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**ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310**

March 1995

PREPARED FOR:

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**Executive Summary and Recommendation  
Environmental Site Investigation  
Mobil Service Station #01-558  
381 Woodstock Road  
Quechee, Vermont**

Groundwater Technology, Inc. was retained by Mobil Oil Corporation in January 1995 to complete an Environmental Site Investigation for the referenced site. As part of the Environmental Site Investigation, Groundwater Technology performed background research and additional subsurface investigation.

Vermont Department of Environmental Conservation (DEC) underground storage tank (UST) records indicate that five UST exist at the site (three gasoline, one waste oil and one fuel oil). Their records also indicate the existing UST permit is invalid due to an unpaid assessment fee. It was also noted that the UST permit is not transferable. Also, according to DEC records, a fuel oil UST exists on the property which the site owner claims has been removed.

Potential sensitive receptors in the area include two basements, surface water (a drainage swale) and two bedrock supply wells (including the site supply well).

On February 14, 1995 a Groundwater Technology geologist supervised the installation of three 4-inch diameter groundwater monitoring wells (GT-1, GT-2 and GT-3) which were used to help further define the vertical and lateral extent of the hydrocarbon impacted soil and groundwater. Select soil samples were collected from each groundwater monitoring well boring location and submitted to Mobil's Environmental Services Laboratory (ESL) for analysis. Soil samples were analyzed for select volatile organic compounds (VOC) referencing EPA Method 8020 plus methyl tertiary butyl ether (MTBE) and total petroleum hydrocarbons (TPH) by modified EPA Method 8015 at boring locations GT-2 and GT-3. Soil samples from boring location GT-1 were analyzed referencing EPA method 8240 and TPH by modified EPA Method 8015. Analytical results revealed a concentration of 3.4 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) of o-xylene in a soil sample from the GT-3 boring and 11 milligrams per kilogram ( $\text{mg}/\text{kg}$ ) of gasoline range organics. No detectable concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX) or MTBE were detected in any of the other soil samples analyzed. Gasoline range organics were however detected in borings GT-1 (6  $\text{mg}/\text{kg}$ ) and GT-2 (5  $\text{mg}/\text{kg}$ ). Soil headspace readings performed in the field during installation of the monitoring wells reveal concentrations from below detection limit (BDL) to 14 parts per million (ppm) in GT-1, BDL to 157 ppm in GT-2, and BDL to 4.0 ppm in GT-3.

Soil underlying the site consists generally of very dense fine grained sand, silt and trace cobbles. It was encountered from a depth of 16 feet to approximately 2 feet below the surface. A medium grained sand backfill was encountered from 2 feet to the surface. Groundwater was encountered at an average depth of 4.60 feet as recorded on the well construction logs and flows east based on gauging data from site monitoring wells.

Water samples were collected from the surface water culvert discharge point (SW) on February 15, 1995 and groundwater samples were collected from all monitoring wells (MW-0, MW-4, GT-1, GT-2, and GT-3) on February 21, 1995. Samples from the culvert discharge and monitoring wells MW-0, MW-4, GT-1, GT-2 and GT-3 were analyzed for VOC including BTEX and MTBE by EPA Method 8240, semi VOC by EPA Method 8270 (base/neutral component), and TPH by modified EPA Method 8015 at ESL. Monitoring well GT-1 was additionally analyzed for RCRA metals. Analytical results reveal dissolved BTEX compounds ranging from BDL in SW, GT-1, GT-3 and MW-0 to 13,459 micrograms per liter  $\mu\text{g/L}$  in GT-2. MTBE ranged from BDL in GT-1, GT-2 and MW-0 to 48,200  $\mu\text{g/L}$  in MW-4. Naphthalene was also detected in MW-4 at a concentration of 227  $\mu\text{g/L}$  and butyl benzyl phthalate was detected in monitoring wells GT-1 and GT-3 at concentrations of 4.7  $\mu\text{g/L}$  and 3.2  $\mu\text{g/L}$  respectively. RCRA metals detected in GT-1 included barium, cadmium, chromium, lead and selenium at 4.1 milligrams per liter (mg/L), 0.15 mg/L, 1.8 mg/L, 0.27 mg/L, and 0.25 mg/L respectively. No other compounds analyzed for were detected.

On February 17, 1995 Gore-Sorber™ modules (G-1 through G-8) were installed on the subject site to more accurately delineate the subsurface hydrocarbon impacted areas. The results of the Gore-Sorber™ survey detected gasoline and diesel/fuel oil range organics in the three modules that were retrieved and analyzed. Five modules remain in frozen in the site's subsurface. These can be retrieved and analyzed to obtain valid data up to March 31, 1995. Analysis of the modules after March 31, 1995 may produce ambiguous results.

At least one hydrocarbon source area has been identified through this and previous investigations. The primary source area is the existing UST field where a documented release occurred in 1989. A secondary source area of the pump island pad and related petroleum distribution piping may also be associated with the prior release based on the historical file review information. A french drain system appears to play a key role in distributing groundwater, including impacted groundwater, across the site.

Based on results of the investigation completed at the site to date, no upgradient off-site sources have been identified. However, the risk of impacting downgradient off-site groundwater is a possibility due to groundwater flowing east across the site and drainage through the french drain system. The site is located in a residentially zoned area as designated by the town of Hartford, Vermont, although only one resident is located within 1,000 feet of the site.

Groundwater enforcement standards are being exceeded in downgradient on-site monitoring wells. In consideration of this and the continued source area it is likely that remediation will be required at this site.

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## 1.0 INTRODUCTION

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### 1.1 Background and Statement of Purpose

Mobil Oil Corporation (Mobil) retained Groundwater Technology, Inc. in January 1995 to complete an environmental site investigation for Mobil Service Station #01-558 located at 381 Woodstock Road in Quechee, Vermont (**Figure 1, Appendix A**). The scope of work to complete the site investigation was approved by Ms. Linda Costanzo of Mobil on January 31, 1995 and site investigation activities commenced on February 1, 1995. Groundwater Technology completed environmental activities at the site under contract with Mr. Michael Gorevan, the present owner, in 1989 and the Vermont Department of Environmental Conservation (DEC) from 1989 and into 1991. Potential conflict of interest issues were discussed with Ms. Costanzo. Work commenced with this project after determining that Mobil's interests would not be compromised.

The purpose of this site investigation was to investigate any subsurface environmental impact associated with past and present site usage and evaluate hydrogeologic characteristics of the site. Mobil intends to use the information contained in this report to aid in evaluating their option to operate the site under a lease agreement. This site investigation report has been completed in accordance with site investigation and reporting requirements outlined in the DEC Hazardous Materials Management Division's draft Site Investigation Guidance document, dated May 1994.

### 1.2 Scope of Work

The scope of work performed by Groundwater Technology to complete the environmental site investigation included the following tasks:

- Preparation of a site specific health and safety plan.
- Compilation of data regarding the site location, history and surrounding area through contact with state and local agencies and utility companies.
- Installation of three groundwater monitoring wells (GT-1, GT-2 and GT-3).
- Collection of soil samples from well borings for characterization and field screening for total volatile organic compounds (VOC).
- Collection of select soil samples from each boring location for laboratory analysis of volatile and semi-volatile organic compounds.

- Completion of a top-of-casing elevation and location survey of the three wells and two existing wells.
- Gauging of all monitoring wells to determine the presence of non-aqueous phase liquid (NAPL) hydrocarbons and water-table elevation.
- Collection of groundwater samples from three new and two existing on-site monitoring wells for analysis of VOC referencing EPA Method 8240, semi volatile organic compounds referencing EPA Method 8270 (base/neutral fraction) and total petroleum hydrocarbons (TPH) referencing a modified EPA Method 8015. GT-1 was also sampled and analyzed for RCRA metals.
- Completion of a soil gas survey through installation of eight Gore-Sorber™ modules (G-1 through G-8).

These activities are described in detail in the following paragraphs.

## 2.0 SITE HEALTH AND SAFETY PLAN

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As required by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.120, Groundwater Technology prepared a Site Health and Safety Plan (SSP). The purpose of the SSP is to reduce the risk of physical or chemical exposures that may affect Groundwater Technology personnel, their subcontractors and/or other personnel who may be present in the work area. The SSP includes:

- Information about chemicals expected on site;
- safety procedures for working on site; and
- emergency response procedures.

Data reviewed by Groundwater Technology prior to starting the subsurface investigation indicated that levels of petroleum compounds could potentially exist in the soil and groundwater. Based on this information, Modified Level D was determined to be the minimum acceptable level of protection for this site. Modified Level D provides minimal dermal protection; respiratory protection is optional unless air monitoring data (with a PID) indicate otherwise. Personal protective equipment for Modified Level D includes coveralls, protective gloves, steel-toe boots/shoes, safety glasses, and hardhats. A copy of the SSP is available from the Groundwater Technology files upon request.

### 3.0 LOCATION, DESCRIPTION AND HISTORY

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#### 3.1 Site Description

The subject site is located at 381 Woodstock Road (Route 4) directly opposite the entrance and exit ramps to Interstate I-89 in Quechee, Vermont, latitude 43° 39' 42" N and longitude 72° 23' 20" W on the United States Geological Survey, Quechee, Vermont, topographic quadrangle map (**Figure 1, Appendix A**). The site is listed at the town of Hartford Assessor's Office as Lot #0148 on Map #08, in an area zoned by the town as residential. Quechee is a village in the town of Hartford.

The site (**Figure 2, Appendix A**) consists of a 1.67 acre parcel of land owned by Michael A. Gorevan, and is currently occupied by a full service, gasoline retail facility, a mini mart, automobile repair facility and a bookstore. The service station is currently closed/abandoned. Photographs of the site are included in **Appendix B**.

Structures on the site include a slab-on-grade, one-story masonry building which contains a minimart, public restrooms, office/storage space, cashiers station, and four service bays. The building is heated by an oil-fired furnace. Sewage generated at the site is discharged to an on site septic tank with leachfield sewer system. A floor drain exists in two rear (southwest) service bays. Apparently the floor drain does not have discharge pipe. The integrity of the floor drain bottom was not investigated. There is also a wood framed structure which houses a bookstore in the southeast corner of the property. The structure has no running water or sewage system.

Drinking water to the site is supplied by an on-site bedrock supply well. The water line from the well to the station was frozen during a site visit on February 14, 1995 therefore, it was not sampled. Other utilities that service the site include overhead electric and telephone lines. There are catch basins located on the site which drain to culverts located parallel to Woodstock Road, beneath the two entrances of the site. A french drain system, as approximated in **Figure 2**, has also been confirmed to exist on the subject site. According to Mr. Michael A. Gorevan, the current owner of the property, Exxon installed the system on the southeast portion of the property to divert shallow groundwater away from the pump island area and prevent frost heaves through the pavement. The french drain system in the northwest and north portions of the site was installed after NAPL was discovered in the UST field in 1989. Both systems appear to eventually drain into a culvert that passes under Route 4 and discharges to a swale. Approximately 65% of the site is paved having

generally flat topography to the west and sloping slightly to the east. Surface drainage flows west to east across the site. **Figure 2** shows locations of all underground utilities identified.

### 3.2 Past and Present Owners and Site Uses

Research regarding site ownership and usage was performed by Groundwater Technology personnel at the town of Hartford, Vermont Assessor's Office. The subject site is currently owned by Mr. Michael A. Gorevan of Quechee, Vermont. The site was operated until late 1994 or early 1995 by New England Enterprises, Inc. with Mr. Gorevan as president. Research indicates that Mr. Gorevan purchased the property from Exxon Company, U.S.A. (Exxon) in March 1983. Exxon purchased the property in June 1969 from L.A. Whipple, Inc. The present lot was previously deeded as three separate lots. Previous owners are included in **Table 1, Appendix C**. According to Mr. Gorevan, prior to Exxon constructing the retail gasoline station in 1969 the property was used as farm land.

### 3.3 Site Tankage, Chemical Usage and Management

According to Ms. June Middleton of the Vermont DEC, Tank Storage Records Department, there are currently five UST at the site. The tanks are owned and permitted by Mr. Gorevan, although Ms. Middleton states that the permit is currently invalid because an assessment fee is unpaid. The permit will not be valid until the fee is paid, demonstrating financial responsibility. Ms. Middleton also stated that the permit is not transferrable. Two of the UST were installed in 1989, are double-wall steel construction (sti-P3®) and have 10,000-gallon capacities. A third UST installed in 1985, is single walled steel and fiberglass construction (buffed), also with a 10,000-gallon capacity. These were used to store three grades of unleaded gasoline. A fourth UST at the site is a waste oil tank of unknown construction with a 1,000-gallon capacity. The UST are located to the north-northeast of the station building and the waste oil UST is located on the southeast corner of the building (**Figure 2**). A 1,000-gallon capacity UST for #2 fuel oil is also listed in the DEC records. According to Mr. Gorevan, this tank was removed in 1989, however, this could not be confirmed at the DEC.

The product lines are constructed of double-wall fiberglass, apparently without leak detection. According to Mr. Michael Gorevan, all existing UST at the site are equipped with overfill protection, spill containment, and release detection. It could not be determined if the steel tanks have cathodic protection. The DEC records indicate the product lines were installed in 1989 by Tom Roy

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Construction. Service Station Maintenance of Worcester, Massachusetts installed new dispensers and replumbed the piping in the vicinity of the dispensers in 1993.

According to DEC records and Mr. Gorevan, the two existing double-wall steel gasoline UST installed in May 1989 replaced three former gasoline UST. Two 6,280-gallon gasoline UST, which were installed in 1969, and one 4,000-gallon gasoline UST also installed in 1969. The existing UST were installed in the former gasoline UST field. **Figure 2** details the locations of the present and former UST on-site.

**Table 2, Appendix C** summarizes information regarding present and former tank usage at the site. Tank removal dates for three of the four former UST referenced in **Table 2** were obtained from DEC records. The oil furnace for the station is currently fueled from an above-ground tank located inside the building.

Currently, there are three (3) thirty-gallon drums on site each approximately three-quarters full of metal shavings (possibly brake rotor grindings). The drums are not labeled and in poor condition. Additionally, there is one (1) five-gallon pail of what appears to be roof tar, one (1) abandoned truck and one (1) abandoned car on the site. Additionally, the site is littered with trash (paper, cans and plastic bottles) and in a generally degraded state.

### 3.4 Abutting Properties

A reconnaissance of the site vicinity indicates that all but one of the parcels surrounding the subject site are currently vacant. The parcel located to the north of the subject property is currently used for both commercial and residential purpose. Only one property within a 1,000-foot radius of the site was identified as containing UST. These UST are listed in **Table 3** and are discussed in more detail in Sections 4.2 and 4.3 of this report. A plan showing the site vicinity is included as **Figure 3**.

Abutting properties and their usage are listed in **Table 4**.

### 3.5 Potential Sensitive Receptors

The village of Quechee derives its drinking water from both public and private water supply wells located throughout Quechee. No public supply wells exist within 1,000 feet of the site. According to

a 1992 well location map obtained at the DEC, there are at least 30 private supply wells within one-half mile of the site (Figure 6). The site water supply well is located on the western portion of the site and is crossgradient from the UST. As previously discussed, the transfer line from the supply well was frozen during a site visit on February 14, 1995 thus, preventing any sampling of the well. The sewer system with leachfield is located to the west of the station building. One residential property (Lot #0196) abutting the site to the south and hydraulically crossgradient of the subject site has a basement and a supply well. The bookstore on the subject property also has a partial basement.

Potential preferred migration pathways include fill material around underground utilities. Typically, utility line backfill has a higher porosity and permeability than surrounding native soils and may provide a preferential conduit for the migration of vapor and liquid. Both the french drain constructed on the subject site and the utilities buried beneath Woodstock Road would potentially provide a conduit for the migration of vapor and liquid (Figure 2). The french drain systems were previously discussed in section 3.1.

## 4.0 REGULATORY RESEARCH AND FILE REVIEW

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Groundwater Technology personnel completed a file review at the DEC offices in Waterbury, Vermont on February 13, 1995. Information sources reviewed include: The Hazardous Materials Management Division hazardous sites list and files including petroleum and non-petroleum sites; DEC spills database listing; and DEC Underground Storage Tank Records. All records were reviewed for reference to the subject property and properties within a 1,000 foot radius of the site. Sections 4.1 through 4.3 summarize information obtained during the regulatory research that may be relevant to the site. incidents reported in the regulatory files that occurred within one-half mile of the site but are not likely to impact the site are recorded in the Groundwater Technology project file.

### 4.1 DEC Hazardous Materials Management Division Active Sites List

The Hazardous Materials Management Division sites list and files were reviewed for reference to the subject site and properties within a 1,000-foot radius. The subject site is listed as site #89-0310 with a project status of "site being monitored". Al's Country Store at 407 Woodstock Road (Lot #199, Map #8; **Figure 2**) is listed as site #91-1171 with a project status of "Info on Soils Needed". No other sites within a one-half mile radius were listed.

### 4.2 DEC Hazardous Materials Managements Division Spills Database

DEC Hazards Materials Division Spills Database list was reviewed for reference to the subject site and properties within a 1,000-foot radius. The following reference was found regarding the subject site:

- Quechee Mobil (subject site), 381 Woodstock Road, on October 27, 1990, an overfill of 25 gallons of gasoline was reported. This spill was cleaned with speedy dry.
- Route 4, Quechee, a truck accident was reported on November 29, 1990 which resulted in a 50-gallon gasoline leak. An environmental contractor responded to clean the spill.

### 4.3 DEC Tank Storage Records

DEC Tank Storage Records were reviewed for UST located within 1,000 feet of the subject site. Properties currently or formerly containing UST within a 1,000-foot radius of the site are included in **Table 3** and are identified on **Figure 3**.

## 5.0 HISTORICAL ENVIRONMENTAL ACTIVITIES

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The following events and findings were noted during Groundwater Technology's review of state and local files, discussions with the DEC, property owner and Mobil representatives. It is Groundwater Technology's understanding that an environmental release was first discovered during the installation of groundwater monitoring wells in March 1989 for the purpose of complying with DES leak detection requirements. Upon discovery of the release, UST were tightness tested with results indicating failure of two of the three gasoline UST. The product lines could not be tested due to their poor condition. Tank removal contractors, emergency response contractors and Groundwater Technology were contracted by Mr. Gorevan to properly remove the leaking UST and lines, and treat associated impacted soils and groundwater. Groundwater Technology proceeded with the contracted scope of work and performed treatment of approximately 300 cubic yards of impacted soil with an above-ground soil vapor extraction system. Groundwater Technology was subsequently contracted by the DEC to perform quarterly groundwater monitoring and sampling which took place through early 1991 according to internal records. Based on discussions with the DEC, quarterly monitoring has been ongoing since that time.

The following environmental reports/letters/memorandums have been generated regarding the subject site:

- In an internal memorandum from Mr. Greg Leech of the DEC to Mr. Chuck Schwer, dated March 31, 1989, Mr. Leech describes activities conducted while he and R. Deetz of the DEC performed a site visit. During the site visit, monitoring wells were being installed in which two of the wells had separate-phase petroleum ranging from 1/8-inch to 18-inches in thickness. Throughout the course of the day, Mr. Leech noted that 55-gallons of product was recovered from these wells and from the UST pump boxes. An 8-inch diameter culvert drain leading from the site and crossing under Route 4 was also noted to have a sheen. Mr. Leech instructed Mr. Gorevan to have the product lines and the UST tightness tested. According to Mr. Leech, product line testing could not be conducted because they were in "such bad shape that there was no way testing could be run on them". Mr. Leech recommended that the site be considered a high priority due to impacted receptors being; groundwater; surface waters; vadose soil zones and ambient air. Attached to this memorandum are 1983 Petro-tite® line testing results (conducted for Exxon) and a "Vermont Notification for UST" which identifies four petroleum UST, a waste oil UST and a fuel oil UST. The line test results indicated that the lines tested tight in 1983.
- "Site Investigation and Remediation Plan - Draft Proposal" by Thermo Water Management, dated 1989; Historical review of previous environmental investigations; monitoring well installation details; and identification of separate phase petroleum in monitoring well MW-2.

- "Underground Storage Tank Program Tank Pull Form" by R. Deetz of the DEC identifying the removal of three gasoline UST on May 10, 1989. It should be noted that according to Mr. Michael Gorevan, four tanks were removed on this day including one #2 fuel oil UST and three gasoline UST.

R. Deetz noted that the tanks removed were in good condition, however, soils, groundwater and surface waters were impacted with petroleum. R. Deetz classified the site as a high priority.

- In a memorandum for R. Deetz to Mr. Schwer dated May 12, 1989, R. Deetz summarizes the UST pull and dewatering activities at the subject site. R. Deetz identifies three UST being removed on May 10, 1989 along with soils with field headspace readings of 200 parts per million (ppm).
- In a letter from Mr. Schwer of the DEC to Ms. Betty Burgess, assumed to be a resident of the property located immediately south of the subject site, dated January 2, 1990, Mr. Schwer indicates that according to analytical results of Ms. Burgess water supply, the water is potable relative to gasoline. Mr. Schwer states that based on analytical results from samples collected on April 12, 1989, July 28, 1989 and October 3, 1989 the DEC has concluded that Ms. Burgess' water had not been impacted by the gasoline release at the subject site and was safe to drink.
- In a memorandum from Mr. Richard Spiese of the DEC to Mr. Grant MacEwan of the Woodstock National Bank dated January 24, 1991, a summary of the DEC's involvement at the site is detailed. The memorandum states that petroleum contamination was first discovered on March 30, 1989. During the UST removal, it was noted that approximately 300 cubic yards of soil were removed, stockpiled and treated on site. Monitoring wells were installed sampled and analyzed and according to Mr. Spiese, the results were showing signs of improvement as of the date of the memorandum. Mr. Spiese also noted that the site was not considered a "pressing priority" by the Hazardous Materials Management Division.
- In a memorandum from Mr. Schwer to Mr. Yudien, Assistant Attorney General, dated May 21, 1991, Mr. Schwer states that in 1989 Mr. Gorevan began installing monitoring wells to meet requirements for UST monitoring (as a result of the detection of NAPL in the wells, tank testing was performed). Two of the four on site UST were found to be leaking with leak rates of 0.3 gallons/hour and .09 gallons/hour respectively. Mr. Schwer noted that within a 30 day period this equates to 281 gallons. Additionally, Mr. Schwer points out that the waste oil UST was never leak monitored as required.

## 6.0 SUBSURFACE SITE INVESTIGATION

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### 6.1 Well Installation and Soil Sampling

A Groundwater Technology geologist supervised the installation of three borings which were completed as groundwater monitoring wells. The wells (GT-1 through GT-3) were installed on February 14, 1995. Auger refusal was met at five feet below surface grade in boring B-1, therefore the boring was moved to location GT-2. The borings were installed by AM Drilling, Inc. of Leominster, Massachusetts, using a truck mounted, hollow stem auger drill rig. The boring locations are shown on **Figure 2**. Monitoring well construction details are included on the monitoring well construction logs provided in **Appendix D** along with boring logs available from previous investigations. Standard field work methodologies for drilling procedures are included in **Appendix E**.

Soil samples collected during drilling were screened in the field for VOC with a portable photolization detector (PID). Field screening results are summarized in **Table 5** and are included on the boring logs. VOC were detected in each of the borings installed and ranged from 4 ppm in GT-3 to 157 ppm in GT-2.

During drilling of borings GT-2 and GT-3, select soil samples were collected for laboratory analysis of benzene, toluene, ethylbenzene and total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) utilizing a modified EPA Method 8020 and total petroleum hydrocarbons (TPH) utilizing a modified EPA Method 8015. Soil samples were also collected from GT-1 and submitted for laboratory analysis referencing EPA Method 8240 and TPH by a modified EPA Method 8015. The different analysis for GT-1 was based on its proximity to the waste oil UST. Soil samples were chosen based on the highest PID reading registered during headspace analysis or the sample collected at the water table. The analyses were performed at Mobil's Environmental Service Laboratories (ESL) in Pennington, New Jersey. Analytical results of soil samples collected from the boring locations indicate that a concentration of 3.4  $\mu\text{g}/\text{kg}$  of xylenes was detected in a soil sample from GT-3. No BTEX or MTBE was detected in any of the other samples collected. Gasoline range TPH compounds were detected in samples collected from GT-1, GT-2 and GT-3 at concentrations of 6 mg/kg, 5 mg/kg and 11 mg/kg respectively. The soil analytical results are summarized in **Table 5** and the analytical reports are provided in **Appendix F**.

## 6.2 Site Geology

The site stratigraphy as determined through split spoon samples collected during the boring installations consists generally of very dense silt and fine-grained sand with a trace amount of cobbles. This stratigraphy was encountered from a depth of 16 feet to approximately 2 feet below the surface grade and is interpreted to be till. A gravel backfill consisting of medium to coarse-grained sand, gravel and silt was encountered from 2 feet to surface grade. These findings are consistent with previous borings logs.

## 6.3 Gauging, Surveying and Groundwater Flow Direction

New and existing monitoring wells (GT-1, GT-2, GT-3, MW-0 and MW-4) were gauged on February 15, 21 and 27, 1995 to determine depth to groundwater and the thickness of NAPL (if present). Standard field work methodologies for monitoring well gauging are provided in **Appendix E**. The site monitoring wells were surveyed on February 15, 1995 to an on-site benchmark with an arbitrarily assigned elevation of 100 feet to establish top-of-casing (TOC) elevations. The benchmark used for surveying was the concrete apron on the eastern-most pump island.

Based on gauging data obtained to date, groundwater flows east beneath the site. **Figure 4** illustrates the water table elevation contours. Mounding of the water table appears to exist in the vicinity of the pump islands and gasoline UST field. Two of the wells (GT-1 and GT-3) were dry during the February 15, 1995 gauging event. Monitoring well gauging results are provided in **Table 6**.

## 6.4 Groundwater Sampling and Analysis

Groundwater Technology personnel collected groundwater samples from the site monitoring wells to determine groundwater quality at the site. Groundwater samples were collected from MW-0, MW-4, GT-1, GT-2 and GT-3 on February 21, 1995. Samples were collected by inserting a two-inch diameter bailer with a ball check valve at the bottom into the well. Monitoring well GT-1 had to be resampled on February 27, 1995 due sample breakage while in transit. Standard sampling methodologies are included in **Appendix E**. All groundwater samples collected were analyzed for VOC including BTEX and MTBE utilizing modified EPA Method 8240, semi-VOC (base/neutral

fraction) by EPA method 8270 and TPH by modified EPA Method 8015. Because there was an obvious metallic-like sheen on the GT-1 sample, RCRA metals were analyzed for in addition to the other analyses. Additionally, the storm water culvert was sampled at a discharge point located east of Route 4 on February 15, 1995 and analyzed for the presence of VOC including BTEX and MTBE utilizing modified EPA Method 8240 and TPH by modified EPA Method 8015. The sample location is identified as SW on **Figure 2**. All analyses were performed at ESL.

Analytical results of groundwater samples collected from monitoring wells and the water sample collected from the stormwater culvert (SW) reveal BTEX concentrations ranging from below the method detection limit (BDL) in SW, GT-1, GT-3 and MW-0 to 13,459 micrograms per liter ( $\mu\text{g/L}$ ) in GT-2. MTBE concentrations ranged from BDL in GT-1, GT-2 and MW-0 to 48,000  $\mu\text{g/L}$  in MW-4. Butyl benzyl phthalate was detected in monitoring well GT-1 and GT-3 at concentrations of 4.7  $\mu\text{g/L}$  and 3.2  $\mu\text{g/L}$  respectively. Naphthalene was detected in GT-2 and MW-4 at concentrations of 311  $\mu\text{g/L}$  and  $\mu\text{g/L}$  respectively. RCRA metals detected in GT-1 included barium (4.1 mg/L), cadmium (0.15 mg/L), chromium (1.8 mg/L), lead (.27 mg/L) and selenium (.25 mg/L). Vermont Primary Groundwater Quality Standards (PGQS) for each of the metals in their respective order is as follows: 1.0 mg/L, .005 mg/L, .050 mg/L and .0202 mg/L, selenium is not listed. As indicated, each of the analytical results for metals exceed DEC enforcement standards. No other compounds analyzed for were detected. All groundwater results are summarized and compared to previous results in **Table 7**. Complete analytical reports for the most recent sampling events are provided in **Appendix F**.

### 6.5 Soil Gas Survey (Gore-Sorber™)

A Groundwater Technology geologist installed eight Gore-Sorber™ modules (G-1 through G-8) at the site on February 17, 1995. The purpose of this survey was to further define the vertical and lateral extent of the hydrocarbon impacted soil and/or groundwater. An electric rotary Impact hammer was used to complete a one-inch diameter by an approximately three-foot deep pilot hole at each of the eight Gore-Sorber™ locations **Figure 5**. Due to the extremely dense sediments, weather conditions, a frost layer, and time constraints, only eight of the proposed 10 Gore-Sorber™ modules were installed. After the holes were completed a sorbent module was placed in each pilot hole and then sealed to prevent direct exposure to atmospheric conditions.

On February 27, 1995 a Groundwater Technology geologist was deployed to the site to retrieve the Gore-Sorber™ modules. At this time all Gore-Sorber™ modules were observed to have been frozen

into the pilot hole. It is assumed that due to the repetitive thaw and freezing cycle of the weather, the pilot holes filled with both water and loose soils which in turn froze the Gore-Sorber™ modules in place. After applying rock salt, heat and mechanical pressure to the Gore-Sorber™ module ultimately only three Gore-Sorber™ modules were retrieved. The three modules retrieved (G-1, G-2 and G-7) were analyzed for volatile and semi-volatile organic compounds by GC/MS methodology at the W.L. Gore & Associates, Inc. laboratory in Elkton, Maryland.

Results of the analyses indicate that module G-7 contained the highest levels of BTEX constituents and trimethylbenzene. Benzene ranged from BDL in modules G-1 and G-2 to 16.02  $\mu\text{g/L}$  in G-7. Total BTEX results ranged from .03  $\mu\text{g/L}$  in G-1 to 169.42  $\mu\text{g/L}$  in G-7. Trimethylbenzene ranged from .02  $\mu\text{g/L}$  in G-2 to 71.97  $\mu\text{g/L}$  in G-7. Complete analytical results are included in **Appendix G** and are included on **Figure 5**.

## 7.0 SUMMARY AND CONCLUSIONS

---

Based on the information, methods and results described herein, Groundwater Technology presents the following summary and conclusions.

- According to DEC records, there are currently five UST at the site. These include three 10,000-gallon capacity UST for gasoline storage and two 1,000-gallon capacity UST for waste and fuel oil storage. Mr. Gorevan indicated that the 1,000-gallon fuel oil UST has been removed, however, this was not confirmed in the DEC records.
- According to DEC personnel the UST permit for the site is presently invalid as a result of an unpaid assessment fee. In addition, the permit is non-transferable.
- According to a DEC well supply map dated May 25, 1992, there are at least 30 private supply wells within one-half mile of the site including the one on the subject site. All residences and commercial locations within 1,000 feet of the site are supplied by private supply wells.
- Regulatory file research and review indicates that there is one property that contains underground storage tanks within 1,000 feet of the site. However, this property is located hydraulically crossgradient from the site.
- Head space screening with a PID of soil samples collected during monitoring well installation revealed VOC concentrations ranging from BDL to 157 ppm. Soil samples submitted for laboratory analysis from the three borings (GT-1, GT-2 and GT-3) indicated detectable concentrations of petroleum hydrocarbons (gasoline range organics) at 6 mg/kg, 5 mg/kg and 11 mg/kg respectively.
- Based on gauging data obtained from on-site monitoring wells, groundwater flows east.
- February 1995 groundwater analytical results reveal the presence of dissolved hydrocarbons on-site. Dissolved BTEX concentrations ranged from BDL in wells GT-1, GT-3 and MW-0 to 13,459  $\mu\text{g/L}$  in GT-2. Dissolved MTBE concentrations ranged from BDL in wells GT-1, GT-2 and MW-0 to 48,200  $\mu\text{g/L}$  in MW-4. RCRA metals detected in GT-1 include barium, cadmium, chromium, lead and selenium at concentrations of 4.1 mg/L, .15 mg/L, 1.8 mg/L, .27 mg/L, and .25 mg/L respectively. The discharge from a storm water culvert located east across Route 4 from the site contained 134  $\mu\text{g/L}$  of MTBE.
- One hydrocarbon source area has been identified through this and previous investigations. The primary source area appears to be the existing UST field where a documented release occurred in 1987. The french drain system at the site appears to be distributing hydrocarbon impacted water away from the pump island and UST field.
- The results of the Gore-Sorber<sup>SM</sup> survey detected gasoline and diesel/fuel oil range organics in the three modules that were retrieved and analyzed. Five modules remain in frozen in the site's subsurface. These can be retrieved and analyzed to produce valid data up to March 31, 1995 according to Mr. Mark Wrigley of W.L. Gore & Associates, Inc. Analysis of the modules after March 31, 1995 may produce ambiguous results.

## 8.0 LIMITATION OF WORK PRODUCT

---

Groundwater Technology has performed the assessment contained in this report in a professional manner using the degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. Groundwater Technology shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld or not fully disclosed to it at the time the investigation was performed. The conclusions presented in this report were based solely upon the services described.

This report shall not be construed to create any warranty or representation that the real property on which the investigation was conducted is free of pollution or complies with any or all applicable regulatory or statutory requirements, or that the property is fit for any particular purpose. No third party is entitled to rely upon any information or opinions contained in the report.

ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310

**A P P E N D I X A**

**FIGURES**

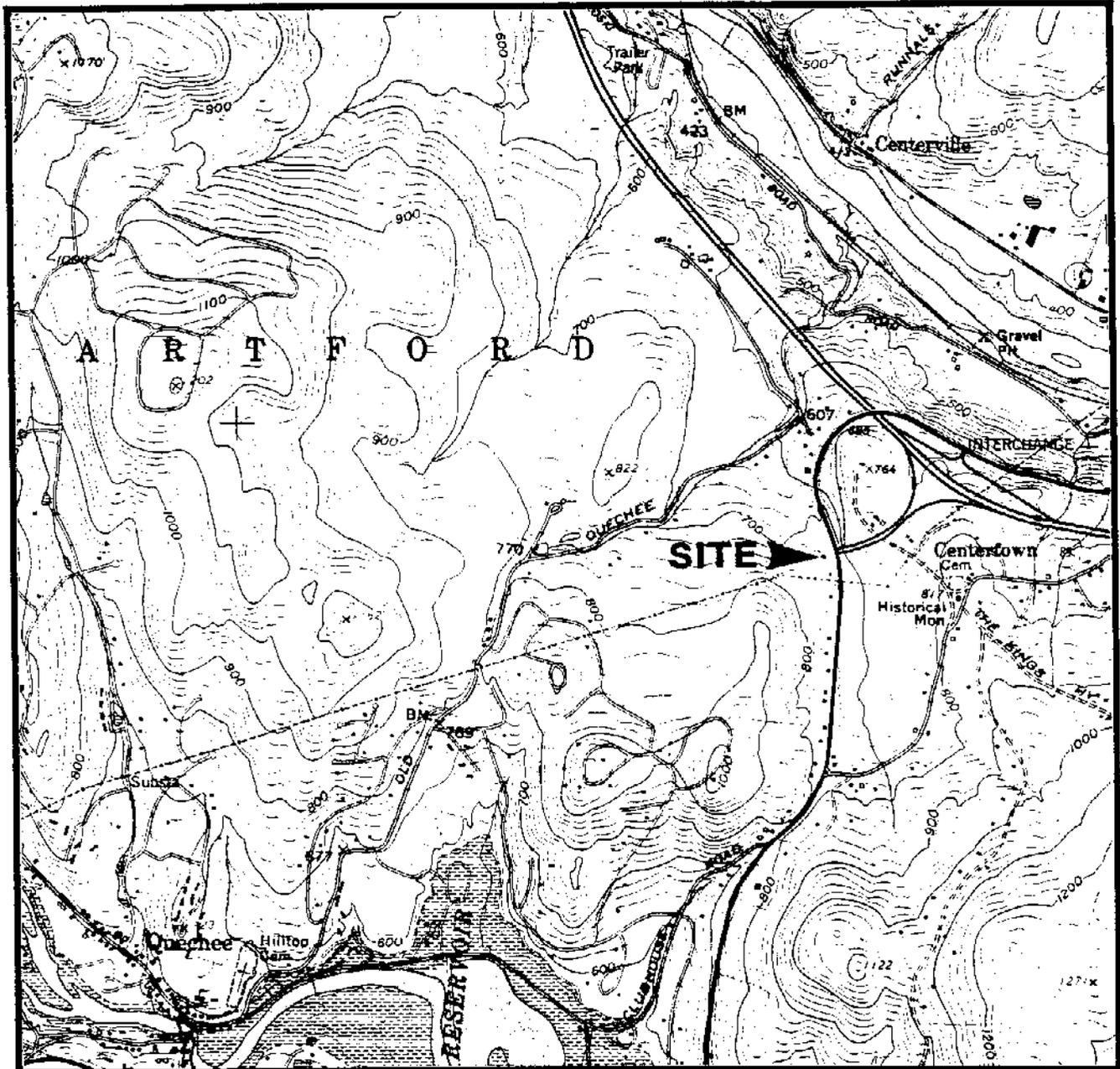
PREPARED FOR:

MS. LINDA COSTANZO  
MOBIL OIL CORPORATION  
1800 WEST PARK DRIVE, SUITE 450  
WESTBOROUGH, MASSACHUSETTS 01581

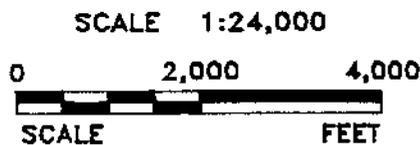
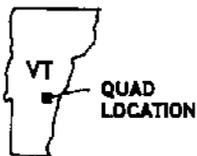
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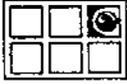
GROUNDWATER TECHNOLOGY, INC.  
199 ROUTE 101, P.O. BOX 1203  
AMHERST, NEW HAMPSHIRE 03031-1203

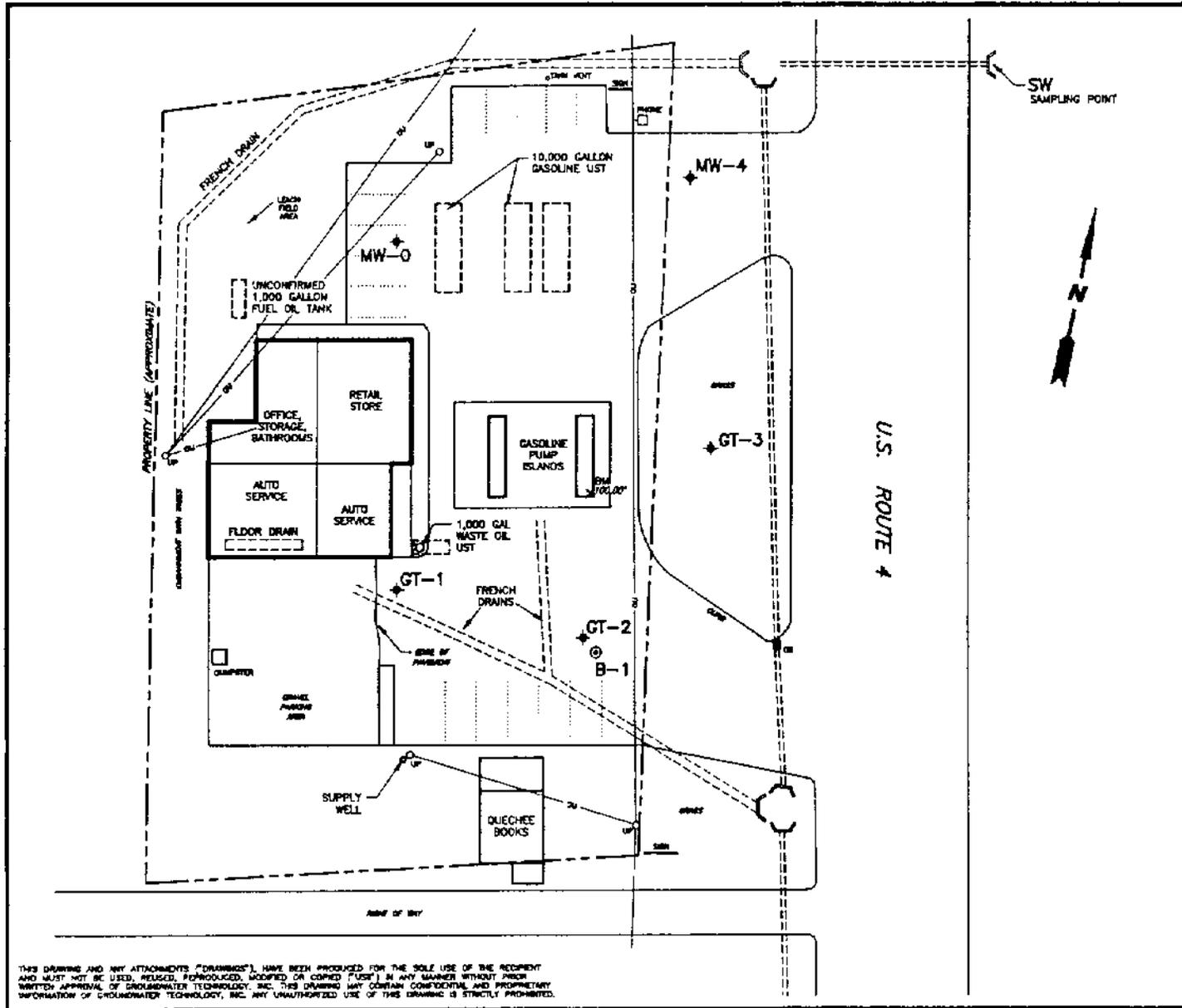
MARCH 1995



SOURCE: U.S.G.S. TOPOGRAPHIC QUADRANGLE  
 QUECHEE, VT - 1959 (p.r.1988)  
 LAT., LONG. OF SITE: 43°39'42"N; 72°23'20"W.  
 UTM COORD. OF SITE: 710,585E; 4,837,402N; 18N.



 <p><b>GROUNDWATER TECHNOLOGY</b></p> <p>199 ROUTE 101 AMHERST, NH 03031 (603) 672-5303</p>	DESIGNED:	<b>SITE LOCATION</b>		
	DETAILED: <i>PMK</i>			CLIENT:
	CHECKED: 	LOCATION:	ROUTE 4 QUECHEE, VERMONT	FIGURE: <b>1</b>



◆ MONITORING WELL  
 ⊙ SOIL BORING

UTILITIES, FRENCH DRAINS AND UST ARE APPROXIMATELY LOCATED

ELEVATIONS ARE RELATIVE TO ARBITRARY DATUM:  
 BENCHMARK (BM X) = 100.00'

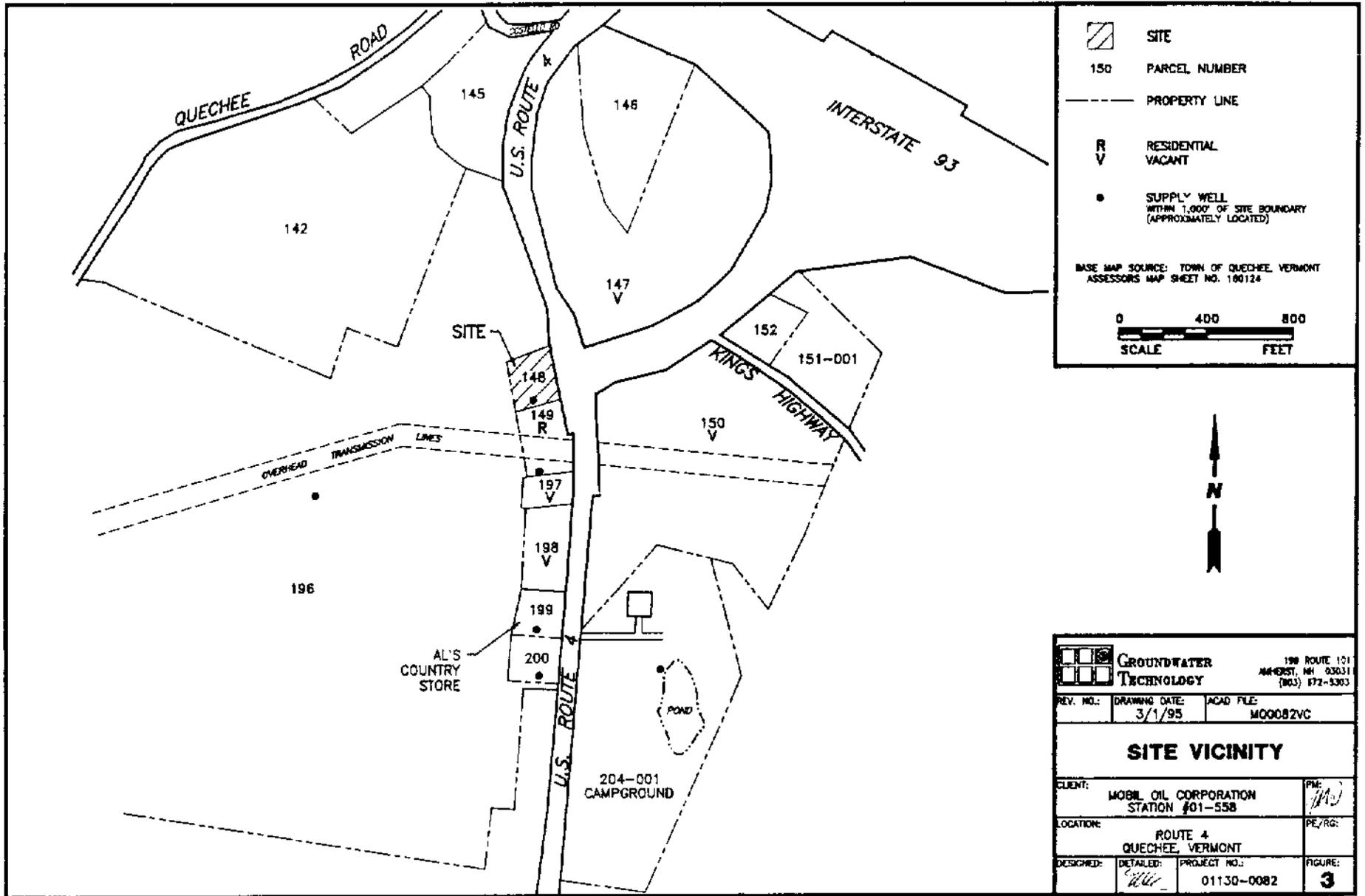
THIS PLAN IS NOT TO BE USED TO LOCATE UTILITIES OR UNDERGROUND STORAGE TANKS; SITE FEATURES ARE APPROXIMATELY LOCATED

BASE MAP SOURCES: 1) PLAN PROVIDED BY MOBIL OIL CORP. NOV. 28, 1994; TITLE, DATE AND PREPARED NOT SHOWN ON PLAN; 2) FIELD MEASUREMENTS AND OBSERVATIONS BY GTI PERSONNEL

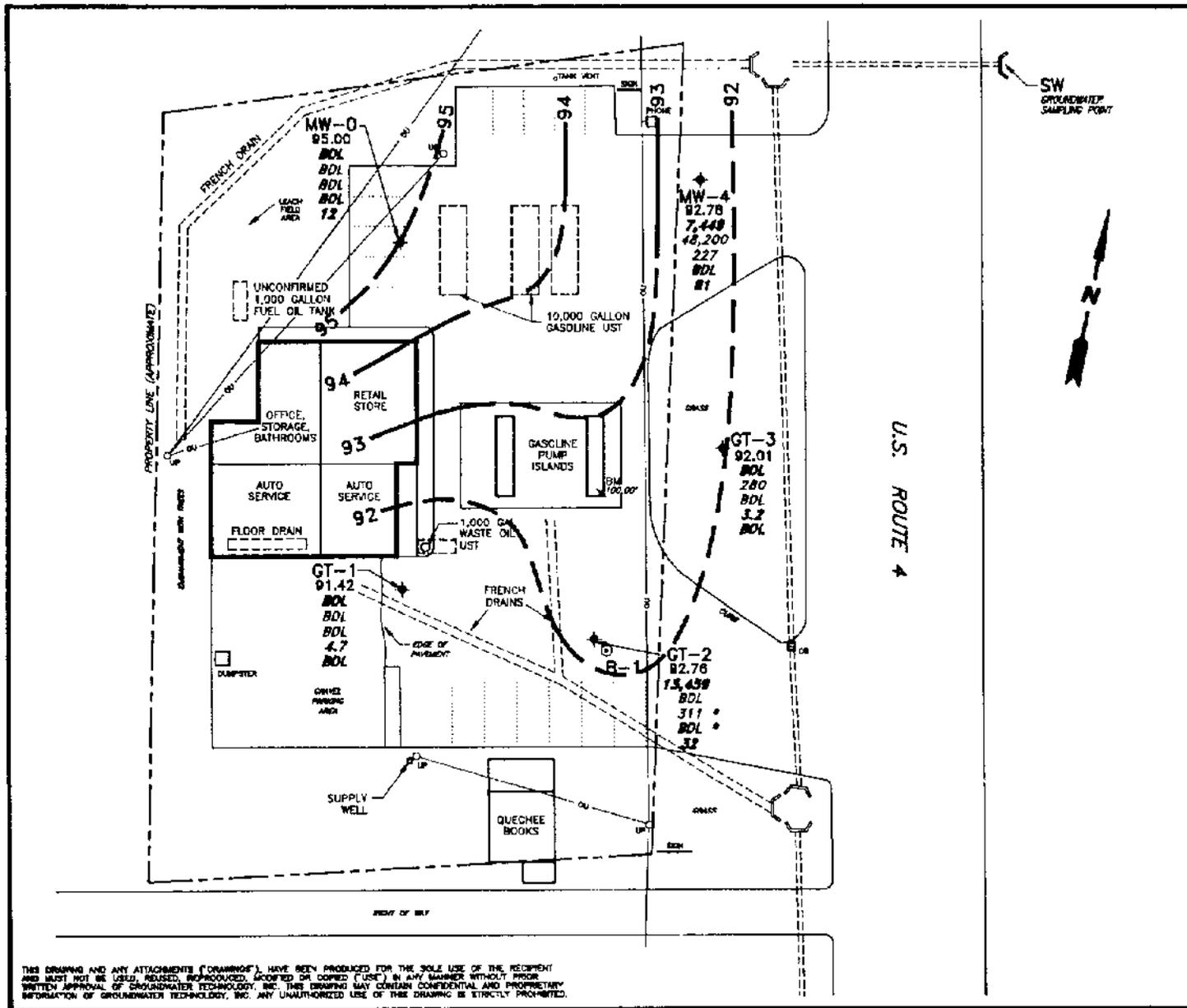
0 30 60  
 SCALE FEET

		100 ROUTE 107 AMHERST, NH 03031 (603) 672-5363	
REV. NO.:	DRAWING DATE:	ACAD FILE:	
	3/1/95	MQ008201	
<b>SITE PLAN</b>			
CLIENT:	MOBIL OIL CORPORATION STATION #01-558		
LOCATION:	ROUTE 4 QUECHEE, VERMONT		PE/RG:
DESIGNED:	DATE:	PROJECT NO.:	FIGURE:
	3/1/95	01130-0082	<b>2</b>

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		199 ROUTE 101 MORRIST, NH 03631 (603) 872-8303	
REV. NO.:	DRAWING DATE:	ACAD FILE:	
	3/1/95	MOG082VC	
<b>SITE VICINITY</b>			
CLIENT:	MOBIL OIL CORPORATION STATION #01-558	PIE:	<i>MD</i>
LOCATION:	ROUTE 4 QUECHEE, VERMONT	PE/RS:	
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	<i>WLL</i>	01130-0082	<b>3</b>



◆ MONITORING WELL  
 ⊙ SOIL BORING

**MONITORING DATE: 2/21/95**

EX: GT-1 - WELL IDENTIFICATION  
 91.42 - WATER TABLE ELEVATION (FT)  
 BDL - Total BTEX in µg/L  
 BDL - MTBE in µg/L  
 BDL - Naphthalene in µg/L  
 4.7 - Butyl Benzyl Phthalate in µg/L  
 BDL - TPH in mg/L

— WATER TABLE CONTOUR (FT)  
 (INFERRED CONTOURS ARE DASHED)  
 BDL - BELOW DETECTION LIMIT  
 \* - SAMPLED 2/27/95

BTEX = SUM OF BENZENE, TOLUENE, ETHYL BENZENE AND XYLENES  
 MTBE = METHYL TERTIARY BUTYL ETHER

UTILITIES, FRENCH DRAINS AND UST ARE APPROXIMATELY LOCATED

□ CATCH BASIN  
 ○ UTILITY POLE  
 --- DRAINAGE LINE  
 --- OVERHEAD UTILITY LINES  
 --- CULVERT HEADWALL  
 □ UST UNDERGROUND STORAGE TANK

ELEVATIONS ARE RELATIVE TO ARBITRARY DATUM:  
 BENCHMARK (BM X) = 100.00'

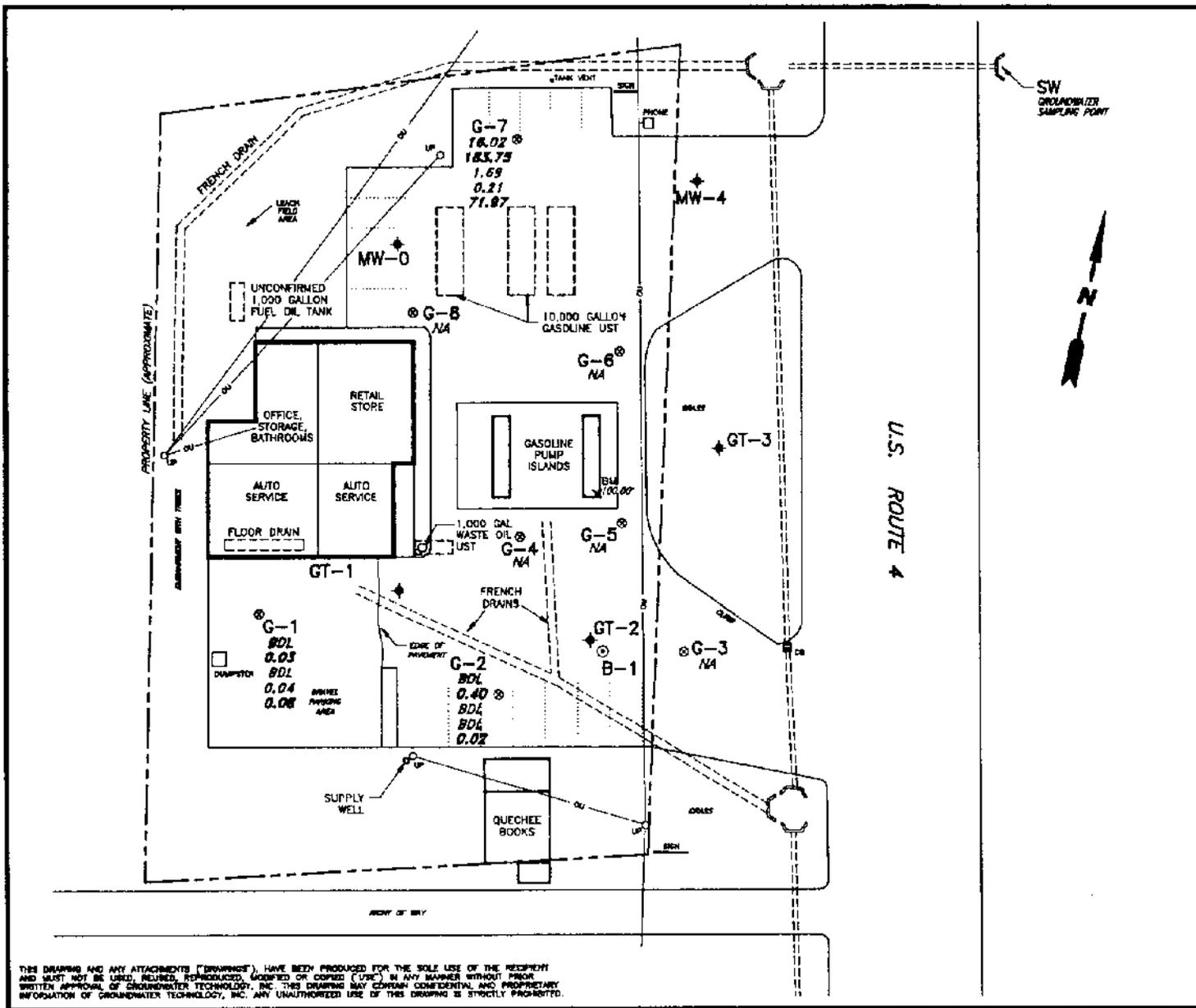
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BASE MAP SOURCES: 1) PLAN PROVIDED BY MOBIL OIL CORP. NOV. 28, 1984; TITLE, DATE AND PREPARER NOT SHOWN ON PLAN; 2) FIELD MEASUREMENTS AND OBSERVATIONS BY GTI PERSONNEL.

0 30 60  
 SCALE FEET

		100 ROUTE 101 AMHERST, NH 03031 (603) 672-5303	
REV. NO.:	DRAWING DATE:	ACAD FILE:	
	3/2/95	MQ008201	
<b>WATER TABLE CONTOURS AND HYDROCARBON DISTRIBUTION</b>			
CLIENT:	MOBIL OIL CORPORATION STATION #01-558		PM: <i>MD</i>
LOCATION:	ROUTE 4 QUECHEE, VERMONT		PE/RG:
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
<i>JLK</i>		01130-0082	4

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		199 ROUTE 16 AMHERST, NH 03603 (603) 672-5303
REV. NO.:	DRAWING DATE:	ACAD FILE:
	3/2/95	MQ008201
<b>SOIL GAS SURVEY RESULTS</b>		
CLIENT:	MOBIL OIL CORPORATION STATION #01-558	FILE: <i>MO</i>
LOCATION:	ROUTE 4 QUECHEE, VERMONT	PE/RG:
DESIGNED:	DETAILED:	PROJECT NO.:
	<i>SWK</i>	01130-0082
		FIGURE:
		<b>5</b>

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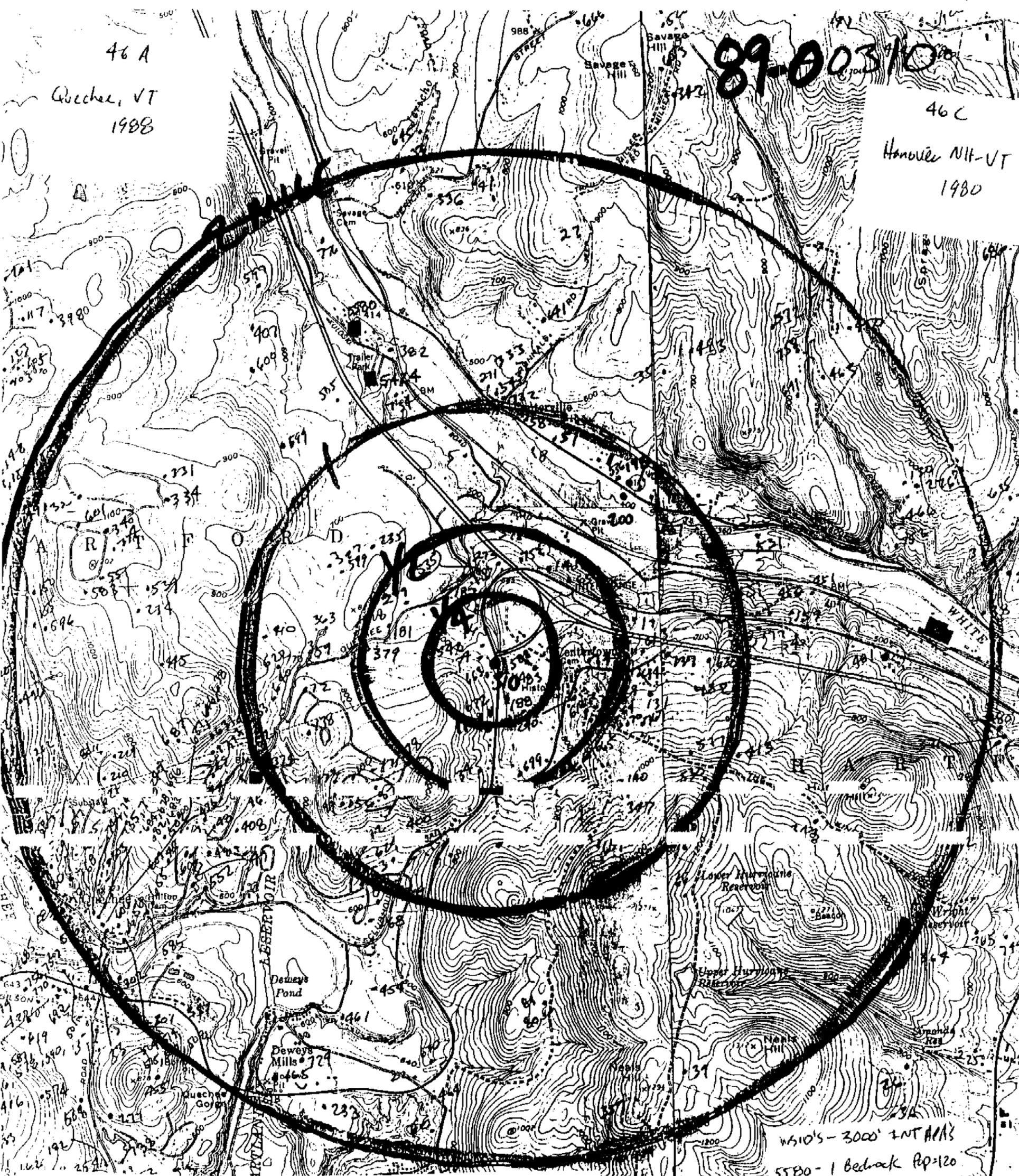
46 A

Quechee, VT  
1988

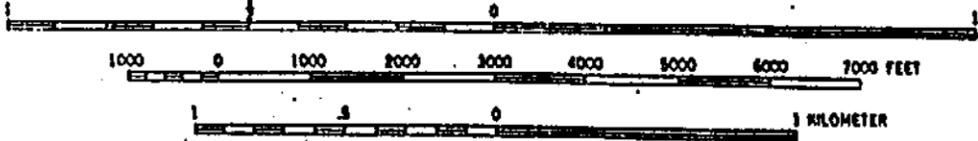
89-00310

46 C

Hanover NH-VT  
1980



SCALE 1:24000



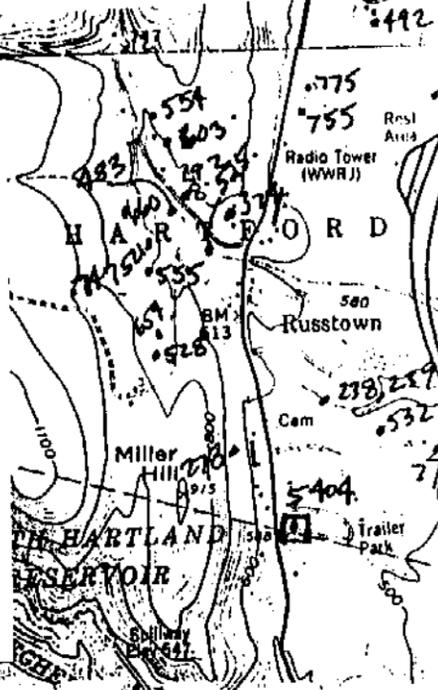
4510'S - 3000' INT AIN'S  
 5580 - 1 Bedrock Pop=120  
 5924 - 1 Bedrock Pop=?  
 5374 - 1 Bedrock Pop=43

VNG-D&K  
 VSPS  
 DATE: 5/25/92

- SITE # 89-0310
- Public Supply - Bedrock  
APA or WHPA - 3000' Int.
- Private Bedrock Well  
○ Private Gravel Well
- Surface Water
- Topo Boundry
- Town Boundry

NA

FIGURE 6  
**SUPPLY WELL LOCATIONS**  
 THIS DRAWING COPIED AS IS FROM  
 VERMONT DEC FILE  
 FOR USE BY GROUNDWATER TECHNOLOGY, INC.  
 FEBRUARY 1995  
 PROJECT:  
 MOBIL OIL CORPORATION  
 ROUTE 4, QUECHEE, VERMONT





Photograph #1 (above)

Water supply well and abandoned vehicle near southern property line



Photograph #2 (above)

Gravel parking lot and rear service bays viewed to the west - northwest.



Photograph #3 (above)

Manhole cover to waste oil UST fill port



Photograph #4 (above)

UST pads viewed to the south



Photograph #5 (above):

Rear (West) side of station with 30 gallon drums and 5 gallon pail

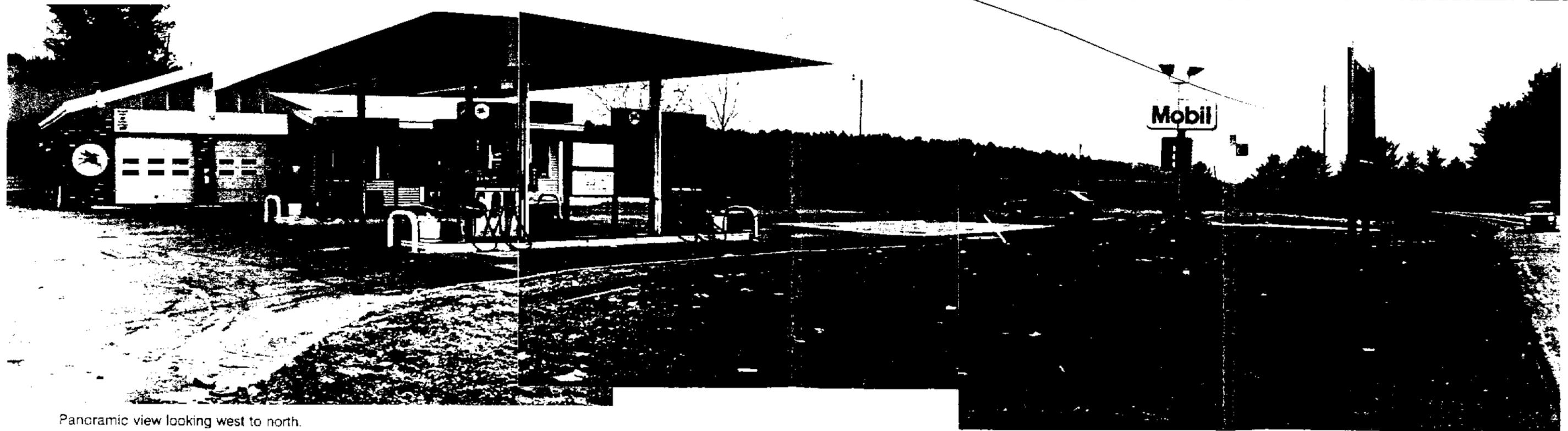


Photograph #6 (above)

View to north down Route 4 - Culvert discharge is behind road signs



Panoramic view looking south to west.



Panoramic view looking west to north.

ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310

**A P P E N D I X C**

**T A B L E S**

PREPARED FOR:

MS. LINDA COSTANZO  
MOBIL OIL CORPORATION  
1800 WEST PARK DRIVE, SUITE 450  
WESTBOROUGH, MASSACHUSETTS 01581

PREPARED BY:

GROUNDWATER TECHNOLOGY, INC.  
199 ROUTE 101, P.O. BOX 1203  
AMHERST, NEW HAMPSHIRE 03031-1203

MARCH 1995

**Table 1  
Ownership History**

**Mobil Oil Corporation  
SS# 01-558  
Route 4  
Quechee, Vermont**

<b>Book/Page</b>	<b>Date Obtained</b>	<b>Owner</b>
57-298	9/3/57	Lot 3 Whipple, LeLand
Unknown	9/3/57	Lot 3 Potter, George
57/298	1/13/58	Lot 3 LA Whipple, Inc.
96/534	5/22/34	Lot 2 Brown, Windsor C.
61/306	9/14/65	Lot 2 L.A. Whipple, Inc.
57/298	1/13/58	Lot 1 L.A. Whipple Inc.
63/563	6/19/69	Exxon Corporation
98/409-10	3/18/83	Gorevan, Michael

**Table 4  
Abutting Properties and Usage**

**Mobil Oil Corporation  
Service Station #01-558  
(Map #08, Lot #0148)  
381 Woodstock Road  
Quechee, Vermont**

<b>Map/Lot #</b>	<b>Owner &amp; Mailing Address</b>	<b>Usage</b>
08/0147	Punt, Rose 3 Briar Rose Lane White River Jct, VT 05001	Vacant
08/0149	Burgess, Betty L. c/o Herbert Donner 172-90 Highland Avenue Jamaica, NY 11432	Vacant
08/150	Punt, Rose 3 Briar Rose Lane White River Jct, VT 05001	Vacant
08/0196	Punt, Rose 3 Briar Rose Lane White River Jct, VT 05001	Residential
08/0197	Janisse, Julie R. White River Jct, VT 05001	Vacant

**TABLE 5  
SOIL SCREENING AND ANALYTICAL RESULTS**

**Mobil Oil Corporation  
Mobil/Quechee  
Route 4, Quechee, VT**

Boring/ Date	Sample ID	Sample Depth	Depth End (feet)	PID (ppmv)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl- benzene (ug/kg)	Xylenes (ug/kg)	Total BTEX	Methyl Tert- butyl Ether (ug/kg)	TPH (mg/kg)
GT-1 2/14/95	S-1	1.0	--	BDL	--	--	--	--	--	--	--
	S-2	4.0	6	14	<5	<5	<5	<5	BDL	<10	6
		4.5	--	--	--	--	--	--	--	--	--
		5.0	--	--	--	--	--	--	--	--	--
		9.0	--	BDL	--	--	--	--	--	--	--
	S-3	9.5	--	--	--	--	--	--	--	--	--
		10.0	--	--	--	--	--	--	--	--	--
		10.5	--	--	--	--	--	--	--	--	--
		14.0	--	BDL	--	--	--	--	--	--	--
		14.5	--	--	--	--	--	--	--	--	--
15.0		--	--	--	--	--	--	--	--	--	
GT-2 2/14/95	S-1	1.0	--	34	--	--	--	--	--	--	--
	S-2	9.0	11	157	<1	<1	<1	<1	BDL	<10	5
		9.5	--	--	--	--	--	--	--	--	--
		10.0	--	--	--	--	--	--	--	--	--
	S-3	13.0	--	26	--	--	--	--	--	--	--
		13.5	--	--	--	--	--	--	--	--	--
14.0	--	--	--	--	--	--	--	--	--	--	
GT-3 2/14/95	S-1	1.0	--	BDL	--	--	--	--	--	--	--
	S-2	4.0	6	4	<1	<1	<1	3	3	<10	11
		4.5	--	--	--	--	--	--	--	--	--
		5.0	--	--	--	--	--	--	--	--	--
		5.5	--	--	--	--	--	--	--	--	--
	S-3	9.0	--	BDL	--	--	--	--	--	--	--
		9.5	--	--	--	--	--	--	--	--	--

TABLE 5 (cont.)  
SOIL SCREENING AND ANALYTICAL RESULTS

Mobil Oil Corporation  
Mobil/Quechee  
Route 4, Quechee, VT

Boring/ Date	Sample ID	Sample Depth	Depth End (feet)	PID (ppmv)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl- benzene (ug/kg)	Xylenes (ug/kg)	Total BTEX	Methyl Tert- butyl Ether (ug/kg)	TPH (mg/kg)
(Continuation)	S-4	10.0	--	--	--	--	--	--	--	--	--
		10.5	--	--	--	--	--	--	--	--	--
		11.0	--	BDL	--	--	--	--	--	--	--
		11.5	--	--	--	--	--	--	--	--	--
		12.0	--	--	--	--	--	--	--	--	--
		12.5	--	--	--	--	--	--	--	--	--
B-1 2/14/95	S-1	1.0	--	BDL	--	--	--	--	--	--	--
	S-2	4.0	--	65	--	--	--	--	--	--	--
		4.5	--	--	--	--	--	--	--	--	--
		5.0	--	--	--	--	--	--	--	--	--
		5.5	--	--	--	--	--	--	--	--	--

Field notes, data qualifiers, and abbreviations are appended.

COMPILATION OF FIELD NOTES AND BORING INFORMATION  
FOR REPORTING SOIL ANALYTICAL DATA

Comments: Page 1 of 1

GTI STANDARD ABBREVIATIONS

PGQS	Primary Groundwater Quality Standards (enforcement standard)
NL	Not listed in PGQS standards
1	Analyzed referencing EPA Method 8240 + MTBE, 8270, RCRA metals and TPH by GC/FID
2	Analyzed referencing EPA Method 8240 + MTBE, 8270 and TPH by GC/FID
3	Analyzed referencing EPA Method 8240 + MTBE and TPH by GC/FID
Elev.	Elevations are relative to arbitrary datum: Benchmark = 100.00' MW-1, MW-2 and MW-5 are destroyed
NA	Not Available (see Field Notes above)
NG	Not Gauged/Measured
DRY	No measurable amount of water in well
NS	Not Sampled
<	Less than applicable reporting level
--	Not applicable or not analyzed for
BDL	Below Detection Limit
ND	None Detected
ug/l	Microgram per liter of water (ppb)
mg/kg	Milligram per kilogram of water (ppm)
Liq. Phase	Liquid, non-aqueous phase liquid
*	Groundwater elevation includes correction for liquid phase

*End of List*

TABLE 6  
GROUNDWATER MONITORING DATA

Mobil Oil Corporation  
Mobil/Quechee  
Route 4, Quechee, VT

Well ID	Casing Elevation ft. msl	Monitoring Date	Depth to Water (ft)	Depth to Liq. Phase (ft)	Liq. Phase Thickness (ft)	Groundwater Elevation* (ft)
GT-1	100.67	2/15/95	DRY	--	--	--
		2/21/95	10.82	--	--	89.85
		2/27/95	9.25	--	--	91.42
GT-2	99.50	2/15/95	11.69	--	--	87.81
		2/21/95	8.56	--	--	90.94
		2/27/95	6.74	--	--	92.76
GT-3	97.97	2/15/95	DRY	--	--	--
		2/21/95	6.72	--	--	91.25
		2/27/95	5.96	--	--	92.01
MW-0	100.26	2/13/95	5.20	--	--	95.06
		2/15/95	5.59	--	--	94.67
		2/21/95	5.49	--	--	94.77
		2/27/95	5.26	--	--	95.00
MW-4	96.69	2/13/95	4.66	--	--	92.03
		2/15/95	4.88	--	--	91.81
		2/21/95	4.73	--	--	91.96
		2/27/95	3.91	--	--	92.78

Field notes, data qualifiers, and abbreviations are appended.

COMPILATION OF FIELD NOTES AND STANDARD ABBREVIATIONS  
FOR REPORTING GROUNDWATER MONITORING AND ANALYTICAL DATA

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GTI STANDARD ABBREVIATIONS

PGQS	Primary Groundwater Quality Standards (enforcement standard)
NL	Not listed in PGQS standards
1	Analyzed referencing EPA Method 8240 + MTBE, 8270, RCRA metals and TPH by GC/FID
2	Analyzed referencing EPA Method 8240 + MTBE, 8270 and TPH by GC/FID
3	Analyzed referencing EPA Method 8240 + MTBE and TPH by GC/FID
Elev.	Elevations are relative to arbitrary datum: Benchmark = 100.00' MW-1, MW-2 and MW-5 are destroyed
NA	Not Available (see Field Notes above)
NG	Not Gauged/Measured
DRY	No measurable amount of water in well
NS	Not Sampled
<	Less than applicable reporting level
--	Not applicable or not analyzed for
BDL	Below Detection Limit
ND	None Detected
ug/l	Microgram per liter of water (ppb)
mg/kg	Milligram per kilogram of water (ppm)
Liq. Phase	Liquid, non-aqueous phase liquid
*	Groundwater elevation includes correction for liquid phase
Sp. G.	Specific gravity in use is 0.80
<i>End of List</i>	

TABLE 7  
HISTORICAL WATER AND GROUNDWATER ANALYTICAL DATA

Mobil Oil Corporation  
Mobil/Quechee  
Route 4, Quechee, VT

Well ID	Casing Elevation ft. msl	Monitoring Date	Notes	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Xylenes (ug/l)	Total BTEX (ug/l)	Methyl Tert-butyl Ether (ug/l)	TPH (mg/l)	Butyl Benzyl Phthalate (ug/l)	Naphthalene (ug/l)	
PGQS		2/21/95	--	5.0	2420	680	400	--	NL	NL	NL	NL	
GT-1	100.67	2/21/95	1	<5.0	<5.0	<5.0	<5.0	BDL	<10	<25	4.7	<1.6	
GT-2	99.50	2/21/95	2	289	3110	1160	8880	13459	<200	32	--	--	
GT-3	97.97	2/21/95	2	<5.0	<5.0	<5.0	<5.0	BDL	280	<25	3.2	<1.6	
MW-0		11/22/89	--	--	--	--	--	ND	--	--	--	--	
		1/19/90	--	--	--	--	--	ND	--	--	--	--	
		5/2/90	--	--	--	--	--	ND	--	--	--	--	
		5/9/91	--	--	--	--	--	ND	--	--	--	--	
		10/31/91	--	--	--	--	--	ND	--	--	--	--	
		4/29/92	--	--	--	--	--	ND	--	--	--	--	
		12/22/92	--	--	--	--	--	ND	--	--	--	--	--
		5/4/93	--	--	--	--	--	ND	--	--	--	--	--
		10/20/93	--	--	--	--	--	ND	--	--	--	--	--
		4/28/94	--	--	--	--	--	ND	--	--	--	--	--
		11/2/94	--	--	--	--	--	ND	--	--	--	--	
	100.26	2/21/95	2	<5.0	<5.0	<5.0	<5.0	BDL	<10	12	<2.5	<1.6	
MW-2		11/2/94	NA	9100	200	1700	50	11050	41400	--	--	--	
MW-4		11/22/89	--	--	--	--	--	32000	--	--	--	--	
		1/19/90	--	--	--	--	--	23000	--	--	--	--	
		5/2/90	--	--	--	--	--	22100	--	--	--	--	
		5/9/91	--	--	--	--	--	23400	--	--	--	--	
		10/31/91	--	--	--	--	--	13800	--	--	--	--	
		4/29/92	--	--	--	--	--	11020	--	--	--	--	
		12/22/92	--	--	--	--	--	12100	--	--	--	--	
		5/4/93	--	--	--	--	9750	--	--	--	--		

TABLE 7 (cont.)  
HISTORICAL WATER AND GROUNDWATER ANALYTICAL DATA

Mobil Oil Corporation  
Mobil/Quechee  
Route 4, Quechee, VT

Well ID	Casing Elevation ft. msl	Monitoring Date	Notes	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Xylenes (ug/l)	Total BTEX (ug/l)	Methyl Tert-butyl Ether (ug/l)	TPH (mg/l)	Butyl Benzyl Phthalate (ug/l)	Naphthalene (ug/l)	
(Continuation)	96.69	10/20/93	--	--	--	--	--	8675	--	--	--	--	
		4/28/94	--	--	--	--	--	8152	--	--	--	--	
		11/2/94	--	--	--	--	--	11050	--	--	--	--	
		2/21/95	2	6300	187	938	24	7449	48200	8	<5.0	227	
MW-5		11/22/89	--	--	--	--	--	3.7	--	--	--	--	
		1/19/90	--	--	--	--	--	18	--	--	--	--	
		5/2/90	NA	--	--	--	--	11.2	--	--	--	--	
SW		11/22/89	--	--	--	--	--	ND	--	--	--	--	
		1/19/90	--	--	--	--	--	6.9	--	--	--	--	
		5/2/90	--	--	--	--	--	ND	--	--	--	--	
		5/9/91	--	--	--	--	--	2060	--	--	--	--	
		10/31/91	--	--	--	--	--	770	--	--	--	--	
		4/29/92	--	--	--	--	--	4230	--	--	--	--	
		12/22/92	--	--	--	--	--	21	--	--	--	--	
		5/4/93	--	--	--	--	--	1130	--	--	--	--	
		10/20/93	--	--	--	--	--	9	--	--	--	--	
		4/28/94	--	--	--	--	--	9	--	--	--	--	
		11/2/94	--	--	170	420	32	600	1222	1130	--	--	--
		2/15/95	3	<5.0	<5.0	<5.0	<5.0	<5.0	BDL	134	--	--	--

Field notes, data qualifiers, and abbreviations are appended.

COMPILATION OF FIELD NOTES AND STANDARD ABBREVIATIONS  
FOR REPORTING GROUNDWATER MONITORING AND ANALYTICAL DATA

Remarks: Page 1 of 1

GTI STANDARD ABBREVIATIONS

PGQS	Primary Groundwater Quality Standards (enforcement standard)
NL	Not listed in PGQS standards
1	Analyzed referencing EPA Method 8240 + MTBE, B270, RCRA metals and TPH by GC/FID
2	Analyzed referencing EPA Method 8240 + MTBE, B270 and TPH by GC/FID
3	Analyzed referencing EPA Method 8240 + MTBE and TPH by GC/FID
Elev.	Elevations are relative to arbitrary datum: Benchmark = 100.00' MW-1, MW-2 and MW-5 are destroyed
NA	Not Available (see Field Notes above)
NG	Not Gauged/Measured
DRY	No measurable amount of water in well
NS	Not Sampled
<	Less than applicable reporting level
--	Not applicable or not analyzed for
BDL	Below Detection Limit
ND	None Detected
ug/l	Microgram per liter of water (ppb)
mg/kg	Milligram per kilogram of water (ppm)
Liq. Phase	Liquid, non-aqueous phase liquid
*	Groundwater elevation includes correction for liquid phase
Sp. G.	Specific gravity in use is 0.80
<i>End of List</i>	

ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310

**A P P E N D I X D**  
**S O I L B O R I N G L O G S**

PREPARED FOR:

MS. LINDA COSTANZO  
MOBIL OIL CORPORATION  
1800 WEST PARK DRIVE, SUITE 450  
WESTBOROUGH, MASSACHUSETTS 01581

PREPARED BY:

GROUNDWATER TECHNOLOGY, INC.  
199 ROUTE 101, P.O. BOX 1203  
AMHERST, NEW HAMPSHIRE 03031-1203

MARCH 1995

# UNIFIED SOIL CLASSIFICATION SYSTEM

## CLASSIFICATION CHART

MAJOR DIVISIONS		SYMBOLS	TYPICAL NAMES	GT&S FILL PATTERN
COARSE GRAINED SOILS OVER 50% > No. 200 SIEVE SIZE	<u>GRAVELS</u>  MORE THAN 1/2 OF COARSE FRACTION > NO. 4 SIEVE SIZE	GW	Well graded gravels or gravel-sand mixtures, little or no fines	26
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines	25
		GM	Silty gravels, gravel-sand mixtures	26=11
		GC	Clayey gravels, gravel-sand-clay mixtures	26=14
	<u>SANDS</u>  MORE THAN 1/2 OF COARSE FRACTION < NO. 4 SIEVE SIZE	SW	Well graded sands or gravelly sands, little or no fines	8
		SP	Poorly graded sands or gravelly sands, little or no fines	6
		SM	Silty sands, sand-silt mixtures	9
		SC	Clayey sands, sand-clay mixtures	10
FINE GRAINED SOILS OVER 50% < No. 200 SIEVE SIZE	<u>SILTS &amp; CLAYS</u>  <u>LL &lt; 50</u>	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	11
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	14
		OL	Organic silts and organic silty clays of low plasticity	18
	<u>SILTS &amp; CLAYS</u>  <u>LL &gt; 50</u>	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	12
		CH	Inorganic clays of high plasticity, fat clays	15
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts	35
HIGHLY ORGANIC SOILS	Pt	Peat and other highly organic soils	20	

### GRAIN SIZE CHART

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3'	305 to 76.2
GRAVEL COARSE FINE	3" to No. 4	76.2 to 4.75
	3" to 3/4" 3/4" to No. 4	76.2 to 19.1 10.1 to 4.75
SAND COARSE MEDIUM FINE	No. 4 to No. 200	4.75 to 0.074
	No. 4 to No. 10	4.76 to 2.00
	No. 10 to No. 40 No. 40 to No. 200	2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below No. 0.074

### WELL CONSTRUCTION MATERIALS

	Asphalt (68)	<b>SCREENS</b>
	Concrete (56)	Solid (1s)
	Neat Cement (54)	Slotted PVC (3w)
	Base Course (30)	Slot. PVC High Flow (8w)
	Sluff (64)	Wire Wound PVC (10w)
	Bentonite (21)	Wire Wound Steel (15w)
	Filter Pack (7)	Saw Cut (12w)
	Pea Gravel (2)	Stainless Steel (13w)
	Liner (33)	
	Geocloth (36)	

### SAMPLE TYPES

SS - Split Spoon  
CC - Continuous Core  
CG - Cuttings Grab

### SYMBOLS

Initial Water Level  
 Static Water Level



Project Mobil/Quechee Owner Mobil Oil Corporation  
 Location Route 4, Quechee, VT Proj. No. 01130-0082  
 Surface Elev. \_\_\_\_\_ Total Hole Depth 16 ft. Diameter \_\_\_\_\_  
 Top of Casing 100.67 ft. Water Level Initial 5 ft. Static \_\_\_\_\_  
 Screen: Dia 4 in. Length 11.2 ft. Type/Size PVC/0.020 in.  
 Casing: Dia 4 in. Length 2 ft. Type PVC  
 Fill Material #2 Sand Rig/Core Grab/Split Spoon  
 Drill Co. A & M Drilling Method Hollow Stem Auger  
 Driller \_\_\_\_\_ Log By Rav Cadorette Date 2/14/95 Permit # \_\_\_\_\_  
 Checked By Mike Dacey License No. \_\_\_\_\_

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PTD (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							
2	BDL		S-1	Grab			Dark brown, dry, medium SAND, some coarse sand and cobble (F.L.)
4	14		S-2	36 50 50%		SM	Olive gray, moist SILT, little fine sand, trace coarse sand and cobble Initial water level
6							
8							
10	BDL		S-3	26 35 42 100% 50			Same as above
12							
14	BDL		S-4	80/5" 20%			Encountered COBBLE (weathered stone) Olive gray, moist, fine SAND, some silt, some cobble, little coarse sand
16							Bottom of Exploration at 16'
18							
20							
22							
24							



Project Mobil/Quechee Owner Mobil Oil Corporation  
 Location Route 4, Quechee, VT Proj. No. 01130-0082  
 Surface Elev. \_\_\_\_\_ Total Hole Depth 15 ft. Diameter \_\_\_\_\_  
 Top of Casing 99.50 ft. Water Level Initial 5 ft. Static \_\_\_\_\_  
 Screen: Dia 4 in. Length 10 ft. Type/Size PVC/0.020 in.  
 Casing: Dia 4 in. Length 2.5 ft. Type PVC  
 Fill Material #2 Sand Rig/Core Grab/Split Spoon  
 Drill Co. A & M Drilling Method Hollow Stem Auger  
 Driller \_\_\_\_\_ Log By Roy Cadorette Date 2/14/95 Permit # \_\_\_\_\_  
 Checked By Mike Dacev License No. \_\_\_\_\_

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2							Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0							Dark brown, dry, medium SAND, some coarse and fine sand, little cobble (FILL)
2		34	S-1	Grab			
4							Initial water level
6							
8						SM	
10		157	S-2	62 80/2" 50%			Light gray, dry, fine SAND, little silt, little coarse sand, little cobble
12							
14		26	S-3	63 50/1" 40%			Light gray, moist, fine SAND, some medium sand, little silt
16							Bottom of Exploration at 15'
18							
20							
22							
24							

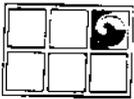


Project Mobil/Quechee Owner Mobil Oil Corporation  
 Location Route 4, Quechee, VT Proj. No. 01130-0082  
 Surface Elev. \_\_\_\_\_ Total Hole Depth 13 ft. Diameter \_\_\_\_\_  
 Top of Casing 97.97 ft. Water Level Initial 4 ft. Static \_\_\_\_\_  
 Screen: Dia 4 in. Length 9 ft. Type/Size PVC/0.020 in.  
 Casing: Dia 4 in. Length 0.55 ft. Type PVC  
 Fill Material #2 Sand Rig/Core Grab/Split Spoon  
 Drill Co. A & M Drilling Method Hollow Stem Auger  
 Driller \_\_\_\_\_ Log By Rav Cadorette Date 2/14/95 Permit # \_\_\_\_\_  
 Checked By Mike Dacey License No. \_\_\_\_\_

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2							Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0							
2	BDL		S-1	Grab	☒		Dark brown, dry, medium SAND, some fine sand
4		4	S-2	21 33 40 45 90%	☒		Olive gray, moist, fine sand, some silt, some medium sand, trace cobble Initial water table
6						SM	
8							
10	BDL		S-3	22 40 33 31	☒		Olive gray, moist, fine SAND, some silt, trace coarse sand and cobble
12	BDL		S-4	19 24 24 21 60%	☒		Dark gray, moist, fine SAND, some silt, trace coarse sand
14							Dark gray, moist, fine SAND, some silt, little cobble, trace coarse sand
14							Bottom of Exploration at 13'
16							
18							
20							
22							
24							



Project Mobil/Quechee Owner Mobil Oil Corporation  
 Location Route 4, Quechee, VT Proj. No. 01130-0092  
 Surface Elev. \_\_\_\_\_ Total Hole Depth 6 ft. Diameter \_\_\_\_\_  
 Top of Casing \_\_\_\_\_ Water Level Initial \_\_\_\_\_ Static \_\_\_\_\_  
 Screen: Dia \_\_\_\_\_ Length \_\_\_\_\_ Type/Size \_\_\_\_\_  
 Casing: Dia \_\_\_\_\_ Length \_\_\_\_\_ Type \_\_\_\_\_  
 Fill Material \_\_\_\_\_ Rig/Core Grab/Split Spoon  
 Drill Co. A & M Drilling Method Hollow Stem Auger  
 Driller \_\_\_\_\_ Log By Ray Cadorette Date 2/14/95 Permit # \_\_\_\_\_  
 Checked By Mike Dacey License No. \_\_\_\_\_

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ x Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0	BDL	S-1	Grab	<input checked="" type="checkbox"/>		Dark brown, dry, fine SAND, little medium sand and coarse sand (FILL)
2					SM	
4	65	S-2	24 31 42 70% 52	<input checked="" type="checkbox"/>		Light gray, dry, fine SAND, little silt, little coarse sand, little cobble
6						Auger Refusal at 6'
8						
10						
12						
14						
16						
18						
20						
22						
24						

TO Mike Gorevan ADDRESS  
 PROJECT NAME Mobile Station LOCATION Rte 4 Quechee VT  
 REPORT SENT TO Mike Gorevan PROJ. NO.  
 SAMPLE SENT TO Retained by S.E.I. OUR JOB NO. 4473-89

GROUND WATER OBSERVATIONS			CASING	SAMPLER	CORE BAR	SURFACE ELEV.
At 6' 10"	at 18 +/-	Hours	Type HSA	SS		3-29-89
			Size I. D. 4"	1 1/2"		DATE COMPL 3-29-89
At	at	Hours	Hammer Wt.	140	BIT	BORING FOREMAN M. Domingue
			Hammer Fall	30"		INSPECTOR
						SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From - To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				0-6	6-12	12-18				No.	Pen	Rec.
		0' - 5'	ss					2" Bituminous concrete				
		5' - 6'5"	ss	52	6			24" D/br. coarse sandy gravel				
								4 1/2' med dense gray silty gravelly fine sands				
10'		10' - 11'	ss	27	56			extremely gravelly silts occasional cobbles (glacial till)	1	6"	3"	
		15' - 16'	ss	23	47				2	12"	12"	
		20' - 21'	ss	20	44				3	12"	12"	
									4	12"	12"	
25'								MW#1 materials used 14' 2" PVC 0.010 slotted sch 40 1' 2" PVC solid 20 lbs Bentonite 300 lbs sand 1 plastic cap 1 econo screw plug on top of riser				

GROUND SURFACE TO 25'

Sample Type  
 I - Dry C - Cored W - Washed  
 UP - Undisturbed Piston  
 TP - Test Pit A - Auger V - Vane Test  
 U - Undisturbed Thinwall

PROPORTIONS USED		CASING: THEN	
trace	0 to 10%	140 lb. Wt. x 30% fall on 2" O. D. Sampler	
little	10 to 20%	Cohesionless Density	
some	20 to 35%	0-10 Loose	Cohesive Consistency
and	35 to 50%	10-30 Med. Dense	0-4 Soft 30 + Hard
		30-50 Dense	4-8 M/Stiff
		50 + Very Dense	8-15 Stiff
			15-30 V-Stiff

SUMMARY	
Earth Boring	25'
Rock Coring	
Samples	4
HOLE NO. MW#1	

TO Mike Gorevan  
 PROJECT NAME Mobile Station  
 REPORT SENT TO Mike Gorevan  
 SAMPLE SENT TO  
 ADDRESS Rte 4 Quechee VT  
 LOCATION  
 PROJ. NO.  
 OUR JOB NO. 4473-89

GROUND WATER OBSERVATIONS			CASING	SAMPLER	CORE BAR	SURFACE ELEV.
At 18"	at immed	Hours	HSA	SS		DATE STARTED 3-29-89
		Type	4"	1 1/2"		DATE COMPL 3-29-89
		Size I. D.		140#	BIT	BORING FOREMAN M. Domingue
		Hammer Wt.		30"		INSPECTOR
		Hammer Fall				SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depth From - To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				From	To					No.	Pen	Rec.
				0-6	6-12	12-18						
								2"	Bituminous concrete			
								24"	loose brown coarse sandy gravel			
5'		5' - 7'	SS	2	2	2			Pure gas at 18" below surface. immediately stopped drilling and told owner - called state Greg Leach	1	24"	24"
		Pure gas		2					loose gr/br fine to coarse sands layers of silt			
10'		10' - 10'6"	SS	32/6"					"old ground"	2	6"	6"
		Slight smell							very dense gray gravelly silts with cobbles (glacial till)			
								15'	MW#1 materials used 13' PVC slotted 0.010 sch40 1' PVC solid 2" 20 lbs Bentonite 300 lbs sand 1 plastic cap 1 econo screw plug on top of riser			

GROUND SURFACE TO 15'

USED 15' "CASING: THEN

Soils Type  
 D- Dry C-Cored W-Washed  
 UP-Undisturbed Piston  
 TP-Test Pit A-Auger V-Vane Test  
 UI-Undisturbed Thinwall

Proportions Used	140 lb. Wt. x 30% fall on 2" O. D. Sampler	Cohesionless Density	Cohesive Consistency
trace 0 to 10%	0-10 Loose	0-4 Soft	30 + Hard
little 10 to 20%	10-30 Med. Dense	4-8 M/Stiff	
some 20 to 35%	30-50 Dense	8-15 Stiff	
and 35 to 50%	50 + Very Dense	15-30 V-Stiff	

SUMMARY	
Earth Boring	15'
Rock Coring	
Samples	2
HOLE NO. MW#2	

TO Mike Gorevan  
 PROJECT NAME Mobile Station  
 REPORT SENT TO Mike Gorevan  
 SAMPLE SENT TO  
 ADDRESS  
 LOCATION Rte. 4 Quechee VT  
 PROJ. NO.  
 OUR JOB NO. 4473-89

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
At 3.2 +/-	at 4 +/-	Type HSA			DATE STARTED 3-30-89
Hours		Size I. D. 4"			DATE COMPL 3-30-89
At	at	Hammer Wt.		BIT	BORING FOREMAN M. Domingue
Hours		Hammer Fall			INSPECTOR
					SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				From 0-6	To 6-12	To 12-18				No.	Pen	Rec.
								8"	loose dk. br. loamy topsoil			
5'		slight smell of gas				moist		5'	med dense brown silts and fine sands			
15'								15'	extremely dense gray gravelly silts occasional cobbles (glacial till)			
									MW#3 materials used 10' 2" PVC 0.010 slotted sch 40 2' 2" PVC solid 200 lbs silica sand 1 PVC cap 1 econo screw water proof cap on riser			

GROUND SURFACE TO 15'

USED "CASING" THEN

Sample Type  
 D Dry C-Cored W-Washed  
 U Undisturbed Piston  
 TP-Test Pit A-Auger V-Vane Test  
 UT-Undisturbed Thinwall

Proportions Used  
 trace 0 to 10 %  
 little 10 to 20 %  
 some 20 to 35 %  
 and 35 to 50 %

140 lb. Wt. x 30% fall on 2" O. D. Sampler  
 Cohesionless Density  
 0-10 Loose  
 10-30 Med. Dense  
 30-50 Dense  
 50 + Very Dense

Cohesive Consistency  
 0-4 Soft 30 + Hard  
 4-8 M/Stiff  
 8-15 Stiff  
 15-30 V-Stiff

SUMMARY  
 Earth Boring 15'  
 Rock Coring  
 Samples 0  
 HOLE NO. MW#3

TO Mike Gorevan ADDRESS  
 PROJECT NAME Mobile Station LOCATION Rte. 4 Quechee VT  
 REPORT SENT TO Mike Gorevan PROJ. NO.  
 SAMPLE SENT TO Retained by S.E.I. OUR JOB NO. 4473-89

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR	SURFACE ELEV.
At dry	at immed	HSA	SS		3-31-89
	Hours	Type			DATE STARTED
		Size I. D.	4"	1 1/2"	3-31-89
At	at	Hammer Wt.		140	BORING FOREMAN M. Domingue
	Hours	Hammer Fall		30"	INSPECTOR
					SOILS ENGR.

LOCATION OF BORING:

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler			Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE		
				From 0-6	To 6-12	To 12-18				No.	Pen	Rec.
								4"	loose dk.br. loamy topsoil			
5'		5'-6'6"	SS	17	28	52		4 1/2'	loose to med dense brown silts and fine sands	1	18"	18"
0'		10'-11'6"	SS	20	42	52		14'	extremely dense gray gravelly silts (glacial till)	2	18"	18"
15'									MW#4 materials used 14' 2" PVC 0.010 screen sch 40 2' 2" PVC solid 250 lbs silica sand 1 plastic PVC cap 1 econo screw water tight on riser			

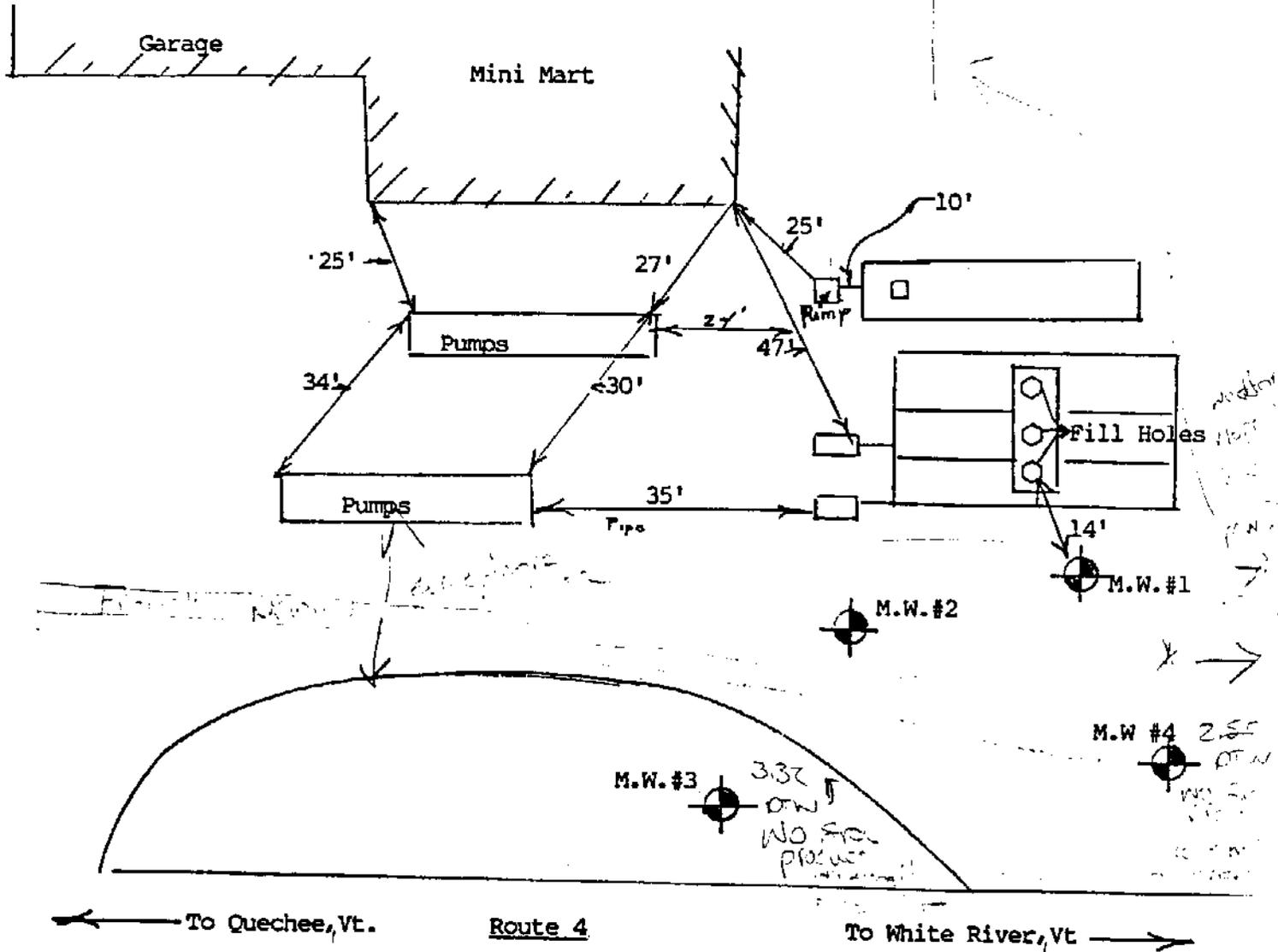
GROUND SURFACE TO 14'

Sample Type  
 D—Dry C—Cored W—Washed  
 U—Undisturbed Piston  
 TP—Test Pit A—Auger V—Vane Test  
 UT—Undisturbed Thinwall

USED	PROPORTIONS USED	"CASING"	THEN
trace	0 to 10%	140 lb. Wt. x 30% fall on 2" O. D. Sampler	Cohesionless Density
little	10 to 20%		0-10 Loose
some	20 to 35%		10-30 Med. Dense
and	35 to 50%		30-50 Dense
			50 + Very Dense
			Cohesive Consistency
			0-4 Soft 30 + Hard
			4-8 M/Stiff
			8-15 Stiff
			15-30 V.Stiff

SUMMARY	
Earth Boring	14'
Rock Coring	
Samples	2
HOLE NO. MW #4	

Approximate Locations (No scale)



5

2

Monitoring Wells @ Quechee Mobile Sta.  
 Rte 4  
 Quechee, Vt

by  
 Soils Engineering Inc  
 Charlestown, N.H.

*40'-50'*  
*Perimeter dimensions*  
*road dimensions*

ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310

**A P P E N D I X E**  
**STANDARD FIELD WORK METHODOLOGIES**

PREPARED FOR:

MS. LINDA COSTANZO  
MOBIL OIL CORPORATION  
1800 WEST PARK DRIVE, SUITE 450  
WESTBOROUGH, MASSACHUSETTS 01581

PREPARED BY:

GROUNDWATER TECHNOLOGY, INC.  
199 ROUTE 101, P.O. BOX 1203  
AMHERST, NEW HAMPSHIRE 03031-1203

MARCH 1995

## STANDARD FIELD WORK METHODOLOGIES

### Monitoring Well Installation and Development

Groundwater monitoring wells were installed by a competent drilling subcontractor under the direct supervision of a Groundwater Technology geologist, using a truck-mounted hollow-stem auger drill rig. Drilling locations were selected to address potential impacts from hazardous material releases, if such occurred, and to assess soil and groundwater quality at the upgradient and downgradient site boundaries. All well locations are shown on an attached figure.

Monitoring wells were constructed of fifteen feet of schedule-40, 0.020-inch slotted PVC well screen and additional schedule-40 PVC well casing necessary to extend the well to approximately four inches below surface grade. The screened interval extends approximately five feet above and ten feet below the water table in order to monitor seasonal fluctuations in water table elevation and detect the presence of any liquid-phase petroleum, if present. Casing and screen were centered in the borehole and the annular space was backfilled with clean graded sand to a depth at least six inches above the top of the well screen. A one-foot thick bentonite seal was placed above the sand pack to prevent surface water runoff from directly entering the well. Any remaining annular space was filled with clean, native backfill. A locking steel roadbox was cemented in place to protect the well from vehicular traffic and surface water runoff. A locking well gripper and padlock was installed in the top of the well casing to further protect against surface infiltration and vandalism. Well construction details are shown on the well logs.

Following construction, each monitoring well was developed by alternative surging and bailing with a clean PVC ball check-valve bailer. Each well was surged repeatedly and the silty water was removed from the well. Well development is undertaken to repair any damage done to the formation or well bore by the drilling operation and to ensure good hydraulic connection between the well and the surrounding formation.

### Soil Sample Collection & Screening

During drilling, soil samples were collected at five-foot intervals using a split spoon sampler driven in advance of the auger bit. The split-spoon sampler was driven by a 140-pound hammer dropped from a height of 30 inches. Blow counts were recorded every six inches. The supervising

Groundwater Technology geologist performed a visual and textural classification of the soil samples and recorded these descriptions on the boring logs.

Soil samples collected during drilling were screened for petroleum-related VOC with a portable photoionization detector (PID). The PID was equipped with a 10.2 eV ionization lamp and has a detection limit of one ppm VOC. Soil samples were transferred from the split-spoon sampler to a pre-cleaned glass jar. The jar was half filled, covered with a sheet of aluminum foil and sealed with a screw cap. The headspace within each sample jar was allowed to equilibrate within the sample container for a minimum of fifteen minutes. The sample was then shaken vigorously for fifteen seconds; the screw cap was removed and the aluminum foil was pierced with the PID probe. The maximum meter response was then recorded as the total VOC concentration in the sample jar headspace. The PID is calibrated daily to a benzene standard. The PID is considered a preliminary screening tool and as such, results should be considered approximate. Soil screening results are included on the boring logs.

### **Well Surveying and Gauging**

Groundwater monitoring wells were surveyed relative to an arbitrary on-site datum to establish top-of-casing (TOC) elevations. The top-of-casings were surveyed to an accuracy of 0.01 foot. The monitoring wells were gauged with an ORS Environmental Equipment Interface Probe (IP). The IP measures depth to groundwater and the thickness of any liquid-phase petroleum, if present, to an accuracy of 0.01 foot. A well monitoring form(s) is included. Groundwater elevations in the monitoring wells were determined by surveying and gauging data and were used to prepare a groundwater contour map.

### **Groundwater Sample Collection and Analysis**

Monitoring wells were sampled for the specified laboratory analyses. Prior to sampling at least three well volumes of water were removed from each well using a PVC ball check-valve bailer to ensure that a representative groundwater sample was obtained. This bailer was decontaminated by rinsing with methanol followed by distilled water between each well. Samples were obtained using a teflon ball check-valve bailer which was similarly decontaminated between each well. Groundwater samples were placed in pre-cleaned 40 ml glass vials with a Teflon™ septum. Samples were acidified to a pH of <2, as necessary, and chilled to prevent biodegradation during transport to a state certified analytical laboratory where they were analyzed.

## **Gore-Sorber™ Sample Collection**

Gore-Sorber™ modules were placed in a predetermined grid in holes approximately 9/16-inch in diameter, 3 or more feet in the ground. The modules were left in the ground for a minimum of 10-days and then pulled out and placed in sample containers. The samples were then shipped to the W.L. Gore and Associates, Inc. laboratory for analyses.

ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310

**A P P E N D I X F**

**SOIL, WATER AND GROUNDWATER ANALYTICAL RESULTS**

PREPARED FOR:

MS. LINDA COSTANZO  
MOBIL OIL CORPORATION  
1800 WEST PARK DRIVE, SUITE 450  
WESTBOROUGH, MASSACHUSETTS 01581

PREPARED BY:

GROUNDWATER TECHNOLOGY, INC.  
199 ROUTE 101, P.O. BOX 1203  
AMHERST, NEW HAMPSHIRE 03031-1203

MARCH 1995

February 28, 1995

Joel Sadler  
Groundwater Technology, Inc.  
P.O. Box 73  
199 Route 101  
Amherst, NH 03031

**SS# 01-558**  
**Quechee, VT**

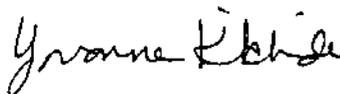
**Sample Date: 2/21/95**

Enclosed are the analytical results for Service Station 01-558. The samples were received on February 22, 1995 and were processed to meet all required hold times. Please note that the Trip blank contains MTBE.

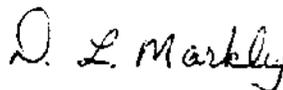
The attached tables provide sample identification and analytical data for this project. This letter represents authorization and approval of the attached analytical results and is an integral part of this report.

If any further information is required regarding these analyses, kindly refer to the 7-digit TSL Number for the sample in question. We will be happy to respond to any questions you may have.

Sincerely,



Yvonne Kirkbride  
Project Coordinator



for Phyllis E. Kovacs  
Quality Assurance Director



Please Print

Consultant: Groundwater Technology Serv. Sta. # 01-558  
 Sampler: Joel Sadler Phone: 603 672 5303  
 Site Location: Quebec VT  
 Mobil Engineer: Linda Costanzo Phone: 508 389 1820

Permit Information:  
 DSW  DGW  ID27  Hazardous   
 Other \_\_\_\_\_

Matrix

Soil	Water	Other
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#56 4PK  
Newcooler 3PK

BTEX/02 <input type="checkbox"/> 8020 <input type="checkbox"/> + MTBE <input type="checkbox"/> + TBA <input type="checkbox"/>	BTEX/62A <input type="checkbox"/> 8240 <input type="checkbox"/> + MTBE <input type="checkbox"/> + TBA <input type="checkbox"/>	EPA 8240PPL <input type="checkbox"/> 8240 <input type="checkbox"/> NBS(+16) <input type="checkbox"/>	EPA 801 <input type="checkbox"/> EPA 8010 <input type="checkbox"/> + EDB <input type="checkbox"/>	Hydrocarbons GC/FID Gas <input type="checkbox"/>	Oil & Grease 1/3.1 <input type="checkbox"/>	EPA 821 Long Lat <input type="checkbox"/> Diesel <input type="checkbox"/> Mineral <input type="checkbox"/>	EPA 823 PPL <input type="checkbox"/> Short Lat <input type="checkbox"/> TPH 418.1 <input type="checkbox"/>	Metals - Priority Pollutant <input type="checkbox"/> NBS(+16) <input type="checkbox"/> + TBA <input type="checkbox"/>	Lead 289.2 <input type="checkbox"/> 200.7 <input type="checkbox"/> RCRA <input type="checkbox"/>	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> 7420 <input type="checkbox"/> 7421 <input type="checkbox"/> 6010 <input type="checkbox"/>	Corrosivity <input type="checkbox"/> Flash Point <input type="checkbox"/> Respirometry <input type="checkbox"/>	TPH GC/FID (EPA 8100) <input type="checkbox"/>
Total # of Containers												

Sample Identification	Collection		Grab	Composite	Soil	Water	Other	Total # of Containers	Analysis Parameters												Comments				
	Date	Time							BTEX/02	BTEX/62A	EPA 8240PPL	EPA 801	Hydrocarbons GC/FID Gas	Oil & Grease	EPA 821 Long Lat	EPA 823 PPL	Metals - Priority Pollutant	Lead 289.2	TCLP Metals	Corrosivity		TPH GC/FID			
GT-1	2-21-95	11:00	X			X		3																	
GT-2	2-21-95	12:05	X			X		3																	9503169 COOLER 19503173
GT-3	2-21-95	1:00	X			X		3																	REF-169 COOLER 1 174
MW-4	2-21-95	1:25	X			X		3																	170 COOLER 2 175
MW-D	2-21-95	1:45	X			X		3																	177 COOLER 2 177
TRIP BLANK	2-15-95	8:18			X			2	X																173 AED 179

2 separate coolers  
 EA 03618  
 03619

Turnaround time requested, (please circle): Emergency, Routine  
 (Call to confirm Emergency turnaround time.) 24 HOUR  
 Rush analysis results via:  
 Fax #: 603 672 0737 -or- Phone #: \_\_\_\_\_

Special Detection Limits: \_\_\_\_\_  
 Special Reporting Requirements: 24 HOUR TAT

CONDITION OF SAMPLES UPON RECEIPT AT ESL:  
 Sample Temp: 5.3 Preserved?: \_\_\_\_\_ Damaged?: Yes  
 Comments: leaked; GT-2 8270 B/LN BTI, 1 VOA GT-1  
Reid Broken. Reid set of TRIP BLANKS (1 Broken)  
NOT ON COC. PER J. SADLER - OK TO LIST  
"TRIP BLANKS" ON COC.

-- This section must be signed each time the sample changes hands --

Relinquished By:	Date	Time	Received By:	Date	Time
<u>Joel Sadler</u>	<u>2-21-95</u>	<u>14:42</u>	<u>UPS</u>	<u>2-21</u>	<u>2:15</u>
			Received By ESL:		
			<u>Chris E. Dwyer</u>	<u>2/22/95</u>	<u>9:00</u>

In case we have questions when the samples arrive, ESL should call:  
 Name: Joel Sadler Phone: 603 672 5303  
 Send Report to: Groundwater Technology 192 Route 101 PO Box 1203

Project Name: 01-558

Sampled: 02/21/95

Matrix: WATER

Received: 02/22/95

Sample ID: GT-1

Analyzed: 22 Feb 95 4:29 pm

ESL No: 9503173a.d

Method No: EPA 8240

Method Title: Volatile Organics  
Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
1,1-Dichloroethene	ND	ug/l	5.0
Methylene Chloride	ND	ug/l	5.0
Methyl tert-Butyl Ether	ND	ug/l	10
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery	
Pentafluorobenzene	29	30 ug/l	97	%
1,4-Difluorobenzene	30	30 ug/l	100	%
4-Bromofluorobenzene	31	30 ug/l	104	%

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: J. Dart

Project Name: 01-558

Sampled: 02/21/95

Matrix: WATER

Received: 02/22/95

Sample ID: GT-2

Analyzed: 23 Feb 95 2:53 pm

ESL No: 9503174B.D

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	200
Vinyl Chloride	ND	ug/l	200
Bromomethane	ND	ug/l	200
Chloroethane	ND	ug/l	200
1,1-Dichloroethene	ND	ug/l	100
Methylene Chloride	ND	ug/l	100
Methyl tert-Butyl Ether	ND	ug/l	200
trans-1,2-Dichloroethene	ND	ug/l	100
1,1-Dichloroethane	ND	ug/l	100
Chloroform	ND	ug/l	100
Carbon Tetrachloride	ND	ug/l	100
1,2-Dichloroethane	ND	ug/l	100
Benzene	289	ug/l	100
Trichloroethene	ND	ug/l	100
1,2-Dichloropropane	ND	ug/l	100
Bromodichloromethane	ND	ug/l	100
cis-1,3-Dichloropropene	ND	ug/l	100
2-Chloroethyl Vinyl Ether	ND	ug/l	200
Toluene	3110	ug/l	100
trans-1,3-Dichloropropene	ND	ug/l	100
1,1,2-Trichloroethane	ND	ug/l	100
Tetrachloroethene	ND	ug/l	100
Dibromochloromethane	ND	ug/l	100
Chlorobenzene	ND	ug/l	100
Ethylbenzene	1180	ug/l	100
para & meta Xylene	5760	ug/l	100
o-Xylene	3120	ug/l	100
Bromoform	ND	ug/l	100
1,1,2,2-Tetrachloroethane	ND	ug/l	100
1,1,1-Trichloroethane	ND	ug/l	100

Surrogate	Results	Spike level/Units	Recovery	
Pentafluorobenzene	28	30 ug/l	94	%
1,4-Difluorobenzene	29	30 ug/l	98	%
4-Bromofluorobenzene	33	30 ug/l	109	%

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: f. Oart

Project Name: 01-558

Sampled: 02/21/95

Matrix: WATER

Received: 02/22/95

Sample ID: GT-3

Analyzed: 22 Feb 95 5:52 pm

ESL No: 9503175a.d

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
1,1-Dichloroethene	ND	ug/l	5.0
Methylene Chloride	ND	ug/l	5.0
Methyl tert-Butyl Ether	280	ug/l	10
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery	%
Pentafluorobenzene	28	30 ug/l	---	93
1,4-Difluorobenzene	29	30 ug/l	---	96
4-Bromofluorobenzene	31	30 ug/l	---	105

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: J. O. Oat

Project Name: 01-558

Sampled: 02/21/95

Matrix: WATER

Received: 02/22/95

Sample ID: MW-4

Analyzed: 23 Feb 95 3:38 pm

ESL No: 9503177B.D

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	1000
Vinyl Chloride	ND	ug/l	1000
Bromomethane	ND	ug/l	1000
Chloroethane	ND	ug/l	1000
1,1-Dichloroethene	ND	ug/l	500
Methylene Chloride	ND	ug/l	500
Methyl tert-Butyl Ether	48200	ug/l	1000
trans-1,2-Dichloroethene	ND	ug/l	500
1,1-Dichloroethane	ND	ug/l	500
Chloroform	ND	ug/l	500
Carbon Tetrachloride	ND	ug/l	500
1,2-Dichloroethane	ND	ug/l	500
Benzene	6300	ug/l	500
Trichloroethene	ND	ug/l	500
1,2-Dichloropropane	ND	ug/l	500
Bromodichloromethane	ND	ug/l	500
cis-1,3-Dichloropropene	ND	ug/l	500
2-Chloroethyl Vinyl Ether	ND	ug/l	1000
Toluene	187	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	500
1,1,2-Trichloroethane	ND	ug/l	500
Tetrachloroethene	ND	ug/l	500
Dibromochloromethane	ND	ug/l	500
Chlorobenzene	ND	ug/l	500
Ethylbenzene	938	ug/l	500
para & meta Xylene	ND	ug/l	500
o-Xylene	24	ug/l	5.0
Bromoform	ND	ug/l	500
1,1,2,2-Tetrachloroethane	ND	ug/l	500
1,1,1-Trichloroethane	ND	ug/l	500

J

Surrogate	Results	Spike level/Units	Recovery
Pentafluorobenzene	29	30 ug/l	95 %
1,4-Difluorobenzene	30	30 ug/l	99 %
4-Bromofluorobenzene	30	30 ug/l	99 %

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: L. Oat

Project Name: 01-558

Sampled: 02/21/95

Matrix: WATER

Received: 02/22/95

Sample ID: MW-0

Analyzed: 23 Feb 95 12:43 pm

ESL No: 9503178B.D

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
1,1-Dichloroethene	ND	ug/l	5.0
Methylene Chloride	ND	ug/l	5.0
Methyl tert-Butyl Ether	ND	ug/l	10
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery
Pentafluorobenzene	31	30 ug/l	103 %
1,4-Difluorobenzene	32	30 ug/l	108 %
4-Bromofluorobenzene	30	30 ug/l	100 %

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: E. Darr

Project Name: 01-558

Sampled: 02/15/95

Matrix: WATER

Received: 02/22/95

Sample ID: TRIP BLANK

Analyzed: 23 Feb 95 4:21 pm

ESL No: 95031798.D

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
1,1-Dichloroethene	ND	ug/l	5.0
Methylene Chloride	ND	ug/l	5.0
Methyl tert-Butyl Ether	13	ug/l	10
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery	
Pentafluorobenzene	29	30 ug/l	96	%
1,4-Difluorobenzene	31	30 ug/l	102	%
4-Bromofluorobenzene	31	30 ug/l	102	%

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: P. Carr

Matrix: Water  
 Sample ID: Method Blank  
 ESL No: MFBB22EA.D

Analyzed: 22 Feb 95 1:05 pm  
 Method No: EPA 8240  
 Method Title: Volatile Organics  
 Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
Trichlorofluoromethane	ND	ug/l	5.0
1,1-Dichloroethene	ND	ug/l	5.0
t-Butyl Alcohol	ND	ug/l	50
Methylene Chloride	ND	ug/l	10
Methyl tert-Butyl Ether	ND	ug/l	5.0
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
Diisopropyl ether	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery	
Pentafluorobenzene	30	30 ug/l	---	101 %
1,4-Difluorobenzene	31	30 ug/l	---	104 %
4-Bromofluorobenzene	31	30 ug/l	---	102 %

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: J. Oat

Matrix: Water  
 Sample ID: Method Blank  
 ESL No: MFBB23EA.D

Analyzed: 23 Feb 95 11:22 am  
 Method No: EPA 8240  
 Method Title: Volatile Organics  
 Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
Trichlorofluoromethane	ND	ug/l	5.0
1,1-Dichloroethene	ND	ug/l	5.0
t-Butyl Alcohol	ND	ug/l	50
Methylene Chloride	ND	ug/l	10
Methyl tert-Butyl Ether	ND	ug/l	5.0
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
Diisopropyl ether	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery
Pentafluorobenzene	30	30 ug/l	99 %
1,4-Difluorobenzene	30	30 ug/l	101 %
4-Bromofluorobenzene	31	30 ug/l	104 %

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: S. Dait

Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\624F0210.M  
 Title : EPA 624 Volatiles  
 Last Update : Tue Feb 21 13:35:08 1995  
 Response via : Initial Calibration

Non-Spiked Sample: 9503178B.D

Spike Sample	Spike Duplicate Sample
File ID : 9503178Y.D	9503178Z.D
Sample : 9503178Y W 8240 MS	9503178Z W 8240 MSD
Acq Time: 23 Feb 95 1:26 pm	23 Feb 95 2:10 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC RPD	Limits % Rec
Chloromethane	0.0	20	20	20	100	101	1	25	70-130
Vinyl Chloride	0.0	20	18	19	90	95	5	25	70-130
Bromomethane	0.1	20	19	19	93	93	1	25	70-130
Chloroethane	0.0	20	19	20	97	101	4	25	70-130
Trichlorofluorometha	0.0	20	21	21	103	104	1	25	70-130
1,1-Dichloroethene	0.0	20	20	20	99	99	0	25	70-130
t-Butyl Alcohol	0.0	100	106	105	106	105	1	25	70-130
Methylene Chloride	0.0	20	21	21	106	106	0	25	70-130
Methyl tert-Butyl Et	0.7	20	21	21	102	102	1	25	70-130
trans-1,2-Dichloroet	0.0	20	20	20	101	102	1	25	70-130
Diisopropyl ether	0.0	20	20	20	99	99	0	25	70-130
1,1-Dichloroethane	0.0	20	21	21	103	104	1	25	70-130
Methyl Ethyl Ketone	0.0	20	20	19	98	95	3	25	70-130
Chloroform	0.0	20	21	21	105	107	2	25	70-130
1,1,1-Trichloroethan	0.0	20	21	20	103	102	1	25	70-130
Carbon Tetrachloride	0.0	20	21	21	103	105	2	25	70-130
1,2-Dichloroethane	0.0	20	21	21	107	106	0	25	70-130
Benzene	0.0	20	21	21	103	103	0	25	70-130
Trichloroethene	0.0	20	20	21	102	104	2	25	70-130
1,2-Dichloropropane	0.0	20	20	21	102	103	0	25	70-130
Bromodichloromethane	0.0	20	21	21	104	104	1	25	70-130
cis-1,3-Dichloroprop	0.0	20	20	21	102	104	2	25	70-130
2-Chloroethyl Vinyl	0.0	20	0	0	0	0	0	25	70-130
Toluene	0.0	20	19	20	96	101	5	25	70-130
trans-1,3-Dichloropr	0.0	20	20	22	102	111	9	25	70-130
1,1,2-Trichloroethan	0.0	20	21	22	103	108	5	25	70-130
Tetrachloroethene	0.0	20	21	23	104	113	8	25	70-130
Dibromochloromethane	0.0	20	20	22	102	111	8	25	70-130
Chlorobenzene	0.0	20	20	20	98	101	3	25	70-130
Ethylbenzene	0.0	20	16	17	80	83	3	25	70-130
para & meta Xylene	0.0	40	36	37	91	93	3	25	70-130
o-Xylene	0.0	20	17	17	85	86	2	25	70-130
Bromoform	0.0	20	19	19	95	96	1	25	70-130
1,1,2,2-Tetrachloroe	0.0	20	18	19	91	96	6	25	70-130
1,3-Dichlorobenzene	0.0	20	18	19	90	94	4	25	70-130
1,4-Dichlorobenzene	0.0	20	19	19	93	93	0	25	70-130
1,2-Dichlorobenzene	0.0	20	18	18	91	89	3	25	70-130

## Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\624F0210.M  
 Title : EPA 624 Volatiles  
 Last Update : Tue Feb 21 13:35:08 1995  
 Response via : Initial Calibration

Non-Spiked Sample: 9502771A.D

Spike Sample	Spike Duplicate Sample
File ID : 9502771Y.D	9502771Z.D
Sample : 9502771Y W 8240 MS	9502771Z W 8240 MSD
Acq Time: 22 Feb 95 3:09 pm	22 Feb 95 3:52 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC RPD	Limits % Rec
Chloromethane	0.7	20	21	22	100	105	4	25	70-130
Vinyl Chloride	0.0	20	17	17	87	85	3	25	70-130
Bromomethane	0.1	20	18	18	90	89	2	25	70-130
Chloroethane	0.0	20	19	19	95	93	2	25	70-130
Trichlorofluorometha	0.0	20	19	20	96	101	5	25	70-130
1,1-Dichloroethene	0.0	20	19	19	94	97	3	25	70-130
t-Butyl Alcohol	122.9	100	237	230	114	107	7	25	70-130
Methylene Chloride	0.1	20	21	21	103	106	3	25	70-130
Methyl tert-Butyl Et	1330.	20	1441	1451	554#	607#	9	25	70-130
trans-1,2-Dichloroet	0.0	20	20	20	98	102	4	25	70-130
Diisopropyl ether	0.0	20	20	20	100	101	1	25	70-130
1,1-Dichloroethane	0.0	20	20	20	102	102	1	25	70-130
Methyl Ethyl Ketone	0.0	20	25	26	125	128	3	25	70-130
Chloroform	0.0	20	20	21	102	105	2	25	70-130
1,1,1-Trichloroethan	0.0	20	20	20	100	101	1	25	70-130
Carbon Tetrachloride	0.0	20	20	21	100	104	4	25	70-130
1,2-Dichloroethane	0.0	20	21	21	103	106	3	25	70-130
Benzene	2.6	20	22	23	99	102	4	25	70-130
Trichloroethene	0.0	20	20	20	101	102	1	25	70-130
1,2-Dichloropropane	0.0	20	20	21	101	105	4	25	70-130
Bromodichloromethane	0.0	20	20	21	101	104	3	25	70-130
cis-1,3-Dichloroprop	0.4	20	20	21	98	101	3	25	70-130
2-Chloroethyl Vinyl	0.0	20	0	0	0	0	0	25	70-130
Toluene	5.8	20	25	27	94	104	10	25	70-130
trans-1,3-Dichloropr	0.0	20	20	22	102	108	6	25	70-130
1,1,2-Trichloroethan	0.0	20	20	22	101	112	10	25	70-130
Tetrachloroethene	0.0	20	21	23	105	115	9	25	70-130
Dibromochloromethane	0.0	20	21	23	105	114	8	25	70-130
Chlorobenzene	0.0	20	19	20	95	100	5	25	70-130
Ethylbenzene	0.0	20	18	17	89	87	2	25	70-130
para & meta Xylene	2.0	40	36	36	86	85	1	25	70-130
o-Xylene	0.6	20	18	18	86	85	1	25	70-130
Bromoform	0.0	20	19	20	97	98	2	25	70-130
1,1,2,2-Tetrachloroe	0.0	20	19	20	97	98	1	25	70-130
1,3-Dichlorobenzene	0.0	20	19	19	96	94	2	25	70-130
1,4-Dichlorobenzene	0.0	20	19	19	94	97	2	25	70-130
1,2-Dichlorobenzene	0.0	20	19	18	93	92	1	25	70-130



ENVIRONMENTAL SERVICES LABORATORY

Project Name: 01-558

Matrix: Water

Sample ID: GT-1

ESL No: 9503173b.d

Sampled: 02/21/95

Received: 02/22/95

Extraction Date: 2/22/95

Analyzed: 24 Feb 95 5:11 pm

Method No: EPA 625

Method Title: Semi-Volatile Organics

Priority Pollutant List

Base/Neutral Extractables

Parameter	Results	Units	MDL
N-Nitrosodimethylamine	ND	ug/L	2.3
Bis(2-chloroethyl)ether	ND	ug/L	5.7
1,3-Dichlorobenzene	ND	ug/L	1.9
1,4-Dichlorobenzene	ND	ug/L	4.4
1,2-Dichlorobenzene	ND	ug/L	1.9
Bis(2-chloroisopropyl)ether	ND	ug/L	5.7
Hexachloroethane	ND	ug/L	1.6
N-Nitrosodi-n-propyl amine	ND	ug/L	2.8
Nitrobenzene	ND	ug/L	1.9
Isophorone	ND	ug/L	2.2
Bis(2-chloroethoxy)methane	ND	ug/L	5.3
1,2,4-Trichlorobenzene	ND	ug/L	1.9
Naphthalene	ND	ug/L	1.6
Hexachlorobutadiene	ND	ug/L	0.9
Hexachlorocyclopentadiene	ND	ug/L	20
2-Chloronaphthalene	ND	ug/L	1.9
Acenaphthylene	ND	ug/L	1.9
Dimethyl phthalate	ND	ug/L	6.0
2,6-Dinitrotoluene	ND	ug/L	1.9
Acenaphthene	ND	ug/L	1.9
2,4-Dinitrotoluene	ND	ug/L	5.7
Fluorene	ND	ug/L	1.9
Diethyl phthalate	ND	ug/L	6.0
4-Chlorophenyl phenyl ether	ND	ug/L	4.2
N-Nitrosodiphenylamine	ND	ug/L	2.4
4-Bromophenyl phenyl ether	ND	ug/L	1.9
Hexachlorobenzene	ND	ug/L	1.9
Phenanthrene	ND	ug/L	5.4
Anthracene	ND	ug/L	1.9
Di-n-butylphthalate	ND	ug/L	2.5
Fluoranthene	ND	ug/L	2.2
Benzidine	ND	ug/L	30
Pyrene	ND	ug/L	1.9
Butyl benzyl phthalate	4.7	ug/L	2.5
Benzo[a]anthracene	ND	ug/L	7.8
3,3'-Dichlorobenzidine	ND	ug/L	17



Project Name: 01-558

Matrix: Water  
Sample ID: GT-1  
TSL No: 9503173b.dSampled: 02/21/95  
Received: 02/22/95  
Extraction Date: 02/22/95  
Analyzed: 24 Feb 95 5:11 pm  
Method No: EPA 625  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
Chrysene	ND	ug/L	2.5
Bis(2-ethylhexyl)phthalate	ND	ug/L	15
Di-n-octylphthalate	ND	ug/L	3.9
Benzo[b]fluoranthene	ND	ug/L	4.8
Benzo[k]fluoranthene	ND	ug/L	2.5
Benzo[a]pyrene	ND	ug/L	3.0
Indeno(1,2,3-c,d)pyrene	ND	ug/L	3.7
Dibenzo[a,h]anthracene	ND	ug/L	2.5
Benzo[g,h,i]perylene	ND	ug/L	4.1

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	94	100	94
2-Fluorobiphenyl	82	100	82
Terphenyl-D14	41	100	41

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: L.DARTQA/QC Reviewed by: L. DART



ENVIRONMENTAL SERVICES LABORATORY

Project Name: 01-558

Matrix: Water  
Sample ID: GT-3  
ESL No: 9503175b.d

Sampled: 02/21/95  
Received: 02/22/95  
Extraction Date: 2/22/95  
Analyzed: 25 Feb 95 7:50 am  
Method No: EPA 625  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
N-Nitrosodimethylamine	ND	ug/L	2.3
Bis(2-chloroethyl)ether	ND	ug/L	5.7
1,3-Dichlorobenzene	ND	ug/L	1.9
1,4-Dichlorobenzene	ND	ug/L	4.4
1,2-Dichlorobenzene	ND	ug/L	1.9
Bis(2-chloroisopropyl)ether	ND	ug/L	5.7
Hexachloroethane	ND	ug/L	1.6
N-Nitrosodi-n-propyl amine	ND	ug/L	2.8
Nitrobenzene	ND	ug/L	1.9
Isophorone	ND	ug/L	2.2
Bis(2-chloroethoxy)methane	ND	ug/L	5.3
1,2,4-Trichlorobenzene	ND	ug/L	1.9
Naphthalene	ND	ug/L	1.6
Hexachlorobutadiene	ND	ug/L	0.9
Hexachlorocyclopentadiene	ND	ug/L	20
2-Chloronaphthalene	ND	ug/L	1.9
Acenaphthylene	ND	ug/L	1.9
Dimethyl phthalate	ND	ug/L	6.0
2,6-Dinitrotoluene	ND	ug/L	1.9
Acenaphthene	ND	ug/L	1.9
2,4-Dinitrotoluene	ND	ug/L	5.7
Fluorene	ND	ug/L	1.9
Diethyl phthalate	ND	ug/L	6.0
4-Chlorophenyl phenyl ether	ND	ug/L	4.2
N-Nitrosodiphenylamine	ND	ug/L	2.4
4-Bromophenyl phenyl ether	ND	ug/L	1.9
Hexachlorobenzene	ND	ug/L	1.9
Phenanthrene	ND	ug/L	5.4
Anthracene	ND	ug/L	1.9
Di-n-butylphthalate	ND	ug/L	2.5
Fluoranthene	ND	ug/L	2.2
Benzidine	ND	ug/L	30
Pyrene	ND	ug/L	1.9
Butyl benzyl phthalate	3.2	ug/L	2.5
Benzo[a]anthracene	ND	ug/L	7.8
3,3'-Dichlorobenzidine	ND	ug/L	17

Project Name: 01-558

Matrix: Water  
Sample ID: GT-3  
TSL No: 9503175b.dSampled: 02/21/95  
Received: 02/22/95  
Extraction Date: 02/22/95  
Analyzed: 25 Feb 95 7:50 am  
Method No: EPA 625  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
Chrysene	ND	ug/L	2.5
Bis(2-ethylhexyl)phthalate	ND	ug/L	15
Di-n-octylphthalate	ND	ug/L	3.9
Benzo[b]fluoranthene	ND	ug/L	4.8
Benzo[k]fluoranthene	ND	ug/L	2.5
Benzo[a]pyrene	ND	ug/L	3.0
Indeno(1,2,3-c,d)pyrene	ND	ug/L	3.7
Dibenzo[a,h]anthracene	ND	ug/L	2.5
Benzo[g,h,i]perylene	ND	ug/L	4.1

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	96	100	96
2-Fluorobiphenyl	87	100	87
Terphenyl-D14	54	100	54

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: L.DARTQA/QC Reviewed by: J. Carr



## ENVIRONMENTAL SERVICES LABORATORY

Project Name: 01-558

Matrix: Water  
Sample ID: MW-4  
ESL No: 9503177b.dSampled: 02/21/95  
Received: 02/22/95  
Extraction Date: 2/22/95  
Analyzed: 25 Feb 95 8:56 am  
Method No: EPA 625  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
N-Nitrosodimethylamine	ND	ug/L	5.0
Bis(2-chloroethyl)ether	ND	ug/L	11
1,3-Dichlorobenzene	ND	ug/L	4.0
1,4-Dichlorobenzene	ND	ug/L	9.0
1,2-Dichlorobenzene	ND	ug/L	4.0
Bis(2-chloroisopropyl)ether	ND	ug/L	11
Hexachloroethane	ND	ug/L	3.0
N-Nitrosodi-n-propyl amine	ND	ug/L	6.0
Nitrobenzene	ND	ug/L	4.0
Isophorone	ND	ug/L	4.0
Bis(2-chloroethoxy)methane	ND	ug/L	11
1,2,4-Trichlorobenzene	ND	ug/L	4.0
Naphthalene	227	ug/L	3.0
Hexachlorobutadiene	ND	ug/L	2.0
Hexachlorocyclopentadiene	ND	ug/L	40
2-Chloronaphthalene	ND	ug/L	4.0
Acenaphthylene	ND	ug/L	4.0
Dimethyl phthalate	ND	ug/L	12
2,6-Dinitrotoluene	ND	ug/L	4.0
Acenaphthene	ND	ug/L	4.0
2,4-Dinitrotoluene	ND	ug/L	11
Fluorene	ND	ug/L	4.0
Diethyl phthalate	ND	ug/L	12
4-Chlorophenyl phenyl ether	ND	ug/L	8.0
N-Nitrosodiphenylamine	ND	ug/L	5.0
4-Bromophenyl phenyl ether	ND	ug/L	4.0
Hexachlorobenzene	ND	ug/L	4.0
Phenanthrene	ND	ug/L	11
Anthracene	ND	ug/L	4.0
Di-n-butylphthalate	ND	ug/L	5.0
Fluoranthene	ND	ug/L	4.0
Benzidine	ND	ug/L	60
Pyrene	ND	ug/L	4.0
Butyl benzyl phthalate	ND	ug/L	5.0
Benzo[a]anthracene	ND	ug/L	16
3,3'-Dichlorobenzidine	ND	ug/L	34



Project Name: 01-558

Sampled: 02/21/95

Matrix: Water

Received: 02/22/95

Sample ID: MW-4

Extraction Date: 02/22/95

TSL No: 9503177b.d

Analyzed: 25 Feb 95 8:56 am

Method No: EPA 625

Method Title: Semi-Volatile Organics

Priority Pollutant List

Base/Neutral Extractables

Parameter	Results	Units	MDL
Chrysene	ND	ug/L	5.0
Bis(2-ethylhexyl)phthalate	ND	ug/L	30
Di-n-octylphthalate	ND	ug/L	8.0
Benzo[b]fluoranthene	ND	ug/L	10
Benzo[k]fluoranthene	ND	ug/L	5.0
Benzo[a]pyrene	ND	ug/L	6.0
Indeno(1,2,3-c,d)pyrene	ND	ug/L	7.0
Dibenzo(a,h)anthracene	ND	ug/L	5.0
Benzo(g,h,i)perylene	ND	ug/L	8.0

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	94	100	94
2-Fluorobiphenyl	85	100	85
Terphenyl-D14	50	100	50

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: L.DART

QA/QC Reviewed by: J. Oert



ENVIRONMENTAL SERVICES LABORATORY

Project Name: 01-558

Matrix: Water  
Sample ID: MW-0  
ESL No: 9503178b.d

Sampled: 02/21/95  
Received: 02/22/95  
Extraction Date: 2/22/95  
Analyzed: 25 Feb 95 10:01 am  
Method No: EPA 625  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
N-Nitrosodimethylamine	ND	ug/L	2.3
Bis(2-chloroethyl)ether	ND	ug/L	5.7
1,3-Dichlorobenzene	ND	ug/L	1.9
1,4-Dichlorobenzene	ND	ug/L	4.4
1,2-Dichlorobenzene	ND	ug/L	1.9
Bis(2-chloroisopropyl)ether	ND	ug/L	5.7
Hexachloroethane	ND	ug/L	1.6
N-Nitrosodi-n-propyl amine	ND	ug/L	2.8
Nitrobenzene	ND	ug/L	1.9
Isophorone	ND	ug/L	2.2
Bis(2-chloroethoxy)methane	ND	ug/L	5.3
1,2,4-Trichlorobenzene	ND	ug/L	1.9
Naphthalene	ND	ug/L	1.6
Hexachlorobutadiene	ND	ug/L	0.9
Hexachlorocyclopentadiene	ND	ug/L	20
2-Chloronaphthalene	ND	ug/L	1.9
Acenaphthylene	ND	ug/L	1.9
Dimethyl phthalate	ND	ug/L	6.0
2,6-Dinitrotoluene	ND	ug/L	1.9
Acenaphthene	ND	ug/L	1.9
2,4-Dinitrotoluene	ND	ug/L	5.7
Fluorene	ND	ug/L	1.9
Diethyl phthalate	ND	ug/L	6.0
4-Chlorophenyl phenyl ether	ND	ug/L	4.2
N-Nitrosodiphenylamine	ND	ug/L	2.4
4-Bromophenyl phenyl ether	ND	ug/L	1.9
Hexachlorobenzene	ND	ug/L	1.9
Phenanthrene	ND	ug/L	5.4
Anthracene	ND	ug/L	1.9
Di-n-butylphthalate	ND	ug/L	2.5
Fluoranthene	ND	ug/L	2.2
Benzidine	ND	ug/L	30
Pyrene	ND	ug/L	1.9
Butyl benzyl phthalate	ND	ug/L	2.5
Benzo[a]anthracene	ND	ug/L	7.8
3,3'-Dichlorobenzidine	ND	ug/L	17



Project Name: 01-558

Sampled: 02/21/95

Matrix: Water

Received: 02/22/95

Sample ID: MW-0

Extraction Date: 02/22/95

TSL No: 9503178b.d

Analyzed: 25 Feb 95 10:01 am

Method No: EPA 625

Method Title: Semi-Volatile Organics

Priority Pollutant List

Base/Neutral Extractables

Parameter	Results	Units	MDL
Chrysene	ND	ug/L	2.5
Bis(2-ethylhexyl)phthalate	ND	ug/L	15
Di-n-octylphthalate	ND	ug/L	3.9
Benzo[b]fluoranthene	ND	ug/L	4.8
Benzo[k]fluoranthene	ND	ug/L	2.5
Benzo[a]pyrene	ND	ug/L	3.0
Indeno(1,2,3-c,d)pyrene	ND	ug/L	3.7
Dibenzo[a,h]anthracene	ND	ug/L	2.5
Benzo[g,h,i]perylene	ND	ug/L	4.1

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	98	100	98
2-Fluorobiphenyl	89	100	89
Terphenyl-D14	59	100	59

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: L.DART

QA/QC Reviewed by: L. Dart



Project Name: ##-###

Matrix: Water  
Sample ID: METHOD BLANK  
ESL No: mewb22eb.dSampled: 02/22/95  
Received: 02/22/95  
Extraction Date: 2/22/95  
Analyzed: 24 Feb 95 4:05 pm  
Method No: EPA 625  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
N-Nitrosodimethylamine	ND	ug/L	2.3
Bis(2-chloroethyl)ether	ND	ug/L	5.7
1,3-Dichlorobenzene	ND	ug/L	1.9
1,4-Dichlorobenzene	ND	ug/L	4.4
1,2-Dichlorobenzene	ND	ug/L	1.9
Bis(2-chloroisopropyl)ether	ND	ug/L	5.7
Hexachloroethane	ND	ug/L	1.6
N-Nitrosodi-n-propyl amine	ND	ug/L	2.8
Nitrobenzene	ND	ug/L	1.9
Isophorone	ND	ug/L	2.2
Bis(2-chloroethoxy)methane	ND	ug/L	5.3
1,2,4-Trichlorobenzene	ND	ug/L	1.9
Naphthalene	ND	ug/L	1.6
Hexachlorobutadiene	ND	ug/L	0.9
Hexachlorocyclopentadiene	ND	ug/L	20
2-Chloronaphthalene	ND	ug/L	1.9
Acenaphthylene	ND	ug/L	1.9
Dimethyl phthalate	ND	ug/L	6.0
2,6-Dinitrotoluene	ND	ug/L	1.9
Acenaphthene	ND	ug/L	1.9
2,4-Dinitrotoluene	ND	ug/L	5.7
Fluorene	ND	ug/L	1.9
Diethyl phthalate	ND	ug/L	6.0
4-Chlorophenyl phenyl ether	ND	ug/L	4.2
N-Nitrosodiphenylamine	ND	ug/L	2.4
4-Bromophenyl phenyl ether	ND	ug/L	1.9
Hexachlorobenzene	ND	ug/L	1.9
Phenanthrene	ND	ug/L	5.4
Anthracene	ND	ug/L	1.9
Di-n-butylphthalate	ND	ug/L	2.5
Fluoranthene	ND	ug/L	2.2
Benzidine	ND	ug/L	30
Pyrene	ND	ug/L	1.9
Butyl benzyl phthalate	ND	ug/L	2.5
Benzo[a]anthracene	ND	ug/L	7.8
3,3'-Dichlorobenzidine	ND	ug/L	17



Project Name: ##-###

Sampled: 02/22/95

Received: 02/22/95

Matrix: Water

Extraction Date: 02/22/95

Sample ID: METHOD BLANK

Analyzed: 24 Feb 95 4:05 pm

TSL No: mewb22eb.d

Method No: EPA 625

Method Title: Semi-Volatile Organics

Priority Pollutant List

Base/Neutral Extractables

Parameter	Results	Units	MDL
Chrysene	ND	ug/L	2.5
Bis(2-ethylhexyl)phthalate	ND	ug/L	15
Di-n-octylphthalate	ND	ug/L	3.9
Benzo[b]fluoranthene	ND	ug/L	4.8
Benzo[k]fluoranthene	ND	ug/L	2.5
Benzo[a]pyrene	ND	ug/L	3.0
Indeno(1,2,3-c,d)pyrene	ND	ug/L	3.7
Dibenzo[a,h]anthracene	ND	ug/L	2.5
Benzo[g,h,i]perylene	ND	ug/L	4.1

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	102	100	101
2-Fluorobiphenyl	93	100	93
Terphenyl-D14	52	100	52

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: L.DART

QA/QC Reviewed by: L. Dett



Spike

Project Name: Duplicate Report

Sampled: 02/14/95

Received: 02/16/95

Prepared: 02/17/95

Analyzed: 02/21/95

Method No: EPA 625

Method Title: Semi-Volatile Organics

Priority Pollutant List: Base/Neutrals

Matrix: Water  
 Sample ID: MS/MSD  
 TSL No: 9502733  
 Spike Level: 100ug/L

Parameter	Spike Result ug/L	Dup Spike Result ug/L	MDL ug/L	Percent Difference	Parameter	Spike Result ug/L	Dup Spike Result ug/L	MDL ug/L	Percent Difference
N-Nitrosodimethylamine	31	37	2.3	18	4-Chlorophenyl phenyl ether	77	87	4.2	12
Bis(2-chloroethyl) ether	74	83	5.7	11	N-Nitrosodiphenylamine	78	85	2.4	8.8
1,3-Dichlorobenzene	54	60	1.9	11	4-Bromophenyl phenyl ether	71	79	1.9	11
1,4-Dichlorobenzene	56	61	4.4	8.6	Hexachlorobenzene	69	77	1.9	11
1,2-Dichlorobenzene	57	63	1.9	10	Phenanthrene	73	83	5.4	13
Bis(2-chloroisopropyl) ether	69	77	5.7	11	Anthracene	76	86	1.9	12
Hexachloroethane	48	55	1.6	14	Di-n-Butylphthalate	74	82	2.5	10
N-Nitroso-di-n-propyl amine	76	87	2.8	14	Fluoranthene	78	88	2.2	16
Nitrobenzene	78	85	1.9	11	Benzidine	ND	30	30	NA
Isophorone	78	87	2.2	11	Pyrene	84	95	1.9	12
Bis(2-chloroethoxy)methane	76	85	5.3	11	Butylbenzylphthalate	83	94	2.5	12
1,2,4-Trichlorobenzene	62	71	1.9	14	Benzo[a]anthracene	85	98	7.8	14
Naphthalene	67	74	1.6	10	3,3'-Dichlorobenzidine	69	52	1.7	13
Hexachlorobutadiene	55	64	0.8	15	Chrysene	86	99	2.5	14
Hexachlorocyclopentadiene	54	66	2.0	20	Bis(2-ethylhexyl)phthalate	80	91	1.5	13
2-Chloronaphthalene	69	78	1.8	12	Di-n-octylphthalate	69	65	3.9	11
Dimethylphthalate	72	81	6.0	12	Benzo[b]fluoranthene	62	73	4.8	16
Acenaphthalene	72	68	1.9	6.7	Benzo[k]fluoranthene	69	67	2.5	13
2,8-Dinitrotoluene	81	92	1.8	13	Benzo[a]pyrene	62	72	3.0	15
Acenaphthene	70	79	1.8	12	Indeno(1,2,3-c,d)pyrene	69	79	3.7	14
2,4-Dinitrotoluene	79	90	5.7	13	Dibenzo[a,h]anthracene	71	80	2.5	12
Fluorene	71	80	1.9	12	Benzo[g,h,i]perylene	69	78	4.1	12
Diethylphthalate	71	74	6.0	4.1					

MDL = Minimum Detection Limit

ND = None Detected

Surrogates	Spike	Recovery, %	
		Duplicate	Spike
Base/Neutrals			
Nitrobenzene-D5	82	92	
2-Fluorobiphenyl	72	81	
Terphenyl-D14	70	85	

Analyst: L.Dart

QA/QC Reviewed by: L. Dart



Project Name: Spike Report

Sampled: 2/14/95

Received: 2/16/95

Prepared: 2/17/95

Analyzed: 2/21/95

Method No: EPA 825

Method Title: Semi-Volatile Organics

Priority Pollutant List: Base/Neutrals

Matrix: Water  
 Sample ID: MATRIX SPIKE  
 TSL No: 9502733  
 Spike Level: 100 ug/L

Parameter	Unspiked		Spiked Result ug/L	Spike % Recovery	Parameter	Unspiked		Spiked Result ug/L	Spike % Recovery
	Result ug/L	MDL ug/L				Result ug/L	MDL ug/L		
N-Nitrosodimethylamine	ND	2.3	31	31	4-Chlorophenyl phenyl ether	ND	4.2	77	77
Bis(2-chloroethyl) ether	ND	5.7	74	74	N-Nitrosodiphenylamine	ND	2.4	78	78
1,3-Dichlorobenzene	ND	1.9	54	54	4-Bromophenyl phenyl ether	ND	1.9	71	71
1,4-Dichlorobenzene	ND	4.4	56	56	Hexachlorobenzene	ND	1.9	69	69
1,2-Dichlorobenzene	ND	1.9	57	57	Phenanthrene	ND	5.4	73	73
Bis(2-chloroisopropyl) ether	ND	5.7	69	69	Anthracene	ND	1.9	76	76
Hexachloroethane	ND	1.6	48	48	Di-n-Butylphthalate	ND	2.5	74	74
N-Nitroso-di-n-propyl amine	ND	2.8	76	76	Fluoranthene	ND	2.2	76	76
Nitrobenzene	ND	1.9	76	76	Benzidine	ND	30	ND	N/A
Isophorone	ND	2.2	78	78	Pyrene	ND	1.9	84	84
Bis(2-chloroethoxymethane	ND	5.3	76	76	Butylbenzylphthalate	ND	2.5	83	83
1,2,4-Trichlorobenzene	ND	1.9	62	62	Benzo[a]anthracene	ND	7.8	85	85
Naphthalene	ND	1.6	67	67	3,3'-Dichlorobenzidine	ND	17	59	59
Hexachlorobutadiene	ND	0.9	55	55	Chrysene	ND	2.5	86	86
Hexachlorocyclopentadiene	ND	20	54	54	Bis(2-ethylhexyl)phthalate	ND	15	80	82
2-Chloronaphthalene	ND	1.9	69	69	Di-n-octylphthalate	ND	3.9	58	58
Acenaphthylene	ND	6.0	72	72	Benzo[b]fluoranthene	ND	4.8	62	62
Dimethylphthalate	ND	1.9	72	72	Benzo[k]fluoranthene	ND	2.5	59	59
2,6-Dinitrotoluene	ND	1.9	81	81	Benzo[a]pyrene	ND	3.0	62	62
Acenaphthene	ND	1.9	70	70	Indeno(1,2,3-c,d)pyrene	ND	3.7	69	69
2,4-Dinitrotoluene	ND	5.7	79	79	Dibenzo[a,h]anthracene	ND	2.5	71	71
Fluorene	ND	1.9	71	71	Benzo[g,h,i]perylene	ND	4.1	69	69
Diethylphthalate	ND	6.0	71	71					

MDL = Minimum Detection Limit

ND = None Detected

Surrogates Base/Neutrals		% Recovery	
		Sample	Spike
	Nitrobenzene-D5	76	82
	2-Fluorobiphenyl	70	72
	Terphenyl -D14	69	70

Analyst: L.Dart

QA/QC Reviewed by: L. Dart

Project Name: Mobil SS# 01-558

Sample ID: GT-1

ESL No: 9503173

Sampled: 2/21/95

Received: 2/22/95

Analyzed: 2/24 &amp; 2/28/95

Method Title: RCRA Metals

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Parameter	Results	Units	MDL	EPA Method Number	Matrix Spike Recovery
Arsenic	ND	mg/L	0.20	6010	96%
Barium	4.1	mg/L	0.10	6010	79%
Cadmium	0.15	mg/L	0.10	6010	87%
Chromium	1.8	mg/L	0.20	6010	84%
Lead	0.27	mg/L	0.10	6010	89%
Selenium	0.25	mg/L	0.20	6010	94%
Silver	ND	mg/L	0.20	6010	91%
Mercury	ND	ug/L	1.0	7470	105%

1 MDL = Method Detection Limit

ND = None Detected

1 A Method Number from

Test Methods for Evaluating Solid Wastes, SW 846, 1986

Analyst: K.A. Hartzell

QA/QC Reviewed By: \_\_\_\_\_





February 24, 1995

Mike Dacey  
Groundwater Technology, Inc.  
P.O. Box 73  
199 Route 101  
Amherst, NH 03031

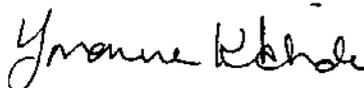
**SS# 01-558**  
**Quechee, VT**

Enclosed are the analytical results for Service Station 01-558. The samples were received on February 15, 1995 and were processed to meet all required hold times.

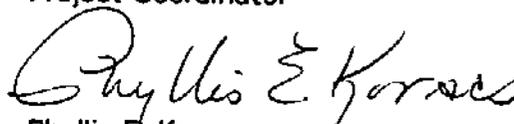
The attached tables provide sample identification and analytical data for this project. This letter represents authorization and approval of the attached analytical results and is an integral part of this report.

If any further information is required regarding these analyses, kindly refer to the 7-digit ESL Number for the sample in question. We will be happy to respond to any questions you may have.

Sincerely,



Yvonne Kirkbride  
Project Coordinator



Phyllis E. Kovacs  
Quality Assurance Director



Project Name: 01-558

Sampled: 02/14/95

Matrix: SOIL

Received: 02/15/95

Sample ID: GT-2/S-2/B-1A9'-11'

Analyzed: 02/17/95

ESL No: 9502798.d

Method No: SW846 8020 / 8010

Method Title: Aromatic Volatile Organics  
Halogenated Volatile Organics

Parameter	Results	Units	MDL
MTBE	ND	ug/Kg	10
Benzene	ND	ug/Kg	1.0
Toluene	ND	ug/Kg	1.0
Ethylbenzene	ND	ug/Kg	1.0
p&m-Xylene	ND	ug/Kg	1.0
o-Xylene	ND	ug/Kg	1.0

Surrogate	Recovery	
1,4-Difluorobenzene	101	%

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MDL = Method Detection Limit

ND = None Detected

Results have been dry weight corrected.

Note: %Moisture = 8.0%

Analyst:

*MCR/LSB*

QA/QC Reviewed By:

*RAA*

Project Name: 01-558

Sampled: 02/14/95

Matrix: SOIL

Received: 02/15/95

Sample ID: GT-3/S-2/4'-6'

Analyzed: 02/17/95

ESL No: 9502799.d

Method No: SW846 8020

Method Title: Aromatic Volatile Organics  
Halogenated Volatile Organics

Parameter	Results	Units	MDL
1,1,2,2-Tetrachloroethane (TBE)	ND	ug/Kg	10
Benzene	ND	ug/Kg	1.0
Toluene	ND	ug/Kg	1.0
o-xylbenzene	ND	ug/Kg	1.0
p-&m-Xylene	ND	ug/Kg	1.0
o-Xylene	3.4	ug/Kg	1.0

Surrogate	Recovery	
1,4-Difluorobenzene	101	%

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MDL = Method Detection Limit

ND = None Detected

Results have been dry weight corrected.

Note: %Moisture = 25%

Analyst: MCR/LSD

QA/QC Reviewed By: RAA

Project Name: QA / QC

Sampled: 02/17/95

Matrix: Water

Received:

Sample ID: Method Blank

Analyzed: 02/17/95

ESL No: bh0217e1.d

Method No: SW846 8020

Method Title: Aromatic Volatile Organics  
Halogenated Volatile Organics

Parameter	Results	Units	MDL
MTBE	ND	ug/L	2.0
Benzene	ND	ug/L	0.2
Toluene	ND	ug/L	0.2
Ethylbenzene	ND	ug/L	0.2
p&m-Xylene	ND	ug/L	0.2
o-Xylene	ND	ug/L	0.2
Surrogate	Recovery		
1,4-Difluorobenzene	102	%	

MDL = Method Detection Limit

ND = None Detected

\\hpchem\5\data\950217\

Analyst:

*MCR/LLD*

QA/QC Reviewed By:

*AAA*

Spike Recovery and RPD Summary Report - SOIL

Method : C:\HPCHEM\5\METHODS\EP601602.M  
 Title :  
 Last Update : Tue Feb 14 09:38:30 1995  
 Response via : Initial Calibration

Non-Spiked Sample: 9502798.D

Spike Sample	Spike Duplicate Sample
File ID : 9502798X.D	9502798Y.D
Sample : MS	MSD
Acq Time: 17 Feb 95 06:21 PM	17 Feb 95 07:41 PM

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC RPD	Limits % Rec
MTBE	0.0	100	103	103	103	103	0	25	75-125
BENZENE	0.0	100	102	102	102	102	0	25	75-125
TOLUENE	0.0	100	102	103	102	103	0	25	75-125
CHLOROBENZENE	0.0	200	206	207	103	103	0	25	75-125
ETHYLBENZENE	0.0	100	98	98	98	98	0	25	75-125
P & M XYLENE	0.0	200	204	206	102	103	1	25	75-125
O-XYLENE	0.6	100	103	104	103	103	1	25	75-125
1,3 DICHLOROBENZENE	1.0	200	201	201	100	100	0	25	75-125
1,4 DICHLOROBENZENE	1.2	200	201	199	100	99	1	25	75-125
1,2 DICHLOROBENZENE	1.2	200	201	201	100	100	0	25	75-125

EP601602.M

Tue Feb 21 14:21:38 1995

GC\_E

Project Name: 01-558

Sampled: 02/14/95

Matrix: SOIL

Received: 02/15/95

Sample ID: GT-1/S-2 4'-6'

Analyzed: 17 Feb 95 4:18 pm

ESL No: 9502791a.d

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/kg	10
Vinyl Chloride	ND	ug/kg	10
Bromomethane	ND	ug/kg	10
Chloroethane	ND	ug/kg	10
1,1-Dichloroethene	ND	ug/kg	5.0
Methylene Chloride	ND	ug/kg	5.0
Methyl tert-Butyl Ether	ND	ug/kg	10
trans-1,2-Dichloroethene	ND	ug/kg	5.0
1,1-Dichloroethane	ND	ug/kg	5.0
Chloroform	ND	ug/kg	5.0
Carbon Tetrachloride	ND	ug/kg	5.0
1,2-Dichloroethane	ND	ug/kg	5.0
Benzene	ND	ug/kg	5.0
Trichloroethene	ND	ug/kg	5.0
1,2-Dichloropropane	ND	ug/kg	5.0
Bromodichloromethane	ND	ug/kg	5.0
cis-1,3-Dichloropropene	ND	ug/kg	5.0
2-Chloroethyl Vinyl Ether	ND	ug/kg	10
Toluene	ND	ug/kg	5.0
trans-1,3-Dichloropropene	ND	ug/kg	5.0
1,1,2-Trichloroethane	ND	ug/kg	5.0
Tetrachloroethene	ND	ug/kg	5.0
Dibromochloromethane	ND	ug/kg	5.0
Chlorobenzene	ND	ug/kg	5.0
Ethylbenzene	ND	ug/kg	5.0
para & meta Xylene	ND	ug/kg	5.0
o-Xylene	ND	ug/kg	5.0
Bromoform	ND	ug/kg	5.0
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0
1,1,1-Trichloroethane	ND	ug/kg	5.0

Surrogate	Results	Spike level/Units	Recovery	
Pentafluorobenzene	30	30 ug/l	98	%
1,4-Difluorobenzene	29	30 ug/l	98	%
4-Bromofluorobenzene	27	30 ug/l	90	%

MDL = Method Detection Limit

ND = None Detected

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Results have been dry weight corrected.

Percent Moisture = 19.6

Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: alm

Project Name: 01-558

Sampled: 02/15/95

Matrix: WATER

Received: 02/15/95

Sample ID: SW CULVERT

Analyzed: 17 Feb 95 3:36 pm

ESL No: 9502801a.d

Method No: EPA 8240

Method Title: Volatile Organics

Priority Pollutant List +

Parameter	Results	Units	MDL
Chloromethane	ND	ug/l	10
Vinyl Chloride	ND	ug/l	10
Bromomethane	ND	ug/l	10
Chloroethane	ND	ug/l	10
1,1-Dichloroethene	ND	ug/l	5.0
Methylene Chloride	ND	ug/l	5.0
Methyl tert-Butyl Ether	134	ug/l	10
trans-1,2-Dichloroethene	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	5.0
Carbon Tetrachloride	ND	ug/l	5.0
1,2-Dichloroethane	ND	ug/l	5.0
Benzene	ND	ug/l	5.0
Trichloroethene	ND	ug/l	5.0
1,2-Dichloropropane	ND	ug/l	5.0
Bromodichloromethane	ND	ug/l	5.0
cis-1,3-Dichloropropene	ND	ug/l	5.0
2-Chloroethyl Vinyl Ether	ND	ug/l	10
Toluene	ND	ug/l	5.0
trans-1,3-Dichloropropene	ND	ug/l	5.0
1,1,2-Trichloroethane	ND	ug/l	5.0
Tetrachloroethene	ND	ug/l	5.0
Dibromochloromethane	ND	ug/l	5.0
Chlorobenzene	ND	ug/l	5.0
Ethylbenzene	ND	ug/l	5.0
para & meta Xylene	ND	ug/l	5.0
o-Xylene	ND	ug/l	5.0
Bromoform	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0
1,1,1-Trichloroethane	ND	ug/l	5.0

Surrogate	Results	Spike level/Units	Recovery	
Pentafluorobenzene	29	30 ug/l	96	%
1,4-Difluorobenzene	28	30 ug/l	95	%
4-Bromofluorobenzene	29	30 ug/l	96	%

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Analyst: M.LE

QA/QC Reviewed by: dlm



## Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\624F0210.M  
 Title : EPA 624 Volatiles  
 Last Update : Sun Feb 12 08:25:30 1995  
 Response via : Initial Calibration

Non-Spiked Sample: 9502273B.D

Spike Sample	Spike Duplicate Sample
File ID : 9502273Y.D	9502273Z.D
Sample : 9502273Y W 624 MS	9502273Z W 624 MSD
Acq Time: 17 Feb 95 2:11 pm	17 Feb 95 2:52 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC Limits RPD	QC Limits % Rec
Chloromethane	0.0	20	18	18	92	88	5	25	70-130
Vinyl Chloride	0.0	20	18	17	89	87	2	25	70-130
Bromomethane	0.1	20	19	18	93	88	6	25	70-130
Chloroethane	0.0	20	19	18	93	89	4	25	70-130
Trichlorofluorometha	0.0	20	19	19	96	94	3	25	70-130
1,1-Dichloroethene	0.0	20	19	18	94	90	5	25	70-130
t-Butyl Alcohol	0.0	100	87	88	87	88	1	25	70-130
Methylene Chloride	0.0	20	19	18	94	92	1	25	70-130
Methyl tert-Butyl Et	0.2	20	20	18	100	91	9	25	70-130
trans-1,2-Dichloroet	0.0	20	18	18	92	90	3	25	70-130
Diisopropyl ether	0.0	20	18	18	89	88	1	25	70-130
1,1-Dichloroethane	0.0	20	18	18	90	90	1	25	70-130
Methyl Ethyl Ketone	0.0	20	22	15	108	76	34#	25	70-130
Chloroform	0.0	20	19	19	95	95	0	25	70-130
1,1,1-Trichloroethan	0.0	20	18	18	92	91	1	25	70-130
Carbon Tetrachloride	0.0	20	19	19	96	94	2	25	70-130
1,2-Dichloroethane	0.0	20	19	19	97	95	2	25	70-130
Benzene	0.0	20	19	18	94	90	4	25	70-130
Trichloroethene	0.0	20	19	19	97	96	1	25	70-130
1,2-Dichloropropane	0.0	20	18	18	88	88	0	25	70-130
Bromodichloromethane	0.0	20	19	19	96	93	3	25	70-130
cis-1,3-Dichloroprop	0.0	20	18	18	91	90	0	25	70-130
2-Chloroethyl Vinyl	0.0	20	0	0	0	0	0	25	70-130
Toluene	0.3	20	18	19	89	92	3	25	70-130
trans-1,3-Dichloropr	0.0	20	18	18	90	91	2	25	70-130
1,1,2-Trichloroethan	0.0	20	19	19	93	97	4	25	70-130
Tetrachloroethene	0.0	20	20	21	101	104	3	25	70-130
Dibromochloromethane	0.0	20	19	20	96	99	3	25	70-130
Chlorobenzene	0.0	20	19	19	97	96	1	25	70-130
Ethylbenzene	0.0	20	15	15	73	74	1	25	70-130
para & meta Xylene	3.7	40	37	36	84	81	3	25	70-130
o-Xylene	3.3	20	17	16	69#	64#	7	25	70-130
Bromoform	0.0	20	19	19	93	95	2	25	70-130
1,1,2,2-Tetrachloroe	0.0	20	17	18	87	89	2	25	70-130
1,3-Dichlorobenzene	0.0	20	18	18	89	88	1	25	70-130
1,4-Dichlorobenzene	0.0	20	18	18	89	91	2	25	70-130
1,2-Dichlorobenzene	0.0	20	17	17	84	85	1	25	70-130

Spike Recovery and RPD Summary Report - SOIL

Method : C:\HPCHEM\1\METHODS\624F0210.M  
 Title : EPA 624 Volatiles  
 Last Update : Sun Feb 12 08:25:30 1995  
 Response via : Initial Calibration

Non-Spiked Sample: 9502791A.D

Spike Sample	Spike Duplicate Sample
File ID : 9502791Y.D	9502791Z.D
Sample : 9502791Y S 8240 MS	9502791Z S 8240 MSD
Acq Time: 17 Feb 95 5:00 pm	17 Feb 95 5:41 pm

Compound	Sample Conc	Spike Added	Spike Res	Dup Res	Spike %Rec	Dup %Rec	RPD	QC RPD	Limits % Rec
Chloromethane	0.0	20	18	17	90	83	8	25	70-130
Vinyl Chloride	0.0	20	18	17	92	85	9	25	70-130
Bromomethane	0.1	20	19	18	94	88	7	25	70-130
Chloroethane	0.0	20	19	18	94	88	7	25	70-130
Trichlorofluorometha	0.0	20	20	18	102	92	11	25	70-130
1,1-Dichloroethene	0.0	20	20	19	100	93	8	25	70-130
t-Butyl Alcohol	0.0	100	99	99	99	99	0	25	70-130
Methylene Chloride	0.0	20	20	18	98	92	7	25	70-130
Methyl tert-Butyl Et	0.5	20	20	19	96	92	4	25	70-130
trans-1,2-Dichloroet	0.0	20	20	18	99	91	9	25	70-130
Diisopropyl ether	0.0	20	18	17	92	87	6	25	70-130
1,1-Dichloroethane	0.0	20	19	18	95	88	8	25	70-130
Methyl Ethyl Ketone	0.0	20	25	25	125	124	0	25	70-130
Chloroform	0.0	20	20	18	99	92	7	25	70-130
1,1,1-Trichloroethan	0.0	20	20	19	101	94	7	25	70-130
Carbon Tetrachloride	0.0	20	21	19	103	94	9	25	70-130
1,2-Dichloroethane	0.0	20	20	19	100	93	7	25	70-130
Benzene	0.0	20	20	19	99	93	6	25	70-130
Trichloroethene	0.0	20	24	22	120	109	10	25	70-130
1,2-Dichloropropane	0.0	20	19	18	93	89	5	25	70-130
Bromodichloromethane	0.0	20	20	18	98	91	7	25	70-130
cis-1,3-Dichloroprop	0.0	20	19	18	93	89	5	25	70-130
2-Chloroethyl Vinyl	0.0	20	19	19	95	96	0	25	70-130
Toluene	0.0	20	20	19	99	93	6	25	70-130
trans-1,3-Dichloropr	0.0	20	20	18	99	89	10	25	70-130
1,1,2-Trichloroethan	0.0	20	21	20	103	100	3	25	70-130
Tetrachloroethene	0.0	20	23	21	114	104	9	25	70-130
Dibromochloromethane	0.0	20	21	20	106	101	5	25	70-130
Chlorobenzene	0.0	20	21	19	104	95	9	25	70-130
Methylbenzene	0.0	20	17	16	83	77	7	25	70-130
para & meta Xylene	0.1	40	39	37	97	92	5	25	70-130
o-Xylene	0.0	20	17	16	87	82	6	25	70-130
Bromoform	0.0	20	20	21	102	104	1	25	70-130
1,1,2,2-Tetrachloroe	0.0	20	15	16	76	79	3	25	70-130
1,3-Dichlorobenzene	0.0	20	18	18	92	89	3	25	70-130
1,4-Dichlorobenzene	0.0	20	18	18	91	92	1	25	70-130
1,2-Dichlorobenzene	0.0	20	18	18	89	88	0	25	70-130





**Project Name: SS#01-558**  
**Consultant: Groundwater Tech.**  
**Matrix: Water**

**Sampled: 02/15/95**  
**Received: 02/15/95**  
**Analyzed: 02/17/95**  
**Method No: EPA 8015 Modified**  
**Method Title: Total Petroleum**  
**Hydrocarbons by GC-FID**

ESL Number	Sample ID	Parameter	Results	Units	MDL	% Surrogate Recovery
9502801	SW Culvert	GRO	ND	mg/l	8	91
		DRO	ND	mg/l	25	98
		MRO	ND	mg/l	10	103

GRO = Gasoline Range Organics  
DRO = Distillate Range Organics  
MRO = Mineral Oil Range Organics  
MDL = Method Detection Limit  
ND = None Detected

**Analyst: A.Andkhoie**

**QA/QC Reviewed by:**





**DATA QUALIFIER STATEMENTS**

- J** - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N** - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
- NJ** - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ** - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R** - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- Q** - No analytical result.
- \*** - The surrogate recovery out of range.
- N/A** - Not Applicable

March 3, 1995

Mike Dacey  
Groundwater Technology, Inc.  
P.O. Box 73  
199 Route 101  
Amherst, NH 03031

**SS# 01-558**  
**Quechee, VT**

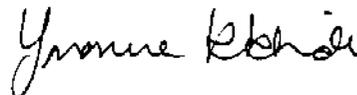
**Sample Date: 2/27/95**

Enclosed are the analytical results for Service Station 01-558. The sample was received on February 28, 1995 and was processed to meet all required hold times.

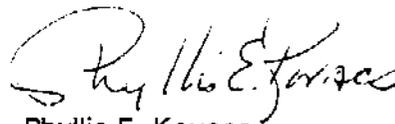
The attached tables provide sample identification and analytical data for this project. This letter represents authorization and approval of the attached analytical results and is an integral part of this report.

If any further information is required regarding these analyses, kindly refer to the 7-digit TSL Number for the sample in question. We will be happy to respond to any questions you may have.

Sincerely,



Yvonne Kirkbride  
Project Coordinator



Phyllis E. Kovacs  
Quality Assurance Director



Project Name: 01-558

Matrix: Water  
 Sample ID: GT-2  
 ESL No: 9503842c.d

Sampled: 2/27/95  
 Received: 2/28/95  
 Extraction Date: 2/28/95  
 Analyzed: 2 Mar 95 12:10 pm  
 Method No: EPA 8270  
 Method Title: Semi-Volatile Organics  
 Priority Pollutant List  
 Base/Neutral Extractables

Parameter	Results	Units	MDL
<b>Base/Neutral Extracts</b>			
N-Nitrosodimethylamine	ND	ug/L	9.0
Bis(2-chloroethyl)ether	ND	ug/L	23
1,3-Dichlorobenzene	ND	ug/L	8.0
1,4-Dichlorobenzene	ND	ug/L	18
1,2-Dichlorobenzene	ND	ug/L	8.0
Bis(2-chloroisopropyl)ether	ND	ug/L	23
Hexachloroethane	ND	ug/L	6.0
N-Nitrosodi-n-propyl amine	ND	ug/L	11
Nitrobenzene	ND	ug/L	8.0
Isophorone	ND	ug/L	9.0
Bis(2-chloroethoxy)methane	ND	ug/L	21
1,2,4-Trichlorobenzene	ND	ug/L	8.0
Naphthalene	311	ug/L	6.0
Hexachlorobutadiene	ND	ug/L	4.0
Hexachlorocyclopentadiene	ND	ug/L	80
2-Chloronaphthalene	ND	ug/L	8.0
Acenaphthylene	ND	ug/L	8.0
Dimethyl phthalate	ND	ug/L	24
2,6-Dinitrotoluene	ND	ug/L	8.0
Acenaphthene	ND	ug/L	8.0
2,4-Dinitrotoluene	ND	ug/L	23
Fluorene	ND	ug/L	8.0
Diethyl phthalate	ND	ug/L	24
4-Chlorophenyl phenyl ether	ND	ug/L	17
N-Nitrosodiphenylamine	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	8.0
Hexachlorobenzene	ND	ug/L	8.0
Phenanthrene	ND	ug/L	22
Anthracene	ND	ug/L	8.0
Di-n-butylphthalate	ND	ug/L	10
Fluoranthene	ND	ug/L	9.0
Benzidine	ND	ug/L	120
Pyrene	ND	ug/L	8.0
Butyl benzyl phthalate	ND	ug/L	10
Benzo[a]anthracene	ND	ug/L	31
3,3'-Dichlorobenzidine	ND	ug/L	68

Project Name: 01-558

Matrix: Water  
Sample ID: GT-2  
TSL No: 9503842c.dSampled: 2/27/95  
Received: /28/95 G  
Extraction Date: 02/28/95  
Analyzed: 2 Mar 95 12:10 pm  
Method No: EPA 8270  
Method Title: Semi-Volatile Organics  
Priority Pollutant List  
Base/Neutral Extractables

Parameter	Results	Units	MDL
<b>Base/Neutral Extracts</b>			
Chrysene	ND	ug/L	10
Bis(2-ethylhexyl)phthalate	ND	ug/L	60
Di-n-octylphthalate	ND	ug/L	16
Benzo(b)fluoranthene	ND	ug/L	19
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	12
Indeno(1,2,3-c,d)pyrene	ND	ug/L	15
Dibenzo(a,h)anthracene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	16

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	95	100	95
2-Fluorobiphenyl	89	100	89
Terphenyl-D14	60	100	60

MDL = Method Detection Limit

ND = None Detected

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Analytical data has not been blank corrected.

Test methods for Evaluating Solid Wastes, SW 846, 1986.

Analyst: L.DARTQA/QC Reviewed by: L.Dart

Project Name: ##-###

Sampled: 02/28/95

Matrix: Water

Received: 02/28/95

Sample ID: METHOD BLANK

Extraction Date: 02/28/95

ESL No: MEBB28EA

Analyzed: 03/01/95

Method No: EPA 8270

Method Title: Semi-Volatile Organics

Priority Pollutant List

Base/Neutral Extractables

Parameter	Results	Units	MDL
Base/Neutral Extracts			
N-Nitrosodimethylamine	ND	ug/L	2.3
Bis(2-chloroethyl)ether	ND	ug/L	5.7
1,3-Dichlorobenzene	ND	ug/L	1.9
1,4-Dichlorobenzene	ND	ug/L	4.4
1,2-Dichlorobenzene	ND	ug/L	1.9
Bis(2-chloroisopropyl)ether	ND	ug/L	5.7
Hexachloroethane	ND	ug/L	1.6
N-Nitrosodi-n-propyl amine	ND	ug/L	2.8
Nitrobenzene	ND	ug/L	1.9
Isophorone	ND	ug/L	2.2
Bis(2-chloroethoxy)methane	ND	ug/L	5.3
1,2,4-Trichlorobenzene	ND	ug/L	1.9
Naphthalene	ND	ug/L	1.6
Hexachlorobutadiene	ND	ug/L	0.9
Hexachlorocyclopentadiene	ND	ug/L	20
2-Chloronaphthalene	ND	ug/L	1.9
Acenaphthylene	ND	ug/L	1.9
Dimethyl phthalate	ND	ug/L	6.0
2,6-Dinitrotoluene	ND	ug/L	1.9
Acenaphthene	ND	ug/L	1.9
2,4-Dinitrotoluene	ND	ug/L	5.7
Fluorene	ND	ug/L	1.9
Diethyl phthalate	ND	ug/L	6.0
4-Chlorophenyl phenyl ether	ND	ug/L	4.2
N-Nitrosodiphenylamine	ND	ug/L	2.4
4-Bromophenyl phenyl ether	ND	ug/L	1.9
Hexachlorobenzene	ND	ug/L	1.9
Phenanthrene	ND	ug/L	5.4
Anthracene	ND	ug/L	1.9
Di-n-butylphthalate	ND	ug/L	2.5
Fluoranthene	ND	ug/L	2.2
Benzidine	ND	ug/L	30
Pyrene	ND	ug/L	1.9
Butyl benzyl phthalate	ND	ug/L	2.5
Benzo[a]anthracene	ND	ug/L	7.8
3,3'-Dichlorobenzidine	ND	ug/L	17

Project Name: ##-###

Matrix: Water  
 Sample ID: METHOD BLANK  
 TSL No: MEBB28EA

Sampled: 02/28/95  
 Received: 02/28/95  
 Extraction Date: 02/28/95  
 Analyzed: 3/1/95  
 Method No: EPA 8270  
 Method Title: Semi-Volatile Organics  
 Priority Pollutant List  
 Acid Extractables

Parameter	Results	Units	MDL
<b>Base/Neutral Extracts</b>			
Chrysene	ND	ug/L	2.5
Bis(2-ethylhexyl)phthalate	ND	ug/L	15
Di-n-octylphthalate	ND	ug/L	3.9
Benzo[b]fluoranthene	ND	ug/L	4.8
Benzo[k]fluoranthene	ND	ug/L	2.5
Benzo[a]pyrene	ND	ug/L	3.0
Indeno(1,2,3-c,d)pyrene	ND	ug/L	3.7
Dibenzo[a,h]anthracene	ND	ug/L	2.5
Benzo[g,h,i]perylene	ND	ug/L	4.1

Surrogate	Results	Spike level/Units	Recovery
Nitrobenzene-D5	94	100	94
2-Fluorobiphenyl	91	100	91
Terphenyl-D14	80	100	80

MDL = Method Detection Limit  
 ND = None Detected  
 c:\hpchem\1\data\0C0195\  
 Analytical data has not been blank corrected.

Test methods for Evaluating Solid Wastes, SW 846, 1986.

Analyst: L.DART

QA/QC Reviewed by: D. Dent



Project Name: Spike Report

Sampled: 2/27/95

Received: 2/28/95

Prepared: 2/28/95

Analyzed: 3/2/95

Method No: EPA 625

Method Title: Semi-Volatile Organics

Priority Pollutant List: Base/Neutrals

Matrix: Water  
 Sample ID: MATRIX SPIKE  
 TSL No: 9503842  
 Spike Level: 100 ug/L

Parameter	Unspiked			Spiked			Spike %			
	Result	MDL	ug/L	Result	MDL	ug/L	Recovery	Result	MDL	ug/L
N-Nitrosodimethylamine	ND	9.2	22	22	4-Chlorophenyl phenyl ether	ND	17	58	58	
Bis(2-chloroethyl) ether	ND	23	62	62	N-Nitrosodiphenylamine	ND	9.6	59	59	
1,3-Dichlorobenzene	ND	7.6	46	46	4-Bromophenyl phenyl ether	ND	7.6	57	57	
1,4-Dichlorobenzene	ND	18	48	48	Hexachlorobenzene	ND	7.6	53	53	
1,2-Dichlorobenzene	ND	7.6	48	48	Phenanthrene	ND	22	59	59	
Bis(2-chloroisopropyl) ether	ND	23	54	54	Anthracene	ND	7.6	58	58	
Hexachloroethane	ND	6.4	43	43	Di-n-Butylphthalate	ND	10	61	61	
N-Nitroso-di-n-propyl amine	ND	11	70	70	Fluoranthene	ND	8.8	57	57	
Nitrobenzene	ND	7.6	82	82	Benzidine	ND	120	ND	N/A	
Isophorone	ND	8.8	65	65	Pyrene	ND	7.6	64	64	
Bis(2-chloroethoxy)methane	ND	21	70	70	Butylbenzylphthalate	ND	10	58	58	
1,2,4-Trichlorobenzene	ND	7.6	51	51	Benzo[a]anthracene	ND	31	51	51	
Naphthalene	311	6.4	240	N/A	3,3'-Dichlorobenzidine	ND	68	ND	N/A	
Hexachlorobutadiene	ND	3.6	46	46	Chrysene	ND	10	54	54	
Hexachlorocyclopentadiene	ND	80	28	28	Bis(2-ethylhexyl)phthalate	ND	60	62	62	
2-Chloronaphthalene	ND	7.6	54	54	Di-n-octylphthalate	ND	16	106	106	
Acenaphthylene	ND	24	62	62	Benzo[b]fluoranthene	ND	19	101	101	
Dimethylphthalate	ND	7.6	38	38	Benzo[k]fluoranthene	ND	10	106	106	
2,6-Dinitrotoluene	ND	7.6	54	54	Benzo[a]pyrene	ND	12	99	99	
Acenaphthene	ND	7.6	60	60	Indeno(1,2,3-c,d)pyrene	ND	15	78	78	
2,4-Dinitrotoluene	ND	23	48	48	Dibenzo[a,h]anthracene	ND	10	79	79	
Fluorene	ND	7.6	61	61	Benzo[g,h,i]perylene	ND	16	77	77	
Diethylphthalate	ND	24	53	53						

MDL = Minimum Detection Limit

ND = None Detected

Surrogates	% Recovery		
	Sample	Spike	
Base/Neutrals	Nitrobenzene-D5	95	60
	2-Fluorobiphenyl	89	59
	Terphenyl -D14	60	36

Analyst: L.Dart

QA/QC Reviewed by:

L. Dart

ENVIRONMENTAL SITE INVESTIGATION  
MOBIL SERVICE STATION #01-558  
381 WOODSTOCK ROAD  
QUECHEE, VERMONT  
VERMONT DEC SITE #89-0310

**A P P E N D I X G**  
**GORE-SORBER™ REPORT**

PREPARED FOR:

MS. LINDA COSTANZO  
MOBIL OIL CORPORATION  
1800 WEST PARK DRIVE, SUITE 450  
WESTBOROUGH, MASSACHUSETTS 01581

PREPARED BY:

GROUNDWATER TECHNOLOGY, INC.  
199 ROUTE 101, P.O. BOX 1203  
AMHERST, NEW HAMPSHIRE 03031-1203

MARCH 1995



W. L. GORE & ASSOCIATES, INC.

101 LEWISVILLE ROAD • P.O. BOX 1100 • ELKTON, MARYLAND 21922-1100 PHONE: 410/392 3300  
FAX: 410/996-3325 • TELEX 467637 GORE FB ELKT  
ENVIRONMENTAL PRODUCTS GROUP

March 3, 1995

Mr. Mike Dacey  
Groundwater Technology, Inc.  
199 Route 101  
Amherst, NH 03031

**Site Reference: Mobil Oil Corporation, Route 4, Quechee, Vermont**  
**Customer Purchase Order Number: 132089**  
**Gore Production Order Number: 063245**

Dear Mr. Dacey:

Thank you for choosing a GORE-SORBER<sup>SM</sup> Screening Survey.

The attached deliverables package consists of two copies of the following information:

- **Laboratory Report**
- **Chain of Custody record and Laboratory Analytical Summary Data Tables (included in Appendix A)**

Please contact our office if you have any questions or comments concerning this report. We appreciate this opportunity to be of service to Groundwater Technology, Inc. (and Mobil), and look forward to working with you again in the future.

Sincerely,

Mark J. Wrigley, P.G.

Associate

Attachments

cc:

MW/bk I\PROJECTS\GTM\MOB\_QUEC\_VT\950303R.DOC

GORE-SORBER Screening Survey is a Service mark of W. L. Gore & Associates, Inc.



**W. L. GORE & ASSOCIATES, INC.**

101 LEWISVILLE ROAD • P.O. BOX 1100 • ELKTON, MARYLAND 21922 1100 PHONE: 410/392-3300  
FAX: 410 996-3325 • TELEX 467637 GORE FB ELKT  
ENVIRONMENTAL PRODUCTS GROUP

**GORE-SORBER<sup>SM</sup> Screening Survey  
Final Report**

**MOBIL OIL CORPORATION  
QUECHEE, VERMONT**

MARCH 3, 1995

Prepared For:  
Groundwater Technology, Inc.  
199 Route 101  
Amherst, New Hampshire 03031

W.L. Gore & Associates, Inc.  
Written/Submitted by

Mark J. Wrigley, P.G.  
Product Specialist

W.L. Gore & Associates, Inc.  
Reviewed/Approved by

John P. Cusick  
Product Specialist

1:PROJECTS\GTTMUB\_QUEE\_VT\950303R.DOC

*This document shall not be reproduced, except in full, without written approval of W.L. Gore & Associates*

FORM 11R.1  
Rev 10/26/94

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GORE-TEX, GORE-TEX LIGHT-PULSE, GORE-SORBER, and The Gore-Tex Approach...  
Experience Working For You are trademarks of W. L. Gore & Associates, Inc.  
GORE-TEX Approach is a service mark of W. L. Gore & Associates, Inc.

**GORE-SORBER<sup>SM</sup> Screening Survey  
Final Report**

**REPORT DATE:** March 3, 1995

**AUTHOR:** MJW

**SITE INFORMATION**

**Site Reference:** Mobil Quechee, Vermont

**Customer Purchase Order Number:** 132089

**Customer Project Number:** 01130-0082

**Gore Production Order Number:** 063245

**Gore Site Code:** EW

**FIELD PROCEDURES**

**# Modules shipped:** 13

**Installation Date(s):** February 17, 1995

**# Modules Installed:** 8

**Field work performed by:** Raymond Cadorette, Groundwater Technology, Inc.

**Retrieval date(s):** February 27, 1995

**Exposure Time:** 10 [days]

**# Modules Retrieved:** 3

**# Trip Blanks Returned:** 1

**# Modules Lost in Field:** 5 (only empty jars returned)

**# Unused Modules Returned:** 4

**Date/Time Received by Gore:** February 28, 1995/11:00am

**By:** CJF

**Recorded Cooler/Water Temperature Control Blank temperature:**

2.0 [°C]

**Chain of Custody Form attached:**

**Chain of Custody discrepancies:** None

**Comments:** "Relinquished by" information on COC not completed.

**ANALYTICAL PROCEDURES**

**NOTE:** All data have been archived. Any replicate sorbers not used in the initial analysis will be discarded thirty (30) days from the date of this report.

**Laboratory analysis:** thermal desorption/cryofocusing, gas chromatography, mass selective detection

**Quality Assurance Level:** 1 (ANA-1.01/10/95)

**Instrument ID:** # 2

**Chemist:** WW

**Data Subdirectory:** 063245

**Compounds/mixtures requested:** Standard Target Analytes (GS3)

**Deviations from Standard Method:** None

**Comments:** Soil vapor analytes and abbreviations are tabulated in the Data Table Key (page 3).

**GORE-SORBER<sup>sm</sup> Screening Survey  
Final Report**

**DATA TABULATION**

**# CONTOUR MAPS ENCLOSED:** None  
**LIST OF MAPS ENCLOSED:** Not Applicable

**NOTE:** All data values presented in Appendix A represent masses of compound(s) desorbed from the GORE-SORBER Screening Modules received and analyzed by W.L. Gore, as identified in the Chain of Custody (Appendix A). The measurement traceability and instrument performance are reproducible and accurate for the measurement process documented. Semi-quantitation of the compound mass is based on either a single-level (QA Level 1) or three-level (QA Level 2) standard calibration.

**Comments:**

- Only module #107751 contained significant levels of target analytes. The principal analytes detected included BTEX constituents, and trimethylbenzenes. Lower levels of MTBE, diesel range alkanes (C11 and C13), and naphthalenes were also detected.
- Unresolved hydrocarbon envelopes (UHEs) were observed in the chromatograms for modules #107750 and -751. Comparison of these UHEs with Gore's fluids library yielded a low quality tentative match in the range of #2 heating oil for module #107750, and a high quality tentative match in the range of gasoline for module #107751.

GORE-SORBER is a registered trademark of W. L. Gore & Associates, Inc.

**GORE-SORBER<sup>sm</sup> Screening Survey  
Final Report**

**KEY TO DATA TABLE  
Mobil Oil Corporation  
Route 4, Quechee, Vermont**

**UNITS**

µg                      micrograms (per sorber), reported for compounds for which we run external standards.

**ANALYTES**

BTEX	combined masses of benzene, toluene, ethylbenzene and total xylenes (Gasoline Range Aromatics)
C11-C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
MTBE	methyl t-butyl ether
t12DCE	trans-1,2-dichloroethene
11DCA	1,1-dichloroethane
c12DCE	cis-1,2-dichloroethene
CHCl <sub>3</sub>	chloroform
111-TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
BENZ	benzene
CCl <sub>4</sub>	carbon tetrachloride
TCE	trichloroethylene
TOL	toluene
OCT	octane
PCE	tetrachloroethene
Cl BENZ	chlorobenzene
Et BENZ	ethylbenzene
m-XYL	m-, p-xylene
o-XYL	o-xylene
PHENOL	phenol
1,3,5-TMB	1,3,5-trimethylbenzene
1,2,4-TMB	1,2,4-trimethylbenzene
14-DCB	1,4-dichlorobenzene
2-Me PHENOL	2-methyl phenol
C <sub>11</sub> /UNDEC	undecane
NAPH	naphthalene
C <sub>13</sub> /TRIDEC	tridecane
2-Me NAPH	2-methyl naphthalene
C <sub>15</sub> /PENTADEC	pentadecane

**BLANKS**

TBn                      unexposed trip blanks, which traveled with the exposed modules  
BLANK                      method blank, retained at Gore

## **APPENDIX A:**

1. CHAIN OF CUSTODY
2. DATA TABLES



# W. L. GORE & ASSOCIATES, INC.

101 LEWISVILLE ROAD • P.O. BOX 1100 • ELKTON, MARYLAND 21922-1100 PHONE: 410/392-3300  
 FAX: 410/398-6624 • TELEX 467637 GORE FB ELKT  
 ENVIRONMENTAL PRODUCTS GROUP

## GORE-SORBER<sup>sm</sup> SCREENING SURVEY MODULE CHAIN OF CUSTODY RECORD

Instructions: Anyone taking possession of these modules must sign and date the bottom portion of this page.

The top portion of this page is to be completed by the party performing the GORE-SORBER<sup>®</sup> module installation.

The back of this page is to be completed by the party performing the GORE-SORBER module retrieval.

Customer Name:	GROUNDWATER TECHNOLOGY INC		
Customer Address:	199 Rt 101 AMHERST NH 03031		
Customer Phone Number (voice / fax):	(603) 672 - 5303	(603) 672 - 0737	
Project Manager/Project Number	M. K. Dacey / 01130-0082		
Deployment Site Name:	Moh. 1 Quechee		
Deployment Site Address:	Rte 7 Quechee Vermont		
Module Installation Depth:	2.5 - 2.75 Ft.		
Modules Installation Method:	<input checked="" type="radio"/> Rotary Hammer	<input type="radio"/> Slam Bar	<input type="radio"/> Other
Installation Start Date and Time:	21/7/95	10:10	<input checked="" type="radio"/> AM <input type="radio"/> PM
Installation Complete Date and Time:	21/7/95	17:40	<input type="radio"/> AM <input checked="" type="radio"/> PM
# of GORE-SORBER Modules Received	13 pieces		
# of GORE-SORBER Modules Installed	8 pieces		
Serial # of GORE-SORBER Modules Shipped	# 107750	through # 107760	
	# 107766	through # 107767	
	#	through #	
	#	through #	
	#	through #	
Serial Numbers Of Trip Blanks	# 107757	# 107759	# 107760 # 107766
	# 107767	#	#
	#	#	#
	#	#	#
Installed By (please print):	Raymond G. Dorelle		
Signature:	I, Raymond G. Dorelle attest that proper field sampling procedures as well as the SOP provided by W.L. Gore & Associates, Inc. were followed during the installation of these GORE-SORBER modules.		
Relinquished By:	(C) Jordan	21/5/95	3:00 am (pm)
W. L. Gore & Associates, Inc.			
Received By:	Raymond J. C. Dorelle	21/5/95	4:00 am (pm)
Company/Affiliation:	GTE		
Relinquished By:		/ /	: am pm
Company/Affiliation:			
Received By:		/ /	: am pm
Company/Affiliation:			
Relinquished By:		/ /	: am pm
Company/Affiliation:			
Received By:	(C) Jordan	2/28/95	11:00 am (pm)
W. L. Gore & Associates, Inc.			

Retrieval Start Date and Time: 2/12/95 10:00 AM PM

Retrieval Complete Date and Time: 2/12/95 : AM PM

Installation

Retrieval

#	Module Serial #	Date/Time	SPH	Evidence	Hydrocarbon	Odos	Module in Water	Date/Time	Comments
	107750v	2/12/95 10:00	yes	(no)	yes	(no)	yes	(no)	
2	107753v	2/12/95 11:00	yes	(no)	yes	(no)	yes	(no)	2/23/10:30 PID: BDL
3	107756 NH	2/12/95 12:00	yes	(no)	yes	(no)	yes	(no)	2/25/10:45 PID: BDL
4	107752 NH	2/12/95 12:05	yes	(no)	yes	(no)	yes	(no)	PID: BDL
5	107755 NH	2/12/95 14:15	yes	(no)	yes	(no)	yes	(no)	PID: BDL
6	107753 NH	2/12/95 15:35	yes	(no)	yes	(no)	yes	(no)	PID: BDL
7	107751v	2/12/95 16:41	yes	(no)	yes	(no)	yes	(no)	PID: BDL
8	107754 NH	2/12/95 17:40	yes	(no)	yes	(no)	yes	(no)	2/23/14:00 PID: BDL
9			yes	no	yes	no	yes	no	PID: BDL
10			yes	no	yes	no	yes	no	
11			yes	no	yes	no	yes	no	
12			yes	no	yes	no	yes	no	
13			yes	no	yes	no	yes	no	
14			yes	no	yes	no	yes	no	
15			yes	no	yes	no	yes	no	
16			yes	no	yes	no	yes	no	
17			yes	no	yes	no	yes	no	
18			yes	no	yes	no	yes	no	
19			yes	no	yes	no	yes	no	
20			yes	no	yes	no	yes	no	
21			yes	no	yes	no	yes	no	
22			yes	no	yes	no	yes	no	
23			yes	no	yes	no	yes	no	
24			yes	no	yes	no	yes	no	
25			yes	no	yes	no	yes	no	
26			yes	no	yes	no	yes	no	
27			yes	no	yes	no	yes	no	
28			yes	no	yes	no	yes	no	
29			yes	no	yes	no	yes	no	
30			yes	no	yes	no	yes	no	
31			yes	no	yes	no	yes	no	
32			yes	no	yes	no	yes	no	
33			yes	no	yes	no	yes	no	
34			yes	no	yes	no	yes	no	
35			yes	no	yes	no	yes	no	
36			yes	no	yes	no	yes	no	
37			yes	no	yes	no	yes	no	
38			yes	no	yes	no	yes	no	
39			yes	no	yes	no	yes	no	
40			yes	no	yes	no	yes	no	
41			yes	no	yes	no	yes	no	

Number of Modules Retrieved: 3  
 Number of Modules Shipped: 8  
 Number of Coolers Shipped: 1  
 Retrieved By (please print):  
 Signature:

I attest that proper field sampling procedures as well as the SOP instructions provided by W.L. Gore & Associates, Inc. were followed during the retrieval / packing of these GORE-SORBBER modules.

TARGET COMPOUNDS - SITE EW  
GROUNDWATER TECHNOLOGY, INC  
MOBIL, QUECHEE, VERMONT  
PRODUCTION ORDER # 063245

MODULE #	DATE ANALYZED	MTBE, ug	t12DCE, ug	11DCA, ug	c12DCE, ug	CHCl3, ug	111TCA, ug	12DCA, ug	BENZ, ug	CCl4, ug
107750	03/01/95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107751	03/01/95	1.69	0.00	0.00	0.00	0.00	0.00	0.00	16.02	0.00
107753	03/01/95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
trip blank, 107757	03/01/95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00

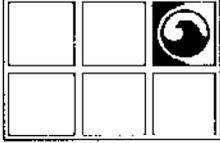
TARGET COMPOUNDS - SITE EW  
GROUNDWATER TECHNOLOGY, INC  
MOBIL, QUECHEE, VERMONT  
PRODUCTION ORDER # 063245

MODULE #	TCE, ug	TOL, ug	OCT, ug	PCE, ug	CIBENZ, ug	EIBENZ, ug	m-XYL, ug	o-XYL, ug	135TMB, ug	PHENOL, ug
107750	0.00	0.01	0.04	0.38	0.00	0.00	0.01	0.01	0.04	0.00
107751	0.00	36.76	3.84	0.00	0.00	0.42	54.27	76.28	56.44	0.00
107753	0.00	0.11	0.07	0.00	0.00	0.05	0.16	0.08	0.01	0.00
trip blank, 107757	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TARGET COMPOUNDS - SITE EW  
GROUNDWATER TECHNOLOGY, INC  
MOBIL, QUECHEE, VERMONT  
PRODUCTION ORDER # 063245

MODULE #	124TMB, ug	14DCB, ug	2MePHENOL, ug	UNDEC, ug	NAPH, ug	TRIDEC, ug	2MeNAPH, ug	PENTADEC, ug
107750	0.04	0.00	0.00	0.16	0.04	0.04	0.05	0.02
107751	15.53	0.00	0.00	1.04	0.21	0.07	0.17	0.03
107753	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
trip blank, 107757	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01

310



# GROUNDWATER TECHNOLOGY®

Groundwater Technology, Inc.

199 Route 101, P.O. Box 1203, Amherst, NH 03031 USA  
Tel: (603) 672-5303 Fax: (603) 672-0737

## LETTER OF TRANSMITTAL

Date: March 5, 1995  
Via: Airborn

TO: Ms JUNE Middleton  
COMPANY: VT DEC  
ADDRESS: 103 S Main St  
CITY: Waterbury, Vermont

These are: (as checked below)

- |                                                    |                                            |
|----------------------------------------------------|--------------------------------------------|
| <input type="checkbox"/> Per your request          | <input type="checkbox"/> For your approval |
| <input checked="" type="checkbox"/> For your files | <input type="checkbox"/> For use on job    |

Remarks DEC site # 89-0310  
Attached please find an Environmental Site Investigation Report for Mobil Service Station # 01-558 in Quechee, Vermont. This report is being forwarded to you at the request of Mobil Oil and Eastern Consulting (for your review) prior to the scheduled waste oil tank removal on April 10, 1995. Please call me if you have any questions

Sincerely,  
GROUNDWATER TECHNOLOGY, INC.

cc: Michael Dacey (GTI)  
Linda Costanzo (Mobil)  
Glenn Dougherty (Eastern)

By: Eric Brett

Floor drain closed/removed - 4/10/94  
Waste oil removed 4/10/94