VOLUNTARY CLEANUP PROGRAM

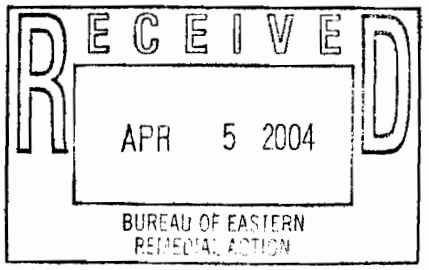
VOLUNTARY INVESTIGATION & INTERIM REMEDIAL MEASURE WORK PLAN

FOR

FORMER FRESH & CLEAN LAUNDRY

22-26 RAILROAD AVENUE
GLEN HEAD, NEW YORK 11545
Site No.: V-00606-1
Index No.: W1-0936-02-09

PREPARED FOR



NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK 12233-7016

PREPARED BY

ENVIRONMENTAL SERVICES INC.

March, 2004

TABLE OF CONTENTS

TABLE OF CONTENTS - CON'T

List of Figures

TABLE OF CONTENTS - CON'T

List of Appendices

1.0 INTRODUCTION

This Voluntary Investigation and Interim Remedial Measure Work Plan (Work Plan) has been developed pursuant to the requirements of an executed Voluntary Cleanup Agreement (October 22, 2002) between the New York State Department of Environmental Conservation, Division of Environmental Remediation (DER) and Former Fresh & Clean Laundry, by Nancy L. Peterman, the Volunteer. The site is located at 22-26 Railroad Avenue, Town of Oyster Bay, City of Glen Head, New York 11545 (see Figure 1), fully described as Section 20, Block 13, Lot Nos. 319-320. A Voluntary Investigation Work Plan is directed when available data collected by previous investigations demonstrates, and the NYSDEC concludes, that contamination is present at the site and further delineation of this contamination is needed to allow a decision by the DER regarding remedial action to be undertaken at said site.

In addition to further site delineation, ESI proposes that an Interim Remedial Measure (IRM) be completed as one of the initial tasks to prevent further vertical movement of the contaminants previously identified to be present.

1.1 Purpose

The purpose of this proposed voluntary investigation and IRM is to:

- Determine the nature and delineate the areal and vertical extent of contamination in all media for each area of potential environmental concern or that emanating from the site.
- Delineate the surface and subsurface environmental media, including topography and depth to groundwater.
- Identify the source(s) of contamination, migration paths and actual or potential receptors of contamination on or through air, soil, sediment, groundwater, surface water, utilities and structures at the site without regard to property boundaries.
- Collect and evaluate all necessary data to evaluate the actual and potential impact to public health and the environment.
- Collect data to facilitate selection and design of remedial action alternatives.

- Identify collected data needed for monitoring natural attenuation, potential feasible cleanup technologies and presumptive remedies.

- Conduct an Interim Remedial Measure to prevent further vertical movement of the contaminants previously identified to be present.

A detailed approach to meet the above listed objectives are discussed in Section 5.0.

2.0 SITE HISTORY

2.1 Physical Site Description

Site Name: Former Fresh & Clean Laundry, now occupied by commercial tenants (House DeGau, Rally Educational Supply and A+Signs & Graphics).

Owners: Nancy L. and Kenneth Peterman, Estate of Donald S. Baldwin

Volunteer: Nancy L. Peterman

Location: 22-26 Railroad Avenue, Glen Head, New York 11545
Latitude 40° N, Longitude 73° W

Voluntary Cleanup Agreement: Site No.: V-00606-1
Index No.: W1-0936-02-09

2.2 Site Description, History of Ownership and Land Use

The former Fresh & Clean Laundry property is situated on the southeast corner of the intersection of Railroad Avenue and School Street (address: 22-26 Railroad Avenue) (Figures 1 and 2). The site is developed with a two-story approximately 56,050 ft^2 cinder block building that is used for commercial tenant purposes (hair and nail salon, sign manufacturer and office space for an education company). The building encompasses more than 60 percent of the footprint of the subject parcel and is situated along the western portion of the parcel.

The total square footage of the building is divided amongst three tenants with approximately 31,000 square feet of space for each of the bottom and top floors of the building. Two of the three tenants (House of DeGau [a hair dresser/nail salon] and Rally Education) are located at the front side (entrance) of the property facing the east side of Railroad Avenue. The third tenant, A+ Graphics & Signs, occupies a recently renovated space located at the rear of the building, at lower grade. The remaining portion of the property, to the east of the building, is an asphalt-paved area used for parking.

The property and adjoining properties further to the east are located on a steeply sloping

block with an approximate 15-foot elevation change. Across the subject property, the western end (front) is at the highest elevation, while the eastern portion (rear) is at a significantly lower grade level.

Ownership: The history of ownership is as follows: The Volunteer, Nancy L. Peterman and her spouse Kenneth Peterman, are co-owners of fifty percent of the property. Nancy and Kenneth Peterman acquired their fifty percent interest in the property from Hazel I. Baldwin, mother of Nancy L. Peterman and former spouse of Donald S. Baldwin, on February 10, 2000. Hazel I. Baldwin acquired her fifty percent interest in the property as tenant in common with Donald S. Baldwin on October 31, 1997 (division of marital assets). The remaining fifty percent interest in the property was owned by Donald S. Baldwin and is currently in his estate subsequent to his death on May 18, 1999.

Site Operation: Much of the historic information available relative to the subject property is derived from a Multi-Site Preliminary Site Assessment prepared for the New York State Department of Environmental Conservation (NYSDEC) in September 2000 (NYSDEC PSA). Pertinent excerpts of the PSA are cited where applicable (See Figure 3 to 7). A portion of the subject property was noted in the NYSDEC PSA as developed with an office building based on review of 1932 Sanborn Maps. No evidence of dry cleaning was noted at that time. The same development was reportedly also present on a 1943 map, but again no evidence of dry cleaning was noted at that time. A 1955 site survey available depicts the building development consistent with that observed during ESI's December 2003 site inspection.

Although the date of use of the property for dry cleaning is unknown, reportedly the Fresh and Clean dry cleaning facility has been out of business since circa 1988 (as per Nassau County Department of Health (NCDH) records. Records in the NCDH files indicate illegal discharges of contaminated liquid waste to on-site sanitary systems occurred; however, no record of site specific sampling/investigation was found relative to that inspection report. Fresh and Clean Laundry is listed as a RCRA large quantity generator (EPA ID No. NYD082782079). No other information pertaining to on-site investigations, waste disposal

activities, spills or violations during the records searches were identified in the NYSDEC PSA. ESI's record search of the Town of Oyster Bay Building Department did not yield any pertinent information. Little, if any, additional information is available relative to the subject property with the exception of an anecdotal records of prior recent use as a doctor's office. ESI's record search of the NCDH files revealed only limited historic data present in Section 3.0; copies of available records are provided in Appendix B.

2.3 Adjacent Property Land Use

The Railroad Avenue/Glen Head Avenue corridor and surrounding areas have been used for commercial purposes and residential housing since circa 1932 and before the date of development of the subject property. Based upon recent inspection, the current adjacent properties' uses include:

North: Directly to the north is School Street. To the north of this street, is a series of commercial establishments (16 Station Plaza) that front on Railroad Avenue similar to the subject property. These land uses include a dental/medical office (corner of School Street and Railroad Avenue), a chiropractic office, a real estate office, a restaurant, hobby store and bar. Residences were noted to the rear of these commercial establishments.

South: The area directly to the south of the subject property is a series of commercial establishments that front on Railroad Avenue similar to the subject property. These uses include a lawnmower repair and welding facility (wooded land in rear), restaurant, office building and exercise studio.

East: Directly to the east of the subject property is a small maintenance building for the adjoining Glen Head School, further to the south. This school is located in a predominantly residential neighborhood.

West: Directly to the west is a municipal paved parking lot associated with the Glen Head shopping area and the adjoining LIRR. Further to the west of the parking lot is LIRR tracks, Walnut Avenue and a series of commercial establishments. An automotive repair shop, a tobacco store, a dry cleaners (Station Valet Cleaners), coffee shop, LIRR station plaza and residences were observed to be present.

2.4 Geographic Setting

Previous investigators have concluded that the Laurentide continental ice sheet deposited two major terminal moraines on Long Island during the Wisconsinan stage of the Pleistocene Epoch (Cadwell, 1989). These moraines formed two lines of hills that trend generally east-west along the island. The Former Fresh and Clean Laundry lies north of the Harbor Hill moraine.

2.5 Hydrogeology

A concise and accurate description of the geology, physiography and drainage of Nassau County is found in the Soil Survey of Nassau County, New York (USDA). Relevant excerpts of this study are included below.

Nassau County is part of the Coastal Plain physiographic province. The county is characterized by undulating or rolling landscapes in the northern part and a flat plain with a gently southward tilt in the southern part. A lobe of rolling topography protrudes farther to the south along the eastern edge of the county. Extensive tidal areas and marshes are just south of the plain and a barrier beach and dunes form the southern outline of the county.

Elevation in the county ranges from sea level to about 340 feet above sea level near the eastern edge of the county, just south of NYS Route 25. The landforms at the higher elevations were deposited as a terminal moraine. These areas have irregular topography that is crossed by deep glacial drainage channels near the north shore. These channels empty into deep bays on the north shore. The steepest relief is along drainage channels or on the side slopes adjacent to the bays. An outwash plain, which is to the south of the terminal moraine, has a maximum elevation of about 180 feet just northeast of Hicksville and slopes gradually to the south some 8 to 10 miles, finally reaching tidal area at sea level.

Nassau County is underlain by bedrock, but most of it is at a depth of several hundred feet. The closest surficial bedrock is to the west in the boroughs of Bronx and Queens in New York City and areas to the northwest in Westchester County near Long Island Sound. From these areas of surface exposure, the rock surface dips to the southeast to form a solid

basement below Nassau County. Most of the bedrock consists of Cretaceous sedimentary layers. Some of the older rocks in the area are the 200 million year old Triassic red beds and lava flows off New Jersey and Connecticut and Cambrian metamorphic rocks in the New York City area that are 450 million years old.

During the late Cretaceous Period the sediments from the eroding Appalachian Highlands were carried by streams and rivers to low-lying coastal areas. The sand, silt and clay of the Raritan and Magothy formations, which form the foundation of Long Island, were deposited as deltas in areas of shallow water. The Raritan formation is below sea level and the Magothy formation is at the surface of several sites along the north shore. The Magothy is the primary potable water supply aquifer on Long Island.

During the Tertiary Period the area of Long Island was uplifted above sea level and the Cretaceous sediments were eroded and dissected by streams and rivers. The valley now occupied by Long Island Sound was cut by a major river and smaller tributary streams formed valleys which are now the north shore bays.

During the Pleistocene Epoch of the Quaternary Period, several major glacial advances into the northern United States occurred. This epoch is divided into four major glacial stages. From oldest to youngest, they are: Nebraskan, Kansan, Illinoisan and Wisconsinan. During the Illinoisan advance, the ice sheet reached a position just north of the Long Island area. Outwash sand and gravel, of the Jameco gravel formation, was deposited by meltwater streams. Following the Illinoisan stage, sea level rose close to its present level and a clay (Gardiner clay) containing marine fossils was deposited in the shallow coastal waters surrounding Long Island.

During the Wisconsinan glacial advance, the ice reached a position represented on most of Long Island by the Ronkonkoma terminal moraine. In the latter part of this stage, the ice sheet receded from a point east of Lake Success and established a new position along the north shore marked by the Harbor Hill terminal moraine. West of Lake Success this lobe of ice overrode the Ronkonkoma moraine and pushed as far south as Staten Island. This

caused the terminal moraine/deposits in Nassau County to form a wide band of irregular topography occupying the northern half of the county, while in adjacent Suffolk County the terminal moraine deposits were far enough apart to be two distinct landforms separated by a flat plain. During the Wisconsinan advance, sea level dropped about 350 feet below its current elevation to expose a broad, flat coastal plain.

As the climate again warmed about 11,000 years ago, the Wisconsinan period ended and the Holocene, or present, period began. The ice sheet receded to its present polar limits and sea level rose to its present level. Currents and wave action modified the outwash plain to create the present-day shoreline.

These overlying Pleistocene deposits are referred to as the Upper Glacial aquifer, a highly prolific aquifer and consists of three distinct units. The oldest and deepest unit is a sand and gravel layer associated with the Ronkonkoma ice sheet. After the recession of the ice sheet, sea level rose to near its' present level. During this interstadial period, marine and/or lacustrine sediments were deposited over the Ronkonkoma deposits, a clay bed at the base, separated from an upper clay bed by a band of silty, sandy beds. Overlying the clay is a terminal moraine and adjacent outwash deposits associated with the Harbor Hill ice sheet.

The aquifers in the study area include both the Upper Glacial and the Magothy. Previous work performed in the study area has determined the depth to groundwater as approximately 110 feet below grade surface (bgs), topographic grade dependent. According to published information, groundwater levels on Long Island generally follow a seasonal pattern, in which they are highest in March and April. Published data indicate that the water table elevation in the vicinity of the site (measured in March and April 1997) was between 50 and 60 ft above mean sea level (msl). The elevation of the water table, measured in the vicinity of the site in May 2000, was approximately 50 ft msl.

The subject property is located within the boundaries of a Special Groundwater Protection Area (SGPA) which is in the deep recharge Hydrogeologic Zone I. Zone I encompasses much of the residential, transport, commercial and industrial activity areas of Nassau and

Suffolk Counties. Zone 1, located in Nassau County and western Suffolk, contributes water to the middle and lower portions of the Magothy aquifer. Portions of the Glacial aquifer, and to a lesser extent, the Magothy aquifer have been contaminated by nitrates from fertilizers and on-site wastewater disposal systems and by synthetic organic chemicals from industrial and other discharges. Initially, the nitrate contamination was a result of farming practices and then, later, of urbanization. Although the greater part of Zone I is urbanized and subject to contamination, several of the northern sectors are still relatively undeveloped and provide opportunities for clean recharge of the aquifers. Only a small portion of Zone I is sewered (roughly ten percent).

2.6 Topography

The subject site is located at approximately 150-155 feet msl relative to the National Geodetic Vertical Datum of 1929 (USGS Hicksville Quadrangle - Figure 2). The land surface is significantly sloped toward the east.

2.7 Water Supply Wells

Identification of all drinking (potable) and non-potable water supply wells was conducted during the 1999 and 2000 NYSDEC PSA for the Glen Head Groundwater Plume area. These potential groundwater receptors were evaluated by NYSDEC for potential influences from the contamination reported within the Glen Head Groundwater Plume area. This study had determined that groundwater flow direction was to the northwest-west proximate to the subject site which is part of the area designated as the Glen Head Groundwater Plume area

According to this study, the nearest public water supply well is located about 1,500 ft to the north of Glen Head Road (cross-gradient) relative to the Glen Head Groundwater Plume area. There is also a public supply well located approximately 1.5 miles to the north-northwest (downgradient) of the Glen Head Groundwater Plume area. The NYSDEC PSA indicates that both wells are owned and operated by Sea Cliff Water Company and that no elevated levels of VOCs were reported as of 2000 to have impacted either potable supply well. The location of the closest supply well (N-05792) is presented in Figure 4. One well is upgradient and the other well is about 1.5 miles away, making neither an immediate

receptor from the study site. The table below provides data on these wells. Another upgradient supply well, N-16670, is located approximately 4,000 feet to the south.

Well Field Data

Well No.	Aquifer	Land Surface	Depth to Bottom	Capacity gpm	Depth to Screen
N-05792	Magothy	120	295	1,050	255
N-07857	Magothy-Upper Glacial	180	614	1,300	560
N-00901	Glacial	--	68	750	47
N-11670	–	–	–		--

Measurements are in feet. msl = mean sea level gpm - gallons per minute.

2.8 Drainage Pattern and Surface Water Bodies

There is one proximate surface water body as depicted in the regional groundwater elevation map (See Figure 5). It is an unnamed pond located approximately 1,700 feet northeast of the site. The pond is not tributary to any other surface water bodies and according to information from the United States Department of the Interior National Wetlands Inventory (Hicksville quadrangle) the pond is classified as POWFx (a retention basin). The closest New York State freshwater wetland (HV-l) is located approximately 2,500 feet east/northeast of the study area. The wetland is linear and follows the course of Glen Cove Creek. Hempstead Harbor exists approximately 6,000 ft west of the study area and is known to support commercial and recreational fishing. Although it appears to influence the local groundwater patterns it does not apparently effect drainage patterns at the site.

2.9 Soils

According to the United States Department of Agriculture Soil Conservation Service and the Soil Survey of Nassau County, New York, the soils at the subject site are classified Ug - Urban Land. This unit consists of areas where at least 85 percent of the surface is covered

with asphalt, concrete or other impervious building material. These areas mostly are parking lots, shopping centers, industrial parks or institutional sites. Many are in the business centers in the villages and cities. Most areas are nearly level, and some are generally sloping. Many areas are rectangular or long and narrow and are mainly adjacent to local main thoroughfares. The areas range from about three acres to as much as several hundred acres.

Included with this unit in mapping are small areas of soil that have not been appreciably altered or that are not under an impervious cover. These areas are mainly in lawns or other landscaped areas. Most of the included open areas are well drained Riverhead, Hempstead, or Enfield soils or excessively drained Udipsamments. In many areas rapid or very rapid runoff prevents adequate discharge of runoff from intense rainstorms to safe outlets. A few areas are in low spots where seasonal wetness sometimes causes temporary flooding of the surface or frost heaving and subsequent breakup of surface pavements.

2.10 Infrastructure

Based upon site inspection and independent research, the following site specific information regarding utilities and infrastructure relative to the subject property was established. The subject property and the adjoining area is serviced by a municipal potable water supply system (Sea Cliff Water Company of Glen Cove, New York). According to Village of Glen Head and Town of Oyster Bay records, a municipal sanitary sewer system does not exist in the Village of Glen Head. Thus, it can be concluded that the on-site sanitary/septic system is in service (and has historically been used) at the subject site. Evidence of several steel manway covers at grade identified as cesspools inclusive of an apparent septic tank was noted during site inspection.

Stormwater drainage at the front of the property appears to flow via overland transport on asphalt pavement onto Railroad Avenue and to perimeter areas of the subject property. A round indentation was noted in the asphalt-paved parking area serving the storefronts, along Railroad Avenue. No information regarding building or site infrastructure was available

from the Town of Oyster Bay Building Department. At the rear of the building, at lower grade, an asphalt-paved parking area is present with four stormwater drywells were present. No other in-situ drainage structures (e.g., floor drains) were identified within the building. Both natural gas and municipal water line utilities were also present. These utilities enter the building along its northern border, along School Street. Electric, cable and telephone service enter the building from above ground poles. The property is served by natural gas which is used for a natural gas-fired heating system.

3.0 SUMMARY OF PAST INVESTIGATIONS

Information available to Environmental Services Inc. (ESI) from Freedom of Information (FOIL) requests revealed that the NYSDEC, the New York State Department of Health (NYSDOH), the NCDH and others have previously studied both the subject property and the area encompassing the study property (Glen Head Groundwater Plume area - Figure 8). Records of the following environmental studies were available: 1) NCDH inspection of the property in December1980; 2) NYSDEC's Preliminary Site Assessment (PSA) of the study area in 1999-2000; 3) a September 2000 Phase II site investigation by an environmental consultant (P.W. Grosser Consulting Inc.) during which the on-site cesspools were sampled; and 4) NYSDOH (2003) and NCDH (2004) inspections of the subject property and the testing of indoor air quality of the tenant spaces. A summary of these environmental studies is provided below; please note that ESI has not been provided with complete copies of the NYSDOH or NCDH inspection reports or testing data, with the exception of that data included as Appendix B.

3.1 NCDH Site Inspection December 1980

A NCDH summary letter dated December 2, 1980 concluded that wastewater containing tetrachloroethylene (PCE) was being disposed at the subject facility onto the ground surface or through plumbing into the septic tank system and cesspools. The discharge was ordered to cease immediately and instructions for appropriate handling of wastewaters were provided. No site specific testing data was associated with this report.

3.2 NYSDEC Preliminary Site Assessment (PSA) September 2000

A Preliminary Site Assessment (PSA) dated September 2000 was performed by Lawler Matusky and Skelly Engineers LLP (LMS) for the NYSDEC as part of an ongoing investigation of an approximately 40 acre area of contaminated groundwater designated the "Glen Head Groundwater Plume area." The plume study area included several former and active dry cleaning and industrial facilities located in the Village of Glen Head (refer to

Figures 3 to 6). The study area is comprised of mixed land uses including commercial and residential. The commercial properties in the area are primarily located along Glen Head Road and Glen Cove Avenue. Figure 3 depicts the approximate site boundaries (i.e., Glen Cove Avenue to the west, the northern end of Railroad Avenue to the north, Railroad Avenue to the east near Glen Head School and Walnut Avenue to the south). One active and four former dry cleaning facilities (inclusive of the subject property) were targeted during the PSA as potential sources of PCE and other VOCs that were determined to have contaminated the shallow aquifer. In addition to the active and former dry cleaning establishments, the former TransTechnology industrial facility, located north of Glen Head Road, between Dumond Place and the LIRR railroad tracks, was identified as a possible source site.

A September - October 1999 phase of the PSA included areas upgradient of the TransTechnology site in an attempt to determine locations of PCE sources and local groundwater flow conditions. Groundwater samples were collected from four monitoring wells and four hydropunch locations. Elevated concentrations of VOCs, particularly PCE, were detected in all of the initial PSA groundwater samples. A second phase of investigatory work was conducted in May 2000 to further define potential sources of groundwater contamination. Elevated levels of PCE and VOCs were again detected in the groundwater. No information was available to ESI of any NYSDEC activities subsequent to this study. The site specific hydrogeologic data from the PSA was used in the development of this work plan.

3.3 September, 2000 Phase II Site Investigation

In September, 2000, P.W. Grosser Consulting Engineers (Grosser) completed a limited Phase II site investigation. This investigation focused on the subsurface drainage system (on-site sanitary system). Grosser identified a total of seven cast iron manhole covers at grade in the rear parking area, located east of the facility building. According to Grosser, there was a poured concrete distribution box with a solid bottom. Examination of a *"Rear Plot Plan"* sketch indicated that the distribution box received discharge from the former Fresh & Clean

Laundry processes and directed the discharge to three at grade cesspools and possibly to an additional below grade overflow pool. Three cast iron pipes were observed exiting the distribution box in directions which apparently generally corresponded with locations of cesspools designated CP- 1, C P-2 and CP-3, with all three pools having manhole covers at grade. Of note, the Grosser report indicated that all of the cast iron pipes observed at the distribution box were filled with concrete. The sanitary system is currently served by one active cesspool, CP-4. Two additional manhole covers were observed southeast of the building; same were determined in the Phase II to reportedly be a septic tank. There was an additional manhole identified, the sanitary cesspool (CP-4) serving the septic tank. The Grosser report indicated that visual confirmation of connection pipes entering the cesspool could not be accomplished due to standing liquid in the structure with an obstruction of view. CP-4 was sampled due to the possibility of interconnection with the other cesspools at the site.

Bottom sediments from the four cesspools were sampled and submitted for laboratory analysis for VOCs by EPA Method 8260. The testing data indicated that primarily three cesspools (CP-l, CP-2, & CP-3) had received discharges of common industrial solvents and cleaners. Cesspool CP-2 reported the highest VOC contamination with a concentration of PCE of 1,500,000 part per billion (ppb). The main VOC constituents reported above NYSDEC recommended soil cleanup objectives (RSCOs) in the cesspools were PCE and 1,2-dichloroethene and trichloroethylene (breakdown products of PCE). In addition, low levels of petroleum products were reported above allowable limits, specifically xylenes and 1, 2-dichlorobenzene. Several VOCs were reported above their respective RSCOs at CP-4; however, these VOCs were present at substantially lower concentrations than the other cesspools. Each of the bottom sediments samples were collected at the base of each structure, approximately 20-22 feet below grade surface (bgs).

3.4 NYSDOH Indoor Air Sampling December 2003

Available records through the FOIL process included results of indoor air sampling data for

the tenants at the subject property. Tetrachloroethylene concentrations were evaluated through the use of organic vapor monitoring badges left in place for approximately 24 hours.

The following sampling locations were evaluated with testing results indicated:

Sampling Location	Data	Remarks
Rally Education - outdoor	Non-detect	Ambient, upstairs, fire escape
Rally Education	90 mcg/cu. m.	office shelf
House DeGau	90 mcg/cu. m.	nail salon shelf
House DeGau	110 mcg/cu. m.	salon lunch area
A+ Graphics & Signs	380 mcg/cu. m	signs work area
–	0.2 mcg/cu. m	trip blank
A+ Graphics & Signs	Non-detect	Ambient, wooden fence

3.5 NCDH Indoor Air Sampling January 2004

On January 13-14, 2004, NCDH sampled indoor air at several areas at the subject property. Again, tetrachloroethylene concentrations were evaluated through the use of organic vapor monitoring badges left in place for approximately 24 hours.

Sampling Location	Data	Remarks
A+ Graphics & Signs	2,200 mcg/cu. m.	paint room northwest corner of building.
A+ Graphics & Signs	2,000 mcg/cu. m.	main room of operation
A+ Graphics & Signs	5 mcg/cu. m.	Ambient, wooden fence
–	0.03 mcg/cu. m	trip blank

It should be noted that the January 2004 NCDH site inspection revealed that the A+Graphics & Signs use tetrachloroethylene in their etching operations.

4.0 EXPOSURE ASSESSMENT

To perform a qualitative exposure assessment, site conditions are characterized to evaluate whether a site poses an existing or potential hazard to the exposed or potentially exposed population. Site characterization involves a review of sampling data for exposed media and an evaluation of the physical conditions of the contaminant sources or physical hazards near the site which may pose an additional health risk to the community.

The reported concentrations of chlorinated volatile organic compounds such as tetrachloroethylene and its breakdown products on the site were evaluated in a three step process. First, an analysis was conducted to identify potential exposure pathways. Second, concentrations of the chemicals of concern were assigned to the exposure points for each pathway based on the site data. Third, the exposure point concentrations were compared to acceptable levels to determine if those concentrations could pose an unacceptable risk to human health.

4.1 Exposure Pathways Analysis

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population.

An exposure pathway is complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented. Any exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present and will never exist in the future. Potential exposure pathways for this type of chlorinated VOCs in the site soils and groundwater can include: 1) soil contact; 2) inhalation of indoor or outdoor air containing chemicals of concern that volatilized from underlying soils and groundwater; 3) ingestion of groundwater; and 4) discharge of groundwater to surface water with subsequent exposures. Potential receptors for each of these exposure pathways are identified below.

4.1.1 Soil Contact Exposure Pathways

The previous Phase II site investigation (October 2000) identified elevated concentrations of the

VOCs in bottom sediments/soils within the on-site sanitary system serving the subject property. No other on-site source areas of contamination are known to exist or have been identified as potentially existing (e.g., stormwater drywells, injection wells, shallow soils, etc.).

The transport mechanism of contaminants through the bottom of a leaching structure such as a cesspool is via gravity drainage near the release source until contact is ultimately made with underlying groundwater. The depth of these bottom sediments/soils was approximately 20-22 feet bgs, while depth to groundwater at the subject property is approximately 110+ feet bgs. A vertical separation of more than 90 feet exists between the known contamination and underlying groundwater. The relationship (if any) between the VOC impacts within the on-site sanitary system and the Glen Head groundwater contamination area will be further evaluated as part of this investigation.

Unless the VOC-impacted materials contained within the bottoms of the on-site cesspools is removed and/or brought up to the surface via some form of excavation, soil contact exposure will not be a completed exposure pathway. Remediation of the cesspools as proposed under the IRM will potentially create a completed soil contact and/or inhalation exposure pathway for remediation workers and any occupants temporarily occupying the work zone. However, this pathway will be created for a limited time frame and appropriate health and safety protocols will be followed to minimize the potential exposure to remediation workers as well site occupants/tenants. As necessary, supplemental engineering controls can be employed to provide mitigation of any potential inhalation hazards.

If the cesspools have contributed to VOC impacts in groundwater, contaminant transport by advection and diffusion in groundwater can cause additional soil contamination on and off site. This is limited however, to the zone of soil in contact with groundwater. Therefore, the only potential exposure pathway associated with the VOCs in the subsurface sediments/soils within cesspools is via the groundwater migration pathway and any related volatilization of VOCs through the soil. Another mechanism would be if construction or excavation to the depth of groundwater occurs. The potential for excavation to become a completed exposure pathway is considered negligible given the extreme depth to groundwater.

4.1.2 Inhalation Exposure Pathways

For inhalation exposures, potential receptors under current and future conditions include workers and

customers at the subject property. The contaminated cesspools are located at the rear, but are relatively close (within 20-40 feet) of the exterior wall of the building. The impacted bottom sediments are located subgrade, approximately 20 feet bgs. The building slab is a poured concrete floor in good condition, with the exterior areas asphalt or concrete paved. Groundwater impacts, if present, are more than 100 feet below grade.

However, it is acknowledged that groundwater contamination has been documented within the study area that includes the subject property and indoor air testing has revealed elevated levels of tetrachloroethylene relative to ambient air concentrations. The source of the tetrachloroethylene requires identification. It is unknown if the tetrachloroethylene concentrations may be residual from prior operations at the property (e.g., impacted building materials) or that working quantities of VOC-containing products currently being used by tenants (such as A+ Graphics Sign) are a factor. It was determined that tetrachloroethylene is presently being used as an etching agent. The interior space occupied by A+ Graphics Sign (signs work area) was noted to have the most elevated concentration of tetrachloroethylene (380 -2,200 mcg/cu.m).The investigation work plan provides a scope of work (e.g., proposed soil gas sampling of areas exterior of the building) to further evaluate this potential exposure pathway. The potential for an outdoor inhalation hazard is not present as evidenced by the NYSDOH/NCDH ambient air testing data.

Remediation of the cesspools as proposed under the IRM will potentially create a completed inhalation exposure pathway for remediation workers and any occupants temporarily occupying the work zone. However, this pathway will be created for a limited time frame and appropriate health and safety protocols will be followed to minimize the potential exposure to remediation workers as well site occupants/tenants. As necessary, supplemental engineering controls can be employed to provide mitigation of any potential inhalation hazards.

Therefore, the primary potential exposure pathway at the site is inhalation of indoor air by predominantly site workers and other occupants. Therefore, if the indoor air testing data is ultimately correlated to soil gas migration into the building from on-site source areas, this would constitute a completed exposure pathway requiring mitigation. The proposed IRM which includes the remediation of the cesspools is the initial corrective measure to mitigate indoor air quality concerns. Other abatement measures may be required.

4.1.3 Groundwater Ingestion Pathway

Previous investigations (Section 2.7) determined that potable water is supplied to the area by a municipal water supply provider, the Sea Cliff Water Company. The nearest public water supply well is located about 1,500 ft to the north of Glen Head Road (cross-gradient) relative to the Glen Head Groundwater Plume area. There are also two other public supply wells located between approximately 4,000 feet and 1.5 miles of the subject property, upgradient and potentially downgradient, respectively, of the Glen Head Groundwater Plume area. The NYSDEC PSA indicates that no VOC impacts were reported (as of 2000) at these potable supply wells. Based on the direction of groundwater flow and distance to the two closest wells, and no other identified private potable supply wells, ingestion of impacted groundwater at the subject property is unlikely and not a completed exposure pathway. If unregistered private potable wells exist in the area, exposure to contaminated groundwater could occur. Article IV of Nassau County Sanitary Code specifically prohibits the unauthorized use of private wells for potable water supply.

4.1.4 Discharge of Groundwater to Surface Water Pathway

There is one proximate surface water body that is an unnamed pond located approximately 1,700+ feet northeast of the site (cross-gradient). The pond is not tributary to any other surface water bodies and is classified as a retention basin. The closest New York State freshwater wetland is located approximately 2,500 feet east/northeast (cross-gradient) of the study area. As depth to groundwater is in excess of 110+ feet bgs, the potential for groundwater to impact aquatic life to these shallow and cross-gradient surface water bodies is negligible. Therefore, discharge of contaminated groundwater to surface water pathway is not considered a completed exposure pathway relative to the study property.

4.2 Exposure Assessment Summary

A qualitative exposure assessment has been performed that has not identified any completed potential exposure pathways with the exception of an inhalation exposure pathway for the occupants of the building, based upon prior indoor air testing data. However, it is known that one of the tenants currently uses tetrachloroethylene in their etching process. The integrity of the building's foundation was observed to be good. Soil gas testing and other site related data is required to determine if a correlation exists with the known contamination source (bottom sediments in cesspools) and indoor air quality data. Therefore, if the indoor air testing is related to soil gas migration into the building, this would constitute a completed exposure pathway

requiring mitigation. The proposed IRM which includes the remediation of the cesspools is the initial corrective measure to mitigate indoor air quality concerns.

Remediation of the cesspools as proposed under the IRM will potentially create a completed soil contact and/or inhalation exposure pathway for remediation workers and any occupants temporarily occupying the work zone. However, this pathway will be created for a limited time frame and appropriate health and safety protocols will be followed to minimize the potential exposure to remediation workers as well site occupants/tenants. As necessary, supplemental engineering controls can be employed to provide mitigation of any potential inhalation hazards.

Furthermore, if after the completion of this investigatory work specified in this work plan, additional completed exposure pathways are identified and/or new data is collected that warrants further evaluation, a risk-based exposure assessment evaluation will be proposed to be performed.

5.0 WORK PLAN OBJECTIVES

The objective of this work plan is to provide detailed specifications for the performance of sample collection and analysis of soil gas, subsurface soils and groundwater to determine the horizontal and vertical extent of contamination of tetrachloroethylene and its breakdown products to the satisfaction of the DER (See Figure 10). ESI proposes to utilize a dynamic work plan to direct and expedite the investigation. In addition, the focus will include efforts to identify actual or potential impacts to sensitive receptors.

5.1 Potential Environmental Concerns

Based on the review of available documents supplied to ESI, the primary environmental concerns at the subject property are the potential for on- and off-site soil gas migration and the potential impacts to groundwater from contaminated bottom sediments residing in the on-site sanitary system from prior discharge of wastewaters. The extent of the soil and/or any groundwater contamination is unknown, but is anticipated to be within the area of former wastewater discharges.

5.2 Scope of Voluntary Investigation and Interim Remedial Measure (IRM)

ESI has defined the scope of the voluntary investigation and IRM into specific tasks. These tasks are outlined as follows:

Task 1 - On-Site Sanitary System Evaluation

During the previous investigation of the on-site sanitary system completed at the site, the entire layout of the subsurface drainage structures was not fully identified. ESI proposes to uncover each of the drainage structures with grade level openings and determine and uncover any associated subgrade overflow pools or septic leaching fields. Overflow drainage pipes will be traced and all subsurface covers will be uncovered with the use of a skid steer or backhoe.

Purpose: The on-site sanitary leaching pools are known to be contaminated and a possible source of groundwater contamination.

Specifications: The influent and effluent discharge piping leaving septic tank will be evaluated to ascertain the relationship of each overflow cesspool structure to each other. As feasible, subgrade pools will be identified and verified through intrusive means. These pools will be opened/uncovered

and snaking, flow or dye testing used to confirm site relationships. Upon completion of this investigation, if new cesspools are identified that have not been sampled prior, a bottom sludge sample will be collected using a stainless steel sludge sampler. Sample collection procedure, quality assurance/quality control (QA/QC) and equipment decontamination procedures are discussed in Section 6.0. The collected sample will be maintained in an ice packed cooler and transported under strict chain-of-custody to a NYSDOH ELAP-certified laboratory for analysis by Target Compound List (TCL) EPA Method 8260 - Purgeable Organics and Tentatively Identified Compounds (TICs) by GC/MS.

Task 2 - Interim Remedial Measure (IRM)

The September 2000 Phase II site investigation at the former Fresh & Clean Laundry Facility reported elevated concentrations of volatile organic compounds in all four cesspools. Therefore, an IRM that includes the removal of liquids and sludge/sediments from each of the cesspools and the contents of their associated septic tank is proposed.

Purpose: An IRM is proposed to be completed as one of the initial tasks to prevent further vertical movement of the contaminants present. Furthermore, it is prudent to perform this IRM prior to the installation of soil borings inside these structures to evaluate the potential for Non-Aqueous Phase Liquids (NAPLs) to be present. Drilling interior to contaminated structures can inadvertently introduce contamination downward.

Specifications: The removal of the liquids and sludges from the septic tank will be performed initially and an inspection of the interior will be made to ensure that it is not a leaching structure. Liquids from the septic tank and the cesspools will be removed via vacuum truck. The liquids will be disposed of at a facility based upon prior characterization data. This facility will be designated prior to the implementation of the IRM. Impacted sludges/soils from each cesspool will be removed using an industrial vacuum loader truck. The removal of the impacted sludge/sediment from each cesspool will be performed using an industrial vacuum loader truck. The sludge/soil from the cesspools will be loaded into watertight roll-off containers and transported to Horizon Environment International in Granes-Piles, Quebec, Canada and/or Stablex Canada, Inc. in Blainesville, Quebec, Canada. The removal of sludge will continue until clean sand is observed based upon field screening evidence by an HNu Systems, Inc., Model P1-101 Photoionizer detector (PID) or equivalent. Previous analytical data of the soil characteristics will be utilized to determine the disposal facility and

approval. After adequate remediation, as determined from samples collected from the new bottom horizon, Task 3 will be performed. Sample collection procedure, QA/QC and equipment decontamination procedures are discussed in Section 6.0. The collected sample will be maintained in an ice packed cooler and transported under strict chain-of-custody to a state ELAP certified laboratory for analysis by TCL VOCs by EPA Method 8260 and TICs Purgeable Organics by GC/MS. If the endpoint sample does not exhibit compliance, the need for additional remediation will be evaluated relative to feasibility and performed, if possible, prior to the implementation of Task 3.

Task 3 - Soil Boring Delineation Program

Following the implementation of the IRM, ESI proposes to complete one soil boring with the use of a GeoProbe drilling unit through the center of each subsurface drainage structure identified as previously impacted. At a minimum, drainage structures CP-1, CP-2, CP-3 and CP-4 will be further evaluated under this task. As discussed previously, if additional subgrade cesspools are identified, an initial characterization soil sample will be collected and evaluated to determine if any further vertical delineation via soil borings is required. Each soil boring will evaluate the nature, severity and vertical extent of the contamination.

Purpose: To definitively establish whether or not a non-aqueous phase liquids (NAPL) exists in the subsurface soils beneath the previously impacted cesspool.

Specifications: A GeoProbe model 540U direct push sampling rig mounted in a four wheel drive van or equivalent will be used for the collection of soil samples. In limited access areas, a low profile or equivalent GeoProbe will be mobilized for use. A two or four foot long soil sampling tool is attached to the drive rods for the collection of continuous undisturbed soil samples. The sample will be protected in a PVC liner that prevents the loss of VOCs prior to field analysis. Each sample will be opened and logged to document subsurface conditions including soil types and description of non-soil materials and field instrument measurements. There will be additional documentation, if present, of soil mottling, presence of odor, vapors and soil discoloration. A portion of each sample will be placed in a resealable plastic bag and screened for total volatile organic compounds by an HNu Systems, Inc., Model P1-101 Photoionizer detector (PID) or equivalent.

Each soil boring will begin at the remediated base of each structure and will be sampled continuously at four (4) foot intervals. If field measurement readings are detected above background, the coring

will be extended until readings are consistent with ambient air (background) or nominal PID concentrations are achieved. After vertical profiling, a total of three (3) soil samples (remediated base, intermediate depth and deepest PID screened interval) will be submitted for laboratory analysis from CP-1, CP-3 and CP-4 and any other identified impacted cesspool structure. The soil boring at CP-2 will be continued until a minimum of 60 feet bgs, with samples collected at four foot intervals to check for the presence of a NAPL. All samples collected from this boring (four foot intervals) will be submitted for laboratory analysis. Between each sampling event all equipment will be decontaminated following the protocol outlined in Section 6.0.

These samples will be appropriately containerized at the time of their collection and immediately maintained in an ice packed cooler. Upon completion of each day's sample collection, these samples will be transported under strict chain-of-custody to a NYSDOH-ELAP certified laboratory for TCL VOC analysis by EPA Method 8260 and TICs Purgeable Organics by GC/MS.

Task 4 - Soil Gas Investigation

Purpose: The main objective for determining concentrations of volatile organic compounds in soil gas is to assist in an evaluation of the potential for migration of vapors into off-site and on-site locations.

Specifications: With the GeoProbe equipped with a Post-Run Tubing System (PRT), soil gas samples will be collected from below the pavement at the site (within 24 inches bgs), in order to make a representation of conditions near building foundations or property perimeters. Each of these locations will be initially field screened with a PID to provide real time data and then samples will be collected via summa canisters for laboratory testing. Upon completion of each day's sample collection, the summa canisters will be transported under strict chain-of-custody to a NYSDOH-ELAP certified laboratory for VOC analysis by EPA Method TO-14 or TO-15 . Soil gas sampling locations were selected in order to provide relevant data at the subject property (See Figure 10). The actual location of each sampling point will be determined based on site constraints or field data. The shallow borings associated with soil gas testing will be abandoned by bentonite grout to grade. Sample collection procedure, quality assurance/quality control and equipment decontamination procedures are discussed in Section 6.0.

Task 5 - Indoor Air Testing

As both the NYSDOH and NCDH have recently sampled indoor air quality, no additional indoor air testing is proposed. It is also noted that tetrachloroethylene is currently being used by one of the tenants in the building.

Task 6 - Groundwater Investigation

Purpose: At the completion of the IRM's and the Soil Boring Program, ESI proposes to install three groundwater monitoring wells to assess upgradient and downgradient water quality conditions at the site. The nature and extent of groundwater impacts from the suspected tetrachloroethylene release from the on-site sanitary system has not been defined. This groundwater investigation will delineate laterally and vertically profile the extent of the contaminant plume, if any. The investigation will also collect the necessary data to evaluate the feasibility of Monitored Natural Attenuation (MNA), potential cleanup technologies and presumptive remedies. Additionally the installation of these wells will allow an accurate and site-specific calculation of the direction and velocity of groundwater flow at the subject property.

During the initial NYSDEC Preliminary Site Assessment Program completed by the Glen Head Groundwater Plume in September 2000, the depth to groundwater in the area was determined to be approximately 110+ feet below grade and travels in a west-northwesterly flow direction. ESI proposes to install one (1) upgradient monitoring well along the easternmost portion of the site. In addition, two (2) downgradient monitoring wells will be installed downgradient (west) of the drainage structures. The proposed locations of the monitoring wells are shown on Figure 9. If allowed by the NYSDEC, a portion of the field screened and un-impacted drill cuttings will be spread on unpaved areas. If not feasible, drill cuttings will be containerized on-site in a 55-gallon drum until sampling and disposal arrangements are completed.

Specifications: Each of the three (3) wells will be installed via Hollow Stem Auger drilling. The wells will be constructed of 4 inch PVC casing with a I5-foot section of PVC screen. Given a depth of water of 115 feet below grade, ESI proposes to install the wells at 125 feet below grade (10-feet of screen in the water table). Since soil samples will not be collected during the well installation program, a wooden plug attached to the lead auger will be utilized to prevent "heaving sands". Once

the borehole has been reamed to 125 feet, the augers will be withdrawn approximately 6 inches and the down-hole hammer will be used to knock out the plug (which remains in the ground). The 15-foot section of PVC screen and 110 feet section of PVC casing will be lowered to depth. Filler pack sand will be added through the annulus between the well casing and the hollow stem of the auger. Once the filter pack has been installed to the desired depth, (three feet above the screen), two feet of bentonite pellets will be placed through the augers to act as a sanitary seal. The augers are then withdrawn far enough that no pellets remain within the auger. Water is then introduced to the augers to hydrate the bentonite pellets. The remaining annulus space will be filled with a bentonite/cement grout. The augers will be raised and a tremie pipe will be used to pump the grout into annulus space. A flush-mounted manhole will be cemented to protect the well.

Figure 8 indicates the location of three (3) proposed wells. The actual location of each well will be determined based on site constraints or field analytical data. Upon completion of the wells, the location and casing elevations will be determined by a New York State licensed surveyor. Depth to groundwater will be measured from each well to the nearest 0.01 foot using a sonic interface probe. The collected data will be used to generate a groundwater gradient map indicating the direction of groundwater flow.

Well Development: The purpose of developing a groundwater monitoring well is to repair damage done to the formation by the drilling operation and to alter the basic hydraulic characteristics of the formation near the well, so that groundwater will move freely to enter the well. The wells will be developed using a decontaminated submersible well pump or dedicated disposable polyethylene bailer after the well seal and grout have set (48 hour minimum). The pump/bailer will be moved up and down throughout the screen interval during well development. A geologist will supervise the well development and record procedures, quantities and characteristics of water removed in a field notebook. A minimum of five wellbore volumes will be removed during development. The turbidity, pH, temperature and conductivity of successive well volumes will be recorded during development. Efforts will be undertaken to develop the wells until turbidity is less than 50 NTUs and pH, temperature and conductivity stabilize within 10% on successive well volumes. Purge development waters will be discharged upgradient /proximate to each of the well locations, if approved by the NYSDEC. If discharge of these waters is not feasible due to runoff conditions, development waters will be containerized for off-site disposal, in accordance with applicable regulations for same.

Prior to sampling, the monitoring wells will be purged using a decontaminated submersible well pump or a dedicated disposable polyethylene bailer. A field geologist will supervise the well purging/sampling and record procedures, quantities and characteristics of water removed in field notebook. A minimum of three wellbore volumes will be removed during purging. The turbidity, pH, temperature and conductivity of successive well volumes will be recorded during purging. Efforts will be undertaken to purge the wells until turbidity is less than 50 NTUs and pH, temperature and conductivity stabilize within 10% on successive well volumes. Purge waters will be discharged upgradient/proximate to each of the well locations, if approved by NYSDEC. If discharge of these waters is not feasible due to runoff conditions, purge waters will be containerized for off-site disposal, in accordance with applicable regulations for same.

After purging, groundwater samples will be collected as soon as possible[1] from each of the monitoring wells via dedicated disposable polyethylene bailers with dedicated disposable polyethylene rope. Groundwater samples will be dispensed from the bailers into appropriate clean laboratory-supplied glassware.

During groundwater sampling, each of the two 40 ml containers will be completely filled to ensure a zero headspace. The glassware will either be pre-preserved by the laboratory or will be preserved in the field to ensure a pH of <2. The filled glassware will then be transferred to an ice-packed cooler and transported under strict chain-of-custody to NYSDOH ELAP-certified laboratory for TCL VOC analysis by EPA Method 8260 - Purgeable Organics with TICs by GC/MS. Additional sample collection procedures, collection of QA/QC samples, other QA/QC measures and equipment decontamination procedures are discussed in Section 6.0.

The first round of sampling will be within one week after well installation. Following the initial sampling event, ESI will incorporate a sampling program on a quarterly basis for a minimum of six months (two additional sampling events).

Once groundwater flow direction has been confirmed and the on-site groundwater and soil (inside cesspools) quality data generated and evaluated, the need for the vertical profiling of groundwater

[1] All samples will be collected within three hours of initiating groundwater sampling.

to deeper depths (as per NYSDEC request) within the aquifer will be determined in consensus with the NYSDEC DER. A recommendation for this work or variation thereof, will be proposed after the completion of Tasks 1 - 6. A separate work scope will be set forth for this task at that time, if required.

5.3 Project Schedule

Within 30 days of the approval of the Voluntary Investigation Plan, ESI will begin performing Task 1 - On-site Sanitary Evaluation and any attendant sampling. Following disposal characterization and other analysis, Task 2 - IRM will be implemented within 45 days of Task 1. Task 3 - Soil boring Delineation will be initiated after the satisfactory completion of Task 2 and be completed within 60 days thereof. Task 4- Soil Gas Survey will be performed concurrently with Task 3. Task 6 - Monitoring well installation will be performed within 45 days of completion of Task 3.

Receipt of certified laboratory data in these tasks will require 30-45 days; data useability analysis will be performed and will require an additional 30-45 days per data package. Any data used for screening or initial or disposal characterization purposes only will not be validated. Interim reports will be provided, if deemed to be necessary, within 60 days of receipt of validated data. ESI will correspond with NYSDEC as necessary in instances where field investigation scope requires modification. A final report will be issued within 60 days of receipt of validated testing data packages.

5.3.1 *Reporting*

ESI may prepare an interim report of findings upon the completion of select tasks or grouped tasks, as deemed necessary to appropriately address the investigation needs of this project. A Final Report will be submitted to the NYSDEC within 60 days after the completion of all work associated with the approved Work Plan and receipt of all validated laboratory data. A copy of the preliminary and final report will be submitted to each of the recipients listed in the Voluntary Cleanup Agreement. When the Investigation is considered complete by the NYSDEC and if it is determined that remedial efforts are necessary, only the NYSDOH-ELAP approved laboratory data will be used to make remedial decisions.

6.0 QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) PROCEDURES

All soil and groundwater QA/QC samples will be analyzed at H2M Labs, Inc. in Melville, New York. H2M Labs, Inc. is a NYSDOH-ELAP-CLP Certified Laboratory, proficient in all aspects of the 1991 Analytical Services Protocol. All samples will be analyzed for TCL VOCs with TICs and data packages will be provided following NYSDEC ASP B deliverables. Soil gas will be analyzed at a laboratory to be identified and will include required QA/QC samples to provide a data package consistent with analytical testing method/deliverable requirements.

Appropriate QA/QC Procedures were developed to ensure that suitable and verifiable data results from sampling and analysis are maintained. To achieve this objective, the quality assurance procedures detailed in this section were adopted from NYSDEC, DER "Draft Technical Guidance for Site Investigation and Remediation," December, 2000 (3/26/01) and will be followed for all sampling and laboratory analysis activities.

6.1 Quality Assurance Requirements

The person responsible for conducting the investigation and/or remediation will ensure suitable and verifiable data results from sampling and analysis. To achieve this objective, the quality assurance procedures detailed in this section will be followed for all sampling and laboratory analysis activities. Quality Assurance/Quality Control procedures were developed to ensure that suitable and verifiable data will result from the prescribed sampling and analysis programs. The procedures to be implemented during the investigation are summarized below.

6.1.1 Sampling Personnel

The activities associated with the field sampling and analysis program will be performed under the supervision of a Quality Assurance Officer, in accordance with the NYSDEC, DER "Draft Technical Guidance for Site Investigation and Remediation", December, 2000 (3/26/01). The samplers assigned will possess a minimum of two or more years experience in environmental field work. Additionally, all samplers will have received the mandatory forty-hour Occupational Safety and Health Administration (OSHA) training on working with potentially hazardous materials and appropriate Hazard Communication Program and Right-To-Know training.

6.1.2 Sampling Equipment

Individual QA/QC measures will be implemented for each of the types of equipment, field screening instruments, sample containers, etc. used in the performance of the sampling program as follows:

6.1.3 GeoProbe and Drilling Rigs

Prior to arrival on the subject property and between sample locations, all equipment that would come into contact with an environmental media associated with the proposed drilling systems will be decontaminated by a physical scrub with detergent (Alconox) and potable water solution and rinsing them with potable water of demonstrated environmental quality.

6.1.4 Glassware

All sample glassware will be "Level A" certified decontaminated-containers supplied by a NYSDOH-Certified Commercial Laboratory. Samples analyzed for media potentially containing VOCs will be placed in Teflon-lined containers. All samples (except the soil gas samples) will be preserved by cooling them to a temperature of approximately four degrees Celsius during maintenance prior to transport to laboratory.

6.1.5 Sample Documentation

To establish and maintain proper sample documentation control, the following sample identification and chain-of custody procedures will be followed:

6.1.5.1 Sample Identification

Sample identification will be executed by use of a sample tag, log book and chain-of-custody forms. Said documentation will provide the following information: 1) the project code; 2) the sample laboratory number; 3) the sample preservation; 4) the date the sample was secured from the source media; 5) the time the sample was secured from the source media; and 6) the person who secured the sample from the source media.

6.1.5.2 Chain-of Custody Procedures

Due to the evidential nature of samples, possession will be traceable from the time the samples are collected until they are received by the testing laboratory. A sample is considered under custody if it: is in a person's possession; it is in a person's view, after being in possession; if it is in a person's possession and they locked it up; or, it is in a designated secure area. When transferring custody, the

individuals relinquishing and receiving the samples will sign, date and note the time on the Chain-of-Custody Form.

6.1.5.3 Laboratory-Custody Procedures

A designated sample custodian will accept custody of the delivered samples and verify that the information on the sample tags matches that on the Chain-of-Custody Records. Pertinent information as to delivery, pick-up, courier, etc., will be entered in the "remarks" section. The custodian will enter the sample tag data into a bound logbook. The laboratory custodian will use the sample tag number, or assign a unique laboratory number to each sample tag, and assure that all samples will be transferred to the proper analyst or stored in the appropriate source area. The laboratory custodian will distribute samples to the appropriate analysts. Laboratory personnel will be responsible for the care and custody of samples from the time they are received until the sample is exhausted or returned to the sample custodian. All identifying data sheets and laboratory records will be retained as part of the permanent documentation. Samples received by the laboratory will be retained until after analysis and quality assurance checks are completed.

6.2 Soil Gas Testing

The soil gas sampling will be conducted using a GeoProbe direct push sampling rig equipped with a Post-Run Tubing system. Once the desired depth is reached, new polyethylene tubing fitted with a PRT adaptor will be inserted down into the rods to the depth of the point holder and attached. The surface will be sealed with an impervious media such as clay or bentonite. The soil gas flowrate will then be measured using a regulator and the soil gas will directly enter the summa canister under a vacuum. A predetermined required sample volume will be provided by the laboratory. These samples will be submitted for laboratory analysis for VOCs by TO-14 or TO-15 delivered under strict chain-of-custody to a NYSDOH ELAP-certified lab providing Category B deliverables (if feasible).

6.3 Soil or Bottom Sediment Sample Collection

The soil sampling will be conducted using a GeoProbe direct push sampling rig or equivalent using a discrete sampling device. A new PVC liner will be installed into the sampling barrel between each sampling event. The equipment (drive point, barrel, subs and adaptors) will be decontaminated before each sample collection following NYSDEC Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a municipal-supplied potable water rinse. The retrieved samples will be placed in

laboratory supplied certified containers. The samples will be stored in a cooler containing ice to maintain a temperature of 4° Celsius and delivered under strict chain-of-custody to a NYSDOH ELAP-certified laboratory providing Category ASP-B deliverables, where applicable. All generated soil cuttings will be maintained in a DOT approved 55 gallon drum. Upon completion of the project, a soil sample from the drum(s) will be analyzed for disposal by an NYSDOH ELAP-certified laboratory.

To ensure quality control, one (1) field blank will be collected per twenty soil samples by rinsing the decontaminated field equipment with organic-free water and submitting the rinse water in standard sample containers to a certified laboratory for TCL VOC analysis by EPA Method 8260 and TICs. One (1) Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample will be collected per twenty (20) soil samples and submitted with the rest of the samples to a certified laboratory for TCL VOC analysis by EPA Method 8260 and TICs. No trip blank samples are required for analysis in coordination with soil samples to conform with an NYSDEC ASP-B deliverable package.

6.4 Groundwater Sample Collection

A field geologist will supervise the well purging/sampling and record procedures, quantities and characteristics of water removed in a field notebook. A minimum of three wellbore volumes will be removed during purging. The turbidity, pH, temperature and conductivity of successive well volumes will be recorded during purging. Efforts will be undertaken to purge the wells until turbidity is less than 50 NTUs and pH, temperature and conductivity stabilize within 10% on successive well volumes. The retrieved samples will be placed in new laboratory-supplied 40 ml teflon cap glass vials. The samples will be stored in a cooler containing ice to maintain a temperature of 4° Celsius and delivered under strict chain-of-custody to a NYSDOH ELAP-certified laboratory providing Category ASP-B deliverables. Purge waters will be discharged upgradient /proximate to each of the well locations. If discharge of these waters is not feasible due to runoff conditions, purge waters will be containerized (DOT approved 55 gallon drum) for off-site disposal, in accordance with applicable regulations for same.

The equipment will be decontaminated before each sample collection following NYSDEC Sampling Guidelines & Protocols, 1991. The cleaning procedure will include the use of a standard laboratory grade phosphate-free detergent (Alconox) followed by a municipal-supplied potable water rinse.

To ensure quality control to conform with an NYSDEC ASP-B deliverable package, one (1) trip blank with organic-free water will be maintained per sampling day and one (1) field blank per twenty (20) groundwater samples by rinsing the field equipment with organic-free water and submitting the rinse water in standard sample containers to a certified laboratory for TCL VOC analysis by EPA Method 8260 and TICs. One MS/MSD sample will be collected per twenty groundwater samples and submitted with the rest of the samples to a certified laboratory for TCL VOC analysis by EPA Method 8260 and TICs.

6.5 Laboratory Analysis Requirements

6.5.1 Certification and Data Acceptance

Laboratories performing analysis will conform to the following:

- For the analysis of any aqueous samples for a parameter or category of parameters for which laboratory certification exists pursuant to NYSDOH ELAP Certification, the laboratory will be certified for that specific parameter or category of parameters pursuant to NYSDOH ELAP Certification.

- For the analysis of non-aqueous samples using specific analytical methods contained in the EPA Publication SW-846, "Test Methods for Evaluating Solid Waste", third edition, update IIF, January 1995, as amended and supplemented, for a parameter or category of parameters for which certification exists pursuant to NYSDOH ELAP Certification, the laboratory will be certified for that specific parameter or category of parameters pursuant to NYSDOH ELAP Certification or, at a minimum, have obtained temporary approval to analyze regulatory samples pursuant to NYSDOH ELAP Certification.

- For analysis of samples where Category B deliverables are required, NYSDOH ELAP CLP certification is required for the category of parameters to be analyzed for. The DER will reject analytical data from any laboratory for which its certification for the parameter analyzed for has expired, decertified and/or been suspended.

6.5.2 Analytical Methods

Except as provided below, analytical methods used will have been published in the most

current NYSDEC Analytical Services Protocol. Where possible, the method selected must achieve a detection limit that is below the lowest standard or guidance value that applies to the media being sampled and analyzed for the contaminant(s) that can reasonably be expected to be found.

If an analytical method as described above does not exist for a specific contaminant or parameter within a specific matrix, or if an analytical method as described above for a given contaminant or parameter is demonstrated to be inappropriate for the matrix analyzed or the method cannot achieve a detection limit below the applicable standard or guidance value, then the person responsible for conducting the investigation and/or remediation will:

- Select an appropriate method from another source.
- Document the rationale for selecting the method.
- Develop a standard operating procedure for the method, including a quality control section.
- Exception: it is recognized that the analytical methods for semi-volatile compounds in soil frequently cannot achieve detection limits below regulatory action levels. In these cases, EPA Method 8270 is acceptable irrespective of the detection limit.

Methods acceptable to the DER will be utilized for the determination of the presence of free product in soil or water. Such methods include, without limitation, visual identification of sheens or other visible product, measurable thickness of product on the water table, the use of field instruments, ultraviolet fluorescence, soil-water agitation, centrifuging and hydrophobic dye testing.

- For contaminants that in their pure phase and at standard state conditions (20 degrees Celsius to 25 degrees Celsius and one atmosphere pressure) have densities greater than water, free product will be considered to be present if the contaminant is detected in groundwater at concentrations equal to or

greater than one percent of the water solubility of the contaminant if groundwater contains only that organic contaminant. If a mixture of such contaminants is present, then the effective water solubility of the contaminant should be estimated for this determination.

Gas chromatography methods with a mass spectrometer detector system should be used for analysis of semi-volatile contaminants (exclusive of herbicides, pesticides, and PCBs). Other chromatography methods (liquid chromatography, HPLC) with appropriate detector systems should be used for the analysis of organic analytes amenable only to non-gas chromatographic methods. A mass spectrometer detector system is not required if the site has already been characterized to the extent that all contaminants are known.

6.5.3 Specific Requirements

Laboratories will follow all quality assurance/quality control procedures specified in the analytical methods.

Sampling methods, sample preservation requirements, sample handling times, decontamination procedure for field equipment and frequency for field blanks, field duplicates and trip blanks should conform to the NYSDEC Analytical Services Protocol (ASP), unless an alternate method/procedure has been approved.

Results from analysis of soils and sediments will be reported on a dry weight basis, except for those results required by the method to be otherwise reported.

6.5.4 Sample Matrix Cleanup

Acceptable sample matrix cleanup methods include, without limitation, those methods contained in the EPA Publication SW846 or the EPA "Contract Laboratory Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date of sample analysis.

Sample matrix cleanup methods will be performed if:

- Petroleum contaminated soils, sediments or other solids are analyzed for semi-volatile organics and the method detection limits are elevated above the applicable remediation standard because of matrix interference.
- Gas chromatographic peaks are not adequately separated due to matrix interference. A peak will be considered inadequately separated when a rise in baseline or extraneous peaks interfere with:
  (1) the instrumental ability to correctly identify compounds present (including internal standards and surrogates), and/or
  (2) the integration of peak area and subsequent quantization.
- So specified by the analytical method, or
- Matrix interferences prevent accurate quantization and/or identification of target compounds.

6.5.5 Laboratory Data Deliverables

Unless otherwise approved in advance by the DER, laboratory data deliverables should be as follows (with the exception of the soil gas data).

- Category B laboratory data deliverables as defined in the Analytical Services Protocol (ASP) should be submitted for initial, confirmatory (post remediation) samples and final delineation samples for all sites. In addition, a Data Usability Summary Report will be prepared by a party independent from the laboratory performing the analysis.

- Analytical results without all quality control documentation and raw data may be provided for all intermediate sampling events and for all long-term groundwater monitoring samples where the site has DER oversight, provided the following information is submitted:

(1) A cover page, including facility name and address, laboratory name and address, laboratory certification number, if applicable, date of analytical report preparation and signature of laboratory director.
(2) A listing of all field sample identification numbers and corresponding laboratory sample identification numbers.
(3) A listing of all analytical methods used, including matrix cleanup method.
(4) The method detection limit and practical quantization level for each analyte for each sample analysis.
(5) All sample results including date of analysis.
(6) All method blank results.
(7) All chain of custody documentation.

- Upon written request, the DER may require that deliverables package be upgraded to a "Category B" data deliverables package for any sample analysis. If the backup documentation is not available to generate "Category B" deliverables or that the lab is not qualified to generate "Category B" deliverables (not ELAP-CLP lab), reanalysis or resampling and analysis is an option.
- Identify any analytical cleanup methods, where applicable.

6.5.6 Field Screening Methods

Field screening methods, (such as immunoassay, x-ray fluoresence, and mobile laboratories) are limited as follows:

Field screening methods for all sampling matrices (soil, water, air, interior surfaces) can only be used under the following conditions:

- For contaminant delineation if contaminant identity is known or if there is reasonable certainty that a specific contaminant may be present (for

example, benzene, toluene, ethylbenzene, xylene in the case of sampling for a gasoline release); or

- To bias sample location to the location of greatest suspected contamination.

Field screening methods should not be used to verify contaminant identity or clean zones unless there has been a correlation study approved in advance by the DER for the specific site where screening methods are proposed for verification.

Where field screening is used:

- A standard operating procedure must exist or be developed which includes:
  (1) A detailed step by step procedure for the analysis method.
  (2) Duplicate analysis of a minimum of 10% of the samples.
  (3) Quality assurance procedures (calibration standards, blanks, etc.) as specified by the method.
  (4) Laboratory confirmation on a minimum of 10% of the samples by a standard ASP method is required. There should be no bias in the selection of duplicate or laboratory confirmation samples, such as selecting positive detections or duplication or confirmation. The duplicate or confirmation analysis should be done on a minimum of every 10^{th} sample, selected in the order they are presented for analysis. Laboratory confirmation occurs if the correlation between field screening and laboratory results are within +/- 30%.
- Analysis must be done by a Field Analyst with the following minimum qualifications:
  (1) Completion of a certification course or training by an experienced analyst who has demonstrated proficiency in the method; or,
  (2) Demonstration of the analyst's proficiency by correlation of the analyst's results with laboratory confirmation analysis.

Other field screening methods may be acceptable, subject to the DER's review of documentation.

6.5.7 Analytical Parameter Requirements

The following requirements apply for selection of analytical parameters:

- Samples from each area of concern should be analyzed for contaminants which may be present.
- Analysis of Target Compound List plus 30/Target Analyte List (TCL+30/TAL), petroleum hydrocarbons, and pH should be conducted when contaminants in an area are unknown or not well documented, although a limited contaminant list may be used subject to the DER's approval. At the subject property, TCL VOC by EPA Method 8260 and TICs is proposed.

6.5.8 Petroleum Storage and Discharge Areas

Sample analysis should be conducted pursuant to the requirements of STARS #1" Petroleum Contaminated Soil Guidance Policy." Samples taken in non-petroleum storage and discharge areas should be analyzed for the stored material. Analysis should be conducted using any gas chromatography method by a laboratory that is certified pursuant to NYSDOH ELAP for the category of parameters being analyzed for. Laboratory deliverables should be as specified in the method listed above.

6.5.9 If Air Sampling is Required

The quality assurance procedures specified in the method approved by the DER for the sampling should be followed. Quality assurance procedures should follow the guidelines or direction of the NYSDOH. The laboratory method to be used for soil gas or air sampling must be able to detect contaminant levels at or below typical background concentrations.

7.0 HEALTH AND SAFETY PLAN

A site specific Health and Safety Plan has been developed and is attached as Appendix D. The plan will be adhered to by all personnel involved in the investigation and/or remediation. Incorporated into the plan is a section on community health and safety with measures to ensure the public living and working near the site, including facility employees or visitors, are protected from exposure to site contaminants during intrusive activities or on-site treatment actions.

8.0 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP) provides for real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

8.1 Continuous Monitoring

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching and the installation of soil borings or monitoring wells.

8.2 Periodic Monitoring

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at

wells on the curb of a busy urban street, in the midst of a public park or adjacent to a school or residence.

8.3 VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a **continuous** basis or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings will be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

8.4 Particulate Monitoring, Response Levels and Actions

Particulate concentrations will be monitored **continuously** at temporary particulate monitoring stations at the downwind perimeter of the immediate work area (i.e., the exclusion zone) or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

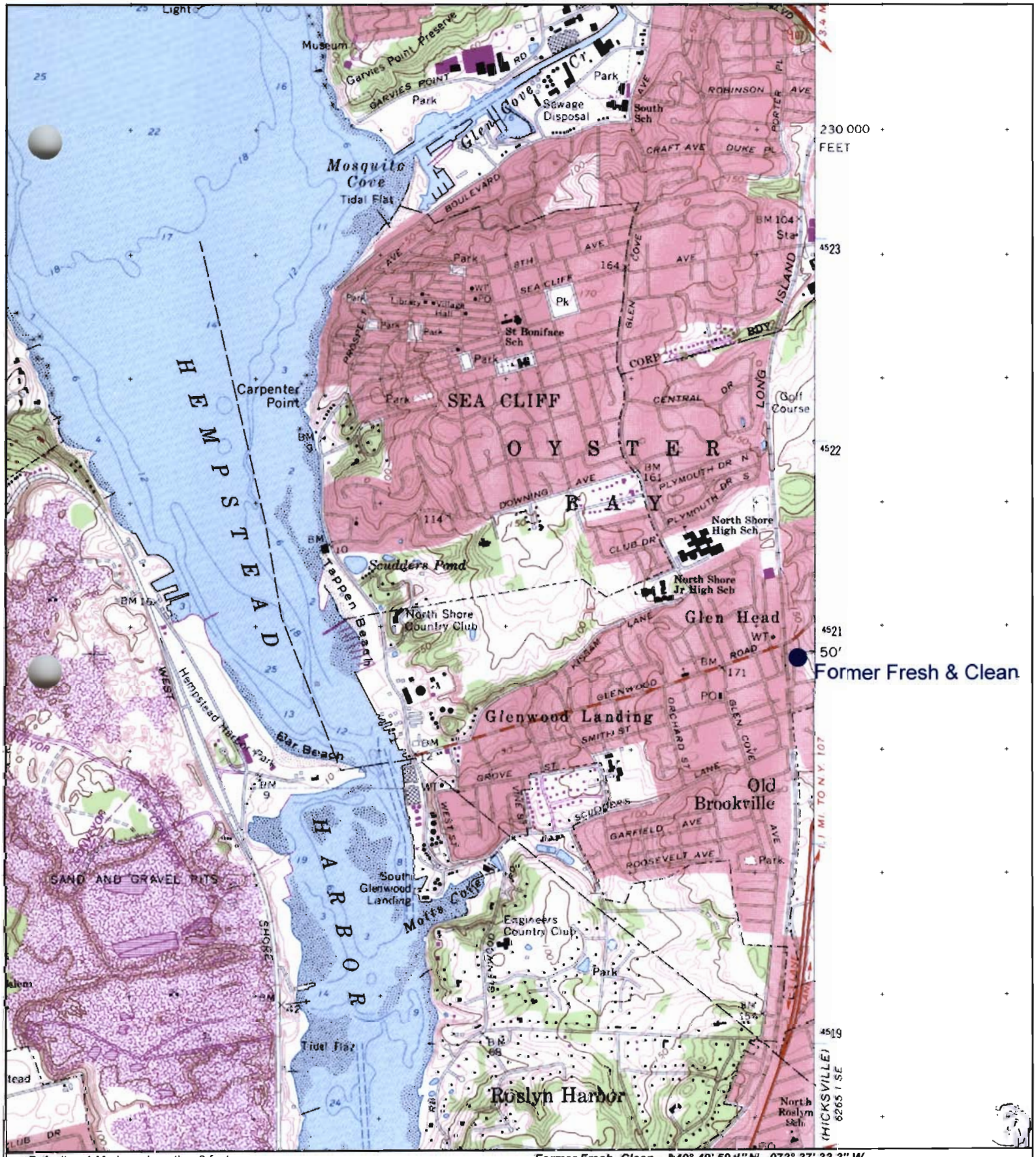
All readings will be recorded and be available for State (DEC and DOH) personnel to review.

9.0 CITIZEN PARTICIPATION

As part of the Citizen Participation requirements, the abutting/proximate properties to the subject site are listed below.

Occupant and Address	Location
Tom's Lawnmower & Welding Service 28-30 Railroad Avenue, Glen Head, NY 11545	Abutting to the south
Elmers Restaurant 34 Railroad Avenue, Glen Head, NY 11545	Second property to the south
Automated Time Concepts 36 Railroad Avenue, Glen Head, NY 11545	Third property to the south
Village of Glen Head Municipal Parking Lot Railroad Avenue, Glen Head, NY 11545	Abutting property to the west
Unknown occupant (medical office?) 1A School Street, Glen Head, NY 11545	Abutting to the north
Michael Hoffman, DDS/Mark Goodman, DMD 16 Station Plaza, Glen Head, NY 11545	Second property to the north
Real Estate, Ernestos East Restaurant, Gold Coast Hobby Store, The Iron Horse Bar 16 Station Plaza, Glen Head, NY 11545	Additional commercial properties to the north
Multiple Single family Residences 4, 6, 8 and 10 School Street, Glen Head, NY 11545	Abutting to the north, northeast
Northshore School Maintenance Building 1A School Street, Glen Head, NY 11545	Abutting to the east
Elementary School School Street, Glen Head, NY 11545	Second property to the east

LIST OF FIGURES



<Default> - 1 Markers, Length = 0 feet

Former Fresh_Clean - 040° 49' 59.1" N, 073° 37' 33.3" W

me: SEA CLIFF
e: 3/24/104
Scale: 1 inch equals 2000 feet

Location: 040° 50' 11.6" N 073° 38' 31.5" W
Caption: Former Frech _Clean Laundry
22-26 Railroad Avenue
Glen Head, NY 11545
Figure 1

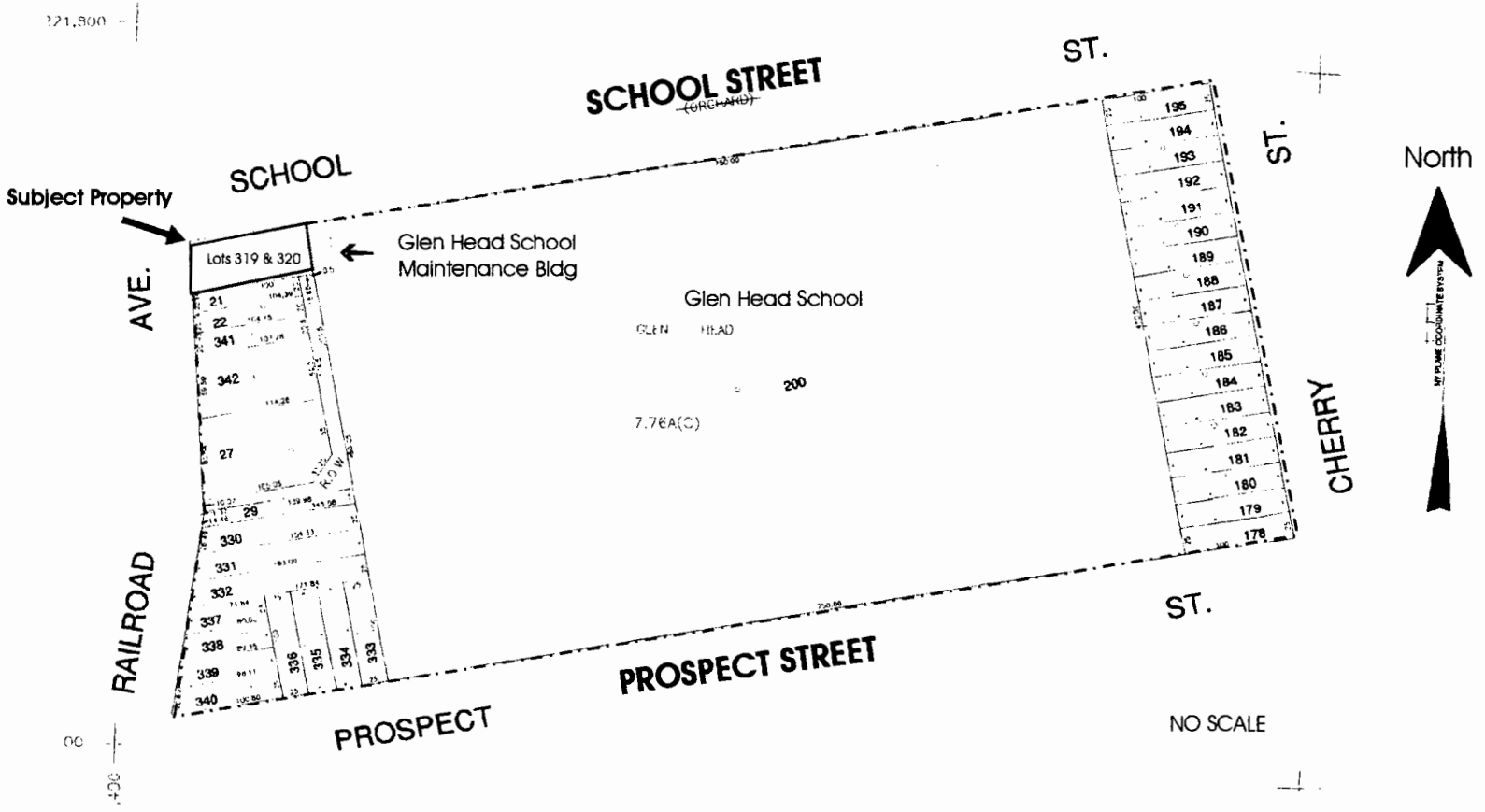
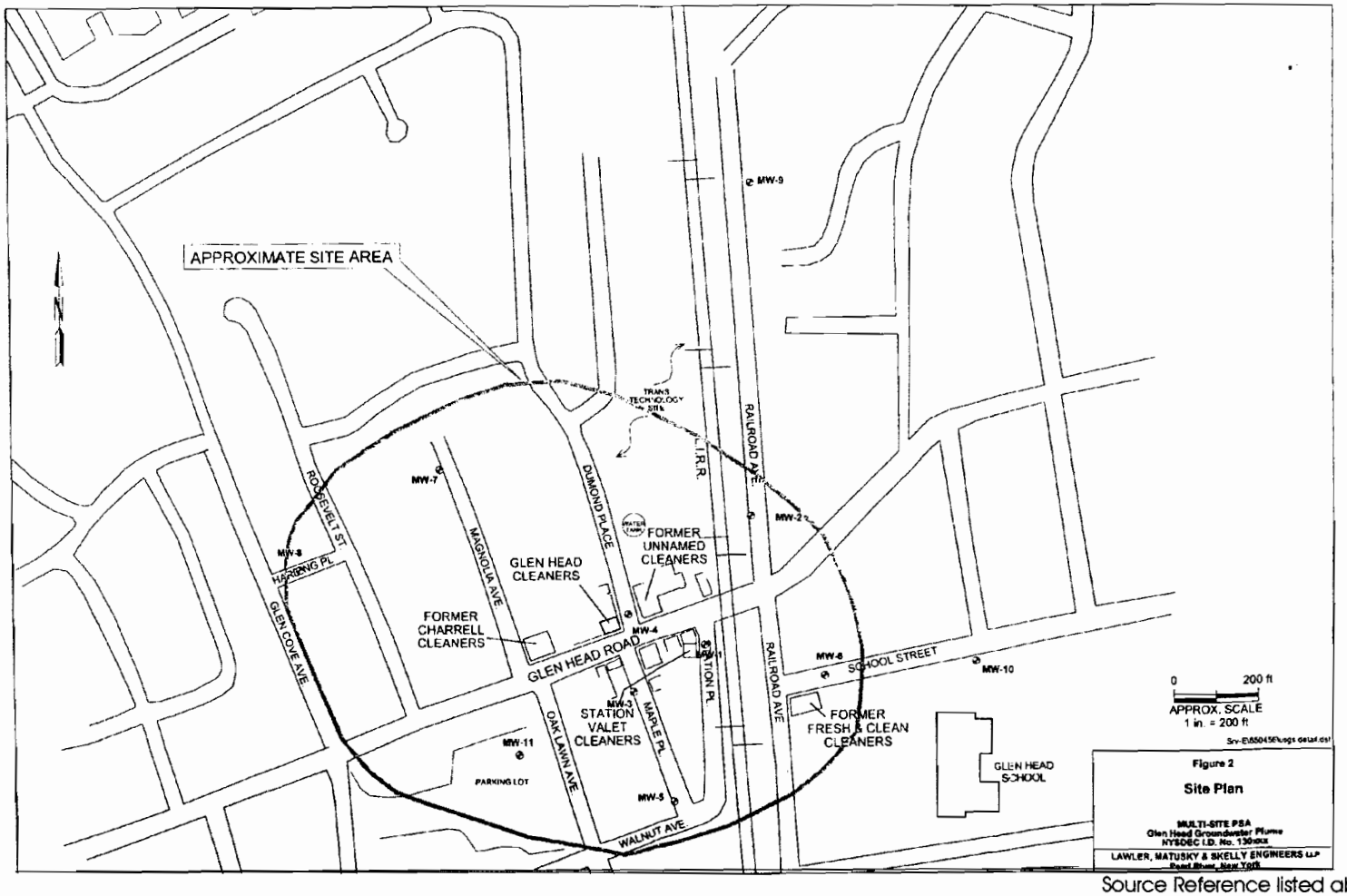
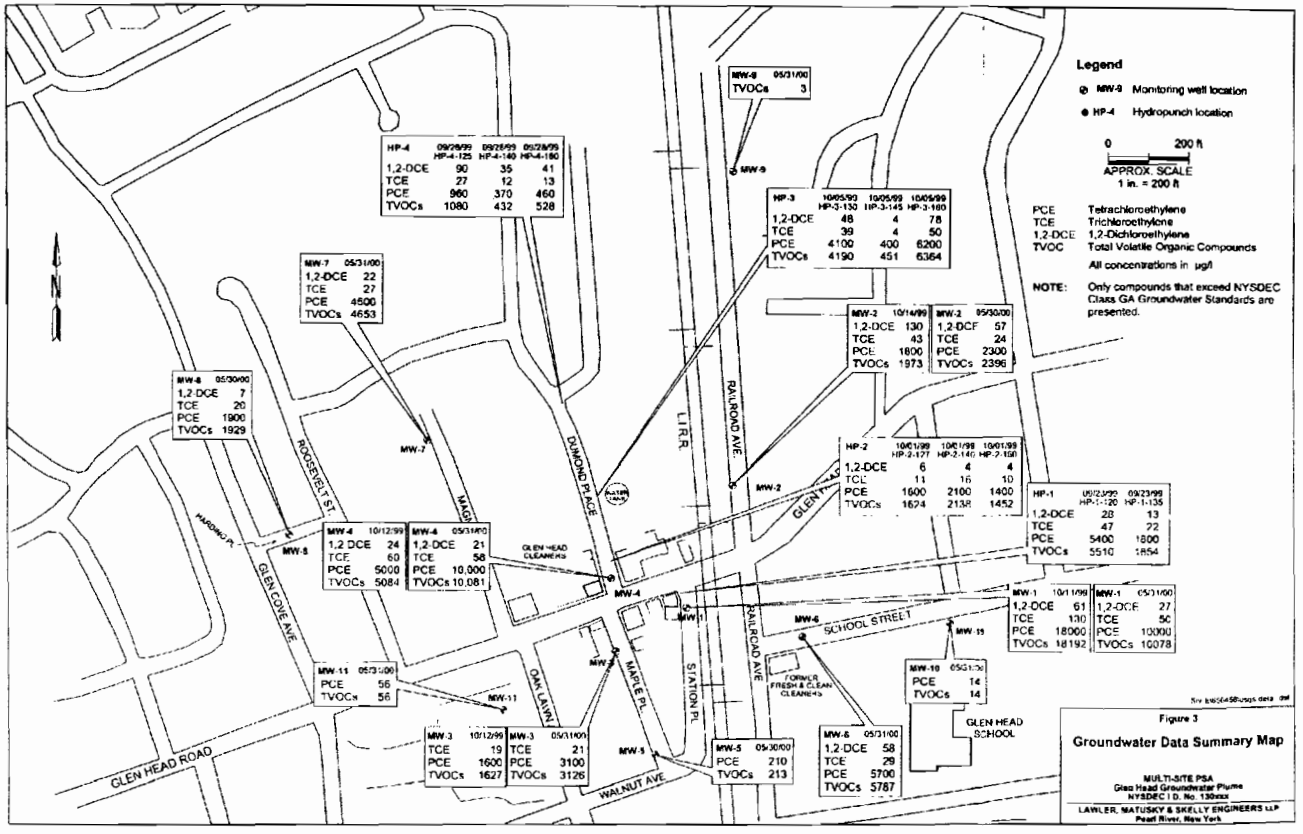


FIGURE 2 - SUBJECT PROPERTY TAX MAP



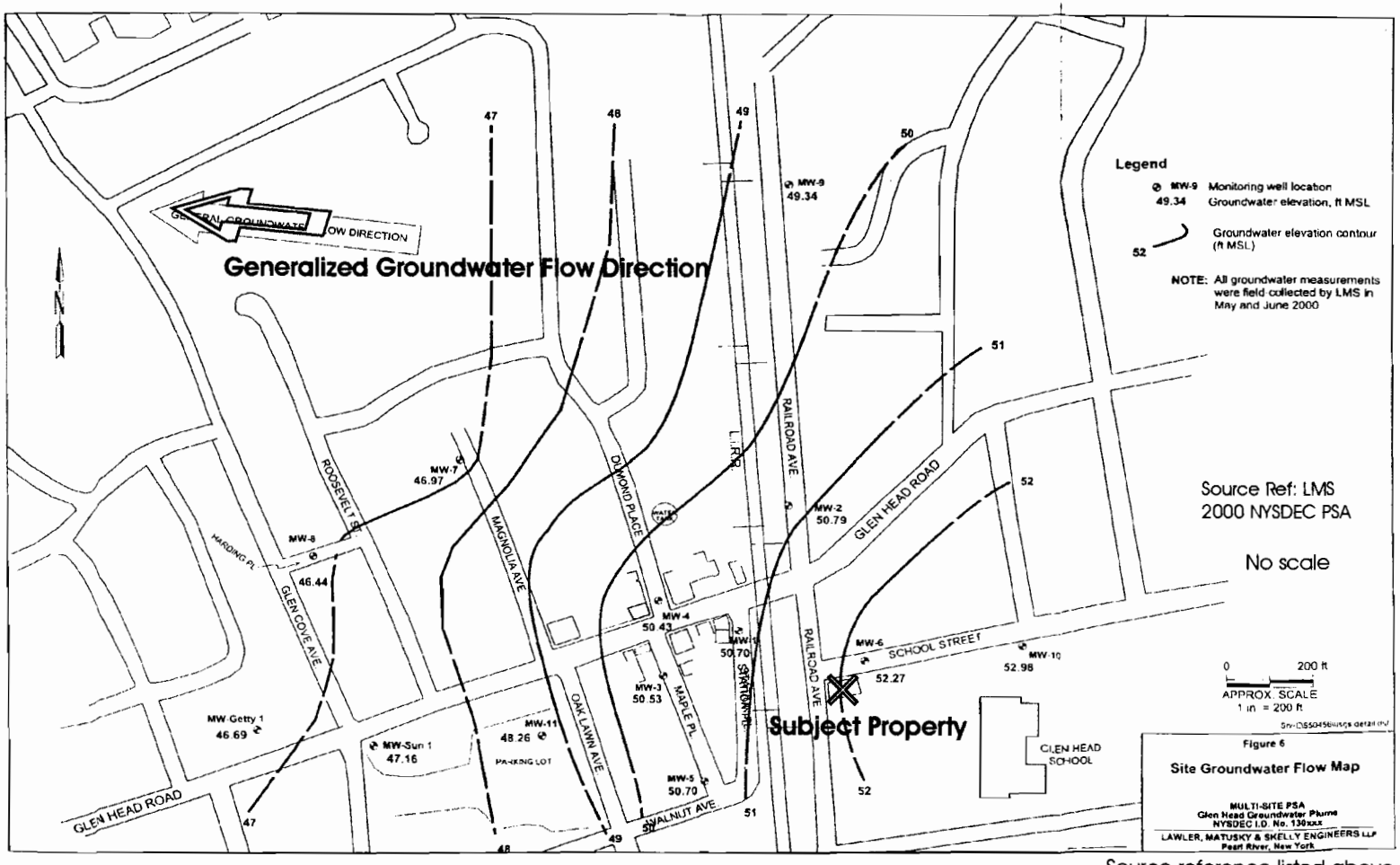
Source Reference listed above.

Figure 3 - Glen Head Groundwater Plume Area



Source Reference listed above.

Figure 4 - PSA Groundwater Data Summary Map



Source reference listed above.

Figure 5 - Groundwater Elevation Map with Groundwater Flow Direction

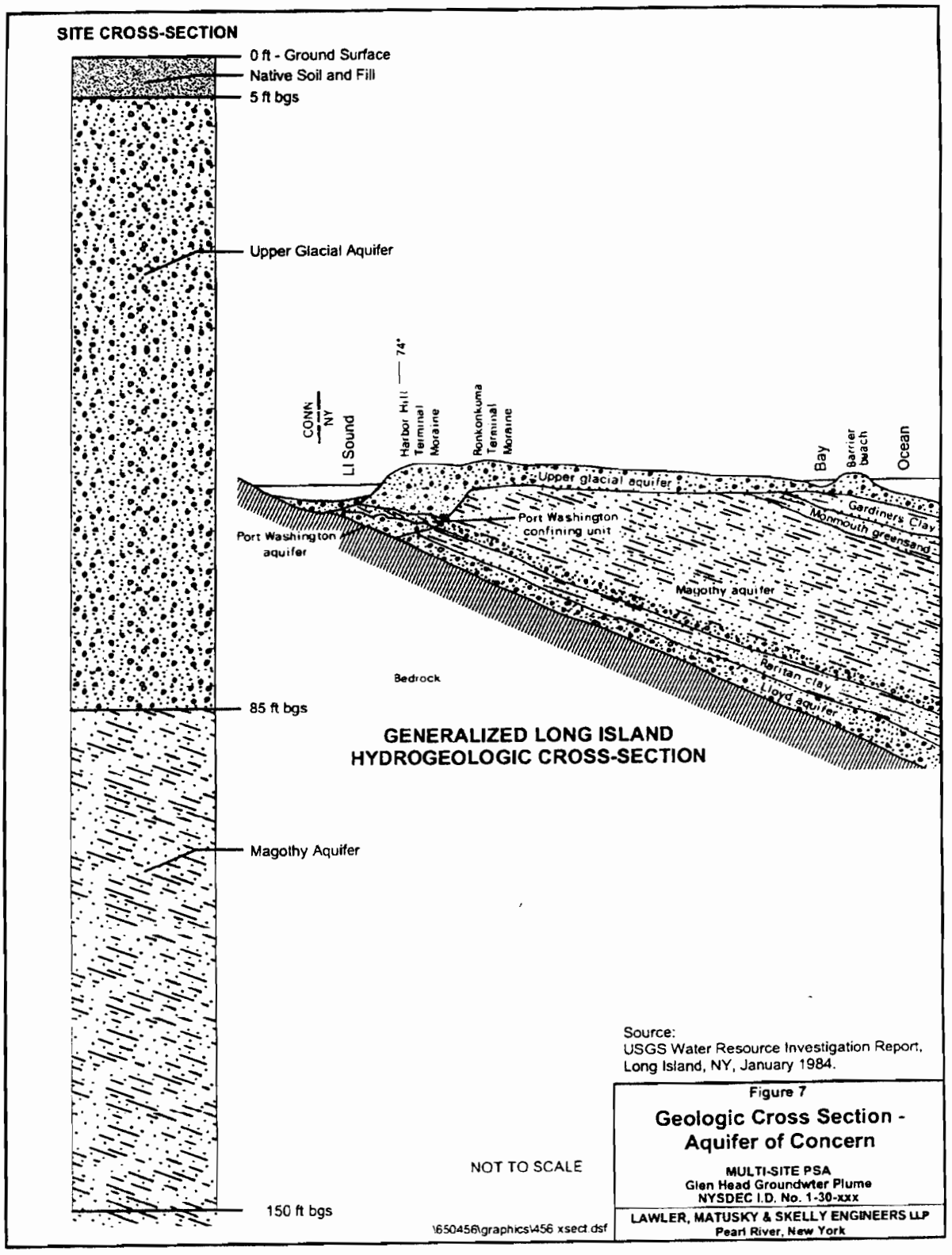


Figure 6 - Geologic Cross Section - Aquifers of Concern

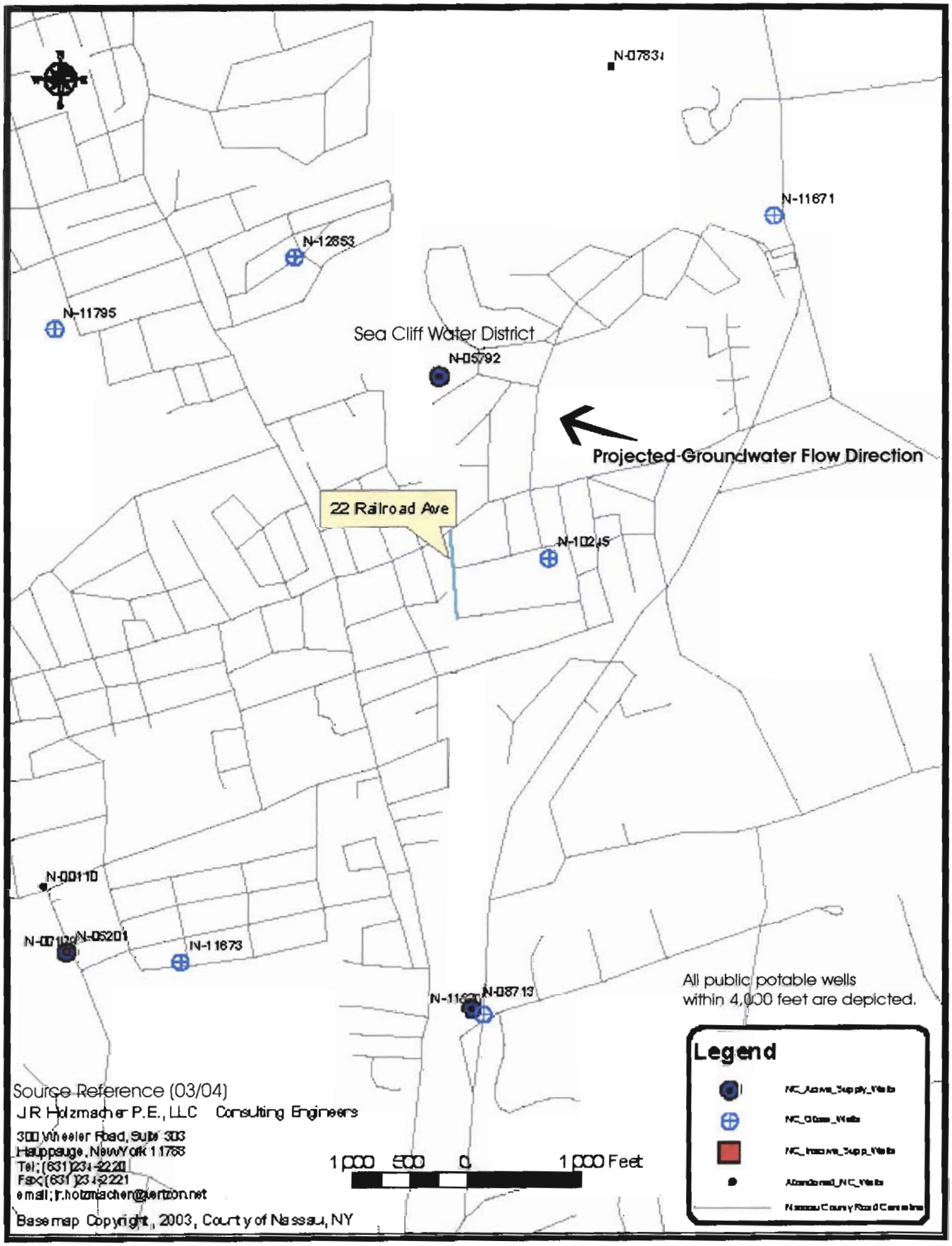


Figure 7 - Public Supply Well Location Map

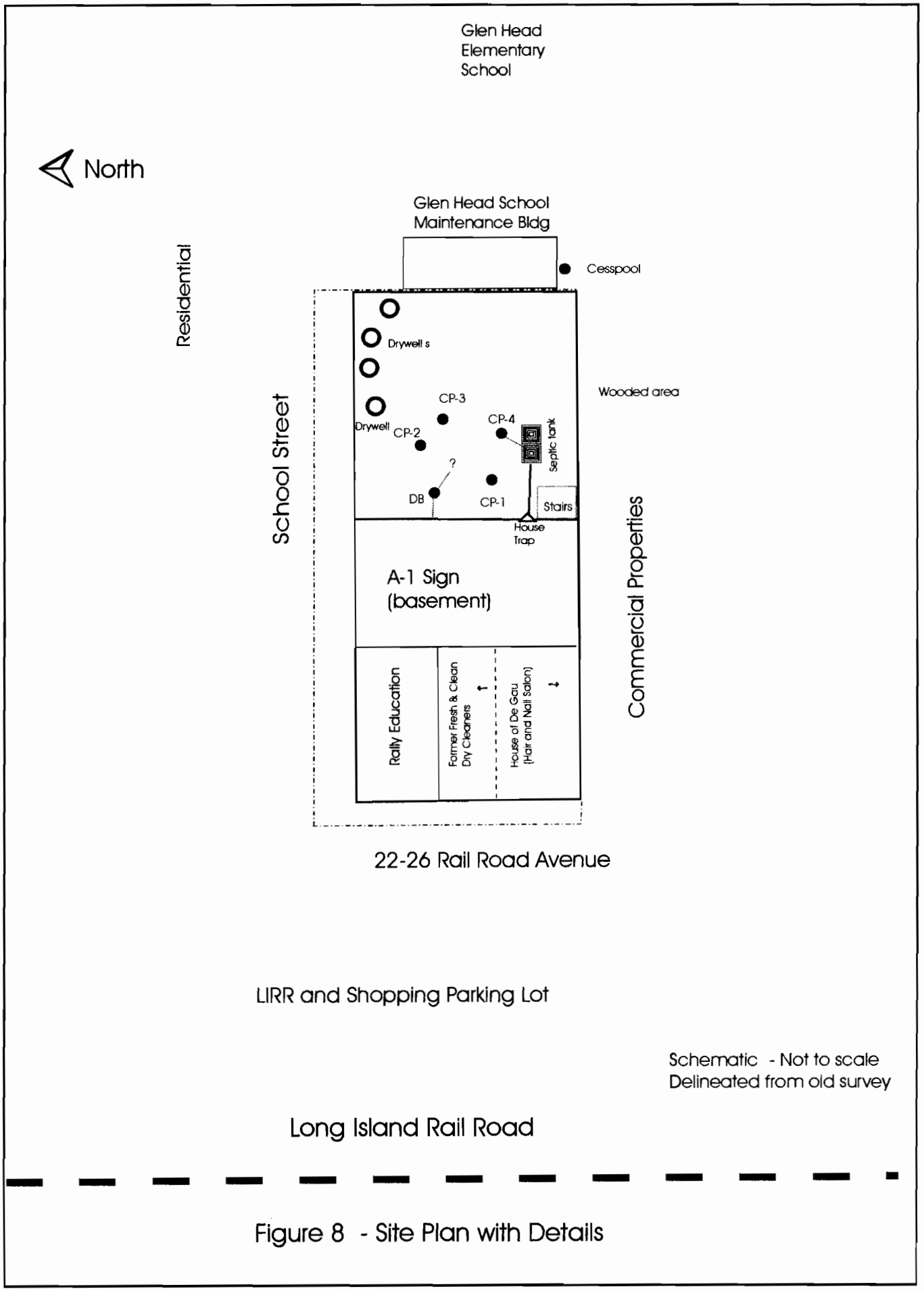


Figure 8 - Site Plan with Details

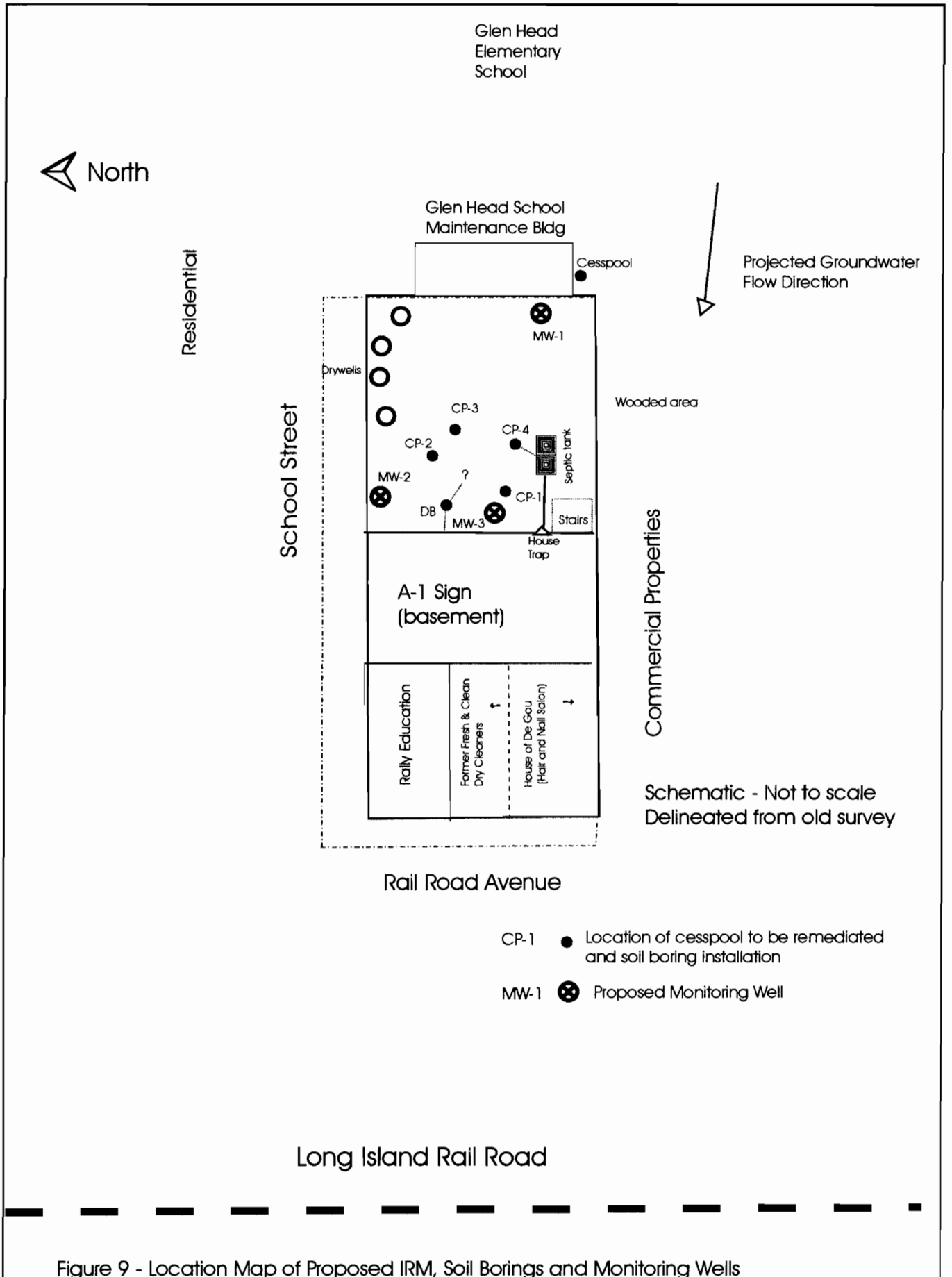


Figure 9 - Location Map of Proposed IRM, Soil Borings and Monitoring Wells

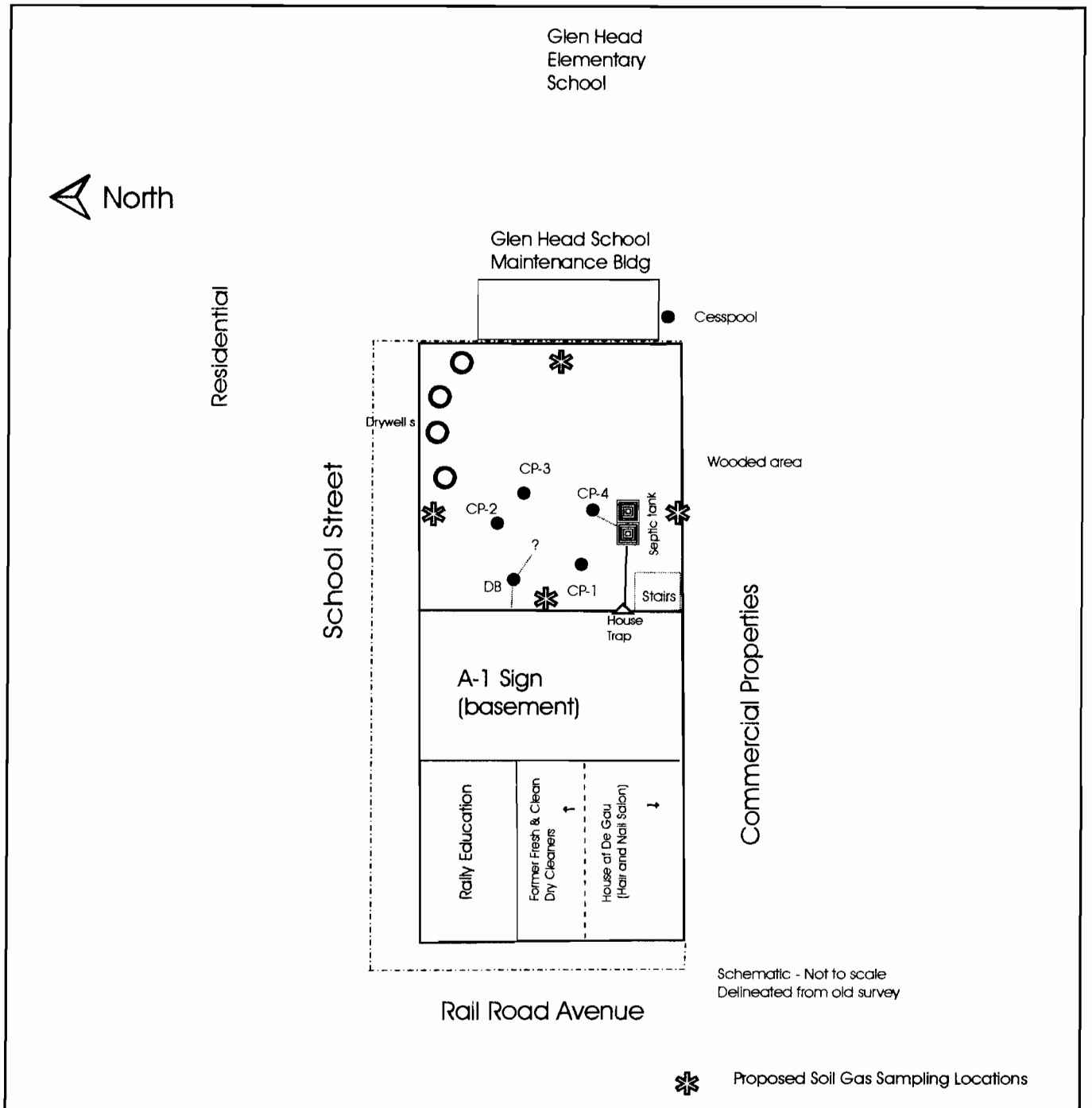


Figure 10 - Location of Proposed Soil Gas Sampling Locations

APPENDIX A

Photographic Log

Photograph No. 1 – Front of 22-26 Railroad Avenue (Former Fresh & Clean Laundry). Note current commercial uses and municipal parking.

Photograph No. 2 – Access to partial basement at 26 Railroad Avenue (House DeGau).

Photograph No. 3 – Side (north) of 22-26 Railroad Avenue; note slope of street towards rear of the property.

Figure 4 – Rear of 22-26 Railroad Avenue, location of A+ Graphics and Signs. Two (one former and one active) garage doors and paved parking area.

Figure 5 – Rear of 22-26 Railroad Avenue, location of septic system distribution box, septic tanks and cesspools, within paved parking area.

Figure 6 – Rear of 22-26 Railroad Avenue, location of natural gas lines and service meters.

Figure 7 – Rear paved parking area with four storm water dry wells. Area formerly wooded undeveloped land. Abuts location of school maintenance building.

Figure 8 – Adjoining (rear) neighbor to the south of 22-26 Railroad Avenue, location of Tom's Lawnmower and Welding Service. Note drums, abandoned tanks, etc.

Figure 9 – Residences located on the north side of School Street, to the north of the subject property.

Figure 10 – Residences located on the north side of School Street; note slope in grade.

Figure 11 –Glen Head Elementary School located to the east of the subject property.

Figure 12 – Municipal parking lot with Sea Cliff Water Tower located in the background.

Figure 13 – Commercial properties located to the south of the subject property.

Figure 14 – Interior of the beauty salon located 26 Railroad Avenue.

Figure 15 – Interior of the A+Graphics and Signs.

APPENDIX B

Prior Environmental Studies

FRANCIS T. PURCELL
County Executive

NASSAU COUNTY DEPARTMENT OF HEALTH

240 OLD COUNTRY ROAD, MINEOLA, N.Y. 11501

JOHN J. DOWLING, M.D., M.P.H.
Commissioner

FRANCIS V. PADAR, P.E., M.C.E.
Deputy Commissioner
Division of Environmental Health

December 2, 1980

CERTIFIED MAIL

Fresh & Clean Laundry
22 Railroad Ave.
Glen Head, N.Y.

Gentlemen:

Representatives of this office have inspected the dry cleaning establishment located on the property at:

Same as above

It has been determined that wastewater containing tetrachloroethylene (perc or cleaning fluid), is being disposed of at this facility onto the surface of the ground or through plumbing into septic tank system and cesspools. Such methods of disposal are not acceptable and are in violation of the Environmental Conservation Law, Article 17, Titles 7 and 8, 6NYCRR Parts 750-757. Accordingly, this discharge must be discontinued immediately and you are herewith instructed to do the following:

1. Provide a watertight and covered receptacle to receive all liquid wastes from the dry cleaning operation that may contain tetrachloroethylene (perc) or any other synthetic organic cleaning chemical.

2. Deposit all liquid wastes (sludge and water from separator) from (a) the still, (b) the solvent recovery unit (reclaimer-water separator), and (c) the solvent adsorption unit (sniffer); any spillage from chemical storage or transfer vessels and any other wastes that may contain the chemical, in the receptacle in (1) above.

3. Hold these wastes for disposal through a DEC registered industrial waste scavenger. (use an empty perc drum).

4. Where possible, utilize the wastewater from the above equipment, and any other wastes in the dry cleaning operation including the use of the material for the pre-spotting solutions.

If you have any reasonable alternate means for eliminating the above-referenced discharges or wastes, such as incorporation into a recirculating cooling system with cooling tower, we would be glad to discuss this with you. This office has been working in contact with your local Neighborhood Cleaners Association, 116 East 27 Street, N. Y., N.Y. 10016. They assure us they are willing to assist us and you in solving the problem of eliminating these discharges. You can call them at 212-684-0945 for information.

Representatives of this office will be reinspecting your facility in the near future to ascertain whether you are acting in compliance with this directive.

Should you have any questions, please call this office at 516-535-2404.

Very truly yours,

L Sama

LS:ceg

L. Sama
Public Health Engineer
Bureau of Land Resources
Management

DRY CLEANER INSPECTION REPORT
Bureau of Land Resources Management
Nassau County Department of Health

Facility Name: FRESH KLEAN PARKLAND LAUNDRY | Address: 82 RAILROAD AVE LEVITTOWN
Company Representative: AL COOK | Title: | Phone: 676-9477
Property Owner: Name: | Phone:
Address

Permit No. ☐ New ☐ Renewal | Effective Date | Expiration Date | Member NCA ☐ Yes ☒ No

Item	Yes	No	N/A
A. Waste Sources			
1. Separator Water: ☐ Sniffer ☑ Reclaimer	✓		
2. Filter Powder		✓	
3. Filter Cartridge	✓		
4. Still Bottom		✓	
B. Waste Storage	✓		
1. ☑ Inside ☐ Outside	✓		
2. Drum		✓	
3. Special Container	✓		
C. Waste Disposal	✓		
1. Registered Industrial Scavanger	✓		
a. Name SAFETY KLEEN			
b. D.E.C. #			
2. Evaporator		✓	
3. Recirculation System			

Item	Yes	No	N/A
C. Waste Disposal (cont'd)			
4. Sewer		✓	
5. Other EVAPORATES	✓		
D. Chemical Storage	✓		
1. Drums		✓	
2. Tanks		✓	
3. D.C. Reservoir	✓		
E. Records	✓		
1. ☑ Purchase Receipts ☐ Removal Receipts	✓		
2. Records Kept a Minimum of 3 Yrs.			✓
3. Reports Submitted on Time			✓
F. Overall Inspection Rating			
☑ Satisfactory ☐ Non-Compliance			

Date	Item	Comments
		MANIFEST SHEETS KEPT AT HOME, WILL BE KEPT ON PREMISES IN FUTURE
		O.O.B 11/14/88

Signature of Inspector: G Fitzgerald | Date: 5/19/89 | Signature of Company Representative: Jackie | Date

DRY CLEANER SURVEY
Bureau of Land Resources Mgmt.
Nassau County Dept. of Health

Facility Name: FRESH 'N CLEAN DRY CLNG & LAUNDRY

Date: 10/30/85

Contact: MR AL COOK

Phone: 676-9414

Address: 33 RAILROAD AVE GLEN HEAD

Zip

Make of Equipment	D.C.	WASCO
	Reclaimer	COMBO
	Sniffer	NO
Reclamation Process	Type	☑ Condensation ☐ Distillation
Chemical Usage	Chemical Name	PERC
	Gallons Purchased/ Year	200
Separator Water Discharge	Quantity Per Month	2 pts WEEK
	Disposal Method	☐ Cesspool ☐ Sewer ☐ Recirculation ☐ Evaporator ☐ Dry Well ☐ Hold to Haul ☑ Other EVAPORATES
Solid Discharge	Nature	☐ Filter Powder ☑ Filter Cartridge ☐ Still Bottom
	Disposal Method	☐ Garbage ☑ Hold to Haul ☐ Other
Chemical Storage	Type	☑ D.C. Reservoir ☐ Drums ☐ Tank Capacity
Sewer	Available?	☐ Yes ☑ No
	If Yes, Is It Hooked Up?	☐ Yes ☑ No

Comments

Signature of Business Representative: Jackie

Inspector: A. Ifsend

7/84

DRY CLEAN INSPECTION REPORT

Bureau of Land Resources Management

Nassau County Department of Health

Facility Name: FRESH 'N CLEAN DRY CLEAN & LAUNDRY | Address: 32 RAILROAD AVE 'N HEAD

Company Representative: AL COOK | Title: | Phone: 676-9494

Property Owner: Name: DAN BALDWIN | Phone:

Address

Permit No. ☐ New ☐ Renewal | Effective Date | Expiration Date | Member NCA ☐ Yes ☐ No

Item	Yes	No	N/A
A. Waste Sources			
1. Separator Water: ☐ Sniffer ☑ Reclaimer	✓		
2. Filter Powder		✓	
3. Filter Cartridge	✓		
4. Still Bottom		✓	
B. Waste Storage		✓	
1. ☐ Inside ☐ Outside		✓	
2. Drum		✓	
3. Special Container		✓	
C. Waste Disposal		✓	
1. Registered Industrial Scavanger		✓	
a. Name			
b. D.E.C. #			
2. Evaporator		✓	
3. Recirculation System		✓	

Item	Yes	No	N/A
C. Waste Disposal (cont'd)			
4. Sewer		✓	
5. Other EVAPORATES		✓	
D. Chemical Storage	✓		
1. Drums		✓	
2. Tanks		✓	
3. D.C. Reservoir	✓		
E. Records	✓		
1. ☑ Purchase Receipts ☐ Removal Receipts	✓		
2. Records Kept a Minimum of 3 Yrs.			✓
3. Reports Submitted on Time			✓
F. Overall Inspection Rating			
☑ Satisfactory ☐ Non-Compliance			

Date	Item	Comments

Signature of Inspector: G. Fotopoulos | Date: 10/30/85 | Signature of Company Representative: Jackie | Date:

EH 795 7/84

ENVIRONMENTAL
HEALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent : Fresh & Clean Laundrette

Address: 22 Railroad Ave Glen Head

Inspector

DATE	COMMENTS
12/4/67	Visited Fresh + Clean Dry Cleaners + spoke to Mr Cook regarding the discharge from the water separator of the dry cleaning machine. The water is caught in a 1 gal jug which amounts to approximately 2 gals a week. All water evaporates due to the high temperatures in the room where the dry cleaning machine is installed. No cause for action A J Gall
9/24/68	Visited Fresh & Clean Laundrette + spoke to the manager inquiring whether or not the fluid as detailed. He stated that only cartridge fulters are used and no fluid as detailed. No further need of follow up. A Jgall

EH 109a 1/68
DH-1198, 9/71

Bureau of Wastewater Management-Nassau County Dept. of Health	Company Name: FRESH & CLEAN LAUNDRY CENTER CO	Date: 11/23/82
Contact: MR COOK		Phone: 676-9474
Address: 22 RAILROAD AVE GLEN HEAD		Zip

EQUIPMENT	Make	W.C. WASCO CLEAN	DRYER COMBO
	Model	—	—
	Year	10	—
RECLAMATION PROCESS	Type	CONDENSATION	
CHEMICAL USAGE	Brand Name & Chemical	PERK	
	Distributor	CHLORAL CHEMICAL	
	Gallons Purchased/ Year	200	
LIQUID DISCHARGE	Frequency	N/A	
	Quantity	N/A 11/4/80 2 pts wash	
	How Disposed	DIRECTLY TO DRAIN evaporate	
SOLID DISCHARGE	Nature	CARTRIDGE FILTERS	
	Frequency of Filter Change	1 x MONTH	
SEWER	Available? [ ] Yes [X] No	If yes, is it hooked up? [ ] Yes [X] No	

COMMENTS: BULK TO STORAGE TANK ON PREMISES
MACHINE VENTED TO OUTSIDE
15 HRS WK OPERATION
1 CEILING & WALL EXHAUST FAN

Signature of Business Representative	X Dorothy Smith	Inspector: A. FitzGerald

H-698 10/79

NASSAU COUNTY
DEPARTMENT OF HEALTH
240 OLD COUNTRY ROAD
MINEOLA, N.Y. 11501

February 2, 1988

Fresh & Clean Laundry Cleaners
22 Railroad Ave.
Glen Head, NY 11545

Dear Facility Owner/Operator:

Re: Facility ID # 510

In order to protect the ground and surface waters of Nassau County, the Board of Health adopted a Public Health Ordinance (Article XI), titled Toxic and Hazardous Materials Storage, Handling and Control. This Ordinance provides for the registration and regulation of toxic and hazardous materials stored in underground or aboveground tanks, containers or in bulk.

Toxic or hazardous materials, which are specifically defined in the Article XI Regulations, include any substance, solution or mixture, including petroleum products, which present an actual or potential hazard to human health or a threat to the quality of either the underground drinking water supply or surface waters if discharged to the land or waters of Nassau County.

Registration is mandated whenever any of the following minimum total storage capacities exist at a facility:

- A total of 250 gallons or more of toxic or hazardous materials including chemicals, fuel oil used solely for on-site heating (see Note), as well as lubricating, transmission, hydraulic, cutting, and motor oils
- 50 gallons or more of halogenated hydrocarbons
- More than 27.5 gallons of toxic or hazardous waste
- Bulk (dry) storage exceeding 2,000 pounds of toxic or hazardous materials

Our records indicate that your facility may fall under the provisions of the Ordinance. Please complete Form 1 (General Information). Form 2 (Tank Registration) and/or Form 3 (Bulk and Container Storage Registration) should be completed if tank and/or bulk and container storage exists at your facility. Refer to the enclosed instructions for filling out the forms.

(over)

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent: A+ Graphics & Signs Bill Manfredonia

Address: 57 School St. Glen Head NY 11545

Inspector: Steve Genovese

DATE 1/13/04 - 1/14

COMMENTS

On Tuesday January 13, 2004 Joe DeFranco and ~~[illegible]~~ I sampled the A+ Graphics & Signs building in Glen Head. This business is located in the basement area of the former Fresh Clean Laundry. It is in the rear of the building right near the dry wells where the contamination is believed to have been dumped. Inside we sampled a paint room in the NW corner of the building and the main room. We went through a list of his chemicals and told him to refrain from using some of them due to the fact that we had elevated levels last time believed to be from Methylene Chloride. We also placed an outside badge near the fence, adjacent to the door.

EH 109a 1/68
DH-1198. 9/71

SECTION | BLOCK 11 | LOT 211 240 | ADDRESS RAILROAD AVE | CARD No. 1/2

PROPERTY DESCRIPTION

6

501-4
501T-4

19,120
1,680

20,800

8,050
2
08
86098-1333

1-2-3-7-23-41-50-D-A-63
1-2-3-7-23-41-50-D-A-63

BALDWIN
5718-493

DS SEC 20 BLOCK 19
LOT 319-320

TRANSITICNAL

REASON CODE 15

63 D A 501

5718-493

MS4 8 86

CLASS 480.14

63 D A 501

6718-493

LOTS 319-320

REMARKS

12/20/63 Hdd'N Priced Complete 10x34 +450

10X34X40 = 136

ASSESSMENT SUMMARY

19	LAND	1410
	BLDGS.	15540
	TOTAL	16950
19 65	LAND	1650
	BLDGS.	15522
	TOTAL	17150
19	LAND	1650
	BLDGS.	15949
	TOTAL	17600
19 66	LAND	2760
	BLDGS.	15949
	TOTAL	18706
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	

70 LAND RECORD K-1

NO UTILITIES	LOW
NO SEWER	HIGH
NO WATER	ROUGH
NO GAS	ROCKY
NO ELECTRICITY	SWAMPY
	HILLSIDE
NO STREET	WOODED
DIRT STREET	BRUSH LAND
SEMI IMPROVED ST.	TILLABLE
NO SIDEWALK	

LAND VALUE COMPUTATIONS

FRONTAGE FIGURED	AVERAGE DEPTH	UNIT PRICE	UNIT PERCENT	FRONT FT. PRICE	COR. INFL.	TOTAL	% DEPR.	VALUE
~~50~~	113	~~28.50~~	~~135~~	~~29.83~~	~~75~~		~~1570~~	
~~50~~	113	~~30~~	105	~~31.50~~	75		~~1650~~	
50 X 113 X 50 X 105 X 1.50 136						2761		
~~11 x 34 x 100 x 40 = 130 x 20%~~								

ASSESSMENT RECORD NASSAU COUNTY, NEW YORK

TAR &	✓ SLATE		METAL
COMPOSITION			
WOOD JOIST	METAL JOIST		SHEATHING
WOOD BEAMS	STEEL BEAMS		
WOOD TRUSSES	STEEL TRUSSES		
SKY LIGHTS	VENTILATORS		ROOF DRAINS

PARTITIONS			
L. & P. ON WOOD STUDS			
COM. WOOD BOARD			
PLST. BD. ON STUDS	✓	✓	✓
PLST. ON TILE OR C. B.			
PLST. ON BRICK			

STAIRS & FIRE ESCAPES	
PINE STAIRS	
HARDWOOD STAIRS	
1 METAL STAIRS	✓
FIRE ESCAPES	

INTERIOR FINISH	
PINE DOORS & TRIM	
HARDWOOD DOORS & TRIM	
ENAMEL DOORS & TRIM	
9 FIRE PROOF DOORS	✓
BUILT IN FEATURES	

HEATING			
STEAM			
VAPOR			
HOT WATER			
HOT AIR GAS	✓		
PIPELESS FURNACE			
NO HEATING SYSTEM			
OIL BURNER	GAS BOILER		COAL STOKER

PLUMBING				
3 TOILET ROOMS	✓	BATH ROOMS		
WATER CLOSETS EXTRA		SINKS EXTRA	1 /	URINALS
G. I. PIPING		BRASS PIPING		

TILING			
	16		
TOILET ROOM FL. & WAINSCOT		TOILET ROOM FL.	
BATH ROOM FL. & WAINSCOT		BATH ROOM FL.	
		WASH MACH 17	✓

ELECTRICAL WIRING		
FLEXIBLE CONDUIT		PIPE CONDUIT
KNOB & TUBE		

ATION | GOOD | FAIR | POOR

S CUBAGE 75000 CUFT @ 21¢ CU FT

COMPUTATIONS

	WALLS (VERTICAL)		4966
	OOORS & WINDOWS		
440 ft	STORE FRONTS PLATE GLASS	2nd ft	880
	FACE BRICK OR WALL TRIM		
3125 ft	ROOF & FLOORS ETC. (HORIZONTAL)	25¢ ft	8156
	BASEMENT AREA		
	STAIRS & FIRE ESCAPES		550
	INTERIOR FINISH		
	MISC		460
	OIL BURNER		
	PLUMBING		990
	TILING		
	TOTAL REPLACEMENT VALUE		16000

OCCUPANCY DETAIL & INCOME

LAUNDRY & CLEANING STORE

TOTAL

RENTAL CAPITALIZATION

PERCENTAGE ITEMS		FLAT EXPENSE ITEMS
TAXES		COST OF OWNING LAND
INSURANCE		VACANCY ALLOWANCE
		COST OF HEATING
MAINTENANCE		COST OF WATER
		COST OF ELECTRICITY
DEPR. ALLOWANCE		COST OF MANAGEMENT
		COST OF JANITOR
CONTINGENCIES		
TOTAL CAP. RATE		TOTAL FLAT EXPENSES

GROSS ANNUAL INCOME

LESS FLAT EXPENSES

BALANCE FOR PERCENTAGE CAPITALIZATION

REFLECTED CAPITALIZED VALUE

20 19 319 E2103516 N221574

SECTION | BLOCK 17 | LOT 314 320 | ADDRESS RAILROAD AVE | CARD No. 1/2

PROPERTY DESCRIPTION

6

501 -4
501T-4

18,120
1,680

20,300

08 2
86028-1331
1-2-3-7-23-41-50-D-A-63
1-2-3-7-23-41-50-D-A-63

BALDWIN
5718-493

DS SEC 20 BLOCK 19
LOT 319-320

TRANSITICNAL

REASON CODE 15

63 D A 501

5718-493

CLASS 480.14 MS4 8 86

63 D A 501

6718-493

LOTS 314-320

REMARKS

12/20/63 Add'N Priced Complete Bldg +450

10X34X40 = 136

ASSESSMENT SUMMARY

19	LAND	1410
	BLDGS.	15540
	TOTAL	16950
19 65	LAND	1650
	BLDGS.	15522
	TOTAL	17150
19	LAND	1650
	BLDGS.	15949
	TOTAL	17600
19 66	LAND	2760
	BLDGS.	15949
	TOTAL	18706
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	

70 LAND RECORD K-1

NO UTILITIES		LOW
NO SEWER		HIGH
NO WATER		ROUGH
NO GAS		ROCKY
NO ELECTRICITY		SWAMPY
		HILLSIDE
NO STREET		WOODED
DIRT STREET		BRUSH LAND
SEMI IMPROVED ST.		TILLABLE
NO SIDEWALK		

LAND VALUE COMPUTATIONS

FRONTAGE FIGURED	AVERAGE DEPTH	UNIT PRICE	UNIT PERCENT	FRONT FT. PRICE	COR. INFL.	TOTAL	% DEPR.	VALUE
~~50~~	~~113~~	~~28.50~~	~~105~~	~~29.93~~	~~75~~		~~15%~~	
~~50~~	~~113~~	~~30~~	~~105~~	~~31.50~~	~~75~~		~~1650~~	
50 X 113 X 50 X 105 X √√50 136						2761		

~~11 x 34 x 100 x 40 = 130 x 50~~

ASSESSMENT RECORD NASSAU COUNTY, NEW YORK

SECTION 20 | BLOCK 19 | LOT 819 320 | ADDRESS RAILROAD AVE SEWARD | CARD NO 2

PROPERTY DESCRIPTION

Pasquale Filardi
Glen Head, L.I.

Vol 13
P.65
Glen Head Overlook

[redacted]

25x112.625--825
25x112.625

2/5/52 Deeded OFFICE MOVED TO SEC 20 BLK 19 LOT 22 Map

3/24/42 Bldg 1st + B, C/B 1 FP 5000 Pounds

1943
44
53

ASSESSMENT SUMMARY

19	LAND	157.2
	BLDGS.	226
	TOTAL	1798
19	LAND	1572
	BLDGS.	
	TOTAL	1800
19	LAND	1410
	BLDGS.	
	TOTAL	1600
19 53	LAND	1410
	BLDGS.	5000
	TOTAL	6400
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	

VN13 LAND RECORD

NO UTILITIES		LOW	
NO SEWER		HIGH	
NO WATER		ROUGH	
NO GAS		ROCKY	
NO ELECTRICITY		SWAMPY	
		HILLSIDE	
NO STREET		WOODED	
DIRT STREET		BRUSH LAND	
SEMI IMPROVED ST.		TILLABLE	
NO SIDEWALK			

LAND VALUE COMPUTATIONS

FRONTAGE FIGURED	AVERAGE DEPTH	UNIT PRICE	UNIT PERCENT	FRONT FT. PRICE	COR. INFL.	TOTAL	$ DEPR.	VALUE
50	113	28.50	105	29.93	75	1572	-	

11 X 34% X 100 X 120% = 150 X 50% = 4

ASSESSMENT RECORD NASSAU COUNTY NEW YORK — NEW YORK — THE J. M. CUMMINSHAW CO.

2

OCCUPANCY	CONSTRUCTION	SIZE	GRADE	AGE	REMODL'D	COND.	PHY. DEP.	FUNCT. DEP.	REPL. VALUE	PHYSICAL VALUE	SOUND VA
2	1	18X12	C	8'		1	75		302	116	
									TOTAL	116	

FOUNDATION		ATTIC & BSMT. FIN.	
CONCRETE WALLS		ATTIC FL. & STAIRS	
CEMENT BLK. WALLS		FIN. ATTIC AREA	
BRICK WALLS		FIN. BSMT. AREA	
STONE WALLS		RECREATION RM. BSMT.	
W.		GARAGE IN BSMT.	
PIERS			

BASEMENT AREA			
¼	½	¾	

ROOMS			
BSMT.		1ST	2
2ND		3RD	

EXTERIOR WALLS	
CLAPBOARDS	
COLONIAL SIDING	
SINGLE SIDING	✓
WOOD SHINGLES	
COMPO. SHINGLES	
STUCCO ON FRAME	
STUCCO ON TILE OR C.B.	
FACE BRICK VENEER	
FACE BR. ON TILE OR C.B.	
COM. BRICK VENEER	
COM. BR. ON TILE OR C.B.	
SOLID COM. BRICK	
STONE VENEER	
SOLID STONE	
ROOF INSULATION	
BLANKET INSULATION	

INTERIOR FINISH			
	1ST	2ND	3RD
PINE			
ENAMELED			
CHESTNUT			
HARDWOOD			
WALL BOARD	✓		
MATCH BEAD			
UNFIN. INT.			

ROOF TYPE		
HIP	GABLE	✓
MANSARD	FLAT	
GAMBREL		

ROOFING	
ASPHALT SHINGLE	
WOOD SHINGLE	✓
ASBESTOS SHINGLE	
SLATE – STD. WT.	
SLATE – HEAVY	
TILE	
METAL	
COMPOSITION	

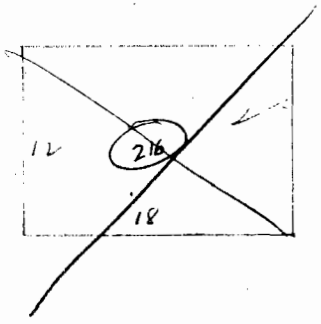
HEATING	
STEAM	
HOT WATER	
VAPOR	
AIR COND.	
HOT AIR	
PIPELESS	
NO HEATING SYST.	✓
OIL BURNER	
COAL STOKER	
GAS BOILER	

FIREPLACES	
FIREPLACE STACKS	
FIREPLACES	
ARTIFICIAL FIREPLACE	
INCINERATOR	

FLOORS				
	B	1ST	2ND	3RD
CEMENT				
EARTH				
PINE		✓		
HARDWOOD				
SINGLE FL.		✓		

LIGHTING	
NO ELECTRIC LTG.	
GAS LIGHTING	
PRIVATE LTG. SYST.	

3/14/60 Bldg T&B - C/O FD 5000 Parts



1' = 140 sq ft

47613

MEASURED	72
LISTED	
AREA COMP.	135
PRICED	✓

PLUMBING	
BATHROOMS	
STALL SHOWER BATH ROOM	
STALL SHOWER EXTRA	
TOILET ROOMS	
WATER CLOSET EXTRA	
LAVATORY EXTRA	
SINK EXTRA	
SEPTIC TANK OR CESSPOOL	
DRILLED WELL	
PRIVATE WATER SYST.	
WATER ONLY	✓
NO PLUMBING	

TILING	
BATH FLOOR & WAINSCOT	
BATH FLOOR & WALLS	
BATH FLOOR ONLY	
TOILET RM. FL. & WAINS.	
TOILET RM. FL. & WALLS	
TOILET RM. FL. ONLY	
KITCHEN WAINSCOT	

LOCATION		
GOOD	FAIR	✓ POOR

INCOME	

BUILDING COMPUTATION			
216 sq ft	140	302	
S.F.			19
S.F.			
S.F.			
S.F.			19
S.F.			
S.F.			
S.F.			
			19
BSMT. AREA			
WALLS			
			19
ROOF			
FLOORS			
FLOORS			19
ATTIC			
			19
INT. FIN.			
HEATING			
FIREPLACES			19
PLUMBING			
TILING			19
TOTAL			19
COST FACTOR			
REPLACEMENT VALUE			

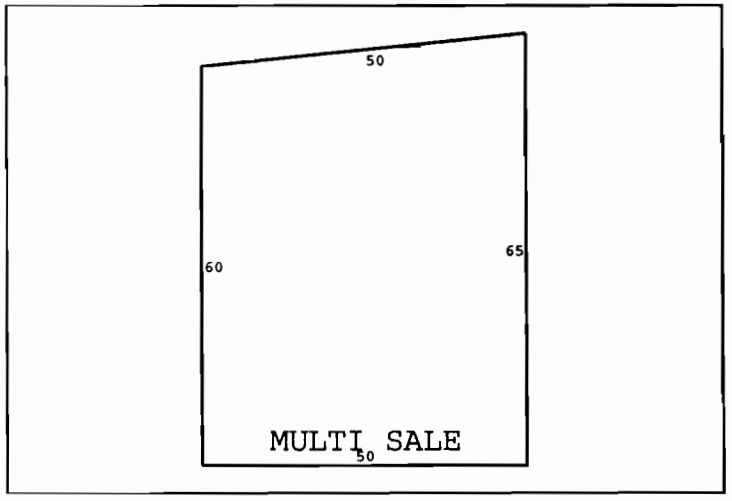
OUTBUILDINGS			
WALL FOUNDATION		CONC. FLOOR	
PIER FOUNDATION		EARTH FLOOR	19
SINGLE WALL SDG.			
DOUBLE WALL SDG.		SHINGLE ROOF	
SHINGLE WALLS		ROLL ROOFING	
STUCCO ON			
CEMENT BLOCK		ELECTRIC LIGHTS	
BRICK		FINISHED INT.	19
UNIT PRICE #1		UNIT PRICE #2	

20-019- -0319.0 CARD 1 OF 1 TAX YEAR 2006 TIEBACK
ALT ID 319-320 MAP/ROUTE FIELD REVIEW FLAG ( )
TAX CODE 4 ZONING TAX DIST
ADDRESS -26 RAILROAD AVE
NBHD C0403 RESTRICTIONS / /
LUC 4851 --O W N E R S H I P D A T A-- ---- S A L E S D A T A----
LVG UNIT 0 PETERMAN KENNETH & NANCY DATE TYPE PRICE S V
CLASS 4 02/10/00 2 0 4 X
BOOK/PAGE: 10/31/97 2 0 4 X

---------- PROPERTY FACTORS ----------
TOPO 1/ / LEVEL /
UTIL 1/ / ALL PUBL /
ST/RD 1/ PAVED
TRAFFIC 1 LIGHT

---ENTRANCE INFORMATION ---
DATE CD INFO CD ID
10/20/2003 AI
10/05/2001 PC 134
07/23/2001 0C 114

---------- LOCATION FACTORS ----------
FRONTING
LOCATION 6 NEIGHBOR LAND ADJ %
PARKING TYPE QUANTITY PROXIMITY ---------- NOTES ------
AVAIL / /



------- LAND DATA -------
ACRES --------- C A L P T A B L E---------
TY SQFT/UNITS BASE BASE INCR
PE LN CD FRONT DEPTH PRICE INFL -FAC SIZE RATE /DECR LAND-VAL
SQ 1 1 5,650 19.00 0 19.00 19.00 107,350.00
PRIMARY SITE ADJ FACTOR(CA14) 1.0000

--------- APARTMENT INFORMATION ---------
USE MDL COUNT BED BATH HALF OTHER UNITS

GROSS LN CODE VALUE LAND-VAL
TOTAL ACRES .1297 TOTAL LAND-VALUE 107,350
TOT SIZE .1297 NBHD 604 ZONE 0 LOC 6 UTILITY 0 STREET 0
LAND ADJ ADJ FACTOR (CA11) 1.0000 ADJ FACTOR (AA44) 1.0000

MISC. IMPROVEMENTS 0
GROSS BUILDING SUMMARY
DESCR VALUE 0
---------- BUILDING PERMIT RECORD ---------
DATE NUMBER AMOUNT PURPOSE

20-019- -0319.0 CARD 1 OF 1 TAX YEAR 2006 TIEBACK
ALT ID 319-320 MAP/ROUTE FIELD REVIEW FLAG ( )

BLDG 1 YR BLT 1963 EFF YR # UNITS STRUCTURE 374 RTL MULT OCP GRADE C ID. UNITS 1 HOUSE OF DEGAU INV RAT

BUILDING OTHER FEATURES / ATTACHED IMPROVEMENTS

LN	LNUM	CODE	DESCRIPTION	+/-	MEAS1	MEAS2	STOPS	IU	UNIT COST	PRICE

INTERIOR / EXTERIOR INFORMATION

LINE	SCT	FRM	TO	LEVELS DIMENSION YRBLT	WDTH	LGTH	AREA	USE PERM	TYPE	HT	EXT	CON	INT FIN	PTN	HT	AC	PLB	LT	OTHER FEAT	RCN BASE RCN	RCN PER SF	PHY	FUN	%RENT	% GD	%COMP
1	1	B1	B1	1963			3125	225	086 00	10	00	2	100	2	0	0	2	2	0	147,219	47.11	3	3		50	
								SUPPORT ARE			NONE	FRS		NRM	NONE	NON	NRM	NORM				AV	AV			
2	1	01	01	1963			2085	156	083 24	15	03	2	100	2	1	1	2	2	0	215,589	103.40	3	3		50	
								MULTI USE S			CONC	FRS		NRM	HOT	CTR	NRM	NORM				AV	AV			
3	2	01	01	1963			1040	75	082 23	15	04	2	100	2	1	1	2	2	0	152,745	146.87	3	3		50	
								MULTI-USE O			BRIC	FRS		NRM	HOT	CTR	NRM	NORM				AV	AV			

OTHER BUILDING & YARD IMPROVEMENTS

TYP	YEAR	EFF	SIZE	GRD	QN	MODS	C	F	%COMP	MA%	ADJFACT	VALUE
PA1	1963		1X1200	C	1		3	3		50	1.0000	2400
PAVING ASP												
PA1	1963		X1	C	1		3	3	1	50	1.0000	0
PAVING ASP												

TOTAL OBY VALUE 2,400

PARKING DATA

COVERED 0 UNCOVERED 0

TOTAL SQUARE FEET:		6,250
BASE R.C.N.		515,550
	82.49	/SQFT
GRADE FACTOR		1.00
ADJ R.C.N.		515,550
	82.49	/SQFT
OVERALL % GOOD		50
R.C.N.L.D.		257,780
	41.24	/SQFT
NO IDENT UNITS		1
TOTAL R.C.N.L.D.		257,780
ADJUSTMENT FACTOR (CA31)		1.0000
TOTAL YARD IMP VALUE		2,400
OTHER: _____		0
TOTAL CARD VALUE		260,180
ECF % (CA11)		

MODEL TYPE - 00 - NONE

MODEL NUM: 000

EST ECONOMIC INCOME

GROSS LEASABLE AREA (GRA)		% RENTABLE AREA (%RA)		NET LEASABLE AREA (NLA)
3,125	X	100.00%	=	3,125

MODEL ANNUAL RATE/SF		ECO ADJ		
.00	X	100.0%		.00 ADJ RATE

POTENTIAL GROSS INCOME	0
TOTAL POTENTIAL GROSS INCOME	0

VACANCY AND CREDIT LOSS

MODEL		AGE ADJ		ECO ADJ		ADJ VAC/CL	
.0%	X	100.0%	X	100.0%	=	.0%	0

EFFECTIVE GROSS INCOME	0
ADDITIONAL INCOME	0
EXPENSES .0%	0

OVERALL EXPENSE % (ADJ)

UTILITY EXPENSE PSF

GROSS LEASABLE AREA		ADJ UTIL EXP RATE	
3,125	X	.00	0

NET INCOME	0

EXPENSES - AGE GROUP:

OVERALL EXPENSE RATIO

MODEL RATIO		AGE ADJ		ECO ADJ	=	ADJ EXP
.0%	X	100.0%	X	100.0%	=	.0%

UTILITY EXPENSE PSF

MODEL RATE PSF		AGE ADJ		ECO ADJ	=	ADJ UTIL EXP PSF
.00	X	100.0%	X	100.0%	=	0.00

MODEL TYPE - 23 - M.U.OFFICE

MODEL NUM: 020

EST ECONOMIC INCOME

GROSS LEASABLE AREA (GRA)		% RENTABLE AREA (%RA)		NET LEASABLE AREA (NLA)	
1,040	X	100.00%	=	1,040	

MODEL ANNUAL RATE/SF		ECO ADJ		
18.75	X	105.0%		19.69 ADJ RATE

POTENTIAL GROSS INCOME	20,475
TOTAL POTENTIAL GROSS INCOME	20,475

VACANCY AND CREDIT LOSS

MODEL		AGE ADJ		ECO ADJ		ADJ VAC/CL	
10.0%	X	110.0%	X	100.0%	=	11.0%	-2,252

EFFECTIVE GROSS INCOME		18,223
ADDITIONAL INCOME		0
EXPENSES	16.5%	-3,007
OVERALL EXPENSE % (ADJ)		

UTILITY EXPENSE PSF

GROSS LEASABLE AREA		ADJ UTIL EXP RATE		
1,040	X	.00		0

NET INCOME	15,216

EXPENSES - AGE GROUP: 013

OVERALL EXPENSE RATIO

MODEL RATIO		AGE ADJ		ECO ADJ		ADJ EXP
25.0%	X	110.0%	X	60.0%	=	16.5%

UTILITY EXPENSE PSF

MODEL RATE PSF		AGE ADJ		ECO ADJ		ADJ UTIL EXP PSF
.00	X	110.0%	X	100.0%	=	0.00

MODEL TYPE - 24 - M.U. SALES

MODEL NUM: 019

EST ECONOMIC INCOME

GROSS LEASABLE AREA (GRA)		% RENTABLE AREA (%RA)		NET LEASABLE AREA (NLA)	
2,085	X	100.00%	=	2,085	

MODEL ANNUAL RATE/SF		ECO ADJ		
20.50	X	100.0%		20.50 ADJ RATE

POTENTIAL GROSS INCOME		42,743
TOTAL POTENTIAL GROSS INCOME		42,743

VACANCY AND CREDIT LOSS

MODEL		AGE ADJ		ECO ADJ	=	ADJ VAC/CL	
8.0%	X	106.0%	X	100.0%	=	8.5%	-3,633

EFFECTIVE GROSS INCOME		39,110
ADDITIONAL INCOME		0
EXPENSES	15.9%	-6,218

OVERALL EXPENSE % (ADJ)

UTILITY EXPENSE PSF

GROSS LEASABLE AREA		ADJ UTIL EXP RATE	
2,085	X	.00	0

NET INCOME	32,892

EXPENSES - AGE GROUP: 015

OVERALL EXPENSE RATIO

MODEL RATIO		AGE ADJ		ECO ADJ	=	ADJ EXP
15.0%	X	106.0%	X	100.0%	=	15.9%

UTILITY EXPENSE PSF

MODEL RATE PSF		AGE ADJ		ECO ADJ	=	ADJ UTIL EXP PSF
.00	X	106.0%	X	100.0%	=	0.00

CAPITALIZATION SUMMARY

	NET LEASABLE AREA	NET INCOME
23 - M.U.OFFICE	1,040	15,216
24 - M.U. SALES	2,085	32,892

CAPITALIZATION RATE COMPONENTS
OVERALL RETURN RATE

MODEL OR OVERRIDE =	CAP RATE
TAX RATE =	ADJ RATE
.0438 =	.0438
ADJUSTED CAP RATE %	.1313 %

TOTAL NET LEASEABLE AREA (EXCLUDING ENCLOSURES, PARKING GARAGE, ETC.)	3,125
TOTAL NET INCOME	48,108
DIRECT OVERALL CAPITALIZATION	.1313%
INDICATED VALUE (INCOME)	366,473
RESIDUAL LAND VALUE	0
LESS VALUE - PERSONAL PROPERTY	0
TOTAL INDICATED VALUE (INCOME)	366,470

20-019- -0319.0 CARD 1 OF 1 TAX YEAR 2006 TIEBACK
ALT ID 319-320 MAP/ROUTE FIELD REVIEW FLAG ( )

PARCEL SUMMARY VALUES

PARCEL TOTAL			COST APPROACH			INCOME APPROACH		
LAND SIZE	5,650	LAND	107,350	19.00 /SQFT	LAND	107,350	19.00	/SQFT
BLDG SIZE	6,250	IMP	260,180	41.63 /SQFT	IMP	259,120	41.46	/SQFT
		TOTAL	367,530	58.80 /SQFT	TOTAL	366,470	58.64	/SQFT

ADJUSTED R.C.N.	515,550	82.49 /SQFT
OVERALL % GOOD	50	
R.C.N.L.D.	257,780	41.24 /SQFT
(INCLUDES PERCENT COMPLETE - SEE CARD DETAIL)		
BLDG ADJ FACTOR (CA31)	1.0000	
TOTAL YARD IMP VALUE	2,400	
TOTAL OTHER IMP VALUE	0	
TOTAL IMP VALUE	260,180	
ECF 0%		
ADJ TOTAL IMP VALUE	260,180	
IMP VALUE	260,180	ADJ TOTAL IMP VALUE * BLDG ADJ FACTORS (AA44): 1.0000 * (CA11): 1.0000
LAND VALUE	107,350	
TOTAL VALUE	367,530	

PREVIOUS YEARS VALUES		PREV YEARS APPRAISED VALUES	
LAND	BUILDING	LAND	BUILDING
101,700	247,610	0	0

CURRENT LAND 107,350 BUILDING 259,120 TOTAL 366,470
ASSESSED LAND 0 BUILDING 0 TOTAL 0
REVIEW CODE 4 INCOME APPROACH REVIEW REASON REV REVAL VALUE UPD
REVIEW DATE 31-JUL-03 REVIEWER ID

ESTIMATE LAND _____ BUILDING _____ TOTAL _____
REVIEW CODE REVIEW REASON ____
REVIEW DATE _____ REVIEWER ID ____
REVIEW STATUS 7
MAINTAINED ON 31-JUL-03 STATUS

(x Refiled) 2/2/04

THOMAS S. GULOTTA
COUNTY EXECUTIVE

JOHN R. SPECHT
FIRE MARSHAL

RECEIVED FEB 17 2004

NASSAU COUNTY FIRE COMMISSION
OFFICE OF FIRE MARSHAL
899 JERUSALEM AVENUE
P.O. BOX 128
UNIONDALE, NEW YORK 11553
516-566-5200

APPLICATION FOR PUBLIC ACCESS TO RECORDS

TO: Records Access Officer **DATE:** 1/13/04

I hereby apply to inspect the following record: (Exact address including Number & Street)

History of storage tank registration (above and underground), documentation regarding the storage or handling of chemical or toxic materials and flammables, NCFM Inspection reports, violations of NCFM codes for Former Fresh & Clean Dry Cleaners closed circa 1988, 225 Railroad Avenue, Glen Head, New York (Seat 20, Blk 13, Lot 314)

Reason for inspection: (Be specific)

Information is necessary to complete Environmental Assessment for property

Jeff Harmon
Name (Please Print)

Signature

Berninger Environmental Inc
Representing (Business Name)

Pending Litigation YES ☐ NO ☒

Fresh & Clean c/o Environmental Services Inc.
Person or Firm your office represents

133 Commack Rd
Mastic Beach, NY 11951
Address

Mailing Address: 1615 Ninth Avenue, Bohemia, NY 11716

Phone No.: 631-588-2251 / cell 516 647-4211

FOR FIRE MARSHAL USE ONLY

☒	Approved	☐	Record of which this Agency is Legal Custodian, cannot be found
☐	Denied for reason(s) checked	☒	Record is not Maintained by this Agency
☐	Confidential Disclosure - Part of Investigatory Files	☐	Exempted by Statute other than Freedom of Information Act
☐	Unwarranted Invasion of Personal Privacy	☐	Other _____

T C Homsey — Signature
SFI — Title
2-09-04 — Date

NOTICE: You have a right to appeal denial of this application to the head of this agency.

Fire Marshal _____, 899 Jerusalem Avenue, PO Box 128, Uniondale, NY 11553, who must fully explain his reasons for such denial in writing within seven days of receipt of an appeal.

Hereby Appeal: _____ Signature _____ Date

FMACCESS[011491]

GPS 40°49.993N
73°37.574W

1/13/04

Rez-N-Bond
contains Methylene Chloride
CAS # 75-09-02

At Graphics & Signs
Former Fresh and Clean
V006061

Met Walter Benninger &
Jill Hainsworth of
BEI

Transco, Inc. Resin Bond

Rapid Remover
Adhesive Removal Formula

Brake + Parts Cleaner
Professional Strength
MBL Industries Inc
990 Industrial Park Drive
Marietta, GA 30062
(770) 422-2071
14 oz spray can

Superfrog
Frog Juice
1800-877-1907
Spray Paint
Mineral Spirits Propylene
Glycol Methyl Ether Acetate

Badge #	Location	In	Out
AZ 4989	At Main Room	12:21	11:35
AZ4971	At Paint Room	12:27	11:32
AZ4950	At Outdoor	12:28	11:43

Thomas R. Suozzi
County Executive

Susan G. King
Director

Nassau County Department of Health
Division of Environmental Health
240 Old Country Road
Mineola, New York 11501-4250

FAX: (516) 571-1475

FAX TRANSMITTAL COVER SHEET

DATE: 3/8/04

TO: Walter Berninger

FAX #: 631-588-2926

FROM: Joseph DeFranco

Nassau County Dept. of Health

We are transmitting 5 page(s) including this cover sheet. If there is a problem regarding this transmittal, please contact:

(516) 571- 3323

OTHER MESSAGE:

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

PROGRAM: 110: STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: V006061 DRAINAGE BASIN: GAZETTEER CODE: 2952
LOCATION: FORMER FRESH AND CLEAN
DESCRIPTION: BLANK AZ4951
SAMPLE TYPE: 950: CONTROL - AIR CARTRIDGE BLANK
TIME OF SAMPLING: 01/14/2004 14:55 TO 01/14/2004 14:56 DATE PRINTED: 02/05/2004

DATE PRINTED: 02/05/2004 FINAL REPORT

PARAMETER	RESULT
TETRACHLOROETHENE	0.03 MCG

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(2), RO(0), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:JDEFRANCO
SUBMITTED BY:NEALON

0983 NEW YORK STATE DEPARTMENT OF HEALTH 116

[redacted]

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

[redacted]
PROGRAM: 110: STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: V006061 DRAINAGE BASIN: GAZETTEER CODE: 2952
[redacted]
LOCATION: FORMER FRESH AND CLEAN
DESCRIPTION: A+ GRAPHICS AND SIGNS OUTDOOR AZ 4950
[redacted]
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 909: AMBIENT AIR - OUTDOOR
[redacted]

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 02/05/2004 FINAL REPORT

PARAMETER	RESULT
ELAPSED TIME	1395 MINUTES
TETRACHLOROETHENE	5. MCG/CU.M. [PL]

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(2), RO(0), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:JDEFRANCO
SUBMITTED BY:NEALON

0979 NEW YORK STATE DEPARTMENT OF HEALTH 116

[redacted]

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

[redacted]

PROGRAM: 110: STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: V006061 DRAINAGE BASIN: GAZETTEER CODE: 2952
[redacted]
LOCATION: FORMER FRESH AND CLEAN
DESCRIPTION: A+ GRAPHICS AND SIGNS MAIN ROOM AZ 4989
[redacted]
REPORTING LAB: TOX- LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 902: AMBIENT AIR - INDOOR
[redacted]

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 02/05/2004 FINAL REPORT

[redacted]

PARAMETER	RESULT
ELAPSED TIME	1394 MINUTES
TETRACHLOROETHENE	2000. MCG/CU.M.

**** END OF REPORT ****

[redacted]

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(2), RO(0), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA, N.Y. 11501

COLLECTED BY:JDEFRANCO
[redacted]
SUBMITTED BY:NEALON

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

PROGRAM: 110: STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: V006061 DRAINAGE BASIN: GAZETTEER CODE: 2952
LOCATION: FORMER FRESH AND CLEAN
DESCRIPTION: A+ GRAPHICS AND SIGNS PAINT ROOM NORTH AZ 4971
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 902: AMBIENT AIR - INDOOR

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 02/05/2004 FINAL REPORT

PARAMETER	RESULT
ELAPSED TIME	1387 MINUTES
TETRACHLOROETHENE	2200. MCG/CU.M.

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(2), RO(0), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA, N.Y. 11501

COLLECTED BY: JDEFRANCO
SUBMITTED BY: HEALON

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303511 SAMPLE RECEIVED: 12/09/2003 CHARGE: 4.00
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: 17 GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: RALLY EDUCATION AMBIENT - UPSTAIRS FIRE ESCAPE BADGE #AG1041
SAMPLING PNT ADDR: 22 RAILROAD AVE, GLEN HEAD, 11548
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 909: AMBIENT AIR - OUTDOOR
TIME OF SAMPLING: 12/03/2003 13:38 TO 12/04/2003 13:37 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 12/23/2003 FINAL REPORT

----------PARAMETER----------	----------RESULT----------
ELAPSED TIME	1439 MINUTES
TETRACHLOROETHENE	< 5. MCG/CU.M.

**** END OF REPORT ****

JAN 02 2004

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(1), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:J NEALON
SUBMITTED BY:J NEALON

1191 NEW YORK STATE DEPARTMENT OF HEALTH 116

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303512 SAMPLE RECEIVED: 12/09/2003 CHARGE: 4.00
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: 17 GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: RALLY EDUCATION OFFICE SHELF BADGE #AG-1051
SAMPLING PNT ADDR: 22 RAILROAD AVE, GLEN HEAD, 11545
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 902: AMBIENT AIR - INDOOR
TIME OF SAMPLING: 12/03/2003 13:30 TO 12/04/2003 13:35 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 12/23/2003 FINAL REPORT

----------PARAMETER----------	----------RESULT----------
ELAPSED TIME	1445 MINUTES
TETRACHLOROETHENE	90. MCG/CU.M.

**** END OF REPORT ****

JAN 2 2004

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(1), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:J NEALON
SUBMITTED BY:J NEALON

1193 NEW YORK STATE DEPARTMENT OF HEALTH 116

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303513 SAMPLE RECEIVED: 12/09/2003 CHARGE: 4.00
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: 17 GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: HOUSE OF DE GAU-NAIL SALON SHELF BADGE #AG-1048
SAMPLING PNT ADDR: 24 RAILROAD AVE., GLEN HEAD, 11545
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 902: AMBIENT AIR - INDOOR
TIME OF SAMPLING: 12/03/2003 13:15 TO 12/04/2003 13:27 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 12/23/2003 FINAL REPORT

----------PARAMETER----------	----------RESULT----------
ELAPSED TIME	1452 MINUTES
TETRACHLOROETHENE	90. MCG/CU.M.

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(1), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:J NEALON
SUBMITTED BY:J NEALON

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303514 SAMPLE RECEIVED: 12/09/2003 CHARGE: 4.00
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: 17 GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: HOUSE OF DE GAU - HARI SALON LUNCH AREA #AG-1036
SAMPLING PNT ADDR: 24 RAILROAD AVE., GLEN HEAD, 11545
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 902: AMBIENT AIR - INDOOR
TIME OF SAMPLING: 12/03/2003 13:24 TO 12/04/2003 13:30 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 12/23/2003 FINAL REPORT

----------PARAMETER----------	----------RESULT----------
ELAPSED TIME	1446 MINUTES
TETRACHLOROETHENE	110. MCG/CU.M.

**** END OF REPORT ****

JAN 12 2004

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(1), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:J NEALON
SUBMITTED BY:J NEALON

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303545 SAMPLE RECEIVED: 12/10/2003 CHARGE: 4.00
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: 17 GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: A+ GRAPHICS & SIGNS AMBIENT (WOODEN FENCE) BADGE #AG-3426
SAMPLING PNT ADDR: 5 SCHOOL ST, GLEN HEAD, 11545
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 909: AMBIENT AIR - OUTDOOR
TIME OF SAMPLING: 12/04/2003 13:17 TO 12/05/2003 23:21 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 12/23/2003 FINAL REPORT

----------PARAMETER----------	----------RESULT----------
ELAPSED TIME	2044 MINUTES
TETRACHLOROETHENE	< 5. MCG/CU.M.

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(1), LPHE(1), FED( ), INFO-P( ), INFO-L( )

JAN 0 2 2004

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:
SUBMITTED BY:

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303546 SAMPLE RECEIVED: 12/10/2003 CHARGE: 4.00
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: 17 GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: AT GRAPHICS & SIGNS WORK AREA BADGE #AG-3460
SAMPLING PNT ADDR: 5 SCHOOL ST, GLEN HEAD, 11545
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-1: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 902: AMBIENT AIR - INDOOR
TIME OF SAMPLING: 12/04/2003 13:12 TO 12/05/2003 11:16 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-1 ORGANIC VAPOR MONITORING BADGE
DATE PRINTED: 12/23/2003 FINAL REPORT

PARAMETER	RESULT
ELAPSED TIME	1324 MINUTES
TETRACHLOROETHENE	380. MCG/CU.M.

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(1), LPHE(1), FED( ), INFO-P( ), INFO-L( )

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:
SUBMITTED BY:

WADSWORTH CENTER
EMPIRE STATE PLAZA, ALBANY NY 12201

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 200303547 SAMPLE RECEIVED: 12/09/2003 CHARGE: 3.90
PROGRAM: 106: BUREAU OF ENVIRONMENTAL EXPOSURE INVESTIGATION
SOURCE ID: V006061 DRAINAGE BASIN: GAZETTEER CODE: 2900
POLITICAL SUBDIVISION: NASSAU COUNTY: NASSAU
LATITUDE: LONGITUDE:
LOCATION: FRESH & CLEAN LAUNDRY
DESCRIPTION: TRIP BLANK
REPORTING LAB: TOX: LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: BADGE-BL: ORGANIC VAPOR MONITORING BADGE
SAMPLE TYPE: 950: CONTROL - AIR CARTRIDGE BLANK
TIME OF SAMPLING: 12/03/2003 TO 12/04/2003 DATE PRINTED: 12/23/2003

ANALYSIS: BADGE-BL ORGANIC VAPOR MONITORING BADGE - BLANK
DATE PRINTED: 12/23/2003 FINAL REPORT

PARAMETER	RESULT
TETRACHLOROETHENE	0.2 MCG

**** END OF REPORT ****

NYS ELAP ID 10763, LAB DIR DR K. ALDOUS, CONTACT MR R. PAUSE 518-473-0323
COPIES SENT TO: CO(1), RO(0), LPHE(1), FED( ), INFO-P( ), INFO-L( )

JAN 0 6 2004

ASST. COMMR. FOR ENVIRONMENTAL HEALTH
NASSAU COUNTY HEALTH DEPT.
240 OLD COUNTRY RD.
MINEOLA,N.Y. 11501

COLLECTED BY:
SUBMITTED BY:J NEALON

P.W. GROSSER CONSULTING Inc.

630 JOHNSON AVENUE, SUITE 7
BOHEMIA, NEW YORK 11716-2618
PHONE: (631) 589-6353
FAX: (631) 589-8705
Web site: www.pwgrosser.com

FAX TRANSMITTAL

SENT TO: JOE PARISI — Original to be Mailed: ___

Company: ESI — Date: 11/25

CC: ___ — No of Pages: 15 (including cover sheet)

SUBJECT: Final Phase II Report

FAX #: 395-9893

SENT BY: James Rhodes

COMMENTS :

P.W. GROSSER
CONSULTING
ENGINEER &
HYDROGEOLOGIST, P.C.

October 11, 2000

Mr. Michael Capobianco
123 Frost Pond Road
Glen Cove, New York 11542

630
JOHNSON
AVENUE
SUITE 7

BOHEMIA

NEW YORK
11716-2618

PHONE:
516/631*-589-6353

FAX:
516/631*-589-8705

VISIT US AT:
www.pwgrosser.com

Re: Phase II Environmental Sampling
22-26 Railroad Avenue
Glen Head, New York

Dear Mr. Capobianco:

P.W. Grosser Consulting Engineer & Hydrogeologist, P.C. (PWGC) has prepared this letter to document the sampling and laboratory analysis results of four (4) at grade cesspool structures at the above referenced facility. Following is a description of the sampling activities and laboratory analysis results:

Cesspool Sampling

A total of seven (7) cast-iron manhole covers were observed at grade at parking lot located at the rear east side of the building. One manhole cover accessed a poured concrete distribution box with solid bottom. A cast iron pipe originating from the direction of the rear east building wall was observed entering the distribution box. Three cast iron pipes were observed exiting the distribution box in directions which appeared to generally correspond with locations of cesspools designated CP-1, CP-2 and CP-3, with all the aforementioned cesspools having manhole covers at grade. All of the cast iron pipes observed at the distribution box were filled with concrete.

Examination of a "Rear Plot Plan" sketch provided by the property owner indicated that the distribution box received discharge from a former laundromat at the site and directed the discharge to the three at grade cesspools and to possibly an additional below grade overflow pool. The cesspools CP-1, CP-2 and CP-3 were sampled due to the potential that dry-cleaning operations may have occurred at the laundromat and discharges of dry-cleaning compounds may have impacted the cesspools.

* As of November 1, 1999 the area code in Suffolk County will change to 631.

Two manhole covers were lifted and were found to access a septic tank with an additional cover accessing the sanitary cesspool (CP-4) which serves the septic tank. Visual confirmation of pipes entering the aforementioned cesspools could not be accomplished at the time of sampling activities due to standing liquid in the structures and/or obstruction of sight due to the cesspool chimney. Cesspool CP-4 was sampled due to the potential interconnection with other cesspools at the site. A figure depicting cesspool and sampling locations is attached.

Samples from the four cesspools were collected using a stainless steel handheld auger and contained in laboratory supplied glassware for submittal for laboratory analysis. Downhole equipment was decontaminated with an Alconox wash and distilled water rinse. A sample description summary is provided in Table 1.

Table 1.

Cesspool	Estimated Diameter	Estimated Depth	Piping Observed	Standing Liquid	Sample Description & Notes
CP-1	8'	20'	Yes	15'	dark black sanitary sludge
CP-2	8'	22'	No	7'	dark black sanitary sludge
CP-3	8'	20'	No	None	dark black sanitary sludge Note: chemical odor when manhole cover initially lifted
CP-4	8'	20'	Yes	15'	black coarse sands with gravel

Analytical Testing Results

Samples collected from the base of the cesspools were submitted for laboratory analysis for volatile organic compounds (VOCs) by EPA Method 8260. Analytical testing results for samples were compared to Soil Cleanup Objectives contained in the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM), April 1995. The TAGM provides a basis to determine soil cleanup levels at listed NYSDEC hazardous waste sites however, the document is also used as a general guidance to determine the overall environmental conditions at non-listed sites. A summary of contaminants detected above laboratory method detection limits (MDL) is provided in Table 2. Complete laboratory results are attached. Contaminants which exceeded TAGM regulatory guidances are in bold.

Table 2.

Parameter parts per billion (ppb)	Results CP-1	Results CP-2	Results CP-3	Results CP-4	NYSDEC TAGM
Vinyl Chloride	<50	83	12	<10	200
1,1 Dichloroethene	<50	170	<10	<10	400
t -1, 2 Dichloroethene	480	2,500	42	<10	300
1,1 Dichloroethane	<50	140	<10	<10	200
c -1, 2 Dichloroethene	55,000	460,000	2,600	280	250
Chloroform	<50	<50	42	<10	300
Trichloroethylene	33,000	180,000	410	18	700
Toluene	79	360	13	77	1,500
Tetrachloroethene	9,700	1,500,000	1,500	40	1,400
Chlorobenzene	<50	57	<10	<10	1,700
Ethyl Benzene	160	460	110	29	5,500
m + p Xylene	500	3,000	380	89	1,200* *totals*
o Xylene	200	1,400	110	20	1,200* *totals*
Isopropylbenzene	56	390	<10	<10	No Guidance
n -Propylbenzene	150	1,100	<10	26	No Guidance
1,3,5 Trimethylbenzene	380	4,200	12	70	No Guidance
1,2,4 Trimethylbenzene	1,100	12,000	32	170	No Guidance
sec -Butylbenzene	150	730	<10	23	No Guidance
p -Isopropyltoluene	690	1,200	77	4,400	No Guidance
1,3 Dichlorobenzene	<50	2,700	<10	450	1,600
1,4 Dichlorobenzene	220	3,100	38	300	8,500
n -Butylbenzene	220	1,200	<10	48	No Guidance
1,2 Dichlorobenzene	210	8,300	<10	540	7,900
1,2,4 -Trichlorobenzene	50	1,800	<10	1,400	3,400
Napthalene	490	7,000	59	24	13,000
1,2,3 -Trichlorobenzene	<50	650	<10	200	No Guidance
p -Ethyltoluene	670	5,900	20	110	No Guidance
1,2,4,5 Tetramethylbenzene	130	1,900	51	39	No Guidance
Acetone	<500	<500	730	310	200
p Diethylbenzene	910	1,500	57	200	No Guidance

Conclusions & Recommendations

Based upon review of laboratory analysis the cesspools at the site have been impacted with VOC contamination. Cesspools CP-1, CP-2 and CP-3 have received discharges of common industrial solvents and cleaners with CP-3 appearing to be the most severely impacted structure with an elevated concentration of Tetrachloroethene (a.k.a Perchloroethylene or "Perc") of 1,500,000 parts per billion (ppb) which is over 1,000 times the NYSDEC TAGM guidance value of 1,400 ppb.

PWGC recommends that the cesspool structures at the site be remediated in accordance and under the purview of Nassau County Department of Health (NCDH) and United States Environmental Protection Agency (USEPA) Underground Injection Control (UIC) regulations.

Remediation would consist of pumping and disposing of all liquid within the cesspools, removal of all impacted sludge/sediment/soil from the base of the structures and collection and analysis of end point samples to determine if the NCDH and USEPA UIC Cleanup Objectives have been achieved. Additional sampling and laboratory analysis of sludge/sediment/soils and liquids at the cesspools would also be required for disposal waste characterization purposes.

In addition, it is notable that below grade overflow pools may exists at the site. Once standing liquids are pumped from the cesspools in the event that overflow piping is clearly visible, NCDH representatives may require exposure and remediation of any impacted below grade overflow structures. Pumpout and disposal of the septic tank contents is also recommenced. PWGC is currently preparing a remediation proposal and will forward same under separate cover.

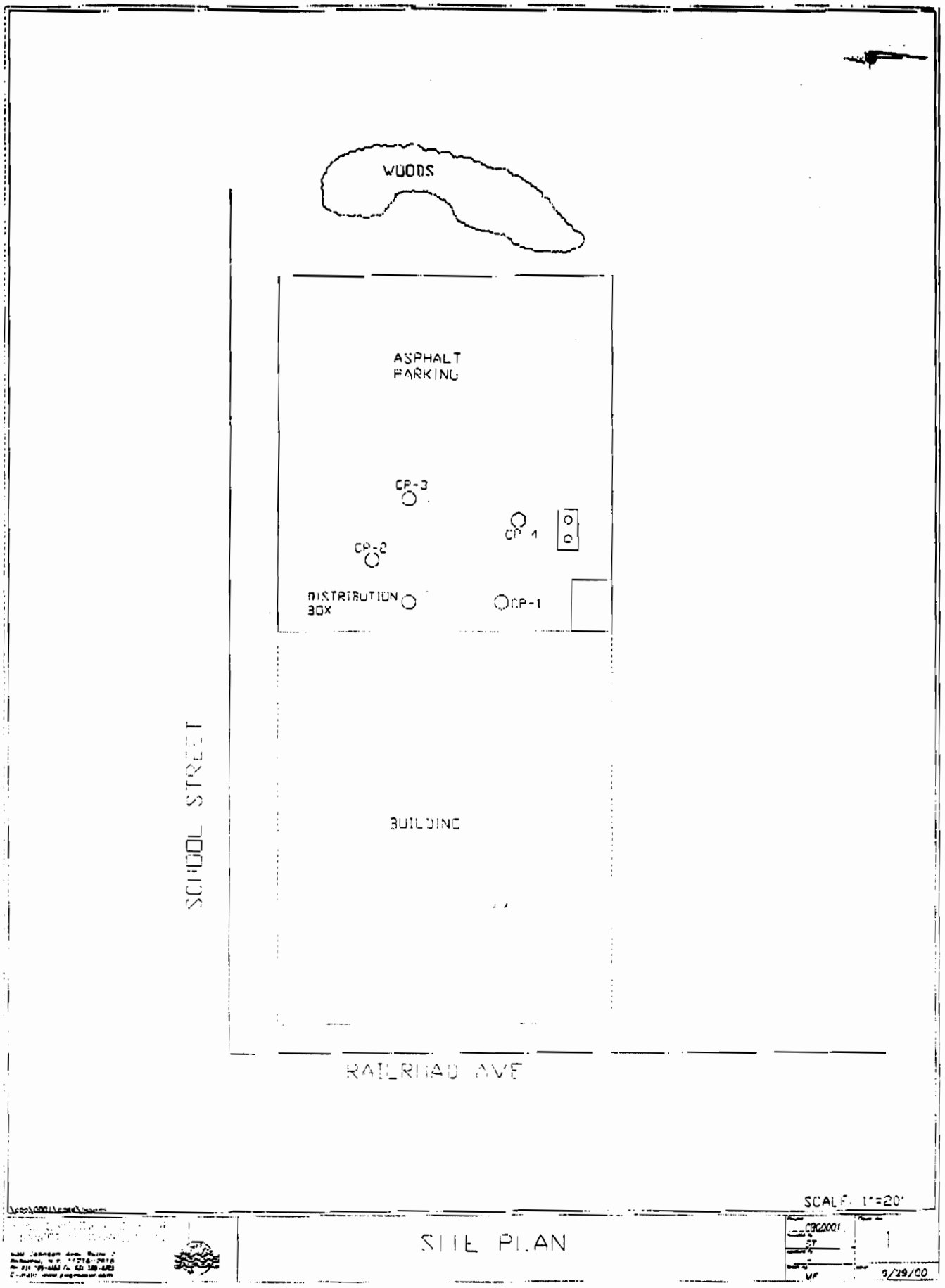
Should you have any questions or require further information, please do not hesitate to call either of the undersigned.

Very truly yours,
PWGC

Salvatore Tedesco
Environmental Scientist

James P. Rhodes

James P. Rhodes
Sr. Hydrogeologist


WOODS
ASPHALT
PARKING
CP-3
CP-4
CP-2
DISTRIBUTION
BOX
CP-1
BUILDING
SCHOOL STREET
RAILROAD AVE
SCALE: 1"=20'
SITE PLAN
CBG2001
1
9/29/00

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.01 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-1, 1015

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS		
Dichlordifluomethane	ug/Kg	<50	t-1,3Dichloropropene	ug/Kg	<50
Chloromethane	ug/Kg	<50	112 Trichloroethane	ug/Kg	<50
Vinyl Chloride	ug/Kg	<50	Tetrachloroethene	ug/Kg	9700
Bromomethane	ug/Kg	<50	1,3-Dichloropropane	ug/Kg	<50
Chloroethane	ug/Kg	<50	Chlorodibromomethane	ug/Kg	<50
Trichlorofluomethane	ug/Kg	<50	1,2 Dibromoethane	ug/Kg	<50
1,1 Dichloroethene	ug/Kg	<50	Chlorobenzene	ug/Kg	<50
Methylene Chloride	ug/Kg	<50	Ethyl Benzene	ug/Kg	160
t-1,2-Dichloroethene	ug/Kg	480	1112Tetrachloroethan	ug/Kg	<50
1,1 Dichloroethane	ug/Kg	<50	m + p Xylene	ug/Kg	500
2,2-Dichloropropane	ug/Kg	<50	o Xylene	ug/Kg	200
c-1,2-Dichloroethene	ug/Kg	55000	Styrene	ug/Kg	<50
Bromochloromethane	ug/Kg	<50	Bromoform	ug/Kg	<50
Chloroform	ug/Kg	<50	Isopropylbenzene	ug/Kg	56
111 Trichloroethane	ug/Kg	<50	Bromobenzene	ug/Kg	<50
Carbon Tetrachloride	ug/Kg	<50	1122Tetrachloroethan	ug/Kg	<50
1,1-Dichloropropene	ug/Kg	<50	123-Trichloropropane	ug/Kg	<50
Benzene	ug/Kg	<50	n-Propylbenzene	ug/Kg	150
1,2 Dichloroethane	ug/Kg	<50	2-Chlorotoluene	ug/Kg	<50
Trichloroethylene	ug/Kg	33000	135-Trimethylbenzene	ug/Kg	380
1,2 Dichloropropane	ug/Kg	<50	4-Chlorotoluene	ug/Kg	<50
Dibromomethane	ug/Kg	<50	tert-Butylbenzene	ug/Kg	<50
Bromodichloromethane	ug/Kg	<50	124-Trimethylbenzene	ug/Kg	1100
c-1,3Dichloropropene	ug/Kg	<50	sec-Butylbenzene	ug/Kg	150
Toluene	ug/Kg	79			

cc:

REMARKS: Volatile Organic Compounds by EPA Method 8260.
Page 1 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-6777• FAX (631) 422-6770

LAB NO:204354.01 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-1, 1015

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
p-Isopropyltoluene	ug/Kg	690	
1,3 Dichlorobenzene	ug/Kg	<50	
1,4 Dichlorobenzene	ug/Kg	220	
n-Butylbenzene	ug/Kg	220	
1,2 Dichlorobenzene	ug/Kg	210	
Dibromochloropropane	ug/Kg	<50	
124-Trichlorobenzene	ug/Kg	50	
Hexachlorobutadiene	ug/Kg	<50	
Naphthalene	ug/Kg	490	
123-Trichlorobenzene	ug/Kg	<50	
ter.ButylMethylEther	ug/Kg	<50	
p-Ethyltoluene	ug/Kg	670	
Freon 113	ug/Kg	<50	
1245 Tetramethylbenz	ug/Kg!	130	
Acetone	ug/Kg	<500	
Methyl Ethyl Ketone	ug/Kg	<500	
Methylisobutylketone	ug/Kg	<500	
Chlorodifluoromethan	ug/Kg	<50	
p Diethylbenzene	ug/Kg	910	
% Solids		43	

cc:

REMARKS: VOC by EPA Method 8260.
!1245 Tetramethylbenz = 1,2,4,5-Tetramethylbenzene
Page 2 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.02 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-2, 1000

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS		
Dichlordifluomethane	ug/Kg	<50	t-1,3Dichloropropene	ug/Kg	<50
Chloromethane	ug/Kg	<50	112 Trichloroethane	ug/Kg	<50
Vinyl Chloride	ug/Kg	83	Tetrachloroethene	ug/Kg	150000
Bromomethane	ug/Kg	<50	1,3-Dichloropropane	ug/Kg	<50
Chloroethane	ug/Kg	<50	Chlorodibromomethane	ug/Kg	<50
Trichlorofluomethane	ug/Kg	<50	1,2 Dibromoethane	ug/Kg	<50
1,1 Dichloroethene	ug/Kg	170	Chlorobenzene	ug/Kg	57
Methylene Chloride	ug/Kg	<50	Ethyl Benzene	ug/Kg	460
t-1,2-Dichloroethene	ug/Kg	2500	1112Tetrachloroethan	ug/Kg	<50
1,1 Dichloroethane	ug/Kg	140	m + p Xylene	ug/Kg	3000
2,2-Dichloropropane	ug/Kg	<50	o Xylene	ug/Kg	1400
c-1,2-Dichloroethene	ug/Kg	460000	Styrene	ug/Kg	<50
Bromochloromethane	ug/Kg	<50	Bromoform	ug/Kg	<50
Chloroform	ug/Kg	<50	Isopropylbenzene	ug/Kg	390
111 Trichloroethane	ug/Kg	<50	Bromobenzene	ug/Kg	<50
Carbon Tetrachloride	ug/Kg	<50	1122Tetrachloroethan	ug/Kg	<50
1,1-Dichloropropene	ug/Kg	<50	123-Trichloropropane	ug/Kg	<50
Benzene	ug/Kg	<50	n-Propylbenzene	ug/Kg	1100
1,2 Dichloroethane	ug/Kg	<50	2-Chlorotoluene	ug/Kg	<50
Trichloroethylene	ug/Kg	180000	135-Trimethylbenzene	ug/Kg	4200
1,2 Dichloropropane	ug/Kg	<50	4-Chlorotoluene	ug/Kg	<50
Dibromomethane	ug/Kg	<50	tert-Butylbenzene	ug/Kg	<50
Bromodichloromethane	ug/Kg	<50	124-Trimethylbenzene	ug/Kg	12000
c-1,3Dichloropropene	ug/Kg	<50	sec-Butylbenzene	ug/Kg	730
Toluene	ug/Kg	360			

cc:

REMARKS: Volatile Organic Compounds by EPA Method 8260.
Page 1 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.02 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-2, 1000

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
p-Isopropyltoluene	ug/Kg	1200	
1,3 Dichlorobenzene	ug/Kg	2700	
1,4 Dichlorobenzene	ug/Kg	3100	
n-Butylbenzene	ug/Kg	1200	
1,2 Dichlorobenzene	ug/Kg	8300	
Dibromochloropropane	ug/Kg	<50	
124-Trichlorobenzene	ug/Kg	1800	
Hexachlorobutadiene	ug/Kg	<50	
Naphthalene	ug/Kg	7000	
123-Trichlorobenzene	ug/Kg	650	
ter.ButylMethylEther	ug/Kg	<50	
p-Ethyltoluene	ug/Kg	5900	
Freon 113	ug/Kg	<50	
1245 Tetramethylbenz	ug/Kg!	1900	
Acetone	ug/Kg	<500	
Methyl Ethyl Ketone	ug/Kg	<500	
Methylisobutylketone	ug/Kg	<500	
Chlorodifluoromethan	ug/Kg	<50	
p Diethylbenzene	ug/Kg	1500	
% Solids		49	

cc:

REMARKS: VOC by EPA Method 8260.
!1245 Tetramethylbenz = 1,2,4,5-Tetramethylbenzene
Page 2 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.03 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CB0-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-3, 0945

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS		
Dichlordifluomethane	ug/Kg	<10	t-1,3Dichloropropene	ug/Kg	<10
Chloromethane	ug/Kg	<10	112 Trichloroethane	ug/Kg	<10
Vinyl Chloride	ug/Kg	12	Tetrachloroethene	ug/Kg	1500
Bromomethane	ug/Kg	<10	1,3-Dichloropropane	ug/Kg	<10
Chloroethane	ug/Kg	<10	Chlorodibromomethane	ug/Kg	<10
Trichlorofluomethane	ug/Kg	<10	1,2 Dibromoethane	ug/Kg	<10
1,1 Dichloroethene	ug/Kg	<10	Chlorobenzene	ug/Kg	<10
Methylene Chloride	ug/Kg	<10	Ethyl Benzene	ug/Kg	110
t-1,2-Dichloroethene	ug/Kg	42	1112Tetrachloroethan	ug/Kg	<10
1,1 Dichloroethane	ug/Kg	<10	m + p Xylene	ug/Kg	380
2,2-Dichloropropane	ug/Kg	<10	o Xylene	ug/Kg	110
c-1,2-Dichloroethene	ug/Kg	2600	Styrene	ug/Kg	<10
Bromochloromethane	ug/Kg	<10	Bromoform	ug/Kg	<10
Chloroform	ug/Kg	42	Isopropylbenzene	ug/Kg	<10
111 Trichloroethane	ug/Kg	<10	Bromobenzene	ug/Kg	<10
Carbon Tetrachloride	ug/Kg	<10	1122Tetrachloroethan	ug/Kg	<10
1,1-Dichloropropene	ug/Kg	<10	123-Trichloropropane	ug/Kg	<10
Benzene	ug/Kg	<10	n-Propylbenzene	ug/Kg	<10
1,2 Dichloroethane	ug/Kg	<10	2-Chlorotoluene	ug/Kg	<10
Trichloroethylene	ug/Kg	410	135-Trimethylbenzene	ug/Kg	12
1,2 Dichloropropane	ug/Kg	<10	4-Chlorotoluene	ug/Kg	<10
Dibromomethane	ug/Kg	<10	tert-Butylbenzene	ug/Kg	<10
Bromodichloromethane	ug/Kg	<10	124-Trimethylbenzene	ug/Kg	32
c-1,3Dichloropropene	ug/Kg	<10	sec-Butylbenzene	ug/Kg	<10
Toluene	ug/Kg	13			

cc:

REMARKS: Volatile Organic Compounds by EPA Method 8260.
Page 1 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.03 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-3, 0945

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
p-Isopropyltoluene	ug/Kg	77	
1,3 Dichlorobenzene	ug/Kg	<10	
1,4 Dichlorobenzene	ug/Kg	38	
n-Butylbenzene	ug/Kg	<10	
1,2 Dichlorobenzene	ug/Kg	<10	
Dibromochloropropane	ug/Kg	<10	
124-Trichlorobenzene	ug/Kg	<10	
Hexachlorobutadiene	ug/Kg	<10	
Naphthalene	ug/Kg	59	
123-Trichlorobenzene	ug/Kg	<10	
ter.ButylMethylEther	ug/Kg	<10	
p-Ethyltoluene	ug/Kg	20	
Freon 113	ug/Kg	<10	
1245 Tetramethylbenz	ug/Kg!	51	
Acetone	ug/Kg	730	
Methyl Ethyl Ketone	ug/Kg	<100	
Methylisobutylketone	ug/Kg	<100	
Chlorodifluoromethan	ug/Kg	<10	
p Diethylbenzene	ug/Kg	57	
% Solids		39	

cc:

REMARKS: VOC by EPA Method 8260.
!1245 Tetramethylbenz = 1,2,4,5-Tetramethylbenzene
Page 2 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.04 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-4, 1030

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS		
Dichlordifluomethane	ug/Kg	<10	t-1,3Dichloropropene	ug/Kg	<10
Chloromethane	ug/Kg	<10	112 Trichloroethane	ug/Kg	<10
Vinyl Chloride	ug/Kg	<10	Tetrachloroethene	ug/Kg	40
Bromomethane	ug/Kg	<10	1,3-Dichloropropane	ug/Kg	<10
Chloroethane	ug/Kg	<10	Chlorodibromomethane	ug/Kg	<10
Trichlorofluomethane	ug/Kg	<10	1,2 Dibromoethane	ug/Kg	<10
1,1 Dichloroethene	ug/Kg	<10	Chlorobenzene	ug/Kg	<10
Methylene Chloride	ug/Kg	<10	Ethyl Benzene	ug/Kg	29
t-1,2-Dichloroethene	ug/Kg	<10	1112Tetrachloroethan	ug/Kg	<10
1,1 Dichloroethane	ug/Kg	<10	m + p Xylene	ug/Kg	89
2,2-Dichloropropane	ug/Kg	<10	o Xylene	ug/Kg	20
c-1,2-Dichloroethene	ug/Kg	280	Styrene	ug/Kg	<10
Bromochloromethane	ug/Kg	<10	Bromoform	ug/Kg	<10
Chloroform	ug/Kg	<10	Isopropylbenzene	ug/Kg	<10
111 Trichloroethane	ug/Kg	<10	Bromobenzene	ug/Kg	<10
Carbon Tetrachloride	ug/Kg	<10	1122Tetrachloroethan	ug/Kg	<10
1,1-Dichloropropene	ug/Kg	<10	123-Trichloropropane	ug/Kg	<10
Benzene	ug/Kg	<10	n-Propylbenzene	ug/Kg	26
1,2 Dichloroethane	ug/Kg	<10	2-Chlorotoluene	ug/Kg	<10
Trichloroethylene	ug/Kg	18	135-Trimethylbenzene	ug/Kg	70
1,2 Dichloropropane	ug/Kg	<10	4-Chlorotoluene	ug/Kg	<10
Dibromomethane	ug/Kg	<10	tert-Butylbenzene	ug/Kg	<10
Bromodichloromethane	ug/Kg	<10	124-Trimethylbenzene	ug/Kg	170
c-1,3Dichloropropene	ug/Kg	<10	sec-Butylbenzene	ug/Kg	23
Toluene	ug/Kg	77			

cc:

REMARKS: Volatile Organic Compounds by EPA Method 8260.
Page 1 of 2.
*Glen Head.

DIRECTOR

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (631) 422-5777• FAX (631) 422-5770

LAB NO:204354.04 00/00/00

P.W. Grosser Consulting
630 Johnson Avenue, Suite 7
Bohemia, NY 11716-2618
ATTN: Paul Grosser

SOURCE OF SAMPLE: 22-26 Railroad Avenue*, #CBO-00-01
COLLECTED BY: Client DATE COL'D:09/25/00 RECEIVED:09/25/00

SAMPLE: Soil sample, CP-4, 1030

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
p-Isopropyltoluene	ug/Kg	4400	
1,3 Dichlorobenzene	ug/Kg	450	
1,4 Dichlorobenzene	ug/Kg	300	
n-Butylbenzene	ug/Kg	48	
1,2 Dichlorobenzene	ug/Kg	540	
Dibromochloropropane	ug/Kg	<10	
124-Trichlorobenzene	ug/Kg	1400	
Hexachlorobutadiene	ug/Kg	<10	
Naphthalene	ug/Kg	24	
123-Trichlorobenzene	ug/Kg	200	
ter.ButylMethylEther	ug/Kg	<10	
p-Ethyltoluene	ug/Kg	110	
Freon 113	ug/Kg	<10	
1245 Tetramethylbenz	ug/Kg!	39	
Acetone	ug/Kg	310	
Methyl Ethyl Ketone	ug/Kg	<100	
Methylisobutylketone	ug/Kg	<100	
Chlorodifluoromethan	ug/Kg	<10	
p Diethylbenzene	ug/Kg	200	
% Solids		83	

cc:

REMARKS: VOC by EPA Method 8260.
!1245 Tetramethylbenz = 1,2,4,5-Tetramethylbenzene
Page 2 of 2.
*Glen Head.

DIRECTOR

[illegible]

ECO TEST LABORATORIES, INC. • ENVIRONMENTAL TESTING

77 Sheffield Avenue, North Babylon, New York 11703

(631) 422-5777 • FAX (631) 422-5770

Client: PW Grosser

Address: 630 – Johnson Ave – Suite 7

Bohemia NY 11716

Phone (631) 589-6353 FAX (631) 589-8705

Person receiving report: Jim Rhodes

Sampled by: Sal Tedesio

Source: 22-26 Railroad Ave, Glen Head

Job No.: CBO-00-01

MATRIX (Soil, etc.)	COLLECTED DATE	COLLECTED TIME	SAMPLE IDENTIFICATION	TOTAL NUMBER OF CONTAINERS	2 oz VOA wide mouth													[illegible]
Sludge	9/25	10:15	CP-1	1	1													VOC 8260
Sludge	9/25	10:00	CP-2	1	1													VOC 8260
Sludge	9/25	9:45	CP-3	1	1													VOC 8260
Sludge/Sand	9/25	10:30	CP-4	1	1													VOC 8260

Relinquished by: (Signature)	DATE/TIME	SEAL INTACT ?	Received by: (Signature)	Relinquished by: (Signature)	DATE/TIME	SEAL INTACT ?	Received by: (Signature)
[signature] Representing: PWGC	9/25 [illegible]:10	YES NO NA	[signature] Representing:	Representing:		YES NO NA	Representing:
Relinquished by: (Signature)	DATE/TIME	SEAL INTACT ?	Received by: (Signature)	Relinquished by: (Signature)	DATE/TIME	SEAL INTACT ?	Received by: (Signature)

NEW YORK STATE SUPERFUND STANDBY CONTRACT

PRELIMINARY SITE ASSESSMENT REPORT

Volume I • Report

Glen Head Groundwater Plume

Village of Glen Head
Town of Oyster Bay, New York
Site No.: 1-30-098
Work Assignment No. D002676-45

September 2000

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
John Cahill, *Commissioner*

Division of Environmental Remediation
Michael J. O'Toole, Jr., P.E., *Director*

By:
Lawler, Matusky & Skelly Engineers LLP

NEW YORK STATE SUPERFUND STANDBY CONTRACT

PRELIMINARY SITE ASSESSMENT REPORT

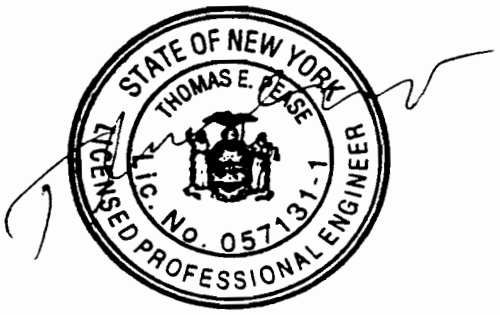
GLEN HEAD GROUNDWATER PLUME SITE
Village of Glen Head, New York
Site No. 1-30-098

VOLUME I – REPORT

Work Assignment No. D002676-45

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation



September 2000

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS
One Blue Hill Plaza
Pearl River, New York 10965

PRELIMINARY SITE ASSESSMENT REPORT

GLEN HEAD GROUNDWATER PLUME SITE
Village of Glen Head, New York

WORK ASSIGNMENT NO. D002676-45

TABLE OF CONTENTS

LIST OF APPENDICES

REFERENCES ARE BOUND SEPARATELY IN VOLUME II.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION

SITE INVESTIGATION INFORMATION

1. SITE NAME	2. SITE NUMBER	3. TOWN/CITY/VILLAGE	4. COUNTY
Glen Head Groundwater Plume	130098	Oyster Bay/Village of Glen Head	Nassau

5. REGION	6. CLASSIFICATION			
1		CURRENT	PROPOSED	MODIFY

7. LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location) see Figure 1

a. Quadrangle: Sea Cliff, NY

b. Site Latitude 40.833648 Site Longitude 73.627223

c. Tax Map Numbers Tax ID Nos. were available for some of the suspected sources: Glen Head Cleaners (Section 21, Block 228, Lot 17); former Charrell Cleaners (Section 21, Block 228, Lot 12); former Fresh & Clean Dry Cleaners (Section 20, Block 13, Lot 314).

d. Site Street Address: Area encompassing Glen Cove Avenue to the west, the northern end of Railroad Avenue to the north, Railroad Avenue to the east, and Walnut Avenue to the south.

8. BRIEFLY DESCRIBE THE SITE (Attach site plan showing disposal/sampling locations) see Figures 2 through 6; Table 1.

The Glen Head Groundwater Plume site lies in the area located immediately south of the TransTechnology site that has known groundwater contamination and past on-site industrial activities. Previous investigations at the TransTechnology site indicated that on-site groundwater had concentrations of up to 16,000 ug/l of PCE. A PSA was initiated in areas upgradient of the TransTechnology site for the NYSDEC by Lawler, Matusky & Skelly Engineers LLP (LMS) in September - October 1999 in an attempt to determine locations of PCE sources and local groundwater flow conditions. Groundwater samples were collected from four monitoring wells and four hydropunch locations. Elevated concentrations of VOCs, particularly PCE, were detected in all of the initial PSA groundwater samples. After a review of the initial (1999) PSA data, a second phase of investigatory work was conducted in May 2000 to better characterize the site and the potential sources of groundwater contamination. Elevated levels of PCE and VOCs were again detected in the groundwater.

Since PCE contamination was documented at the Glen Head Groundwater Plume site during the PSA (maximum concentration of 18,000 ug/l, see Figure 3)), it is suspected that releases of PCE occurred at the site. This contamination may have contributed to the groundwater contamination that was previously detected at the former TransTechnology site. Possible sources of PCE contamination have been identified during the PSA (i.e., five active/former dry cleaning facilities located in the site area - see Figure 2); however, definite sources of contamination could not be confirmed during the PSA. It is probable that at least one - and possibly more- of the five potential sources noted (and possibly other sources not identified during the PSA) have contributed to the local groundwater contamination. It is possible that improper handling of PCE/PCE waste or poor housekeeping practices that may have historically occurred at the potential source facilities may have resulted in releases of PCE to the subsurface at the Glen Head ndwater Plume site.

a. Area: 40 acres b. EPA ID Number NA

c. Completed ( )Phase I ( )Phase II (X) PSA ( )RI/FS ( )PA/SI ( )Other

9. HAZARDOUS WASTE DISPOSED (Include EPA Hazardous Waste Numbers)

F002 (spent halogenated solvents) - tetrachloroethene (PCE)

10. ANALYTICAL DATA AVAILABLE

a. ( )Air (X)Groundwater ( )Surface Water ( )Sediment ( )Soil ( )Waste ( )Leachate ( )EPTox ( )TCLP

b. Exceedences in NYS Groundwater Standards or Guidance Values Refer to attached Table 1.

11. CONCLUSION

12. SITE DATA

a. Nearest Surface Water: Distance 1700 ft Direction: NE Classification: N/A (retention basin)

b. Nearest Groundwater: Depth 110 ft Flow Direction: WNW (X)Sole Source ( )Primary ( )Principal

c. Nearest Water Supply: Dist. 1500 ft Direction: Northeast Active (X)Yes ( )No

d. Nearest Building: Distance (on-site) Direction: Not applicable Uses: Dry cleaning, misc. commercial/industrial

e. In State Economic Development Zone?	( )Y	(X)N	i. Controlled Site Access?	( )Y	(X)N
f. Crops or livestock on site?	( )Y	(X)N	j. Exposed hazardous waste?	( )Y	(X)N
g. Documented fish or wildlife mortality?	( )Y	(X)N	k. HRS Score _____		
h. pact on special status fish or wildlife resource?	( )Y	(X)N	l. For Class 2: Priority Category		

1.0 NYSDEC SITE INVESTIGATION INFORMATION

SITE SUMMARY

Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations if available. Follow the outline on the next page:

SITE CONDITIONS AND BACKGROUND

1. PHYSICAL LOCATION (Address, Lat-Long, Map Ref.)

The Glen Head Groundwater Plume site consists of an area that includes several former and active dry cleaning and industrial facilities located in the Village of Glen Head (Township of Oyster Bay) in Nassau County, New York (refer to Figures 1 and 2). The site area consists of mixed land uses including commercial and residential. The commercial properties in the site vicinity are primarily located along Glen Head Road and Glen Cove Avenue. The approximate site coordinates (central location) are 40.833648 (latitude) and 73.627223 (longitude). Figure 2 displays the approximate site boundaries (i.e., Glen Cove Avenue to the west, the northern end of Railroad Avenue to the north, Railroad Avenue to the east [near Glen Head School], and Walnut Avenue to the south). The total approximate site area is 40 acres. **Ref.: 1**

2. SITE CHARACTERISTICS (include a description of the buildings or structures on site and their physical condition).

One active and four former dry cleaning facilities were primarily targeted during the Preliminary Site Assessment (PSA) as potential sources of tetrachloroethylene (PCE), and other volatile organic compound (VOC), contamination in the shallow aquifer in the site area: Glen Head Cleaners [GH Cleaners], located on the northwest corner of the intersection of Glen Head Road and Dumond Place (an active dry cleaning facility); the former Charrell Cleaners [C Cleaners], located at 36 Glen Head Road, about 250 ft west of GH Cleaners; a former dry cleaners [unnamed] located on the northeast corner of the intersection of Glen Head Road and Dumond Place, about 50 ft east of GH Cleaners; Station Valet Cleaners [SV Cleaners, no active dry cleaning activities presently occur] located along Station Place, about 50 ft south of Glen Head Road; and the former Fresh and Cleaner Dry Cleaners [FC Cleaners], located along Railroad Avenue near the eastern portion of the site. In addition to the active and former dry cleaning establishments noted to exist at the Glen Head Groundwater Plume site, the former TransTechnology industrial facility, located north of Glen Head Road, between Dumond Place and the LIRR railroad tracks, has also been identified as a possible source site. Figure 2 displays

the locations of the five active/former dry cleaning facilities along with the location of the TransTechnology site.

Numerous file review and record search requests were made for this PSA to attempt to identify other former dry cleaning facilities that may have existed in the site vicinity. The record searches met with limited success. However, a dry cleaner address search conducted through an Internet search engine revealed that there are six active dry cleaning facilities listed within approximately 1.5 miles of the Glen Head Groundwater Plume site (see Reference No. 4). In addition, two active and one former dry cleaning establishments were identified along Glen Cove Avenue during site visits and file reviews. However, as groundwater flow at the site was estimated to flow toward the west/northwest (as was ultimately determined, as described below) and Glen Cove Avenue is considered to be downgradient from the possible sources identified above, these three dry cleaners were not considered to be part of the Glen Head Groundwater Plume site and were not investigated for the PSA. This investigation focused on the site area and the potential PCE source areas, as described above and in Figure 2. **Ref.: 2, 3, and 4.**

The site area, including the above-mentioned active and former dry cleaning establishments, is serviced by a municipal potable water supply system (Sea Cliff Water Company of Glen Cove, New York, refer to Section IV of PSA Report). According to village records, a municipal sanitary sewer system does not exist in the section of the Village of Glen Head that contains the Glen Head Groundwater Plume site. Thus, it is surmised that on-site sanitary/septic systems exist (and historically existed) at the site area. As observed during site investigations, stormwater at the site is generally collected by a system of drywells that discharge to groundwater. It is possible that discharges of PCE/PCE wastes from the above-noted potential sources may have occurred into on-site sanitary or drywell structures historically. As described in Sections III and IV, groundwater in the site vicinity flows to the west-north-west.

Historic maps of the site area from 1932 and 1943 were reviewed. On each map, the site area and surrounding vicinity (selected as the area approximately bounded by Glen Cove Avenue to the west, the northern end of Railroad Avenue to the north, approximately 700 ft east of Railroad Avenue to the east, and Walnut Avenue to the south) were analyzed for land use changes and development. The areas around the above-mentioned potential sources were focused on. Copies of the two historic maps that were reviewed are included in Reference No. 2. **Ref.: 2**

The historic map from 1932 shows the general site area layout. Glen Head Road, Railroad Avenue, Orchard Avenue (referred to as School Street today), Dumond Place, Maple Place, Oak Lawn Avenue, Roosevelt Street, and Glen Cove Avenue are all present. Railroad tracks (today owned by LIRR) are also shown in their current position. The roadway presently referred to as Station Place (west of LIRR tracks and south of Glen Head Road) is shown on the 1932 map but is unnamed. The street currently known as Magnolia Avenue (one block west of Dumond Place) is known as William Avenue on the 1932 historic map. The Sea Cliff Water Company storage tank that presently exists along the east side of Dumond Place is not shown on the 1932 map. Utility lines (water) are shown to be located within Glen Head Road, Railroad Avenue, Orchard

Avenue, Maple Place, Oak Lawn Avenue, and Glen Cove Avenue. The Glen Head School is shown to exist east of Railroad Avenue along the south side of Orchard Avenue (its present location) in the 1932 map. **Ref.: 2.**

Commercial establishments that presently exist along Glen Cove Avenue (western part of Glen Head Groundwater Plume site) are not depicted on the 1932 historic map, as the lots are shown to be undeveloped. Residential structures and garages are shown to exist along the east side of Glen Cove Avenue, south of Glen Head Road. A filling station with four underground storage tanks (USTs) is shown at the northeast corner of the intersection of Glen Head Road and Glen Cove Avenue (also location of present-day filling station). **Ref.: 2.**

Several commercial buildings/properties (most unspecified) are located along Glen Head Road from Glen Cove Avenue east to Railroad Avenue (and beyond the site focus area). Residential properties are also shown to exist along Glen Head Road, and also at areas north and south of Glen Head Road. A bank and office are located at the northwest corner of the Roosevelt Street/Glen Head Road intersection. The 1932 map also indicates that oils were possibly stored in an automobile garage that was situated behind a store building located along the south side of Glen Head Road, approximately 260 ft east of Glen Cove Avenue. A small, one story, unspecified shop is shown on the 1932 map to be located along the west side of Maple Place, approximately 150 feet south of Glen Head Road. The property along the north side of Glen Head Road that was known to house a former dry cleaner (C Cleaners, 36 Glen Head Road) was not shown to be developed as of 1932. A three-story commercial building was shown to exist at the northwest corner of the intersection of Dumond Place and Glen Head Road (current location of Glen Head Cleaners, 56 Glen Head Road). The use of this building is not specified in the 1932 historic map. **Ref.: 2.**

A small office is shown to be located along the west side of Dumond Place, approximately 110 feet north of Glen Head Road. A group of three adjacent stores are depicted at the northeast corner of the Dumond Place/Glen Head Road intersection on the 1932 map. A "cleaning and pressing" operation (unnamed potential source identified above) is shown to exist at the middle store, located approximately 20 feet east of Dumond Place along the north side of Glen Head Road. A drug store and office is shown at the southeast corner of the intersection of Maple Place and Glen Head Road. A large coal yard, with railroad siding, four coal pocket areas, and office building, is shown to be located along the east side of Maple Place approximately 100 feet south of Glen Head Road. A chain of four adjacent stores is shown along the present location of Station Place, just west of the railroad tracks and south of Glen Head Road. The building uses are not specified on the 1932 map, but the building that housed SV Cleaners is shown to exist. Some commercial development is also shown along the east side of Railroad Avenue on the 1932 map. A small office structure is located at the southeast corner of Orchard Avenue (today known as School Street) and Railroad Avenue (location of former FC Dry Cleaners, described above); however, no evidence of dry cleaning was indicated on the historic map. Several adjacent stores also exist along Railroad Avenue, between Orchard Avenue and Glen Head Road. A post office

was noted to exist at one of these locations. A commercial building is also depicted along Railroad Avenue at a location south of the former FC Cleaners. **Ref.: 2.**

A railroad station building is shown east of the tracks, along the west side of Railroad Avenue, south of Glen Head Road. A hotel was depicted on the 1932 map in the vicinity of the Glen Head Groundwater Plume site along the north side of Glen Head Road, approximately150 feet east of the railroad tracks. A freight depot is shown on the 1932 map to be located approximately 900 feet north of Glen Head Road, along the east side of the railroad tracks. Further east along the north side of Glen Head Road, an auto service establishment (approximately 700 feet east of Railroad Avenue) and the Post Brick Company (approximately 1500 feet east of Railroad Avenue) exist. Coverage of the TransTechnology property located north of Glen Head Road was not provided on the 1932 historic map that was reviewed. **Ref.: 2.**

The 1943 historic map is relatively unchanged from the 1932 map. Two additional filling stations (with USTs) are now shown to be located at the Glen Head Road/Glen Cove Avenue intersection (at the northwest and southeast corners). The filling station at the northeast corner of the intersection of Glen Head Road and Glen Cove Avenue still exists, and an "auto greasing" building has been added at this property since 1932 (approximately 60 ft north of Glen Head Road). The small shop previously noted to exist along the west side of Maple Place (across from the coal yard) is not depicted in the 1943 map. The coal yard and railroad track configurations are basically unchanged since 1932. Along the east side of Dumond Place, a 500,000 gallon water tank is shown to exist approximately 250 feet north of Glen Head Road (at current location). A new office building is also shown along the east side of Dumond Place, just south of the water tank. A filling station (present location of automobile repair shop) located along the north side of Glen Head Road has been constructed since 1932, between Dumond Place and the railroad tracks. Another filling station was constructed by 1943 at the southeast corner of the intersection of Railroad Avenue and Glen Head Road. Post Brick Company is no longer depicted on the 1943 map. **Ref.: 2.**

Significant development along Glen Cove Avenue is still not depicted in the 1943 map. The property containing the former C Cleaners along the north side of Glen Head Road is also not shown to be developed as of 1943. The buildings that have housed GH Cleaners, SV Cleaners, and FC Cleaners are still depicted (basically same configurations as shown in 1932; no specific dry cleaning activities noted). The building located near the northeast corner of the Dumond Place/Glen Head Road intersection (unnamed possible source; labeled as "pressing and cleaning" on 1932 map) still exists, but the building use is not specified on the 1943 map. The hotel noted on the 1932 historic map is still shown to be present along north side of Glen Head Road. The 1943 map that was reviewed does not provide coverage of the TransTechnology site. **Ref.: 2.**

The following paragraphs provide brief discussions of the potential sources (and also the TransTechnology site) that were identified during the PSA. Figure 2 provides a lay-out of the Glen Head Groundwater Plume site and the locations of the potential sources.

GH Cleaners: **Glen Head Cleaners (Tax Section No. 21, Block 228, Lot 17) is an active dry cleaning facility located at the northwest corner of the intersection of Dumond Place and Glen Head Road (see Figure 2). It appears that dry cleaning operations currently take place in the ground floor of the three-story structure and within the one-story building extension off of the north side of the structure, along Dumond Place. The building that houses GH Cleaners has been in existence since at least 1932. It has been noted that PCE was historically used and disposed of at the site (see below). Glen Head Cleaners has an EPA ID No. of NYD077359529 and is listed as a large quantity (hazardous waste) generator. RCRA violations (SRC #5896) have also been noted to have occurred at this facility. Ref.: 2, 3, 5, 6.**

Representatives of NCDOH conducted an inspection of GH Cleaners at 56 Glen Head Road on 22 January 1980 (it was not determined through file information what prompted this investigation). A survey form was prepared that noted equipment make/model; reclamation processes; chemical usage; liquid discharges; and solid discharges. It was noted that 600 gallons per year of PCE were purchased by the facility, and that liquid discharge at the facility occurred one time per week (quantity of 1 quart per week). The still and drier were noted to have liquid wastes that went to a drain. Solid discharges at the GH Cleaners facility in 1980 were noted to be cartridge filters, that were disposed of about every 3 months. Further notes that were made during the NCDOH inspection (22 January 1980) were that no sewer system was available to serve the facility; the facility operated about 25 hrs per week; machines were vented to the outside; there were two ceiling and two wall exhaust fans; and that bulk materials were stored on-site in a tank of sorts. As noted in a 2 December 1980 letter from NCDOH (Reference No. 8), it was evidently determined sometime in 1980 that wastewater containing PCE was being disposed of at the facility onto the ground surface or through plumbing into a septic tank system or cesspools. NCDOH noted that such disposal practices were in violation of ECL, Article 17, Titles 7 and 8, 6NYCRRR Parts 750-757. GH Cleaners was instructed to cease this discharge practice immediately and provide an adequate receptacle for all future PCE/solvent wastes. Wastes collected were to be held on-site for disposal through a NYSDEC registered industrial waste scavenger, and, where possible, wastewaters were to be utilized in dry cleaning processes (i.e., pre-spotting). **Ref.: 7, 8.**

A subsequent inspection (4 December 1980) was conducted by NCDOH. No cause for action was identified. Several periodic inspections of the GH Cleaners facility were made by NCDOH (see Reference No. 9). Overall inspection ratings of "Satisfactory" were given by NCDOH in 1981, 1985, 1987, 1989, 1990, 1991, 1992, 1993, 1994, 1995, and 1996. Safety Kleen was identified as the certified industrial waste scavenger for the facility, starting in 1987. **Ref.: 9.**

On 3 February 1988, a letter was sent to the GH Cleaners facility from NCDOH. The letter outlined the requirements of Article XI of the Nassau County Health Ordinance and how it requires the registration and regulation of toxic and hazardous materials stored in USTs, ASTs, containers, or in bulk. NCDOH indicated in the letter that, according to its files for GH Cleaners, the facility may fall under Article XI provisions. GH Cleaners was identified as facility ID #512 in the letter. **Ref.: 10.**

An application for an Article XI toxic or hazardous materials storage facility permit was filed by GH Cleaners in 1988 and 1989. Three items/areas were submitted for registration: one 550 gallon #2 fuel oil tank, located north of the facility building along Dumond Place; an indoor storage area (housing various dry cleaning equipment/processes/chemicals, such as washing machines, PCE storage drums, miscellaneous spotting chemicals drum, and miscellaneous waterproofing chemicals); and an outdoor bulk storage area, located west of the building (for PCE waste including still bottoms and spent cartridge filters). A copy of the application form is included as Reference No. 11. No record of investigations of the outdoor bulk storage area (area S-2 noted in the application) was found during file searches. Ref.: 11.

An on-site inspection was conducted by personnel from NYSDEC and NCDOH on 31 July 1998. Activities associated with the generation of hazardous wastes (various dry cleaning processes) were noted. Several notices of violations were also issued, as shown in a compilation of facility information included as Reference No. 12. Many of the compliance violations cited were associated with improper storage of PCE waste, improper labeling of storage containers, and miscellaneous operational and facility issues. Subsequent reports noted that the first generation dry cleaning machines were disconnected in August 1998, and that GH Cleaners was investigating the use of a non-PCE dry cleaning solvent. **Ref.: 12, 13.**

PCE contamination in an interior floor drain/drywell (Class V injection well) was identified at GH Cleaners (no information pertaining to the discovery of the contamination was found during the file reviews). P.W. Grosser of Bohemia, New York, was subsequently hired in 1997 to conduct an investigation of the drywell structure, under the USEPA Underground Injection Control (UIC) program. Elevated concentrations of PCE (as high as 2,100 ppm) were detected in sediment samples collected from beneath the drywell structure. As documented in the P.W. Grosser Closure Report (see Reference No. 14), contaminated sediment within the interior drywell was delineated, removed, and disposed of off-site. The Class V structure and associated piping were also decommissioned. EPA closed the file on this UIC action in February 1999. However, no investigations of other on-site areas, such as sanitary systems or outdoor stormwater drywells, were evidently conducted at GH Cleaners. It is possible that discharges of wastes from potential PCE sources at GH Cleaners may have historically occurred into on-site sanitary or drywell structures. **Ref.: 14, 15.**

C Cleaners: Charrell Cleaners (Tax Section No.21, Block 228, Lot 12) was formerly located at 36 Glen Head Road, approximately 200 ft west of Dumond Place. It was not determined during file reviews when C Cleaners functioned; however, historic maps revealed that the building that housed C Cleaners was constructed sometime after 1943. A restaurant, Ruby Café, currently occupies the one-story brick building. No information pertaining to on-site investigations, waste storage, spills, or violations was found for C Cleaners during the records searches that were conducted for the PSA. As noted, it is possible that discharges of wastes from this potential source may have historically occurred into on-site sanitary or drywell structures. **Ref.: 2, 3.**

Unnamed Cleaners east of GH Cleaners: This facility was identified on the 1932 historic map that was reviewed for the PSA ("pressing and cleaning" were noted to occur). The building, which still exists, is located near the northeast corner of the Dumond Place/Glen Head Road intersection (across Dumond Place from GH Cleaners, at 62 Glen Head Road; Tax Section 21, Block N-3, Lot 18). The two-story building appears to have a wood frame construction, and is currently occupied by a florist. No record of any on-site investigation, waste storage, spills, or violations was found during file searches that were conducted for the PSA. As noted, it is possible that discharges of wastes from this potential source may have historically occurred into on-site sanitary or drywell structures. **Ref.: 2, 3.**

SV Cleaners: The one-story masonry building that houses SV Cleaners has historically been located at 3 Station Place (just west of the LIRR tracks, approximately 50 ft south of Glen Head Road) since as early as 1932. No tax information was obtained for this facility. It has been reported that this facility is solely used today as a pick-up/drop-off location for dry cleaning, and that there is no active dry cleaning conducted at the premises. Active dry cleaning may have been conducted at the property historically. No other on-site information pertaining to spills, waste disposal, or violations was found during the records searches that were conducted for the PSA. As noted, it is possible that discharges of wastes from this potential source may have historically occurred into on-site sanitary or drywell structures when dry cleaning operations were occurring at the facility. **Ref.: 2, 3, 16.**

FC Cleaners: This former dry cleaning facility (Tax Section No. 20, Block 13, Lot 314) was located on the southeast corner of the intersection of Railroad Avenue and School Street (address: 22 Railroad Avenue), in the vicinity of the eastern portion of the Glen Head Groundwater Plume site. Dry cleaning occurred at this location historically. NCDOH files show that FC Cleaners has been out of business since 1988. Files also show that an illegal discharge of contaminated liquid waste to on-site sanitary systems occurred; however, no record of sampling/investigation was found. The two-story concrete block building is currently occupied by a doctor's office. FC Cleaners is listed as a RCRA large quantity generator (EPA ID No. NYD082782079). No other information pertaining to on-site investigations, waste disposal activities, spills, or violations was found during the records searches that were conducted for the PSA. As noted, it is possible that discharges of wastes from the potential sources may have historically occurred into on-site sanitary or drywell structures. **Ref.: 2, 3, 5, 6, 16.**

TransTechnology site: Until 1978, the TransTechnology site (Tax Section No. 21, Block N3, Lot 21) located north of Glen Head Road (at 1 Roberts Lane) was used by Lundy Electronics Company (Lundy) as a machine shop and electronics manufacturing facility. In the early 1980s, Lundy was acquired by TransTechnology, an electronics assembler. Since that time, portions of the site have been leased by TransTechnology to various tenants whose activities have reportedly included woodworking, metals fabrication, and warehousing. Until 1994, TransTechnology assembled electronic components on-site, and a waste manifest from as recently as 1997 (see Reference No. 17a) shows that TCE and PCE wastes were generated on-site. Since 1992, site assessments of the TransTechnology property have occurred. Investigations consisted of

monitoring well and soil boring installation. Soil, soil vapor, groundwater, drywell liquid, and drywell sediment samples have been collected and analyzed. No significant concentrations of VOCs have been detected in on-site soils, but on-site groundwater contained elevated concentrations of several VOCs, including PCE, at up to 16,000 ug/l (from a monitoring well located at the southern part of property, approximately 150 ft north of Glen Head Road). Chromium has also been detected at elevated levels at the TransTechnology site, at concentrations up to 2,870 ppm in on-site soil/sediment and 200 ug/l in on-site groundwater. **Ref.: 17, 17a, 18.**

Investigations at the TransTechnology site have also found that soils underlying the site consist of fine to medium sands. Geophysical logging data also suggested that a silty zone is located across the site at the 45 to 90 ft depth. The water table was reported to be located approximately 110 ft bgs, and the general direction of groundwater flow at the site was reportedly toward the northwest. Investigations conducted by Eder in 1992 suggested that on-site groundwater was contaminated with VOCs originating from an off-site source. **Ref.: 17, 18.**

After a follow-up site investigation performed in 1993, which included additional soil and groundwater sampling at the TransTechnology site, Eder stated that there were no active VOC sources on the TransTechnology property. Eder also reported that a PCE and TCE groundwater plume was present at the southwest portion of the property, and that this plume had migrated onto the TransTechnology property from an off-site upgradient source. The likely source was reported to be a dry cleaning facility located along Glen Head Road. Concentrations of VOCs were also found in on-site, upgradient monitoring wells. A small area of near-surface VOC-impacted soil was found in the vicinity of a leaching pool at the TransTechnology site. However, according to Eder, site data did not indicate that VOCs were migrating vertically to the groundwater table. Summaries of the 1992 and 1993 Eder investigations are included within the Conestoga-Rovers & Associates Subsurface Investigation Report (1997) that is included as Reference No. 18. The 1996-1997 Conestoga-Rovers & Associates site investigation yielded similar conclusions to the Eder assessments. In addition, it was concluded that the groundwater contamination at the TransTechnology site was limited primarily to the upper 10 ft of the saturated zone and that TCE measurements in on-site groundwater could be attributed to an off-site and/or an on-site source based on the groundwater flow pattern and distribution. **Ref.: 18.**

3. RELEASE OR THREATENED RELEASE INTO THE ENVIRONMENT OF A HAZARDOUS SUBSTANCE, OR POLLUTANT OR CONTAMINANT (be certain to indicate whether this is a release from a facility as defined in 40 CFR 300.5)

The Glen Head Groundwater Plume site (see Figure 2) lies in the area located immediately south of the TransTechnology site that has known groundwater contamination and past on-site industrial activities. Investigations at the TransTechnology site indicated that on-site groundwater had concentrations of up to 16,000 ug/l of PCE. A PSA was initiated for the NYSDEC by Lawler, Matusky & Skelly Engineers LLP (LMS) in September - October 1999 in

an attempt to determine locations of PCE sources and local groundwater flow conditions. After a review of the initial PSA data, a second phase of investigatory work was conducted in May 2000 to better characterize the site and the potential sources of groundwater contamination. A detailed summary of the PSA is described below (see Item No. 4). As alluded to, the major contaminant of concern targeted at the Glen Head Groundwater Plume site was PCE, a compound used in dry cleaning. **Ref: 17.**

Since PCE contamination was documented at the Glen Head Groundwater Plume site during the PSA, it is suspected that releases of PCE occurred at the site. This contamination may have contributed to the groundwater contamination that was previously detected at the former TransTechnology site. Possible sources of PCE contamination have been identified during the PSA (i.e., the five active/former dry cleaning facilities described above); however, definite sources of contamination could not be confirmed during the PSA. It is probable that at least one - and possibly more- of the five potential sources noted above (or other sources not identified herein) have contributed to the local groundwater contamination. In addition, it is possible that improper handling of PCE/PCE waste or poor housekeeping practices (for instance, the discharge of wastes to an interior drywell at the GH Cleaners facility [described above]) that may have historically occurred at the potential source facilities may have resulted in releases of PCE to the subsurface at the Glen Head Groundwater Plume site.

4. SITE ASSESSMENT ACTIVITIES / OBSERVATIONS

The PSA was conducted for the Glen Head Groundwater Plume site (Site No. 1-30-098) by LMS to characterize PCE contamination in on-site groundwater and to evaluate potential contaminant sources and groundwater flow patterns at the site. As part of the PSA, reviews of agency files (NYSDEC Region 1 office in Stony Brook, New York; NYSDEC main office in Albany, New York; the New York State Department of Health (NYSDOH) office in Albany, New York, and the NCDOH office in Mineola, New York) and historic maps were conducted.

Possible VOC sources at the Glen Head Groundwater Plume site were initially identified by NYSDEC Region 1, based on groundwater data obtained from the TransTechnology site that is located in an apparent downgradient position from former and active dry cleaning facilities in the vicinity of Glen Head Road and Dumond Place. Elevated levels of PCE (as high as 16,000 ug/l), TCE (1800 ug/l), and other VOCs were detected in the groundwater at the TransTechnology site, indicating that the sole source aquifer had been impacted. An auto body repair shop (located at 66 Glen Head Road, approximately 125 ft east of Dumond Place) was also identified as being a potential source of the contamination. **Ref: 17.**

On July 16 1999, a site reconnaissance of the Glen Head Groundwater Plume site area was conducted by LMS to delineate groundwater sample locations and observe the physical layout of the site. The initial portion of the PSA field activities was conducted by LMS in September and October 1999 to attempt to determine groundwater contaminant sources. As the major

contaminant of concern at the site was anticipated to be PCE, active and former dry cleaning facilities were primarily targeted as potential sources (as described above). In particular, three such properties in the presumed upgradient position of the TransTechnology site (GH Cleaners, SV Cleaners, and the unnamed former dry cleaning establishment on the corner of Dumond Place and Glen Head Road) were initially (1999) evaluated for the Glen Head Groundwater Plume site PSA.

During the initial phase of the PSA field work, a total of four monitoring wells and four hydropunches were conducted: one monitoring well was located along Station Place (MW-1), one monitoring well was located along Railroad Avenue (MW-2), one monitoring well was placed along Maple Place (MW-3), and one well was installed along Dumond Place (MW-4). The wells were installed by CT&E Environmental Services (CT&E) of West Creek, New Jersey (a complete description of all PSA field activities is provided below in Section III). The four monitoring wells were subsequently surveyed by YEC, Inc. (YEC) of Valley Cottage, New York, and water levels were obtained by LMS during the course of PSA activities. In addition to the monitoring wells, CT&E conducted hydropunch groundwater sampling at four locations during the initial PSA work. One hydropunch sample was collected along Station Place (HP-1) and three hydropunch samples (HP-2, -3, and -4) were collected on Dumond Place. Figure 3 shows the four monitoring well and four hydropunch locations from the 1999 PSA field activities.

The monitoring wells were installed to a maximum depth of 129 ft bgs, and shallow groundwater samples were collected by LMS at depths ranging from approximately 111 to 120 ft bgs at the well locations. In addition, two to three groundwater samples were collected at each of the four hydropunch locations. The hydropunch groundwater samples were collected from depths ranging from approximately 120 to 160 ft bgs. All groundwater samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) by H2M Labs, Inc. (H2M) of Melville, New York, according to NYSDEC Analytical Services Protocol (ASP) Method 95-1. The results are shown in Table 1 and graphically summarized in Figure 3. Laboratory analytical summary sheets are included in Appendix A, and data validation information is contained in Appendix B.

Analysis of groundwater samples collected from on-site monitoring wells during the October 1999 sampling event indicate the presence of elevated concentrations of PCE (18000 ug/l), TCE (130 ug/l), and total 1,2-DCE (61 ug/l) in MW-1, located on Station Place in front of SV Cleaners. These concentrations exceed the NYSDEC Class GA groundwater standards of 5 ug/l.

Concentrations of PCE, TCE, and 1,2-DCE (total) were also found to exceed NYSDEC Class GA standards in groundwater collected from MW-2, located on Railroad Avenue. PCE was detected at a concentration of 1800 ug/l, TCE was present at 43 ug/l, and 1,2-DCE (total) was found at 130 ug/l in MW-2.

Based on preliminary groundwater elevation data, MW-3, located on Maple Place south of Glen Head Road and GH Cleaners, was presumed to be sidegradient to SV Cleaners and upgradient of GH Cleaners and the former dry cleaning facility at the northeast corner of the Dumond Place/Glen Head Road intersection. PCE and TCE levels detected in MW-3 during the 1999 sampling event were found to

exceed Class GA standards with detected concentrations of 1600 and 19 ug/l, respectively.

Concentrations of PCE (5000 ug/l), TCE (60 ug/l), and total 1,2-DCE (24 ug/l) in groundwater collected from MW-4 during the October 1999 sampling episode were also found to exceed the respective Class GA standards. MW-4 was installed along Dumond Place, between the GH Cleaners property and the unnamed former dry cleaning facility (see Figure 3).

Hydropunch groundwater samples were collected from two depths at HP-1, located north of MW-1 near the intersection of Station Place and Glen Head Road. In the sample collected from 120 ft bgs, PCE (5400 ug/l), TCE (47 ug/l), and total 1,2-DCE (28 ug/l) were detected at levels exceeding the NYSDEC Class GA groundwater standard of 5 ug/l for each of these compounds. Concentrations of these compounds were also found to violate Class GA standards in the groundwater collected from the deeper interval (135 ft bgs) at HP-1. The PCE, TCE, and total 1,2-DCE concentrations detected at this depth were 1800, 22, and 13 ug/l, respectively. As shown on Table 1, groundwater samples collected from HP-2, HP-3, and HP-4 also had elevated levels of these three VOCs.

During the period of time that the first phase of PSA work was taking place, the owner of GH Cleaners corresponded with NYSDEC regarding information relating to active and former dry cleaning locations in Glen Head. In a letter dated 15 September 1999 the owner provided NYSDEC with a map detailing the locations of active and former facilities in the vicinity of the site. Dry cleaning activities along the western portion of the site (i.e., along Glen Cove Avenue) and at the eastern portion of the site (FC Cleaners) were highlighted, along with the three active/former dry cleaners that were initially targeted during the 1999 PSA work. **Ref.: 19.**

Based on the new information regarding dry cleaning operations in the site area and the results of the hydropunch and monitoring well sampling that occurred in September - October 1999, it was clear that the primary objectives of the PSA (i.e., to delineate the extent of groundwater contamination at the site, to identify or confirm one or more potential source areas and upgradient, "clean"[i.e., non-VOC contaminated] groundwater locations) had not been accomplished. As depicted on Table 1 and Figure 3, PCE was detected at elevated levels in all eight of the 1999 groundwater sample locations. After a review of this initial PSA data and the potential source locations identified, it was surmised that a localized groundwater flow pattern different from the regional flow, or other PCE sources, could possibly exist at the Glen Head Groundwater Plume site.

A subsequent (January 2000) study of topography and groundwater flow in the site area was conducted by LMS. Reviews of monitoring well elevations and groundwater levels (obtained from the first phase of the PSA) and site maps were conducted in an attempt to better characterize groundwater flow at the site. A localized topographic high (and, thus, a potential hydrogeologic high) was identified to exist northwest of the area originally investigated for the PSA. Site area topography can be viewed in Figures 4 and 5. A review of groundwater levels (and the surmised local groundwater flow pattern) obtained from the four monitoring wells installed during the first phase of the PSA did not appear to demonstrate any influence from this local topographic feature. However, as the four monitoring wells were all located east of the localized topographic high, the actual groundwater flow patterns over the entire site could not be confirmed.

The initial (1999) PSA data appeared to document a significant, widespread contaminant plume and provided a tentative confirmation of groundwater flow direction. In general, the site was found to be complicated by the fact that there were several potential sources of contamination and the first phase PSA data did not clearly indicate the actual source(s). The 1999 PSA data provided rationale for the needs to conduct additional investigations for the site PSA, to conclusively identify groundwater contamination sources, and to fully understand the local hydrogeology.

Thus, the second phase of PSA work was initiated (in April 2000) to attempt to identify and investigate all potential sources of the contamination. Existing data and additional information pertaining to the Glen Head Groundwater Plume site area were evaluated. Based on these data (and hydrogeological and topographical analyses), seven additional monitoring well locations were determined. The monitoring wells were installed in May 2000 by American Auger & Ditching (American Auger) of Constantia, New York, to attempt to better characterize the local hydrogeology and groundwater contamination potentially associated with up to five active and former dry cleaning facilities in the site vicinity. The seven new monitoring wells were surveyed by YEC. In addition, existing observation wells previously installed at gasoline service stations on the northwest and southeast corners of the intersection of Glen Cove Avenue and Glen Head Road (western portion of Glen Head Groundwater Plume site) were surveyed since permission was obtained to collect water level data. An attempt was also made to gain access to monitoring wells on the TransTechnology property for the purpose of measuring water levels; however, access to this property for the PSA was denied. Figure 3 displays the location of the seven new monitoring wells (MW-5 through MW-11). A detailed description of field activities, including monitoring well installations, is included below in Part III.

Groundwater samples from all 11 PSA monitoring wells (four installed in 1999; seven installed in May 2000) were collected in May 2000 by LMS and analyzed by H2M for TCL VOCs. Table 1 and Figure3 include summaries of the analytical results. Laboratory analytical summary sheets are included in Appendix A, and data validation information is contained in Appendix B.

During the May 2000 PSA sampling event, the four monitoring wells (MW-1, MW-2, MW-3, and MW-4) were re-sampled. MW-1, located near SV Cleaners along Station Place, again contained elevated concentrations of PCE (10,000 ug/l), TCE (50 ug/l), and 1,2-DCE (27 ug/l). However, the concentrations of these compounds had decreased from the 1999 sampling event. MW-2 (located along Railroad Avenue) also contained elevated concentrations of the same three VOCs, at levels similar to those detected during the 1999 sampling event (PCE: 2300 ug/l; TCE: 24 ug/l; and 1,2-DCE: 57 ug/l). Elevated concentrations of PCE (3100 ug/l) and TCE (21 ug/l) were again detected in MW-3, located along Maple Place, just south of Glen Head Road. The TCE concentration detected during the May 2000 sampling event was similar to the level found in October 1999 (19 ug/l); however, the PCE concentration detected in May 2000 had increased from the 1999 level of 1600 ug/l. MW-4, located along Dumond Place just north of Glen Head Road and between GH Cleaners and the unnamed former dry cleaners, again was found to contain elevated concentrations of PCE (10,000 ug/l), TCE (58 ug/l), and 1,2-DCE (21 ug/l). As shown on Table 1, the TCE and 1,2-DCE levels detected during the two PSA sampling episodes were found to be similar. However,

the concentration of PCE was observed to have increased from 5,000 ug/l (October 1999) to 10,000 ug/l (May 2000).

During the May 2000 PSA field work, seven new monitoring wells (MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, and MW-11 - refer to Figure 3) were installed, as noted above. Section III of this report includes a complete description of the monitoring well locations and PSA field activities. Copies of all Glen Head Groundwater Plume site PSA field notes are included in Appendix C.

MW-5 was positioned on the south end of Maple Place (approximately 400 ft south of Glen Head Road) near the intersection of Walnut Avenue. Since MW-3, located north of MW-5 on Maple Place, was originally thought to be situated upgradient of potential PCE sources (i.e, GH Cleaners, unnamed former dry cleaners) but was found to contain significant levels of VOCs, MW-5 was drilled further south of Glen Head Road to possibly provide a "clean", upgradient sampling point. However, a PCE concentration of 210 ug/l (above the Class GA standard of 5 ug/l) was detected in MW-5 during the May 2000 groundwater sampling.

Monitoring well MW-6 was installed on School Street just east of the Railroad Avenue intersection. This location is just north of the former property at which FC Cleaners operated (22 Railroad Avenue) and was chosen to address the presence of drywells (and possible historic PCE/PCE waste discharges) in a small parking lot at the rear of the property. During the May 2000 sampling event, elevated concentrations of PCE (5,700 ug/l), TCE (29 ug/l), and 1,2-DCE (58 ug/l) were found.

MW-7 was installed at the north end of Magnolia Avenue (see Figure 3). This location was selected since it is at nearly the highest ground surface elevation in the area (refer to Figures 4 and 5), and if local groundwater flow is controlled by topography it would be expected that this point could be "clean" and upgradient relative to other samples collected from lower topographical points. If the topography was found not to influence the local groundwater flow, however, this well would still aid in delineating the extent of contamination that is downgradient or sidegradient to the potential PCE sources identified at the site. Elevated levels of three VOCs (PCE: 4,600 ug/l; TCE: 27 ug/l; and 1,2-DCE: 22 ug/l) were detected in MW-7 in May 2000.

MW-8 was installed along Harding Place, near the western boundary of the Glen Head Groundwater Plume site. The well was installed at a somewhat lower topographical elevation from MW-7. However, if the topography was found not to influence the local groundwater flow, MW-8 would still aid in delineating the extent of contamination that is downgradient or sidegradient to the five potential PCE sources identified at the Glen Head Groundwater Plume site. [The location of this well was also considered to be a possible downgradient/sidegradient point to evaluate the former and active dry cleaning facilities along Glen Cove Avenue, depending on the results of the PSA groundwater flow analysis.] Analytical results from the May 2000 sampling event showed that elevated levels of PCE (1,900 ug/l), TCE (20 ug/l), and 1,2-DCE (7 ug/l) were present in MW-8.

Monitoring well MW-9 was installed just inside of the northernmost gate of the Town of Oyster Bay highway department storage yard (at the north end of Railroad Avenue, approximately 950 ft north of Glen Head Road). This location was selected since contaminants of concern were detected in the

first phase of the PSA at MW-2, also located on Railroad Avenue, directly south of MW-9. Thus, an additional sampling point was required to determine the northern extent of VOC contamination at the site. It was also thought that if the topographic high noted to exist west of Dumond Place (see Figures 4 and 5) had an influence on local groundwater flow, then MW-9 may be positioned to detect impacts on the groundwater quality from potential sources southwest of MW-9. No elevated levels of VOCs were detected in MW-9 during the May 2000 PSA sampling. PCE and TCE were not detected in MW-9.

Installation of MW-10 was conducted in the front lawn of the Glen Head School on School Street (see Figure 3). This location was chosen to address the possibility of contaminated groundwater migrating to the east- toward areas with lower ground surface elevations assuming groundwater flow corresponds with topography- from the former FC Cleaners. Due to the low ground surface elevation in the MW-10 vicinity (refer to Figures 4 and 5), this well was installed at a significantly shallower depth than any of the other wells installed as part of the PSA. PCE was detected in MW-10 at a concentration of 14 ug/l, which is slightly above the 5 ug/l Class GA groundwater standard. No other VOCs were detected in this well during the May 2000 sampling event.

MW-11 was installed in a Town of Oyster Bay municipal parking lot located between Oak Lawn Avenue and Glen Cove Avenue (refer to Figure 3). If the local groundwater flow was actually found to be westerly, this monitoring well would be located downgradient and/or sidegradient of the five possible PCE sources identified for the Glen Head Groundwater Plume site. [In addition, if groundwater was ultimately found to flow north or northeast at the site, then MW-11 would be in a sidegradient position to assess possible contamination from the active/former dry cleaners located along Glen Cove Avenue.] One VOC, PCE (56 ug/l), was detected at an elevated concentration during the May 2000 sampling episode. No other VOCs were detected in MW-11.

Static water levels from the 11 PSA monitoring wells, and also from two service station wells along Glen Cove Avenue that were accessed (refer to Section III), were field-measured in May 2000 by LMS. These measurements and the surveyed elevations of the wells were used to calculate groundwater elevations at each location. These groundwater elevations were used to construct a potentiometric surface map of the site area (see Figure 6). Results of the groundwater elevation data analysis indicate that local groundwater flow is to the west-northwest at the site. This westerly gradient is very likely controlled by the proximity of the site to Hempstead Harbor, located approximately 6000 ft west of the site. It thus appears that the local ground topography has no (or very little) effect on the local groundwater flow patterns.

5. CERCLA STATUS

Not assigned.

6. OTHER ACTIONS TO DATE (e.g., Federal removal[1], Federal remedial[2] or pre-remedial actions, State actions, other legal violations)

Only the actions described above. Except for the closure of an interior drywell at GH Cleaners (under the EPA UIC program), no other Federal or State remedial actions have occurred to date.

7. STATE AND LOCAL AUTHORITIES ROLE (Intervention)

In June 1999, NYSDEC assigned LMS to conduct a PSA to determine locations of PCE sources that are contributing to groundwater contamination and to assess the local groundwater flow conditions.

POSSIBLE THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES (permits - local, state, and federal)

1. POSSIBLE THREATS TO THE PUBLIC HEALTH AND WELFARE

The groundwater sampling data that were generated from the 1999 and 2000 PSA sampling events revealed that concentrations of VOCs analyzed for were above NYS Class GA standards at several locations, as shown in Table 1 and Figure 3. Elevated levels of VOCs, particularly PCE, were detected in the groundwater in the vicinity of (i.e., downgradient, sidegradient) the five active/former dry cleaners described above as possible sources and the TransTechnology site.

The nearest public water supply well is located about 1500 ft to the north of Glen Head Road (side- to upgradient) of the Glen Head Groundwater Plume site. There is also a public supply well located approximately 1.5 miles to the north-northwest (downgradient) of the Glen Head Groundwater Plume site. Both wells are owned and operated by Sea Cliff Water Company. No elevated levels of VOCs have been reported to have impacted either potable supply well; however, given the size and concentrations in the groundwater contaminant plume identified during the PSA, future impacts to the downgradient well may occur if no actions are taken. **Ref.: 20, 26.**

2. POSSIBLE THREATS TO THE ENVIRONMENT

As stated above, shallow groundwater at the Glen Head Groundwater Plume site is contaminated with VOCs, particularly PCE. No potential impacts to Hempstead Harbor (surface water located approximately 6000 ft west of the site) or a retention basin/unnamed pond (surface water located about 1700 ft northeast of the site) were identified during the PSA, and no sampling of surface waters was conducted as part of the PSA. **Ref.: 1.**

PERMITS - LOCAL, STATE, AND FEDERAL

GH Cleaners and FC Cleaners are listed as hazardous waste generators in the RCRIS (RCRA

SITE SKETCH

Provide a sketch of the site with available information. Indicate all pertinent features of the site and nearby environments including: delineation of site boundary, land cover/trees and other vegetation, utilities (water, electrical, gas, sewage, storm drains), sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences or other barriers restricting access to the site, fields, drainage channel or pathways, water bodies, wells, sensitive environments and other features such as hills and valleys. Be certain to indicate a north arrow.

Refer to Figure 2.

SITE ASSESSMENT REPORT:

PART I: SITE INFORMATION

1a. Site Name/Alias Glen Head Groundwater Plume site

Street Address In the vicinity of Glen Head Road, between Glen Cove Avenue and Railroad Avenue. Address information for five possible sources (active/former dry cleaning facilities) is provided in Section I, Item No.2

City Village of Glen Head (Town of Oyster Bay)	**State** New York	**Zip Code** 11545

2. County Nassau	**County Code*** 30	**Cong. Dist** 3
3. CERCLIS ID No. Not Assigned		**Region** NA
4. Tax Map Section No. 20-21	**Block No.** Multiple (refer to Section I)	**Lot No.** Multiple (refer to Section I)
5. Latitude 40.833648		**Longitude** 73.627223

USGS Quad: Sea Cliff, New York

6. Approximate size of site: For purposes of this PSA report, the site area is assumed to be bounded by Glen Cove Avenue to the west, the northern end of Railroad Avenue to the north, Railroad Avenue to the east [near Glen Head School], and Walnut Avenue to the south. Approx. 40 acres.

7a. GH Cleaners: Owner Joseph Petruzziello		**Telephone Number** 516-676-4367
Street 1 Dumond Place		
City Glen Head	**State:** NY	**Zip Code** 11545

7b. Former C Cleaners: Current Property Owner Michael and Robert Rich		**Telephone Number**
Street 12 University Place		
City Glen Head	**State:** NY	**Zip Code** 11545

7c. Former Unnamed Cleaners: Current Property Owner John Caggiano		**Telephone Number**
Street 62 Glen Head Road		

City Glen Head **State:** NY **Zip Code** 11545

7d. SV Cleaners: Owner Information not available **Telephone Number**

Street

City **State:** **Zip Code**

7e. Former FC Cleaners: Current Property Owner Robert Moskow **Telephone Number**

Street 12 Railroad Avenue

City Glen Head **State:** NY **Zip Code** 11545

8a. GH Cleaners: Operator Same as owner

8b. Former C Cleaners: Operator N/A

8c. Former Unnamed Cleaners: Operator N/A

8d. SV Cleaners: Operator N/A (no active dry cleaning occurs)

8e. Former FC Cleaners: Operator N/A

9. Type of Ownership

Private (X) **Federal ( )** **County ( )** **Municipal ( )**
Unknown ( ) **Other ( )**

10. Owner/Operator Notification on File: Both GH Cleaners and former FC Cleaners are identified in the RCRIS database as large quantity generators.

RCRA 3001 Date _____

Other ***(Specify, Date)*** **Unknown**

Plume site, other than investigations conducted at the TransTechnology site and NCDOH/NYSDEC investigations of GH Cleaners (described in Section I, Item No. 2).

a) Is the site or any waste source subject to Petroleum Exclusion? Identify petroleum products and by products that justify this decision.

No.

b) Are pesticides produced and stored on site? Does the facility apply pesticides (FIFRA or Federal Insecticide, Fungicide, and Rodenticide Act) to any part of the property?

The facilities investigated at the site do not produce or store pesticides.

c) Is the site or any waste source subject to RCRA Subtitle C (briefly explain)?

Two of the active/former dry cleaning facilities are listed as large quantity generators in the RCRIS (RCRA Information System) database. The RCRIS database identifies hazardous waste permits for generators, receivers, and transporters of hazardous waste. PCE is a listed "F002" hazardous waste (spent halogenated solvent) under 40 CFR 261.31. Therefore, it is assumed that the PCE detected in the groundwater could be subject to RCRA Subtitle C. **Ref: 3, 5, 6.**

d) Is the site or any waste source maintained under the authority of the Nuclear Regulatory Commission (NRC) ?

No.

16. Information available from:

Contact: Elaine Zuk | **Agency:** NYSDEC | **Telephone Number:** (518) 457-0639

Preparer: Michael Musso, Scott Englert, Terry Schneider | **Agency/Company:** Lawler, Matusky & Skelly Engineers LLP

Date: September 2000 | **Telephone Number:** (845) 735-8300

PART II: WASTE SOURCE INFORMATION

For each of the waste units (sources) identified in Part I, complete the following items.

Waste Unit (#) 1

Source Type

__	**Constituent**	__	**Wastestream**
__	**Landfill**	__	**Contaminated Soil**
__	**Surface Impoundment (buried/backfilled)**	__	**Pile(Specify type: chemical, junk, trash, tailings, etc.)**
__	**Drums**	__	**Land Treatment**
__	**Tanks/Containers**	_X_	**Other(Specify):**Groundwater Contamination

Description:

1. **Describe the types of containers, impoundments or other storage systems (i.e. concrete lined surface impoundment) and any labels that may be present.**

   None identified.

2. **Describe the physical condition of the containers or storage systems (i.e. rusted and/or bulging metal drums).**

   Not applicable.

3. **Describe any secondary containment that may be present (e.g. drums on concrete pad in building or above ground tank surrounded by berm).**

   Not applicable.

Hazardous Waste Quantity - The horizontal and vertical limits of the plume were not fully defined during the PSA. Thus, the quantity of groundwater contamination could not be determined.

Hazardous Substances/Physical State - The hazardous substance of PCE (and common PCE breakdown products) was detected in the groundwater. The original physical state of the substance is presumed to have been a liquid form of PCE solvent or waste material.

On 4 October 1999, drilling work for MW-2 (new location) commenced. Due to property owner concerns and traffic congestion and obstructions encountered along Glen Head Road, it was decided to relocate this well to Railroad Avenue north of Glen Head Road (see Figure 3). MW-2 terminated at approximately 118 ft bgs, and the well was set at the same depth. Split spoon samples were collected from the ground surface to 112 ft bgs at intervals of 2 to 3 ft. Boring logs for the spoon samples, along with monitoring well installation logs, are compiled in Appendix C.

Once well installation was completed, development of the wells was required to flush fine-grained sediments from the filter pack and screen. Development of the wells was conducted by CT&E and LMS in October 1999 using either a submersible pump or hand bailer. Development criteria involved pumping or bailing the wells for 2 consecutive hours or until turbidity levels were reduced to an acceptable level (< 50 NTUs). Development logs for the monitoring wells installed as part of this phase of the PSA are included in Appendix C. The four monitoring wells that were installed were also surveyed as to location and elevation by YEC, Inc. of Valley Cottage, New York. Information from the land survey is included in Appendix D.

Groundwater samples were also collected during the first phase of field work for the PSA using a hydropunch tool. The hydropunch tool allows in-situ sampling of groundwater from discrete intervals within the aquifer of interest. The method of sampling utilized in this investigation involved attaching a hydropunch tool to a string of drill rods lowered through the center of the hollow stem augers used to advance the boring to the target depth(s). During CT&E's hydropunch drilling, split spoon samples were also collected. Since the hydropunch location at HP-1 (northwest corner of Glen Head Road and Station Place, see Figure 3) was located very close to MW-1, limited split spoon samples were collected at HP-1. Split spoons were recovered generally more frequently during drilling of HP-2, HP-3, and HP-4 located along Dumond Place. Appendix C contains the boring logs derived from the analysis of split spoon samples collected during hydropunch drilling.

The hydropunch itself consists of a hollow tube fitted with an inner screen that is designed to extend outward and allow the infiltration of groundwater into the hollow tube. The tool, fitted to a string of drill rods, is driven through the end of the augers to the desired depth. The rods are then pulled up several feet and the lithostatic pressure causes the screened section of the hydropunch to be pulled out of the hollow tube, thereby allowing the entrance of groundwater into the tool. The infiltration of water is typically a relatively slow process; after a given amount of time has elapsed (usually about 30 min.) the hydropunch is brought to the surface. As the tool is raised through the formation the lithostatic pressure causes the screened section to be further extended, activating a seal that holds the groundwater from the sampled interval within the outer tube of the hydropunch. Once sampling of the desired intervals was completed, the borehole was grouted to the surface and an asphalt patch was applied, as necessary.

The first hydropunch location (HP-1) for the Glen Head PSA was near the corner of Station Place and Glen Head Road, approximately 30 ft north of MW-1. HP-1 was drilled and sampled on 23 September 1999. Due to problems encountered with the hydropunch tool, the first groundwater sample (ID: HP-1-120) from HP-1 was collected from a depth of approximately 116 ft (just below the water table) using a disposable bailer lowered through the center of the augers. The hydropunch

was successfully utilized at HP-1 in obtaining a sample (ID: HP-1-135) from approximately 135 ft bgs.

Hydropunch points HP-2, HP-3, and HP-4 were all located along Dumond Place with HP-2 closest to Glen Head Road (approximately 40 ft north of MW-4). HP-4 was the northernmost hydropunch conducted along Dumond Place. All hydropunch locations are shown on Figure 3. Drilling for HP-2 was initiated on 29 September 1999. Drilling continued and hydropunching was initiated on 1 October 1999. The first hydropunch sampling attempted at HP-2 was from the 122-124 ft bgs interval. No groundwater was collected from this depth so the borehole was advanced to 125 ft bgs and a sample (ID: HP-2-127) was collected from the127-129 ft bgs interval. Two additional hydropunch samples were collected at HP-2; one sample was obtained at approximately 140 ft bgs (ID: HP-2-140) and the other from about 160 ft bgs (ID: HP-2-160).

HP-3 was drilled and sampled on 5 October 1999. Hydropunch samples were obtained from 130 ft (ID: HP-3-130), 145 ft (ID: HP-3-145), and 160 ft bgs (ID: HP-3-160). Drilling and sampling at hydropunch location HP-4, near the entrance to the former TransTechnology facility off of Dumond Place, occurred on 28 September 1999. Groundwater samples were collected from 125 ft (ID: HP-4-125), 140 ft (ID: HP-4-140), and 160 ft (HP-4-160) bgs at this location.

During drilling activities conducted at the four monitoring well and four hydropunch locations, soil cuttings that were generated were stored temporarily in a 15 cy roll-off container at a Town of Oyster Bay highway department storage yard along Railroad Avenue. A composite soil sample was collected and analyzed for TCLP characteristics by H2M. The waste was characterized to be "non-hazardous", and the roll-off container was subsequently removed from the yard for off-site disposal by Waste Management of Long Island (WMLI) of New Hyde Park, New York. Appendix E contains waste disposal information for the PSA.

The four on-site monitoring wells installed during the first phase of PSA work were sampled on 11 and 12 October 1999. Prior to sampling, three well volumes (casing volume plus filter pack volume) of groundwater were purged from each well using a submersible pump and dedicated polyethylene tubing to insure water collected for samples was representative of formation water. Purge and sample chemistries, including temperature, pH, specific conductivity, and turbidity, were monitored for each well to quantitatively demonstrate that groundwater collected for samples was indeed formation water. After purging, the water level in the well was allowed to recover and samples were collected using a Teflon bailer. Well sampling logs are included in Appendix C. Three laboratory-cleaned, non-preserved 40 ml amber vials were used during the collection of each PSA groundwater sample. For QA/QC purposes an additional six vials were collected as MS/MSD samples during both the monitoring well and hydropunch sampling. During the monitoring well sampling, an additional sample was collected from MW-4 as a blind duplicate (ID: MW-2A) and during the hydropunch sampling, an equipment rinsate sample was collected from the hydropunch equipment. Groundwater samples were shipped following chain-of-custody protocol for overnight delivery for analysis at a NYSDEC-approved off-site laboratory (H2M Labs) for TCL VOCs following NYSDEC Analytical Services Protocol (ASP) Method 8260B.

Tab[illegible] (Page 1 of 6)
GROUNDWA[illegible]R DATA SUMMARY
Glen Head Groundwater Plume PSA

SDG Number	LMS160	LMS160	LMS160	LMS160	LMS160	LMS160	
LMS Sample ID	HP-1-120	HP-1-135	HP-2-127	HP-2-140	HP-2-160	HP-3-130	NYSDEC
Lab Sample Number	9928683	9928684	9929886	9929887	9929888	9930429	CLASS GA
Sampling Date	09/23/1999	09/23/1999	10/01/1999	10/01/1999	10/01/1999	10/06/1999	STANDARDS (a)
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
	[DF1:50]	[DF1:20]	[DF 1:10]	[DF 1:25]	[DF 1:10]	[DF 1:25]	
Volatile Organic Compounds (ug/L)							
Acetone	27 g	14 g	ND g	16 g	32 g	ND g	50 GV
1,1-Dichloroethene	1	ND	ND	ND	ND	2	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	28	13	6	4	4	**48 g**	5
2-Butanone	5 g	2 jg	5 g	2 jg	6 g	ND g	50 GV
1,1,1-Trichloroethane	2	3	1	ND	ND	1	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	1
Trichloroethene	**47 g**	**22 g**	**11**	**16**	**10**	**39 g**	5
Benzene	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	**5400 dg**	**1800 dg**	**1600 d**	**2100 d**	**1400 d**	**4100 d**	5
Toluene	ND	ND	ND	ND	ND	ND	5
Styrene	ND	ND	1	ND	ND	ND	5
Total VOCs	**5510**	**1854**	**1624**	**2138**	**1452**	**4190**	100[1]

1 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water: Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample. ER, equipment rinsate, TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
b - Compound found in associated blank
d - Compounds identified in an analysis at a dilution factor.
j - Estimated concentration, compound present below quantitation limit
GV - Guidance Value
ND - Not detected at analytical reporting limit.
DF - Dilution Factor.
g - Value considered estimated based on data validator's report (Appendix B).
Note - Numbers in bold exceed cleanup standard

Tabl[illegible] ge 2 of 6)
GROUNDWA[illegible] DATA SUMMARY
Glen Head Groundwater Plume PSA

SDG Number	LMS160	LMS160	LMS160	LMS160	LMS160	LMS168	
LMS Sample ID	HP-3-145	HP-3-160	HP-4-125	HP-4-140	HP-4-150	MW-1	
Lab Sample Number	9930430	9930431	9929628	9929629	9929630	9931123	NYSDEC
Sampling Date	10/05/1999	10/05/1999	09/28/1999	09/28/1999	09/28/1999	10/11/1999	CLASS GA
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	STANDARDS (a)
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
	[DF 1:5]	[DF 1:50]	[DF 1:10]	[DF 1:5]	[DF 1:5]	[DF 1:500]	
Volatile Organic Compounds (ug/L)							
Acetone	33 g	26 g	ND g	13 g	8 g	ND	50 GV
1,1-Dichloroethene	ND	2	ND	ND	ND	1	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	4 g	78 g	90	35	41	61	5
2-Butanone	8 g	5 jg	ND	ND	ND	ND	50 GV
1,1,1-Trichloroethane	2	3	ND	2	2	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	1
Trichloroethene	4 g	50 g	27	12	13	130	5
Benzene	ND	ND	ND	ND	1	ND	1
Tetrachloroethene	400 d	6200 d	960 d	370d	460 d	18000 bdg	5
Toluene	ND	ND	2	ND	3	ND	5
Styrene	ND	ND	1	ND	ND	ND	5
Total VOCs:	451	6364	1080	432	528	18192	100[1]

1 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample. ER, equipment rinsate, TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
b - Compound found in associated blank.
d - Compounds identified in an analysis at a dilution factor
j - Estimated concentration, compound present below quantitation limit
GV - Guidance Value
ND - Not detected at analytical reporting limit
DF - Dilution Factor
g - Value considered estimated based on data validator's report (Appendix B)
Note - Numbers in bold exceed cleanup standard

GROUNDWATER DATA SUMMARY

Glen Head Groundwater Plume PSA

SDG Number	LMS178	LMS168	LMS178	LMS168	LMS168	LMS178	
LMS Sample ID	GHMW1	MW-2	GHMW2	MW-2A*	MW-3	GHMW3	
Lab Sample Number	20000531-095	9931559	20000531-011	9931124	9931125	20000531-096	NYSDEC
Sampling Date	05/31/2000	10/14/1999	05/30/2000	10/12/1999	10/12/1999	05/31/2000	CLASS GA
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	STANDARDS (a)
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
	[DF 1:100]	[DF 1:25]	[DF 1:20]	[DF 1:100]	[DF 1:16]	[DF 1:20]	
Volatile Organic Compounds (ug/L)							
Acetone	ND	ND	ND	ND	ND	ND	50 GV
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	27	130	57	24	3	3	5
2-Butanone	ND	ND	ND	ND	ND	ND	50 GV
1,1,1-Trichloroethane	1	ND	1	2	2	2	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	1
Trichloroethene	50	43 g	24	66	19	21	5
Benzene	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	10000d	1800 d	2300 d	5200 bdg	1600 bdg	3100 d	5
Toluene	ND	ND	ND	4	3	ND	5
Styrene	ND	ND	ND	ND	ND	ND	5
Total VOCs:	10078	1973	2382	5296	1627	3126	100 1

1 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.

* - Denotes QA/QC sample: ER, equipment rinsate; TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.

(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998

b - Compound found in associated blank

d - Compounds identified in an analysis at a dilution factor.

J - Estimated concentration; compound present below quantitation limit

GV - Guidance Value.

ND - Not detected at analytical reporting limit

DF - Dilution Factor

g - Value considered estimated based on data validator's report (Appendix B)

Note - Numbers in bold exceed cleanup standard

GROUNDWAT(,TA SUMMARY
Glen Head Groundwater Plume PSA

SDG Number	LMS168	LMS178	LMS178	LMS178	LMS178	LMS178	
LMS Sample ID	MW-4	GHMW4	GHMW6	GHMW6	GHMW7	GHMW8	
Lab Sample Number	9931126	20000531-097	20000531-012	20000531-098	20000531-099	20000531-013	NYSDEC
Sampling Date	10/12/1999	05/31/2000	05/30/2000	05/31/2000	05/31/2000	05/30/2000	CLASS GA
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	STANDARDS (a)
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
	[DF 1:16]	[DF 1:100]	[DF 1:2.5]	[DF 1:50]	[DF 1:50]	[DF 1:20]	
Volatile Organic Compounds (ug/L)							
Acetone	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	
1,2-Dichloroethene (total)	24 d	21	ND	58	22	7	
2-Butanone	ND	ND	ND	ND	ND	ND	
1,1,1-Trichloroethane	ND	2	2	ND	4	2	
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	
Trichloroethene	60 d	58	1	29	27	20	
Benzene	ND	ND	ND	ND	ND	ND	
Tetrachloroethene	5000 bdg [DF 1:100]	10000 d	210 d	5700d	4600 d	1900d	
Toluene	ND	ND	ND	ND	ND	ND	
Styrene	ND	ND	ND	ND	ND	ND	
Total VOCs:	5084	10081	213	5787	4653	1929	

l - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample. ER, equipment rinsate; TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998
b - Compound found in associated blank
d - Compounds identified in an analysis at a dilution factor
j - Estimated concentration, compound present below quantitation limit
GV - Guidance Value
ND - Not detected at analytical reporting limit
DF - Dilution Factor
g - Value considered estimated based on data validator's report (Appendix B)
Note - Numbers in bold exceed cleanup standard

GROUNDWATER DATA SUMMARY
Glen Head Groundwater Plume PSA

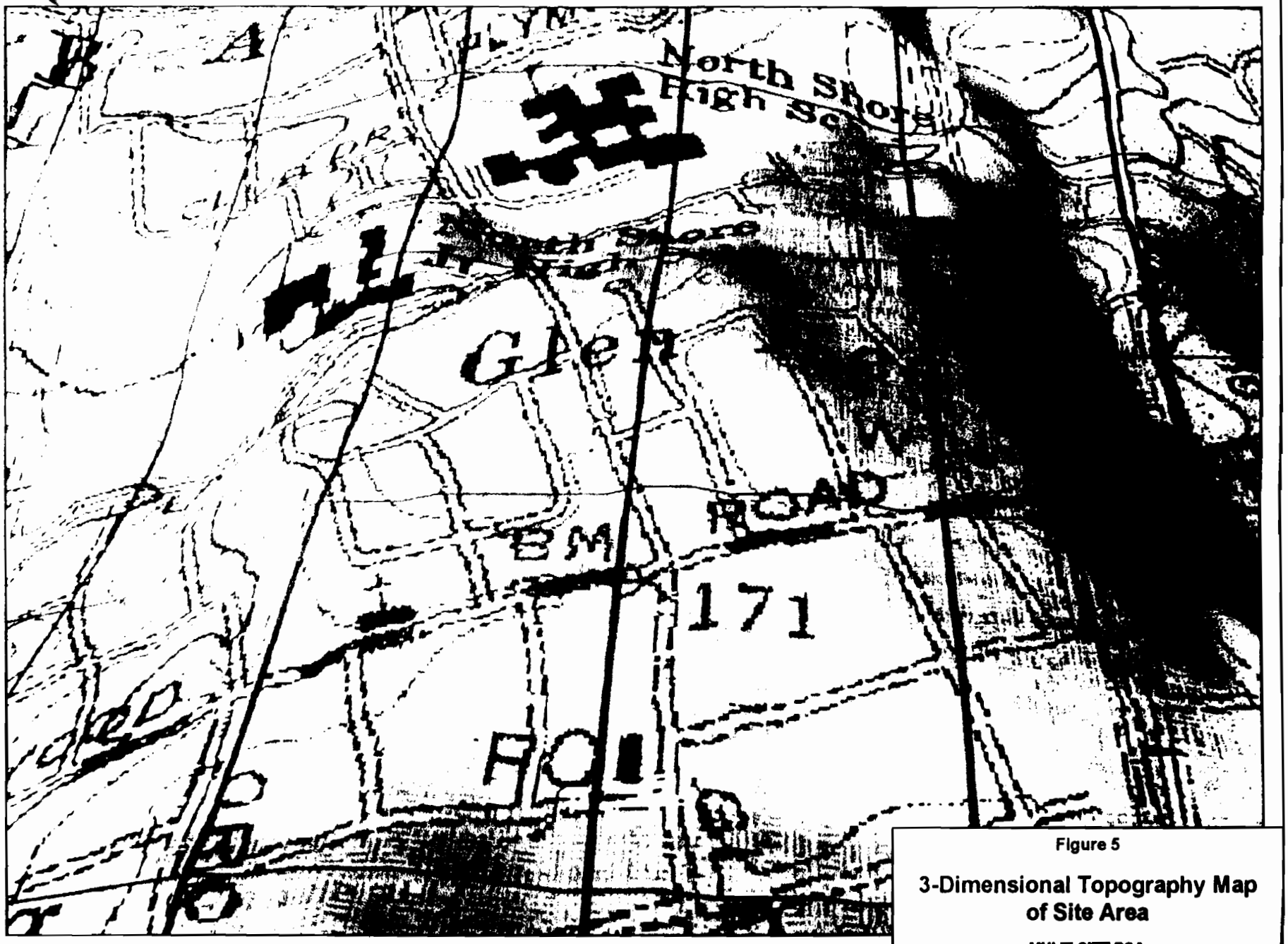
SDG Number	LMS178	LMS178	LMS178	LMS178	LMS160	LMS160	
LMS Sample ID	GHMW9	GHMW10	GHMW11	GHMW12*	ER-1*	TB-1*	NYSDEC
Lab Sample Number	20000531-014	20000531-100	20000531-101	20000531-102	9930428	9928686	CLASS GA
Sampling Date	06/30/2000	05/31/2000	05/31/2000	06/31/2000	10/06/1999	09/24/1999	STANDARDS (a)
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
				[DF1:100]			
Volatile Organic Compounds (ug/L)							
Acetone	ND	ND	ND	ND	ND g	ND	50 GV
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	1	ND	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	ND	ND	ND	28	ND	ND	5
2-Butanone	ND	ND	ND	ND	ND g	ND	50 GV
1,1,1-Trichloroethane	1	ND	ND	1	ND	ND	5
1,2-Dichloropropane	1	ND	ND	ND	ND	ND	1
Trichloroethene	ND	ND	ND	50	ND g	ND	5
Benzene	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	ND	14	56	8900 d	ND	2	5
Toluene	ND	ND	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	ND	ND	5
Total VOCs	3	14	56	8979	ND	2	100

1 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample. ER, equipment rinsate; TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
b - Compound found in associated blank
d - Compounds identified in an analysis at a dilution factor
j - Estimated concentration, compound present below quantitation limit
GV - Guidance Value
ND - Not detected at analytical reporting limit
DF - Dilution Factor
g - Value considered estimated based on data validator's report (Appendix B).
Note - Numbers in bold exceed clean-up standard

Table 1 (Page 6 of 6)
GROUNDWATER DATA SUMMARY
Glen Head Groundwater Plume PSA

SDG Number	LMS160	LMS160	LMS160	LMS168	LMS178	LMS178	LMS168	
LMS Sample ID	TB-2*	TB-3*	TB-4*	TB-5*	TB-6/30*	TB-6/31*	TB-6*	NYSDEC
Lab Sample Number	9929531	9929889	9930432	9931127	20000531-015	20000531-103	9931560	CLASS GA
Sampling Date	09/29/1999	10/01/1999	10/06/1999	10/11/1999	05/30/2000	05/31/2000	10/14/1999	STANDARDS (a)
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	WATER	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Volatile Organic Compounds (ug/L)								
Acetone	ND g	ND g	ND g	ND	ND	ND	ND	
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	
1,2-Dichloroethene (total)	ND	ND	ND	ND	ND	ND	ND	
2-Butanone	ND	ND g	ND g	ND	ND	ND	ND	
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	
Trichloroethene	ND	ND	ND g	ND	ND	ND	ND	
Benzene	ND	ND	ND	ND	ND	ND	ND	
Tetrachloroethene	1	ND	ND	ND	ND	ND	ND	
Toluene	ND	ND	ND	ND	ND	ND	ND	
Styrene	ND	ND	ND	ND	ND	ND	ND	
Total VOCs:	1	ND	ND	ND	ND	ND	ND	

1 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample: ER, equipment rinsate; TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
b - Compound found in associated blank
d - Compounds identified in an analysis at a dilution factor
j - Estimated concentration, compound present below quantitation limit
GV - Guidance Value.
ND - Not detected at analytical reporting limit
DF - Dilution Factor.
g - Value considered estimated based on data validator's report (Appendix B)
Note - Numbers in bold exceed cleanup standard



Not to scale

Srv-E\650456\GlenHead 3d.dsf

Figure 5

3-Dimensional Topography Map of Site Area

MULTI-SITE PSA
Glen Head Groundwater Plume
NYSDEC I.D. No. 130xxx

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.**

There is an observed release of PCE and its breakdown products (including TCE and 1,2-DCE) to the groundwater at the Glen Head Groundwater Plume site. Analyses of groundwater samples collected by LMS in September 1999, October 1999 and May 2000, during the PSA, indicated concentrations of PCE (ranging from 14 ug/l to 18,000 ug/l) above the New York State Class GA standard of 5 ug/l (see Table 1 and Figure 3). Information obtained during this PSA indicates that groundwater flows toward the west/northwest in the vicinity of the site, as shown on Figure 6 and described in Section I, Item No. 4. Therefore, the eastern most monitoring well, MW-10, has been designated as an upgradient well for the purpose of this investigation. Groundwater samples collected in May 2000 indicate that 14 ug/l of PCE was detected in the upgradient well, MW-10. Downgradient wells (MW-1, MW-2, MW-3, MW-4, MW-6, MW-7, and MW-8) and apparent sidegradient wells (MW-5, MW-9, and MW-11) sampled in May 2000 and October 1999 had detected concentrations of PCE in excess of three times that detected in the upgradient well MW-10.

MW-1, located directly downgradient of MW-10, was sampled in October 1999 and May 2000. Results from these analyses indicate the presence of PCE at 18,000 ug/l (October 1999) and 10,000 ug/l (May 2000). These were the highest PCE concentrations detected during the PSA. The lowest concentration of PCE detected in the apparent sidegradient wells was detected in MW-11 at 56 ug/l which is more than three times that detected in the upgradient well (14 ug/l).

There were/are several active dry cleaning facilities located within the area of the groundwater plume. Five possible PCE sources within the Glen Head Groundwater Plume site were identified during the PSA, as described in Section I of this report.

2. **Describe the aquifer of concern; include information such as stratigraphy, depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction. Attach a sketch of stratigraphic column.**

According to published information, the site is located in an area of Long Island that is underlain by three hydrogeologic units, the Upper Glacial Formation (UGA), the Magothy Formation, and the Raritan Clay and Lloyd Sand Members of the Raritan Formation which overlie the southeasterly dipping bedrock surface (see Figure 7). According to information from a potable well in the vicinity of the site, the area is underlain by approximately 85 feet of the unconsolidated deposits of the UGA, which directly overlie approximately 150 feet of the sands and clayey sands of the Magothy Formation. The Magothy Formation overlies the Raritan clay unit of the Raritan Formation.

The UGA is composed of upper Pleistocene deposits of the Quaternary period of the Cenozoic era (2 million years before present to 8000 years before present). These deposits consist of till and outwash sediments. Till deposits are composed of clay, sand, gravel, and boulders while the outwash deposits consist of quartzose sand, fine to very coarse, and pebble to boulder sized gravel. Till is poorly permeable (10^{-3} to 10^{-1} darcys). Outwash deposits are moderately to highly permeable (1 to 10^{2} darcys). Regionally, the altitude of the potentiometric surface of the UGA in the area of the site is between 50 and 60 feet. According to information obtained during this investigation, the potentiometric surface of the UGA is located from 47 to 52 feet in the vicinity of the site (Figure 7).

The Magothy Formation consists of upper Cretaceous deposits of the Cretaceous period of the Mesozoic era (135 to 65 mybp). These deposits are composed of fine to medium quartzose sand interbedded with discontinuous layers and/or lenses of coarse sand and sandy and solid clay. The permeability is poor to moderate with some areas of the aquifer exhibiting high permeability. The average permeability of the aquifer ranges from 10^{-2} to 10^{2} darcys. The Magothy Aquifer is the principal aquifer for the withdrawal of public drinking water supplies. A public supply well, GH (N 5792) of the Sea Cliff Water Company is located approximately 1500 feet north of Glen Head Road and the site. This well is approximately 300 feet deep and is screened in the Magothy.

The Raritan Clay unit consists of solid and silty clay with minor lenses of sand. Because of its poor to very poor permeability (the average vertical hydraulic conductivity is 0.001 ft/day), this unit acts as a confining layer over the Lloyd Sand member.

It is assumed, for the purpose of this investigation, that the UGA and the deposits of the Magothy Formation are hydraulically connected. Therefore both the UGA and the Magothy Formation (Magothy aquifer) are considered the aquifer of concern.

The site lies within a 4-mile radius of the Oyster Bay Special Groundwater Protection Area

(SGPA) which is in the deep recharge Hydrogeologic Zone I. The vertical hydraulic gradient of this zone is downward and is approximately four times steeper than the horizontal hydraulic gradient. Deep flow areas recharge groundwater in the deep aquifers which are the principal long-term providers of drinking water for Long Island. This zone contributes water to the middle and lower portions of the Magothy Aquifer which is the principal aquifer for the withdrawal of public drinking water supplies. As the PSA focused on evaluating only the horizontal extent of the shallow groundwater contamination at the site, it should be noted that the VOC contamination may also be migrating vertically to deeper depths, based on local geological characteristics.

Refs: 20, 21, 22, 23, 24, 25, 26, 27.

3. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer(s) of concern?**

The depth of the disposal/storage is unknown. The contaminated groundwater plume in the vicinity of the site is considered the source of contamination for the purpose of this investigation. According to published information, groundwater levels on Long Island generally follow a seasonal pattern, in which they are highest in March and April. Published data indicate that the water table elevation in the vicinity of the site (measured in March and April 1997) was between 50 and 60 ft above mean sea level (msl). The elevation of the water table in the UGA, measured in the vicinity of the site in May 2000, was approximately 50 ft MSL (Figure 7). PCE, TCE, and 1,2-DCE were detected in groundwater samples collected from depths within the saturated zone of the aquifer of concern.

Refs: 27.

4. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the top of the aquifer of concern?**

The aquifer of concern is the Upper Glacial/Magothy. Approximately five ft of soil and fill overlie the upper Pleistocene deposits of till and outwash sediments of the UGA in the vicinity of the site. The permeability of the fill and soil is unknown. According to the literature, the sediments overlying the saturated zone are composed typically of till deposits of clay, sand, gravel, boulders, and outwash deposits which consist of quartzose sand, fine to very coarse, and pebble to boulder sized gravel. Till is poorly permeable (10^{-3} to 10^{-1} darcys). Outwash deposits are moderately to highly permeable (1 to 10^{2} darcys). Therefore, the permeability value of the least permeable continuous intervening stratum between the ground surface and the top of the aquifer of concern is 10^{-3} to 10^{-1} darcys in the vicinity of the site.

Refs: 23, 27.

5. What is the net precipitation at the site (inches)?

The average precipitation for nearby Mineola, New York was recorded as 43.55 inches in 1997. Mineola is listed in Region 4 of the National Climatic Data Center compilation for New York State. The total evaporation for Region 4 (measured at Greenport New York) in July, August, September, and October of 1997 was 21.28 inches. There were no values recorded for January through June or November to December of that year. Because of the lack of data, a zero total evaporation was assumed for these months. Therefore, the total net precipitation at the site was estimated as follows:

Total Precipitation:	43.55
-Evaporation:	21.28 (July through October)
Net Precipitation:	**22.27 inches**

Ref: 28.

6. What is the distance to and depth of the nearest well that is currently used for drinking purposes?

The nearest operational public groundwater supply well is Well GH (N 5792) of the Sea Cliff Water Company. It is located approximately 1500 ft north/northeast of Glen Head Road and the site and serves approximately 15,000 people. The well is constructed to a depth of 300 ft bgs and is screened from 255 to 295 ft bgs in the Magothy. The static water level was measured at 93 ft bgs on May 24, 1989. In addition, a second well of the Sea Cliff Water Company is located approximately 1.5 miles north-northwest (downgradient) of the Glen Head Groundwater Plume site.

The number of people that obtain drinking water from private wells located within a 4-mile radius of the site is unknown. According to a representative of the NYSDEC, areas that are served by public water (most of Nassau County) use private wells for non drinking water purposes. Most of these wells provide water for golf coarse irrigation, industrial use (process water), laundries, or for air-conditioning purposes. However, there are residential communities within a four mile radius of site which may be served by private wells.

Refs: 20, 24, 26, 29, 30.

7. If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be actually contaminated by hazardous substance(s) attributed to an observed release from the site.

Of the identified wells, the closest public supply well is well GH (N 5792) of the Sea Cliff Water Company, which is located north/northeast of the site (upgradient). A second well is

located approximately 1.5 miles downgradient from the Glen Head Groundwater Plume site. According to information from the Sea Cliff Water Company, there has been no impact to these potable supply wells from the site contamination (i.e., there are no exceedences of PCE, TCE, or 1,2-DCE in excess of the maximum contaminant limits (MCLs) for these VOCs).

Ref: 20, 26.

8. **Identify the population served by wells (private + municipal) located within 4 miles of the site that draw from the aquifer(s) of concern.**

According to the New York State Atlas of Community Water System Sources (NYSDOH Atlas) and the Nassau County Department of Health (NCDOH), wells of the Albertson, Glen Cove City, Jericho, Locust Valley, Manhasset-Lakeville, Old Westbury Village, Plandome Village, Port Washington, Roslyn, Sands Point Village, and Sea Cliff water districts lie within a 4-mile radius of the site. According to the NYSDOH Atlas the Community Hospital at Glen Cove, New York, also has a supply well within a 4-mile radius of the site. Collectively, 33 wells in these water districts serve approximately 90,000 people with potable groundwater. The nearest potable public supply well, well GH (N 5792) of the Sea Cliff Water Company is located approximately 1500 feet north/northeast of Glen Head Road and the site on the north side of Roslyn Drive (Figure 1). According to information from the Sea Cliff Water Company, the well serves approximately 15,000 residents. Another Sea Cliff Water Company well exists approximately 1.5 miles north-northwest of the Glen Head Groundwater Plume site.

The number of people obtaining water from private wells located within a 4-mile radius of the site is unknown. According to a representative of the NYSDEC, areas that are served by public water (most of Nassau County) use private wells for non drinking water purposes. Most of these wells provide water for golf coarse irrigation, industrial use (process water), laundries, or for air-conditioning purposes. However, there are residential communities within a 4- mile radius of site which may be served by private wells.

Refs: 20, 24, 26, 29, 30, 31.

Distance	Population
0 - 1/4 mi	552.5
>1/4 - ½ mi	1,657.5
>½ - 1 mi	6,633
>1 - 2 mi	19,108
>2 - 3 mi	26,174
>3 - 4 mi	36,080

9. State whether groundwater is blended with surface water, groundwater, or both before distribution.

The nearest public supply well is well GH (N 5792) which is located north/northeast of the site. The well is screened in the Magothy and according to information from Sea Cliff Water Company there is no blending of surface water with groundwater prior to distribution.

Refs: 20, 26.

10. Is a designated well head protection area within 4 miles of the site?

Yes. According to information received from the USEPA, Region 2, there is 50 feet of ownership by Nassau County around each public well with an additional 50 feet of control beyond that. Therefore, the designated well head protection area for public wells in Nassau County is 100 feet. The closest identified public supply well, well GH (N 5792) of the Sea Cliff Water Company, is located approximately 1500 feet north/northeast of Glen Head Road and the site area. Another Sea Cliff Water well is located 1.5 miles north-northwest of the site.

Ref: 20, 32.

11. Does a waste source overlie a designated or proposed wellhead protection area? If a release to groundwater is observed or suspected, does a designated or proposed wellhead protection area lie within the contaminant boundary of the release?

For the purpose of this investigation, the groundwater plume is considered the source at the site. The full extent of the contaminant plume has not been determined. A public supply well (well No. 5792 of the Sea Cliff Water Company) is located north/northeast of the site. An additional public well (Sea Cliff Water Company) is located approximately 1.5 miles north-northwest (downgradient) of the site.

Ref: 20.

12. Identify one of the following resource uses of groundwater within 4 miles of the site (i.e., commercial livestock watering, ingredient in commercial food preparation, supply for commercial aquiculture, supply for major, or designated water recreation area, excluding drinking water use, irrigation (5-acre minimum) of commercial food or commercial forage crops.

According to information from the Town of Oyster Bay, there are some small farm stands within a four mile radius of the site. They are however, less than five acres in size. According to information from the Long Island Regional Planning Board, there are several parcels of agricultural land within a four mile radius of the site. It is not know if these parcels support crops. A nearby golf club, the Glen Head Country Club, has a pool.

Groundwater is used to fill the pool.

Refs: 24, 33, 34.

SURFACE WATER ROUTE

13. Describe the likelihood of a release of contaminant(s) to surface water as follows: release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.

None observed or suspected. Surface water samples were not collected as part of this investigation and no release to surface water is suspected from the site. An unnamed pond, (a retention basin) the nearest down slope surface water body, is located approximately1700 feet northeast of the site (Figure 1). There is no evidence to suggest contamination in the soils in the vicinity of the site. The majority of the site is paved (at least 85%) and contains catch basins and/or storm sewers. The runoff in catch basins and/or storm sewers may discharge to this retention basin through which it would recharge the aquifer. The retention basin is not hydraulically connected to any other surface water body.

Refs: 1, 35, 36.

14. Identify the nearest down slope surface water. Include a description of possible surface drainage patterns from the site.

The nearest downslope waterbody is an unnamed pond (retention basin) which is located approximately 1700 feet northeast of the site. Based on the topography of the area, in the vicinity of the site, it appears that surface drainage would be directed to the east, northeast and southeast. The majority (at least 85%) of the area in the vicinity of the site is paved and runoff from the site would be diverted to catch basins and storm drains which may be diverted to this retention basin. The runoff would ultimately be recharged to the groundwater. The retention basin is not hydraulically connected to any other surface water body. Hempstead Bay, located approximately 6000 ft west of the Glen Head Groundwater Plume site, appears to influence the local groundwater patterns but does not apparently effect drainage patterns at the site.

Refs: 1, 35, 36.

15. What is the distance to the nearest down slope surface water? Measure the distance along a course that runoff can be expected to follow.

The nearest down slope surface water body is located approximately 1700 feet northeast of the site. Any runoff from the site, not diverted by catch basins and/or storm drains would most likely follow the topography of the site which slopes to the east, northeast and southeast.

Ref: 35.

16. Identify all surface water body types within 15 downstream miles of the POE.

Not applicable. The nearest downslope surface water body, an unnamed pond (retention basin) which is located approximately 1700 feet northeast of the site, is not tributary to any other surface water bodies.

Ref: 35.

Name	WB Type	Flow	Saline/Fresh /Brackish	Distance (miles)
N/A	N/A	N/A	N/A	N/A

17. Determine the 2 yr, 24 hr rainfall (inches) for the site.

According to information from the Northeast Regional Climate Center, the 2-year, 24 hour rainfall is 3.25 inches in the vicinity of the site.

Ref: 37.

18. Determine size of drainage area (acres) for the sources at the site.

Not applicable. The source of the contamination is the groundwater. The majority (at least 85%) of the area in the vicinity of the site is paved and runoff from the site is diverted to catch basins and/or storm drains that may discharge to a nearby retention basin.

Refs: 35, 36.

19. Describe the predominant soil group in the drainage area.

According to the Soil Survey of Nassau County the predominant soil in the drainage area is designated as Urban Land. Urban Land consists of areas where 85% of the surface is covered with asphalt, concrete, or other impervious building material. These areas are mostly parking lots, shopping centers, industrial parks, or institutional sites. Most areas are nearly level and some are gently sloping. Included are small areas of soil that have not been

appreciably altered or that are not under impervious cover. These consist of lawns and landscaped areas. Most of the open areas are well-drained Riverhead, Hempstead or [illegible] soils or are excessively drained Udipsamments. Udipsamments consist of manmade fill or borrow areas, most of which are grass-covered. In some areas the original soil material has been stripped and moved while others consist of sandy fill material. There are several groundwater recharge basins in the vicinity of the site. These basins are used for the collection of runoff from streets, parking lots, and buildings and act as reservoirs for groundwater recharge. The basins usually have steep sides and nearly level bottoms. Some of these basins are dry a majority of the time because the collected water rapidly infiltrates into the soil, while others may contain water for a longer period of time. The recharge basins in the vicinity of the site are semi-permanent and hold water for part of the time.

Refs: 35, 36, 38.

20. **Determine the floodplain (1 yr., 10 yr., 100 yr., 500 yr., none) that the site is within.**

None. According to the National Flood Insurance Program Flood Insurance Rate Map (FIRM) for Nassau County, the site is located within zone C. Areas within this zone are areas of minimal flooding.

Ref: 39.

21. **Identify drinking water intakes in surface waters within 15 miles downstream of the point of surface water entry. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.**

Intake	WB Type	Distance From POE	Pop. Served	Flow (cfs)
N/A	N/A	N/A	N/A	N/A

Not applicable. No surface waters are reportedly used as potable sources in this region.

22. **Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:**

Fishery	WB Type	Flow	Saline/Fresh Brackish	Distance (miles)
Hempstead Harbor	Bay	N/A	Saline	1.1

No fisheries exist in down slope surface waters. The nearest downslope surface water body

is an unnamed pond located approximately 1700 feet northeast of the site. The pond is not tributary to any other surface water bodies and according to information from the United States Department of the Interior National Wetlands Inventory (Hicksville quadrangle) the pond is classified as POWFx (a retention basin).

Hempstead Harbor exists approximately 6000 ft west of the site, and is known to support commercial and recreational fishing.

Ref: 35.

23. Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry.

Environment	WB Type	Distance from POE	Flow (cfs)	Wetland Frontage (miles)
Wetland	Pond	0.32 miles	N/A	0.28 miles

There is no observed or suspected release to the surface water from the site, however, a wetland is located approximately 1700 feet northeast of the site. It is classified as POWFx (a retention basin) on the United States Department of the Interior National Wetlands Inventory Map (Hicksville quadrangle). Hempstead Bay, located approximately 6000 ft west of the Glen Head Groundwater Plume site, appears to influence the local groundwater patterns but does not apparently effect drainage patterns at the site.

Ref: 35.

24. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 18-20 that are or may be actually contaminated by hazardous substance(s) attributed to an observed release from the site.

Not applicable. No surface water samples were collected. There is no known or suspected release to the surface water from the site, therefore, no sensitive environments are known to be impacted by the contaminant plume.

25. Identify whether the surface water is used for any of the following purposes, such as: irrigation (5 acre minimum) of commercial food or commercial forage crops, watering of commercial livestock, commercial food preparation, recreation, potential drinking water supply?

Not applicable. The nearest downslope surface water body is an unnamed pond located

approximately 1700 feet northeast of the site. The pond is a federally-designated wetland (retention basin). Ref: 35.

SOIL EXPOSURE PATHWAY

26. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of an area of observed contamination.

Not applicable. Soil samples were not collected during this investigation and soil contamination is not suspected. The source of the contamination is a groundwater plume.

27. Determine the number of people that regularly work on or within 200 feet of an area of observed or suspected contamination.

Not applicable. Soil samples were not collected during this investigation and soil contamination is not suspected.

28. Identify terrestrial sensitive environments on or within 200 feet of an area of observed or suspected contamination.

Not applicable. Soil samples were not collected during this investigation and soil contamination is not suspected.

29. Identify whether there are any of the following resource uses, such as commercial agriculture, silviculture, livestock production or grazing within an observed or suspected contamination boundary?

Not applicable. Soil samples were not collected during this investigation and soil contamination is not suspected.

AIR ROUTE

30. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence and relationship to background.

This investigation did not include air sampling. There is no suspected release of contaminants to the air associated with the site. The contamination is associated with a groundwater plume in the vicinity of the site. The contaminants in the groundwater do not present an inhalation hazard since more than 85% of the site is paved.

Ref: 36.

31. Determine populations that reside within 4 miles of the site.

Distance	Population
0 (on-site)	0
0 - 1/4 mi	552.5
>1/4 - ½ mi	1,657.5
>½ - 1 mi	6,633
>1 - 2 mi	19,108
>2 - 3 mi	26,174
>3 - 4 mi	36,080

Ref: 40.

32. Identify sensitive environments and wetland acreage (wetland acreage only for wetlands sensitive environment) within 4 miles of the site.

There are several New York State and federally-mapped wetlands located within a 4-mile radius of the site. The closest New York State freshwater wetland (HV-1) is located approximately 2,500 feet east/northeast of the site. The wetland is linear and follows the course of Glen Cove Creek. The closest federally-mapped wetland (POWZx) is located approximately 1700 feet northeast of the site and is approximately 3.6 acres.

Refs: 35, 38, 41, 42.

Distance	Type of Sensitive Environment	Actual Distance from site (miles)	Wetland Acreage
>1/4-1/2 mi.	Wetland (HV-1)	0.47 miles	N/A (linear)
>½-1 mi.	Wetland (POWZx)	0.32 miles	3.6 acres

33. **If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination (might be actual contamination) from the release.**

Not applicable. No air release of contaminants associated with the site has been observed or is suspected.

34. **If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 46, that are or may be located within the area of air contamination from the release.**

Not applicable. No air release of contaminants associated with the site has been observed or is suspected.

GROUNDWATER DATA SUMMARY
Glen Head Groundwater Plume PSA

SDG Number	LMS160	LMS160	LMS160	LMS160	LMS160	LMS160	
LMS Sample ID	HP-1-120	HP-1-135	HP-2-127	HP-2-140	HP-2-160	HP-3-130	
Lab Sample Number	9928683	9928684	9929686	9929687	9929688	9930429	NYSDEC
Sampling Date	09/23/1999	09/23/1999	10/01/1999	10/01/1999	10/01/1999	10/05/1999	CLASS GA
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	STANDARDS (a)
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
	[DF1:50]	[DF1:20]	[DF 1:10]	[DF 1:25]	[DF 1:10]	[DF 1:25]	
Volatile Organic Compounds (ug/L)							
Acetone	27 g	14 g	ND g	16 g	32 g	ND g	50 GV
1,1-Dichloroethene	1	ND	ND	ND	ND	2	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	28	13	6	4	4	48 g	5
2-Butanone	5 g	2 jg	5 g	2 jg	6 g	ND g	50 GV
1,1,1-Trichloroethane	2	3	1	ND	ND	1	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	1
Trichloroethene	47 g	22 g	11	16	10	39 g	5
Benzene	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	5400 dg	1800 dg	1600 d	2100 d	1400 d	4100 d	5
Toluene	ND	ND	ND	ND	ND	ND	5
Styrene	ND	ND	1	ND	ND	ND	5
Total VOCs:	5510	1854	1624	2138	1452	4190	100

1 - This value appies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample: ER, equipment rinsate; TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
b - Compound found in associated blank.
d - Compounds identified in an analysis at a dilution factor.
j - Estimated concentration, compound present below quantitation limit.
GV - Guidance Value.
ND - Not detected at analytical reporting limit.
DF - Dilution Factor.
g - Value considered estimated based on data validator's report (Appendix B).
Note - Numbers in bold exceed cleanup standard.

GROUNDWATER DATA SUMMARY
Glen Head Groundwater Plume PSA

SDG Number	LMS178	LMS168	LMS178	LMS168	LMS168	LMS178	
LMS Sample ID	GHMW1	MW-2	GHMW2	MW-2A*	MW-3	GHMW3	
Lab Sample Number	20000831-085	9931559	20000831-011	9931124	9931126	20000831-086	NYSDEC
Sampling Date	08/31/2000	10/14/1999	08/30/2000	10/12/1999	10/12/1999	08/31/2000	CLASS GA
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	STANDARDS (a)
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
	[DF 1:100]	[DF 1:25]	[DF 1:20]	[DF 1:100]	[DF 1:16]	[DF 1:20]	
Volatile Organic Compounds (ug/L)							
Acetone	ND	ND	ND	ND	ND	ND	GV
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	27	130	57	24	3	3	5
2-Butanone	ND	ND	ND	ND	ND	ND	50 GV
1,1,1-Trichloroethane	1	ND	1	2	2	2	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	1
Trichloroethene	50	43 g	24	66	19	21	5
Benzene	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene	10000d	1800 d	2300 d	5200 bdg	1600 bdg	3100 d	5
Toluene	ND	ND	ND	4	3	ND	5
Styrene	ND	ND	ND	ND	ND	ND	5
Total VOCs:	10078	1973	2382	5296	1627	3126	100*

1 - This value applies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.
* - Denotes QA/QC sample: ER, equipment rinsate; TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.
(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998.
b - Compound found in associated blank.
d - Compounds identified in an analysis at a dilution factor.
J - Estimated concentration, compound present below quantitation limit.
GV - Guidance Value
ND - Not detected at analytical reporting limit.
DF - Dilution Factor
g - Value considered estimated based on data validator's report (Appendix B)
Note - Numbers in bold exceed cleanup standard

GROUNDWATER DATA SUMMARY

Glen Head Groundwater Plume PSA

SDG Number	LMS178	LMS178	LMS178	LMS178	LMS160	LMS160	
LMS Sample ID	GHMW9	GHMW10	GHMW11	GHMW12*	ER-1*	TB-1*	
Lab Sample Number	20000531-014	20000531-100	20000531-101	20000531-102	9830428	9829606	NYSDEC
Sampling Date	05/30/2000	05/31/2000	05/31/2000	05/31/2000	10/05/1999	09/24/1999	CLASS GA
Matrix	WATER	WATER	WATER	WATER	WATER	WATER	STANDARDS (a)
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
				[DF1:100]			
Volatile Organic Compounds (ug/L)							
Acetone	ND	ND	ND	ND	ND g	ND	**50 GV**
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	**5**
1,1-Dichloroethane	1	ND	ND	ND	ND	ND	**5**
1,2-Dichloroethene (total)	ND	ND	ND	28	ND	ND	**5**
2-Butanone	ND	ND	ND	ND	ND g	ND	**50 GV**
1,1,1-Trichloroethane	1	ND	ND	1	ND	ND	**5**
1,2-Dichloropropane	1	ND	ND	ND	ND	ND	**1**
Trichloroethene	ND	ND	ND	50	ND g	ND	**5**
Benzene	ND	ND	ND	ND	ND	ND	**1**
Tetrachloroethene	ND	14	56	8900 d	ND	2	**5**
Toluene	ND	ND	ND	ND	ND	ND	**5**
Styrene	ND	ND	ND	ND	ND	ND	**5**
Total VOCs	3	14	56	8979	ND	2	**100†**

† - This value appies to the total of all organic substances listed in the New York State Groundwater Effluent Limitations table from the Division of Water, Technical and Operational Guidance Series (1.1.1) with a groundwater effluent limitation less than 100 ug/L.

* - Denotes QA/QC sample. ER, equipment rinsate. TB, trip blank. Sample MW-2A is blind duplicate of sample MW-4. Sample GHMW12 is blind duplicate of sample GHMW1.

(a) - NY State Division of Water Technical and Operational Guidance Series (1.1.1) June 1998

b - Compound found in associated blank.

d - Compounds identified in an analysis at a dilution factor.

J - Estimated concentration, compound present below quantitation limit.

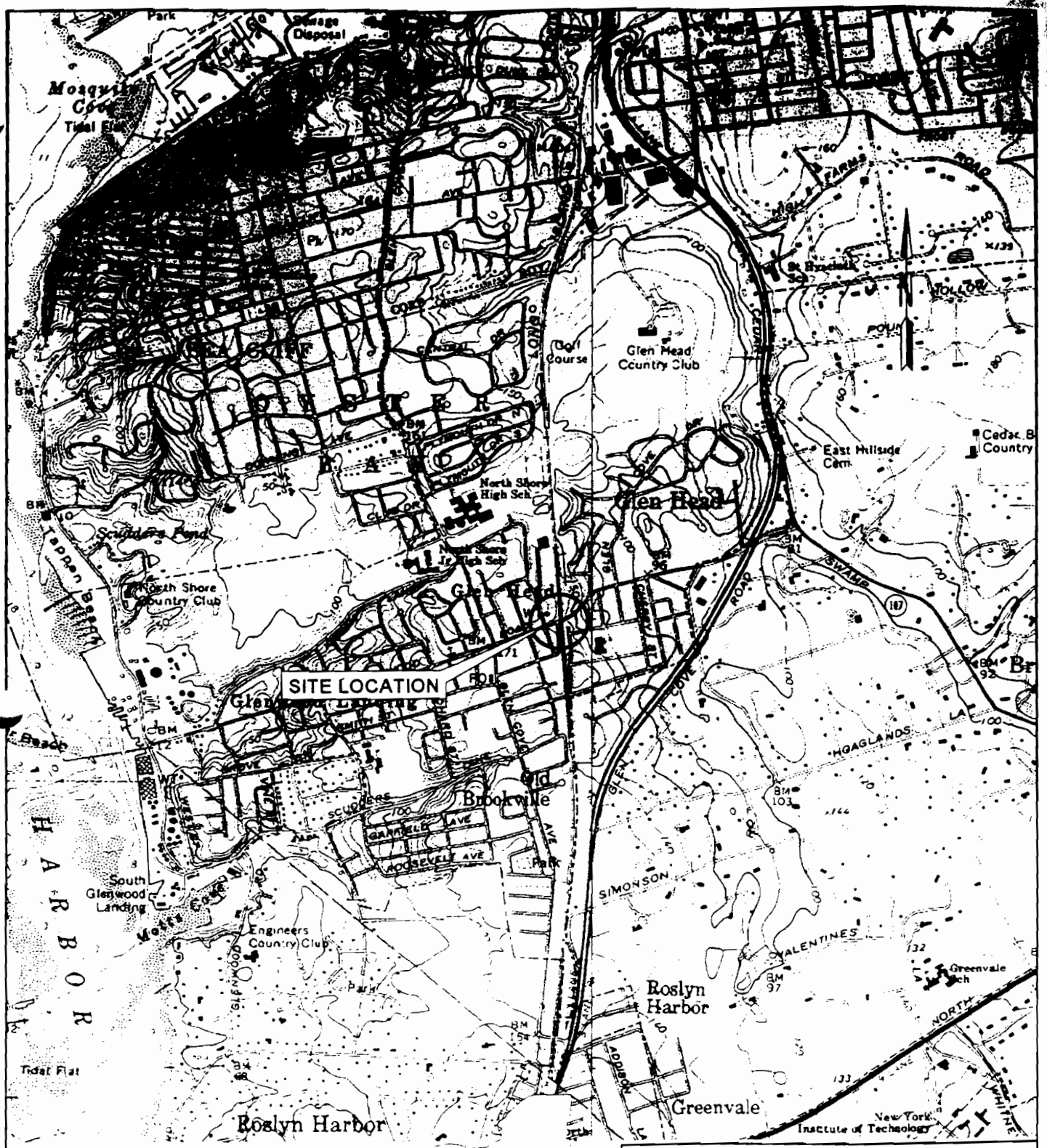
GV - Guidance Value

ND - Not detected at analytical reporting limit

DF - Dilution Factor

g - Value considered estimated based on data validator's report (Appendix B).

Note - Numbers in bold exceed cleanup standard



Glen Head Site
40.833648° N
73.627223° w

NEW YORK STATE

QUADRANGLE LOCATION

0 2000 ft

SCALE
1 in. = 2000 ft

Map source:
USGS 7.5-minute Quadrangle Map,
Glen Cove, NY, 1968, photorevised 1979, and
Hicksville, NY, 1967, photorevised 1979.
Printed from Wildflower Productions "Topo"

Grv-E:\650456\GlenHeadusgs.dsf

Figure 1

Site Location

MULTI-SITE PSA
Glen Head Groundwater Plume
NYSDEC I.D. No. 130xxx

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York

APPENDIX C

Environmental Services, Inc. - Project Personnel

Environmental Services Inc. - Project Personnel

Mr. Joseph Parisi - Principal

Responsible for: Client contact, Project coordination, scheduling and equipment procurement.

Mr. Walter Berninger - Project Manager

Responsible for: Project coordination, scheduling, material and equipment procurement and director of field activities. Field analytical equipment maintenance, calibration, operation and data collection.

Ms. Jill Haimson, PG, CGWP - HydroGeologist/Field Project Manager/QA Officer

Responsible for: Technical oversight, field analytical equipment maintenance, calibration and operation, data collection and interpretation and report preparation.

Joel Meyers - Crew Leader

Responsible for: GeoProbe® operator, sample technician. Senior Driller.

Peter Daniels - Technician

Responsible for: GeoProbe® operator and assistant, sample technician and equipment decontamination. Driller's assistant.

Miscellaneous ESI Personnel (to be designated)

Responsible for: Vacuum truck and vacuum loader operation, disposal characterization, backhoe, skid steer operator, miscellaneous equipment, field sampling, etc.

Ms. Lori Beyers - Data Usability Analysis

Responsible for: Development of the data usability summary report (DUSR) for site samples.

APPENDIX D

Site Specific Health and Safety Plan

SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR WORK ACTIVITIES

FORMER FRESH & CLEAN LAUNDRY

22-26 RAILROAD AVENUE
GLEN HEAD, NEW YORK
Site No.: V-00606-1
Index No.: W1-0936-02-09

PREPARED FOR

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK 12233

PREPARED BY

ENVIRONMENTAL SERVICES INC.

March, 2004

TABLE OF CONTENTS

FOREWORD

The Occupational Health and Safety Act (OSHA) implementing regulations of 29 CFR 1910.120 govern hazardous waste operations and emergency response. These regulations require that employers of employees involved in certain specific hazardous waste operations 1) develop and implement a written health and safety PROGRAM for employees involved in hazardous waste operations and 2) that the PROGRAM incorporate a site-specific health and safety plan.

Environmental Services Inc.(ESI) has employees conducting activities which fall within the scope of these regulations, and thus, has in place a written health and safety PROGRAM as required. Its contents are contained in the ESI HAZWOPER Program Manual. Some activities conducted at the contaminated portion of the Former Fresh & Clean Laundry property may fall within the scope of these OSHA regulations. Thus, to assure regulatory compliance, this site-specific health and safety plan covering activities conducted at the contaminated portion of the Former Fresh & Clean Laundry has been prepared. The Integrated Safety Management System and Environmental Health, Safety, and Quality check lists will be used to define safe work procedures for work conducted in uncontaminated areas of the Former Fresh & Clean Laundry.

The regulatory requirements for site-specific health and safety plans are found at 29 CFR 1910.120 (b)(4) and include ten specific elements which are designated with the letters A through J. Each of these elements is addressed in this health and safety plan for the Former Fresh & Clean Laundry Each element is listed below along with the section number where it is addressed in this health and safety plan.

	Health and safety PLAN ELEMENT	**SECTION NO. IN THIS PLAN**
A)	Health and Safety risk hazard analysis	4.0
B)	Employee training assignments and requirements	6.1
C)	Personal protective equipment requirements	4.1, 5.4
D)	Medical surveillance requirements	6.2
E)	Frequency and types of monitoring required	4.1, 5.2
F)	Site control measures	5.3
G)	Decontamination procedures	4.1, 5.6
H)	Emergency response plan	5.7
I)	Confined space entry procedures	none (no confined space entry)
J)	Spill containment program	5.3

1.01 INTRODUCTION AND PROJECT DESCRIPTION

1.1 INTRODUCTION

This Voluntary Investigation and Interim Remedial Measure Work Plan (Work Plan) has been developed pursuant to the requirements of an executed Voluntary Cleanup Agreement (October 22, 2002) between the New York State Department of Environmental Conservation, Division of Environmental Remediation (DER) and Former Fresh & Clean Laundry, by Nancy L. Peterman, the Volunteer. The site is located at 22-26 Railroad Avenue, Town of Oyster Bay, City of Glen Head, New York 11545 (see Figure 1), fully described as Section 20, Block 13, Lot Nos. 319-320.
A Voluntary Investigation Work Plan is directed when available data collected by previous investigations demonstrates, and the NYSDEC concludes, that contamination is present at the site and further delineation of this contamination is needed to allow a decision by the DER regarding remedial action to be undertaken at said site.

In addition to further site delineation, ESI proposes that an Interim Remedial Measure (IRM) be completed as one of the initial tasks to prevent further vertical movement of the contaminants previously identified to be present.

1.1.1 Purpose

The purpose of this proposed voluntary investigation and IRM is to:

- Determine the nature and delineate the areal and vertical extent of contamination in all media for each area of potential environmental concern or that emanating from the site;
- Delineate the surface and subsurface environmental media, including topography and depth to groundwater;
- Identify the source(s) of contamination, migration paths and actual or potential receptors of contamination on or through air, soil, sediment, groundwater, surface water, utilities and structures at the site without regard to property boundaries;
- Collect and evaluate all necessary data to evaluate the actual and potential impact to public health and the environment;
- Collect data to facilitate selection and design of remedial action alternatives;

- Identify collected data needed for monitoring natural attenuation, potential feasible cleanup technologies and presumptive remedies.

- Conduct an Interim Remedial Measure to prevent further vertical movement of the contaminants previously identified to be present.

This Site-Specific Health and Safety Plan (HASP) addresses the safety aspects of the spectrum of work activities to be conducted at the contaminated area. Activities at the contaminated area (but not the uncontaminated background area) fall under the scope of Code of Federal Regulations, 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response (HAZWOPER)*. The purpose of this document is to establish overall site-specific health and safety guidelines to be followed by all personnel conducting work at this site regardless of organizational affiliation. Work will be performed in accordance with requirements, as stipulated.

The levels of protection and procedures specified in this HASP are based on the best information available from historical data and recent evaluations of the area. Therefore, these recommendations represent the minimum health and safety requirements to be observed by all personnel engaged in work at the site. Unforeseeable site conditions, changes in scope of work or hazardous conditions not previously considered will warrant a reassessment of the protection levels and controls stated. Refer to Section 5.1 for requirements pertaining to field modifications and changes to the HASP.

2.0 SITE ORGANIZATION AND COORDINATION

Subsurface Investigation activities will be performed by ESI personnel. All work is performed under the direction of the Site Supervisor and support staff, all of whom are ESI employees.

The following section describes the organizational structure for the subsurface investigation. Key personnel and their responsibilities are listed. Mr. Joseph Parisi, Principal of ESI, will utilize Mr. Walter Berninger as the Project Manager (PM), Ms. Jill Haimson will be the Site Supervisor (SS), Mr. Peter Daniels will serve as the Site Health and Safety Officer (SSHO) and Mr. Joel Meyers will act as the Emergency Response Coordinator (ERC). Miscellaneous ESI Personnel (to be designated) will be responsible for remediation efforts and associated equipment.

2.1 SITE HEALTH AND SAFETY OFFICER

The SSHO advises the Site Supervisor on health and safety issues and conducts briefings prior to initiation of site activities. The SSHO assesses the potential for worker exposures to hazardous agents, recommends appropriate hazard controls for protection of task site personnel and will require personnel to obtain immediate medical attention in the event of a work-related injury or illness. The SSHO ensures any necessary monitoring of potential chemical hazards is performed, reviews the effectiveness of monitoring and personal protective equipment and recommends upgrades or downgrades in protective health and safety measures. The SSHO ensures that appropriate fall protection measures are available and that needed work permits such as Radiological Work Permits (RWPs) are obtained. The SSHO notifies the Office of Radiation Protection when radiological support is required. The SSHO has stop work authority and advises emergency response personnel of an emergency. The SSHO authorizes the return to work following resolution of any health and safety hazards or other stop work issues. The SSHO ensures that this HASP is revised and approved if there are changes in site conditions or tasks. The SSHO shall be available for consultation when required and shall be aware of project-related work occurring on-site.

2.2 SITE SUPERVISOR

The Site Supervisor has primary responsibility for directing and managing all subsurface investigation field activities, including coordination with any support organizations. The Site Supervisor ensures that all on-site project personnel meet the required level of training, have reviewed the HASP, and are instructed in safe work practices. The Site Supervisor also ensures that a qualified SSHO is designated, maintains a current copy of the HASP and documents field changes to the HASP in the project logbook. In addition, the Site Supervisor and staff perform oversight of

field activities, maintain awareness of site operations and ensure that all project personnel adhere to ES&H requirements in order to prevent potential accidents from occurring.

The Site Supervisor is responsible for ensuring that the following five core functions of the Integrated Safety Management System (ISMS) are fulfilled appropriately:

- Define the work, roles and responsibilities. Allocate resources to ensure that research goals are balanced with safe work practices.

- Identify and analyze the hazards using the ESH&Q evaluation, consultation with subject matter experts, material safety data sheet information, Work Smart Standards (WSS), lessons learned by other Principal Investigators (PIs) and staff and other resources.

- Develop and implement hazard controls tailored to the work being performed:

  - Resources include ESI staff, subject matter experts, the Hazardous Materials Inventory System, ESD Chemical Hygiene Plan, Division and Project Procedures, Training Needs Assessment process, Laboratory Operating Manuals, Laboratory Stewards and Lessons Learned and Alerts.
  - Examples of actions and tools include optimization of engineering controls and procedural approaches with training, HAZCOM job-specific training, job pre-briefings, compliance-based and project-specific training, ES&H permits (e.g., RWPs, Lockout/Tagout process) and protective equipment.

- Perform work within controls to ensure the work is done safely:

  - Communicate expectations to project staff.
  - Ensure that the controls identified in the ESH&Q evaluation and this HASP are carried out.
  - Ensure opportunity for procedure modification to respond to unanticipated situations.
  - Stop work if imminent danger exists.

- Provide feedback and continuous improvement:

  - Solicit feedback from project staff regarding ESH&Q issues and act on that input.
  - Communicate concerns to and seek help from supervisors and the ESH&Q group.
  - Reallocate resources to address issues that arise.
  - Ensure safety meetings and site briefings are performed.

2.3 PRINCIPAL INVESTIGATORS AND FIELD PROJECT PERSONNEL

PIs and field project personnel involved in onsite operations are responsible for understanding the intent of the principles of Integrated Safety Management and are to be knowledgeable of the processes in place to satisfy the intent of Integrated Safety Management.

Define the Scope of Work:

- Understand the expectations they are to meet in their particular work assignment.
- Understand the responsibilities of the Site Supervisor and SSHO.
- Provide documentation of training to the Site Supervisor.

Identify and Analyze the Hazard:

- Notify the SSHO of any special medical conditions (i.e., allergies, diabetes, etc.).
- Actively participate in identification of hazards prior to beginning work.
- Ensure that potential work hazards have been evaluated by subject matter experts and are accounted for in all work practices.

Develop and Implement Hazard Controls

- Seek the help of the SSHO and other subject matter experts, as appropriate, to analyze the hazards.
- Ensure that control strategies are developed and implemented, as appropriate, before work begins.
- Ensure safety measures are incorporated into activities (i.e., through HASP addendums or amendments, work aides or standard operating procedures).

Perform Work Within Controls:

- Perform only those tasks that they believe they can do safely.
- Meet the responsibilities and safely perform the tasks that are delegated to them.
- Take all reasonable precautions to prevent injury to themselves and to their fellow employees; be alert to potentially harmful situations.
- Suspend work if unexpected concerns arise and modify plans to address concerns before resuming work.
- Comply with the work plan and HASP as well as postings and rules at the project site.

Provide Feedback and Continuous Improvement:

- Keep the SSHO and Site Supervisor informed of any issues, problems or concerns regarding all aspects of their work.
- Notify appropriate American Cleaner's Inc.management personnel or the facility point of contact of any unsafe condition, violation, noncompliance or environmental threat discovered in a facility.
- Report to the SSHO any changes in site conditions that may affect health and safety.
- Immediately notify the SSHO of symptoms or signs of exposure potentially related to any chemical, physical or biological hazards present at the site and immediately report any accidents, injuries and/or unsafe conditions to the SSHO.
- If unsafe conditions develop, task site personnel are authorized and expected to stop work and notify the SSHO and Site Supervisor of the unsafe condition.

3.0 INTEGRATED SAFETY MANAGEMENT SYSTEM

The ISMS process systematically integrates safety into management and work practices at all levels so missions are accomplished while protecting the public, the worker and the environment. Direct involvement of workers during the development and implementation of safety management systems is essential for success. DOE requires that the principles of ISMS be implemented for all ORNL activities. Therefore, all ESI personnel are expected to incorporate the following basic ISMS core functions during all work activities:

- Defining the scope of work.
- Identifying and analyzing hazards associated with the work.
- Developing and implementing hazard controls.
- Performing work activities within these controls.
- Providing feedback on the adequacy of the controls to continue improving safety management.

4.0 TASK SPECIFIC HAZARD EVALUATION AND CONTROLS

The purpose of this Subsurface Investigation hazard evaluation is to identify and assess potential hazards that personnel might encounter at the Former Fresh & Clean Laundry property and to prescribe methods of hazard control. Historical site data provided in Appendix A gives the results of chemical analyses in subsurface sediments inside former cesspools located at the rear of the Former Fresh & Clean Laundry facility. Material Safety Data Sheets (MSDS) for chemicals that are likely to be handled when conducting field work are included in Attachment B.

A description of sampling procedures and the activities to be conducted at the Former Fresh & Clean Laundry is described below.

4.1 WATER LEVEL MEASUREMENTS

Task Description: Manual water level measurements will be collected from any monitoring wells installed in order to determine current depth to groundwater in the area. These measurements are taken by lowering an electronic water level sounder down the well. As the sounder is brought out of the well the tip of the sounder that has been submerged is rinsed with distilled water to rinse off the groundwater. The rinse water is allowed to drip back down into the well.

Equipment and Materials: Equipment includes water level sounder.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**

  - Groundwater Contact: Based on previously obtained sample data (only available for soils; no known groundwater contamination is present), the risk of chemical or radiological exposure from short-term exposure to groundwater and surface water samples is minimal. However, direct contact with contaminated materials should be avoided; therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater monitoring and during the handling of sample tubes to prevent eye and skin contact.

  - Downhole equipment: Rinse downhole equipment with distilled water as it is brought out of the well.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Biological/Vector Hazards**

  - Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazards**

  - Level of Protection: D
  - Protective Clothing: ESI-issued work clothes or disposable tyvek
  - Head Gear: Safety glasses
  - Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
  - Footwear: Sturdy work shoes

- **Monitoring Requirements**

  - None

4.2 FIELD SAMPLING AND ANALYSIS OF GROUNDWATER

Task Description: Procedures for field sampling and analysis of groundwater are described in the Former Fresh & Clean Laundry Voluntary Investigation Work Plan. Groundwater will generally be sampled with a submersible pump or manually bailed due to deep depths below grade. Slow purge techniques will be used in order to reduce the disturbance caused by removal of large volumes of water from the system. Field parameters will be monitored until stable groundwater chemistry (e.g. specific conductance, pH, Eh, temperature, dissolved oxygen) readings are obtained on the Myron

6P Ultrameter among others. The purge water will be collected in DOT approved 55-gallon drums. Upon completion of the project, the drum contents will be sampled and analyzed for disposal at an approved facility. It may also be possible to discharge water back to the subsurface if approved by the regulators.

Samples will be handled and transported according to regulatory requirements and procedures outlined in the Former Fresh & Clean Laundry Voluntary Investigation Work Plan. Samples will be preserved and stored as required by the analytical protocols (e.g. cooled, preservative added). Storage on site may occur for short periods of time in ice chests containing "blue ice" but will be quickly transferred to refrigerator storage in the field laboratory or at the fixed base laboratory at the appropriate temperatures. All storage of contaminated samples will follow procedures and relevant regulations. Volatile organic compounds (VOC's) will be tested on-site with a portable gas chromatograph (GC). The testing is performed by head space analysis which requires no sample preparation.

Equipment and Materials: Sampling equipment includes sampling tubing which is dedicated for each sample collected; submersible pump; bailers and rope, filters and sample containers (for collecting samples); HACH meter and test kits and reagents for analyzing sulfur, ferrous iron, nitrite/nitrate, dissolved oxygen and carbonate (see Appendix B for reagent MSDSs). Some samples may be preserved with a few drops of nitric, hydrochloric or sulfuric acid or formaldehyde. Calibration standards including pH and conductivity are also used.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**

  - Groundwater Contact: Based on previously obtained sample data (only available for soils), the risk of chemical exposure from short-term exposure to groundwater is minimal. However, direct contact with contaminated materials should be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater sampling to prevent eye and skin contact.

  - Reagent Contact: Corrosive or oxidizing reagents pose a contact hazard. To prevent eye and skin contact when corrosive or oxidizing reagents are used disposable latex or nitrile gloves and safety glasses will be worn.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Explosion Hazards**

  - Gas cylinders: Pressurized gas cylinders will be transported and handled in accordance with applicable Department of Transportation guidance and regulations. Care will be taken to secure the cylinders upright during transport to ensure they are not damaged. Cylinders will also be secured at the site so they will not tip over during the injection process.

- **Biological/Vector Hazards**

  - Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazards**

  - Level of Protection: D
  - Protective Clothing: ESI-issued work clothes or disposable tyvek
  - Head Gear: Safety glasses
  - Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
  - Footwear: Sturdy work shoes

- **Monitoring Requirements**

  - Air Quality: Air monitoring with an organic vapor analyzer or other suitable instrument will be performed during all groundwater sampling activities. A VOC

ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5ppm VOCs in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

4.3 FIELD SAMPLING AND ANALYSIS OF SOIL

Task Description: Procedures for field sampling and analysis of subsurface soils are described in the Former Fresh & Clean Laundry Voluntary Investigation Work Plan. Soil samples will generally be obtained by a discrete sampler by hand or Geoprobe direct push sampling rig. This method ensures dedicated, undisturbed samples protected in a PVC liner. Field testing for total volatile organic compounds (VOCs) in the breathing zone (work zone), as well as the downwind perimeter will be monitored by an HNu or Minirae portable Photoionization Detector (PID). The air monitoring action levels using PID readings cited in Section 8.0 - Community Air Monitoring Plan will be used to safeguard workers and observers during the implementation of the field investigation program.

Any discarded soil will be collected in DOT approved 55-gallon drums. Upon completion of the project, the drum contents will be sampled and analyzed for disposal at an approved facility. It may also be possible to replace the discarded soil back in the bore hole if approved by the regulators.

Samples will be handled and transported according to regulatory requirements and procedures outlined in the Former Fresh & Clean Laundry Voluntary Investigation Work Plan. Samples will be preserved and stored as required by the analytical protocols (e.g. cooled, preservative added). Storage on site may occur for short periods of time in ice chests containing "blue ice" but will be quickly transferred to refrigerator storage in the field laboratory or at the fixed base laboratory at the appropriate temperatures. All storage of contaminated samples will follow procedures and relevant regulations.

Equipment and Materials: Sampling equipment includes a Geoprobe direct push sampling rig for exterior sample locations or hand operated stainless steel sludge auger and a weighted slide hammer for interior sample collection. A PVC liner is dedicated for each sample collected.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**
  - Soil Contact: Based on previously obtained sample data, the risk of chemical

exposure from short-term exposure to soil samples is minimal (See Appendix A) However, direct contact with contaminated materials should be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater sampling to prevent eye and skin contact.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards.

  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Section 5.5 for discussion of recognition of symptoms and controls.

- **Biological/Vector Hazards**

  - Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazards**

  - Level of Protection: D
  - Protective Clothing: ESI-issued work clothes or disposable tyvek
  - Head Gear: Safety glasses
  - Gloves: Latex or nitrile (when conducting groundwater sampling or handling corrosive or oxidizing reagents)
  - Footwear: Sturdy work shoes

- **Monitoring Requirements**

  - Air Quality: Air monitoring with an organic vapor analyzer or other suitable instrument will be performed during all soil sampling activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5ppm VOCs in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

4.4 GEOPROBE AND WELL INSTALLATION

Task Description: Probe rods are installed by using a Geoprobe direct push rig which hydraulically pushes or hammers steel drive pipe into the ground (please refer to the Former Fresh & Clean Laundry Voluntary Investigation Work Plan for a more complete description). Sections of probe rods are added (threaded attachment) until the desired depth is reached. A sampling tool is opened to obtain the soil or groundwater which is then retrieved. Sampling equipment and probe rods are cleaned and decontaminated by detergent wash and potable water rinse. Hollow-stem augers and other drilling methods may also be used to install groundwater monitoring wells. These methods produce drill cuttings that will be collected in DOT approved 55-gallon drums. Upon completion of the project, the drum contents will be sampled and analyzed for disposal at an approved facility. It may also be possible to replace the discarded soil back in the bore hole if approved by the regulators.

Equipment and Materials: Equipment includes Geoprobe rig, drill rigs and associated equipment and support vehicles such as air compressors, pressure washers, generators, probe rod and well construction materials.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**

  - Groundwater Contact: Based on previously obtained sample data, the risk of chemical exposure from short-term exposure to groundwater samples is minimal. However, direct contact with contaminated materials should be avoided, therefore, disposable latex or nitrile gloves and safety glasses will be worn when conducting groundwater sampling to prevent eye and skin contact.

  - Soil/cuttings Contact: Workers could be exposed to contaminated soil remaining on the probe rods as it is raised out of the ground. This hazard will be minimized by screening the drive pipe as it is raised out of the hole. Prior to removal from the site, all drill pipe, drill cuttings and any core samples collected will be scanned for VOC contamination. An exclusion area will be set up around the drill rig to prevent entry by personnel that are not trained or wearing proper protection.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards. Operators will avoid accessing locations greater than six feet above ground. If it becomes necessary to perform work on the drill mast, the mast will be lowered prior to performing work.
  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Sect. 5.5 for discussion of recognition of symptoms and controls.
  - Abrasions, Scrapes and Sprains: Always use appropriate care when using tools and mechanical equipment. Maintain awareness of body and limb location and think ahead to probable body and object path before applying force to tools. Wear protective clothing as listed below. Drill rods, augers and tools will be properly stowed and restrained during transport. Support rails will have adequate strength to hold tools. Operators will avoid placing body parts at points of operation and/or pinch points.
  - Lifting: Use your legs to lift heavy objects, avoid awkward positions and twisting of the body and ask for assistance with awkward or heavy loads.
  - Mechanical Hazard: Working with drill rigs can result in injuries from equipment dislodging and striking unsuspecting personnel and from impacts due to flying objects or overturning vehicles. Therefore, follow these precautions:
    - ✓ Drill rig will be inspected visually before each use. If inspection reveals unsafe conditions, rig will be removed from service and repaired. Only qualified individuals shall make repairs to the drill rig.
    - ✓ Drill rig cabs will be kept free of all nonessential items and all loose items will be secured.
    - ✓ Drill rigs will be provided with necessary safety equipment.
    - ✓ Drill rig shall be properly maintained per manufacturer's recommendations. Only qualified individuals shall make repairs to the drill rig.
    - ✓ Parking brakes will be set before shutting off any heavy equipment or vehicle.
    - ✓ High pressure hoses will be secured to prevent "whipping" in the event of a failure.
    - ✓ Only competent individuals shall be allowed to operate the drill rig.

- ✓ To minimize overhead hazards, wire cables will be inspected by the rig operator prior to use. Any frayed, kinked, marked or otherwise damaged cables will be taken out of service. Operator and other personnel in area during lifting of tools onto rig mast shall position themselves so that they are not under the load and/or between equipment.

- ▸ Electrical Hazard: Of special concern to drilling operations is the possibility for conducting electricity through the drilling tower through either inadvertent contact with underground or overhead power lines or by lightning strikes. In addition, some of the equipment used is operated by electricity. Unless safe work practices are observed, serious injury or death can result. Therefore, observe the following precautions:
  - ✓ Treat all electrical wires and circuits as 'live" unless certain they are not.
  - ✓ Always maintain a firm work base to prevent a loss of balance and potential fall onto energized busses or parts (which should be covered with a good electrical insulator such as a rubber blanket).
  - ✓ All tools should have insulated handles, be electrically grounded or double insulated.
  - ✓ Do not drill within 10 ft of an overhead power line that is ≤ 50 kV (or within 50 ft for > 50 kV) unless power to the line is first turned off for the duration of the drilling.
  - ✓ Ground fault circuit interrupters will be used for electrical extension cords in use between a fixed electrical system (permanent outlet) and a tool.
  - ✓ Prior to drilling have site representatives delineate location of underground power lines and other utilities.
  - ✓ Do not drill within 25 ft of any known underground power line.
  - ✓ Maintain a watch for electrical storms. If electrical activity appears to be imminent, cease drilling operations and evacuate the area around the drill rig. If time permits do not leave auger or drill string in the borehole.
- ▸ Noise: Unprotected exposure of site workers to noise from drilling activities can result in noise induced hearing loss. Hearing protection must be worn where noise levels are greater than 85 dBA. The SSHO will ensure that either ear muffs or disposable foam earplugs are made available to all personnel and are used by the personnel in the immediate vicinity of the drill rig.

- **Biological/Vector Hazard**

- ▸ Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazard**

  - Level of Protection: D
  - Protective Clothing: ESI-issued work clothes or disposable tyvek
  - Head Gear
    - Hard hat required for drill rig operations; not required for steam cleaning and washing
    - Safety glasses or goggles required during drilling and decon operations
    - Ear muffs or disposable foam earplugs required in the vicinity of drill rig
  - Gloves: Leather work gloves over nitrile or latex gloves during drilling or decon operations
  - Footwear: Steel-toed work shoes

- **Monitoring Requirements**

  - Air Quality: Air monitoring with a PID or other suitable instrument will be performed during all well installation activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5 ppm VOC in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

4.5 INTERIM REMEDIAL MEASURE (IRM)

Task Description: The elevated concentrations of volatile organic compounds in all four cesspools are proposed to be addressed via an IRM. The IRM includes the removal of liquids and sludge/sediments from each of the cesspools and the contents of their associated septic tank(s).The removal of the liquids and sludges from the septic tank will be performed initially and an inspection of the interior will be made to ensure that it is not a leaching structure. Liquids from the septic tank and the cesspools will be removed via vacuum truck. Impacted sludges/soils from each cesspool will removed using an industrial vacuum loader truck. The sludge/soil from the cesspools will be loaded into watertight roll-off containers for off-site transport.

Equipment and Materials: Equipment includes a vacuum truck and an industrial vacuum loader truck and associated equipment and support vehicles.

Task Hazards and Controls:

- **Chemical and Radiological Hazards**

  - Soil/cuttings Contact: Workers may be exposed to contaminated soil being removed from the bottom of the cesspools during remediation and endpoint sampling. This hazard will be minimized by utilizing appropriate personnel protection equipment and screening for VOC contamination. An exclusion area will be set up around the remediation equipment to prevent entry by personnel that are not trained or wearing proper protection.

- **Physical Hazards**

  - Tripping/Falling: Precautions should be taken to avoid trip, slip and fall accidents when climbing irregular or slippery surfaces. Before changing location visually survey the area for slippery surfaces and tripping hazards. Operators will avoid accessing locations greater than six feet above ground. If it becomes necessary to perform work on the drill mast, the mast will be lowered prior to performing work.
  - Heat/Cold Stress: Wear clothing appropriate for environmental and weather conditions. Temperature extremes may be a hazard for consideration depending on the timing of the activity. Refer to Sect. 5.5 for discussion of recognition of symptoms and controls.
  - Abrasions, Scrapes and Sprains: Always use appropriate care when using tools and mechanical equipment. Maintain awareness of body and limb location and think ahead to probable body and object path before applying force to tools. Wear protective clothing as listed below. Drill rods, augers and tools will be properly stowed and restrained during transport. Support rails will have adequate strength to hold tools. Operators will avoid placing body parts at points of operation and/or pinch points.
  - Lifting: Use your legs to lift heavy objects, avoid awkward positions and twisting of the body and ask for assistance with awkward or heavy loads.
  - Mechanical Hazard: Working with drill rigs can result in injuries from equipment dislodging and striking unsuspecting personnel and from impacts due to flying objects or overturning vehicles. Therefore, follow these precautions:
    - ✓ Equipment will be inspected visually before each use. If inspection reveals unsafe conditions, the equipment will be removed from service and repaired. Only qualified individuals shall make repairs to the

equipment. Remediation equipment will be provided with necessary safety equipment.

- ✓ Remediation equipment shall be properly maintained per manufacturer's recommendations. Only qualified individuals shall make repairs to the Remediation equipment.
- ✓ Parking brakes will be set before shutting off any heavy equipment or vehicle.
- ✓ High pressure hoses will be secured to prevent "whipping" in the event of a failure.
- ✓ Only competent individuals shall be allowed to operate the equipment.
- ✓ Overhead hazards will be minimized.

▸ Electrical Hazard: Of special concern to remedial operations is the possibility for conducting electricity through the equipment on top of the trucks through either inadvertent contact with underground or overhead power lines or by lightning strikes. In addition, some of the equipment used is operated by electricity. Unless safe work practices are observed, serious injury or death can result. Therefore, observe the following precautions:

- ✓ Treat all electrical wires and circuits as 'live" unless certain they are not.
- ✓ Always maintain a firm work base to prevent a loss of balance and potential fall onto energized parts (which should be covered with a good electrical insulator such as a rubber blanket).
- ✓ All tools should have insulated handles, be electrically grounded or double insulated.
- ✓ Ground fault circuit interrupters will be used for electrical extension cords in use between a fixed electrical system (permanent outlet) and a tool.
- ✓ Prior to remediation have site representatives delineate location of underground power lines and other utilities.
- ✓ Maintain a watch for electrical storms. If electrical activity appears to be imminent, cease operations and evacuate the area around the equipment.

▸ Noise: Unprotected exposure of site workers to noise from remediation activities can result in noise induced hearing loss. Hearing protection must be worn where noise levels are greater than 85 dBA. The SSHO will ensure that either ear muffs or disposable foam earplugs are made available to all personnel and are used by the personnel in the immediate vicinity of the equipment.

• **Biological/Vector Hazard**

▸ Ticks/Snakes/Pathogens: Be cautious of snakes and vector carriers such as ticks. Check clothing and skin for ticks after walking in brush. Wash hands before eating and drinking.

- **Personal Protective Equipment Required to Address General Site Hazard**

  - Level of Protection: D
  - Protective Clothing: ESI-issued work clothes or disposable tyvek
  - Head Gear
    - Hard hat required for work operations
    - Safety glasses or goggles required during operation
    - Ear muffs or disposable foam earplugs required in the vicinity of activated equipment.
  - Gloves: Leather work gloves over nitrile or latex gloves during active work or decon operations
  - Footwear: Steel-toed work shoes

- **Monitoring Requirements**

  - Air Quality: Air monitoring with a PID or other suitable instrument will be performed during all activities. A VOC ambient air monitoring result of 3ppm will trigger a warning response. If a detection of 5 ppm VOC in ambient air is detected, the SSHO will suspend work and instruct the workers to move to a safe zone until such time the work zone is tested safe.

5.0 OTHER HEALTH AND SAFETY PLAN ELEMENTS

5.1 REVISIONS/ MODIFICATIONS TO THE HASP

The following actions will warrant revision and approval of this plan by the appropriate health and safety disciplines:

- Change in tasks (or previously unidentified tasks) that could impact employee health and safety.
- Changes in hazards (unknown or not previously addressed) which require a significant change in, or addition to, respiratory protection (as defined in exemptions to the plan modifications), physical/barrier protection features or other engineering controls.
- Occurrences as defined by DOE Order 232.1A.

5.1.1 Modifications allowed

The SSHO may upgrade PPE. These changes must be documented in the field logbook. The change and reason or evidence for the change must also be documented in the field logbook. For upgrades to include respiratory protection (including air-purifying and supplied air) for previously unidentified non-radiological issues or contaminants such as VOCs, the appropriate health and safety disciplines must be contacted. The SSHO will approve and document changes in PPE in the field logbook. Upgrades to include respiratory protection will require the SSHO to ensure workers have 40 Hour HAZWOPER Training and to assess any additional medical surveillance requirements.

5.2 MONITORING

Historical site data indicate that chemical exposure of site personnel is not a significant concern within the scope of this project. Therefore, other than for Geoprobing, well installation and remediation (see Section 4.5 and 4.6) no additional monitoring is required unless there is reason to suspect, based on information identified, that chemical contamination will be encountered during field activities. Site monitoring requirements may change based on site conditions. All changes must be documented in the site logbook.

5.3 SITE AND SPILL CONTROL

Site access is available from public roads through the area and therefore will not be controlled to the general site. Based on the anticipated levels of contamination, formal barricaded work zones

will not be established unless new monitoring data indicate the need for such barriers. An exclusion zone may be required for remediation operations if required to reduce the accidental spread of hazardous substances from contaminated areas to clean areas. The SSHO will determine, as needed, the locations of the support zone, contamination reduction zone and the exclusion zone. Personnel accessing the zones must meet access requirements as stated in this plan.

5.4 PERSONAL PROTECTIVE EQUIPMENT

Level D protection is normally used when the potential for personnel contamination is low, as is the case with this project. Level D protection will include ESI-furnished clothing or disposable tyvek. Details and special requirements have been covered in the hazard control sections of the specific tasks in Sect. 4 above. Unexpected new hazards will require a reassessment of the specified PPE.

5.5 TEMPERATURE EXTREMES AND SITE CHARACTERISTICS

The effect of temperature extremes on personnel is a primary hazard associated with the activities conducted at the site. Symptoms and controls related to temperature extremes are considered in detail in this section.

Field activities conducted during the summer or winter pose a hazard because of temperature extremes. Since the project site is located in a relatively open area, workers shall dress appropriately for environmental conditions, wearing clothing that provides reasonable protection against winter cold and summer sun. Although extreme physical exertion will not be likely within the scope of this project, during hot weather workers are encouraged to be aware of their own symptoms of heat stress (headaches, dizziness, increased heart rate), to drink plenty of water and to take breaks as needed. Heat stress symptoms, remedies and monitoring are discussed in Section 5.5.1. Cold exposure effects are discussed in Section 5.5.2.

Workers are also encouraged to apply insect repellant and/or sunscreen as needed prior to field activities. Workers should exercise caution by visually inspecting their immediate area of activity for presence of poisonous/harmful plant, insect and animal species as well as any hazard resulting from previous human activity.

5.5.1 Effects and Prevention of Heat Stress

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur. They can range from mild symptoms such as fatigue, irritability, anxiety and decreased concentration, dexterity, or movement, to death.

Heat-related health concerns can include the following:

- **Heat rash:** Caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreases ability to tolerate heat and is a nuisance.
- **Heat cramps:** Caused by profuse perspiration combined with inadequate fluid intake and chemical replacement, particularly salts. Signs include muscle spasm and pain in the extremities and abdomen.
- **Heat exhaustion:** Caused by increased stress on various organs to meet increased demands to cool the body. Signs include shortness of breath; increased pulse rate (120-200 beats per minute); pale, cool, moist skin; profuse sweating; dizziness; and lassitude.
- **Heat stroke:** Is the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. Signs include red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse and possibly coma. Medical help must be obtained immediately.

Medical attention must be obtained for the more serious symptoms of heat stress. One or more of the following methods is recommended to help reduce the potential for heat stress:

1. Provide plenty of liquids. To replace body fluids (water and electrolytes) lost due to sweating, use a 0.1 percent saltwater solution, more heavily salted foods or commercial mixes. The commercial mixes may be preferable for those employees on a low-sodium diet.
2. Provide cooling devices to aid natural body ventilation. These devices, however, add weight and their use should be balanced against worker efficiency.
3. Wear long cotton underwear, which acts as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing protective clothing.
4. Install mobile showers and/or hose-down facilities to reduce body temperature and cool protective clothing.
5. In extremely hot weather, conduct non-emergency response operations in the early morning or evening.
6. Ensure that adequate shelter is available to protect personnel against sun, heat or other adverse weather conditions that decrease physical efficiency and increase the probability of accidents.
7. In hot weather, rotate workers wearing protective clothing.
8. Maintain good hygiene frequently changing clothing and showering daily. Clothing should be permitted to dry during rest periods. Workers who notice skin problems should immediately consult medical personnel.

5.5.2 Cold Exposure

Persons working outdoors in temperatures at or below freezing may suffer from cold exposure. During prolonged outdoor periods with inadequate clothing for protection, the effects of cold exposure may occur even at temperatures well above freezing. Cold exposure may cause severe injury due to freezing of exposed body surfaces (frostbite) or profound generalized cooling (hypothermia), possibly resulting in death. Areas of the body which have high surface area-to-volume ratios such as fingers, toes and ears are the most susceptible to frostbite.

Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite of the extremities can be categorize into:

- **Frost nip or incident frostbite:** characterized by sudden blanching or whitening of skin.
- **Superficial frostbite:** skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- **Deep frostbite:** tissues are cold, pale and solid; extremely serious injury.

Systemic hypothermia, or lowering of the core body temperature, is caused by exposure to freezing or rapidly dropping temperatures. Symptoms are usually exhibited in five stages: 1) shivering and loss of coordination; 2) apathy, listlessness, sleepiness and (sometimes) rapid cooling of the body to less than 95°F (35°C); 3) unconsciousness, glassy stare, slow pulse and slow respiratory rate; 4) freezing the extremities; and 5) death.

5.6 DECONTAMINATION

ESI will maintain on-site decontamination equipment such as a steam cleaner, potable water, alconox, pressure washer, water reservoir tank, and a wastewater transfer system and receiving container, as required Groundwater, soil sampling and drilling and sampling equipment will be decontaminated between each boring, well installation, sampling event and prior to mobilization on or off site.

Decontamination of personnel shall be conducted only in the unexpected event that contamination is detected. At a minimum, personnel who have conducted work at the site will wash their hands prior to eating or drinking. ESI personnel shall supervise, assist and document incidents involving personnel contamination.

5.7 EMERGENCY PREPAREDNESS/RESPONSE

All emergency services can be reached by dialing 911 from any facility or mobile telephone. Access to phones and/or radios will be provided to onsite personnel. The Emergency Response Coordinator (ERC) will coordinate all emergency response operations.

Should evacuation from the site become necessary, the evacuation route to the hospital is shown in Figure 2. Emergency telephone numbers are given below.

Emergency Telephone Numbers

FIRE / POLICE 911

Town of GlenHead Fire Department

Fire/Emergency calls: (516) 742-3300.... or 911
Fire Department Non-Emergency calls: (516) 374-9801

Sea Cliff Fire Dept Emergency (516) 671-0334 Non-Emergency..(516) 671-1690

Nassau County Police Department

SIXTH PRECINCT (516) 573-6600 100 Community Drive, Manhasset, NY 11030

Commanding Officer: Inspector Peter A. Matuza (516) 573-6652
Serving the Communities of East Hills, Flower Hill, Glen Head, Glenwood Estates, Great Neck, Great Neck Estates, Great Neck Plaza, Greenvale, Harbor Hills, Kensington, Kings Point, Lake Success, Manhasset, Manorhaven, Munsey Park, North Hills, Plandome, Roslyn, Roslyn Estates, Roslyn Harbor, Roslyn Heights, Russell Gardens, Saddle Rock, Sands Point, Sea Cliff, Thomaston, University Gardens .

Nearest Emergency Medical Facility

North Shore University Hospital at Glen Cove
101 St. Andrews Lane, Glen Cove, NY 11542
Hospital Emergency Services: (516) 674-7300

TOWN OF OYSTER BAY PHONE NUMBERS

In the event of an emergency call **911**

To contact Oyster Bay Town Supervisor John Venditto, please call
(516) 624-6350

To contact the Town of Oyster Bay after-hours, please call
the **Town's 24-hour Operations Center** at **(516) 677-5757**

6.0 TRAINING/MEDICAL REQUIREMENTS

6.1 SITE-SPECIFIC HAZARD COMMUNICATION AND ACCESS BRIEFING

Since different training requirements may be needed based on the nature of different tasks to be performed, specific training requirements may be identified. However, generally applicable training requirements are presented here. Visitors not entering any exclusion zone or contamination reduction zone who have very limited potential for exposure to contaminants require:

- Site-specific hazard communication and access briefing.

  All project personnel performing hands-on work that could potentially expose them to hazardous substances, safety or health hazards will meet the following training requirements:

  - General Employee Training (GET)
  - 40 hour HAZWOPER (SARA/OSHA) training, or equivalent (Note: for certain types of low risk work, 24 hour training is acceptable)
  - Current HAZWOPER 8-hour Annual Refresher (as applicable)
  - Site-specific hazard communication and access briefing

In addition, the Site Health and Safety Officer requires:

- 8-hour HAZWOPER Supervisor training

Personnel involved in service or maintenance work on energized equipment require:

- Lockout/Tagout training

Prior to beginning work at the project site, all personnel will review this Health and Safety Plan and sign the training acknowledgment form (Appendix C). The site-specific hazard communication and access briefing is documented in the project logbook. If site conditions change, or other hazards are detected, the training and access requirements will be revised accordingly.

6.2 MEDICAL SURVEILLANCE

A medical surveillance program will be conducted in accordance with the requirements of 29 CFR 1910.120 for:

- All employees who are or may be exposed to hazardous substances or health hazards at or above the established permissible exposure limits or, if there is no permissible exposure

  limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year.

- All employees who wear a respirator for 30 days or more a year or as required by 29 CFR 1910.134.
- All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.

- Members of HAZMAT teams.

All ESI employees receive periodic medical examinations. Because of the low potential for exposure to hazardous agents, it is not expected that additional medical surveillance will be required for ESI personnel at the Former Fresh & Clean Laundry facility. Non-ESI personnel will be required to acknowledge coverage by a medical surveillance program sufficient to satisfy the requirements of 29 CFR 1910.120 (Appendix C).

LIST OF FIGURES

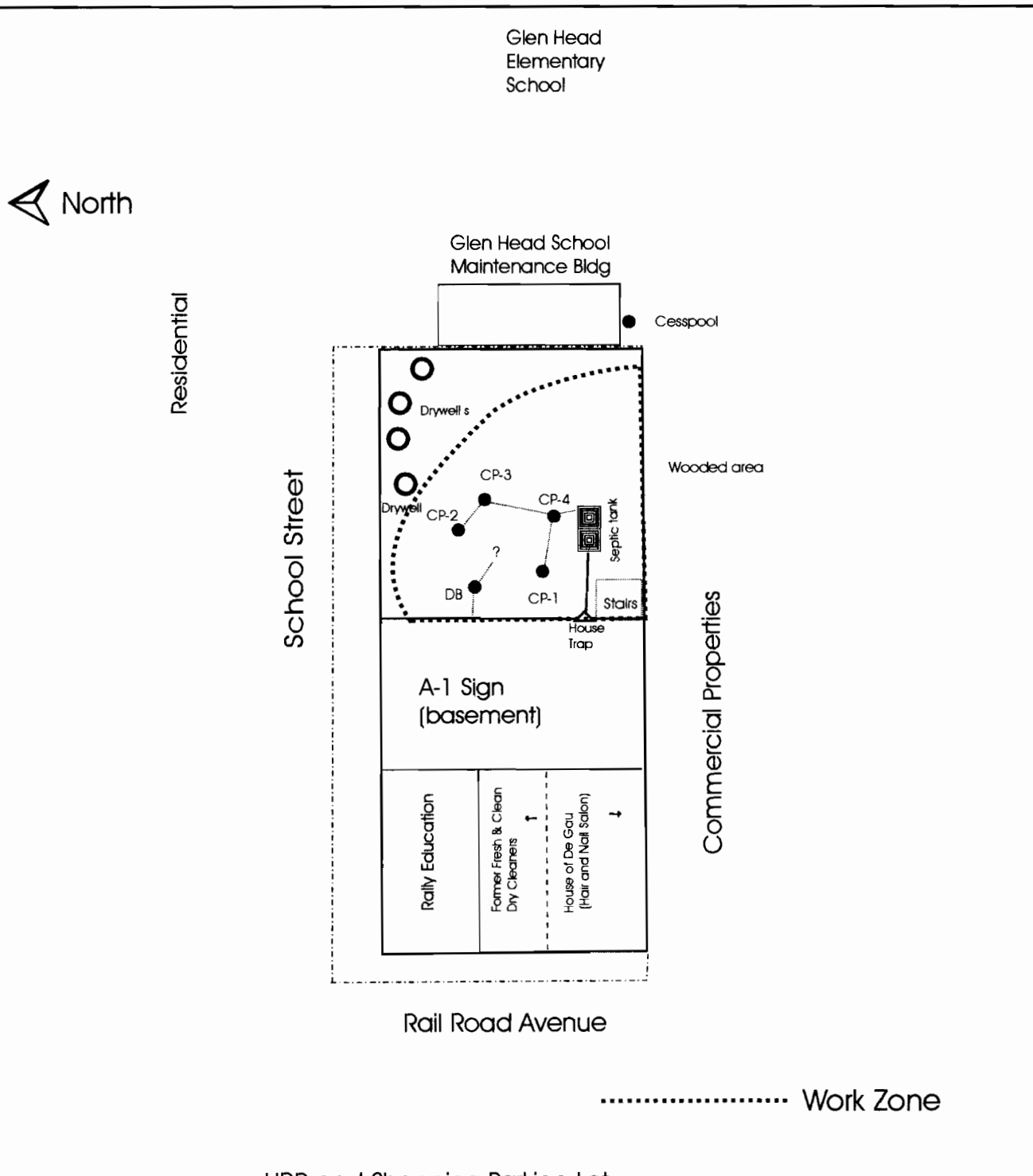
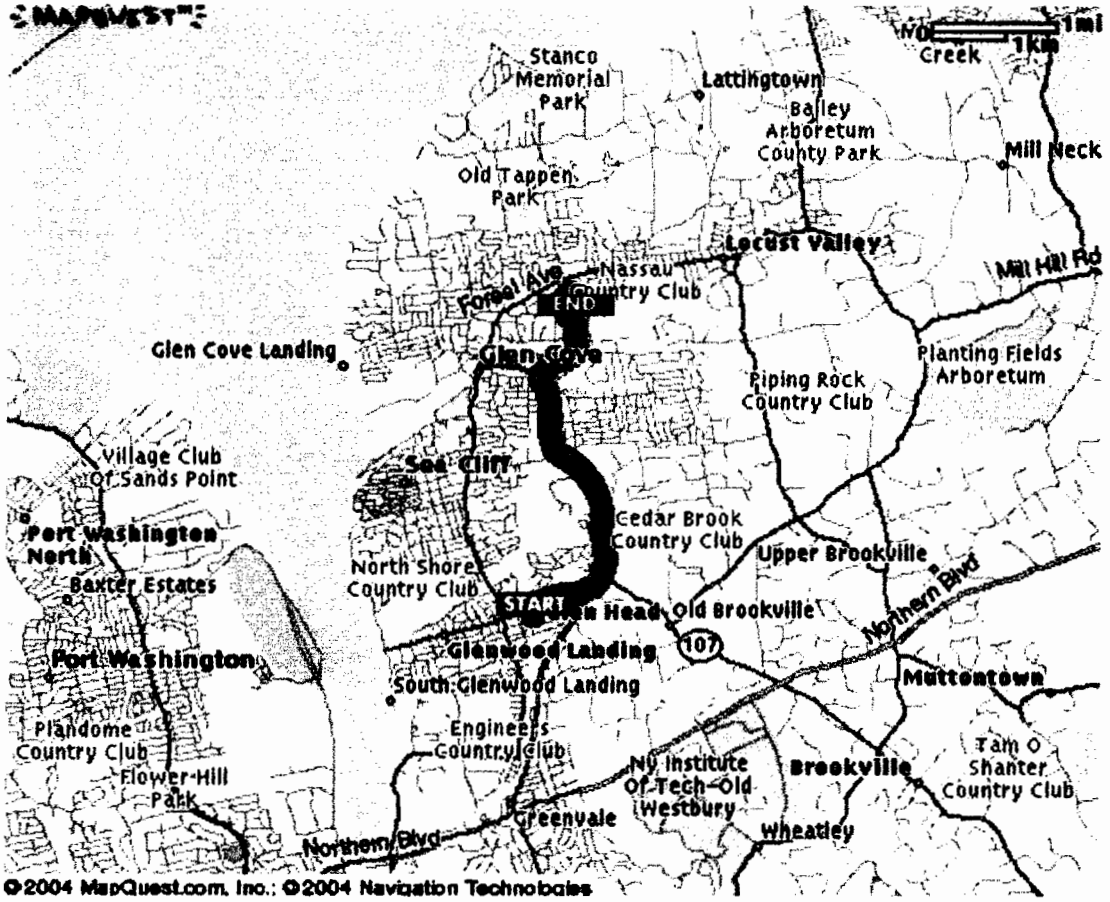


Figure 1 - Site Plan with IRM and other Work Plan work areas



- **Start out going North on RAILROAD PLZ/RAILROAD AVE toward GLEN HEAD RD. <0.1 miles**
- **Turn RIGHT onto GLEN HEAD RD. 0.5 miles**
- **Turn SLIGHT LEFT onto GLEN COVE RD/GREENVALE GLEN COVE RD. Continue to follow GLEN COVE RD. 1.9 miles**
- **Turn SLIGHT RIGHT onto TOWN PATH. 0.3 miles**
- **Turn LEFT onto WALNUT RD. 0.3 miles**
- **Turn SLIGHT RIGHT to stay on WALNUT RD. 0.1 miles**
- **Turn RIGHT onto ST ANDREWS LN EXT. 0.1 miles**
- **End at 101 SAINT ANDREWS LN GLEN COVE NY**

Estimated time: 10 minutes for 3.56 miles.

Figure 2 - DRIVING DIRECTIONS FROM SITE TO HOSPITAL

APPENDIX A

Historical Site Data

SUMMARY OF PAST INVESTIGATIONS

Records available to Environmental Services Inc.(ESI) include a September, 2000 limited Phase II site investigation. This investigation focused on the subsurface drainage system (on-site sanitary system). Seven cast iron manhole covers at grade in the rear parking area, located east of the facility building. According to the Phase II report, there was a poured concrete distribution box with a solid bottom. Examination of a *"Rear Plot Plan"* sketch indicated that the distribution box received discharge from the former Fresh & Clean Laundry processes and directed the discharge to three at grade cesspools and to possibly an additional below grade overflow pool. Three cast iron pipes were observed exiting the distribution box in directions which apparently generally corresponded with locations of cesspools designated CP- 1, C P-2 and CP-3, with all three pools having manhole covers at grade. Of note, the report indicated that all of the cast iron pipes observed at the distribution box were filled with concrete. Two additional manhole covers were observed southeast of the building; same were determined in the Phase II to reportedly be a septic tank. There was an additional manhole identified, the current sanitary cesspool serving the septic tank.

Bottom sediments from the four cesspools were sampled and submitted for laboratory analysis for VOCs by EPA Method 8260. The testing data indicated that all three cesspools (CP-l, CP-2, & CP-3) had received discharges of common industrial solvents and cleaners. Cesspool CP-2 reported the highest VOC contamination with a concentration of PCE of 1,500,000 part per billion (ppb). The main VOC constituents reported above NYSDEC soil cleanup guidance values in the cesspools were PCE and 1,2-dichloroethene and trichloroethylene (breakdown products of PCE). In addition, low levels of petroleum products were reported above allowable limits, specifically xylenes and 1, 2-dichlorobenzene. Several VOCs were reported above their respective RSCOs at CP-4; however, these VOCs were present at substantially lower concentrations than the other cesspools. Each of the bottom sediments samples were collected at the base of each structure, approximately 20-22 feet below grade surface (bgs).

NYSDOH Indoor Air Sampling December 2003

Available records through the FOIL process included results of indoor air sampling data for the tenants at the subject property. The following sampling locations were evaluated with testing results indicated:

Sampling Location	Data	Remarks
Rally Education - outdoor	Non-detect	Ambient, upstairs, fire escape
Rally Education	90 mcg/cu. m.	office shelf
House DeGau	90 mcg/cu. m.	nail salon shelf
House DeGau	110 mcg/cu. m.	salon lunch area
A+ Graphics & Signs	380 mcg/cu. m	signs work area
–	0.2 mcg/cu. m	trip blank
A+ Graphics & Signs	Non-detect	Ambient, wooden fence

NCDH Indoor Air Sampling January 2004

On January 13-14, 2004, NCDH sampled indoor air at several areas at the subject property Again, tetrachloroethylene concentrations were evaluated through the use of organic vapor monitoring badges left in place for approximately 24 hours.

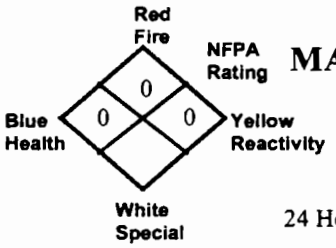
Sampling Location	Data	Remarks
A+ Graphics & Signs	2,200 mcg/cu. m.	paint room northwest corner of building.
A+ Graphics & Signs	2,000 mcg/cu. m.	main room of operation
A+ Graphics & Signs	5 mcg/cu. m.	Ambient, wooden fence
--	0.03 mcg/cu. m	trip blank

During the January 2004 NCDH site inspection, it was determined that the A+ Graphics & Signs use tetrachloroethylene for etching purposes.

APPENDIX B

Material Safety Data Sheets (MSDS)

Alconox ®



MATERIAL SAFETY DATA SHEET

Alconox, Inc.
30 Glenn Street
White Plains, NY 10603

24 Hour Emergency Number – Chem-Tel (800) 255-3924

I. IDENTIFICATION

Product Name (as appears on label)	ALCONOX
CAS Registry Number:	Not Applicable
Effective Date:	January 1, 2001
Chemical Family:	Anionic Powdered Detergent
Manufacturer Catalog Numbers for sizes	1104, 1125, 1150, 1101, 1103 and 1112

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

There are no hazardous ingredients in ALCONOX as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.

III. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point (F):	Not Applicable
Vapor Pressure (mm Hg):	Not Applicable
Vapor Density (AIR=1):	Not Applicable
Specific Gravity (Water=1):	Not Applicable
Melting Point:	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Solubility in Water:	Appreciable-Soluble to 10% at ambient conditions
Appearance:	White powder interspersed with cream colored flakes.
pH:	9.5 (1%)

IV. FIRE AND EXPLOSION DATA

Flash Point (Method Used):	None
Flammable Limits:	LEL: No Data UEL: No Data
Extinguishing Media:	Water, dry chemical, CO_2, foam
Special Fire fighting Procedures:	Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None

V. REACTIVITY DATA

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatibility (Materials to Avoid):	None
Hazardous Decomposition or Byproducts:	May release CO_2 on burning

VI. HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? Yes Skin? No Ingestion? Yes
Health Hazards (Acute and Chronic):	Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.
Carcinogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No
Signs and Symptoms of Exposure:	Exposure may irritate mucous membranes. May cause sneezing.
Medical Conditions Generally Aggravated by Exposure:	Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder.
Emergency and First Aid Procedures:	Eyes: Immediately flush eyes with water for at least 15 minutes. Call a physician. Skin: Flush with plenty of water. Ingestion: Drink large quantities of water or milk. Do not induce vomiting. If vomiting occurs administer fluids. See a physician for discomfort.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken if Material is Released or Spilled:	Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.
Waste Disposal Method:	Small quantities may be disposed of in sewer. Large quantities should be disposed of in accordance with local ordinances for detergent products.
Precautions to be Taken in Storing and Handling:	Material should be stored in a dry area to prevent caking.
Other Precautions:	No special requirements other than the good industrial hygiene and safety practices employed with any industrial chemical.

VIII. CONTROL MEASURES

Respiratory Protection (Specify Type):	Dust mask - Recommended
Ventilation:	Local Exhaust-Normal Special-Not Required Mechanical-Not Required Other-Not Required
Protective Gloves:	Impervious gloves are useful but not required.
Eye Protection:	Goggles are recommended when handling solutions.
Other Protective Clothing or Equipment:	None
Work/Hygienic Practices:	No special practices required

MSDS Number: **A2052** * * * * * *Effective Date: 02/18/03* * * * * *Supercedes: 02/21/00*

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance

ALCONOX®

1. Product Identification

Synonyms: Proprietary blend of sodium linear alkylaryl sulfonate, alcohol sulfate, phosphates, and carbonates.
CAS No.: Not applicable.
Molecular Weight: Not applicable to mixtures.
Chemical Formula: Not applicable to mixtures.
Product Codes: A461

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Alconox® proprietary detergent mixture	N/A	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight
Flammability Rating: 0 - None
Reactivity Rating: 1 - Slight
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:
May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.
Ingestion:
May cause irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
Skin Contact:
No adverse effects expected.
Eye Contact:
May cause irritation, redness and pain.
Chronic Exposure:
No information found.
Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact:
Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Not expected to be a fire hazard.
Explosion:
No information found.
Fire Extinguishing Media:
Dry chemical, foam, water or carbon dioxide.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. When mixed with water, material foams profusely. Small amounts of residue may be flushed to sewer with plenty of water.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Moisture may cause material to cake. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
- OSHA Permissible Exposure Limit (PEL):
15 mg/m3 total dust, 5 mg/m3 respirable fraction for nuisance dusts.
- ACGIH Threshold Limit Value (TLV):
10 mg/m3 total dust containing no asbestos and < 1% crystalline silica for Particulates Not Otherwise Classified (PNOC).
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:
Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
White powder interspersed with cream colored flakes.

Odor:
No information found.
Solubility:
Moderate (1-10%)
Specific Gravity:
No information found.
pH:
No information found.
% Volatiles by volume @ 21C (70F):
0
Boiling Point:
No information found.
Melting Point:
No information found.
Vapor Density (Air=1):
No information found.
Vapor Pressure (mm Hg):
No information found.
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
No information found.
Conditions to Avoid:
No information found.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Alconox®	No	No	None
proprietary detergent mixture			

12. Ecological Information

Environmental Fate:
This product is biodegradable.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Alconox®	Yes	No	No	No
proprietary detergent mixture				

--------\Chemical Inventory Status - Part 2\----------

		--Canada--		
Ingredient	Korea	DSL	NDSL	Phil.
Alconox®	No	No	Yes	No
proprietary detergent mixture				

--------\Federal, State & International Regulations - Part 1\----------

	-SARA 302-		------SARA 313------	
Ingredient	RQ	TPQ	List	Chemical Catg.
Alconox®	No	No	No	No
proprietary detergent mixture				

--------\Federal, State & International Regulations - Part 2\----------

		-RCRA-	-TSCA-
Ingredient	CERCLA	261.33	8(d)
Alconox®	No	No	No
proprietary detergent mixture			

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **0** Flammability: **0** Reactivity: **0**
Label Hazard Warning:
CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT.
Label Precautions:
Avoid contact with eyes.
Keep container closed.
Use with adequate ventilation.
Avoid breathing dust.
Wash thoroughly after handling.
Label First Aid:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. In all cases, get medical attention.
Product Use:
Laboratory Reagent.
Revision Information:
MSDS Section(s) changed since last revision of document include: 8.
Disclaimer:
****
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS | J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

TRICHLOROETHYLENE

MSDS Number: T4940 — *Effective Date: 09/14/00*

1. Product Identification

Synonyms: Trichloroethene; TCE; acetylene trichloride; Ethinyl trichloride
CAS No.: 79-01-6
Molecular Weight: 131.39
Chemical Formula: C2HCl3
Product Codes:
J.T. Baker: 5376, 9454, 9458, 9464, 9473, 9474
Mallinckrodt: 8598, 8600, 8633

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Trichloroethylene	79-01-6	100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS HEART, CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES SEVERE SKIN

IRRITATION. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Cancer Causing)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:
Vapors can irritate the respiratory tract. Causes depression of the central nervous system with symptoms of visual disturbances and mental confusion, incoordination, headache, nausea, euphoria, and dizziness. Inhalation of high concentrations could cause unconsciousness, heart effects, liver effects, kidney effects, and death.

Ingestion:
Cases irritation to gastrointestinal tract. May also cause effects similar to inhalation. May cause coughing, abdominal pain, diarrhea, dizziness, pulmonary edema, unconsciousness. Kidney failure can result in severe cases. Estimated fatal dose is 3-5 ml/kg.

Skin Contact:
Cause irritation, redness and pain. Can cause blistering. Continued skin contact has a defatting action and can produce rough, dry, red skin resulting in secondary infection.

Eye Contact:
Vapors may cause severe irritation with redness and pain. Splashes may cause eye damage.

Chronic Exposure:
Chronic exposures may cause liver, kidney, central nervous system, and peripheral nervous system effects. Workers chronically exposed may exhibit central nervous system depression, intolerance to alcohol, and increased cardiac output. This material is linked to mutagenic effects in humans. This material is also a suspect carcinogen.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders, cardiovascular disorders, impaired liver or kidney or respiratory function, or central or peripheral nervous system disorders may be more susceptible to the effects of the substance.

---

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.
Skin Contact:
Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.

---

5. Fire Fighting Measures

Fire:
Autoignition temperature: 420C (788F)
Flammable limits in air % by volume:
lel: 8; uel: 12.5
Explosion:
A strong ignition source, e. g., a welding torch, can produce ignition. Sealed containers may rupture when heated.
Fire Extinguishing Media:
Use water spray to keep fire exposed containers cool. If substance does ignite, use CO2, dry chemical or foam.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Combustion by-products include phosgene and hydrogen chloride gases. Structural firefighters' clothing provides only limited protection to the combustion products of this material.

---

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting

spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
Trichloroethylene:
-OSHA Permissible Exposure Limit (PEL):
100 ppm (TWA), 200 ppm (Ceiling),
300 ppm/5min/2hr (Max)

-ACGIH Threshold Limit Value (TLV):
50 ppm (TWA) 100 ppm (STEL);
listed as A5, not suspected as a human carcinogen.

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has poor warning properties. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene is a recommended material for personal protective equipment.

Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.
Odor:
Chloroform-like odor.
Solubility:
Practically insoluble in water. Readily miscible in organic solvents.
Specific Gravity:
1.47 @ 20C/4C
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
87C (189F)
Melting Point:
-73C (-99F)
Vapor Density (Air=1):
4.5
Vapor Pressure (mm Hg):
57.8 @ 20C (68F)
Evaporation Rate (BuAc=1):
No information found.

---

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Will slowly decompose to hydrochloric acid when exposed to light and moisture.
Hazardous Decomposition Products:
May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong caustics and alkalis, strong oxidizers, chemically active metals, such as barium, lithium, sodium, magnesium, titanium and beryllium, liquid oxygen.
Conditions to Avoid:
Heat, flame, ignition sources, light, moisture, incompatibles

---

11. Toxicological Information

Toxicological Data:
Trichloroethylene: Oral rat LD50: 5650 mg/kg; investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
This material has been linked to mutagenic effects in humans.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Trichloroethylene (79-01-6)	No	Yes	2A

---

12. Ecological Information

Environmental Fate:
When released into the soil, this material may leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released to water, this material is expected to quickly evaporate. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.
Environmental Toxicity:
The LC50/96-hour values for fish are between 10 and 100 mg/l. This material is expected to be slightly toxic to aquatic life.

---

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: TRICHLOROETHYLENE
Hazard Class: 6.1
UN/NA: UN1710

Packing Group: III
Information reported for product/size: 5GL

International (Water, I.M.O.)

Proper Shipping Name: TRICHLOROETHYLENE
Hazard Class: 6.1
UN/NA: UN1710
Packing Group: III
Information reported for product/size: 5GL

International (Air, I.C.A.O.)

Proper Shipping Name: TRICHLOROETHYLENE
Hazard Class: 6.1
UN/NA: UN1710
Packing Group: III
Information reported for product/size: 5GL

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
Trichloroethylene (79-01-6)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------------------------------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Trichloroethylene (79-01-6)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Trichloroethylene (79-01-6)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Trichloroethylene (79-01-6)	100	U228	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: No information found.
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

16. Other Information

NFPA Ratings: Health: **2** Flammability: **1** Reactivity: **0**
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS HEART, CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES SEVERE SKIN IRRITATION. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.
Label Precautions:
Do not get in eyes, on skin, or on clothing.
Do not breathe vapor.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Keep away from heat and flame.
Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician. Note to physician: Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.
Product Use:
Laboratory Reagent.
Revision Information:
MSDS Section(s) changed since last revision of document include: 8, 11.
Disclaimer:
****

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A

PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

****

Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,1-Dichloroethane	100 ppm	100 ppm TWA; 400 mg/m3 TWA; see Appendix C (Chloroethanes) for supplementary exposure limits 3000 ppm IDLH	100 ppm TWA; 400 mg/m3 TWA

OSHA Vacated PELs:

1,1-Dichloroethane:
100 ppm TWA; 400 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear chemical goggles. Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

A respiratory protection program that meets OSHA's 29 CFR §1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	clear colorless to very faint yellow
Odor:	None reported.
pH:	Not available.
Vapor Pressure:	244 mbar @ 20 C
Vapor Density:	3.11
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	57 deg C @ 760.00mm Hg
Freezing/Melting Point:	-97 deg C
Autoignition Temperature:	660 deg C (1,220.00 deg F)
Flash Point:	-10 deg C (14.00 deg F)
NFPA Rating:	(est.) Health: 2; Flammability: 3; Reactivity: 0
Explosion Limits, Lower:	.16 vol %
Upper:	.06 vol %
Decomposition Temperature:	
Solubility:	0.5g/100ml
Specific Gravity/Density:	1.1770g/cm3
Molecular Formula:	C2H4Cl2
Molecular Weight:	98.96

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, strong oxidants.
Incompatibilities with Other Materials:
Oxidizing agents.
Hazardous Decomposition Products:
Hydrogen chloride, phosgene, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 75-34-3: KI0175000
LD50/LC50:
CAS# 75-34-3: Inhalation, rat: LC50 =13000 ppm/4H; Oral, rat: LD50 = 725 mg/kg.
Carcinogenicity:
1,1-Dichloroethane -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
California: carcinogen; initial date 1/1/90
Epidemiology:
No information available.
Teratogenicity:
No information available.
Reproductive Effects:
No information available.
Neurotoxicity:
No information available.
Mutagenicity:
No information available.
Other Studies:
See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is classif as a hazardous waste.
US EPA guidelines for the classification determination are listed in 40 CFR Part Additionally, waste generators must consult state and local hazardous waste regu ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 75-34-3: was a number U076.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: UN2362
Packing Group: II
Canadian TDG
Shipping Name: 1,1-DICHLOROETHANE
Hazard Class: 3
UN Number: UN2362
Other Information: FLASHPOINT -10 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA

CAS# 75-34-3 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 75-34-3: Effective Date: June 1, 1987; Sunset Date: June 1, 1997
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
CAS# 75-34-3: 4/12b
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

SARA
Section 302 (RQ)
CAS# 75-34-3: final RQ = 1000 pounds (454 kg)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
Section 313
This material contains 1,1-Dichloroethane (CAS# 75-34-3, 99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act:
CAS# 75-34-3 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
CAS# 75-34-3 is listed as a Priority Pollutant under the Clean Water Act.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
1,1-Dichloroethane can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains 1,1-Dichloroethane, a chemical known to the state of California to cause cancer.
California No Significant Risk Level:
CAS# 75-34-3: no significant risk level = 100 ug/day

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: XN F
Risk Phrases:
R 11 Highly flammable.
R 22 Harmful if swallowed.
R 36/37 Irritating to eyes and respiratory system.
R 52/53 Harmful to aquatic organisms; may cause long-term adverse effects in the aquatic environment.
Safety Phrases:
S 9 Keep container in a well-ventilated place.
S 16 Keep away from sources of ignition - No smoking.
S 23 Do not inhale gas/fumes/vapour/spray.
S 28A After contact with skin, wash immediately with plenty of water.
S 33 Take precautionary measures against static discharges.
S 37 Wear suitable gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

WGK (Water Danger/Protection)
CAS# 75-34-3: 3

United Kingdom Occupational Exposure Limits
CAS# 75-34-3: OES-United Kingdom, TWA 200 ppm TWA; 823 mg/m3 TWA

CAS# 75-34-3: OES-United Kingdom, STEL 400 ppm STEL; 1650 mg/m3 STEL

Canada

CAS# 75-34-3 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of B2, D2B.
CAS# 75-34-3 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 75-34-3: OEL-ARAB Republic of Egypt
OEL-AUSTRALIA:TWA 200 ppm (810 mg/m3);STEL 250 pp (1010 mg/m3)
OEL-AUSTRIA:TWA 100 ppm (400 mg/m3)
OEL-BELGIUM:TWA 200 ppm (810 mg/m3);STEL 250 ppm (1010 mg/m3)
OEL-DENMARK:TWA 100 ppm (400 mg/m3)
OEL-FINLAND:TWA 100 ppm (400 mg/m3);STEL 250 ppm (1000 mg/m3)
OEL-FRANCE:TWA 200 ppm (810 mg/m3)
OEL-GERMANY:TWA 100 ppm (400 mg/m3)
OEL-JAPAN:TWA 100 ppm (400 mg/m3)
OEL-THE NETHERLANDS:TWA 200 ppm (820 mg/m3)
OEL-THE PHILIPPINES:TWA 100 ppm (400 mg/m3)
OEL-RUSSIA:TWA 100 ppm
OEL-SWITZERLAND:TWA 100 ppm (400 mg/m3);STEL 200 ppm (800 mg/m3)
OEL-THAILAND:TWA 50 ppm;STEL 100 ppm
OEL-TURKEY:TWA 100 ppm (400 mg/m3)
OEL-UNITED KINGDOM:TWA 200 ppm (810 mg/m3);STEL 400 ppm
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 9/02/1997 Revision #5 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

1,2-Dichloroethane, 99.8+% (GC) ACROS96087

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: 1,2-Dichloroethane, 99.8+% (GC)
Catalog Numbers:
AC113360000, AC113360010, AC113360025, AC113360250, AC113361000
Synonyms:
Ethylene Dichloride; 1,2- Ethylene Dichloride; Glycol Dichloride; Ethane 1,2-Dichloro-.

Company Identification (Europe): Acros Organics N.V.
Janssen Pharmaceuticalaan 3a
2440 Geel, Belgium
Company Identification (USA): Acros Organics
One Reagent Lane
Fairlawn, NJ 07410
For information in North America, call: 800-ACROS-01
For information in Europe, call: 0032(0) 14575211
For emergencies in the US, call CHEMTREC: 800-424-9300
For emergencies in Europe, call: 0032(0) 14575299

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
107-06-2	1,2-DICHLOROETHANE	>99.8	203-458-1

Hazard Symbols: T F
Risk Phrases: 11 22 36/37/38 45

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: colourless. Flash Point: 58 deg F.
Warning! Flammable liquid. Causes respiratory tract irritation. May cause digestive tract irritation. Irritant. May be harmful if swallowed. May cause central nervous system depression. May cause liver and kidney damage. Causes eye and skin irritation. May cause cancer based on animal studies. Potential cancer hazard.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects

Eye:

Causes eye irritation. Vapors may cause eye irritation. May cause chemical conjunctivitis and corneal damage.

Skin:

Causes skin irritation. May be absorbed through the skin. May cause irritation and dermatitis. May cause cyanosis of the extremities.

Ingestion:

May cause central nervous system depression, kidney damage, and liver damage. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause effects similar to those for inhalation exposure. May be harmful if swallowed.

Inhalation:

Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause liver and kidney damage. Aspiration may lead to pulmonary edema. Vapors may cause

dizziness or suffocation. Can produce delayed pulmonary edema. May cause burning sensation in the chest.

Chronic:

Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis. May cause liver and kidney damage. Effects may be delayed.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion:

Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation:

Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. DO NOT use mouth-to-mouth respiration.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May polymerize explosively when involved in a fire.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep

container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Use with adequate ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1,2-DICHLOROETHANE	10 ppm	1 ppm TWA; 4 mg/m3 TWA; NIOSH Potential Occupational Carcinogen - see Appendix A ; see Appendix C (Chloroethanes) for supplementary exposure limits Potential NIOSH carcinogen.	50 ppm TWA; C 100 ppm; C 100 ppm

OSHA Vacated PELs:

1,2-DICHLOROETHANE:

1 ppm TWA; 4 mg/m3 TWA

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

A respiratory protection program that meets OSHA's 29 CFR S1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	colourless
Odor:	chloroform-like
pH:	Not available.
Vapor Pressure:	66 mm Hg @ 20 C
Vapor Density:	3.5 (Air=1)
Evaporation Rate:	0.3 (Butyl acetate=1)
Viscosity:	Not available.
Boiling Point:	181 deg F

Freezing/Melting Point:	-31.9 deg F
Autoignition Temperature:	775 deg F (412.78 deg C)
Flash Point:	58 deg F (14.44 deg C)
NFPA Rating:	(est.) Health: 2; Flammability: 3; Reactivity: 0
Explosion Limits, Lower:	6.2
Upper:	15.9
Decomposition Temperature:	Not available.
Solubility:	Silghtly soluble in water
Specific Gravity/Density:	1.26 (Water=1)
Molecular Formula:	C2H4Cl2
Molecular Weight:	98.934

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, electrical sparks.
Incompatibilities with Other Materials:
Aluminum, bases, alkali metals, ketones, organic peroxides, nitric acid, strong oxidizing agents, strong reducing agents, liquid ammonia.
Hazardous Decomposition Products:
Hydrogen chloride, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 107-06-2: KI0525000
LD50/LC50:
CAS# 107-06-2: Inhalation, rat: LC50 =1000 ppm/7H; Oral, mouse: LD50 = 413 mg/kg; Oral, rabbit: LD50 = 860 mg/kg; Oral, rat: LD50 = 670 mg/kg; Skin, rabbit: LD50 = 2800 mg/kg.
Carcinogenicity:
1,2-DICHLOROETHANE -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
California: carcinogen; initial date 10/1/87
NIOSH: occupational carcinogen
NTP: Suspect carcinogen
OSHA: Possible Select carcinogen
IARC: Group 2B carcinogen
Epidemiology:
IARC Group 2B: Proven animal carcinogenic substance of potential relevance to humans. IARC Group 2B: No data available on human carcinogenicity, however sufficient evidence of carcinogenicity in animals.
Teratogenicity:
May cause decreased fertility and other adverse effects in pregnant female rats and the progeny of the first generation, but not of the second, by giving them repeated 4-hr/day exposures to 57 mg/m3. Death, Ihl-rat, TCLo=20100 ug/m3/1H (female 7-14D post); Stunted fetus, Oral-rat, TDLo=1260 mg/kg (6-15D preg) Developmental abnormalities: Craniofacial, Ihl-mouse, TCLo=100 ppm/7H (female 6-15D post); Musculoskeletal, Oral-rat, TDLo=1260 mg/kg (6-15D preg)
Reproductive Effects:
No information found.
Neurotoxicity:
No information found.
Mutagenicity:
No information found.
Other Studies:
See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:

Water flea Daphnia: 218mg/L; 48HFish: Bluegill/Sunfish: 430mg/L; 96H;
StaticFish: Fathead Minnow: 136mg/L; 96H; Static

Other

For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is classif
as a hazardous waste.
US EPA guidelines for the classification determination are listed in 40 CFR Part
Additionally, waste generators must consult state and local hazardous waste regu
ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 107-06-2: waste number U077.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: ETHYLENE DICHLORIDE-POISON
Hazard Class: 3
UN Number: UN1184
Packing Group: II
Canadian TDG
Shipping Name: ETHYLENE DICHLORIDE
Hazard Class: 3(6.1)(9.2)
UN Number: UN1184
Other Information: FLASHPOINT -10 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 107-06-2 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 107-06-2: Effective Date: June 1, 1987; Sunset Date: June 1, 1997
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
CAS# 107-06-2: final RQ = 100 pounds (45.4 kg)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 107-06-2: acute, chronic, flammable.
Section 313
This material contains 1,2-DICHLOROETHANE (CAS# 107-06-2, 99
8 %),which is subject to the reporting requirements of Section 313 of
SARA Title III and 40 CFR Part 372.
Clean Air Act:
CAS# 107-06-2 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 107-06-2 is listed as a Hazardous Substance under the CWA.
CAS# 107-06-2 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 107-06-2 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
1,2-DICHLOROETHANE can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains 1,2-DICHLOROETHANE, a chemical known to the state of California to cause cancer.
California No Significant Risk Level:
CAS# 107-06-2: no significant risk level = 10 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T F

Risk Phrases:

R 11 Highly flammable.
R 22 Harmful if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 45 May cause cancer.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.
S 9 Keep container in a well-ventilated place.
S 16 Keep away from sources of ignition - No smoking.
S 33 Take precautionary measures against static discharges.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 107-06-2: 3

United Kingdom Occupational Exposure Limits

Canada

CAS# 107-06-2 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of B2, D2B, D2A.
CAS# 107-06-2 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 107-06-2: OEL-ARAB Republic of Egypt:TWA 5 ppm (2 mg/m3)
OEL-AUSTRALIA:TWA 10 ppm (40 mg/m3)
OEL-AUSTRIA:TWA 20 ppm (80 mg/m3)
OEL-BELGIUM:TWA 10 ppm (40 mg/m3)
OEL-DENMARK:TWA 1 ppm (4 mg/m3);Skin
OEL-FINLAND:TWA 10 ppm (40 mg/m3);STEL 20 ppm (80 mg/m3);CAR
OEL-FRANCE:TWA 10 ppm (40 mg/m3)
OEL-GERMANY;Carcinogen
OEL-HUNGARY:STEL 4 mg/m3;Carcinogen
OEL-JAPAN:TWA 10 ppm (40 mg/m3)
OEL-THE NETHERLANDS:TWA 50 ppm (200 mg/m3)
OEL-THE PHILIPPINES:TWA 50 ppm (200 mg/m3)
OEL-RUSSIA:TWA 10 ppm
OEL-SWEDEN:TWA 1 ppm (4 mg/m3);STEL 5 ppm (20 mg/m3);Skin;CAR
OEL-SWITZERLAND:TWA 10 ppm (40 mg/m3);STEL 20 ppm (80 mg/m3)
OEL-TURKEY:TWA 50 ppm (200 mg/m3)
OEL-UNITED KINGDOM:TWA 10 ppm (40 mg/m3);STEL 15 ppm (60 mg/m3)
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 9/02/1997 Revision #4 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

Seton Resource Center

llow access to non-virtual folders: 0

APPENDIX C

Health and Safety Plan Acceptance and Training Acknowledgment

Instructions: This form is to be completed by each person that works on the Former Fresh & Clean Laundry Voluntary Investigation Work Plan site and returned to the Site Health and Safety Officer.

I have read and agree to abide by the contents of the SITE-SPECIFIC HEALTH AND SAFETY PLAN for work activities at the site. I have completed the training requirements specified in the plan. I am currently participating in a medical surveillance program that satisfies the requirements of CFR 1910.120.

Signature:	Date:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Return to:

Site Safety and Health Officer