

GROUNDWATER TECHNOLOGY

Groundwater Technology, Inc.
1000 Perimeter Park Dr., Suite I, Morrisville, NC 27560
(919) 467-2227

Letter of Transmittal

DATE	W.O. NO.
ATTENTION	
RE:	

TO Ms. Sherri Knight
NCDEHNR
Winston Salem Regional Office
Winston Salem, NC 27107-2241

GENTLEMEN:

- WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
- Shop drawings Prints Plans Samples Specifications
- Copy of letter Change order _____

COPIES	DATE	NO.	DESCRIPTION
1	10/3/95		Project update report
			2903 S. Elm St.
			Greensboro, NC

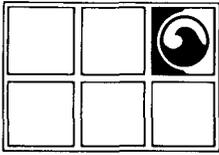
THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit _____ copies for approval
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- As requested Returned for corrections Return _____ corrected prints
- For review and comment _____
- FOR BIDS DUE _____ 19 _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS Dear Mr. Knight,
Please find enclosed one copy
of the Elm St. project update report.
For your use,
Thank you,

COPY TO _____

SIGNED: Jamie W. [Signature]



September 29, 1995

Ms. Sherri Knight
North Carolina Department of Environmental, Health, and Natural Resources
Winston Salem Regional Office
Winston Salem, NC 27107-2241

**RE: Project Update Report
Former Sunoco Station
2903 S. Elm Street
Greensboro, North Carolina
Incident #10076**

Dear Ms. Knight:

1.0 INTRODUCTION

This project update report summarizes the results of the soil and groundwater assessment activities conducted by Groundwater Technology, Inc. (Groundwater Technology), on behalf of Sun Company, at the above referenced site. The site location is shown on **Figure 1**. Area properties are depicted on **Figure 2** and a map of the site is provided as **Figure 3**. Initial site activities (conducted by Law Engineering in December 1992 and Ground Water Protection of Charlotte, North Carolina in February 1993) identified petroleum compounds in the subsurface at the subject site. The additional assessment activities discussed herein were performed during August 1995 to evaluate the extent of petroleum impacted materials.

2.0 OVERVIEW OF PROJECT HISTORY

The following is a summary of results from previous site investigations.

- During December 1992, the initial assessment conducted at the site by Law Engineering (Law) included a site sensitive receptor survey, the drilling of six soil borings (MW-1A, MW-3A, MW-3B, MW-3C, MW-3D, and SB-5) and collection of five soil samples, the installation of one Type II groundwater monitoring well (MW-1; identified as MW-2 in the initial assessment report), and the collection of a groundwater sample and laboratory analysis. During June 1st and June 2nd, 1993, a total of four groundwater monitoring wells were installed to supplement the existing Type II monitoring well designated MW-1. Three of the additional groundwater monitoring wells (MW-2 through MW-4) were constructed as shallow, Type II monitoring wells to access the lateral extent of subsurface petroleum

hydrocarbons. The fourth additional well (VMW-5) was constructed as a Type III vertical-definition well installed to assess the vertical extent of the dissolved hydrocarbon plume.

- Soil samples collected during the installation of the monitoring wells were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX constituents) by EPA Method 8020 and total petroleum hydrocarbons (TPH) as gasoline and diesel by EPA Method 8015. The single groundwater sample (MW-2) was submitted for laboratory analysis of BTEX constituents by EPA Method 602 and TPH by EPA Method 8015. Laboratory analyses of the soil sample from monitoring well MW-2 detected Benzene (0.016 parts per million (ppm)), toluene (0.033 ppm), ethylbenzene (0.073 ppm) and xylenes (0.042 ppm). Laboratory analyses of the soil sample from monitoring well MW-4 detected toluene (0.0031 ppm). BTEX constituent concentrations were not detected above the corresponding laboratory detection limits in any of the remaining soil samples. TPH as diesel was detected in soil samples MW-1, MW-2, and MW-4 at concentrations of 290 ppm, 170 ppm, and 41 ppm, respectively. TPH as gasoline and diesel were not detected above the corresponding laboratory detection limits in any of the remaining soil samples. Laboratory analyses of the groundwater sample from monitoring well MW-2 detected benzene (13 parts per billion (ppb)). TPH as diesel was detected in the groundwater sample from MW-2 at a concentration of 690 ppb.
- As part of the survey, Law evaluated adjacent properties for potential environmental concerns. According to Law's report, evidence of USTs on surrounding properties was observed at the Texaco retail facility west of the site and the Amoco retail facility south of the site. Review of the NCDEHNR Pollution Incident Report (dated 10/6/92) by Law identified several facilities in the vicinity of the site as having a documented contamination incident. The only facility identified on this list that is located within a 1,000 foot radius of the site was the Amoco retail station. The remaining identified sites appear to be located to the north, across I-85/40.
- During August 1993, Griffith Enterprises, Inc. submitted a final Tank Excavation Assessment Report. The removal activities at the site occurred on April 27, 1993. The activities included the removal of one (1) 1,000 gallon single-wall steel fuel oil UST which contained numerous 1/4" holes along the bottom. Groundwater was encountered in the UST excavation at a depth of approximately 6 feet below ground surface. No releases were recognized from the UST. Two soil samples (designated S-1 and S-2) and one groundwater sample (designated W-1) were collected during the tank removal activities. The groundwater sample was submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX constituents) by EPA Method 602, 625 and 3030C. The soil samples were submitted for laboratory analysis for TPH as gasoline (EPA Method 5030) and TPH as diesel (EPA Method 3550). Laboratory analytical results for soil sample S-1 detected gasoline at a concentration of 217 ppm and detected diesel at a concentration of 547 ppm. Laboratory analytical results for soil sample S-2 detected gasoline at a concentration of 171 ppm and detected diesel at a concentration of 383 ppm. Laboratory analytical results for groundwater sample W-1 detected benzene (9 ppb), toluene (12 ppb), ethylbenzene (49 ppb), and xylene (112 ppb). Semi-volatile organic compounds (EPA Method 625) were not detected above the minimum quantitative limit. Lead was detected at a concentration of 1020 ppb.

3.0 SCOPE OF ADDITIONAL WORK

This section presents a summary of the additional investigative activities completed by Groundwater Technology at the site during August 1995.

- An additional (temporary) groundwater monitoring well (MW-6) was installed and four (4) soil borings drilled at the site on August 19, 1995 to further evaluate the extent of the dissolved hydrocarbons. Groundwater monitoring well MW-6 was constructed as a shallow Type II monitoring well to assess the lateral extent of subsurface petroleum hydrocarbons potentially emanating from the former fuel oil UST basin. The new monitoring well location and soil borings are shown on the site map (Figure 3). Monitoring well construction details as well as soil boring details are illustrated in the drilling logs which are presented in Appendix A.
- Following the installation of monitoring well MW-6, the well was developed by bailing an amount of water equivalent to three well volumes. A water sample (designated as MW-6) was collected from the well and later submitted for laboratory analysis of semi-volatile organic compounds by EPA Method 625. Copies of the groundwater analytical report is included in Appendix B.
- During the soil boring activities, a native soil sample was collected from each boring from beneath the backfill under the former tank pit. Each sample was submitted for laboratory analysis of total petroleum hydrocarbons (TPH) as gasoline by EPA Method 5030 and TPH as diesel by EPA Method 3550. Copies of the soil analytical reports are included in Appendix C.

Detailed descriptions of the field methodologies used for each investigative activity are presented in Appendix D. A brief summary of the results from previous investigations and recommendations for additional activities are provided below.

4.0 SUMMARY OF RESULTS

4.1 Surrounding Area

Land use in the immediate vicinity of the subject site consists primarily of commercial businesses including several gasoline stations (Figure 2). The adjacent properties include a Howard Johnson Hotel to the northeast, an Amoco Service Station approximately 500 feet to the south of South Buffalo Creek, a Texaco Service Station approximately 200 feet to the west, and I-85/40 is located approximately 400 feet north of the site. Review of the NCDEHNR Pollution incident Report (dated 10/6/92) by Law Engineering identified the Amoco retail station to be the only facility within a 1,000 foot radius of the site.

Surface drainage in the area is consistent with the topography of the site and flows in a southern direction toward South Buffalo Creek, which is located approximately 250 feet south of the site.

4.2 Source Characterization

The results of the initial and additional assessment activities have identified the gasoline USTs as an on-site source of the dissolved petroleum constituents.

4.3 Potential Receptors

Soil-absorbed hydrocarbons are likely to be confined to the area surrounding or immediately downgradient from the contaminant source area. Because the site is paved around the former tank field and pump islands, direct contact with soil-adsorbed hydrocarbons is unlikely. Potential migration of dissolved-phase hydrocarbons is restricted to subsurface migration routes. Vapor-phase hydrocarbons have the potential to migrate more readily than phase-separated or dissolved-phase hydrocarbons. Potential migration routes for subsurface petroleum hydrocarbons at the site include underground utilities that run along South Elm Street. Potable water is supplied to the surrounding properties by the municipal water and sewer system. No municipal or private potable water wells were identified within a 2,500-foot radius of the site. In addition, no building structures with basements were identified within a 1,000-foot radius of the site.

4.4 Site Geology and Hydrogeology

The subject site is located in the Charlotte and Milton Belts of the Piedmont Physiographic Province of central North Carolina. This portion of the Piedmont is characterized by igneous to meta-igneous rock with two dominant groups of intrusions: the diorite-gabbro group and granitic plutons. The Charlotte belt consists of rocks of a higher metamorphic grade sandwiched between lower grade rocks of the Kings Mountain belt and Carolina Slate belt. The Milton belt, formerly the northern part of the Charlotte belt, consists of strongly foliated gneiss and schist. The city of Greensboro is underlain by predominantly medium to coarse-grained, equigranular to porphyritic quartz monzonite and granodiorite with lesser amounts of granite, tonalite and quartz diorite. The rock is massive to well-foliated with common shearing and recrystallization. The rocks of the Piedmont are, for the most part, metamorphosed and deeply weathered.

To date, six groundwater monitoring wells have been installed at the site. The soils encountered during drilling activities are characterized as sandy clay changing to silty clay at approximately 16 to 20 feet below grade, with saprolite (clayey sand) encountered from 20 to 35 feet below grade.

During well drilling operations, saturated soils were encountered at depths ranging from 12 to 16 feet below grade. Shallow groundwater was encountered at depths ranging between approximately 11.9 and 15.2 feet below grade.

4.5 Groundwater Flow

The liquid level data collected during the March 22, 1995 monitoring well sampling events are presented in Table 1. A water-table elevation contour map was generated using the March 1995 well gauging data is presented as Figure 4. Liquid-phase hydrocarbons were not detected in any of the wells during the gauging event.

The water-table elevation contour map indicates that the major component of shallow groundwater flow beneath the site appears to be to the southeast towards South Buffalo Creek, which is similar to the topographic slope in the vicinity of the site.

4.6 Soil Analytical Results

During the drilling of the soil borings, soil samples were collected from each well boring and submitted to GTEL Environmental Laboratories in Tampa, Florida for analysis of total petroleum hydrocarbons as gasoline and diesel by EPA Method 8015. It should be noted that soil borings SB-1

through SB-4 listed in the soil analytical reports correspond respectively to soil samples SS-8 through SS-12 listed on the accompanying COC (chain of custody).

A composite sample (COMP-2) was also collected and submitted for analysis of Total Lead by EPA Method 7421, Extractable Organic Halides by EPA Method 600, and total BTEX by EPA Method 8020. Copies of the soil analytical reports are included in Appendix C.

Analytical results indicate that TPH as gasoline was detected at 1.4 mg/kg in the soil sample obtained from SB-4. This concentration does not exceed the NCDEHNR action level of 10 mg/kg. TPH as diesel fuel was not detected above the corresponding laboratory detection limit of 10 mg/kg. The composite sample indicated that lead was detected at 5.2 mg/kg and extractable organic halides were less than the reporting limit. Benzene and ethylbenzene were detected above NCAC 2L standards at 1.2 $\mu\text{g}/\text{kg}$ and 33 $\mu\text{g}/\text{kg}$, respectively. Toluene and total xylenes were detected below NCAC 2L standards at 29 $\mu\text{g}/\text{kg}$ and 31 $\mu\text{g}/\text{kg}$, respectively.

4.7 Groundwater Analytical Results

Groundwater samples were obtained from all site wells on March 22, 1995 and from monitoring well MW-6 on August 19, 1995. Copies of the original laboratory reports are included in Appendix B.

The results of the March 1995 sampling event indicated that benzene, total xylenes, and MTBE were detected above NCAC 2L standards in monitoring wells MW-1 through MW-3. Detected constituents included benzene (<0.5 $\mu\text{g}/\text{L}$ to 4.7 $\mu\text{g}/\text{L}$), total xylenes (<2.0 $\mu\text{g}/\text{L}$ to 4.4 $\mu\text{g}/\text{L}$) and MTBE (<10 $\mu\text{g}/\text{L}$ to 200 $\mu\text{g}/\text{L}$). A summary of the analytical results from the March 22, 1995 groundwater sampling event are presented in Table 2.

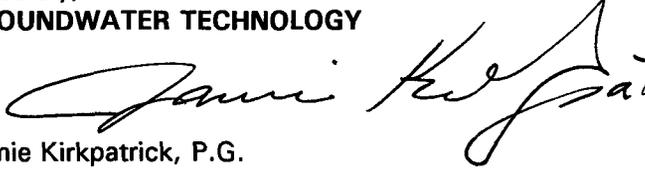
The results of the August 19, 1995 sampling event indicated that dissolved semi-volatile organics were not detected in monitoring well MW-6.

5.0 Recommendations

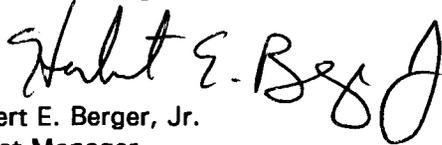
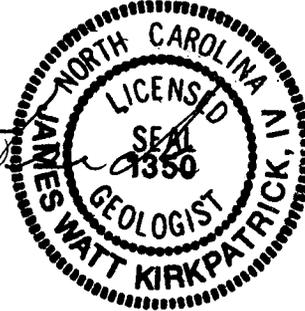
Based on the latest groundwater analytical results (March 22, 1995 and August 18, 1995), it appears that the vertical and horizontal extent of the dissolved petroleum compounds has been adequately defined. It does not appear that further soil investigation and/or corrective action is necessary at the former Sunoco Service Station. Therefore, on behalf of Sun Company, Inc., a letter requiring no further action at this site and subsequent site closure is requested from the North Carolina Department of Environment, Health, and Natural Resources, Regional Office in Winston Salem, North Carolina.

Please do not hesitate to contact Herb Berger at (919) 467-2227 if you have any questions regarding this project.

Sincerely,
GROUNDWATER TECHNOLOGY



Jamie Kirkpatrick, P.G.
Associate Geologist



Herbert E. Berger, Jr.
Project Manager
Lead Geologist

CC: Dan Shine (Sun Company, Inc.)
Herb Berger (Groundwater Technology)
file

TABLES

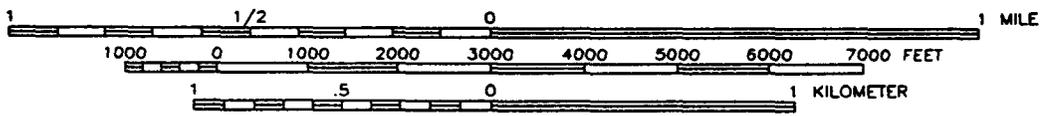
Table 1
 2903 South Elm Street
 Greensboro, North Carolina
 Summary of Liquid Level Data
 Project Update Report - Third Quarter 1995

	Well Head Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1			
3/22/95	597.04	14.50	582.54
MW-2			
3/22/95	596.61	12.00	584.61
MW-3			
3/22/95	596.36	14.03	582.33
MW-4			
3/22/95	596.47	13.83	582.64
VMW-5			
3/22/95	597.10	15.04	582.06

TABLE 2
 Date: March 22, 1995
 GROUNDWATER ANALYTICAL RESULTS (ug/L)
 Former Sunoco Station
 2903 South Elm Street
 Greensboro, North Carolina

SAMPLE DESIGNATION:	MW-1	MW-2	MW-3	MW-4	VMW-5	NC Standards
<u>Volatile Organic Compounds</u> <u>EPA Method 602</u>						
Benzene	4.7	<0.5	<0.5	<0.5	<0.5	1
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	1000
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	29
Xylene, total	<2.0	4.4	<2.0	<2.0	<2.0	530
BTEX, total	4.7	4.4	--	--	--	--
MTBE	130	200	15	<10	<10	200

FIGURES

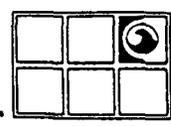


QUADRANGLE LOCATION

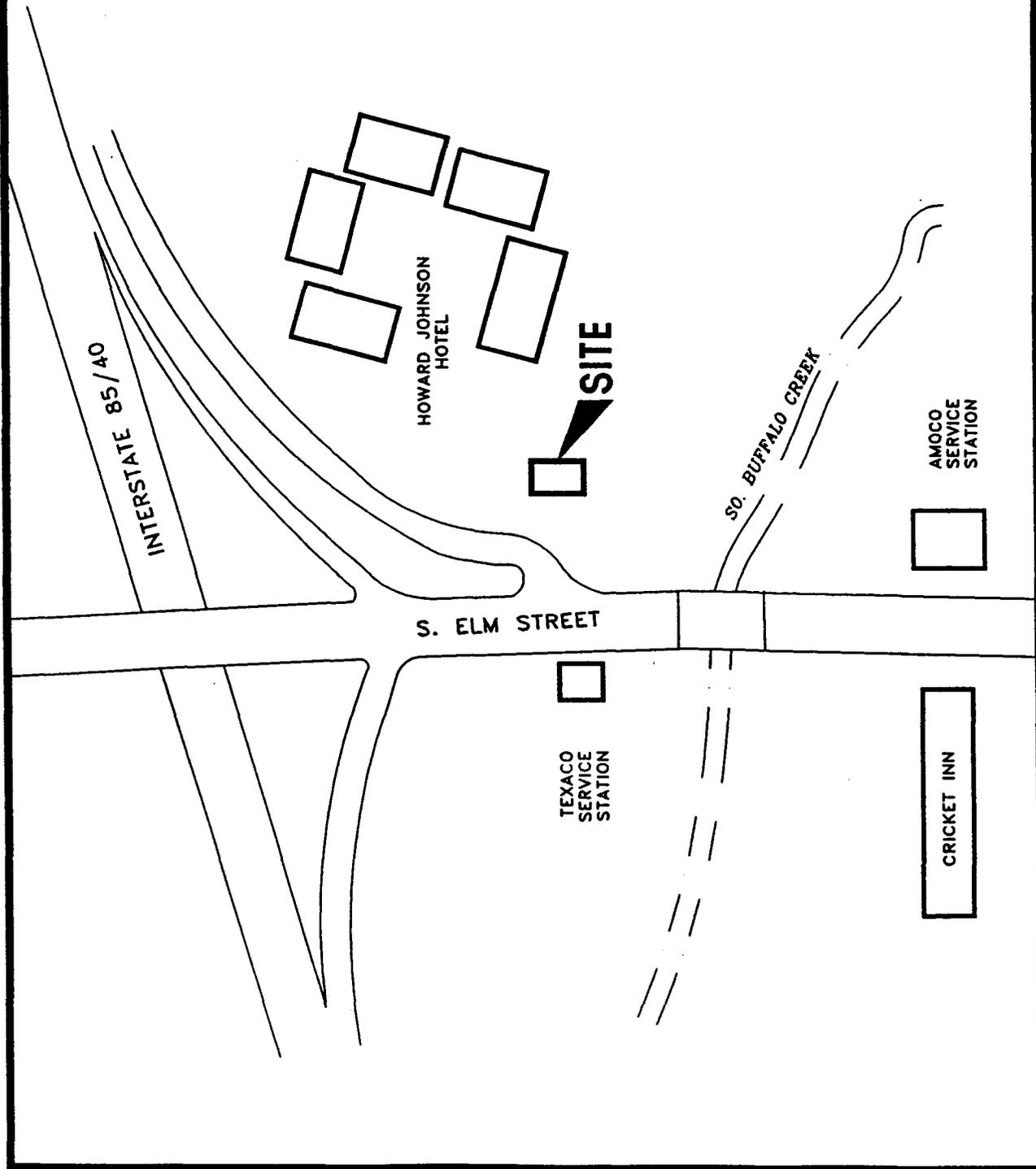
GREENSBORO, NC
 7.5' QUADRANGLE
 36079-A7-TF-024
 1968

FIGURE 1
SITE LOCATION MAP
SUN COMPANY, INC.

2903 S. ELM ST.
 GREENSBORO, NC
 053245455



GROUNDWATER
 TECHNOLOGY, INC.

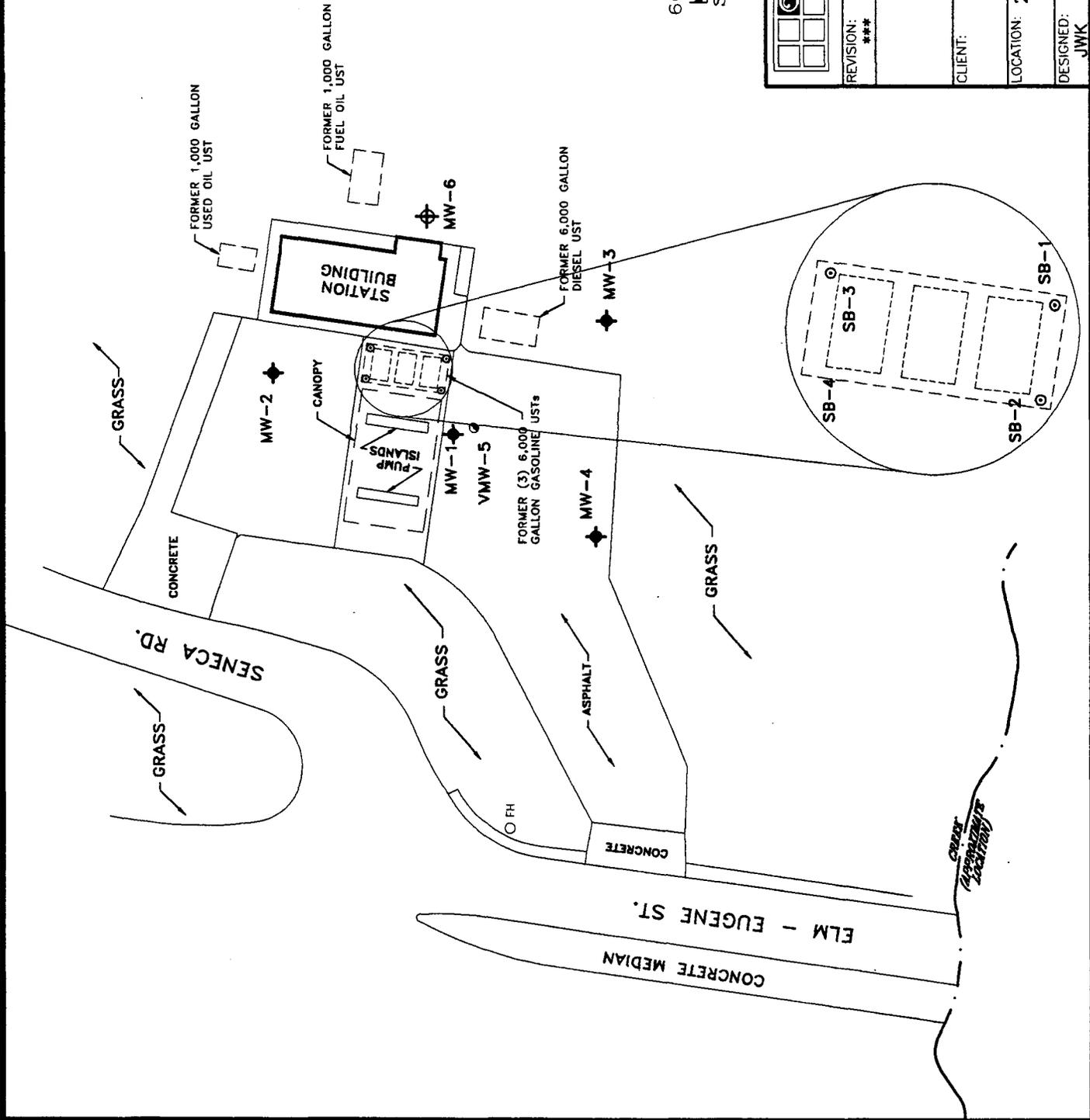
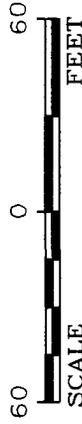


■ NOT TO SCALE ■

		1000 PERIMETER PARK DR SUITE 1 MORRISVILLE, NC 27560 (919) 467-2227	
GROUNDWATER TECHNOLOGY		ACAD FILE: 5455-are	
REV. NO.:	DRAWING DATE: 7/9/93	AREA MAP	
CLIENT:	SUN COMPANY, INC.		
LOCATION:	2903 S. ELM ST. GREENSBORO, NC		
DESIGNED:	TLW	PROJECT NO.: FKP 053245455	PE/RG: FIGURE: 2

LEGEND

- ◆ MONITORING WELL
- VERTICAL DEFINITION MONITORING WELL
- FH FIRE HYDRANT
- ◆ TEMPORARY MONITORING WELL
- SOIL BORING



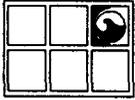
GROUNDWATER TECHNOLOGY
1000 PERIMETER PARK DR.
SUITE 1
MORRISVILLE, NC 27560

REVISION: ***
DRAWING DATE: 9/27/95
ACAD FILE: 5455-S2

SITE MAP

CLIENT: SUN COMPANY, INC. PM: ***
LOCATION: 2903 S. ELM STREET PE/RG: ***
GREENSBORO, NC
DESIGNED: JWK DETAILED: GPB PROJECT NO.: 052345455
FIGURE: 3

**APPENDIX A
DRILLING LOGS**

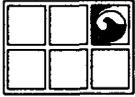


Project Sun/Elm St. Owner Sunoco
 Location 2903 S. Elm St., Greensboro, NC Proj. No. 05324-00102
 Surface Elev. _____ Total Hole Depth 20 ft. Diameter 8 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 2 in. Length 5 ft. Type/Size 20 SLOT in.
 Casing: Dia 2 in. Length 15 ft. Type PVC
 Fill Material SAND Rig/Core CME 75
 Drill Co. Rock-Ray Drilling Method HOLLOW STEM AUGER
 Driller R. Schmon Log By J. KIRKPATRICK Date 8/19/95 Permit # _____
 Checked By _____ License No. _____

See Site Map
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	FID (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							(0-.25') Asphalt
2							(0-.25') Grass and roots.
4							(.25-2') Slightly silty fine to medium SAND; dry.
6		98	9/100%				(2-4') Green, gray, black silty fine to coarse sandy CLAY with organics (wood fragments) and gravel; moist; strong odor of diesel fuel.
8		700	14/100%				(4-6') Little recovery - looks like slough.
10		1000+	39/100%		ML		(6-8') Greenish gray silty, fine to coarse sandy CLAY with gravel; moist; no odor.
12		1000+	7/100%				(8-10') Greenish-gray fine to medium sandy CLAY with gravel; moist; no odor.
14		98	6/100%				(10-12') Same as above; moist to wet; no odor.
16		260	3/100%				(12-14') Same as above; wet; no odor.
18		1000+	10/100%				(14-16") Tan, orange, and gray fine to coarse sandy silty CLAY; wet; no odor.
20		1000+	10/100%				(16-18') Dark gray to black silty CLAY with wood fragments; wet; no odor.
22							(18-20') Dark gray to black fine sandy CLAY with wood fragments; moist to wet; no odor. Saprolite.
24							(16-17') Same as above.
26							(17-18') Light brown SILT; wet.
28							(18-20') Same as above.
30							



Drilling Log

Soil Boring **SB-1**

Project Sun/Elm St. Owner Sunoco
 Location 2903 Elm St. Proj. No. 053240102
 Surface Elev. NA ft. Total Hole Depth 20 ft. Diameter 4 in.
 Top of Casing NA ft. Water Level Initial NA ft. Static NA ft.
 Screen: Dia NA in. Length NA ft. Type/Size NA in.
 Casing: Dia NA in. Length NA ft. Type NA
 Fill Material NA Rig/Core CME-75
 Drill Co. Rock-Ray Drilling Inc. Method HSA
 Driller Rocky Schmon Log By J. Kirkpatrick Date 08/19/95 Permit # _____
 Checked By _____ License No. _____

See Site Map
For Boring Location

COMMENTS:
NA = not applicable

Depth (ft.)	FID (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				A > A		(0-.5') Concrete
2					ML	(.5-4') Light brown silty fine to coarse SAND with gravel.
4				/ / / /		(4-6') Grayish-green silty fine to very coarse SAND; dry.
6	4.0		4	/ / / /		(6-8') Concrete fill.
8	4.0		50/3	/ / / /	CL	(8-10') Same as above.
10			50/0	/ / / /		(10-12') Grayish-green silty fine to very coarse SAND; dry.
12	100		7			(12-14') Rods fell through void.
14					ML	(14-16') Dark gray-black fine to medium sandy silty CLAY; moist to wet with wood fragments.
16	64		7	/ / / /	SC	(16-18') Dark gray-black fine sandy CLAY; wet.
18	1000+		9		ML	(18-20') Medium gray fine sandy clayey SILT; wet. (29-31') Hard, white, gray, and black fine to medium quartz sandy SILT; fine black mineral grains.
20	25		10			
22						
24						



**GROUNDWATER
TECHNOLOGY**

Drilling Log

Soil Boring **SB-2**

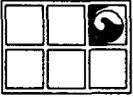
Project Sun/Elm St. Owner Sunoco
 Location 2903 Elm St. Proj. No. 053240102
 Surface Elev. NA ft. Total Hole Depth 20 ft. Diameter 4 in.
 Top of Casing NA ft. Water Level Initial NA ft. Static NA ft.
 Screen: Dia NA in. Length NA ft. Type/Size NA in.
 Casing: Dia NA in. Length NA ft. Type NA
 Fill Material NA Rig/Core CME-75
 Drill Co. Rock-Ray Drilling Inc. Method HSA
 Driller Rocky Schmon Log By J. Kirkpatrick Date 08/19/95 Permit # _____
 Checked By _____ License No. _____

See Site Map
For Boring Location

COMMENTS:

NA = not applicable

Depth (ft.)	FID (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						(0-.5') Concrete
2	0.4		16		GW	(.5-4') Light brown silty fine to coarse SAND with gravel.
4	0.4		10		SP	
6	46		50/.3		ML	(4-6') Brown gray fine to medium sandy silty CLAY; moist.
8			50/.3			(6-8') Gray-green silty fine to very coarse SAND; moist.
10			50/0		SM	(8-10') Concrete fill.
12	54		12			(10-12') Gray-green silty fine to very coarse SAND; saturated.
14						
16						
18						
20						
22						
24						



Drilling Log

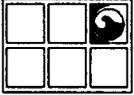
Soil Boring SB-3

Project Sun/Elm St. Owner Sunoco
 Location 2903 Elm St. Proj. No. 053240102
 Surface Elev. NA ft. Total Hole Depth 20 ft. Diameter 4 in.
 Top of Casing NA ft. Water Level Initial NA ft. Static NA ft.
 Screen: Dia NA in. Length NA ft. Type/Size NA in.
 Casing: Dia NA in. Length NA ft. Type NA
 Fill Material NA Rig/Core CME-75
 Drill Co. Rock-Ray Drilling Inc. Method HSA
 Driller Rocky Schmon Log By J. Kirkpatrick Date 08/19/95 Permit # _____
 Checked By _____ License No. _____

See Site Map
For Boring Location

COMMENTS:
NA = not applicable

Depth (ft.)	FID (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						(0-.5') Concrete
2						
4						(.5-6") Gray-green silty fine to very coarse SAND with gravel; dry.
6	180		5			(6-8') Same as above; moist.
8	320		3		GM	(8-10') Same as above.
10	100		3			(10-12') Same as above.
12	50		2			(12-14') Same as above.
14	150		14			
16						
18						
20						
22						
24						



Drilling Log

Soil Boring **SB-4**

Project Sun/Elm St. Owner Sunoco
 Location 2903 Elm St. Proj. No. 053240102
 Surface Elev. NA ft. Total Hole Depth 20 ft. Diameter 4 in.
 Top of Casing NA ft. Water Level Initial NA ft. Static NA ft.
 Screen: Dia NA in. Length NA ft. Type/Size NA in.
 Casing: Dia NA in. Length NA ft. Type NA
 Fill Material NA Rig/Core CME-75
 Drill Co. Rock-Ray Drilling Inc. Method HSA
 Driller Rocky Schmon Log By J. Kirkpatrick Date 08/19/95 Permit # _____
 Checked By _____ License No. _____

See Site Map
For Boring Location

COMMENTS:
NA = not applicable

Depth (ft.)	FID (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						(0-.5') Concrete
2	180		15			(.5-2') Gray-green silty fine to very coarse SAND with gravel; dry.
4	50		4		SP	(2-4') Same as above.
6	120		5			(4-6') Same as above.
8	110		4			(6-8') Same as above; moist.
10	900		6		SC	(8-10') Dark gray fine to coarse sandy silty CLAY; wet.
12	752		7			(10-12') Same as above.
14	680		5		GC	(12-14') Same as above; with gravel.
16	780		5		ML	(14-16') Dark gray fine to coarse sandy silty CLAY; wet.
18						
20						
22						
24						

APPENDIX B
GROUNDWATER ANALYTICAL REPORTS



ENVIRONMENTAL
LABORATORIES, INC.

Southeast Region
10500 University Center Drive, Suite 160
Tampa, FL 33612
(813) 979-9092 (800) 933-GTEL (4835)
Fax: (813) 979-6914

RECEIVED
SEP 08 1995

September 7, 1995

Herb Berger
GROUNDWATER TECHNOLOGY, INC.
1000 Perimeter Park Drive, Suite 1
Morrisville, NC 27560

RE: GTEL Client ID: 053240102
Login Number: F5080258
Project ID (number): 053240102
Project ID (name): SUN ELM STREET

Dear Herb Berger:

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 08/22/95 under Chain-of-Custody Number(s) 25500.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes. This Analytical report shall not be reproduced except in full.

GTEL is certified (approved) by the State of Florida under Certification Number HRS E84196, by the State of South Carolina under Certificate Number 96025, and by the State of Tennessee for UST list.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Harold Vernon
Laboratory Director

ANALYTICAL RESULTS

Semi-Volatile Organics in Water
Modified EPA Method 625^a

GTEL Sample Number		080258-02	--	--	--
Client Identification		MW-6	--	--	--
Date Sampled		08-19-95	--	--	--
Date Extracted		08-25-95	--	--	--
Date Analyzed		09-06-95	--	--	--
Dilution Multiplier ^b		1	--	--	--
Analyte	Reporting Limit, ug/L	Concentration, ug/L			
N-Nitrosodimethylamine	10	<10	--	--	--
Phenol	10	<10	--	--	--
<i>bis</i> (2-Chloroethyl) Ether	10	<10	--	--	--
2-Chlorophenol	10	<10	--	--	--
1,3-Dichlorobenzene	10	<10	--	--	--
1,4-Dichlorobenzene	10	<10	--	--	--
1,2-Dichlorobenzene	10	<10	--	--	--
<i>bis</i> (2-Chloroisopropyl) Ether	10	<10	--	--	--
N-Nitroso-di-n-propylamine	10	<10	--	--	--
Hexachloroethane	10	<10	--	--	--
Nitrobenzene	10	<10	--	--	--
Isophorone	10	<10	--	--	--
2-Nitrophenol	10	<10	--	--	--
2,4-Dimethylphenol	10	<10	--	--	--
<i>bis</i> (2-Chloroethoxy)methane	10	<10	--	--	--
2,4-Dichlorophenol	10	<10	--	--	--
1,2,4-Trichlorobenzene	10	<10	--	--	--
Naphthalene	10	<10	--	--	--
Hexachlorobutadiene	10	<10	--	--	--

ANALYTICAL RESULTS

**Semi-Volatile Organics in Water
Modified EPA Method 625^a**

GTEL Sample Number		080258-02	--	--	--
Client Identification		MW-6	--	--	--
Date Sampled		08-19-95	--	--	--
Date Extracted		08-25-95	--	--	--
Date Analyzed		09-06-95	--	--	--
Dilution Multiplier ^b		1	--	--	--
Analyte	Reporting Limit, ug/L	Concentration, ug/L			
4-Chloro-3-methylphenol	20	<20	--	--	--
Hexachlorocyclopentadiene	10	<10	--	--	--
2,4,6-Trichlorophenol	10	<10	--	--	--
2-Chloronaphthalene	10	<10	--	--	--
2-Nitroaniline	50	<50	--	--	--
Dimethylphthalate	10	<10	--	--	--
Acenaphthylene	10	<10	--	--	--
2,6-Dinitrotoluene	10	<10	--	--	--
Acenaphthene	10	<10	--	--	--
2,4-Dinitrophenol	50	<50	--	--	--
4-Nitrophenol	50	<50	--	--	--
2,4-Dinitrotoluene	10	<10	--	--	--
Diethylphthalate	10	<10	--	--	--
4-Chlorophenyl Phenyl Ether	10	<10	--	--	--
Fluorene	10	<10	--	--	--
4,6-Dinitro-2-methylphenol	50	<50	--	--	--
N-Nitrosodiphenylamine	10	<10	--	--	--
4-Bromophenyl Phenyl Ether	10	<10	--	--	--

ANALYTICAL RESULTS

Semi-Volatile Organics in Water Modified EPA Method 625^a

GTEL Sample Number		080258-02	--	--	--
Client Identification		MW-6	--	--	--
Date Sampled		08-19-95	--	--	--
Date Extracted		08-25-95	--	--	--
Date Analyzed		09-06-95	--	--	--
Dilution Multiplier ^b		1	--	--	--
Analyte	Reporting Limit, ug/L	Concentration, ug/L			
Hexachlorobenzene	10	<10	--	--	--
Pentachlorophenol	50	<50	--	--	--
Phenanthrene	10	<10	--	--	--
Anthracene	10	<10	--	--	--
Di-n-butylphthalate	10	<10	--	--	--
Fluoranthene	10	<10	--	--	--
Pyrene	10	<10	--	--	--
Butylbenzylphthalate	10	<10	--	--	--
3,3'-Dichlorobenzidine	20	<20	--	--	--
Benzo[a]anthracene	10	<10	--	--	--
Chrysene	10	<10	--	--	--
bis(2-Ethylhexyl)phthalate	10	<10	--	--	--
Di-n-octylphthalate	10	<10	--	--	--
Benzo[b]fluoranthene	10	<10	--	--	--
Benzo[k]fluoranthene	10	<10	--	--	--
Benzo[a]pyrene	10	<10	--	--	--
Indeno[1,2,3-c,d]pyrene	10	<10	--	--	--
Dibenzo[a,h]anthracene	10	<10	--	--	--
Benzo[g,h,i]perylene	10	<10	--	--	--

a Test Procedures for Analysis of Organic Pollutants, Code of the Federal Register, 40CFR Part 136. Method modified with a capillary column to include additional compounds. Sample preparation by liquid/liquid extraction.

b Dilution Multiplier indicates the adjustments made for sample dilution.



10500 UNIVERSITY CENTER DRIVE
TAMPA, FL 33612
(813) 979-9092

Company Name: **Groundwater Technology**
 Phone #: 919 467-2227
 Company Address: **1000 Pettineter Pk. Dr. Ste. I**
 Site Location: 2903 S. Elm St.
 Project Manager: **Herb Berger**
 Client Project ID: (#) 051240102
 (NAME) **Sun - Elm St.**
 Sampler Name (Print): **JAMIE KIRKPATRICK**

Field Sample ID	GTEL Lab # (Lab Use only)	# CONTAINERS	Matrix			Method Preserved			Sampling				
			WATER	SOIL	AIR	SLUDGE	PRODUCT	OTHER	HCl	HNO ₃	USE SERVED	OTHER	DATE
55-7	02	2X										8/19/93	17:45
MW-6	03, 04	2X										8/19/93	17:45
COMP-2	03, 04	2X										8/19/93	17:45

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

25500

ANALYSIS REQUEST

<input type="checkbox"/> BTX/Gas Hydrocarbons PID/FID <input type="checkbox"/> with MTBE <input type="checkbox"/>	<input type="checkbox"/> BTX 602 <input type="checkbox"/> 8020 <input checked="" type="checkbox"/> with MTBE
<input type="checkbox"/> Hydrocarbons GC/FID Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Screen <input type="checkbox"/>	<input type="checkbox"/> Hydrocarbon Profile (SIMDIS) <input type="checkbox"/>
<input type="checkbox"/> Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> SM-503	<input type="checkbox"/> TPH/IR 418.1 <input type="checkbox"/> SM 503
<input type="checkbox"/> EDB by 504 <input type="checkbox"/> DBCP by 504 <input type="checkbox"/>	<input type="checkbox"/> EPA 503.1 <input type="checkbox"/> EPA 502.2 <input type="checkbox"/>
<input type="checkbox"/> EPA 601 <input type="checkbox"/> EPA 8010	<input type="checkbox"/> EPA 602 <input type="checkbox"/> EPA 8020 <input type="checkbox"/>
<input type="checkbox"/> EPA 608 <input type="checkbox"/> 8080 <input type="checkbox"/> PCB only <input type="checkbox"/>	<input type="checkbox"/> EPA 624/PPL <input type="checkbox"/> 8240/TAL <input type="checkbox"/> NBS (+15) <input type="checkbox"/>
<input type="checkbox"/> EPA 625/PPL <input checked="" type="checkbox"/> 8270/TAL <input type="checkbox"/> NBS (+25) <input type="checkbox"/>	<input type="checkbox"/> EPA 610 <input type="checkbox"/> 8310 <input type="checkbox"/>
<input type="checkbox"/> EP TOX Metals <input type="checkbox"/> Pesticides <input type="checkbox"/> Herbicides <input type="checkbox"/>	<input type="checkbox"/> TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-VOA <input type="checkbox"/> Pest <input type="checkbox"/> Herb <input type="checkbox"/>
<input type="checkbox"/> EPA Metals - Priority Pollutant <input type="checkbox"/> TAL <input type="checkbox"/> RCRA <input type="checkbox"/>	<input type="checkbox"/> CAM Metals TLLC <input type="checkbox"/> STLC <input type="checkbox"/>
<input type="checkbox"/> Lead 239.2 <input type="checkbox"/> 200.7 <input type="checkbox"/> 7420 <input type="checkbox"/> 7421 <input type="checkbox"/> 6010 <input type="checkbox"/>	<input type="checkbox"/> Organic Lead <input type="checkbox"/>
<input type="checkbox"/> Corrosivity <input type="checkbox"/> Flash Point <input type="checkbox"/> Reactivity <input type="checkbox"/>	<input checked="" type="checkbox"/> TPH by EPA 5030 + 3550
	<input checked="" type="checkbox"/> Tot. Lead EPA 7421 by 3030C
	<input checked="" type="checkbox"/> TOX

REMARKS:

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS

Lab Use Only Lot #: **8-1 5-35**

Work Order #: **F508025888**

Storage Location

Received by: **[Signature]** Date: **8/23/93** Time: **16:50**

Relinquished by Sampler: **[Signature]**

Relinquished by: **[Signature]** Date: **8/23/93** Time: **16:30**

Relinquished by: **[Signature]** Date: **8/23/93** Time: **16:30**

QA/QC Level: Blue CLP Other

CUSTODY RECORD



ENVIRONMENTAL
LABORATORIES, INC.

Southeast Region

10500 University Center Drive, Suite 160
Tampa, FL 33612
(813) 979-9092
(800) 933-GTEL (4835)
Fax (813) 979-6914

March 30, 1995

Herb Berger
GROUNDWATER TECHNOLOGY INC.
1000 Perimeter Park Dr. Ste. #1
Morrisville, NC 27560

RECEIVED
MAR 31 1995

RE: GTEL Client ID: 053245455
Login Number: F5030492
Project ID (number): 053245455
Project ID (name): SUN-ELM ST.

Dear Herb Berger:

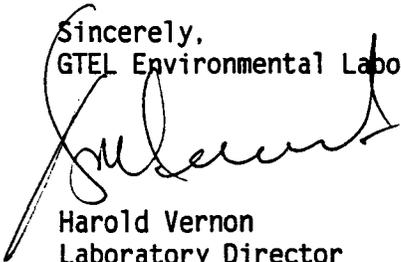
Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 03/23/95 under Chain-of-Custody Number(s) 25405.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes. This Analytical report shall not be reproduced except in full.

GTEL is certified by the State of North Carolina under certification #454.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.



Harold Vernon
Laboratory Director

ANALYTICAL RESULTS
Volatile Organics

GTEL Client ID: 053245455
 Login Number: F5030492
 Project ID (number): 053245455
 Project ID (name): SUN-ELM ST.

Method: EPA 602
 Matrix: Aqueous

GTEL Sample Number	F5030492-01	F5030492-02	F5030492-03	F5030492-04
Client ID	VMW5	MW4	MW3	MW2
Date Sampled	03/22/95	03/22/95	03/22/95	03/22/95
Date Analyzed	03/29/95	03/29/95	03/29/95	03/29/95
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting		Concentration:			
	Limit	Units				
Benzene	0.5	ug/L	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	1.0	ug/L	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	1.0	ug/L	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes (total)	2.0	ug/L	< 2.0	< 2.0	< 2.0	4.4
MTBE	10	ug/L	< 10	< 10	15	200

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 602:

"Test Procedures for Analysis of Organic Pollutants", Code of Federal Regulations, 40CFR Part 136, Appendix A. Analyte list modified to include additional compounds.

ANALYTICAL RESULTS
Volatile Organics

GTEL Client ID: 053245455
 Login Number: F5030492
 Project ID (number): 053245455
 Project ID (name): SUN-ELM ST.

Method: EPA 602
 Matrix: Aqueous

GTEL Sample Number	F5030492-05	--	--	--
Client ID	MW1	--	--	--
Date Sampled	03/22/95	--	--	--
Date Analyzed	03/29/95	--	--	--
Dilution Factor	1.00	--	--	--

Analyte	Reporting		Concentration:		
	Limit	Units			
Benzene	0.5	ug/L	4.7	--	--
Toluene	1.0	ug/L	< 1.0	--	--
Ethylbenzene	1.0	ug/L	< 1.0	--	--
Xylenes (total)	2.0	ug/L	< 2.0	--	--
MTBE	10.	ug/L	130	--	--

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 602:

"Test Procedures for Analysis of Organic Pollutants". Code of Federal Regulations, 40CFR Part 136, Appendix A. Analyte list modified to include additional compounds.



10500 UNIVERSITY CENTER DRIVE
TAMPA, FL 33612
(813) 979-9092

**CHAIN-OF-CUSTODY RECORD
AND ANALYSIS REQUEST**

25405

Company Name: **GTI** Phone #: (919) 4672227
 Company Address: **Morrisville, NC** FAX #: (919) 4672229
 Site Location: **Greensboro, NC**
 Project Manager: **Herb Burger** Client Project ID: (#) 053245455
 (NAME) **Sam - Elm St.**
 Sampler Name (Print): **Aaron Hill**

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	GTEL Lab # (Lab Use only)	# CONTAINERS	Matrix			Method Preserved				Sampling				
			WATER	AIR	SLUDGE	PRODUCT	OTHER	HCl	HNO3	H2SO4	ICE	UNREF. SERVED	OTHER (Specify)	DATE
VMW5	01	3	X				X						3/22	1315
MW4	02	1												1322
MW3	03	1												1330
MW2	04	1												1337
MW1	05	1												1345

<input checked="" type="checkbox"/> BTX/Gas Hydrocarbons PID/FID <input type="checkbox"/> with MTBE	<input type="checkbox"/>
<input type="checkbox"/> Hydrocarbons GC/FID Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Screen	<input type="checkbox"/>
<input type="checkbox"/> Hydrocarbon Profile (SIMDIS) <input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> SM-503	<input type="checkbox"/>
<input type="checkbox"/> TPH/IR 418.1 <input type="checkbox"/> SM 503	<input type="checkbox"/>
<input type="checkbox"/> EDB by 504 <input type="checkbox"/> DBCP by 504	<input type="checkbox"/>
<input type="checkbox"/> EPA 503.1 <input type="checkbox"/> EPA 502.2	<input type="checkbox"/>
<input type="checkbox"/> EPA 601 <input type="checkbox"/> EPA 8010	<input type="checkbox"/>
<input type="checkbox"/> EPA 602 <input type="checkbox"/> EPA 8020	<input type="checkbox"/>
<input type="checkbox"/> EPA 608 <input type="checkbox"/> 8080 <input type="checkbox"/> PCB only	<input type="checkbox"/>
<input type="checkbox"/> EPA 624/PPL <input type="checkbox"/> 8240/TAL <input type="checkbox"/> NBS (+15)	<input type="checkbox"/>
<input type="checkbox"/> EPA 625/PPL <input type="checkbox"/> 8270/TAL <input type="checkbox"/> NBS (+25)	<input type="checkbox"/>
<input type="checkbox"/> EPA 610 <input type="checkbox"/> 8310	<input type="checkbox"/>
<input type="checkbox"/> EP TOX Metals <input type="checkbox"/> Pesticides <input type="checkbox"/> Herbicides	<input type="checkbox"/>
<input type="checkbox"/> TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-VOA <input type="checkbox"/> Pest <input type="checkbox"/> Herb	<input type="checkbox"/>
<input type="checkbox"/> EPA Metals - Priority Pollutant <input type="checkbox"/> TAL <input type="checkbox"/> RCRA	<input type="checkbox"/>
<input type="checkbox"/> CAM Metals TLLC <input type="checkbox"/> STLC	<input type="checkbox"/>
<input type="checkbox"/> Lead 239.2 <input type="checkbox"/> 200.7 <input type="checkbox"/> 7420 <input type="checkbox"/> 7421 <input type="checkbox"/> 6010	<input type="checkbox"/>
<input type="checkbox"/> Organic Lead	<input type="checkbox"/>
<input type="checkbox"/> Corrosivity <input type="checkbox"/> Flash Point <input type="checkbox"/> Reactivity	<input type="checkbox"/>

REMARKS: *2c*

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS

Lab Use Only Lot #: **3-233**

Work Order #: **F5030492**

Received by: **Arbore**

Received by: **Kanac Cell**

Relinquished by Sampler: **Aaron Hill**

Relinquished by: **Kanac Cell**

Relinquished by: **Kanac Cell**

QA/QC Level

Blue CLP Other

Priority (24 hr) Expedited (48 hr) 7 Business Days Other Business Days

Special Handling: **Transfer**

GTEL Contact: **Transfer**

Quote/Contract #: **1600**

Confirmation #: **3/22/95**

P.O. #: **3-951930**

Storage Location: **3-233**

CUSTODY RECORD



10500 UNIVERSITY CENTER DRIVE
TAMPA, FL 33612
(813) 979-9092

**CHAIN-OF-CUSTODY RECORD
AND ANALYSIS REQUEST**

25435

OTHER

Company Name: **GTI** Phone #: (919) 4672227
 Company Address: **Morrisville, NC** FAX #: (919) 4672229
 Project Manager: **Herb Berger** Site Location: **Greensboro, NC**
 Client Project ID: (#) 053245455
 (NAME) **Swan - Elm St.**
 Sampler Name (Print): **Anderson Hill**

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	GTEL Lab # (Lab Use only)	# CONTAINERS	Matrix				Method Preserved				Sampling				
			WATER	AIR	SLUDGE	PRODUCT	OTHER	HCl	HNO ₃	H ₂ O ₂	ICF	UNPRE SERVED	OTHER (Specify)	DATE	TIME
VMW5	01	3	X				X						95	3/22	1715
MW4	02	1												1322	
MW3	03	1												1330	
MW2	04	1												1337	
MW1	05	1													

<input checked="" type="checkbox"/> BTEX 602/8020 with MTBE	<input type="checkbox"/> BTEX/Gas Hydrocarbons PID/FID with MTBE	<input type="checkbox"/> Hydrocarbons GC/FID Gas	<input type="checkbox"/> Diesel	<input type="checkbox"/> Screen	<input type="checkbox"/> Hydrocarbon Profile (SIMDIS)	<input type="checkbox"/> Oil and Grease 413.1	<input type="checkbox"/> 413.2	<input type="checkbox"/> SM-503	<input type="checkbox"/> TP/IR 418.1	<input type="checkbox"/> SM 503	<input type="checkbox"/> EDB by 504	<input type="checkbox"/> DBCP by 504	<input type="checkbox"/> EPA 503.1	<input type="checkbox"/> EPA 502.2	<input type="checkbox"/> EPA 601	<input type="checkbox"/> EPA 8010	<input type="checkbox"/> EPA 602	<input type="checkbox"/> EPA 8020	<input type="checkbox"/> EPA 608	<input type="checkbox"/> 8080	<input type="checkbox"/> PCB only	<input type="checkbox"/> EPA 624/PPL	<input type="checkbox"/> 8240/TAL	<input type="checkbox"/> NBS (+15)	<input type="checkbox"/> EPA 625/PPL	<input type="checkbox"/> 8270/TAL	<input type="checkbox"/> NBS (+25)	<input type="checkbox"/> EPA 610	<input type="checkbox"/> 8310	<input type="checkbox"/> EP TOX Metals	<input type="checkbox"/> Pesticides	<input type="checkbox"/> Herbicides	<input type="checkbox"/> TCLP Metals	<input type="checkbox"/> VOA	<input type="checkbox"/> Semi-VOA	<input type="checkbox"/> Past	<input type="checkbox"/> Herb	<input type="checkbox"/> EPA Metals - Priority Pollutant	<input type="checkbox"/> TAL	<input type="checkbox"/> RCRA	<input type="checkbox"/> CAM Metals	<input type="checkbox"/> TLC	<input type="checkbox"/> STLC	<input type="checkbox"/> Lead 239.2	<input type="checkbox"/> 200.7	<input type="checkbox"/> 7420	<input type="checkbox"/> 7421	<input type="checkbox"/> 6010	<input type="checkbox"/> Organic Lead	<input type="checkbox"/> Corrosivity	<input type="checkbox"/> Flash Point	<input type="checkbox"/> Reactivity
---	--	--	---------------------------------	---------------------------------	---	---	--------------------------------	---------------------------------	--------------------------------------	---------------------------------	-------------------------------------	--------------------------------------	------------------------------------	------------------------------------	----------------------------------	-----------------------------------	----------------------------------	-----------------------------------	----------------------------------	-------------------------------	-----------------------------------	--------------------------------------	-----------------------------------	------------------------------------	--------------------------------------	-----------------------------------	------------------------------------	----------------------------------	-------------------------------	--	-------------------------------------	-------------------------------------	--------------------------------------	------------------------------	-----------------------------------	-------------------------------	-------------------------------	--	------------------------------	-------------------------------	-------------------------------------	------------------------------	-------------------------------	-------------------------------------	--------------------------------	-------------------------------	-------------------------------	-------------------------------	---------------------------------------	--------------------------------------	--------------------------------------	-------------------------------------

REMARKS: **2**

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS

Lab Use Only Lot #: **3-2B**

Work Order #: **F5030492**

Received by: **Airborne II** Date: **3/22/95** Time: **1600**

Received by: **James Hill** Date: **3/25/95** Time: **9:30**

Received by Laboratory: **James Hill** Waybill #

QA/QC Level: Blue CLP Other

Special Handling: **Transfer**

GTEL Contact: **Transfer**

Quote/Contract #

Confirmation #

P.O. #

Relinquished by Sampler: **James Hill**

Relinquished by:

Relinquished by:

CUSTODY RECORD

APPENDIX C
SOIL ANALYTICAL REPORTS



GTEL

ENVIRONMENTAL
LABORATORIES, INC.

Southeast Region
10500 University Center Drive, Suite 160
Tampa, FL 33612
(813) 979-9092 (800) 933-GTEL (4835)
Fax: (813) 979-6914

RECEIVED
SEP 08 1995

September 7, 1995

Herb Berger
GROUNDWATER TECHNOLOGY, INC.
1000 Perimeter Park Drive, Suite 1
Morrisville, NC 27560

RE: GTEL Client ID: 053240102
Login Number: F5080258
Project ID (number): 053240102
Project ID (name): SUN ELM STREET

Dear Herb Berger:

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 08/22/95 under Chain-of-Custody Number(s) 25500.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes. This Analytical report shall not be reproduced except in full.

GTEL is certified (approved) by the State of Florida under Certification Number HRS E84196, by the State of South Carolina under Certificate Number 96025, and by the State of Tennessee for UST list.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Harold Vernon
Laboratory Director

ANALYTICAL RESULTS
Volatile Organics

GTEL Client ID: 053240102
 Job Number: F5080258
 Project ID (number): 053240102
 Project ID (name): SUN ELM STREET

Method: EPA 8020
 Matrix: Low Soil

GTEL Sample Number	F5080258-03	--	--	--
Client ID	COMP-2	--	--	--
Date Sampled	08/19/95	--	--	--
Date Analyzed	08/24/95	--	--	--
Dilution Factor	1.00	--	--	--

Analyte	Reporting Limit	Units	Concentration	Dry Weight
Benzene	1.0	ug/kg	1.2	--
Toluene	2.0	ug/kg	29.	--
Ethylbenzene	2.0	ug/kg	33.	--
Xylenes (total)	4.0	ug/kg	31.	--
Percent Solids	--	%	88.3	--

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 8020:

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition including Update 1.

ANALYTICAL RESULTS
Metals

GTEL Client ID: 053240102
 Login Number: F5080258
 Project ID (number): 053240102
 Project ID (name): SUN ELM STREET

Method: EPA 7421
 Matrix: Soil

GTEL Sample Number	F5080258-03	--	--	--
Client ID	COMP-2	--	--	--
Date Sampled	08/19/95	--	--	--
Date Analyzed	08/29/95	--	--	--
Dilution Factor	1.00	--	--	--

Analyte	Reporting		Concentration: Dry Weight
	Limit	Units	
Lead	0.40	mg/kg	5.2
Percent Solids	--	%	88.3

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 7421:

"Test Methods for Evaluating Solid Waste, Physical and Chemical Methods, SW-846", Third Edition, Revision 1, US EPA July 1992. Digestion by EPA Method 3051.

ANALYTICAL RESULTS
Extractable Organic Halides

GTEL Client ID: GTEL_TAMPA
 Login Number: M5080458
 Project ID (number): 053240102
 Project ID (name): SUN 2903 S. Elm Street Morrisville, NC

Method: EPA 600/APPX D
 Matrix: Solids

GTEL Sample Number	M5080458-01	--	--	--
Client ID	COMP 2	--	--	--
Date Sampled	08/19/95	--	--	--
Date Analyzed	08/30/95	--	--	--
Dilution Factor	1.00	--	--	--

Analyte	Reporting		Concentration: Dry Weight			
	Limit	Units				
Extractable Organic Halides	300	mg/kg	< 300	--	--	--
Percent Solids	--	%	84.1	--	--	--

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 600/APPX D:

"Methods for Chemical Analysis of Water and Wastes". EPA 600/4-79-020. USEPA EMSL, Cincinnati, OH. Revised, March 1983.

**CHAIN-OF-CUSTODY RECORD
AND ANALYSIS REQUEST**

25500

10500 UNIVERSITY CENTER DRIVE
TAMPA, FL 33612
(813) 979-9092

Company Name: **Groundwater Technology** Phone #: 919 467-2227
 Company Address: 1000 Perimeter Pk. Dr. Ste. I, Marietta, NC 27560 FAX #: 919 467-2299
 Project Manager: **Herb Berger** Client Project ID: (#) 053240102
 (NAME) **Sam - Elm St.**
 Sampler Name (Print): **JAMIE KIRKPATRICK**

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	GTEL Lab # (Lab Use only)	# CONTAINERS	Matrix			Method Preserved				Sampling					
			WATER	SOIL	AIR	SLUDGE	PRODUCT	OTHER	HCl	HNO ₃	H ₂ SO ₄	ICE	UNPRE. SERVED	OTHER (Specify)	DATE
SS-7	02	2	X							X				8/19	9:25
MW-6	02	2	X							X				8/19	17:45
Comp. 2	03, 04	2	X							X				8/19	17:15

REMARKS:

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS

Lab Use Only Lot #: **50802588B**

Work Order #: **9-1 6-3**

Storage Location

CUSTODY RECORD

Relinquished by Sampler: *[Signature]* Date: **8/24/95** Time: **16:50**

Relinquished by: *[Signature]* Date: **8/25/95** Time: **16:30**

Relinquished by: *[Signature]* Date: **8/25/95** Time: **16:30**

Waybill #: **515 1, 01, 7422**

ANALYSIS REQUEST

<input type="checkbox"/>	BTEX/Gas Hydrocarbons PID/FID <input type="checkbox"/> with MTBE <input type="checkbox"/>
<input type="checkbox"/>	Hydrocarbons GC/FID Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Screen <input type="checkbox"/>
<input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> SM-503 <input type="checkbox"/>
<input type="checkbox"/>	TPH/IR 418.1 <input type="checkbox"/> SM 503 <input type="checkbox"/>
<input type="checkbox"/>	EDB by 504 <input type="checkbox"/> DBCP by 504 <input type="checkbox"/>
<input type="checkbox"/>	EPA 503.1 <input type="checkbox"/> EPA 502.2 <input type="checkbox"/>
<input type="checkbox"/>	EPA 601 <input type="checkbox"/> EPA 8010 <input type="checkbox"/>
<input type="checkbox"/>	EPA 602 <input type="checkbox"/> EPA 8020 <input type="checkbox"/>
<input type="checkbox"/>	EPA 608 <input type="checkbox"/> 8080 <input type="checkbox"/> PCB only <input type="checkbox"/>
<input type="checkbox"/>	EPA 624/PPL <input type="checkbox"/> 8240/TAL <input type="checkbox"/> NBS (+15) <input type="checkbox"/>
<input type="checkbox"/>	EPA 625/PPL <input type="checkbox"/> 8270/TAL <input type="checkbox"/> NBS (+25) <input type="checkbox"/>
<input type="checkbox"/>	EPA 610 <input type="checkbox"/> 8310 <input type="checkbox"/>
<input type="checkbox"/>	EP TOX Metals <input type="checkbox"/> Pesticides <input type="checkbox"/> Herbicides <input type="checkbox"/>
<input type="checkbox"/>	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-VOA <input type="checkbox"/> Pest <input type="checkbox"/> Herb <input type="checkbox"/>
<input type="checkbox"/>	EPA Metals - Priority Pollutant <input type="checkbox"/> TAL <input type="checkbox"/> RCRA <input type="checkbox"/>
<input type="checkbox"/>	CAM Metals TLCL <input type="checkbox"/> STLC <input type="checkbox"/>
<input type="checkbox"/>	Lead 239.2 <input type="checkbox"/> 200.7 <input type="checkbox"/> 7420 <input type="checkbox"/> 7421 <input type="checkbox"/> 6010 <input type="checkbox"/>
<input type="checkbox"/>	Organic Lead <input type="checkbox"/>
<input type="checkbox"/>	Corrosivity <input type="checkbox"/> Flash Point <input type="checkbox"/> Reactivity <input type="checkbox"/>

X TPH by EPA 5030 + 3550
 Tot. Lead EPA 742 by 3050
 TOX



GTEL

ENVIRONMENTAL
LABORATORIES, INC.

Southeast Region

10500 University Center Drive, Suite 160
Tampa, FL 33612
(813) 979-9092 800-933-GTEL (4835)
FAX: 813-979-6914

September 1, 1995

Herb Berger
GROUNDWATER TECHNOLOGY, INC.
1000 Perimeter Park Drive, Suite 1
Morrisville, NC 27560

RE: GTEL Client ID: 053240102
Login Number: F5080294
Project ID (number): 053240102
Project ID (name): SUN ELM ST.

Dear Herb Berger:

This report, previously dated 08/31/95, is a reissue.

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 08/24/95 under Chain-of-Custody Number(s) 29878.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes. This Analytical report shall not be reproduced except in full.

GTEL is certified (approved) by the State of Florida under Certification Number HRS E84196, by the State of South Carolina under Certificate Number 96025, and by the State of Tennessee for UST list.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Harold Vernon

Harold Vernon
Laboratory Director

RECEIVED
SEP 07 1995

ANALYTICAL RESULTS
Volatiles Organics

GTEL Client ID: 053240102
 gin Number: F5080294
 Project ID (number): 053240102
 Project ID (name): SUN ELM ST.

Method: 8020/DOHS, CA LUFT
 Matrix: Low Soil

GTEL Sample Number	F5080294-01	F5080294-02	F5080294-03	F5080294-04
Client ID	SB-1(14-16')	SB-2(10-12')	SB-3(8-10')	SB-4(8-10')
Date Sampled	08/19/95	08/19/95	08/19/95	08/19/95
Date Analyzed	08/25/95	08/25/95	08/25/95	08/25/95
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting		Concentration: Dry Weight			
	Limit	Units				
TPH as Gasoline	100	ug/kg	< 130	< 120	< 120	1400
Percent Solids	--	%	77.5	83.6	83.0	87.3

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

8020/DOHS, CA LUFT:

"Test Methods for Evaluating Solid Waste. Physical/Chemical Methods". SW-846. Third Edition including Update 1. Analyte list modified to include additional compounds. Gasoline Range Hydrocarbons (TPH) quantitated by GC/FID with purge and trap.

ANALYTICAL RESULTS

**Total Petroleum Hydrocarbons in Soil
by GC/FID^a**

GTEL Sample Number		080294-01	080294-02	080294-03	080294-04
Client Identification		SB-1 14-16'	SB-2 10-12'	SB-3 8-10'	SB-4 8-10'
Date Sampled		08-19-95	08-19-95	08-19-95	08-19-95
Date Extracted		08-30-95	08-30-95	08-30-95	08-30-95
Date Analyzed		08-30-95	08-30-95	08-30-95	08-30-95
Total Petroleum Hydrocarbons as:	RL, mg/kg ^b	Concentration, mg/kg			
DIESEL	10	<13	<12	<12	<11
Dilution Multiplier ^c		1	1	1	1

- a Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA September 1986; Methylene chloride extraction by EPA Method 3550. CA-LUFT Manual, DOHS-CA, Oct. 1989. Results reported on a Dry Weight basis.
- b RL = Reporting Limit.
- c The Dilution Multiplier indicates the factor necessary for the adjustment of the reporting limits due to sample dilutions.

RESULTS
PERCENT SOLIDS

GTEL Sample Number	080294-01	080294-02	080294-03	080294-04	--
Client Identification	SB-1 14-16'	SB-2 10-12'	SB-3 8-10'	SB-4 8-10'	--
	Percent				
Percent Solids	77.5	83.6	83.0	87.3	--



10500 UNIVERSITY CENTER DRIVE
TAMPA, FL 33612
(813) 979-9092

**CHAIN-OF-CUSTODY RECORD
AND ANALYSIS REQUEST**

29878

OTHER

ANALYSIS REQUEST

Company Name: *BLANDWATER TECHNOLOGY*
 Phone #: *919-467-2227*
 Company Address: *1000 Perimeter Pk. Dr. Suite 1, Marietta, NC 27650*
 FAX #: *919-467-2299*
 Site Location: *2903 S. Elm St. Greensboro, NC*
 Project Manager: *Herb Berger*
 Client Project ID: (#) *053240102*

(NAME) *JAMIE KIRKPATRICK*
 Sampler Name (Print): *JAMIE KIRKPATRICK*

I attest that the proper field sampling procedures were used during the collection of these samples.

Field Sample ID	GTEL Lab # (Lab Use only)	# CONTAINERS	Matrix		Method Preserved					Sampling				
			WATER	SOIL	SLUDGE	PRODUCT	OTHER	HCl	HNO ₃	H ₂ O ₂	ICE	UNREF. SERVED	OTHER (Specify)	DATE
<i>SS-7</i>		<i>2</i>	<i>X</i>						<i>X</i>				<i>8/19</i>	<i>9:30</i>
<i>SS-8</i>	<i>01</i>	<i>1</i>											<i>8/19</i>	<i>12:10</i>
<i>SS-9</i>	<i>02</i>	<i>1</i>											<i>14:35</i>	
<i>SS-10</i>	<i>03</i>	<i>1</i>											<i>15:55</i>	
<i>SS-11</i>	<i>04</i>	<i>1</i>											<i>17:05</i>	

<input type="checkbox"/> BTEX 602 <input type="checkbox"/> 8020 <input type="checkbox"/> with MTBE	
<input type="checkbox"/> BTEX/Gas Hydrocarbons PID/FID <input type="checkbox"/> with MTBE	
<input type="checkbox"/> Hydrocarbons GC/FID Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Screen	
<input type="checkbox"/> Hydrocarbon Profile (SIMDIS)	
<input type="checkbox"/> Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> SM-503	
<input type="checkbox"/> TPH/R 418.1 <input type="checkbox"/> SM 503	
<input type="checkbox"/> EDB by 504 <input type="checkbox"/> DBCP by 504	
<input type="checkbox"/> EPA 503.1 <input type="checkbox"/> EPA 502.2	
<input type="checkbox"/> EPA 601 <input type="checkbox"/> EPA 8010	
<input type="checkbox"/> EPA 602 <input type="checkbox"/> EPA 8020	
<input type="checkbox"/> EPA 608 <input type="checkbox"/> 8080 <input type="checkbox"/> PCB only	
<input type="checkbox"/> EPA 624/PPL <input type="checkbox"/> 8240/TAL <input type="checkbox"/> NBS (+15)	
<input type="checkbox"/> EPA 625/PPL <input type="checkbox"/> 8270/TAL <input type="checkbox"/> NBS (+25)	
<input type="checkbox"/> EPA 610 <input type="checkbox"/> 8310	
<input type="checkbox"/> EP TOX Metals <input type="checkbox"/> Pesticides <input type="checkbox"/> Herbicides	
<input type="checkbox"/> TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi-VOA <input type="checkbox"/> Pest <input type="checkbox"/> Herb	
<input type="checkbox"/> EPA Metals - Priority Pollutant <input type="checkbox"/> TAL <input type="checkbox"/> RCRA	
<input type="checkbox"/> CAM Metals TRLC <input type="checkbox"/> STLC	
<input type="checkbox"/> Lead 239.2 <input type="checkbox"/> 200.7 <input type="checkbox"/> 7420 <input type="checkbox"/> 7421 <input type="checkbox"/> 6010	
<input type="checkbox"/> Organic Lead	
<input type="checkbox"/> Compositvity <input type="checkbox"/> Flash Point <input type="checkbox"/> Reactivity	

TPH by EPA 5030+3550

REMARKS:

SPECIAL DETECTION LIMITS

SPECIAL REPORTING REQUIREMENTS

Lab Use Only Lot #: _____

Work Order #: *F50802911 B.V. 52-3*

Storage Location

Received by: _____ Date: *8/23/95* Time: *16:30*

Received by: _____ Date: _____ Time: _____

Received by Laboratory: _____ Date: *7-11-95* Time: *110711*

Company Name: _____

Relinquished by Sampler: *Jamie Kirkpatrick*

Relinquished by: _____

Relinquished by: _____

QA/QC Level

Blue CLP Other

Priority (24 hr)

Expedited (48 hr)

7 Business Days

Other Business Days

GTEL Contact _____

Quote/Contract # _____

Confirmation # _____

P.O. # _____

Special Handling

FAX

CUSTOMER RECORD

Received by Laboratory: *Y. An*

Date: *7-11-95*

Time: *110711*

APPENDIX D
FIELD METHODS AND PROTOCOLS

MONITORING WELL INSTALLATION AND CONSTRUCTION
Shallow (Type II) Wells Completed in Unconsolidated Material

The shallow (Type II), water-table wells were drilled with a truck-mounted drilling rig equipped with hollow-stem augers. The augers and all drilling equipment were steam cleaned prior to drilling at each location and after completion of the last boring.

Each well was installed through the augers to ensure proper construction and placement, and is constructed of Schedule 40 PVC solid casing and factory slotted well screen (0.02-inch slots) connected by threaded, flush joints. The wells were completed with a sufficient length of well screen so that the screened interval extends approximately 5 feet above and 10 feet below the static depth of the water table. The screen of each well is equipped with a PVC bottom cap. The solid PVC casing of each well extends from the top of the well screen to approximately 6-inches below grade. The annular space of each well is packed with washed sand to a minimum level of 1 foot above the top of the well screen. A one-foot-thick bentonite seal rests on top of the sand pack, above which a Portland cement grout extends to approximately 4 inches below the top of the PVC casing. The PVC casing of each well is equipped with a sealed, locking cap to prevent unauthorized access. In addition, each well casing is protected with a steel, water-tight manhole set to grade within a concrete pad. Each shallow, water-table well was constructed in accordance with NCDEHNR well construction specifications.

SOIL SAMPLING PROTOCOL

During drilling operations, soil samples were collected using 2-foot-long, stainless-steel, split-spoon samplers. The split-spoon samplers were washed with alkaline soap and water and rinsed with distilled water before each use. At each drilling location, soil samples were collected in 2-foot intervals at selected depths to the completion depth of drilling. The depths from which soil samples were collected at each location are indicated in the drilling logs presented in **Appendix A**. The split-spoon samplers were advanced using a 140-pound sliding hammer, and the number of hammer blows required to advance the split spoons in successive 6-inch increments was recorded.

A description of the soils retained in each split-spoon sampler was logged by a geologist, and representative portions of the material were placed into labeled laboratory containers that were promptly placed on ice in a cooler. A separate representative portion of each soil sample was placed in a resealable plastic bag and allowed to equilibrate for a minimum of 15 minutes. After the equilibration period, either a photoionization detector (PID) or a flame ionization detector (FID) probe was inserted into each resealable bag and a headspace reading of total volatile organic compounds (VOCs) was recorded. The PID/FID response values recorded in the field are indicated in the drilling logs. After completion of drilling at each location, the PID/FID response values for all soil samples were evaluated in the field. The soil sample from each drilling location that exhibited the highest PID/FID response value was retained and submitted for laboratory analysis along with completed chain-of-custody forms. In the event that no PID/FID response was observed for any of the soil samples collected at a drilling location, the sample collected from immediately above the water table was retained and submitted for laboratory analysis.

WELL DEVELOPMENT PROTOCOL

Following construction and installation, the monitoring wells were developed using an air lift/purge technique to remove sediment from within the well and annular gravel pack, and to ensure proper hydraulic connection between the well and surrounding aquifer material. The well development assembly consisted of a compressed-air line, equipped with an in-line oil filter, that was passed through the center of an approximately 3-foot length of solid, Schedule 40, PVC casing that was attached to the well head with a PVC slip coupling. The solid casing was fitted with a PVC, side-discharge pipe to allow water purged during development to be conveyed to a steel, 55-gallon drum for containment prior to treatment.

Prior to initiation of the development process at each well, the compressed-air line was washed with alkaline soap and water and was rinsed with distilled water. The free end of the compressed-air line was then lowered into each well below the water table, and the top of the solid casing was sealed with duct tape. Compressed air was then passed through the air line, and water within the well was lifted and purged until the discharge appeared to be free of suspended sediments or for a maximum of two hours. Following completion of development, water contained in the 55-gallon drum was pumped through a portable granular activated carbon (GAC) treatment unit equipped with an in-line sediment filter.

GROUNDWATER SAMPLING PROTOCOL

Groundwater samples were obtained from the monitoring wells using the following protocol:

- 1) The static water level in each well was measured with an electronic optical INTERFACE PROBE™.
- 2) The volume of standing water (in gallons) in each well was calculated using the following formula:

$$V = [(3.14) r^2 h] \times 7.48 \text{ gal/ft}^3$$

where r is the radius of the well in feet, and h is the height of the water column standing in the well.

- 3) Monitoring wells capable of sustaining sufficient yield were purged of a minimum of three static well volumes of water using a stainless steel submersible pump. Monitoring wells having low yield were purged until dry, and the water level was allowed to recover to a minimum of 80 percent of the static level prior to sampling. Purged water was conveyed to a steel 55-gallon drum for containment and then pumped through a portable granular activated carbon (GAC) treatment unit equipped with an in-line sediment filter prior to being discharged.
- 4) Representative groundwater samples were collected with a stainless steel bailer that was thoroughly cleaned prior to sample collection from each well using an alkaline soap and water wash followed by three distilled water rinses. The first bailer of water retrieved from each well was discarded. All groundwater samples were transferred directly from the bailer to laboratory-prepared containers.
- 5) All sample containers were labeled with the following information:
 - Sample Designation
 - Sampling Date
 - Sampling Time
 - Site Name
 - Requested Analysis/Analyses
 - Type of Preservative Used (if applicable)
- 6) All sample containers were placed on ice in a cooler, along with completed chain-of-custody forms, and shipped via overnight courier to GTEL Environmental Laboratories, Inc. for analysis.