CAVALIER
RAINBOWS END

DRAFT

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

Prepared for:

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1 INTRODUCTION

This document has been prepared for Dominic Cavalieri by Groundwater Sciences Corporation (GSC) in response to the requirements of the site's Order on Consent (Index # W3-0774-96-08). Mr. Cavalieri is the current owner of the site, which was formerly occupied by Cavalier Gage and Electronic Company (Cavalier) and is currently occupied by Rainbow's End Child Daycare Center (RE) (Site No. 3-14-092). The subject of this report is the remedial investigation (RI) of the site groundwater plume and a feasibility study (FS) of options regarding the plume.

1.1 Purpose and Scope

The purpose of this report is to present the results of investigations conducted voluntarily and in compliance with the Order on Consent. The investigation activities are intended to identify a continuing source, if one exists, and to provide data for an indoor air risk assessment. The feasibility study discusses options in the absence of a significant, continuing source.

1.2 Companion Document

The RI activities which are the subject of this report were performed according to the protocols specified in the RI/FS work plan dated March 18, 1994 and submitted previously as Appendix A to the Order on Consent. The voluntary investigation activities performed prior to the Order on Consent were conducted in accordance with generally accepted practice and NYSDEC guidance documents.

2 BACKGROUND

This section presents a description of site conditions, operations, and history.

2.1 Location and Site Description

The site is located in a rural part of central Dutchess County, approximately 12 miles northeast of the city of Poughkeepsie. As Figure 2-1 shows, the site lies adjacent to Hibernia Road, approximately one-half mile east of Salt Point. Wappinger Creek passes within one quarter of a mile of the site to the southeast and southwest. Topography in the area is hilly, with approximately 200 feet of relief.

Figure 2-2 shows that the site consists of an approximately 15-acre parcel bounded to the south by Hibernia Road, to the east by a property line near Wappinger Creek, to the west by a property line approximately coincident with a tributary to Wappinger Creek, and to the north by a property line which runs across the south slope of an undeveloped hill.

The site is currently a child day-care center and has two buildings. The southernmost, larger main building is used for classrooms and administrative offices. This one-story building consists of what was originally a domestic dwelling which has been added to periodically over time. The eastern side of the building is the original and oldest part of the building. The northwestern portion of the original building (north-central portion of the existing building) is underlain by a full basement. The remainder of the original building (eastern and southern portion of the existing building) is underlain by a crawl space. The non-rectangularly shaped western portion of the main building and the northern and western corners of the rectangular portion of the building were constructed circa 1980 and consist of both slab-on-grade and crawl space construction. The smaller, northern one-story building currently contains a nursery school classroom in the southern portion and an unheated shed in the northern portion. This slab-on-grade building is a converted garage/shed.

Public water and sewer service are not available to the site and so the site's water is provided by an on-site water supply well, and sanitary sewer needs are handled via a septic infiltration system. The site has had three water supply wells. The oldest and original water supply well (WSW-1) is located beneath

the newer northwestern portion of the main building (Figure 2. This portion of the building was constructed as slab-on-grade over WSW-1 and so the exact position of the well is unknown and the well is inaccessible. The depth and other construction details regarding this well are unknown. In 1980, a backup water supply well was drilled to the south of the main building. This well, WSW-2, was drilled by air rotary methods by Frank Sabarese, Inc. of Clintondale, New York. This well is a six-inch diameter well with an open-hole completion. The total depth is 515 feet and 50 feet of six-inch diameter steel casing with a drive shoe was set. The initial well yield was reportedly 2 gallons per minute (gpm). In 1992, a third water supply well, WSW-3, was drilled approximately 300 feet to the north of the main building. Bedrock was encountered at a depth of 3.5 feet and competent dolostone bedrock was encountered at a depth of 12 feet. The total depth is 500 feet and 40 feet of six-inch diameter steel casing was set in a 12-inch borehole. A drive shoe was used and the casing was grouted in place with bentonite/Portland grout. No discrete, high-yield water-bearing zones were encountered and the well yield was approximately 1 gpm at a depth of 180 feet, and 2 gpm at a depth of 320 feet. The final estimated yield for WSW-3 is approximately 2 gpm.

As Figure 2-3 shows, the site has two septic tanks. The easternmost tank ("1987 New Septic Tank" on Figure 2-3) is pre-formed concrete and has a capacity of 1,250 gallons. It was installed in 1987 and replaced an older tank of unknown age, construction, and capacity. The older, western tank ("Former Old Septic Tank" on Figure 2-3) has a capacity of 625 gallons and appears to be of bituminous-impregnated felt construction. The infiltration mechanism for the 1987 new septic tank was believed to be two large dry wells located in a generally northerly direction from the tank and under the parking lot. The location for the infiltration field of the former old septic tank is not known.

The septic system was reconfigured in 1994 such that most of the main building's wastes are conveyed to the new 1987 septic tank and are, in turn, conveyed to a 1994 new septic leach field located approximately 100 feet to the northwest of the main building (Figure 2-3).

2.2 Site Operations History

The 7.5-Minute Topographic Map for the site is dated 1963. This map shows the main building to be present as well as the pond to the west of the building. This pond appears to be a man-made feature. It is adjacent to, but not connected with, a perennial tributary to Wappinger Creek. The eastern side of the pond consists of steeply sloping land. This pond may be the result of a sand and gravel quarry operation conducted on the site prior to 1963.

Aerial photographs taken in 1959, 1966, 1967, 1970 and 1980 were reviewed, and copies were submitted to NYSDEC previously. The 1959 and 1967 photographs were obtained from the United States Department of Agriculture. The 1966, 1970 and 1980 photographs are from the Dutchess County Planning Commission. All of these photographs show the main site building with the same general configuration. This configuration is one which shows the building very similar to its current plan, except that the northern and western portions which were added circa 1980 are not shown. The site driveways and parking areas are similar to the current configuration, except that the main parking area has been expanded since the photographs were taken. All of the photographs show the building to the north of the main building, which was expanded northward by the addition of a shed after the 1980 photograph was taken. In the 1970 and 1980 photographs, trailers are shown to the southeast of the northern building. According to Cavalier employees familiar with operations in the 1970's and 1980's, these trailers were used for the storage of mechanical parts and no chemicals were stored in them. In the 1980 air photo, two features, which appear to be vertically oriented cylinders, are shown adjacent to the northwestern edge of the parking lot between the north building and the main building. These features were picnic tables with umbrellas used for employee breaks.

Based on interviews with Cavalier employees who are familiar with the site, the main building was originally constructed in the 1950's and was occupied as a residence from the 1950's to 1967. From 1967 to 1985, light manufacturing of electronic and electrical components was conducted within the building. This operation consisted primarily of electrical-mechanical/electronic component assembly.

The principal solvents used on site were halogenated solvents, particularly 1,1,1-trichloroethane (TCA) and 1,1,2-trichloro- 1,2,2-trifluoroethane (Freon 113). Attempts have been made to contact people with responsibility or knowledge of chemical use and operations at the site. The current president of Cavalier started with the company in 1978 as a purchasing clerk and then served as the purchasing manager. From the period 1978 through 1985, no TCA was purchased. The only TCA used on-site from that period forward would have been that which may have remained from previous purchases. From 1978 through 1985, the only solvent purchased was Freon 113. This solvent was purchased and used in small quantities in order to clean parts during soldering operations.

Waste solvents were placed in a drum for off-site disposal. Freon 113 has not been detected in site groundwater. These interviews did not reveal any incidents or practices which would have caused the site groundwater contamination.

For all but three years during this period (1967 - 1985), the site was operated by Cavalier. For a three-year period in the mid-1970's, the same types of site activities were conducted by a different operator (Micri Corporation).

The building was unoccupied and there were no operations on-site from 1985 to 1988. In 1988, the site was occupied by RE, and RE has occupied the site continuously from 1988 to the present. The only chemicals on-site during RE's tenure would be those associated with housekeeping and children's arts and crafts supplies.

Currently, well WSW-1 contains mechanical equipment associated with an inoperable jet pump and is inaccessible beneath a concrete slab floor of the main building. WSW-2 contains an electric submersible pump with associated discharge line and power cables and is available for water quality monitoring. WSW-3 contains an electric submersible pump and is the current water supply well for the site.

2.3 Geologic and Hydrogeologic Conceptual Model

As Figure 2-4 shows, the site is underlain by carbonate bedrock of the Wappinger Group. This group consists of several formations which, in aggregate, are up to approximately 3,000-feet thick and consist primarily of dolostone. The bedrock encountered during the installation of WSW-3 consisted primarily of medium to dark gray dolostone to slightly quartzose dolostone, with quartz and calcite-healed fractures (Appendix A). The specific yield of WSW-2 and WSW-3 are both approximately 0.005 gallons per foot. Based on these low specific yields, it can be inferred that the Wappinger Group beneath the site does not have well-developed primary or secondary porosity and has low hydraulic conductivity.

The soil thickness beneath the site is quite variable. Only three and a half feet of soil was encountered at WSW-3, yet the abandoned sand and gravel quarry operation suggests that a relatively thick section of soil was present beneath the western portion of the site. The thickness of site soil ranged from 10 to 16 feet in the four Geoprobe borings (Appendix A). Trenching associated with the connection of WSW-3 to the main building indicated that the soil between WSW-3 and the main building consists of up to four feet of sand with fine gravel. The four Geoprobe borings also encountered sand and gravel.

Cross section A-A′ (Figure 2-5)was constructed using site topography, available data from wells WSW-1, WSW-2 and WSW-3, and boring logs from Geoprobe borings GP-1 and GP-3. Approximate static groundwater elevations in wells WSW-2 and WSW-3, and the lack of saturated soil in borings GP-1 through GP-4, indicate that saturated soil is not present beneath the developed portion of the site.

In developing a conceptual site hydrogeologic model, it is assumed that both Wappinger Creek and the tributary to Wappinger Creek along the western property boundary are gaining streams and, therefore, are groundwater flow discharge boundaries. Based on general recharge/discharge relationships, groundwater is recharged in the topographically high areas such as those occupied by the site buildings and is discharged (in the vicinity of the site) to perennial streams (Wappinger Creek and tributaries). Groundwater is, therefore, presumed to flow from the vicinity of the site's buildings toward Wappinger Creek and the tributary to Wappinger Creek in a sub-basin bounded by the two perennial water bodies and the hill to the north of RE. That is, groundwater beneath the eastern portion of the site would be

expected to flow in a southerly direction toward Wappinger Creek, groundwater beneath the central portion of the site in a southwesterly direction toward Wappinger Creek and the lower reach of the tributary, and groundwater beneath the western portion of the site in a westerly direction toward the pond and tributary.

As noted previously, the site relies on wells for its water supply. Groundwater is withdrawn at a rate of approximately 1,100 gallons per day, which is roughly the usage associated with four single-family homes. These pumping stresses will induce groundwater flow toward the pumping center.

3 REMEDIAL INVESTIGATION ACTIVITIES AND RESULTS

In 1988, a drinking water sample was collected as part of the DCDOH approval process to develop the site as a day-care center. This sample was analyzed for inorganic parameters, pesticides, and herbicides. A VOC sample was collected in January 1992 to meet DCDOH routine water analyses requirements, and VOCs were detected. In an effort to address health and safety concerns as well as environmental impacts, a number of other drinking water VOC samples were collected on site and off site in 1992. Additional groundwater samples have been collected from on-site water supply wells and one downgradient off-site water supply well. Other assessment activities include the collection of six near-surface soil samples, samples of the liquid fraction of septic tanks, and building air samples; a soil gas survey; and subsurface soil sample collection using Geoprobe technology. Laboratory Form I reports not provided previously in Appendix A of the Order on Consent are provided in Appendix B.

3.1 1992 Groundwater Sampling Activities and Results

The 1988 sample was collected from the water supplied by WSW-1. This sample was analyzed for metals, other inorganic parameters, pesticides, and herbicides (Appendix A of the Order on Consent). No metals were detected above the New York State groundwater standard except zinc (0.55 mg/l). No pesticides or herbicides were detected.

As shown on Table 3-1, in 1992 on-site groundwater quality samples were collected on January 3, January 25, January 28, February 14, June 2, July 16 and November 16. In early 1992, the site water supply plumbing was configured such that groundwater produced by WSW-1 or WSW-2 was conveyed to a junction so that either well could provide the water supply for the building. (Table follow the text of this report). Valves and sampling ports were provided in the plumbing such that water produced by one well could not enter the other well and water produced by either well could be sampled discretely with an appropriate purge of piping.

The January 3 sample was collected by a local engineer (Smith) as part of routine sampling requested by the Dutchess County Department of Health (DCDOH). Sampling was attempted for both WSW-1 and WSW-2. Results of this sampling indicated that similar concentrations of TCA, 1,1-dichloroethane

(1,1-DCA), and 1,1-dichloroethylene (DCE) were found in both wells. A confirmation sample was collected on January 25 by Groundwater Sciences Corporation (GSC). This sample confirmed the presence of TCA, 1,1-DCA, and DCE in both WSW-1 and WSW-2. The concentrations, however, were significantly different from those reported in the January 3 sampling. The average of the WSW-1 and WSW-2 concentrations detected in the January 25 samples is approximately equal to the concentrations found in each of the WSW-1 and WSW-2 samples collected on January 3. It is believed that the January 3 sample was collected such that the water produced from these two wells was inadvertently mixed prior to the collection of each sample. Therefore, the results of the January 3 sampling are suspect. Prior to sampling on January 25, it was noted that WSW-2 was the active water supply well instead of WSW-1. This situation was corrected on January 25, when WSW-1 was returned to service and WSW-2 was shut off.

On January 28, one working day after WSW-1 was reactivated, DCDOH collected a sample from the kitchen tap. Since it was collected so soon after the change from WSW-2 to WSW-1 and the site's plumbing system contains a pressure tank and water softener with an approximate combined capacity of 250 gallons, it is believed that this sample is not representative of either water supply well, but rather a composite of the two. This sample detected TCA, 1,1-DCA, and DCE at concentrations greater than those believed to be representative of WSW-1 and lower than those believed to be representative of WSW-2. This sample also detected trichloroethylene (TCE) and 1,2-dichloroethane (1,2-DCA) at concentrations of less than 1 microgram per liter (µg/l).

A carbon treatment system was installed downstream from the pressure tank and water softener and operation began on February 14, 1992. As part of the start-up suite of samples, an untreated sample of the water produced by WSW-1 was collected. This sample contained TCA, 1,1-DCA, and DCE at concentrations similar to the January 25 sample collected by GSC.

In May, mechanical problems developed in WSW-1 and this well was no longer operable. WSW-2 then became the water supply source for the site. On June 2, 1992 an untreated water sample was collected as part of the ongoing water treatment system monitoring at the site. This sample indicated the presence

of TCA, 1,1-DCA, and DCE at concentrations similar to those detected in the January 25 sample. 1,2-DCA was also detected at a concentration of less than 1 µg/l.

The initial sample from WSW-3 was collected on July 16, 1992. This well was completed on July 15, 1992 and the water column was evacuated by drilling rig air development. The sample was collected the next day from the midpoint of the recovered water column by a stainless steel bailer. No VOCs were detected in this sample at a detection limit of 0.5 µg/l.

An off-site VOC sample was collected on February 14, 1992 by the DCDOH at 30 Hibernia Road. This sample did not contain VOCs at a detection limit of 0.5 µg/l.

3.2 Post-1992 Groundwater Sampling Activities and Results

As shown on Tables 3-2, 3-3 and 3-4 , wells WSW-2, WSW-3 and off-site location 30 Hibernia Road have been sampled many times since 1992.

VOCs continue to be detected in WSW-2. However, as shown on Figure 3-1, concentrations have decreased significantly since 1992 and appear to be essentially stable since early 1995.

Well WSW-3 was installed in July 1992 and is the current water supply well. In WSW-3, VOCs were not detected in 1992 and early 1993, but began to be detected later in 1993. The initial detection in 1993 appears to be part of a seasonal pattern where concentrations increase for a brief time around October (Figure 3-2). This pattern was repeated in 1995, 1996 and 1997. Samples were not collected in late 1994. Despite this seasonal spike in concentrations, VOCs decrease to values below NYSDEC groundwater standards and remain at these low levels throughout most of the year.

The off-site, downgradient well at 30 Hibernia Road continues to be free of VOCs.

3.3 Septic Tank Sampling Activities and Results

Samples were collected from the liquid fraction in each of the older septic tanks for VOC analyses. As shown on Table 3-5, the new 1987 septic tank was sampled on February 11, 1992 by the DCDOH and on April 7, 1992 by GSC. The February 11, 1992 result indicates the presence of TCA, 1,1-DCA, toluene, 1,2,4-trimethylbenzene (1,2,4-TMB), and 1,3,5-TMB. On February 11, 1992 the water supply treatment system had not yet been activated and so the TCA and 1,1-DCA present in the sample appear to reflect the water supply quality. Toluene, 1,2,4-TMB, and 1,3,5-TMB have not been detected in site groundwater. These compounds probably originated within the building and the use of any materials on-site which could possibly have contained these materials has been discontinued. The April 7, 1992 sample did not detect TCA or 1,1-DCA, detected a lower concentration of toluene, and detected 4-isopropyltoluene which coelutes with 1,2,4-TMB. The April 7, 1992 sample did not detect 1,3,5-TMB.

The former old septic tank was also sampled on April 7, 1992 by GSC. The only VOC detected in this sample was chloroform at a concentration near the detection limit.

3.4 Surficial Soil Sampling Activities and Results

Soil samples were collected and analyzed for Method 8010 VOCs plus Freon 113 in March and October 1992. Five samples were collected on March 19 from the outdoor recreation areas on-site. These samples were collected within a few inches of the surface with steam-cleaned trowels, were placed into laboratory-provided containers which were in turn placed into a laboratory-provided cooler with ice packs, and conveyed to the contract laboratory for analysis.

As shown on Table 3-6, of these five samples only one detected VOCs. Methylene chloride and chloroform were detected at low concentrations (2.1 µg/kg and 8.8 µg/kg, respectively) well below the soil cleanup guidelines in NYSDEC TAGM HWR-94-4046. Neither of these compounds have been found in site groundwater samples. On October 7, 1992, a sample was collected from the trench associated with the WSW-3 water supply conveyance pipe and was analyzed for VOCs. None were detected.

3.5 Soil Gas Survey Activities and Results

On November 24, 1996, a soil gas survey was conducted. It addressed the building doorways, the loading areas, the two historical septic tanks, the likely areas of the septic infiltration fields, and area of former on-site storage trailers. As shown on Figure 3-3, this soil gas survey is constructed on a 30 by 30-foot grid spacing. This survey was conducted according to protocols presented in the Order on Consent which are summarized below.

At each location, a decontaminated, three-foot-long hollow steel rod with slots near the driving point was driven into the soil. A calibrated photo-ionization detector (PID) organic vapor analyzer with a 11-11.7 eV lamp was mechanically attached to the discharge of a suction device, which was, in turn, connected to the top of each rod. A sample was drawn following an appropriate purge time and the organic vapor concentration was recorded. At two locations, a gas-tight syringe was collected and conveyed to the contract laboratory (EnviroTest Laboratories, Inc.) for gas chromatograph analysis of the sample in order to confirm the results of the PID. Since there were no detections in the PID soil gas survey, these two locations were selected on the basis of the former septic system configuration. The first sample for laboratory analysis was collected from beneath the paved parking lot at a location which is believed to be in the general vicinity of the former septic system exfiltration field. The second laboratory sample was collected from a location adjacent to the old septic tank.

Soil gas survey results are summarized on Table 3-7 and show that in virtually all cases, there were no detections and that no result was greater than the background value of 0.2 ppm. Samples for laboratory confirmation were collected on January 6, 1996 at the two locations nearest the septic tanks (D3 and D4). These samples were analyzed within 24 hours for Method 8010 and 8020 VOCs, and Freon 113. No VOCs were detected.

3.6 Subsurface Soil Sampling Activities and Results

A Geoprobe survey approved previously by the Department was performed on June 21, 1997. Boreholes were advanced at Locations GP-1 through GP-4 (Figures 2-2 and 3-3). Two soil samples were collected at each location (5 feet and 10 feet) and conveyed to EnviroTest Laboratories, Inc. for

analysis for Method 8010 VOCs plus Freon 113. Refusal at the top of bedrock was encountered in each Geoprobe location at depths ranging from 10 feet to 16 feet. Soil groundwater was not encountered and so was not sampled.

Soil sample results were received August 25, 1997 and were validated using CLP protocols. The results are summarized on Table 3-8, which indicates confirmed detections of TCA and TCE at concentrations which are approximately 100 times lower than NYSDEC TAGM HWR-94-4046 cleanup objectives.

3.7 Indoor Air Sampling Activities and Results

Environmental Standards, Inc. (ES) was retained by RE to provide indoor air sampling services at their facility located in Salt Point, New York. The sampling was performed by ES on July 20 and 21, 1996 to assist in qualitatively and quantitatively characterizing vapor intrusion into the facility basement and occupied areas from contaminated subsurface soils and groundwater. The resulting samples were analyzed at a certified laboratory for bromodichloromethane (BDCM), chloroform, 1,1-DCA, 1,1-DCE, and TCA. ES's report is presented as Appendix C and the discussion below is largely excerpted from that report.

The sampling program consisted of the collection of three 24-hour integrated air samples using SUMMA® canisters as the collection media. Samples were collected at three locations within the facility, one in the basement area near an existing well, one in what is referred to as the Infant's Room, and one in a playroom. Both of the upstairs rooms were located directly above the basement area. Based on information about the facility provided to ES, these areas seemed to represent the most likely areas of vapor intrusion to the facility. A 24-hour integrated sampling method was used to characterize chronic exposure conditions to the vapors most likely encountered at the facility. The sampling method was based on US EPA's Method TO-14, SUMMA® Passivated Canister Sampling with Gas Chromatography.

At the request of ES, representatives of RE closed all windows at the facility and turned off the air conditioning system on the evening before sampling began. This procedure minimized the air exchange rate within the facility, thereby ensuring maximum possible contaminant concentrations for sampling.

The sampling equipment consisted of three clean six-liter laboratory-certified SUMMA® canisters equipped with laboratory-certified clean flow controllers. The SUMMA® canisters were shipped to ES's office and transported to the site for sampling. Each SUMMA® canister arrived from the laboratory with an internal vacuum pressure of approximately -30 psia. The flow controllers were calibrated at the laboratory to provide flow to the SUMMA® canisters at a rate that allows a sample to be collected over a 24-hour period. Upon completion of sampling, the SUMMA® canister should be just less than full, such that a slight vacuum pressure remains in the canister. The vacuum provides a method to check against canisters that may leak during transport to the laboratory following sampling.

Representatives of ES arrived at the facility on the morning of Saturday, July 20 and proceeded to commence with the sampling effort. The SUMMA® canisters were fitted with the flow controllers on site and placed in position for sampling. The canister placed in the basement was positioned near the existing well and close to an open container of purge water that was assumed to have been removed from the water table via the well. The remaining two SUMMA® canisters were placed in the Infant Room and playroom, respectively, normally occupied by children and adult caregivers as part of the facility's day-care operations. The rooms were selected based on their locations approximately directly over the basement.

Once in place, the regulator valves on each of the canisters were turned to the open position, and sample collection was initiated. The ES representative then left the premises and returned 24 hours later to close the regulator valves and collect the canisters for shipment to the laboratory. Each sample was provided with a unique identifier and such information as sample start and stop times and the type of analysis to be performed. The information was attached to the sample prior to shipment to the laboratory. The laboratory analyzed the samples for BDCM, chloroform, 1,1-DCA, 1,1-DCE, and TCA

using gas chromatography. Only TCA was detected in the samples. A summary of the laboratory results is provided in Table 3-9.

4 RISK ASSESSMENT

4.1 Indoor Air

An assessment of inhalation exposure to indoor air concentrations of TCA was conducted by ES for day-care workers and children at the RE (Appendix C). For the adult day-care worker scenario, it was assumed that the worker was employed by the day-care facility for 25 years and would be on site for 250 days per year (five days per week for 50 weeks per year) and that exposure would occur via inhalation. The child exposure scenario was based on the assumptions that children might be exposed to indoor air up until school age (approximately until the child was six years old). Although it is unlikely that day-care workers or children at the facility would be exposed to indoor air concentrations for eight hours per day over 25 and 6 years, respectively, especially during the warmer eight months of the year, these conservative assumptions were used in the risk assessment to ensure protection of human health. Inhalation rates were obtained from the USEPA Exposure Factors Handbook for moderate activity, 2.5 m^3/hr for adult males and 2.0 m^3/hr for children. The inhalation intakes were calculated using the paradigm recommended by the USEPA, and the results were compared to inhalation RfDs , which are estimates of daily exposures that are not likely to produce human health impacts. The chronic inhalation RfD for TCA was used to estimate the hazard for the adult scenario, and a provisional subchronic RfD was used to estimate the hazard for children.

The Hazard Quotients for adults and children exposed to TCA via inhalation at RE were estimated to be 0.012 and 0.002, respectively. Hazard quotients that are less than 1 are not considered to be of concern for potential noncancer effects.

This conservative assessment demonstrates that concentrations of constituents in indoor air at the RE do not present unacceptable health impacts.

4.2 Other Media

VOCs detected in soil were present at concentrations which are well below the concentrations in TAGM HWR-94-4046. Groundwater concentrations are above the NYSDEC drinking water standard.

However, a treatment system removes VOCs to a no-detect level, and so there is no complete exposure pathway.

5 INTERIM REMEDIAL MEASURES

Interim remedial activities have been undertaken which help to mitigate historic impacts to the environment, to ensure that continuing or future releases do not occur, and that continue to monitor conditions to ensure that there are no unacceptable human health risks.

As discussed previously, TCA has not been purchased for use at this site since 1978. Any stocks which had been purchased prior to 1978 would not have been used after 1985 when Cavalier discontinued the use of this site. Since 1988, the site has been occupied by a day-care center, which does not use industrial chemicals. Site surveys have been performed to ensure that no supplies, such as cleaning products, are used on site which contain halogenated or aromatic VOCs.

Prior to the site being occupied by RE in 1988, both of the then existing septic systems were pumped out. The operator of the day-care center indicated that these tanks were pumped out annually thereafter, and so any material which may have been in the septic system as a result of operations by Cavalier would have been removed by the successive septic system cleanings.

When the groundwater problem was discovered in early 1992, RE immediately installed a carbon adsorption system in the basement of the building to ensure that drinking water quality met all applicable and appropriate standards. This system was approved by the DCDOH, is maintained regularly, and is sampled quarterly with results being sent to the DCDOH.

In mid-1992, a new water supply well was installed in an upgradient portion of the site to provide water which was free of VOCs, or at least contained VOCs at lower concentrations. This well, WSW-3, produces approximately 1,100 gallons per day of groundwater which, except for brief periods during the fall, does not contain VOCs or contains VOCs at concentrations lower than New York State drinking water standards.

A new septic system was installed in 1994. The major element of this new system is a new infiltration field located to the northwest of the building. In using this new septic system, the original septic infiltration fields used by Cavalier during its occupancy of the building were abandoned.

As noted above, the new water supply well pumps approximately 1,100 gallons per day, or roughly 400,000 gallons per year of groundwater. This water contains VOCs, which are removed by a carbon adsorption system and properly disposed of off site. Therefore, this system, in addition to providing a safe drinking water source for this facility, has the secondary benefit of capturing impacted groundwater, treating it to remove VOCs and returning it to the groundwater system via the septic infiltration field.

For the past few years, groundwater samples have been collected at least quarterly from the two remaining on-site wells and the off-site well located at 30 Hibernia Road. There are no other wells located in a cross gradient or downgradient direction in this groundwater subbasin.

6 FEASIBILITY STUDY

The purpose of an FS is to identify and evaluate remedial alternatives available for remediation. Additionally, the purpose of an FS is to identify the New York State Standards, Criteria and Guidelines (SCGs) for the site. The identified SCGs and the remedial response evaluation are then used to identify a remedial alternative(s) that will cost-effectively minimize the risk to public health and the environment, and provide for compliance with SCGs. The risk assessment conducted by ES (Section 4) concluded that there are no unacceptable hazards or risks to public health and the environment with regard to indoor air. Furthermore, the only contaminated media identified is bedrock groundwater. Thus, compliance with groundwater SCGs is the primary thrust of this FS.

6.1 Identification and Screening of Remedial Alternatives

In this subsection, a series of alternatives for remedial actions at the former Cavalier site is developed. As part of this process, the media of interest are identified, SCGs are discussed, a series of general response actions are then discussed, and a series of alternatives is formulated and described.

6.1.1 Identification of Media of Interest

Based on the RI (Section 2) and the risk assessment (Section 4), the medium of interest is bedrock groundwater.

6.1.2 Standards, Criteria and Guidelines (SCGs)

The New York State groundwater and drinking water standards are the appropriate SCGs for this site. The groundwater SCGs are as stringent, or more stringent than the NYS drinking water standards and USEPA MCLs. The SCG for the VOCs in site groundwater is 5 µg/l.

6.1.3 Description of Alternative and Preliminary Screening

In this subsection, three remedial alternatives are presented in a logical, progressive manner. These alternatives range from a continued monitoring alternative to one which requires source removal. Other less feasible alternatives are not presented for further consideration. Three alternatives are presented. The no-action alternative would result in a completed human exposure pathway, and so is not discussed below.

6.1.3.1 Alternative 1: Continued Drinking Water Treatment and Groundwater Monitoring

Under this alternative, drinking water treatment with GAC would continue and regular groundwater samples would be collected from the two site wells (WSW-2 and WSW-3) and from the off-site well at 30 Hibernia Road. No action would be taken with regard to source removal.

6.1.3.2 Alternative 2: Bedrock Groundwater Pump and Treat

Under this alternative, the site would be remediated by a series of bedrock groundwater recovery wells. These wells would have pumps and controls, and GAC would be used for treatment. Monitoring, as described for Alternative 1, would also be performed.

6.1.3.3 Alternative 3: Source Removal

This alternative involves the removal of shallow source material to mitigate groundwater contamination. Monitoring, as described for Alternative 1, would also be performed.

6.2 Detailed Analysis of Alternatives

The subsection presents the results of the detailed analyses of the site alternatives identified above.

6.2.1 Criteria Use for Evaluation

The detailed analysis of remedial site alternatives provides information to aid in the comparison of alternatives and the selection of the final recommended alternative. The analysis is performed following USEPA guidance for conducting feasibility studies under CERCLA NCP and NYSDEC selection of

Remedial Actions at Inactive Hazardous Waste Sites TAGM (May 1, 1990). The following nine criteria are used in the final analysis:

- Attainment of SCGs
- Overall protection of human health and the environment
- Reduction of mobility, toxicity, or volume
- Short-term effectiveness
- Long-term effectiveness and permanence
- Implementability and feasibility
- Cost-effectiveness

6.2.1.1 Compliance with SCGs

Evaluation of compliance with SCGs is one of the four FS report requirements.

6.2.1.2 Overall Protection of Human Health and the Environment

Remedial actions must be protective. A remedy is protective if it adequately eliminates, reduces or controls current and potential risks posed by each exposure pathway for VOCs at the site. In addition, implementation of a remedy cannot result in unacceptable short-term risks to, or cross-media effects on, human health and the environment.

6.2.1.3 Reduction of Mobility, Toxicity or Volume

This balancing evaluation criterion addresses the preference for remedial actions which employ treatment technologies that significantly and permanently reduce the mobility, toxicity or volume of the hazardous substances. Factors to be considered may include the nature of the treatment and the materials that it can effectively treat; the amount of hazardous substances to be treated; the degree of expected reduction in toxicity, mobility or volume; the degree of irreversibility; the type and quantity of residuals which will remain after treatment; and the degree to which the treatment reduces the hazards posed by principal threats at the site.

6.2.1.4 Short-term Effectiveness

This balancing criterion includes the short-term impacts of the alternatives (i.e., impacts of the implementation) on the neighboring community, construction workers involved in remedial actions, and the surrounding environment, including potential threats to human health and the environment associated with collection, handling, treatment, and transport of hazardous substances due to the implementation of the remedy.

6.2.1.5 Long-term Effectiveness and Permanence

The balancing criterion reflects NYSDEC's emphasis on implementing remedies that will provide protection of human health and the environment in the future, as well as in the near term. In evaluating alternatives for their long-term effectiveness and the degree of permanence that they can afford, the analysis should focus on the residual risks that will remain at the site after the completion of the remedial action.

6.2.1.6 Implementability and Technical Feasibility

Considerations with respect to the ability to implement the remedy include the technical and administrative feasibility of the alternatives, as well as the availability of the goods or services on which the viability of the alternative depends.

6.2.1.7 Cost

The costs of each alternative for the former Cavalier site have been developed and include both capital and operation and maintenance costs. Operation and maintenance costs have been calculated assuming a 30-year life and are expressed as the net present value of these costs. A discount rate of 5 percent is used for costs incurred in the future. Capital costs consist of direct (construction) and indirect (non-construction and overhead and profit) costs.

6.2.2 Evaluation of Alternatives

Three alternatives as discussed above are evaluated in detail in the sections below.

6.2.2.1 Alternative 1 Evaluation

Alternative 1 includes drinking water treatment and continuation of regular groundwater sampling. This alternative would allow for the attainment of New York State drinking water standards at the point of use, but not the New York State groundwater standards. However, this alternative is protective of human health since there is no complete exposure pathway, and, therefore, no associated risk to the medium of concern, which is bedrock groundwater. This alternative accomplishes limited reduction in the mobility of contaminants since some are captured by pumping the on-site water supply well at a rate of approximately 1,100 gallons per day. This pumping also reduces the volume of contaminated groundwater in the subsurface.

This alternative was implemented in 1992 and has proven to be effective in the short term and long term in providing safe drinking water and monitoring groundwater concentrations. This alternative was implemented approximately five years ago and continues to be feasible.

The annual operating and maintenance costs associated with this alternative are approximately $7,000 for monitoring, and $1,000 for treatment system operation and maintenance. These costs are likely to remain relatively constant (in 1997 dollars). Therefore, the cost of this alternative over 30 years discounted at 5 percent is $123,000.

6.2.2.2 Alternative 2 Evaluation

Alternative 2 includes the installation of additional bedrock wells and the application of pump-and-treat technology. The activities described for Alternative 1, i.e., drinking water treatment and continuation of regular groundwater sampling, would also be included in this alternative.

As with Alternative 1, this alternative would not achieve compliance with groundwater standards since the diffuse source in the bedrock (e.g., reverse diffusion of sequestered contaminants from the bedrock matrix into bedrock fractures) would still be present. This alternative would somewhat reduce the mobility and volume of contaminated groundwater but would not reduce the toxicity of contaminated groundwater in the subsurface.

This alternative would not be effective in the short term or the long term in remediating bedrock groundwater, due to the nature of subsurface conditions. Contaminated groundwater is found in the bedrock beneath the site. In all likelihood, this problem occurred prior to 1985 and so contaminants have had more than a decade to diffuse into the bedrock matrix. Reverse diffusion from the bedrock matrix into the bedrock fractures where the groundwater is mobile is controlled by the concentration gradient between the groundwater in the matrix and the groundwater in the fractures. Pumping is not likely to alter this gradient in a meaningful way. Therefore, pumping is not likely to materially enhance the natural attenuation process which is occurring at the site. Furthermore, the bedrock has a very low specific yield (i.e., 0.005 gallons per foot of well borehole) and so many wells would likely be necessary to attempt a pump-and-treat remedy.

As discussed above, pump-and-treat is not likely to speed the removal of contaminants from the bedrock groundwater system in a meaningful way, and the application of this technology to this site with low permeability bedrock would be problematic. Therefore, this technology is difficult to implement due to the tight bedrock and is not feasible due to limitations imposed by reverse diffusion of contaminants from groundwater in the bedrock matrix to groundwater in bedrock fractures. The futility of applying pump-and-treat technology to fractured bedrock systems is discussed in detail in the 1994 National Research Council publication entitled Alternatives for Ground Water Cleanup, which indicates that fractured bedrock groundwater systems are the least amenable to pump-and-treat remedies.

The capital cost for this alternative includes five wells at a cost of $6,000 each, and a control/treatment system costing $30,000. Annual operating and maintenance costs associated with this alternative are approximately $9,000, plus Alternative 1 costs for monitoring and drinking water system maintenance. These costs are likely to remain relatively constant in 1997 dollars. Therefore, the cost of Alternative 2 over 30 years (discounted at 5 percent) is $60,000 for capital, and $262,000 for operation and maintenance, or a total cost over 30 years of $322,000.

6.2.2.3 Alternative 3 Evaluation

Alternative 3 includes the removal of shallow source material. The activities described for Alternative 1, i.e., drinking water treatment and continuation of regular groundwater sampling, would also be included in this alternative.

No shallow source material has been identified at this site by historical use investigations, aerial photograph review, site inspections, septic system sampling, soil sampling or soil gas sampling. Therefore, shallow site media, including site soils, meet SCGs and are protective of human health and the environment. Since no shallow contaminated media have been identified, removal of contaminated media cannot be implemented.

6.2.2.4 Selected Remedy

The first alternative is protective of human health because of the new on-site water supply well with lower VOC concentrations, a Dutchess County Department of Health-administered drinking water treatment system, and continued detection monitoring of the only other water supply well in this groundwater subbasin. This alternative is also effective, implementable, feasible and cost-effective. Therefore, this is the selected remedy.

Since the first alternative is protective of human health, the second alternative provides no additional human health benefit. The second alternative would not materially enhance the effectiveness of the first alternative. The pump-and-treat alternative is also difficult to implement due to the low permeability of the bedrock, and is not feasible for source removal due to the likely rate-limiting mechanism of reverse diffusion of contaminants sequestered in the bedrock matrix. The second alternative is, therefore, technically impracticable.

No shallow contaminated media were identified in the remedial investigation. Therefore, Alternative 3 cannot the implemented and is not feasible.

Table 3-1
1992 Groundwater Detected VOC Sampling Results (µg/l)

Abandoned WSW-1 (On-site)

Date	Parameter					Collected by
	TCA	1,1-DCA	DCE	TCE	1,2-DCA	
1/3/92*	49	120	9	<0.5	<0.5	Smith
1/25/92	17	17	2.1	<1.0	<1.0	GSC
1/28/92**	65	130	12	0.5	0.9	DCDOH
2/14/92	16	34	0.5	<0.5	<0.5	GSC

* Believed to be inadvertent composite of WSW-1 and WSW-2.
** Likely a composite of WSW-1 and WSW-2 due to switching system from WSW-2 to WSW-1 one business day prior to sample collection.

WSW-2 (On-site)

Date	Parameter					Collected by
	TCA	1,1-DCA	DCE	TCE	1,2-DCA	
1/3/92*	45	109	3	<0.5	<0.5	Smith
1/25/92	130	200	18	<1.0	<1.0	GSC
6/2/92	110	220	13	<0.5	0.76	GSC

* Believed to be inadvertent composite of WSW-1 and WSW-2.

WSW-3 (On-site)

Date	Parameter					Collected by
	TCA	1,1-DCA	DCE	TCE	1,2-DCA	
7/16/92	<0.5	<0.5	<0.5	<0.5	<0.5	GSC
11/16/92	<0.5	<0.5	<0.5	<0.5	<0.5	GSC

Off-site (30 Hibernia Road)

Date	Parameter					Collected by
	TCA	1,1-DCA	DCE	TCE	1,2-DCA	
2/14/92	<0.5	<0.5	<0.5	<0.5	<0.5	DCDOH

Table 3-2
Former Water Supply Well to South of Building (WSW-2)

Date	Parameter				Collected By
	TCA	1,1-DCA	1,1-DCE	1,2-DCA	
01/25/92	130	200	18	<1.0	GSC
06/02/92	110	220	13	0.76	GSC
01/31/95	2.6	81	7.7	<0.5	GSC
03/27/95	3.8	67	8.0	<0.5	GSC
05/23/95	3.3	85	6.6	<0.5	GSC
07/27/95	2.7	72	6.6	<0.5	GSC
09/26/95	5.7	83	8.3	<0.5	GSC
11/28/95	3.3	62	9.2	<0.5	GSC
01/29/96**	3.6	86	12	<0.5	GSC
05/29/96	5.2	79	10	<0.5	GSC
07/25/96	4.5	87	7.6	<0.5	GSC
09/26/96**	6.7	96	11	<0.5	GSC
11/21/96	6.4	80	8.4	<0.5	GSC
1/30/97	7.0	100	8.6	<0.5	GSC
5/29/97***	4.6B	82	5.1	<0.5	GSC
7/10/97	5.0	81	6.8	<0.5	GSC
10/30/97	3.9	78	8.1	0.6	GSC
SCG	5.0	5	5.0	5.0	

* Vinyl chloride detected at 0.9 µg/l
** Freon® 12 1 µg/l, vinyl chloride 0.3 µg/l, methylene chloride 0.6 µg/l, TCE 0.6 µg/l (trip blank 0.5 µg/l), bromoform 0.8 µg/l.
*** TCA in trip blank at 0.6 µg/l.

Table 3-3 WSW-3 (On-Site) Current Water Supply Well to Northwest of Building					
Date	Parameter				Collected By
	TCA	1,1-DCA	1,1-DCE	1,2-DCA	
07/16/92	<0.5	<0.5	<0.5	<0.5	GSC
11/16/92	<0.5	<0.5	<0.5	<0.5	GSC
03/10/93	<0.5	<0.5	<0.5	<0.5	GSC
09/08/93	7.3	<0.5	<0.5	<0.5	Cavalier
10/08/93	37	<0.5	<0.5	<0.5	Cavalier
12/16/93	5.3	<0.5	<0.5	<0.5	Cavalier
04/06/94	1.6	<0.5	<0.5	<0.5	Cavalier
01/31/95	2.3	0.5	<0.5	<0.5	GSC
02/22/95	1.8	0.6	<0.5	<0.5	Cavalier
03/27/95	<0.5	<0.5	<0.5	<0.5	GSC
04/21/95	1.9	<0.5	<0.5	<0.5	Cavalier
05/23/95	<0.5	<0.5	<0.5	<0.5	GSC
06/07/95	<0.5	<0.5	<0.5	<0.5	Cavalier
07/27/95	4.5	0.5	<0.5	<0.5	GSC
09/01/95*	12	1.9	<0.5	<0.5	Cavalier
09/26/95	34	4.4	<0.5	<0.5	GSC
10/11/95	40	4.2	<0.5	<0.5	Cavalier
11/28/95	5.5	2.1	<0.5	<0.5	GSC
12/11/95	9.6	3.7	1.3	<0.5	Cavalier
01/29/96	3.6	2.0	<0.5	<0.5	GSC
02/28/96	2.2	1.3	<0.5	<0.5	Cavalier
04/30/96	1.6	1.1	<0.5	<0.5	Cavalier
05/29/96	1.4	1.2	<0.5	<0.5	GSC
06/28/96**	0.8	0.6	<0.5	<0.5	RE
07/25/96	1.8	1.0	<0.5	<0.5	GSC
09/26/96***	4.1	2.7	<0.5	<0.5	GSC
11/21/96	0.9	1.1	<0.5	<0.5	GSC
1/30/97	<0.5	<0.5	<0.5	<0.5	GSC
3/5/97	<0.5	<0.5	<0.5	<0.5	GSC
5/29/97****	0.8B	<0.5	<0.5	<0.5	GSC
7/10/97	0.6	0.6	<0.5	<0.5	GSC
10/30/97	68	7.7	0.8	<0.5	GSC
SCG	5.0	5.0	5.0	5.0	
SCG	5.0	5.0	5.0	5.0	

* Methylene chloride detected in sample at 0.7 µg/l and trip blank at 0.7 µg/l.
** Methylene chloride detected in sample at 1.0 µg/l.
*** Methylene chloride at 0.6 µg/l.
**** TCA in trip blank at 0.6 µg/l.

Table 3-4 Off-Site 30 Hibernia Road					
Date	Parameter				Collected By
	TCA	1,1-DCA	1,1-DCE	1,2-DCA	
02/14/92	<0.5	<0.5	<0.5	<0.5	DCDOH
01/31/95	<0.5	<0.5	<0.5	<0.5	GSC
03/27/95	<0.5	<0.5	<0.5	<0.5	GSC
05/23/95	<0.5	<0.5	<0.5	<0.5	GSC
07/27/95	<0.5	<0.5	<0.5	<0.5	GSC
09/26/95*	<0.5	<0.5	<0.5	<0.5	GSC
11/28/95	<0.5	<0.5	<0.5	<0.5	GSC
01/29/96	<0.5	<0.5	<0.5	<0.5	GSC
05/29/96**	<0.5	<0.5	<0.5	<0.5	GSC
07/25/96	<0.5	<0.5	<0.5	<0.5	GSC
09/26/96***	<0.5	<0.5	<0.5	<0.5	GSC
11/21/96	<0.5	<0 5	<0.5	<0.5	GSC
1/30/97	<0.5	<0.5	<0.5	<0.5	GSC
5/29/97	0.5B	<0.5	<0.5	<0.5	GSC
7/10/97	<0.5	<0.5	<0.5	<0.5	GSC
10/30/97	<0.5	<0.5	<0.5	<0.5	GSC
SCG	5.0	5.0	5.0	5.0	

* Methylene chloride detected in sample at 0.6 µg/l and trip blank at 0.6 µg/l.
** Methylene chloride detected in sample at 1.2 µg/l.
*** Methylene chloride at 0.6 µg/l.

Table 3-5
Septic Tank Liquid VOC Sampling Results (µg/l)

1987 New Tank (East Tank)

Date	Parameter						Collected by
	TCA	1,1-DCA	Toluene	1,2,4-TMB*	1,3,5-TMB	Chloroform	
2/11/92	5.0	24	340	54	4	<0.5	DCDOH
4/7/92	<2.5	<2.5	89	49	<2.5	<2.5	GSC

* Coelutes with 4-isopropyltoluene

Former Old Tank (West Tank)

Date	Parameter						Collected by
	TCA	1,1-DCA	Toluene	1,2,4-TMB*	1,3,5-TMB	Chloroform	
4/7/92	<2.5	<2.5	<2.5	<2.5	<2.5	2.7	GSC

* Coelutes with 4-isopropyltoluene

Table 3-6 Soil VOC Sampling Results (µg/kg)		
Location, Date	Parameter	
	Methylene Chloride	Chloroform
Play Yard Swings, 3/19/92 (f)	<1.4	<1.4
Stream Playground, 3/19/92 (D)	<1.2	<1.2
Sled Hill, 3/19/92 (C)	<1.2	<1.2
North Activity Area, 3/19/92 (B)	<1.2	<1.2
South Activity Area, 3/19/92 (A)	2.1	8.8
NYSDEC Soil Cleanup Objective	100	300

Table 3-7

Soil Gas Survey Results

Location (Map Grid)	Location (Field Designation)	Result* (ppm)	QA/QC Activity
B5	1	0.0-0.2	Calibration - OK
Background	Background	0.2	Ambient air
A3	2	0.0	Calibration after sample - OK
Background	Background	0.0	Ambient air
B1	3	0.0	Sensitivity check with uncapped solvent based marker - OK
B2	4	0.0	Calibration after sample - OK
C2	5	0.0	Sensitivity check with uncapped solvent based marker - OK
D2	6	0.0	Calibration after sample - OK
D1	7	0.0	Calibration - OK
E1	8	0.0	Calibration - OK
E2	9	0.0-0.2	Sensitivity check with uncapped solvent based marker - OK
F1	10	0.0	Sensitivity check with uncapped solvent based marker - OK
F2	11	0.0	Sensitivity check with uncapped solvent based marker - OK
F3	12	0.0	Sensitivity check with uncapped solvent based marker - OK
E3	13	0.0	Calibration - OK
D3	14	0.0	Sensitivity check with uncapped solvent based marker - OK
D4	15	0.0	Sensitivity check with uncapped solvent based marker - OK
E4	16	0.0	Sensitivity check with uncapped solvent based marker - OK
F4	17	0.0-0.2	Sensitivity check with uncapped solvent based marker - OK
F4 Replicate	17 Replicate	0.0-0.2	Sensitivity check with uncapped solvent based marker - OK
G4	18	0.0	Sensitivity check with uncapped solvent based marker - OK
G5	19	0.0	Calibration - OK
F5	20	0.0	Sensitivity check with uncapped solvent based marker - OK
E5	21	0.0	Sensitivity check with uncapped solvent based marker - OK
D5	22	0.0	Sensitivity check with uncapped solvent based marker - OK
E6	23	0.0	Sensitivity check with uncapped solvent based marker - OK
F6	24	0.0	Calibration - OK
QA/QC 1	QA/QC 1	62	Tedlar bag filled with 67ppm span gas before first sample collected and analyzed after last sample collected

* Using H nu Model 101 with 11.7eV lamp

Table 3-8

Geoprobe Soil Sampling Detections (ug/kg)

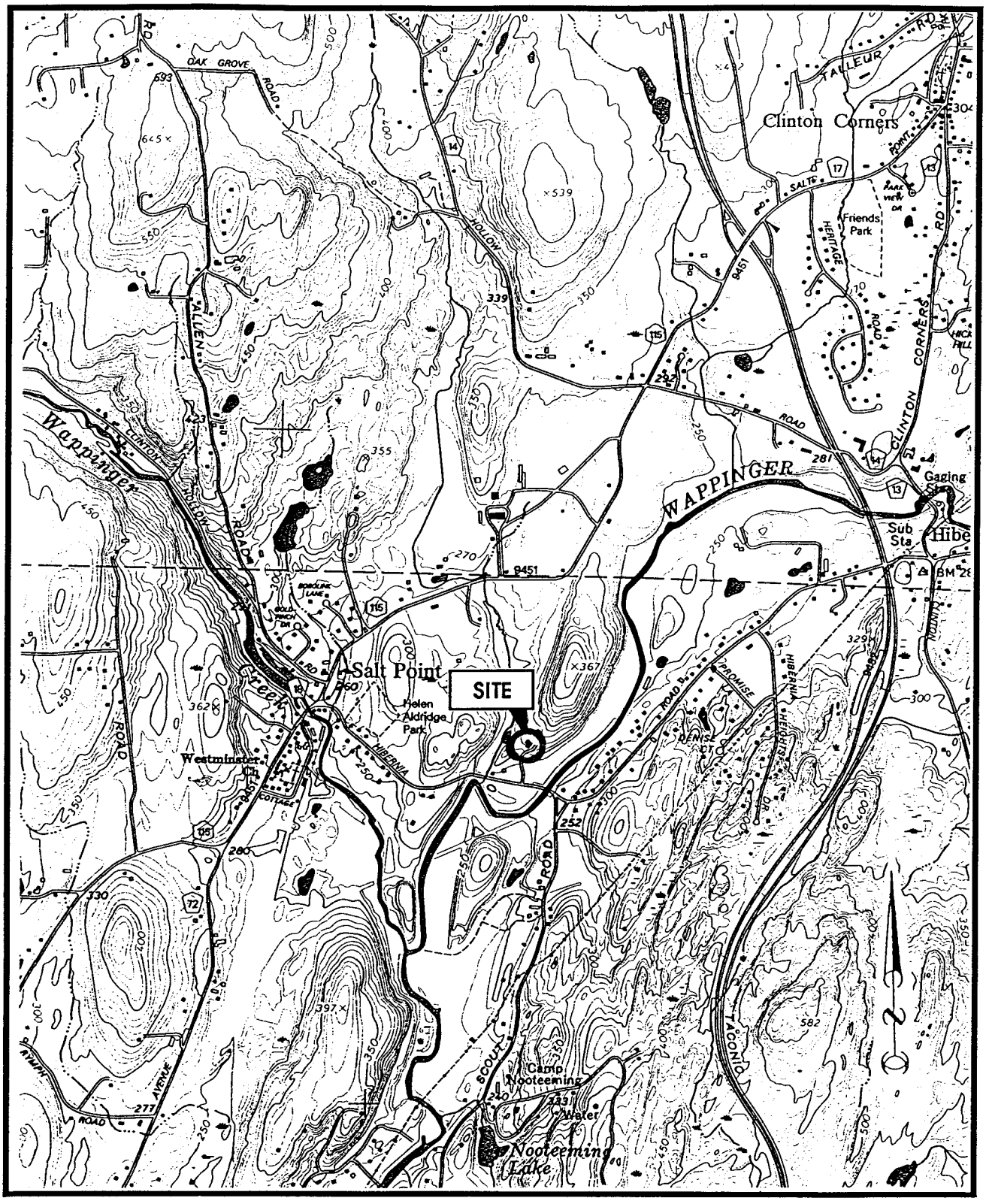
All Analyses for VOCs by Method 8010 plus Freon 113

Location	111-Trichloroethane	Trichloroethene	Tetrachloroethene	Methylene Chloride
GP-1, 5 feet	0.7 J			
GP-1, 10 feet	0.8 J			
GP-2, 5 feet	1.0			
GP-2, 10 feet	0.5 J			
GP-3, 5 feet	0.8 J			
GP-3, 5 feet (lab re-run)	0.9 J			
GP-3, 10 feet	0.8 J	0.6 J		
GP-3, 10 feet (lab re-run)	1.0 J	1.3	0.6 J	
GP-4, 5 feet	0.8 J			
GP-4, 10 feet	0.7 J	0.7 J		
Trip Blank				1.4
Equipment Rinse Blank				0.7 J
NYSDEC Cleanup Level*	800	700	1,400	

J - Estimated value below detection limit

* NYSDEC TAGM: HWR-94-4046

Table 3 - 9 Indoor Air Analytic Results (ppbv)					
	Chloroform	**TCA**	**1,1-DCE**	**1,1-DCA**	**BDCM**
Basement	ND @ 0.84	9.6	ND @ 0.84	ND @ 0.84	ND @ 3.4
Infant Room	ND 0.81	ND @0.81	ND @ 0.81	ND @ 0.81	NS @ 3.2
Front Room	ND @ 0.96	ND @ 0.96	ND @ 0.96	ND @ 0.96	ND @ 3.8
NS = Not sampled ND = Not detected					



Scale: 1 inch = 2,000 feet

Figure 2-1

Site Location Map
A Portion of the U.S.G.S.
7 1/2 Minute Salt Point Quadrangle

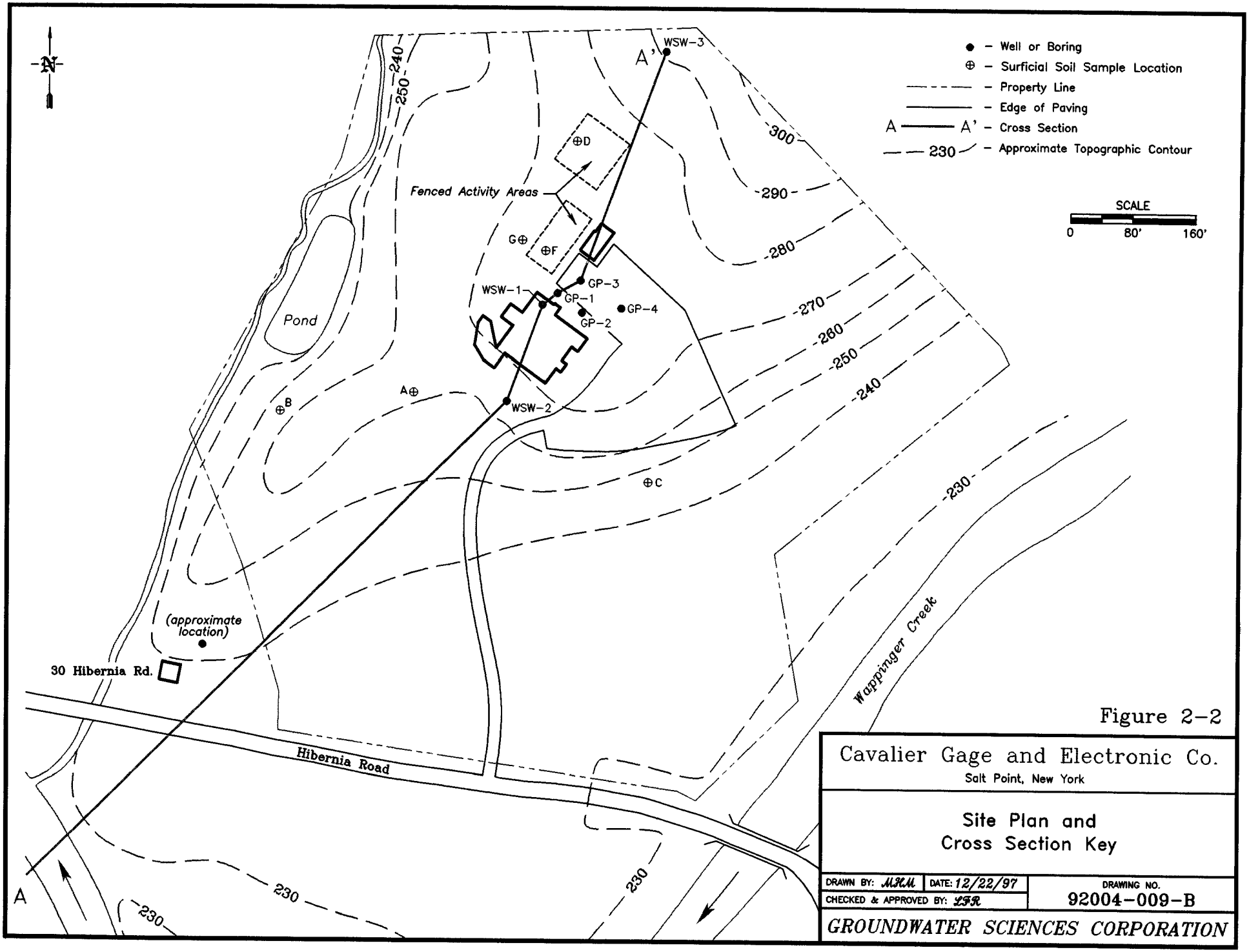


Figure 2-2

Cavalier Gage and Electronic Co.
Salt Point, New York

Site Plan and
Cross Section Key

DRAWN BY: MHM	DATE: 12/22/97	DRAWING NO.
CHECKED & APPROVED BY: LFR		92004-009-B

GROUNDWATER SCIENCES CORPORATION

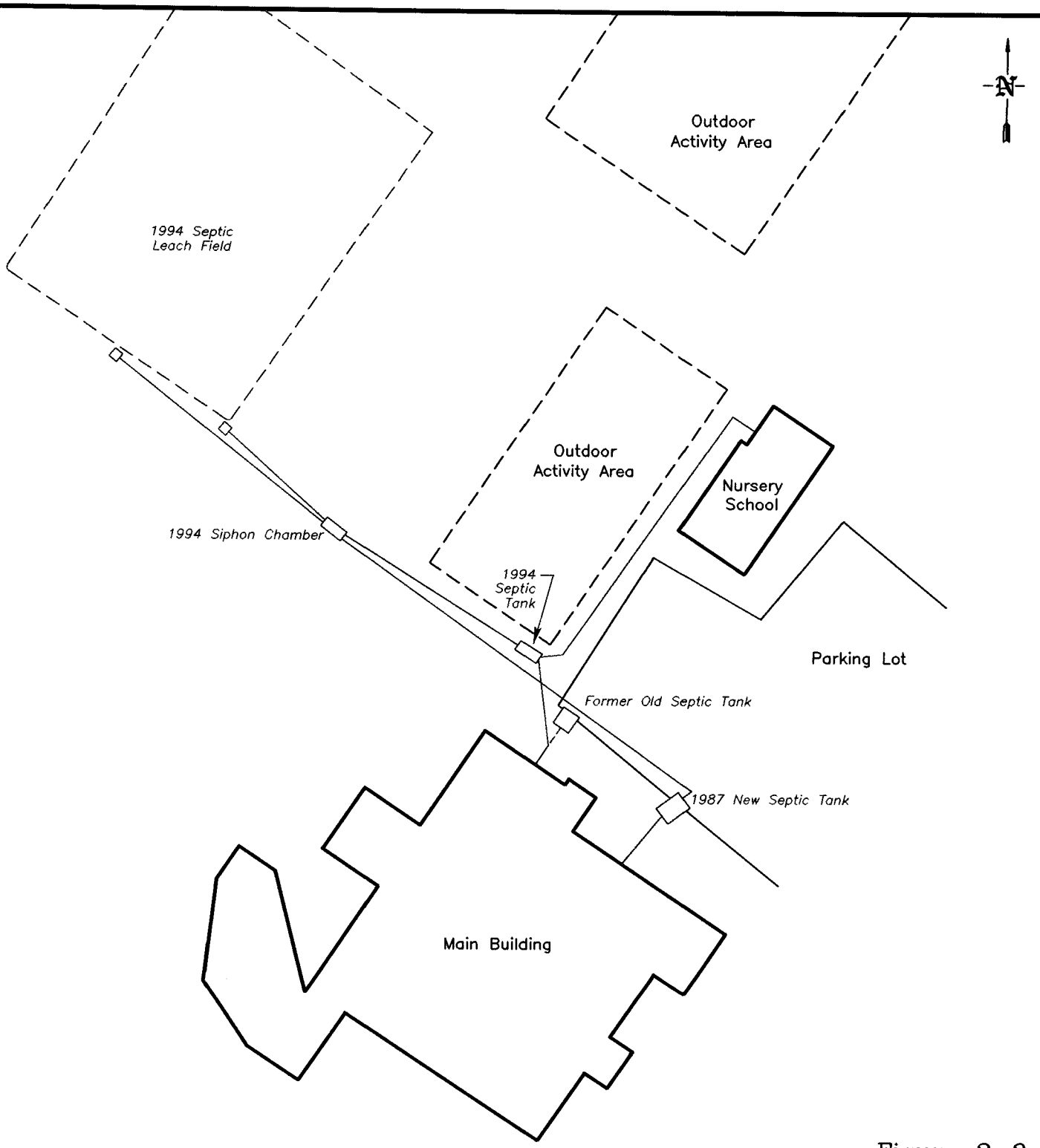


Figure 2-3

Cavalier Gage and Electronic Co.
Salt Point, New York

Site Plan Detail

DRAWN BY: MKM	DATE: 12/22/97	DRAWING NO.
CHECKED & APPROVED BY: LFR		92004-005-C

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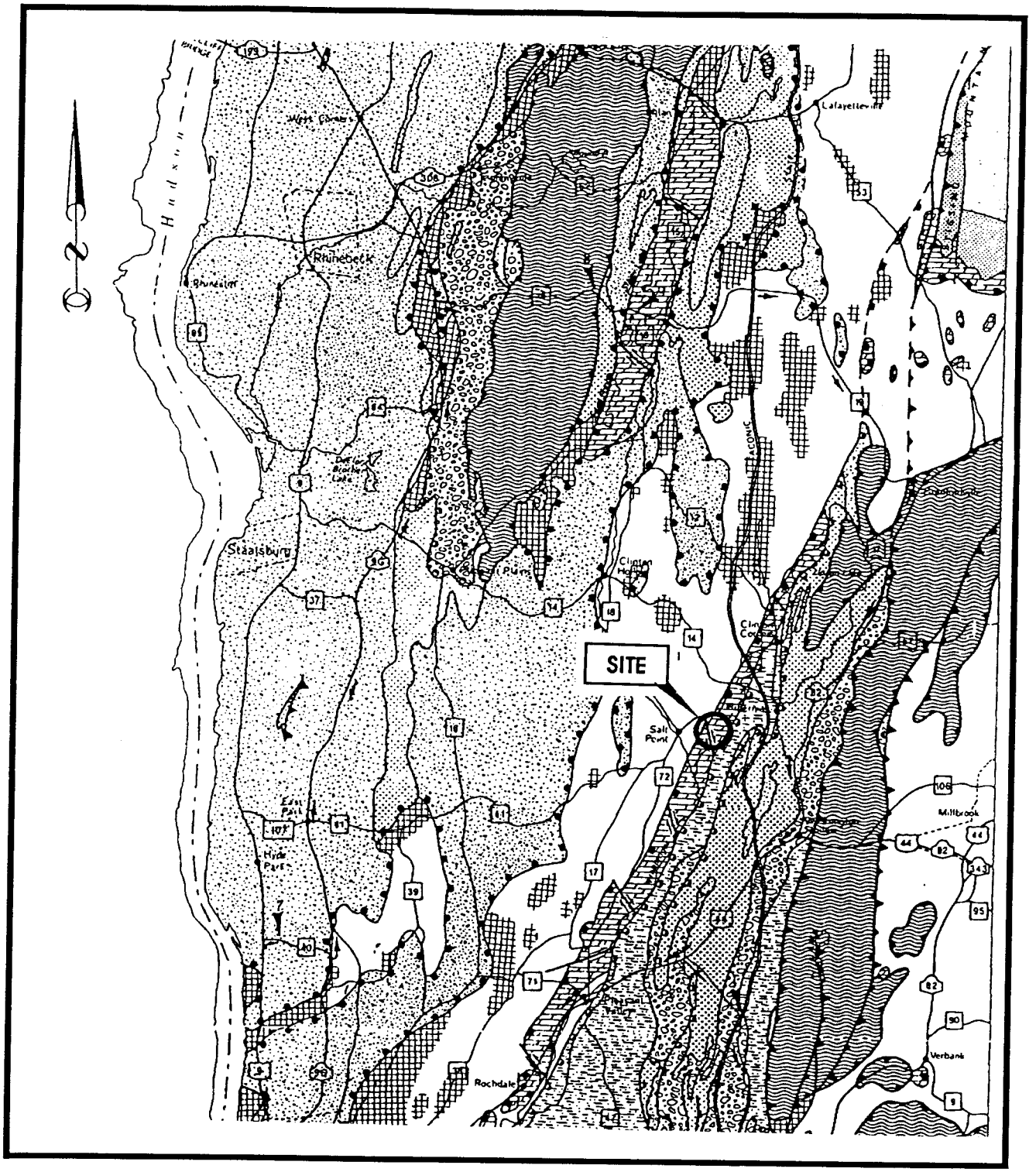

1 inch equals approximately 3 miles

Figure 4a
Geologic Map

Fisher, D.W. and Warthin, A.S. Jr.,
taken from Field Guide Book,
NYSGA 48th Annual Meeting,
October 15-17, 1976

Map cartography by John B. Skiba, May 1976

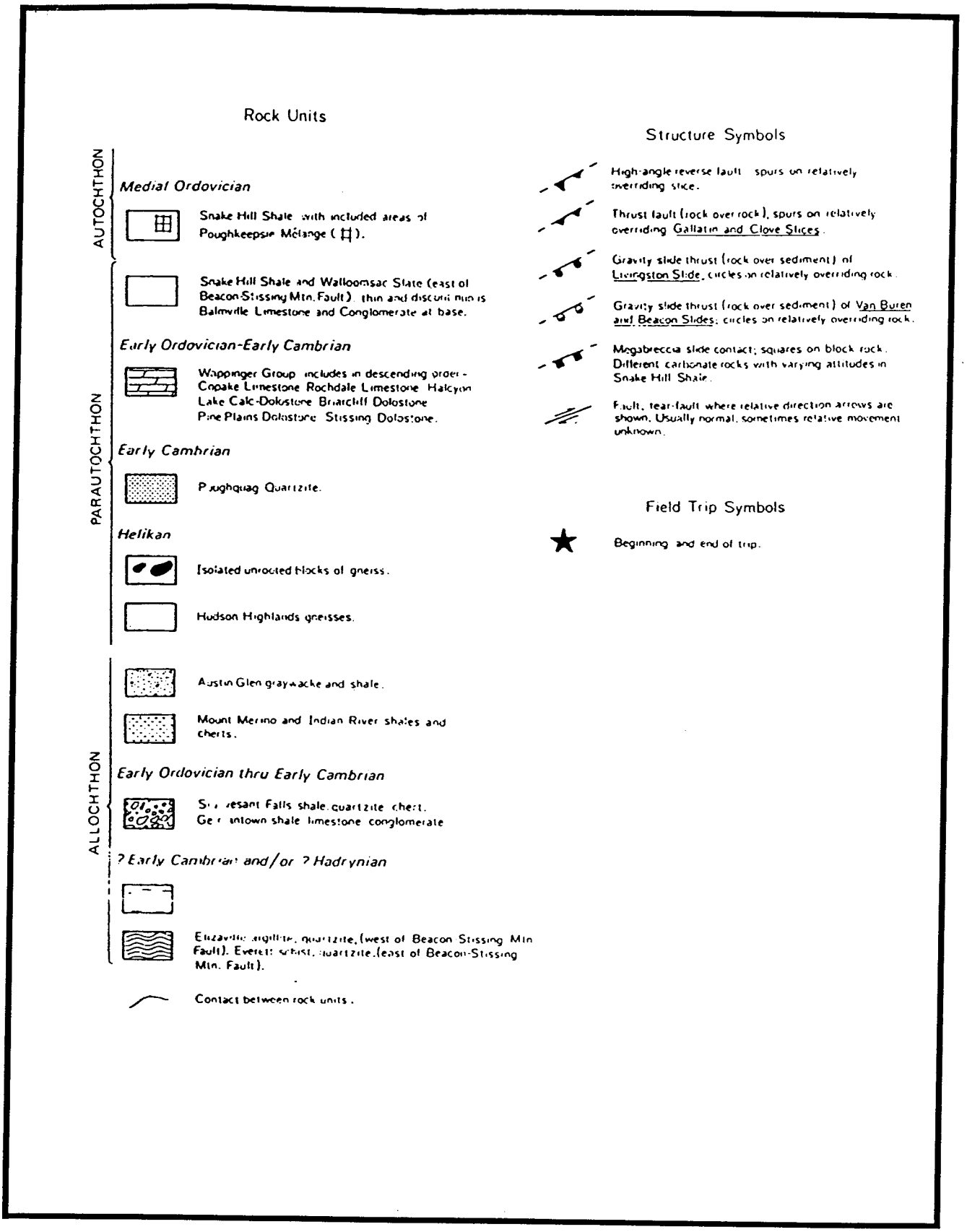

Figure 4b
Key to Geologic Map

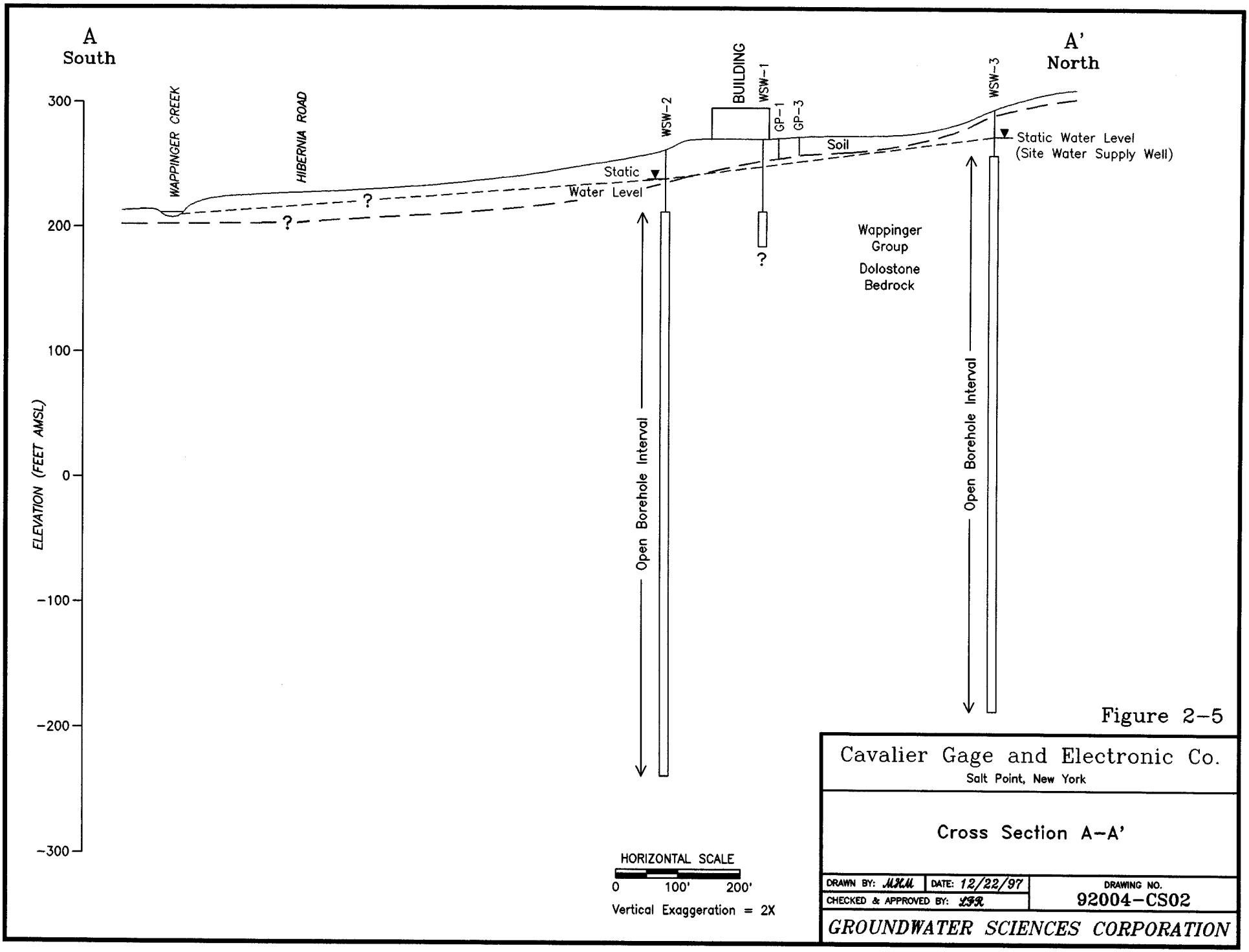

Figure 2-5

Cavalier Gage and Electronic Co.
Salt Point, New York

Cross Section A-A'

DRAWN BY: MHM	DATE: 12/22/97	DRAWING NO.
CHECKED & APPROVED BY: LFR		92004-CS02

GROUNDWATER SCIENCES CORPORATION

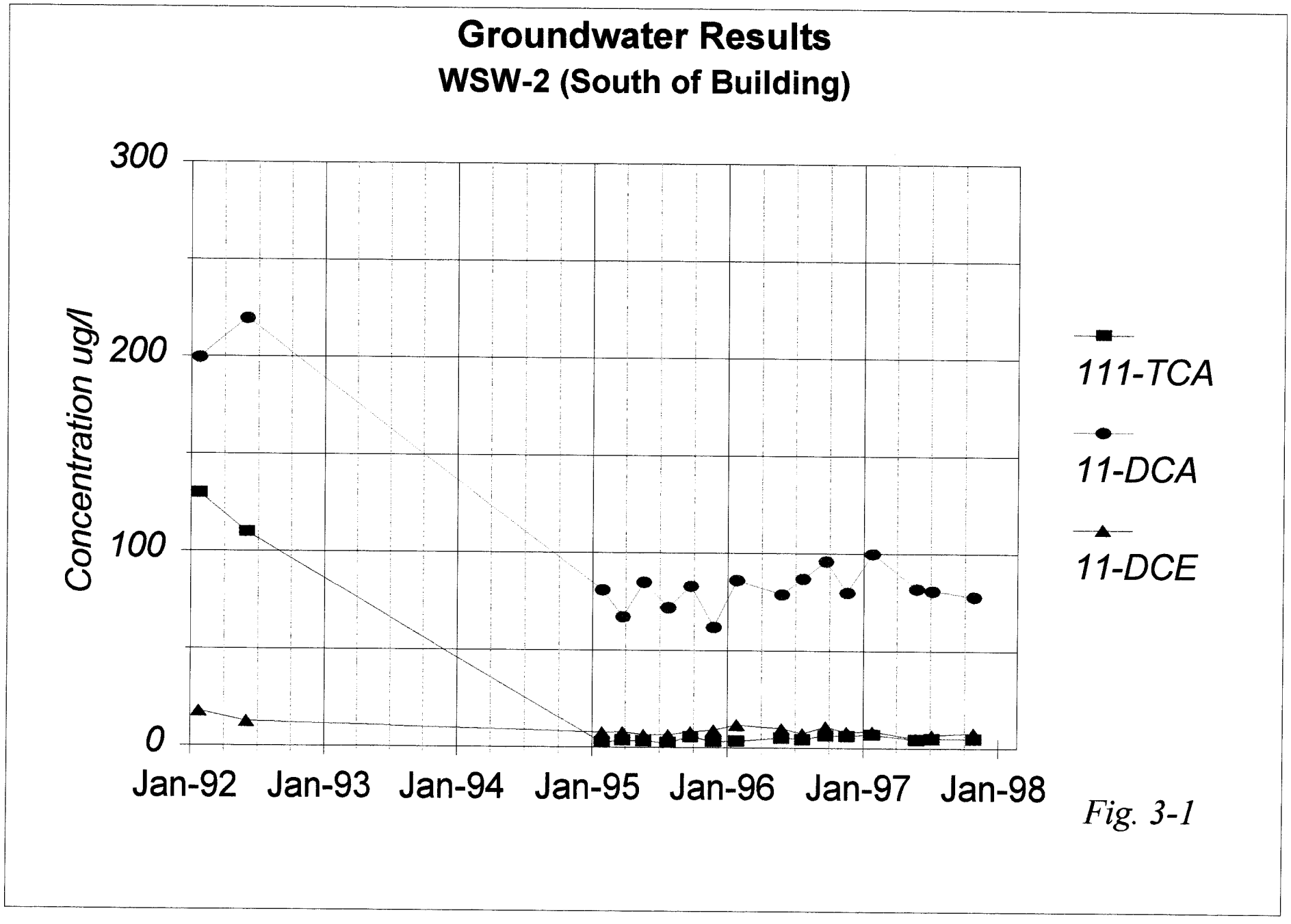
Groundwater Results
WSW-2 (South of Building)
300
200
100
0
Concentration ug/l
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
111-TCA
11-DCA
11-DCE

Fig. 3-1

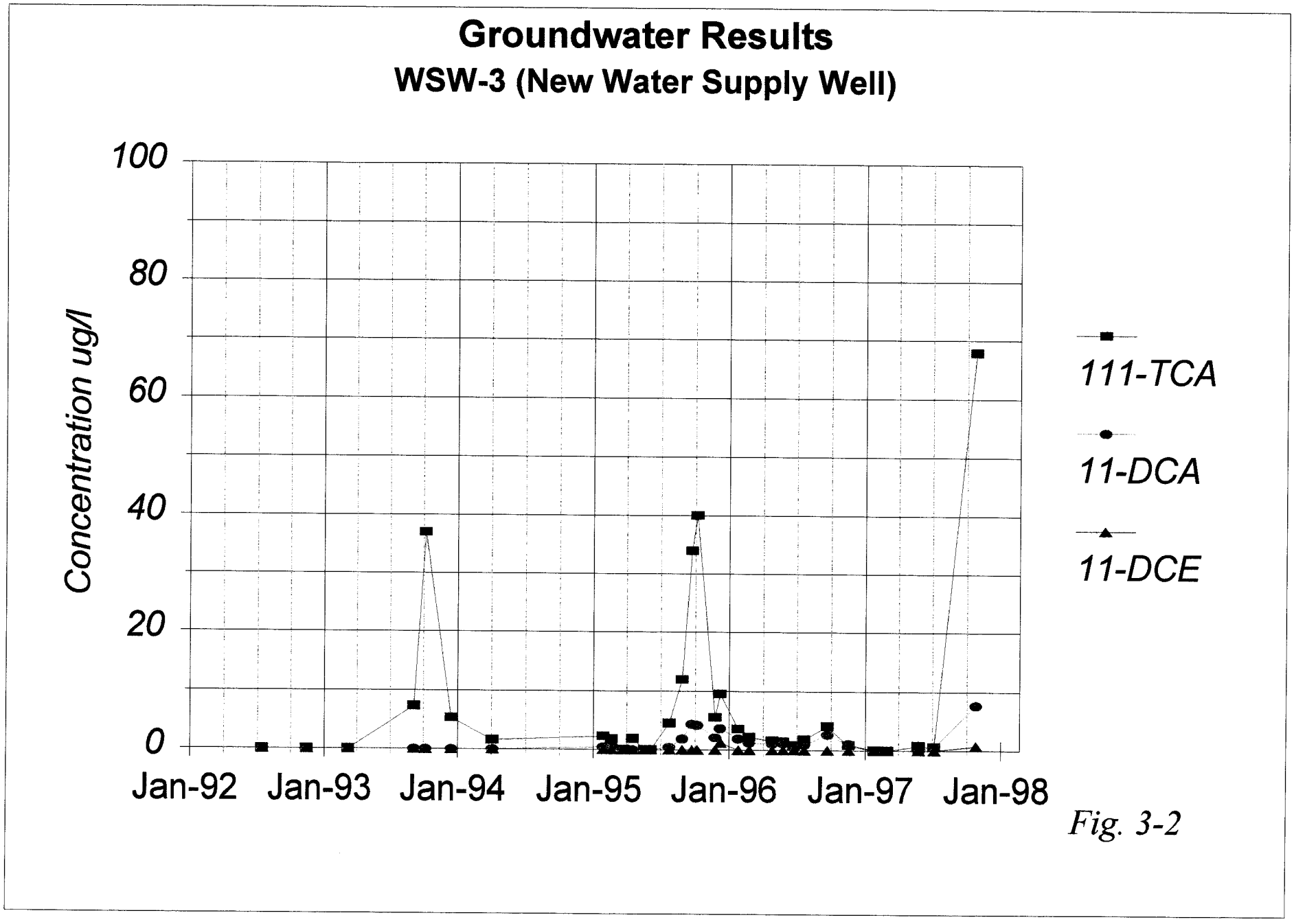
Groundwater Results
WSW-3 (New Water Supply Well)
Concentration ug/l
100
80
60
40
20
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
111-TCA
11-DCA
11-DCE

Fig. 3-2

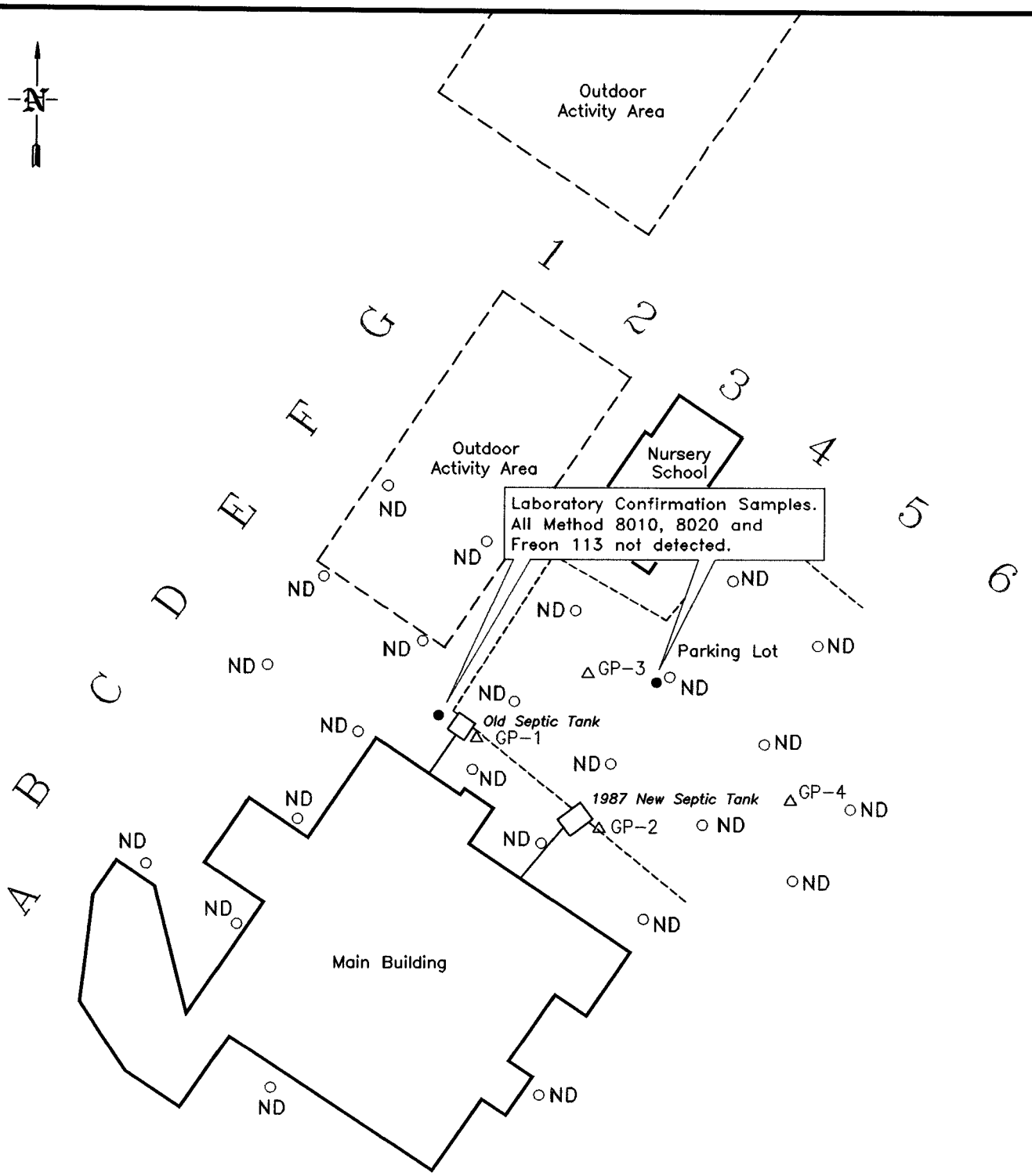

Figure 3–3

○ – Field PID Soil Gas Sampling Location
△ – Geoprobe Location
ND – Not Detected in PID Survey
● – Laboratory Soil Gas Sample Location

Approximate Scale
0 20' 40'

Cavalier Gage and Electronic Co.
Salt Point, New York

Soil Gas Survey Results

DRAWN BY: MJM	DATE: 12/22/97	DRAWING NO. 92004-011-B
CHECKED & APPROVED BY: LJR		

GROUNDWATER SCIENCES CORPORATION

Appendix A

Well Logs, Geoprobe Logs

ROCK CLASSIFICATION SHEET

WSW-3

Project: Rainbow's End | Job No. 9206A
Site Area: Rainbow's End Child development, Nibernia Road
Contractor: Groundwater Services | Driller: T.J. Philipoar
Classified by: T. McCollum | Date: 7/9/92
Sheet 1 of 2
Drill Hole No. RE #3
Elevation
Coordinates N/S ~N 45°E E/W

Depth	Drilling History: Run No.	Core Rec.	Remarks	Well Constr.	Geologic Characteristics: Graphic Log	Description	Engineering Characteristics: Description	Discont.	Groundwater: Static Water Level Time & Date
3'6"			Over burden/ soil	6" steel protective casing (Concrete Cement Grout to surface)		lt.-med. Red/Brown Silt, little clay, trace vf sand and f-m sr gravel. trace little organics and mottling	moist - held nbloming when tested		using an 8" hammer w/a 10" bit (~12" hole)
5.0' 6'2"	—		Competant Dolostone *			DKgr-blk, Dolostone, little blk. shale interlayering, trace white Qtz., little iron staining.	Dry, Hard Drilling (using enough water to cut down dust)	—	
8.0'			Fractured/Weathered Zone			iron staining with light tan weathered Dolostone, fr. wh. Qtz.	Dry,		
10.0'			Competant Dolostone			DK gr-blk Dolostone, some white-clear Quartz, trace iron staining	Dry		
12.0'			Fractured/Weathered zone			Iron staining with light tan-brown weathered Dolostone,	Dry	—	
15.0	—		Competant Dolostone/ Quartzose			med. gr. Dolostone little clear-white Qtz, trace dk gray shale	Dry		
19'						13'.0 med.-lt. gray f-m grained Quartzose layering trace dk gray shale.		—	
20.0	—		Competant Quartzose/Dolostone			15'.0 Clear-white Quartz veins/filled fract. prominent			
25.0	—					19'.0' Increase lt.-med gray f. grained Quartzose Dolostone, also increase in Milky White Quartz thinly laminated with black shale.	Dry	—	
30.0						22' Grades to Med. Gr. Dolostone lt. Gray Quartzy		—	
						27' trace pyrite			
						29' trace little Gray blk shale.	Picked up a little water (enough to make slurpy cuttings)		

* Note: Possibly either Pine Plains or Briarcliff member of the Wappingers Group

ROCK CLASSIFICATION SHEET

Project Rainbows End Job No. 92004 Sheet 2 of 2
Site Area Hibernia Road Drill Hole No. RE #3
Contractor Groundwater Sciences Driller T.J. Philipbar Classified by T. McCollum Date 7/9/92 Elevation
Coordinates N/S N 45° E
E/W

Depth	Drilling History: Run No.	Core Rec.	Remarks	Well Constr.	Geologic Characteristics: Graphic Log	Description	Engineering Characteristics: Description	Discont.	Groundwater: Static Water Level Time & Date
33.0			Competant Dolostone	12" borehole; 6" steel casing		Same as above	wet, still have a little water present		
35.0'	—		Competant Dolostone			33' Lt-dk gr-blk dolostone trace wh. Qtz. & blk shale	wet.	—	
40.0	—			6" Drive Shoe w/ Cement Plug				—	
	—		Installed 40' of 6" threaded steel casing, used a cement plugged drive shoe and grouted the annular space w/a cement / bentonite mixture (let set for +24 hrs before continuing drilling				—	—	
	—						—	—	
	—						—	—	

ROCK CLA ICATION SHEET

Project: Rambo[illegible] Int Child Dill Job No.: 9?00[illegible]
Site Area: Hibernia Rd.
Contractor: T.J. Philipbar Driller: Mike / Jim
Classified by: TLA Date: 7/13

Sheet: 2 of
Drill Hole No.: RE #3
Elevation:
Coordinates: N/S N45°E
E/W:

	Drilling History				Geologic Characteristics		Engineering Characteristics		Groundwater
Depth	Run No.	Core Rec.	Remarks	Well Constr.	Graphic Log	Description	Description	Discont.	Static Water Level Time & Date
180'			Had to move in T. Andrews Rig. Broke a Compressor Coupling at ~12:35 on Sat. down 160'	6" bit		Med-Lt Gray Dolostone trace Qtz (White, Gray) in small scale veining	water present.		~16 GPM down 160' from Sat.
207'						DkGr/Black Dolostone trace Wh. Qtz veining trace Pyrite, trace black shale			
210'						Med Gray Dolostone [illegible] trace White Qtz [illegible]			
216'						Blk DGr. [illegible] trace Bk Shale [illegible] veining			
220'			Not Logged 220' - 320			From [illegible]'s Sampled ~every 10-15' No drastic variation of rock change. Dolostone / Quartzose ratio varied	No Increase in Water		~2GPM down 320'. Ran out of water to continue drilling

ROCK CLASSIFICATION SHEET

Project: Fairbanks End | Job No.: G200
Site Area: Hibernia Rd / Pleasant Valley
Contractor: GSC | Driller: T.J. Thompson | Classified by: [illegible] | Date: [illegible]

Sheet 4 of ___
Drill Hole No. PT #3
Elevation ___
Coordinates N/S ___ E/W ___

Depth	Run No. (Drilling History)	Core Rec.	Remarks	Well Constr.	Graphic Log (Geologic Characteristics)	Description	Description (Engineering Characteristics)	Discont.	Static Water Level Time & Date (Groundwater)
320'						DK-M Gray slightly Quartzose Dolostone, trace white Qtz veining			No Increase in Water
350' / 360'	—					Increase Quartzose content	Concoidal fracturing evident.		
380'						Color change to H Gray			
420'	—					Color change dk Gr BK small grained dolostone trace white Quartz	—		
425'						SAA, trace Gray Quartz			
470'	—					Increase in Quartzose ratio. Also increase in clear - white Quartz veining.	—		
490'						trace Pyrite, Increase in white Quartz & BK Shale			
500' EOB	—		Stopped at 500'			DK gray - med Gray little white Qtz, little Quartz - : Black — flecking Pattern trace pyrite 495'	—		35 sec for one gal.

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-1 Site Rainbows End

Manhole/Standpipe/(Other) Geoprobe

Physical Well/Location Condition Edge of grass near pavement

* PURGING

Date _____ Personnel _____ Air Temp _____ Skies _____ Wnd Spd/Drctn _____

TD _____ SWL _____ TD - SWL _____ Required Purge Volume (from table) _____

Method _____ Start _____ Stop _____ Volume/Minutes _____

WL end of purge (WLEP) _____

Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] = _____

* SAMPLING

Sample ID: CGP1Ø56Ø621S GW/Surface/(Other) Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clear Wnd Spd/Drctn None

~~WL Recovery (WL/time):~~ ____/____; ____/____; ____/____; ____/____

Sampled Depth Interval: 5 to 5' feet Sampling Method Grab Start _____ Stop _____

Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Envirotest Turnaround Time Normal No. of Containers 1

Date Shipped 6/23/97 Method Shipped Drop off

Analyses Requested 8010 VOCs + Freon 113 by ASPB

* ADDITIONAL NOTES:

FIELD OPERATIONS REPORT

Project No. 92004

Total Depth 16'
Depth to S.S. Refusal 16'
Depth to Competent Bedrock _____
SWL (Date) _____
Screened Interval _____
Hole Diameter _____
Monitoring Tube _____
Elev., Ground Surface _____

Well No. GP-1
Driller Frank Ware
Logged by DRM
Drilling Began 6/21/97
Drilling Completed 6/21/97
Well Const. Completed _____
Development Completed _____
Elev., T.O.C. _____

Depth	Blow Count	PID (ppm)	Recovery in.	Sample No./ Run No.	SAMPLE DESCRIPTION (USCS), Grn. Size, Color, Shape, texture, moistness, etc.	% Grn. Size C	S	Sd	Gr	Other Notes	Graphic Lith.	Well Constr.	Depth
5		0			med-crs gd. Brown clayey sand w/ gravel, cobbles, & dolomite chips, dry								
10		0			: as above								
15		0			: as above								
					Total depth 16'								
20					DRY - No water sample taken								

GROUNDWATER SCIENCES CORPORATION

FIELD OPERATIONS REPORT

Project No. 92604

Total Depth 15'
Depth to S.S. Refusal 15'
Depth to Competent Bedrock
SWL (Date)
Screened Interval
Hole Diameter
Monitoring Tube
Elev., Ground Surface

Well No. GP-2
Driller Frank Ware
Logged by DRM
Drilling Began 6/21/97
Drilling Completed 6/21/97
Well Const. Completed
Development Completed
Elev., T.O.C.

Depth	Blow Count	PID (ppm)	Recovery in.	Sample No./ Run No.	SAMPLE DESCRIPTION (USCS), Grn. Size, Color, Shape, texture, moistness, etc.	% Grn. Size C	S	Sd	Gr	Other Notes	Graphic Lith.	Well Constr.	Depth
5		0			Cr. brown sand w/ gravel, cobbles & occ. dolomite fragments, dry								5
10		0			: as above, slightly moist at 13'								10
15		0			: as above Total depth 15'								15
20													20

GROUNDWATER SCIENCES CORPORATION

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-1 Site Rainbows End
Manhole/Standpipe/(Other) Geoprobe
Physical Well/Location Condition Pavement

* PURGING

Date NA Personnel ~~Air Temp~~ ~~Skies~~ ~~Wnd Spd/Drctn~~
TD ~~SWL~~ ~~TD - SWL~~ ~~Required Purge Volume (from table)~~
Method ~~Start~~ ~~Stop~~ ~~Volume/Minutes~~
~~WL end of purge (WLEP)~~
Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] =

* SAMPLING

Sample ID: C G P 1 1 Ø 6 Ø 6 2 1 S GW/Surface/(Other) Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clear Wnd Spd/Drctn None

~~WL Recovery (WL/time)~~:

Sampled Depth Interval: 10 to 10 feet Sampling Method Grab ~~Start~~ ~~Stop~~
Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Envirotest Turnaround Time Normal No. of Containers 1
Date Shipped 6/23/97 Method Shipped Drop off
Analyses Requested 8010 VOCs + Fr. 113 by ASP B

* ADDITIONAL NOTES:

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-2 Site Rainbows End

Manhole/Standpipe/(Other) Geoprobe

Physical Well/Location Condition Edge of grass

* PURGING

Date N/A Personnel _____ Air Temp _____ Skies _____ Wnd Spd/Drctn _____

TD _____ SWL _____ TD - SWL _____ Required Purge Volume (from table) _____

Method _____ Start _____ Stop _____ Volume/Minutes _____

WL end of purge (WLEP) _____

Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] = _____

* SAMPLING

Sample ID: C G P 2 ~~1~~ Ø 6 Ø 6 2 1 S GW/Surface/(Other) Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clr. Wnd Spd/Drctn None

WL Recovery (WL/time): N/A / ; / ; / ; /

Sampled Depth Interval: 10 to 10 feet Sampling Method Grab Start _____ Stop _____

Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Enviroteat Turnaround Time Normal No. of Containers 1

Date Shipped 6/21/97 Method Shipped ~~Fed~~ Drop off

Analyses Requested 8010 VOCs + Freon 113 by ASPB

* ADDITIONAL NOTES:

4

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-2 Site Rainbows End

Manhole/Standpipe/(Other) Geoprobe

Physical Well/Location Condition ~~Grass~~ Edge of grass

* PURGING

Date N/A ~~Personnel~~ _____ Air Temp _____ Skies _____ Wnd Spd/Drctn _____

~~TD _____ SWL _____ TD - SWL _____~~ Required Purge Volume (from table) _____

~~Method _____ Start _____ Stop _____ Volume/Minutes~~ _____

WL end of purge ~~(WLEP)~~ _____

Water Level Required ~~for 90% Recovery~~: TD - [(TD - SWL) x 0.90] = _____

* SAMPLING

Sample ID: C G P 2 Ø 5 6 Ø 6 2 1 S GW/Surface/(Other) Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clr. Wnd Spd/Drctn None

WL Recovery (WL/time): N/A / ; / ; / ; /

Sampled Depth Interval: 5 to 5 feet Sampling Method Grab Start _____ Stop _____

Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Enviroteat Turnaround Time Normal No. of Containers 1

Date Shipped 6/23/97 Method Shipped Drop off

Analyses Requested 8010 + Freon 113 by ASPB

* ADDITIONAL NOTES:

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

*** GENERAL INFORMATION**

Sample Location/Well ID GP-3 Site Cavalier/Rainbows End

Manhole/Standpipe/(Other) Geoprobe

Physical Well/Location Condition Pavement

*** PURGING**

Date N/A ~~Personnel~~ ~~Air Temp~~ ~~Skies~~ ~~Wnd Spd/Drctn~~

TD ~~SWL~~ ~~TD - SWL~~ ~~Required Purge Volume (from table)~~

Method ~~Start~~ ~~Stop~~ ~~Volume/Minutes~~

WL end of purge (WLEP)

Water Level ~~Required for 90% Recovery:~~ ~~TD - [(TD - SWL) x 0.90] =~~

*** SAMPLING**

Sample ID: C G P 3 0 5 6 0 6 2 1 S GW/Surface/(Other) Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clear Wnd Spd/Drctn None

WL Recovery (WL/time): NA ; / ; / ; /

Sampled Depth Interval: 5 to 5' feet Sampling Method Grab Start ~~Stop~~

Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

***LAB INFO**

Lab Enviroteat Turnaround Time Normal No. of Containers 1

Date Shipped Drop off Method Shipped 6/23/97

Analyses Requested 8010 VOCs + Fr. 113 By ASP B

*** ADDITIONAL NOTES:**

FIELD OPERATIONS REPORT

Project No. 92004

Total Depth 13.5'
Depth to S.S. Refusal 13.5'
Depth to Competent Bedrock
SWL (Date)
Screened Interval
Hole Diameter
Monitoring Tube
Elev., Ground Surface

Well No. GP-3
Driller Frank Ware
Logged by DRM
Drilling Began 6/21/97
Drilling Completed 6/21/97
Well Const. Completed
Development Completed
Elev., T.O.C.

Depth	Blow Count	PID (ppm)	Recovery in.	Sample No./ Run No.	SAMPLE DESCRIPTION (USCS), Grn. Size, Color, Shape, texture, moistness, etc.	% Grn. Size C	S	Sd	Gr	Other Notes	Graphic Lith.	Well Constr.	Depth
5		0			Coarse gd. brown sand w/ gravel, cobbles & quartz + dolomite fragments, dry								
10		0			sand interlayer (~6" thick; ~9-10' deep), dry								
					dolomite fragments at base, dry								
15					Refusal 13.5'								
20													

GROUNDWATER SCIENCES CORPORATION

FIELD OPERATIONS REPORT

Project No. 92004

Total Depth 10'
Depth to S.S. Refusal 10'
Depth to Competent Bedrock
SWL (Date)
Screened Interval
Hole Diameter
Monitoring Tube
Elev., Ground Surface

Well No. GP-4
Driller Frank Ware
Logged by DRM
Drilling Began 6/21/97
Drilling Completed 6/21/97
Well Const. Completed
Development Completed
Elev., T.O.C.

Depth	Blow Count	PID (ppm)	Recovery in.	Sample No./ Run No.	SAMPLE DESCRIPTION (USCS), Grn. Size, Color, Shape, texture, moistness, etc.	% Grn. Size C	S	Sd	Gr	Other Notes	Graphic Lith.	Well Constr.	Depth
5		0			Cr grained brown sand with angular gravel, cobble, + dolomite fragments, dry								
10		6			Total depth: 10'								
15													
20													

GROUNDWATER SCIENCES CORPORATION

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-3 Site Cavalier / Rainbows End
Manhole/Standpipe/Other Geoprobe
Physical Well/Location Condition Pavement

* PURGING

Date N/A ~~Personnel~~ ~~Air Temp~~ ~~Skies~~ ~~Wnd Spd/Drctn~~
TD ~~SWL~~ TD - SWL Required Purge Volume (from table)
Method ~~Start~~ ~~Stop~~ ~~Volume/Minutes~~
WL end of purge (WLEP)
Water Level Required for 90% Recovery: ~~TD - [(TD - SWL) x 0.90] =~~

* SAMPLING

Sample ID: SB P 3 1 0 6 0 6 2 1 S GW/Surface/Other Soil

Date 6/21/97 Personnel DRM Air Temp 85° Skies Clear Wnd Spd/Drctn None
WL Recovery (WL/time): N/A / ; / ; / ; /
Sampled Depth Interval: 10 to 10 feet Sampling Method Grab Start ~~Stop~~
Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Enviratest Turnaround Time Normal No. of Containers 1
Date Shipped 6/23/97 Method Shipped Drop off
Analyses Requested 8010 VOCs + Freon 113 by ASP B

* ADDITIONAL NOTES:

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-4 Site Rainbows End

Manhole/Standpipe/Other Geoprobe

Physical Well/Location Condition Pavement

* PURGING

Date N/A ~~Personnel~~ ~~Air Temp~~ ~~Skies~~ ~~Wnd Spd/Drctn~~

TD ~~SWL~~ ~~TD - SWL~~ ~~Required Purge Volume (from table)~~

Method ~~Start~~ ~~Stop~~ ~~Volume/Minutes~~

WL end of purge (WLEP)

Water Level Required for 90% Recovery: ~~TD - [(TD - SWL) x 0.90] =~~

* SAMPLING

Sample ID: C G P 4 1 Ø 6 Ø 6 2 1 S GW/Surface/Other Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clear Wnd Spd/Drctn

WL Recovery (WL/time): N/A / ; / ; / ; /

Sampled Depth Interval: 10 to 10 feet Sampling Method Grab Start Stop

Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Enviroteat Turnaround Time Normal No. of Containers 1

Date Shipped 6/23/97 Method Shipped Drop off

Analyses Requested 8010 VOCs + Freon 113 by ASP B

* ADDITIONAL NOTES:

Refusal at 10' ~sample taken at ~9½'

GROUNDWATER SCIENCES CORPORATION
SAMPLING FIELD DATA SHEET

* GENERAL INFORMATION

Sample Location/Well ID GP-4 Site Rainbows End

Manhole/Standpipe/Other Geoprobe

Physical Well/Location Condition Pavement

* PURGING

Date N/A ~~Personnel~~ ~~Air Temp~~ ~~Skies~~ ~~Wnd Spd/Drctn~~

TD ~~SWL~~ ~~TD - SWL~~ ~~Required Purge Volume (from table)~~

Method ~~Start~~ ~~Stop~~ ~~Volume/Minutes~~

WL end of purge (WLEP)

Water Level Required for 90% Recovery: ~~TD - [(TD - SWL) x 0.90] =~~

* SAMPLING

Sample ID: C G P 4 Ø 5 6 Ø 6 2 1 S GW/Surface/Other Soil

Date 6/21/97 Personnel DRM Air Temp 88° Skies Clr. Wnd Spd/Drctn None

WL Recovery (WL/time): N/A / ; / ; / ; /

Sampled Depth Interval: 5 to 5 feet Sampling Method Grab Start ~~Stop~~

Field Data (in well/ in line):

Depth	pH	Sp. Cond.	Temperature	DO	Eh	Clarity
N/A						

*LAB INFO

Lab Enviroteat Turnaround Time Normal No. of Containers 1

Date Shipped 6/21/97 Method Shipped Drop off

Analyses Requested 8010 VOCs + Freon 113 by ASP B

* ADDITIONAL NOTES:

Appendix B

Analytical Data

Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW270130G WSW2
ETL Sample Number: 169606-06
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 30-JAN-97
Date Received: 31-JAN-97
Date Extracted:
Date Analyzed: 05-FEB-97
Report Date: 11-FEB-97
Column: RTX-502.2
Lab File Id: B0207.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5	8.6	
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5	100	D
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5	7	
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

1997 Groundwater Soil Data

Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW270710G old well South of Bldg
ETL Sample Number: 174569-06 WSW-2
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 10-JUL-97
Date Received: 11-JUL-97
Date Extracted:
Date Analyzed: 19-JUL-97
Report Date: 30-JUL-97
Column: RTX-502.2
Lab File Id: A3123.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5	6.8	
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5	81	D
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	5	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

EnviroTest Laboratories Inc.
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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW270529G WSW 2
ETL Sample Number: 173259-06
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 29-MAY-97
Date Received: 30-MAY-97
Date Extracted:
Date Analyzed: 05-JUN-97
Report Date: 13-JUN-97
Column: RTX-502.2
Lab File Id: B1554.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5	5.1	
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5	82	D
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	4.6	B
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW370130G New WSW-2 (WSW-3)
ETL Sample Number: 169606-01
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 30-JAN-97
Date Received: 31-JAN-97
Date Extracted:
Date Analyzed: 05-FEB-97
Report Date: 11-FEB-97
Column: RTX-502.2
Lab File Id: B0165.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW271030G Well South of bldg. WSW-2
ETL Sample Number: 178355-06
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 30-OCT-97
Date Received: 31-OCT-97
Date Extracted:
Date Analyzed: 07-NOV-97
Report Date: 18-NOV-97
Column: RTX-502.2
Lab File Id: A6482.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5	8.1	
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5	78	D
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5	.6	
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	3.9	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.2

Client ID: RAWSW370305G WSW-3
ETL Sample Number: 170614-01
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 05-MAR-97
Date Received: 06-MAR-97
Date Extracted:
Date Analyzed: 14-MAR-97
Report Date: 18-MAR-97
Column: RTX-502.2
Lab File Id: B9951.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
108-38-3/106-42-3	m,p-Xylene	.5		U
95-47-6	o-Xylene	.5		U
98-82-8	Isopropylbenzene	.5		U
100-42-5	Styrene	.5		U
103-65-1	n-Propylbenzene	.5		U
98-06-6	tert-Butylbenzene	.5		U
135-98-8	sec-Butylbenzene	.5		U
108-67-8	1,3,5-Trimethylbenzene	.5		U
99-87-6	4-Isopropyltoluene	.5		U
95-63-6	1,2,4-Trimethylbenzene	.5		U
74-83-9	Bromomethane	.5		U
104-51-8	n-Butylbenzene	.5		U
87-68-3	Hexachlorobutadiene	.5		U
120-82-1	1,2,4-Trichlorobenzene	.5		U
91-20-3	Naphthalene	.5		U
87-61-6	1,2,3-Trichlorobenzene	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U

Volatile Organics Analysis Data Sheet
Form I VOA
502.2

Results are continued from the previous page for 170614-01

WSW-3 1/30/97

CAS NO.	Compound	ug/l	ug/l	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
96-12-8	1,2-Dibromo-3-Chloropropane	.5		U
71-43-2	Benzene	.5		U
108-88-3	Toluene	.5		U
100-41-4	Ethylbenzene	.5		U
76-13-1	Freon 113	.5		U
1634-04-4	MTBE	1		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW370710G New well - Raw water
ETL Sample Number: 174569-01 WSW-3
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 10-JUL-97
Date Received: 11-JUL-97
Date Extracted:
Date Analyzed: 18-JUL-97
Report Date: 30-JUL-97
Column: RTX-502.2
Lab File Id: A3113.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5	.6	
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	.6	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW370529G Raw water - WSW-3
ETL Sample Number: 173259-01
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 29-MAY-97
Date Received: 30-MAY-97
Date Extracted:
Date Analyzed: 05-JUN-97
Report Date: 13-JUN-97
Column: RTX-502.2
Lab File Id: B1524.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	.8	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAI30H70130G 30 Hibernia
ETL Sample Number: 169606-05
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 30-JAN-97
Date Received: 31-JAN-97
Date Extracted:
Date Analyzed: 05-FEB-97
Report Date: 11-FEB-97
Column: RTX-502.2
Lab File Id: B0205.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

EnviroTest Laboratories Inc.
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Newburgh, NY 12550
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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAWSW3710306G New water supply well
ETL Sample Number: 178355-01 WSW-3
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 30-OCT-97
Date Received: 31-OCT-97
Date Extracted:
Date Analyzed: 06-NOV-97
Report Date: 18-NOV-97
Column: RTX-502.2
Lab File Id: A6472.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5	.8	
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5	7.7	
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	68	
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAI705290530 Trip Blank
ETL Sample Number: 173259-07
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 29-MAY-97
Date Received: 30-MAY-97
Date Extracted:
Date Analyzed: 05-JUN-97
Report Date: 13-JUN-97
Column: RTX-502.2
Lab File Id: B1556.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	.6	B
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAI30H70529G 30 Hibernia
ETL Sample Number: 173259-05
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 29-MAY-97
Date Received: 30-MAY-97
Date Extracted:
Date Analyzed: 05-JUN-97
Report Date: 13-JUN-97
Column: RTX-502.2
Lab File Id: B1552.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5	.5	B
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAI30H71030G 30 Hibernia
ETL Sample Number: 178355-03
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 30-OCT-97
Date Received: 31-OCT-97
Date Extracted:
Date Analyzed: 07-NOV-97
Report Date: 18-NOV-97
Column: RTX-502.2
Lab File Id: A6476.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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Volatile Organics Analysis Data Sheet
Form I VOA
502.1

Client ID: RAI30H70710G 30 Hibernia
ETL Sample Number: 174569-05
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 10-JUL-97
Date Received: 11-JUL-97
Date Extracted:
Date Analyzed: 18-JUL-97
Report Date: 30-JUL-97
Column: RTX-502.2
Lab File Id: A3121.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	.5		U
74-83-9	Bromomethane	.5		U
75-71-8	Dichlorodifluoromethane	.5		U
75-01-4	Vinyl Chloride	.5		U
75-00-3	Chloroethane	.5		U
75-09-2	Methylene Chloride	.5		U
75-69-4	Trichlorofluoromethane	.5		U
75-35-4	1,1-Dichloroethene	.5		U
74-97-5	Bromochloromethane	.5		U
75-34-3	1,1-Dichloroethane	.5		U
156-60-5	trans-1,2-Dichloroethene	.5		U
156-59-2	cis-1,2-Dichloroethene	.5		U
67-66-3	Chloroform	.5		U
107-06-2	1,2-Dichloroethane	.5		U
590-20-7	2,2-Dichloropropane	.5		U
74-95-3	Dibromomethane	.5		U
71-55-6	1,1,1-Trichloroethane	.5		U
56-23-5	Carbon Tetrachloride	.5		U
75-27-4	Bromodichloromethane	.5		U
78-87-5	1,2-Dichloropropane	.5		U
563-58-6	1,1-Dichloropropene	.5		U
79-01-6	Trichloroethene	.5		U
142-28-9	1,3-Dichloropropane	.5		U
124-48-1	Dibromochloromethane	.5		U
79-00-5	1,1,2-Trichloroethane	.5		U
106-93-4	1,2-Dibromoethane	.5		U
75-25-2	Bromoform	.5		U
630-20-6	1,1,1,2-Tetrachloroethane	.5		U
96-18-4	1,2,3-Trichloropropane	.5		U
79-34-5	1,1,2,2-Tetrachloroethane	.5		U
127-18-4	Tetrachloroethene	.5		U
108-90-7	Chlorobenzene	.5		U
108-86-1	Bromobenzene	.5		U
95-49-8	2-Chlorotoluene	.5		U
106-43-4	4-Chlorotoluene	.5		U
541-73-1	1,3-Dichlorobenzene	.5		U
95-50-1	1,2-Dichlorobenzene	.5		U
106-46-7	1,4-Dichlorobenzene	.5		U
10061-01-5	cis-1,3-Dichloropropene	.5		U
10061-02-6	trans-1,3-Dichloropropene	.5		U
76-13-1	Freon 113	.5		U

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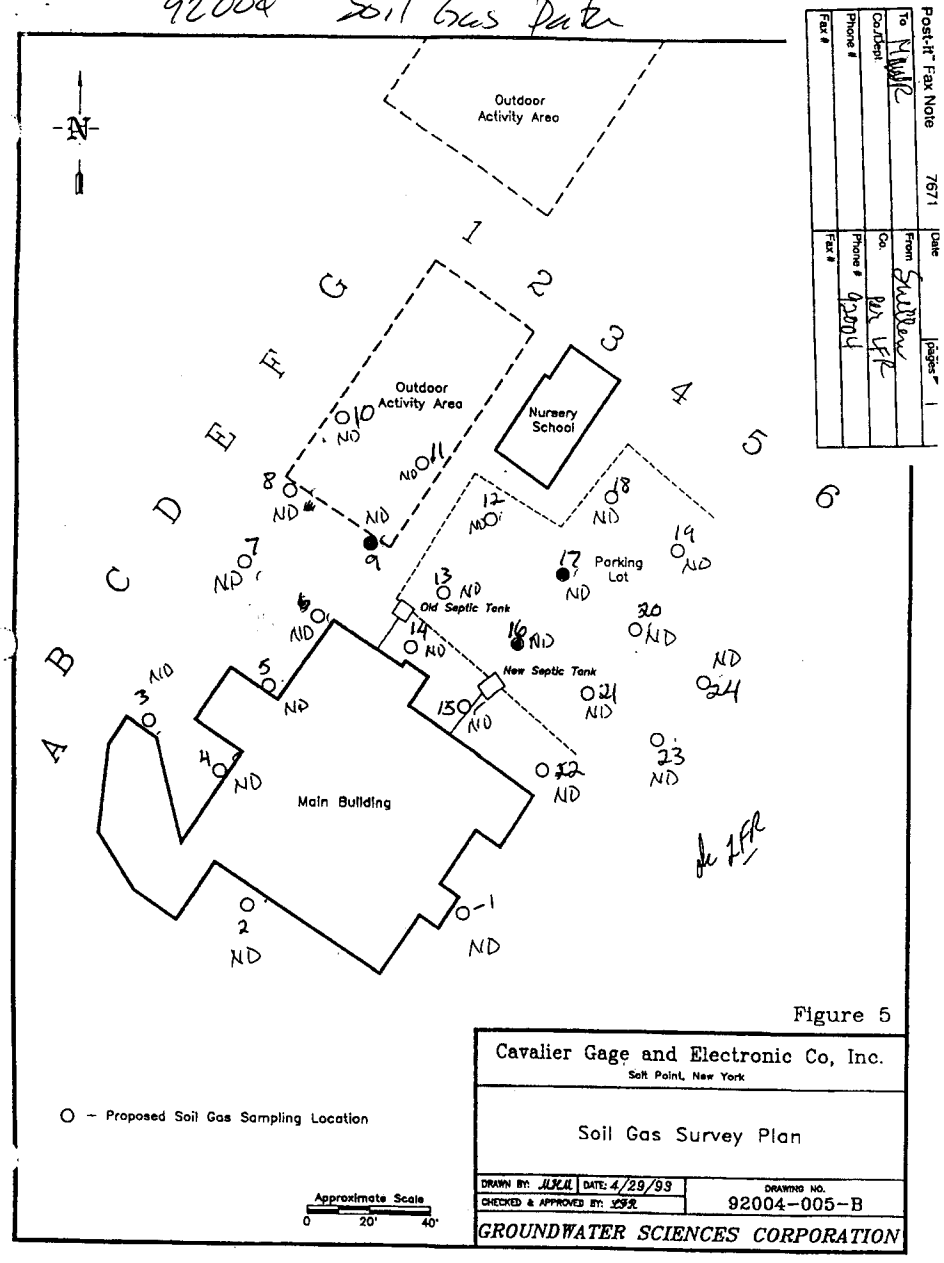
92004 Soil Gas Data



Post-it™ Fax Note 7671

To Niwot | Date
Co./Dept. | # of pages ▸ 1
Phone # | Phone # 920-04
Fax # | Fax #
From Sullivan
Co. per ltr

Figure 5

Cavalier Gage and Electronic Co, Inc. Salt Point, New York	
Soil Gas Survey Plan	
DRAWN BY: MKH DATE: 4/29/93	DRAWING NO. 92004-005-B
CHECKED & APPROVED BY:	
GROUNDWATER SCIENCES CORPORATION	

Soil Gas Data

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

3

Site: Rainbows End — ___ Inside
Sample Location: West Side — ✓ Outside
Sample Type: hnu soil gas
Air Temp: 35 Weather: Cloudy
Date: 11/24/96 Time: 14:08
Collected by: MWR
Sample ID: Point 3 Sample Depth: 1 full rod
HNu reading: N/D 0-20 Drager reading(s):

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospheric psi
Description of Pressure Decay: N/A
Additional Notes: Calibration Check - Sensitivity with marker - OK
Results - ND at 0-20
Calibration after sample with marker - OK
The rod was a little hard to drive 4 on 1-10
Easy = 1, Very hard = 10

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

4

Site: Rainbows End — ___ Inside
Sample Location: West Side — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather: Cloudy
Date: 11/24/96 Time: 14:27
Collected by: MWR
Sample ID: Point 4 Sample Depth: 1 full rod
HNu reading: ND at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospher psi
Description of Pressure Decay: N/A
Additional Notes: Calibration check with marker - OK
Results - ND at 0-20
Calibration with span gas in a tedlar bag OK - 67 at span 5

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

1

Site: Rainbows End — ___ Inside
Sample Location: South East Side Door — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 1 Sample Depth: 1 full rod
HNu reading: N/D 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmo. per
Description of Pressure Decay: N/A
Additional Notes: Calibration Check at start 67 at span 5 - OK
Easy to drive the rod 1 liter purge, next letter sampled with tedlar bags on all samples
Results: 0.2 Background .02 - 0 - no detection

Calibration - Sensitivity Check with marker - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

2

Site: Rainbows End — ___ Inside
Sample Location: South Side of Building — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 2 Sample Depth: 1 full rod
HNu reading: N/D 0-20 Drager reading(s):

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospher psi
Description of Pressure Decay: N/A
Additional Notes: Calibration 67 at span 5 - OK
Easy to drive rod
Results: 0.2 Background on 0-20 Scale - 0 - no detection
Calibration after sample 67 at span 5 - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

7

Site: Rainbows End — Inside
Sample Location: West of North corner of main building — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 7 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospher psi
Description of Pressure Decay: N/A
Additional Notes: Calibration with tedlar bag and gas, 67 at Span 5
Results: N/D at 0-20
Calibration check after sample - OK

Note - 0-200 asc checked during sample run

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

5

Site: Rainbows End — Inside
Sample Location: North West Side near bld — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35 Weather: Cloudy
Date: 11/25/96 Time:
Collected by: MWR
Sample ID: Point 5 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: The rod was a little hard to drive
Calibration check with marker - OK
Results N/A at 0-20
Calibration check with marker after sample - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

8

Site: Rainbows End — Inside
Sample Location: South West Corner of Activity Area — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35' Weather: Cloudy
Date: 11/27/96 Time:
Collected by: MWR
Sample ID: Point 8 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Calibration before sample - OK
Results N/D at 0-20
Calibration after sample - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

6

Site: Rainbows End — Inside
Sample Location: North Corner of Main — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather:
Date: 11/25/96 Time: 14:59
Collected by: MWR
Sample ID: Point 6 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospher psi
Description of Pressure Decay: N/A
Additional Notes: Temperature in truck where hnu is used and samples tested is 89°
The rod was easy to drive
Calibration check before sample with marker - OK
N/D at 0-20
Calibration with Isobutylene and air 67 at Span 5 after Sample

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

11

Site: Rainbows End
Sample Location: Activity Area East Side — Inside ____ Outside ✓
Sample Type: hnu Soil gas
Air Temp: 36° Weather: Cloudy
Date: 11/24/96 Time: 15:51
Collected by: ~~MWP~~ MWR
Sample ID: Point 11 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ____ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospheric psi
Description of Pressure Decay: N/A
Additional Notes: Calibration before sample with marker - OK
Results N/D at 0-20
Calibration after sample with marker - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

9

Site: Rainbows End
Sample Location: South East Corner of Activity Area — Inside ____ Outside ✓
Sample Type: hnu Soil gas
Air Temp: 36° Weather: Cloudy
Date: 11/24/96 Time: 15:22
Collected by: MWR
Sample ID: Point 9 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 * Drager reading(s): N/A

Soil Sample: ____ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Near sewer manhole.
Calibration check with marker - OK -
Results N/D at 0-20 - (0.2 Needle deflection and then 0 on 0-20) *
Calibration check after with marker - ok

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

12

Site: Rainbows End
Sample Location: South of Nursy School in Black Top — Inside ____ Outside ✓
Sample Type: hnu Soil gas
Air Temp: 36° Weather: Cloudy
Date: 11/24/96 Time: ____
Collected by: MWR
Sample ID: Point 12 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ____ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospheric psi
Description of Pressure Decay: N/A
Additional Notes: Calibration with marker before sample - OK
Results N/D at 0-20, 0-20
Calibration with marker after sample - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

10

Site: Rainbows End
Sample Location: Inside activity area, west — Inside ____ Outside ✓
Sample Type: hnu Soil gas
Air Temp: 36° Weather: Cloudy
Date: 11/26/96 Time: ____
Collected by: MWR
Sample ID: Point 10 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ____ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmospheric psi
Description of Pressure Decay: N/A
Additional Notes: Calibration with marker - OK before sample
Results N/D at 0-20
Calibration check after sample with marker, OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

15

Site: Rainbows End — ___ Inside
Sample Location: Blacktop Strip in grass — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 34° Weather: Cloudy
Date: 11/24/96 Time: ___
Collected by: MWR
Sample ID: Point 15 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity before sample with marker - OK
Results: N/D at 0-20
Sensitivity after sample with marker - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

13

Site: Rainbows End — ___ Inside
Sample Location: Blacktop Parking — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather: Cloudy
Date: 11/24/96 Time: 16:25
Collected by: MWR
Sample ID: Point 13 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): ___

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Calibration before with marker - OK
Results: N/D at 0-20
Calibration with span gas and tedlar bag 67 at span 5

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

16

Site: Rainbows End — ___ Inside
Sample Location: Blacktop Parking Area — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 34° Weather: Cloudy
Date: 11/24/96 Time: ___
Collected by: MWR
Sample ID: Point 16 Sample Depth: 1 full rod
HNu reading: N/D at 0-20* Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity with marker before sample OK
* Faculty trap deflection at 0 between 0 and 0.02 on 0-20
N/D at 0-20, and 0-200
Sensitivity with marker after sample - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

14

Site: Rainbows End — ___ Inside
Sample Location: By main entrance — ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 35° Weather: Cloudy
Date: 11/24/96 Time: ___
Collected by: MWR
Sample ID: Point 14 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity with marker - OK
Results: N/D at 0-20
Sensitivity after sample with marker, OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

18

Site: Rainbows End
Sample Location: Black Top Parking
Sample Type: hnu Soil Gas
Air Temp: 34° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 18 Sample Depth: 1 full rod
HNu reading: N/D 0-20 Drager reading(s): N/A

Inside
✓ Outside

Soil Sample: Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity before Sample OK
Results N/D 0-20
Sensitivity after sample with marker - OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

17

Site: Rainbows End
Sample Location: Black top Parking
Sample Type: hnu Soil gas
Air Temp: 34° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 17 Sample Depth:
HNu reading: Drager reading(s):

Inside
✓ Outside

Soil Sample: Yes No Soil Sample Depth
Soil Description:
Sampling Pressure: psi
Description of Pressure Decay:
Additional Notes: Sensitivity with marker before sample - OK -
Results between 0 and .002 on 0-20 scale - constant pulse

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

19

Site: Rainbows End
Sample Location: Black top Parking
Sample Type:
Air Temp: 33° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 19 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Inside
✓ Outside

Soil Sample: Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity with marker before Sample - OK
Results N/D at 0-20
Calibration 60 at span 5 adjusted to 67 at 5 with gas

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

17 Replicate

Site: Replicate Rainbows End
Sample Location: Point
Sample Type: QAQC
Air Temp: 34° Weather: Cloudy
Date: 11/24/96 Time: 17:05
Collected by: MWR
Sample ID: R Point 17 Sample Depth: 1 full rod
HNu reading: N/D 0-20 Drager reading(s):

Inside
Outside

Soil Sample: Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes:
Results Same as above 0 - 0.02 on 0-20 scale
Sensitivity after sample with marker, OK

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

22

Site: Rainbows
Sample Location: North East corner of main building - grass
Sample Type: hnu Soil Gas
Air Temp: 33°
Weather: Cloudy
Date: 11/24/96
Time:
Collected by: MWR
Sample ID: Point 22
Sample Depth: 1 full rod
HNu reading: N/D at 0-20
Drager reading(s): N/A

Inside
✓ Outside

Soil Sample: Yes ✓ No
Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity before sample with marker - ok
Results: N/D at 0-20
Sensitivity with marker after sample - ok

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

20

Site: Rainbows End
Sample Location: Black Top Parking
Sample Type: hnu Soil Gas
Air Temp: 33°
Weather: Cloudy
Date: 11/24/96
Time: 17:49
Collected by: MWR
Sample ID: Point 20
Sample Depth: 1 full rod
HNu reading: N/D at 0-20
Drager reading(s): N/A

Inside
✓ Outside

Soil Sample: Yes ✓ No
Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensory with marker before sample - ok -
Results N/D at 0-20
Sensitivity after sample with marker - ok

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

23

Site: Rainbows End
Sample Location: Black Top parking area
Sample Type: hnu Soil Gas
Air Temp: 33°
Weather: Cloudy
Date: 11/24/96
Time: 18:30
Collected by: MWR
Sample ID: Point 23
Sample Depth: 1 full rod
HNu reading: N/D at 0-20
Drager reading(s): N/A

Inside
✓ Outside

Soil Sample: Yes ✓ No
Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity checked before sample with marker - ok
Results: N/D at 0-20

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

21

Site: Rainbows End
Sample Location: Black Top Parking
Sample Type: hnu Soil Gas
Air Temp: 33°
Weather: Cloudy
Date: 11/24/96
Time:
Collected by: MWR
Sample ID: Point 21
Sample Depth: 1 full Rod
HNu reading: N/D at 0-20
Drager reading(s): N/A

Inside
✓ Outside

Soil Sample: Yes ✓ No
Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity with marker before sample - ok -
Results N/D at 0-20
Sensitivity with marker before sample - ok

CHAIN OF CUSTODY RECORD

EnviroTest Laboratories Inc.
315 Fullerton Avenue, Newburgh, NY 12550 (914) 562-0890 FAX (914) 562-0841

CUSTOMER NAME: Groundwater Sciences Corp
ADDRESS: 2601 Market Place Street Suite 310
CITY, STATE, ZIP: Harrisburg PA 17110
NAME OF CONTACT: Larry Rauch
PHONE NO.: 717 657 1611
PROJECT LOCATION: Rainbows End
PROJECT NUMBER / PO NO.: 9200+

REPORT TYPE: STANDARD ☒ ISRA ☐ NYASP A ☐ B ☐ CLP ☐ OTHER ____

TURNAROUND: ☐ NORMAL ☒ QUICK ☐ VERBAL

LABORATORY # (Lab Use Only)
TEMP BLANK Y ___ N ___ C°
pH CHECK Y ___ N ___
REVIEWED BY:
NY PUBLIC WATER SUPPLIES
SOURCE ID ____
ELRP TYPE ____
FEDERAL ID ____

ETL#	SAMPLING DATE	TIME	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	ANALYSIS REQUESTED
	1/6/97	15:34		✓	Air	RESGEQ370106	1	8010, 8020, Freon 113
	1/6/97	15:41		✓	Air	RESGI7B70106	1	8010, 8020, Freon 113
	1/6/97	15:53		✓	Air	RESGOST70106	1	8010, 8020, Freon 113

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
N/A					N/A		
N/A					N/A		
N/A					N/A		
Michael Ruchin	GSC	1/7/97	08:30	Paul [illegible]	ETL	1/7/97	08:30

COMMENTS: Samples kept at room temperature (65°F) overnight + 1/7/97 08:30 Michael Ruchin
All samples received intact and in good condition. P.F. 1747

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0564 EPA NY049

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

24

Site: Rainbows End
Sample Location: Black Top parking — Inside ___ / ✓ Outside
Sample Type: hnu Soil gas
Air Temp: 33° Weather: Cloudy
Date: 11/24/96 Time:
Collected by: MWR
Sample ID: Point 24 Sample Depth: 1 full rod
HNu reading: N/D at 0-20 Drager reading(s): N/A

Soil Sample: Yes ___ ✓ No Soil Sample Depth: N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Sensitivity checked with marker before sample
Results N/D at 0-20
Calibration check - End of sample collection: 62 at span 5

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

QAQC

Site: Rainbows End
Sample Location: N/A — ✓ Inside / ___ Outside
Sample Type: QAQC
Air Temp: 89° - Truck Weather: Cloudy
Date: 11/24/96 Time: 19:10
Collected by: MWR
Sample ID: QAQC1 Sample Depth: N/A
HNu reading: 62 at 0-200 Drager reading(s):

Soil Sample: Yes ___ ✓ No Soil Sample Depth: N/A
Soil Description: N/A
Sampling Pressure: Atmosphere psi
Description of Pressure Decay: N/A
Additional Notes: Span gas in tedlar bag put on ground for 3 hours at 36 to 33° and run as sample
Result: 62 at 0 200

Soil Gas Sampling Sheet

3

Site: Rainbows End
Sample Location: Old Septic Tank location — Inside ___ / Outside ✓
Sample Type: Soil Gas
Air Temp: 34° Weather: Cloudy Wind: 8mph/West
Date: 1/6/97 Time: 15:53
Collected by: MWR
Sample ID: RESGOST70106 Sample Depth: 1 full rod
HNu reading: N/A Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: N/A psi
Description of Pressure Decay: N/A
Additional Notes: Purged 1 liter and sampled the second liter

Note: gas tight syringes were cleaned with DI water and baked at 123°C for 69 hours prior to use. (Sample Collection)

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

Site:
Sample Location: — Inside ___ / Outside ___
Sample Type:
Air Temp: Weather:
Date: Time:
Collected by:
Sample ID: Sample Depth:
HNu reading: Drager reading(s):

N/D sample collected

Soil Sample: ___ Yes ___ No Soil Sample Depth
Soil Description:
Sampling Pressure: psi
Description of Pressure Decay:
Additional Notes:

Sample Location: Rainbows End — Inside ___ / Outside ✓
Sample Type: Near Point #17
Air Temp: QAQC ambient air/equipment blank * Weather:
Date: 34° Time: Cloudy Wind: 8mph/West
Collected by: 1/6/97 15:34
Sample ID: MWR
HNu reading: RESGEQB70106 Sample Depth: N/A
Drager reading(s): N/A

Soil Sample: ___ Yes X No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: N/A psi
Description of Pressure Decay: N/A
Additional Notes:

* the ambient air sample was collected in a tedlar bag after 5 volumes were exausted to purge the bag and the line. For each sample the needle of the sample syringe was inserted through the connecting silicone tubing in the tedlar bag and drawn.

Groundwater Sciences Corporation
Soil Gas Sampling Sheet

2

Site: Rainbows End
Sample Location: Next to the original Point #17 — Inside ___ / Outside ✓
Sample Type: Soil Gas
Air Temp: 34° Weather: Cloudy. Wind: 8mph/West
Date: 1/6/97 Time: 15:41
Collected by: MWR
Sample ID: RESG17B70106 Sample Depth: 1 full rod
HNu reading: N/A Drager reading(s): N/A

Soil Sample: ___ Yes ✓ No Soil Sample Depth N/A
Soil Description: N/A
Sampling Pressure: N/A psi
Description of Pressure Decay: N/A
Additional Notes: Purged 1 liter and Sampled the Second liter.

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	RESGEQ870106	Date Collected:	06-JAN-97
ETL Sample Number:	168923-01	Date Received:	07-JAN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	07-JAN-97
% Solid:	NA	Report Date:	09-JAN-97
Matrix:	8 Air	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	B9475.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ng/ml	Conc. ng/ml	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

ANALYTICAL REPORT

Groundwater Sciences Corp.
Larry Roach
2601 Market Place St.
Suite 310
Harrisburg PA 17110-9307

Report Date: 09-JAN-97

Project: 92004

Lab Number: 168923

Sample Number(s): 168923-01
to
168923-03

Ronald A. Bayer
Laboratory Director

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	RESG17B70106	Date Collected:	06-JAN-97
ETL Sample Number:	168923-02	Date Received:	07-JAN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	07-JAN-97
% Solid:	NA	Report Date:	09-JAN-97
Matrix:	8 Air	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	B9477.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ng/ml	Conc. ng/ml	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
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Volatile Organics Analysis Data Sheet
Form I VOA
8020

Client ID:	RESGEQB70106	Date Collected:	06-JAN-97
ETL Sample Number:	168923-01	Date Received:	07-JAN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	07-JAN-97
% Solid:	NA	Report Date:	09-JAN-97
Matrix:	8 Air	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	B9474.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ng/ml	Conc. ng/ml	Data Qualifier
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
108-90-7	Chlorobenzene	1		U
100-41-4	Ethylbenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
1330-20-7	Xylenes, total	1		U

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
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Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID: RESG0ST70106
ETL Sample Number: 168923-03
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 8 Air
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 06-JAN-97
Date Received: 07-JAN-97
Date Extracted:
Date Analyzed: 07-JAN-97
Report Date: 09-JAN-97
Column: RTX-502.2
Lab File Id: B9479.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ng/ml	Conc. ng/ml	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

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Volatile Organics Analysis Data Sheet
Form I VOA
8020

Client ID: RESG17B70106
ETL Sample Number: 168923-02
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 8 Air
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 06-JAN-97
Date Received: 07-JAN-97
Date Extracted:
Date Analyzed: 07-JAN-97
Report Date: 09-JAN-97
Column: RTX-502.2
Lab File Id: B9476.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ng/ml	Conc. ng/ml	Data Qualifier
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
108-90-7	Chlorobenzene	1		U
100-41-4	Ethylbenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
1330-20-7	Xylenes, total	1		U

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Volatile Organics Analysis Data Sheet
Form I VOA
8020

Client ID:	RESGOST70106	Date Collected:	06-JAN-97
ETL Sample Number:	168923-03	Date Received:	07-JAN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	07-JAN-97
% Solid:	NA	Report Date:	09-JAN-97
Matrix:	8 Air	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	B9478.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ng/ml	Conc. ng/ml	Data Qualifier
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
108-90-7	Chlorobenzene	1		U
100-41-4	Ethylbenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
1330-20-7	Xylenes, total	1		U

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August 19, 1997

Groundwater Sciences Corp.
2601 Market Place Street, Suite 310
Harrisburg, PA 17112

Attn.: Mr. Larry Roach

SUBJECT: CASE NARRATIVE, 92004,
ETL NUMBER 173961.

Dear Mr. Roach:

Enclosed are the analytical results for the 92004 project. The samples were received on June 23, 1997 and were prepared and analyzed according to EPA established methodologies and protocols. The reports were completed according to NYSDEC ASP Category B reporting requirements.

Your evaluation of the enclosed data should incorporate the use of the attached case narrative.

I certify that this package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

ENVIROTEST LABORATORIES, INC.

Ronald A. Bayer
Laboratory Director

Geoprobe Soil Data

CASE NARRATIVE
Client: Groundwater Sciences Corp.
Date: 8/19/97
ETL Lab No. 173961

Volatiles

Surrogate Recovery

The following samples contain surrogate recovery outside the established control limits:

CGP30560621S (173961-03): fails bromofluorobenzene (BFB)
CGP31060621S (173961-04): fails BFB
CGP30560621SRE (173961-03RE): fails (BFB)
CGP31060621SRE (173961-04RE): fails BFB

000001

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0554 EPA NY049

Sample Data Summary Package

Groundwater Sciences Corp.
Harrisburg, PA
Project: 92004
ETL Lab. #: 173961
Matrix: Soil/Water
1 of 1

EnviroTest Laboratories Inc.
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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Received at Lab	Date Extracted	Date Analyzed	Key
173961-01	Soil	6/21/97	6/23/97		6/24/97	GP-1 5'
173961-02	Soil	6/21/97	6/23/97		6/24/97	GP-1 10'
173961-03	Soil	6/21/97	6/23/97		6/24/97	GP-3 5'
173961-04	Soil	6/21/97	6/23/97		6/25/97	GP-3 10'
173961-05	Soil	6/21/97	6/23/97		6/25/97	GP-2 5'
173961-06	Soil	6/21/97	6/23/97		6/25/97	GP-2 10'
173961-07	Water	6/21/97	6/23/97		6/25/97	Equ-Rinse Bl.
173961-08	Soil	6/21/97	6/23/97		6/26/97	GP-4 5'
173961-09	Soil	6/21/97	6/23/97		6/25/97	GP-4 10'
173961-10	Water	6/21/97	6/23/97		6/25/97	Trip Blank

000002

EnviroTest Laboratories Inc.

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CHAIN OF CUSTODY RECORD

CUSTOMER NAME: Groundwater Sciences Corp.
ADDRESS: 2601 Market Pl. St Suite 310
CITY, STATE, ZIP: Harrisburg PA 17112 7176526832
NAME OF CONTACT: Larry Roach
PHONE NO.:
PROJECT LOCATION: Raubans End
PROJECT NUMBER / PO NO.: 92004

REPORT TYPE: STANDARD ☐ ISRA ☐ NYASP A ☐ B ☑ CLP ☐ OTHER

TURNAROUND: ☑ NORMAL ☐ QUICK ☐ VERBAL

LABORATORY # (Lab Use Only): 173961
TEMP BLANK Y N 4°C
pH CHECK Y N
REVIEWED BY:

NY PUBLIC WATER SUPPLIES
SOURCE ID
ELRP TYPE
FEDERAL ID

ETL#	Sampling Date	Time AM PM	Comp	Grab	Matrix	Client I.D.	Total Number of Containers	40ml Glass HCL	2 oz. Qorpak	Analysis Requested
01	6/21	X		✓	SOIL	CGP1Ø56Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
02	6/21	X		✓	SOIL	CGP11Ø6Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
03	6/21	X		✓	SOIL	CGP3Ø56Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
04	6/21	X		✓	SOIL	CGP31Ø6Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
05	6/21	X		✓	SOIL	CGP2Ø56Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
06	6/21	X		✓	SOIL	CGP21Ø6Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
07	6/21	X			WATER	CEG6Ø621TUBE	2	2		8010 VOCs + Freon 113 by ASP B
08	6/21	X		✓	SOIL	CGP4Ø56Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
09	6/21	X		✓	SOIL	CGP41Ø6Ø621S	1		1	8010 VOCs + Freon 113 by ASP B
10	6/21	X			WATER	CTB6Ø6Ø1Ø621	2	2		8010 VOCs + Freon 113 by ASP B

000003

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[illegible]	GSC	6/21/97		Samples received via Fed Ex		6/21/97	12:45 PM
Denise R[illegible]	GSC	6/21/97	12:45 PM	[illegible]	GSC	6/21/97	12:45
[illegible]	GSC	6-23-97	9:14	[illegible]	ETL	6/23/97	9:14

COMMENTS: All samples received intact and in good condition. Temp 4 blank 4°C [illegible] 6/23/97 9:14

NYSDOH 10142 NJDEP 73507 CTDOHS PH-0554 EPA NY049

DATA REPORTING QUALIFIERS

Data qualifiers are used in the analytical report for organics and inorganics. The qualifiers are equivalent to those used by the USEPA in its Contract Laboratory Program.

ORGANIC QUALIFIERS

- U - Indicates that the compound was analyzed for but not detected. The sample detection limit is corrected for dilution and percent moisture. This detection limit is not necessarily the instrument detection limit.
- J - Indicates an estimated value. This qualifier is used when mass spectral data indicates the presence of a compound that meets the identification criteria and the result is less than the specified detection limit but greater than zero.
- B - Indicates that the analyte was found in both the sample and its associated laboratory blank. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
- C - This qualifier applies to pesticide parameters where the identification has been confirmed by gas chromatography/mass spectrometry.
- E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument for the specific analysis.
- D - Indicates all compounds identified in an analysis at a secondary dilution factor.
- DL - This suffix indicates a diluted sample and is appended to the sample number on the result form.
- N - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P - This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentration between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with an "P".
- A - This flag indicates that a TIC is a suspected aldol-condensation product.
- RE - This suffix indicates a re-analyzed sample and is appended to the sample number on the result form.
- RR - This suffix indicates a re-extracted and re-analyzed sample and is appended to the sample number on the result form.

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VOLATILE ORGANIC LABORATORY CHRONICLE--ENVIROTEST LABORATORIES, INC.

ETL Laboratory Number: 173961
Client Project Number: 92004

Date Receipt/Refrigeration: 6/23/97
Date Sampled: 6/21/97
Preservative: 4°C

Sample Relinquished by	Sample Received by	Date	Time	Reason for Change of Custody
[signature]	R Stott	24 June 97		Storage & Analysis

Analysis: Volatiles-GC
Analyst: RS

Date of Analysis: 24 June 97, 25 June 97, 30 June 97

Volatiles-GC/MS
Analyst: ______

Date of Analysis: ______

Section Supervisor Review and Approval: [signature]

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	CGP10560621S	Date Collected:	21-JUN-97
ETL Sample Number:	173961-01	Date Received:	23-JUN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	24-JUN-97
% Solid:	91.3	Report Date:	19-AUG-97
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	A2339.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.1		U
74-83-9	Bromomethane	1.1		U
75-71-8	Dichlorodifluoromethane	1.1		U
75-01-4	Vinyl Chloride	1.1		U
75-00-3	Chloroethane	1.1		U
75-09-2	Methylene Chloride	1.1		U
75-69-4	Trichlorofluoromethane	1.1		U
75-35-4	1,1-Dichloroethene	1.1		U
75-34-3	1,1-Dichloroethane	1.1		U
540-59-0	Total-1,2-Dichloroethene	1.1		U
67-66-3	Chloroform	1.1		U
107-06-2	1,2-Dichloroethane	1.1		U
71-55-6	1,1,1-Trichloroethane	1.1	.7	J
56-23-5	Carbon Tetrachloride	1.1		U
75-27-4	Bromodichloromethane	1.1		U
78-87-5	1,2-Dichloropropane	1.1		U
10061-01-5	cis-1,3-Dichloropropene	1.1		U
79-01-6	Trichloroethene	1.1		U
124-48-1	Dibromochloromethane	1.1		U
10061-02-6	trans-1,3-Dichloropropene	1.1		U
79-00-5	1,1,2-Trichloroethane	1.1		U
110-75-8	2-Chloroethylvinyl Ether	1.1		U
75-25-2	Bromoform	1.1		U
79-34-5	1,1,2,2-Tetrachloroethane	1.1		U
127-18-4	Tetrachloroethene	1.1		U
108-90-7	Chlorobenzene	1.1		U
541-73-1	1,3-Dichlorobenzene	1.1		U
95-50-1	1,2-Dichlorobenzene	1.1		U
106-46-7	1,4-Dichlorobenzene	1.1		U
74-95-3	Dibromomethane	1.1		U
630-20-6	1,1,1,2-Tetrachloroethane	1.1		U
96-18-4	1,2,3-Trichloropropane	1.1		U
544-10-5	1-Chlorohexane	1.1		U
108-86-1	Bromobenzene	1.1		U
100-44-7	Benzyl Chloride	1.1		U
95-49-8	4-Chlorotoluene	1.1		U
76-13-1	Freon 113	1.1		U

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DATA REPORTING QUALIFIERS

INORGANICS

Concentration Qualifiers (C)

U - Indicates that the analyte was analyzed for but not detected.

B - The reported value is less than the Contract Required Detection Limit (CRDL), but greater than the Instrument Detection Limit (IDL).

Quality Qualifiers (Q)

E - Indicates an estimated value because of the presence of interference.

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Method Qualifiers (M)

P - for ICP.
A - for Flame AA.
F - for Furnace AA.
PM - for ICP when Microwave Digestion is used.
AM - for Flame AA when Microwave Digestion is used.
FM - for Furnace AA when Microwave Digestion is used.
CV - for Manual Cold Vapor AA.
AV - for Automated Cold Vapor AA.
AS - for Semi-Automated Spectrophotometric
C - for Manual Spectrophotometric
T - for Titrimetric.
NR - if the analyte is not required to be analyzed.

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Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	CGP30560621S	Date Collected:	21-JUN-97
ETL Sample Number:	173961-03	Date Received:	23-JUN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	24-JUN-97
% Solid:	94.6	Report Date:	19-AUG-97
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	A2343.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1	.8	J
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

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Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	CGP11060621S	Date Collected:	21-JUN-97
ETL Sample Number:	173961-02	Date Received:	23-JUN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	24-JUN-97
% Solid:	90.0	Report Date:	19-AUG-97
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	A2341.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.1		U
74-83-9	Bromomethane	1.1		U
75-71-8	Dichlorodifluoromethane	1.1		U
75-01-4	Vinyl Chloride	1.1		U
75-00-3	Chloroethane	1.1		U
75-09-2	Methylene Chloride	1.1		U
75-69-4	Trichlorofluoromethane	1.1		U
75-35-4	1.1-Dichloroethene	1.1		U
75-34-3	1.1-Dichloroethane	1.1		U
540-59-0	Total-1,2-Dichloroethene	1.1		U
67-66-3	Chloroform	1.1		U
107-06-2	1,2-Dichloroethane	1.1		U
71-55-6	1,1,1-Trichloroethane	1.1	.8	J
56-23-5	Carbon Tetrachloride	1.1		U
75-27-4	Bromodichloromethane	1.1		U
78-87-5	1,2-Dichloropropane	1.1		U
10061-01-5	cis-1,3-Dichloropropene	1.1		U
79-01-6	Trichloroethene	1.1		U
124-48-1	Dibromochloromethane	1.1		U
10061-02-6	trans-1,3-Dichloropropene	1.1		U
79-00-5	1,1,2-Trichloroethane	1.1		U
110-75-8	2-Chloroethylvinyl Ether	1.1		U
75-25-2	Bromoform	1.1		U
79-34-5	1,1,2,2-Tetrachloroethane	1.1		U
127-18-4	Tetrachloroethene	1.1		U
108-90-7	Chlorobenzene	1.1		U
541-73-1	1,3-Dichlorobenzene	1.1		U
95-50-1	1,2-Dichlorobenzene	1.1		U
106-46-7	1,4-Dichlorobenzene	1.1		U
74-95-3	Dibromomethane	1.1		U
630-20-6	1,1,1,2-Tetrachloroethane	1.1		U
96-18-4	1,2,3-Trichloropropane	1.1		U
544-10-5	1-Chlorohexane	1.1		U
108-86-1	Bromobenzene	1.1		U
100-44-7	Benzyl Chloride	1.1		U
95-49-8	4-Chlorotoluene	1.1		U
76-13-1	Freon 113	1.1		U

000013

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Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID: CGP31060621S
ETL Sample Number: 173961-04
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: 82.0
Matrix: 3 Soil/Sldg
Sample Wt/Vol: 5g
Level: LOW

Date Collected: 21-JUN-97
Date Received: 23-JUN-97
Date Extracted:
Date Analyzed: 25-JUN-97
Report Date: 19-AUG-97
Column: RTX-502.2
Lab File Id: A2347.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2		U
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2		U
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2		U
107-06-2	1,2-Dichloroethane	1.2		U
71-55-6	1,1,1-Trichloroethane	1.2	.8	J
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2	.6	J
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U

000024

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841

VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID: CGP30560621SRE
EnviroTest Lab No.: 173961-03RE
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: 94.6
Matrix: Soil
Sample Wt/Vol.: 5g
Level: Low

Date Collected: 6/21/97
Date Received: 6/23/97
Date Extracted:
Date Analyzed: 6/25/97
Report Date: 8/4/97
Column: RTX-502.2
Lab File ID: A2385.D
Dilution Factor: 1

CAS No.	Compound	Detection Limit ug/kg	Conc ug/kg
74-87-3	Chloromethane	1.1	U
74-83-9	Bromomethane	1.1	U
75-71-8	Dichlorodifluoromethane	1.1	U
75-01-4	Vinyl Chloride	1.1	U
75-00-3	Chloroethane	1.1	U
75-09-2	Methylene Chloride	1.1	U
75-69-4	Trichlorofluoromethane	1.1	U
75-35-4	1,1-Dichloroethene	1.1	U
75-34-3	1,1-Dichloroethane	1.1	U
540-59-0	Total- 1,2-Dichloroethene	1.1	U
67-66-3	Chloroform	1.1	U
107-06-2	1,2-Dichloroethane	1.1	U
71-55-6	1,1,1-Trichloroethane	1.1	0.9 J
56-23-5	Carbon Tetrachloride	1.1	U
75-27-4	Bromodichloromethane	1.1	U
78-87-5	1,2-Dichloropropane	1.1	U
10061-01-5	cis-1,3-Dichloropropene	1.1	U
79-01-6	Trichloroethene	1.1	U
124-48-1	Dibromochloromethane	1.1	U
10061-02-6	trans-1,3-Dichloropropene	1.1	U
79-00-5	1,1,2-Trichloroethane	1.1	U
110-75-8	2-Chloroethylvinyl ether	1.1	U
75-25-2	Bromoform	1.1	U
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U
127-18-4	Tetrachloroethene	1.1	U
108-90-7	Chlorobenzene	1.1	U
541-73-1	1,3-Dichlorobenzene	1.1	U
95-50-1	1,2-Dichlorobenzene	1.1	U
106-46-7	1,4-Dichlorobenzene	1.1	U
74-95-3	Dibromomethane	1.1	U
630-20-6	1,1,1,2-Tetrachloroethane	1.1	U
96-18-4	1,2,3-Trichloropropane	1.1	U
544-10-5	1-Chlorohexane	1.1	U
108-86-1	Bromobenzene	1.1	U
100-44-7	Benzyl chloride	1.1	U
95-49-8	4-Chlorotoluene	1.1	U
76-13-1	Freon 113	1.1	U

FORM I - VOA

000025

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
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FAX (914) 562-0841

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID: CGP20560621S
ETL Sample Number: 173961-05
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: 93.4
Matrix: 3 Soil/Sldg
Sample Wt/Vol: 5g
Level: LOW

Date Collected: 21-JUN-97
Date Received: 23-JUN-97
Date Extracted:
Date Analyzed: 25-JUN-97
Report Date: 19-AUG-97
Column: RTX-502.2
Lab File Id: A2349.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.1		U
74-83-9	Bromomethane	1.1		U
75-71-8	Dichlorodifluoromethane	1.1		U
75-01-4	Vinyl Chloride	1.1		U
75-00-3	Chloroethane	1.1		U
75-09-2	Methylene Chloride	1.1		U
75-69-4	Trichlorofluoromethane	1.1		U
75-35-4	1,1-Dichloroethene	1.1		U
75-34-3	1,1-Dichloroethane	1.1		U
540-59-0	Total-1,2-Dichloroethene	1.1		U
67-66-3	Chloroform	1.1		U
107-06-2	1,2-Dichloroethane	1.1		U
71-55-6	1,1,1-Trichloroethane	1.1	1	J
56-23-5	Carbon Tetrachloride	1.1		U
75-27-4	Bromodichloromethane	1.1		U
78-87-5	1,2-Dichloropropane	1.1		U
10061-01-5	cis-1,3-Dichloropropene	1.1		U
79-01-6	Trichloroethene	1.1		U
124-48-1	Dibromochloromethane	1.1		U
10061-02-6	trans-1,3-Dichloropropene	1.1		U
79-00-5	1,1,2-Trichloroethane	1.1		U
110-75-8	2-Chloroethylvinyl Ether	1.1		U
75-25-2	Bromoform	1.1		U
79-34-5	1,1,2,2-Tetrachloroethane	1.1		U
127-18-4	Tetrachloroethene	1.1		U
108-90-7	Chlorobenzene	1.1		U
541-73-1	1,3-Dichlorobenzene	1.1		U
95-50-1	1,2-Dichlorobenzene	1.1		U
106-46-7	1,4-Dichlorobenzene	1.1		U
74-95-3	Dibromomethane	1.1		U
630-20-6	1,1,1,2-Tetrachloroethane	1.1		U
96-18-4	1,2,3-Trichloropropane	1.1		U
544-10-5	1-Chlorohexane	1.1		U
108-86-1	Bromobenzene	1.1		U
100-44-7	Benzyl Chloride	1.1		U
95-49-8	4-Chlorotoluene	1.1		U
76-13-1	Freon 113	1.1		U

000034

VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID: CGP31060621SRE
EnviroTest Lab No.: 173961-04RE
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: 82
Matrix: Soil
Sample Wt/Vol.: 5g
Level: Low

Date Collected: 6/21/97
Date Received: 6/23/97
Date Extracted:
Date Analyzed: 6/26/97
Report Date: 8/4/97
Column: RTX-502.2
Lab File ID: A2387.D
Dilution Factor: 1

CAS No.	Compound	Detection Limit ug/kg	Conc ug/kg
74-87-3	Chloromethane	1.2	U
74-83-9	Bromomethane	1.2	U
75-71-8	Dichlorodifluoromethane	1.2	U
75-01-4	Vinyl Chloride	1.2	U
75-00-3	Chloroethane	1.2	U
75-09-2	Methylene Chloride	1.2	U
75-69-4	Trichlorofluoromethane	1.2	U
75-35-4	1,1-Dichloroethene	1.2	U
75-34-3	1,1-Dichloroethane	1.2	U
540-59-0	Total- 1,2-Dichloroethene	1.2	U
67-66-3	Chloroform	1.2	U
107-06-2	1,2-Dichloroethane	1.2	U
71-55-6	1,1,1-Trichloroethane	1.2	1.0 J
56-23-5	Carbon Tetrachloride	1.2	U
75-27-4	Bromodichloromethane	1.2	U
78-87-5	1,2-Dichloropropane	1.2	U
10061-01-5	cis-1,3-Dichloropropene	1.2	U
79-01-6	Trichloroethene	1.2	1.3
124-48-1	Dibromochloromethane	1.2	U
10061-02-6	trans-1,3-Dichloropropene	1.2	U
79-00-5	1,1,2-Trichloroethane	1.2	U
110-75-8	2-Chloroethylvinyl ether	1.2	U
75-25-2	Bromoform	1.2	U
79-34-5	1,1,2,2-Tetrachloroethane	1.2	U
127-18-4	Tetrachloroethene	1.2	0.6 J
108-90-7	Chlorobenzene	1.2	U
541-73-1	1,3-Dichlorobenzene	1.2	U
95-50-1	1,2-Dichlorobenzene	1.2	U
106-46-7	1,4-Dichlorobenzene	1.2	U
74-95-3	Dibromomethane	1.2	U
630-20-6	1,1,1,2-Tetrachloroethane	1.2	U
96-18-4	1,2,3-Trichloropropane	1.2	U
544-10-5	1-Chlorohexane	1.2	U
108-86-1	Bromobenzene	1.2	U
100-44-7	Benzyl chloride	1.2	U
95-49-8	4-Chlorotoluene	1.2	U
76-13-1	Freon 113	1.2	U

FORM I - VOA

000031

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID: CEQ60621TUBE
ETL Sample Number: 173961-07
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 21-JUN-97
Date Received: 23-JUN-97
Date Extracted:
Date Analyzed: 25-JUN-97
Report Date: 19-AUG-97
Column: RTX-502.2
Lab File Id: A2367.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1	.7	J
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

000040

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID: CGP21060621S
ETL Sample Number: 173961-06
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: 95.5
Matrix: 3 Soil/Sldg
Sample Wt/Vol: 5g
Level: LOW

Date Collected: 21-JUN-97
Date Received: 23-JUN-97
Date Extracted:
Date Analyzed: 25-JUN-97
Report Date: 19-AUG-97
Column: RTX-502.2
Lab File Id: A2351.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1	.5	J
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

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Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	CGP41060621S	Date Collected:	21-JUN-97
ETL Sample Number:	173961-09	Date Received:	23-JUN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	25-JUN-97
% Solid:	92.4	Report Date:	19-AUG-97
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	A2355.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.1		U
74-83-9	Bromomethane	1.1		U
75-71-8	Dichlorodifluoromethane	1.1		U
75-01-4	Vinyl Chloride	1.1		U
75-00-3	Chloroethane	1.1		U
75-09-2	Methylene Chloride	1.1		U
75-69-4	Trichlorofluoromethane	1.1		U
75-35-4	1,1-Dichloroethene	1.1		U
75-34-3	1,1-Dichloroethane	1.1		U
540-59-0	Total-1,2-Dichloroethene	1.1		U
67-66-3	Chloroform	1.1		U
107-06-2	1,2-Dichloroethane	1.1		U
71-55-6	1,1,1-Trichloroethane	1.1	.7	J
56-23-5	Carbon Tetrachloride	1.1		U
75-27-4	Bromodichloromethane	1.1		U
78-87-5	1,2-Dichloropropane	1.1		U
10061-01-5	cis-1,3-Dichloropropene	1.1		U
79-01-6	Trichloroethene	1.1	.7	J
124-48-1	Dibromochloromethane	1.1		U
10061-02-6	trans-1,3-Dichloropropene	1.1		U
79-00-5	1,1,2-Trichloroethane	1.1		U
110-75-8	2-Chloroethylvinyl Ether	1.1		U
75-25-2	Bromoform	1.1		U
79-34-5	1,1,2,2-Tetrachloroethane	1.1		U
127-18-4	Tetrachloroethene	1.1		U
108-90-7	Chlorobenzene	1.1		U
541-73-1	1,3-Dichlorobenzene	1.1		U
95-50-1	1,2-Dichlorobenzene	1.1		U
106-46-7	1,4-Dichlorobenzene	1.1		U
74-95-3	Dibromomethane	1.1		U
630-20-6	1,1,1,2-Tetrachloroethane	1.1		U
96-18-4	1,2,3-Trichloropropane	1.1		U
544-10-5	1-Chlorohexane	1.1		U
108-86-1	Bromobenzene	1.1		U
100-44-7	Benzyl Chloride	1.1		U
95-49-8	4-Chlorotoluene	1.1		U
76-13-1	Freon 113	1.1		U

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Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID:	CGP40560621S	Date Collected:	21-JUN-97
ETL Sample Number:	173961-08	Date Received:	23-JUN-97
Client Name:	Groundwater Sciences Corp.	Date Extracted:	
Project Name:	92004	Date Analyzed:	26-JUN-97
% Solid:	89.2	Report Date:	19-AUG-97
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	A2389.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.1		U
74-83-9	Bromomethane	1.1		U
75-71-8	Dichlorodifluoromethane	1.1		U
75-01-4	Vinyl Chloride	1.1		U
75-00-3	Chloroethane	1.1		U
75-09-2	Methylene Chloride	1.1		U
75-69-4	Trichlorofluoromethane	1.1		U
75-35-4	1,1-Dichloroethene	1.1		U
75-34-3	1,1-Dichloroethane	1.1		U
540-59-0	Total-1,2-Dichloroethene	1.1		U
67-66-3	Chloroform	1.1		U
107-06-2	1,2-Dichloroethane	1.1		U
71-55-6	1,1,1-Trichloroethane	1.1	.8	J
56-23-5	Carbon Tetrachloride	1.1		U
75-27-4	Bromodichloromethane	1.1		U
78-87-5	1,2-Dichloropropane	1.1		U
10061-01-5	cis-1,3-Dichloropropene	1.1		U
79-01-6	Trichloroethene	1.1		U
124-48-1	Dibromochloromethane	1.1		U
10061-02-6	trans-1,3-Dichloropropene	1.1		U
79-00-5	1,1,2-Trichloroethane	1.1		U
110-75-8	2-Chloroethylvinyl Ether	1.1		U
75-25-2	Bromoform	1.1		U
79-34-5	1,1,2,2-Tetrachloroethane	1.1		U
127-18-4	Tetrachloroethene	1.1		U
108-90-7	Chlorobenzene	1.1		U
541-73-1	1,3-Dichlorobenzene	1.1		U
95-50-1	1,2-Dichlorobenzene	1.1		U
106-46-7	1,4-Dichlorobenzene	1.1		U
74-95-3	Dibromomethane	1.1		U
630-20-6	1,1,1,2-Tetrachloroethane	1.1		U
96-18-4	1,2,3-Trichloropropane	1.1		U
544-10-5	1-Chlorohexane	1.1		U
108-86-1	Bromobenzene	1.1		U
100-44-7	Benzyl Chloride	1.1		U
95-49-8	4-Chlorotoluene	1.1		U
76-13-1	Freon 113	1.1		U

000043

EnviroTest Laboratories Inc.
315 Fullerton Avenue
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2B
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY
8010/8020

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.

Lab Code: 10142 Lab No.: 173961 Level: (low/med) low

	CLIENT SAMPLE NO.	SMC1 (DBFM)	#	SMC2 (BCP)	#	SMC3 (BFBH)	#	SMC4 (BFBP)	#	TOT OUT
01	VBLK24	111				119				0
02	CGP10560621S	96				75				0
03	CGP11060621S	98				72				0
04	CGP30560621S	84				51	*			1
05	CGP31060621S	79				56	*			1
06	CGP20560621S	88				72				0
07	CGP21060621S	97				82				0
08	CGP41060621S	103				81				0
09										
10										
11										
12										
13										
14										
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	QC LIMITS
SMC1 = Dibromofluoromethane	(74-136)
SMC2 = 2-Bromo-1-chloropropane	(64-126)
SMC3 = 4-Bromofluorobenzene HALL	(68-126)
SMC4 = 4-Bromofluorobenzene PID	(67-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0690
FAX (914) 562-0841

CTDOHS PH-0554 EPA NY049

Volatile Organics Analysis Data Sheet
Form I VOA
8010-FREON113

Client ID: CTB606210621
ETL Sample Number: 173961-10
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 21-JUN-97
Date Received: 23-JUN-97
Date Extracted:
Date Analyzed: 25-JUN-97
Report Date: 19-AUG-97
Column: RTX-502.2
Lab File Id: A2365.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1	1.4	
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U

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2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

8010/8020

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.

Lab Code: 10142 Level: (low/med) low

	CLIENT SAMPLE NO.	SMC1 (DBFM) #	SMC2 (BCP) #	SMC3 (BFBH) #	SMC4 (BFBP) #	TOT OUT
01	CTB606210621	96		98		0
02	CEG60621TUBE	99		93		0
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	QC LIMITS
SMC1 = Dibromofluoromethane	(74-136)
SMC2 = 2-Bromo-1-chloropropane	(64-126)
SMC3 = 4-Bromofluorobenzene HALL	(68-126)
SMC4 = 4-Bromofluorobenzene PID	(67-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

EnviroTest Laboratories Inc.
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2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

8010/8020

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.

Lab Code: 10142 Lab No.: 173961 Level: (low/med) low

	CLIENT SAMPLE NO.	SMC1 (DBFM) #	SMC2 (BCP) #	SMC3 (BFBH) #	SMC4 (BFBP) #	TOT OUT
01	VBLK25	99		97		0
02	VBLKSPK25	115		115		0
03	CGP10560621SMS	113		83		0
04	CGP10560621SMS	112		81		0
05	CGP30560621SRE	77		48 *		1
06	CGP31060621SRE	87		62 *		1
07	CGP40560621S	89		69		0
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	QC LIMITS
SMC1 = Dibromofluoromethane	(74-136)
SMC2 = 2-Bromo-1-chloropropane	(64-126)
SMC3 = 4-Bromofluorobenzene HALL	(68-126)
SMC4 = 4-Bromofluorobenzene PID	(67-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

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3B

SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.

Blank Spike - Client Sample No.: VBLKSPK25

Instrument ID: 5890N Blank Spike-ETL Sample No. VBLKSPK25

Date of Analysis: 6/25/97

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK SPIKE CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	10	10	97	(60-138)
Trichloroethene	10	10	100	(65-130)
Methylene Chloride	10	10	101	(69-129)
Tetrachloroethene	10	10	99	(68-139)
Chlorobenzene(1)	20	20	100	(72-135)

(1) Chlorobenzene and 1,1,1,2-Tetrachloroethane co-elute

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Comments: _____

_____

Page 1 of 1

625SBS 9/96

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3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.

Matrix Spike - Client Sample No.: CGP10560621S

Matrix Spike - ETL Sample No.: 173961-01

Instrument ID: 5890N

Date of Analysis: 6/25/97

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	10	0	9	89	(60-138)
Trichloroethene	10	0	9	87	(65-130)
Methylene Chloride	10	0	9	94	(69-129)
Tetrachloroethene	10	0	9	85	(68-139)
Chlorobenzene(1)	20	0	18	89	(72-135)

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MS % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	10	8	76	15	22	(60-138)
Trichloroethene	10	8	81	8	24	(65-130)
Methylene Chloride	10	9	92	3	21	(69-129)
Tetrachloroethene	10	8	78	9	21	(68-139)
Chlorobenzene(1)	20	16	82	8	21	(72-135)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

(1) Chlorobenzene and 1,1,1,2-Tetrachloroethane co-elute

Comments: _____

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Page 1 of 1

000011

FORM III VOA-2 625F3B 9/96

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0690
FAX (914) 562-0841

VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID: VBLK24
EnviroTest Lab No.: VBLK24
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid:
Matrix: Soil
Sample Wt/Vol.: 5g
Level: Low

Date Collected:
Date Received:
Date Extracted:
Date Analyzed: 6/24/97
Report Date: 8/4/97
Column: RTX-502.2
Lab File ID: A2333.D
Dilution Factor: 1

CAS No.	Compound	Detection Limit ug/kg	Conc ug/kg
74-87-3	Chloromethane	1.0	U
74-83-9	Bromomethane	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
75-00-3	Chloroethane	1.0	U
75-09-2	Methylene Chloride	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
540-59-0	Total- 1,2-Dichloroethene	1.0	U
67-66-3	Chloroform	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
75-27-4	Bromodichloromethane	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
79-01-6	Trichloroethene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
110-75-8	2-Chloroethylvinyl ether	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-90-7	Chlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-95-3	Dibromomethane	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
544-10-5	1-Chlorohexane	1.0	U
108-86-1	Bromobenzene	1.0	U
100-44-7	Benzyl chloride	1.0	U
95-49-8	4-Chlorotoluene	1.0	U
76-13-1	Freon 113	1.0	U

FORM I - VOA

000080

4A

VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
VBLK24

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.
Lab Code: 10142 Instrument ID: 5890N
Date Analyzed: 6/24/97 Matrix: Soil Method: 8010

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID
01	CGP10560621S	173961-01
02	CGP11060621S	173961-02
03	CGP30560621S	173961-03
04	CGP31060621S	173961-04
05	CGP20560621S	173961-05
06	CGP21060621S	173961-06
07	CGP41060621S	173961-09
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COMMENTS:

FORM IV VOA 6244A 6/96

000013

4A
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
VBLK25

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.
Lab Code: 10142 Instrument ID: 5890N
Date Analyzed: 6/25/97 Matrix: Water Method: 8010

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID
01	CTB606210621	173961-10
02	CEG60621TUBE	173961-07
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04		
05		
06		
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COMMENTS:

EnviroTest Laboratories Inc.
315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890
FAX (914) 562-0841
NYSDOH 10142 NJDEP 73507 CTDOHS PH-0554 EPA NY049

4A
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
VBLK25

Lab Name: EnviroTest Labs Client Name: Groundwater Sciences Corp.
Lab Code: 10142 Instrument ID: 5890N
Date Analyzed: 6/25/97 Matrix: Soil Method: 8010

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID
01	VBLKSPK25	VBLKSPK25
02	CGP10560621SMS	173961-01MS
03	CGP10560621SMSD	173961-01MSD
04	CGP30560621SRE	173961-03RE
05	CGP31060621SRE	173961-04RE
06	CGP40560621S	173961-08
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COMMENTS:

EnviroTest Laboratories Inc.
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Newburgh, NY 12550
(914) 562-0890
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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0554 EPA NY049

VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID: VBLK25
EnviroTest Lab No.: VBLK25
Client Name: Groundwater Sciences Corp.
Project Name: 92004
% Solid:
Matrix: Soil
Sample Wt/Vol.: 5g
Level: Low

Date Collected:
Date Received:
Date Extracted:
Date Analyzed: 6/25/97
Report Date: 8/4/97
Column: RTX-502.2
Lab File ID: A2361.D
Dilution Factor: 1

CAS No.	Compound	Detection Limit ug/kg	Conc ug/kg
74-87-3	Chloromethane	1.0	U
74-83-9	Bromomethane	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-01-4	Vinyl Chloride	1.0	U
75-00-3	Chloroethane	1.0	U
75-09-2	Methylene Chloride	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
540-59-0	Total- 1,2-Dichloroethene	1.0	U
67-66-3	Chloroform	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon Tetrachloride	1.0	U
75-27-4	Bromodichloromethane	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
79-01-6	Trichloroethene	1.0	U
124-48-1	Dibromochloromethane	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
110-75-8	2-Chloroethylvinyl ether	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-90-7	Chlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-95-3	Dibromomethane	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
544-10-5	1-Chlorohexane	1.0	U
108-86-1	Bromobenzene	1.0	U
100-44-7	Benzyl chloride	1.0	U
95-49-8	4-Chlorotoluene	1.0	U
76-13-1	Freon 113	1.0	U

FORM I - VOA

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NYSDOH 10142 NJDEP 73507 CTDOHS PH-0554 EPA NY049

Appendix C

Environmental Standards, Inc. Indoor Air Sampling and Risk Assessment Report

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

August 22, 1996

Ms. Betty Wagner
P.O. Box 214
Salt Point, NY 12578

Dear Ms. Wagner:

Environmental Standards, Inc. (Environmental Standards) was retained by Rainbow's End Daycare and Activity Center to provide indoor air sampling services at their facility located in Salt Point, New York. The sampling was performed by Environmental Standards on July 20 and 21, 1996, to assist in qualitatively and quantitatively characterizing vapor intrusion into the facility basement and occupied areas from contaminated subsurface soils and groundwater. The resulting samples were analyzed at a certified laboratory for Bromodichloromethane, Chloroform, 1,1-Dichloroethane, 1,1-Dichloroethene, and 1,1,1-Trichloroethane (see Attachment 1 for laboratory results).

A brief human health risk evaluation has been performed to evaluate the impact of vapor infiltration to children and care givers associated with activities performed at the Daycare Center.

Overview of Sampling Methodology

The sampling program consisted of the collection of three 24-hour integrated air samples using SUMMA® canisters as the collection media. Samples were collected at three locations within the facility, one in the basement area near an existing well, one in what is referred to as the Infant's Room, and one in a play room. Both of the upstairs rooms were located directly above the basement area. Based on information about the facility provided to Environmental Standards, these areas seemed to represent the most likely areas of vapor intrusion to the facility. A 24-hour integrated sampling method was used to characterize chronic exposure conditions to the vapors most likely encountered at the facility. The sampling method was based on US EPA's Method TO-14, SUMMA® Passivated Canister Sampling with Gas Chromatography.

At the request of Environmental Standards, representatives of Rainbow's End Daycare Center closed all windows at the facility and turned off the air conditioning system on the

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VALLEY FORGE, PA

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1111 Kennedy Place
Suite 2
Davis, CA 95616
916•758•1903

evening before sampling began. This procedure minimized the air exchange rate within the facility, thereby ensuring maximum possible contaminant concentrations for sampling.

The sampling equipment consisted of three clean 6-liter laboratory-certified SUMMA® canisters equipped with laboratory-certified clean flow controllers. The SUMMA® canisters were shipped to Environmental Standards' office and transported to the site for sampling. Each SUMMA® canister arrived from the laboratory with an internal vacuum pressure of approximately -30 psia. The flow controllers were calibrated at the laboratory to provide flow to the SUMMA® canisters at a rate that allows a sample to be collected over a 24 hour period. Upon completion of sampling, the SUMMA® canister should be just less than full, such that a slight vacuum pressure remains in the canister. The vacuum provides a method to check against canisters that may leak during transport to the laboratory following sampling.

Representatives of Environmental Standards arrived at the facility on the morning of Saturday, July 20, and proceeded to commence with the sampling effort. The SUMMA® canisters were fitted with the flow controllers on site and placed in position for sampling. The canister placed in the basement was positioned near the existing well and in close proximity to an open container of purge water that was assumed to be removed from the water table via the well. The remaining two SUMMA® canisters were placed in the Infant Room and play room, respectively, normally occupied by children and adult care givers as part of the facility's day care operations. The rooms were selected based on their locations approximately directly over the basement.

Once in place, the regulator valves on each of the canisters were turned to the open position, and sample collection was initiated. The Environmental Standards representative then left the premises and returned 24 hours later to close the regulator valves and collect the canisters for shipment to the laboratory. Each sample was provided a unique identifier and such information as sample start and stop times and the type of analysis to be performed. The information was attached to the sample prior to shipment to the laboratory. The laboratory analyzed the samples for Bromodichloromethane, Chloroform, 1,1-Dichloroethane, 1,1-Dichloroethene, and 1,1,1-Trichloroethane using gas chromatography. Only 1,1,1-Trichloroethane was detected in the samples. A summary of the laboratory results is provided in Table 1.

Risk Characterization

An assessment of inhalation exposure to indoor air concentrations of 1,1,1-Trichloroethane was conducted for daycare workers and children at the Rainbow's End Daycare and Activity Center, Salt Point, New York. For the adult daycare worker scenario, it was assumed that the worker was employed by the daycare facility for 25 years and would be on site for 250 days per year (5 days per week for 50 weeks per year) and that exposure would occur via inhalation. The child exposure scenario was

based on the assumptions that children might be exposed to indoor air up until school age (approximately until the child was 6 years old). Although it is unlikely that daycare workers or children at the facility would be exposed to indoor air concentrations for eight hours per day over 25 and 6 years, respectively, especially during the warmer eight months of the year, these conservative assumptions were used in the risk assessment to ensure protection of human health. Inhalation rates were obtained from the US EPA Exposure Factors Handbook for moderate activity, 2.5 m^3/hr for adult males and 2.0 m^3/hr for children. The inhalation intakes were calculated using the paradigm recommended by the US EPA, and the results were compared to inhalation RfDs which are estimates of daily exposures that are not likely to produce human health impacts. The chronic inhalation RfD for 1,1,1-Trichloroethane was used to estimate hazard for the adult scenario, and a provisional subchronic RfD was used to estimate the hazard for children.

The Hazard Quotients for adults and children exposed to 1,1,1-Trichloroethane via inhalation at the Rainbow's End Daycare Facility were estimated to be 0.01 and 0.002, respectively. Hazard quotients that are less than 1 are not considered to be of concern for potential noncancer effects.

Summary of Results

This conservative assessment demonstrates that concentrations of constituents in indoor air at the Rainbow's End Daycare Facility do not present unacceptable health impacts.

If you have any questions, please do not hesitate to call at 610-935-5577.

Sincerely yours,

G. L. Kirkpatrick

Gerald L. Kirkpatrick, P.G., CGWP
Managing Director of Geosciences
and Risk Assessment/Principal

Mark Hammaker

Mark Hammaker, P.E.
Environmental Engineer

RJF/MKH:hb

cc: Robert J. Fares, Environmental Standards, Inc.

Table 1
Analytical Results

Sample 01A (basement)

Compound	Detection Limit (ppbv)	Amount (ppbv)
Chloroform	0.84	Not Detected
1,1,1-Trichloroethane	0.84	9.8
1,1-Dichloroethene	0.84	Not Detected
1,1-Dichloroethane	0.84	Not Detected
Bromodichloromethane	3.4	Not Detected

Sample 02A (infant)

Compound	Detection Limit (ppbv)	Amount (ppbv)
Chloroform	0.81	Not Detected
1,1,1-Trichloroethane	0.81	Not Detected
1,1-Dichloroethene	0.81	Not Detected
1,1-Dichloroethane	0.84	Not Detected
Bromodichloromethane	3.2	Not Detected

Sample 03A (front)

Compound	Detection Limit (ppbv)	Amount (ppbv)
Chloroform	0.96	Not Detected
1,1,1-Trichloroethane	0.96	Not Detected
1,1-Dichloroethene	0.96	Not Detected
1,1-Dichloroethane	0.96	Not Detected
Bromodichloromethane	3.8	Not Detected

ATTACHMENT 1

AIR TOXICS LTD.

SAMPLE NAME: CGEC#2-Infant Room

ID#: 9607232-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5072706	Date of Collection:	7/21/96
Dil. Factor:	1.61	Date of Analysis:	7/27/96

Compound	Det. Limit (ppbv)	Amount (ppbv)
Chloroform	0.81	Not Detected
1,1,1-Trichloroethane	0.81	Not Detected
1,1-Dichloroethene	0.81	Not Detected
1,2-Dichloroethane	0.81	Not Detected
Bromodichloromethane	3.2	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	100	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: CGEC#1-Basement/Well

ID#: 9607232-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5072705	Date of Collection:	7/21/96
Dil. Factor:	1.68	Date of Analysis:	7/27/96

Compound	Det. Limit (ppbv)	Amount (ppbv)
Chloroform	0.84	Not Detected
1,1,1-Trichloroethane	0.84	9.8
1,1-Dichloroethene	0.84	Not Detected
1,2-Dichloroethane	0.84	Not Detected
Bromodichloromethane	3.4	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	102	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 9607232-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5072704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 7/27/96

Compound	Det. Limit (ppbv)	Amount (ppbv)
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
1,2-Dichloroethane	0.50	Not Detected
Bromodichloromethane	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	99	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: CGEC#3-Front Room

ID#: 9607232-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5072707	Date of Collection: 7/21/96
Dil. Factor:	1.91	Date of Analysis: 7/27/96

Compound	Det. Limit (ppbv)	Amount (ppbv)
Chloroform	0.96	Not Detected
1,1,1-Trichloroethane	0.96	Not Detected
1,1-Dichloroethene	0.96	Not Detected
1,2-Dichloroethane	0.96	Not Detected
Bromodichloromethane	3.8	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	99	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130

ENVIRONMENTAL STANDARDS

9607232 -

Chain of Custody

Project Name:	Rainbow's End Daycare Center	Report to:	Environmental Standards, Inc.
Client:	Cavalier Gauge and Electric Co.		P.O. Box 911
Project Manager:	David C. Nuber		Valley Forge, PA 19482-0911
Job #/P.O. #:	96030775.A000	Attn: David C. Nuber	Phone: 610-935-5577

maround time request: Normal Rush: ____ Days

one #: 610-935-5577

x #: 610-935-5583

rcle fax # to receive results by fax)

mpler(s): Jaime Gonsalves

Sample Identification	Date Collected	Time Collected	Grab (G) or Composite (C)	Matrix Code	Total # of Containers	Modified EPA Method TO-14										
REC#1 - Basement/well	7/21/96	11:15	C	A	1	X										
REC#2 - Infant Room	7/21/96	11:15	C	A	1	X										
REC#3 - Front Room	7/21/96	11:15	C	A	1	X										

Analyses Requested

Matrix Codes
S - Soil
GW - Ground Water
Sed. - Sediment
SW - Surface Water
A - Air
O - Other (Specify)

Remarks
Analyze for:
1) bromodichloromethane,
2) chloroform,
3) 1,2-dichloroethane,
4) 1,1-dichloroethene and
5) 1,1,1-trichloroethane
for all three samples.

a Package Deliverables: (Circle all that apply)
ata Package Field COC
QC Summary 3. EPA CLP
Other (Specify)

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Custody Seal Intact?
		7-22-96					Yes No
	Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Custody Seal Intact?
							Yes No
	Relinquished by:	Date:	Time:	Received for Laboratory by:	Date:	Time:	Custody Seal Intact?
				Scott Amerson ATL	7/23/96	1032	Yes No