollutant concentrations in B-2, located in the spill area (Table 4-2). These are: 40 and 25 ppm Sb at 20-22 and 35-37 feet, 10.5 and 25.0 ppm As at 10-12 and 20-22 feet, 19.9 ppm Zn at 5-7 feet, 24.7 and 119.0 ppm Mn at 5-7 and 10-12 feet, and high concentrations of 2-ethylhexyl phthalate, PCE, and dibutylphthalate respectively, at 65-67 and 35-37 feet. High levels of volatile organic (PCE, TCE) contamination found in and around the spill area during the soil gas survey, further supports these spots as source areas.

B. Second Hypothesis: The excavated soil which was redistributed on plastic sheets (Figure 2-2) acts as a source for contamination of soil via wind blowing on the surface and also via leaching and transport by infiltrating rain through the deteriorated plastic sheeting to deeper horizons.

Evidence:

Excavated soils have not been treated to remove metal contaminants and there is no record to suggest proper treatment of soils to remove volatile organics. Currently there is apparent decay of the plastic sheeting. The 0-2 foot sample from soil boring B-2 and the composite soil samples above and below the liner showed high concentrations of Cd and Sb, respectively.

C. Third Hypothesis: There are other on-site sources of soil contamination with organic and metal pollutants. Field sampling proposed in this work plan will attempt to identify any additional sources of contamination while further defining those already known.

Evidence:

There are no soil analyses for areas other than the spill area and its surroundings and the leaching basins.

4.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

This section provides a preliminary determination of the Federal and New York State environmental and public health requirements that are applicable or relevant and appropriate to the Claremont site and other Federal and State criteria, advisories and guidance that should be considered during the planned RI.

4.3.1 Determination of ARARs

The Federal and State requirements identified below have been categorized on a preliminary basis as "applicable or relevant and appropriate," requirements based upon EPA post-Superfund Amendments and Reauthorization Act of 1986 (SARA), and interim guidance that addresses development and utilization of ARARs (52 Federal Register 32496, August 27, 1987 and (OSWER) Directives). In addition, Federal and State nonpromulgated criteria or advisories are included, which would be considered if ARARs were unavailable or not protective of human health and the environment. ARARs and "to be considered" material primarily are used during the Feasibility Study to evaluate the remedial alternatives during initial screening and detailed evaluation.

SARA defines an ARAR as:

- any standard, requirement, criterion, or limitation under any Federal environmental law; and
- any promulgated standard, requirement, criterion, or limitation under a State environmental or facility siting law that is more stringent than any Federal standard, requirement, criterion, or limitation.

The purpose of this definition is to make CERCLA responses consistent with both Federal and State environmental requirements.

Within these jurisdictional boundaries, ARARs are further defined according to the activity, contaminants, or location they are expected to affect. ARARs that relate to the level of pollutant allowed are called contaminant-specific; ARARs that relate to the presence of a special geographic or archeologic area are called location-specific; and ARARs that relate to a method of remedial response are called action-specific.

4.3.2 Consideration of ARARs During the RI/FS

Specifically, ARARs will be considered at seven key program intervals.

1) Task 1 - Scoping of the Field Investigation and Analyses (see Section 6.3): Consider ARARs when determining the data to be collected in the field investigation.

2) Task 4 - Analytical Methods (See Section 6.4): Employ methods promulgated in the Final Rule regarding National Primary Drinking Water Regulations: Monitoring of unregulated contaminants, and other appropriate methods.

3) Task 6 - Public Health Evaluation (see Section 4.4): Consider ARARs during the analysis of risk to public health and the environment.

4) Task 9 - Development of Remedial Response Objectives (see Section 4.5.1): Compare site data-base to ARARs.

5) Task 9 - Identification of Applicable Technologies and Assembly of Alternatives (see Section 4.5.2): Utilize ARARs specific to site conditions for development of action levels, specific response objectives, and remedial alternatives relative to criteria defined in 40 CFR 300.68(f). Also, identify ARARs that apply to the formulated alternatives.

6) Task 9 - Screening of Remedial Technologies/ Alternatives (see Section 6.9): Consider ARARs when assessing the effectiveness of an alternative, as defined in 40 CFR 300.68(g)(3).

7) Task 10 - Remedial Alternatives Evaluation (see Section 6.10): Evaluate each alternative to the extent it attains or exceeds ARARs, as defined in 40 CFR 300.68-(h)(2)(iv).

Primary consideration should be given to remedial alternatives that attain or exceed the requirements established from regulations identified as "applicable" or "relevant and appropriate" (ARARs).

The combination of groundwater remediation for Claremont and the Old Bethpage landfill will necessitate mutual agreement on clean-up requirements and monitoring methods. In light of the present uncertainty regarding 1) the design requirements for a combination remedy; and 2) the proposed New York State maximum concentration limits for organic compounds, various potential contaminant specific ARARs are presented in this section (Table

4-8). Analytical methods for the RI will be sufficiently fine to allow evaluation of all the potential ARARs, i.e., detection levels will be low enough to provide data for consideration in reference to all the potential requirements.

As the RI/FS process continues, more ARARs and "to be considered" material that are issued by the State of New York will be considered and utilized.

The conclusions based on ARARs reached at each task will be used as a guide to evaluate the appropriate extent of site clean-up; to aid in scoping, formulating and selecting proposed treatment technologies and to govern the implementation/operation of the selected action. With each task, ARARs are identified and utilized by taking into account the following:

- contaminants suspected to be at the site;
- chemical analyses to be performed;
- types of media to be sampled;
- geology and other site characteristics;
- use of the resource/media;
- level of exposure and risk;
- potential transport mechanisms;
- purpose and application of the potential ARARs; and
- remedial alternatives that will be considered for the site.

4.3.3 Preliminary Identification of ARARs for the Claremont Polychemical Site

A. Potential Applicable or Relevant and Appropriate Requirements

The National Contingency Plan (NCP) and the SARA/CERCLA Compliance Policy guidance define applicable requirements as the Federal and State requirements for hazardous substances, which would be legally binding at the site, if site response were to be undertaken regardless of CERCLA Section 104. Relevant and appropriate requirements are defined as those Federal and State requirements that, while not directly applicable, are designed to apply to problems similar to those encountered at this site and that their use is well suited. In other words, requirements may be relevant and appropriate if they would be applicable except for jurisdictional restrictions associated with the requirement. With respect to the selection of remedial alternatives, relevant and appropriate requirements are to be afforded the same weight and consideration as applicable requirements. The following Federal and New York regulatory requirements are potentially applicable or relevant and appropriate to the Claremont site:

1) **Contaminant-Specific**

Federal

- o RCRA Groundwater Protection Standards Maximum Concentration Limits (MCLs) (40 CFR 264, Subpart F)
- o Clean Water Act (Section 304), Water Quality Criteria (May 1, 1987 - latest update)
- o Safe Drinking Water Act, National Primary Drinking Water Regulations, Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16)*
- o TSCA PCB Disposal Requirements and Spill Clean-up Policy (40 CFR Part 761)
- o National Primary Drinking Water Regulations: Synthetic Organic Chemicals, Monitoring for unregulated contaminants (40 CFR 141-142).

State of New York

- o New York Public Water Supplies Requirements, Maximum Contaminant Levels (MCLS) (10 NYCRR 5-1)
- o New York Standards for Raw Water Quality (10 NYCRR 170.4)
- o New York Standards for Protection of Human Health and Potable Water Supplies (Surface Water) (6 NYCRR 701.3 for Class GA waters)
- o New York Groundwater Quality Standards for Class GA waters (6 NYCRR 703)
- o New York State RCRA Groundwater Protection Standards - Maximum Concentration Limits (MCLs) (6 NYCRR 373-2.6). New York Groundwater Protection Standards are New York's codification of RCRA's Groundwater Protection Maximum contaminant levels (MCLs) (40 CFR 264). New York and

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* Compliance with SDWA MCLs will ensure compliance with Federal RCRA MCLs (i.e., lvels are identical). However, New York State RCRA MCLs are more stringent in some cases than federal RCRA MCLs.

Federal RCRA MCLs are part of groundwater monitoring and response requirements for hazardous waste treatment storage or disposal facilities. The Federal and New York levels are the same, except for floride for which the State level is lower than the Federal.2)

2) <u>**Location-Specific**</u>

<u>Federal</u>

- o Safe Drinking Water Act: Sole-Source Aquifer Requirements (Activities affecting groundwater quality) (Section 1424(e)) (40 CFR 149)
- o National Historical Preservation Act Requirements (Identification of National Register and National Register-Eligible Features)

<u>State of New York</u>

- o Claremont's Existing SPDES Permit Standards/Limitations for Groundwater Discharges
- o Groundwater Effluent Standards for Nassau/Suffolk Counties Under New York SPDES Program - Article 17 of ECL, 6 NYCRR 750-758.

3) <u>**Action-Specific**</u>

<u>Federal</u>

- o RCRA Hazardous Waste Treatment, Storage, and Disposal Facility Standards (landfill, incinerators, surface impoundments, tanks, containers and other treatment methods) (40 CFR 264 and 265)
- o RCRA Non-Hazardous Waste Management Standards (40 CFR 257)
- o RCRA Facility Closure and Post-Closure Standards (40 CFR 264, Subpart G)
- o RCRA Groundwater Monitoring and Protection Standards (40 CFR 264, Subpart F)
- o RCRA Land Disposal Restrictions (40 CFR 268) (On and Off-Site Disposal of Excavated Soil and Removed Materials)
- o Safe Drinking Water Act, Underground Injection Control Requirements (Groundwater Reinjection) (40 CFR 144 and 146)

- o DOT Rules for Hazardous Materials Transport (49 CFR 107, 171.1-171.500)

- o Health and Safety Standards for Federal Service Contracts (29 CFR 1926)

- o Occupational Safety and Health Standards for Hazardous Responses (29 CFR 1904, 1910)

State of New York

- o New York's General Prohibitions For Air Emissions (6 NYCRR Part 211) (Fugitive Dust Generated During Building Decontamination/Razing, Cap Construction or Implementation of Other Remedy)

- o New York RCRA Hazardous Waste Management System Regulations (6 NYCRR 370) (Design, Performance and Operation Requirements and Closure/Post-Closure Standards For Surface Impoundments, Landfills, Tanks/Containers, and Incinerators)

- o New York State Pollutant Discharge Elimination System (SPDES) (Article 17 of ECL, 6 NYCRR 750-758) (Discharge of Treated Groundwater to Surface Waters, Storm Sewers or Groundwater)

- o New York State Effluent Standards/Limitations For Discharges to Water (6 NYCRR 703)

B. "To Be Considered" Material

When ARARs do not exist for a particular chemical or remedial activity or when the existing ARARs are not protective of human health or the environment, other criteria, advisories and guidance may be useful in designing and selecting a remedial alternative. The following criteria, advisories and guidance were developed by EPA, other Federal agencies and the State of New York.

1) **Contaminant-Specific**

Federal

- o **Safe Drinking Water Act National Primary Drinking Water Regulations, Proposed Maximum Contaminant Levels (MCLs) (50 Federal Register 46902-46933, November 13, 1985)**

- o **Proposed Maximum Contaminant Level Goals (MCLGs) (50 Federal Register 46936-47022, November 13, 1985)**

- o **USEPA Drinking Water Health Advisories (cleanup levels)**

- o **USEPA Health Effects Assessment (HEAs) (cleanup levels)**

- TSCA Health Data
- Toxicological Profiles, Draft, Agency for Toxic Substances and Disease Registry, U.S. Public Health Service (cleanup levels)
- Groundwater Classification Guidelines
- Groundwater Protection Strategy

State of New York

- Proposed Maximum Contaminant Levels (MCLs) For Organic Chemicals (10 NYCRR Part 5)
- Technical Operations Guidance Series

2) **Action Specific**

Federal

- RCRA Design Guidelines For Landfill Liners and Covers (Capping, Containment or Subsurface Barriers)
- Policy for the Development of Water-Quality-Based Permit Limitations for Toxic Pollutants (49 Federal Register 9016)
- Waste Load Allocation Procedures
- EPA Effluent Limitation Guidelines for Organic Chemical Facilities (40 CFR 414, 416)

State of New York

- Underground Injection/Recirculation of Groundwater, Technical Operating Guidance, April 11, 1987.
- New York State Process and Exhaust and/or Ventilation Systems - Emission Levels (6 NYCRR 212)

Table 4-8 summarizes the contaminant-specific ARARs and "to be considered" criteria for compounds in groundwater which are applicable to the Claremont RI/FS. The table reflects expected changes in New York State Department of Health MCLs for volatile organic compounds. An across-the-board 5 ppb limit (with some exceptions) will likely be promulgated before completion of the RI.

4.4 PRELIMINARY RISK ASSESSMENT

This section presents a preliminary risk assessment of public health risk associated with the Claremont Polychemical site. Results of this assessment have been used in designing the proposed sampling and analysis program. The preliminary risk assessment is based upon information gathered to date relating to site history, hydrogeology, land use, demography and contaminant type and distribution.

TABLE 4-7 (Sheet 1 of 3)

WATER QUALITY CONTAMINANT SPECIFIC REQUIREMENTS (ARARS)+

CHEMICAL	SAFE DRINKING WATER ACT AND NY MCLs (mg/l)	CLEAN WATER ACT Water Quality Criteria for Human Health — Adjusted for Drinking Water Only a/	SAFE DRINKING WATER ACT Health Advisories (mg/l)			NEW YORK STATE CLASS GA (mg/l unless otherwise stated)		NEW YORK STATE RAW WATER STANDARDS (mg/l)
			1-Day	10-Day	Longer Term	Groundwater Standards	TOG Guidance Values+	
Acenaphthene		20 ug/l (Organoleptic)[b]					.02	
Aldrin		0 (1.2 ng/l)				0.004 ug/l [g]	.020	.017
Antimony		146 ug/l					.003	
Arsenic	0.05	(25 ng/l)				0.025		
Barium	1.0					1.0		
Benzene	0.005[f]	0 (0.67 ug/l)	0.23	0.07		0.2 ug/l [g]		
Beryllium		0 (3.9 ng/l)					.003	
Cadmium	0.01	10 ug/l				0.01		
Carbon tetrachloride	0.005[f]	0 (0.42 ug/l)	0.2	0.02		5 ug/l		
Chlordane		0 (22 ng/l)	0.0625	0.0625	0.0075	0.1 ug/l		
1,2-Dichloroethane	0.005[f]	0 (0.94 ug/l)	Insufficient Data				.0008	
1,1,1-Trichloroethane	0.005[f]	19 mg/l			1.0		.05	
1,1,2-Trichloroethane	0.005[f]	0 (0.6 ug/l)					.0006	
1,1,2,2-Tetrachloroethane		0 (0.17 ug/l)					.0002	
Monochloroethane	0.005[f]	Insufficient data					.05	
1,1-Dichloroethane	0.005[f]	Insufficient data						
1,1,1,2-Tetrachloroethane	0.005[f]	Insufficient data						
2,6-Dichlorophenol		0.2 ug/l (Organoleptic)						
2,4-Dichlorophenol		3.09 mg/l					.0003	
2,4-Dichlorophenoxyacetic acid	0.05[f]					4.4 ug/l		
2,4,5-Trichlorophenol		2600 ug/l						
2,4,6-Trichlorophenol		0 (1.8 ug/l)						
3-Methyl-4-chlorophenol		3000 ug/l (Organoleptic)						
bis-(2-Chloroethyl) ether		0 (30 ng/l)				1.0 ug/l		
bis-(2-Chloroisopropyl) ether		34.7 ug/l						
Chloroform	0.1[d]	0 (0.19 ug/l)				100 ug/l	.0003	
2-Chlorophenol		0.1 ug/l (Organoleptic)						
Chromium Cr^{+6}	0.005[f]	50 ug/l				0.05		
Copper		170 mg/l				1.0		
DDT		0 (1.2 ng/l)				0.012 ug/l [g]		
Dichlorobenzenes (all isomers)		470 ug/l				4.7 ug/ml	.042	
Dichlorobenzidines		0 (20.7 ng/l)						

TABLE 4-7 (Sheet 2 of 3)

WATER QUALITY CONTAMINANT SPECIFIC REQUIREMENTS (ARARS)+

CHEMICAL	SAFE DRINKING WATER ACT AND NY MCLs (mg/l)	CLEAN WATER ACT Water Quality Criteria for Human Health — Adjusted for Drinking Water Only a/	SAFE DRINKING WATER ACT Health Advisories (mg/l) 1-Day	10-Day	Longer Term	NEW YORK STATE CLASS GA (mg/l unless otherwise stated) Groundwater Standards	TOG Guidance Values+	NEW YORK STATE RAW WATER STANDARDS (mg/l)
Dichloromethane	0.005^{f}	See Halomethanes	13	1.3	0.15			
Dichloropropanes	0.005^{fh}	Insufficient Data					.05	
Dichloropropenes	0.005^{fh}	87 ug/l						
Dieldrin		0 (1.1 ng/l)				0.002 ug/l $^{g/}$		.017
2,4-Dimethylphenol	0.005^{f}	400 ug/l (Organoleptic)						
2,4-Dinitrotoluene		0 (0.11 ug/l)						
Endosulfan	0.005^{f}	138 ug/l						
Endrin	0.0002	1 ug/l				0.006 ug/l $^{g/}$		.001
Ethylbenzene	0.005^{f}	2.4 mg/l					.05	
Fluoranthene		188 ug/l					.05	
Fluoride	2.2					1.5 ug/l	1.5	
Halomethanes		0 (0.19 ug/l)						
Heptachlor		0 (11 ng/l)				0.003 ug/l $^{g/}$		.018
Hexachlorobutadiene		0 (0.45 ug/l)						
Lindane (99% gamma-HCH)	0.004					0.004 ug/l $^{g/}$		
Hexachlorocyclopentadiene		206 ug/l					.001	
Isophorone		5.2 mg/l					.05	
Lead	0.05	50 ug/l				0.025		
Mercury	0.002	10 ug/l				0.002		
Methoxychlor	0.05^{f}					35.0 ug/l		
Methyl Ethyl Ketone	0.005^{f}		7.5	0.750				
Naphthalene		Insufficient Data					.01	
Nickel		15.4 ug/l						
Nitrobenzene	0.005^{f}	19.8 mg/l					.03	
Dinitrophenol	0.005^{f}	70 ug/l						
Mononitrophenol	0.005^{f}	Insufficient Data						
n-Nitrosodiphenylamine	0.005^{f}	0 (7.0 ug/l)					.05	
Pentachlorophenol	0.005^{f}	1.01 mg/l				21 ug/l		
Phenol		3.5 mg/l				0.001		
Dimethylphthalate	0.005^{f}	350 mg/l					.05	
Diethylphthalate		434 mg/l					.05	
Dibutylphthalate	0.005^{f}	44 mg/l				770 ug/l		
Di-2-ethylhexylphthalate	0.005^{f}	21 mg/l						
Polychlorinated biphenyls (PCBs)			0 (12.6 ng/l)		0.125	0.0125		0.1 ug/l
Polynuclear aromatic hydrocarbons (PAHs)			0 (3.1 ng/l)					
2,4,5 T-P Silvex	0.01^{f}					.26 ug/l		

TABLE 4-7 (Sheet 3 of 3)

WATER QUALITY CONTAMINANT SPECIFIC REQUIREMENTS (ARARS)+

CHEMICAL	SAFE DRINKING WATER ACT AND NY MCLs (mg/l)	CLEAN WATER ACT Water Quality Criteria for Human Health — Adjusted for Drinking Water Only a/	SAFE DRINKING WATER ACT Health Advisories (mg/l) 1-Day	10-Day	Longer Term	NEW YORK STATE CLASS GA (mg/l unless otherwise stated) Groundwater Standards	TOG Guidance Values+	NEW YORK STATE RAW WATER STANDARDS (mg/l)
Selenium	0.01	10 ug/l				0.02	0.01	
Silver	0.05	50 ug/l				0.05		
Sulfate						250	NA	
2,3,7,8-TCDD		0 (0.00018 ng/l)				3.5 x 10^{-5} ug/l		
Tetrachloroethylene		0 (0.88 ug/l)	2.3	0.175	0.02		.0007	
Thallium		17.8 ug/l					.004	
Toluene		15 mg/l	21.5	2.2	0.34		.05	
Toxaphene	0.005[f]	0 (26 ng/l)				0.24 [g/]	0.005	
Trichloroethylene	0.005[f]	0 (2.8 ug/l)	2.0	0.2	0.075	10.0 ug/l		
Trihalomethanes (total)[e/]	0.1							
Vinyl chloride	0.002[f/]	0 (2.0 ug/l)				5.0 ug/l		
Xylenes	0.005[fh]		12	1.2	0.62		.05	
Zinc		5 mg/l (organoleptic)				5		
Styrene	0.005[f]					931 ug/l		

\+ TOGS (Technical Operations Guidance Series) are Clean-Up Standards, technically not ARARs.

a/ These adjusted criteria, for drinking water ingestion only, were derived from published EPA Water Quality Criteria (*Federal Register* 45:79318-79379, November 28, 1980) for combined fish and drinking water ingestion and for fish ingestion alone. The adjusted values are not official EPA Water Quality Criteria, but may be appropriate for Superfund sites with contaminated ground water. In the derivation of these values intake was assumed to be 2 liters/day for drinking water and 6.5 grams/day for fish, and human body weight was assumed to be 60 kilograms. Values for bioconcentration factor carcinogenic potency, and acceptable daily intake were those used for water quality criteria development.

b/ Criteria designated as organoleptic are based on taste and odor effects, not human health effects. Health-based Water Quality Criteria are not available for these chemicals.

c/ The criterion for all carcinogens is zero; the concentration given in parentheses corresponds to a carcinogenic risk of 10^{-6}. Water quality criteria documents present concentrations resulting in carcinogenic risks of 10^{-5} to 10^{-7}. To obtain concentrations corresponding to risks at 10^{-4} and 10^{-5}, the 10^{-6} concentration should be multiplied by 100 and 10, respectively. To obtain concentrations corresponding to risks of 10^{-7} and 10^{-8}, the 10^{-6} concentration should be divided by 10 and 100, respectively.

d/ Chloroform is one of four trihalomethanes whose sum concentration must be less than 0.1 mg/l.

e/ Total trihalomethanes refers to the sum concentration of chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

f/ Proposed changes under consideration by NY State Department of Health (10 NYCRR 5-1).

g/ Standard is not detectable, levels provided reflect the optimum detection level.

MCL Maximum Contaminant Level

h/ each isomer

* Compounds that are suspected contaminants

8099b

As summarized in Section 4.2, investigations of the site (Woodward-Clyde, 1983; Velzy Associates, 1984; and C.A. Rich, 1986) have indicated the presence of elevated levels of certain volatile organic compounds in the aquifer. In a few samples, phenol was detected at levels above those permitted in groundwater. Elevated levels of manganese were also detected in groundwater (C.A. Rich, 1986). In addition to the documented groundwater contamination (Table 4-9), soil sampling conducted by the Nassau County Health Department (NCHD) in the spill area and by C.A. Rich Consultants (1986) in the leaching basins (Figure 2-2) indicated elevated levels of organic parameters, such as TCE (0.045 mg/kg), PCE (55.0 mg/kg), toluene (160 mg/kg), phenol (18.9 mg/kg) and bis(2-ethylhexyl)phthalate (88.0 mg/kg) (Table 4-10). Also, elevated soil levels of arsenic (25.0 mg/kg), cadmium (42.0 mg/kg), copper (50,800 mg/kg), lead (164 mg/kg) and zinc (25,000 mg/kg) were found in 1986 in the leaching basins and the spill area.

Depending upon the probability of exposure to these chemicals via different pathways, which will be evaluated in the RI, the resident and/or transient population may be subjected to certain public health risks. The potential sources of contamination are listed below.

4.4.1 Potential Source Areas and Release Mechanisms (See Figure 2-2)

1. Spill Area - The documented contamination of soil and groundwater in this area (Section 4.2) confirms it as a source of contamination to groundwater which is the principal public water supply. Percolation of precipitation water through the soil is a means by which groundwater becomes contaminated from contaminated soil. An associated release mechanism to be considered is the horizontal flow of groundwater through the aquifer which may result in the spread of contamination downgradient of the source.

2. Wastewater Treatment Tanks, Leaching Basins, Diffusion Wells and Feed Lines - The three leaching basins received effluent from the wastewater treatment tanks which treated process waters contaminated largely with metallic elements. Elevated levels of heavy metals were found in sludge samples taken from the leaching basins in 1986 (Section 4.2.2). In addition, organic compounds have also been identified recently in samples of the treatment tank standing water and sludge taken by the EPA while planning removal tasks for this RI/FS. The 12 foot deep treatment tanks are full to capacity with approximately 8 feet of sludge and 4 feet of water. Because the tanks are open and exposed to the weather, the possibility exists for the water to blow or overflow onto the ground, thereby releasing contaminants to the environment. The feed lines from the treatment tanks to

TABLE 4-8 (Sheet 1 of 2)

MAJOR GROUNDWATER CONTAMINANTS AT THE SITE AND ITS VICINITY

Contaminant (New York State Guidance Lines Levels)	Maximum Concentration (ppb)	Location/Source	Safe Drinking Water Act MCL (ppb)	Safe Drinking Water Act MCLG (ppb)	Current New York State Groundwater Standards Class GA (ppb)
Tetrachloroethylene [PCE]	6197	SW-2/Rich		0	0.7
	199	NCHD/Rich			
	140	8A/Geraghty & Miller			
	120	7B/Geraghty & Miller			
Trichloroethylene [TCE]	620	SW-2/Rich	5		10
	115	Diffusion Well/Rich			
	50	8A/Geraghty & Miller			
	58	9B/Geraghty & Miller			
1,1,1-Trichloroethane [1,1,1-TCA]	1557	SW-2/Rich	200		50 (Guidance values)
	60	Diffusion Well/Rich			
1,2 Dichloroethylene [1,2-DCE]	3158	DOH/Rich		70	50
	982	SW-1/Rich			
	160	8A/Geraghty & Miller			
	310	6B/Geraghty & Miller			
	570	6E/Geraghty & Miller			
	130	9B/Geraghty & Miller			
Total Phenols	41	SW-3/Rich			1
	35	SW-2/Rich			
	29	Diffusion Well/Rich			
	18	DW-1/Rich			
	17	DOH/Rich			
	16	DW-2, SW-1/Rich			
	26	6B/Geraghty & Miller			
	18	6E/Geraghty & Miller			
Benzene	40	SW-2/Rich	5		ND

ND- Not Detectable

TABLE 4-8 (Sheet 2 of 2)

MAJOR GROUNDWATER CONTAMINANTS AT THE SITE AND ITS VICINITY

Contaminant (New York State Guidance Lines Levels)	Maximum Concentration (ppb)	Location/Source	Safe Drinking Water Act		Current New York State Groundwater Standards Class GA (ppb)
			MCL (ppb)	MCLG (ppb)	
bis(2-ethylhexyl) phthalate	469	SW-3/Rich			4,200
	227	SW-1/Rich			
	142	NCDOH/Rich			
Cadmium	107	DW-3/Rich	10		10
Manganese	1722	SW-2/Rich			300
	1602	DW-2/Rich			
	1239	Diffusion Well/Rich			
Lead	2550	SW-1/Rich	50		25
	2550	SW-2/Rich			
Copper	691	NCDOH/Rich		1,300	1,000
	149	SW-3/Rich			
	148	SW-2/Rich			
Zinc	110	DW-3/Rich			5,000
	83	DW-1/Rich			
	79	DW-2/Rich			
	71	SW-1/Rich			

Source: C.A. Rich, 1986

Geraghty & Miller, 1986

TABLE 4-9

MAJOR SOIL CONTAMINANTS DETECTED AT THE SITE

Contaminant	Maximum Concentration (mg/kg)	Location/Source	Background Concentration in U.S. Soil (mg/kg)[3])
TRICHLOROETHYLENE	0.045	NCHD (B-2, 5-7')(1)	
TETRACHLOROETHYLENE (PCE)	55.0	NCHD (B-2, 5-7')(1)	
TOLUENE	16.0	NCHD (B-2, 5-7')(1)	
PHENOL	18.9	RICH (B-2, 45-47')(2)	
BIS(2-ETHYLHEXYL)PHTHALATE	88.0	RICH (B-2, 0-2')(2)	
ARSENIC	25.0	RICH (B-2, 20-22')(2)	0.1-30 (5.1)
CADMIUM	42.0	NCHD (LEACHING BASIN #2)(1)	0.07-1.1
CHROMIUM	26.9	NCHD (LEACHING BASIN #1)(1)	3-200 (40)
COPPER	50,800	NCHD (LEACHING BASIN #2)(1)	6-60
MANGANESE	119.0	RICH (B-2, 10-12')(2)	7-2000 (345)
LEAD	164.0	NCHD (ABOVE LINER)(1)	10-70 (17)
ZINC	25,000	NCHD (LEACHING BASIN #2)(1)	17-125

(1)NCHD - Nassau County Health Department Study, 1986.

(2)C.A. Rich Consultants Inc., 1986.

(3) Range (mean) taken from Trace Elements in Soils and Plants
A. Kabata-Pendios and H. Pendies CRC Press Inc., Boca Raton, Florida (1984)

the leaching basins and overflow lines connecting the tanks are in unknown condition. The possibility exists that the buried lines may have leaked during the period of routine discharges allowing contaminants to enter the surrounding soils at locations near leaks. The exact locations of these lines has not been documented or established.

3. Possible Septic Tank and Tile Field - A site plan drawn by Peter Capriano, P.E. in 1966 indicates that a septic system was to be constructed for the Claremont facility. The location of this structure and a possible tile field to enhance leaching has yet to be verified. The possibility exists that process wastewaters may have been dumped into the system.

4. Abandoned Material Inside Building - The 700 drums, bags and small containers within the building contain hazardous materials according to sampling completed by EPA while planning removal tasks. It consists of raw materials, waste and final products from the processes undertaken at Claremont. In raw and waste materials, concentrations of contaminants are excessively high (e.g. percentages or hundreds of thousands of ppm). Some of the containers, bags and drums are leaking or broken. Because the building is for the most part unused, volatiles can be trapped inside. Some materials, (aluminum powder) present an explosive risk.

5. Drum and Container Staging Area - A concrete pad, adjacent to the east side of the building, was used as a staging area for drums. Presently, 10 severely corroded drums of unknown solids are situated on the concrete pad. The possibility exists that contents of these containers washed or blew onto the ground during operations or previous remediation at Claremont.

6. Solvent Tank Farm Storage Area - The chemicals used at the facility were described in Section 3.1. This storage area also represents potential for concentrated sources of contaminants.

7. Other Yard Storage Areas - The Claremont lot is cluttered with a great deal of scrap iron, empty tanks, empty and rusting drums, mobile and immobile vehicles, and wood pallets. The appearance of the yard and history of the site indicate that unsound practices and procedures for the movement and handling of materials and chemicals may have occured over a long period of time. No records exist of the condition of the yard over most of the operating period of the facility. Consequently, other areas of the yard may ultimately be discovered to be sources of contamination as the result of past leaks or spills that have been covered over by groundcover, clutter, or recently added soils.

8. Industrial Operations Located Upgradient of the Site - Several industrial operations, including printing, plastic and metal plating operations, are located in the light industrial area upgradient from the site. Waste discharge from these operations can be potential sources of groundwater contamination at the site.

9. Old Bethpage Landfill - The Old Bethpage landfill, located west of the site, is a confirmed source of contamination to the deep portion of the Magothy Aquifer.

4.4.2 Potential Exposure Pathways and Receptors

Potential exposure pathways and receptors from the sources of contamination identified in the previous section are described as below.

Groundwater

Chemical analyses of the groundwater from the Magothy Aquifer below the site show significant contamination by certain volatile organic compounds, phthalate esters, and metals. The principal contaminants detected are TCE, PCE, benzene, 1,1,1-trichloroethane, 1-2-dichloroethane, lead, cadmium and phenol. Some of these contaminants are potential carcinogens (e.g., benzene, 1,2-dichloroethane, TCE and PCE), and they are present at concentrations which range from 1 to 2 orders of magnitude above the Maximum Contaminant Level under the Safe Drinking Water Act as well as the New York State Groundwater Standard (Table 4-9).

Groundwater is the sole source of drinking water in Long Island. Potential public exposure to these contaminants can occur directly via ingestion of groundwater, or indirectly via ingestion of garden produce irrigated with contaminated groundwater. Exposure can also occur via inhalation or dermal contact while washing or bathing. These exposure pathways will be evaluated in this RI.

Surface Water

There is no surface water in the vicinity of the Claremont site. Surface runoff from the site is discharged into infiltration basin and percolates to the groundwater.

Site Soil/Sediment

Limited soil sampling from previous studies (C.A. Rich, 1986; NCHD, 1986) indicate that soil from the former spill area was contaminated with cadmium, copper, volatile organics (PCE, TCE), phthalate esters, and phenol (Table 4-10). Contaminated soil from this area was excavated and left uncovered on plastic sheeting on site to be aerated. The wastewater treatment tanks on site have also been left uncovered and are filled to capacity. Surface soil from this area is probably contaminated by overflow during rain and spill from these tanks. Other areas of potential soil contamination are the tank farm area, the concrete pad area where drums were staged and areas covered with debris in the yard. Since the property is not fenced, local residents have easy entry to the site. Delivery persons and clients also have intermittent access to the site. But the principal populations at risk are the people employed by L&L excavating and Maniac Leasing. These people spend most of their work days outdoors on site. In addition, the Claremont property may be the site of a new co-generation plant. Thus, the workers contracted to construct this plant will also be potential receptors of soil contamination.

Exposure to contaminants in soil can occur via ingestion and direct contact pathways. Exposure can also occur via inhalation of soil particles made airborne during dry periods by wind, vehicular traffic, or other soil excavating activities. Receptor exposure to contaminated soil will be evaluated in this RI.

Air

No air quality data, except that limited to inside the plant building, are available now for the Claremont Polychemical site. However, volatile organic compounds are major contaminants in site soil, and therefore, exposure can occur via inhalation of organic vapors volatilized from on-site soils. In support of an assessment to be completed by the Agency for Toxic Substance and Disease Registry on the current site conditions regarding release of organic gases, Ebasco has completed a brief sampling program. The results from the brief sampling program will be used to scope any additional sampling for the RI.

In addition, according to the Record of Decision (ROD) signed by NYSDEC and EPA in March, 1988 for the Old Bethpage landfill, groundwater will be pumped from five recovery wells at a rate of 1.5 million gallons per day and treated via an air stripper located at the eastern boundary of the landfill. Since one potential remedial alternative for groundwater at the Claremont site may also be pump and treatment via an air stripper, exposure of local residents to any toxic vapors emitted to the atmosphere will be evaluated. Evaluation of the pump and treatment remedial alternatives at the Claremont site will be based on a risk assessment of this specific exposure pathway.

4.4.3 Review of the Existing Data Base

Based on the potential exposure pathways at the Claremont site described above, and review of the existing data base, the following data gaps for characterizing contamination in this study area can be identified.

- Groundwater Pathway - Past investigation of groundwater on site has been performed by Velzy Associates (1984) and C.A. Rich Consultants (1986). Groundwater was sampled on site in March, 1986 and June, 1986 by C.A. Rich Consultants; and analyzed for priority pollutants. However, great variations exist in data from these two rounds of sampling. For example, benzene was detected at 40 ppb in SW-2 in the first round of sampling but was not detected in the second round of sampling (C.A. Rich, 1986). Some type of analytical error could be involved as the data generated had not been validated to ensure proper QA/QC procedure. In addition, no preservatives were used in the first round of sampling. For metal analysis, the samples were filtered in the laboratory in the first round and field-filtered in the second round. According to EPA Region II protocol, groundwater samples taken for total metals analysis must be unfiltered. Filtered samples may be used for analyses of dissolved metals only.

  In this RI, additional monitoring wells will be installed on site, and groundwater will be sampled and analyzed for TCL compounds. Data will be CLP generated and validated for risk assessment purposes.

- Soil/Sediment Pathway - Past investigation of site soils consists of priority pollutant parameters from three borings in the spill area and one in the leaching basin area, as well as EP toxicity metals testing for the sludge samples from the leaching basins. Potential soil contamination from the treatment tank, tank farm and drum storage pad areas as well as the waste file areas have been studied. In addition, sampling and analytical errors may have occurred during these studies. For example, very high levels of organic vapors were detected by an OVA in boring B-2 at the time of sampling, but no corresponding volatile organic compounds were detected in the samples analyzed by the laboratory (C.A. Rich, 1988). One possible explanation for this discrepancy is that the detection limit used in the analyses may have been too high (in ppm range).

  In this RI, a more extensive sampling effort and chemical analyses need to be performed in order to evaluate the various soil exposure pathways. Soil samples will be analyzed for TCL compounds by CLP protocols and data generated will be validated.

- Air Pathway - A link to exposure to contaminants in groundwater and soil or sediments is made through air Volatile compounds and contaminated particulates can move through the gaseous medium. A brief sampling program has been completed at Claremont. Sampling stations included the spill area, maintenance room in the building, the vicinity of the waste treatment tanks, a location in the south eastern portion of the site and a location between the Old Bethpage Landfill and Claremont next to the landfill fence. Pumped samples using tenax and carbon adsorbants were collected. Air Monitoring procedures T01 (tenax) and T02 (carbon) were completed by REM contract laboratories. A meteorological station, measuring wind direction and speed, was installed and operated on the roof of the Claremont building throughout the sampling period. For this RI, air sampling will be performed to assess this potential exposure pathway depending on results from the brief program.

In summary, the existing data base is not sufficient to define quantitatively the hydrogeologic regime at the site nor is it adequate to quantitatively define groundwater or soil quality. Moreover, the data base does not meet quality assurance standards, and is not adequate to complete a risk assessment which would comply with existing guidance, even if the data was CLP generated. However, the data that has been obtained is minimally adequate to make a qualitative assessment of the environmental conditions at the Claremont site, and to plan a cost-effective and time-efficient RI program.

4.5 PRELIMINARY REMEDIAL RESPONSE OBJECTIVES AND ACTION ALTERNATIVES

4.5.1 Response Objectives

Although the existing data base for the Claremont Polychemical site is inadequate to clearly define present contamination at the entire site, the threat to public health and the environment, several preliminary remedial response objectives may be formulated from the preliminary risk assessment and previous site investigations.

As data are gathered throughout the course of RI activities, these objectives will be refined and developed or, as appropriate, eliminated. Attainment of the RI objectives will provide a basis for evaluation of these preliminary remedial response objectives. For example, if the extent to which natural and manmade barriers contain substances and the adequacy of the barriers (i.e., cap) are assessed, the potential for direct contact with contaminants can also be assessed. Other RI objectives, including assessment of chemical distribution and migration, will also allow better definition of the risk from direct contact with site related contaminants.

On the basis of the existing data, preliminary remedial response objectives were identified to mitigate risks associated with the site. These objectives include:

- restore the contaminated aquifer for future groundwater uses;
- prevent human exposure to contaminated groundwater;
- protect uncontaminated groundwater downgradient for current and future uses;
- prevent inhalation of contaminated airborne particulates;
- prevent migration of soil contaminants to groundwater;
- minimize human exposure to contaminants that may be present in soil or wastes;
- prevent environmental impacts due to the off-site migration of contaminants via groundwater and surface runoff, and
- assure that site conditions and remedies meet the ARARs and are protective of human health and the environment.

4.5.2 Remedial Action Alternatives

To meet the above preliminary remedial response objectives, a set of general response actions were identified. These general response actions fall into the following categories:

- source control actions;
- migration control actions, and
- no action.

A preliminary list of remedial technologies that addresses these actions is provided and discussed in the following paragraphs; it is summarized in Tables 4-11 to 4-14.

No Action

The no action alternative will be evaluated to provide a comparative basis for other remedial alternative evaluations. At the site, the no action alternative means that no remedial actions (containment or treatment) will be designed and implemented for soil, tanks, groundwater, or buildings. The no action alternative would include public health and environmental evaluations (including risk assessment), long-term monitoring, (e.g., air and groundwater), and might include institutional control (e.g., prohibit the use of private well water for drinking and irrigation purposes).

Containment

Containment alternatives would include: 1) utilization of impermeable barriers and caps to completely isolate the contaminated soil from contact with rainfall runoff, surface water and groundwater; and 2) encapsulation and/or sealing of all the buried tanks to completely prevent any release of contaminants to the environment.

Soil Treatment and Disposal

The contaminated soil at the site can be cleaned by either excavation and on-site or off-site treatment/disposal, or in-situ treatment (Table 4-11). These alternatives would entail treatment of contaminated soils to reduce or eliminate their potential risk to public health and the environment.

- On-site or Off-site Treatment/Disposal

On-site/off-site treatment technologies may include soil washing, incineration, mechanical (thermal) aeration, chemical fixation, biological treatment and roasting. The treated soil would be disposed of either by landfilling off site or by use as backfill on site.

Soil washing involves chemical and physical processes. The chemical process applies solvent extraction methodologies to remove contaminants (metals and organics) from the soil. Physical processes may include classification of the contaminated soil prior to extraction, removal of excess moisture from treated soil after extraction, and recovery of the spent solvent. The wastewater generated from soil washing would be treated in an on-site water treatment system.

Soils incineration is a process in which one of a number of thermal technologies is utilized to accomplish different phases of thermal reactions leading progressively to complete oxidation of organic substances.

Mechanical (thermal) aeration involves the contact of clean air with the heated, contaminated soils to transfer the volatile organics from the soil into the air system. Depending upon the concentrations of contaminants, the air stream could be combusted in an afterburner or passed through activated carbon for air pollution control.

TABLE 4-10

PRELIMINARY IDENTIFICATION OF REMEDIAL TECHNOLOGIES/ALTERNATIVES FOR CONTAMINATED SOIL

RESPONSE ACTION	REMEDIAL ALTERNATIVE	DATA REQUIREMENTS
NO ACTION	o FENCES/WARNING SIGNS	RISK ASSESSMENT
	o GROUNDWATER MONITORING	
	o SURFACE WATER MONITORING	
CONTAINMENT	o CAPPING	GEOHYDROLOGICAL DATA
	o IMPERMEABLE BARRIER	
TREATMENT	EXCAVATION/ON-SITE TREATMENT	SOIL CHARACTERIZATION
	VOLATILES	
	o MECHANICAL/THERMAL AERATION	BENCH SCALE/PILOT PLANT
	o INCINERATION	
		TREATABILITY STUDIES
	NON-VOLATILE ORGANICS	
	o SOIL WASHING	
	o INCINERATION	
	o BIOLOGICAL TREATMENT	
	METALS	
	o CHEMICAL FIXATION	
	o SOIL WASHING	
	o ROASTING (THERMAL IMMOBILIZATION)	
	EXCAVATION/OFF-SITE TREATMENT	
	o OFF-SITE CONTRACT TREATMENT	
	o SAME TECHNOLOGIES FOR ON SITE TREATMENT SHOULD BE CONSIDERED	
	IN-SITU TREATMENT	
	o SOIL FLUSHING	
	o VITRIFICATION	
	o FIXATION	
	o BIORECLAMATION (ORGANICS ONLY)	
DISPOSAL	o ON-SITE DISPOSAL	REGULATORY REQUIREMENTS
	o OFF-SITE DISPOSAL	IDENTIFICATION OF AVAILABLE LANDFILL

Chemical fixation involves the addition of siliceous material combined with setting agents such as lime or cement resulting in a stabilized and solidified product. Commercial proprietary fixation agents and processes can be used for both inorganic and organic contaminated soils.

The biological treatment technology considered for the contaminated soil is the so-called "land farming" technology. It involves spreading of contaminated soil over a prepared treatment area. Depending on the characterization of the contaminated soil, it could be mixed with nutrient enriched soil. The moisture, carbon/nitrogen ratio, pH and nutrient content of the soil are monitored and maintained to enhance the microbial metabolism. The hazardous organics would thus be degraded and transformed to non-hazardous substances.

Roasting is a treatment process which can immobilize the contaminant metals in soils by incorporating them into a ceramic-like matrix. This process involves heating the metal-contaminated soil along with an additive (e.g., kaolin) in a rotary kiln or multiple-hearth furnace. The operating temperature is generally two-thirds of the metal's melting temperature.

o <u>In-Situ Treatment</u>

Technologies capable of treating contaminated soil in-place have been considered. These technologies include soil flushing, vitrification, solidification and bioreclamation.

Soil flushing is the in-place washing of contaminants from the soil with a suitable solvent such as water or a surfactant solution. The contaminated elutriate is pumped to the surface for removal, resource recovery and recirculation, or on-site treatment and reinjection.

The <u>in-situ</u> soil vitrification technology uses an electric current passed between electrodes placed in the ground to convert soil and contaminants into a stable glass material. Heat from the electric current decomposes organic matter, and solubilizes and encapsulates metallic and other inorganic materials in the vitrified mass. When the electric current ceases, the molten mass cools and solidifies. The gases generated from vitrification can be further combusted in an afterburner for air pollution control. Any wastewater generated from scrubbing gaseous emissions can be treated in an on-site water treatment system.

In-situ solidification uses a mechanical mixer/injector to introduce and mix fixation materials directly into the contaminated subsurface materials. The soil is eventually solidified.

In-situ bioreclamation is a technique for treating zones of contamination by microbial degradation. The basic concept involves altering environmental conditions to enhance microbial catabolism or metabolism of organic contaminants, resulting in the breakdown and detoxification of those contaminants.

Groundwater/Treatment and Disposal

The contaminated groundwater at the site can be pumped and treated on site or treated *in-situ* (Table 4-12).

- On-Site Treatment/Disposal

On-site treatment technologies involve air stripping or chemical oxidation for removing volatile organics; and carbon adsorption, chemical oxidation, biological treatment, reverse osmosis for removing non-volatile organics.

- Air Stripping

Air stripping is a mass transfer process in which volatile organic contaminants in groundwater are transferred to the gaseous vapor phase. Generally organic compounds with Henry's Law constant of greater than 0.003 can be effectively removed by air stripping. Air stripping is an efficient process to treat aqueous groundwater with relatively high volatility, low water solubility (e.g., chlorinated hydrocarbons such as tetrachloroethylene) and aromatics (such as toluene).

If the RI results indicate that the groundwater is contaminated with metals, chemical precipitation or ion exchange can be used to remove the metals.

- Chemical Precipitation

Chemical precipitation is a pH adjustment process in which acid or base is added to a solution to adjust the pH to a point where the constituents to be removed have their lowest solubility. Metals can be precipitated from solution as hydroxides, sulfides, carbonates, or other insoluble salts. Hydroxide precipitation with lime is most common, however, sodium sulfide is sometimes used to achieve lower treatment effluent metal concentrations. The resulting residuals are metal sludge and the treatment effluent which has an elevated pH and (in the case of sulfide precipitation) excess sulfides.

- Ion Exchange

Ion exchange is a process whereby selective ions are removed from the aqueous phase by less harmful ions held by ion exchange resins.

- In-situ Bioreclamation

As described above, biological technology can also be used to treat the organics in the groundwater

- Carbon Adsorption

The process of adsorption onto activated carbon involves contacting a waste stream with the carbon, usually by flow through a series of packed or packed bed reactors. The activated carbon selectively adsorbs hazardous constituents in the waste by a surface attraction phenomenon in which the organic molecules are attracted to the internal pore surfaces of the carbon granules. Activated carbon can be used for the adsorption of volatile, and semivolatile organic contaminants of the groundwater.

- Reverse Osmosis

In normal osmotic processes, solvent will flow across a semi-permeable membrane from a dilute concentration to a more concentrated solution until equilibrium is reached. The application of high pressure to the concentrated side will cause this process to reverse. This results in solvent flow away from the concentrated solution, leaving an even higher concentration of solute. Reverse osmosis can be used to remove dissolved solids, including sodium, to meet drinking water standards.

Underground Tanks

The tanks at the site can be excavated and handled by either on-site treatment/disposal or off-site treatment/disposal (Table 4-13).

Definitive location of the tanks and characterization of their contents is needed during the investigation. The selection of treatment methods will be based on the RI results which will define the nature and quantity of the wastes and chemicals.

Building Structure

Technologies capable of treating contaminated structures have been considered for preliminary evaluation (Table 4-14). These technologies include vacuuming, solvent washing, steam cleaning, painting and coating (sealing) and gritblasting.

TABLE 4-12

PRELIMINARY IDENTIFICATION OF REMEDIAL TECHNOLOGIES/ALTERNATIVES FOR BURIED TANKS

RESPONSE ACTION	REMEDIAL ALTERNATIVE	DATA REQUIREMENTS
NO ACTION	o FENCES/WARNING SIGNS o INSTITUTIONAL CONTROL	RISK ASSESSMENT
CONTAINMENT	o SEAL TANKS/FILL WITH INERT MATERIAL o ENCAPSULATION	
TREATMENT	EXCAVATION/ON-SITE TREATMENT o LIQUID WASTES* o SOLID WASTES* o CHEMICALS* (IF ANY)	CHARACTERIZATION OF TANK CONTENTS
	EXCAVATION/OFF-SITE TREATMENT o OFF-SITE CONTRACT TREATMENT	IDENTIFY TREATMENT/ DISPOSAL FACILITIES
DISPOSAL	(FOR ON-SITE TREATMENT PRODUCT/RESIDUE AND DECONTAMINATED TANKS) o ON-SITE DISPOSAL o OFF-SITE DISPOSAL	REGULATORY REQUIREMENTS IDENTIFICATION OF AVAILABLE LANDFILL

* SELECTION OF TREATMENT METHODS WILL BE BASED ON THE QUANTITY AND PHYSICAL/CHEMICAL CHARACTERISTICS OF THE WASTES AND CHEMICALS

TABLE 4-13

PRELIMINARY IDENTIFICATION OF REMEDIAL TECHNOLOGIES/ALTERNATIVES FOR BUILDING

RESPONSE ACTION	REMEDIAL ALTERNATIVE	DATA REQUIREMENTS
NO ACTION	o FENCES/WARNING SIGNS o INSTITUTION CONTROL	RISK ASSESSMENT
TREATMENT	DEMOLITION/ON-SITE TREATMENT o CONTAMINATED MEDIA* o CONTAMINANTS*	NATURE AND EXTENT OF CONTAMINATION; BUILDING ENGINEERING DATA
	DEMOLITION/OFF-SITE TREATMENT	IDENTIFY TREATMENT/ DISPOSAL FACILITY
	DECONTAMINATION/ RESTORATION o VACUUMING o SOLVENT WASHING o STEAM CLEANING o PAINTING AND COATING (SEALING)	FUTURE USE
DISPOSAL	o ON-SITE DISPOSAL o OFF-SITE DISPOSAL	REGULATORY REQUIREMENT

* POTENTIAL REMEDIAL ALTERNATIVES WILL BE IDENTIFIED AFTER THE R.I. DATA ARE COLLECTED AND ANALYZED.

Vacuuming is used to remove loose particulate contamination from surfaces of structures by common cleaning techniques. This technology is generally used in conjunction with other technologies.

Gritblasting is a surface removal technique in which an abrasive material is used for uniform removal of contaminated surface layers from buildings. Hydroblasting uses a high-pressure water jet to remove contaminated debris from surfaces.

Solvent washing technology consists of pressure-spraying fluorocarbon solvents (i.e., Freon 113) onto contaminated surfaces followed by collection and purification of the solvent.

Steam cleaning uses steam in place of solvent but is only designed to remove surface contamination.

Surface sealing is a painting process in which appropriate resin types will be coated onto the surface to contain the contaminants within the structure.

These technologies and any others identified during the RI site studies when conditions are more fully characterized will be screened during the FS. In general, technologies will be screened by site-limiting characteristics, waste-limiting characteristics, and inherent limitations of the technologies with respect to their effectiveness, implementibility and cost.

5.0 WORK PLAN RATIONALE

5.1 OBJECTIVES OF THE PROJECT

The primary objective of the RI is to gather all of the necessary information for site characterization as it applies to an evaluation of risks associated with the site and remediation of the site.

The information from the RI will be used to perform Public Health and Environmental Risk Assessments, and to scope out any treatability tests required for the FS. Sampling and analysis of soil, groundwater and building materials at the site will be conducted during the RI. Table 5-1 presents the relationships of risks, RI objectives, field sampling, analysis and remediation alternatives.

The primary objective of the FS is to screen, test and evaluate remedial alternatives for remediation of groundwater and source control at the site. An attempt will be made to join remediation efforts with those made by the Town of Oyster Bay for remediation of the Old Bethpage landfill. The FS will be focused toward the goal of a joint effort. Pump and treat remediation planning by the Town of Oyster Bay to contain the leading edge of the land-

TABLE 5-1 (Sheet 1 of 3)

RATIONALE FOR FIELD STUDIES AND IDENTIFICATION OF REMEDIATION ALTERNATIVES

OBJECTIVE	RISK	INVESTIGATION	ESTIMATED NO. SAMPLES NEEDED		ANALYSIS	ALTERNATIVE REMEDIATION
			LOCATION	NUMBER		
AREAL/VERTICAL EXTENT OF SOIL CONTAMINATION	- INHALATION INGESTION, DERMAL CONTACT	SURFACE SOIL	- ON-SITE & UPGRADIENT SOIL GAS	175 (GRID)	FIELD	- NO ACTION - CONTAINMENT: CAPPING TREAT TREATMENT: EXCAVATION/ON-SITE TREATMENT EXCAVATION/REMOVAL *IN SITU* TREATMENT
			- SCOOP SAMPLES	30	TCL (METALS)/CLP	
			- 0 - 2 FT. BORINGS	25*	TCL (FULL)/CLP	
	- SOURCE TO GROUND WATER CONTAMINATION	SUB-SURFACE SOIL ABOVE WATER TABLE	- 22 BORINGS: CONTINUOUS TO 10 FT; 15 & 20 FT; EVERY 10 FT TO WATER TABLE BETWEEN 20-70 FT; CLAY HORIZONS	12 SAMPLES FROM EACH BORING, 5 FOR ANALYSIS	FIELD SCREENING TO IDENTIFY SAMPLES FOR FULL TCL ANALYSIS (CLP)	- NO ACTION - CONTAINMENT: CAPPING - TREATMENT: EXCAVATION/ON-SITE TREATMENT EXCAVATION/REMOVAL *IN SITU* TREATMENT
			- 3 BORINGS: CONTINUOUS TO WATER LEVEL	35 FROM EACH WELL, 5 FOR ANALYSIS		
			- WELL LOCATIONS: SCREENED INTERVAL	1 FROM EACH: 4 SHALLOW 2 INTERMED 2 DEEP	FULL TCL & TOC	

*INCLUDED IN TOTAL NUMBER OF SAMPLES/BORING IN SUBSURFACE ESTIMATE

[redacted]

TABLE 5-1 (Sheet 2 of 3)

RATIONALE FOR FIELD STUDIES AND IDENTIFICATION OF REMEDIATION ALTERNATIVES

OBJECTIVE	RISK	INVESTIGATION	ESTIMATED NO. SAMPLES NEEDED		ANALYSIS	ALTERNATIVE REMEDIATION
			LOCATION	NUMBER		
DELINATE GROUND WATER PLUME(S) (<150ft) COMING FROM SITE	- INJESTION - INHALATION WHILE BATHING	GROUNDWATER	- BETWEEN CLAREMONT & LANDFILL	2 EXISTING WELLS	FIELD LAB SCREENING TO IDENTIFY SAMPLES FOR TCL CLP ANALYSIS	- PUMP AND TREAT ON-SITE - PUMP AND TREAT (POTW) - PUMP AND TREAT IN COMBINATION WITH SIMILAR TREATMENT ASSOCIATED WITH OLD BETHPAGE LANDFILL
			- DOWNGRADIENT FROM SITE	THREE 3-WELL CLUSTERS; 11 EXISTING WELLS		
			- EAST OF SITE	ONE 3-WELL CLUSTER		
			- SITE	8 EXISTING WELLS		

TABLE 5-1 (Sheet 3 of 3)

RATIONALE FOR FIELD STUDIES AND IDENTIFICATION OF REMEDIATION ALTERNATIVES

OBJECTIVE	RISK	INVESTIGATION	ESTIMATED NO. SAMPLES NEEDED			ANALYSIS	ALTERNATIVE REMEDIATION
			LOCATION		NUMBER		
			TYPE	LOCATION			
DETERMINE CONTAMINATION OF FACILITIES	- INHALATION - DERMAL CONTACT	BUILDING WASTE TREATMENT SYSTEM; LEACHING PITS; BURIED TANKS	- WIPE	WALLS	12: 1-EACH OF 10 ROOMS	TCL METALS	- DEMOLITION/OFF-SITE DISPOSAL (RCRA) - DECONTAMINATION/DEMOLITION (MLF) - DECONTAMINATION/SALVAGE, LIQUID WASTES TREATED ON OR OFF-SITE - REMOVAL OF TANKS AND OFF-SITE DISPOSAL
			- DUST	FLOOR	10: 1-EACH OF 10 ROOMS	TCL METALS	
			- FLUID	FLOOR DRAINS SUMPS	2 2	TCL FULL, TOC	- SEALING OF TANKS

fill leachate plume is expected to also contain deep contamination south of the Clarmont site. For this reason, the RI and subsequent FS will focus on expected shallow groundwater contamination coming from the Claremont site. Deep groundwater sampling will be undertaken to confirm indications from previous sampling that the vertical extent of the Claremont contamination is limited to relatively shallow areas. In this way, the work by Oyster Bay will not be duplicated. The FS will provide information required by the EPA to prepare a Record of Decision which specifies the recommended remedial alternatives. The FS will also provide information required by the designers of the Old Bethpage remediation system so that the feasibility of a joint remediation alternative may be evaluated.

5.2 SUMMARY OF INFORMATION NEEDED

A detailed review of the existing database has been performed in conjunction with the development of this work plan. Technical reports reviewed include those by Woodward Clyde Consultants (June 1983); Velzy Associates (June 1984); C.A. Rich Consultants (December 1986); Geraghty & Miller (August 1985; September 1986; September 1987; July 1987) and NYSDEC (March 1988). Analytical data packages furnished by the New York State Department of Law (March and June, 1986) and the Nassau County Health Department (February-March, 1986) were also examined. In addition, a meeting was held between Ebasco, EPA and M. Neitlich, of the former Claremont Polychemical Corp., in which chemical inventory lists and information regarding processing on site were exchanged.

Emphasis has been placed upon review of existing data with respect to:

- overall and regional site hydrogeology and stratigraphy;
- the nature and extent of soil contamination on site;
- the nature and distribution of groundwater contamination in the vicinity of the site;
- past and present industrial processes in the area;
- site-specific groundwater modeling of remediation scenarios, and
- impact of remediation efforts planned by the Town of Oyster Bay for the Old Bethpage landfill.

The proposed work effort has been specifically designed to avoid direct overlap with the technical results and data collected in previous studies. This work plan is intended to selectively supplement the existing data base with information necessary to conduct a risk assessment and a focused feasibility study as described in Section 5.1. With respect to this focused scope of work, the existing data base reflects the following data gaps:

- o areal and vertical extent and characterization of soil contamination on site;
- o areal and vertical extent of groundwater contamination attributed to the Claremont site, and
- o extent of contamination of the building on site.

This remedial investigation is designed to fill these gaps in the data base by means outlined in the following sections of this work plan.

5.3 DATA QUALITY OBJECTIVES (DQO) DETERMINATION

The data quality objectives are based on the concept that different data uses may require different levels of data quality. Data quality can be defined as the degree of uncertainty in the data with respect to precision, accuracy, representativeness, completeness and comparability. The four levels of data quality are:

(1) <u>Screening</u> (Level 1): This provides the lowest data quality but the most rapid results. It is often used for health and safety monitoring at the site, preliminary comparision to ARARs, initial site characterization to locate areas for subsequent and more accurate analyses, and for engineering screening of alternatives (bench-scale tests).

(2) <u>Field Analyses</u> (Level 2): This provides rapid results and better quality than in Level 1. Analyses include mobile lab-generated data.

(3) <u>Engineering</u> (Level 3): This provides an intermediate level of data quality and is used for site characterization. Engineering analyses include mobile lab-generated data and CLP analytical lab methods.

(4) Confirmational (Level 4): This provides the highest level of data quality and is used for purposes of risk assessment, engineering design, and cost recovery documentation. These analyses require full CLP analytical and data validation procedures.

(5) Non-standard Method (Level 5): Analyses which may require method modification and/or development. CLP Special Analytical Services (SAS) are considered Level 5.

The proposed field program (see Section 6.0) will generate data of several DQO levels. Soil gas analyses and on-site field screening of soil samples will yield semi-quantitative results of DQO Level 2 quality. Soil and building sample analyses by the CLP Laboratory are confirmational DQO Level 4. Because EPA analytical series 500 will be used for aqueous samples, involving method specific detection limits, their DQO level will be 5. The DQO Levels 4 and 5 data will be used for the purposes of conducting risk assessments, engineering design and cost recovery. Specific conductivity, pH, Eh, DO and temperature of groundwater measured in the field, will be of DQO Level 2 quality. Field screening for health and safety of work crews are considered of DQO Level 1 quality.

6.0 RI/FS TASK DESCRIPTIONS

6.1 TASK 1 - PROJECT PLANNING

Task 1 consists of the preparation of this Work Plan and the Work Plan's companion documents: the Sampling and Analysis Plan (SAP), the Health and Safety Plan (HASP) and the Site Management Plan (SMP). Together these comprise the Field Operations Plan (FOP).

Contents of these companion plans can be summarized as follows:

- SAP: includes sampling and analytical objectives; the number, type, and location of all samples to be collected; the site-specific quality assurance requirements which will be in accordance with the Quality Assurance Project Plan for the REM III Program; the Brossman Guidance; detailed sampling and analysis procedures; and data management elements.
- HASP: includes site information; a hazard assessment; training requirements; monitoring procedures for site operations; safety considerations during site operations; decontamination and disposal procedures; and other requirements in accordance with the Health and Safety Plan for the REM III Program.

- SMP: includes a site description; an operations plan outlining the site project organization and responsibilities; and the field operations schedule. This plan also addresses site security.

The preliminary planning stage included in-depth review of reports on previous site investigations, the EPA Remedial Project Manager's (RPM) file on Claremont; tax records and property maps for delineation of the site; reports on investigations and feasibility studies for the Old Bethpage landfill; the 1986 Superfund Amendment and Reauthorization Act and related guidance. It also included site visits, discussion with EPA Enforcement staff, EPA/TAT personnel regarding data and scheduling requirements/priorities related to possible interim removal actions; extensive discussion with the New York State Department of Law regarding site characterization and planned remediation of the Old Bethpage landfill.

6.2 TASK 2 - COMMUNITY RELATIONS

REM III community relations under direction from the EPA Remedial Project Manager and EPA's Community Relations staff will assist in preparing and implementing the approved community relations plan for the Claremont Polychemical site. Project developments may necessitate activities in combination with those for the Old Bethpage landfill remediation. Such events will be identified before the Work Plan is finalized. Community relations implementation assistance will be provided as specifically requested by EPA and is expected to include the following subtasks.

Prepare Community Relations Plan (CRP) (Subtask 2.1) REM III community relations staff will prepare and submit to EPA a draft CRP in July 1988. The final CRP is expected to be approved by EPA by August 1988.

Maintain information repositories (Subtask 2.2) Information repositories will be established at a public facility. Site information approved for public release will be available for public review.

Identify EPA information contact (Subtask 2.3) Concerned public and private citizens will be provided with access to an EPA representative who can respond directly to public inquiries about the Claremont Polychemical site. RPM, Carlos R. Ramos, will be identified as the contact with regard to technical matters.

Design and distribute fact sheets (Subtask 2.4) One fact sheet will be distributed following release of the work plan. The second fact sheet will be distributed following release of the

RI report. It will describe activities conducted or planned as part of the RI/FS and will identify the extent of contamination at the site and describe the remedial alternatives considered. A third fact sheet will be distributed at the termination for the feasibility study.

<u>Provide public meeting support (Subtask 2.5)</u> REM III community relations staff will provide logistical support and attend public meetings on the RI/FS work plan. Technical staff will be available to provide input and make presentations as needed. A public meeting summary for the RI/FS work plan will be prepared.

<u>Phone contact with local officials (Subtask 2.6)</u> Public officials will be updated concerning site activities, schedule changes, major findings during the RI/FS, and unforeseen site developments.

<u>Contact local newspapers (Subtask 2.7)</u> REM III community relations staff will assist EPA in the preparation of news releases to the local media concerning significant events during the RI/FS.

<u>Preparation and implementation of informal small group meetings (Subtask 2.8)</u> REM III community relations staff will assist EPA at public availability sessions or small group meetings throughout the RI/FS field activities. The purpose of these sessions is to plan with community leaders how to properly inform residents about sampling activities at the site and to explain results of the FS report. REM III community relations staff will provide the following support.

- o Arrange for locations and room setup for public availability session;
- o Provide information to EPA personnel about possible questions, issues, and concerns citizens have about the project;
- o Attend public availability sessions/meetings, and
- o Provide a summary report on issues identified during public availability sessions with an action list for appropriate EPA follow-up.

<u>Provide coordination, planning, and management support (Subtask 2.9)</u> REM III community relations staff will provide general planning, management, analytic, and coordination support to EPA and REM III technical staff during the community relations activities at the site. This may include: meeting with EPA to discuss planning and scheduling, and providing information and analysis about concerns expressed by local officials and residents during the development of the revised community relations plan.

6.3 TASK 3 - FIELD INVESTIGATION

This task includes all efforts related to implementing a field investigation at the site. Exhibit I is a composite presentation of the sampling program on site. The objectives of the field investigation are as follows:

- delineate the areal and vertical extent of soil contamination;
- delineate the areal and vertical extent of groundwater contamination whose source is the Claremont Polychemical site;
- gather data to evaluate remedial alternatives, and
- gather data to support a risk assessment.

The field investigation will consist of the following subtasks:

1. Subcontracting
2. Mobilization and Demobilization
3. Soil Gas Survey
4. Soil Sampling
    4a. Subsurface Soil Sampling
    4b. Surface Soil Sampling
5. Monitoring Well Installation
6. Groundwater Sampling
7. Building Investigation
8. Site Survey

6.3.1 Subcontracting (Subtask 3.1)

This subtask will include the letting of subcontracts to perform the Field Investigation. The following subcontracts will be required to support the field investigation:

- A surveying subcontract for the surveying of locations and elevations of monitoring wells, soil borings and surface samples following the site investigation. Preparation of a topographic map will also be included under this subcontract.
- A drilling subcontract for soil sampling and monitoring well installation and development.

6.3.2 Mobilization and Demobilization (Subtask 3.2)

This subtask will consist of field personnel orientation, equipment mobilization, and the staking of sampling locations.

Each field team member will attend an orientation meeting to become familiar with the history of the site, health and safety requirements, and field procedures.

Equipment mobilization will entail the ordering, purchase, and if necessary, the fabrication of all sampling equipment needed for the field investigation. A complete inventory of currently available REM III equipment will be conducted and any additional equipment required will be secured. Utility hookups and the set up of a field office trailer will also be part of the mobilization effort.

Locations for the soil borings, surface soil samples and groundwater monitoring wells will be staked at the start of the site operations. These locations will be measured from existing landmarks. The soil gas survey grid will be surveyed in by Ebasco personel at this time (Subtask 3.8).

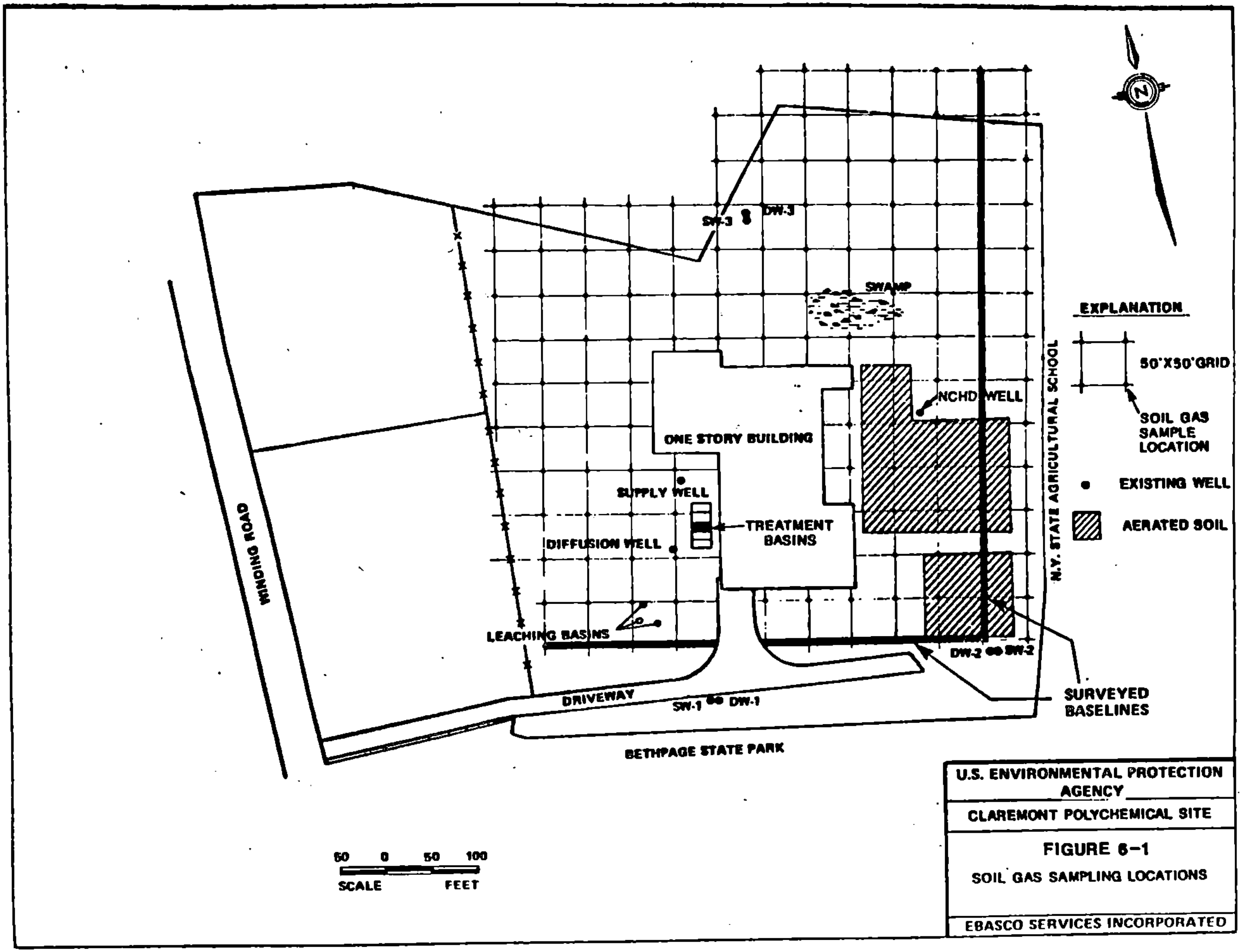
Demobilization will consist of equipment demobilization and will be performed at the completion of each phase of field activities as necessary. Equipment demobilization may include but will not be limited to sampling equipment, drilling subcontractor equipment, health and safety decontamination equipment, and field office trailer and utility hook ups.

6.3.3 Soil Gas Survey (Subtask 3.3)

Soil gas sampling provides a cost-effective method to delineate the areal extent of soil contaminated with volatile compounds. Vapor, extracted from a shallow borehole, is analyzed on site using a portable gas chromatograph. The results of the soil gas analysis are indicative of the soil contamination in the immediate vicinity of the borehole. Since "real-time" analytical results are produced, additional boreholes can be installed until the areal extent of contamination has been defined. The results of the soil gas investigation allow the site investigator to select the location of subsequent soil borings more strategically and efficiently.

The specific objective of this soil gas survey is to qualitatively define the areal extent of volatile organic soil contamination on site in order to more accurately locate soil borings in contamination "hot spots."

Soil gas samples will be collected, as possible, on a 50' x 50' sampling grid established on site and extending 50 feet north (generally upgradient) of the site. Figure 6-1 is a map of the site showing an idealized soil sampling grid. For areas blocked by debris and stock piled materials used by tenants present on



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 6-1

SOIL GAS SAMPLING LOCATIONS

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the site, sample locations will be distributed near the edges of the blocked areas and at accessible locations within the blocked areas. Sampling nodes may be adjusted within the grid system so as to sample suspicious/disturbed areas (e.g., the spill area, adjacent to the leaching basins, adjacent to wastewater treatment tanks, under discarded drums, etc.). Once "hot spots" have been identified, additional sampling points may be used to more clearly delineate the boundaries of each "hot spot". Approximately 175 soil gas samples are anticipated for adequate "hot spot" delineation (Table 6-1). Soil borings, located on the basis of soil gas results, will then be used to confirm and quantify soil contamination.

Soil gas samples will be analyzed with a Photovac 10S70 (field gas chromatograph). Sample responses will be compared with those from standards of contaminants of concern (e.g., PCE, TCE).

6.3.4 Soil Sampling (Subtask 3.4)

The proposed soil sampling program includes surface soil and subsurface soil sampling programs (Table 6-1).

Subsurface Soil Sampling (Subtask 3.4a):

The objective of the subsurface soil sampling program is to delineate the horizontal and vertical extent of soil contamination above the water table and, to quantify this contamination. In addition, engineering parameters of soils are required to evaluate remedial treatment technologies for contaminated soils.

A maximum of 25 soil borings are planned for this field investigation. Tentative soil boring locations, shown in Figure 6-2, have been located based on historical information. Final number of borings and their locations will be based on soil gas survey results as well as historical information.

EPA has agreed with a potential buyer/developer of the site to sample first those areas throught to be least contaminated, based on existing records, i.e., the northern and western areas. With rapid turn-around for chemical analyses, preliminary, unvalidated data from these locations will be used to assess the availability of the site for purchase.

Soil borings will extend to the water table (approximately 70 feet). Samples will be taken continuously to 10 feet, every 5 feet to 20 feet and then every 10 feet to the water table, for a total of 12 samples per boring. Samples may be taken continuously to the water table (35 samples per boring) in those borings located in suspected high contamination areas, as evidenced by relatively high soil gas readings and/or historical information (e.g., the spill area). Hollow stem augers with split-barrel samplers will be used to obtain soil samples where possible. If this method of drilling proves inadequate, drilling operations may be switched to the air or mud rotary method.

TABLE 6-1

CLAREMONT POLYCHEMICAL
PROPOSED ANALYTICAL PROGRAM

	MATRIX	FIELD SCREENING	FULL$^{(a)}$ TCL	TCL METALS$^{(a)}$ ONLY	SAS$^{(b)}$	TOC$^{(c)}$	ENGINEERING$^{(d)}$ PARAMETERS	ASBESTOS	TOTAL VOA ONLY
A. SOIL GAS	G	175$^{(e)}$	–	–	–	–	–	–	
B. SOIL									
Subsurface Soil	S	369$^{(f)}$	125	–	125	25	25	–	
Surface Soil	S	–	–	30	–	–	–	–	
Monitoring Well Soils	S	–	8	–	8	8	–	–	
Duplicate Samples	S	20$^{(f)}$	8	2	8	3	2	–	
TOTAL SOIL SAMPLES	S	389$^{(f)}$	141	32	141	36	27	–	
C. GROUNDWATER (TWO ROUNDS)									
Newly Installed Wells (16)	AQ	32$^{(g)}$	32	–	32	32	–	–	
Existing On-Site Wells (8)	AQ	16$^{(g)}$	16	–	16	16	–	–	
Existing Off-Site Wells (17)	AQ	34$^{(g)}$	34	–	34	34	–	–	
Duplicate Samples	AQ	6$^{(g)}$	6	–	6	6	–	–	
TOTAL GROUNDWATER SAMPLES	AQ	88$^{(g)}$	88	–	88	88	–	–	
D. BUILDING INVESTIGATION									
Wipe Samples	S	–	–	12	–	–	–	–	
Dust Samples	S	–	–	10	–	–	–	1	
Drainage Water/Steam Condensate	AQ	–	4	–	–	4	–	–	
Duplicate Samples	S/AQ	–	1	3	–	1	–	1	
TOTAL BUILDING SAMPLES	S/AQ	–	5	25	–	5	–	2	
E. BLANK SAMPLES $^{(h)}$									
Field Blanks	AQ	–	55	2	10	40	–	–	–
Trip Blanks	AQ	–	–	–	–	–	–	–	55
Distilled Water Blanks	AQ	–	15	–	2	15	–	–	–
TOTAL BLANKS SAMPLES $^{(h)}$	AQ	–	70	2	12	55	–	–	55

NOTES:

(a) CLP LABORATORY

(b) SAS: TOTAL DISSOLVED SOLIDS (TDS), TOTAL SUSPENDED SOLIDS (TSS), TOTAL PHENOLICS, NH$_4$, Cl. NO$_3$, NO$_2$, SO$_4$, O-PO$_4$, COLOR, OIL AND GREASE.

(c) TOC: TOTAL ORGANIC CARBON

(d) ENGINEERING PARAMETERS: PARTICLE SIZE DISTRIBUTION, BULK DENSITY, ATTERBERGS LIMIT, MOISTURE CONTENT.

(e) PHOTOVAC 10S70 (gas chromatograph)

(f) HEADSPACE ANALYSIS: PHOTOVAC 10S70 (gas chromatogrpah); Number of samples based on 12 samples/boring for 22 borings and 35 samples/borings for 3 borings.

(g) pH, Eh, SPECIFIC CONDUCTANCE, TEMPERATURE, DO

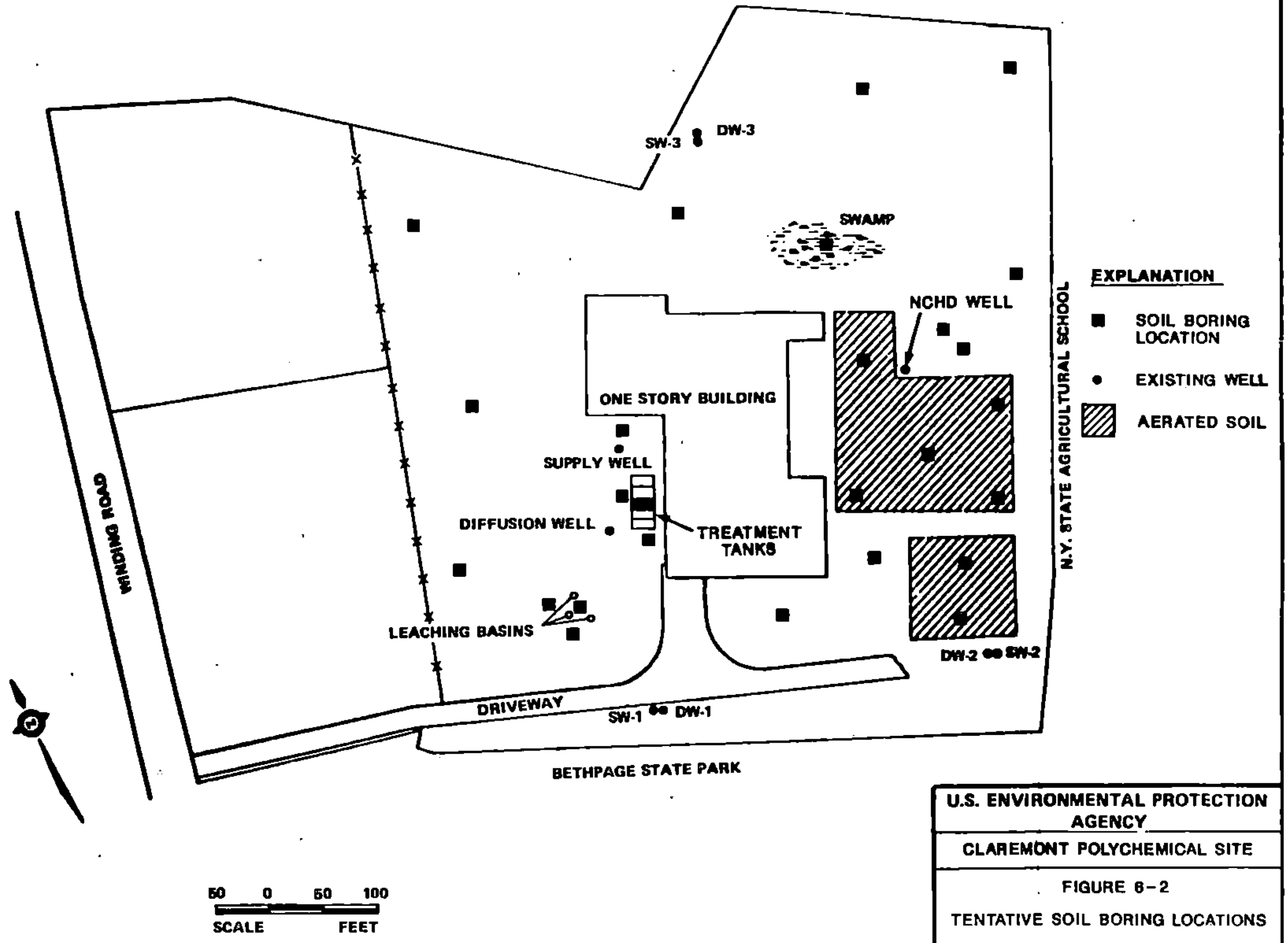
(h) FIELD BLANK TOTALS APPROXIMATE AND BASED ON 1/SAMPLING PROCEDURE/DAY; TRIP BLANK TOTALS APPROXIMATE AND BASED ON 1/DAY (TCL VOA ONLY); DISTILLED WATER BLANK TOTAL APPROXIMATE AND BASED ON 1/WEEK.

TABLE 6-1 (Sheet 2 of 2)

PROPOSED ANALYTICAL PROGRAM

NOTES:

G = GAS (AIR), S = SOLID (SOIL, DUST, WIPE), AQ = AQUEOUS (WATER)
(a) CLP LABORATORY
(b) OTHER SAS: TOTAL DISSOLVED SOLIDS (TDS), TOTAL SUSPENDED SOLIDS (TSS), AMMONIA (NH_4), CHLORIDE (Cl), NITRATE/NITRITE (NO_3/NO_2), SULFATE (SO_4), TOTAL ORTHO-PHOSPHATE ($O\text{-}PO_4$), AND OIL AND GREASE.
(c) TOC: TOTAL ORGANIC CARBON
(d) ENGINEERING PARAMETERS: PARTICLE SIZE DISTRIBUTION, BULK DENSITY, ATTERBERG LIMIT, MOISTURE CONTENT.
(e) PHOTOVAC 10S70 (gas chromatograph)
(f) HEADSPACE ANALYSIS: PHOTOVAC 10S70 (gas chromatograph); Number of samples based on 12 samples/boring for 22 boring and 35 samples/boring for 3 borings
(g) pH, Eh, SPECIFIC CONDUCTANCE, TEMPERATURE, DO
(h) FIELD BLANK TOTALS APPROXIMATE AND BASED ON 1/SAMPLING PROCEDURE/DAY; TRIP BLANK TOTALS APPROXIMATE AND BASED ON 1/DAY (TCL VOA ONLY); DISTILLED WATER BLANK TOTAL APPROXIMATE AND BASED ON 1/WEEK.
(i) VOCS – THE VOLATILE ORGANICS WILL BE ANALYZED BY SAS (EPA 500 SERIES) SINCE A DETECTION LIMIT OF 1 UG/L IS WARRANTED DUE TO FEDERAL AND NEW YORK STATE MCL REQUIREMENTS.



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CLAREMONT POLYCHEMICAL SITE

FIGURE 6-2

TENTATIVE SOIL BORING LOCATIONS

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To minimize the number of samples sent through the Contract Lab Protocol (CLP) program, soil samples will be screened on site for volatile organics. The screening process will consist of a headspace analysis of soil samples by a Photovac 10S70 (field gas chromatograph). Real-time semi-quantitative results will be obtained, allowing the field investigator to choose those samples to be sent to the CLP Laboratory based on relative concentrations of volatile contaminants measured. Samples from intervals which have previously shown contamination may also be sent to the CLP Laboratory for analysis.

Five (5) samples per boring will be sent to a CLP Laboratory for full Target Compound List (TCL) analysis. Samples will be chosen as follows. The 0-2 and 2-4 foot samples from all borings will be sent to the CLP laboratory as these shallow samples are most likely to contain contaminants which are not detected by field screening methods (e.g., metals and semi-volatiles). The most highly contaminated sample from the 4 to 15 foot interval and the 15 to 60 foot interval, as indicated by the headspace analysis, will also be sent to the CLP laboratory. In addition, a fifth soil sample will be taken at the water table. If no contamination is detected by field screening methods, the 0-2, 2-4, 13-15, 38-40 foot and water table samples will be sent from each boring.

Samples from 5 of the 25 soil borings planned will also be analyzed for total organic carbon (TOC) and selected engineering parameters (Atterbergs Limit, particle size distribution, moisture content and bulk density).

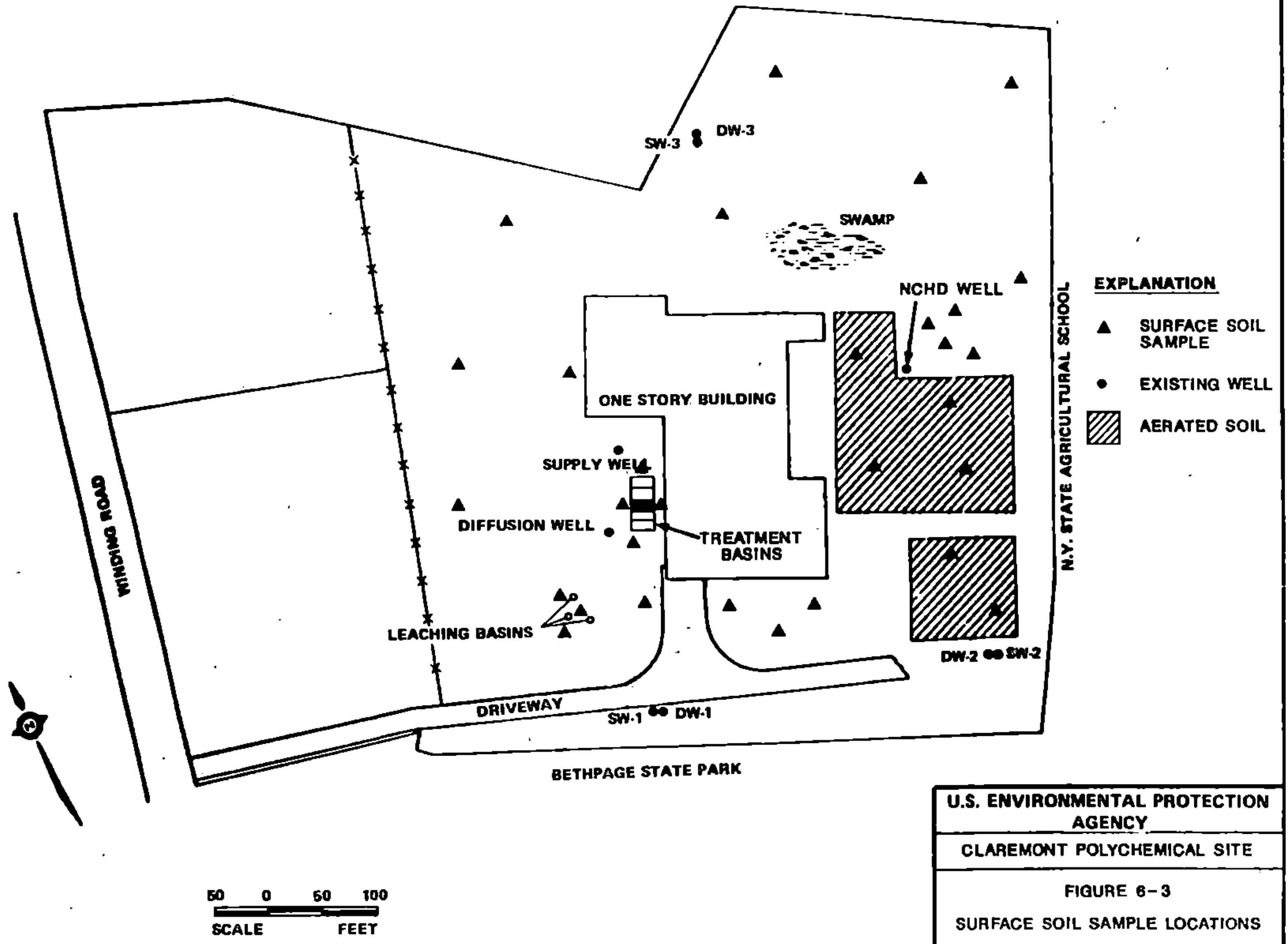
One additional soil sample from each screened interval in 8 of the 16 proposed monitoring wells (see Subtask 3.5) will be sent to a CLP laboratory for TCL and TOC analysis. These analytical results will be used to determine partitioning coefficients for contaminants of concern as required for fate and transport modeling. If the mud rotary method for drilling is employed, a sample of the drilling mud will be analyzed for full TCL parameters by a CLP laboratory.

Surface Soil Sampling (Subtask 3.4b)

The surface soil sampling program is designed to determine the extent of contamination in surface soils (upper 6 inches) so that risks posed by the direct ingestion of soils and the inhalation of dust may be evaluated.

Thirty (30) 0-6 inch scoop samples, shown in Figure 6-3, are planned. Sample locations have been chosen to cover areas of concern such as the spill area, aerated soil areas, around the leaching basins and wastewater treatment tanks and in the buried tank area.

Samples will be sent to a CLP laboratory for TCL metals analysis only because the more mobile organic contaminants are not expected in surface soil samples.



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 6-3

SURFACE SOIL SAMPLE LOCATIONS

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6.3.5 Monitoring Well Installation (Subtask 3.5)

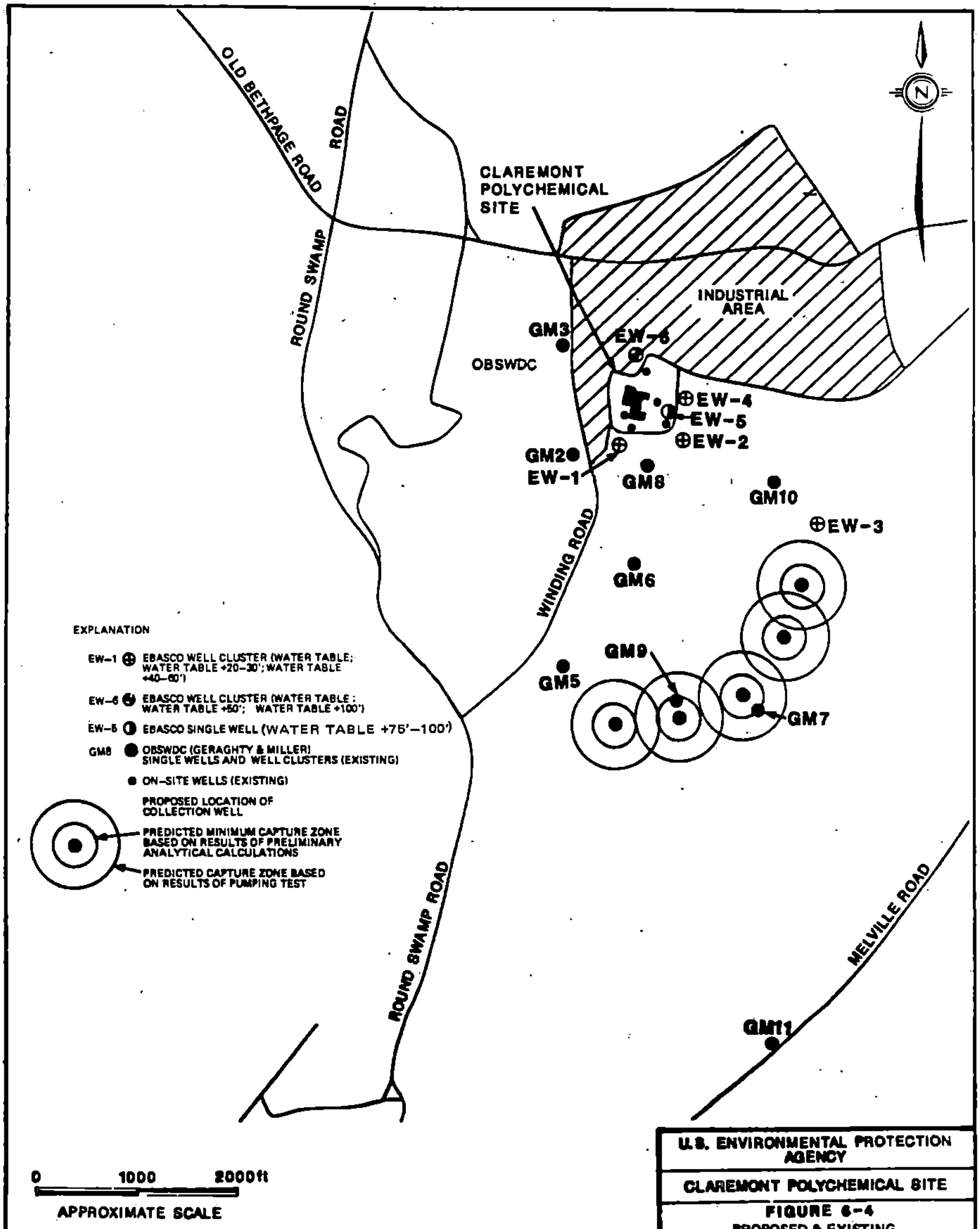
The monitoring well installation program is designed to provide groundwater sampling points on site, as well as upgradient and downgradient of the site. The intent of groundwater sampling is 1) characterization of groundwater moving downgradient off the site and 2) distinction of the Claremont contaminant plume from any sources upgradient. The recovery wells and treatment system designed to remediate the Old Bethpage landfill plume will intercept deep contaminants attributed to the Landfill south of Claremont. As a result, onsite and downgradient Claremont sampling will focus on shallow contamination, with confirmatory investigation of potential deep contamination. A combination of existing and newly installed wells will be used (Figure 6-4).

Groundwater sampling points on site are furnished largely by existing shallow wells (<130 ft). A single deep well (EW-5) (150-200 ft.) will be installed in the southeast corner of the site. The deep well (EW5), to be located near existing well cluster SW/DW-2 (Rich 1986), should allow sampling of any relatively deep contamination on site because well cluster SW/DW-2 is located directly downgradient of the known spill area and showed highest levels of PCE and TCE in 1986. Sampling in 1986 was limited to depths less than 110 ft.

Groundwater flow in this area is generally north-northwest to south-southeast, however, the abundance of discontinuous clay horizons in the Magothy in the northern portion of the site presents a potential for locally perched water table conditions which may cause very local changes in groundwater flow direction. Therefore, downgradient monitoring wells will be located to the south, southeast and east of the site.

Figure 6-4 presents the location of proposed and existing monitoring wells. Downgradient well cluster are designated EW-1 through EW-4. In combination with Geraghty and Miller well clusters 8 and 10, EW-1, EW-2 and EW-3 will provide good coverage directly south and southeast (downgradient) of the site. EW-3 will also allow confirmation that the extraction wells for the Landfill will capture the entire contaminant plume. Previous sampling at Geraghty and Miller well cluster 10 showed contamination (Section 4.2.3) which contributed to definition of the landfill plume (Figure 4-4). EW-4 will be installed directly east of the site. Groundwater monitoring points to the west and further south of the site are furnished by Old Bethpage landfill wells.

EW-1 through EW-4 well clusters will consist of 3 wells each, a shallow (water table), intermediate (approximately 20-30 feet below water table) and deep (approximately 20-30 feet below intermediate) well. Exact screen depths for the intermediate and deep wells will be determined in the field based on permeability of soils at these approximate depths and headspace screening of saturated soil samples at 10 foot intervals with a



*SOURCE: GERAGHTY & MILLER, INC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 6-4
PROPOSED & EXISTING MONITORING WELL CLUSTER LOCATIONS AND OLD BETHPAGE LANDFILL COLLECTION WELL LOCATIONS

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Photovac 10S70 gas chromatograph. Well screens will be set so as to monitor permeable zones within the aquifer which indicate relatively high VOC concentrations.

One well cluster (EW-6) will be installed upgradient of the site to identify contamination which may be coming onto the site from other sources, i.e. northern portion of Old Bethpage landfill, or light industrial area. A thicker portion of the aquifer (water table to approximately 200 feet below ground surface) will be monitored with this 3 well cluster.

Shallow monitoring wells will be drilled by the hollow stem auger method. If there are difficulties with using this technique, the air or mud rotary methods will be employed. Intermediate and deep wells will be drilled by the air or mud rotary methods. Filtered compressed air would be used with the air method. In either case, substances introduced to the hole will be sampled and chemically analyzed.

All soil samples will be collected by the split-spoon sampling method. Samples will be obtained every 5 to 10 feet for geologic characterization of the borehole and at the well screen depth in selected boreholes for chemical analysis. The site geologist will compile a geologic log from the above samples for each monitoring well location.

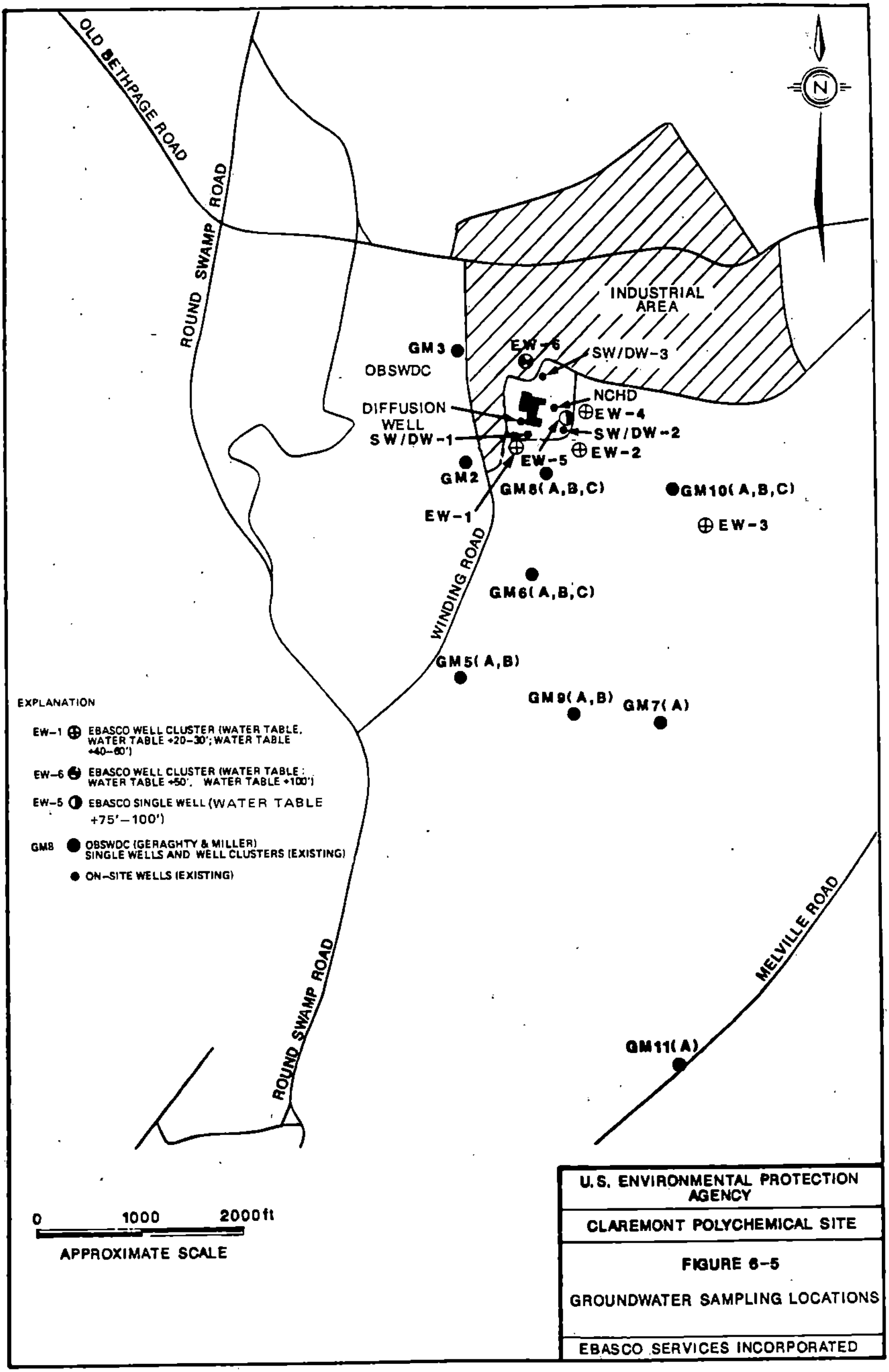
Monitoring wells will be 4 inches O.D. and constructed of Schedule 80 PVC screen and riser pipe. Wells will monitor a 10-foot section of the aquifer.

Following installation, all wells will be developed by pumping and surging. Development will last for a minimum of 2 hours, and possibly longer, depending on site conditions. Purge water will be discharged to the ground surface. Slug tests will be performed on all newly installed wells.

6.3.6 Groundwater Sampling (Subtask 3.6)

The objective of the groundwater monitoring and sampling program is to delineate the areal and vertical extent of the contamination plume originating at the Clarmont site, and to determine the chemical makeup of this plume in order to evaluate potential risks and feasible remedial alternatives. In co-operation with New York State, the initial groundwater samples will be processed for fast turn-around and preliminary, unvalidated data used to assess means to facilitate the combined treatment of contamination from Claremont and the Old Bethpage landfill.

Sixteen (16) newly installed wells and 25 existing wells (from previous Claremont and Old Bethpage Landfill monitoring), shown in Figure 6-5, will be sampled following well installation.



U.S. ENVIRONMENTAL PROTECTION AGENCY

CLAREMONT POLYCHEMICAL SITE

FIGURE 6-5

GROUNDWATER SAMPLING LOCATIONS

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Only those existing wells which monitor the upper portion (250 feet) of the aquifer will be sampled. A minimum stabilization period of 10-14 days will be required prior to sampling any new wells which could be developed by pumped air or water (high velocities). Pump and surge is the preferred method for development of wells. Three to five well volumes will be purged by pumping prior to sampling. Purge water will be handled in the same way as that produced during well development. A stainless steel or teflon bailer will be used to collect the samples. Specific conductance, pH, dissolved oxygen (DO), Eh and temperature will be measured at the start of purging operations and after each purged volume. Stabilization of these parameters from successive purged volumes indicates that the groundwater within the well is at equilibrium.

Unfiltered samples will be analyzed by a CLP laboratory for full TCL parameters, TOC, TSS (total suspended solids), TDS (total dissolved solids) and selected SAS parameters. SAS parameters such as ammonia, nitrate/nitrite, sulfate, total phosphate, chloride and total phenols may be useful in distinguishing between landfill leachate and contamination coming from Claremont Polychemical.

Filtered and unfiltered samples will be analyzed for TCl metals. Filtration will be through a 0.45 micron cellulose ester membrane. Preservation will be achieved by addition of HNO_3 to reach a pH of less than 2.

A second round of groundwater sampling is planned as a means of confirming first round analytical results. A summary of the groundwater sampling program is included as part of Table 6-1.

A minimum of 2 rounds of water level measurements of newly installed and existing wells will be taken to confirm existing potentiometric surface maps. If possible, water level rounds will be taken during different seasons in order to assess seasonal variations of the water table.

6.3.7 Building Investigation (Subtask 3.7)

The building investigation is designed to characterize the extent of contamination in the building on site so that potential risks and the need for remedial action relating to the building may be evaluated.

In addition to walls and floors, a number of features of concern were identified inside the 10-room process building during a site visit. They are insulated overhead pipes, two fume hoods, two steam condensers and two floor drains.

One floor dust sample from each room for a total of 10 samples will be collected during the investigation. A total of twelve wipe samples from one wall per room and the two fume hoods will also be collected. These samples will be sent to a CLP Laboratory for TCL metals analysis.

One sample of the insulation on overhead pipes will be analyzed for asbestos by a CLP Laboratory.

A total of four water samples from the 2 floor drains and 2 steam condensers will be analyzed by a CLP Laboratory for full TCL parameters. A summary of the building sampling program is presented as part of Table 6-1.

6.3.8 Site Survey (Subtask 3.8)

This subtask includes establishing the 50' x 50' soil gas grid on site by Ebasco personnel prior to initiating field work. Upon completion of field operations, final sampling locations, monitoring well locations and well casing elevations will be established by a licensed survey. A topographic map with sampling locations will be generated.

6.4 TASK 4 - SAMPLE ANALYSIS/VALIDATION

A summary of the analytical effort is shown in Table 6-1. Section 5.3 lists the data quality objectives for each type of analysis.

Ebasco will send samples through the EPA Contract Laboratory Program (CLP) and conduct analyses in the field. Samples will be analyzed for volatile and semi-volatile organics, pesticides/PCBs, metals and other parameters (generally, such characteristics as physical properties of soil and basic water quality), using recommended procedures for analysis of Superfund sites. Analyses for organics and metals, will be conducted by EPA assigned laboratories using current methodologies (Routine Analytical Services - RAS) based on:

> Statement of Work for Organics Analysis Multi-Media, Multi-Concentration (CLP-SOW, Organics, 8-87);
>
> Statement of Work for Inorganics, Multi-Media, Multi-Concentration (CLP-SOW Inorganics, 12-87).

Special laboratory analyses, e.g., engineering parameters; TOC, TSS, TDS, basic water quality; detection limits different from those achievable with routine methodologies, will be handled via CLP Special Analytical Service (CLP-SAS) or documented field procedures, as appropriate.

The DQO for CLP analyses will be confirmational (Level 4) for soil and building samples. CLP-SAS will be Level 5 for aqueous samples. Field analyses (Level 2) will be utilized for rapid turnaround analyses for soil gas, soil sample screening for VOC and in situ water quality.

6.4.1 Sample Analysis (Subtask 4.1)

Soil Gas Samples

Soil gas samples will be analyzed by a field gas chromatograph (Photovac 10S70) with photoionization detector. Sample responses will be compared with those from standards of contaminants of interest.

Soil Samples

Surface and subsurface soils will be analyzed by a CLP laboratory utilizing current CLP methodologies (CLP-SOW for Inorganics, December 1987, CLP-SOW for Organics, August 1987). The samples will be handled via CLP-SAS methods to achieve two week turn-around of analytical results.

On site analysis using a portable gas chromatograph (Photovac 10S70) employing a headspace analytical technique (Cushing, et al., unpublished) will be used to screen soil samples for VOC.

Groundwater Samples

Current CLP methodologies (CLP-SOW, Inorganics, December 1987; CLP-SOW, Organics, August 1987) will be used to analyze groundwater samples. CLP-SAS methods also will be used for two week turn-around and to obtain specific parameters. Field measurements of pH, Eh, specific conductance and dissolved oxygen (DO) will be obtained utilizing portable field equipment. Instruments will be calibrated and standardized observing the standard methodologies.

Dust and Wipe Samples

Dust and wipe samples will be analyzed utilizing CLP-SOW, 12-87 methods for inorganics and CLP-SOW, 8-87 for organics.

Field Quality Control Samples

The proposed analytical program includes QA/QC samples. Duplicate samples will be analyzed at a frequency of 5% or more. Field blanks will be taken on each sampling day for each sampling procedure. One distilled water blank sample will be collected for each week of sampling. Duplicate samples, field blanks, and distilled water blanks will be analyzed for the same parameters as the original samples. Trip blanks will accompany each sample batch requiring analyses for TCL volatiles and will be analyzed for TCL volatiles only. Approximate numbers of duplicates and blanks have been included in Table 6-1.

6.4.2 Documentation Procedures (Subtask 4.2)

The site specific quality assurance requirements will be in accordance with the Quality Assurance Project Plan for the REM III Program, as approved by EPA, and in accordance with the Brossman Guidance.

Data Management aspects of the program pertain to controlling and filing of documents and analytical results. Ebasco has developed a program filing system (Administrative Guideline Number PA-5) that conforms to the requirements of the EPA and the REM III Program to ensure that the documents are properly stored and filed. This guidance will be implemented to control and file all documents associated with the Claremont site RI/FS. The system includes document receipt control procedures, a file review and inspection system, and security measures.

To facilitate data tracking and assure complete records, PC files will be established in the field documentary sampling effort.

Ebasco's Regional Laboratory Sample Coordinator (RLSC) will track the samples sent to CLP to insure the continuity and consistency of data and analyses throughout the sampling program. Tracking will include tabulating the dates samples are obtained, dates shipped, analyses performed, holding time, dates extracted or analyzed, and dates validated. The RLSC will notify the Site Manager in the event of problems with the sample analyses.

6.4.3 Data Validation (Subtask 4.3)

Data validation is performed by the EPA Environmental Service Division (ESD), Edison, NJ, office. However, Ebasco will provide support to EPA-ESD for data validation up to the extent of 100% of the effort in this task.

6.5 TASK 5 - DATA EVALUATION

Data collected during Task 3 will be assembled, reviewed, and carefully evaluated to satisfy the objectives of the investigation. When possible, partial data evaluation will be performed concurrently with the continuation of sampling and data validation.

6.5.1 Data Reduction and Analysis (Subtask 5.1)

The data collected to characterize the Claremont site will be organized, tabulated, and analyzed to identify the extent and nature of contamination, determine groundwater flow direction, and identify potential on site and off site source(s) of the contaminants. Field data and data resulting from laboratory analysis will be entered into a database.

Boring logs will be prepared for all completed borings. Stratigraphic information developed from the site borings may be displayed as cross-sections through the site. Measured water level elevations will be used to develop plots of the piezometric surface in the Magothy aquifer and to evaluate variations in flow direction with depth. Both the horizontal and vertical hydraulic gradients will be evaluated.

Knowledge of accuracy and precision of the analytical methodology, in addition to statistical evaluation of variation, will provide unbiased estimates of contamination and help to define contaminant boundaries.

The data on water and soil quality will be evaluated and mapped to illustrate the areal extent of soil contaminants, and contaminant plume(s) detected.

These analyses will provide information to support the RI and FS and will be incorporated in the screening of remedial alternatives and in the detailed evaluation of remedial alternatives.

6.5.2 Environmental Fate and Transport Assessment (Subtask 5.2)

Contaminant concentrations in various media (soil and groundwater) will be assessed. Computer models will be used to characterize contaminants in soil and their interactions with groundwater downgradient of the Claremont site.

It is hypothesized that groundwater is the primary pathway for contaminant transport (Section 4.2.4). Groundwater modeling will be used to determine the extent and consequences of potential contaminant plume migration from the Claremont site. The effect of the Old Bethpage recovery wells on Claremont contaminant plume migration will be assessed.

To support the Feasibility Study effectiveness evaluation of various pump and treat scenarios for the groundwater operable unit, two-dimensional flow and possibly contaminant transport modeling will be conducted. Information for this more detailed analysis will be obtained from the Remedial Investigation field program and analyses and models used for remediation of the Old Bethpage Landfill by Geraghty & Miller (September 1988).

Two-dimensional groundwater flow and contaminant transport model analysis will be utilized to generate appropriate data for support of the conceptual design and technical evaluation of remedial alternatives. The information to be developed using the modeling analysis includes:

- Fate and migration of plume contaminants as a result of pumping for remediation of the Old Bethpage landfill contaminant plume (no action);

- Pumping rate, boundary of plume migration and reinjection influence for groundwater gradient control (plume containment);
- Remediation rate (rate of restoration) and remediation level (cancer risk level) by pump and treat (active restoration), and
- Modified performance goals (modifying decision) and continued operation (performance evaluation) of the remedial actions.

The models will utilize regional hydrologic data, as well as, site specific data and take into account retardation, adsorption, degradation, and dispersion. They will be discussed with EPA prior to implementation and be consistent with other EPA approved modeling efforts for other Long Island Superfund sites.

6.6 TASK 6 - ASSESSMENT OF RISKS

The Preliminary Risk Assessment (discussed in Section 4.4 of this Work Plan) was an initial examination of the various elements of the Baseline Risk Assessment that will be formally conducted as part of this RI/FS as a Public Health Evaluation. As the data needed to perform the Baseline Risk Assessment are collected and analyzed, the required level of detail for specific risk assessment steps will be determined. These activities will constitute an extension of the analyses begun with the Preliminary Risk Assessment.

The risk assessment will address identified groundwater and soil (surface and subsurface) contamination. Other risks potentially associated with the site may also be identified and assessed based on the findings of the field investigation program. It is anticipated that any passive or active sources of contamination associated with the Claremont site will have been identified and the current level and extent of contamination will have been adequately characterized. To systematically examine the resulting risks due to contaminant migration, a Baseline Public Health Evaluation will be prepared according to the guidelines specified by the EPA in the Superfund Public Health Evaluation Manual developed as OSWER Directive 9285.4-2. This Public Health Assessment will evaluate the projected public health and environmental impacts associated with the prevailing conditions assuming no further remedial or control actions are performed.

In accordance with the noted EPA procedures, five subtasks (which were begun as part of the Preliminary Risk Assessment) may be required as part of this evaluation, depending in part on what is discovered during the field investigation:

1) Selection of contaminants of concern (or indicator contaminants) from among those known to be at the site based on considerations of chemical toxicity, persistence, and measured concentrations;

2) Identification of contaminant migration pathways to points where critical human or environmental exposures could occur;

3) Estimation of indicator contaminant concentrations at exposure points by considering their fate and transport along the identified migration pathways;

4) Comparison of project concentrations to Applicable or Relevant and Appropriate Requirements established to protect the public health or the environment, and

5) Quantitative risk characterization, including a detailed assessment of human intakes and contaminant form toxicity (this subtask would be undertaken if warranted by conditions identified at the site).

Previous studies of Claremont Polychemical have documented contamination of the groundwater and soils with tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1,1 trichloroethane (TCA), cis and trans 1,2 dichloroethylene (DCE), phenols, bis(2-ethylhexyl)phthalate, manganese, arsenic, cadmium, copper, lead and zinc. The predominant contaminant has been identified as PCE. Extensive volatile organic contamination of groundwater generally presents well documented risks to populations using the water for drinking and washing and who also inhale volatiles which evaporate from water during use, especially within homes.

The risks to be assessed in this RI/FS are those resulting from areas identified in the field investigation as sources containing substantially contaminated soils or areas containing new contaminants not previously identified. Risk will be apportioned, as for the risks associated with existing contamination in the aquifer such as leachate from the Old Bethpage landfill.

The contaminated soil areas may present risks to public health via three major pathways:

- groundwater (drinking, inhalation, washing);
- soil (ingestion, dermal contact and inhalation of dust), and
- air (inhalation of gases evaporating from the soil, and inhalation of gases evaporating from groundwater).

Volatile organics entering the groundwater from contaminated soil can be considered a contamination source. After the site investigation information has been evaluated and the data base established, Ebasco will identify those potential source areas. A preliminary baseline public health evaluation will be performed for the site; the objective of which is to characterize health and environmental risks that would prevail if no additional remediation action is taken.

The basic methodology to be employed is summarized in Figure 6-6. This process will be conducted in accordance with the procedures outlined in the EPA Superfund Public Health Evaluation Manual (EPA 1986).

The first step in the public health evaluation is data evaluation and the selection of indicator chemicals for which quantitative risk analyses will be performed. Indicator chemicals will be selected on the basis of a number of factors including the levels detected, prevalence, distribution among area matrices, toxicity, and environmental fate in order to represent the entire spectrum of compounds measured on site. Likely indicator chemicals for this site include tetrachloroethylene, trichloroethylene, trichloroethane, trans-1,2-dichloroethylene, phenol, lead, arsenic, cadmium, copper, and zinc as discussed in Section 4.4.

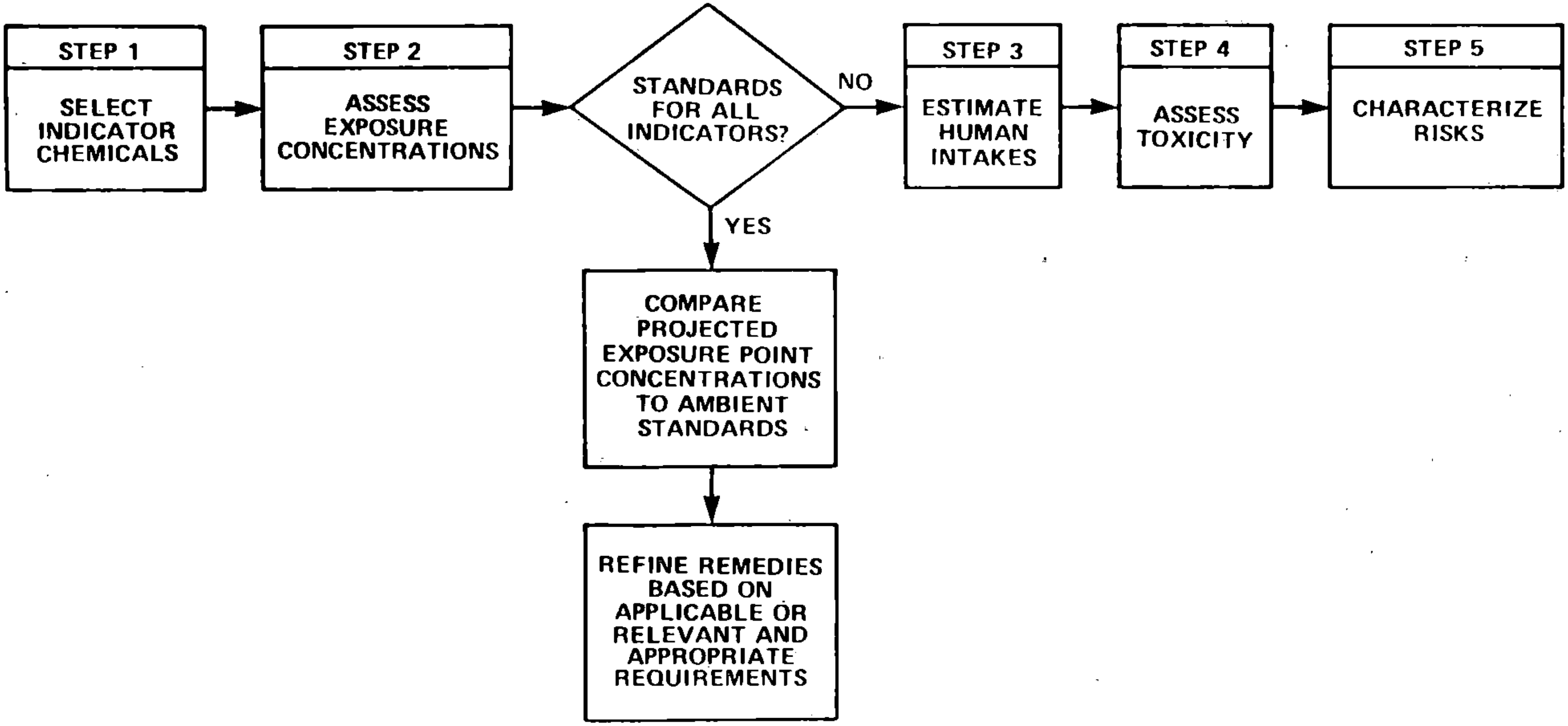
The second step in the public health evaluation is the characterization of potential exposure pathways and receptors. The pathways to be evaluated were described above and, for the identified contaminants, are related to contaminated soil contact (dermal), ingestion, dust inhalation, vaporization through the soil, and vaporization from potable water.

Based on limited available information on the Claremont site, several source areas can be identified, i.e., the spill area, the leaching basins, drums within the building and the waste treatment tanks. Potential source areas include the buried tank farm and the area in which above ground tanks are located (NE corner of site). All these sources pose a potential risk to human populations via groundwater (public water supplies). Physical contact is limited to persons with access to the site. Based on the site history, there is no reason to believe these are the only source areas.

Acceptable concentrations of indicator chemicals in environmental media at relevant exposure points will then be calculated for various exposure pathways using arithmetic, equilibrium environmental fate and transport models as appropriate and necessary.

The general basis and guidelines for exposure projections will be in accordance with the Draft Superfund Exposure Assessment Manual (EPA, 1986). Environmental chemistry and fate data from

FIGURE 6-6
BASELINE PUBLIC HEALTH EVALUATION
CLAREMONT POLYCHEMICAL RI/FS WORK PLAN



the literature will be considered and incorporated, where applicable, into all acceptable concentration estimates. The acceptable concentrations of the indicator chemicals will then be compared to the maximum concentrations found in the soil.

Applicable or relevant and appropriate requirements may be available for all of the indicator chemicals. If so, no further quantitative analysis of risk will be performed, unless the pathway is critical. A pathway may be critical if the sum of the risks from individual components is critical or if the pathway is one of several pathways which cumulatively result in a risk. For certain pollutants and critical exposure pathways where concentrations exceed or nearly exceed standards, additional risk analyses will be performed to confirm that the pollutant transport models adequately reflect conditions at the site and to determine additional data needs. If standards and criteria are not available for all of the indicator chemicals, quantitative analyses will be performed according to the general procedures outlined in EPA's Endangerment Assessment Handbook (1985) and the Superfund Public Health Evaluation Manual (1986).

For chemicals (or media-specific contamination) for which no applicable or relevant standards exist, quantitative assessment will be completed on those compounds for which toxicological data are available. Average case and plausable maximum case conditions will be considered. For contaminants measured in soils, modeling will be used to specify the level of concern based on the potential route(s) of exposure because no Federal or State standards are available.

The primary source of toxicological data used in the analysis will be Appendix C of the Superfund Public Health Assessment Manual (1986), EPA's Health Effects Assessments (HEAs) and EPA's Air and Water Quality Criteria Documents. Target risk levels for carcinogens will be selected after consultation with EPA and the Agency for Toxic Substance and Disease Registry (ATSDR). EPA will also be notified if it is believed that there are valid technical reasons for selecting toxicity values other than those found in the references cited above. In addition, using the references cited, a summary toxicity profile will be developed for each indicator chemical. This toxicity profile will summarize pertinent information for the chemical(s), based on EPA contaminant profiles, health effects advisories, and water quality criteria support documents.

Risk assessment techniques and analyses will be used in combination with the identified ARARs and characteristics of the site to develop appropriate soil, sediment, and other necessary clean-up goals. These target clean-up levels, developed to protect human health and the environment, will be used in the design and evaluation of removal or other proposed remedial alternatives that will be considered for this site. Action levels and clean-up goals will be developed which can be shown to result in acceptable off-site concentrations and exposures relative to the ARARs.

6.7 TASK 7 - TREATABILITY STUDY/PILOT TESTING

The preliminary scoping of remedial alternatives included certain developed and innovative technologies for treatment of the contaminated soil and groundwater at the site. Assuming that some of these technologies meet remedial response objectives (Section 4.5.1) and they pass the initial screening, treatability studies (laboratory or field) will be needed to evaluate their technical feasibility, reliability and applicability to the Claremont site and to develop cost information for economical comparison among the technologies.

However, in this Work Plan, no specific treatability studies are proposed at this time because of the following reasons:

- groundwater treatment in combination with that for the Old Bethpage landfill will require co-ordination with the planned pump and treat method to be used for the landfill;
- although the existing data indicate that the groundwater beneath the site is contaminated with metals, volatile and semivolatile compounds, the areal and vertical extent of such contamination has not been defined (i.e., plume delineation);
- the areal and vertical extent of soil contamination at the site is unknown and soil properties have not been determined;
- the site hydrogeology and statigraphy is not completely defined;
- the impact of contaminated groundwater moving from upgradient sources (i.e., Old Bethpage landfill) if a pumping and treatment alternative is considered for remediating the contaminated groundwater at the site is not known, and
- conducting treatability studies for certain technologies can be costly. Therefore, treatability studies should not be conducted for those technologies which cannot pass the initial screening.

It is proposed that Ebasco will meet with EPA to discuss the need and suggested scope of treatability studies to be performed when the preliminary analytical results become available. These studies will be performed in order to confirm the applicability of source control technologies discussed in Section 4.5.2. With

EPA's concurrence, Ebasco will submit, in twenty calendar days, a written proposal (including scope of work, budget and schedule) for the treatability studies to EPA for approval. During that time, Ebasco will also commence preparing and issuing necessary bid packages for selecting qualified testing facilities to perform the treatability tests. Of course, the subcontracts will not be awarded until EPA has approved Ebasco's proposal.

In order to avoid future budget and schedule problems a preliminary level of effort and associated costs have been estimated for this task based on performing the following treatability tests concerning treatment of contaminated soil and groundwater at the site for metal and organic removal:

- chemical fixation/solidification;
- soil washing;
- chemical precipitation/reduction, and
- air stripping/carbon adsorption

6.8 TASK 8 - REMEDIAL INVESTIGATION REPORT

The Remedial Investigation Report will summarize the data collected and the conclusions drawn from the field investigation. The report will be presented in the format specified in the draft EPA <u>Guidance for Conducting RI/FS Under CERCLA</u> (March 1988) and will include the following information:

- an updated site description
- site maps
- field investigation results
- chemical analyses results
- evaluation of site hydrology, and
- results of the risk assessment

Project status meetings are scheduled as part of Task 8 following EPA review of the RI report.

6.9 TASK 9 - REMEDIAL ALTERNATIVE SCREENING

Based on the results of the risk analysis and the established remedial response objectives, the initial screening of remedial alternatives will be performed according to the procedures recommended in the EPA's "Guidance on Feasibility Studies under CERCLA (1985)," Porter's "Interim Guidance on Superfund Selection of Remedy" (December 1986) and (July 1987), and EPA's Guidance for Conducting RI/FS under CERCLA (draft, March 1988).

In the latter, identification of alternatives is initiated in a "Phase I FS" which is performed concurrently with the RI per present guidance (Porter, July 1987; EPA, March 1988). This Work Plan includes a preliminary identification and discussion of such alternatives, although the process of identifying and screening potential alternatives will continue throughout the

RI, as new technological and/or site-specific data emerge. These guidances concerning "Phase II FS", initial screening, is reflected in Ebasco's task-activity decision points at the conclusion of the RI (Section 7.3). The subtasks comprising Task 9 will accomplish the following objectives:

- development of remedial response objectives and general response actions;
- identification and screening of remedial technologies;
- development and screening of remedial alternatives.

Development of Remedial Objectives and General Response Actions

Based on the data collected during the RI, the remedial response objectives will be defined more fully. Significant site problems and contaminant pathways will form the basis for consideration of remediation alternatives. Remedial response objectives which would further elimination or minimization of risks to public health and the environment will be defined including detailed consideration of the ARARs in relation to site-specific conditions. Based on the response objectives, general response actions will be delineated to address each of the site problem areas and to meet the cleanup goals. These response actions will form the foundation for the screening of remedial technologies. General response actions considered should include the "no action" alternative as a baseline against which all other alternatives can be measured.

Identification of Applicable Technologies and Development of Alternatives

Based on the remedial response objectives and each identified general response action, potential treatment technologies and their associated containment or disposal requirements are identified. The pre-screening of these potential treatment technologies for suitability as part of a remedial alternative is conducted.

Technologies which may prove extremely difficult to implement, may not achieve the remedial objective in a reasonable time, or are not applicable and infeasible based on the site conditions, are then eliminated first. The preliminary effort for this task has been completed and the results can be found in Section 4.5.2 - Initial Evaluation, Remedial Action Altenatives. However this preliminary identification of applicable technologies will be finalized based on the results of the RI and the remedial response objectives. A revised list of potential remedial technologies/alternatives will be developed.

The development of alternatives requires combining appropriate remedial technologies such as those listed in Tables 4-11 through 4-14, in a manner that will best satisfy the site remediation strategies or best meet established response objectives.

As required by SARA, treatment alternatives shall be developed in each of the following categories:

1. Source Control Actions
   - an alternative for treatment that would eliminate, or minimize to the extent feasible, the need for long-term management (including monitoring) at the site;
   - alternatives that would use treatment as a primary component to address the principle threats at the site;
   - an alternative that relies on containment, with little or no treatment, and
   - a no-action alternative.
2. Groundwater Response Actions
   - alternatives that would address site-specific clean-up levels within different remediation time-frames.

6.10 TASK 10 - EVALUATION OF DETAILED REMEDIAL ALTERNATIVES

The remedial alternatives which pass the initial screening will be further evaluated. The evaluation will conform to the requirements of the NCP, in particular, Section 300.68 (h), Subpart F, and will consist of a technical, environmental and cost evaluation as well as an analysis of other factors, as appropriate. The detailed evaluation will follow the process specified in draft EPA guidance on feasibility studies under CERCLA March 1988, and Porter's on "Interim Guidance on Superfund Selection of Remedy (1987). The nine evaluation criteria suggested in those guidance documents will be used (Table 6-2).

A brief description of the criteria is given as follows:

Short-Term Effectiveness

This criterion addresses the effects of the alternative during the construction and implementation phase until the remedial actions have been completed and protection has been achieved. Each alternative is evaluated with respect to its effects on the community, on-site workers, the environment, and time until protection is achieved.

Table 6-2

DETAILED EVALUATION CRITERIA

- SHORT-TERM EFFECTIVENESS
    - Protection of community during remedial actions
    - Protection of workers during remedial actions
    - Time until remedial action objectives are achieved
    - Environmental impacts
- LONG-TERM EFFECTIVENESS
    - Magnitude of residual risks
    - Adequacy of controls
    - Reliability of controls
- REDUCTION OF TOXICITY, MOBILITY AND VOLUME
    - Treatment process and remedy
    - Amount of hazardous material destroyed or treated
    - Reduction in toxicity, mobility or volume
    - Irreversibility of the treatment
    - Type and quantity of treatment residuals
- IMPLEMENTABILITY
    - Ability to carry out a technology
    - Reliability of technology
    - Ease of undertaking additional remedial action, if necessary
    - Monitoring considerations
    - Coordination with other agencies
    - Availability of treatment, storage capacity, and disposal services
    - Availability of necessary equipment and specialists
    - Availability of prospective technologies
- COST
    - Capital costs
    - Annual operating and maintenance costs
    - Present worth analysis
- COMPLIANCE WITH ARARs
    - Compliance with chemical-specific ARARs
    - Compliance with action-specific ARARs
    - Compliance with location-specific ARARs
    - Compliance with appropriate criteria, advisories and guidances
- OVERALL PROTECTION
- STATE ACCEPTANCE
- COMMUNITY ACCEPTANCE

Long-Term Effectiveness

This criterion addresses the results of a remedial action in terms of the risk remaining at the site after the response objectives have been met. The primary focus of this evaluation is the extent and effectiveness of methods that may be required to manage the risk posed by treatment residual and/or untreated wastes.

Reduction of Toxicity, Mobility, and Volume

This criterion addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility or volume of the hazardous substances as their principal element.

Implementability

This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. Technical feasibility assessments include construction and operational difficulties and unknowns, reliability, ease of undertaking additional remedial action, and the ability to monitor effectiveness. Administrative feasibility considers activities needed to coordinate with other offices and agencies to obtain permits for implementing the remedial actions.

Cost

This criterion addresses the capital costs, and annual operation and maintenance costs. Present worth analysis will be completed as part of the evaluation.

Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs. Direct costs include expenditures for the equipment, labor, and material necessary to install 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 the continued effectiveness of a remedial action. 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 sufficient to cover all costs associated with the remedial action over its planned life. As suggested in EPA's guidance

(March 1988), a discount rate of 5 percent will be considered unless the market values indicate otherwise during the performance of the FS.

Compliance With ARARs

This criterion is used to compare the degree to which each alternative complies with applicable or relevant and appropriate Federal and State requirements, as defined in CERCLA Section 121. EPA and New York State must agree on these and means to demonstrate compliance for groundwater remediation.

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 permanence, short-term effectiveness, and compliance with ARARs.

State Acceptance

This criterion evaluates the technical and administrative issues and concerns the state (or support agency) may have regarding each of the alternatives. The combined apporoach to groundwater remediation will necessitate documentation of specific responsibilities of the EPA and New York State.

Community Acceptance

This criterion incorporates public comments into the evaluation of the remedial alternatives.

After each of the remedial alternatives has been assessed against the nine criteria and demonstrated to be in compliance with CERCLA and SARA, a comparative analysis will be performed. This analysis will compare all the remedial alternatives against each other for each of the nine evaluation criteria.

6.11 TASK 11 - FEASIBILITY STUDY REPORT

The FS report will summarize the activities performed and will present the results and associated conclusions for Tasks 1 through 10. The report will include a summary of treatability findings, a description of the initial screening process and the detailed evaluations of the remedial alternatives studied. Because of the strategy to combine groundwater remediation with that for the Old Bethpage landfill, the FS will be focused i.e., limited, regarding clean-up options. Depending on the nature of soil contamiantion, the FS may be further focused. The FS report will be prepared and presented in the following format as specified in the draft EPA Guidance for Conducting RI/FS under CERCLA (March 1988).

The Feasibility Study Report will be comprised of an executive summary and four sections. The executive summary will be a brief overview of the FS Study and the analysis underlying the remedial actions which were evaluated.

The introduction, Section 1.0 will provide background information regarding site location, facility history and operation, waste discharges and regulatory actions. The nature of the problem, as identified through studies, will be presented. A summary of geohydrological conditions, remedial action objectives, and the nature and extent of contamination described in the RI Report will also be provided.

Section 2.0 will present the feasible technologies identified for general response actions, and the results of the remedial technology screening.

Section 3.0 will present the remedial alternatives, developed by combining the technologies identified in the previous screening process. The results of initial screening of remedial alternatives, with respect to effectiveness, implementability and cost, will be described.

Section 4.0 will contain the detailed description of the cost and non-cost features of each remedial action alternative passing the initial screening in Section 3.0. The detailed evaluation of each remedial alternative with respect to nine criteria, 1) short-term effectiveness, 2) long-term effectiveness, 3) reduction of mobility, toxicity and volume, 4) implementability, 5) cost, 6) compliance with ARARs, 7) overall protection, 8) state acceptance and 9) community acceptance will be presented. A comparison of these alternatives will also be presented.

Ebasco's FS Report will clearly establish the basis for EPA to select the preferred remedial alternative. Technical contributions to the draft report will be reviewed by the FS lead before being submitted to the Site Manager. Following review by the site manager and regional manager, zone management will complete the review process before transmittal to EPA Region II. Response to comments at each level of review will be incorporated as the document progresses to final form.

6.12 TASK 12 - POST RI/FS SUPPORT

This task includes efforts to prepare the responsivenes summary, support the Record of Decision (ROD), conduct predesign activities, and close out the work assignment. All activities conducted after the release of the Feasibility Study report to the public are to be reported under this Task. Activities that may be conducted as part of Task 12 are:

- preparing the predesign report
- preparing the conceptual design

- organizing and attending public meetings

- writing and reviewing the resposiveness summary

- providing task management and quality control

6.13 Task 13 - ENFORCEMENT SUPPORT

Activities completed during project planning (Task 1) involved enforcement support. Multiple owners have been involved with the site. It was variously described in earlier investigations (9 acres or 12 acres). The status of adjacent businesses, Captree Chemical and Associated Hauling and Rigging was unclear. Therefore, effort was expended searching property and tax records to delineate property boundaries. Additional information on past ownership was found. The EPA Office of Regional Counsel was informed. Subsequently, EPA requested further research which was completed. These activities occurred during May 1988 for the most part (Exhibit II).

Due to the likely effects of the remediation of the Old Bethpage landfill on the Claremont site and the bankrupt status of the principal PRPs, additional enforcement support may be needed in the future by the EPA. Such activities as review of PRP documents, attendance of meetings, preparation of briefing materials and enforcement decision documents could be necessary. Therefore, a budget for enforcement support has been established.

6.14 TASK 14 - MISCELLANEOUS SUPPORT

This Task covers activities that are associated with the project but are outside the typical RI/FS scope of work. Because the Claremont site is adjacent to other hazardous waste sites and a buyer has voiced interest in obtaining the property for development of a cogeneration facility, the EPA is likely to require various undefined support in the future. Support under this task may include special efforts related to public health/welfare or environmental quality assessments or review of special state or local projects. A budget has been estimated for EPA consideration. It includes the air quality support provided for the current health assessment.

6.15 TASK 15 - EXPEDITED RESPONSE ACTIONS (ERA) PLANNING

This Task covers activities related to planning expedited response actions (ERA) after the remedial action approach has been selected. Activities will be administrative as well as technical. Due to the expected remediation of the Old Bethpage landfill, an expedited process to Claremont remediation may prove beneficial. The following are typical activities that may be included in this Task:

- drafting and supporting preparation of action memoranda regarding removal of the buried tanks and more extensive remedial actions

- attending meetings with New York State and local authorities

- preparing expedited response action plans and specifications

- conducting procurement activities

- reviewing proposals

As of December 1, 1988 the REM Team is to undertake removal of the abandoned containers of toxic and hazardous materials within the Claremont building, and above ground and buried on the property (Section 2.2), i.e. complete Phase 2 of the removal action planned by EPA. Phase 1, some sampling and consolidation, bulk packaging of the material in the building was completed by EPA. Supplements to the Work Plan and FOP will be prepared separately while planning for this activity.

7.0 ESTIMATED PROJECT COSTS

The estimated cost for the Claremont RI/FS is $1,376,325. These costs do not include the cost for the CLP analyses and any treatability studies. These costs include all work hours, travel, equipment, and subcontract costs for the initial tasks and the tasks described in this Work Plan. A detailed breakdown of the estimated project costs has been provided to the EPA under separate cover.

The level of effort estimated for the Claremont site RI/FS is 15,631 hours. This estimate includes the hours expended on the initial tasks which include: the preparation of project plans, procurement of the well drilling, well installation, soil boring, surveying and additional subcontractors.

8.0 PROJECT SCHEDULE AND KEY ASSUMPTIONS

The project schedule is shown on Exhibit II.

The project schedule is based on the following assumptions:

- o Ebasco will have access to the Claremont site and adjacent area where wells are to be installed or sampled for a minimum of 12 hours a day during the site investigation.

- o The entire site will be accessible for sampling.

- Ebasco will be able to establish a field office at the Claremont site complete with a trailer and a parking area for all equipment including subcontractor drilling equipment. Electrical power and phone lines will be available for use at the field office.

- EPA will obtain approval/permits for Ebasco to have access to all wells to be sampled and at sites of proposed new wells.

- After EPA approval of the Work Plan, a 21 day period overlapping with finalization of the FOP and site clearance, is scheduled for agency and public review of the Plan.

- Ebasco's technical staff will be provided with all analytical results as they are generated (prior to completion of the data validation effort by the ESD). The schedule is also based on a CLP analysis and validation time of approximately 12 weeks.

- Selected soil and groundwater samples will be processed for fast turn-around in order that the EPA may fulfill the obligations arising from the two agreements into which it has entered.

The schedule was developed to assure complete investigation of the site and establishment of the data base necessary to perform the FS; with cost-effectiveness and manageability.

Exhibit II contains several elements which should be highlighted, as they constitute key decision points and/or critical path items.

The entire RI/FS for Claremont is scheduled for 98 weeks from work assignment to Feasibility Report finalization, including 3 weeks for public review of the Work Plan. The duration of the RI field study is 41 weeks from mobilization to submittal of the draft RI report. The draft RI report will be submitted to EPA in week 83 of the project. Project planning for the site (first 39 weeks of the schedule) includes the preparation of the Work Plan, the Sampling and Analysis Plan, the Health and Safety Plan and the Site Management Plan and subcontracting for well drilling is expected to be initiated (with the mailing of RFP's) in week 40 of the project to allow field work to begin as soon as the Field Operation Plan (FOP) is approved and public comment on the Work Plan received.

Key elements in the RI schedule are the public review of the Work Plan, obtaining site access and maintaining a steady-state, soil gas measurements, and installation of monitoring wells. Installation of wells in a timely fashion is required to perform sampling on schedule. To keep the schedule as short as possible, soil sampling and well installation have been scheduled concurrently. Well installation can commence as soon as access is gained and area permits are obtained.

Samples will be sent to the CLP laboratories as soon as they are obtained. The last samples will have to be analyzed and validated in a period of approximately 12 weeks to meet the schedule.

The FS will be started in week 54 with screening of remedial alternatives. The draft FS report will be submitted in week 87.

9.0 PROJECT MANAGEMENT

9.1 ORGANIZATION AND MANAGEMENT APPROACH

The proposed project organization is shown on Figure 9-1. The Regional Manager (RM), Dr. Dev R. Sachdev is responsible for the quality of all REM III work performed in Region II. He monitors the progress of each work assignment to ensure adequate resources are available and that major problems are prevented or minimized. Dr. Sachdev implements the program standard of quality for work in the region and makes sure that the Site Manager meets that standard. The RM's review concentrates on the technical quality, schedule, and cost for all work assignments.

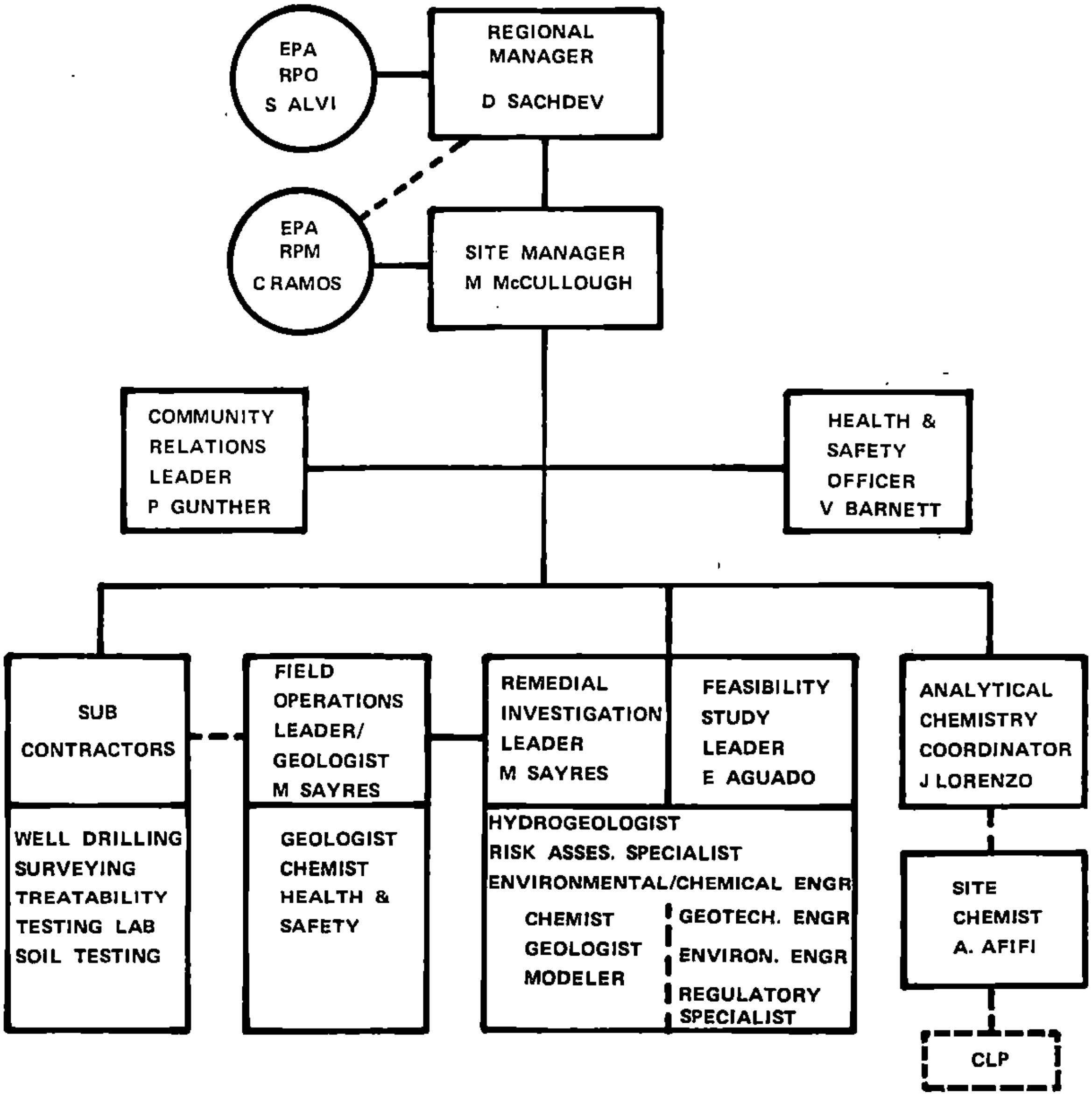
The Site Manager (SM), Ms. Martha McCullough, has primary responsibility and authority for implementing and executing the RI/FS. Supporting the SM are the RI Leader/Field Operations Leader (FOL), Ms. Mindy Sayres; FS Leader, Mr. Edgar Aquado; and other technical staff. The FOL is responsible for on site management for the duration of all activities at the site. The RI Leader is responsible for the RI and for the preparation of the RI report. The FS Leader is responsible for the FS and for the preparation of the FS Report.

The task numbering system for the RI/FS effort is as follows:

Task 1	Project Planning
Task 2	Community Relations
Task 3	Field Investigation
Task 4	Sample Analyses/Validation
Task 5	Data Evaluation
Task 6	Assessment of Risks

FIGURE 9-1

CLAREMONT POLYCHEMICAL SITE
PROJECT TEAM ORGANIZATION



Task 7	Treatability Study/Pilot Testing
Task 8	Remedial Investigation Report
Task 9	Remedial Alternatives Screening
Task 10	Remedial Alternatives Evaluation
Task 11	Feasibility Study Report
Task 12	Post RI/FS Support
Task 13	Enforcement Support
Task 14	Miscellaneous Support
Task 15	Expedited Response Action Planning

The task list, project schedule and budget comprise the basis for an integrated management information system against which work assignment progress can be measured. The baseline plans are a precise description of how the work assignment will be executed in terms of work scope, schedule, staffing and cost. The project schedule and the general cost estimate are presented in Sections 8 and 7, respectively.

Each of the RI/FS Tasks (Tasks 1 through 15) have or will be scheduled, budgeted and tracked separately during the course of the RI/FS work. Monthly progress reports will be prepared and submitted to EPA. Progress review meetings will be held to evaluate project status, discuss current items of interest, and to review project staffing.

9.2 QUALITY ASSURANCE AND INFORMATION MANAGEMENT

The site specific quality assurance requirements will be in accordance with the Quality Assurance Project Plan for the REM III Program, as approved by EPA, and in accordance with the Brossman Guidance.

Information management aspects of the program pertain to controlling and filing documents. Ebasco has developed a program filing system (Administrative Guideline Number PA-5) that conforms to the requirements of the Environmental Protection Agency and the REM III Program to ensure that the documents are properly stored and filed. This guideline will be implemented to control and file all documents associated with the Claremont site RI/FS. The system includes document receipt control procedures, a file review and inspection system, and security measures.

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APPENDIX

GLOSSARY OF TERMS AND ACRONYMS

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GLOSSARY OF TERMS AND ACRONYMS

ARARs:	Applicable or Relevant and Appropriate Requirements
CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act of 1980.
CFR:	Code of Federal
CLP:	Contract Laboratory Program (CLP)
CRP:	Community Relations Plan
DIFFUSION WELL:	Used to create a closed loop water cooling system for plant operations.
DO:	Dissolved Oxygen
DQO:	Data Quality Objectives
EPA:	Environmental Protection Agency
ERA:	Expedited Response Actions
ESD:	Environmental Service Division
FOP:	Field Operations Plan
GPR:	Ground Penetrating Radar
HASP:	Health and Safety Plan
HEA:	Health Effects Assessment
LEACHING BASINS:	Concrete walled structures with open bottoms approximately 3 feet in diameter and 10 feet deep, and accessed through manhole cover.
MCLGs:	Maximum Contaminant Level Goals
MCLs:	Maximum Contaminant Level
NCHD:	Nassau County Health Department

NCP:	National Contingency Plan
NYCRR:	New York Code of Rules and Regulations
NYDOL:	New York State Department of Law
NYSDEC:	New York State Department of Environmental
OBSWDC:	Oyster Bay Solid Waste Disposal Complex
OSWER:	Office of Solid Waste and Emergency Response
PC:	Personal Computer
PRP:	Potential Responsible Party
QA/QC:	Quality Action/Quality Control
RCRA:	Resource Conservation and Recovery Act
REM:	Remedial Engineering Management
RI/FS:	Remedial Investigation/Feasibility Study
RLSC:	Regional Laboratory Sample Coordinator
RPM:	Remedial Project Manager
SAP:	Sampling and Analysis Plan
SARA:	Superfund Amendments and Reauthorization Act of 1986.
SAS:	Special Analytical Service
SENSITIVITY ANALYSIS:	A test of a procedure to determine the overall changes that will result from any small change in one or more procedured element.
SMP:	Site Management Plan
SOW:	Statement of Work
SPDES:	State Pollutantion Discharge Elimination System

APPENDIX
GLOSSARY OF TERMS AND ACRONYMS (Cont'd)

SPILL AREA:	75'x75' of visibly contaminated soils discovered by NCHD inspectors in 1980.
TAT:	Technical Assistance Team
TCL:	Target Compound List
TOC:	Total Organic Carbon
TDS:	Total Dissolved Solids
TREATABILITY STUDIES:	Laboratory/field tests conducted to determine the efficiency of certain technologies to destroy/immobilize or reduce toxicity of hazardous substances.
TSCA:	Toxic Substances Control Act
TSS:	Total Suspended Solids
VOC:	Volatile Organic Compound
WASTEWATER TREATMENT TANKS:	Usually constructed facilities in which physical or chemical processes are applied to wastewater.