REMEDIAL INVESTIGATION/FEASIBILITY STUDY
WORK PLAN

GLARO INC.
735 Old Willets Path
Hauppauge, New York 11788
Suffolk County

NYSDEC SITE #1-52-124

December, 1995
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Project Requested By: New York State Department of Environmental Conservation

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DECEMBER, 1995

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GLARO INC.
735 OLD WILLETS PATH
HAUPPAUGE, NEW YORK

1.0 - BACKGROUND

This work plan provides a scope of work for the conductance of a remedial investigation/feasibility study (RI/FS) at the site located at 735 Old Willets Path, Hauppauge, New York. The Glaro Inc. property has been listed by the New York State Department of Environmental Conservation (NYSDEC) in the Registry of Inactive Hazardous Waste Disposal sites in New York State (Site number 1-52-124). The NYSDEC has classified the site as a Classification "2"(Class 2 Site) due to volatile organic contamination at the property.

The RI/FS will provide data on current site conditions and will be used to recommend remedial measures, as appropriate. This RI/FS will be conducted under an executed order on consent. Data gathered during the RI/FS will be used for developing, evaluating and selecting remedial actions and alternatives. Any deviation from the agreed upon protocols in this work plan will be discussed with the NYSDEC prior to implementation.

1.1 - Objectives

The overall objectives of the RI/FS are to determine the nature and extent of contaminants at the site. The information gathered during the investigation will be presented to NYSDEC and used to initiate remedial measures, if and where appropriate. The specific objectives of the RI/FS are as follows:

(1) Provide sufficient analytical data on the site so that areas that have been previously identified or suspected as potential source areas of contamination are confirmed or are determined to be either free of contamination or below regulatory levels.

(2) If source areas are present, determine the nature, type, physical extent and migratory path of contamination at and/or emanating from that location so that appropriate remedial measures can be implemented.

(3) Determine the impact of contamination quantified on human health and the environment.

(4) Document areas that are free of contamination or are already properly remediated to NYSDEC.

(5) Present and discuss the data necessary to support the development of remedial measures.

(6) Identification and screening of remedial technologies.

(7) Screening and development of remedial alternatives.

Analytical data will be collected to achieve these objectives using methods in accordance with NYSDEC protocols and analyzed by approved methods subject to NYSDEC Analytical Services Protocol (ASP) Contract Laboratory Protocol (CLP) procedures. The

investigation will draw upon data acquired in previous investigations conducted at the site as well as the new data acquired during this study to the maximum extent possible.

In addition to this RI/FS Work Plan, interim remedial measures (IRMs) will be proposed by Kost Environmental Services Inc. (KES) upon review of preliminary data collected during the RI. An IRM work plan will be submitted to NYSDEC prior to implementation. The potential pathways of contaminant migration are air, soil and groundwater. This RI/FS will concentrate on the soil and groundwater pathways, which have been shown in previous studies to be the most significant at this site. Groundwater monitoring will be utilized to estimate if groundwater contamination exists, as well as to determine groundwater flow direction and velocity.

The subsequent RI/FS report will be formatted as outlined in the US Environmental Protection Agency (USEPA) Guidance Document, " Guidance on Remedial Investigations Under CERCLA" EPA 540/G - 89/004, October 1988 and the draft " Intermin Final Guidance for Conducting RI/FS under CERCLA' EPA October 1988. Development of this work plan in conjunction with the site-specific Health and Safety Plan, are the initial requirements for a RI/FS.

2.0- SITE BACKGROUND AND HISTORY

2.1- Site Description and Operation

The site is identified as 735 Old Willets Path, Hauppauge, New York (see Figure 1 - Location Map in Appendix). The building which is presently occupied by Glaro, Inc. was constructed in 1966 and has been occupied by Glaro, Inc. since that time. Activities conducted at the Glaro site include receiving aluminum tubing and sheet metal, and some steel products. The metal is cut, bent, spun, punched, stamped, polished, degreased, and spray painted with water soluble paint, and then assembled into finished products.

The approximate 3.3 acre site is presently occupied by two industrial buildings. The Glaro Inc. facility occupies the southerly portion of the property and the Avnet facility occupies the northerly portion. The Avnet facility and associated parking area was developed in 1987 through 1992.

The property is bordered by Old Willets Path to the west, Kings Highway to the north and Power Drive to the east.

The property is situated in an industrial park locale of Hauppauge, New York. Savoy Medical Supply Co. is located directly to the south of the site, an asphalt plant to the east and numerous industrial activities to the west.

There is one (1) three thousand (3000) gallon fuel UST located on the property adjacent to the northeast sector of the

structure. This UST is used for the storage of No.2 heating oil and is used for on-site heating purposes.

Prior to 1982, Glaro Inc. was discharging water contaminated with solvents into an underground drywell which is believed to be a major contributing cause to the present on site environmental problem. Since 1983, that material has been evaporated by boiling the discharge in a specially built, licensed, on site kettle. Other hazardous waste collected on site is stored in 55 gallon drums in a specially built, sealed, containment area until it is disposed of by firms licensed to carry and dispose of such material in accordance with all State and Federal rules and regulations.

Five storm water runoff dry wells with open grate covers, and one additional dry well with a closed cover provide drainage for the paved and roof areas of the site. Potable water is supplied to the site by the Suffolk County Water Authority (SCWA). There are no on-site diffusion or supply wells. Sanitary wastes from both structures are discharged to on-site septic tanks and leaching pools.

2.2 Previous Site Investigations and Remediations

Previous site investigations conducted at the facility were reviewed and a summary is presented below.

In July 1981 the Suffolk County Department of Health Services

sampled an industrial leaching basin located on the north side of the Glaro building. The analysis indicated the presence of tetrachloroethylene (117,000 ppb), 1,1,1 trichloroethane (530 ppb), and 1,1,2 trichloroethylene (75 ppb).

The SCHS requested that the discharge to this pool cease immediately and that the pool be cleaned out. This pool was receiving the condensate from a "degreasing" machine that was utilized by Glaro in its manufacturing operation. In September 1981, the leaching pool was cleaned out and the SCDHS gave permission to reuse the pool again. In October 1981, the SCDHS notified Glaro Inc. regarding the storage of drums and compliance with Article 12 of the Suffolk County Sanitary Code. In December 1981, the SCDHS notified Glaro Inc. regarding samples taken from the industrial leaching pool and organic solvent contamination. Subsequently, a clean out of the pool occurred in February, 1982 regarding the removal of liquid and some sludge. In April, 1982, Glaro Inc. informed the SCDHS that it had abandoned use of the drainage pool. In June 1982, the SCDHS approved construction plans or interior drum storage as requested earlier by the County. The storage area was constructed and inspected in April 1983. A notice of violation was then issued in January 1985 by the SCDHS regarding the discharge of liquid from the degreasing operation onto the ground outside of the Glaro building. Sampling indicated

the presence of the tetrachloroethylene. Subsequently, in February, 1985 Glaro informed the SCDHS that it was using an evaporation process and no longer discharged any liquids onto the ground. Glaro then pursued obtaining the necessary air permits for this evaporation process. Due to the numerous discharges of organic solvents without a permit, the SCDHS scheduled a hearing in April, 1985 with an Order on Consent No. 1 W 85 - 19 agreed to in May 1985 . The o.o.c. included the installation of groundwater monitoring wells and a monetary penalty. The three monitoring wells were installed in December, 1985/January 1986. Groundwater sampling and analysis was then performed by the SCDHS in December 1986. The results indicated the presence of 1,1,1 trichloroethane, 1,1,2 trichloroethylene, tetrachloroethylene and cis,dichloroethylene in three wells. The highest concentration of an organic compound was 11,000 ppb of 1,1,2 trichloroethylene in wells # 1 and # 2.

In February 1987 the SCDHS acknowledged through internal memorandum that the groundwater test results were elevated and that some type of remedial treatment would be necessary. In addition, the SCDHS acknowledged that adjacent companies to the Glaro site utilized similar solvents and that an extensive ground water investigation must take place to define the extent of the plume.

In May 1987, the SCDHS submitted documentation to the NYSDEC to have the Glaro site added to the " Registry of Inactive Hazardous Waste Disposal Sites as site # 152124. In September of 1994 a groundwater investigation was undertaken by Glaro Inc. to determine groundwater flow, possible off site sources of contamination and groundwater quality at the site. The investigation indicated that chlorinated hydrocarbon contamination still existed at the site at much lower concentration than previously observed. The investigation indicated off-site sources of contamination were impacting the Glaro site. At the present time, the primary area of concern on the site is the previously abandoned leaching basin on the north side of the building.

3.0 HYDROGEOLOGY

The regional and local hydrogeology of the area surrounding the site is presented in this section of the Work Plan.

3.1- REGIONAL HYDROGEOLOGY

The geologic formations that underlie Suffolk County are composed of a series of thick deposits of unconsolidated water-bearing sediments of late Cretaceous and Pleistocene age. These unconsolidated deposits are underlain by crystalline bedrock of Precambrian age.

There are (3) primary water-yielding aquifers underlying Suffolk County and the site. These aquifers, from shallow to deep are: (1) upper glacial; (2) Magothy; and (3) Lloyd aquifers. The Magothy has been reported to be semi-confined (confined in areas where the Gardiners clay unit is present). The underlying Lloyd Aquifer is confined due to an overlying clay unit identified as the Raritan Clay.

The upper glacial aquifer, consisting of highly permeable sand and gravel with occasional thin clay beds, is more commonly used for drinking water in eastern Suffolk County than in the more densely populated western Suffolk County. The Magothy aquifer is the principal water supply aquifer underlying Suffolk County. It consists primarily of lenticular beds of very fine to medium sand that are interbedded with clay and sandy clay, silt and some gravel and sand. Beds of coarse sand with gravel are common in the lower 100 to 150 feet of the aquifer. The Magothy is absent in many areas along the north shore and reaches a thickness of approximately 700 feet beneath the Hauppauge area.

Below the Magothy aquifer is the Raritan clay formation. This formation is a significant confining unit above the Lloyd aquifer that consists mainly of clay and silty clay from 0 to 200 feet in thickness. The clay has a very low hydraulic conductivity, but

does not totally prevent movement of water between the Magothy and the underlying Lloyd aquifer.

The Lloyd aquifer is the oldest and deepest water-bearing unit. It unconformably rests on impermeable crystalline bedrock and consists of lenticular deposits of clay, silt, sandy clay, sand and gravel. The upper surface of the aquifer dips southeast from about 500 feet below sea level in the northern part of the county to more than 1400 feet below sea level at the southern portion. The Lloyd aquifer ranges from 200 to 300 feet in thickness within the county.

The regional groundwater flow direction beneath the site has been mapped to be northeast.

3.2 LOCAL HYDROGEOLOGY

The local hydrogeologic units correspond to the previously discussed regional hydrogeolgic units. In the vicinity of the site, the shallow aquifer generally includes saturated coarse sands and gravel and in some areas, hydraulically connected finer grained sand and gravel beds in the upper part of the Magothy formation. Water levels in shallow wells fluctuate seasonably on an average between 1 and 4 feet. The intermediate aquifer includes the bulk of the Magothy aquifer down to the top of the clay member of the

Raritan formation. The top of the clay member is estimated at approximately 750 feet below grade in the vicinity of the subject site. The Lloyd or deep aquifer is located beneath the clay and is estimated at 900 feet beneath the site. Bedrock is beneath the deep aquifer and is estimated at 1150 feet beneath the subject site. (USGS 1669 -0)

The predominant horizontal groundwater flow direction based on groundwater elevation maps of the Suffolk County Department of Health and on-site monitoring wells was to the northeast (see Figure 2 in Appendix). The depth to groundwater underlying the site is approximately 75 feet below grade. Utilizing a published hydraulic conductivity value of 1500 gpd/ft 2 (Geological Survey Professional paper 627-E), a porosity of 30 percent and a calculated gradient ranging between 0.0015 and 0.0016 ft/ft, the groundwater on-site is estimated to flow at a rate of approximately 1.0 feet per day in a northeasterly direction.

This site is located within Hydrogeologic Zone I defined in the "Long Island Areawide Waste Treatment Management Plan" also known as the Nassau/Suffolk 208 Plan in 1978. This zone is a primary source of drinking water for much of Long Island. Groundwater Management Zone I covers areas characterized by a deep flow system which generally contributes recharge to the Magothy aquifer.

The site is located to the east of the Oak Brush Plains Special Groundwater Protection Area (SGPA) as designated in a document by the Long Island Regional Planning Board (L I R P B). This study designated areas which afford a unique opportunity to preserve Long Island's groundwater resources.

3.3 Regional Groundwater Quality

The site is located in an industrialized area. Within a three quarter (3/4) mile radius west and hydraulically upgradient of the site is a NYSDEC Class 2 listed inactive hazardous waste disposal site identified as Computer Circuits. (NYSDEC Site No. 1-52-034). Groundwater beneath and downgradient of the Computer Circuits site has been documented with chlorinated VOC's, heavy metals and plating wastes.

Directly adjacent and south of the subject property there is a documented discharge of " extremely high levels" of 1,1,1 trichloroethane, 1, 1, dichloroethane, 1,1,2 trichloroethylene, p-dichlorobenzene,toluene and tetrachloroethylene to on-site sanitary septic tanks. (Suffolk County Dept. of Health Services 7/1/87). This site was identified as Savoy Medical Supply, 745 Calebs Path, Hauppauge, New York. Groundwater monitoring results obtained from a well located on the Savoy property adjacent to the Glaro property line indicated the presence of 1,1,1

Trichloroethane, 1,1 dichloroethane and 1,2 dichloroethene at concentrations of 79 ppb, 34ppb and 5 ppb in 1990.

Subsequently, in 1994 Glaro installed monitoring wells on its property just north of the Savoy property line and detected concentrations of 1,1 dichloroethane, 1,1 dichloroethane, 1,2 dichloroethene,1,1,1 trichloroethane, trichloroethylene and tetrachloroethane. (See Groundwater Investigation Report, Kost Environmental Services Inc. - 1994)

3.4 - PUBLIC WATER SUPPLY

Potable water is supplied to the site by SCWA. The closest downgradient SCWA well field is located approximately 9000 feet northeast of the subject site. That well field is identified as the Wheeler Road Hauppauge well field and is located at the intersection of Veterans Highway and Wheeler Road. The well field consists of four (4) wells (515746, 519399,523183 and 538491) which are 128 feet, 131 feet, 340 feet, and 383 feet deep, respectively. These wells are connected to a granulated activated carbon (GAC) system for treatment purposes, and is used on a periodic " as needed basis."

4.0 - SCHEDULE AND PROJECT MANAGEMENT

4.1 - Schedule

A task-by-task schedule for the RI/FS activities is set forth in this work plan and is provided in Figure 4.

4.2 PROJECT MANAGEMENT

General direction of the RI/FS will be provided by Darrel J.Kost P.E. Mr.Kost has 17 years of hydrogeological supervisory and project management experience with state and federal remediation projects. Mr. Kost also will have responsibility for plan development and implementation of the RI/FS , development of bid packages, acquisition of engineering of specialized technical support and all other aspects of the day-to-day activities associated with the project.

Mr. John Hofmann will be responsible for overall project quality including development of the project quality control/quality assurance (QA/QC) plans, review of specific task QA/QC procedures, review of laboratory, vendor and subcontractor plans and procedures, and auditing specific tasks at established intervals.

Mr. Kost will be responsible for on-site management for the duration of all site operations, including activities such as sampling, and the work performed by subcontractors, such as well

drilling and surveying. He will provide consultation and decide on factors relating to sampling activities and changes to the field sampling program.

He will ensure that the analytical laboratory will perform analyses as described in the Field Sampling Program (FSP) and will be responsible for assuring that proper collection, packaging, preservation and shipping of samples is performed in accordance with USEPA guidelines. Project progress meetings will be held, as needed, to evaluate project status, discuss current items of interest, and review major deliverables such as the FSP, Health and Safety Plan (HASP) and the RI/FS report.

The resume of Mr. Kost is presented in Appendix.

5.0.TECHNICAL WORK PLAN

The following scope of work has been developed to further evaluate and characterize the site under the RI/FS in order to assess current environmental conditions and select remedial technologies and alternatives. Interim remedial measures (IRMs) will be proposed upon review and assessment of the preliminary data from the RI.

5.1 DATA QUALITY OBJECTIVES

The Data Quality Objectives (DQOs) for the RI/FS will be applicable for all data collection activities at the site. DQOs will be incorporated into the FSP and the QA/QC sections of the RI/FS (Sections 5.5 and 6.0 respectively).

The primary data users for this project will be KES, NYSDEC and the New York State Department of Health (NYSDOH). No secondary users have been identified at this time.

Data to be collected during the implementation of the FSP will be used to characterize the nature and extent of contamination. These results will be used for the preparation of a health- based risk assessment, the RI report, the Treatability Study (if necessary) and the Feasibility Study (FS) report.

This project is being conducted under NYSDEC ASP CLP procedures. As part of these procedures, differing levels of work are defined. For this project, it is anticipated that Level I (screening) will be used during the soil vapor survey and soil sampling or groundwater monitoring well installation and sampling. Level I includes screening for total VOC vapors, using a portable photoionization detector (PID) with an 11.7 ev bulb. The field screening results will be utilized for determining soil sampling locations and selection of soil samples to be laboratory tested for select parameters as per Level IV DQO. Laboratory methods for

organics will be gas chromatograph/mass spectrometer (GC/MS) in order to achieve ppb detection limits.

The analytical data to be obtained for this project will be analyzed by H2M, and will conform to Contract Laboratory Protocol (CLP) analytical level IV. The data will be used for risk assessment, site characterization, evaluation of alternatives, and engineering design.

5.2 PRELIMINARY IDENTIFICATION OF ARARs and TBCs

5.2.1- Potential Applicable or Relevant and Appropriate Requirements (ARARs)

The National Contingency Plan (NCP) (50 Federal Register 47912, November 20, 1985) and the Superfund Amendments and Reauthorization Acts/Comprehensive Environmental Response, Compensation and Liability Act (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 responses were to be undertaken regardless of CERCLA Section 104. Relevant and appropriate requirements which are defined as applicable apply to facilities or problems similar to those encountered at this site; therefore,

their use is well suited. 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 state regulatory requirements are potential ARARs to the site:

1) CONTAMINANT-SPECIFIC

FEDERAL:

- Resource Conservation and Recovery Act (RCRA) Groundwater Protection Standards and Maximum Concentration limits (40 CFR 264, Subpart F)

- Clean Water Act, Water Quality Criteria (Section 304) May 1, 1987 Gold Book.

- National Ambient Air Quality Criteria (NS) (40CFR 50)

- Safe Drinking Water Act, Maximum Contaminant Levels (MCLs) 40 CFR 141.11-16

NEW YORK STATE

- New York Groundwater Quality Standards (6 NYCRR 703)

- New York State Drinking Water Act Maximum Contaminant Levels (MCLs) (10 NYCRR5)

- New York Surface Water Quality Standards (6 NYCRR 702)

- New York State Raw Water Quality Standards (10 NYCRR 170.4)

- New York RCRA Groundwater Protection Standards (6 NYCRR 373-26e)

  New York Ambient Air Quality Standards (6 NYCRR 256 and 257)

- New York State Analytical Detectability for Toxic Pollutants (85-W-40-TOG)

2) LOCATION - SPECIFIC

NEW YORK STATE

- New York State Air Guidelines for the control of Toxic Ambient Air Contaminants (Air Guide 1)

3) ACTION-SPECIFIC

FEDERAL

- RCRA Subtitle C Hazardous Waste Treatment Facility Design and Operating Standards for Treatment and Disposal systems, (i.e., landfill incinerators, tanks, containers, etc.) (40 CFR 264 and 265) (Minimum Technology Requirements)

- RCRA Subtitle C Closure and Post Closure Standards (40 CFR 264, subpart G)

- RCRA Groundwater Monitoring and Protection Standards (40 CFR 264, Subpart F)

- RCRA Generator Requirements for Manifesting Waste for Off-site Disposal (40 CFR 263)

- RCRA Subtitle D Non-hazardous Waste Management Standards (40 CFR 257)

- RCRA Transporter Requirements for Off-site Disposal (40 CFR 270)

- Safe Drinking Water Act, Underground Injection Control Requirements (40 CFR 144 and 146)

- RCRA Land Disposal Restrictions (40 CFR 268) (On and off site disposal of excavated soil)

- Clean Water Act - NPDES Permitting Requirements for Discharge of Treatment System Effluent (40 CFR 122-125)

- Effluent Guidelines for Organic Chemicals, Plastics and Resins (Discharge Limits) (40CFR 414)

- National Emissions Standards for Hazardous Air Pollutants NESHAPSs) (40 CFR 61)

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

- Occupational Safety and Health Standard for Hazardous Response and General Construction Activities (29CFR 1904, 1910, and 1926)

NEW YORK STATE

New York State Pollution Discharge Elimination Systems (SPDES) Requirements (Standards for Storm Water Runoff, Surface Water, and Groundwater Discharges) (6 NYCRR 750-757)

- New York State Toxicity Testing for the SPDES Permit Program (TOG 1.3.2)

- New York State RCRA Standards for the Design and Operation of Hazardous Waste Treatment Facilities (i.e., landfills, incinerators, tanks containers, etc.). Minimum Technology Requirements (6 NYCRR 370-372)

- New York State RCRA Closure and Post-Closure Standards (Clean Closure and Waste-;n-Place Closures) (6 NYCRR 372)

- New York State Solid Waste Management Requirements and Siting Restrictions (6 NYCRR 360-361)

- New York State RCRA Generator and Transporter Requirements for Manifesting Waste for Off-site Disposal (6 NYCRR 364 and 372)

- New York State Air Emission Requirements (VOC Emission from Air Strippers and Process Vents, General Air Quality) (6 NYCRR 200-212)

- New York State Underground Injection Recirculation at Groundwater Remediation Sites (Technical Operating Guidance (TOG) Series 7.1.2)

The NYSDEC considers the following requirements equivalent to ARARs. These NYS requirements were taken from the NYS Standards, Criteria and Guidelines (SCG's).

Division of Solid Waste

- 6 NYCRR Part 360 - Solid Waste Management Facilities (effective October 9, 1993) (revised in December 1993)

- 6 NYCRR Subpart 373-1 - Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements (revised January 31, 1992)

- 6 NYCRR Subpart 373-2 - Final Status Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities (revised) January 31, 1992)

- 6 NYCRR Subpart 373-3 - Interim Status Standards for Owners and Operators of Hazardous Waste Facilities (revised January 31, 1992)

- 6 NYCRR Part 374 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (revised January 31, 1992)

- 6 NYCRR Part 376 - Land Disposal Restrictions (January 31, 1992)

- 6 NTCRR Part 700-705 NYSDEC Water Quality Regulations for Surface Waters and Groundwater

Division of Hazardous Waste Remediation

- 6 NYCRR Part 375 - Inactive Hazardous Waste Disposal Site Remedial Program (May 1992)

- Technical and Administrative Guidance Memorandum (TAGM) HWR-924046 Determination of Soil Cleanup Objective and Cleanup Levels. (January 24, 1994) HWR-92-4030 Selection of Remedial Actions at Inactive Hazardous Waste Sites. (May 1990).

Division of Water

- 6 NYCRR Part 702.15 (a), (b), (c), (d) and (e) Empowers DEC to Apply and Enforce Guidance where there is no Promulgated Standard.

- Technical and Operations Guidance Series (TOGS)

1.1.1; October, 1993 -	Ambient Water Quality Standards and Guidance Values (revised in December 1993)
1.2.1; April, 1990-	Industrial SPDES Permit Drafting Strategy for Surface Waters
1.3.1; May, 1990 -	Waste Assimilative Capacity Analysis and Allocation for Setting Water Quality Based Effluent Limits
1.3.1 C; August 1991 -	Development of Water Quality Based Effluent Limits for Metals Amendment
1.3.2; May, 1990-	Toxicity Testing in the SPDES Permit Program
1.3.4; April I, 1987 -	BPJ Methodologies
1.3.4 - Nov. 3. 1988 -	BPJ Methodologies/Amendments
1.3.7 - July 1990	Analytical Detectability and Quantitation Guidelines for Selected Environmental Parameters.

2.1.2; July 1990 -	Underground Injection /Recirculation (UIR) at Groundwater Remediation Sites.
2.1.3; October, 1990 -	Primary and Principal Aquifer Determinations

DIVISION OF AIR

6 NYCRR part 200 (200.6)- 1933)	General Provisions (Revised December
6 NYCRR Part 201 -	Permits and Certificates (Revised Dec.1993)
6 NYCRR Part 211 (211.1)-	General Prohibitions
6 NYCRR Part 212-	General Process Emission Sources
6 NYCRR Part 257-	Air Quality Standards
Air Guide 1-	Guidelines for the Control of Toxic Ambient Air Contaminants

DIVISION OF SPILLS MANAGEMENT

-	Spill Technology and Remediation Series (STARS) Memo #1, AUGUST 1992- Petroleum Contaminated Soil Guidance Policy

DIVISION OF REGULATORY AFFAIRS

- Article 27, Title II of the ECL -	Industrial Siting Hazardous Waste Facilities
6 NYCRR Part 621 -	Uniform Procedures
6 NYCRR Part 624 -	Permit Hearing Procedures.

DIVISION OF MINERAL RESOURCES

6 NYCRR Part	420 -	General
	421 -	Permits
	422 -	Mined Land - Use Plan
	423 -	Reclamation Bond
	424 -	Enforcement
	425 -	Civil Penalties
	426 -	Hearings

-Title 27 - NYS Mined Land Reclamation Law

NEW YORK STATE DEPARTMENT OF HEALTH (Revised 12/93)

NYSDOH PWS - 68	Blending Policy for Use of Sources of drinking Water
NYSDOH PWS 69	Organic Chemical Action Steps for Drinking Water
NYSDOH PWS 152	Procedure for Handling Community Water System Emergencies
NYSDOH PWS 159-	Responding to Organic Chemical Concerns at Public Water Systems
NYSDOH PWS 160-	Public Notification of Organic Chemical Incidents Regarding Public Water Supplies

5.2.2.- POTENTIAL "TO BE CONSIDERED" MATERIAL (TBCs)

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 the EPA and other federal and state agencies.

1) FEDERAL

- Safe drinking water Act National Primary drinking Water Regulations, Maximum Contaminant Level Goals (MCLGs)
- Proposed Maximum Contaminant Levels (50
- Federal Register 46936-47022,Nov.13,1985)
- Proposed Federal Air Emission Standards for Volatile Organic Control Equipment (52 Federal Register 3748)
- Proposed Requirements for Hybrid Structures (combines waste-in-place and clean closure) (52 Federal Register 8711)
- USEPA Drinking Water Health Advisories
- USEPA Health Effects Assessment (HEAs)
- USEPA Integrated Risk Information System (IRIS) latest revision
- TSCA Health Data
- Toxicological Profiles, Agency for Toxic Substances and Disease Registry, U.S. Public Health Service.
- Policy for the Development of Water-Quality- Based Permit Limitations for Toxic Pollutants (49 Federal Register 9016)
- Cancer Assessment Group National Academy of Science Guidance Document
- Groundwater Classification Guidelines
- Groundwater Protection Strategy
- Waste Load Allocation Procedures

5.3 - POTENTIAL PATHWAYS OF CONTAMINATION

As discussed in Section 2.0 and 3.0 , soil and groundwater sampling and analysis activities have been previously performed at the site and the surrounding area. The chemical compounds present in the soils and groundwater have been identified by the previous sampling and analysis effort. Therefore, potential pathways of contamination can be assessed.

The previous investigations performed at the site identified areas of concern as the sub surface soil in the location of the previously existing leaching basins located on the north side of the property. In general, the data indicate that VOC contamination may be present in the vadose zone soils in these areas. The potential pathway for migration of VOCs is downward movement through the vadose zone in a dissolved-phase, due to recharge from rainwater. VOCs in solution which reach the groundwater will move, typically with the groundwater, in the direction of groundwater flow. VOC- impacted vadose zone water may eventually reach the water table. The VOC-impacted groundwater in the saturated zone then flows in the down-gradient direction.

The pathway of overland runoff of VOCs dissolves in surface water after rain events has been determined to be non-existant due to the nature of the original spill conditions i.e. into leaching basins.

VOCs which exist in the groundwater beneath the site will typically travel with the groundwater flow which is generally in a northeast direction at a velocity typically consistent with the groundwater pore velocity.

5.4 - WORK PLAN APPROACH

The work plan approach is to present previous data and evaluate existing laboratory data. This information will be incorporated into the tasks necessary for completion of the RI/FS. Data previously collected will be supplemented by additional sampling and analyses in the RI/FS.

The purpose of the RI is to determine the aerial and vertical extent of soil and groundwater contamination. Based upon the findings of this RI, remedial alternatives will be presented and the most feasible alternative(s) of remediation will be evaluated and documented in the FS report.

The FSP will provide for the implementation of the NYSDEC approved work plan. This RI/FS work plan also outlines field investigation Procedures and Methodology, Quality Assurance/Quality Control (QA/QC); the Health and Safety Plan (HASP); and the Citizen Participation Plan (CPP).

5.5 Field Sampling Program

Based upon the history of the site operation and VOC contamination a RI/FS program has been developed. Areas suspected as potentially contaminated by VOC's will be focused on. In this manner, an evaluation ofthe nature and extent of contamination of the property will be completed and the need for remedial measures determined.

A soil gas survey will be conducted on the northerly side of the Glaro structure in order to determine the horizontal and vertical extent of contamination in the area of the original source. Subsequent to the results of the soil gas survey, soil samples will be obtained using a geoprobe or drill rig.

Multi-level groundwater monitoring wells will be installed on the Glaro property to determine on-site groundwater quality conditions. (see figure 3 - existing/proposed conditions in Appendix)

A detailed description of this site investigation tasks is presented below. All field work will be conducted in accordance with the Health and Safety Plan. In addition, the NYSDEC will be notified at least five (5) working days prior to the commencement of any field activities.

5.5.1- Task 1 - Soil Gas Survey

The soil gas survey will be conducted on the northerly side of the Glaro site in order to determine the vertical and horizontal extent of the TCE and PCE concentrations in the soil column. A grid pattern will be established with the main source of the contamination i.e. a leaching basin, being the westerly limit and then proceeding in qan easterly direction (see Figure 5.1). Soil gas samples will be obtained at nine probe locations utilizing a "direct-push" device to advance a retractable soil gas sampling probe to three predetermined depths at each probe location. Probe rod, retractable points and any other down hole equipment will be steam cleaned before and after each probe location. Soil gas samples will be obtaianed at depths of approximately 22'. 44'.and 66' below grade at each probe location. Soil gas samples will be pre-screened with a photoionization detector (PID) to determine the presence of organic vapors. Additional soil gas samples i.e. not the samples pre-screened with the PID, will be analyzed on site by a portable gas chromatograph for target compounds i.e. trichloroethylene (TCE),tetrachloroethene (PCE) vinyl chloride, dichloroethylene, and trichloroethane. (see figure 3 for soil gas locations.)

The portable gas chromatograph will be calibrated for TCE and PCE using standards prepared by Scott Specialty Gases Inc. Detection limits of 100 ppb will be utilized. Five soil gas samples will also be collected and transported to a NYSDOH certified laboratory for Purgeable Halocarbon analysis (SW 846, method 8240). These samples will be duplicates of samples analyzed by the portable GC and will be used to provide quality assurance for the on-site soil gas analysis.

5.5.2.-Task 2-Multi-level Groundwater Monitoring Wells

Three multi-level groundwater monitoring wells will be installed on the northerly side of the Glaro property to assess groundwater quality. Two multi-level wells will be installed down gradient from the existing monitoring wells W1 and W2 and a third well will be installed up gradient from the " source area" (see Figure 3 in appendix). The multi-level monitoring wells will provide a means to obtain downgradient water quality from twelve discrete depths at each well location.

The multi-level monitoring wells will be constructed of 1/2" diameter schedule 40 PVC flush joint riser with a terminus of 1/2" diameter by 1 foot 0.010" slotted schedule 40 PVC flush joint screen. Each 1/2 " diameter will be "bundled" around a 2" diameter schedule 40 PVC flush joint riser with a 2" diameter by 5 ft. schedule 40, 0.010"

slotted PVC joint screen. A "cluster" of twelve individuall wells will comprise each multi-level well location. Screen intervals will start at approximately 150 ft. below grade with successive 1/2" wells staggered at 7.5 ft. higher than the previous one. This will provide a sampling zone which extends to the existing groundwater interface.

The upgradient well will be constructed of 2" diameter schedule 40 flush joint PVC riser with 20 ft. of 2" diameter schedule 40,0.010 slotted flush joint screen. The screen will be installed approximately 10 ft. into the saturated zone.

All monitoring wells will be installed utilizing a rotary drill rig equipped with hollow stem augers. All down-hole equipment, along with all monitoring well materials, will be steam cleaned prior to use at each bore hole location. A drill log for each bore hole will be kept at the site by the on-site geologist.

As the down gradient multi-level monitoring wells are installed and the hollow stem augers are withdrawn, the native formation will be allowed to collapse around the well until the water table interface is encountered. The well annulus will then be grouted to within two feet of the surface. The well head will be secured witha concrete seal and a flush mounted 12" diameter bolt down manhole.

The upgradient monitoring well will be installed with a rotary drill rig equipped with hollow stem augers. The screened interval will receive an approximately sized gravel pack to two feet above the top of screen. The well annulus above the screen will be grouted to within two feet of the surface and secured with a concrete seal and an 8" diameter bolt down manhole.

Following the installation and development of the new monitoring wells, groundwater samples will be collected from the new wells and the existing wells and analyzed for VOC's (SW 846, Method 8240). QA/QC sampling for this task will include appropriate field and trip blank and duplicates. The laboratory will supply NYSDEC ASP Category B deliverables for data validation.

6.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN

The QA/QC plan objective is to produce data at the highest level to provide direct support for the feasibility study. All sampling activities used directly to support the RI/FS will use Level IV Data Quality Objectives. These activities include groundwater sampling and possibly soil sampling. QA/QC samples will be collected and will represent all sampling locations to assure quality control for the soil and groundwater characterization of this site. Analyses of QA/QC samples will enable data evaluation for accuracy and integrity.

QA/QC sample sets include a field blank, a site specific matrix spike/matrix spike duplicate, and a blind duplicate. One (1) field blank will be collected per sampling method (equipment), one (1) MS/MSD and blind duplicate per different matrix, and one (1) trip blank per sampling day.

Specifically, all data will be gathered or developed using procedures appropriate for the intended use. Standard procedures are used so that known and acceptable levels of accuracy, precision, representatives, completeness and comparability are maintained for each data set. Descriptions of these criteria are presented in the following subsections.

6.1 FIELD QA/QC

In order to ensure that data collected in the field is consistent and accurate, forms will be utilized for repetitive data collection, such as depth to water in wells, well locations, etc.
These field forms include Well Logging, Field Sampling and Water Level Data Records.

The accuracy of the data collected will be checked by using an additional degree of definition than the minimum wherever possible.

For example, if two distances are needed to locate a well, three (3) will be used so that if one distance is inaccurate, the well can still be located and the field measurement can be re-taken. For measurements where this is not possible (i.e. depth to water), measurements will be taken and recorded three times.

Blanks and duplicate samples will be used to verify the quality of the field sampling results. A brief description of these samples follows:

Blank Samples

A field (equipment) blank will be used to determine the effectiveness of the decontamination of the sampling devices i.e.) bailers and/or split-spoon samplers.) Analyte free water will be poured into the decontaminated sampling device and then transferred to sample containers before use in sampling. If dedicated bailers are used a blank sample will be collected prior to use to ensure proper bailer decontamination from the supplier.

A trip blank will contain analyte-free water and will be transported to the site and returned without opening. This will serve as a check for contamination originating from sample transport, shipping and from site conditions.

The analyte free water used as blanks (for both field and trip blanks) will depend upon the type of analysis. Distilled and deionized water will be used as blanks for the inorganic analysis. For organic analysis, the blanks will be high performance liquid chromatography (HPLC) grade water.

Duplicate Sample

One blind duplicate sample will be prepared during soil sampling and groundwater sampling. Site-specific MS and MSDS samples will be collected and submitted to the laboratory as separate samples. One MS/MSD will be collected for every 20 samples, per matrix, per sampling equipment.

Field Records

All information pertinent to any field activities will be recorded in bound, waterproof field books. Duplicates of all notes will be prepared and kept in a secure place away from the site. Proper documentation will consist of all field personnel maintaining records of all work accomplished including the items listed below:

date and time of work events

purpose of work

description of methods

description of samples

number and size of samples

description of sampling point

date and time of collection of sample

sample collector's name

field observations

any field measurements with portable instruments

Each sample collected in the field will be labeled using waterproof ink. Each bottle will be labeled with a number, location, parameter to be analyzed, sampling time and date. Packaging,shipping and chain-of-custody requirements for the samples shall be in accordance with National Enforcement Investigation Center (NEIC) procedures.

6.2 PREPARATION AND PRESERVATION OF SAMPLE CONTAINERS

The scope of this project necessitates that several types of sampling containers will be used. Sample containers will be provided by H2M Labs, Inc. Each sample container will be provided with a label for sample identification purposes. The amount of the information on the label will include a sample identification number, time, date and

initials of the sample collector. All sample containers will be accompanied by a full chain-of-custody.

All sample containers will be thoroughly pre-cleaned at the laboratory prior to sampling. Appropriate sample preservatives will be pre-added in the bottles. Procedures vary according to the type of analysis to be performed. Individual procedures are outlined below. It is lab practice to pre-preserve sample containers in order to minimize potential contaminants in the field and to reduce unnecessary sample handling in the field.

6.3 DECONTAMINATION ZONE.

The decontamination zone will be located at the easterly end of the property. The driller will prepare a decontamination station whose perimeter is diked to prevent ground contamination from wash waters running out of the area. All drilling equipment shall be decontaminated in this area.

Wash waters from equipment (i.e. split-spoons, pumps, etc.) requiring decontamination will be contained and stored in 55 gallon drums pending laboratory analyses.

DECONTAMINATION PROCEDURES

All field equipment, with the exception of drilling equipment, split-spoons, dedicated polyethylene bailers, hoses, pumps, well casings, well screenings, and personal protective equipment , shall be decontaminated for field use according to the following procedures:

Non-phosphate detergent and tap water wash
tap water rinse
distilled/deionized water rinse
10% nitric acid rinse**
Methanol rinse
Total air dry or nitrogen blowout
Distilled/deionized water rinse

**Only if sample is to be analyzed for metals.

FIELD DECONTAMINATION FOR DRILLING EQUIPMENT AND SPLIT SPOON SAMPLERS

Field decontamination will consist of steam cleaning and/or a manual scrubbing to remove foreign material and steam cleaning inside and out. These items will then be stored in such a manner as to preserve their decontaminated condition.

FIELD DECONTAMINATION FOR THE PUMPS AND HOSES

The procedures for the field decontamination of the pumps and hoses shall consist of a manual scrubbing to remove foreign materials followed by an Alconox scrub and tap water rinse. All wash fluid will be collected and disposed of properly.

PERSONNEL PROTECTIVE EQUIPMENT DECONTAMINATION PROCEDURES

The personnel protective equipment decontamination procedure shall consist of the minimum decontamination stations outlined in the Site Health and Safety Plan.

6.4 SAMPLE CUSTODY

To maintain and document sample possession, chain-of-custody procedures will be followed. A chain-of-custody form contains the signatures of individuals who have possession of the samples after collection and identification in the field.

A sample is under custody if:

1) it is in one's actual possession; or

2) it is in one's view, after being in your physical possession; or

3) it was in one's physical possession and then was locked up or sealed to prevent tampering; or

4) it is in a designated secure place restricted to authorized personnel.

H2M or KES personnel will preserve and retain the unused portions of all samples in their original containers. These samples will be stored until project closeout, at which time they shall be properly packaged and, at the direction of the H2M or KES representative, transported to an off-site location for disposal.

Each person involved with the samples will know chain-of-custody procedures. A detailed discussion of the stages of possession; (1) field collection, (2) transfer, and (3) laboratory custody is presented below in the following sections:

FIELD CHAIN-OF-CUSTODY

Chain of Custody procedures for (1) field notebook and boring logs, (2) well key chain, (3) split-spoon sediment samples from well drilling and (4) environmental samples are included as part of field collection.

FIELD NOTEBOOK AND BORING LOG NOTEBOOK CHAIN-OF-CUSTODY.

Dedicated field and log books will be used for the duration of the project. These will be numbered and assigned to the field personnel. A log of the notebook number, the personnel assigned to the notebooks and their affiliation, and the date and time signed out and signed in will be kept. Maintenance of the notebook log will be the responsibility of the field hydrogeologist. Sufficient numbers of notebooks will be provided to allow for reviews of the field data by the project hydrogeologist during the field operations.

All water level data and field notes will be recorded in bound field notebooks. Drilling data will be recorded in boring logs which will be kept in binders. Soil sample chain-of-custody forms will also be kept in binders.

WELL KEY CHAIN-OF-CUSTODY

The field hydrogeologist will be responsible for placing the locks on the protective casings and maintaining chain-of-custody of the keys. The hydrogeologist will initiate a log tracing each set of keys from the wells. The log will contain the well number, the date and time the lock was installed on the well, the person who received the key, and the date, time and person to whom the key was given for the duration of the project. Each of the people to whom a key is

assigned during the project will maintain a separate chain-of-custody log for the key (s) that they are assigned.

SPLIT-SPOON SOIL SAMPLES

All split-spoon soil samples taken during drilling will be recorded on both the boring log forms and a chain-of-custody form. The field hydrogeologist will be responsible for the custody of the soil samples. The chain-of-custody form will report the sample I.D. date and time taken, person who received the sample, and date, time and person to whom the sample was released. The sample chain-of-custody forms will be kept in binders.

ENVIRONMENTAL SAMPLES CHAIN-OF-CUSTODY

When collecting samples for analysis or evidence, only a number which provides a fair representation of the media being sampled will be collected.

The field sampler initiates the chain-of-custody procedure in the field and is the first to sign the form upon collection of samples.

The field sampler is personally responsible for the care and custody of the samples until they are transferred and properly

dispatched. Sample tags shall be completed for each sample, using waterproof ink, subjected to proper preservation, and packaged to preclude breakage during shipment. Every sample shall be assigned a unique identification number that is entered on the chain-of-custody form. Samples can be grouped for shipment using a single form.

The record shall be completed in the field as to indicate: project number, unique sample number, sample location (borehole, depth, grid coordinates), sampling date and time, person obtaining the sample, and method of sample preservation. The paperwork will be performed and checked at an on-site location.

6.5 TRANSFER OF CUSTODY AND SHIPMENTS

All samples will be accompanied by a chain-of-custody record. When transferring the possession of samples, the individuals relinquishing the receiving will sign, date and note the time of transfer. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory or to the permanent laboratory.

Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed

custody record enclosed in each sample box or cooler. If samples are shipped directly to the laboratory, the chain-of-custody forms will be kept in possession of the person delivering the samples. All chemical analytical samples will be delivered to the laboratory within 24 to 48 hours of collection.

For samples shipped by commercial carrier, the chain-of-custody form will be sealed in a watertight envelope, placed in the shipping container, and the shipping container sealed prior to being given to the carrier. The waybill will serve as an extension of the chain-of-custody record between the final field person and receipt in the laboratory. The waybill number will be included on the chain-of-custody record.

Whenever samples are split with a facility or government agency , a separate chain-of-custody record will be prepared for those samples and marked to indicate with whom the samples were split.

6.6 LABORATORY SAMPLE CUSTODY

H2M Labs, Inc. has standard operating procedures for documenting receipt, tracking and compilation of sample data. Sample custody related to sampling procedures and sample transfer are described below:

1) SHIPPING OR PICKUP OF COOLER BY CLIENT

(a) Cooler packed at H2M after contact with client.

(b) cooler wrapped with evidence tape.

(c) Chain-of Custody form filled out by H2M personnel and client.

(d) Client supplied with evidence tape to seal cooler prior to shipment back to the laboratory.

2) DELIVERY OF COOLER TO H2M

(a) Samplers check for any external damage (such as leaking)

(b) The outside of the cooler is checked with a Geiger counter.

(c) Samplers sign for cooler to H2M (to shipper)

(d) H2M receives cooler and complete chain of custody.

3) FINAL STEPS

(a) Raw data stored on file.

The samples will be stored at the proper temperature and not longer than required holding time before analysis. It is the responsibility of the laboratory to properly dispose of samples beyond the holding period.

7.0 HEALTH AND SAFETY PLAN (HASP)

7.1 GENERAL

This Health and Safety Plan (HASP) has been prepared for the interim remedial investigation, and for the remedial investigation to conducted at and in the area of the Glaro Inc. Glaro Inc. is located at 735 Old Willets Path in Hauppauge, Suffolk County, Long Island, New York. Currently, as well as in the past Glaro Inc. has been a metal processing and finishing facility. This HASP will be implemented by a designated Health and Safety Officer (HSO). All persons or third parties who enter the work area must comply with this HASP. The work area includes the support, decontamination and exclusion zones. A copy of the HASP will be kept at the work site during the duration of the project.

Site Area: 735 Old Willets Path, Hauppauge, New York and area north and northeast.

Scope of Work: Interim remedial investigation including soil borings, and sampling, monitoring well installation and development, ground water sampling aquifer characteristics testing, water level measurements, and surveying of well locations for the remedial investigation and will be presented in the Remedial Investigation Plan.

FACILITY MANAGER	MICHAEL B. GLASS GLARO INC. HAUPPAUGE, NEW YORK	516-232-1050
PROJECT MANAGER	DARREL KOST KOST ENVIRONMENTAL SERVICES INC.	516-226-2156
HEALTH AND SAFETY OFFICER and 'RIGHT TO KNOW ' OFFICER;	DARREL J. KOST P.E.	516-226-2156
EMERGENCY PHONE NUMBERS;		
INJURY;	Community Hospital of Western Suffolk Rt.111 Smithtown By-Pass Smithtown, New York	516-361-4090
	St .John's Episcopal Hospital 50 Route 25A Smithtown, New York	516-862-3111
	University Hospital Stony Brook, Nicolls Road Stony Brook, New York	516-444-2465
FIRE/EXPLOSION OR AMBULANCE;	Hauppauge Volunteer Fire Dept.	516-265-1500
POLICE;	Suffolk County Police Department 4th Prct.	Dial 911 516-854-8400
POISON CONTROL CENTER;	Nassau County Medical Center	516-542-0123
NATIONAL RESPONSE CENTER;		1-800-424-8802
NYSDEC REPRESENTATIVE;	Jeffrey E. Trad, PE. Eastern Project Manager	518-457-1708

7.2 HEALTH AND SAFETY OFFICER

The Health and Safety Officer (HSO) will be responsible for the resolution of any outstanding safety issues which arise during the conduct of site work. The HSO will be responsible for all health and safety activities and the delegation of health and safety duties. If and when field operations are Level D it will not be necessary for the HSO to be present on-site at all times. When the HSO is not present on-site, the HSO will direct the health and safety effort through a health and safety designee. The designee will be responsible for implementation of the HASP.

The HSO has stop work authorization which the HSO will execute upon the HSO's determination of an eminent safety hazard, emergency situation or other potentially dangerous situations (e.g. weather conditions), where this action is appropriate. Authorization to proceed with the work will be issued by the HSO.

7.3 SITE LOCATION AND HISTORY

7.3.1. LOCATION

The Glaro Inc. facility is located adjacent to and east of Old Willets Path in Hauppauge, Long Island. The actual street address is 735 Old Willets Path. Commercial establishments abut the facility to the west and east, and the Long Island Expressway to the south.

7.3.2 HISTORY

The Glaro Inc. facility has been in business at this location since 1966 when it was constructed. Metal processing and finishing are currently done at the facility. In 1981 The Suffolk County Department of Health Services sampled on-site leaching basins and detected " excessively high levels" of tetrachloroethylene, 1,1,1, trichloroethane and 1,1,2 tetrachloroethene. Additional sampling was performed and eventually in 1985 monitoring wells were installed on site. The results of the investigations indicated the presence of chlorinated hydrocarbons and intermediate or breakdown products of chlorinated hydrocarbons.

To address the potential source areas of chlorinated VOCs present in the dry wells and monitoring wells and unsaturated soil as determined by preliminary investigation Glaro Inc. has decided to perform a soil-gas survey and additional monitoring well installation to define the impacted area on the subject property.

7.4 WASTE DESCRIPTION/ CHARACTERIZATION

The types of wastes that may be encountered during the sub- surface investigations as part of the remedial investigation are soil and groundwater containing perchloroethylene, trichloroethane, 1.1,1-trichloroethane, 1,1- dichloroethane, 1, 1-dichloroethene, cis and trans 1, 2- dichloroethylene and methylene chloride. The following table lists their characteristics and potential hazard.

TABLE 1

WASTE	CHARACTERISTICS	POTENTIAL HAZARD
perchloroethylene	non-flammable,volatile, heavier than water	carcinogen,toxic
trichloroethylene	non-flammable, non-corrosive, volatile	narcotic, carcinogen, toxic
cis and trans 1,2-dichloroethylene	flammable, volatile	narcotic, toxic irritant
1,1,1-trichloroethane	non-flammable volatile	narcotic, toxic
methylene chloride	non-flammable, volatile	carcinogen,toxic
1,1- dichloroethene	non-flammable,volatile	carcinogen,toxic narcotic

Material safety data sheets for the above compounds are attached under Appendix A of this HASP.

7.5 HAZARD ASSESSMENT

7.5.1 GENERAL

The hazard assessment associated with work and investigations to be conducted at and in the area of the facility are discussed in sections 5.2 to 5.5. Specific protective equipment for each level and job function is outlined in Section 8.0 Air monitoring to be conducted during the work to determine the degree of respiratory protection required is discussed in Section 5.6.

7.5.2 SOIL GAS SURVEY PROGRAM

The soil gas survey investigation presents little to no physical contact with soils or soil gas potentially containing chlorinated VOCs. Level D* should provide adequate protection as discussed below. The only part of this investigation which could result in contact with minimal quantities of soils would be cleaning/decontamination of the drilling equipment. During this procedure, disposable PVC or vinyl gloves will be worn to minimize dermal contact of soils.

7.5.3 SUBSURFACE INVESTIGATIONS DURING REMEDIAL INVESTIGATION

The potential hazard to personnel during subsurface investigation work of the remedial investigation will be inhalation and dermal contact with soil and/or groundwater potentially containing chlorinated VOCs during soil borings, soil and hydro punch sampling and installation of monitoring wells. Level D protection (no respirator) should provide adequate protection against dermal contact. It may be necessary to upgrade to Level C protection (half-mask or full face air purifying respirator) in the event organic vapors are detected above the action level discussed in Section 5.6. During well development and groundwater sampling Level D* protection should provide adequate protection against dermal contact.

7.5.4 MONITORING WELL SURVEY

The potential hazard to surveying personnel while locating the wells and recording their elevations is minimal. Level D* should provide adequate protection. Since the surveyors will come into contact with the well curb box and cap, protection from dermal contact by using disposable vinyl or PVC gloves will be required. A new pair of disposable gloves will be worn to access each separate well.

7.5.5 AIR MONITORING DURING SUBSURFACE WORK

During performance of subsurface work on-site, the ambient air in the breathing zone of the immediate work area (s) will be monitored with a photoionization detection meter (total volatile compound - Microtip or HNu meter) prior to the start of work and continuously thereafter as conditions warrant. If a concentration of 10 ppm of total volatile compounds is detected on the instrument work will cease immediately, and the workers shall leave the area immediately. The level of protection will be upgraded to Level C to include:
half face air purifying respirator for 10-15 ppm and full face air purifying respirator for greater than 15 ppm to less than 50 ppm, prior to continuing work. If a concentration of 50 ppm and greater and less than 100 ppm is detected on the instrument, the level of protection will be upgraded to Level B to include self-contained breathing apparatus prior to continuing work. If a concentration of 100 ppm or greater is

detected on the instrument, work will cease immediately and the situation evaluated prior to recommencement of work.

7.6 TRAINING

Site specific training of workers and personnel will be conducted and provided by the HSO prior to any on-site activity. The training will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include area and facility layout, hazards, emergency services at the facility, and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time.

Workers and personnel conducting and/or supervising the soil gas survey, soil borings/monitoring well installations, soil and groundwater sampling, and well survey will have attended and successfully completed a 40 hour Health and Safety Training Course of Hazardous Waste Operations, and taken part in an employer medical surveillance program in accordance with OSHA 1910.120 requirements. Specifically, that the workers have had a medical physical within one (1) year prior to the date the work begins and that they are physically able to wear a respirator.

The site manager shall have completed an 8 hour Supervisor Hazardous Waste Health and Safety Course.

Documentation of training and medical surveillance will be submitted to the HSO prior to the start of any on-site work. A copy of the training certificates shall be inserted into the map pocket in Appendix.

7.7 SITE ACCESS

Restricted access to the work area is not anticipated to be necessary during the soil gas survey investigations. During subsurface remedial investigations an Exclusion Zone (contaminated area where subsurface work is to be conducted) Contamination Reduction Zone (decontamination area), and Support Zone (clean area, everywhere else) will be utilized as necessary.

The exclusion, contamination reduction, and support zone during subsurface work have been identified and designated as follows:

Exclusion Zone - The location of the exclusion zone will be determined in the field prior to the start of work and will vary depending on the area (s) the work is being conducted. The exclusion zones will be delineated with stakes and red colored flagging or equal method. Only authorized persons with proper training and protective gear will be allowed to enter the exclusion zone.

Contamination Reduction Zone - 15'+x10'+ area, marked off with stakes and blue and white colored flagging or equal method. The location will be determined in the field prior to the start of work and will vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and equipment will take place. It will be located upwind of the Exclusion Zone.

Support Zone - Area outside of contamination reduction zone and not including the exclusion zone.

7.8 PERSONAL PROTECTION

7.8.1 LEVEL OF PROTECTION

Based on evaluation of the potential hazards, the level of protection to be worn by soil gas survey personnel, geotechnical personnel, sampling personnel, surveyors, etc. that will be performing work during the remedial investigation is defined below and will be controlled by the HSO.

WORK TASK	LEVEL OF PROTECTION
Soil Gas Survey	
Perform soil gas survey	Level D

REMEDIAL INVESTIGATION

Test Pit excavations	Level D
Soil borings/monitoring well installations and well development;	
- upgradient	other
- downgradient	Level D
Excavation of Dry Well(s) and removal of contaminated soil to dumpsters or drums	Level C or B (depending on air monitoring results)
Hydro punch and soil sampling -upgradient	other
-downgradient	Level D
survey well locations and elevations	Level D*
Groundwater sampling: -upgradient	other
-downgradient	Level D*
Aquifer testing (if performed) -pump test, conductivity,slug test	Level D*
Water level measurements	Level D*

Note: The levels of protection will be upgraded and downgraded as appropriate based on the air monitoring results (Section 5.6 installation methods used, and other conditions that may arise.

"Other" level of protection will consist of standard OSHA requirements for personal safety. i.e. - work gloves, hard hat, safety shoes and glasses.

Level D* protective equipment will consist of disposable vinyl or PVC gloves, and safety glasses as appropriate (i.e., during surface water and groundwater sampling.)

Level D protective equipment will consist of field clothes, disposable inner vinyl or PVC gloves and chemically resistant outer gloves (i.e. solvent resistant nitrile, PVC/nitrile) as appropriate , polylaminated tyvek suits as appropriate, resistant outer boots (i.e.rubber, etc.) as appropriate, hard hat, safety glasses, and full-face and half -mask air purifying respirators readily available. The appropriate respirator cartridges that will be available at the site, to use if necessary with the air purifying respirators are organic vapor cartridges.

Level C protective equipment will consist of the items listed for Level D protection except a half-face or full- face air purifying respirator will be worn as determined by the air monitoring results (see Section 5.6) Level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus will be worn as determined by the air monitoring results. (See Section 5.6)

7.8.2 SAFETY EQUIPMENT

Basic emergency and first aid equipment will be available at the Support Zone during subsurface work, as appropriate. This shall include a first aid kit, fire extinguisher, supply of portable water, soap, and towels and first aid handbook.

7.9 COMMUNICATIONS

The facility is a commercial establishment and telephones are readily accessible. The nearest telephones are located in the office area of the building on the Glaro ;Inc. property. Hand signals will be employed as necessary and the buddy system will always be employed.

7.10 DECONTAMINATION PROCEDURES

7.10.1 PERSONNEL DECONTAMINATION PROCEDURES

Decontamination procedures will be carried out by all personnel leaving the Exclusion Zone (except under emergency evacuation).

A. Soil Gas Survey

1. Disposable vinyl or PVC gloves will be removed upon completion of the survey and disposed of as solid waste in the dumpster on-site.

B. Subsurface Work, Subsurface Drilling and Monitoring Well Installations, Soil Sampling.

1. Clean outer protective gloves and outer boots if worn with water (pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.

2. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers.

3. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn, and gloves and deposit in designated area to be determined in the field for use the next day or when necessary.

4. Remove hard hat and safety glasses, rinse with clean water as necessary and deposit in designated area for use the next day or when necessary.

5. Remove tyvek suit if worn and discard in designated container. Remove respirator at this time, if used, wash and rinse with clean water. Organic vapor cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container and

disposed of as outlined in Section 10.3. Remove inner gloves and discard in designated container.

C. GROUNDWATER SAMPLING, AND SURVEYING OF MONITORING WELLS.

1. Disposable vinyl or PVC gloves will be removed and disposed of as solid waste in the dumpster on-site.

7.10.2 EQUIPMENT AND SAMPLE CONTAINERS DECONTAMINATION

All decontamination will be done by personnel in protective gear appropriate for the level of protection determined by the site HSO.

Drilling equipment will be steam cleaned within the exclusion zone prior to the start of drilling, soil boring and monitoring well installation (as applicable) and at completion of drilling.

Exterior surfaces of sample containers will be wiped clean with disposable wipes in the decontamination zone and transferred to a clean cooler for transportation to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable wipes will be placed in the designated disposal container.

7.10.3 DISPOSAL OF DECONTAMINATION WASTES

During installation of the vapor extraction system and during subsurface investigations, protective clothing will be disposed of as a solid waste.

Any hazardous waste will be manifested as a Hazardous Waste Solid, n.o.s., ORM-E,UN 9189,F 002; and transported by a 6NYCRR Part 364 waste transporter permitted to transport this type of waste; and disposed of at a treatment storage disposal facility (TSDF) permitted to accept the type of waste being delivered.

Rinse water collected during decontamination will be disposed of on-site in an area of documented contamination and allowed to infiltrate the soil, unless directed otherwise by NYSDEC.

7.11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATOR IS: MICHAEL B. GLASS

SITE HEALTH AND SAFETY OFFICER: DARREL J. KOST P.E

The following standard emergency procedure will be used by on site personnel: The Project Manager and HSO shall be notified of any on-site emergencies and be responsible for assuring that the appropriate procedures are followed.

7.11.1 PERSONAL INJURY

Emergency first aid shall be administered on site as deemed necessary and only by a trained individual, if available at the site. If necessary, decontaminate and transport individual to nearest medical facility. The HSO will supply medical data sheets to appropriate medical personnel and be responsible for completing the incident report.

7.11.2 PERSONAL EXPOSURE

The typical response to personnel exposure includes the following:

SKIN CONTACT; Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eyewash and potable water supply will be provided on site. Eyes should be rinsed 15 minutes subsequent to chemical contamination

INHALATION; Move to fresh air and/or, if necessary decontaminate and transport to hospital (emergency medical facility.)

INGESTION; Decontaminate and transport to hospital (emergency medical facility.) If possible and if the individual is conscious, give large quantities of salt water and induce vomiting.

PUNCTURE WOUND OR LACERATION; Decontaminate and transport to hospital.

7.11.3 POTENTIAL OR ACTUAL FIRE OR EXPLOSION

Immediately evacuate area in the event of potential or actual fire or explosion. Notify the fire and police department, and other appropriate emergency response groups. Perform off-site decontamination and contain wastes for proper disposal.

7.11.4 EQUIPMENT FAILURE

Should there be any equipment failure, breakdown, etc. the Project Manager and HSO shall be contacted immediately.

7.12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system. Establish and maintain communications
- Minimize contact with potentially contaminated soil and/or groundwater.
- Employ disposable items when possible to minimize risks during

decontamination and if possible cross-contamination during sampling-handling.

- Smoking, eating,or drinking after entering the work zone and before decontamination will not be allowed (to prevent oral ingestion of potential contaminants present.)
- Avoid heat and other work stresses related to wearing the protective gear.
- Withdrawal from a hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair (except moustaches) prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The Project Manager, the HSO, and sampling personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will remain at the project site during the full duration of the project so that replacement personnel may add information maintaining continuity. These daily records will become part of the permanent file.

7.13 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone on-site while operations are being conducted must be certified by the HSO. Authorization will involve completion of appropriate training courses and review and sign off of this HASP.

Personnel authorized to perform work on-site are as follows:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

7.14.0 MEDICAL DATA SHEET

This medical data sheet will be completed by all on=site personnel and will be kept on-site during the duration of the project. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

PROJECT: Glaro Inc. Hauppauge, New York

Name_____ Home Telephone_____

Address_____

Age_____ Height_____ Weight_____

Name of Next of Kin_____

Drug or Other Allergies_____

Particular Sensitivities_____

Do You Wear Contact Lenses_____

Provide a Checklist of Previous Illness or Exposure to Hazardous Chemicals_____

What Medications are you Presently Using_____

_____

Do You Have Any Medical Restrictions_____

_____

Name, Address, and Telephone Number of Personal Physician:

7.15.0 FIELD TEAM REVIEW

Each field team member shall sign this section after site specific training is completed and before being permitted to work on-site.

I have read and understood this Health and Safety Plan, and I will comply with the provisions contained therein.

PROJECT: Glaro Inc. Hauppauge, New York

Name: Printed	Signature	Date

APPENDIX

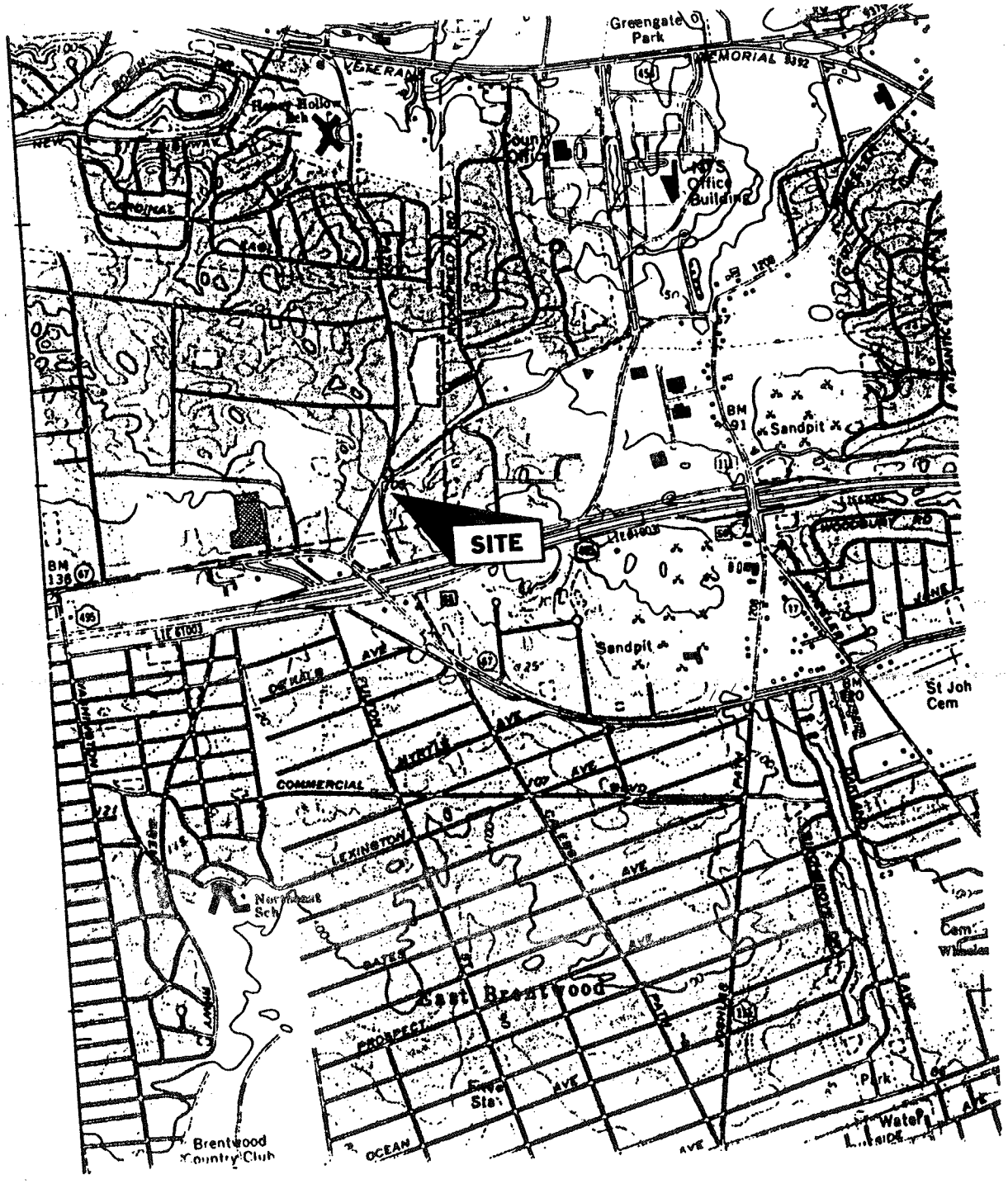
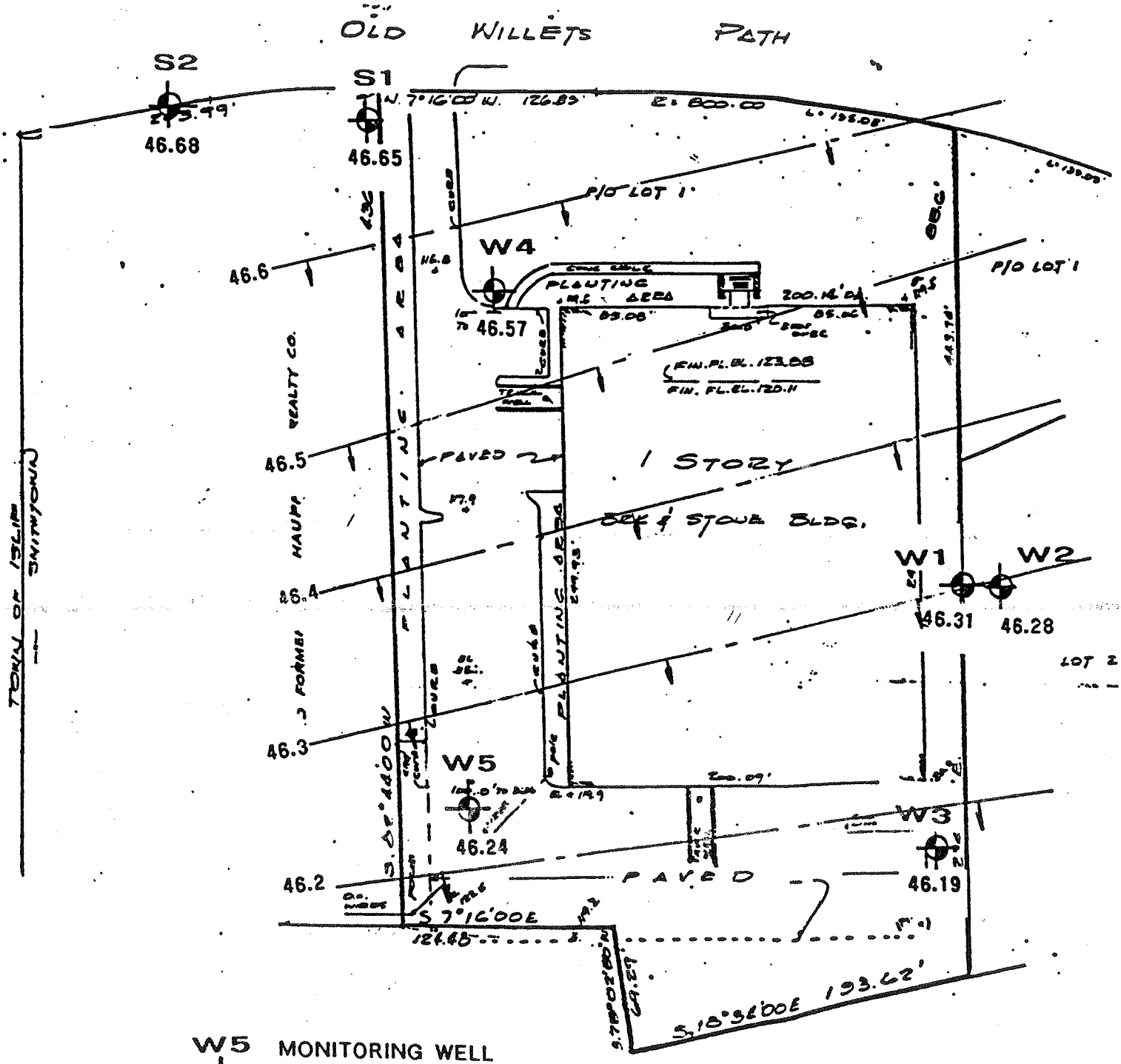


FIGURE 1

LOCATION MAP



W5 MONITORING WELL

46.24 GW ELEV.

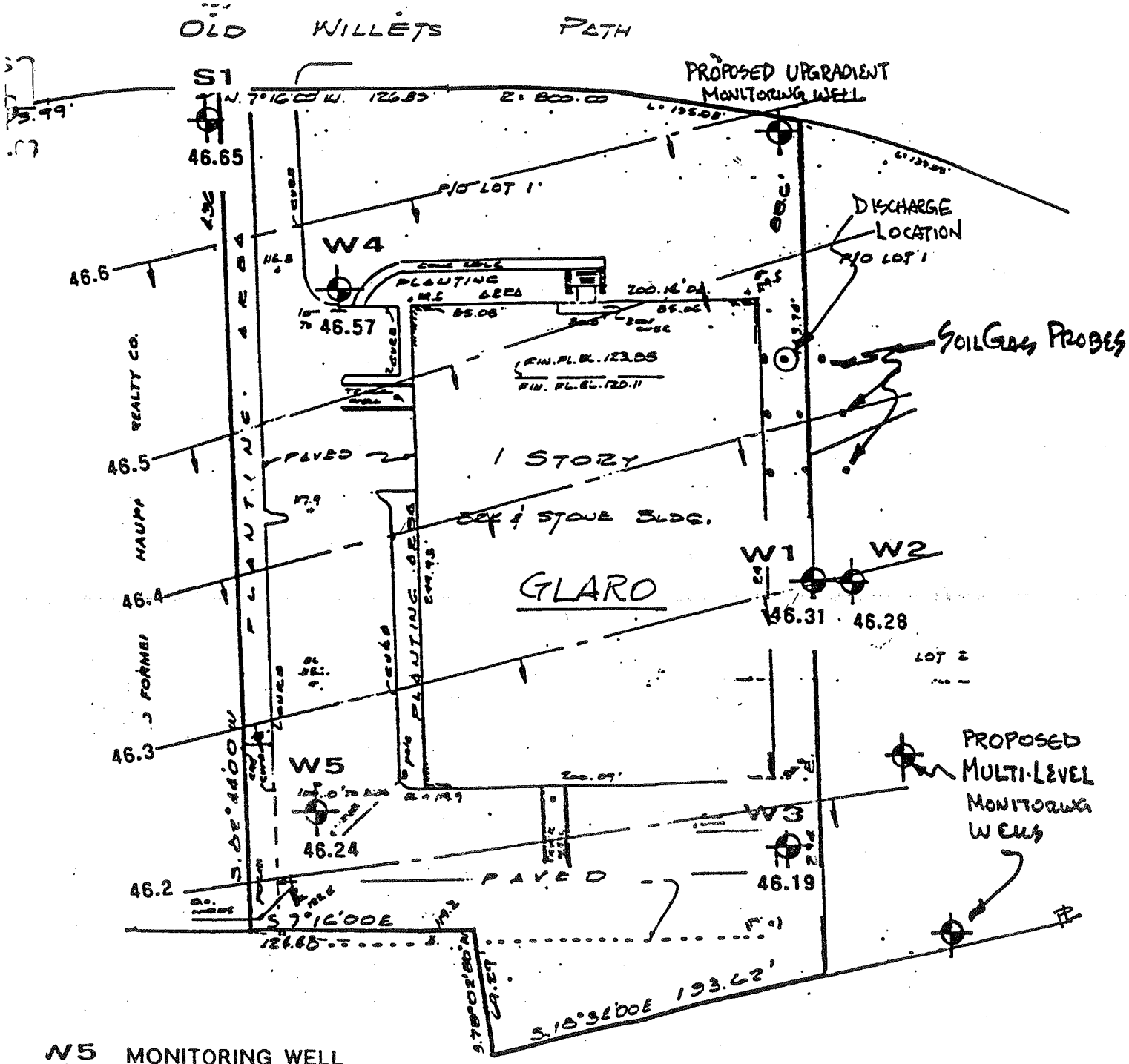
GW CONTOUR

FIGURE 2

GW FLOW

Kost Environmental Services, Inc.
Lindenhurst, New York 11757

Glaro, Inc.
RI/FS Work Plan



W5 MONITORING WELL

46.24 GW ELEV.

GW CONTOUR

77

FIGURE 3

EXISTING/PROPOSED CONDITIONS

Figure 4

Schedule for RI/FS

Task	Date
Soil Vapor Analysis	June 3, 1996
Data Interpretation	June 10, 1996
Monitoring Well Drilling	June 17, 1996
Soil Sample Collection	June 17, 1996
Water Sample Collection	June 24, 1996
Sample Turnaround	July 22, 1996
Data Interpretation	August 1, 1996
Feasibility Study or IRM Proposals	September 1, 1996
Final RI/FS Report or IRM Workplan	October 1, 1996

Field Screening Procedures with PID

The soil samples from the soil borings will be field screened with a PID to evaluate the presence of VOCs. A small aliquot of sample will be placed in a clean jar, a piece of aluminum foil placed over the jar opening, and the lid sealed. After an approximately 15 minute equilibration period, the lid will be removed and the PID probe inserted through the aluminum foil septum. The PID readings will be recorded.

Prior to any sampling events, the PID (microtip) will be calibrated in order to display concentration units equivalent to ppm. A supply of Zero Gas (outside air) is used to set the PIDs Zero point. Then, Span Gas (isobutylene at 100 ppm) is used to set the response factor.

Soil Gas Sampling Method and Procedures

1. Driven Probe Installation

Utilizing an Earthprobe direct-push device, a retractable point is driven into the ground until the desired sampling depth is achieved. The probe roads are withdrawn slightly to expose the retractable point and allow soil gas to reach the hollow core of the probe rods. Teflon-lined tubing is then inserted into the probe rod and attached to the down hole retractable point holder.

2. Sample Collection and Handling

Soil gas samples are collected using a portable vacuum/volume system. This system provides the following functions:

Measurement of the volume of gas extracted at a sample point.

Measurement of the initial vacuum applied at the sample point.

Measurement of the time for a sampling point to return to atmospheric pressure after a vacuum has been applied.

A 3-Point Initial Calibration

Quality Control (QC) criteria: correlation co-efficient ≥ 0.95

A mid-point calibration every 10 samples or daily, whichever is more frequent.

QC criteria: Relative Percent Difference (RPD) $\leq$ 30 Percent

A blank run after calibration standards.

QC Criteria: Peak area for target compounds less than half the area of the reported detection limit

Duplicate analysis on 10 percent of the samples.

Laboratory confirmation on 10 percent of the samples.

3. Vacuum/Volume System Operation

Silicone tubing is connected from the vapor point tubing to the vacuum/volume system. Included in this portion of the sample train will be an in line soil gas sample bottle with septum and a "T" fitting. The bottle will be utilized to obtain and capture the soil gas sample. The "T" fitting will be connected to a photoionization device to allow monitoring of organic vapors.

1. Turn the vacuum pump on and allow vacuum to build in the vacuum tank. Pump the tank down to the desired vacuum (volume) and turn switch off.

2. Attach sample train to vacuum/volume system.

3. Open line control valve and evacuate (purge) teflon tubing.

4. After purge volume is achieved close the line valve and allow sample line pressure to return to zero. This returns the

sampling train to atmospheric pressure.

5. Secure sample by closing each end of sample bottle. The sample is now available for analysis by the on-site portable gas chromatograph.

RESUMES

John F. Hofmann

30 Pinewood Drive

Shirley, NY 11967

Environmental Manager: As manager, Mr.Hofmann is responsible for the oversight of day-to-day activities for E.A.R., including project coordination with clients, staff and regulatory personnel. Mr. Hofmann has gained valuable experience in government service; managing major petroleum related programs in areas of federal, state and local UST regulations. With twenty-five years of experience in the environmental arena, Mr. Hofmann brings his extensive regulatory experience and insider perspective to all of E.A. R.'s projects.

Mr. Hofmann is a member of the National Groundwater Association.

Education and Training

Graduated William Floyd High School - 1967

Received A.A.S. Degree in Marine Technology from Suffolk County Community College - 1969.

F.D.A., U.S. Public Health Service, Shellfish Growing Area Surveys and Sanitation Workshop

National Marine Fisheries Training Program on Enteric Virus Extraction and Assay Procedures for Clams, Oysters and Marine Waters

Basic S.C.U.B.A. Certification course (NASDS)

Aquatic Safety and Survival Workshop, American Fisheries Society, Cornell University, June 23-25, 1986.

Health and Safety Operations at Hazardous Materials Sites, 29 CFR 1910.120(E) (2), 40 Hours. County of Westchester Fire Training Center 1987.

Annual eight-hour Hazardous Materials refresher course, 1988, 89, 90, & 91. Hunter College.

Emergency Control of Hazardous Materials Incidents I & II. New York State Office of Fire Prevention and Control, September and October 1988.

Hazardous Materials Leak, Spill and Fire Control Seminal/Workshop. Sponsored by Marine Pollution Control and Northville Industries.

Emergency Vehicles Operators Course, 4 days, Suffolk County Police Department Academy.

Petroleum Bulk Storage/Major Oil Storage Facility Workshop, by NSDEC, May 7-9, 1990.

Environmental Pollution Prevention and Response Training Seminar, by U. S. Coast Guard, New Haven, September 12-13, 1990.

Protecting Coastal Water from Oil Spills Seminar sponsored by the American Chemical Society, March 1991.

Participant in the Multi-Agency Local Response Team Meeting at U.S. Coast Guard, New Haven, 1991.

Annual Respirator fit testing by S.T.A.T., Inc. 1990 and 1991.

Experience

October 1992 - Present, Environmental manager for Environmental Assessment & Remediations. Prepare and review remediation plans, environmental site assessments, monitoring programs, underground storage tank investigations and plans for subsurface contamination projects. Provide regulatory experience to clients and staff. Involved in all aspects of daily environmental consulting business.

1990 - October 1992, Environmental Engineering Technician III, Division of Construction Management, Bureau of Spill Prevention and

Response. Manage regional Major Oil storage Facility License Program. Perform necessary inspections of the four dozen Major Facilities to determine compliance with current Federal, State and Local regulations. Review facility plans including SPC plans and engineering plans for upgrading of facility changes or rehabilitations. Approve cleanup procedures at major oil Storage Facilities and ensure compliance with applicable regulations.

1987-1990, Environmental Engineering Technician III, Division of Water, Bureau of Spill Prevention and Response. Provided emergency response to oil and hazardous material incidents and monitor cleanups. Review and plan subsurface contamination investigations and remediations for state funded and responsible party projects. Perform field investigations to gather information regarding spill causes and sources. Prepare documentation and reports related to spill incidents.

1986-1987, Principal Engineering Technician, NYSDEC, Division of Hazardous Waste. Conducted R.C.R.A. compliance inspections of industrial sites. Provided weekly updates of waste industrial sites. Provided weekly updates of waste regulations. Responded to complaints and inquiries from the public regarding hazardous waste sites. Reviewed Phase I & II investigation reports for Superfund sites. Developed and implemented a program to dispose of abandoned waste drums.

1971 - 1986. Senior Laboratory Technician, NYSDEC, Division of Marine Resources. Performed sanitary examinations of shellfish growing areas. Operated marine vessels up to 36' LOA, throughout the NYS Marine District. Performed bacteriological examination of water and shell fish samples utilizing an on site mobil laboratory.

1970-1971, Laboratory Technician, NYSDEC, Division of Marine Resources. Collected water samples from shell fish growing areas, performed microbiological evaluations of water and shellfish samples.

1969-1970, Hydrologist Field Assistant. U.S. Geological Survey. Collected water level measurements from observation wells and assisted Hydrologists on various groundwater projects.

Darrel J. Kost, P.E.

Civil Engineer II

President

Environmental Engineering

EXPERIENCE; NEW YORK STATE DEPARTMENT OF TRANSPORTATION

(1966 - PRESENT)

KOST ENVIRONMENTAL SERVICES INC.

(1992 - PRESENT)

Mr. Kost has over 18 years ofexperience in the field of environmental engineering covering a broad range of projects including hazardous waste management, water and wastewater treatment, air pollution control, hazardousmaterial storage, groundwater investigations and site remediation.

Mr. Kost's experience includes all aspects of project engineering and management including engineering studies, econmonic analyses, treatability studies, design, construction and startup. He has been responsible for projects including methane venting systems, groundwater investigations, groundwater recovery systems, air pollution control, and hazardous waste management for municipal and private clients. He also has extensive experience inspecting and auditing industry for environmental compliance. He has also worked closely with industries including primarily petrochemical, dry-cleaning, metal finishing and plating.

Mr. Kost has directed numerous site investigations utilizing a variety of techniques including soil gas surveys, geophysical surveys, soil boring, monitoring wells and groundwater analyses to assess environmental impacts and implement effective remediation programs. Site investigation projects have ranged from Phsase I and II environmental assessments as part of property transactions to remedial investigations/feasibility studies at state inactive hazardous waste sites.

Selected experience as a project manager includes:

*Project manager for remediation of a NYSDEC inactive hazardous waste site involving a discharge of chlorinated solvents to the groundwater

*Project manager for numerous large scale petroleum recovery operations located throughout Long Island.

*Preparation and design plans and specificatioons for numerous Major Oil Storage Facilities (greater than 400,000 gal in capacity) including aboveground storage tanks, underground storage tanks SPCC plans, etc.

*Project manager for dry-cleaning remediation projects involving soil and groundwater contamination.

*Project manager for approximately 500 site assessments

involving chemical facilities, gasoline stations, dry cleaning sites, etc.

*Phase II site investigation at a construction and demolition facility. Conducted under an order-on-consent, the investigation included an evaluation of suspected source areas, a soil monitoring program and sampling and analysis program.

EDUCATION: M.S. Environmeental Engineering
S.U.N.Y. at Stony Brook
B.S. Civil Engineering
Worcester Polytechnic Institute

REGISTRATIONS; Licensed Professional Engineer, New York

CERTIFICATIONS; Certified USEPA Asbestos Abatement Project Designer

Certified USEPA Asbestos Abatement Supervisor

MEMBERSHIPS; Water Pollution Control Federation
National Groundwater Association
American Society of Civil Engineers

PROFESSIONAL PAPERS;

Contamination of Groundwater by Petroleum Products

National Conference on Environmental Engineering, Atlanta, Ga. 1981

Petroleum Recovery Operations in an Urban Area.

American Society of Civil Engineers Urban Water Conference, May 1984 (co-author)

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 16896 Page: 1

Product Name: CHLOROTHENE (R) SM SOLVENT

Effective Date: 07/18/90 Date Printed: 07/19/90 MSDS:001111

1. INGREDIENTS: (% w/w, unless otherwise noted)

1,1,1-Trichloroethane	CAS# 000071-55-6	96.5% (wt.)
Diethylene Ether (1,4-Dioxane	CAS# 000123-91-1	2.5
1,2-Butylene oxide	CAS# 000106-88-7	0.47
Nitromethane	CAS# 000075-52-5	0.34

The hazard information presented is based on tests conducted on this or similiar mixtures. Therefore, pursuant to the OSHA Hazard Communication Standard (see 29 CFR Part 1910.1200 (g) (2) (b)), the information is based on the tested mixture and not individual ingredients.

2. PHYSICAL DATA:

BOILING POINT: 165F (74C)
VAP PRESS: 100 mmHg @ 20C
VAP DENSITY: 4.55
SOL. IN WATER: 0.07 g/100g @ 25C
SP. GRAVITY: 1.321 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Irritating odor at high concentrations.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None

METHOD USED: TOC, TCC, COC

FLAMMABLE LIMITS
LFL: 7.5% @ 25C
UFL: 12.5% @ 25C

EXTINGUISHING MEDIA: Water fog.

FIRE & EXPLOSION HAZARDS: Vapors of this solvent may develop a flammable atmosphere in confined or poorly-ventilated areas.

(Continued on Page 2)

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear positive pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid open flames, welding arcs or other high temperature sources which induce thermal decomposition.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Prolonged contact with free water may result in corrosion and diminished stabilizer levels.. Prolonged contact with, or storage in aluminum, its alloys, and particularly metallic aluminum and zinc powders should be avoided. These reactive metals can cause hydrochloric acid gas to form and, if confined as in an aerosol can or pump, the gas pressure may rupture the container.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and very small amounts of phosgene and chlorine.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small leaks: Mop up, wipe up, or soak up immediately. Remove to out-of-doors.
Large spills: Evacuate area. Contain liquid; transfer to closed metal containers. Keep out of water supplies.

DISPOSAL METHOD: When disposing of the unused contents, the preferred options are to send to licensed reclaimer, or to

permitted incinerators. Any disposal practice must be in compliance with federal, state, and local laws and regulations. Do not dump into sewers, on the ground, or into any body of water.

(Continued on Page 3)
(R) Indicates a Trademark of The Dow Chemical Company

* An Operating Unit of The Dow Chemical Company

5. ENVIRONMENTAL AND DISPOSAL INFORMATION: (CONTINUED)

Empty containers must be disposed of in accordance with all applicable federal, state and local regulations. DO NOT CUT OR WELD CONTAINER due to explosion hazard.

6. HEALTH HAZARD DATA:

EYE: May cause pain. May cause slight transient (temporary) irritation with slight transient corneal injury. Vapors may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation. Repeated contact may cause drying or flaking of skin.

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The LD50 for rabbits is about 15,000 mg/kg.

INGESTION: Single dose oral toxicity is low. The LD50 for for rats is >10,000 mg/kg. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm trichloroethane. Progressively higher levels over 1000 ppm may cause dizziness, drunkenness; concentrations as low as 10,000 ppm can cause unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats). In confined or poorly ventilated areas, vapors which readily accumulate can cause unconsciousness and death.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any significant adverse effects. The formulation containing 1,1,1-trichloroethane, 1,4-dioxane, 1,2-butylene oxide, and nitromethane was tested in

(Continued on Page 4)

6. HEALTH HAZARD DATA: (CONTINUED)

long-term animal studies and did not cause cancer. Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus. In animal studies, has been shown not to interfere with reproduction. Results of in vitro (test tube) mutagenicity tests have been negative. Results of mutagenicity tests in animals have been negative.

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs unless absolutely necessary. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

(Continued on Page 5)

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): 1,1,1-Trichloroethane (methyl chloroform): OSHA PEL and ACGIH TLV are 350 ppm TWA, 450 ppm STEL. 1,4-Dioxane (diethylene ether): OSHA PEL and ACGIH ATLV are 25 ppm, Skin.

ACGIH TLV is 25 ppm (skin) for diethylene ether. OSHA PEL is 100 ppm (skin) for diethylene ether. Dow Industrial Hygiene Guide for 1,2-butylene oxide is 40 ppm (excursion 100 ppm). ACGIH TLV and OSHA PEL for nitromethane is 100 ppm.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Lethal concentrations may exist in areas with poor ventilation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved positive-pressure self contained breathing apparatus.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full body suit will depend on operation.

EYE PROTECTION: Use safety glasses. Where contact with liquid is likely, chemical goggles are recommended because eye contact with this material may cause discomfort, even though it is unlikely to cause injury.

9. ADDITIONAL INFORMATION:

(Continued on Page 6)

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Handle with reasonable care. Avoid breathing vapors. Store in a cool dry place. Concentrated vapors of this product are heavier tha air and will collect in low areas such as pits, degreasers, storage tanks, and other confined areas. Do not enter areas where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance.

1,1,1-Trichloroethane products should not be packaged in aluminum aerosol cans or with finely divided aluminum or its alloys in an aerosol can.

Aluminum is not an acceptable material of construction for pumps, mixers, fittings, storage tanks for 1,1,1-trichloroethan products or formulations. Metallic aluminum and zinc powders should be avoided.

The following uses are not approved by Dow: Fire ant insecticide, direct food applications, fire extinguisher fluid, use in welding areas, septic tank or sink drain cleaner, presurgical cleanup or adhesive tape removal from skin in hospitals, anesthetic agent, wig cleaning, etc. Absence from this list does not imply approval because the list cannot be all-inclusive. These uses and other uses not listed above may be inappropriate due to the likelihood of potential health or environmental hazards. In general, this solvent should not be used where it may become a groundwater contaminant, where inade quate ventilation is likely (see Section 8), or where vapor concentrations may become flammable (7.5-12.5 percent volume in air). Mixtures of potentially reactive chemicals with 1,1,1-trichloroethane should not be made without thorough testing; examples of reactive materials are: amines, highly-reactive metals (sodium, lithium, beryllium, etc.), reactive metal powders (aluminum, zinc, brass, etc.), organometallic compounds, and metal hydrides. Users are urged to contact the Dow product steward in cases of doubt by calling 1-800-258-CHEM

(Continued on Page 7)

9. ADDITIONAL INFORMATION: (CONTINUED)

MSDS STATUS: Revised section 9 and regsheet.

(Continued on Page 8)

REGULATION INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no

warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION	
1,1,1-TRICHLOROETHANE (METHYL CHLOROFORM	000071-55-6	96.5	%
1,4-DIOXANE	000123-91-1	2.5	%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

CANADA REGULATIONS

(Continued on Page 9)

The Workplace Hazardous Materials Information System (W.H.M.I.S.) Classification for this product is:

D1B
D2B

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

1,1,1-Trichloroethane/Class 6.1/UN2831/III

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

PRODUCT NAME: PERCHLOROE..... DJ1

Effective Date: 02/14/90 Date Printed: 02/22/90 MSDS:000475

1. INGREDIENTS: (% w/w, unless otherwise noted)

Tetrachloroethylene	CAS# 000127-18-4	99.5%
tert-Butyl Glycidyl Ether	CAS# 007665-72-7	

This document is prepared pursuant to the OSHA Hazard

Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 250F (121C)
VAP PRESS: 13 mmHg @ 20C
VAP DENSITY: 5.76
SOL. IN WATER: 0.015g/100g 25C
SP. GRAVITY: 1.612-1.619 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Ether-like odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: TCC, TOC, COC

FLAMMABLE LIMITS
LFL: None
UFL: None

EXTINGUISHING MEDIA: Non-flammable material.

FIRE & EXPLOSION HAZARDS: No autoignition temperature.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained respiratory equipment.

(Continued on Page 2)

* An Operating Unit of The Dow Chemical Company

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Strong acids and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Involvement in fire forms hydrogen chloride and small amounts of phosgene and chlorine.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small leaks - mop up, wipe up, or soak up immediately. Remove to out of doors Large spills - evacuate area. Contain liquid; transfer to closed metal containers. Keep out of water supply.

DISPOSAL METHOD: When disposing of unused contents, the preferred options are to send to licensed reclaimers or to permitted incinerators. Any disposal practice must be in compliance with federal, state, and local laws and regulations. Do not dump into sewers, on the ground, or into any body of water.

6. HEALTH HAZARD DATA:

EYE: May cause pain, and slight transient (temporary) irritation. Vapors may irritate the eyes at about 100 ppm.

SKIN CONTACT: Short single exposure not likely to cause significant skin irritation. Prolonged or repeated exposure may cause some skin irritation, even a burn. Repeated contact may cause drying or flaking of skin. May cause allergic skin reaction in susceptible individuals.

(Continued on Page 3)

6. HEALTH HAZARD DATA: (CONTINUED)

SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The LD50 in rabbits is >10,000 mg/kg.

INGESTION: Single dose oral toxicity is low. The LD50 for rats is >5000 mg/kg. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: In confined or poorly ventilated areas vapors can readily accumulate and can cause unconsciousness and death. Dizziness may occur at 200 ppm; progressively higher levels may also cause nasal irritation, nausea, incoordination, drunkenness drunkenness; and over 1000 ppm, unconsciousness and death. A single brief (minutes) inhalation exposure to levels above 6000 ppm may be immediately dangerous to life. Based on structural analogy and/or equivocal data in animals, excessive exposure may potentially increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats). Alcohol consumed before or after exposure may increase adverse effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Signs and symptoms of excessive exposure may be central nervous system effects and anesthetic or narcotic effects. Observations in animals include liver and kidney effects.

CANCER INFORMATION: For hazard communication purposes under OSHA Standard 29 CFR Part 1910.1200, perchloroethylene is listed as a potential carcinogen by IARC and NTP. Perchloroethylene has been shown to increase the rate of spontaneously occurring malignant tumors in certain laboratory rats and mice. Other long-term inhalation studies in rats failed to show a tumorigenic response. Epidemiology studies are limited and have not established an association between perchloroethylene exposure and cancer. Perchloroethylene is not believed to pose a measurable carcinogenic risk to man when handled as recommended.

(Continued on Page 4)

HEALTH HAZARD DATA: (CONTINUED)

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Results of in vitro (test tube) mutagenicity tests have been negative.

FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs unless absolutely necessary. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

(Continued on Page 5)

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Perchloroethylene: OSHA PEL is 25 ppm TWA. ACGIH TLV is 50 ppm TWA; STEL is 200 ppm.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Lethal concentrations may exist in areas with poor ventilation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved positive pressure self-contained breathing apparatus.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full body suit will depend on operation.

EYE PROTECTION: Use safety glasses. Where contact with liquid is likely, chemical goggles are recommended because eye contact with this material may cause discomfort, even though it is unlikely to cause injury.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is

(Continued on Page 6)

9. ADDITIONAL INFORMATION: (CONTINUED)

considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986 (see Section 6 above for more details): This product contains a chemical(s) known to the State of California to cause cancer.

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Handle with reasonable care and caution. Avoid breathing vapors. Vapors of this product are heavier than air and will collect in low areas such as pits, degreasers, storage tanks, and other confined areas. Do not enter these areas where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance.

May cause allergic skin reaction in susceptible individuals. Use only in non-dermal contact situations. Do not use in dry cleaning or cold cleaning.

MSDS STATUS: Revised Section 6.

SARA 313 INFORMATION:
This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
PERCHLOROETHYLENE	000127-18-4	99.5 %

(Continued on Page 7)

(R) Indicates a Trademark of The Dow Chemical Company

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

* An Operating Unit of The Dow Chemical Company

REMEDIAL INVESTIGATION/FEASIBILITY STUDY
WORK PLAN

CITIZEN PARTICIPATION PLAN

GLARO INC.
735 Old Willets Path
Hauppauge, New York 11788
Suffolk County

NYSDEC SITE #1-52-124

December, 1995
(Revised May, 1996)

Project Requested By: New York State Department of Environmental Conservation

Prepared By: KOST ENVIRONMENTAL SERVICES INC.
121 North Sixth Street
Lindenhurst, NY 11757

Phone: (516) 226-2156
Fax: (516) 957-0646

DARREL J. KOST, P.E.

8.0 CITIZEN PARTICIPATION PLAN

8.1 INTRODUCTION

The following Citizen Participation Plan (CPP), affecting the investigation and remediation of the Glaro, Inc. site, an inactive hazardous waste disposal site (NYSDEC identification number 1-52-124) has been prepared in order to provide a clear set of opportunities and procedures for citizens to receive information about and provide input to the RI/FS and activities which will take place at this site. The plan seeks to assure an open process for the interested and possibly affected public. This includes public officials at all levels, citizen interest groups, commercial interests, individuals in the area of the site and the media. These parties need to be a part of the decision-making process for this site, and to be informed about on-site activities.

The site is located in an industrial area. The plan presented here briefly describes the site history and condition as it is now known, as well as currently proposed RI/FS activities. It also identifies community officials, groups and individuals who may be affected by or have interest in these investigations, and identifies locations where these parties can obtain additional information about the remedial program for this site. Specific

opportunities for public and community input into the decision-making process are indicated. The CPP is a working document. It can be enhanced to accommodate major changes either in public opinion or in the nature and scope of technical activities at the site.

8.2 SITE BACKGROUND AND HISTORY

Site Description and Operation

The site is identified as 735 Old Willets Path, Hauppauge, New York (see Figure 1 - Location Map.) The building which is presently occupied by Glaro Inc. was constructed in 1966 and has been occupied by Glaro, Inc. since that time. Activities conducted at the Glaro site include receiving aluminum tubing and sheet metal, and some steel products. The metal is cut, bent, spun, punched, stamped, polished, degreased, and spray painted with water soluble paint, and then assembled into finished products.

The approximate 3.3 acre site is presently occupied by two industrial buildings. The Glaro Inc. facility occupies the southerly portion of the property and the Avnet facility occupies the northerly portion. The Avnet facility and associated parking area was developed in 1987 through 1992.

The property is bordered by Old Willets Path to the west, Kings Highway to the north and Power Drive to the East.

The property is situated in an industrial park locale of Hauppauge, New York. Savoy Medical Supply Co. is located directly to the south of the site, an asphalt plant to the east and numerous industrial activities to the west.

There is one (1) three thousand (3000) gallon fuel UST located on the property adjacent to the northeast sector of the structure. This UST is used for the storage of No.2 heating oil and is used for on-site heating purposes.

Prior to 1982, Glaro Inc. was discharging water contaminated with solvents into an underground dry well which is believed to be a major contributing cause to the present on-site environmental problem. Since 1983, that material has been evaporated by boiling the discharge in a specially built, licensed, on site oven. Other hazardous waste collected on-site is stored in 55 gallon drums, in a specially built, sealed, containment area until it is disposed of by firms licensed to carry and dispose of such material in accordance with all State and Federal rules and regulations.

Five storm water runoff dry wells with open grate covers, and one additional dry well with a closed cover provide drainage for the paved and roof areas of the site. Potable water is supplied to

the site by the Suffolk County Water Authority (SCWA). There are no on-site water supply wells. Sanitary wastes from both structures are discharged to on-site septic tanks and leaching pools.

8.3 PREVIOUS SITE INVESTIGATIONS AND REMEDIATIONS

Previous site investigations conducted at the facility were reviewed and a summary is presented below.

In July 1981 the Suffolk County Department of Health Services sampled an industrial leaching basin located on the north side of the Glaro building. The analysis indicated the presence of tetrachloroethylene (117,000 ppb), 1,1,1, trichloroethane (530 ppb) and 1,1,2, trichloroethylene (75 ppb).

The SCHS Requested that the discharge to this pool cease immediately and that the pool be cleaned out. This pool was receiving the condensate from a "degreasing" machine that was utilized by Glaro in its manufacturing operation. In September 1981, the leaching pool was cleaned out and the SCDHS gave permission to reuse the pool again. In October 1981, the SCDHS notified Glaro Inc. regarding the storage of drums and compliance

with Article 12 of the Suffolk County Sanitary Code. In December 1981, the SCDHS notified Glaro Inc. regarding samples taken from the industrial leaching pool and organic solvent contamination. Subsequently, a clean out of the pool occurred in February 1982 regarding the removal of liquid and some sludge. In April, 1982, Glaro Inc. informed the SCDHS that it had abandoned the use of the drainage pool. In June 1982, the SCDHS approved construction plans for interior drum storage as requested earlier by the County. The storage area was constructed and inspected in April 1983. A notice of violation was then issued in January 1985 by the SCDHS regarding the discharge of liquid from the degreasing operation onto the ground outside of the Glaro building. Sampling indicated the presence of the tetrachloroethylene. Subsequently, in February, 1985 Glaro informed the SCDHS that it was using an evaporation process and no longer discharged any liquids onto the ground. Glaro then pursued obtaining the necessary air permits for this evaporation process. Due to the numerous discharges of organic solvents without a permit, the SCCDHS scheduled a hearing in April 1985 with an Order on Consent No. 1 W 85-19 agreed to in May 1985. The o.o.c. called for the installation of groundwater monitoring wells and a monetary penalty. The three monitoring wells were installed in December 1985/January 1986. Groundwater sampling and analysis was then performed by the SCDHS in December

1986. The results indicated the present of 1,1,1, trichloroethane 1,1,2, trichloroethylene, tetrachloroethylene, and disdichloroethylene in three wells. The highest concentration of an organic compound was 11,000 ppb of 1,1,1 trichloroethylene in wells # 1 and #2.

In February 1987 the SCDHS acknowledged through internal memorandum that the groundwater tests revealed elevated concentrations and that some type of remedial treatment would be necessary. In addition, the SCDHS acknowledged that adjacent companies to the Glaro site utilized similar solvents and that an extensive ground water investigation must take place to define the extent of the plume.

In May 1987, the SCDHS submitted documentation to the NYSDEC to have the Glaro site added to the " Registry of Inactive Hazardous Waste Disposal Sites as site # 152124. In September of 1994 a groundwater investigation was undertaken by Glaro Inc. to determine groundwater flow, possible off-site sources of contamination and groundwater quality at the site. The investigation indicated that chlorinated hydrocarbon contamination still existed at the site at much lower concentration than previously observed. The investigation indicated off-site sources of contamination were impacting the Glaro site. At the present time, the primary area of concern on the site is the previously abandoned leaching basin

on the north side of the building.

8.4 REGIONAL GROUNDWATER QUALITY

The site is located in an industrialized area. Within a three quarter (3/4) mile radius west and hydraulically upgradient of the site is a NYSDEC Class 2 listed inactive hazardous waste disposal site identified as Computer Circuits. (NYSDEC Site No. 1-52-034). Groundwater beneath and downgradient of the Computer Circuits site has been documented with chlorinated VOC's, heavy metals and plating wastes.

Directly adjacent and south of the subject property there is a documented discharge of " extremely high levels" of 1,1,1 trichloroethane, 1,1, dichloroethane, 1,1,2 trichloroethylene, p-dichlorobenzene, toluene, and tetrachloroethylene to on-site sanitary septic tanks. (Suffolk County Dept. of Health Services 7/1/87). This site was identified as Savoy Medical Supply, 745 Calebs Path, Hauppauge, New York. Groundwater monitoring results obtained from a well located on the Savoy property adjacent to the Glaro property line indicated the presence of 1,1,1 trichloroethane, 1,1 dichloroethane, and 1,2 dichloroethene at concentrations of 79 ppb, 34 ppb and 5 ppb in 1990.

Subsequently, in 1994 Glaro installed monitoring wells on its property just north of the Savoy property line and detected concentrations of 1,1 dichloroethane, 1,1 dichloroethane, 1,2 dichloroethene, 1,1,1 trichloroethane, trichloroethylene, and tetrachloroethane. (See Groundwater Investigation Report, Kost Environmental Services Inc. - 1994.)

8.5 PUBLIC WATER SUPPLY

Potable water is supplied to the site by SCWA. The closest downgradient SCWA well field is located approximately 9000 feet northeast of the subject site. That well field is identified as the Wheeler Road Hauppauge well field and is located at the intersection of Veterans Highway and Wheeler Road. The well field consists of four (4) wells (515746, 519399, 523183 and 538491) respectively. These wells are connected to a granulated activated carbon (GAC) system for treatment purposes, and is used on a periodic " as needed basis." These public water suply wells are monitored on a periodic basis by the SCWA.

8.6 PROJECT DESCRIPTION

Objectives of the RI/FS

Glaro Inc. has entered into a Order on Consent with the NYSDEC in order to further characterize site conditions. KES has been retained to conduct a remedial investigation/feasibility study (RI/FS) with the following specific objectives:

1) To collect sufficient data on the site so that areas either previously identified or suspected as potential source areas of contamination are either confirmed or are determined to be below regulatory levels of concern.

2) To determine, if source areas are found to be present, the nature, type, physical extent and migratory path of contamination, in order to develop and implement appropriate remedial measures.

3) To document areas found to be free of contamination, or which have been previously remediated.

4) Present and discuss the data necessary to support the development of remedial measures.

5) Identification, screening, and development of remedial technologies and alternatives.

Description of Proposed RI/FS Activities

The RI/FS will focus on the area of the suspected source of VOC'S which is the leaching basin at the northwest sector of the site and groundwater downgradient from the leaching basin area. Soil/gas techniques will be used to field screen and identify possible areas for the collection of soil samples for analysis.

Groundwater monitoring wells will be installed to determine groundwater quality conditions. One (1) monitoring well will be installed upgradient of the suspected source area and two (2) groundwater monitoring wells will be located downgradient, of the suspected source area. All monitoring wells will be installed within the property limits of Glaro Inc. The monitoring wells will be "multi-level" and provide screened intervals to 150 feet below grade.

Groundwater samples will be collected following installation of the wells and will be analyzed for VOC's (SW 846, Method 8240).

As part of the field investigations, a health and safety program for air monitoring will be conducted to test for airborne

organic vapors. Since contamination has been detected in the soil and groundwater, the program will apply the use of a PID.

8.7 PRELIMINARY CONTACT LIST OF POTENTIALLY AFFECTED/INTERESTED PUBLIC

1) Agency Contacts

Jeffrey E. Trad. P.E. project Manager
NYSDEC 50 Wolf Road
Albany, NY 12233
518-457-1708

Joshua Epstein, Citizen Participatioon Specialist
Region 1, NYSDEC
Building 40, SUNY Campus
Stony Brook, NY 11790-2356
516- 444- 0249

Michael Kadlec, Public Health Specialist II
New York State Dept. of Health
Bureau of Environmental Exposure Investigation
2 University Place
Albany, NY 12203-3313
1-800-458-1158

Dr. Chittibabu Vasudevan
NYSDEC 50 Wolf Road
Albany, NY 12233
518-457-1708

Samara Swanston, Esq.
Division of Environmental Enforcement
200 White Plains Road
5th Floor
Tarrytown, NY 19591-5805

2) FEDERAL, STATE, COUNTY AND TOWN OFFICIALS.

Rich Lazio
126 W. Main St.
Babylon, New York 11702
516-893-9010

James J. Lack
New York State Office Building
Veterans Memorial Highway
Hauppauge, NY 11788
516-360-0490

Robert C. Wertz
50 Route 111, Suite 202
P.O.B. 668
Smithtown, NY 11787
516- 724- 2929

Donald Blydenburgh
William H. Rogers
Legislature Building
Veterans Memorial Highway
Hauppauge, NY 11788
516-853-4088

Peter McGowan
Town of Islip
Town Hall, 655 Main St.
Islip, NY 11751
516-224-5691

Patrick Vecchio
Town of Smithtown
Town Hall, 99 W.Main St.
Smithtown, NY 11787
516-224-5691

3) MEDIA

Suffolk Life Newspaper
Newsday (Government Watch")
Islip News
Islip Bulletin
Long Island Advance
Smithtown News

4) Public Interest and Community Organizations

Long Island Citizens Advisory Committee on Hazardous Waste
c/o NYSDEC

Hauppauge Industrial Assoc.
275 A Marcus Blvd.
Hauppauge, NY 11788
Att: President

Citizens for a Clean Environment
23 Deer Path Road
Central Islip, NY 11722
Att: Nancy Manfredonia

Hauppauge Civic Association
32 Apple Tree Drrive
Hauppauge, NY

Coalition for the Preservation of Long Islands Groundwater
P.O.Box 30
Northport, NY 11768
Att: Alex Ingersoll

Long Island Regional Planning Board
H.Lee Dennison Bldg.
Veterans Memorial Highway
Hauppauge, NY 11788
Att: Chairperson

Community Development
62 Eckerncamp Drive
Smithtown, ;NY 11787
Att: Olga Turner

Council on Environmental Quality
H. Lee Dennison Bldg.
12th Floor, Veterans Memorial Highway
Hauppauge, NY 11788

(5) AREA RESIDENCES/ BUSINESSES

Avnet
390 Rabro Dr.
Hauppauge, NY 11788

Occupant
15 Power Dr.
Hauppauge, NY 11788

Strada Design
#25 Power Avenue
Hauppauge, NY 11788

A.P.J. Electric
375 Rabro Dr.
Hauppauge, NY 11788

Occupant
380 Rabro Dr.
Hauppauge, NY 11788

Occupant
380 A Rabro Dr.
Hauppauge, NY 11788

R A Schneck Assoc.
360 Rabro Dr.
Hauppauge, NY 11788

Suffolk Asphalt Supply Inc.
242 Rabro Dr.
Hauppauge, NY 11788

Aldoin Transparent Packaging
40 Ranick Dr
Hauppauge, NY 11788

Regent-Halex
45 Ranick Dr.
Hauppauge. NY 11788

Occupant
33 Ranick Dr.
Hauppauge, NY 11788

M G Electronics
32 Ranick Dr.
Hauppauge, NY 11788

Occupant
26 Ranick Dr.
Hauppauge, NY 11788

Roth Company
25 Ranick Dr.
Hauppauge, NY 11788

Occupant
15 Rasons Ct.
Hauppauge, NY 11788

Maharam
45 Rasons Ct.
Hauppauge, NY 11788

Hohmann & Baward Inc.
30 Rasons Ct.
Hauppauge, NY 11788

Occupant
1795 Express Dr N
Hauppauge, NY 11788

Pistorius Machine Co.
1785 Express Dr N
Hauppauge, NY 11788

Custom Computer Specialists
1775 Express Dr N
Hauppauge, NY 11788

Occupant
1765 Express Dr N
Hauppauge, NY 11788

Occupant
1745 Express Dr. N
Hauppauge, NY 11788

Occupant
1735 Express Dr N
Hauppauge, NY 11788

Resident
273 Calebs Path
Hauppauge, NY 11788

Resident
279 Calebs Path
Hauppauge, NY 11788

Savoy
745 Calebs Path
Hauppauge, NY 11788

Local Union
1049 Willets Path
Hauppauge, NY 11788

St Thomas More Church
Kings Highway
Hauppauge, NY 11788

Cafe 111
470 Wheeler Rd
Hauppauge, NY 11788

Occupant
490 Wheeler Rd
Hauppauge, NY 11788

Occupant
500 Wheeler Rd
Hauppauge, NY 11788

Hirsch Fuel Oil
508 Wheeler Rd
Hauppauge, NY 11788

Occupant
38 Kings Highway
Hauppauge, NY 11788

Occupant
90 Nian Ct
Hauppauge, NY 11788

Betatronix
Nian Ct
Hauppauge, NY 11788

American Tissue
85 Nian Ct
Hauppauge, NY 11788

Occupant
40 Rabro Dr
Hauppauge, NY 11788

Occupant
456 Wheeler Rd
Hauppauge, NY 11788

Occupant
448 Wheeler Rd
Hauppauge, NY 11788

Occupant
438 Wheeler Rd
Hauppauge, NY 11788

Occupant
428 Wheeler Rd
Hauppauge, NY 11788

Occupant
10 Rabro Dr
Hauppauge, NY 11788

Occupant
45 Rabro Dr
Hauppauge, NY 11788

Occupant
One Rabro Dr
Hauppauge, NY 11788

PC Richards
Express Drive N
Hauppauge, NY 11788

Bike Rack Inc.
11 Constance Ct.
Hauppauge, NY 11788

PCI
20 Constance Ct
Hauppauge, NY 11788

W A Boon Service
10 Constance Ct
Hauppauge, NY 11788

Occupant
40 Constance Ct.
Hauppauge, NY 11788

Forest & Broon
50 Constance Ct.
Hauppauge, NY 11788

6) Other

Suffolk County Water Authority

Chief Stephen B. Feron (Hauppauge Fire Department)

SUGGESTED DOCUMENT REPOSITORY

1) Smithtown Public Library
1 North Country Road
Smithtown, NY 11787
516-265-2072
Hours of Operation: Mon-Thurs 10AM-9PM
Fri- 10AM-6PM Sat 9AM-5PM

2) Region I - NYSDEC
Hazardous Waste Remediation Unit
SUNY Campus, Building 40
Stony Brook NY 11790-23566
(516) 751-444078
Hours of Operation 8:30 A.M. - 4:45 P.M.

3) Central Office - NYSDEC
Hazardous Waste Remediation Unit, Room 222
50 Wolf Road
Albany, NY 12233
(518) 457-1708
Hours of Operation 8:30 A.M. - 4:45 P.M.

Description of Citizen Participation Activities for the RI/FS Phase of the Remedial Program

A copy of the draft final and final RE/FS Work Plan will be placed in the document repositories. A notice to the identified media and a public notice detailing the availability of the plan and summarizing the contents will be mailed to the preliminary contact list. This mailing will include information about the document repositories, the name and address of the citizen participation coordinator at KES , as well as the NYSDEC Citizen Participation Specialist, Project Manager and NYS Department of Health contact, and will request information and comments from the public. A fact sheet on the site and information the regulations and procedures which govern the investigation and remedial process will be included in this mailing. Individuals or groups who respond t to this mailing expressing interest in the site, will be added to the contact list.

After approval of this work plan, a public availability session will be held to discuss the project findings.

Prior to any final remedial program selection, the following Citizen Participation activities will take place: A Fact-sheet , explaining the remedial alternatives considered and the reasons for one being preferred, will be distributed to the public contact list. A legal notice, doing the same, will be placed in a paper of general circulation (i.e. Newsday), while a fact-sheet or press notice will be distributed to the local weeklies.

Glossary of Key Terms and Major Program Elements

KEY TERMS

AQUIFER: A geologic formation that is sufficiently permeable to conduct ground water and to yield significant quantities of water to wells and springs.

CITIZEN PARTICIPATION: A process to inform and involve the interested/affected public in the decision-making process during the investigation and remediation of sites. The process helps to assure that the best decisions are made from an environmental,

human health, economic, social and political perspective.

CITIZEN PARTICIPATION PLAN; A document that describes the site-specific citizen participation activities that will occur in order to complement remedial activities. It also provides site background and the rationale for the selected citizen participation program for the site.

CITIZEN PARTICIPATION SPECIALIST; An NYSDEC Staff member within the Division of Hazardous Waste who provides guidance, evaluation and assistance to the project manager in carrying out the site-specific Citizen Participation Plan.

CONSENT ORDER; A legal, enforceable, negotiated agreement between NYSDEC and responsible parties where the latter agrees to undertake or pay for the costs of an investigation and/or cleanup of a site. The order includes a description of the remedial actions to be under-taken at the site and the schedule for implementation.

CONTACT LIST; Names, addresses, and telephone numbers of individuals, groups, organizations, and media interested and/or affected by ;a particular site in the remedial program. It is used to inform and involve the interested/affected public.

DELISTING; Removal of a site from the state Registry based on study which shows the site does not contain hazardous waste or levels of hazardous wastes that pose a significant threat to public health or the environment.

DOCUMENT REPOSITORY; Typically a regional NYSDEC office and/or public building, such as a library, at which documents related to site remedial and citizen participation activities are available for public review.

FACT SHEET; A written discussion of a site's remedial process, or some part of it, prepared for the public and written in easily understandable language. A sheet may be prepared for the general public or a particular sector. Its uses may include discussion of an element of the remedial program, opportunities for public involvement, availability of a report, or other information, or announcement of a public meeting. It may be mailed to all or part of the interested public, distributed at meetings, or during sampling efforts, or sent when requested.

NYSDEC PROJECT MANAGER; A NYSDEC staff member, usually an engineer, geologist, or hydrogeologist within the Division of Hazardous Waste Remediation who is responsible for the day to day

administration and ultimate disposition of one or more hazardous waste sites. The project manager works with the Office of Public Affairs as well as fiscal and legal staff to accomplish site-related goals and objectives.

POTENTIALLY RESPONSIBLE PARTY-LEAD SITE; A site at which those legally liable have accepted responsibility for the investigation and/or the development and implementation of its remedial program. Potentially Responsible Parties (PRPs) may be current owners, past and present site operators, or those who generated waste placed at the site. Remedial programs developed and implemented by PRPs generally result from an enforcement action taken by the state. PRPs usually incur the costs associated with the remedial program.

PUBLIC MEETING; A scheduled gathering of the NYSDEC staff and the public to give and receive information , ask questions and discuss concerns. A Public meeting may take many forms and could be a large group meeting or a workshop.

PUBLIC NOTICE; A written informational technique used to inform the public of an important upcoming activity or phase in a site's remedial program. Some public notices are formal and meet legal requirements, such as those published in a local newspaper of

general circulation. Others are informal notices, which may be made through telephone calls to key citizen leaders or through targeted mailings.

RANKING SYSTEM; The United State Environmental Protection Agency uses a Hazard Ranking System (HRS) to assign numerical scores to each inactive hazardous waste site. The scores express the relative risk or danger from the site.

RESPONSIBLE PARTIES; Those individuals or groups responsible for or contributing to, the contamination of a hazardous waste site.

RESPONSIVENESS SUMMARY; A formal or informal written or verbal summary and response to public questions and comments It is usually prepared during or after important elements in site's remedial program. The responsiveness summary may list and respond to each question or summarize and respond to questions in categories.

STATE LEAD SITE; An inactive hazardous waste site at which the NYSDEC has responsibility for investigating problems at the site and for developing and implementing the site's remedial program.

Major Program Elements

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

SITE PLACED ON REGISTRY OF INACTIVE HAZARDOUS WASTE SITES; Each inactive site known or suspected of containing hazardous wastes must be included in the Registry. Therefor all sites which state or county environmental or public health agencies identify as known or suspected to have received hazardous waste should be listed in the Registry as they are identified. Whenever possible, the NYSDEC carries out an initial evaluation of the site before listing.

PHASE I SITE INVESTIGATION; An investigation that includes preliminary characterizations of hazardous substances present at a site, identifies pathways by which contaminants may be migrating away from the original area of disposal, identifies resources or populations that may be affected by site contamination, and researches waste disposal practices and potentially responsible parties. The investigation therefore involves research of records

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

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

PHASE II SITE INVESTIGATION; An order by the NYSDEC when the results from a Phase I investigation are insufficient for properly classifying a site. Information gathered is summarized in a Phase II report and is used to arrive at a final hazard ranking score to classify the site. A Phase II investigation is not sufficiently detailed, however, to determine the full extent of the contamination, evaluate remedial alternatives, or prepare a conceptual design for construction.

REMEDIAL INVESTIGATION (RI); a process to determine the existence, nature and extent of contamination through data collection and analysis. The process may include sampling,

monitoring , and other information-gathering techniques which are used to determine the necessity for, and proposed extent of, a remedial program for the site.

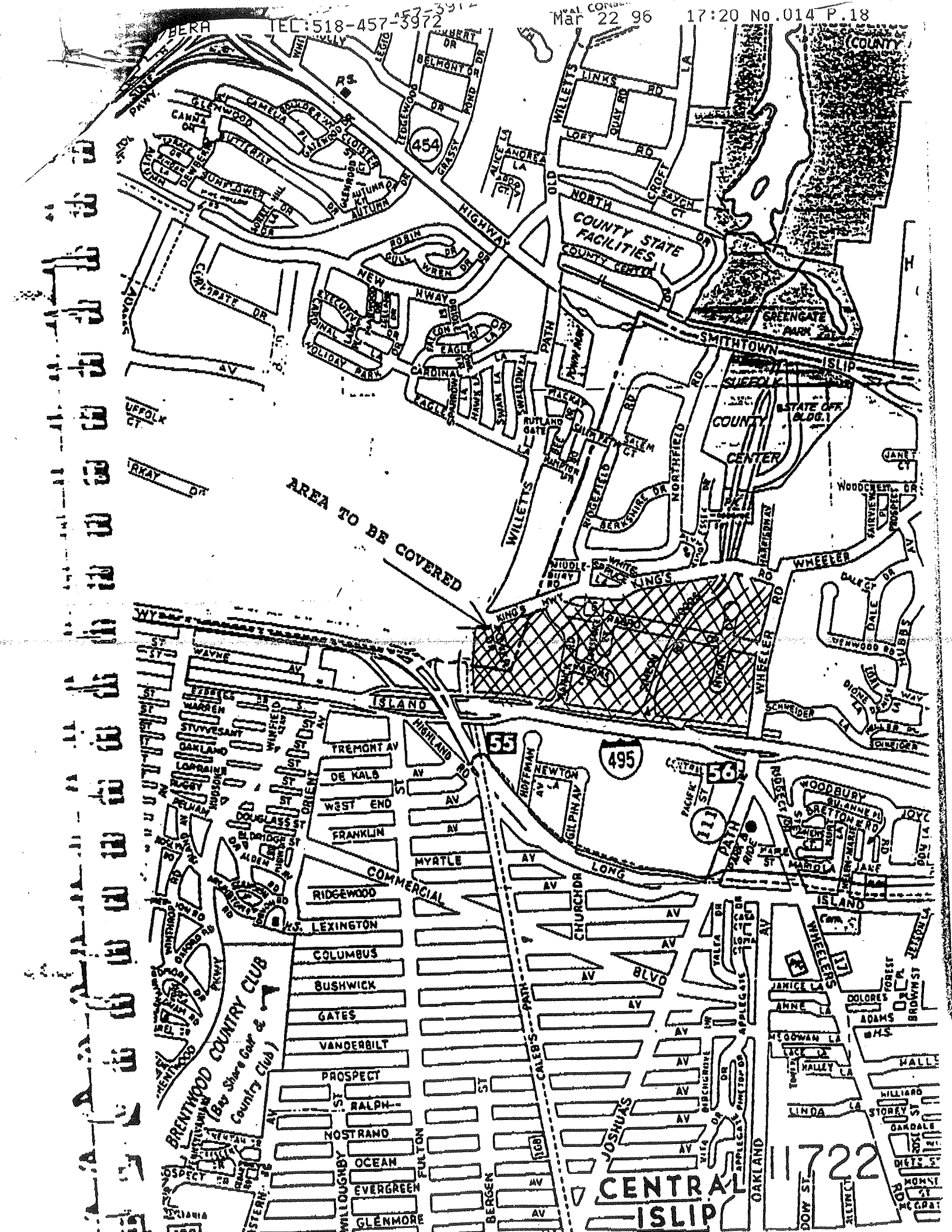
FEASIBILITY STUDY (FS): A process for developing, evaluating and selecting remedial actions and alternatives. Data gathered during the RI are used to: Define the objectives of the site remedial program and broadly develop remedial action alternatives; perform an initial screening of alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

REMEDIAL DESIGN; Once a remedial action has been selected, technical drawings and specification for remedial construction at a site are developed in accordance with the final RI/FS report. Design documents are used to bid and construct the chosen remedial actions. Remedial design is prepared by consulting engineers with experience in inactive hazardous waste site remediation.

CONSTRUCTION; The selection and supervision of contractors who work to carry out the designed remedial alternative. Construction may be as straightforward as excavation of contaminated soil with

disposal at a permitted hazardous waste facility. On the other hand, it may involve drum sampling and identification, complete encapsulation, leachate collection, storage and treatment, groundwater management , or other technologies.

MONITORING/MAINTENANCE; Denotes post-closure activities to ensure continued effectiveness of remedial actions. Typical monitoring-maintenance activities include quarterly inspection by an engineering technician, collection of groundwater or surface water samples, water quality analysis, and other indices of possible site contamination.


AREA TO BE COVERED
COUNTY STATE FACILITIES
COUNTY CENTER
STATE OFF. BLDG. 1
SMITHTOWN
ISLIP
GREENGATE PARK
WILLETTS PATH
OLD NORTH HIGHWAY
NEW HWAY
WILLETTS LINKS RD
LOFT RD
SUAY RD
CROFT
SAXON CT
NORTHFIELD RD
BERKSHIRE DR
RIDGEFIELD
WHEELER RD
KINGS HWY
MIDDLE-BUSH HWY
WAYNE AV
ISLAND
HIGHLAND RD
TREMONT AV
DE KALB AV
WEST END
FRANKLIN
MYRTLE AV
COMMERCIAL
RIDGEWOOD
LEXINGTON
COLUMBUS
BUSHWICK
GATES
VANDERBILT
PROSPECT
RALPH
NOSTRAND
OCEAN
EVERGREEN
GLENMORE
FULTON
BERGEN
CHURCH DR
LONG ISLAND
BLVD
CENTRAL ISLIP
BRENTWOOD COUNTRY CLUB (Bay Shore Golf & Country Club)
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