Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

PHONE (803) 773-5454
FAX (803) 775-1970

March 9, 1999

RECEIVED
MAR 1 1 1999
DIVISION OF
STORAGE TANK MGMT.

P 079 895 470
Certified Mail-Return Receipt Requested

Charles J. Williams, III, Hydrogeologist
State Lead & Field Services Section
Assessment and Corrective Action Branch
Division of Underground Storage Tank Management
SCDHEC
2600 Bull Street
Columbia, S. C. 29201-1708

RE: Heath Self Serve #2/SLA Report
Facility ID# 08932
Sumter County

Dear Mr. Williams:

On behalf of Heath Oil Co., Emerald, Inc. along with Kleen Sites Geoservices, Inc. is providing you with a copy of the SLA report for the above site as requested. If you have any questions or need additional information, please give me a call at (803)773-5454.

Thank you in advance for your cooperation.

Yours very truly,
EMERALD, INC.

Ronny L. Lowder
President

RLL/hl

enclosure

cc: Peter J. Flanagan

SCANNED nd
UST PROGRAM
DOCKETING # 92 I

STANDARD LIMITED ASSESSMENT REPORT

Heath Self-Serve # 2
Intersection of N. Guignard Drive and Miller Road
Sumter, South Carolina

Site ID # 08932

RECEIVED
MAR 1 1 1999
DIVISION OF UNDERGROUND
STORAGE TANK MGMT.

Submitted to:

Bureau of Underground Storage Tank Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

This report has been reviewed by:

Name	William B. Dunnagan, P.G.	937	1 March 1999
	Registered Professional	Registration #	Date

Signature William B. Dunnagan 3/1/99
Date

REGISTERED PROFESSIONAL SEAL→

SCDHEC Certificate # 8

SCANNED
UST PROGRAM
DOCKETING # 92T

STANDARD LIMITED ASSESSMENT REPORT OF FINDINGS

I INTRODUCTION

A. Owner / Operator Information

Name Heath Oil Company
Address P.O. Box 787, Sumter, S.C. 29151
Telephone Number (include area code) (803) 773-3336 (Peter J. Flanagan)

B. Property Owner Information

Name Heath Oil Company
Address P.O. Box 787, Sumter, S.C. 29151
Telephone Number (include area code) (803) 773-3336 (Peter J. Flanagan)

C. Contractor Information

Name Kleen Sites Geoservices, Inc.
Address 409 Burton Road, Lexington, S.C. 29072
Telephone Number (include area code) (803) 957-7988

D. Site Information

Address Intersection of N. Guignard Drive and Miller Road, Sumter, S.C.

Description of Adjacent Land Use

Site is located in downtown Sumter. Adjacent property is zoned commercial.

Predicted Future Land Use

Site will remain a gasoline service station. No changes are currently being planned for the adjacent properties.

E. Site History

Date Release Reported to SCDHEC 7-8-96
Estimated Quantity of Product Released unknown
Cause of Release unknown

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	3K Gasoline	Unknown	No	Currently Inactive
2	6K Gasoline	Unknown	No	Currently Inactive
3	10K Gasoline	Unknown	No	Currently Inactive
4	3K Gasoline	Unknown	No	Unknown
5	3K Gasoline	Unknown	No	Unknown
6	3K Gasoline	Unknown	No	Unknown
7	3K Gasoline	Unknown	No	Unknown
8	3K Gasoline	Unknown	No	Unknown
9	1K Naphthalene	Pre 1974	No	Currently Inactive
10	550 Used Oil	Pre 1974	No	Currently Inactive
11	3K Gasoline	Unknown	No	Currently Inactive

Other releases at this site? Yes No √

If yes, date release reported to SCDHEC N/A

Status of release N/A

No further action date N/A

II INTRODUCTION

A. Site Geography

The land surface generally slopes from west to east.

Mean elevation of site 150 feet above MSL

Additional comments N/A

B. Exposure Analysis

Describe all potential receptors and preferential pathways within a 1,000 foot radius of the site.

Description of Receptor	Distance / Direction from Site
Well formerly used for car wash	Onsite
Irrigation well	West of site at USC - Sumter
Irrigation well	West of site at USC – Sumter
Irrigation well	West of site at USC – Sumter

Onsite well was sampled as part of SLA activities with the following results: benzene = < 5.0 ug/L, toluene = 7.8 ug/L, ethylbenzene = < 5.0 ug/L, xylenes = < 15.0 ug/L, MTBE = 5.3 ug/L, naphthalene = 8.7 ug/L.

C. Utilities Survey

List the utilities on site, and adjacent to the site within a 250-foot radius, that could serve as exposure points or as preferential pathways.

Utility	On site or distance / direction from site	Depth of utility
Sanitary sewer	N. Guignard Drive	6 feet
Sanitary sewer	Miller Road	6 feet
Water Main	N. Guignard Drive	3 feet
Water Main	Miller Road	3 feet
Storm Sewer	South side of site	4 feet

D. Site Geology

Provide a brief description of the regional geology and hydrogeology:

The site is located within the Middle Coastal Plain Physiographic Province of South Carolina. The Middle Coastal Plain Physiographic Province is characterized by unconsolidated sediments of fluvial and marine origin resting unconformably on crystalline bedrock located at a depth of approximately 600 feet. Surficial sediments in the Sumter County area are Pliocene age terrace deposits produced by river incisement of Cretaceous and Tertiary sediment during periods of low sea level.

Provide a brief description of the site specific geology and stratigraphy:

The Heath Self-Serve # 2 site is underlain by brown silty, clayey sand to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands. The first occurrence of ground water was noted at approximately seventeen to eighteen feet below ground surface. A confining layer was not encountered during drilling activities.

E. Soil Boring Data

Drilling Date(s): 12-16-98

Provide a brief justification for the location of the soil borings:

SB-1 Former UST location

SB-2 Former UST location

SB-3 Background boring

SB-4 Dispenser island location

SB-5 Dispenser island location

SB-6 Dispenser island location

SB-7 Dispenser island location

SB-8 Dispenser island location

Complete the table below for each soil boring.

UST Area Borings:

Borehole: SB - 1 Sampling Date: 12-16-98 Sample Depth: 12' - 16'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	1 ppm	Brown, silty clay	No odor
4' - 8'	10 ppm	As above	Staining evident. Slight odor
8' - 12'	100 ppm	Brown, fine-grained, silty sand	Strong gasoline odor
12' - 16'	110 ppm	As above	As above
16' – 18'	70 ppm	As above	As above – water bearing zone

Borehole: SB - 2 Sampling Date: 12-16-98 Sample Depth: 12' - 16'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	0 ppm	Brown, sandy clay	No odor
4' - 8'	0 ppm	Brown, clayey silt	As above
8' - 12'	18 ppm	Brown, fine-grained, sandy silt	Slight petroleum odor
12' - 16'	100 ppm	As above	Strong petroleum odor
16' – 18'	60 ppm	Brown, fine-grained, silty sand	Petroleum odor – water bearing zone

Piping and Dispenser Area Borings:

Borehole: SB - 4 Sampling Date: 12-16-98 Sample Depth: 8' - 10'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	1 ppm	Brown, clayey silt	Slight petroleum odor
4' - 8'	1 ppm	Grey – brown, sandy silt	As above
8' - 10'	35 ppm	Brown - grey, silty clay	Petroleum odor

Borehole: SB - 5 Sampling Date: 12-16-98 Sample Depth: 8' - 10'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	0 ppm	Brown, fine-grained sand	No odor
4' - 8'	1 ppm	Red – brown, sandy clay	Petroleum odor
8' - 10'	5 ppm	Brown, clayey sand	As above

Borehole: SB - 6 Sampling Date: 12-16-98 Sample Depth: 8' - 10'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	0 ppm	Brown, fine-grained sand	No odor
4' - 8'	2 ppm	Brown, silty sand	As above
8' - 10'	110 ppm	Light brown, silty sand	Strong gasoline odor

Borehole: SB - 7 Sampling Date: 12-16-98 Sample Depth: 8' - 10'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	0 ppm	Brown, silty sand	No odor
4' - 8'	0 ppm	Brown, clayey silt	As above
8' - 10'	2 ppm	Brown, sandy silt	Slight petroleum odor

Borehole: SB - 8 Sampling Date: 12-16-98 Sample Depth: 8' - 10'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	0 ppm	Brown, silty sand	No odor
4' - 8'	0 ppm	Brown, clayey silt	As above
8' - 10'	2 ppm	Brown, sandy silt	Slight petroleum odor

Background Boring:

Borehole: SB - 3 Sampling Date: 12-16-98 Sample Depth: 8' - 10'

Split Spoon Interval	Field Screening Results	Lithology	Soil Conditions
0' - 4'	0 ppm	Brown, silty clay	No odor
4' - 8'	0 ppm	Brown, sandy silt	As above
8' - 10'	0 ppm	Brown - grey, clayey silt	As above

Soil Analytical Data

COC	RBSL	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8
Benzene	5	< 1.0	< 1.0	< 1.0	260	200	< 1	< 1.0	2.4
Toluene	1,640	96	33	6.3	270	69	2,000	15	14
Ethylbenzene	1,292	870	2,300	1.0	81	92	160	22	12
Xylenes	42,898	3,200	14,000	8.9	260	120	1,400	120	64
Total BTEX	N/A	4,166	16,333	16.2	871	481	3,560	157	92.4
Naphthalene	211	300	380	< 2.0	3.3	2.9	2,300	7.8	< 2

COC	RBSL	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8
Benzo(a)anthracene	83,535	< 330	< 330	< 330	< 330	< 330	< 330	< 330	< 330
Benzo(b)flouranthene	31,042	< 330	< 330	< 330	< 330	< 330	< 330	< 330	< 330
Benzo(k)flouranthene	267,404	< 330	< 330	< 330	< 330	< 330	< 330	< 330	< 330
Chrysene	13,233	< 330	< 330	< 330	< 330	< 330	< 330	< 330	< 330
Dibenz(a,h)anthracene	99,673	< 330	< 330	< 330	< 330	< 330	< 330	< 330	< 330
TPH (EPA 3550)	N/A	< 10	NS	NS	NS	NS	NS	NS	NS
TOC (Background boring)	N/A	NS	< 90	NS	NS	NS	NS	NS	NS

All COC concentrations are expressed in ug/kg except TPH which is expressed in mg/kg. Soil contamination is present primarily to the south side (store front) of the property around the USTs and dispenser islands.

Additional comments

F. Chemicals of Concern - Ground Water

Provide well installation information in the table below.

MW #	Installation Date	Development Date	Sampling Date
1	5-26-98	5-27-98	12-28-98
2	12-16-98	12-28-98	12-28-98
3	12-16-98	12-28-98	12-28-98
4	12-16-98	Did not develop	Did not sample

Enter the soil analytical data for each monitoring well for all COC in the table below.

COC	MW-2	MW-3	MW-4
Depth of Sample	15	10	10
Benzene	< 1.0	< 1.0	200
Toluene	96	6.3	69
Ethylbenzene	870	1.0	92
Xylenes	3,200	8.9	120
Total BTEX	4,166	16.2	481
Naphthalene	300	< 2.0	2.9
Benzo(a)anthracene	< 330	< 330	< 330
Benzo(b)flouranthene	< 330	< 330	< 330
Benzo(k)flouranthene	< 330	< 330	< 330
Chrysene	< 330	< 330	< 330
Dibenz(a,h)anthracene	< 330	< 330	< 330

Note: COC concentrations are expressed in ug/kg.

Summarize the monitoring well and ground water data in the table below.

MW #	TOC Elevation	Screened Interval	Depth to Water	Water Table Elevation
1	99.88	12 - 22	17.15	82.73
2	NA	14 – 24	16.57	NA
3	101.09	14 – 24	18.28	82.81
4	98.72	14 – 24	16.14*	82.58*

Note: TOC elevations are based on an assumed onsite benchmark elevation of 100.00 feet
* Water table elevation corrected for the presence of free product

Enter dissolved oxygen measurements for each well in table below.

Monitoring Well #	MW-1	MW-2	MW-3	MW-4
Dissolved Oxygen (mg/L)	NA	3.3	6.2	Did not develop

Enter the ground water analytical data for each monitoring well for all COC in the table below. If free product is present, indicate the measured thickness to the nearest 0.01 feet.

COC	RBSL	MW-1	MW-2	MW-3	MW-4
Free Product Thickness	None	-----	-----	-----	0.25
Benzene	5	1,760	794	< 5.0	
Toluene	1,000	14,600	5,590	< 5.0	
Ethylbenzene	700	3,460	1,800	< 5.0	
Xylenes	10,000	8,580	4,370	< 15.0	
Total BTEX	N/A	28,400	12,554	< 30	
MTBE	40	< 5.0	< 5.0	< 5.0	
Naphthalene	25	449	236	< 5.0	Not Sampled
Benzo(a)anthracene	10	< 10.0	< 10.0	< 10.0	
Benzo(b)flouranthene	10	< 10.0	< 10.0	< 10.0	
Benzo(k)flouranthene	10	< 10.0	< 10.0	< 10.0	
Chrysene	10	< 10.0	< 10.0	< 10.0	
Dibenz(a,h)anthracene	10	< 10.0	< 10.0	< 10.0	
Ferrous Iron	N/A	6,810	10,600	< 100	
Lead	Site Specific	144	19	< 3.0	
Nitrates	N/A	117	152	595	
Sulfates	N/A	2,650	6,350	< 1,000	

Note: COC concentrations are expressed in ug/L

Additional Comments

Well MW-4 was not developed due to the presence of free product.

G. Aquifer Characteristics

Hydraulic Conductivity 1.024 E-3 feet / second

Hydraulic Gradient 0.0015

Porosity 0.40

Estimated Seepage Velocity 121 feet / year

III TIER I EVALUATION

A. Current Land Use

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation (Y or N)	Exposure Point, or Reason for Non-selection	Data Requirements (If pathway selected)
Air	Inhalation	Yes ***No***	Depth between ground water and utilities and location of soil contamination makes exposure route unlikely	None
	Explosion Hazard	Yes ***No***		None
Ground water	Ingestion	**Yes** No	Onsite well is already impacted.	None
	Dermal Contact	**Yes** No		None
	Volatile Inhalation	**Yes** No		None
Surface Water	Ingestion	Yes ***No***	Nearest surface water body is over 1,500 feet away (side gradient).	None
	Dermal Contact	Yes ***No***		None
	Volatile Inhalation	Yes ***No***		None
Surficial Soil	Ingestion	Yes ***No***	Surficial soils are not exposed and do not appear to be contaminated.	None
	Dermal Contact	Yes ***No***		None
	Volatile Inhalation	Yes ***No***		None
	Leaching to Ground Water	Yes ***No***		None
Subsurface Soil	Ingestion	Yes ***No***	Subsurface soils are not exposed.	None
	Dermal Contact	Yes ***No***		None
	Volatile Inhalation	Yes ***No***	No underground structures, e.g., basements, were identified in the area.	None
	Leaching to Ground Water	***Yes*** No	Leachability analysis shows COCs are sufficiently present to be an on-going source of ground water contamination.	None

B. Future Land Use

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation (Y or N)	Exposure Point, or Reason for Non-selection	Data Requirements (If pathway selected)
Air	Inhalation	Yes ***No***	Depth between ground water and utilities and location of soil contamination makes exposure route unlikely	None
	Explosion Hazard	Yes ***No***		None
Ground water	Ingestion	***Yes*** No	Onsite water well may be used again. Free product is present onsite.	Additional COC delineation is required.
	Dermal Contact	***Yes*** No		
	Volatile Inhalation	***Yes*** No		
Surface Water	Ingestion	***Yes*** No	Surface water quality may be in jeopardy due to continued plume migration.	Additional COC delineation is required.
	Dermal Contact	***Yes*** No		
	Volatile Inhalation	***Yes*** No		
Surficial Soil	Ingestion	Yes ***No***	Surficial soils do not appear to be contaminated and are not exposed.	None
	Dermal Contact	Yes ***No***		None
	Volatile Inhalation	Yes ***No***		None
	Leaching to Ground Water	Yes ***No***		None
Subsurface Soil	Ingestion	***Yes*** No	Future excavations would expose workers	None
	Dermal Contact	***Yes*** No		None
	Volatile Inhalation	***Yes*** No		Monitoring of breathing zone during site work
	Leaching to Ground Water	***Yes*** No	Leachability analysis shows COCs are sufficiently present to be an on-going source of ground water contamination.	None

Recommendations for further action.

COCs exceeding RBSLs have been identified within onsite soils and within the shallow aquifer. Free phase product has been identified at a thickness of 0.25 feet within well MW-4. Based upon these site conditions, Rapid Assessment (RA) activities seem warranted.

IV APPENDICES

Appendix A - Figures

Appendix B - Monitoring Well Construction Logs

Appendix C - Laboratory Data

Appendix D - Aquifer Calculations

Appendix E - Soil and Water Disposal Manifests

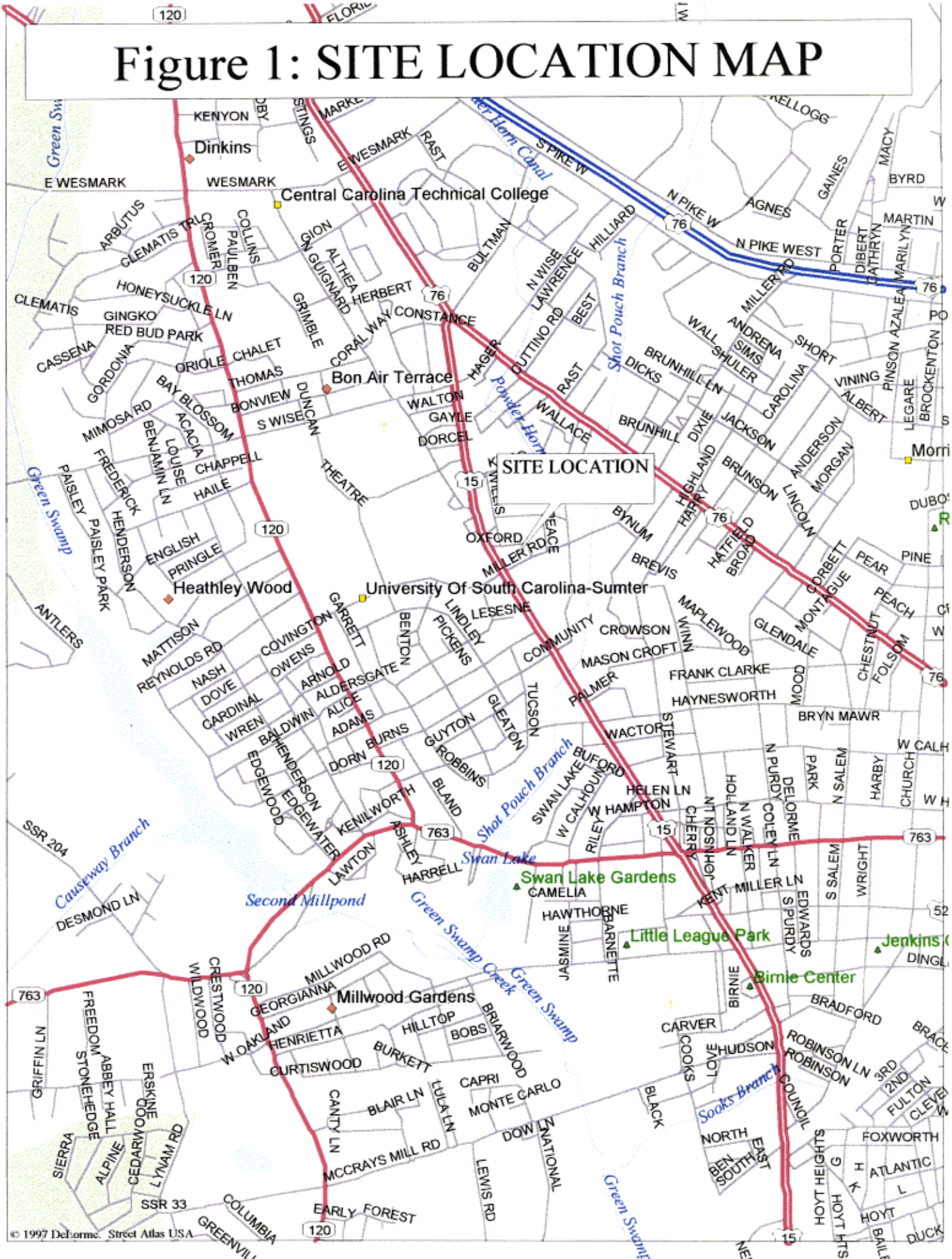
Appendix F - Soil Leachability Calculations

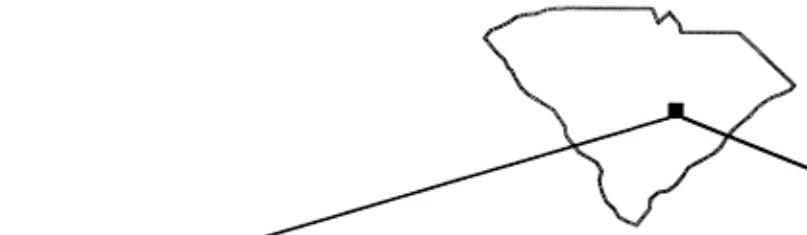
APPENDICES

APPENDIX A

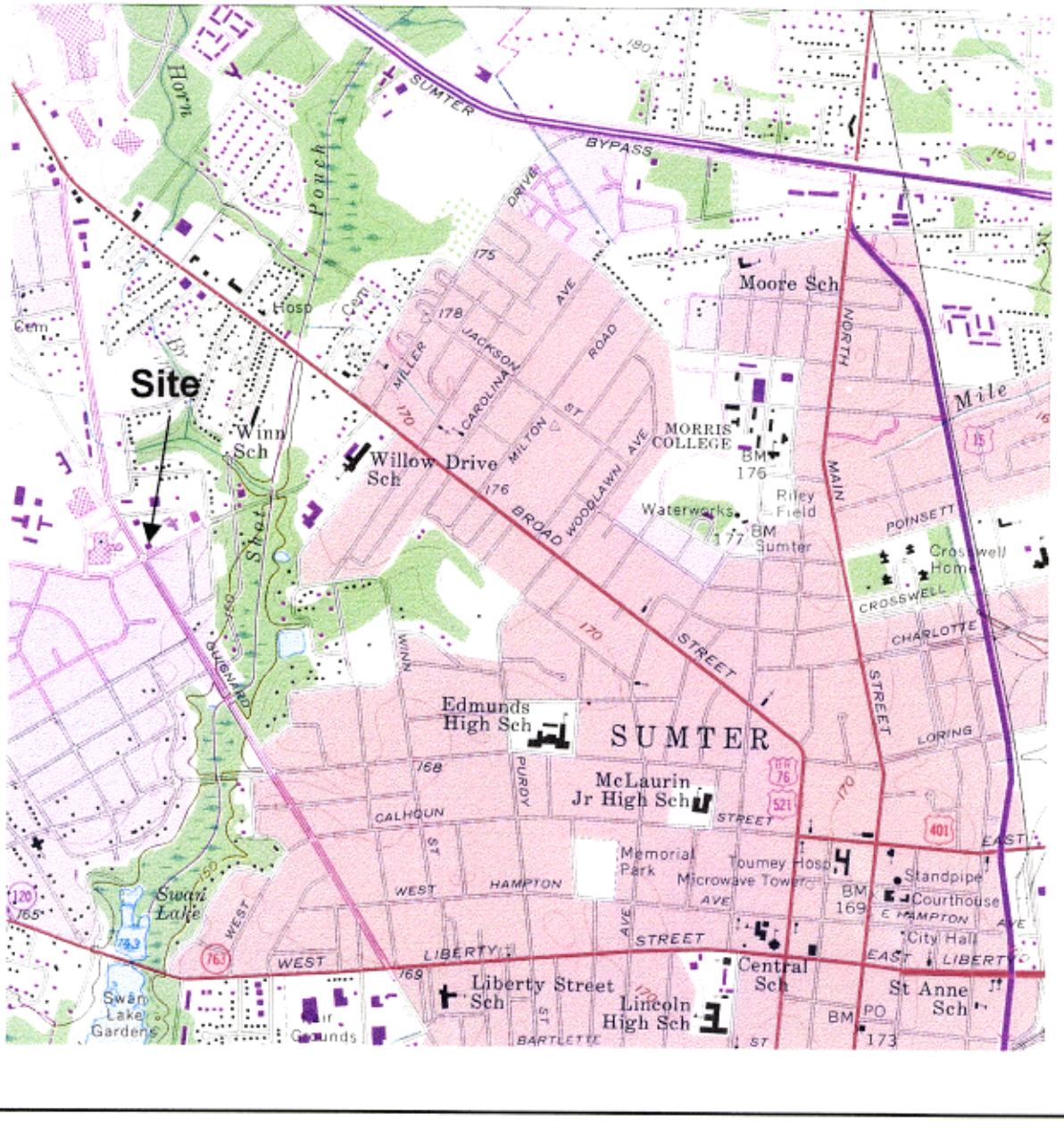
FIGURES

Figure 1: SITE LOCATION MAP



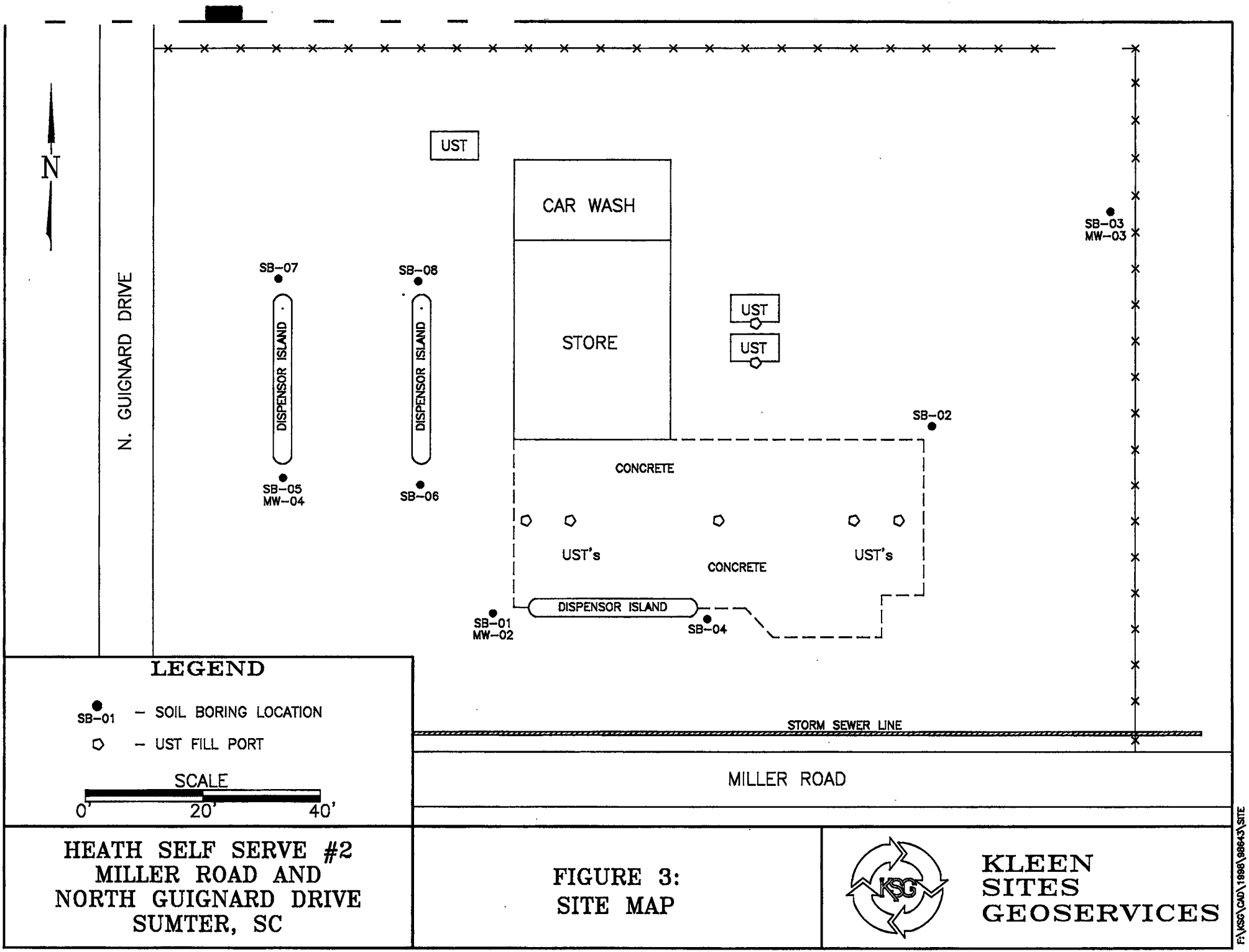


SUMTER EAST QUADRANGLE



HEATH SELF SERVE #2 MILLER ROAD AND NORTH GUIGNARD DRIVE SUMTER, SC	FIGURE 2: SITE TOPOGRAPHIC DIAGRAM	KLEEN SITES GEOSERVICES

F:\KSG\CAD\1998\98643\TOPO



HEATH SELF SERVE #2
MILLER ROAD AND
NORTH GUIGNARD DRIVE
SUMTER, SC

FIGURE 3:
SITE MAP

KLEEN SITES GEOSERVICES

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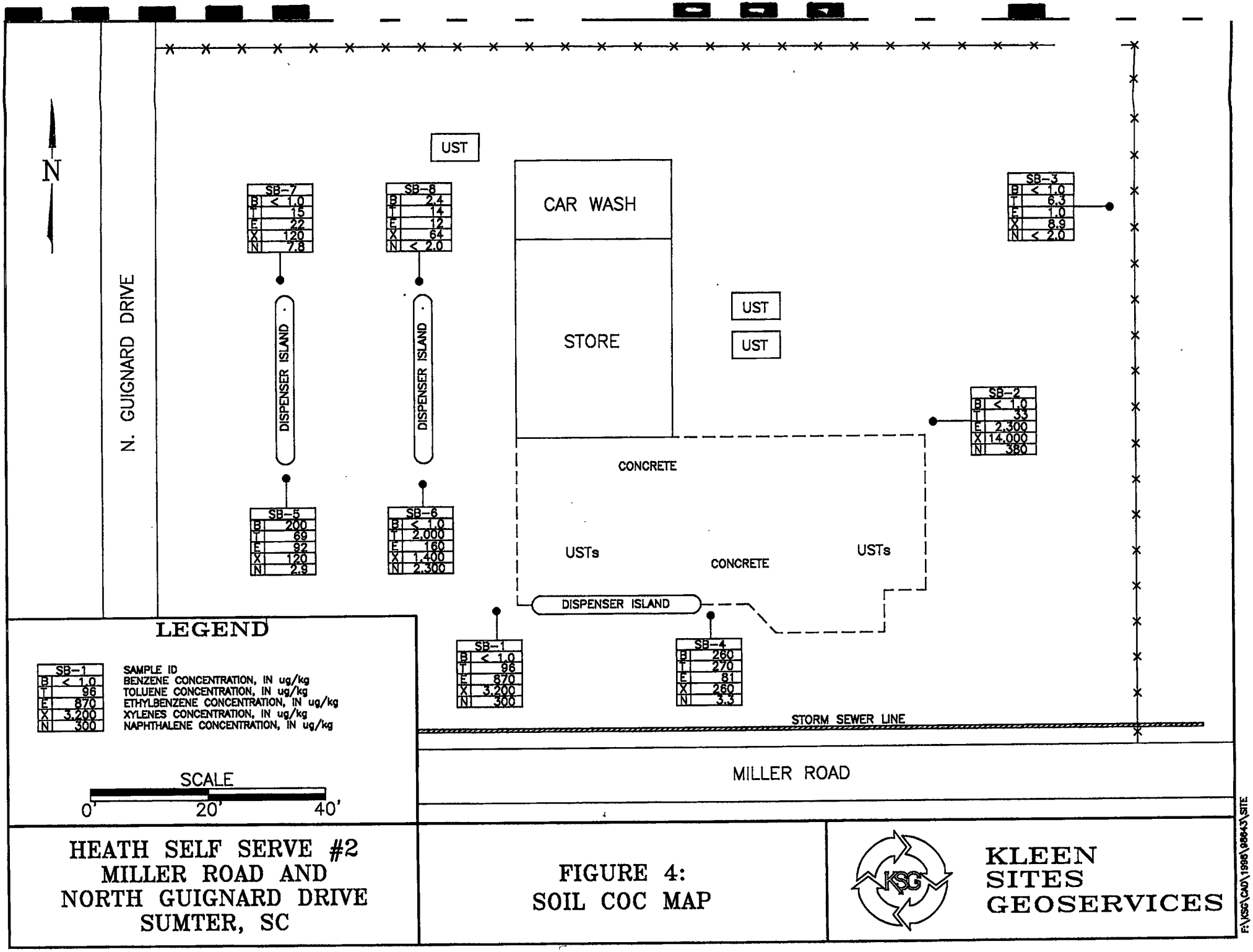

HEATH SELF SERVE #2
MILLER ROAD AND
NORTH GUIGNARD DRIVE
SUMTER, SC

FIGURE 4:
SOIL COC MAP

KLEEN SITES GEOSERVICES

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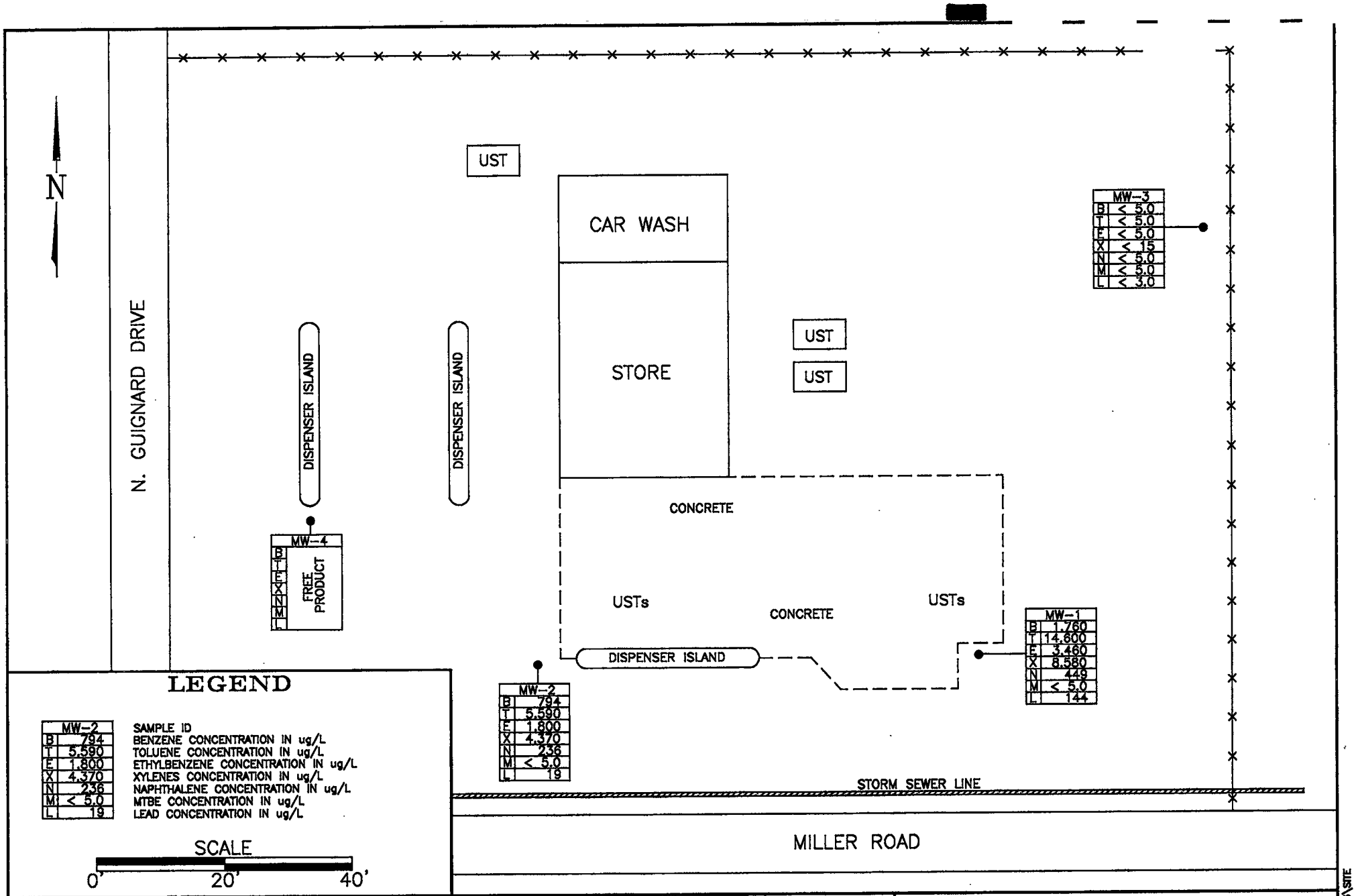

LEGEND

MW-2	SAMPLE ID
B 794	BENZENE CONCENTRATION IN ug/L
T 5,590	TOLUENE CONCENTRATION IN ug/L
E 1,800	ETHYLBENZENE CONCENTRATION IN ug/L
X 4,370	XYLENES CONCENTRATION IN ug/L
N 236	NAPHTHALENE CONCENTRATION IN ug/L
M < 5.0	MTBE CONCENTRATION IN ug/L
L 19	LEAD CONCENTRATION IN ug/L

SCALE

0' 20' 40'

HEATH SELF SERVE #2
MILLER ROAD AND
NORTH GUIGNARD DRIVE
SUMTER, SC

FIGURE 5:
GROUND WATER COC MAP

KSG

KLEEN SITES GEOSERVICES

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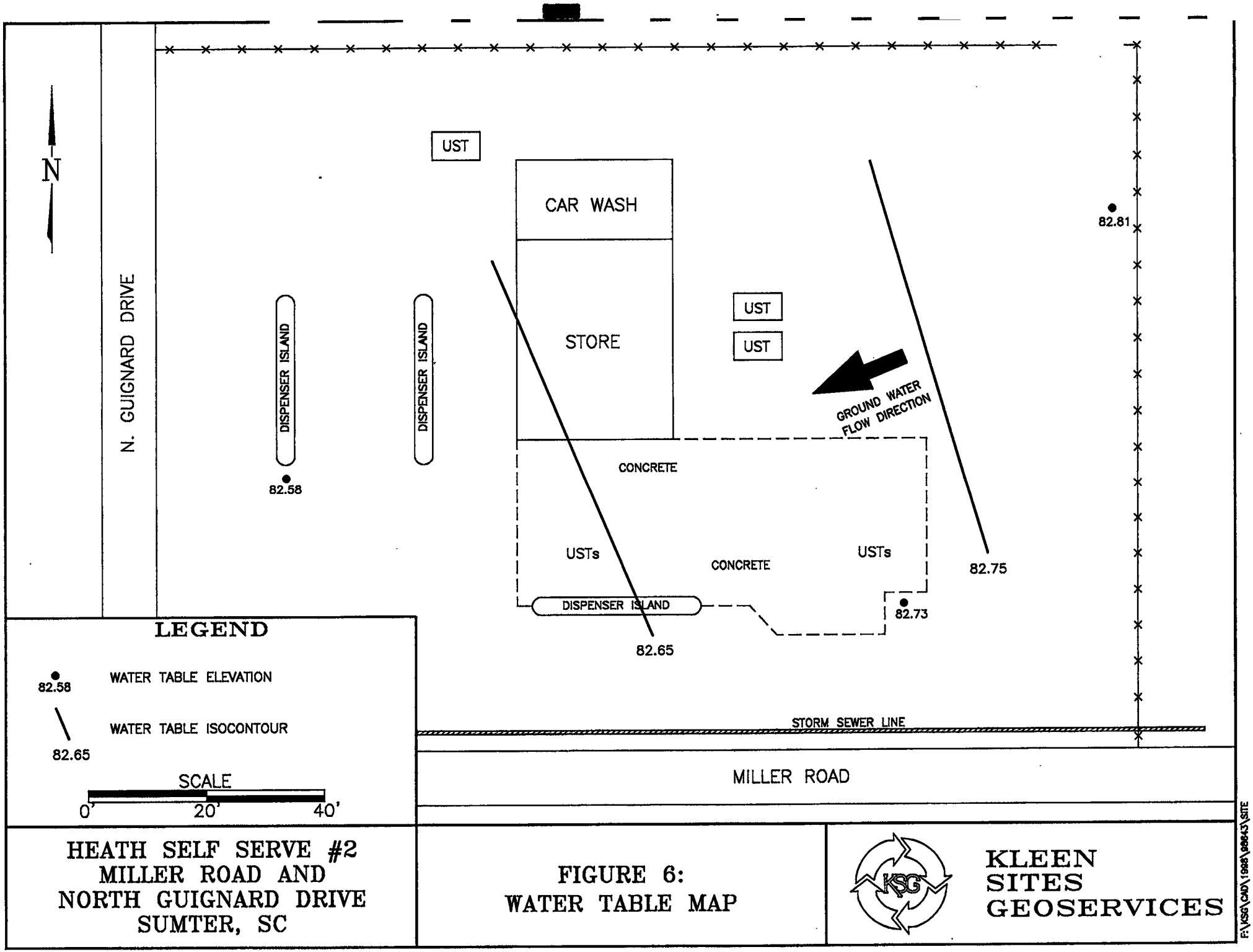


HEATH SELF SERVE #2
MILLER ROAD AND
NORTH GUIGNARD DRIVE
SUMTER, SC

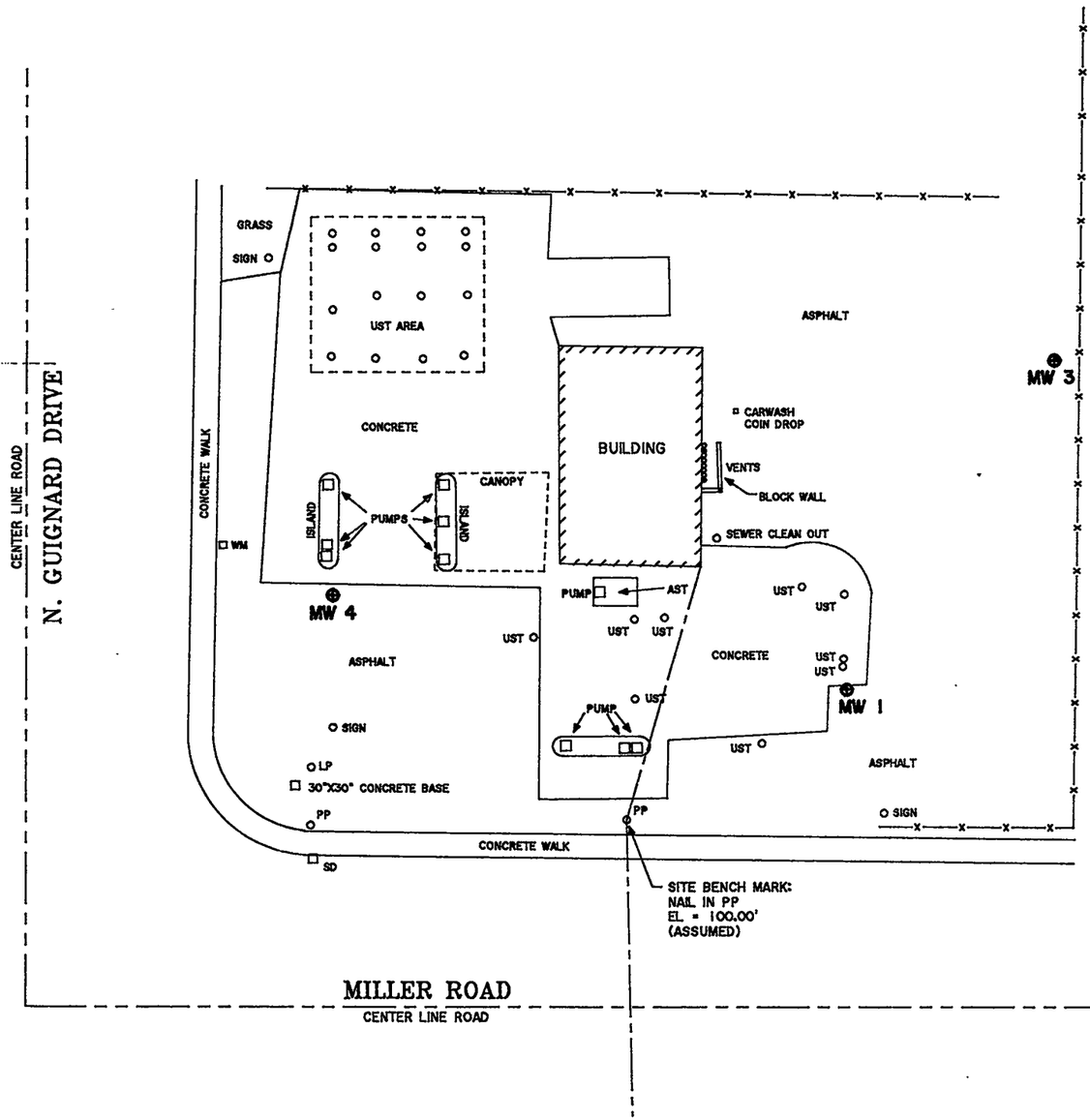
FIGURE 6:
WATER TABLE MAP

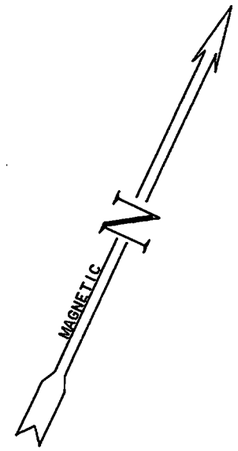
KLEEN SITES GEOSERVICES

F:\KSG\CAD\1998\98043\SITE

30 0 30 60 90

GRAPHIC SCALE – FEET 1" = 30'





LEGEND:

IPF = IRON PIN FOUND
IPS = IRON PIN SET (1/2" REBAR)
CMF = CONCRETE MONUMENT FOUND
CMS = CONCRETE MONUMENT SET
x x x = FENCE
N/F = NOW OR FORMERLY
C/L = CENTER LINE
CP = CALCULATED POINT
⊕ = MONITORING WELL
SD = STORM DRAIN
SSMH = SEWER MANHOLE
TP = TELEPHONE PEDESTAL
WM = WATER METER
WV = WATER VALVE
FH = FIRE HYDRANT
GV = GAS VALVE
PP = POWER POLE
UST = UNDERGROUND STORAGE TANK
AST = ABOVE GROUND STORAGE TANK
TOL = TOP OF LID
TOC = TOP OF CASING
LP = LIGHT POLE

WELL	TOL	TOC
MW 1	100.02'	99.88'
MW 3	101.32'	101.09'
MW 4	98.93'	98.72'

NOTE:

MONITORING WELL #2 COULD NOT BE LOCATED ON SITE.

COMPREHENSIVE SKETCH OF

HEATH SELF SERVE #2

GUIGNARD ST. & MILLER ROAD, SUMTER, S.C.

PREPARED FOR
KLEEN SITES

NOTE:
NOT FOR THE PURPOSE OF RECORDATION AT COUNTY COURTHOUSE OR THE CONVEYANCE OF PROPERTY.
Jay S. Joshi

NOTE:

I HEREBY CERTIFY THAT THE FIELD WORK, CALCULATIONS, AND DRAFTING WAS DONE UNDER MY DIRECT SUPERVISION.

721 TOMS CREEK ROAD
HOPKINS, S.C. 29061
(803) 776-9909
(803) 776-9414

Jay S. Joshi

JAY S. JOSHI, P.L.S. REG. NO. 14811

DATE: JANUARY 26, 1999 JOB #012699F.CRD & PLT LAYER 41

APPENDIX B

MONITORING WELL CONSTRUCTION LOGS

MW-2

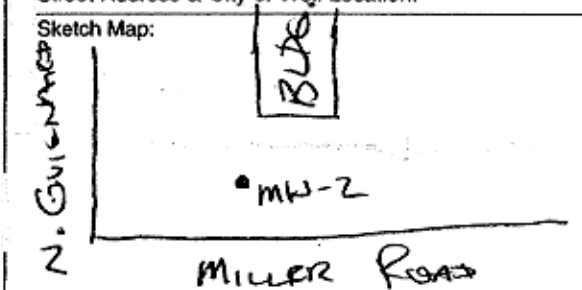
Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: SUMTER System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections:

Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☒ Yes ☐ No

Geophysical Logs: ☒ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN SANDY CLAY	4	4
BROWN SILT	8	12
BROWN SAND, H2O @ 18'	12+	

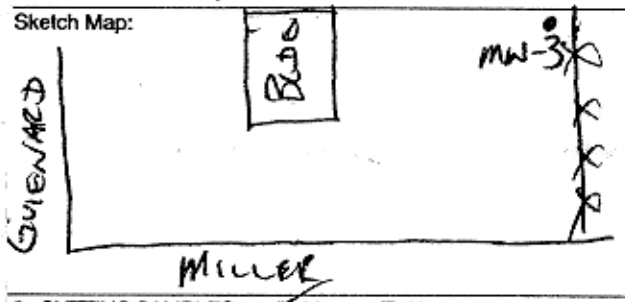
MW-3

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: SUMTER System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☑ Yes ☐ No

Geophysical Logs: ☑ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN CLAY	4	4
BROWN SILT	8	12
BROWN SAND	12+	
H2O @ 18'		

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath Oil Company
Address: HEATH #2
Telephone No.:

Engineer: Klein Sikes
Address: 409 Burton Rd. Lexington S.C. 29072
Telephone No.: 803-957-7988

5. WELL DEPTH (completed) 24 ft. Date Started: Date Completed:

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☑ Test Well ☐ Monitor Well ☐

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 14 ft. depth
in. to ft. depth
Height: Above (Below)
Surface 2' ft.
Weight N/A lb./ft.
Drive Shoe? ☐ Yes ☑ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: .010 Length: 10'
Set Between: 14 ft. and 24 ft.
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

10. STATIC WATER LEVEL N/A ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
N/A ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☐ Yes ☐ No
Installed from 12 ft. to 24 ft.
Effective size F x SU Uniformity Coefficient

14. WELL GROUTED? ☐ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 2' ft. to 12 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected upon completion ☐ Yes ☐ No Type: Amount:

16. PUMP: Date installed: ☐ Not installed
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: Atlantic Boring Date: 11/14/99
Address: 949 Chestnut Rd Elgin S.C. 29045
Signed: Edward Hanson Cert. No.: 936
Authorized Representative

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

MW-4

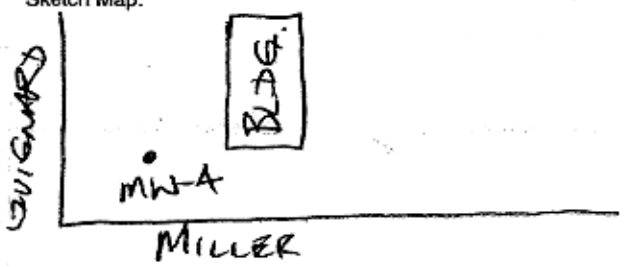
Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: SUMTER System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections:

Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☑ Yes ☐ No

Geophysical Logs: ☑ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN SAND	4	4
TAN - BROWN CLAY	8	12
BROWN SAND	12+	
H2O @ 17'		

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath Oil Company
Address: HEATH #2
Telephone No.:

Engineer: Klein Sites, 409 Burton Rd.
Address: Lexington SC. 29072
Telephone No.: 803-957-7988

5. WELL DEPTH (completed) 24 ft. Date Started: Date Completed:

6. ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☑ Test Well ☐ Monitor Well ☐

8. CASING: ☐ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 14 ft. depth
in. to ft. depth
Height: Above/Below Surface 2" ft.
Weight N/A lb./ft.
Drive Shoe? ☐ Yes ☑ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: .010 Length: 10'
Set Between: 14 ft. and 24 ft.
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

10. STATIC WATER LEVEL
N/A ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
N/A ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☐ Yes ☐ No
Installed from 12 ft. to 24 ft.
Effective size #X 50 Uniformity Coefficient

14. WELL GROUTED? ☐ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 2N ft. to 12 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected upon completion ☐ Yes ☐ No Type: Amount:

16. PUMP: Date installed: ☐ Not installed
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: Atlantic Borings Date: 1/14/99
Address: 949 Chestnut Rd Elgin S.C. 29045
Signed: Edward Hanson Authorized Representative Cert. No.: 936

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

KLEEN SITES GEOSERVICES, INC.

409 BURTON ROAD
LEXINGTON, SOUTH CAROLINA 29072

GROUND WATER MONITORING WELL DEVELOPMENT LOG

WELL NUMBER: MW-2

PROJECT: Heath Self-Serve # 2
ADDRESS: N. Guignard & Miller
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 28 December 1998

TOTAL WELL DEPTH: 24'
STATIC WATER LEVEL: 16.57'
WATER HEIGHT(Hw): 7.43'
WELL DIAMETER (Dw): 0.167'
WELL VOLUME (Vw): 1.2 gallons
$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$
KSG PERSONNEL: E. Dukes

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (s.u.)	TURBIDITY (STU)	NOTES
1236	1.2	22.2	122	7.00	NM	
1239	2.4	25.2	137	6.25	NM	
1241	3.6	24.5	131	6.30	NM	
1243	4.8	24.8	146	6.21	NM	
1244	6.0	24.5	121	6.23	NM	
1245	7.2	24.2	119	6.22	NM	
1246	8.4	24.0	118	6.10	NM	
1247	9.6	26.4	132	6.17	NM	
1248	10.8	25.5	125	6.15	NM	
1250	12.0	24.9	123	6.24	NM	DO = 2.2

KLEEN SITES GEOSERVICES, INC.

409 BURTON ROAD
LEXINGTON, SOUTH CAROLINA 29072

GROUND WATER MONITORING WELL DEVELOPMENT LOG

WELL NUMBER: MW-3

PROJECT: Heath Self-Serve # 2
ADDRESS: N. Guignard & Miller
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

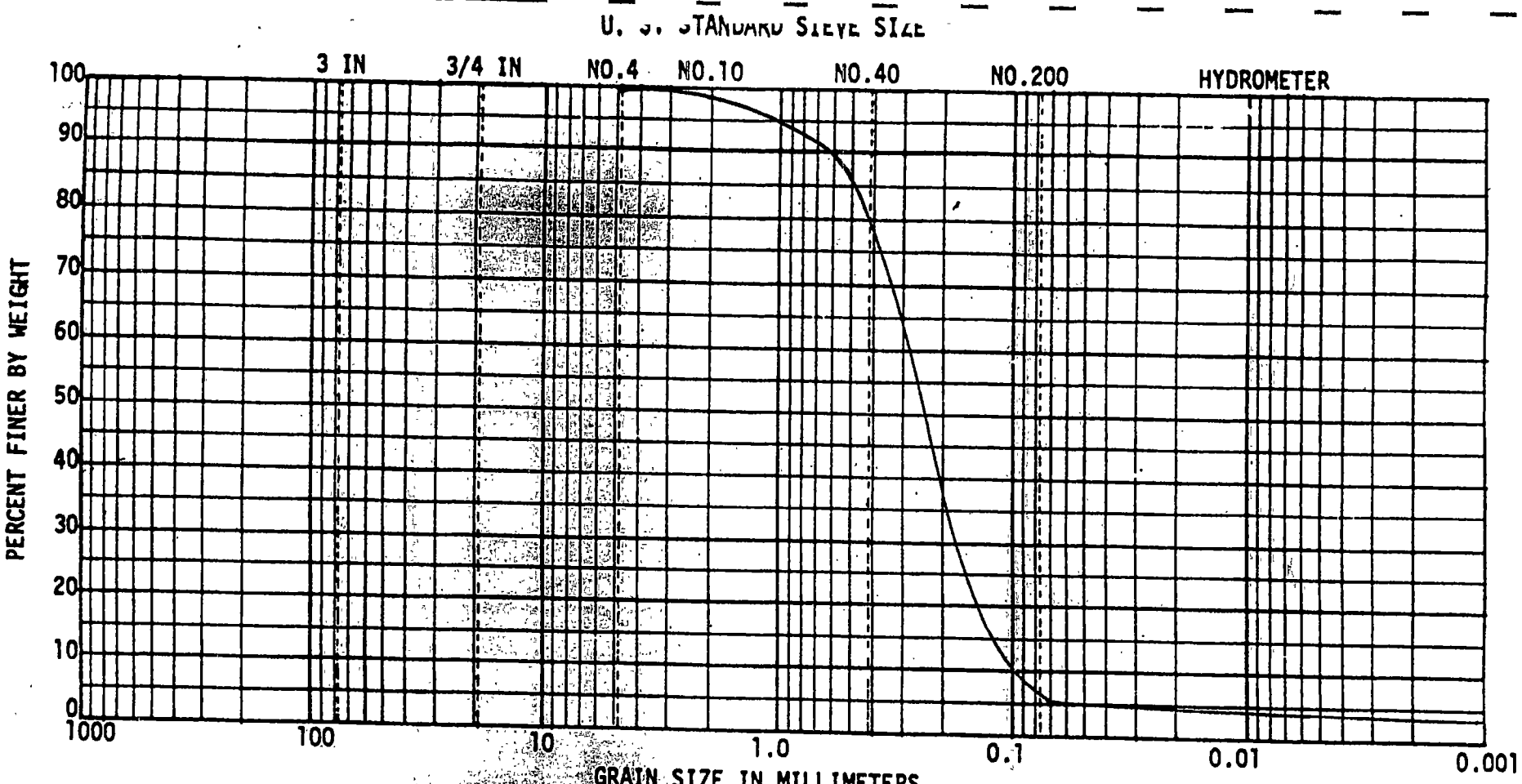
DATE: 28 December 1998

TOTAL WELL DEPTH: 24'
STATIC WATER LEVEL: 18.28'
WATER HEIGHT(Hw): 5.72'
WELL DIAMETER (Dw): 0.167'
WELL VOLUME (Vw): 1.09 gallons
$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$
KSG PERSONNEL: E. Dukes

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (s.u.)	TURBIDITY (STU)	NOTES
1045	0.9	20.7	112	5.01	NM	
1047	1.8	21.3	114	5.04	NM	
1048	2.7	21.5	114	5.05	NM	
1049	3.6	21.8	114	4.93	NM	
1050	4.5	21.8	114	4.96	NM	
1052	5.4	21.8	120	5.06	NM	
1053	6.3	22.1	113	5.02	NM	
1054	7.2	22.0	111	5.05	NM	
1055	8.1	22.3	115	5.02	NM	
1056	9.0	22.4	114	4.88	NM	DO = 6.2

APPENDIX C

LABORATORY DATA



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE	DEPTH	CLASSIFICATION	NAT WC	LL	PL	PI
SB-1	14-15'	Tan Slightly Clayey SAND (SC-SP)				

GRAIN SIZE DISTRIBUTION

KLEEN SITES
409 BURTON ROAD, LEX. SC 29072

JOB NAME: HEATH SELF SERVE #2

GEO-SYSTEMS DESIGN & TESTING, INC.
GEOTECHNICAL SERVICES AND MATERIALS TESTING
P.O. Box 2656, West Columbia, South Carolina 29171
(803) 791-7528

APPENDIX D

AQUIFER CALCULATIONS

MW-3

PT #	X-COORD (S)	Y-COORD (HW/HO)
1	15	1.0
2	30	0.3778
3	45	0.0667
4	60	0.0444
5	90	0.0222

USING B-R METHOD (AQUITEST) $K_H = 3.382E-3$ FT/S

$$D = \frac{(3.382\,E\text{-}3)(.0015)}{0.40} = 1.27E\text{-}5\,\frac{FT}{S} \quad \text{OR} \quad 400\ FT/YR$$

MW-4

PT #	X-COORD (S)	Y-COORD (HW/HO)
1	15	1.0000
2	30	0.4108
3	45	0.1514
4	60	0.0378
5	75	0.0108

USING B-R METHOD (AQUITEST) $K_H = 1.024\,E\text{-}3$ FT/S

$$D = \frac{(1.024\,E\text{-}3)(.0015)}{0.40} = 3.84\,E\text{-}6\,\frac{FT}{S} = 121\ FT/YR$$

APPENDIX E

SOIL AND WATER DISPOSAL MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of
. . . . .	GKKLEEN	01/ /99

GENERATOR

3. Generator's Name and Mailing Address
HEATH OIL #2
#98643
SUMTER, SC

4. Generator's Phone (803-) 957-7988

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
G&K TANK SERVICES, INC.	. . . . .	803-494-4593
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
	. . . . .	
9. Designated Facility Name and Site Address G&K TANK SERVICES, INC 5070 BROAD ST EXT SUMTER, SC 29154	10. US EPA ID Number	C. Facility's Phone 803-494-4593

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL	3	DR	165	GAL
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	2	DR	100	GAL
c.				
d.				

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

KLEEN SITES GEOSERVICES
409 BURTON ROAD
LEXINGTON, SC 29072

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Heath Oil	Ellen B. Cox	1	20	99

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Jackson Enterprises	Charles D. Webb	01	20	99

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Joan Green	Joan Green	12	09	99

ORIGINAL - RETURN TO GENERATOR

G&K
TANK SERVICES, INC.

Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1-800-800-6840 • FAX: (803) 494-8598

Certificate of Disposal

Tank # 3) SOIL
2) WATER
HEATH OIL #2
#98643
SUMTER, SC

Size 55 GALLON
55 GALLON

This is to certify that the above tank has been disposed of by G&K Tank Services, Inc., in accordance with and exceeding EPA regulations on Petroleum Tank Disposal.

Certified by Thomas D. Kelly

Date JANUARY 20, 1999

APPENDIX F

SOIL LEACHABILITY CALCULATIONS

Leachability Input Parameters

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site Data

Facility Name: HEATH SELF-SERVE #2 Site ID # 08932

Input Parameters

Percent Sand in soil		94	%	5% < sand < 70%	
Percent Clay in soil		2	%	5% < clay < 60%	
DAF		8			
Worst Case Soil Analyses	Benzene	(<) 0.0001	mg/Kg	C_s	
	Toluene	2.0	mg/Kg	C_s	
	Ethylbenzene	0.16	mg/Kg	C_s	
	Xylenes	1.40	mg/Kg	C_s	
	Naphthalene	2.30	mg/Kg	C_s	
	Other CoC		mg/Kg	C_s	
					Figure
Natural organic carbon content		(<) 90	mg/Kg	f_{oc}	
TPH		(<) 0.01	mg/Kg	TPH	
Porosity		0.45	decimal %	ϕ	C1
Residual water content		0.04	decimal %	W_r	C2
Bulk density of soil		1.55	g/cc	B_d	C3
Soil hydraulic conductivity		5.6E-3	cm/sec	K_f	C4
Average annual recharge		25	cm	H_w	
Wetting front suction (negative number)		-10	cm	H_f	C5
Distance from highest soil contamination to water table		198	cm	L	
Groundwater SSTL (or RBSL if appropriate)			mg/L	C_{GWsstl}	

List possible human exposure pathways from soil:

Leachability Results and Conclusions

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site Data

Facility Name: HEATH SELF - SERVE #2 Site ID # 08932

Chemical of Concern (Benzene, Naphthalene, etc.) : BENZENE

(Please use a separate form for each Chemical of Concern that exceeds the RBSL in soil.)

Chemical Specific Data

Biodegradation half-life period	16	days	$t_{1/2}$	Refer to
Soil/water partitioning coefficient	81	mg/L	K_{oc}	Table
Henry's law constant	0.226		H'	C2

Results

				Equation Set	Step
Total organic carbon content	9E-5	decimal %	f_{cs}	I	1
Air filled porosity	0.41	decimal %	f	I	2
Infiltration time	9.64E+3	seconds	t	II	1
Velocity of water	2.12E+4	ft/yr	V_w	II	2
Soil/water distribution coefficient	7.29E-3	mL/g	K_d	III	1
CoC percolation rate	2.07E+4	ft/yr	V_c	III	2
Time to reach groundwater	0.114	days	T_c	IV	1
Concentration to protect groundwater	0.005	mg/L	C_p	IV	2
Site specific target level	0.0003	mg/Kg	C_{Ssat}	V	

Conclusions

Does concentration of CoC in soil exceed SSTL? Yes _____ No ✓

Risk of human exposure due to contaminated soil Yes _____ No _____

Leachability Results and Conclusions

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site Data

Facility Name: HEATH SELF-SERVE #2 Site ID # 08932

Chemical of Concern (Benzene, Naphthalene, etc.): TOLUENE

(Please use a separate form for each Chemical of Concern that exceeds the RBSL in soil.)

Chemical Specific Data

Biodegradation half-life period	22	days	$t_{1/2}$	Refer to
Soil/water partitioning coefficient	133	mg/L	K_{oc}	Table
Henry's law constant	0.301		H'	C2

Results

				Equation Set	Step
Total organic carbon content	9E-5	decimal %	f_{cs}	I	1
Air filled porosity	0.41	decimal %	f	I	2
Infiltration time	9.64 E+3	seconds	t	II	1
Velocity of water	2.12 E+4	ft/yr	V_w	II	2
Soil/water distribution coefficient	1.2 E-2	mL/g	K_d	III	1
CoC percolation rate	2.0 E+4	ft/yr	V_c	III	2
Time to reach groundwater	0.116	days	T_c	IV	1
Concentration to protect groundwater	1.005	mg/L	C_p	IV	2
Site specific target level	0.096	mg/Kg	C_{Sstl}	V	

Conclusions

Does concentration of CoC in soil exceed SSTL? Yes ✓ No _____

Risk of human exposure due to contaminated soil Yes _____ No _____

Leachability Results and Conclusions

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site Data

Facility Name: HEATH SELF-SERVE #2 Site ID # 08932

Chemical of Concern (Benzene, Naphthalene, etc.): ETHYLBENZENE

(Please use a separate form for each Chemical of Concern that exceeds the RBSL in soil.)

Chemical Specific Data

Biodegradation half-life period	10	days	$t_{1/2}$	Refer to
Soil/water partitioning coefficient	176	mg/L	K_{oc}	Table
Henry's law constant	0.28		H'	C2

Results

				Equation Set	Step
Total organic carbon content	9 E-5	decimal %	f_{cs}	I	1
Air filled porosity	0.41	decimal %	f	I	2
Infiltration time	9.64 E+3	seconds	t	II	1
Velocity of water	2.12 E+4	ft/yr	V_w	II	2
Soil/water distribution coefficient	1.58 E-2	mL/g	K_d	III	1
CoC percolation rate	2.01 E+4	ft/yr	V_c	III	2
Time to reach groundwater	0.118	days	T_c	IV	1
Concentration to protect groundwater	0.7063	mg/L	C_p	IV	2
Site specific target level	0.090	mg/Kg	C_{Sstl}	V	

Conclusions

Does concentration of CoC in soil exceed SSTL? Yes ✓ No _____

Risk of human exposure due to contaminated soil Yes _____ No _____

Leachability Results and Conclusions

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site Data

Facility Name: HEATH SELF-SERVE #2 Site ID # Ø8932

Chemical of Concern (Benzene, Naphthalene, etc.): XYLENES

(Please use a separate form for each Chemical of Concern that exceeds the RBSL in soil.)

Chemical Specific Data

Biodegradation half-life period	28	days	$t_{1/2}$	Refer to
Soil/water partitioning coefficient	639	mg/L	K_{oc}	Table
Henry's law constant	Ø.278		H'	C2

Results

				Equation Set	Step
Total organic carbon content	9E-5	decimal %	f_{cs}	I	1
Air filled porosity	Ø.41	decimal %	f	I	2
Infiltration time	9.64 E+3	seconds	t	II	1
Velocity of water	2.12 E+4	ft/yr	V_w	II	2
Soil/water distribution coefficient	5.75E-2	mL/g	K_d	III	1
CoC percolation rate	1.77 E+4	ft/yr	V_c	III	2
Time to reach groundwater	Ø.134	days	T_c	IV	1
Concentration to protect groundwater	1Ø.Ø23	mg/L	C_p	IV	2
Site specific target level	4.612	mg/Kg	C_{Sssl}	V	

Conclusions

Does concentration of CoC in soil exceed SSTL? Yes _____ No ✓

Risk of human exposure due to contaminated soil Yes _____ No _____

Leachability Results and Conclusions

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site Data

Facility Name: HEATH SELF-SERVE #2 Site ID # 8932

Chemical of Concern (Benzene, Naphthalene, etc.): NAPHTHALENE

(Please use a separate form for each Chemical of Concern that exceeds the RBSL in soil.)

Chemical Specific Data

Biodegradation half-life period	48	days	$t_{1/2}$	Refer to
Soil/water partitioning coefficient	1,543	mg/L	K_{oc}	Table
Henry's law constant	0.002		H'	C2

Results

				Equation Set	Step
Total organic carbon content	9E-5	decimal %	f_{cs}	I	1
Air filled porosity	0.41	decimal %	f	I	2
Infiltration time	9.64E+3	seconds	t	II	1
Velocity of water	2.12 E+4	ft/yr	V_w	II	2
Soil/water distribution coefficient	1.39 E-1	mL/g	K_d	III	1
CoC percolation rate	1.44 E+4	ft/yr	V_c	III	2
Time to reach groundwater	0.165	days	T_c	IV	1
Concentration to protect groundwater	0.025	mg/L	C_p	IV	2
Site specific target level	0.028	mg/Kg	C_{Sstl}	V	

Conclusions

Does concentration of CoC in soil exceed SSTL? Yes ✓ No _____

Risk of human exposure due to contaminated soil Yes _____ No _____

UST Permit #08932

DHEC — PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

UST PROGRAM DOCKETING # 08T

1. LOCATION OF WELL:

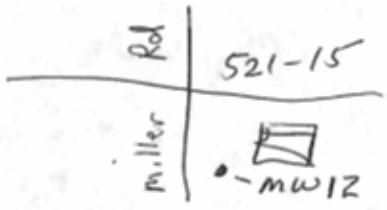
County: SUMTER System Name: HEATH #2

Latitude: Longitude:

Distance and Direction from Road Intersections:

Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: KLEEN SITES GEOSERVICES INC
Address: 409 BURTON RD
LEXINGTON SC
Telephone No.: (803) 957 7588

Engineer: KLEEN SITES GEOSERVICES INC
Address: 409 BURTON RD
LEXINGTON SC
Telephone No.: (803) 957-7588

5. WELL DEPTH (completed) 30 ft. Date Started: 8-18-99 Date Completed: 8-18-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☒ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 4"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 10 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 4"
Slot/Gauge: .010 Length: 20'
Set Between: 10 ft. and 30 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 8 ft. to 30 ft.
Effective size #2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 6 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected ☐ Yes Type: _____
upon completion ☐ No Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 8-18-99
Address: 10401 John Price Rd Charlotte NC.
Signed: Ricky L Lemmond Cert. No.: 1423
Authorized Representative

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AUG 23 1999
Water Monitoring, Assessment & Protection Division

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:

County: Sumter System Name: Heath #2

Latitude: Longitude:

Distance and Direction from Road Intersections: on Right of way miller Rd about 100 Feet off 521

Street Address & City of Well Location: miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

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4. OWNER OF WELL: Kleen Sites Geoservices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7988

Engineer: Kleen Sites Geoservices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed) 22 ft. Date Started: 8-17-99 Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 12 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2
Slot/Gauge: .010 Length: _____
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11 ft. to 23 ft.
Effective size # 2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 8 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. ____ direction
_____ Type well disinfected upon completion ☐ Yes ☐ No Type: _____ Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Registered Business Name: SAEDACCO Date: 8-17-99
Address: 10401 John Price Rd Charlotte N.C.
Signed: _____ (Authorized Representative) Cert. No.: 1423

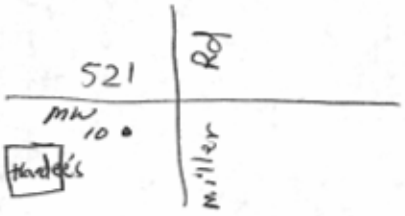
DHEC 1903 (10/96) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: SUMTER System Name: HEATH #2
Latitude: Longitude:
Distance and Direction from Road Intersections: about 200 Feet off Miller Rd North and 20 Feet off 521 East
Street Address & City of Well Location: Miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
15-17		
Tan Silty Sand		

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Water Assessment & Protection Division

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: KLEEN SITES GEOSERVICES INC
Address: 409 BURTON RD LEXINGTON SC
Telephone No.: (803) 957-7988

Engineer: KLEEN SITES GEOSERVICES INC
Address: 409 BURTON RD LEXINGTON SC
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed) 23 ft. Date Started: 8-17-99 Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: .010 Length: 10
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11 ft. to 23 ft.
Effective size #2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 9 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected ☐ Yes Type: _____
upon completion ☐ No Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 8-17-99
Address: 10401 John Price Rd Charlotte NC
Signed: Ruby L Lemire Cert. No.: 1423
Authorized Representative

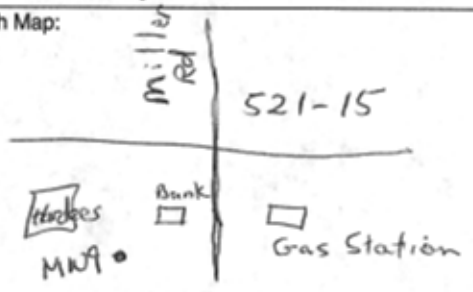
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections: 200 Feet off miller Rd 200 Feet off 521 Miller Rd
Street Address & City of Well Location: Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
~~B~~		
15-17 Tan Silty ~~Clay~~ Sand		
wet		

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Water Assessment & Protection Division

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Kleen Sites Geoservices Inc
Address: 409 Bunton Rd Lexington SC
Telephone No.: (803) 957-7988

Engineer: Klein Sites Geoservices Inc
Address: 409 Bunton Rd Lexington SC
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed) Date Started: 8-17-99
23 ft. Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface 1 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2
Slot/Gauge: .010 Length: 10
Set Between: 13 ft. and 23 ft. NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11 ft. to 23 ft.
Effective size #2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 9 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. ____ direction
_____ Type well disinfected ☐ Yes Type: _____
upon completion ☐ No Amount: _____

16. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 8-17-99
Address: 10401 John Price Rd Charlotte N.C.
Signed: Ruby L Lemire Cert. No.: 1423
Authorized Representative

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:

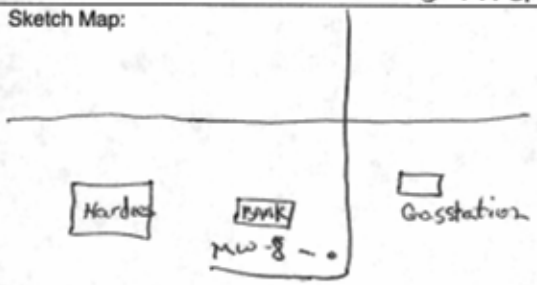
County: Sumter — System Name: Heath #2

Latitude: — Longitude:

Distance and Direction from Road Intersections: Miller Rd North ~~right~~ about 200 Feet off 521 west

Street Address & City of Well Location: Miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
4-6 Red Clay		
9-11 Tan Silty Sand		
15-17 Tan Silty Sand		

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

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Water Monitoring, Assessment & Protection Division

4. OWNER OF WELL: Kleen Sites Geoservices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7588

Engineer: Kleen Sites Geoservices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7588

5. WELL DEPTH (completed) 23 ft. — Date Started: 8-17-99 — Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 0 ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2
Slot/Gauge: .010 Length: 10
Set Between: 13 ft. and 23 ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11 ft. to 23 ft.
Effective size #2 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 9 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 8-19-99
Address: 10401 John Price Rd Charlotte N.C.
Signed: Ruby LaLemire (Authorized Representative) Cert. No.: 1423

DHEC 1903 (10/96) — COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:

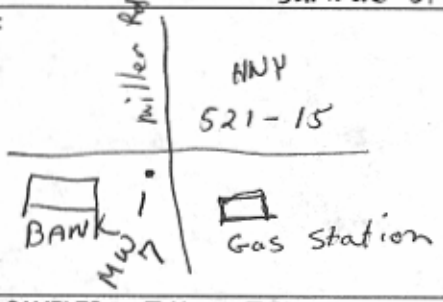
County: Sumter S.C. System Name: Heath #2

Latitude: Longitude:

Distance and Direction from Road Intersections: miller Rd Right of way about 20 Feet off 521 to edst Side of miller Rd

Street Address & City of Well Location: miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
4-6 Red Clay		
9-11 Tan Sand		
15-17 Tan Silty Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

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Water Monitoring, Assessment & Protection Division

3. REMARKS:

4. OWNER OF WELL: Kleensite GeoServices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7488

Engineer:
Address: Same as owner
Telephone No.:

5. WELL DEPTH (completed) 22 ft. Date Started: 8-17-99 Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 12 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: .010 Length: 10'
Set Between: 12 ft. and 22 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 10 ft. to 22 ft.
Effective size # 2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 8 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. ____ direction
_____ Type well disinfected upon completion ☐ Yes ☐ No Type: _____ Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Registered Business Name: SAEDACCO Date: 8-19-99
Address: 10401 John Price Rd Charlotte NC
Signed: Ricky L Lemire (Authorized Representative) Cert. No.: 1423

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
About 50 Feet off Miller Rd
20 Feet off 521 in front of BP Gas Station
Street Address & City of Well Location: Miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

3. REMARKS:

4. OWNER OF WELL: Kleensite Geoservices inc
Address: 409 Burton Rd Lexington S.C.
Telephone No.: (803) 957-7488

Engineer:
Address: Same as owner
Telephone No.:

5. WELL DEPTH (completed) Date Started: 8-16-99
45 ft. Date Completed: 8-17-99

6. ☒ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 40 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: .010 Length: 5'
Set Between: 40 ft. and 45 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 38 ft. to 45 ft.
Effective size # 2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 36 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. ____ direction
_____ Type well disinfected ☐ Yes Type: _____
upon completion ☐ No Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 9-19-99
Address: 10401 John Price Rd Charlotte N.C.
Signed: Ruby L Lemire Cert. No.: 1423
Authorized Representative

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AUG 23 1999
Water Monitoring, Assessment & Protection Division

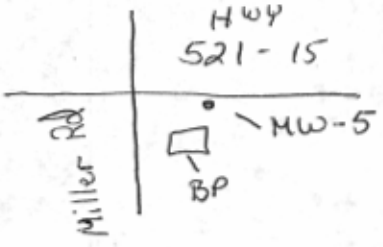
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter SC. System Name: Heath # 2
Latitude: Longitude:
Distance and Direction from Road Intersections: 100 Feet West of miller RD on HWY 521
Street Address & City of Well Location: miller Rd Sumter SC.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
4-6 Red Clay	5	
9-11 Tan Silty Sand		
15-17 Tan silty Sand wet		

UST #.08932

DHEC — PROMOTE PROTECT PROSPER

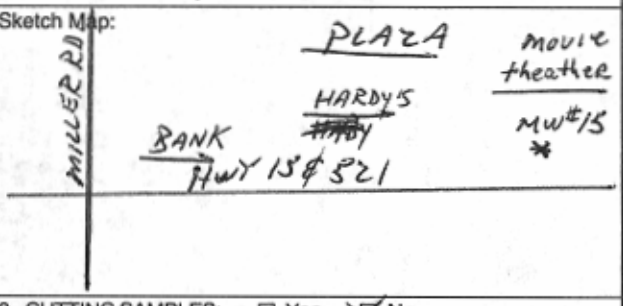
Water Well Record
Bureau of Water

UST PROGRAM DOCKETING # UST

2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 50' EAST OF HWY 15 & 521
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No

Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	6	18'

RECEIVED
NOV 5 1999
PRIVATE WELL SECTION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: HEATH #2
Address: HWY 15 & 521 & MILLER RD, SUMTER, S.C.
Telephone No.:

Engineer: KLEEN SITE
Address: 409 BURTON RD, LEXINGTON, S.C. 29072
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed) 18' ft. Date Started: 10/15/99 Date Completed: 10/15/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 8' ft. and 18' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 10' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 6' ft. to 18' ft.
Effective size 20/30 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 6' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: ____
Address: 10401 JOHN PRICE RD. CHARLOTTE, N.C.
Signed: [signature] Authorized Representative Cert. No.: 1472

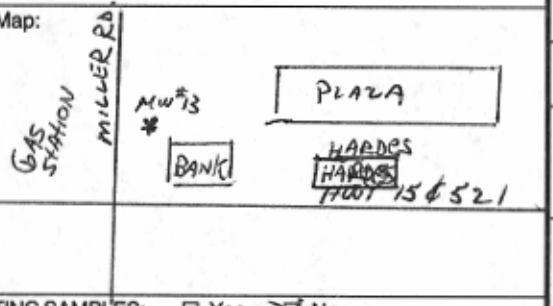
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 15' SOUTH OF MILLER RD.
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No
Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY ~~CLAY~~ SAND	0	18'
WHITE M. TO F. SAND	18'	23'
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

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NOV 5 1999
PRIVATE WELL SECTION

3. REMARKS:

4. OWNER OF WELL: HEATH #2
Address: HWY 15 & MILLER RD, SUMTER, S.C.
Telephone No.:
Engineer: KLEEN SITE
Address: 409 BURTON RD. LEXINGTON, S.C. 29072
Telephone No. (803) 957-7988

5. WELL DEPTH (completed) 23' ft. Date Started: 10/14/99 Date Completed: 10/14/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 13' ft. and 23' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 15' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11' ft. to 23' ft.
Effective size 20/30 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 11' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected upon completion ☐ Yes ☐ No Type: ____ Amount: ____

16. PUMP: Date installed: ____ ☐ Not installed
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 10/15/99
Address: 10401 JOHN PRICE RD. CHARLOTTE, N.C.
Signed: Robert L. Minn Cert. No.: 1472
Authorized Representative

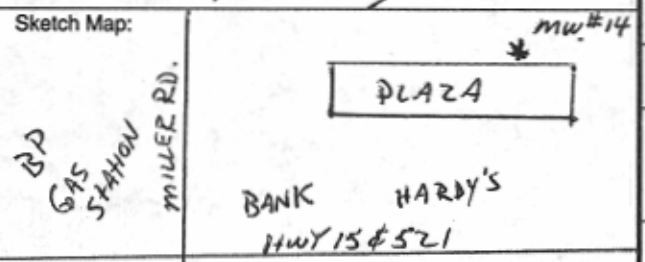
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 150 YARDS SOUTH OF MILLER RD.
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No
Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	0	18'
WHITE MM TO F. SAND	18'	20'

RECEIVED
NOV 5 1999
PRIVATE WELL SECTION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: HEATH #2
Address: HWY 15 & MILLER RD.
SUMTER, S.C.
Telephone No.:
Engineer: KLEEN SITE
Address: 409 BURTON RD.
LEXINGTON, S.C. 29072
Telephone No: (803) 957-7988

5. WELL DEPTH (completed) 20' ft. Date Started: 10/14/99
Date Completed: 10/14/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
10' in. to 20' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 10' ft. and 20' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 12' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size 20/30 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 8' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

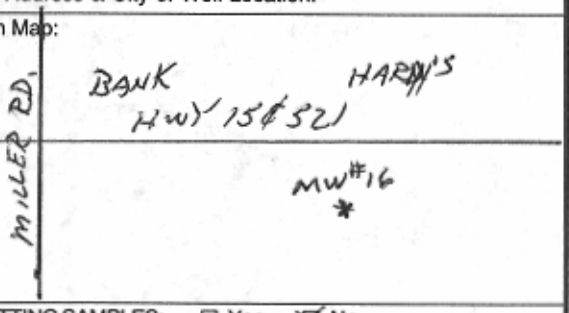
17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAED ACCO Date: 10/15/99
Address: 10461 JOHN PRICE RD. CHARLOTTE, N.C.
Signed: Robert L. Minn Cert. No.: 1472
Authorized Representative

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 25' west of Hwy 15 & 521
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No
Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	0	16'
WHITE M TO F SAND	16'	20'

RECEIVED
NOV 5 1999
PRIVATE WELL SECTION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: HEATH #2
Address: HWY 15 & 521 & MILLER RD
SUMTER, S.C.
Telephone No.:

Engineer: KLEEN SITE
Address: 409 BURTON RD.
LEXINGTON, S.C. 29072
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed) 20' ft. Date Started: 10/14/99 Date Completed: 10/14/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 10' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 10' ft. and 20' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 12' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size 20/30 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 8' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 10/15/99
Address: 10401 JOHN PRICE RD. CHARLOTTE, N.C.
Signed: Robert L. Miller Cert. No.: 1472
Authorized Representative

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rllemerald@CPIS.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

November 29, 1999

Pamela DuBois, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Branch
Division of Underground Storage Tank Management
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

RECEIVED
DEC 0 6 1999
DIVISION OF UNDERGROUND
STORAGE TANK MGMT.

Re: Rapid Assessment Report
Former Heath Self-Serve #2, Release #1
UST Permit #08932
Sumter County

Dear Ms. DuBois,

On behalf of the owner of the above site, Emerald, Inc. and Kleen Sites Geoservices, Inc. are providing you with the Rapid Assessment Report for such. Upon receipt of payment, we will provide your office with a notarized statement of such along with the Assessment Component invoice.

Thank you in advance for your cooperation.

Yours very truly,
Emerald, Inc.

Ronny L. Lowder
President

RLL/be
enclosure
cc: G. Douglas Leonard

SCANNED nd
UST PROGRAM
DOCKETING # 04T

RECEIVED
DEC 0 6 1999
DIVISION OF UNDERGROUND
STORAGE TANK MGMT.

Rapid Assessment Report

Former Heath Self Serve #2
North Guignard Drive & Miller Road
Sumter, South Carolina
GWPD # 08932

November 19, 1999

Prepared For:

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management
2600 Bull Street
Columbia, South Carolina 29201

Prepared By:

Kleen Sites Geoservices, Inc.
UST Site Rehabilitation Contractor #8
409 Burton Road
Lexington, South Carolina 29072

UST PROGRAM
DOCKETING # 93T

Signature Page

This document entitled "Rapid Assessment Report", has been prepared for the South Carolina Department of Health and Environmental Control to describe investigative activities initiated at the former Heath Self Serve #2 site located in Sumter, South Carolina. It has been prepared under the direct supervision of William B. Dunnagan, Jr. in accordance with accepted quality control practices.

KLEEN SITES GEOSERVICES, INC.

William B. Dunnagan, Jr., P.G.
South Carolina Registration # 937
Project Geologist

Rapid Assessment Report
Former Heath Self Serve #2
Sumter, South Carolina

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SECTION 1.0

INTRODUCTION

The former Heath Self Serve #2 is located at the intersection of North Guignard Drive and Miller Road in Sumter, SC (see Figure 1). Activities conducted at the facility included retail gasoline and diesel fuel sales and convenience sales to the public. The site is situated in a heavily developed, commercial area with a combination of commercial and residential structures. The facility is presently operated as a BP Station. A site topographic map and a site diagram are provided in Figures 2 and 3, respectively.

Eleven USTs were previously used for onsite storage of petroleum products. One 10,000 gallon tank, one, 6,000 gallon tanks and seven 3,000 gallon tanks were used for the storage of gasoline. One 1,000 gallon tank was used for the storage of diesel fuel. One 550 gallon tank was used for the storage of used oil. Each of the eleven USTs have either been removed from the ground or permanently abandoned in place. New USTs were installed at the facility in December 1998.

A release of petroleum hydrocarbons was identified within the former tank pit area during closure assessment activities. In December of 1998, a Standard Limited Assessment (SLA) was conducted by personnel from Kleen Sites Geoservices, Inc. (KSG) at the former Heath Self Serve #2 site at the request of the SCDHEC. Following a review of the SLA, the SCDHEC requested that a Rapid Assessment be conducted at the subject facility in a letter dated May 13, 1999. KSG personnel have completed the Rapid Assessment at the former Heath Self Serve #2 in order to better define the vertical and horizontal extent of the soil and ground water contamination plume. The assessment was also conducted to evaluate the risk, if any, posed by the contamination to human health and the environment. A Tier II analysis designed to establish ground water cleanup criteria for the site was also part of the assessment process. This document summarizes the results of the Rapid Assessment.

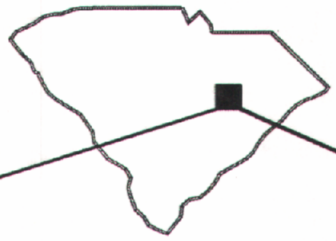
Site Location



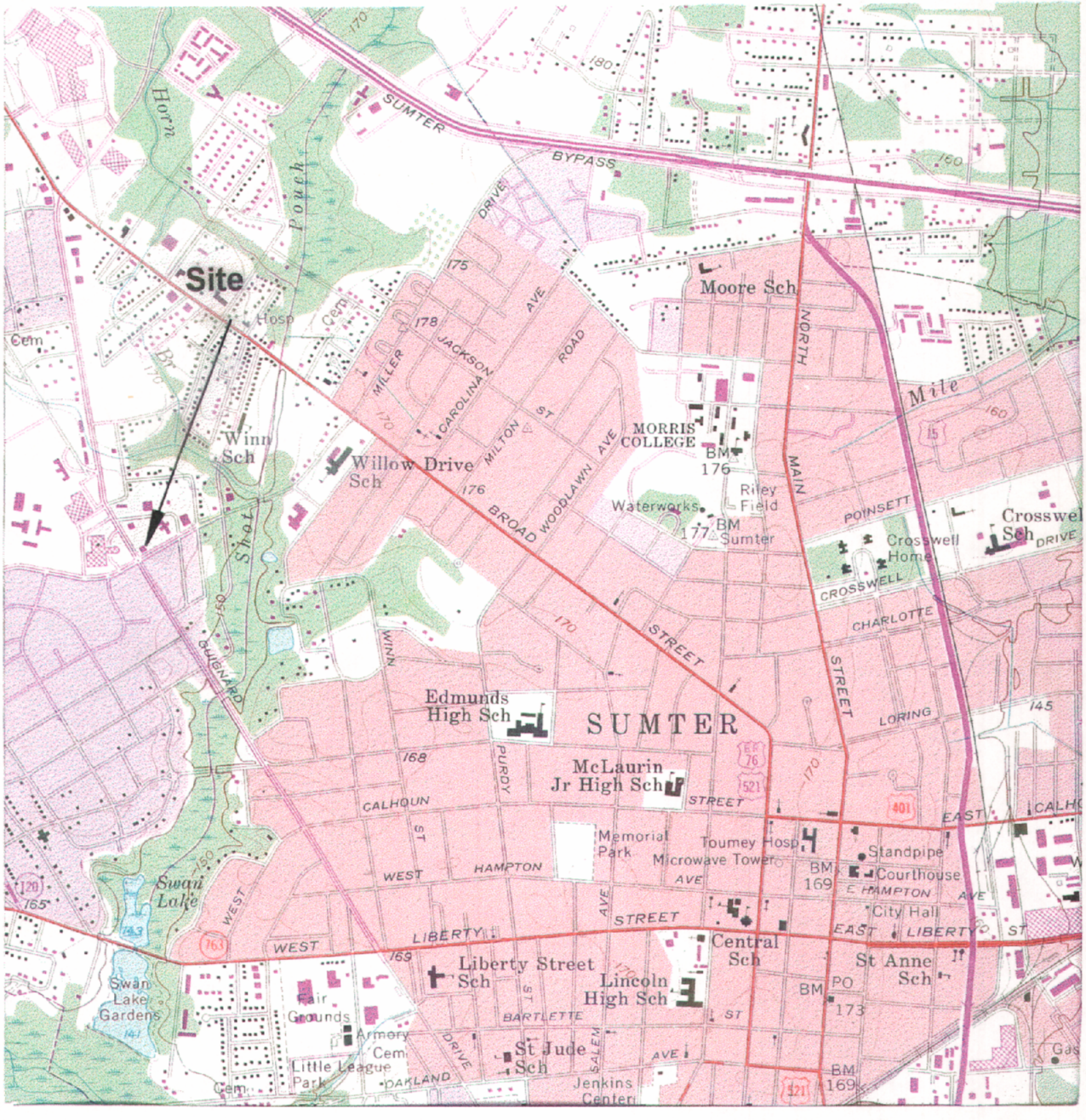
© 1998 DeLorme. Street Atlas USA

Mag 14.00
Thu Oct 28 02:45 1999
Scale 1:31,250 (at center)
2000 Feet
1000 Meters

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Railroad
- Point of Interest
- Park/Reservation
- Locale
- Cemetery
- Water
- Woodland
- River/Canal
- Intermittent River



SUMTER EAST QUADRANGLE

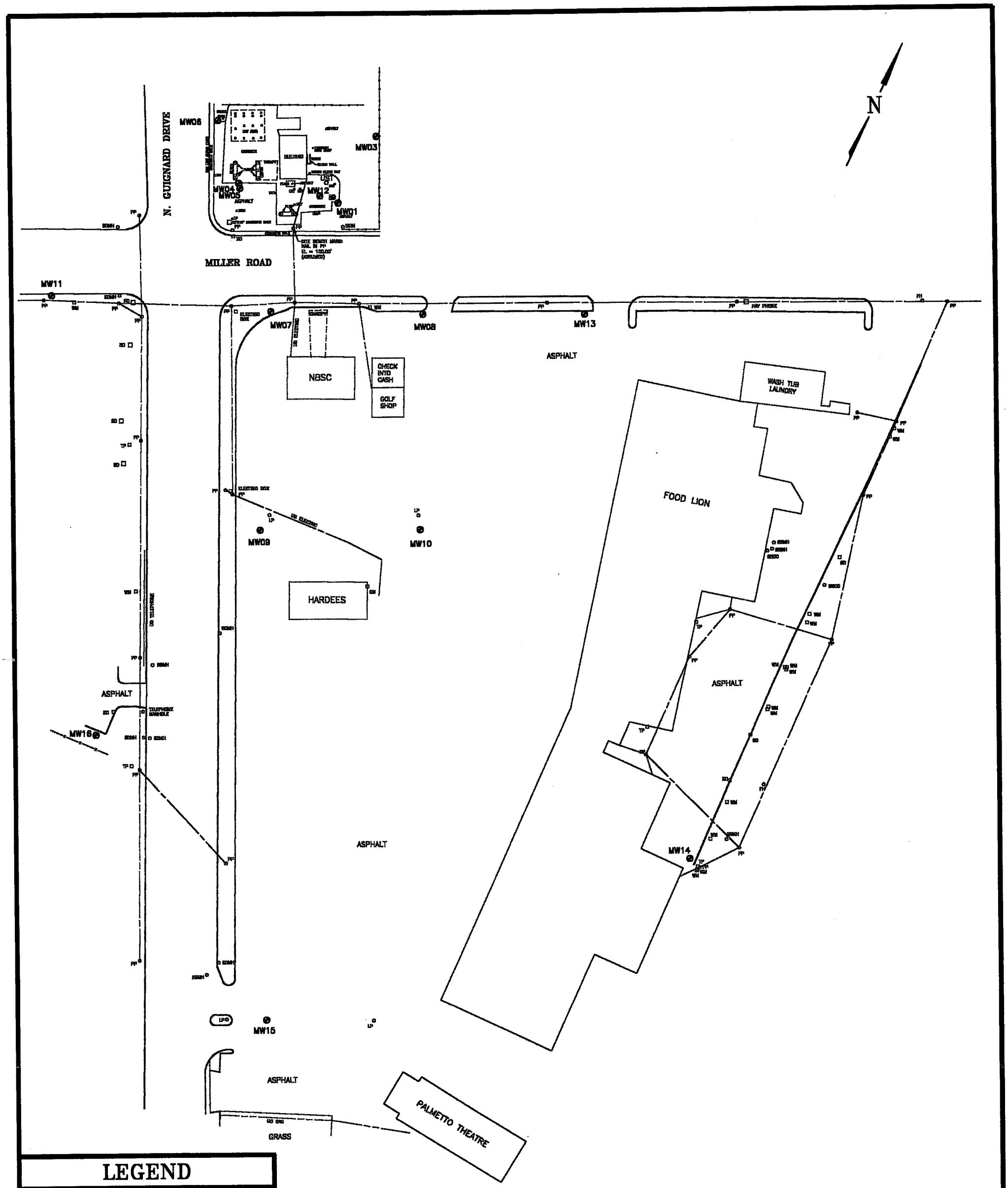


HEATH SELF SERVE #2
N. GUIGNARD DR. and
MILLER STREET
SUMTER, SOUTH CAROLINA

FIGURE 2:
SITE TOPOGRAPHIC
DIAGRAM

KLEEN
SITES
GEOSERVICES

F:\KSG\CAD\1999\99545\Topo



LEGEND

⊕ MW 15 – MONITOR WELL LOCATION

SCALE = 1" = 100'

0' 50' 100'

HEATH SELF SERVE # 2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 3: SITE LOCATION MAP

KLEEN SITES GEOSERVICES

SECTION 2.0

REGIONAL & SITE SPECIFIC GEOLOGY

The former Heath Self Serve #2 site is located within the Middle Coastal Plain Physiographic Province of South Carolina. The Middle Coastal Plain Physiographic Province is characterized by unconsolidated sediments of fluvial and marine origin resting unconformably on crystalline bedrock located at a depth of approximately 600 feet. Surficial sediments in the Sumter County area are Pliocene age terrace deposits produced by river incisement of Cretaceous and Tertiary sediment during periods of low sea level.

The former Heath Self-Serve # 2 site is underlain by brown silty, clayey sand to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands. The first occurrence of ground water was noted at approximately seventeen to eighteen feet below ground surface. A confining layer was not encountered during drilling activities. A geologic cross-sectional view of the former Heath Self Serve #2 site is provided in Appendix A.

SECTION 3.0

SITE ACTIVITIES

KSG personnel conducted a two phase approach during implementation of the Rapid Assessment. The first phase of assessment activities consisted of the collection of ground water samples at selected locations using a GeoProbe rig. Based upon the first phase analytical data, the second phase consisted of the installation of seven permanent, shallow, ground water monitoring wells and one telescoping well. Each activity is described in detail within this section.

3.1 Field Screening

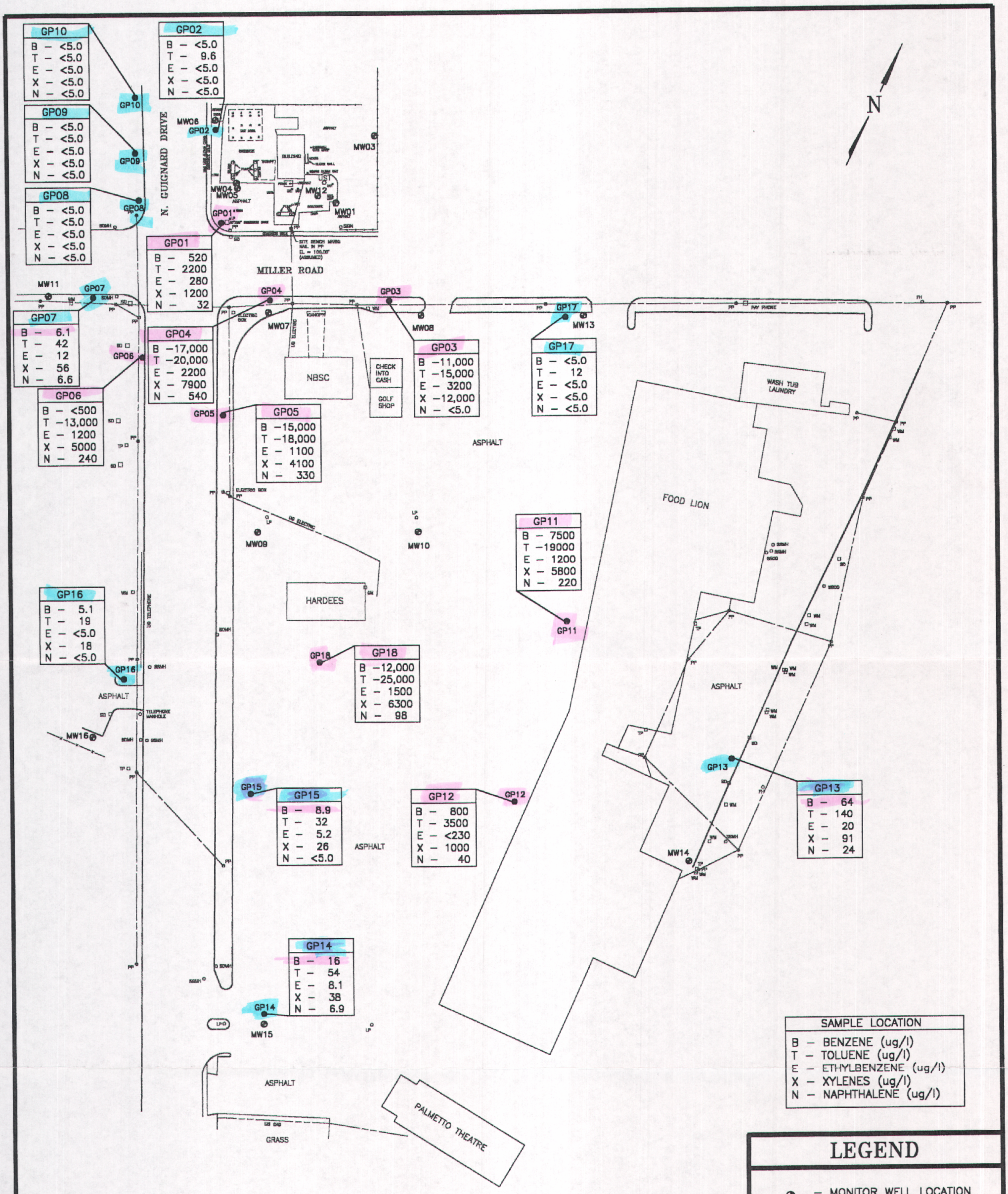
Seventeen temporary wells were installed at the subject facility to check ground water quality at selected locations (See Figure 4). The wells were positioned near the current USTs, dispenser islands, and across the former Heath Self Serve #2 and adjoining properties. At each location, the Geoprobe® sampling tip was advanced to a depth of 18 to 24 feet below ground surface to allow collection of a ground water sample. Once ground water collection activities were completed at each Geoprobe® location, the boreholes were properly abandoned by filling each hole with a lean grout mixture to ground surface.

All ground water samples collected at the former Heath Self Serve #2 site were packed in crushed ice immediately following collection. A Chain of Custody form was completed prior to offsite sample removal. Samples were transported to Shealy Environmental Services and analyzed for benzene, toluene, ethyl benzene and total xylenes (BTEX), methyl tert-butyl ether (MTBE) and naphthalene using EPA Method 8260A. Analytical data sheets for each temporary well ground water sample are provided in Appendix B.

3.2 Soil Assessment

All drilling activities were performed using a truck-mounted drilling rig equipped with hollow-stem augers. Personnel from Southeastern Atlantic Environmental Drilling and Construction Company (SAEDACCO) of Charlotte, NC performed all split spoon sampling and monitor well installations. All assessment activities were performed under the direct supervision of a KSG onsite geologist.

Split-spoon samples were collected at each ground water monitor well location at five foot intervals from surface to seventeen feet below land surface. Each split-spoon sample was screened with a portable VOC monitor. Due to the fact that extensive soil analytical data was generated during the Standard Limited Assessment, additional soil samples were not submitted for laboratory analysis. All shallow wells were drilled to a



HEATH SELF SERVE # 2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 4:
GEOPROBE LOCATION
MAP

KLEEN
SITES
GEOSERVICES

total depth of 18 to 30 feet below ground surface. The deep well was drilled to depth of 45 feet. Soil Boring Lithology Logs and Well Construction Summaries are presented in Appendix C.

3.3 Static Water Level Measurement

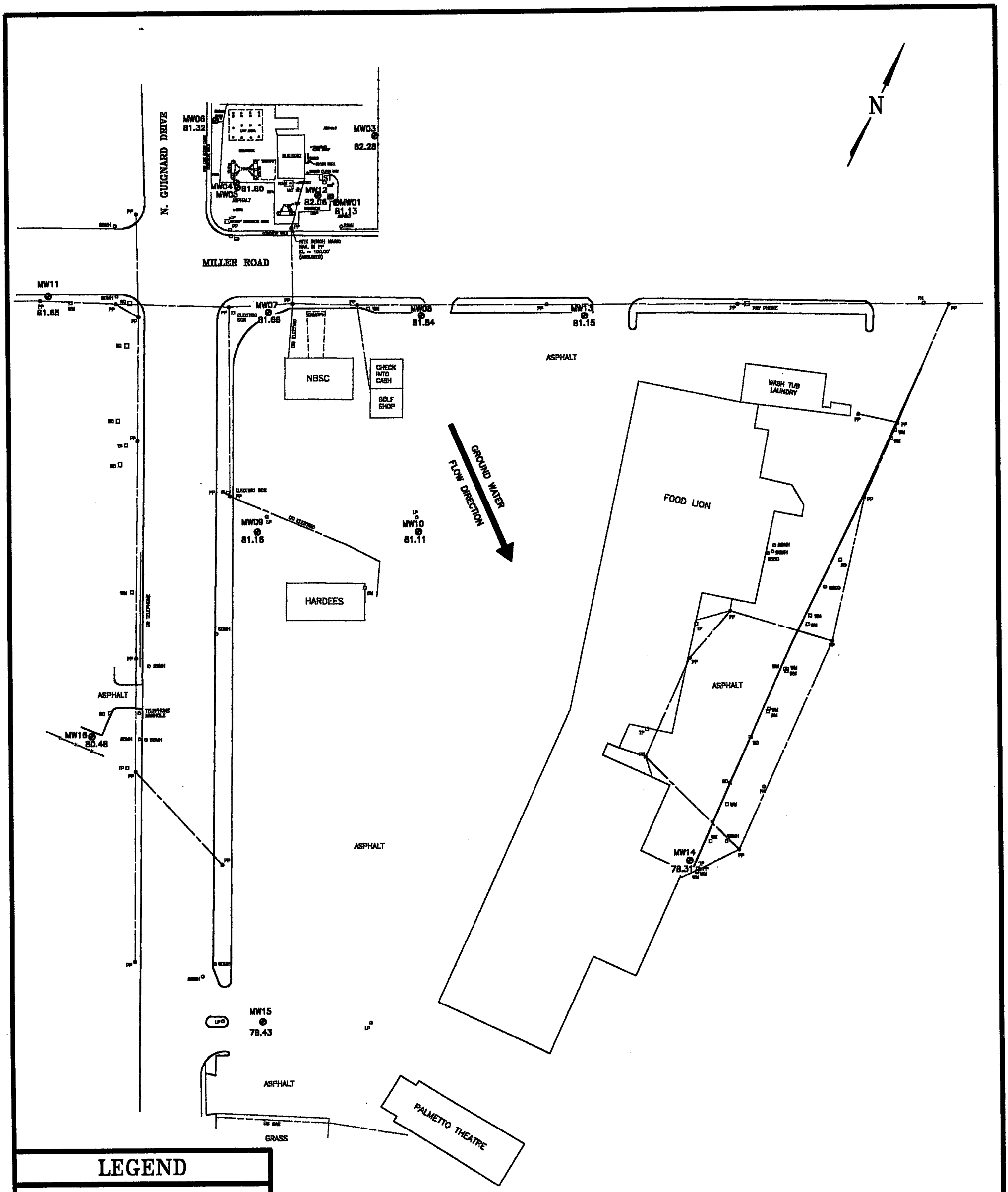
Prior to well development or sample collection, static water levels were taken to the nearest 0.01 foot using a graduated electronic indicator. All measurements were taken from the surveyed top of the well casing so they could be referenced to a common datum. All elevations are relative to an assumed onsite benchmark of 100 feet above mean sea level. Static water levels are summarized in Table 1 and shown in Figure 5.

TABLE 1
STATIC WATER LEVEL ELEVATIONS

Well ID #	Static Water Level†	Free Product Thickness (feet)	Top of Casing Elevation‡	Ground Water Elevation (MSL)
ϕMW01	12.76	0.10	99.88	87.13
MW02	Destroyed during UST removal			
MW03	18.81	ND	101.09	82.28
ϕMW04	17.85	1.28	98.72	81.80
*MW05	17.12	ND	98.83	81.71
MW06	17.66	ND	98.98	81.32
ϕMW07	18.21	1.69	98.64	81.66
MW08	17.74	ND	99.58	81.84
ϕMW09	16.99	0.30	97.93	81.16
MW10	16.60	ND	97.71	81.11
MW11	15.95	ND	97.60	81.65
**MW12	17.62	ND	99.68	82.06
MW13	18.73	ND	99.88	81.15
MW14	12.81	ND	91.12	78.31
MW15	11.86	ND	91.29	79.43
MW16	13.67	ND	94.15	80.48

Notes:

† = Depth below top of casing, in feet
‡ = Feet above mean sea level (MSL) assuming an onsite benchmark of 100'
ϕ = Static water level adjusted for free product
* = Deep Well
** = Recovery Well
ND = Not Detected



LEGEND

● – MONITOR WELL LOCATION
MW 15

MW 15 *
80.48 – STATIC WATER LEVEL ELEVATION (feet)

* based on an onsite benchmark elevation of 100 feet.

SCALE = 1" = 100'
0' 50' 100'

HEATH SELF SERVE # 2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 5:
GROUND WATER ELEVATION MAP

KSG
KLEEN SITES GEOSERVICES

3.4 Ground Water Sampling

Ground water samples were collected from all monitoring wells on August 18 and 19, 1999. Prior to well sampling, all newly installed wells were purged ten well volumes and all existing wells were purged three well volumes to remove any sediment introduced during the soil boring process and to set the sand pack (Well purge logs are presented in Appendix C). Both shallow and deep monitor wells were purged with a PVC bailer and sampled with a disposable Teflon bailer. Dissolved oxygen readings were taken at each well location. Following well purging activities, a ground water sample was collected from each well and placed into appropriate containers.

All samples were packed in crushed ice and transported to Shealy Environmental Services, Inc., for chemical analysis. Each sample was analyzed for BTEX, MTBE, ethylene dibromide (EDB) and naphthalene using EPA Method 8260B, PAHs using EPA Method 8270C and total recoverable lead using EPA Method 239.2. Additionally, all water samples were analyzed for nitrates (EPA Method 353.2), sulfates (EPA Method 300), and ferrous iron (EPA Method 200.7).

3.5 Ground Water Analytical Data

The following table summarizes ground water analytical results.

TABLE 2
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW01	MW03	MW04	MW05	MW06
Benzene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Ethylbenzene (µg/l)	FP	<5.0	FP	<5.0	<5.0
MTBE (µg/l)	FP	<5.0	FP	<5.0	<5.0
Naphthalene (µg/l)	FP	<5.0	FP	9.7	<5.0
Toluene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Total Xylenes (µg/l)	FP	<5.0	FP	<5.0	<5.0
EDB (µg/l)	FP	<5.0	FP	<5.0	<5.0
Ferrous Iron (mg/l)	FP	<0.10	FP	19	0.40
Lead (mg/l)	FP	<0.0030	FP	<0.0030	<0.0030
Dissolved Oxygen (mg/l)	FP	7.5	FP	5.9	4.7
Nitrates (mg/l)	FP	0.769	FP	1.4	1.27
Sulfates (mg/l)	FP	1.30	FP	12.1	10.2
Acenaphthene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Acenaphthylene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Anthracene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzoanthracene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzofluoranthene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzoperylene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzopyrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Chrysene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Dibenzanthracene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Fluoranthene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Fluorene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Indenopyrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Phenanthrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Pyrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Sampling Date	08-18-99	08-18-99	08-18-99	08-19-99	08-18-99

NOTE: FP = Free Product
MW02 was destroyed during UST removal.

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW07	MW08	MW09	MW10	MW11
Benzene (µg/l)	FP	2300	FP	15000	<5.0
Ethylbenzene (µg/l)	FP	1300	FP	1400	<5.0
MTBE (µg/l)	FP	<5.0	FP	<5.0	<5.0
Naphthalene (µg/l)	FP	1200	FP	<250	<5.0
Toluene (µg/l)	FP	10000	FP	22000	<5.0
Total Xylenes (µg/l)	FP	5900	FP	7900	<5.0
EDB (µg/l)	FP	38	FP	460	<5.0
Ferrous Iron (mg/l)	FP	32	FP	0.99	0.33
Lead (mg/l)	FP	0.13	FP	0.72	0.014
Dissolved Oxygen (mg/l)	FP	3.5	FP	4.2	6.2
Nitrates (mg/l)	FP	0.058	FP	0.063	0.941
Sulfates (mg/l)	FP	11.0	FP	5.86	8.95
Acenaphthene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Acenaphthylene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Anthracene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzoanthracene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzofluoranthene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzoperylene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Benzopyrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Chrysene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Dibenzanthracene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Fluoranthene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Fluorene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Indenopyrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Phenanthrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Pyrene (µg/l)	FP	<5.0	FP	<5.0	<5.0
Sampling Date	08-18-99	08-18-99	08-18-99	08-18-99	08-18-99

NOTE: FP = Free Product

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW12	MW13	MW14	MW15	MW16
Benzene (µg/l)	3600	5.1	2160	<5.0	<5.0
Ethylbenzene (µg/l)	2100	<5.0	431	<5.0	<5.0
MTBE (µg/l)	93	<5.0	<5.0	<5.0	<5.0
Naphthalene (µg/l)	290	<5.0	73.6	<5.0	<5.0
Toluene (µg/l)	16000	<5.0	1390	10	<5.0
Total Xylenes (µg/l)	8800	<5.0	2180	14	<5.0
EDB (µg/l)	<250	<5.0	<5.0	<5.0	<5.0
Ferrous Iron (mg/l)	<0.010	0.61	30	5.9	<0.10
Lead (mg/l)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Oxygen (mg/l)	3.1	6.6	3.0	5.5	6.3
Nitrates (mg/l)	0.030	0.332	0.332	1.21	1.93
Sulfates (mg/l)	7.82	5.69	2.71	3.63	2.88
Acenaphthene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Acenaphthylene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Anthracene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Benzoanthracene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Benzofluoranthene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Benzoperylene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Benzopyrene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Chrysene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Dibenzanthracene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Fluoranthene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Fluorene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Indenopyrene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Phenanthrene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Pyrene (µg/l)	<5.0	<5.0	<10	<5.0	<5.0
Sampling Date	08-19-99	10-18-99	10-18-99	10-18-99	10-18-99

3.6 Aquifer Characterization

3.6.1 Aquifer Pump Test

A pump test was conducted onsite to gather information necessary to estimate aquifer characteristics. Water was pumped from well MW12 at a volumetric flow rate averaging 2.93 gallons per minute (gpm). Water meter readings were taken periodically over the span of the test as shown in Appendix D. Static water level measurements were taken periodically on the pumping well (MW12) and the observation well (MW01) during the 7 hour test. It should be noted that no change in the static water level elevation of observation well MW01 was detected during the pump test. The following aquifer characterization data was generated during Rapid Assessment activities.

Hydraulic Conductivity: 0.68 ft/day
Hydraulic Gradient: 0.011 ft/ft
Porosity: 45%
Estimated Seepage Velocity: 0.017 ft/day = 6.07 ft/yr

3.6.2 Free Product Recovery Rate Test

A bail down test was performed on well MW04 and MW07 during the Rapid Assessment on October 25, 1999. An oil-water interface probe was used to determine the free product thickness. During the well sampling event in August of 1999, free product thickness of 0.10, 1.28, 1.69 and 0.30 feet were measured in wells MW01, MW04, MW07 and MW09, respectively. On October 25, 1999, KSG personnel remobilized to the former Heath Self Serve #2 site to perform a free product recovery rate test on well MW04 and MW07. Measurements taken during this field event revealed product thickness of 2.63 and 2.40 feet in wells MW04 and MW07, respectively.

The bail down test involved manually removing free product from Well MW04 and MW07 using a disposable bailer and measuring the thickness of and depth to free product in the well as it recovers. This test is most useful in estimating initial recovery rates for a skimming type operation. In order for the results of a bail down test to be applicable, the free product recharge rate should be slow relative to the rate of ground water recharge. The following procedure was used to calculate the average free product recovery rate:

1. Maximum free product thickness.
2. 80% x maximum thickness recovery.
3. Determine time corresponding to 80% of the free product recovery (min.).
4. Compute gallons per foot of free product thickness in well screen.
   π x (well radius in ft)^2 x 7.48 gal/ft^3 = gal/ft
5. Compute average recovery rate to 80% recovery.
   gal / ft of free product thickness in well screen x 80% max. recovery / time corresponding to 80% recovery = gal / min

Bail down test calculations are provided in Appendix D.

3.7 Receptor Survey

A receptor survey was conducted at the subject facility as part of the Rapid Assessment to identify any potential exposure pathways. Exposure points are considered the location that a receptor can come into contact, either now or in the future, with soil and/or ground water contaminants. Typical exposure points may be drinking water wells, ponds, streams, underground basements, or underground utilities.

3.7.1 Water Wells

An existing onsite well was reportedly used during past car wash operations. This well is no longer in use. The receptor survey identified no additional drinking water or irrigation wells within 1000 feet of the property boundary.

3.7.2 Underground Utilities

A utility check was performed at the former Heath Self Serve #2 site by Palmetto Utilities Protection Service prior to the assessment field effort. KSG personnel conducted an additional utility check during rapid assessment activities to identify any potential underground exposure points (i.e., storm drain, sanitary sewer line, etc.). Contaminated ground water could potentially seep into these utilities if the static water level existed at an elevation greater than or equal to the corresponding underground utility.

A water main and gas line runs parallel with N. Guignard Drive adjacent to the subject property. A storm sewer drain is present on the southern corner of the subject property at the intersection of North Guignard Drive and Miller Road. Due to the depth to ground water, it is unlikely that the underground lines could provide a mechanism for accelerating contaminant transport during periods of abundant precipitation.

3.7.3 Surface Water

Field activities implemented during the Rapid Assessment were unable to identify any surface waters within 1000 feet of the subject site.

3.8 Site Survey

A site survey was performed during the Standard Limited Assessment to establish an accurate site map portraying the locations of the former UST area, onsite building and adjacent structures. The comprehensive site survey was performed by Mr. Jay S. Joshi. By referencing each TOC elevation to an established datum, the static water level elevation at each well was determined. A copy of the revised survey plat showing all ground water monitoring wells is provided in the envelope that is attached to the inside of the back cover of this report.

SECTION 4.0

TIER 2 EVALUATION

4.1 Fate and Transport Model

A computer model that was developed by the U.S. EPA, BIOSCREEN, was used for the fate and transport modeling at the Sumter site. The BIOSCREEN model simulates remediation through natural attenuation of dissolved hydrocarbons. The software is based on the Dominico analytical solute transport model and has the ability to simulate advection, dispersion, adsorption and aerobic (or anaerobic) decay. Site specific data that was generated during the Rapid Assessment was utilized to simulate plume migration over time. Results of the BIOSCREEN model are provided in Appendix F.

4.2 SSTL Calculation

KSG evaluated the health and environmental risks associated with this site and identified the property line on Miller Road as the closest potential receptor. Following a straight line down-gradient from MW01, the property line is approximately 30 feet. During the Tier 2 analysis, the property line was used as the receptor for determining SSTL values. The property line was selected as the nearest potential receptor due to the fact no ordinance exists in Sumter preventing the installation of irrigation wells. Using a modified version of Equation 1 of the Dominico Model, the following analysis was performed:

$$C_o / 2 = (C_x) / \{erfc[(x-vt)/(2(\alpha_x vt)^{1/2})] * erf[Y/(4(\alpha_y x)^{1/2})] * erf[Z/(4(\alpha_z x)^{1/2})]\}$$

Where: *Property Line*

C_x =

5	ppb benzene
1,000	ppb toluene
700	ppb ethylbenzene
10,000	ppb xylenes
40	ppb MTBE
25	ppb naphthalene

Using above information, the following SSTLs were calculated (see Appendix F for calculations):

C_0 =

5	ppb benzene		**226,000**	ppb benzene
1,000	ppb toluene	compared to actual	**301,000**	ppb toluene
700	ppb ethylbenzene	concentrations in	**280,000**	ppb ethylbenzene
10,000	ppb xylenes	Well MW01	**278,000**	ppb xylenes
40	ppb MTBE		**2,000**	ppb MTBE
25	ppb naphthalene		**5,110,819**	ppb naphthalene

Tier 2 calculations are provided in Appendix G.

SECTION 5.0

RESULTS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Results

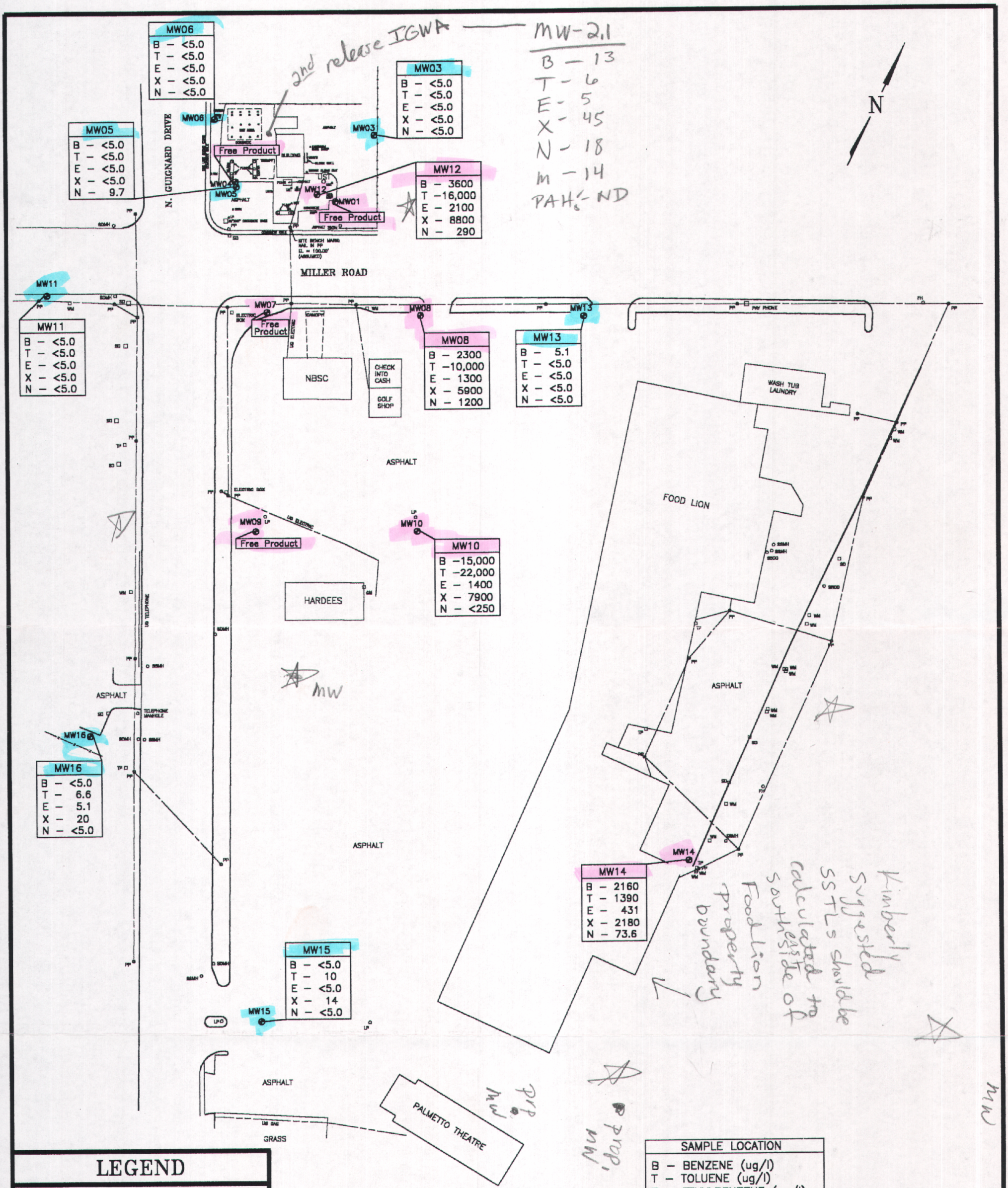
Subsurface soils consist of brown silty, clayey sands from surface to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands down to the final investigation depth of 45 feet. The first occurrence of ground water was noted at approximately 17 to 18 feet below ground surface. Static water levels ranged from 11.86 to 18.81 feet below ground surface across the site and adjoining properties.

The former UST and dispenser island area appear to be the source of contamination at the subject site. A large free product plume is present along the southeastern portion of the subject property. Free product was observed in wells MW01, MW04, MW07 and MW09 at a thickness of 0.10, 1.28, 1.69 and 0.30 feet, respectively. The free product plume extends beneath Miller Road and covers an area measuring approximately 120 feet by 400 feet.

As shown in Figure 4, the natural flow of ground water has transported free product and dissolved phase contaminants in a southeasterly direction. Well MW06 was successful in defining the upgradient extent of the dissolved phase plume while well MW15 closely defines the downgradient extent of the plume. Deep well MW05 did not contain any dissolved phase hydrocarbons at levels exceeding the calculated SSTL concentrations. The dissolved phase ground water contaminant plume covers an area measuring approximately 650 by 950 feet. A diagram showing the dissolved phase hydrocarbon concentrations within the surficial aquifer is presented in Figure 6.

Analytical data generated during the Rapid Assessment revealed elevated levels of EDB in wells MW08 and MW10. Concentrations of lead at levels above the Primary Drinking Water Standard of 0.050 mg/l were identified in two monitoring wells. This data suggests that a release of leaded gasoline is responsible for at least part of the contamination present.

Laboratory analytical data generated from the Rapid Assessment sampling event revealed elevated levels of petroleum constituents within onsite soils and ground water at the former Heath Self Serve #2 site. Elevated levels of soil contamination above the water table were detected during the Standard Limited Assessment in the Samples SB01, SB02, SB04, SB05 and SB06. Soil sample SB02 contained the highest levels of toluene, ethylbenzene, total xylenes and naphthalene at concentration levels 33 µg/kg, 2,300 µg/kg, 14,000 µg/kg and 380 µg/kg, respectively. Soil leachability calculations indicate that the levels of toluene, ethylbenzene and naphthalene in soils immediately surrounding the former UST piping and dispenser island exceed the SSTL values.



HEATH SELF SERVE # 2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 6: GROUND WATER COC MAP

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Dissolved oxygen levels were measured on ground water samples from each monitor well location. A review of the data presented in Table 2 indicates the "classic" reduction in the dissolved oxygen level in ground water present within the dissolved phase contaminant plume. This data appears to provide evidence that aerobic microbial activity is occurring to degrade the petroleum compounds.

A receptor survey was performed as part of the Rapid Assessment process. An onsite well is present that supplied water to the car wash during past operations. This well is no longer in use. No additional potential receptors were located within 1000 feet of the subject site. has not been abandoned, but is not in use

An aquifer pump test was conducted at the site to provide additional aquifer characterization data. A pumping rate of 2.93 gallons per minute was sustained in well MW12 for seven hours. Using an aquifer thickness of 27 feet and a hydraulic gradient of 0.011 ft/ft, a ground water seepage rate of 6.07 feet per year was calculated. From the size of the dissolved phase plume, ground water must be traveling faster, at least locally, than the calculated seepage velocity.

A free product bail down test was performed on monitor well MW04 and MW07. As described in Section 3.6.2, this field test provides a rough approximation of the volume of free product that can be removed on a daily basis. It should be noted that recovery rate would be expected to decrease quickly once continuous free product recovery activities are initiated. A free product recovery rate of 10.46 and 6.39 gallons per day from MW04 and MW07, respectively, was calculated during the Rapid Assessment.

5.2 Conclusions and Recommendations

The Rapid Assessment has been successful in generating current data concerning the concentration of petroleum hydrocarbons in onsite soil and ground water. Soil leachability tests indicate that petroleum contaminants are present in the former UST pit and dispenser island areas at levels that require remediation. Furthermore, ground water contaminants are present in many wells at concentrations above calculated SSTLs. Free product in excess of 1.0 foot in thickness is also present in both onsite and offsite wells.

KSG recommends that a Corrective Action Plan (CAP) and Engineering Report (ER) be prepared in order to determine the most technically sound and cost effective method of remediating contaminated ground water to the SSTLs calculated within Section 4.0 of this report.

SECTION 6.0

APPENDICES

APPENDIX A - GEOLOGIC CROSS SECTIONS

APPENDIX B - ANALYTICAL DATA SHEETS

APPENDIX C - BORING LOGS & WELL CONSTRUCTION SUMMARIES

APPENDIX D - AQUIFER EVALUATION

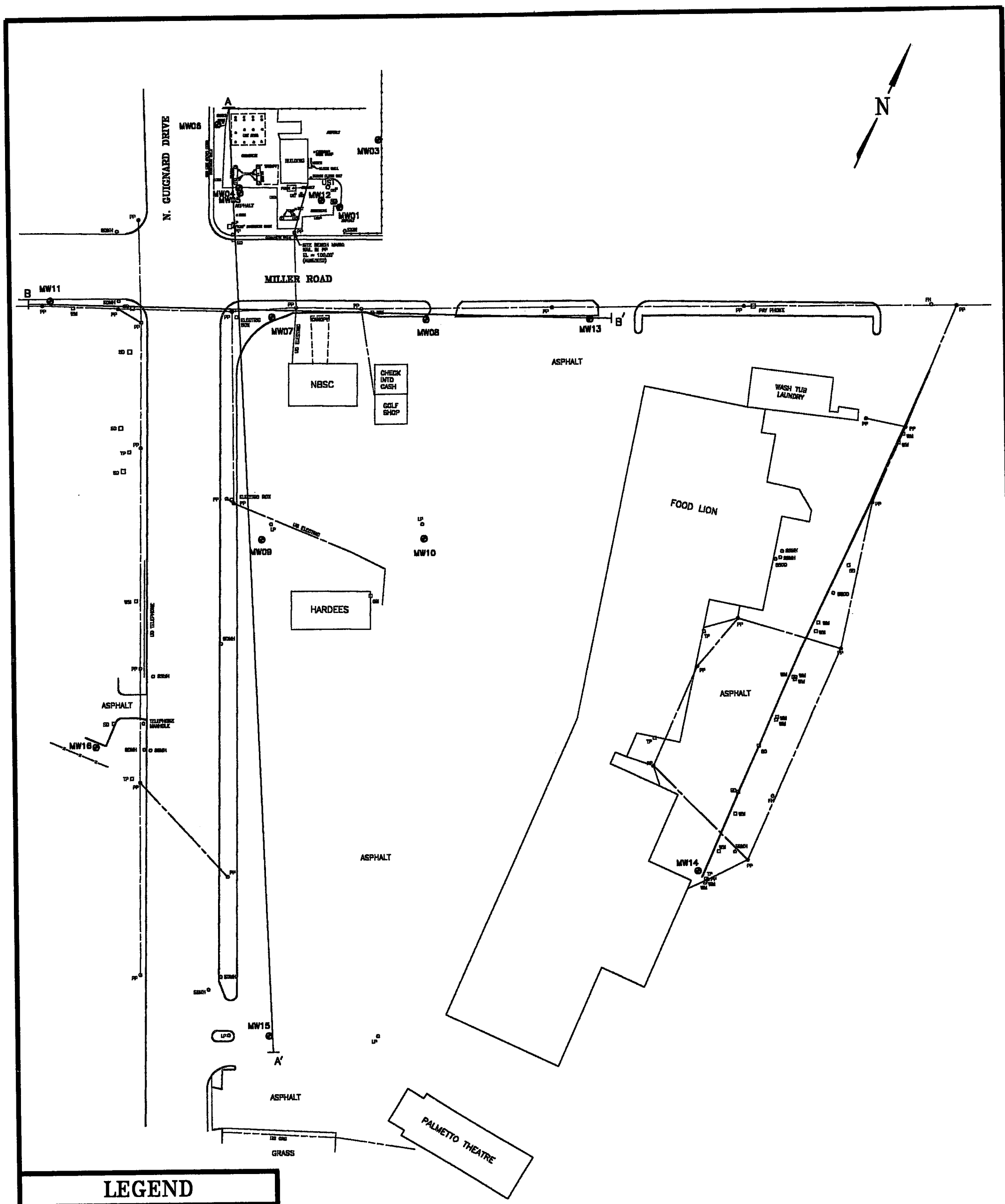
APPENDIX E - WASTE DISPOSAL MANIFESTS

APPENDIX F – BIOSCREEN FATE AND TRANSPORT MODEL

APPENDIX G - TIER 2 EVALUATION

APPENDIX A

GEOLOGIC CROSS SECTIONS



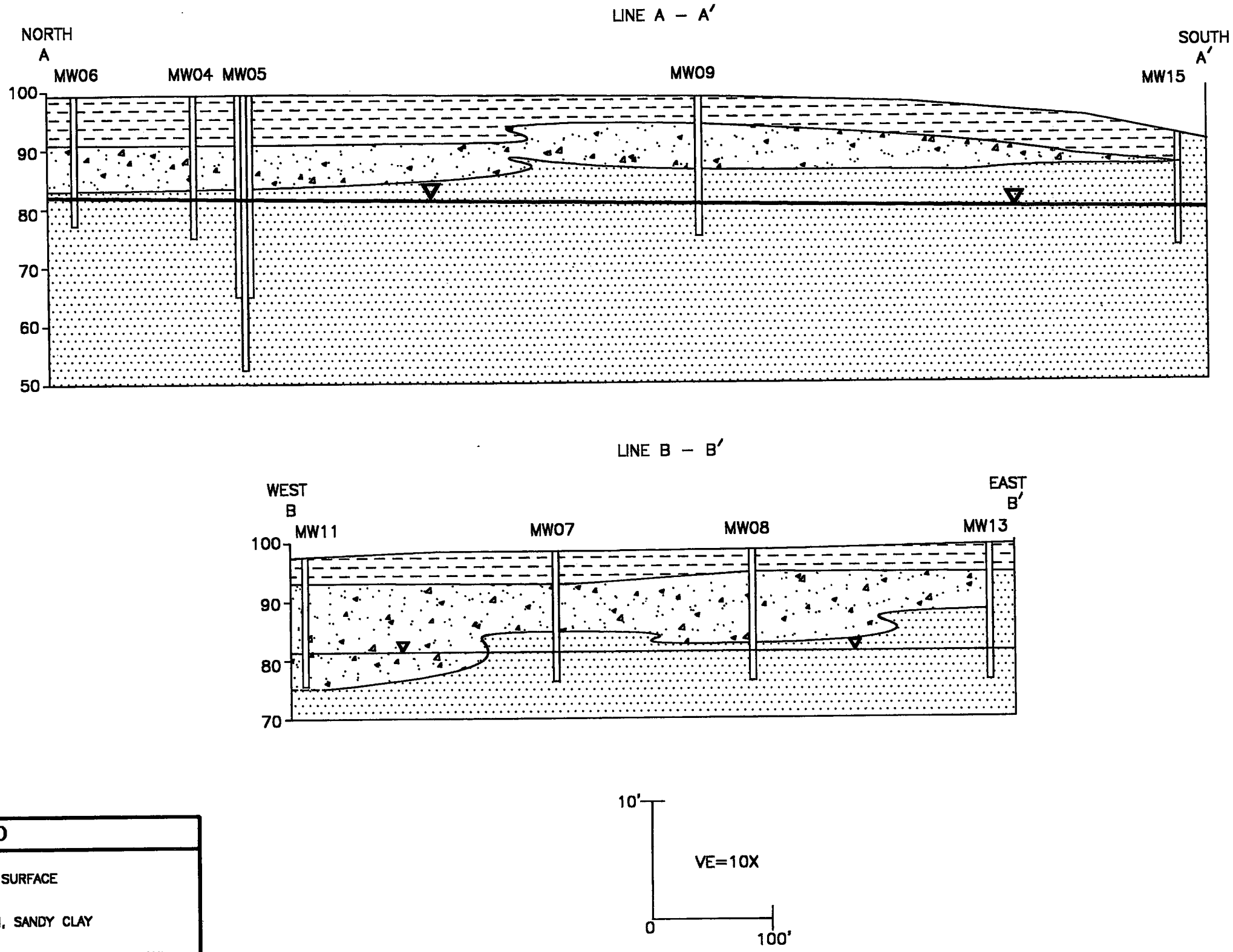
LEGEND

⊕ MW 15 – MONITOR WELL LOCATION

HEATH SELF SERVE # 2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

LINES OF GEOLOGIC CROSS-SECTIONAL VIEW

KLEEN SITES GEOSERVICES



LEGEND

- – POTENTIOMETRIC SURFACE
- – REDDISH–BROWN, SANDY CLAY
- – WHITE TO RED, FINE–GRAINED SILTY SAND
- – WHITE TO RED, FINE–GRAINED SAND

HEATH SELF SERVE # 2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

LINES OF GEOLOGIC CROSS–SECTIONAL VIEW

KLEEN SITES GEOSERVICES

F:\KSG\CAD\1999\98545\GeoCross-SectD.dwg

APPENDIX B

ANALYTICAL DATA SHEETS

APPENDIX C

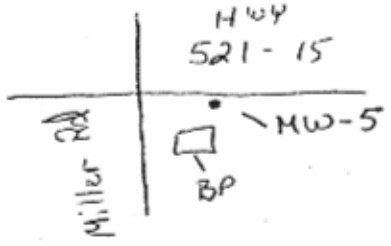
BORING LOGS & WELL CONSTRUCTION DIAGRAMS

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

LOCATION OF WELL:
County: Sumter SC System Name: Heath # 2
Latitude: Longitude:
Distance and Direction from Road Intersections: 100 feet west of miller RD on HWY 521
Street Address & City of Well Location: miller Rd Sumter SC.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
4-6 Red Clay	5	
9-11 Tan Silty Sand		
15-17 Tan Silty Sand wet		

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections: About 50 Feet off Miller Rd 20 Feet off 521 in front of BP Gas Station
Street Address & City of Well Location: Miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter S.C. System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections: miller Rd Right of way about 20 Feet off 521 wedst Side of miller Rd
Street Address & City of Well Location: miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

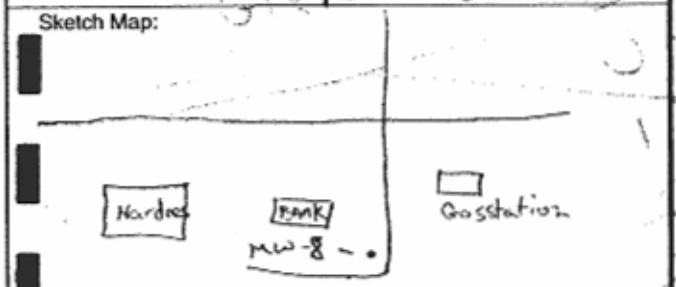
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
4-6 Red Clay		
9-11 Tan Sand		
15-17 Tan Silty Sand		

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name: PR 391 Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections: Miller Rd North about 200 Feet off 521 west
Street Address & City of Well Location: Miller Rd Sumter S.C.
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
4-6 Red Clay		
9-11 Tan Silty Sand		
15-17 Tan Silty Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

3. REMARKS:

4. OWNER OF WELL: Klein Sites Geosciences Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: 803-957-7968
Engineer: Klein Sites Geosciences Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: 803-957-7968

5. WELL DEPTH (completed) 23 ft. Date Started: 8-17-99 Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 0 ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2
Slot/Gauge: .010 Length: 10
Set Between: 13 ft. and 23 ft. NOTE: MULTIPLE SCREENS USE SECOND SHEET
____ ft. and ____ ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11 ft. to 23 ft.
Effective size #2 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 9 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 8-19-99
Address: 10401 John Price Rd Charlotte NC
Signed: Ricky L Lemire Cert. No.: 1423
Authorized Representative

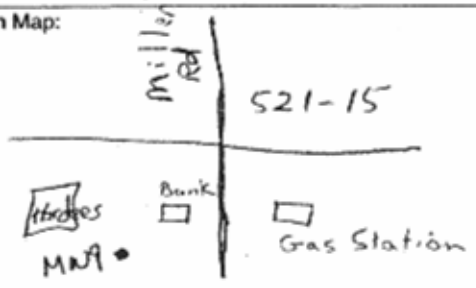
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter — System Name: Heath #2
Latitude: — Longitude:
Distance and Direction from Road Intersections: 200 Feet off Miller Rd 200 Feet off 521 Miller Rd
Street Address & City of Well Location: Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

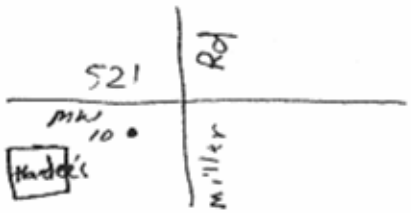
Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
~~Clay~~		
15-17 Tan Silty ~~Clay~~ Sand wet		

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections: 200 Feet off Miller Road and 20 Feet North of 521 East
Street Address & City of Well Location: Miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
15-17		
Tan Silty Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

3. REMARKS:

4. OWNER OF WELL: Kleen Sites Geoservices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7988

Engineer: Kleen Sites Geoservices Inc
Address: 409 Burton Rd Lexington SC
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed): 23 ft. Date Started: 8-17-99 Date Completed: 8-17-99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. _____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ _____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: .010 Length: 10
Set Between: 13 ft. and 23 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11 ft. to 23 ft.
Effective size #2 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 9 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected upon completion ☐ Yes ☐ No Type: _____ Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 8-17-99
Address: 10401 John Price Rd Charlotte NC
Signed: Ruby R Lemme (Authorized Representative) Cert. No.: 1423

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections: on Right of way miller Rd about 100 Feet off 521
Street Address & City of Well Location: miller Rd Sumter S.C.

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

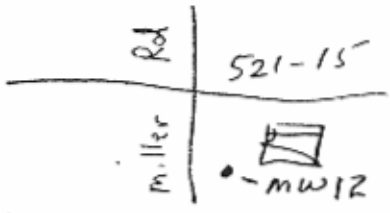
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name: Heath #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

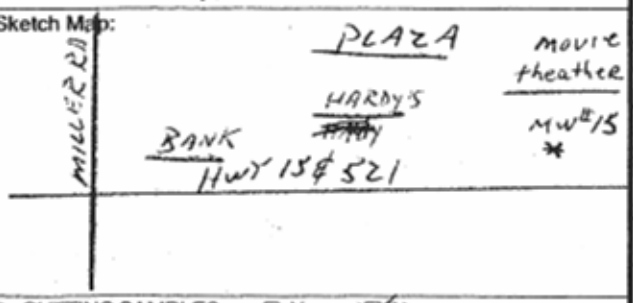
Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 50' EAST OF HWY 15 & 521
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No

Geophysical Logs: ☐ Yes (please enclose) ☒ No

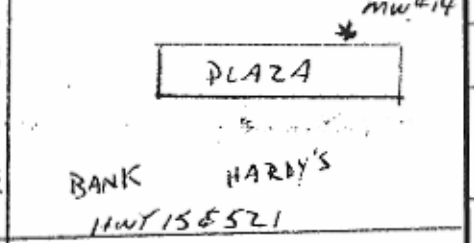
Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	6	18'

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 150 YARDS South OF MILLER RD.
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No

Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	0	18'
White m to F. SAND	18'	20'

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: HEATH #2
Address: HWY 15 & MILLER RD.
SUMTER, S.C.
Telephone No.:

Engineer: KLEEN SITE
Address: 409 BURTON RD.
LEXINGTON, S.C. 29072
Telephone No: (803) 957-7988

5. WELL DEPTH (completed) 20' ft. Date Started: 10/14/99 Date Completed: 10/14/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
10' in. to 20' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 10' ft. and 20' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 12' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size 20/30 Uniformity Coefficient ____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 8' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAED ACCO Date: 10/15/99
Address: 10491 JOHN PRICE RD. CHARLOTTE, N.C.
Signed: ____ (Authorized Representative) Cert. No.: 1472

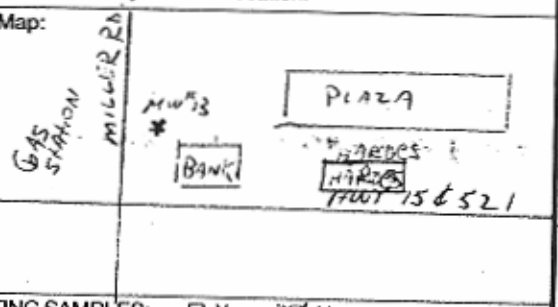
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 15' SOUTH OF MILLER RD.
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No
Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	0	18'
WHITE M. TO F. SAND	18'	23'
Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

REMARKS:

4. OWNER OF WELL: HEATH #2
Address: HWY 915 & MILLER RD.
SUMTER, S.C.
Telephone No.:
Engineer: KLEEN SITE
Address: 409 BURTON RD
LEXINGTON, S.C. 29072
Telephone No.: (803) 957-7988

5. WELL DEPTH (completed) 23' ft. Date Started: 10/14/99 Date Completed: 10/14/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 13' ft. depth
in. to ft. depth
Height: Above/Below Surface ft.
Weight lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 13' ft. and 23' ft.
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 15' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 11' ft. to 23' ft.
Effective size 20/30 Uniformity Coefficient

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 0 ft. to 11' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected ☐ Yes Type:
upon completion ☐ No Amount:

16. PUMP: Date installed: ☐ Not installed
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

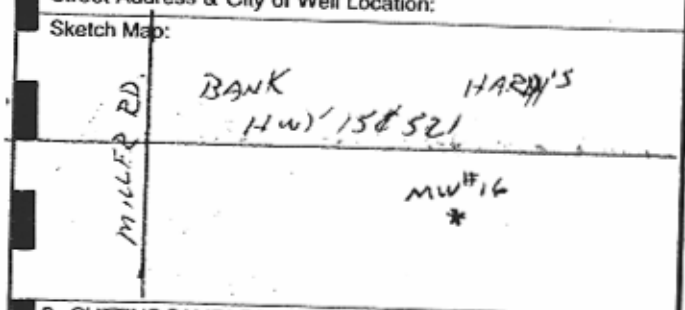
17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 10/15/99
Address: 1040-A JOHN PRICE RD CHARLOTTE, N.C.
Signed: Robert L. Miller Authorized Representative Cert. No.: 1472

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections: 25' west of Hwy 15 & 521
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☒ No
Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ORANGE SILTY SAND	0	16'
WHITE M TO F SAND	16'	20'
Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

REMARKS:

4. OWNER OF WELL: HEATH #2
Address: Hwy 15 & 521 & MILLER RD Sumter, S.C.
Telephone No.:
Engineer: KLEEN SITE
Address: 409 BURTON RD. LEXINGTON, S.C. 29072
Telephone No. (803) 957-7988

5. WELL DEPTH (completed) 20' ft. Date Started: 10/14/99 Date Completed: 10/14/99

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 10' ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.01 Length: 10'
Set Between: 10' ft. and 20' ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL 12' ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size 20/30 Uniformity Coefficient _____

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 8' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected upon completion ☐ Yes ☐ No Type: _____ Amount: _____

16. PUMP: Date installed: _____ ☐ Not installed
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 10/15/99
Address: 10401 JOHN PRICE RD. CHARLOTTE, N.C.
Signed: _____ Cert. No.: 1472
Authorized Representative

OHE 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

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FIELD BOREHOLE LOG

BOREHOLE NO.: **MW05**
TOTAL DEPTH: **45'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	Heath Self Serve #2	DRILLING CO.:	SAEDACCO
SITE LOCATION:	Sumter, SC	DRILLER:	Rich Lemire
JOB NO.:	99545	RIG TYPE:	Truck Mounted
LOGGED BY:	Jason Chiorazzi	METHOD OF DRILLING:	Mud-rotary
PROJECT MANAGER:	Bill Dunnagan	SAMPLING METHODS:	Split Spoon
DATES DRILLED:	08-16-99 to 08-17-99	HAMMER WT./DROP	140 LB., 30 IN.
NOTES:		▽ Water level during drilling ▼ Water level in completed well	

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SANDY CLAY: Red-brown				Cap and pad	
-5		CLAY AND SILT: Red-brown					
-10		SAND AND SILT: Red-tan, fine grained				Concrete Seal	
-15		SILTY SAND: White to tan, fine grained					
▼							
-20		SAND: White to tan, fine grained					
-25							
-40						Bentonite Sand Screened interval -40 to -45	
-45							

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FIELD BOREHOLE LOG

BOREHOLE NO.: **MW06**
TOTAL DEPTH: **22'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-16-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SANDY CLAY: Red-brown				Cap and pad	
		CLAY AND SILT: Red-brown				Concrete Seal	
-5							
		SAND AND SILT: Red-tan, fine grained				Bentonite	
-10						Sand	
		SILTY SAND: Tan, fine grained, odor					
-15						Screened interval -12' to -22'	
▽		SAND: White-gray, fine grained, odor					
▼							
-20							

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FIELD BOREHOLE LOG

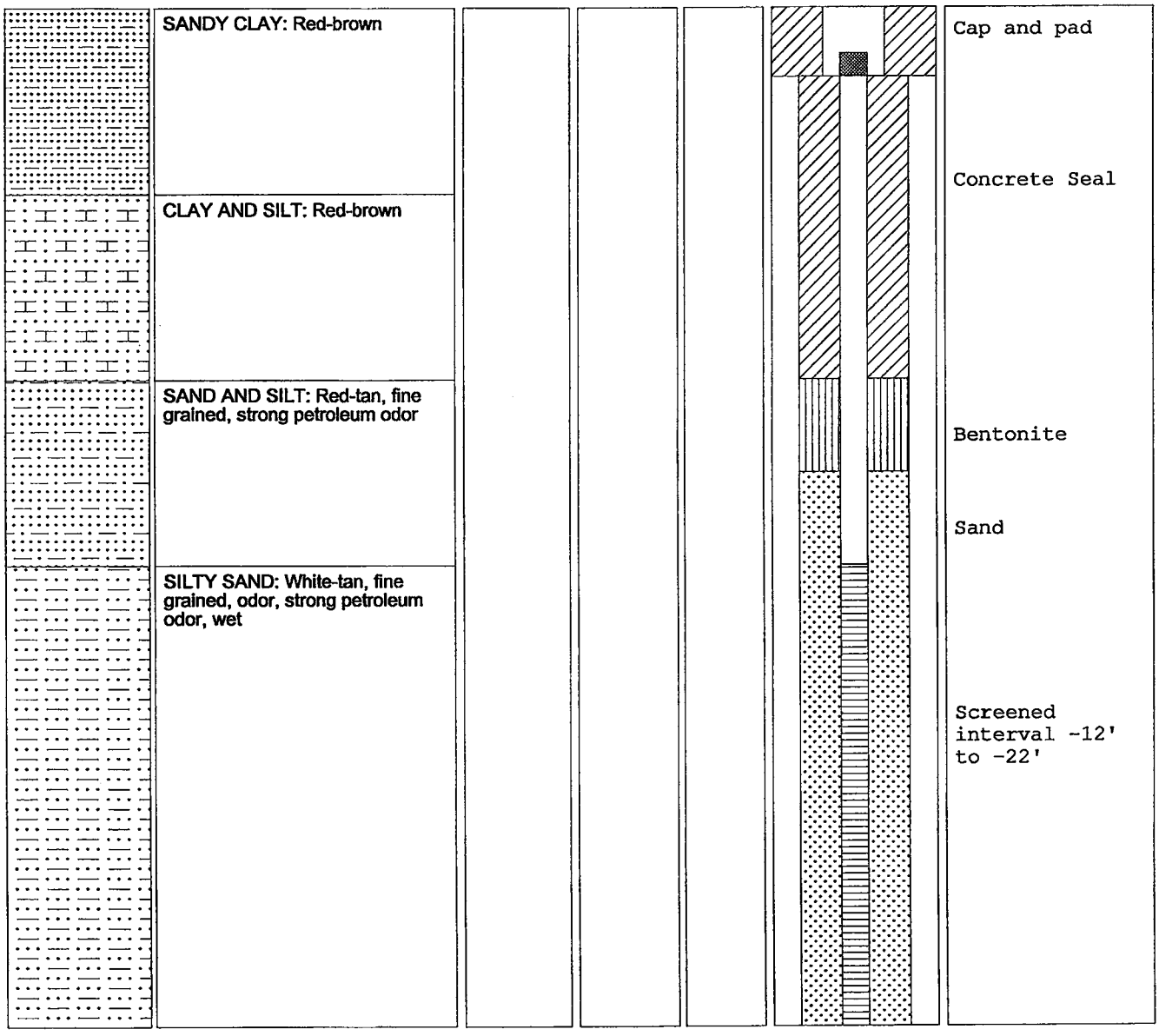
BOREHOLE NO.: **MW07**
TOTAL DEPTH: **22'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-16-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
		SANDY CLAY: Red-brown					
-5		CLAY AND SILT: Red-brown					
		SAND AND SILT: Red-tan, fine grained, strong petroleum odor					
-10							
		SILTY SAND: White-tan, fine grained, odor, strong petroleum odor, wet					
-15							
▽							
▼							
-20							



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FIELD BOREHOLE LOG

BOREHOLE NO.: **MW08**
TOTAL DEPTH: **23'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-17-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SANDY CLAY: Red-brown				Cap and pad	
-5		CLAY AND SILT: Red-brown				Concrete Seal	
-10		SAND AND SILT: Red-tan, fine grained				Bentonite	
-15		SILTY SAND: Red-tan, white, fine grained, odor, wet				Sand	
▼		SAND: White-gray, fine grained, odor				Screened interval -13' to -23'	
-20							

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FIELD BOREHOLE LOG

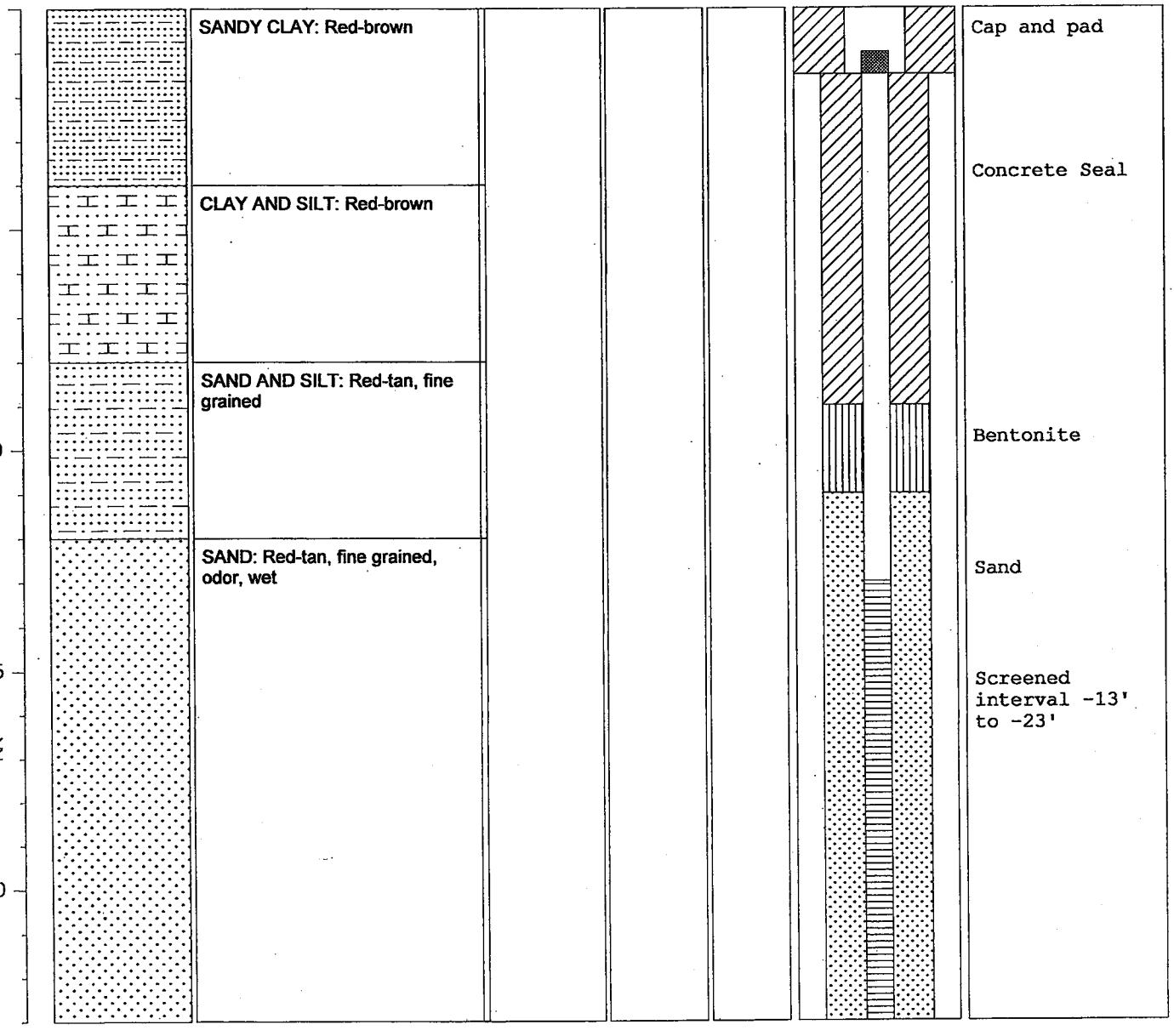
BOREHOLE NO.: **MW09**
TOTAL DEPTH: **23'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-17-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SANDY CLAY: Red-brown				Cap and pad	
-5		CLAY AND SILT: Red-brown				Concrete Seal	
-10		SAND AND SILT: Red-tan, fine grained				Bentonite	
-15		SAND: Red-tan, fine grained, odor, wet				Sand	
▼						Screened interval -13' to -23'	
-20							



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FIELD BOREHOLE LOG

BOREHOLE NO.: **MW10**
TOTAL DEPTH: **23'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-17-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

⧖ Water level during drilling
⧗ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SANDY CLAY: Red-brown				Cap and pad	
-5		CLAY AND SILT: Red-brown				Concrete Seal	
-10		SAND AND SILT: Red-tan, fine grained				Bentonite	
-15		SAND: Red-tan, fine grained, wet				Sand	
-20						Screened interval -13' to -23'	

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FIELD BOREHOLE LOG

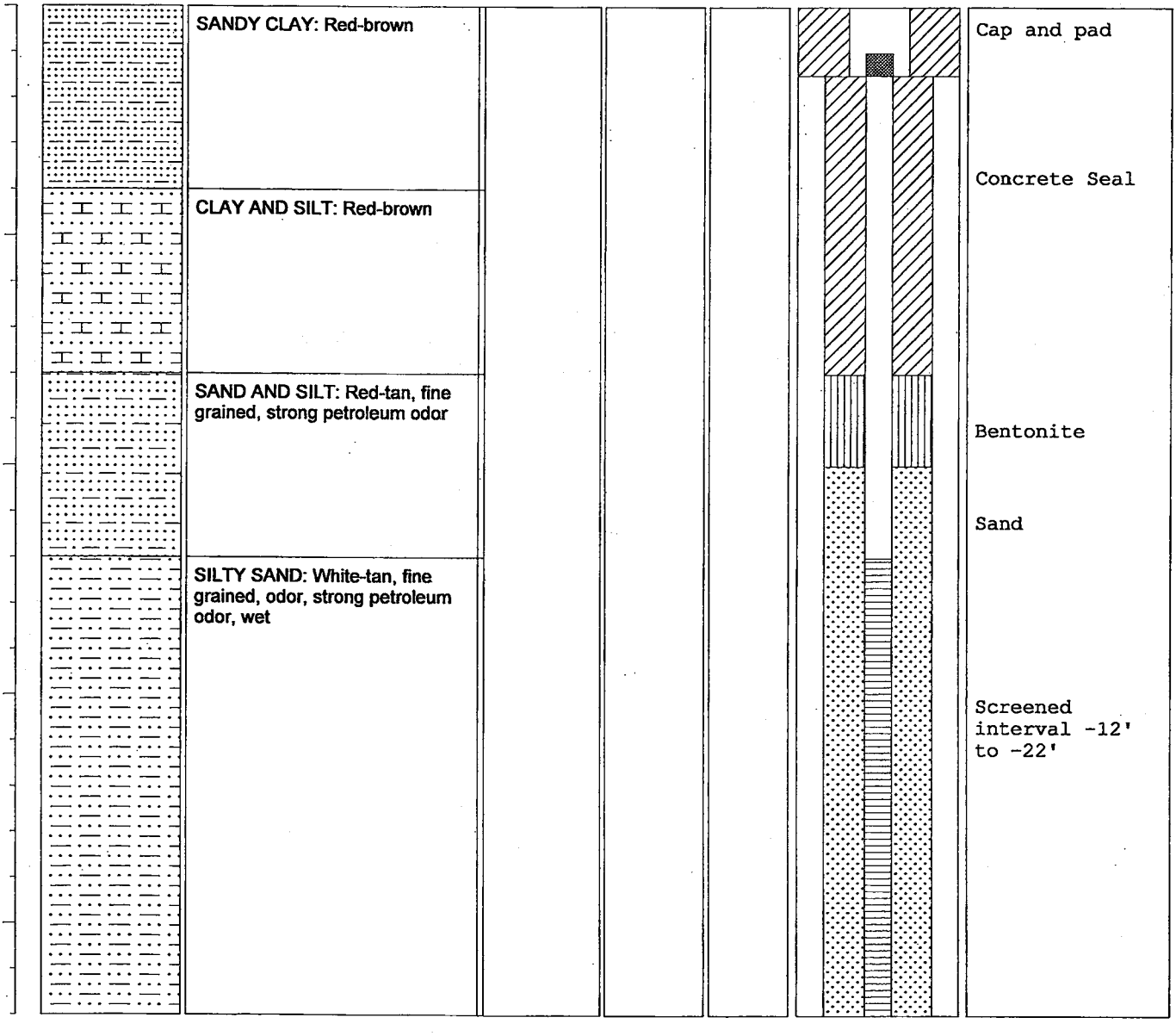
BOREHOLE NO.: **MW11**
TOTAL DEPTH: **22'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-17-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION



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FIELD BOREHOLE LOG

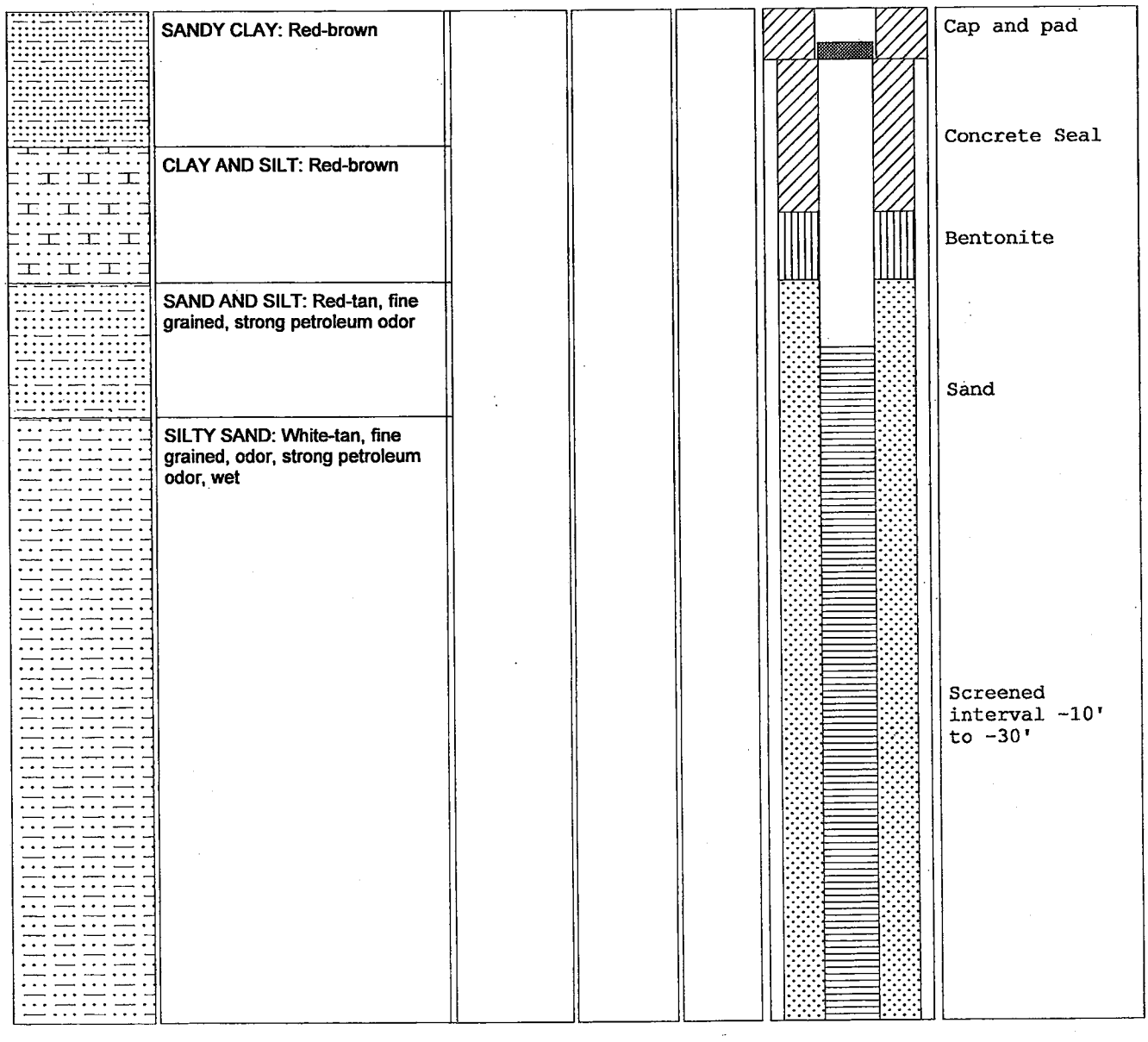
BOREHOLE NO.: **MW12**
TOTAL DEPTH: **22'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rich Lemire**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**08-17-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES: 4" Recovery Well

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE DEPTH	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SANDY CLAY: Red-brown				Cap and pad	
5		CLAY AND SILT: Red-brown				Concrete Seal	
10		SAND AND SILT: Red-tan, fine grained, strong petroleum odor				Bentonite	
15		SILTY SAND: White-tan, fine grained, odor, strong petroleum odor, wet				Sand	
▼							
20						Screened interval -10' to -30'	
25							
30							



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FIELD BOREHOLE LOG

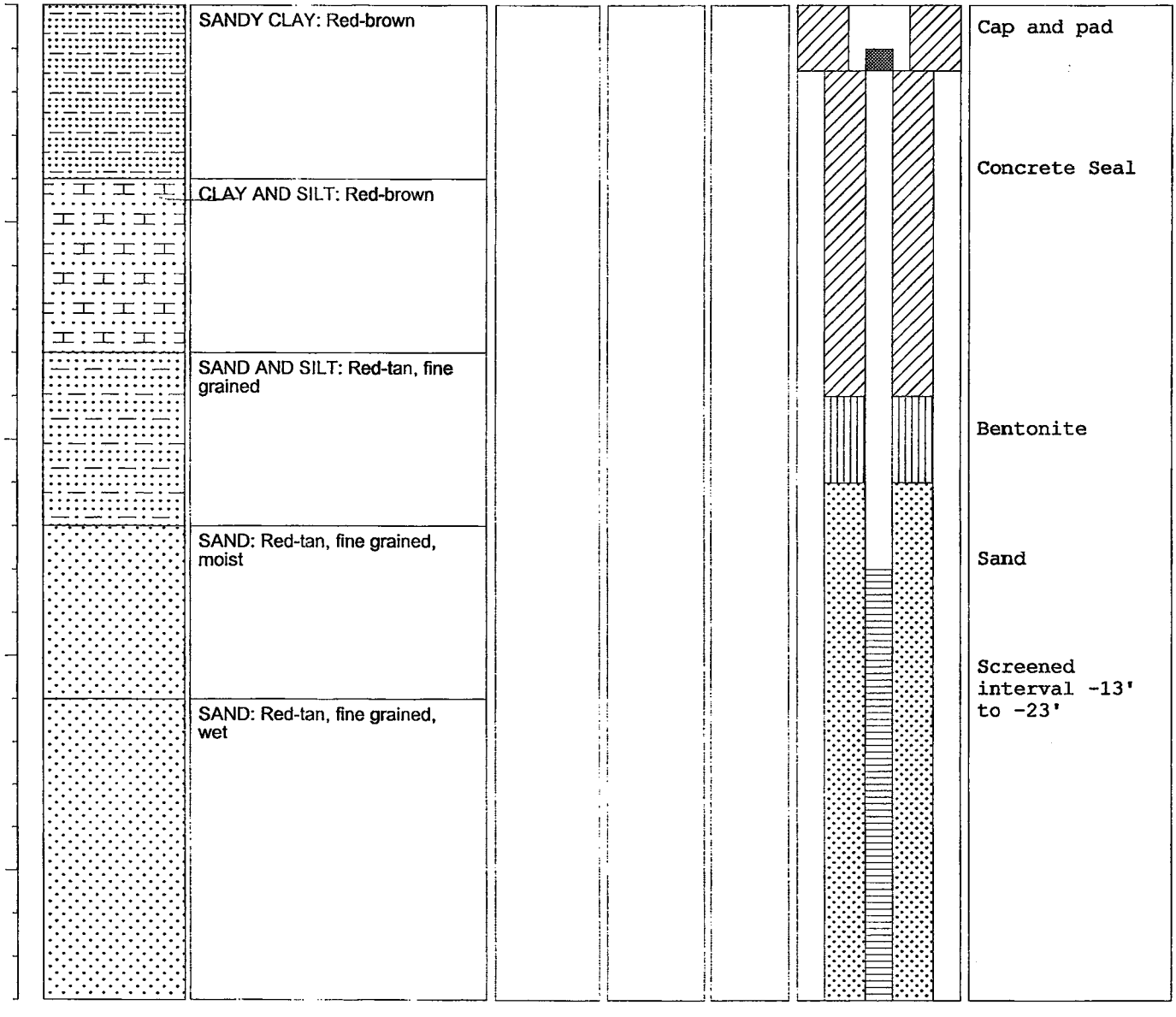
BOREHOLE NO.: **MW13**
TOTAL DEPTH: **23'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Robert Miller**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**10-14-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION



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FIELD BOREHOLE LOG

BOREHOLE NO.: **MW14**
TOTAL DEPTH: **20'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Robert Miller**
JOB NO.:	**99545**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Hollow Stem Auger**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split Spoon**
DATES DRILLED:	**10-14-99**	HAMMER WT./DROP	**140 LB., 30 IN.**

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SAND: Tan, fine grained, no odor				Cap and pad	
5		SAND: Red, tan, fine grained, no odor				Concrete Seal Bentonite Sand	
10		SAND: Red, fine to medium grained, petroleum odor, wet					
▽							
15							Screened interval -10' to -20'
20							

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FIELD BOREHOLE LOG

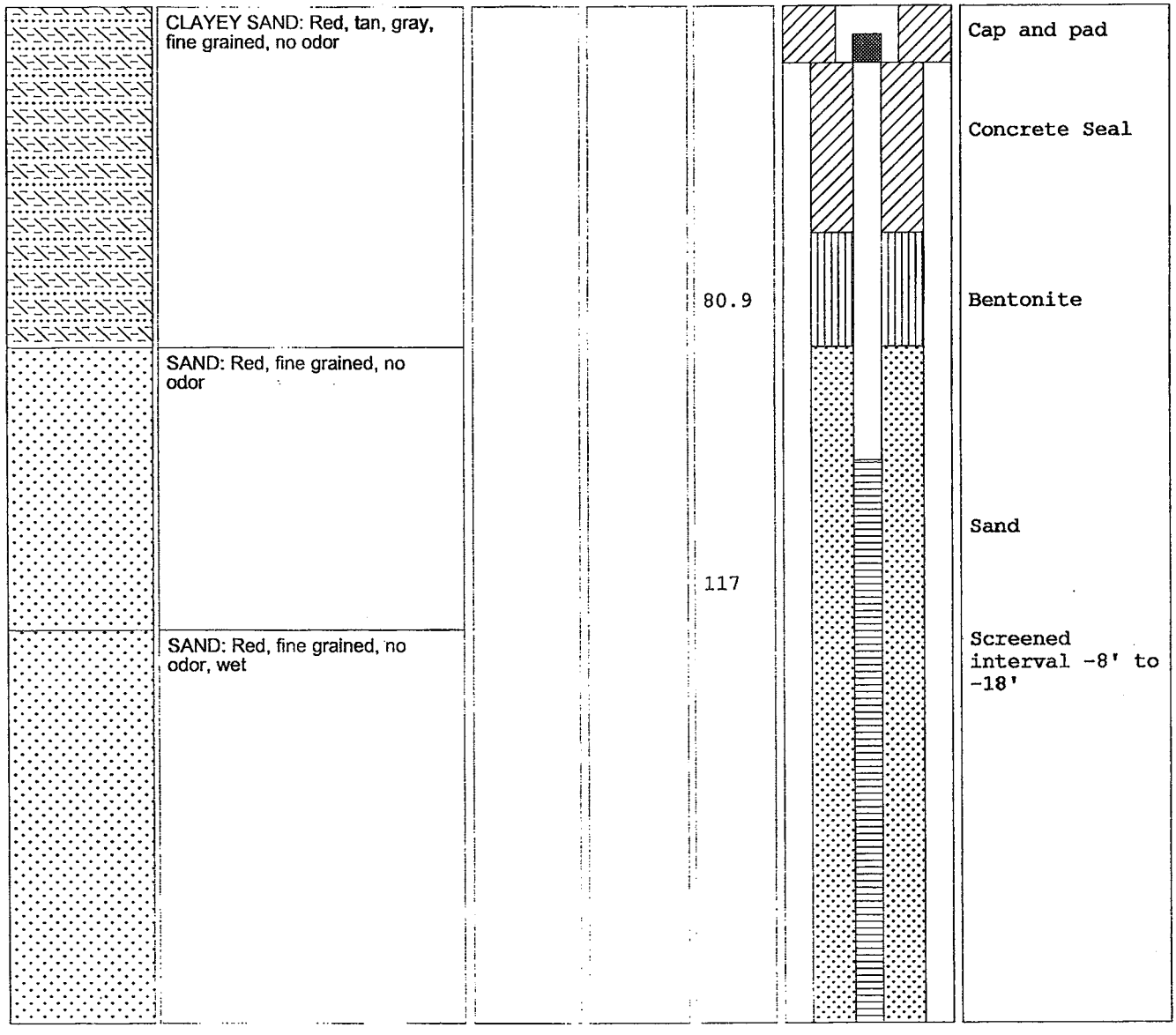
BOREHOLE NO.: **MW15**
TOTAL DEPTH: **18'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	Heath Self Serve #2	DRILLING CO.:	SAEDACCO
SITE LOCATION:	Sumter, SC	DRILLER:	Robert Miller
JOB NO.:	99545	RIG TYPE:	Truck Mounted
LOGGED BY:	Jason Chiorazzi	METHOD OF DRILLING:	Hollow Stem Auger
PROJECT MANAGER:	Bill Dunnagan	SAMPLING METHODS:	Split Spoon
DATES DRILLED:	10-14-99	HAMMER WT./DROP	140 LB., 30 IN.

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
5		CLAYEY SAND: Red, tan, gray, fine grained, no odor			80.9		Cap and pad Concrete Seal Bentonite
10		SAND: Red, fine grained, no odor			117		Sand
▼		SAND: Red, fine grained, no odor, wet					Screened interval -8' to -18'
15							



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FIELD BOREHOLE LOG

BOREHOLE NO.: **MW16**
TOTAL DEPTH: **20'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	Heath Self Serve #2	DRILLING CO.:	SAEDACCO
SITE LOCATION:	Sumter, SC	DRILLER:	Robert Miller
JOB NO.:	99545	RIG TYPE:	Truck Mounted
LOGGED BY:	Jason Chiorazzi	METHOD OF DRILLING:	Hollow Stem Auger
PROJECT MANAGER:	Bill Dunnagan	SAMPLING METHODS:	Split Spoon
DATES DRILLED:	10-14-99	HAMMER WT./DROP	140 LB., 30 IN.

NOTES:

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SAND: Red, fine grained, no odor				Cap and pad	
-5					87	Concrete Seal	
		SAND: Red, tan, fine grained, no odor, damp				Bentonite	
-10					123	Sand	
		SAND: Red, fine grained, wet				Screened interval -10' to -20'	
-15							
-20							

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW01

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Did not sample – FREE PRODUCT
					DO =

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW03

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	24.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	18.81 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.19 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.8 Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	2.4 Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1031	0.8	24.9	40	7.09	Clear
1035	1.6	22.9	20	7.56	
1039	2.4	23.0	10	7.08	
					DO = 7.5

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW04

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	24.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Did not sample – FREE PRODUCT
					DO =

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW05

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	45.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.12 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	27.88 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	4.7 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	47.0 Gallons
DATE:	08-19-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1113	4.7	26.7	180	7.63	Muddy
1116	9.4	24.8	160	7.45	
1120	14.1	24.5	115	7.44	
1123	18.8	24.0	90	7.34	
1127	23.5	24.3	70	7.29	
1134	28.2	24.2	70	7.25	
1138	32.9	24.1	60	7.25	
1143	37.6	24.2	55	7.23	
1149	42.3	24.2	55	7.24	
1156	47.0	24.1	50	7.21	
					DO = 5.9

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW06

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.66 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.34 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.9 Gallons
		$Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	
		PURGE VOLUME:	9.0 Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1144	0.9	25.6	30	7.56	Muddy
1147	1.8	24.7	30	7.55	
1149	2.7	25.2	30	7.54	
1151	3.6	24.9	30	7.07	
1153	4.5	24.8	30	6.91	
1155	5.4	24.9	30	7.05	
1156	6.3	24.6	30	7.06	
1157	7.2	24.7	25	7.06	
1159	8.1	24.6	25	7.07	
1200	9.0	24.5	25	7.06	
					DO = 4.7

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW07

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Did not sample – FREE PRODUCT
					DO =

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW08

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.74 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.26 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.9 Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	9.0 Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1357	0.9	28.0	50	7.06	Strong petroleum odor, sheen
1400	1.8	26.3	60	5.68	
1403	2.7	26.2	70	5.71	
1407	3.6	26.1	80	5.73	
1412	4.5	26.0	75	5.69	
1414	5.4	26.0	80	7.55	
1425	6.3	26.1	75	7.55	
1427	7.2	26.0	60	5.61	
1430	8.1	26.0	50	5.58	
1435	9.0	26.1	40	7.13	
					DO = 3.5

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW09

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
DATE:	08-18-99	PURGE VOLUME:	Gallons
		KSG PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Did not sample – FREE PRODUCT
					DO =

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW10

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	16.60 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	6.40 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.1 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	11.0 Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1535	1.1	28.0	40	7.31	Muddy, slight petroleum odor
1538	2.2	27.1	40	5.01	
1550	3.3	27.0	40	4.97	
1603	4.4	27.1	40	4.95	
1605	5.5	27.0	40	4.92	
1607	6.6	27.0	40	4.94	
1610	7.7	27.1	40	4.88	
1612	8.8	27.1	40	4.93	
1614	9.9	27.1	40	4.87	
1615	11.0	27.0	40	4.98	
					DO = 4.2

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW11

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	15.95 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	6.05 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.0 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	1.0 Gallons
DATE:	08-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1223	1.0	25.7	30	5.66	Cloudy
1225	2.0	24.9	30	5.05	
1226	3.0	24.7	30	4.97	
1228	4.0	24.8	30	4.98	
1229	5.0	24.9	30	7.55	
1231	6.0	24.8	30	5.02	
1233	7.0	24.7	30	5.00	
1234	8.0	24.8	30	7.48	
1235	9.0	24.7	30	7.52	
1236	10.0	24.6	30	5.10	
					DO = 6.2

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW12

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	30.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.62 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	12.38 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	4 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	8.1 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	81.0 Gallons
DATE:	08-19-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1335	8.1	26.2	80	7.42	Muddy, petroleum odor
1339	16.2	25.0	80	7.47	
1343	24.3	24.3	70	7.34	
1348	32.4	24.1	60	7.33	
1352	40.5	24.3	50	7.33	
1357	48.6	24.3	40	7.32	
1401	56.7	24.3	50	7.31	
	64.8				
	72.9				
	81.0				
					DO = 3.1

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW13

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	18.73 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	4.27 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.7 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	7.0 Gallons
DATE:	10-18-99	**KSG** PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1227	1.0	27.4	50	6.08	
1228	2.0	27.0	50	6.12	
1230	3.0	26.8	45	6.09	
1231	4.0	26.9	50	6.11	
1232	5.0	26.7	55	6.13	
1234	6.0	26.8	60	6.15	
1235	7.0	26.7	55	6.12	
					DO = 6.6

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW14

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	12.81 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	7.19 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.2 Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	12.0 Gallons
DATE:	10-18-99	**KSG** PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1127	1.2	28.8	70	6.27	
1129	2.4	26.7	70	5.93	
1130	3.6	27.1	70	5.94	
1132	4.8	26.9	70	5.98	
1134	6.0	26.7	70	6.01	
1135	7.2	26.8	70	6.00	
1137	8.4	26.6	75	6.03	
1139	9.6	26.9	70	6.02	
1140	10.8	27.0	75	6.04	
1142	12.0	26.8	75	6.01	
					DO = 3.0

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW15

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	18.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	11.86 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	6.14 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.0 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	10.0 Gallons
DATE:	10-18-99	**KSG** PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1325	1.0	32.5	40	5.29	
1326	2.0	31.1	40	5.36	
1328	3.0	30.8	40	5.31	
1330	4.0	30.7	35	5.29	
1331	5.0	30.9	30	5.20	
1333	6.0	30.6	30	5.19	
1335	7.0	30.7	30	5.11	
1336	8.0	30.8	35	5.10	
1338	9.0	30.6	30	5.05	
1340	10.0	30.8	30	5.07	
					DO = 5.5

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW16

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	13.67 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	6.33 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.0 Gallons
		$Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	
		PURGE VOLUME:	10.0 Gallons
DATE:	10-18-99	**KSG** PERSONNEL:	ED

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1402	1.0	29.8	40	5.30	
1403	2.0	29.8	40	5.03	
1405	3.0	29.9	45	5.10	
1406	4.0	29.1	45	5.06	
1406	5.0	29.3	45	5.01	
1408	6.0	27.6	40	5.00	
1409	7.0	27.6	45	4.97	
1410	8.0	27.3	45	4.94	
1411	9.0	27.3	40	4.95	
1411	10.0	27.1	40	4.93	
					DO = 6.3

APPENDIX D

AQUIFER CHARACTERIZATION

Aquifer Pump Test Data

AQUIFER PUMP TEST DATA
FORMER HEATH SELF SERVE #2 SITE
SUMTER, SC

Time	Elapsed Pumping Time (seconds)	Water Meter Reading (gallons)	Static Water Level at Recovery Well MW-12 (feet)	Static Water Level at Observation Well MW-1 (feet)	Static Water Level at Observation Well MW-3 (feet)
1028	Start	8224	18.07	12.75	19.26
1029	60	8239	24.18	12.75	19.26
1030	120	8254	29.30	12.75	19.26
1032	240	8262	29.30	12.75	19.26
1036	480	-	29.30	12.75	19.27
1038	600	-	29.30	12.77	19.27
1040	720	8274	29.30	12.76	19.27
1045	1020	8284	29.30	12.78	19.27
1106	2280	8300	29.30	12.78	19.27
1128	3600	8362	29.30	12.78	19.27
1200	5520	8422	29.30	12.78	19.27
1227	7140	8507	29.30	12.78	19.27
1330	10,920	8583	29.30	12.80	19.27
1430	14,520	8934	29.30	12.80	19.27
1530	18,120	9113	29.30	12.80	19.27
1630	21,720	9280	29.30	12.80	19.27
1730	25,320	9456	29.30	12.80	19.27

AQUIFER PUMP TEST
FORMER HEATH SELF SERVE #2 SITE, SUMTER, SC
Single Well, Constant Discharge Evaluation

The pump test was also evaluated using on the production well drawdown vs time data only. Jacob's Straight Line Method was used for a single well with constant discharge.

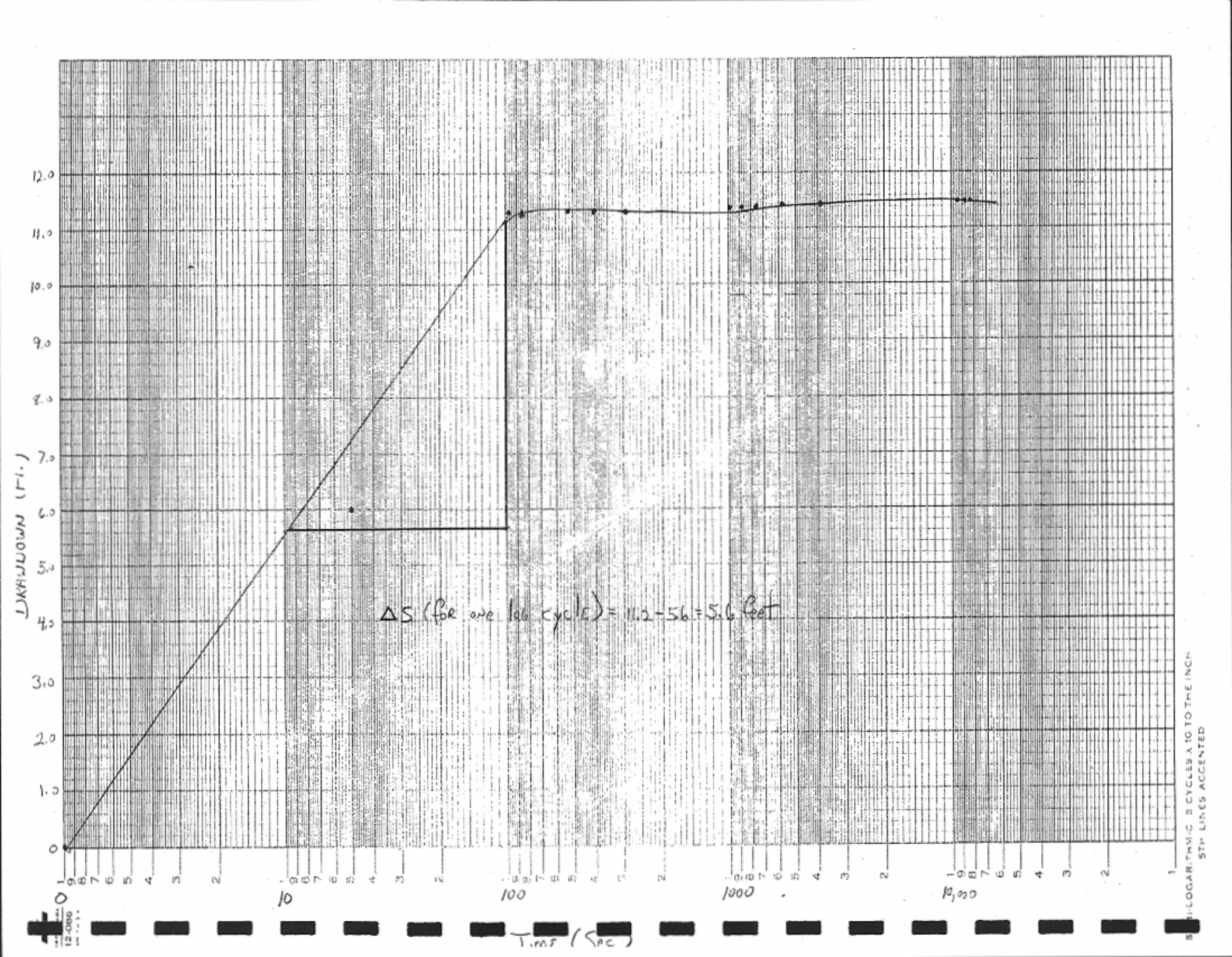
K = Hydraulic Conductivity
D = Aquifer Thickness
Q = Average Pumping Rate
Δs_w = Well Drawdown per Log Cycle

D = 27 feet
Q = 562 ft^3 / day
Δs_w = 5.6 feet

$KD = 2.3\ Q / 4\pi\Delta s_w$

$$K = \frac{2.3\ (562\ ft^3 / day)}{4\pi(5.6feet)(27\ feet)}$$

K = 0.68 feet / day


DRAWDOWN (FT.)
0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
1
10
100
1000
10,000
TIME (SEC)
ΔS (for one log cycle) = 11.2 - 5.6 = 5.6 feet
5 LOGARITHMIC CYCLES X 10 TO THE INCH
5TH LINES ACCENTED

Free Product Recovery Rate Test Data

Bail Down Test Data

MW07

Free Product Thickness (feet)

Elapsed Time (min.)	Depth to Static Water	-	Depth to Product	=	Product Thickness (feet)
1.0	18.52		17.41		1.11
2.0	18.60		17.33		1.27
3.0	18.54		17.27		1.27
4.0	18.55		17.25		1.30
5.0	18.47		17.21		1.26
10.0	18.44		17.19		1.25
15.0	18.42		17.09		1.33
20.0	18.54		17.04		1.50
25.0	18.63		17.01		1.53
30.0	18.75		16.97		1.66
40.0	18.83		16.95		1.80
50.0	18.95		16.92		1.91
60.0	19.02		16.91		2.04
90.0	19.07		16.89		2.13

Maximum Recovered Thickness = 1.89 - 0.22 = 1.02 ft

80% x 1.67 feet = 0.816 ft.

Time corresponding to 80% recovery (0.89 + 0.34) = 1.93 ft.

Gallons/foot of product thickness in well screen

π x (well radius in ft.)^2 x 7.48 gal/ft^3

3.14 x ($^1/_{12}$ ft)^2 x 7.48 gal/ft^3 = 0.16 gal/ft

Average Recovery Rate

0.16 gal/ft x 1.336 ft/30 minutes = 0.0044 = gallons of product per minute

= 6.39 = gallons of product per day

Bail Down Test Data

MW04

Free Product Thickness (feet)

Elapsed Time (min.)	Depth to Static Water	-	Depth to Product	=	Product Thickness (feet)
1.0	17.33		17.11		0.22
2.0	17.33		17.09		0.24
3.0	17.35		17.09		0.26
4.0	17.37		17.09		0.28
5.0	17.38		17.09		0.29
10.0	17.46		17.06		0.40
15.0	17.54		17.03		0.51
20.0	17.60		17.01		0.59
25.0	17.68		16.98		0.70
30.0	17.75		16.97		0.78
40.0	17.88		16.92		0.96
50.0	18.01		16.88		1.13
60.0	18.13		16.85		1.28
90.0	18.39		16.71		1.68
120.0	18.59		16.70		1.89

Maximum Recovered Thickness = 1.89 - 0.22 = 1.67 ft

80% x 1.67 feet = 1.336 ft.

Time corresponding to 80% recovery (0.89 + 0.34) = 1.56 ft.

Gallons/foot of product thickness in well screen

π x (well radius in ft.)^2 x 7.48 gal/ft^3

3.14 x ($^1/_{12}$ ft)^2 x 7.48 gal/ft^3 = 0.16 gal/ft

Average Recovery Rate

0.16 gal/ft x 1.336 ft/30 minutes = 0.0073 = gallons of product per minute

= 10.46 = gallons of product per day

APPENDIX E

WASTE DISPOSAL MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.:
Manifest Document No.: GK1773
2. Page 1 of: 09/28/99

3. Generator's Name and Mailing Address:
EMERALD, INC
PO BOX 1384
SUMTER, SC 29151

4. Generator's Phone ((803)773-5454

5. Transporter 1 Company Name: G & K TANK SERVICES
6. US EPA ID Number:
A. Transporter's Phone: (803)494-4593

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address:
G&K TANK SERVICES
P.O. BOX 1384
SUMTER, SC. 29151
10. US EPA ID Number:
C. Facility's Phone: (803)494-4593

	11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a.	NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1		TK 1147 3500	
b.					
c.					
d.					

D. Additional Descriptions for Materials Listed Above:

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information:
11A. BP STATION CORNER OF GUIGNARD/MILLER RD. SUMTER, SC

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Printed/Typed Name: | Signature: | Month: | Day: | Year:

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Tommy Keels
Signature: Tommy Keels
Month: 09 Day: 29 Year: 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Month: | Day: | Year:

19. Discrepancy Indication Space:

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Tommy Keels
Signature: Tommy Keels
Month: 09 Day: 29 Year: 99

GENERATOR — TRANSPORTER — FACILITY

ORIGINAL - RETURN TO GENERATOR



Broad St. Extension • PO Box 1384 • Sumter SC 29151
(803) 494-2694 • 1-800-800-6840 • FAX (803) 494-8796

Certificate of Disposal

Tank # 1 (one) Size 1147 gallon

This is to certify that the above tank has been disposed of by G&K Tank Services, Inc., in accordance with and exceeding EPA regulations on Petroleum Tank Disposal.

Certified by Rick Keen Date 9-29-99

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of

3. Generator's Name and Mailing Address: GK1832 — 10-28-99

4. Generator's Phone ( ): HEATH SELF SERVR #2 MILLER RD & GUINGARD DR. SUMTER, SC

5. Transporter 1 Company Name | 6. US EPA ID Number | A. Transporter's Phone

7. Transporter 2 Company Name: G & K TANK SERVICES, INC | 8. US EPA ID Number | B. Transporter's Phone: 803-494-4593

9. Designated Facility Name and Site Address: G & K TANK SERVICES, INC 2020 BROAD STREET EXT SUMTER, SC 29151 | 10. US EPA ID Number | C. Facility's Phone

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS PETROLEUM CONTAMINATED SOIL ✓	23	DR		
b. NONHAZARDOUS PETROLEUM CONTAMINATED WATER ✓	009	DR		
c.				
d.				

803-494-4593

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

EMERALD
PO BOX 3050
SUMTER, SC 29151

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Jon Brashear | Signature: Jon Brashear | Month 10 Day 28 Year 99

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Eugene Dicks | Signature: Eugene Dicks | Month 10 Day 28 Year 99

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Tommy Keels | Signature: Tommy Keels | Month 10 Day 28 Year 99

GENERATOR — TRANSPORTER — FACILITY

ORIGINAL - RETURN TO GENERATOR

G & K
TANK SERVICES, INC.

Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1 (800) 922-7835 • FAX: (803) 494-8598

Certificate of Disposal

Tons 9 DRUMS

Contaminant NON HAZARDOUS PETROLEUM CONTAMINATED WATER

HEATH SELF SERVE #2
MILLER RD AND GUINGARD DRIVE
SUMTER, SC

This is to certify the above ~~soil~~ has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by Rob Keown

Date 10-29-99

G & K
TANK SERVICES, INC.

Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1 (800) 922-7835 • FAX: (803) 494-8598

Certificate of Disposal

Tons 23 DRUMS

Contaminant NON HAZARDOUS PETROLEUM

HEATH SELF SERVE #2
MILLER RD AND GUINGARD DRIVE
SUMTER, SC

This is to certify the above soil has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by Rob Eaton

Date 10-29-99

APPENDIX F

BIOSCREEN FATE AND TRANSPORT MODEL

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Heath Self Serve #2
Benzne
Run Name

Data Input Instructions:

115 — 1. Enter value directly, or
or — 2. Calculate by filling in grey
0.02 — cells below. (To restore
formulas, hit button below)

Variable* — Data used directly in model
20 — Value calculated by model
(Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	6.1	(ft/yr)
or		or	
Hydraulic Conductivity	K	1.1E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	22.8	(ft)
Transverse Dispersivity*	alpha y	2.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	850	(ft)

3. ADSORPTION

Retardation Factor*	R	1.0	(-)
or		or	
Soil Bulk Density	rho	1.7	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	5.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.5E+1	(per yr)
or		or	
Solute Half-Life	t-half	0.020	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	3.08	(mg/L)
Delta Nitrate*	NO3	1.2	(mg/L)
Observed Ferrous Iron*	Fe2+	0.01	(mg/L)
Delta Sulfate*	SO4	2	(mg/L)
Observed Methane*	CH4	6.6	(mg/L)

5. GENERAL

Modeled Area Length*	1500	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	50	(yr)



6. SOURCE DATA

Source Thickness in Sat.Zone* 27 (ft)

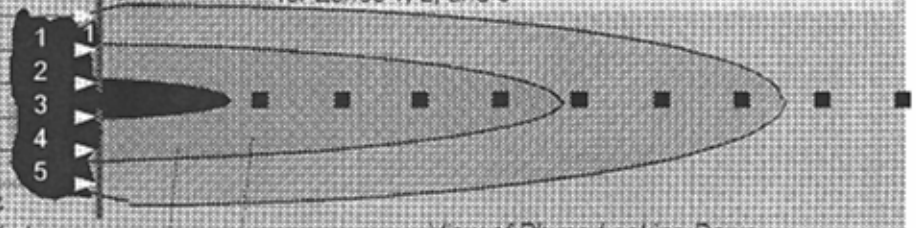
Source Zones:

	Width* (ft)	Conc. (mg/L)*
1	200	74.58
2	200	151.42
3	200	226
4	200	151.42
5	200	74.58

Source Halflife (see Help): 7 (Inst. React) | 7 (1st Order) (yr)

Soluble Mass In Source NAPL Soil: 2000 (Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	226.0	2.3	15.0	7.5		2.16	.8	.016			
Dist. from Source (ft)	0	150	300	450	600	750	900	1050	1200	1350	1500

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help | Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

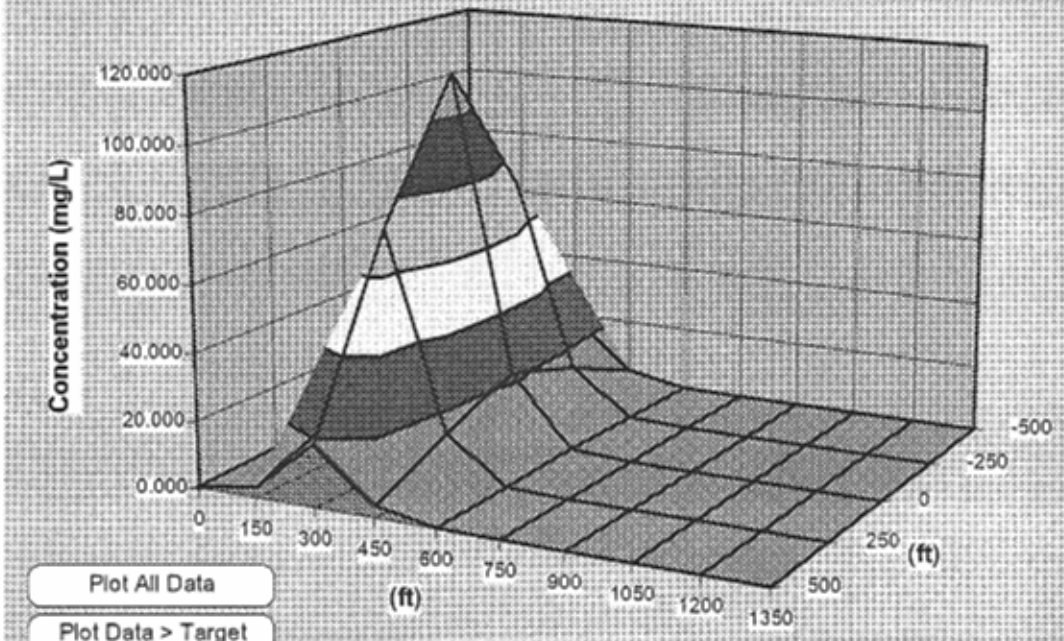
DISSOLVED BENZENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) Y \ Distance from Source (ft)	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.667	3.177	18.622	3.718	0.192	0.002	0.000	0.000	0.000	0.000	0.000
250	1.354	12.718	72.226	14.065	0.715	0.008	0.000	0.000	0.000	0.000	0.000
0	2.021	19.256	112.604	22.327	1.144	0.013	0.000	0.000	0.000	0.000	0.000
-250	1.354	12.718	72.226	14.065	0.715	0.008	0.000	0.000	0.000	0.000	0.000
-500	0.667	3.177	18.622	3.718	0.192	0.002	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	5.2E+5	4.9E+4	2.8E+5	5.5E+4	2.8E+3	3.2E+1	7.8E-2	3.9E-5	3.8E-9	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **0.005** mg/L Displayed Model: **No Degradation**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	17.9	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

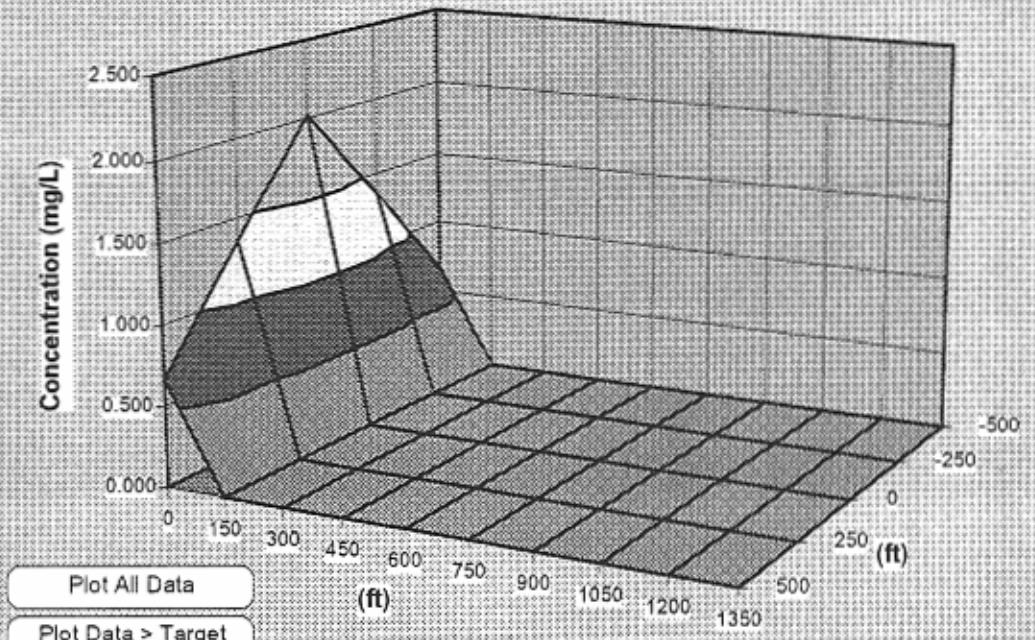
DISSOLVED BENZENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	1.354	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	2.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-250	1.354	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-500	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	5.2E+5	2.3E-27	1.0E-57	4.2E-89	1.8E-120	7.4E-152	3.1E-183	1.3E-214	5.6E-246	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **0.005** mg/L Displayed Model: **1st Order Decay**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	17.9	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Heath Self Serve #2
Toluene
Run Name

Data Input Instructions:

115 — 1. Enter value directly, or
or
0.02 — 2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

Variable* — Data used directly in model
20 — Value calculated by model (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	6.1	(ft/yr)
or		or	
Hydraulic Conductivity	K	1.1E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	22.8	(ft)
Transverse Dispersivity*	alpha y	2.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	850	(ft)

3. ADSORPTION

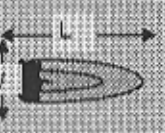
Retardation Factor*	R	1.0	(-)
or		or	
Soil Bulk Density	rho	1.7	(Kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	6.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.5E+1	(per yr)
or		or	
Solute Half-Life	t-half	0.020	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	3.08	(mg/L)
Delta Nitrate*	NO3	1.2	(mg/L)
Observed Ferrous Iron*	Fe2+	0.01	(mg/L)
Delta Sulfate*	SO4	2	(mg/L)
Observed Methane*	CH4	6.6	(mg/L)

5. GENERAL

Modeled Area Length*	1500	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	50	(yr)



6. SOURCE DATA

Source Thickness in Sat.Zone* 27 (ft)

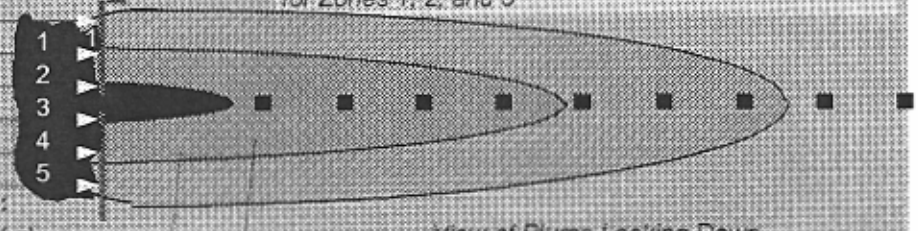
Source Zones

Width* (ft)	Conc. (mg/L)*
200	99.33
200	201.67
200	301
200	201.67
200	99.33

Source Halflife (see Help): 5 (Inst. Reactn) | 6 (1st Order) (yr)

Soluble Mass In Source NAPL Soil: 2000 (Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	301.0
150	10.0
300	22.0
450	19.0
600	
750	1.39
900	3.5
1050	.054
1200	
1350	
1500	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

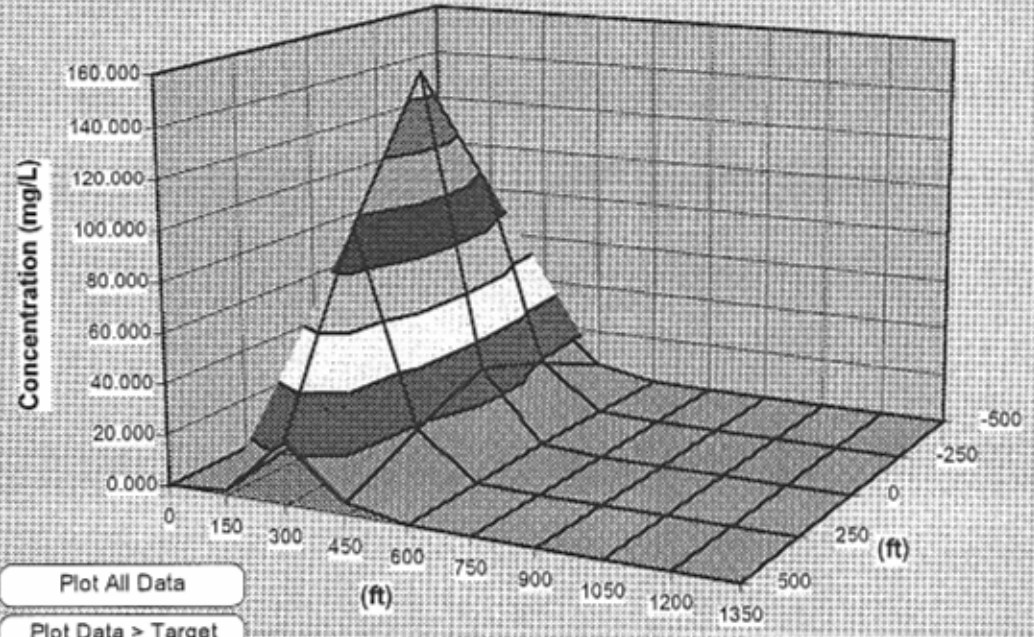
DISSOLVED TOLUENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.186	1.936	24.802	4.951	0.256	0.003	0.000	0.000	0.000	0.000	0.000
250	0.377	7.748	96.195	18.732	0.952	0.011	0.000	0.000	0.000	0.000	0.000
0	0.563	11.730	149.973	29.737	1.524	0.017	0.000	0.000	0.000	0.000	0.000
-250	0.377	7.748	96.195	18.732	0.952	0.011	0.000	0.000	0.000	0.000	0.000
-500	0.186	1.936	24.802	4.951	0.256	0.003	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	6.9E+5	3.0E+4	3.7E+5	7.3E+4	3.8E+3	4.3E+1	1.0E-1	5.1E-5	5.1E-9	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **1.000** mg/L Displayed Model: **No Degradation**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Megnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	3.7	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

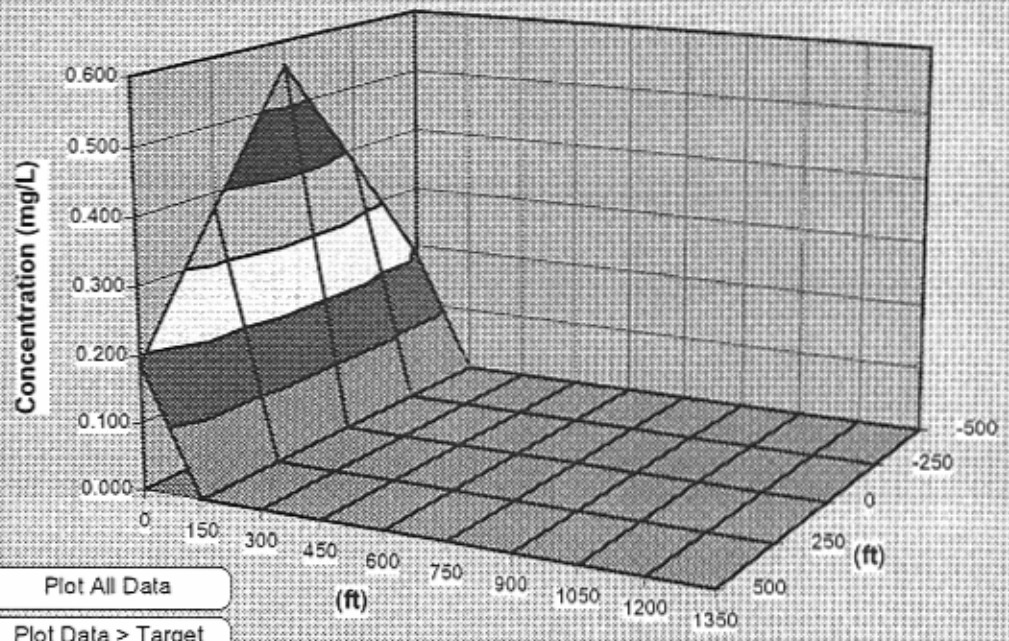
DISSOLVED TOLUENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) Y \ Distance from Source (ft)	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.186	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	0.377	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-250	0.377	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-500	0.186	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	6.9E+5	1.4E-27	1.3E-57	5.6E-89	2.4E-120	9.9E-152	4.2E-183	1.8E-214	7.4E-246	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **1.000** mg/L Displayed Model: **1st Order Decay**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation:	Can't Calc.	(Kg)
- Actual Plume Mass:	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg:	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years):	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years):	3.7	(Kg)
Current Volume of Groundwater in Plume:	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone:	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.4*

Heath Self Serve #2
Ethylbenzene
Run Name

Data Input Instructions:
115 — 1. Enter value directly ... or
or
0.02 — 2. Calculate by filling in grey cells below. (To restore formulas, hit button below)
Variable* — Data used directly in model
20 — Value calculated by model. (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	6.1	(ft/yr)
or			
Hydraulic Conductivity	K	1.1E-02	(cm/sec)
Hydraulic Gradient	i	0.003	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	22.8	(ft)
Transverse Dispersivity*	alpha y	2.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or			
Estimated Plume Length	Lp	850	(ft)

3. ADSORPTION

Retardation Factor*	R	1.0	(-)
or			
Soil Bulk Density	rho	1.7	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	5.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	4.3E+1	(per yr)
or			
Solute Half-Life	t-half	0.016	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	3.08	(mg/L)
Delta Nitrate*	NO3	1.2	(mg/L)
Observed Ferrous Iron*	Fe2+	0.01	(mg/L)
Delta Sulfate*	SO4	2	(mg/L)
Observed Methane*	CH4	6.6	(mg/L)

5. GENERAL

Modeled Area Length*	1500	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	50	(yr)



6. SOURCE DATA

Source Thickness in Sat.Zone* 27 (ft)

Source Zones:

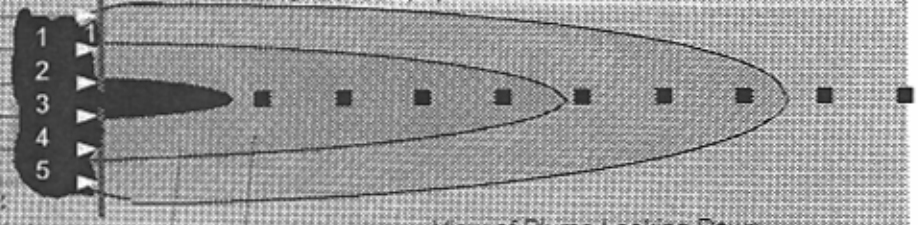
	Width* (ft)	Conc. (mg/L)*
1	200	92.4
2	200	187.6
3	200	280
4	200	187.6
5	200	92.4

Source Halflife (see Help):

Inst. React	1st Order	
6	6	(yr)

Soluble Mass 2000 (Kg)
in Source NAPL Soil

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	280.0	1.3	1.4	1.2		.431	.23	.008			
Dist. from Source (ft)	0	150	300	450	600	750	900	1050	1200	1350	1500

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — **View Output**

RUN ARRAY — **View Output**

Help

Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

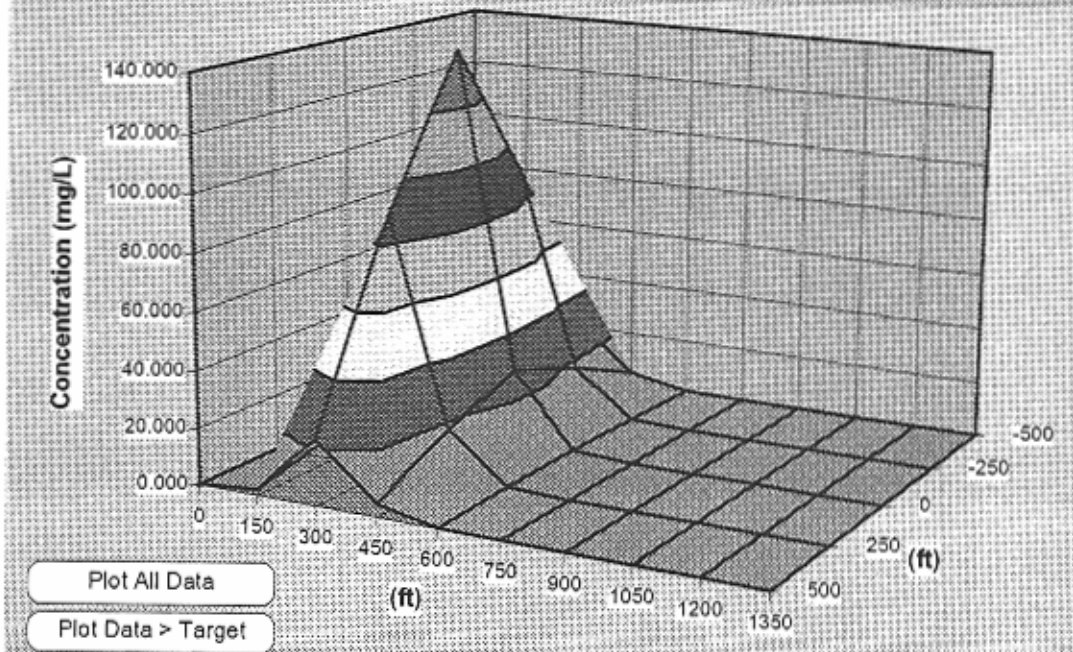
DISSOLVED ETHYLBENZENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.268	2.241	23.072	4.606	0.238	0.003	0.000	0.000	0.000	0.000	0.000
250	0.544	8.972	89.483	17.425	0.885	0.010	0.000	0.000	0.000	0.000	0.000
0	0.811	13.584	139.510	27.662	1.418	0.016	0.000	0.000	0.000	0.000	0.000
-250	0.544	8.972	89.483	17.425	0.885	0.010	0.000	0.000	0.000	0.000	0.000
-500	0.268	2.241	23.072	4.606	0.238	0.003	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	6.4E+5	3.4E+4	3.5E+5	6.8E+4	3.5E+3	4.0E+1	9.7E-2	4.8E-5	4.7E-9	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **0.700** mg/L Displayed Model: **No Degradation**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	5.8	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

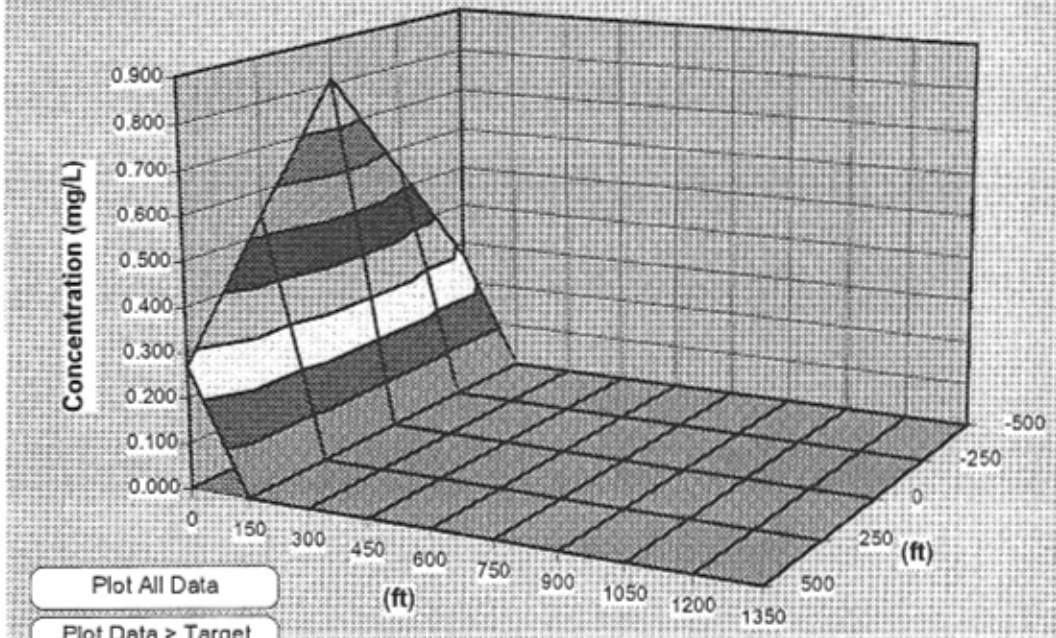
DISSOLVED ETHYLBENZENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.268	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	0.544	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.811	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-250	0.544	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-500	0.268	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	6.4E+5	2.2E-31	2.3E-65	1.3E-100	7.7E-136	4.4E-171	2.5E-206	1.5E-241	8.4E-277	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **0.700** mg/L Displayed Model: **1st Order Decay**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	5.8	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Heath Self Serve #2
Xylene
Run Name

Data Input Instructions:

115 — 1. Enter value directly ... or
or
0.02 — 2. Calculate by filling in grey cells below. (To restore formulas, hit button below)

Variable* — Data used directly in model
20 — Value calculated by model (Don't enter any data)

1. HYDROGEOLOGY

Seepage Velocity*	Vs	6.1	(ft/yr)
or			
Hydraulic Conductivity	K	1.1E-02	(cm/sec)
Hydraulic Gradient	I	0.003	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	22.8	(ft)
Transverse Dispersivity*	alpha y	2.3	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or			
Estimated Plume Length	Lp	850	(ft)

3. ADSORPTION

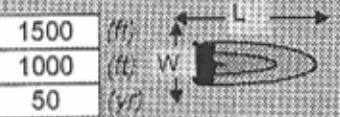
Retardation Factor*	R	1.0	(-)
or			
Soil Bulk Density	rho	1.7	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	5.7E-5	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	1.8E+1	(per yr)
or			
Solute Half-Life	t-half	0.038	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	3.08	(mg/L)
Delta Nitrate*	NO3	1.2	(mg/L)
Observed Ferrous Iron*	Fe2+	0.01	(mg/L)
Delta Sulfate*	SO4	2	(mg/L)
Observed Methane*	CH4	6.6	(mg/L)

5. GENERAL

Modeled Area Length*	1500	(ft)
Modeled Area Width*	1000	(ft)
Simulation Time*	50	(yr)

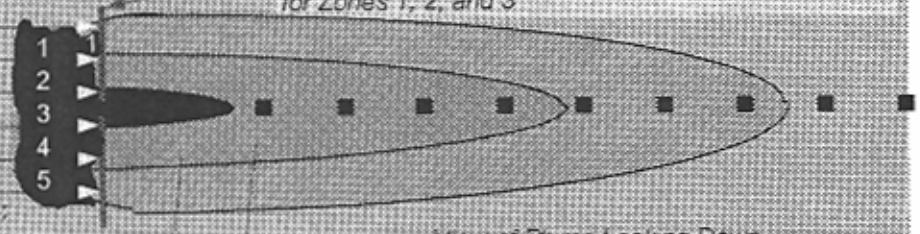


6. SOURCE DATA

Source Thickness in Sat.Zone* 27 (ft)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3

Source Zones: Width* (ft)	Conc. (mg/L)*
200	91.74
200	186.26
200	278
200	186.26
200	91.74



View of Plume Looking Down

Source Halflife (see Help):

Inst. Reactn	1st Order	
6	6	(yr)

Soluble Mass in Source NAPL, Soil: 2000 (Kg)

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	Concentration (mg/L)
0	278.0
150	5.9
300	7.9
450	5.8
600	
750	2.18
900	1.0
1050	.038
1200	
1350	
1500	

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — View Output

RUN ARRAY — View Output

Help

Recalculate This Sheet

Paste Example Dataset

Restore Formulas for Vs, Dispersivities, R, lambda, other

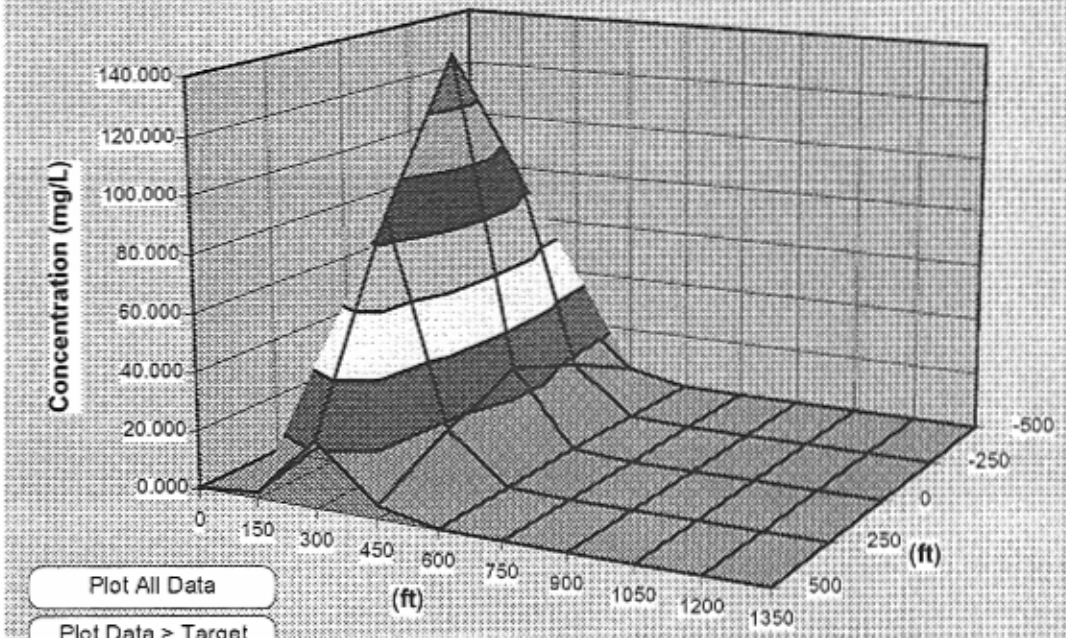
DISSOLVED XYLENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.277	2.272	22.907	4.573	0.237	0.003	0.000	0.000	0.000	0.000	0.000
250	0.563	9.096	88.844	17.301	0.879	0.010	0.000	0.000	0.000	0.000	0.000
0	0.840	13.771	138.513	27.464	1.407	0.016	0.000	0.000	0.000	0.000	0.000
-250	0.563	9.096	88.844	17.301	0.879	0.010	0.000	0.000	0.000	0.000	0.000
-500	0.277	2.272	22.907	4.573	0.237	0.003	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	6.4E+5	3.5E+4	3.5E+5	6.8E+4	3.5E+3	4.0E+1	9.6E-2	4.8E-5	4.7E-9	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: 50 Years Target Level: 10.000 mg/L Displayed Model: No Degradation



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	6.0	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

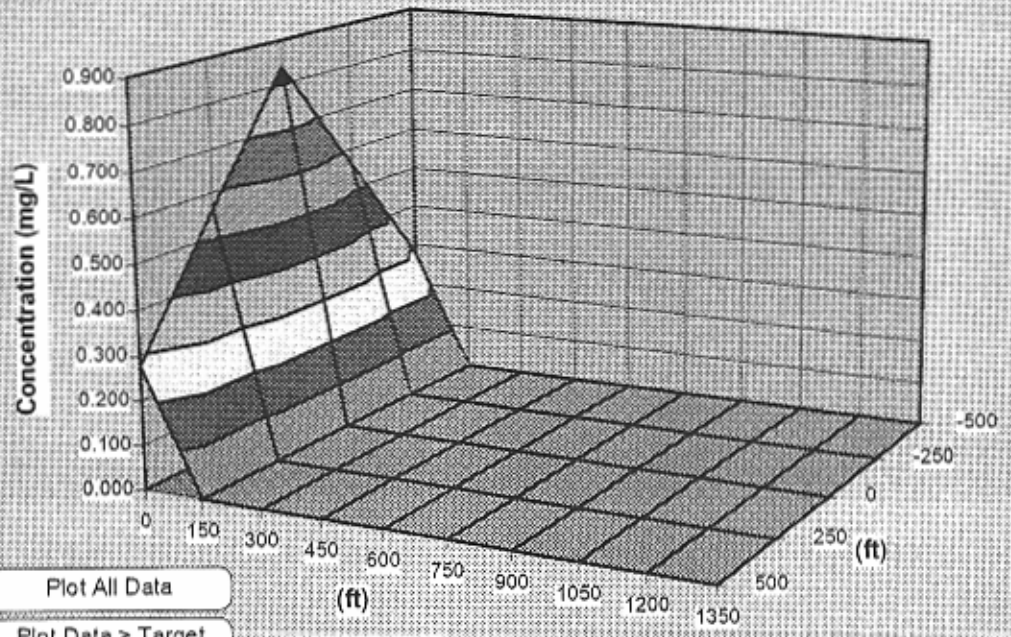
DISSOLVED XYLENE CONCENTRATIONS IN PLUME (mg/L at Z=0)

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	150	300	450	600	750	900	1050	1200	1350	1500
500	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	0.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.840	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-250	0.563	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-500	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS FLUX (mg/day)	6.4E+5	1.6E-18	1.2E-39	4.7E-62	1.9E-84	7.6E-107	3.1E-129	1.2E-151	5.1E-174	0.0E+0	0.0E+0

Model to Display:

- No Degradation Model
- 1st Order Decay Model
- Instantaneous Reaction Model

Time: **50 Years** Target Level: **10.000** mg/L Displayed Model: **1st Order Decay**



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation	Can't Calc.	(Kg)
- Actual Plume Mass	Can't Calc.	(Kg)
= Plume Mass Removed by Biodeg	-	(Kg)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years)	2000.0	(Kg)
Contam. Mass in Source Now (t=50Years)	6.0	(Kg)
Current Volume of Groundwater in Plume	Can't Calc.	(ac-ft)
Flowrate of Water Through Source Zone	Can't Calc.	(ac-ft/yr)

Mass HELP

Recalculate

APPENDIX G

TIER 2 EVALUATION

Site Name: Heath Self Serve #2 Date Completed: 11-14-99

Site Location: Sumter, South Carolina Completed By: ED

GROUNDWATER SSTL VALUES

SSTL Calculation Option:

	TR	HI (or HQ)
❑ Option 1: Site-Specific Screening Level		
■ Option 2: Individual Constituent Limits	√	
❑ Option 3: Cumulative Constituent Limits		

Instructions: *Specify Tier 2 SSTL calculation option. Note if SSTL values based on individual constituent effects or cumulative constituent effects. Record site-specific target level (SSTL) values for complete exposure routes for groundwater. Identify minimum value for each constituent of concern (COC). Note whether representative concentration exceeds minimum SSTL value. For exceedances, calculate Constituent Reduction Factor (CRF) required to reduce Representative Conc. to minimum SSTL value (i.e., Rep. Conc. ÷ min. SSTL). (Note: If RBCA Spreadsheet System used, Groundwater SSTL results can be found and printed on Output Menu under "SSTL: Individual Constituents" or "SSTL: Cumulative Constituents" buttons.)*

CONSTITUENTS OF CONCERN		REPRESENTATIVE CONC.	SSTL RESULTS FOR COMPLETE EXPOSURE PATHWAYS (■ IF COMPLETE)					
			■ Grdwtr Ingestion	❑ Vol. to Ambient Air	❑ Vol. to Indoor Air	Minimum Value	SSTL Exceeded?	Required CRF
CAS No.	Name	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	■ If yes	Only if "yes" left
71-43-2	Benzene	226	0.005				■	
108-88-3	Toluene	301	1.0				■	
100-41-4	Ethylbenzene	280	0.7				■	
1330-20-7	Xylenes (mixed isomers)	278	10.0				■	
91-20-3	Naphthalene	5,110	0.025				■	
1634-04-4	MTBE	2.0	0.04				■	

Maximum CRF:

Note: 1) See Worksheet 4.3 for identification of Complete Pathways.
2) See Worksheet 4.5 for applicable Exposure Scenarios and Risk Goals.
3) See Worksheet 5.6 for derivation of Representative Concentration for each COC in groundwater source zone.
4) CRF = Constituent Reduction Factor (Rep. Conc. ÷ minimum SSTL value).
TR = Target risk limit for excess lifetime carcinogenic risk.
HQ = Hazard quotient for individual constituent non-carcinogenic effects.
HI = Hazard index for cumulative constituent non-carcinogenic effects.

Site Name: Heath Self Serve #2 Date Completed: 11-15-99

Site Location: Sumter, SC Completed By: ED

TIER 2 EXPOSURE PATHWAY TRANSPORT PARAMETERS

Instructions: *For complete exposure pathways, provide site-specific values for transport parameters. In absence of direct measurements, default values may be selected for some parameters, as shown below. If no default value shown, site-specific value must be provided.*

TRANSPORT PARAMETER		SITE-SPECIFIC VALUE (INPUT VALUE BELOW)	DEFAULT VALUE (■ TO SELECT)
AIR PARAMETERS			
δ_{air}	Air mixing zone height (cm)		❑ 200
U_{air}	Ambient air velocity in mixing zone (cm/sec)		❑ 225
Pe	Soil particulate areal emission rate (g/cm^2-sec)		❑ 2.17E-10
σ_y	Transverse air dispersion coeff. (m)		❑ 100
σ_z	Vertical air dispersion coeff. (m)		❑ 10
GROUNDWATER PARAMETERS			
δ_{gw}	Groundwater mixing zone depth (cm)	822.96	❑ 200
I	Water infiltration rate (cm/yr)	25	❑ 30
V_{gw}	Groundwater Darcy velocity (ft/yr)		
K	Saturated hydraulic conductivity (cm/sec)		
i_{grad}	Lateral groundwater flow gradient (dim)	0.011	
$(BC)_i$	Available biodegradation capacity of electron acceptors for constituent *i*	0	
x	Distance to POE from point of maximum COC concentration in groundwater (ft)	30	
α_x	Longitudinal groundwater dispersion coeff. (cm)		■ 10% of x
α_y	Transverse groundwater dispersion coeff. (cm)		■ 33% of α_x
α_z	Vertical groundwater dispersion coeff. (cm)		■ 5% of α_x
SOIL PARAMETERS			
h_{cap}	Capillary zone thickness (cm)		■ 5
h_v	Vadose zone thickness (cm)		
ρ_s	Soil bulk density (g/cm^3)		❑ 1.7
foc_s	Fraction organic carbon in soil leaching zone (di		■ 0.01
foc_{gw}	Fraction organic carbon in water-bearing unit (di		■ 0.001
Lgw	Depth to groundwater (cm)		
Θ_T	Soil porosity (dim)		❑ 0.38
	Soil volumetric watecr content (dim)		
Θ_{wcap}	• Capillary zone		■ 0.342
Θ_{ws}	• Vadose zone		■ 0.12
Θ_{wcrack}	• Foundation crack		■ 0.12

NFA 12/21/99

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rllemerald@CPIS.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

November 30, 1999

RECEIVED
DEC 0 8 1999
DIVISION OF UNDERGROUND
STORAGE TANK MGMT.

Pamela DuBois, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Branch
Division of Underground Storage Tank Management
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

Re: IGWA Report, Release #2
Former Heath Self-Serve #2; UST Permit #08932

Dear Ms. DuBois:

Please find enclosed the completed report for the above. Upon receipt of payment, we will provide you with a notarized statement for such so that the amount can be applied toward the deductible. If you have any questions, please give me a call.

Thank you in advance for your cooperation.

Yours very truly,
Emerald, Inc.

Ronny L. Lowder
President

RLL/be
enclosure
cc: G. Douglas Leonard

UST PROGRAM
DOCKETING # 100T

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rllemerald@CPIS.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

RECEIVED
DEC 0 8 1999
DIVISION OF UNDERGROUND
STORAGE TANK MGMT.

INITIAL GROUND-WATER ASSESSMENT REPORT (IGWA)
RELEASE #2
FORMER HEATH SELF-SERVE #2
NORTH GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA
SITE ID# 08932

Prepared For:

Coca-Cola Bottling Co. Consolidated
P.O. Box 31487
Charlotte, North Carolina 28231

Prepared By:

EMERALD, INC.
P.O. Box 3050
214 W. Liberty Street
Sumter, SC 29151

November 30, 1999

TABLE OF CONTENTS

- IGWA Report
- Appendices

INITIAL GROUND-WATER ASSESSMENT REPORT

Facility Name: Former Heath Self-Serve #2

Site ID Number: 08932

UST Owner or Operator's Name: Coca-Cola Bottling Co., Consolidated

Address: P.O. Box 31487, Charlotte, NC 28231

Phone Number: (704) 551-4023

Contractor: EMERALD, INC. Cert. # 67

Address: P.O. Box 3050, Sumter, SC 29151

Phone Number: (803) 773-5454

Well Driller: SAEDACCO Cert. # 1097

Receptor and Site Data
Please place a check in the appropriate answer block for each question:

Receptor Survey Questions	No	Yes *
Is there a drinking water supply well (public or private) or surface water supply intake within 1000 feet of the UST?	X	
Are irrigation or other non-drinking water wells located within 1000 feet of the UST?		X
Are there other potential receptors (i.e.,utilities, surface waters, wetlands) less than 500 feet from the UST?		X

* If "yes" provide additional information:

- FORMER CAR WASH WELL LOCATED WITHIN 50 FEET OF AREA. WELL HAS BEEN TAKEN OUT OF SERVICE BUT NOT PERMANENTLY CLOSED.

- UTILITIES ARE LOCATED ALONG GUIGNARD DR. & MILLER RD.

Were any water wells within 250 ft radius sampled? ____ Yes X No
See Appendix F for Chain of Custody Form and Laboratory Data.

Is the current use of the site and surrounding properties commercial, residential, agricultural or industrial?

Site: COMMERCIAL Adjacent Properties: COMMERCIAL/CHURCH

Soil and Monitoring Well Data

Primary Soil Type: SILTY SAND CLAY

Well Installation Method and Date: HOLLOW STEM AUGER 11/05/99

Development Method: REMOVAL OF 5 GALLONS

Soil Sample obtained at 13-15 feet.

SOIL ANALYTICAL DATA

SAND L5ft

Benzene (ug/kg) 5	Toluene (ug/kg) 1102	Ethylbenzene (ug/kg) 1210	Xylenes (ug/kg) 4247	Naphthalene (ug/kg) 210
3.6	23.4	84.3	195.1	8.4

Benzo(a)-anthracene (ug/kg)	Benzo(b)-fluoranthene (ug/kg)	Benzo(k)-fluoranthene (ug/kg)	Chrysene (ug/kg)	Dibenz(a,h) anthracene (ug/kg)
ND	ND	ND	ND	ND

* WASTE OIL SITE - SEE ANALYTICAL for TPH & METALS RESULTS.

Ground-Water Data

Depth to Ground Water: 16.37 FT. BELOW TOC

Well Purging/Sampling Method: REMOVAL OF 3 GALLONS/DISPOSABLE TEFLON BAILER

Date Sampled: 11/11/99

Free Product Thickness: 0

Soil/Water Disposal Method: G & K TANK SERVICES

GROUND-WATER ANALYTICAL DATA

Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	MTBE (ug/l)	Naphthalene (ug/l)
13.0	6.0	5.0	45.0	14.0	18.0

Benzo(a)-anthracene (ug/l)	Benzo(b)-fluoranthene (ug/l)	Benzo(k)-fluoranthene (ug/l)	Chrysene (ug/l)	Dibenz(a,h) anthracene (ug/l)
ND	ND	ND	ND	ND

* WASTE OIL SITE - SEE ANALYTICAL FOR TPH & METALS RESULTS.

Appendices

The appendices required for this report are as follows:

Appendix A. Well Construction Log

Appendix B. Laboratory Data

Appendix C. Topographic map with site location marked.

Appendix D. Site Base Map

Appendix E. Disposal Manifest(s)

Appendix F. Additional Data (Sampling Results of Existing Ground-Water Wells)

Appendix G. Invoice Form (SUPERB payment only)

Report Completed By: EMERALD, INC. Cert.# 67

(signature)

Date: 11/30/99

APPENDIX A

WELL CONSTRUCTION LOG

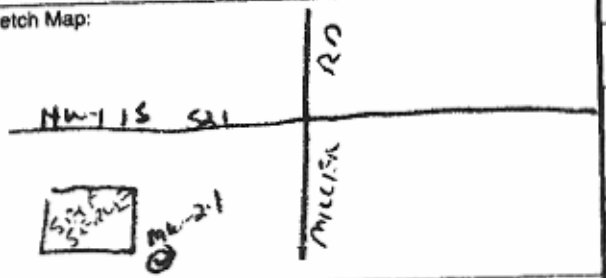
MW-2.1

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

D H E C — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: System Name:
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
FILL	0	10
GRA. S.S CLAY	10	20
↓	20	24

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: HEATH SELF SERVICE #2
Address: HWY 15/521 BY PASS & MILLER RD
Telephone No.: SUMTER, S.C
Engineer: SAFDACO
Address: COLUMBIA S.C
Telephone No.:

5. WELL DEPTH (completed) 24.0 ft. Date Started: 11-5-99
Date Completed: 11-5-99

6. ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☑ Monitor Well ☐ ____

8. CASING ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 14.0 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: SCH 40 PVC Diam.: 2"
Slot/Gauge: .010 Length: 10.0
Set Between: 14.0 ft. and 24.0 ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 12.0 ft. to 240 ft.
Effective size 20/30 Uniformity Coefficient 4.5

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 1.0 ft. to 10.0 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date Installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAFDACO Date: 11-5-99
Address: 10401 JOHN PRICE RD CHARLOTTE NC
Signed: ____ Cert. No.: 1097
Authorized Representative

DHEC 1903 (10/96) COPY MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

APPENDIX B

LABORATORY DATA

TESTAMERICA INC.

Chain of Custody Record 8583 168462

Page 1 of 1

☐ Asheville, NC (A) (828) 254-5169	☐ Bartlett, IL (C) (630) 289-3100	☐ Cedar Falls, IA (E) (319) 277-2401	☐ Charlotte, NC (G) (704) 392-1164	☐ Dayton, OH (I) (937) 294-6856	☐ Lumberton, NC (K) (910) 738-6190	☐ Nashville, TN (M) (615) 726-0177	☐ Pontiac, MI (O) (248) 332-1940	☐ Rockford, Il (Q) (815) 874-2171
☐ Atlanta, GA (B) (770) 368-0636	☐ Brighton, CO (D) (303) 659-0497	☐ Charleston, SC (F) (843) 849-6550	☐ Columbia, SC (H) (803) 796-8989	☐ Davenport, IA (J) (319) 323-7944	☐ Indianapolis, IN (L) (317) 842-4261	☐ Macon, GA (N) (912) 757-0811	☐ Orlando, FL (P) (407) 851-2560	☐ Watertown, WI (R) (920) 261-1660

Client: EMERALD INC
Project No.: HSS#2
Report Address: P.O. BOX 3050 SUMTER, SC 29151
Invoice Address: SAME
Attn: R. LOWDER
Attn: SAME
Phone No.: (803) 773-5454
Sampled By: RL
Fax No.: (803) 775-1970
P.O. No:
Quote No.
State Samples Collected: SC

TURNAROUND TIME
☑ Standard
☐ Rush (surcharges may apply)
Date Needed: 11/19/99

REQUESTED PARAMETERS

Is this work being conducted for regulatory compliance monitoring? Yes ✓ No ___

Is this work being conducted for regulatory enforcement action? Yes ___ No ✓

Which regulations apply:
RCRA ___ NPDES Wastewater ___
UST ✓ Drinking Water ___
Other ___ None ___

Sample ID	Date	Time	Comp (C) Grab (G)	Matrix	Lab Use	BTEX/NAPH	BTEX/NAPH/MTBE	PAHs	TPH	8 RCRA METALS					# and type of containers: HCl	NaOH	HNO_3	H_2SO_4	Other	None	REMARKS
MW-2.1	11/5/99	1:30	G	SOIL		✓		✓	✓	✓									2	4	173521
MW-2.1	11/11/99	2:30	G	GW			✓	✓	✓	✓					2			1		2	173522

QC Deliverables: ☐ None ☐ Level 2 - Batch QC ☐ Level 3 ☐ Level 4 ☐ Other

Init Lab Temp: 4
Rec Lab Temp:

COMMENTS:

FAX COC TO COLUMBIA

Relinquished By: [signature]	Date 11/11/99	Time 5:00 pm	Received By: FedEx	Date	Time
Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	Date	Time	Received By:	Date	Time
Relinquished By:	Date	Time	Received By: C. [signature]	Date 11.12.99	Time 0900

LAB USE ONLY:

Custody Seal: ☐ Yes ☐ No ☐ N/A
Bottles Supplied by TA: ☐ Yes ☐ No

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Lab Number: 99-A173521
Sample ID: MW-2.1
Sample Type: Soil
Site ID:

Project: HSS #2
Project Name: HSS #2
Sampler: RL

Date Collected: 11/ 5/99
Time Collected: 13:30
Date Received: 11/12/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Mean Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Benzene	0.0036	mg/kg	0.0012	0.0010	1	11/19/99	0:14	Cieslelski	8021B	3528
Toluene	0.0234	mg/kg	0.0013	0.0010	1	11/19/99	0:14	Cieslelski	8021B	3528
Ethylbenzene	0.0843	mg/kg	0.0013	0.0010	1	11/19/99	0:14	Cieslelski	8021B	3528
Xylenes, total	0.1751	mg/kg	0.0026	0.0010	1	11/19/99	0:14	Cieslelski	8021B	3528
TPH (Diesel Range)	ND	mg/kg	12.9	4.00	1	11/17/99	13:24	K.Walkup	8015B/3550	1354
Naphthalene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Naphthalene	0.0084	mg/kg	0.0066	0.0050	1	11/19/99	0:14	Cieslelski	8021B	3528
Acenaphthene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Anthracene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Fluoranthene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Fluorene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Pyrene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Benzo(a)anthracene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Benzo(a)pyrene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Benzo(b)fluoranthene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Benzo(k)fluoranthene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Chrysene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Dibenzo(a,h)anthracene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Acenaphylene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Benzo(g,h,i)perylene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
Phenanthrene	ND	mg/kg	0.087	0.066	1	11/19/99	3:47	M.Goodrich	8270C	1366
METALS										
Arsenic	ND	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
Barium	3.626	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
Cadmium	ND	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
Chromium	5.679	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
Lead	2.589	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
Mercury	ND	mg/kg	0.132	0.108	1	11/16/99	7:23	G.McCord	7471	9609
Selenium	ND	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
Silver	ND	mg/kg	1.295	0.984	1	11/16/99	7:28	G.Robinson	6010B	9740
GENERAL CHEMISTRY PARAMETERS										
% Dry Weight	76.	%			1	11/16/99	15:31	C. Terry	CLP	425

COPY 3

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A173521
Sample ID: MW-2.1

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch

BTEX surrogate elevated out due to sample matrix interference.

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
BNA's	30.4 gm	1.0 ml	11/15/99	C. Terry	3550
EPH/8RO	25.5 gm	1.0 ml	11/16/99	C. Terry	3550
BTX Prep	Sample prepared in field				5035

Surrogate	% Recovery	Target Range
surr-a,a,a-Trifluorotoluene	152. @	50. - 150.
surr-o-Terphenyl	92.	50. - 150.
surr-Nitrobenzene-d5	64.	21. - 125.
surr-2-Fluorobiphenyl	71.	25. - 114.
surr-Terphenyl d14	66.	27. - 120.

All samples have been corrected for dry weight.

COPY 3

SPECIALIZED ASSAYS, INC.

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ANALYTICAL REPORT

Laboratory Number: 99-A173521
Sample ID: MW-2.1

These results relate only to the items tested.
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Report Approved By: _____ Report Date: 11/19/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir Technical Services
Eric Smith, Assistant Technical Director
Gail A Lage, Technical Services

Laboratory Certification Number: 84009

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3090
SUMTER, SC 29151

Lab Number: 99-A173522
Sample ID: MW-2.1
Sample Type: Water
Site ID:

Project: HSS#2
Project Name: HSS#2
Sampler: RL

Date Collected: 11/11/99
Time Collected: 14:30
Date Received: 11/12/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Benzene	13.0	ug/l	1.0	1.0	1	11/17/99	20:42	T.Johnson	602	2787
Toluene	6.0	ug/l	1.0	1.0	1	11/17/99	20:42	T.Johnson	602	2787
Ethylbenzene	5.0	ug/l	1.0	1.0	1	11/17/99	20:42	T.Johnson	602	2787
Xylenes, total	45.0	ug/l	1.0	1.0	1	11/17/99	20:42	T.Johnson	602	2787
Methyl-t-butylether	14.0	ug/l	1.0	1.0	1	11/17/99	20:42	T.Johnson	602	2787
Naphthalene	18.0	ug/l	5.0	5.0	1	11/17/99	20:42	T.Johnson	602	2787
TPH (Diesel Range)	940.	ug/l	130.	100.	1	11/19/99	16:20	K.Malkup	8015B/3510	2953
Naphthalene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Acenaphthene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Anthracene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Fluoranthene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Fluorene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Pyrene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Benzo(a)anthracene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Benzo(a)pyrene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Benzo(b)fluoranthene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Benzo(k)fluoranthene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Chrysene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Dibenzo(a,h)anthracene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Indeno(1,2,3-cd)pyrene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Acenaphthylene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Benzo(g,h,i)perylene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
Phenanthrene	ND	ug/l	5.0	5.0	1	11/19/99	1:37	M.Goodrich	610	2298
METALS										
Arsenic, Total	ND	mg/l	0.0050	0.0050	1	11/17/99	8:10	R. Kelley	6010B	9749
Barium, Total	0.0670	mg/l	0.0100	0.0100	1	11/17/99	8:10	R. Kelley	6010B	9749
Cadmium, Total	ND	mg/l	0.0010	0.0010	1	11/17/99	8:10	R. Kelley	6010B	9749
Chromium, Total	0.0090	mg/l	0.0050	0.0050	1	11/17/99	8:10	R Kelley	6010B	9749
Lead	0.0230	mg/l	0.0030	0.0030	1	11/17/99	8:10	R. Kelley	6010B	9749
Mercury, Total	ND	mg/l	0.00020	0.00020	1	11/16/99	7:24	S McCord	7470	9603
Selenium, Total	0.0070	mg/l	0.0050	0.0050	1	11/17/99	8:10	R. Kelley	6010B	9749
Silver, Total	ND	mg/l	0.0050	0.0050	1	11/17/99	8:10	R. Kelley	6010B	9749

ND = Not detected at the report limit.

COPY 3

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A173522
Sample ID: MW-2.1

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	950. ml	1.00 ml	11/16/99	C. Terry	3510
EPH	730. ml	1.00 ml	11/17/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
surr-o-Terphenyl	111.	50. - 150.
BTEX/GRO Surr., a,a,a-trifluorotoluene	85.	50. - 150.
PAH Surrogate	57.	16. - 116

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Report Approved By: _____ Report Date: 11/19/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir Technical Services
Eric Smith, Assistant Technical Director
Gail A Lage, Technical Services

Laboratory Certification Number: 84009

SPECIALIZED ASSAYS, INC.

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P.O. Box 40566
Nashville, TN 37204-0566
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PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	Units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch
Benzene	mg/kg	< 0.0010	0.0564	0.0500	113	61. - 114.	3528
Toluene	mg/kg	< 0.0010	0.0521	0.0500	104	81. - 116.	3528
Ethylbenzene	mg/kg	< 0.0010	0.0568	0.0500	114	81. - 119.	3528
Xylenes, total	mg/kg	< 0.0010	0.1626	0.1500	108	83. - 121.	3528
TPH (Diesel Range)	mg/kg	< 10.0	81.2	80.0	102	30. - 125.	1354
Naphthalene	mg/kg	< 0.0050	0.0525	0.0500	105	42. - 131.	3528
Benzene	mg/l	< 0.0010	0.0190	0.0200	95	59. - 138.	2787
Benzene	mg/l	< 0.0010	0.0200	0.0200	100	59. - 138.	2787
Toluene	mg/l	< 0.0010	0.0200	0.0200	100	59. - 135.	2787
Toluene	mg/l	< 0.0010	0.0200	0.0200	100	59. - 135.	2787
Ethylbenzene	mg/l	< 0.0010	0.0200	0.0200	100	47. - 144.	2787
Ethylbenzene	mg/l	< 0.0010	0.0210	0.0200	105	47. - 144.	2787
Xylenes, total	mg/l	< 0.0010	0.0200	0.0200	100	58. - 136.	2787
Xylenes, total	mg/l	< 0.0010	0.0210	0.0200	105	58. - 136.	2787
Methyl-t-butylether	mg/l	< 0.0010	0.0190	0.0200	95	62. - 133.	2787
Methyl-t-butylether	mg/l	< 0.0010	0.0190	0.0200	95	62. - 133.	2787
Naphthalene	mg/l	< 0.0050	0.0220	0.0200	110	52. - 139.	2787
Naphthalene	mg/l	< 0.0050	0.0220	0.0200	110	52. - 139.	2787
TPH (Diesel Range)	mg/l	< 0.10	1.68	2.00	84	59. - 125.	2953
Naphthalene	mg/l	< 0.005	0.070	0.100	70	51. - 122.	2298
Acenaphthene	mg/l	< 0.005	0.073	0.100	73	58. - 123.	2298
Anthracene	mg/l	< 0.005	0.077	0.100	77	49. - 137.	2298
Fluoranthene	mg/l	< 0.005	0.088	0.100	88	66. - 125.	2298
Fluorene	mg/l	< 0.005	0.082	0.100	82	62. - 128.	2298
Pyrene	mg/l	< 0.005	0.097	0.100	97	61. - 129.	2298
Benzo(a)anthracene	mg/l	< 0.005	0.093	0.100	93	51. - 131.	2298
Benzo(a)pyrene	mg/l	< 0.005	0.098	0.100	98	61. - 128.	2298
Benzo(b)fluoranthene	mg/l	< 0.005	0.089	0.100	89	50. - 136.	2298
Benzo(k)fluoranthene	mg/l	< 0.005	0.103	0.100	103	63. - 136.	2298
Chrysene	mg/l	< 0.005	0.089	0.100	89	46. - 140.	2298
Dibenzo(a,h)anthracene	mg/l	< 0.005	0.098	0.100	98	45. - 135.	2298
Indeno(1,2,3-cd)pyrene	mg/l	< 0.005	0.098	0.100	98	39. - 139.	2298
Acenaphthylene	mg/l	< 0.005	0.074	0.100	74	57. - 122.	2298
Benzo(g,h,i)perylene	mg/l	< 0.005	0.091	0.100	91	40. - 140.	2298
Phenanthrene	mg/l	< 0.005	0.084	0.100	84	52. - 135.	2298
Arsenic, Total	mg/l	< 0.0050	0.0480	0.0500	96	80 - 120	9749
Barium, Total	mg/l	0.0710	1.980	2.000	95	80 - 120	9749
Cadmium, total	mg/l	< 0.0010	0.0480	0.0500	96	80 - 120	9749
Chromium, total	mg/l	< 0.0050	0.1810	0.2000	90	80 - 120	9749
Lead	mg/l	< 0.0050	0.0480	0.0500	96	80 - 120	9749
Mercury, Total	mg/l	< 0.00020	0.00096	0.00100	96	80 - 120	9803
Selenium, Total	mg/l	< 0.0050	0.0460	0.0500	92	80 - 120	9749
Silver, Total	mg/l	< 0.0050	0.0450	0.0500	90	80 - 120	9749
Arsenic	mg/kg	< 0.982	20.155	20.000	101	80 - 120	9740
Barium	mg/kg	6.680	401.163	400.000	99	80 - 120	9740
Cadmium	mg/kg	< 0.982	19.166	20.000	96	80 - 120	9740

COPY 3

SPECIALIZED ASSAYS, INC.

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PROJECT QUALITY CONTROL DATA

Chromium	mg/kg	3.733	41.960	40.000	95	80 - 120	9740
Lead	mg/kg	6.483	98.062	100.000	92	80 - 120	9740
Mercury	mg/kg	< 0.100	0.144	0.170	85	80 - 120	9609
Selenium	mg/kg	< 0.982	18.605	20.000	93	80 - 120	9740
Silver	mg/kg	< 0.982	9.884	10.000	99	80 - 120	9740

Matrix Spike Duplicate

Analyte	Units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
Benzene	mg/kg	0.0564	0.0546	3.24	18.	3528
Toluene	mg/kg	0.0521	0.0501	3.91	18.	3528
Ethylbenzene	mg/kg	0.0568	0.0546	3.95	19.	3528
Xylenes, total	mg/kg	0.1626	0.1566	3.76	18.	3528
TPH (Diesel Range)	mg/kg	81.2	73.5	9.95	47.	1354
Naphthalene	mg/kg	0.0525	0.0550	4.65	20.	3528
TPH (Diesel Range)	mg/l	1.68	1.54	8.70	26.	2853
Arsenic, Total	mg/l	0.0480	0.0520	8.00	20	9749
Barium, Total	mg/l	1.980	2.020	2.00	20	9749
Cadmium, total	mg/l	0.0480	0.0460	0.00	20	9749
Chromium, total	mg/l	0.1810	0.1850	2.19	20	9749
Lead	mg/l	0.0480	0.0460	4.26	20	9749
Mercury, Total	mg/l	0.00096	0.00089	7.57	20	9603
Selenium, Total	mg/l	0.0460	0.0520	12.24	20	9749
Silver, Total	mg/l	0.0450	0.0450	0.00	20	9749
Arsenic	mg/kg	20.155	20.363	1.03	20	9740
Barium	mg/kg	401.163	409.274	2.00	20	9740
Cadmium	mg/kg	19.186	19.556	1.91	20	9740
Chromium	mg/kg	41.860	42.742	2.09	20	9740
Lead	mg/kg	98.062	101.613	3.56	20	9740
Mercury	mg/kg	0.144	0.153	6.06	20	9609
Selenium	mg/kg	18.605	19.758	6.01	20	9740
Silver	mg/kg	9.884	10.081	1.97	20	9740

Laboratory Control Data

Analyte	Units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Benzene	mg/kg	0.0500	0.0547	109	70 - 130	3528
Toluene	mg/kg	0.0500	0.0510	102	70 - 130	3528
Ethylbenzene	mg/kg	0.0500	0.0553	111	70 - 130	3528
Xylenes, total	mg/kg	0.1500	0.1581	105	70 - 130	3528
TPH (Diesel Range)	mg/kg	60.0	62.5	104	60 - 140	1354
Naphthalene	mg/kg	1.67	1.58	95	32 - 123	1366
Naphthalene	mg/kg	0.0500	0.0532	106	60 - 140	3528
Acenaphthene	mg/kg	1.67	1.42	85	36 - 131	1366
Anthracene	mg/kg	1.67	1.65	99	38 - 142	1366
Fluoranthene	mg/kg	1.67	1.68	101	44 - 144	1366
Fluorene	mg/kg	1.67	1.72	103	38 - 136	1366
Pyrene	mg/kg	1.67	1.42	85	38 - 152	1366
Benzo(a)anthracene	mg/kg	1.67	1.45	87	41 - 152	1366

COPY 3

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

PROJECT QUALITY CONTROL DATA

Laboratory Control Data

Analyte	Units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Benzo(a)pyrene	ng/kg	1.67	1.48	89	40 - 151	1366
Benzo(b)fluoranthene	ng/kg	1.67	1.48	89	26 - 146	1366
Benzo(k)fluoranthene	ng/kg	1.67	1.98	119	37 - 199	1366
Chrysene	ng/kg	1.67	1.45	87	44 - 156	1366
Dibenzo(a,h)anthracene	ng/kg	1.67	1.62	97	41 - 154	1366
Indeno(1,2,3-cd)pyrene	ng/kg	1.67	1.52	91	41 - 152	1366
Acenapthylene	ng/kg	1.67	1.65	99	37 - 139	1366
Benzo(g,h,i)perylene	ng/kg	1.67	1.48	89	38 - 156	1366
Phenanthrene	ng/kg	1.67	1.72	103	41 - 145	1366
Benzene	ng/l	0.0200	0.0190	95	70 - 130	2787
Toluene	ng/l	0.0200	0.0200	100	70 - 130	2787
Ethylbenzene	ng/l	0.0200	0.0210	105	70 - 130	2787
Xylenes, total	ng/l	0.0200	0.0210	105	70 - 130	2787
Methyl-t-butylether	ng/l	0.0200	0.0190	95	70 - 130	2787
Naphthalene	ng/l	0.0200	0.0220	110	70 - 130	2787
TPH (Diesel Range)	ng/l	2.00	1.70	85	60 - 140	2953
Naphthalene	ng/l	0.100	0.064	64	10 - 122	2298
Acenapthene	ng/l	0.100	0.073	73	10 - 124	2298
Anthracene	ng/l	0.100	0.079	79	10 - 126	2298
Fluoranthene	ng/l	0.100	0.089	89	14 - 123	2298
Fluorene	ng/l	0.100	0.082	82	10 - 142	2298
Pyrene	ng/l	0.100	0.090	90	10 - 140	2298
Benzo(a)anthracene	ng/l	0.100	0.087	87	12 - 135	2298
Benzo(a)pyrene	ng/l	0.100	0.091	91	10 - 128	2298
Benzo(b)fluoranthene	ng/l	0.100	0.083	83	6 - 150	2298
Benzo(k)fluoranthene	ng/l	0.100	0.097	97	10 - 159	2298
Chrysene	ng/l	0.100	0.085	85	10 - 199	2298
Dibenzo(a,h)anthracene	ng/l	0.100	0.091	91	10 - 110	2298
Indeno(1,2,3-cd)pyrene	ng/l	0.100	0.092	92	10 - 116	2298
Acenapthylene	ng/l	0.100	0.076	76	10 - 139	2298
Benzo(g,h,i)perylene	ng/l	0.100	0.087	87	10 - 116	2298
Phenanthrene	ng/l	0.100	0.086	86	10 - 155	2298
Arsenic, Total	ng/l	0.0500	0.0500	100	80 - 120	9749
Barium, Total	ng/l	2.000	2.010	100	80 - 120	9749
Cadmium, total	ng/l	0.0500	0.0510	102	80 - 120	9749
Chromium, total	ng/l	0.2000	0.1930	96	80 - 120	9749
Lead	ng/l	0.0500	0.0500	100	80 - 120	9749
Mercury, Total	ng/l	0.00100	0.00099	99	80 - 120	9603
Selenium, Total	ng/l	0.0500	0.0530	106	80 - 120	9749
Silver, Total	ng/l	0.0500	0.0500	100	80 - 120	9749
Arsenic	ng/kg	20.000	21.600	108	80 - 120	9748
Barium	ng/kg	400.000	404.000	101	80 - 120	9748
Cadmium	ng/kg	20.000	19.400	97	80 - 120	9748
Chromium	ng/kg	40.000	40.200	100	80 - 120	9748
Lead	ng/kg	100.000	93.200	93	80 - 120	9748
Mercury	ng/kg	0.170	0.170	100	80 - 120	9607

COPY 3

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

PROJECT QUALITY CONTROL DATA

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Selenium	mg/kg	20.000	18.800	94	80 - 120	9740
Silver	mg/kg	10.000	9.600	96	80 - 120	9740

Blank Data

Analyte	Blank Value	Units	Q.C. Batch
Benzene	< 0.0010	mg/kg	3528
Toluene	< 0.0010	mg/kg	3528
Ethylbenzene	< 0.0010	mg/kg	3528
Xylenes, total	< 0.0010	mg/kg	3528
TPH (Diesel Range)	< 10.0	mg/kg	1354
Naphthalene	< 0.165	mg/kg	1366
Naphthalene	< 0.0050	mg/kg	3528
Acenapthene	< 0.165	mg/kg	1366
Anthracene	< 0.165	mg/kg	1366
Fluoranthene	< 0.165	mg/kg	1366
Fluorene	< 0.165	mg/kg	1366
Pyrene	< 0.165	mg/kg	1366
Benzo(a)anthracene	< 0.165	mg/kg	1366
Benzo(a)pyrene	< 0.165	mg/kg	1366
Benzo(b)fluoranthene	< 0.165	mg/kg	1366
Benzo(k)fluoranthene	< 0.165	mg/kg	1366
Chrysene	< 0.165	mg/kg	1366
Dibenzo(a,h)anthracene	< 0.165	mg/kg	1366
Indeno(1,2,3-cd)pyrene	< 0.165	mg/kg	1366
Acenapthylene	< 0.165	mg/kg	1366
Benzo(g,h,i)perylene	< 0.165	mg/kg	1366
Phenanthrene	< 0.165	mg/kg	1366
Benzene	< 0.0010	mg/l	2787
Toluene	< 0.0010	mg/l	2787
Ethylbenzene	< 0.0010	mg/l	2787
Xylenes, total	< 0.0010	mg/l	2787
Methyl-t-butylether	< 0.0010	mg/l	2787
Naphthalene	< 0.0050	mg/l	2787
TPH (Diesel Range)	< 0.10	mg/l	2953
Naphthalene	< 0.005	mg/l	2298
Acenapthene	< 0.005	mg/l	2298
Anthracene	< 0.005	mg/l	2298
Fluoranthene	< 0.005	mg/l	2298
Fluorene	< 0.005	mg/l	2298
Pyrene	< 0.005	mg/l	2298
Benzo(a)anthracene	< 0.005	mg/l	2298
Benzo(a)pyrene	< 0.005	mg/l	2298
Benzo(b)fluoranthene	< 0.005	mg/l	2298
Benzo(k)fluoranthene	< 0.005	mg/l	2298

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

PROJECT QUALITY CONTROL DATA

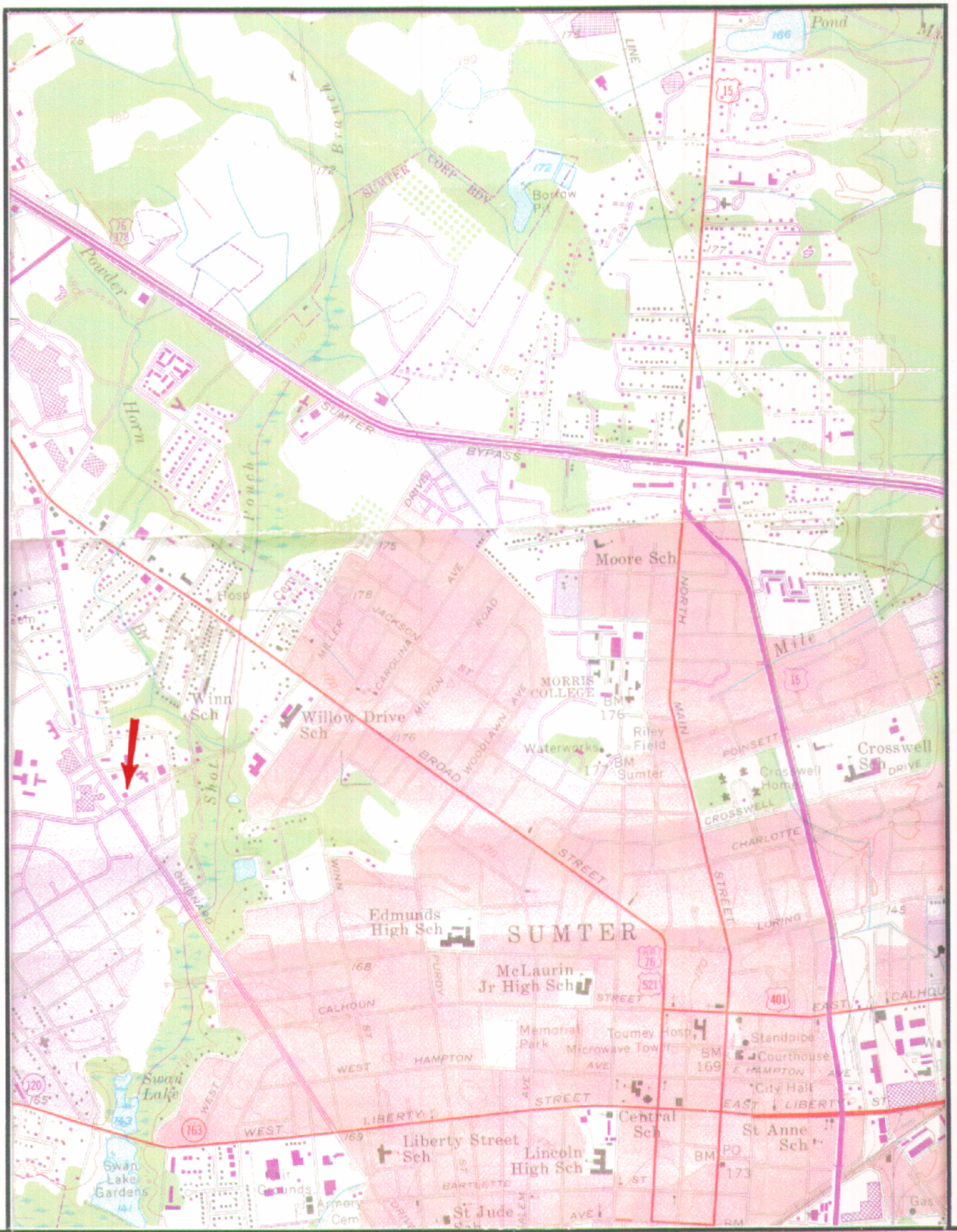
Blank Data

Analyte	Blank Value	Units	Q.C. Batch
Chrysene	< 0.005	ug/l	2298
Dibenzo(a,h)anthracene	< 0.005	ug/l	2298
Indeno(1,2,3-cd)pyrene	< 0.005	ug/l	2298
Naphthalene	< 0.005	ug/l	2298
Benzo(g,h,i)perylene	< 0.005	ug/l	2298
Phenanthrene	< 0.005	ug/l	2298
Arsenic, Total	< 0.0050	mg/l	9749
Barium, Total	< 0.0100	mg/l	9749
Cadmium, total	< 0.0010	mg/l	9749
Chromium, total	< 0.0050	mg/l	9749
Lead	< 0.0030	mg/l	9749
Mercury, Total	< 0.00020	mg/l	9663
Selenium, Total	< 0.0050	mg/l	9749
Silver, Total	< 0.0050	mg/l	9749
Arsenic	< 1.000	mg/kg	9748
Barium	< 1.000	mg/kg	9748
Cadmium	< 1.000	mg/kg	9748
Chromium	< 1.000	mg/kg	9748
Lead	< 1.000	mg/kg	9748
Mercury	< 0.100	mg/kg	9609
Selenium	< 1.000	mg/kg	9748
Silver	< 1.000	mg/kg	9748

COPY 3

APPENDIX C

TOPOGRAPHIC MAP WITH SITE LOCATION MARKED



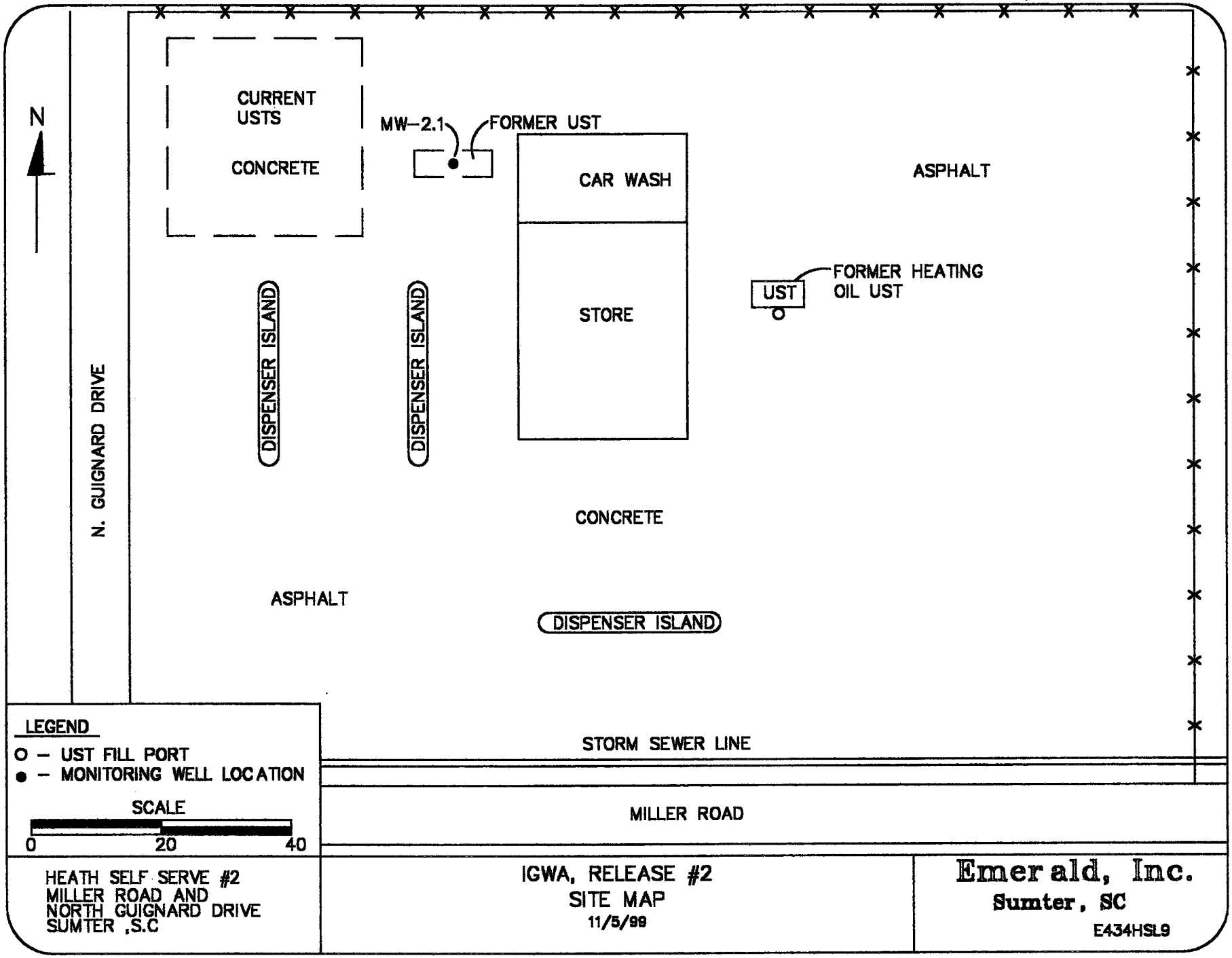
FORMER HEATH SELF-SERVE #2
N. GUIGNARD DR. & MILLER RD.
SUMTER, SC

USGS TOPOGRAPHIC MAP
7.5 MINUTE SERIES
"SUMTER EAST" QUADRANGLE
SCALE: 1:24000

Emerald, Inc.
Sumter, SC

APPENDIX D

SITE BASE MAP


N
CURRENT USTS
CONCRETE
MW-2.1
FORMER UST
CAR WASH
ASPHALT
UST
FORMER HEATING OIL UST
STORE
DISPENSER ISLAND
DISPENSER ISLAND
N. GUIGNARD DRIVE
CONCRETE
ASPHALT
DISPENSER ISLAND
LEGEND
O – UST FILL PORT
● – MONITORING WELL LOCATION
SCALE
0
20
40
STORM SEWER LINE
MILLER ROAD
HEATH SELF SERVE #2
MILLER ROAD AND
NORTH GUIGNARD DRIVE
SUMTER ,S.C
IGWA, RELEASE #2
SITE MAP
11/5/99
Emerald, Inc.
Sumter, SC
E434HSL9

APPENDIX E

DISPOSAL MANIFEST



Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1-800-800-6640 • FAX: (803) 494-8598

Certificate of Disposal

Tank # 1) ONE
HEATH SELF SERVE #2
601 NORTH GUIGNARD
SUMTER, SC

Size 6,000 GALLON

This is to certify that the above tank has been disposed of by G&K Tank Services, Inc., in accordance with and exceeding EPA regulations on Petroleum Tank Disposal.

Certified by Thomas D. Keels

Date MAY 11, 1999

08932 Pam

SCANNED

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water

UST PROGRAM
DOCKETING # 1651

2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:

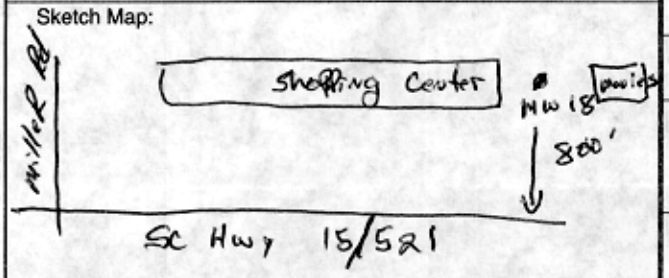
County: Sumter System Name: Heath Self Serve #2

Latitude: Longitude:

Distance and Direction from Road Intersections:

Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0 5 Sands		
5 10 Silty Sands		
10 15 Silty Sands		
15 20 wet Sands		

RECEIVED
NOV 30 2000
PRIVATE WELL SECTION

Verified

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath oil
Address:
Telephone No.:

Engineer: Kleen Sites
Address: Sumpter
Telephone No.:

5. WELL DEPTH (completed) 20' ft. Date Started: 11 3 00 Date Completed: 11 3 00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☑ Monitor Well ☐ ____

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 10 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 6" ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10'
Set Between: 10 ft. and 20' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size #2 Uniformity Coefficient Sand

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 7' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Registered Business Name: SAEdacco Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: Timothy Thomas Cert. No.: 1355
Authorized Representative

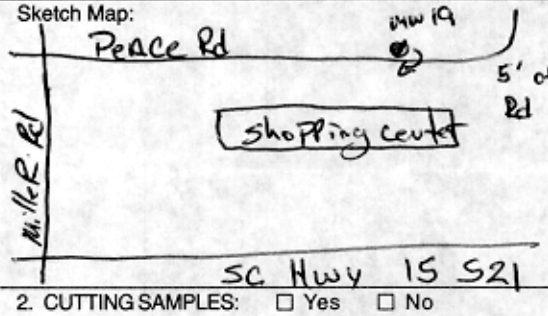
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL: Sumter SC
County: Sumter System Name: Heath Self Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0 5 Sand		
5 10 wet sand		
10 13 wet Sand		

RECEIVED
NOV 30 2000
PRIVATE WELL SECTION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath oil
Address:
Telephone No.:

Engineer: Kleen sites
Address:
Telephone No.:

5. WELL DEPTH (completed) 13' ft. Date Started: 11 3 00 Date Completed: 11 3 00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☑ Monitor Well ☐ ____

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 6" ft.
Weight 2 sch 40 lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10
Set Between: 3 ft. and 13' ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 2' ft. to 13' ft.
Effective size #2 Uniformity Coefficient Sand

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 2' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected upon completion ☐ Yes ☐ No Type: ____ Amount: ____

16. PUMP: Date installed: ____ ☐ Not installed
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

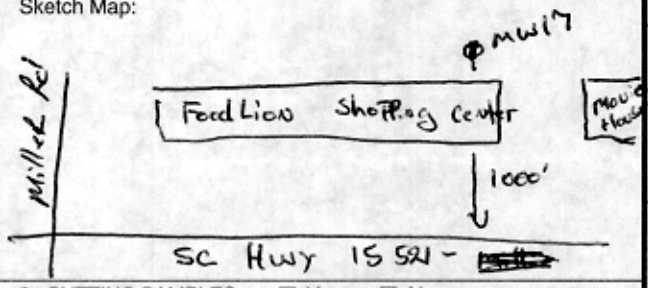
17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SACDACCO Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: Timothy Thomas Cert. No.: 1355
Authorized Representative

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

DHEC — PROMOTE PROTECT PROSPER

1. LOCATION OF WELL:
County: Sumter System Name: Heath Self Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-5 Sands		
5-10 Silty Sand		
10-15 Silty Sand		
15-20 wet Sands		

RECEIVED
NOV 30 2000
PRIVATE WELL SECTION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath Oil
Address:
Telephone No.:
Engineer: Kleen Sites
Address: Sumter
Telephone No.:

5. WELL DEPTH (completed) 20' ft. Date Started: 11-3-00 Date Completed: 11-3-00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☑ Monitor Well ☐ ____

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
.76" in. to 10' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 6" ft.
Weight Sch 40 lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10
Set Between: 10 ft. and 20 ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 5' ft. to 20' ft.
Effective size #2 Uniformity Coefficient Sand

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 7' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: Timothy Thomas Cert. No.: 1355
Authorized Representative

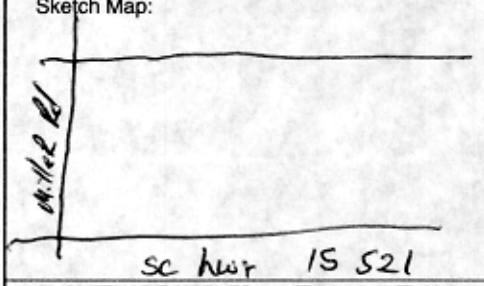
DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL: Sumter
County: Sumter System Name: Heath Sell Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:

Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0,5 sands		
5,10 wet sand		
10,13 wet sand		

RECEIVED
NOV 30 2000
PRIVATE WELL SECTION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath Oil
Address:
Telephone No.:

Engineer:
Address: Kleen Sites
Telephone No.:

5. WELL DEPTH (completed) 13' ft. Date Started: 11-3-00 Date Completed: 11-3-00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☑ Monitor Well ☐

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
in. to ft. depth
Height: Above/Below Surface 6" ft.
Weight Sch 40 lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10'
Set Between: 3 ft. and 13 ft.
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 2' ft. to 13' ft.
Effective size Uniformity Coefficient

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 0 ft. to 1' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected ☐ Yes Type:
upon completion ☐ No Amount:

16. PUMP: Date installed: ☐ Not installed
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: Timothy Thomas Cert. No.: 1355
Authorized Representative

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rllemerald@CPIS.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

December 7, 2000

Pamela DuBois, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Branch
Division of UST Management
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

RECEIVED
DEC 1 [illegible] 2000
Bureau of Underground
Storage Tank Management

Re: Heath Self Serve #2
Rapid Assessment Report - Addendum 01
UST Permit #08932, Release #1
Sumter County

Dear Ms. DuBois:

Please find enclosed one copy of the completed report for the above along with our signed invoice. If you have any questions, please give me a call at your convenience.

Yours very truly,
Emerald, Inc.

Ronny L. Lowder
President

1/16/01
This was received.
Need letter of
response.
Ned

RLL/be
enclosure
cc: G. Douglas Leonard, Coca-Cola

SCANNED 12d
UST PROGRAM
DOCKETING # 1061

Rapid Assessment Report
Addendum 01
Former Heath Self Serve #2
North Guignard Drive & Miller Road
Sumter, South Carolina
GWPD # 08932

November 28, 2000

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Bureau of Underground Storage Tank Management

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This document entitled "Rapid Assessment Report - Addendum 01", has been prepared for the South Carolina Department of Health and Environmental Control to describe investigative activities conducted at the former Heath Self Serve #2 site located in Sumter, South Carolina. It has been prepared under the direct supervision of William B. Dunnagan, Jr. in accordance with accepted quality control practices.

KLEEN SITES GEOSERVICES, INC.

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11/28/00

Seal

Rapid Assessment Report
Addendum 01
Former Heath Self Serve #2
Sumter, South Carolina

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SECTION 1.0

INTRODUCTION

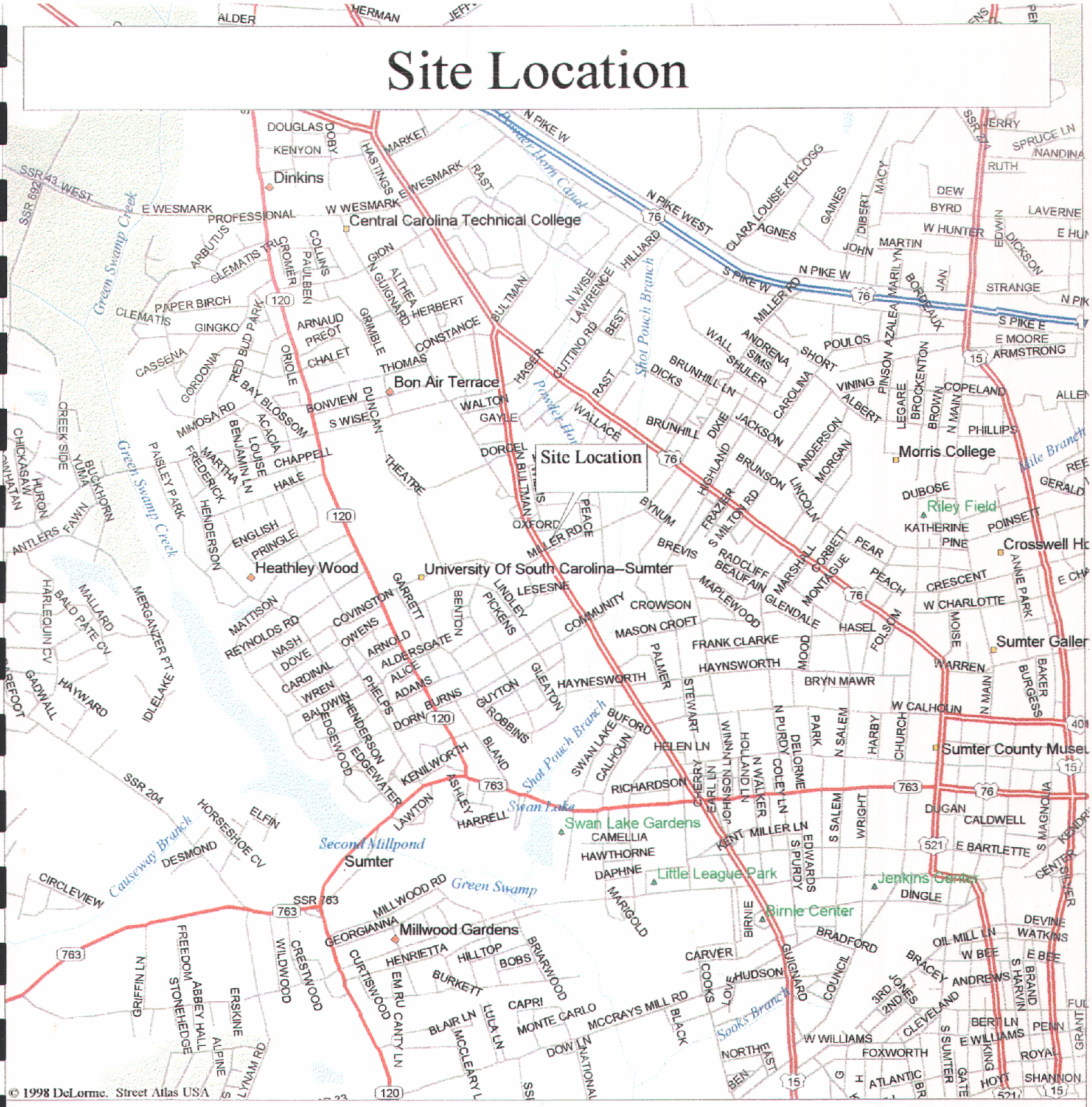
The former Heath Self Serve #2 is located at the intersection of North Guignard Drive and Miller Road in Sumter, SC (see Figure 1). Activities conducted at the facility include retail gasoline and diesel fuel sales and convenience sales to the public. The site is situated in a heavily developed, commercial area with a variety of commercial businesses nearby. The facility is presently operated as a BP Station. A site topographic map and a site diagram are provided in Figures 2 and 3, respectively.

Eleven USTs were previously used for onsite storage of petroleum products. One 10,000 gallon tank, one 6,000 gallon tank and seven 3,000 gallon tanks were used for the storage of gasoline. One 1,000 gallon tank was used for the storage of diesel fuel. One 550 gallon tank was used for the storage of used oil. Each of the eleven USTs have either been removed from the ground or permanently abandoned in place. New USTs were installed at the facility in December of 1998.

A release of petroleum hydrocarbons was identified within the former tank pit area during closure assessment activities. In December of 1998, a Standard Limited Assessment (SLA) was conducted by personnel from Kleen Sites Geoservices, Inc. (KSG) on the subject property at the request of the SCDHEC. Following a review of the SLA, the SCDHEC requested that a Rapid Assessment be conducted in a letter dated May 13, 1999. KSG personnel implemented Rapid Assessment activities at the subject property in order to better define the vertical and horizontal extent of the soil and ground water contamination plumes. The assessment was also conducted to evaluate the risk, if any, posed by the contamination to human health and the environment. A Rapid Assessment Report dated November 19, 1999 was submitted to the SCDHEC Bureau of UST Management for review and comment.

Data generated during the Rapid Assessment indicated the presence of a large free product plume that originated from the southern portion of the subject property. Field measurements indicated that the free product plume extended beneath Miller Road in a southerly direction for approximately 300 feet. The dissolved phase ground water contaminant plume was found to be present beneath much of the Palmetto Plaza property and extended approximately 875 feet from the source area along North Guignard Drive. However, the lateral extent of the dissolved phase plume remained undefined in the area located southeast of the former Heath Self Serve #2 facility. The SCDHEC requested by letter dated August 10, 2000 that additional assessment work be conducted to generate current data on the free product and dissolved phase plumes and to define the downgradient extent of ground water contamination. A presentation of the data generated during this additional phase of site assessment is presented herein.

Site Location

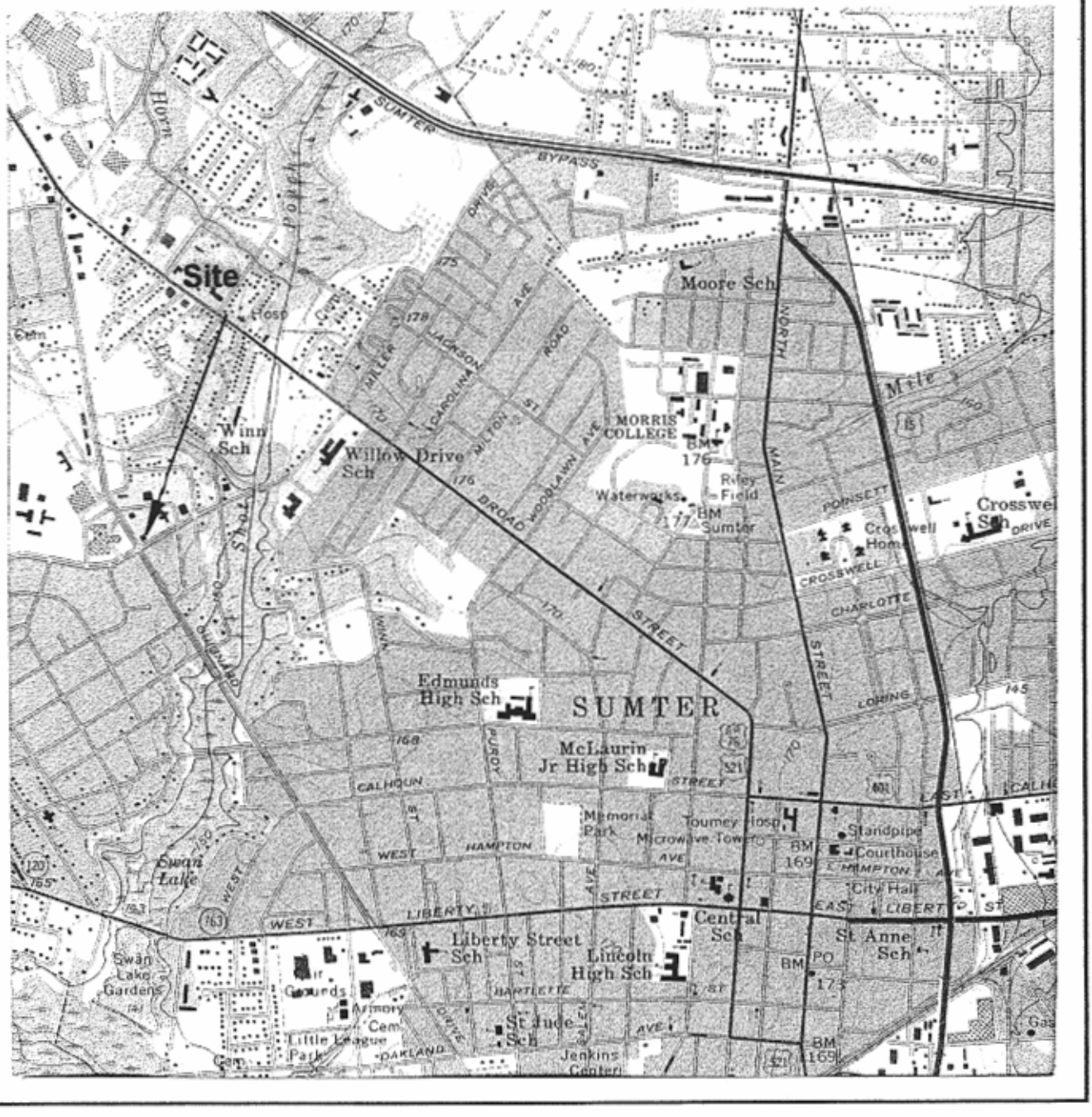


Mag 14.00
Thu Oct 28 02:45 1999
Scale 1:31,250 (at center)
2000 Feet
1000 Meters

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Railroad
- Point of Interest
- Park/Reservation
- Locale
- Cemetery
- Water
- Woodland
- River/Canal
- Intermittent River



SUMTER EAST QUADRANGLE



HEATH SELF SERVE #2 N. GUIGNARD DR. and MILLER STREET SUMTER, SOUTH CAROLINA	FIGURE 2: SITE TOPOGRAPHIC DIAGRAM	KSG KLEEN SITES GEOSERVICES

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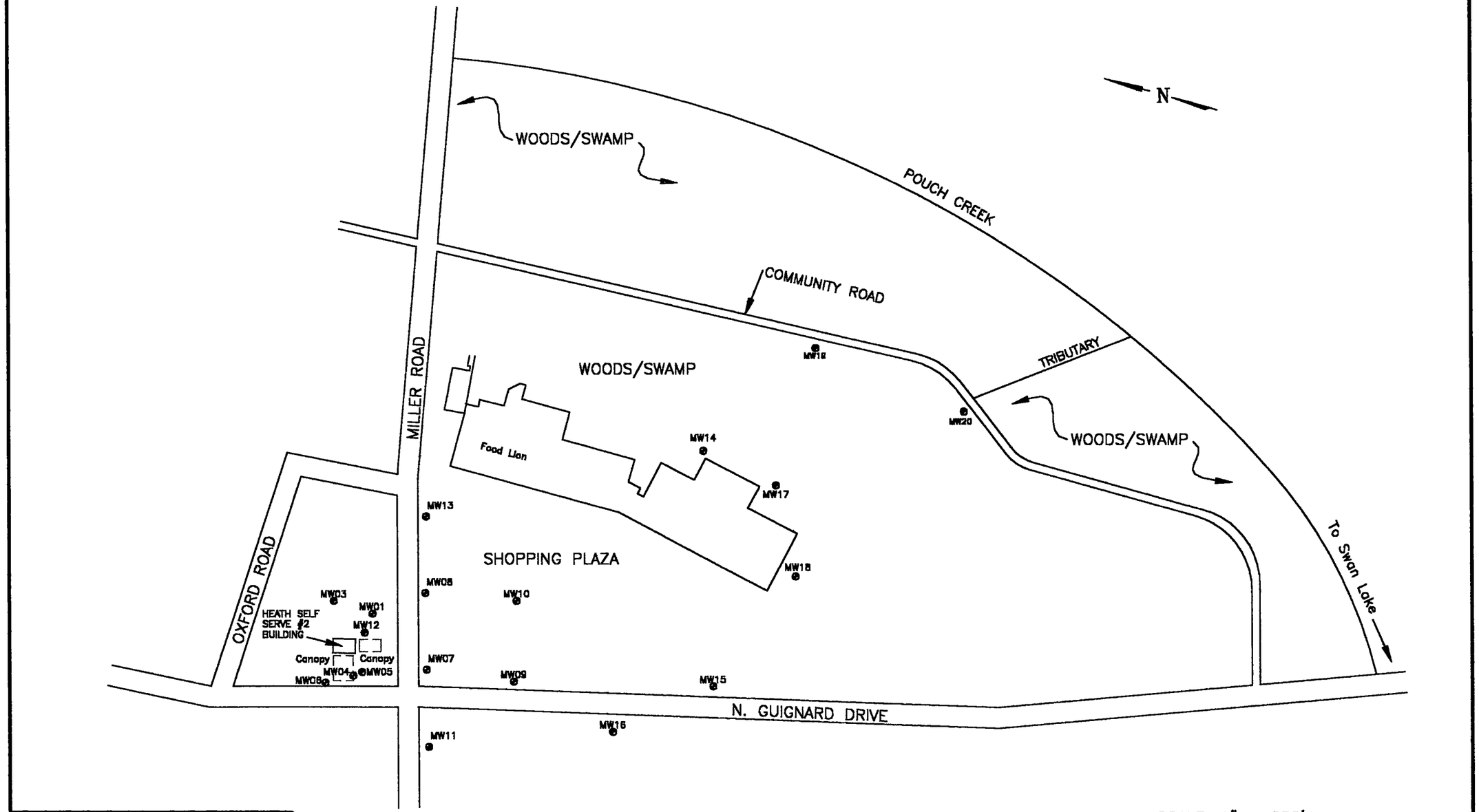

LEGEND

⊕ – EXISITING GROUND WATER MONITORING WELLS

SCALE: 1" = 250'

0' 125' 250'

HEATH SELF SERVE #2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 3: SITE MAP

KLEEN SITES GEOSERVICES

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SECTION 2.0

REGIONAL & SITE SPECIFIC GEOLOGY

The former Heath Self Serve #2 site is located within the Middle Coastal Plain Physiographic Province of South Carolina. The Middle Coastal Plain Physiographic Province is characterized by unconsolidated sediments of fluvial and marine origin resting unconformably on crystalline bedrock located at a depth of approximately 600 feet. Surficial sediments in the Sumter County area are Pliocene age terrace deposits produced by river incisement of Cretaceous and Tertiary sediment during periods of low sea level.

The former Heath Self-Serve # 2 site is underlain by brown silty, clayey sand to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands. The first occurrence of ground water was noted on the subject property at approximately seventeen to eighteen feet below ground surface. A confining layer was not encountered during drilling activities. Static water level measurements taken from monitoring wells that were installed on the Palmetto Plaza property indicate that the depth to water decreases in a southerly direction. Static water levels were approximately 13 feet below ground surface on the Palmetto Plaza property and 3-5 feet below ground surface along Community Drive.

SECTION 3.0

SITE ACTIVITIES

KSG personnel conducted a two phased approach during implementation of Rapid Assessment addendum activities. The first phase of assessment activities consisted of the collection of ground water samples at selected locations using a GeoProbe rig. Based upon the first phase analytical data, the second phase consisted of the installation of four permanent, shallow, ground water monitoring wells. Each activity is described in detail within this section.

3.1 Field Screening

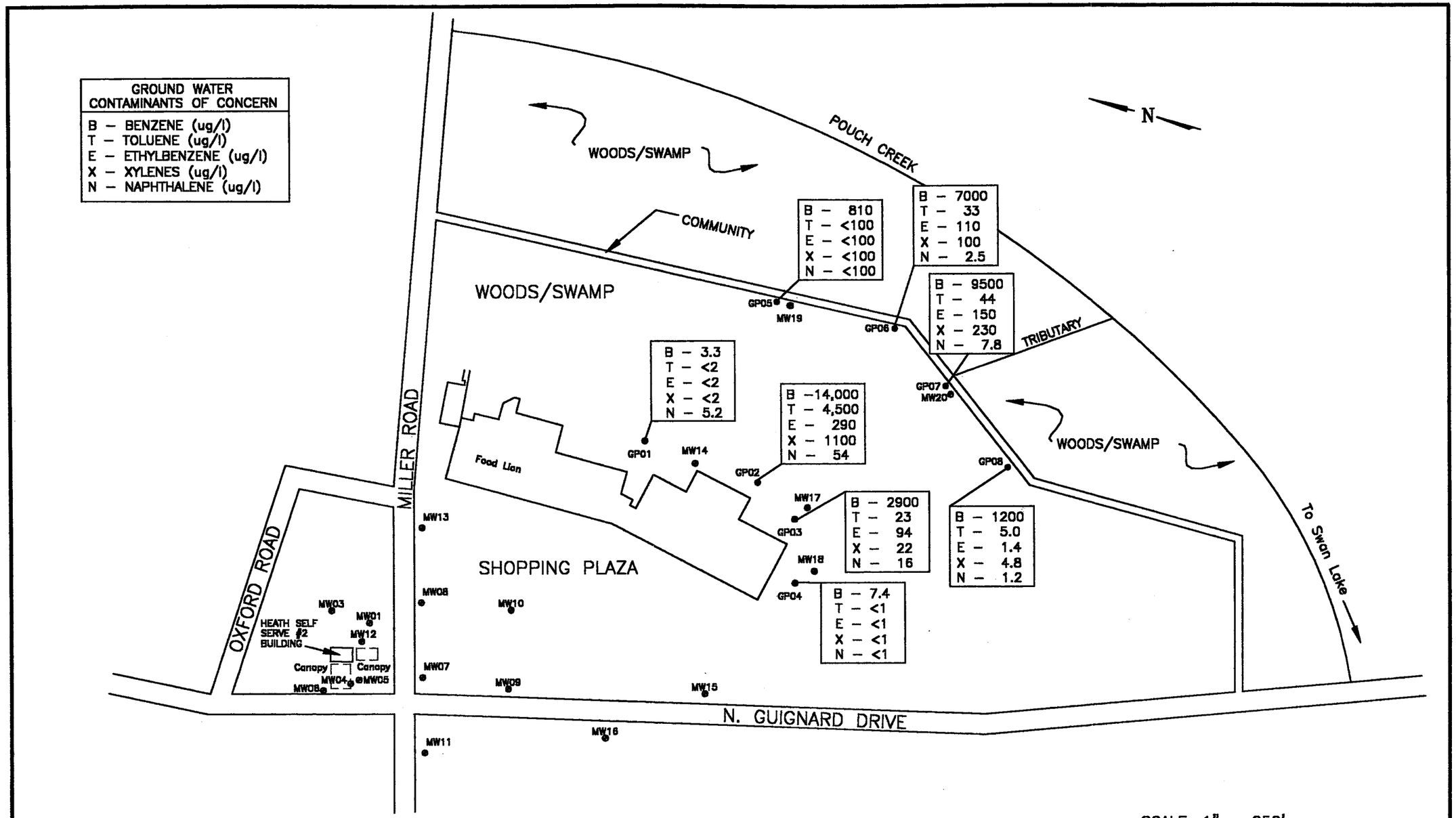
Eight temporary wells were installed at the subject facility to check ground water quality at selected locations (See Figure 4). The temporary wells were positioned behind (i.e southeast) of the Palmetto Plaza Shopping Plaza and along the western side of Community Drive. At each location, the Geoprobe® sampling tip was advanced to a depth of 14 to 22 feet below ground surface to allow collection of a ground water sample. Once ground water collection activities were completed at each Geoprobe® location, the boreholes were properly abandoned by filling each hole with a lean grout mixture to ground surface.

All ground water samples collected during this assessment were packed in crushed ice immediately following collection. A Chain of Custody form was completed prior to offsite sample removal. Samples were transported to Access Analytical, Inc. and analyzed for benzene, toluene, ethyl benzene and total xylenes (BTEX), methyl tert-butyl ether (MTBE) and naphthalene using EPA Method 8260B. Analytical data sheets for each temporary well ground water sample are provided in Appendix A.

3.2 Soil Assessment

All drilling activities were performed using a truck-mounted drilling rig equipped with hollow-stem augers. Personnel from Southeastern Atlantic Environmental Drilling and Construction Company (SAEDACCO) of Charlotte, NC performed all split spoon sampling and monitor well installations. All assessment activities were performed under the direct supervision of a KSG onsite geologist.

GROUND WATER CONTAMINANTS OF CONCERN
B – BENZENE (ug/l)
T – TOLUENE (ug/l)
E – ETHYLBENZENE (ug/l)
X – XYLENES (ug/l)
N – NAPHTHALENE (ug/l)



LEGEND
– EXISITING GROUND WATER MONITORING WELLS
– GEOPROBE LOCATIONS

SCALE: 1" = 250'

0' 125' 250'

HEATH SELF SERVE #2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 4: FIELD SCREENING DATA

KLEEN SITES GEOSERVICES

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Split-spoon samples were collected at each ground water monitor well location at five foot intervals from surface to the water table. Each split-spoon sample was screened with a portable VOC monitor. Due to the fact that extensive soil analytical data was generated during previous assessments, additional soil samples were not submitted for laboratory analysis. Soil Boring Lithology Logs and Well Construction Summaries are presented in Appendix B.

3.3 Static Water Level Measurement

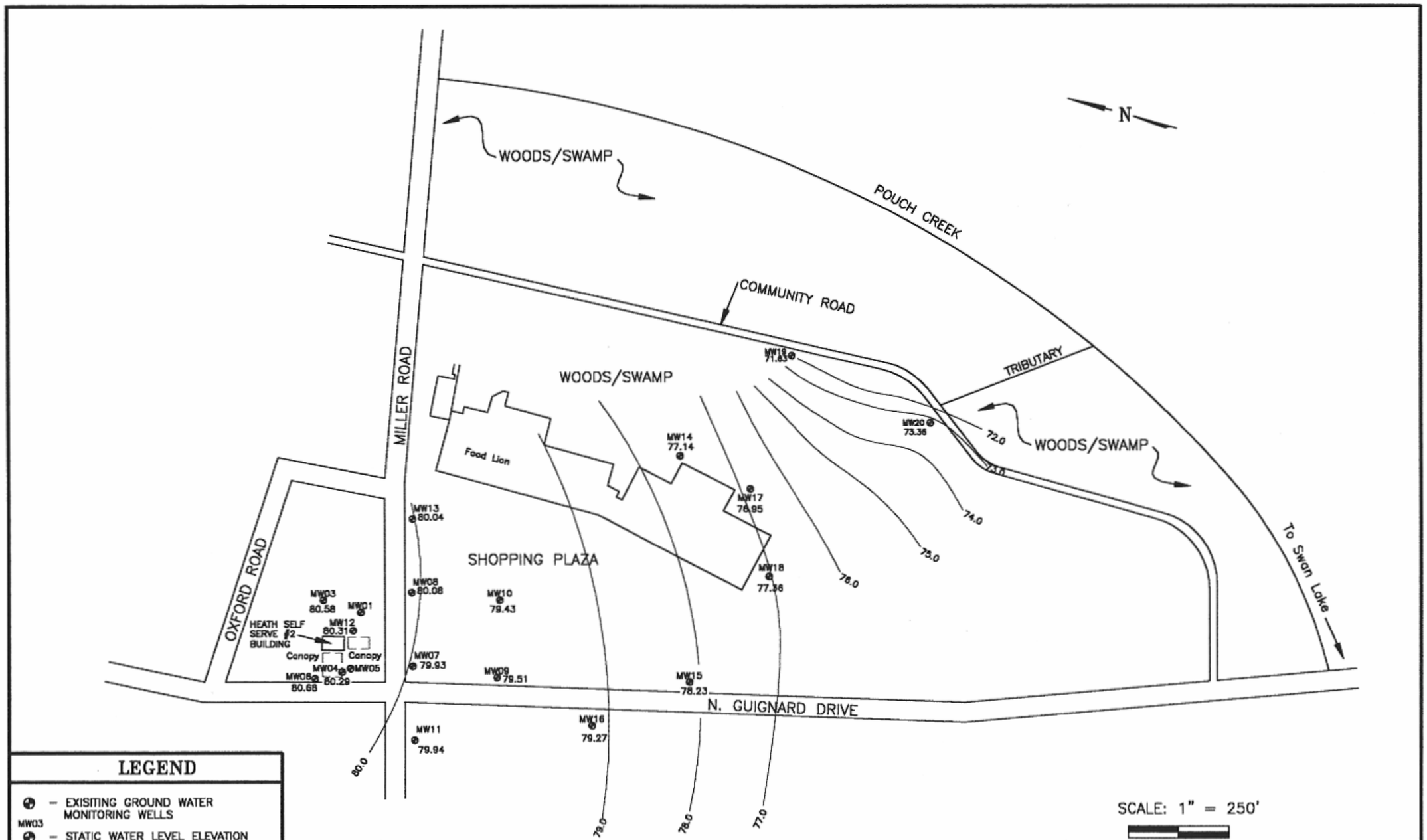
Prior to well development or sample collection, static water levels were taken to the nearest 0.01 foot using a graduated electronic indicator. All measurements were taken from the surveyed top of the well casing so they could be referenced to a common datum. All elevations are relative to an assumed onsite benchmark of 100 feet above mean sea level. Static water levels are summarized in Table 1 and shown in Figure 5.

TABLE 1
STATIC WATER LEVEL ELEVATIONS

Well ID #	Static Water Level†	Free Product Thickness (feet)	Top of Casing Elevation‡	Ground Water Elevation (MSL)
ϕMW01	12.79	0.02	99.88	87.10
MW02	Destroyed during UST removal			
MW03	20.51	ND	101.09	80.58
ϕMW04	20.11	2.31	98.72	80.29
*MW05	19.21	ND	98.83	79.62
MW06	18.30	ND	98.98	80.68
ϕMW07	20.77	2.83	98.64	79.93
ϕMW08	21.30	2.47	99.58	80.08
ϕMW09	20.22	2.46	97.93	79.51
ϕMW10	20.36	2.85	97.71	79.43
MW11	17.66	ND	97.60	79.94
**ϕMW12	21.38	2.75	99.68	80.31
MW13	19.84	ND	99.88	80.04
MW14	13.98	ND	91.12	77.14
MW15	13.06	ND	91.29	78.23
MW16	14.88	ND	94.15	79.27
MW17	12.88	ND	89.83	76.95
MW18	14.93	ND	92.29	77.36
MW19	5.13	ND	76.76	71.63
MW20	3.40	ND	76.16	73.36

Notes:

† = Depth below top of casing, in feet
‡ = Feet above mean sea level (MSL) assuming an onsite benchmark of 100'
ϕ = Static water level adjusted for free product
* = Deep Well
** = Recovery Well
ND = Not Detected



HEATH SELF SERVE #2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 5:
STATIC WATER ELEVATION MAP

KLEEN SITES GEOSERVICES

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3.4 Ground Water Sampling

Ground water samples were collected from all monitoring wells on November 1, 2 and 8, 2000. Prior to well sampling, all newly installed wells were purged ten well volumes and all existing wells were purged three well volumes to remove any sediment introduced during the soil boring process and to set the sand pack. Well purge logs are presented in Appendix C. Both shallow and deep monitor wells were purged with a PVC bailer and sampled with a disposable Teflon bailer. Dissolved oxygen readings were taken at each well location. Following well purging activities, a ground water sample was collected from each well and placed into appropriate containers. It should be noted that Well MW01 may be collapsing due to the presence of free product and the static water level and free product thickness measurements may not be reliable.

All samples were packed in crushed ice and transported to Access Analytical, Inc., for chemical analysis. Each sample was analyzed for BTEX, MTBE, ethylene dibromide (EDB) and naphthalene using EPA Method 8260B, and total recoverable lead using EPA Method 239.2. Additionally, all water samples were analyzed for nitrates (EPA Method 353.2), sulfates (EPA Method 300), ferrous iron (EPA Method 200.7) and methane (Method RSK-175).

3.5 Ground Water Analytical Data

The following table summarizes ground water analytical results.

TABLE 2
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW01	MW01	MW03	MW03	MW04	MW04	MW05	MW05	MW06	MW06
Benzene (µg/l)	FP	FP	<5.0	2.41	FP	FP	<5.0	<1.0	<5.0	<1.0
Ethylbenzene (µg/l)	FP	FP	<5.0	2.76	FP	FP	<5.0	<1.0	<5.0	<1.0
MTBE (µg/l)	FP	FP	<5.0	<1.0	FP	FP	<5.0	<1.0	<5.0	<1.0
Naphthalene (µg/l)	FP	FP	<5.0	196	FP	FP	9.7	<1.0	<5.0	<1.0
Toluene (µg/l)	FP	FP	<5.0	1.27	FP	FP	<5.0	<1.0	<5.0	<1.0
Total Xylenes (µg/l)	FP	FP	<5.0	21.77	FP	FP	<5.0	<1.0	<5.0	<1.0
EDB (µg/l)	FP	FP	<5.0	<1.0	FP	FP	<5.0	<1.0	<5.0	<1.0
Lead (mg/l)	FP	FP	<0.0030	<0.005	FP	FP	<0.0030	<0.005	<0.0030	<0.005
Ferrous Iron (mg/l)	FP	FP	<0.10	<0.03	FP	FP	19	<0.03	0.40	<0.03
Nitrates (mg/l)	FP	FP	0.769	0.70	FP	FP	1.4	1.16	1.27	0.96
Sulfates (mg/l)	FP	FP	1.30	<1.0	FP	FP	12.1	<1.0	10.2	2.13
Methane (mg/l)	FP	FP	NA	1.0	FP	FP	NA	0.6	NA	0.3
Dissolved Oxygen (mg/l)	FP	FP	7.5	4.1	FP	FP	5.9	5.1	4.7	3.3
Sampling Date	08-18-99	11-01-00	08-18-99	11-01-00	08-18-99	11-01-00	08-19-99	11-01-00	08-18-99	11-01-00

NOTE: FP = Free Product
MW02 was destroyed during UST removal.
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW07	MW07	MW08	MW08	MW09	MW09	MW10	MW10	MW11	MW11
Benzene (µg/l)	FP	FP	2300	FP	FP	FP	15000	FP	<5.0	<1.0
Ethylbenzene (µg/l)	FP	FP	1300	FP	FP	FP	1400	FP	<5.0	<1.0
MTBE (µg/l)	FP	FP	<5.0	FP	FP	FP	<5.0	FP	<5.0	<1.0
Naphthalene (µg/l)	FP	FP	1200	FP	FP	FP	<250	FP	<5.0	<1.0
Toluene (µg/l)	FP	FP	10000	FP	FP	FP	22000	FP	<5.0	<1.0
Total Xylenes (µg/l)	FP	FP	5900	FP	FP	FP	7900	FP	<5.0	<1.0
EDB (µg/l)	FP	FP	38	FP	FP	FP	460	FP	<5.0	<1.0
Lead (mg/l)	FP	FP	0.13	FP	FP	FP	0.72	FP	0.014	0.031
Ferrous Iron (mg/l)	FP	FP	32	FP	FP	FP	0.99	FP	0.33	<0.03
Nitrates (mg/l)	FP	FP	0.058	FP	FP	FP	0.063	FP	0.941	0.77
Sulfates (mg/l)	FP	FP	11.0	FP	FP	FP	5.86	FP	8.95	1.66
Methane (mg/l)	FP	FP	NA	FP	FP	FP	NA	FP	NA	<0.2
Dissolved Oxygen (mg/l)	FP	FP	3.5	FP	FP	FP	4.2	FP	6.2	5.7
Sampling Date	08-18-99	11-02-00	08-18-99	11-02-00	08-18-99	11-02-00	08-18-99	11-02-00	08-18-99	11-02-00

NOTE: FP = Free Product
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW12	MW12	MW13	MW13	MW14	MW14	MW15	MW15	MW16	MW16
Benzene (µg/l)	3600	FP	5.1	<1.0	2160	1180	<5.0	<1.0	<5.0	<1.0
Ethylbenzene (µg/l)	2100	FP	<5.0	<1.0	431	60.4	<5.0	<1.0	<5.0	<1.0
MTBE (µg/l)	93	FP	<5.0	<1.0	<5.0	<10.0	<5.0	<1.0	<5.0	<1.0
Naphthalene (µg/l)	290	FP	<5.0	<1.0	73.6	<10.0	<5.0	<1.0	<5.0	<1.0
Toluene (µg/l)	16000	FP	<5.0	<1.0	1390	<10.0	10	<1.0	<5.0	<1.0
Total Xylenes (µg/l)	8800	FP	<5.0	<1.0	2180	393.9	14	<1.0	<5.0	<1.0
EDB (µg/l)	<250	FP	<5.0	<1.0	<5.0	<10.0	<5.0	<1.0	<5.0	<1.0
Lead (mg/l)	<0.0030	FP	<0.0030	0.021	<0.0030	<0.005	<0.0030	0.089	<0.0030	0.075
Ferrous Iron (mg/l)	<0.010	FP	0.61	<0.03	30	4.2	5.9	<0.03	<0.10	<0.03
Nitrates (mg/l)	0.030	FP	0.332	0.45	0.332	<0.05	1.21	1.06	1.93	1.77
Sulfates (mg/l)	7.82	FP	5.69	<1.0	2.71	<1.0	3.63	<1.0	2.88	<1.0
Methane (mg/l)	NA	FP	NA	4.3	NA	1.7	NA	<0.2	NA	<0.2
Dissolved Oxygen (mg/l)	3.1	FP	6.6	3.7	3.0	1.7	5.5	4.9	6.3	5.1
Sampling Date	08-18-99	11-01-00	10-18-99	11-01-00	10-18-99	11-02-00	10-18-99	11-01-00	10-18-99	11-01-00

NOTE: FP = Free Product
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW17	MW18	MW19	MW20	*SW01	*SW02
Benzene (µg/l)	9,320	<1.0	380	1,550	506	1.29
Ethylbenzene (µg/l)	1380	<1.0	1.59	1.71	8.41	<1.0
MTBE (µg/l)	<100	<1.0	1,200	1.12	10.7	<1.0
Naphthalene (µg/l)	224	<1.0	6.71	36.9	<1.0	<1.0
Toluene (µg/l)	10,800	<1.0	1.46	1.98	1.28	<1.0
Total Xylenes (µg/l)	4,910	<1.0	60.59	65.42	9.32	<1.0
EDB (µg/l)	<100	<1.0	<1.0	<1.0	<1.0	<1.0
Lead (mg/l)	0.038	0.108	0.023	0.088	0.021	0.053
Ferrous Iron (mg/l)	4.0	<0.03	0.6	<0.03	<0.03	<0.03
Nitrates (mg/l)	<0.05	0.20	<0.05	0.52	0.47	0.25
Sulfates (mg/l)	9.63	7.95	9.68	5.98	5.00	8.16
Methane (mg/l)	0.23	1.36	0.27	0.12	1.13	0.0013
Dissolved Oxygen (mg/l)	1.9	3.9	2.7	2.4	NA	NA
Sampling Date	11-08-00	11-08-00	11-08-00	11-08-00	11-16-00	11-16-00

NOTE: FP = Free Product
NA = Not Analyzed
* Surface Water Samples

3.6 Receptor Survey

A receptor survey was conducted at the subject facility as part of the initial Rapid Assessment to identify any potential exposure pathways. Exposure points are considered the location that a receptor can come into contact, either now or in the future, with soil and/or ground water contaminants. Typical exposure points may be drinking water wells, ponds, streams, underground basements, or underground utilities. Results from the receptor survey were rechecked during the November 2000 sampling event.

3.6.1 Water Wells

An existing onsite well was reportedly used during past car wash operations. This well is no longer in use. The receptor survey identified no additional drinking water or irrigation wells within 1000 feet of the property boundary.

3.6.2 Underground Utilities

A utility check was performed at the former Heath Self Serve #2 site by Palmetto Utilities Protection Service prior to the assessment field effort. KSG personnel conducted an additional utility check during rapid assessment activities to identify any potential underground exposure points (i.e., storm drain, sanitary sewer line, etc.). Contaminated ground water could potentially seep into these utilities if the static water level existed at an elevation greater than or equal to the corresponding underground utility.

A water main and gas line runs parallel with N. Guignard Drive adjacent to the subject property. A storm sewer drain is present on the southern corner of the subject property at the intersection of North Guignard Drive and Miller Road. Due to the depth to ground water, it is unlikely that underground lines at the Heath Self Serve #2 property could provide a mechanism for accelerating contaminant transport during periods of abundant precipitation.

3.6.3 Surface Water

Field activities implemented during the Rapid Assessment were unable to identify any surface waters within 1000 feet of the subject site. However, field reconnaissance during the current field event identified the presence of a drainage ditch adjacent to Community Drive with standing water. Due to the shallow depth to ground water at this location, this ditch may provide a localized discharge point for ground water. The drainage ditch led into Pouch Creek as shown in Figure 3. Surface water samples were collected from the drainage ditch and Pouch Creek and submitted to Access Analytical, Inc. for the following analyses: BTEX, MTBE, ethylene dibromide (EDB) and naphthalene using EPA Method 8260B, and total recoverable lead using EPA Method 239.2. Additionally, all water samples were analyzed for nitrates (EPA Method 353.2), sulfates (EPA Method 300), ferrous iron (EPA Method 200.7) and methane (Method RSK-175).

3.7 Site Survey

A site survey was performed during the Standard Limited Assessment to establish an accurate site map portraying the locations of the former UST area, onsite building and adjacent structures. The comprehensive site survey was performed by a South Carolina Registered Land Surveyor, Mr. Jay S. Joshi. Following the installation of Wells MW17 – MW20, a subsequent survey was performed by KSG personnel to determine the top of casing (TOC) elevation at each new well location. By referencing each TOC elevation to an established datum, the static water level elevation at each well was determined.

SECTION 4.0

RESULTS, CONCLUSIONS AND RECOMMENDATIONS

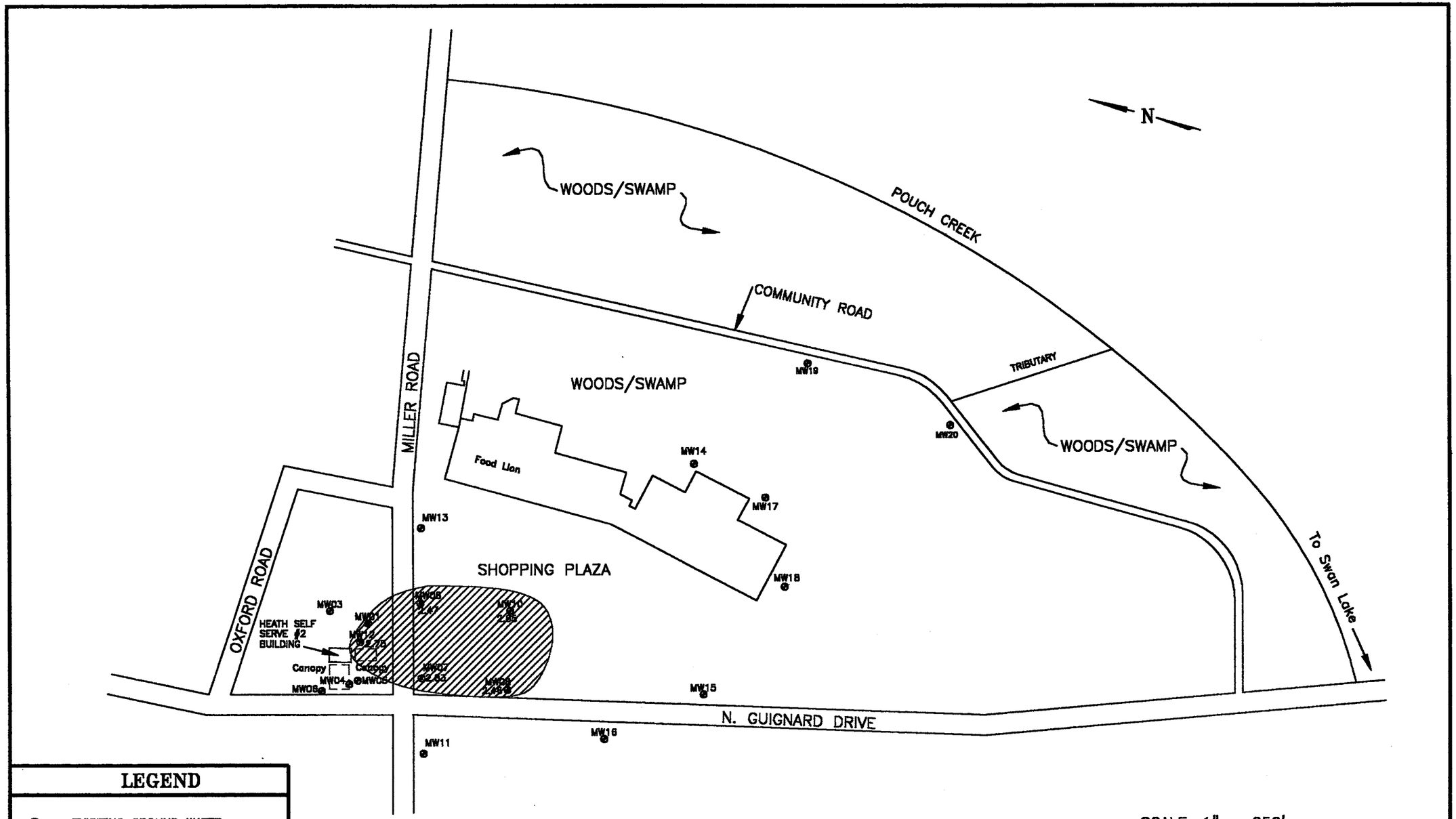
4.1 Results

Previous assessment activities indicate that subsurface soils consist of brown, silty, clayey sands from surface to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands down to the final investigation depth of 45 feet. During the November 2000 sampling event, static water levels were found to range from 18.30 to 20.51 feet below ground surface across the subject property. Static water level depths decrease to the south and southeast away from the subject property. Static water levels in wells that were installed along Community Drive range from 3.40 to 5.13 feet below ground surface.

The former UST and dispenser island area appear to be the source of contamination at the subject site. A large free product plume is present along the southeastern portion of the subject property. Free product was observed in wells MW01, MW04, MW07, MW08, MW09, MW10 and MW12 at a thickness of 0.02, 2.31, 2.83, 2.47, 2.46, 2.85 and 2.75 feet, respectively. The free product plume extends beneath Miller Road and covers an area measuring approximately 200 feet by 400 feet as shown in Figure 6. The free product plume appears to have expanded significantly since the initial Rapid Assessment was performed.

As shown in Figure 7, the natural flow of ground water has transported free product and dissolved phase contaminants in a southeasterly direction. Well MW06 was successful in defining the upgradient extent of the dissolved phase plume. Deep well MW05 was successful in defining the vertical extent of ground water contamination. The western extent of the dissolved phase plume is defined by Wells MW11, MW15 and MW16. The eastern dissolved phase plume boundary is defined by Well MW13. However, the dissolved phase ground water contaminant plume appears to be migrating through a relatively narrow channel in the vicinity of MW14, MW17, MW19 and MW20. Ground water contamination extends beneath Community Drive and discharges into the low-lying area and unnamed tributary shown in Figure 7. Ground water contamination is present within an area measuring approximately 500 by 1500 feet. Dissolved phase hydrocarbon concentrations within the surficial aquifer, unnamed tributary and Pouch Creek are presented in Figure 7.

Analytical data generated during the initial Rapid Assessment revealed elevated levels of EDB in wells MW08 and MW10. Concentrations of lead at levels above the Primary Drinking Water Standard of 0.050 mg/l were identified in two monitoring wells and Pouch Creek. This data suggests that a release of leaded gasoline is responsible for at least part of the contamination present.



LEGEND

- ⊕ – EXISITING GROUND WATER MONITORING WELLS
- MW07 ⊙ 2.83 – THICKNESS OF FREE PRODUCT WITHIN MONITORING WELL (FEET)
- – APPROXIMATE EXTENT OF FREE PRODUCT PLUME

SCALE: 1" = 250'

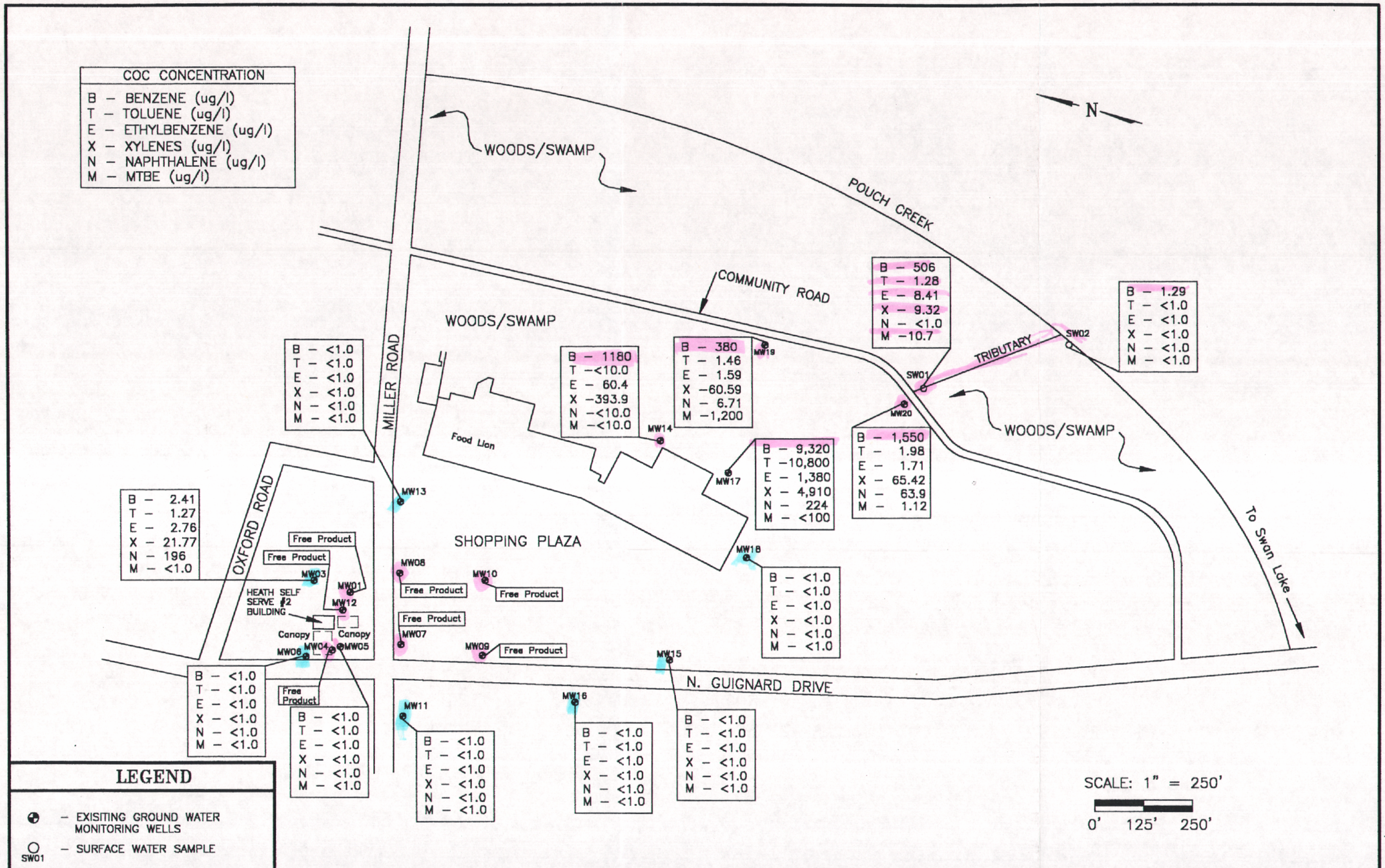
0' 125' 250'

HEATH SELF SERVE #2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 6:
FREE PRODUCT PLUME MAP

KLEEN SITES GEOSERVICES

F:\KSG\CAD\2000\00585\Fig6



HEATH SELF SERVE #2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 7:
GROUND WATER COC MAP

KLEEN SITES GEOSERVICES

F:\KSG\CAD\2000\00585\Fig7

Laboratory analytical data generated from the Rapid Assessment sampling event revealed elevated levels of petroleum constituents within onsite soils and ground water at the former Heath Self Serve #2 site. Elevated levels of soil contamination above the water table were detected during the Standard Limited Assessment in the Samples SB01, SB02, SB04, SB05 and SB06. Soil sample SB02 contained the highest levels of toluene, ethylbenzene, total xylenes and naphthalene at concentration levels 33 µg/kg, 2,300 µg/kg, 14,000 µg/kg and 380 µg/kg, respectively. Soil leachability calculations indicate that the levels of toluene, ethylbenzene and naphthalene in soils immediately surrounding the former UST piping and dispenser island exceed the SSTL values.

Dissolved oxygen levels were measured on ground water samples from each monitor well location. A review of the data presented in Table 2 indicates the "classic" reduction in the dissolved oxygen level in ground water present within the dissolved phase contaminant plume. This data appears to provide evidence that aerobic microbial activity is occurring to degrade the petroleum compounds.

A receptor survey was performed as part of the Rapid Assessment process. An onsite well that supplied water to the car wash during past operations was identified. This well is no longer in use. Field reconnaissance performed during the November 2000 sampling event identified an unnamed tributary present east of Community Drive. This tributary feeds directly into Pouch Creek. Surface water samples that were collected during the present scope of work confirmed that petroleum hydrocarbons have impacted the unnamed tributary. A surface water sample collected from Pouch Creek identified only benzene (1.29 ug/l) at a level above instrument detection limits. However, total lead was present at a level of 0.053 mg/l in Pouch Creek.

4.2 Conclusions and Recommendations

Assessment activities have been successful in generating data concerning the concentration of petroleum hydrocarbons in both soil and ground water that have been adversely affected by a release from the UST system at the former Heath Self Serve #2 facility. Soil leachability tests indicate that petroleum contaminants are present in the former UST pit and dispenser island areas at levels that require remediation. Furthermore, ground water contaminants are present in many wells at concentrations above calculated SSTLs. Free product in excess of 2.0 feet in thickness is also present in both onsite and offsite wells.

KSG recommends that a Corrective Action Plan (CAP) be prepared in order to determine the most technically sound and cost effective method of remediating contaminated ground water to the SSTLs calculated within the Rapid Assessment Report. Additionally, free product removal activities should begin immediately to remove the source of additional contamination to both the surficial aquifer and surface water in the Community Drive area.

SECTION 5.0

APPENDICES

APPENDIX A - ANALYTICAL DATA SHEETS

APPENDIX B - BORING LOGS & WELL CONSTRUCTION SUMMARIES

APPENDIX C – WELL PURGE LOGS

APPENDIX D - WASTE DISPOSAL MANIFESTS

APPENDIX A

ANALYTICAL DATA SHEETS

Ground Water Analytical Data Sheets

Surface Water Analytical Data Sheets

GeoProbe Field Screening Results

FIELD SCREENING SUMMARY
Former Heath Self Serve #2
Sumter, SC
SCDHEC Site ID# 08932

GeoProbe Number	Sample Depth (feet)	Comments
GP01	22	No odor.
GP02	20	Petroleum odor.
GP03	20	Petroleum odor.
GP04	20	No odor.
GP05	14	Petroleum odor.
GP06	14	Petroleum odor.
GP07	14	Petroleum odor.
GP08	14	Petroleum odor.
TOTAL FOOTAGE	**138**	

ACCESS ANALYTICAL, INC.

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-1

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-01
Date Sampled: 10/16/2000
Time Sampled: 13:30
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analy:
BTEX/Naphthalene							
Benzene	3.3	ug/l	5030/8260	2.0	10/23	10/23	SV
Toluene	BDL	ug/l	5030/8260	2.0	10/23	10/23	SV
Ethylbenzene	BDL	ug/l	5030/8260	2.0	10/23	10/23	SV
Total Xylenes	BDL	ug/l	5030/8260	2.0	10/23	10/23	SV
MTBE	BDL	ug/l	5030/8260	2.0	10/23	10/23	SV
Naphthalene	5.2	ug/l	5030/8260	2.0	10/23	10/23	SV
Dilution Factor	2.0		5030/8260		10/23	10/23	SV
Surrogate Recoveries:							
Dibromofluoromethane	90.0	%	5030/8260	68-145	10/23	10/23	SV
Toluene-D8	87.0	%	5030/8260	62-133	10/23	10/23	SV
4-Bromofluorobenzene	108	%	5030/8260	56-135	10/23	10/23	SV

BDL = Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
Tests performed and certified by US Biosystems, Inc.

QAP# 980126 | DOH# E86240 | NC CERT# 444
SUB DOH# 86122,86109,E86048 | ADEM ID# 40850 | MA CERT# M-FL449
SC CERT# 96031001 | TN CERT# 02985 | CT CERT# PH-0122
ELPAT# 13801 | GA CERT# 917
VA CERT# 00395 | USDA Soil Permit# S-35240

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Date: 10/27/2000
Log #: L47565-2

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-02
Date Sampled: 10/16/2000
Time Sampled: 10:20
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	14000 L	ug/l	5030/8260	50	10/23	10/23	SV
Toluene	4500	ug/l	5030/8260	100	10/23	10/23	SV
Ethylbenzene	290	ug/l	5030/8260	50	10/23	10/23	SV
Total Xylenes	1100	ug/l	5030/8260	50	10/23	10/23	SV
MTBE	2800	ug/l	5030/8260	50	10/23	10/23	SV
Naphthalene	54	ug/l	5030/8260	50	10/23	10/23	SV
Dilution Factor	50		5030/8260		10/23	10/23	SV
Surrogate Recoveries:							
Dibromofluoromethane	91.0	%	5030/8260	68-145	10/23	10/23	SV
Toluene-D8	88.0	%	5030/8260	62-133	10/23	10/23	SV
4-Bromofluorobenzene	108	%	5030/8260	56-135	10/23	10/23	SV

BDL = Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
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Analyses are reported in dry weight unless otherwise indicated by units.
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QAP# 980126 | DOH# E86240 | NC CERT# 444
SUB DOH# 86122,86109,E86048 | ADEM ID# 40850 | MA CERT# M-FL449
SC CERT# 96031001 | TN CERT# 02985 | CT CERT# PH-0122
ELPAT# 13801 | GA CERT# 917
VA CERT# 00395 | USDA Soil Permit# S-35240

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-3

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-03
Date Sampled: 10/16/2000
Time Sampled: 11:20
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	2900	ug/l	5030/8260	100	10/23	10/23	SV
Toluene	23	ug/l	5030/8260	1.0	10/23	10/23	SV
Ethylbenzene	94	ug/l	5030/8260	1.0	10/23	10/23	SV
Total Xylenes	22	ug/l	5030/8260	1.0	10/23	10/23	SV
MTBE	BDL	ug/l	5030/8260	1.0	10/23	10/23	SV
Naphthalene	16	ug/l	5030/8260	1.0	10/23	10/23	SV
Dilution Factor	1.0		5030/8260		10/23	10/23	SV
Surrogate Recoveries:							
Dibromofluoromethane	114	%	5030/8260	68-145	10/23	10/23	SV
Toluene-D8	102	%	5030/8260	62-133	10/23	10/23	SV
4-Bromofluorobenzene	130	%	5030/8260	56-135	10/23	10/23	SV

BDL = Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
Tests performed and certified by US Biosystems, Inc.

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
ELPAT# 13801
VA CERT# 00395
DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240
NC CERT# 444
MA CERT# M-PL449
CT CERT# PH-0122

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-4

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-04
Date Sampled: 10/16/2000
Time Sampled: 12:10
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	7.4	ug/l	5030/8260	1.0	10/24	10/24	SV
Toluene	BDL	ug/l	5030/8260	1.0	10/24	10/24	SV
Ethylbenzene	BDL	ug/l	5030/8260	1.0	10/24	10/24	SV
Total Xylenes	BDL	ug/l	5030/8260	1.0	10/24	10/24	SV
MTBE	BDL	ug/l	5030/8260	1.0	10/24	10/24	SV
Naphthalene	BDL	ug/l	5030/8260	1.0	10/24	10/24	SV
Dilution Factor	1.0		5030/8260		10/24	10/24	SV
Surrogate Recoveries:							
Dibromofluoromethane	93.0	%	5030/8260	68-145	10/24	10/24	SV
Toluene-D8	81.0	%	5030/8260	62-133	10/24	10/24	SV
4-Bromofluorobenzene	103	%	5030/8260	56-135	10/24	10/24	SV

BDL - Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
Tests performed and certified by US Biosystems, Inc.

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
ELPAT# 13801
VA CERT# 00395
DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240
NC CERT# 444
MA CERT# M-FL449
CT CERT# PH-0122

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-5

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-05
Date Sampled: 10/16/2000
Time Sampled: 15:35
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	810	ug/l	5030/8260	100	10/24	10/24	SV
Toluene	BDL	ug/l	5030/8260	100	10/24	10/24	SV
Ethylbenzene	BDL	ug/l	5030/8260	100	10/24	10/24	SV
Total Xylenes	BDL	ug/l	5030/8260	100	10/24	10/24	SV
MTBE	2000	ug/l	5030/8260	100	10/24	10/24	SV
Naphthalene	BDL	ug/l	5030/8260	100	10/24	10/24	SV
Dilution Factor	100		5030/8260		10/24	10/24	SV
Surrogate Recoveries:							
Dibromofluoromethane	84.0	%	5030/8260	68-145	10/24	10/24	SV
Toluene-D8	75.0	%	5030/8260	62-133	10/24	10/24	SV
4-Bromofluorobenzene	97.0	%	5030/8260	56-135	10/24	10/24	SV

BDL = Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
Tests performed and certified by US Biosystems, Inc.

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
ELPAT# 13801
VA CERT# 00395
DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240
NC CERT# 444
MA CERT# M-FL449
CT CERT# PH-0122

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-6

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-06
Date Sampled: 10/16/2000
Time Sampled: 16:05
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	7000	ug/l	5030/8260	100	10/23	10/23	SV
Toluene	33	ug/l	5030/8260	1.0	10/23	10/23	SV
Ethylbenzene	110	ug/l	5030/8260	1.0	10/23	10/23	SV
Total Xylenes	100	ug/l	5030/8260	1.0	10/23	10/23	SV
MTBE	20000	ug/l	5030/8260	100	10/23	10/23	SV
Naphthalene	2.5	ug/l	5030/8260	1.0	10/23	10/23	SV
Dilution Factor	1.0		5030/8260		10/23	10/23	SV
Surrogate Recoveries:							
Dibromofluoromethane	91.0	%	5030/8260	68-145	10/23	10/23	SV
Toluene-D8	83.0	%	5030/8260	62-133	10/23	10/23	SV
4-Bromofluorobenzene	105	%	5030/8260	56-135	10/23	10/23	SV

BDL = Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
Tests performed and certified by US Biosystems, Inc.

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
ELPAT# 13801
VA CERT# 00395
DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240
NC CERT# 444
MA CERT# M-FL449
CT CERT# PH-0122

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-7

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-07
Date Sampled: 10/16/2000
Time Sampled: 16:25
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	9500	ug/l	5030/8260	100	10/23	10/23	SV
Toluene	44	ug/l	5030/8260	1.0	10/23	10/23	SV
Ethylbenzene	150	ug/l	5030/8260	1.0	10/23	10/23	SV
Total Xylenes	230	ug/l	5030/8260	1.0	10/23	10/23	SV
MTBE	22	ug/l	5030/8260	1.0	10/23	10/23	SV
Naphthalene	7.8	ug/l	5030/8260	1.0	10/23	10/23	SV
Dilution Factor	1.0		5030/8260		10/23	10/23	SV
Surrogate Recoveries:							
Dibromofluoromethane	95.0	%	5030/8260	68-145	10/23	10/23	SV
Toluene-D8	84.0	%	5030/8260	62-133	10/23	10/23	SV
4-Bromofluorobenzene	104	%	5030/8260	56-135	10/23	10/23	SV

BDL - Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
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QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
ELPAT# 13801
VA CERT# 00395
DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240
NC CERT# 444
MA CERT# M-FL449
CT CERT# PH-0122

Respectfully submitted,

Project Manager

Client #: AXS-02-000028
Address: Kleen Sites Geoservices, Inc.
409 Burton Road
Lexington, SC 29072
Mr. Bill Dunnagan

Page: Page 1 of 1
Date: 10/27/2000
Log #: L47565-8

Sample Description:

Heath #2
Proj.#: 00585

Label: GP-08
Date Sampled: 10/16/2000
Time Sampled: 16:45
Date Received: 10/18/2000
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX/Naphthalene							
Benzene	1200	ug/l	5030/8260	100	10/23	10/23	SV
Toluene	5.0	ug/l	5030/8260	1.0	10/23	10/23	SV
Ethylbenzene	1.4	ug/l	5030/8260	1.0	10/23	10/23	SV
Total Xylenes	4.8	ug/l	5030/8260	1.0	10/23	10/23	SV
MTBE	BDL	ug/l	5030/8260	1.0	10/23	10/23	SV
Naphthalene	1.2	ug/l	5030/8260	1.0	10/23	10/23	SV
Dilution Factor	1.0		5030/8260		10/23	10/23	SV
Surrogate Recoveries:							
Dibromofluoromethane	95.0	%	5030/8260	68-145	10/23	10/23	SV
Toluene-D8	89.0	%	5030/8260	62-133	10/23	10/23	SV
4-Bromofluorobenzene	111	%	5030/8260	56-135	10/23	10/23	SV

BDL - Below Reportable Limit
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.
Tests performed and certified by US Biosystems, Inc.

QAP# 980126
SUB DOH# 86122,86109,E86048
SC CERT# 96031001
ELPAT# 13801
VA CERT# 00395
DOH# E86240
ADEM ID# 40850
TN CERT# 02985
GA CERT# 917
USDA Soil Permit# S-35240
NC CERT# 444
MA CERT# M-FL449
CT CERT# PH-0122

Respectfully submitted,

Project Manager

KLEEN SITES GEOSERVICES, INC.

409 Burton Road, Lexington, South Carolina 29072, (803) 957-7988, Fax (803) 957-4076

CHAIN OF CUSTODY RECORD

Job Name: Hemm #2

Project Manager: Bill Dunnagan Phone: 791 1996

Project Number: 00585

Collected By: J Chiovazzi

Laboratory: Accus

KSG Sample #	Lab Sample #	Date	Time	Description	Sample Matrix	Parameter Analysis: BTEX + Naphthalene								Special Instructions
6P01		10/16	1330			1								
6P02			1020			1								
6P03			1120			1								
6P04			1210			1								
6P05			1535			1								
6P06			1605											
6P07			1625											
6P08			1645			1								

CUSTODY TRANSFERS:

Relinquished by:	Received by:	Date:	Time:
Bill Dunnagan	Cheryl Burr	10/17/00	14:00
Cheryl Burr	Fedex	10/17/00	1700
Fedex			

Matrix:
S=Solid
L=Liquid
O=Other

Laboratory Remarks:

APPENDIX B

BORING LOGS & WELL CONSTRUCTION DIAGRAMS

Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
(803) 791-1996

FIELD BOREHOLE LOG

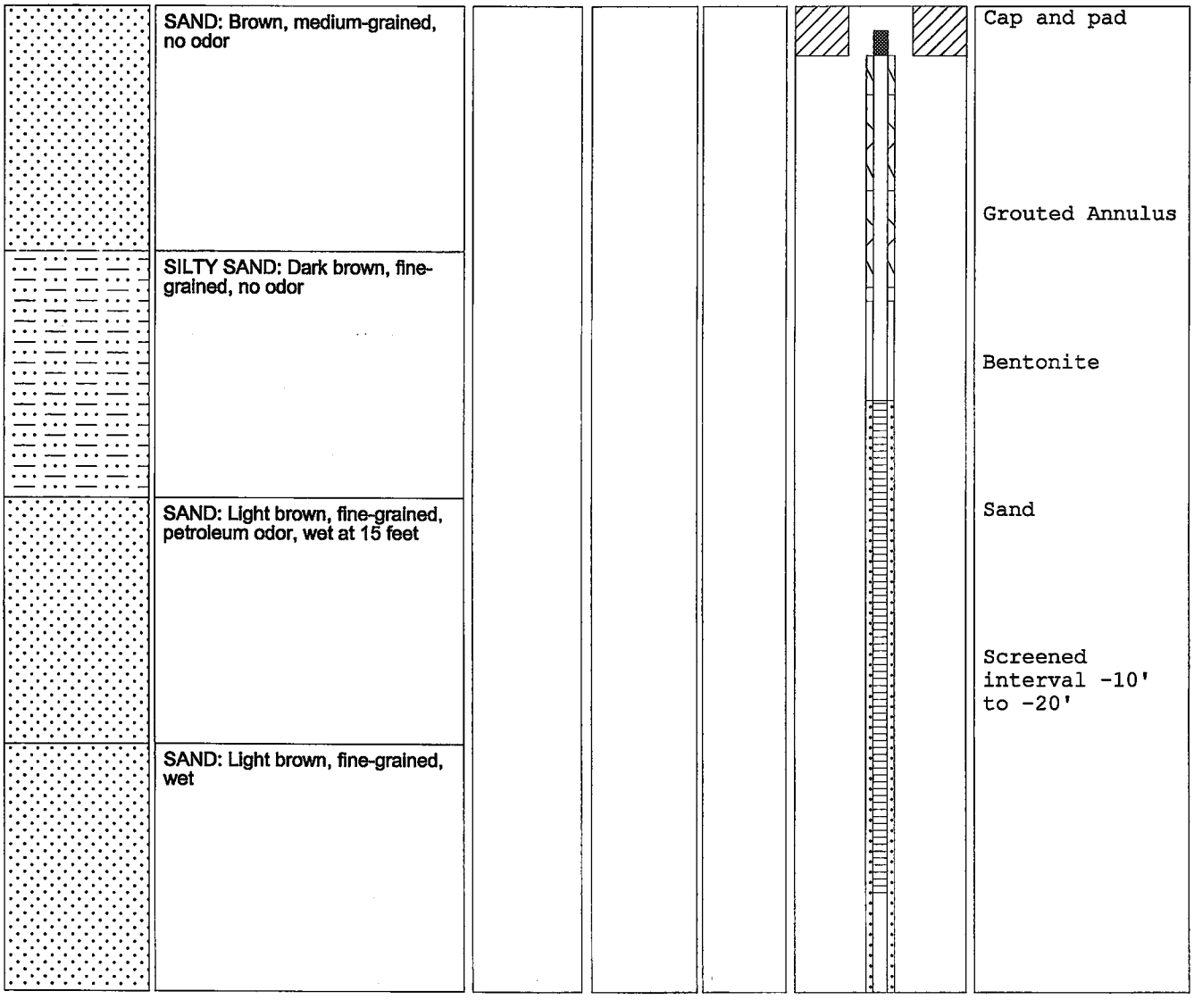
BOREHOLE NO.: **MW17**
TOTAL DEPTH: **20'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Tim Thomas**
JOB NO.:	**00585**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**11-03-00**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SAND: Brown, medium-grained, no odor					Cap and pad
-5		SILTY SAND: Dark brown, fine-grained, no odor					Grouted Annulus
-10		SAND: Light brown, fine-grained, petroleum odor, wet at 15 feet					Bentonite
▼							Sand
▽							Screened interval -10' to -20'
-15		SAND: Light brown, fine-grained, wet					
-20							



Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
(803) 791-1996

FIELD BOREHOLE LOG

BOREHOLE NO.: **MW18**
TOTAL DEPTH: **20'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Tim Thomas**
JOB NO.:	**00585**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**11-03-00**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SAND: Brown, medium-grained, no odor					Cap and pad
-5		SILTY SAND: Dark brown, fine-grained, no odor					Grouted Annulus
-10		SILTY SAND: Dark brown, medium to fine-grained, no odor					Bentonite
-15 ▽		SILTY SAND: Light brown, fine-grained, wet					Sand
-20							Screened interval -10' to -20'

Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
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FIELD BOREHOLE LOG

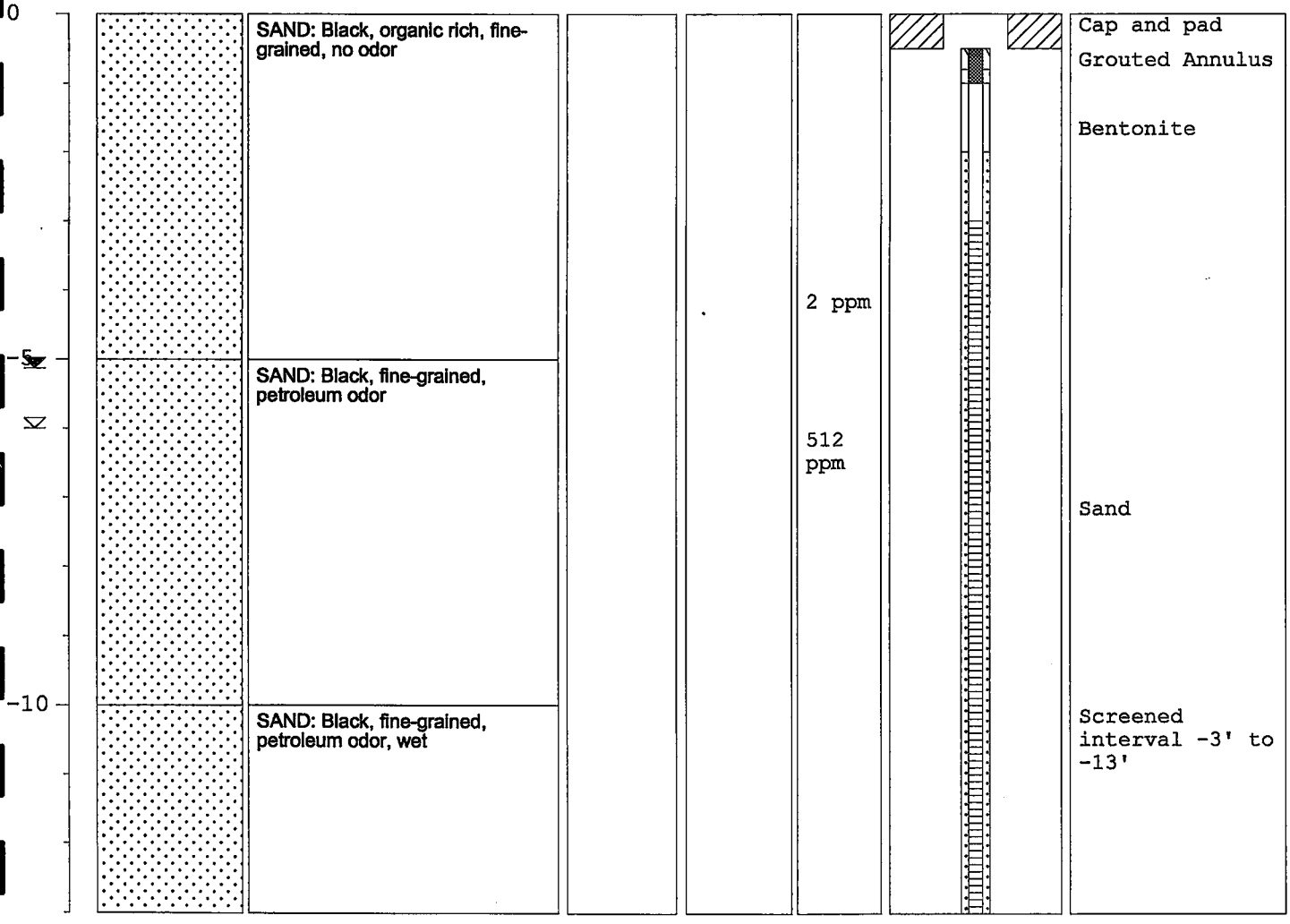
BOREHOLE NO.: **MW19**
TOTAL DEPTH: **13'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Tim Thomas**
JOB NO.:	**00585**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**11-03-00**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SAND: Black, organic rich, fine-grained, no odor			2 ppm		Cap and pad Grouted Annulus Bentonite
-5 ▼ ▽		SAND: Black, fine-grained, petroleum odor			512 ppm		Sand
-10		SAND: Black, fine-grained, petroleum odor, wet					Screened interval -3' to -13'



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FIELD BOREHOLE LOG

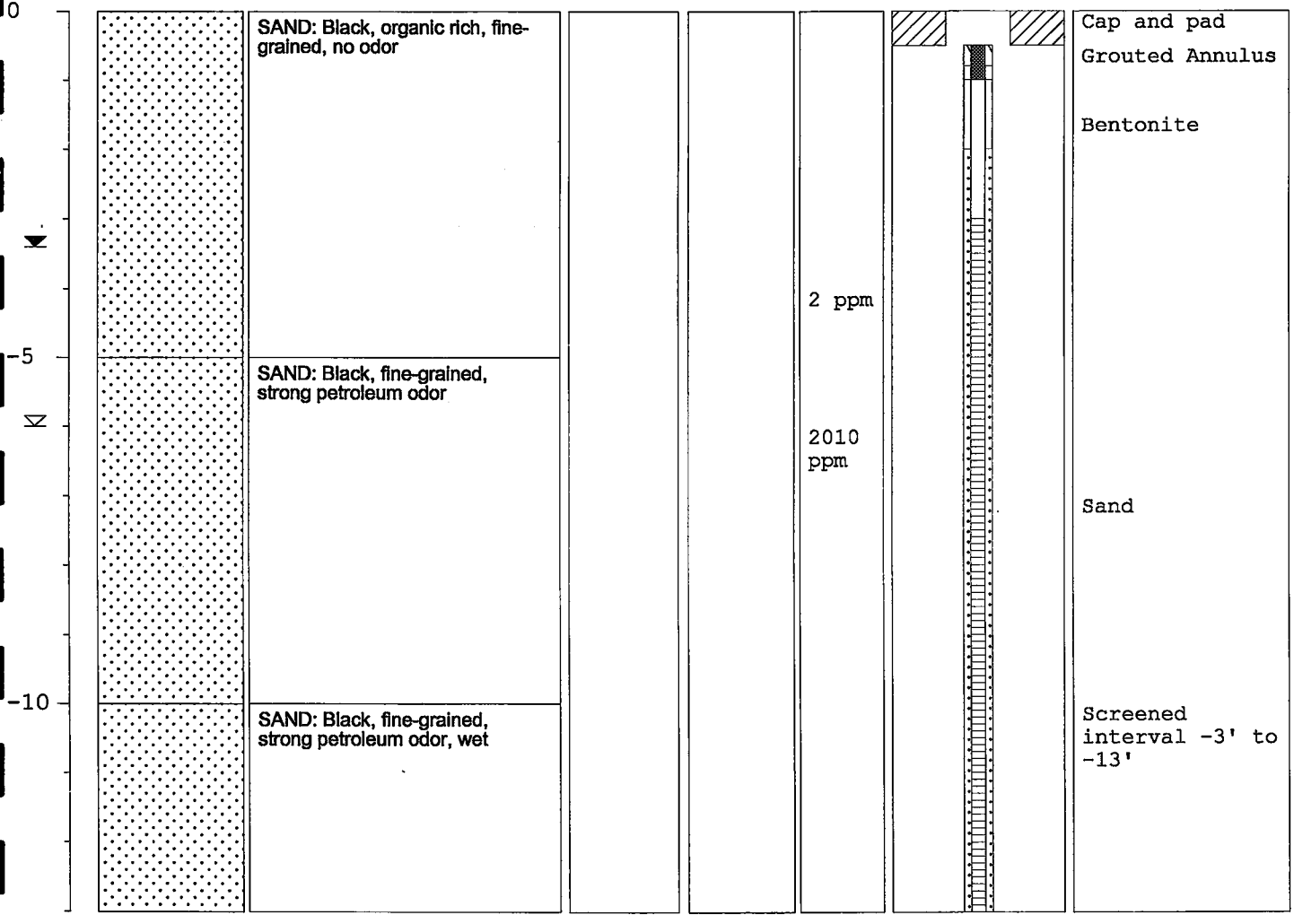
BOREHOLE NO.: **MW20**
TOTAL DEPTH: **13'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Tim Thomas**
JOB NO.:	**00585**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**11-03-00**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

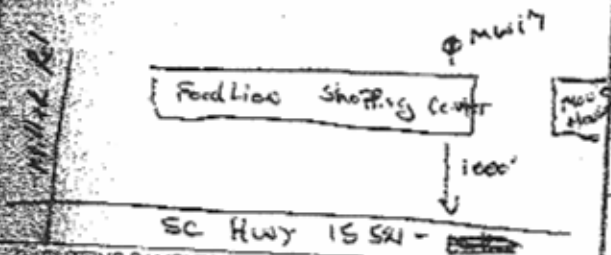
DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SAND: Black, organic rich, fine-grained, no odor			2 ppm		Cap and pad Grouted Annulus Bentonite
-5		SAND: Black, fine-grained, strong petroleum odor			2010 ppm		Sand
-10		SAND: Black, fine-grained, strong petroleum odor, wet					Screened interval -3' to -13'



DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name: Heath Self Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
0-5 Sands		
5-10 Silty Sand		
10-15 Silty Sand		
15-20 wet Sands		

Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath oil
Address:
Telephone No.:
Engineer: Kleen Sites
Address: Sumter
Telephone No.:

5. WELL DEPTH (completed) 20' ft. Date Started: 11-3-00 Date Completed: 11-3-00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE: ☐ Domestic ☐ Public Supply-Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☑ Monitor Well ☐ ____

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
-6' in. to 10' ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface 6" ft.
Weight Sch 40 lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10
Set Between: 10 ft. and 20 ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
____ ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size #2 Uniformity Coefficient Sand

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From 0 ft. to 2' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: [signature] Authorized Representative Cert. No.: 1355

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
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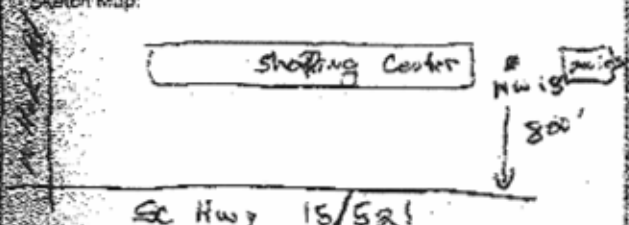
Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL:
County: Sumter System Name: Heath Sclf Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-5 Sands		
5-10 Silty Sands		
10-15 Silty Sands		
15-20 wet Sands		

Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath Oil
Address:
Telephone No.:
Engineer: Kleen Sites
Address: Sumpter
Telephone No.:

5. WELL DEPTH (completed) 20' ft. Date Started: 11 3 00 Date Completed: 11 3 00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE:
☐ Domestic ☐ Public Supply Permit No. ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☑ Monitoring ☐

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2" Height: Above (Below) Surface: 6" ft.
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
Weight: lb./ft.
0 ft. to 10 ft. Sch 40 Drive Shoe? ☐ Yes ☐ No
ft. to ft.

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10'
Set Between: 10 ft. and 20' ft. NOTE: MULTIPLE SCREENS
ft. and ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface
ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 8' ft. to 20' ft.
Effective size #2 Uniformity Coefficient SAND

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 0 ft. to 7' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected ☐ Yes Type:
upon completion ☐ No Amount:

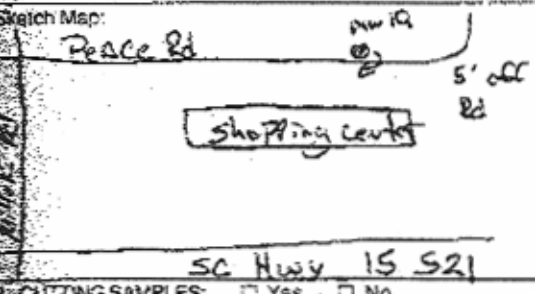
16. PUMP: Date Installed: ☐ Not Installed
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep): ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 11-3-00
Address: 10001 John Price Rd Charlotte NC 28273
Signed: [signature] Cert. No.: 1355
Authorized Representative

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL: Sumter Sc
County: Sumter System Name: Heath Self Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:
Sketch Map:



2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0 5 Sand		
5 10 wet sand		
10 13 wet sand		

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

3. REMARKS:

4. OWNER OF WELL: Heath oil
Address:
Telephone No.:
Engineer: Kleen sites
Address:
Telephone No.:

5. WELL DEPTH (completed) 13' ft. Date Started: 11 3 00 Date Completed: 11 3 00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable/tool ☑ Other

7. USE: ☐ Domestic ☐ Public Supply-Permit No. ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☑ Monitor Well ☐

8. CASING: ☑ Threaded ☐ Welded
Diam.: 2" Height: Above Sand
Type: ☑ PVC ☐ Galvanized Surface 6" ft.
☐ Steel ☐ Other Weight 2 Sch 40 lb/ft.
0 in. to 3 ft. depth Drive Shoe? ☐ Yes ☐ No
in. to ft. depth

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10
Set Between: 3 ft. and 13' ft. NOTE: MULTIPLE SCREENS USE SECOND SHEET
ft. and ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 2' ft. to 13' ft.
Effective size #2 Uniformity Coefficient Sand

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 0 ft. to 2' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected ☐ Yes Type:
upon completion ☐ No Amount:

16. PUMP: Date Installed: Not installed ☐
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: Timothy Thomas Cert. No.: 1355
Authorized Representative

COPY A MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

1. LOCATION OF WELL: Sumter
County: Sumter System Name: Heath Sch Serve #2
Latitude: Longitude:
Distance and Direction from Road Intersections:
Street Address & City of Well Location:
Sketch Map:

SC Hwy 15 521

2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
0-5 sands		
5-10 wet sand		
10-13 wet sand		

Indicate Water Bearing Zones
(Use a 2nd sheet if needed)
3. REMARKS:

4. OWNER OF WELL: Heath Oil
Address:
Telephone No.:
Engineer: Kleewsites
Address:
Telephone No.:

5. WELL DEPTH (completed) 13' ft. Date Started: 11-3-00 Date Completed: 11-3-00

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. USE:
☐ Domestic ☐ Public (supply) Permit No. ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☑ Monitor Well

8. CASING: ☐ Threaded ☐ Welded
Diam.: 2" Height Above Land Surface: 6" in.
Type: ☑ PVC ☐ Galvanized Weight: Sch 40 lb./ft.
☐ Steel ☐ Other Drive Shoe? ☐ Yes ☐ No
0 ft. to 3 ft. depth
ft. to ft. depth

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length: 10'
Set Between: 3 ft. and 13 ft. NOTE: MULTIPLE SCREENS USE SECOND SHEET
ft. and ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL
ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☑ Yes ☐ No
Installed from 2' ft. to 13' ft.
Effective size Uniformity Coefficient

14. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other
Depth: From 0 ft. to 1' ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type well disinfected ☐ Yes Type:
upon completion ☐ No Amount:

16. PUMP: Date Installed: Not installed ☐
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: SAEDACCO Date: 11-3-00
Address: 10401 John Price Rd Charlotte NC 28273
Signed: Timothy Thomas Cert. No.: 1355
Authorized Representative

APPENDIX C

WELL PURGE LOGS

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW01

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	12.79 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	9.21 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 12.77
					Static Water Level – 12.79
					Free Product Thickness = 0.02 feet
					Well was not sampled
					DO =

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW02

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Well has been destroyed by onsite
					construction activities. No water
					sample collected.

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW03

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	24.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	20.51 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	3.49 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	0.6 Gallons
		PURGE VOLUME:	1.8 Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1020	0.6	73.1	39	6.10	Clear
1023	1.2	73.0	35	5.15	
1026	1.8	72.7	34	4.82	
					DO = 4.1

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW04

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	24.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*20.11 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.80
					Static Water Level – 20.11
					Free Product Thickness = 2.31 feet
					Well was not sampled

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW05

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	45.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	19.21 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	25.79 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	4.3 Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	12.9 Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1130	4.3	71.1	38	5.03	Clear
1135	8.6	70.8	38	4.99	
1140	12.9	70.7	35	5.01	
					DO = 5.1

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GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW06

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	18.30 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	3.70 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.6 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	1.8 Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1102	0.6	75.6	36	4.96	Cloudy
1104	1.2	74.8	36	4.88	
1106	1.8	74.6	36	4.82	
					DO = 3.3

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW07

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*20.77 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-02-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.94
					Static Water Level – 20.77
					Free Product Thickness = 2.83 feet
					Well was not sampled

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW08

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	21.30 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-02-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 18.83
					Static Water Level – 21.30
					Free Product Thickness = 2.47 feet
					Well was not sampled

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW09

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*20.22 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-02-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.76
					Static Water Level – 20.22
					Free Product Thickness = 2.46 feet
					Well was not sampled

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW10

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*20.36 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-02-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.51
					Static Water Level – 20.36
					Free Product Thickness = 2.85 feet
					Well was not sampled

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW11

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.66 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	4.34 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.7 Gallons
		PURGE VOLUME:	2.1 Gallons
DATE:	11-02-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1231	0.7	78.3	36	5.43	No petroleum odor
1234	1.4	77.6	35	5.37	
1237	2.1	77.3	35	5.35	
					DO = 5.7

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW12

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*21.38 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	4 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 18.63
					Static Water Level – 21.38
					Free Product Thickness = 2.75 feet
					Well was not sampled

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW13

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	19.84 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	3.16 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.5 Gallons
		PURGE VOLUME:	1.5 Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1400	0.5	75.0	23	5.00	No petroleum odor
1404	1.0	75.2	21	4.97	
1407	1.5	74.8	21	5.08	
					DO = 3.7

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW14

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	13.98 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	6.02 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.0 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	3.0 Gallons
DATE:	11-02-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1135	1.0	78.3	198	5.83	Petroleum odor
1137	2.0	77.6	195	5.87	
1140	3.0	77.3	195	5.99	
					DO = 1.7

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW15

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	18.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	13.06 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	4.94 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.8 Gallons
		PURGE VOLUME:	2.4 Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1238	0.8	80.3	42	4.74	No odor
1241	1.6	80.0	42	4.63	
1245	2.4	79.8	41	4.56	
					DO = 4.9

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW16

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	14.88 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.12 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.8 Gallons
		PURGE VOLUME:	2.4 Gallons
DATE:	11-01-00	KSG PERSONNEL:	JC

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1430	0.8	73.1	63	4.51	No odor, cloudy
1433	1.6	73.0	66	4.45	
1437	2.4	72.9	65	4.38	
					DO = 5.1

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW17

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	12.88 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	7.12 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.2 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	12 Gallons
DATE:	11-08-00	KSG PERSONNEL:	BD

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1315	2.0	83.6	100.3	5.93	Muddy, petroleum odor
1322	4.0	78.6	119.5	5.91	
1329	6.0	77.5	126.5	6.02	
1335	8.0	76.4	126.5	5.99	
1342	10.0	76.2	126.0	6.03	
1350	12.0	76.3	126.5	6.01	
					DO = 2.7

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW18

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	14.93 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.07 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	0.8 Gallons
		PURGE VOLUME:	8 Gallons
DATE:	11-08-00	KSG PERSONNEL:	BD

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1415	2.0	84.1	53.5	5.46	Muddy, no odor
1425	4.0	79.7	50.1	5.02	
1435	6.0	78.2	47.7	4.93	
1450	8.0	76.4	46.6	4.96	
					DO = 3.9

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW19

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	13.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	5.13 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	7.87 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.3 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	13 Gallons
DATE:	11-08-00	KSG PERSONNEL:	BD

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1510	2.0	75.7	40.1	5.14	Grayish-black, mild petroleum odor
1515	4.0	73.5	41.3	5.42	
1520	6.0	73.2	42.6	5.43	
1530	8.0	73.1	41.7	5.40	
1540	10.0	72.6	45.5	5.41	
1550	13.0	72.8	44.7	5.41	
					DO = 2.7

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW20

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	13.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	3.40 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	9.60 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	1.5 Gallons
		PURGE VOLUME:	15 Gallons
DATE:	11-08-00	KSG PERSONNEL:	BD

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1555	5.0	70.3	39.0	5.41	Grayish-black, mild petroleum odor
1605	10.0	69.6	38.1	5.04	
1620	15.0	69.4	35.6	5.08	
					DO = 2.4

APPENDIX D

WASTE DISPOSAL MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	
	GK3440		11-10-00

GENERATOR

3. Generator's Name and Mailing Address: FORMER HEATH SELF SERVE #2
CRNR GUINGARD AND MILLER RD
SUMTER, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
G & K TANK SERVICES, INC		803-494-4593
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address: G & K TANK SERVICES, INC 5070 BROAD STREET EXT SUMTER, SC 29151	10. US EPA ID Number	C. Facility's Phone 803-494-4593

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS PETROLEUM CONTAMINATED DRILLING MUD	05	DR		
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERALD
PO BOX 3050
SUMTER, SC 29151

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Tommy Reeds	Tommy Reeds	11	10	00

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Pat Keenan	Pat Keenan	11	11	00

ORIGINAL - RETURN TO GENERATOR



Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1-800-800-6840 • FAX: (803) 494-8598

Certificate of Disposal

Tons 5 DRUMS Contaminant NON HAZARDOUS PETROLEUM

FORMER HEATH SELF SERVE #2 Guignard & Miller Rd. Sumter, SC

This is to cerify the above soil has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by _____ Date 11/10/00

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

Mr. Doug Leonard
Coca-Cola Bottling Company
4115 Coca-Cola Plaza
Charlotte, NC 28211-3400

Re: Heath Self Serve #2
UST Permit #08932; CP #13822 MWA #15147
Assessment Component Cost Proposal received March 28, 2001
Sumter County

Dear Mr. Leonard:

The Underground Storage Tank Program recognizes your commitment to continue work at this site utilizing your own contractor. SCDHEC has reviewed the Assessment Component Cost Proposal for a Tier II Assessment submitted by Emerald, Inc.

Cost Agreement #13822 is approved up to the amount of the enclosed cost agreement form. This amount represents the components as outlined in the attached Assessment Component Cost Proposal form. The cost proposal will be kept on file. Site activities can be initiated immediately upon receipt of this letter.

Emerald, Inc. can submit an invoice for direct billing from the SUPERB Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. Approval for the installation of six shallow monitoring wells has been provided to your environmental consultant; a copy is enclosed for your records.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Department is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Department for the cost to be paid. **The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable.** The SCDHEC reserves the right to audit project records at any time during the project or after completion of work.

Rehabilitation activities at the site should be resumed immediately upon receipt of this letter. Characterization of all exposure pathways shall be completed using field screening points. Based on the field screening results, monitoring wells shall be installed in appropriate locations to monitor the migration of chemicals of concern along these exposure pathways and for site rehabilitation. The department shall be contacted prior to well installation for concurrence regarding the final well locations.

UST PROGRAM
DOCKETING # 1071

A Report of Findings and the invoice are due within 90 days from the date of this letter. Interim invoices may not be submitted for this scope of work. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

The Underground Storage Tank Program grants pre-approval for transportation of virgin petroleum contaminated groundwater/soil from the referenced site to a permitted treatment facility. The contaminated groundwater/soil must be properly stored in labeled containers or covered with plastic as appropriate. The contaminated groundwater/soil must be accepted by the approved treatment facility. There can be no spillage or leakage in transport. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the final report. If the levels of petroleum contamination based on laboratory analysis are below risk-based screening levels, please contact the project manager for approval to dispose of soil and/or ground water on site. The SUPERB account will not compensate for transportation or treatment of clean soil and/or ground water.

On all correspondence concerning this site, please reference **UST Permit #08932 and Cost Proposal #13822**. If there are any questions concerning this project, please contact Eric Owens at (803) 898-4343

Sincerely,

Eric Owens, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Section
Underground Storage Tank Program
Bureau of Land and Waste Management

enc: Finance Approved Assessment Component Cost Agreement
Monitoring Well Approval

cc: Financial File (with copy of Finance Approved Assessment Component Cost Agreement)
Technical File (with enc)
Ronny L. Lowder, Emerald, Inc., P.O. Box 3050, , Sumter, SC 29151
(with original MWA)

SCDHEC/UST/42301

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rllemerald@CPIS.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

September 25, 2001

Eric Owens, Hydrogeologist
Owner/Operator Assistance Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land and Waste Management
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

RECEIVED
SEP 26 2001
Underground Storage
Tank Program

Re: Heath Self Serve #2
UST Permit # 08932; CP # 13822
Tier II Assessment Report (Addendum 02)
Sumter County

Dear Mr. Owens:

On behalf of Coca-Cola Bottling Company, Consolidated, we are providing you with a copy of the completed report recently conducted at the Heath Self Serve #2 site. If you have any questions, please give me a call at your convenience.

Yours very truly,
Emerald, Inc.

Ronny L. Lowder
President

RLL/sld

Enclosure

cc: Mr. Doug Leonard, CCBCC

SCANNED nd
UST PROGRAM
DOCKETING # 95T

RECEIVED
SEP 26 2001
Underground Storage
Tank Program

Tier II Assessment Report
Addendum 02
Former Heath Self Serve #2
North Guignard Drive & Miller Road
Sumter, South Carolina
GWPD # 08932

September 10, 2001

Prepared For:

South Carolina Department of Health and Environmental Control
Bureau of Land & Waste Management
Underground Storage Tank Program
2600 Bull Street
Columbia, South Carolina 29201

Prepared By:

Kleen Sites Geoservices, Inc.
UST Site Rehabilitation Contractor #8
171 Lott Court
West Columbia, South Carolina 29169

UST PROGRAM DOCKETING # 96T

Signature Page

This document entitled "Tier II Assessment Report - Addendum 02", has been prepared for the South Carolina Department of Health and Environmental Control to describe investigative activities conducted at the former Heath Self Serve #2 site located in Sumter, South Carolina. It has been prepared under the direct supervision of William B. Dunnagan, Jr. in accordance with accepted quality control practices.

KLEEN SITES GEOSERVICES, INC.

William B. Dunnagan, Jr., P.G.
South Carolina Registration # 937
Project Geologist

Seal

Tier II Assessment Report
Addendum 02
Former Heath Self Serve #2
Sumter, South Carolina

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SECTION 1.0

INTRODUCTION

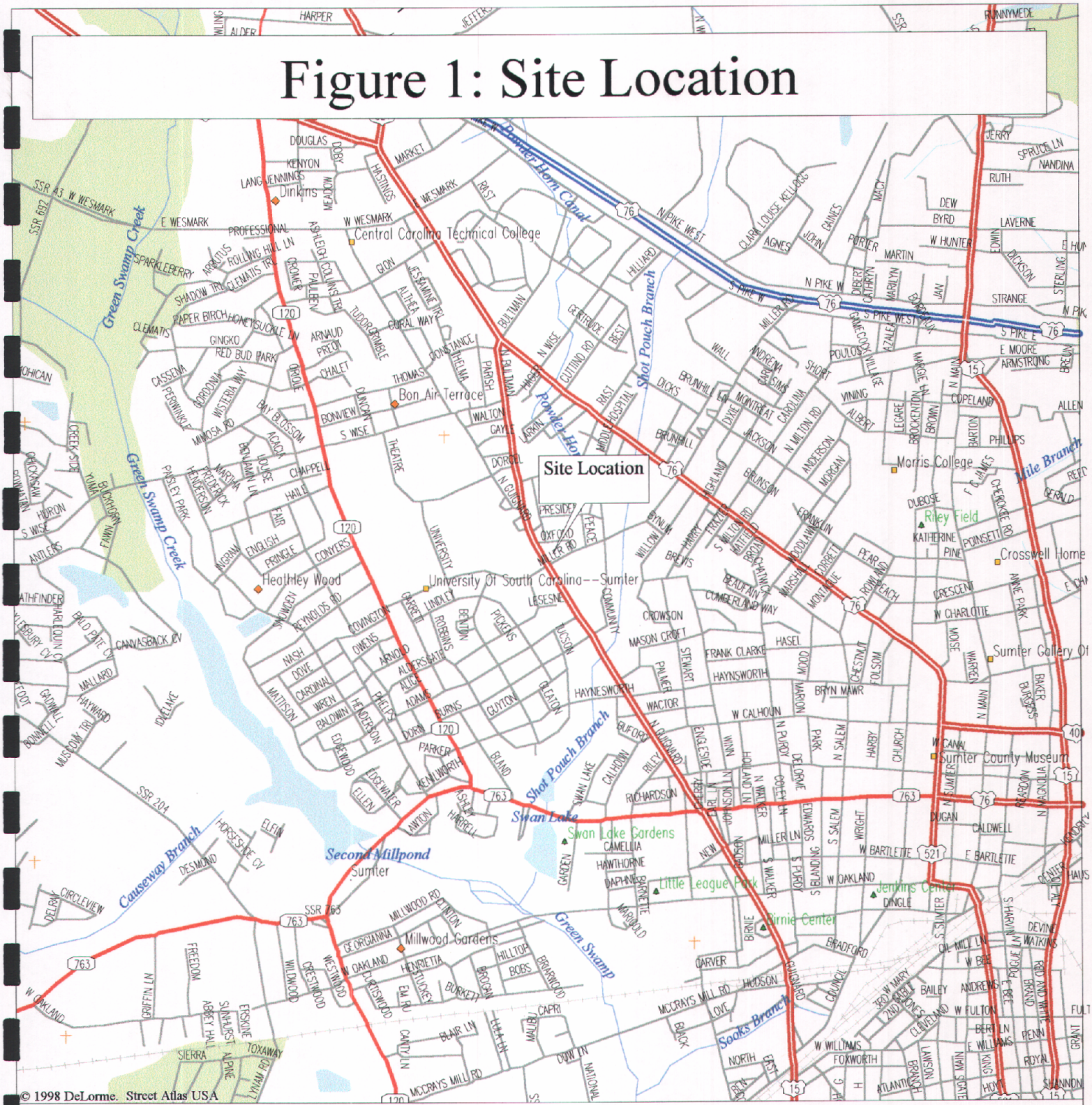
The former Heath Self Serve #2 is located at the intersection of North Guignard Drive and Miller Road in Sumter, SC (see Figure 1). Activities conducted at the facility include retail gasoline and diesel fuel sales and convenience sales to the public. The site is situated in a heavily developed, commercial area with a variety of commercial businesses nearby. The facility is presently operated as a BP Station. A site topographic map and a site diagram are provided in Figures 2 and 3, respectively.

Eleven USTs were previously used for onsite storage of petroleum products. One 10,000 gallon tank, one 6,000 gallon tank and seven 3,000 gallon tanks were used for the storage of gasoline. One 1,000 gallon tank was used for the storage of diesel fuel. One 550 gallon tank was used for the storage of used oil. Each of the eleven USTs have either been removed from the ground or permanently abandoned in place. New USTs were installed at the facility in December of 1998.

A release of petroleum hydrocarbons was identified within the former tank pit area during closure assessment activities. In December of 1998, a Standard Limited Assessment (SLA) was conducted by personnel from Kleen Sites Geoservices, Inc. (KSG) on the subject property at the request of the SCDHEC. Following a review of the SLA, the SCDHEC requested that a Rapid Assessment be conducted in a letter dated May 13, 1999. KSG personnel implemented Rapid Assessment activities at the subject property in order to better define the vertical and horizontal extent of the soil and ground water contamination plumes. A Rapid Assessment Report dated November 19, 1999 was submitted to the SCDHEC Bureau of UST Management for review and comment.

Data generated during the Rapid Assessment indicated the presence of a large free product plume that originated from the southern portion of the subject property. Field measurements indicated that the free product plume extended beneath Miller Road in a southerly direction for approximately 300 feet. The dissolved phase ground water contaminant plume was found to be present beneath much of the Palmetto Plaza property extending approximately 875 feet from the source area along North Guignard Drive. However, the lateral extent of the dissolved phase plume remained undefined in the area located southeast of the former Heath Self Serve #2 facility. The SCDHEC requested by letter dated August 10, 2000 that additional assessment work be conducted to generate current data on the free product and dissolved phase plumes and to define the downgradient extent of ground water contamination. Four additional shallow ground water monitoring wells were installed in October of 2000. A Rapid Assessment Report – Addendum 01 dated November 28, 2000 was submitted to the SCDHEC Bureau of UST Management.

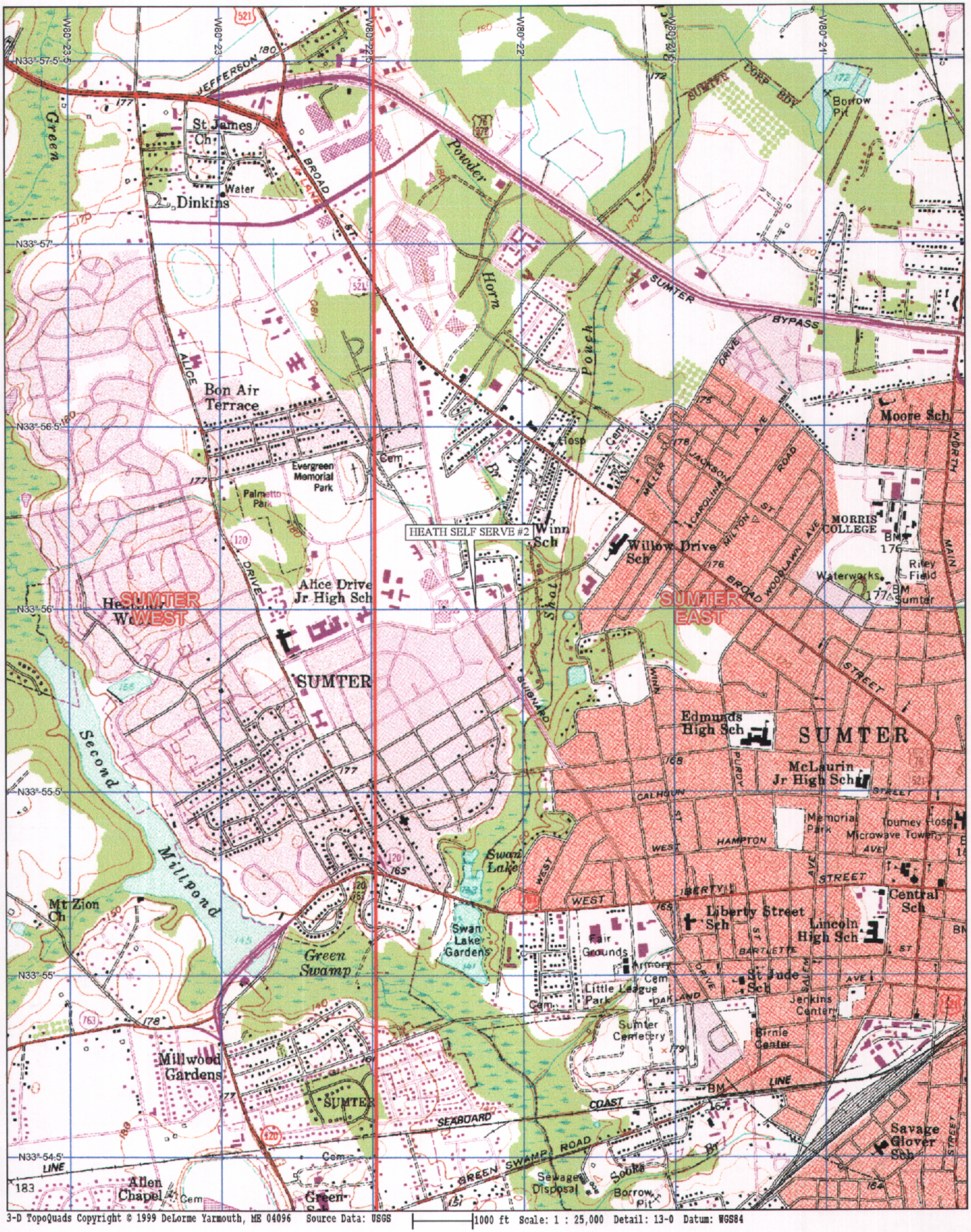
Figure 1: Site Location



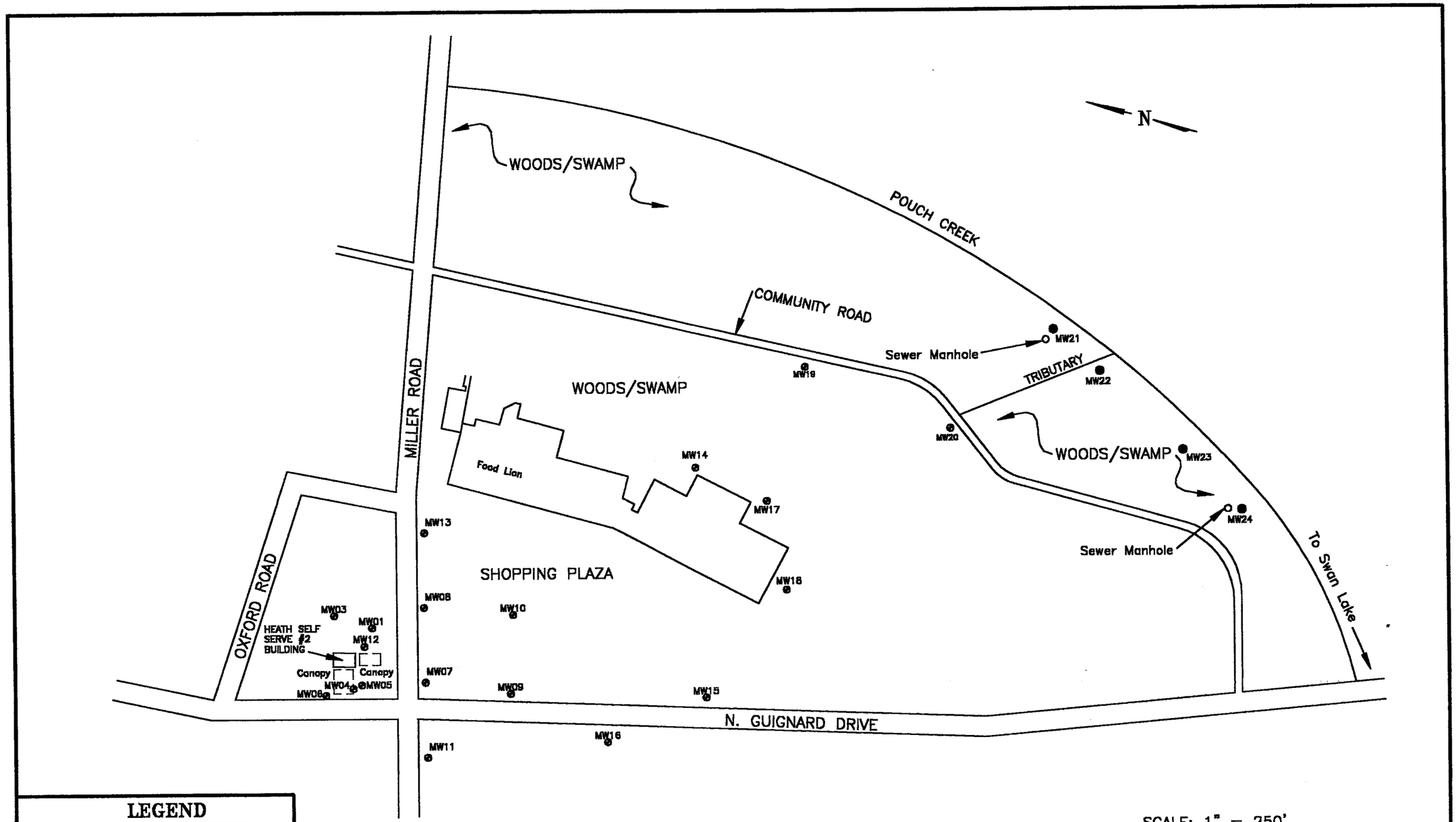
Mag 14.00
Mon Sep 03 17:49 2001
Scale 1:31,250 (at center)
2000 Feet
1000 Meters

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Railroad
- Point of Interest
- Airfield
- Park/Reservation
- Locale
- Cemetery
- Water
- Woodland
- River/Canal
- Intermittent River

FIGURE 2: TOPOGRAPHIC MAP OF SITE



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 1000 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84



LEGEND

- ⊕ – EXISITING GROUND WATER MONITORING WELLS
- ● – GROUND WATER MONITORING WELLS INSTALLED DURING AUGUST 2001 FIELD EVENT

SCALE: 1" = 250'

0' 125' 250'

HEATH SELF SERVE #2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 3: SITE MAP

KLEEN SITES GEOSERVICES

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Data generated during the October 2000 field event revealed that the dissolved phase ground water contaminant plume extended at least 600 feet in a southeasterly (i.e. downgradient) direction from the former UST pits. Impact to a tributary of Pouch Creek was also confirmed. Additional assessment work was requested in a SCDHEC letter addressed to Mr. Doug Leonard of the Coca-Cola Bottling Company. Four additional shallow ground water monitoring wells were installed under the direction of KSG personnel adjacent to Pouch Creek during this assessment. Data generated during this round of investigation is provided herein.

SECTION 2.0

REGIONAL & SITE SPECIFIC GEOLOGY

The former Heath Self Serve #2 site is located within the Middle Coastal Plain Physiographic Province of South Carolina. The Middle Coastal Plain Physiographic Province is characterized by unconsolidated sediments of fluvial and marine origin resting unconformably on crystalline bedrock located at a depth of approximately 600 feet. Surficial sediments in the Sumter County area are Pliocene age terrace deposits produced by river incisement of Cretaceous and Tertiary sediment during periods of low sea level.

The former Heath Self-Serve # 2 site is underlain by brown silty, clayey sand to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands. The first occurrence of ground water beneath the subject property was observed at approximately seventeen to eighteen feet below ground surface. A confining layer was not encountered during drilling activities. Static water level measurements taken from monitoring wells that were installed on the Palmetto Plaza property indicate that the depth to water decreases in a southerly direction. Static water levels were approximately 13 feet below ground surface on the Palmetto Plaza property and less than one foot below ground surface along Pouch Creek.

SECTION 3.0

SITE ACTIVITIES

KSG personnel conducted a two phased approach during implementation of the Tier II Assessment addendum 02 activities. The first phase of assessment activities consisted of the collection of ground water samples at selected locations using a GeoProbe rig. Based upon the first phase analytical data, the second phase consisted of the installation of four permanent, shallow, ground water monitoring wells. Each activity is described in detail within this section.

3.1 Field Screening

Four temporary wells were installed along Pouch Creek to check ground water quality at selected locations (See Figure 4). At each location, the Geoprobe® sampling tip was advanced to a depth of 10 feet below ground surface to allow collection of a ground water sample. Once ground water collection activities were completed at each Geoprobe® location, the boreholes were properly abandoned by filling each hole with a lean grout mixture to ground surface.

All ground water samples collected during this assessment were packed in crushed ice immediately following collection. A Chain of Custody form was completed prior to offsite sample removal. Samples were transported to Access Analytical, Inc. and analyzed for benzene, toluene, ethyl benzene and total xylenes (BTEX), methyl tert-butyl ether (MTBE) and naphthalene using EPA Method 8260B. Analytical data sheets for each temporary well ground water sample are provided in Appendix A.

3.2 Soil Assessment

Personnel from Southeastern Atlantic Environmental Drilling and Construction Company (SAEDACCO) of Charlotte, NC performed all monitor well installation activities. Drilling activities were performed using a truck-mounted drilling rig equipped with hollow-stem augers at Wells MW23 and MW24. Due to a lack of vehicle access, Wells MW21 and MW22 were installed manually. All assessment activities were performed under the direct supervision of a KSG onsite geologist.

Split-spoon samples were collected at each ground water monitor well location from surface to two feet below ground surface due to the shallow depth to ground water. Each split-spoon sample was screened with a portable VOC monitor. Due to the fact that extensive soil analytical data was generated during previous assessments, additional soil samples were not submitted for laboratory analysis. Soil Boring Lithology Logs and Well Construction Summaries are presented in Appendix B.

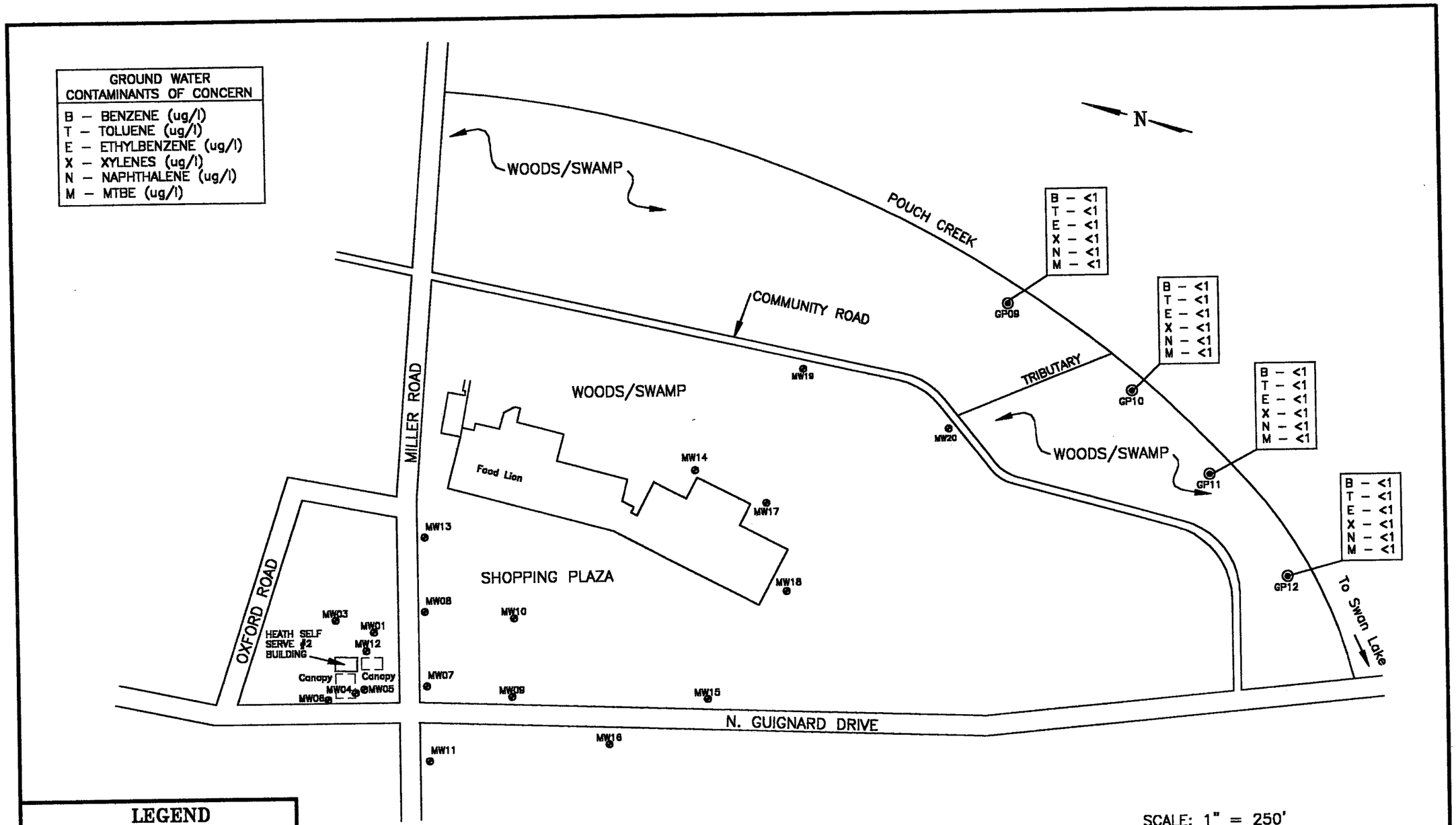
3.3 Static Water Level Measurement

Prior to well development or sample collection, static water levels were taken to the nearest 0.01 foot using a graduated electronic indicator. All measurements were taken from the surveyed top of the well casing so they could be referenced to a common datum. All elevations are relative to an assumed onsite benchmark of 100 feet above mean sea level. Static water levels are summarized in Table 1 and shown in Figure 5.

TABLE 1
STATIC WATER LEVEL ELEVATIONS

Well ID #	Static Water Level†	Free Product Thickness (feet)	Top of Casing Elevation‡	Ground Water Elevation (MSL)
ϕMW01	-	Well not Found	99.88	-
MW02	Destroyed during UST removal			
MW03	21.10	Not Detected	101.09	79.99
ϕMW04	19.27	1.72	98.72	80.71
*MW05	19.01	Not Detected	98.83	79.82
MW06	17.90	Not Detected	98.98	81.08
ϕMW07	19.99	2.24	98.64	80.28
ϕMW08	20.48	1.85	99.58	80.45
ϕMW09	19.58	2.08	97.93	79.87
ϕMW10	19.83	2.56	97.71	79.75
MW11	17.23	Not Detected	97.60	80.37
**ϕMW12	20.41	1.91	99.68	80.66
MW13	19.42	Not Detected	99.88	80.46
MW14	13.83	Not Detected	91.12	77.29
MW15	12.65	Not Detected	91.29	78.64
MW16	14.31	Not Detected	94.15	79.84
MW17	12.65	Not Detected	89.83	77.18
MW18	14.43	Not Detected	92.29	77.86
MW19	5.09	Not Detected	76.76	71.67
MW20	3.59	Not Detected	76.16	72.57
MW21	2.90	Not Detected	73.49	70.59
MW22	2.50	Not Detected	73.79	71.29
MW23	0.60	Not Detected	73.06	72.46
MW24	0.70	Not Detected	72.25	71.55

† = Depth below top of casing, in feet
‡ = Feet above mean sea level (MSL) assuming an onsite benchmark of 100'
ϕ = Static water level adjusted for free product
* = Deep Well
** = Recovery Well



HEATH SELF SERVE #2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 4:
FIELD SCREENING DATA

KLEEN SITES GEOSERVICES

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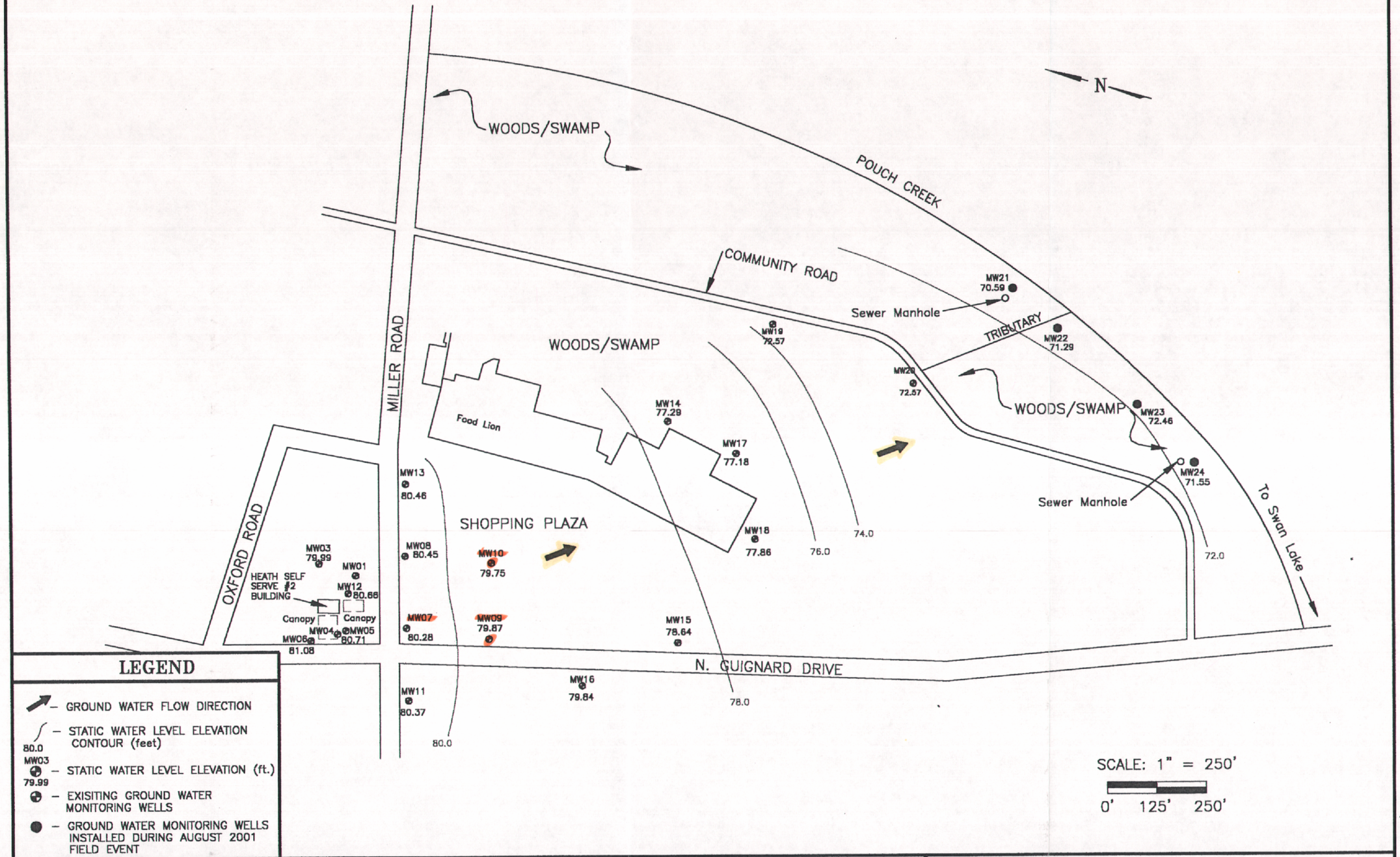

HEATH SELF SERVE #2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 5:
STATIC WATER LEVEL ELEVATION MAP

KLEEN SITES GEOSERVICES

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3.4 Ground Water Sampling

Ground water samples were collected from all monitoring wells on August 16, 20, 21 and 24, 2001. Prior to well sampling, all newly installed wells were purged ten well volumes and all existing wells were purged three well volumes to remove any sediment introduced during the soil boring process and to set the sand pack. Well purge logs are presented in Appendix C. Both shallow and deep monitor wells were purged with a PVC bailer and sampled with a disposable Teflon bailer. Dissolved oxygen readings were taken at each well location. Following well purging activities, a ground water sample was collected from each well and placed into appropriate containers. Wells MW04, MW07, MW08, MW09, MW10 and MW12 were not sampled due to the presence of free product. Wells MW01 and MW02 could not be located during the August 2001 field event.

All samples were packed in crushed ice and transported to Shealy Environmental, Inc., for chemical analysis. Each sample was analyzed for BTEX, MTBE, and naphthalene using EPA Method 8260B, ethylene dibromide (EDB) using EPA Method 8011, and total recoverable lead using EPA Method 6010B. Additionally, all water samples were analyzed for nitrates (EPA Method 353.2), sulfates (EPA Method 300), ferrous iron (EPA Method 3500 Fe-D) and methane (Method RSK-175).

3.5 Ground Water Analytical Data

The following table summarizes ground water analytical results.

TABLE 2
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW01	MW01	MW01	MW03	MW03	MW03	MW04	MW04	MW04
Benzene (µg/l)	FP	FP	NS	<5.0	2.41	27	FP	FP	FP
Ethylbenzene (µg/l)	FP	FP	NS	<5.0	2.76	<5.0	FP	FP	FP
MTBE (µg/l)	FP	FP	NS	<5.0	<1.0	<5.0	FP	FP	FP
Naphthalene (µg/l)	FP	FP	NS	<5.0	196	<5.0	FP	FP	FP
Toluene (µg/l)	FP	FP	NS	<5.0	1.27	7.2	FP	FP	FP
Total Xylenes (µg/l)	FP	FP	NS	<5.0	21.77	20	FP	FP	FP
EDB (µg/l)	FP	FP	NS	<5.0	<1.0	< 0.021	FP	FP	FP
Lead (mg/l)	FP	FP	NS	<0.0030	<0.005	<0.003	FP	FP	FP
Ferrous Iron (mg/l)	FP	FP	NS	<0.10	<0.03	<0.05	FP	FP	FP
Nitrates (mg/l)	FP	FP	NS	0.769	0.70	0.71	FP	FP	FP
Sulfates (mg/l)	FP	FP	NS	1.30	<1.0	2.1	FP	FP	FP
Methane (mg/l)	FP	FP	NS	NA	1.0	<0.026	FP	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	NS	7.5	4.1	5.4	FP	FP	FP
Sampling Date	08-18-99	11-01-00	NS	08-18-99	11-01-00	08-21-01	08-18-99	11-01-00	08-16-01

NOTE: FP = Free Product
MW02 was destroyed during UST removal.
NA = Not Analyzed
NS = Not Sampled (Well Missing)

TABLE 2
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW05	MW05	MW05	MW06	MW06	MW06	MW07	MW07	MW07
Benzene (µg/l)	<5.0	<1.0	**<5.0**	<5.0	<1.0	**<5.0**	FP	FP	FP
Ethylbenzene (µg/l)	<5.0	<1.0	**<5.0**	<5.0	<1.0	**<5.0**	FP	FP	FP
MTBE (µg/l)	<5.0	<1.0	**<5.0**	<5.0	<1.0	**<5.0**	FP	FP	FP
Naphthalene (µg/l)	9.7	<1.0	**<5.0**	<5.0	<1.0	**<5.0**	FP	FP	FP
Toluene (µg/l)	<5.0	<1.0	**<5.0**	<5.0	<1.0	**6.5**	FP	FP	FP
Total Xylenes (µg/l)	<5.0	<1.0	**5.1**	<5.0	<1.0	**12**	FP	FP	FP
EDB (µg/l)	<5.0	<1.0	**<0.021**	<5.0	<1.0	**< 0.02**	FP	FP	FP
Lead (mg/l)	<0.0030	<0.005	**<0.003**	<0.0030	<0.005	**0.028**	FP	FP	FP
Ferrous Iron (mg/l)	19	<0.03	**<0.05**	0.40	<0.03	**<0.050**	FP	FP	FP
Nitrates (mg/l)	1.4	1.16	**1.2**	1.27	0.96	**1.0**	FP	FP	FP
Sulfates (mg/l)	12.1	<1.0	**2.0**	10.2	2.13	**7.2**	FP	FP	FP
Methane (mg/l)	NA	0.6	**<0.026**	NA	0.3	**<0.026**	FP	FP	FP
Dissolved Oxygen (mg/l)	5.9	5.1	**4.6**	4.7	3.3	**2.6**	FP	FP	FP
Sampling Date	08-19-99	11-01-00	**08-21-01**	08-18-99	11-01-00	**8-16-01**	08-18-99	11-02-00	**08-24-01**

NOTE: FP = Free Product
MW02 was destroyed during UST removal.
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW08	MW08	MW08	MW09	MW09	MW09	MW10	MW10	MW10
Benzene (µg/l)	2300	FP	FP	FP	FP	FP	15000	FP	FP
Ethylbenzene (µg/l)	1300	FP	FP	FP	FP	FP	1400	FP	FP
MTBE (µg/l)	<5.0	FP	FP	FP	FP	FP	<5.0	FP	FP
Naphthalene (µg/l)	1200	FP	FP	FP	FP	FP	<250	FP	FP
Toluene (µg/l)	10000	FP	FP	FP	FP	FP	22000	FP	FP
Total Xylenes (µg/l)	5900	FP	FP	FP	FP	FP	7900	FP	FP
EDB (µg/l)	38	FP	FP	FP	FP	FP	460	FP	FP
Lead (mg/l)	0.13	FP	FP	FP	FP	FP	0.72	FP	FP
Ferrous Iron (mg/l)	32	FP	FP	FP	FP	FP	0.99	FP	FP
Nitrates (mg/l)	0.058	FP	FP	FP	FP	FP	0.063	FP	FP
Sulfates (mg/l)	11.0	FP	FP	FP	FP	FP	5.86	FP	FP
Methane (mg/l)	NA	FP	FP	FP	FP	FP	NA	FP	FP
Dissolved Oxygen (mg/l)	3.5	FP	FP	FP	FP	FP	4.2	FP	FP
Sampling Date	08-18-99	11-02-00	08-24-01	08-18-99	11-02-00	08-24-01	08-18-99	11-02-00	08-24-01

NOTE: FP = Free Product
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW11	MW11	MW11	MW12	MW12	MW12	MW13	MW13	MW13
Benzene (µg/l)	<5.0	<1.0	**<5.0**	3600	FP	**FP**	5.1	<1.0	**<5.0**
Ethylbenzene (µg/l)	<5.0	<1.0	**<5.0**	2100	FP	**FP**	<5.0	<1.0	**<5.0**
MTBE (µg/l)	<5.0	<1.0	**<5.0**	93	FP	**FP**	<5.0	<1.0	**<5.0**
Naphthalene (µg/l)	<5.0	<1.0	**<5.0**	290	FP	**FP**	<5.0	<1.0	**<5.0**
Toluene (µg/l)	<5.0	<1.0	**9.0**	16000	FP	**FP**	<5.0	<1.0	**<5.0**
Total Xylenes (µg/l)	<5.0	<1.0	**14**	8800	FP	**FP**	<5.0	<1.0	**<5.0**
EDB (µg/l)	<5.0	<1.0	**< 0.019**	<250	FP	**FP**	<5.0	<1.0	**<0.019**
Lead (mg/l)	0.014	0.031	**0.0075**	<0.0030	FP	**FP**	<0.0030	0.021	**0.020**
Ferrous Iron (mg/l)	0.33	<0.03	**0.06**	<0.010	FP	**FP**	0.61	<0.03	**<0.05**
Nitrates (mg/l)	0.941	0.77	**0.58**	0.030	FP	**FP**	0.332	0.45	**0.35**
Sulfates (mg/l)	8.95	1.66	**1.7**	7.82	FP	**FP**	5.69	<1.0	**2.7**
Methane (mg/l)	NA	<0.2	**<0.026**	NA	FP	**FP**	NA	4.3	**<0.026**
Dissolved Oxygen (mg/l)	6.2	5.7	**2.2**	3.1	FP	**FP**	6.6	3.7	**4.9**
Sampling Date	08-18-99	11-02-00	**08-16-01**	08-18-99	11-01-00	**08-24-01**	10-18-99	11-01-00	**08-20-01**

NOTE: FP = Free Product
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW14	MW14	MW14	MW15	MW15	MW15	MW16	MW16	MW16
Benzene (µg/l)	2160	1180	**450**	<5.0	<1.0	**8.9**	<5.0	<1.0	**<5.0**
Ethylbenzene (µg/l)	431	60.4	**8.4**	<5.0	<1.0	**<5.0**	<5.0	<1.0	**<5.0**
MTBE (µg/l)	<5.0	<10.0	**<5.0**	<5.0	<1.0	**<5.0**	<5.0	<1.0	**<5.0**
Naphthalene (µg/l)	73.6	<10.0	**18**	<5.0	<1.0	**<5.0**	<5.0	<1.0	**<5.0**
Toluene (µg/l)	1390	<10.0	**11**	10	<1.0	**<5.0**	<5.0	<1.0	**6.6**
Total Xylenes (µg/l)	2180	393.9	**160**	14	<1.0	**9.0**	<5.0	<1.0	**11**
EDB (µg/l)	<5.0	<10.0	**<0.019**	<5.0	<1.0	**<0.019**	<5.0	<1.0	**<0.019**
Lead (mg/l)	<0.0030	<0.005	**<0.003**	<0.0030	0.089	**0.073**	<0.0030	0.075	**0.015**
Ferrous Iron (mg/l)	30	4.2	**<0.050**	5.9	<0.03	**<0.050**	<0.10	<0.03	**< 0.05**
Nitrates (mg/l)	0.332	<0.05	**<0.020**	1.21	1.06	**1.1**	1.93	1.77	**1.7**
Sulfates (mg/l)	2.71	<1.0	**1.9**	3.63	<1.0	**3.4**	2.88	<1.0	**2.2**
Methane (mg/l)	NA	1.7	**<0.026**	NA	<0.2	**<0.026**	NA	<0.2	**<0.026**
Dissolved Oxygen (mg/l)	3.0	1.7	**1.2**	5.5	4.9	**5.6**	6.3	5.1	**4.5**
Sampling Date	10-18-99	11-02-00	**08-21-01**	10-18-99	11-01-00	**08-21-01**	10-18-99	11-01-00	**08-16-01**

NOTE: FP = Free Product
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW17	MW17	MW18	MW18	MW19	MW19	MW20	MW20	MW21
Benzene (µg/l)	9,320	680	<1.0	<5.0	380	640	1,550	1,200	<5.0
Ethylbenzene (µg/l)	1380	100	<1.0	<5.0	1.59	<5.0	1.71	<5.0	<5.0
MTBE (µg/l)	<100	<5.0	<1.0	<5.0	1,200	43	1.12	<5.0	<5.0
Naphthalene (µg/l)	224	38	<1.0	<5.0	6.71	19	36.9	40	<5.0
Toluene (µg/l)	10,800	680	<1.0	6.2	1.46	10	1.98	5.7	<5.0
Total Xylenes (µg/l)	4,910	430	<1.0	10	60.59	88	65.42	54	<5.0
EDB (µg/l)	<100	0.10	<1.0	<0.02	<1.0	<0.020	<1.0	0.57	<0.02
Lead (mg/l)	0.038	0.030	0.108	0.028	0.023	<0.003	0.088	<0.003	0.86
Ferrous Iron (mg/l)	4.0	49	<0.03	<0.05	0.6	1.5	<0.03	<0.05	17
Nitrates (mg/l)	<0.05	2.0	0.20	0.64	<0.05	<0.02	0.52	0.23	<0.02
Sulfates (mg/l)	9.63	1.5	7.95	2.9	9.68	2.4	5.98	3.4	38
Methane (mg/l)	0.23	89.0	1.36	1.21	0.27	0.072	0.12	241	0.972
Dissolved Oxygen (mg/l)	1.9	0.9	3.9	2.1	2.7	2.1	2.4	1.4	1.9
Sampling Date	11-08-00	08-24-01	11-08-00	08-20-01	11-08-00	08-21-01	11-08-00	08-21-01	08-20-01

NOTE: FP = Free Product
NA = Not Analyzed

TABLE 2 (Continued)
GROUND WATER ANALYTICAL DATA SUMMARY

Chemical of Concern	MW22	MW23	MW24	*SW01	*SW01	*SW02	*SW02
Benzene (µg/l)	<5.0	<5.0	<5.0	506	1,300	1.29	<5.0
Ethylbenzene (µg/l)	<5.0	<5.0	<5.0	8.41	20	<1.0	<5.0
MTBE (µg/l)	<5.0	<5.0	<5.0	10.7	9.8	<1.0	<5.0
Naphthalene (µg/l)	<5.0	<5.0	<5.0	<1.0	5.0	<1.0	<5.0
Toluene (µg/l)	7.8	<5.0	<5.0	1.28	11	<1.0	<5.0
Total Xylenes (µg/l)	8.0	<5.0	5.4	9.32	36	<1.0	<5.0
EDB (µg/l)	<0.02	<0.02	<0.019	<1.0	NA	<1.0	NA
Lead (mg/l)	0.38	0.023	0.014	0.021	0.054	0.053	0.0058
Ferrous Iron (mg/l)	18	5.0	4.4	<0.03	NA	<0.03	NA
Nitrates (mg/l)	<0.02	<0.02	<0.02	0.47	NA	0.25	NA
Sulfates (mg/l)	12	11	13	5.00	NA	8.16	NA
Methane (mg/l)	0.248	<0.026	<0.026	1.13	NA	0.0013	NA
Dissolved Oxygen (mg/l)	5.0	1.9	1.7	NA	NA	NA	NA
Sampling Date	08-20-01	08-20-01	08-20-01	11-16-00	08-30-01	11-16-00	08-30-01

NOTE: FP = Free Product
NA = Not Analyzed
* Surface Water Samples

3.6 Receptor Survey

A receptor survey was conducted at the subject facility as part of the initial Rapid Assessment to identify any potential exposure pathways. Exposure points are considered the location that a receptor can come into contact, either now or in the future, with soil and/or ground water contaminants. Typical exposure points may be drinking water wells, ponds, streams, underground basements, or underground utilities. Results from the receptor survey were rechecked during the August 2001 sampling event.

3.6.1 Water Wells

An existing onsite well was reportedly used during past car wash operations. This well is no longer in use. The receptor survey identified no additional drinking water or irrigation wells within 1000 feet of the property boundary.

3.6.2 Underground Utilities

A utility check was performed at the former Heath Self Serve #2 site by Palmetto Utilities Protection Service prior to the assessment field effort. KSG personnel conducted an additional utility check during onsite assessment activities to identify any potential underground exposure points (i.e., storm drain, sanitary sewer line, etc.). Contaminated ground water could potentially seep into these utilities if the static water level existed at an elevation greater than or equal to the corresponding underground utility.

A water main and gas line runs parallel with N. Guignard Drive adjacent to the subject property. A storm sewer drain is present on the southern corner of the subject property at the intersection of North Guignard Drive and Miller Road. Due to the depth to ground water, it is unlikely that underground lines at the Heath Self Serve #2 property could provide a mechanism for accelerating contaminant transport during periods of abundant precipitation.

3.6.3 Surface Water

Field reconnaissance during previous assessment activities identified the presence of a drainage ditch with standing water adjacent to Community Drive. Due to the shallow depth to ground water at this location, this ditch may provide a localized discharge point for ground water. The drainage ditch leads into Pouch Creek as shown in Figure 3. Surface water samples were collected from the drainage ditch and Pouch Creek and submitted to Shealy Environmental, Inc. for the following analyses: BTEX, MTBE, and naphthalene using EPA Method 8260B and total recoverable lead using EPA Method 6010B.

3.7 Site Survey

A site survey was performed during the Standard Limited Assessment to establish an accurate site map portraying the locations of the former UST area, onsite building and adjacent structures. The comprehensive site survey was performed by a South Carolina Registered Land Surveyor, Mr. Jay S. Joshi. Following the installation of Wells MW21 – MW24, a subsequent survey was performed by KSG personnel to determine the top of casing (TOC) elevation at each new well location. By referencing each TOC elevation to an established datum, the static water level elevation at each well was determined.

SECTION 4.0

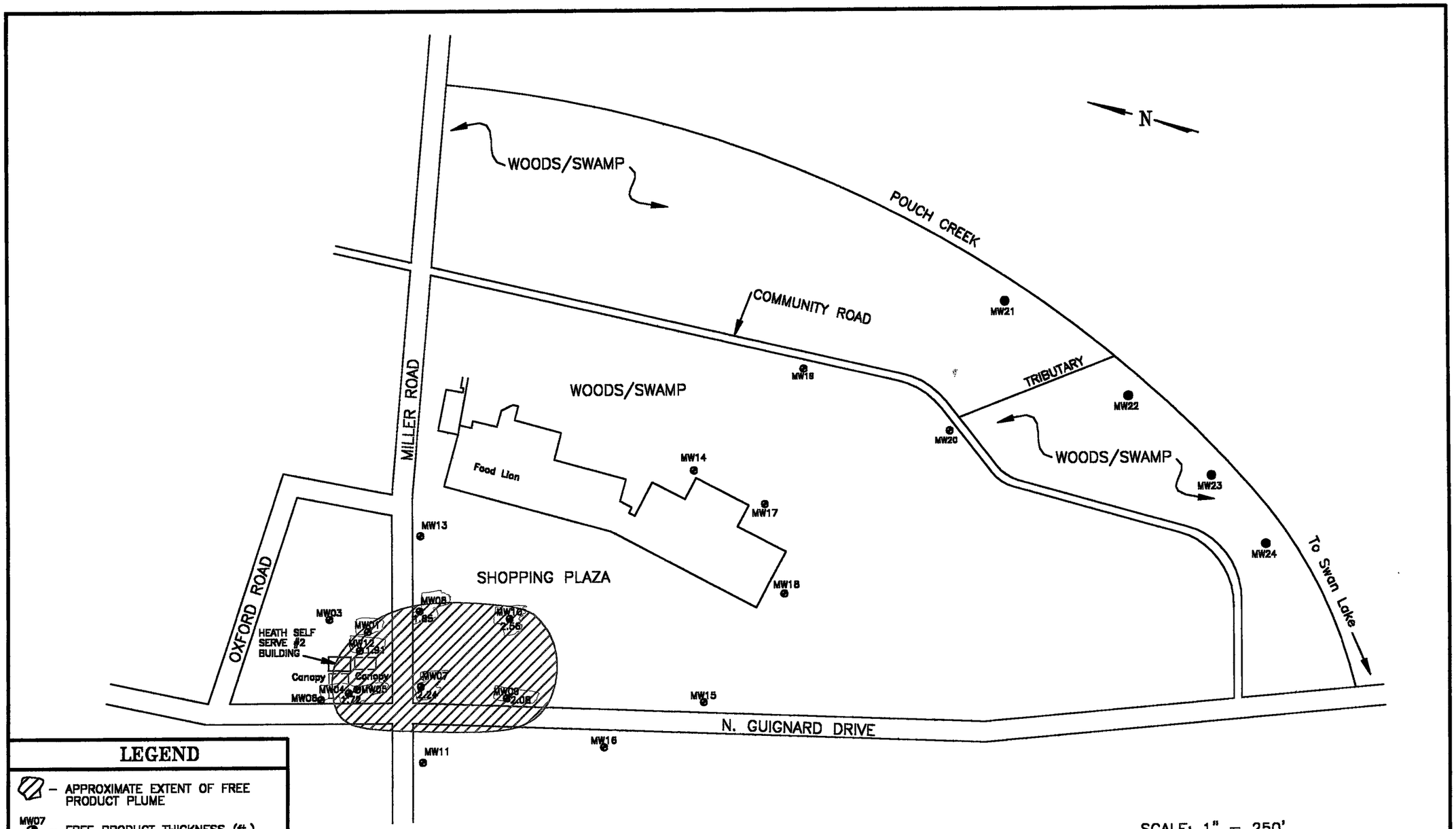
RESULTS, CONCLUSIONS AND RECOMMENDATIONS

4.1 Results

Previous assessment activities indicate that subsurface soils beneath the former Heath Self Serve #2 property consist of brown, silty, clayey sands from surface to a depth of approximately eight feet below ground surface. At this depth, the clay content gradually decreases and the soils are classified as brown, fine grained, silty sands down to the final investigation depth of 45 feet. During the August 2001 sampling event, static water levels were found to range from 17.90 to 21.10 feet below ground surface across the subject property. Static water level depths decrease to the south and southeast away from the subject property. Static water levels in wells that were installed along Pouch Creek range from 0.60 to 2.90 feet below ground surface.

Laboratory analytical data generated from the initial Rapid Assessment revealed elevated levels of petroleum constituents within onsite soils at the former Heath Self Serve #2 site. Elevated levels of soil contamination above the water table were detected during the Standard Limited Assessment in the Samples SB01, SB02, SB04, SB05 and SB06. Soil sample SB02 contained the highest levels of toluene, ethylbenzene, total xylenes and naphthalene at concentration levels 33 µg/kg, 2,300 µg/kg, 14,000 µg/kg and 380 µg/kg, respectively. Soil leachability calculations indicate that the levels of toluene, ethylbenzene and naphthalene in soils immediately surrounding the former UST piping and dispenser island exceed the SSTL values. Additional soil sampling was not performed during the August 2001 field event.

The former UST and dispenser island area appear to be the source of contamination at the subject site. A large free product plume is present along the southeastern portion of the subject property and has expanded since the previous sampling event. Free product was observed in wells MW04, MW07, MW08, MW09, MW10 and MW12 at a thickness of 1.72, 2.24, 1.85, 2.08, 2.56, and 1.91 feet, respectively. The free product plume extends beneath Miller Road and covers an area measuring approximately 200 feet by 400 feet as shown in Figure 6.



LEGEND

- – APPROXIMATE EXTENT OF FREE PRODUCT PLUME
- MW07 2.24 – FREE PRODUCT THICKNESS (ft.)
- – EXISITING GROUND WATER MONITORING WELLS
- – GROUND WATER MONITORING WELLS INSTALLED DURING AUGUST 2001 FIELD EVENT

SCALE: 1" = 250'

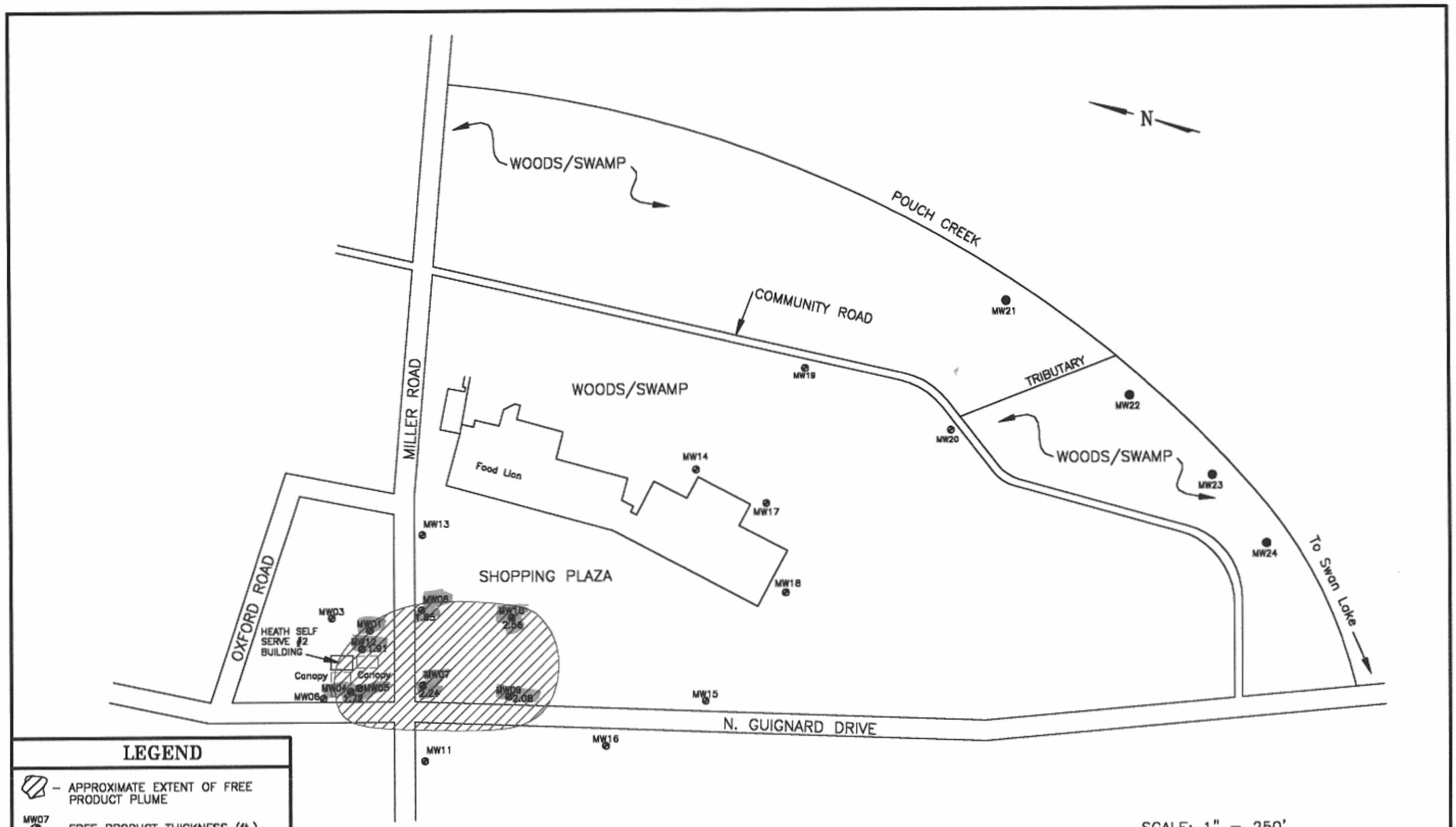
0' 125' 250'

HEATH SELF SERVE #2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 6:
FREE PRODUCT PLUME

KLEEN SITES GEOSERVICES

F:\KSG\CAD\2001\01541\Fig 6



HEATH SELF SERVE #2
N. GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 6:
FREE PRODUCT PLUME

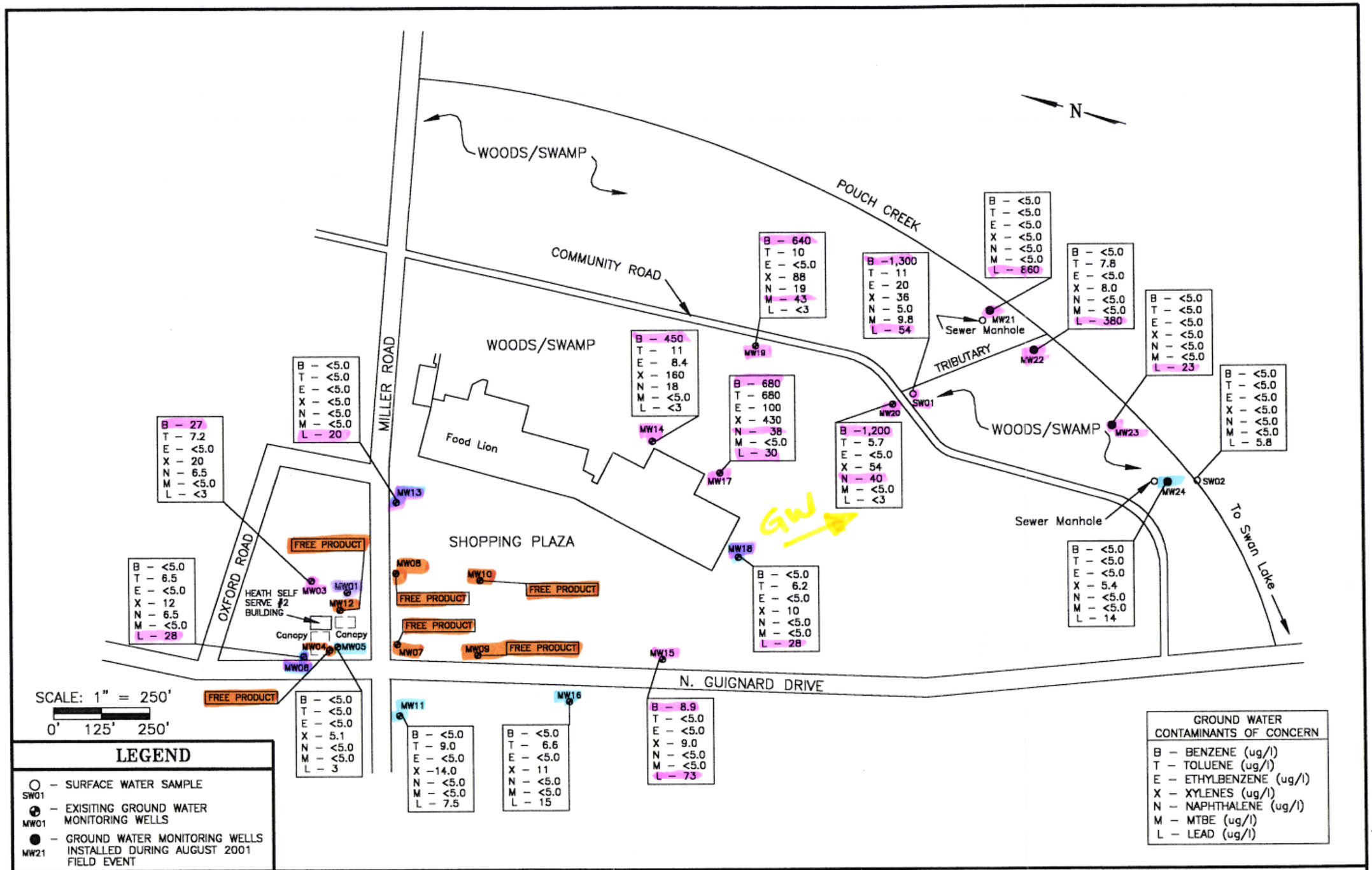
KLEEN SITES GEOSERVICES

F:\KSG\CAD\2001\01541\Fig 6

As shown in Figure 7, the natural flow of ground water has transported free product and dissolved phase contaminants in a southeasterly direction. Well MW06 was successful in defining the upgradient extent of the dissolved phase plume. Deep well MW05 is still adequate to define the vertical extent of ground water contamination. The western extent of the dissolved phase plume is defined by Wells MW11, MW15 and MW16. The eastern dissolved phase plume boundary is defined by Well MW13. However, the dissolved phase ground water contaminant plume appears to be migrating through a relatively narrow channel in the vicinity of MW14, MW17, MW19 and MW20. Ground water contamination extends beneath Community Drive and discharges into the low-lying area and unnamed tributary shown in Figure 7. Wells MW21, MW22, MW23 and MW24 were successful in defining the downgradient extent of ground water contamination. Ground water contamination is present within an area measuring approximately 500 by 1500 feet. Dissolved phase hydrocarbon concentrations within the surficial aquifer, unnamed tributary and Pouch Creek are presented in Figure 7.

Analytical data generated during the initial Rapid Assessment revealed elevated levels of EDB in wells MW08 and MW10. Both wells were found to contain free product during the August 2001 sampling event. EDB was identified for the first time in Wells MW17 and MW20 during the current sampling event. Concentrations of lead at levels above the Primary Drinking Water Standard of 0.050 mg/l were identified in three monitoring wells and Pouch Creek. This data suggests that a release of leaded gasoline is responsible for at least part of the contamination present.

A receptor survey was performed as part of the Rapid Assessment process. An onsite well that supplied water to the car wash during past operations was identified. This well is no longer in use. Field reconnaissance identified an unnamed tributary present east of Community Drive. This tributary feeds directly into Pouch Creek. Surface water samples collected during the present scope of work confirmed that petroleum hydrocarbons have impacted the unnamed tributary. A surface water sample collected from Pouch Creek did not identify any petroleum hydrocarbons at levels above instrument detection limits.



HEATH SELF SERVE #2
N. GUIGNARD DRIVE
& MILLER ROAD
SUMTER, SOUTH CAROLINA

FIGURE 7:
GROUND WATER COC CONCENTRATION MAP

KLEEN
SITES
GEOSERVICES

F:\KSG\CAD\2001\01541\Fig 7

4.2 Conclusions and Recommendations

Assessment activities have been successful in generating data concerning the concentration of petroleum hydrocarbons in both soil and ground water that have been adversely affected by a release from the UST system at the former Heath Self Serve #2 facility. Soil leachability tests indicate that petroleum contaminants are present in the former UST pit and dispenser island areas at levels that require remediation. Furthermore, ground water contaminants are present in many wells at concentrations above calculated SSTLs. Free product in excess of 2.0 feet in thickness is also present in both onsite and offsite wells.

KSG recommends that a Corrective Action Plan (CAP) be prepared in order to determine the most technically sound and cost effective method of remediating contaminated ground water to the SSTLs calculated within the Rapid Assessment Report. Additionally, free product removal activities should begin immediately to remove the source of additional contamination to both the surficial aquifer and surface water in the Community Drive area.

SECTION 5.0

APPENDICES

APPENDIX A - ANALYTICAL DATA SHEETS

APPENDIX B - BORING LOGS & WELL CONSTRUCTION SUMMARIES

APPENDIX C – WELL PURGE LOGS

APPENDIX D - WASTE DISPOSAL MANIFESTS

APPENDIX A

ANALYTICAL DATA SHEETS

Ground Water Analytical Data Sheets

APPENDIX B

BORING LOGS & WELL CONSTRUCTION DIAGRAMS

Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
(803) 791-1996

FIELD BOREHOLE LOG

BOREHOLE NO.: **MW21**
TOTAL DEPTH: **8'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rhashaad Valentine**
JOB NO.:	**01541**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**8-17-01**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SILTY SAND: Black, organic rich, no odor			0 ppm	Cap and pad Grouted Annulus Bentonite	
-5					0 ppm	Sand Screened interval -3' to -8'	

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. LOCATION OF WELL: MW 21
Street Address:
County: Sumter City: Sumter Zip:
Latitude: Longitude:

2. System Name: System Number:

3. WELL DEPTH (completed) 8 ft. Date Started: 8/17/01 Date Completed: 8/17/01

4. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other Auger

5. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Black silty Mud		8ft
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

6. REMARKS:

7. WELL OWNER NAME: Clean Site (last) (first)
Address: Columbia Sc
Telephone Work: Home:

8. Well Driller: Rhashead Valentine Cert. No.: 1859
Address: 10401 John Price Rd. Charlotte NC 28273
Telephone No.: 704 504-9195

9. Permit Number:

10. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

11. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

12. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length:
Set Between: 3 ft. and 8 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

13. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

14. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

15. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

16. ARTIFICIAL FILTER (filter pack) ☐ Yes ☐ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

17. WELL GROUTED? ☐ Yes ☐ No
☐ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From _____ ft. to _____ ft.

18. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected ☐ Yes Type: _____
_____ upon completion ☐ No Amount: _____

19. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Rhashead Valentine Date: 8/17/01
Authorized Representative

Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
(803) 791-1996

FIELD BOREHOLE LOG

BOREHOLE NO.: **MW22**
TOTAL DEPTH: **8'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rhashaad Valentine**
JOB NO.:	**01541**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**8-17-01**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SILTY SAND: Gray to black, organic rich, no odor			0 ppm	Cap and pad Grouted Annulus Bentonite	
-5					0 ppm		Sand Screened interval -3' to -8'

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. LOCATION OF WELL: MW22
Street Address:
County: Sumter City: Sumter Zip:
Latitude: Longitude:

2. System Name: System Number:

3. WELL DEPTH (completed) 8 ft. Date Started: 8/17/01 Date Completed: 8/17/01

4. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other Hand

5. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Black Silty Mud		8ft
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

6. REMARKS:

7. WELL OWNER NAME: (last) (first)
Address:
Telephone Work: Home:

8. Well Driller: Rashad Valentine Cert. No.: 1859
Address: 10401 John Price Rd. Charlotte NC 28273
Telephone No.: 704 504-4195

9. Permit Number:

10. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

11. CASING: ☐ Threaded ☐ Welded
Diam.: 2"
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

12. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length:
Set Between: 3 ft. and 8 ft. NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

13. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

14. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

15. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

16. ARTIFICIAL FILTER (filter pack) ☐ Yes ☐ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

17. WELL GROUTED? ☐ Yes ☐ No
☐ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From _____ ft. to _____ ft.

18. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected ☐ Yes Type: _____
_____ upon completion ☐ No Amount: _____

19. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Rashad Valentine (Authorized Representative) Date: 8/17/01

DHEC 1903 (11/2000) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
(803) 791-1996

FIELD BOREHOLE LOG

BOREHOLE NO.: **MW23**
TOTAL DEPTH: **13'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rhashaad Valentine**
JOB NO.:	**01541**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**8-17-01**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SILTY SAND: Black, organic rich, no odor			0 ppm		Cap and pad Grouted Annulus Bentonite
-5					0 ppm		Sand
-10							Screened interval -3' to -13'

DHEC — PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. LOCATION OF WELL: MW23

Street Address:

County: Sumter City: Sumter Zip:

Latitude: Longitude:

2. System Name: System Number:

3. WELL DEPTH (completed) 13 ft. Date Started: 8/17/01 Date Completed: 8/17/01

4. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other Auger

5. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Black silty mud		13ft
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

6. REMARKS:

7. WELL OWNER NAME: Crum's Inc (last) (first)
Address:
Telephone Work: Home:

8. Well Driller: Rhodhead Valentine Cert. No.: 1859
Address: 10101 John Price Rd. Charlotte NC 28273
Telephone No.: 704 504-9195

9. Permit Number:

10. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

11. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

12. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length:
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

13. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

14. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

15. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

16. ARTIFICIAL FILTER (filter pack) ☐ Yes ☐ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

17. WELL GROUTED? ☐ Yes ☐ No
☐ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From _____ ft. to _____ ft.

18. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected upon completion ☐ Yes ☐ No Type: _____ Amount: _____

19. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: R. Rhodhead Valentine Date: 8/17/01
Authorized Representative

DHEC 1903 (11/2000) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Kleen Sites Geoservices, Inc.
171 Lott Court
West Columbia, SC 29169
(803) 791-1996

FIELD BOREHOLE LOG

BOREHOLE NO.: **MW24**
TOTAL DEPTH: **13'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Heath Self Serve #2**	DRILLING CO.:	**SAEDACCO**
SITE LOCATION:	**Sumter, SC**	DRILLER:	**Rhashaad Valentine**
JOB NO.:	**01541**	RIG TYPE:	**Truck Mounted**
LOGGED BY:	**Jason Chiorazzi**	METHOD OF DRILLING:	**Truck-mounted Drill Rig**
PROJECT MANAGER:	**Bill Dunnagan**	SAMPLING METHODS:	**Split-spoon Sampler**
DATES DRILLED:	**8-17-01**	HAMMER WT./DROP	**Hydraulic hammer**

NOTES: SCDHEC Site ID#08932

▽ Water level during drilling
▼ Water level in completed well

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMP. #	Blows / ft.	PID ppm	BORING COMPLETION	WELL DESCRIPTION
0		SILTY SAND: Gray to black, organic rich, no odor			0 ppm		Cap and pad Grouted Annulus Bentonite
-5					0 ppm		Sand
-10							Screened interval -3' to -13'

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. LOCATION OF WELL: MW24
Street Address:
County: Sumter City: Sumter Zip:
Latitude: Longitude:

2. System Name: System Number:

3. WELL DEPTH (completed) 13 ft. Date Started: 8/1/01 Date Completed: 8/1/01

4. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other Auger

5. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Black silty Mud		13ft.
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

6. REMARKS:

7. WELL OWNER NAME: Clean Sites (last) (first)
Address:
Telephone Work: Home:

8. Well Driller: Rashad Valentine Cert. No.: 1859
Address: 10401 John Price Rd. Charlotte NC 28273
Telephone No.: 704 504-9195

9. Permit Number:

10. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

11. CASING: ☑ Threaded ☐ Welded
Diam.: 2"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

12. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 10 Length:
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

13. STATIC WATER LEVEL
_____ ft. below land surface after 24 hours

14. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

15. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

16. ARTIFICIAL FILTER (filter pack) ☐ Yes ☐ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

17. WELL GROUTED? ☐ Yes ☐ No
☐ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From _____ ft. to _____ ft.

18. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
_____ Type well disinfected ☐ Yes Type: _____
_____ upon completion ☐ No Amount: _____

19. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Rashad Valentine Date: 8/1/01
Authorized Representative

DHEC 1903 (11/2000) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

APPENDIX C

WELL PURGE LOGS

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW01

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	8-16-01	KSG PERSONNEL:	

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Well has not been located.
					DO =

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW02

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	8-16-01	KSG PERSONNEL:	

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Well has been destroyed by onsite
					construction activities. No water
					sample collected.

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW03

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	24.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	21.10 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	2.90 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.5 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	1.5 Gallons
DATE:	8-21-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1230	0.5	26.4	26	5.03	Petroleum odor
1231	1.0	25.0	22	4.83	
1233	1.5	23.7	22	4.68	
					DO = 5.4

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW04

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	24.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*19.27 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	8-16-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.55
					Static Water Level – 19.27
					Free Product Thickness = 1.72 feet
					Well was not sampled

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GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW05

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	45.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	19.01 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	25.99 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	4.2Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	12.6 Gallons
DATE:	8-21-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1305	4.2	25.3	30	4.93	Clear
1308	8.4	24.5	31	4.80	
1312	12.6	23.1	30	4.72	
					DO = 4.6

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW06

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.90 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	4.10 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.6 Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	1.8 Gallons
DATE:	8-16-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1230	0.6	29.2	39	5.21	Muddy
1231	1.2	25.9	33	5.02	
1232	1.8	25.5	34	4.83	
					DO = 2.6

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW07

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*19.99 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	8-24-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.75
					Static Water Level – 19.99
					Free Product Thickness = 2.24 feet
					Well was not sampled

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GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW08

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*20.48 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	8-24-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 18.63
					Static Water Level – 20.48
					Free Product Thickness = 1.85 feet
					Well was not sampled

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW09

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*19.58 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	Gallons
DATE:	8-24-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.50
					Static Water Level – 19.58
					Free Product Thickness = 2.08 feet
					Well was not sampled

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW10

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*19.83 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	8-24-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 17.27
					Static Water Level – 19.83
					Free Product Thickness = 2.56 feet
					Well was not sampled

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW11

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	17.23 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	4.77 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.7 Gallons
		PURGE VOLUME:	2.1 Gallons
DATE:	8-16-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1320	0.7	28.6	26	4.90	No petroleum odor
1322	1.4	28.4	27	4.69	
1323	2.1	24.8	27	4.56	
					DO = 4.2

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GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW12

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	22.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	*20.41 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	4 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	Gallons
DATE:	8-24-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
					Free Product Level – 18.50
					Static Water Level – 20.41
					Free Product Thickness = 1.91 feet
					Well was not sampled

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW13

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	23.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	19.42 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	3.58 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.5 Gallons
		PURGE VOLUME:	1.5 Gallons
DATE:	8-20-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1430	0.5	28.4	17	4.84	No petroleum odor
1432	1.0	26.9	15	4.77	
1434	1.5	25.8	14	4.70	
					DO = 4.9

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GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW14

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	13.83 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	6.17 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.0 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	3.0 Gallons
DATE:	8-21-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1015	1.0	24.5	182	5.98	Strong petroleum odor
1017	2.0	24.2	181	6.04	
1018	3.0	24.1	178	6.08	
					DO = 1.2

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW15

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	18.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	12.65 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.35 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.9 Gallons
		PURGE VOLUME:	2.7 Gallons
DATE:	8-21-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1400	0.9	29.7	34	4.90	Slight petroleum odor
1401	1.8	30.1	35	4.62	
1403	2.7	28.7	36	4.50	
					DO = 5.6

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW16

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	14.31 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.69 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	0.9 Gallons
		PURGE VOLUME:	2.7 Gallons
DATE:	8-16-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1405	0.9	28.0	36	4.76	No odor, muddy
1406	1.8	26.4	48	4.58	
1408	2.7	24.8	53	4.53	
					DO = 4.5

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SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW17

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	12.65 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	7.35 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)(Dw^2)(7.5\ gal/ft^3)(0.785)$	1.2 Gallons
		PURGE VOLUME:	3.6 Gallons
DATE:	8-24-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1006	1.2	24.8	280	6.37	Strong petroleum odor
1008	2.4	24.5	254	6.35	
1010	3.6	24.3	234	6.32	
					DO = 1.9

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW18

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	20.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	14.43 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.57 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.9 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	2.7 Gallons
DATE:	8-20-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1355	0.9	28.5	54	4.86	Muddy, no odor
1358	1.8	27.8	43	4.65	
1400	2.7	27.0	42	4.54	
					DO = 2.9

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW19

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	13.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	5.09 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	7.91 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	1.3 Gallons
		PURGE VOLUME:	3.9 Gallons
DATE:	8-21-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1100	1.3	25.3	33	5.65	Strong petroleum odor
1102	2.6	26.2	29	5.41	
1105	3.9	25.4	25	5.27	
					DO = 2.1

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW20

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	13.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	3.57 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	9.43 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	1.5 Gallons
		$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	
		PURGE VOLUME:	4.5 Gallons
DATE:	8-21-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1140	1.5	23.0	27	4.95	Petroleum odor
1142	3.0	22.9	33	4.89	
1144	4.5	21.8	31	4.82	
					DO = 1.4

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW21

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	8.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	2.90 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.10 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw): $Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$	0.8 Gallons
		PURGE VOLUME:	8.0 Gallons
DATE:	8-20-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1220	0.8	25.1	193	5.45	No odor, muddy
1221	1.6	24.5	191	5.49	
1223	2.4	23.8	198	5.56	
1225	3.2	23.9	188	5.60	
1227	4.0	24.6	175	5.69	
1229	4.8	23.4	180	5.65	
1231	5.6	23.5	177	5.64	Dry @ 5.6 gallons
	6.4				
	7.2				
	8.0				
					DO = 1.9

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW22

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	8.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	2.50 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	5.50 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	0.9 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	9.0 Gallons
DATE:	8-20-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1150	0.9	28.8	52	5.56	No odor, muddy
1153	1.8	28.6	53	5.54	
1155	2.7	27.4	56	5.35	
1157	3.6	28.8	54	5.30	
1159	4.5	28.4	53	5.26	
1201	5.4	27.8	54	5.28	
	6.3				
	7.2				
	8.1				
	9.0				
					DO = 2.0

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GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW23

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	13.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	0.6 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	12.40 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	2.0 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	20.0 Gallons
DATE:	8-20-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1115	2	24.2	46	5.38	No odor, muddy
1117	4	22.9	49	5.30	
1118	6	22.4	50	5.31	
1120	8	21.9	51	5.37	
1121	10	21.8	52	5.43	
1123	12	21.8	48	5.45	
1125	14	21.7	46	5.51	
1126	16	21.5	48	5.50	
1128	18	21.5	51	5.44	
1130	20	21.2	51	5.51	
					DO = 1.9

KLEEN
SITES
GEOSERVICES

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER – MW24

PROJECT:	Heath Self Serve #2	TOTAL WELL DEPTH:	13.00 Feet
STREET:	Miller Rd. & N. Guignard Dr.	STATIC WATER LEVEL:	0.7 Feet
CITY:	Sumter	WATER HEIGHT (Hw):	12.30 Feet
COUNTY:	Sumter	WELL DIAMETER (Dw):	2 Inches
STATE:	South Carolina	WELL VOLUME (Vw):	2.0 Gallons
		Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)	
		PURGE VOLUME:	20.0 Gallons
DATE:	8-20-01	KSG PERSONNEL:	SF

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°F)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
1030	2	22.6	33	5.30	No odor, muddy
1032	4	22.0	33	5.16	
1033	6	21.3	33	5.11	
1034	8	21.1	34	5.08	
1035	10	20.9	33	4.98	
1036	12	20.8	33	5.03	
1038	14	20.8	33	5.01	
1039	16	20.7	34	5.02	
1041	18	20.6	33	5.01	
1043	20	20.6	34	4.99	
					DO = 1.7

APPENDIX D

WASTE DISPOSAL MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. GK4031

2. Page 1 of

09-14-01

3. Generator's Name and Mailing Address
FORMER HEATH SELF SERVE
N. GUIGNARD/MILLER RD
SUMTER, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name
G & K TANK SERVICES, INC

6. US EPA ID Number

A. Transporter's Phone
800-800-6840

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
G & K TANK SERVICES
PO BOX 1384
SUMTER, SC 29151

10. US EPA ID Number

C. Facility's Phone
800-800-6840

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS PETROLEUM CONTAMINANTED WATER	1 DR	55 [illegible]		
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
KLEEN SITES GEOSERVICES
409 BURTON ROAD
LEXINGTON, SC 29072

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name | Signature | Month | Day | Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: [illegible] | Signature: [illegible] | Month 09 | Day 17 | Year [illegible]

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: L. Bradany | Signature: [illegible] | Month 09 | Day 17 | Year 01

GENERATOR

TRANSPORTER

FACILITY

ORIGINAL - RETURN TO GENERATOR

8034948598 P.08
09-18-2001 01:23PM Glasscock Co.
TOTAL P.08



Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1 (800) 922-7835 • FAX: (803) 494-8598

Certificate of Disposal

GALLONS 1 DRUM/55 GALLONS
HEATH SELF SERVE

Contaminant NONHAZARDOUS PETROLEUM CONTAMINATED WATER

This is to certify the above WATER has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated WATER.

Certified by Leigh Bogdany

Date 9-18-2001

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

Phone (803) 896-6240 Fax (803) 896-6245

MR DOUG LEONARD
COCA COLA BOTTLING CO
4115 COCA COLA PLZ
CHAROTTE NC 28211-3400

JUN 0 7 2002

UST PROGRAM DOCKETING # 109T

Re: Heath Self Serve #2, 501 N. Guignard Dr., Sumter, SC
UST Permit #08932; CA #16520
Release #1 Reported July 31, 1996
Monitoring Report Received September 26, 2001
Sumter County

Dear Mr. Leonard:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) recognizes your commitment to continue work at this site utilizing your own contractor. SCDHEC has reviewed the referenced report submitted by Emerald, Inc.

The next scope of work to be implemented at this site is a groundwater sampling event. Cost Agreement **#16520** has been approved to complete the necessary work. Please be advised that only EPA Method 8260B will be accepted for purgeable aromatics.

Emerald can submit an invoice for direct billing from the SUPERB Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Department is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Department for the cost to be paid. **The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable or excessive.** The SCDHEC reserves the right to audit project records at any time during the project or after completion of work.

A Report of Findings and the invoice are due within 30 days from the date of this letter. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

The Bureau grants pre-approval for transportation of virgin petroleum contaminated groundwater/soil from the referenced site to a permitted treatment facility. The contaminated groundwater/soil must be properly stored in labeled containers or covered with plastic as appropriate. The contaminated groundwater/soil must be accepted by the approved treatment facility. There can be no spillage or leakage in transport. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the final report. If the levels of petroleum contamination based on laboratory analysis are below risk-based screening levels, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not compensate for transportation or treatment of clean soil and/or groundwater.

On all correspondence concerning this site, please reference **UST Permit #08932 and Cost Agreement #16520.** If there are any questions concerning this project, please contact me at (803) 896-6648 or (800) 826-5435 (within South Carolina only).

Sincerely,

Eric Owens, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Division

enc: Approved Cost Agreement

cc: Mr. Ronny Lowder, Emerald, Inc., P.O. Box 3050, Sumter, South Carolina 29151 (copy of Approved Cost Agreement)
Technical File

SCDHEC/UST/060602

D. Maxwell

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rlemerald@CPIS.net

September 17, 2002

TELEPHONE (803) 773-5454
FAX (803) 775-1970

Eric Owens, Hydrogeologist
Owner/Operator Assistance Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land and Waste Management
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

Re: Heath Self Serve #2, 501 N. Guignard Drive, Sumter, SC
UST Permit # 08932; CP # 16520
Ground Water Sampling Report
Sumter County

Dear Mr. Owens:

Per request by the Responsible Party, Coca-Cola Bottling Co., Consolidated, Emerald, Inc. is providing you with a copy of the Ground Water Sampling Report as requested by your office. If you have any questions, please contact me at your convenience.

Yours very truly,
Emerald, Inc.

Ronny L. Lowder
President

RLL/sld

Enclosure

cc: Mr. Doug Leonard, CCBCC

RECEIVED
SEP 23 2002
Underground Storage
Tank Program

SCANNED nd
UST PROGRAM
DOCKETING # 961

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rllemerald@CPIS.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

GROUND WATER
SAMPLING REPORT
FORMER HEATH SELF SERVE #2
NORTH GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA
UST PERMIT# 08932

Prepared For:

South Carolina Department of Health & Environmental Control
Owner/Operator Assistance Section
Assessment and Corrective Action Branch
Division of UST Management
2600 Bull Street
Columbia, SC 29201

Prepared By:

EMERALD, INC.
214 W. Liberty Street
P.O. Box 3050
Sumter, SC 29151

RECEIVED
SEP 23 2002
Underground Storage
Tank Program

September 16, 2002

UST PROGRAM
DOCKETING # 96T

Signature Page

This report was prepared by Emerald, Inc. using generally accepted practices. Any questions regarding such should be directed to Ronny L. Lowder at the office of Emerald, Inc. located at 214 W. Liberty Street, Sumter, South Carolina, or telephone (803) 773-5454.



Ronny L. Lowder, President
EMERALD, INC.
UST Rehabilitation Contractor No. 67

Ground Water
Sampling Report
Former Heath Self Serve #2
Sumter, SC

Table of Contents

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	(B) Site Map	
	(C) Monitoring Well Purge Log	
	(D) Analytical Results	
	(E) Disposal Manifest	

1.0 Introduction

The Former Heath Self Serve #2 site is located on the northeast corner of the intersection of North Guignard Drive and Miller Road in Sumter, S.C. The subject facility is currently operated as a gasoline convenience store (Phillips 66) in a heavily developed commercial area with a variety of commercial businesses nearby. Appendices A and B contain a General Location Map and a Site Map respectively.

Eleven USTs were previously used for onsite storage of petroleum products. One 10,000 gallon tank, one 6,000 gallon tank and seven 3,000 gallon tanks were used for the storage of gasoline. One 1,000 gallon tank was used for the storage of diesel fuel. One 550 gallon tank was used for the storage of used oil. Each of the eleven USTs have either been removed from the ground or permanently abandoned in place. New USTs were installed at the facility in December 1998.

A release of petroleum hydrocarbons was identified within the former tank pit area during closure assessment activities. In December of 1998, a Standard Limited Assessment (SLA) was conducted by personnel from Kleen Sites Geoservices, Inc. (KSG) on the subject property at the request of the SCDHEC. Following a review of the SLA, the SCDHEC requested that a Rapid Assessment be conducted in a letter dated May 13, 1999. KSG personnel implemented Rapid Assessment activities at the subject property in order to better define the vertical and horizontal extent of the soil and ground water contamination plumes. A Rapid Assessment Report dated November 19, 1999 was submitted to the SCDHEC Bureau of UST Management for review and comment.

Data generated during the Rapid Assessment indicated the presence of a large free product plume that originated from the southern portion of the subject property. Field

measurements indicated that the free product plume extended beneath Miller Road in a southernly direction for approximately 300 feet. The dissolved phase ground water contaminant plume was found to be present beneath much of the Palmetto Plaza property extending approximately 875 feet from the source area along North Guignard Drive. However, the lateral extent of the dissolved phase plume remained undefined in the area located southeast of the former Heath Self Serve #2 facility. The SCDHEC requested by letter dated August 10, 2000 that additional assessment work be conducted to generate current data on free product and dissolved phase plumes and to define the downgradient extent of ground water contamination. Four additional shallow ground water monitoring wells were installed in October of 2000. A Rapid Assessment Report - Addendum 01 dated November 28, 2000 was submitted to the SCDHEC Bureau of UST Management.

Data generated during the October 2000 field event revealed that the dissolved phase ground water contaminant plume extended at least 600 feet in a southeasterly (i.e. downgradient) direction from the former UST pits. Impact to a tributary of Shot Pouch Creek was also confirmed. Additional assessment work was requested in a SCDHEC letter addressed to Mr. Doug Leonard of Coca-Cola Bottling Company. Four additional shallow ground water monitoring wells were installed under the direction of KSG personnel adjacent to Shot Pouch Creek during a Tier II Assessment Report (Addendum 02) dated September 10, 2001.

Subsequently, SCDHEC requested a ground water sampling event in a letter to Mr. Leonard dated June 7, 2002. This report provides the data generated during this event.

2.0 Field Sampling Methodology

On August 17 and 18, 2002, Emerald, Inc. personnel gauged the water level in each

of the twenty-two (22) monitoring wells prior to sampling activities. The water level measurements are included in the Monitoring Well Purge Log in Appendix C. After gauging each well, Emerald, Inc. personnel removed three (3) well volumes (if available) of water from each well using a clear disposable PVC bailer for each well. Ground water samples from each well were placed in laboratory-prepared bottles, labeled, and placed in the field ice chest for storage and shipment to the laboratory. The water removed from each well was placed in a 55 gallon drum and shipped to G & K Tank Services in Sumter, S.C. for treatment and disposal. Appendix E contains a copy of the disposal manifest.

Table I on the next page shows the ground water elevations at the site on the date of the sampling event. All measurements were taken from the surveyed top of well casing which was conducted during a prior assessment. Free product was observed in six (6) monitoring wells during this event. Two monitoring wells (MWs 1 and17) could not be located and have apparently been destroyed during construction activities.

Table I - Ground Water Elevations
Former Heath Self Serve #2 Site

Date: 8/17/02 and 8/18/02

WELL ID#	STATIC WATER LEVEL*	FREE PRODUCT THICKNESS	TOP OF CASING ELEVATIONS	GROUND WATER ELEVATION
MW01	Well not found		99.88	-
MW02	20.10	ND	Not Available	
MW03	21.79	ND	101.09	79.30
MW04	20.80	1.33'	98.72	77.92
MW05	21.18	ND	98.83	77.65
MW06	19.75	ND	98.98	79.23
MW07	22.00	2.60'	98.64	76.64
MW08	22.60	2.64'	99.58	76.98
MW09	21.42	2.31'	97.93	76.51
MW10	21.58	2.93'	97.71	76.13
MW11	19.30	ND	97.60	78.30
MW 12	22.73	2.65'	99.68	76.95
MW 13	20.91	ND	99.88	78.97
MW 14	15.13	ND	91.12	75.99
MW 15	14.14	ND	91.29	77.15
MW 16	16.07	ND	94.15	78.08
MW 17	Well not found		89.83	-
MW 18	15.83	ND	92.29	76.46
MW 19	6.04	ND	76.76	70.72
MW 20	4.67	ND	76.16	71.49
MW 21	2.43	ND	73.49	71.06
MW 22	2.40	ND	73.79	71.39
MW 23	0.93	ND	73.06	72.13
MW 24	0.65	ND	72.25	71.60

Notes: * - Depth below top of Casing, in feet
ND - Not Detected

3.0 Analytical Results

Table II shows the analytical results for the ground water samples collected from the twenty-two (22) monitoring wells at the Former Heath Self Serve #2 site. Appendix D contains the Analytical Results from the laboratory.

Table II - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW01* 8-01	MW01* 8-02	MW02** 8-01	MW02 8-17-02	MW03 8-21-01	MW03 8-17-02
Benzene (µg/l)	NT	NT	NT	69.0	27	5.1
Ethylbenzene (µg/l)	NT	NT	NT	81.1	<5.0	4.4
MTBE (µg/l)	NT	NT	NT	ND	<5.0	ND
Naphthalene (µg/l)	NT	NT	NT	5.80	<5.0	ND
Toluene (µg/l)	NT	NT	NT	101	7.2	12.1
Total Xylenes (µg/l)	NT	NT	NT	188	20	37.9
Methane (µg/l)	NT	NT	NT	NT	<0.026	NT
1, 2 Dibromoethane (µg/l)	NT	NT	NT	ND	<0.021	ND
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	NT	NT	NT	<0.05	NT
Nitrates (mg/l)	NT	NT	NT	NT	0.71	NT
Sulfates (mg/l)	NT	NT	NT	NT	2.1	NT
Dissolved Oxygen (mg/l)	NT	NT	NT	NT	5.4	NT
Lead (mg/l)	NT	NT	NT	NT	<0.003	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW04 8-16-01	MW04 8-17-02	MW05 8-21-01	MW05 8-17-02	MW06 8-16-01	MW06 8-17-02
Benzene (μg/l)	FP - 1.72'	FP - 1.33'	<5.0	ND	<5.0	8.8
Ethylbenzene (μg/l)	FP	FP	<5.0	ND	<5.0	ND
MTBE (μg/l)	FP	FP	<5.0	ND	<5.0	3.2
Naphthalene (μg/l)	FP	FP	<5.0	ND	<5.0	ND
Toluene (μg/l)	FP	FP	<5.0	3.8	6.5	4.5
Total Xylenes (μg/l)	FP	FP	5.1	3.2	12	8.2
Methane (μg/l)	FP	FP	<0.026	NT	<0.026	NT
1, 2 Dibromoethane (μg/l)	FP	FP	<0.021	ND	<0.02	ND
PAH - Naphthalene (μg/l)	FP	FP	NT	NT	NT	NT
Acenaphthene (μg/l)	FP	FP	NT	NT	NT	NT
Phenanthrene (μg/l)	FP	FP	NT	NT	NT	NT
Flouranthene (μg/l)	FP	FP	NT	NT	NT	NT
Benzo(a)anthracene (μg/l)	FP	FP	NT	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	FP	FP	NT	NT	NT	NT
Benzo(a)pyrene (μg/l)	FP	FP	NT	NT	NT	NT
Benzo(ghi)perylene (μg/l)	FP	FP	NT	NT	NT	NT
Acenaphthylene (μg/l)	FP	FP	NT	NT	NT	NT
Fluorene (μg/l)	FP	FP	NT	NT	NT	NT
Anthracene (μg/l)	FP	FP	NT	NT	NT	NT
Pyrene (μg/l)	FP	FP	NT	NT	NT	NT
Chrysene (μg/l)	FP	FP	NT	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	FP	FP	NT	NT	NT	NT
Dibenzo(a,h)anthracene	FP	FP	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	FP	FP	NT	NT	NT	NT
Ferrous Iron (mg/l)	FP	FP	<0.05	NT	<0.050	NT
Nitrates (mg/l)	FP	FP	1.2	NT	1.0	NT
Sulfates (mg/l)	FP	FP	2.0	NT	7.2	NT
Dissolved Oxygen (mg/l)	FP	FP	4.6	NT	2.6	NT
Lead (mg/l)	FP	FP	<0.003	NT	0.028	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW07 8-24-01	MW07 8-17-02	MW08 8-24-01	MW08 8-17-02	MW09 8-24-01	MW09 8-17-02
Benzene (μg/l)	FP - 2.24'	FP - 2.60'	FP - 1.85'	FP - 2.64'	FP - 2.08'	FP - 2.31'
Ethylbenzene (μg/l)	FP	FP	FP	FP	FP	FP
MTBE (μg/l)	FP	FP	FP	FP	FP	FP
Naphthalene (μg/l)	FP	FP	FP	FP	FP	FP
Toluene (μg/l)	FP	FP	FP	FP	FP	FP
Total Xylenes (μg/l)	FP	FP	FP	FP	FP	FP
Methane (μg/l)	FP	FP	FP	FP	FP	FP
1, 2 Dibromoethane (μg/l)	FP	FP	FP	FP	FP	FP
PAH - Naphthalene (μg/l)	FP	FP	FP	FP	FP	FP
Acenaphthene (μg/l)	FP	FP	FP	FP	FP	FP
Phenanthrene (μg/l)	FP	FP	FP	FP	FP	FP
Flouranthene (μg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)anthracene (μg/l)	FP	FP	FP	FP	FP	FP
Benzo(b)fluoranthene (μg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)pyrene (μg/l)	FP	FP	FP	FP	FP	FP
Benzo(ghi)perylene (μg/l)	FP	FP	FP	FP	FP	FP
Acenaphthylene (μg/l)	FP	FP	FP	FP	FP	FP
Fluorene (μg/l)	FP	FP	FP	FP	FP	FP
Anthracene (μg/l)	FP	FP	FP	FP	FP	FP
Pyrene (μg/l)	FP	FP	FP	FP	FP	FP
Chrysene (μg/l)	FP	FP	FP	FP	FP	FP
Benzo(k)fluoranthene (μg/l)	FP	FP	FP	FP	FP	FP
Dibenzo(a,h)anthracene	FP	FP	FP	FP	FP	FP
Indeno(1,2,3-cd)pyrene	FP	FP	FP	FP	FP	FP
Ferrous Iron (mg/l)	FP	FP	FP	FP	FP	FP
Nitrates (mg/l)	FP	FP	FP	FP	FP	FP
Sulfates (mg/l)	FP	FP	FP	FP	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	FP	FP	FP	FP
Lead (mg/l)	FP	FP	FP	FP	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW10 8-24-01	MW10 8-17-02	MW11 8-16-01	MW11 8-17-02	MW12 8-24-01	MW12 8-17-02
Benzene (µg/l)	FP - 2.56'	FP - 2.93'	<5.0	ND	FP - 1.91'	FP - 2.65'
Ethylbenzene (µg/l)	FP	FP	<5.0	ND	FP	FP
MTBE (µg/l)	FP	FP	<5.0	ND	FP	FP
Naphthalene (µg/l)	FP	FP	<5.0	ND	FP	FP
Toluene (µg/l)	FP	FP	9.0	ND	FP	FP
Total Xylenes (µg/l)	FP	FP	14	4.6	FP	FP
Methane (µg/l)	FP	FP	<0.026	NT	FP	FP
1, 2 Dibromoethane (µg/l)	FP	FP	<0.019	ND	FP	FP
PAH - Naphthalene (µg/l)	FP	FP	NT	NT	FP	FP
Acenaphthene (µg/l)	FP	FP	NT	NT	FP	FP
Phenanthrene (µg/l)	FP	FP	NT	NT	FP	FP
Flouranthene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(a)anthracene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(b)fluoranthene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(a)pyrene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(ghi)perylene (µg/l)	FP	FP	NT	NT	FP	FP
Acenaphthylene (µg/l)	FP	FP	NT	NT	FP	FP
Fluorene (µg/l)	FP	FP	NT	NT	FP	FP
Anthracene (µg/l)	FP	FP	NT	NT	FP	FP
Pyrene (µg/l)	FP	FP	NT	NT	FP	FP
Chrysene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(k)fluoranthene (µg/l)	FP	FP	NT	NT	FP	FP
Dibenzo(a,h)anthracene	FP	FP	NT	NT	FP	FP
Indeno(1,2,3-cd)pyrene	FP	FP	NT	NT	FP	FP
Ferrous Iron (mg/l)	FP	FP	0.06	NT	FP	FP
Nitrates (mg/l)	FP	FP	0.58	NT	FP	FP
Sulfates (mg/l)	FP	FP	1.7	NT	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	2.2	NT	FP	FP
Lead (mg/l)	FP	FP	0.0075	NT	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW13 8-20-01	MW13 8-17-02	MW14 8-21-01	MW14 8-17-02	MW15 8-21-01	MW15 8-17-02
Benzene (μg/l)	<5.0	ND	450	553	8.9	ND
Ethylbenzene (μg/l)	<5.0	ND	8.4	28.0	<5.0	ND
MTBE (μg/l)	<5.0	ND	<5.0	ND	<5.0	ND
Naphthalene (μg/l)	<5.0	ND	18	34.2	<5.0	ND
Toluene (μg/l)	<5.0	ND	11	7.4	<5.0	ND
Total Xylenes (μg/l)	<5.0	ND	160	222	9.0	ND
Methane (μg/l)	<0.026	NT	<0.026	NT	<0.026	NT
1, 2 Dibromoethane (μg/l)	<0.019	ND	<0.019	0.05	<0.019	ND
PAH - Naphthalene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (μg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (μg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (μg/l)	NT	NT	NT	NT	NT	NT
Fluorene (μg/l)	NT	NT	NT	NT	NT	NT
Anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Chrysene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	<0.05	NT	<0.050	NT	<0.050	NT
Nitrates (mg/l)	0.35	NT	<0.020	NT	1.1	NT
Sulfates (mg/l)	2.7	NT	1.9	NT	3.4	NT
Dissolved Oxygen (mg/l)	4.9	NT	1.2	NT	5.6	NT
Lead (mg/l)	0.020	NT	<0.003	NT	0.073	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW16 8-16-01	MW16 8-17-02	MW17 8-24-01	MW17* 8-17-02	MW18 8-20-01	MW18 8-17-02
Benzene (μg/l)	<5.0	ND	680	NT	<5.0	ND
Ethylbenzene (μg/l)	<5.0	ND	100	NT	<5.0	ND
MTBE (μg/l)	<5.0	ND	<5.0	NT	<5.0	ND
Naphthalene (μg/l)	<5.0	ND	38	NT	<5.0	ND
Toluene (μg/l)	6.6	ND	680	NT	6.2	ND
Total Xylenes (μg/l)	11	ND	430	NT	10	ND
Methane (μg/l)	<0.026	NT	89.0	NT	1.21	NT
1, 2 Dibromoethane (μg/l)	<0.019	ND	0.10	NT	<0.02	ND
PAH - Naphthalene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (μg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (μg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (μg/l)	NT	NT	NT	NT	NT	NT
Fluorene (μg/l)	NT	NT	NT	NT	NT	NT
Anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Chrysene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	<0.05	NT	49	NT	<0.05	NT
Nitrates (mg/l)	1.7	NT	2.0	NT	0.64	NT
Sulfates (mg/l)	2.2	NT	2.9	NT	2.9	NT
Dissolved Oxygen (mg/l)	4.5	NT	0.9	NT	2.1	NT
Lead (mg/l)	0.015	NT	0.030	NT	0.028	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW19 8-21-01	MW19 8-17-02	MW20 8-21-01	MW20 8-17-02	MW21 8-20-01	MW21 8-18-02
Benzene (μg/l)	640	492	1200	1480	<5.0	ND
Ethylbenzene (μg/l)	<5.0	11.8	<5.0	ND	<5.0	ND
MTBE (μg/l)	43	39.7	<5.0	ND	<5.0	ND
Naphthalene (μg/l)	19	9.50	40	51.9	<5.0	ND
Toluene (μg/l)	10	ND	5.7	ND	<5.0	ND
Total Xylenes (μg/l)	88	30.7	54	31.8	<5.0	ND
Methane (μg/l)	0.072	NT	241	NT	0.972	NT
1, 2 Dibromoethane (μg/l)	<0.020	0.04	0.57	0.74	<0.02	ND
PAH - Naphthalene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (μg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (μg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (μg/l)	NT	NT	NT	NT	NT	NT
Fluorene (μg/l)	NT	NT	NT	NT	NT	NT
Anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Chrysene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	1.5	NT	<0.05	NT	17	NT
Nitrates (mg/l)	<0.02	NT	0.23	NT	<0.02	NT
Sulfates (mg/l)	2.4	NT	3.4	NT	38	NT
Dissolved Oxygen (mg/l)	2.1	NT	1.4	NT	1.9	NT
Lead (mg/l)	<0.003	NT	<0.003	NT	0.86	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table II - Continued
Former Heath Self Serve #2 Site

Sample Date: 8/17/02 and 8/18/02

Chemical of Concern (units)	MW22 8-20-01	MW22 8-18-02	MW23 8-20-01	MW23 8-18-02	MW24 8-20-01	MW24 8-18-02
Benzene (μg/l)	<5.0	ND	<5.0	ND	<5.0	ND
Ethylbenzene (μg/l)	<5.0	ND	<5.0	ND	<5.0	ND
MTBE (μg/l)	<5.0	ND	<5.0	ND	<5.0	ND
Naphthalene (μg/l)	<5.0	ND	<5.0	ND	<5.0	ND
Toluene (μg/l)	7.8	ND	<5.0	ND	<5.0	ND
Total Xylenes (μg/l)	8.0	ND	<5.0	ND	5.4	ND
Methane (μg/l)	0.248	NT	<0.026	NT	<0.026	NT
1, 2 Dibromoethane (μg/l)	<0.02	ND	<0.02	ND	<0.019	ND
PAH - Naphthalene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (μg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (μg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (μg/l)	NT	NT	NT	NT	NT	NT
Fluorene (μg/l)	NT	NT	NT	NT	NT	NT
Anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Chrysene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	18	NT	5.0	NT	4.4	NT
Nitrates (mg/l)	<0.02	NT	<0.02	NT	<0.02	NT
Sulfates (mg/l)	12	NT	11	NT	13	NT
Dissolved Oxygen (mg/l)	5.0	NT	1.9	NT	1.7	NT
Lead (mg/l)	0.38	NT	0.023	NT	0.014	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

4.0 Appendices

A) General Location Map

B) Site Map

C) Monitoring Well Purge Log

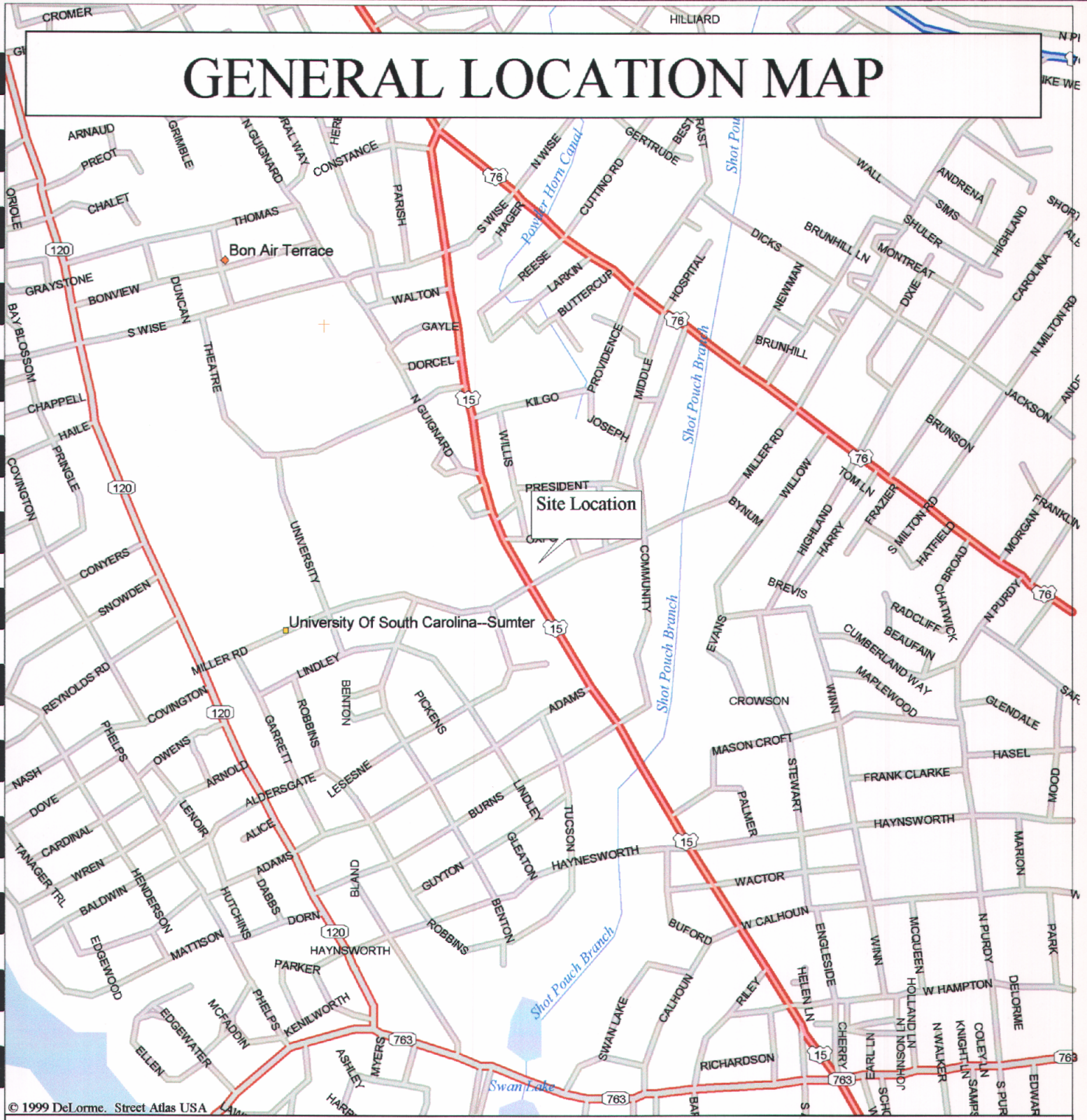
D) Analytical Results

E) Disposal Manifest

APPENDIX A

GENERAL LOCATION MAP

GENERAL LOCATION MAP

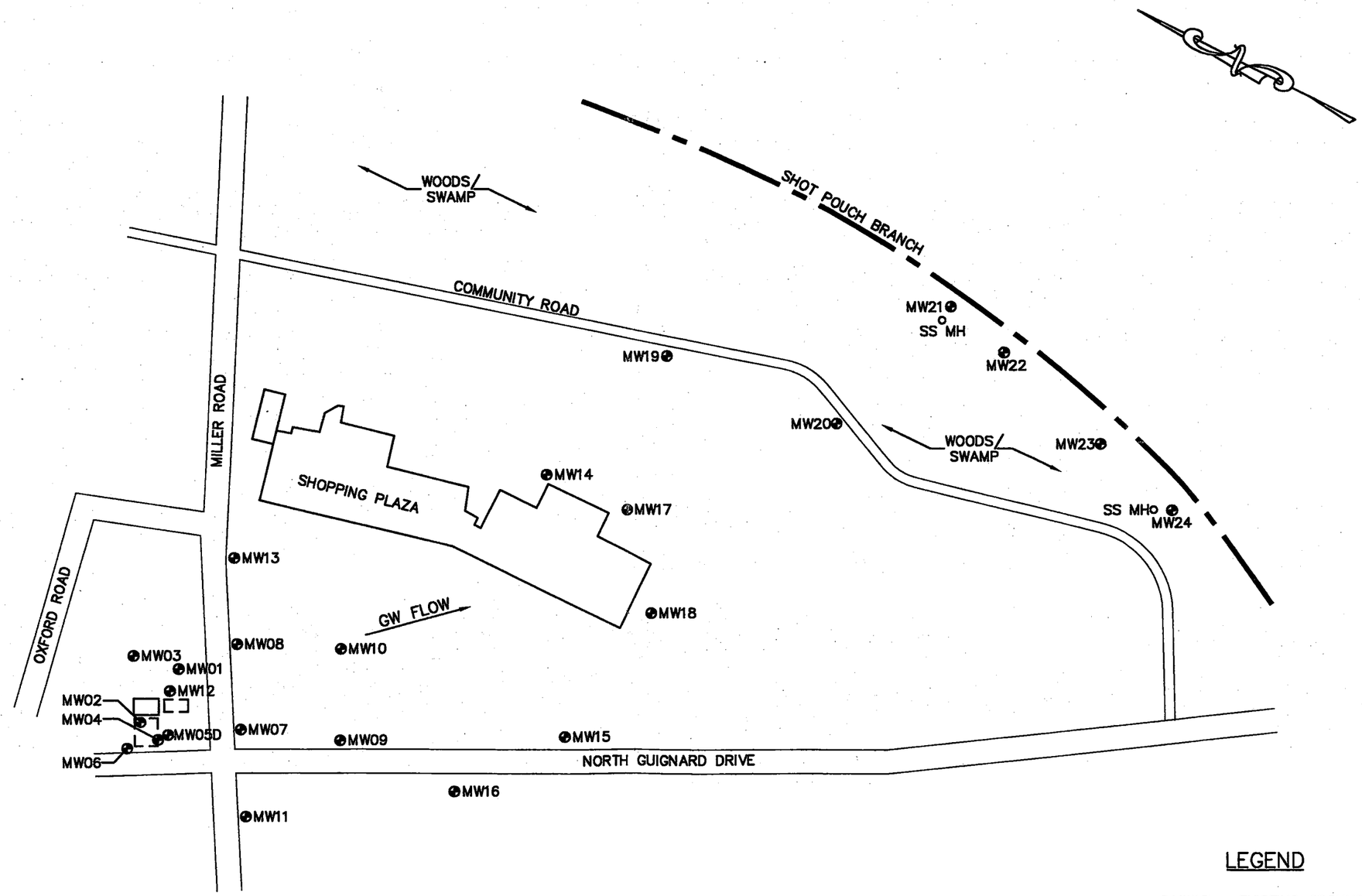


Mag 15.00
Wed Sep 18 08:17 2002
Scale 1:15,625 (at center)
1000 Feet
500 Meters

- Local Road
- State Route
- Interstate/Limited Access
- US Highway
- Point of Interest
- Locale
- Cemetery
- Water
- River/Canal

APPENDIX B

SITE MAP



LEGEND

MW18	EXISTING GROUND MONITORING WELL
GW	GROUND WATER
SS MH	SANITARY SEWER MANHOLE

0 125' 250' 500'

SCALE: 1"=250'

Emerald, Inc.
Sumter, South Carolina

File Number: E562HSLO
Field Work Date(s): 08/28/02

SITE PLAN

Project:
HEATH SELF SERVE #2
N. GUIGNARD DRIVE AND MILLER ROAD
SUMTER, SOUTH CAROLINA

C:\E562HSLO.dwg, 09/05/2002 05:07:54 PM, 1:250.3

APPENDIX C

MONITORING WELL PURGE LOG

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-1

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: ft..
STATIC WATER LEVEL: ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 78°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
Well has been destroyed - could not find					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-2

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 24.00 ft.
STATIC WATER LEVEL: 20.10 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 78°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
8:05	1	27.2	60	5.85	Tan, cloudy, odor
8:10	2	27.6	70	6.00	Tan, cloudy, odor
8:15	3	27.0	60	5.82	Clearing
8:20	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-3

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 24.00 ft.
STATIC WATER LEVEL: 21.79 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 78°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
7:30	1	26.1	30	5.16	Tan, cloudy, no odor
7:40	2	27.1	30	5.35	Tan, cloudy, no odor
7:45	3	26.0	30	5.25	Clearing
7:50	Sample				
					DO = 0.0 mg/l @ 22.3°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-4

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 24.00 ft.
STATIC WATER LEVEL: 20.80 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Partly Cloudy 79°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 1.33'					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-5

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 45.00 ft.
STATIC WATER LEVEL: 21.18 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Partly Cloudy 79°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
9:10	1	27.5	40	5.52	Clear, no odor
9:15	2	26.9	35	5.35	Clear, no odor
9:20	3	26.6	35	5.31	Clear, no odor
9:25	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-6

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 22.00 ft.
STATIC WATER LEVEL: 19.75 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 78°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
8:35	1	27.4	40	5.29	Tan, cloudy, no odor
8:40	2	27.9	40	5.25	Tan, cloudy, no odor
8:45	3	27.1	40	5.16	Clearing
8:50	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-7

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 22.00 ft.
STATIC WATER LEVEL: 22.00 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 85°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 2.60'					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-8

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 23.00 ft.
STATIC WATER LEVEL: 22.60 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 86°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 2.64'					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-9

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 23.00 ft.
STATIC WATER LEVEL: 21.42 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 88°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 2.31'					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-10

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 23.00 ft.
STATIC WATER LEVEL: 21.58 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 88°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 2.93'					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-11

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 22.00 ft.
STATIC WATER LEVEL: 19.30 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 82°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
9:35	1	28.4	30	4.55	Tan, cloudy, no odor
9:40	2	28.8	30	4.34	Tan, cloudy, no odor
9:45	3	27.6	30	4.32	Clearing
9:50	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-12

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 30.00 ft.
STATIC WATER LEVEL: 22.73 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 78°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 2.65'					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-13

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 23.00 ft.
STATIC WATER LEVEL: 20.91 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 88°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
11:20	1	25.3	20	-	Tan, cloudy, no odor
11:25	2	25.3	20	-	Tan, cloudy, no odor
11:30	3	25.0	20	-	Clearing
11:35	Sample				
					DO = mg/l @ °C

* PH meter not working.

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-14

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 20.00 ft.
STATIC WATER LEVEL: 15.13 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 94°

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
13:25	1	28.2	120	-	Tan, cloudy, medium odor
13:30	2	28.1	160	-	Tan, cloudy, medium odor
13:35	3	27.9	160	-	Tan, cloudy, medium odor
13:40	Sample				
					DO = mg/l @ °C

* PH meter not working.

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-15

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 18.00 ft.
STATIC WATER LEVEL: 14.14 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 88°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
11:45	1	29.1	40	-	Orange, muddy, no odor
11:50	2	30.3	40	-	Orange, muddy, no odor
11:55	3	29.4	40	-	Orange, muddy, no odor
12:00	Sample				
					DO = mg/l @ °C

* PH meter not working.

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-16

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 20.00 ft.
STATIC WATER LEVEL: 16.07 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: JB, RL

Clear 85°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
10:05	1	26.3	50	8.39	Tan, cloudy, no odor
10:10	2	25.5	50	8.15	Tan, cloudy, no odor
10:20	3	26.4	50	8.25	Tan, cloudy, no odor
10:25	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-17

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: ft..
STATIC WATER LEVEL: ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 95°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
MW has been destroyed apparently during new construction - could not find.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-18

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 20.00 ft.
STATIC WATER LEVEL: 15.83 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 95°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
13:00	1	28.1	40	-	Tan, cloudy, mild odor
13:05	2	27.5	40	-	Tan, cloudy, mild odor
13:10	3	27.3	40	-	Tan, cloudy, mild odor
13:15	Sample				
					DO = mg/l @ °C

* PH meter not working.

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-19

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 13.00 ft.
STATIC WATER LEVEL: 6.04 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 88°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:05	1	28.1	30	-	Brown, cloudy, medium odor, slight sheen
15:10	2	27.9	25	-	Brown, cloudy, medium odor, slight sheen
15:15	3	27.9	30	-	Brown, cloudy, medium odor, slight sheen
15:20	Sample				
					DO = mg/l @ °C

* PH meter not working.

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-20

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/17/02

TOTAL WELL DEPTH: 13.00 ft.
STATIC WATER LEVEL: 4.67 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Cloudy 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:45	1	25.2	30	-	Brown, cloudy, mild odor
14:50	2	24.8	30	-	Brown, cloudy, mild odor
14:55	3	24.5	30	-	Brown, cloudy, mild odor
15:00	Sample				
					DO = mg/l @ °C

* PH meter not working.

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-21

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/18/02

TOTAL WELL DEPTH: 8.00 ft.
STATIC WATER LEVEL: 2.43 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
11:05	1	26.2	60	5.48	Black, muddy, no odor
11:10	2	25.3	50	5.56	Black, muddy, no odor
11:15	3	24.9	50	5.58	Black, muddy, no odor
11:20	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-22

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/18/02

TOTAL WELL DEPTH: 8.00 ft.
STATIC WATER LEVEL: 2.40 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
10:45	1	27.6	50	5.78	Black, muddy, no odor
10:50	2	26.7	50	5.62	Black, muddy, no odor
10:55	3	26.2	50	5.49	Black, muddy, no odor
11:05	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-23

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/18/02

TOTAL WELL DEPTH: 13.00 ft.
STATIC WATER LEVEL: 0.93 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
10:30	1	25.6	40	5.56	Black, muddy, no odor
10:35	2	25.0	40	5.42	Black, muddy, no odor
10:40	3	24.2	40	5.39	Black, muddy, no odor
10:45	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-24

PROJECT: HSS #2
STREET: 501 N. Guignard
CITY: Sumter
COUNTY: Sumter
STATE: South Carolina

DATE: 8/18/02

TOTAL WELL DEPTH: 13.00 ft.
STATIC WATER LEVEL: 0.65 ft.
WATER HEIGHT (Hw):
WELL DIAMETER (Dw):
WELL VOLUME (Vw):
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)
PURGE VOLUME:
EMERALD PERSONNEL: RL, JB

Clear 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
10:05	1	23.2	30	5.58	Black, muddy, no odor
10:10	2	22.7	35	5.41	Black, muddy, no odor
10:15	3	22.2	30	5.32	Black, muddy, no odor
10:20	Sample				
					DO = mg/l @ °C

APPENDIX D

ANALYTICAL RESULTS

APPENDIX E

DISPOSAL MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. GK4763 | 2. Page 1 of

3. Generator's Name and Mailing Address
HEATH SELF SERVE
GUIGNARD DRIVE
SUMTER, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name: G & K TANK SERVICES, INC | 6. US EPA ID Number . . . . . | A. Transporter's Phone 803-494-4593

7. Transporter 2 Company Name | 8. US EPA ID Number . . . . . | B. Transporter's Phone

9. Designated Facility Name and Site Address
G & K TANK SERVICES, INC
5070 BROAD STREET EXT
SUMTER, SC 29151
10. US EPA ID Number . . . . . | C. Facility's Phone 803-494-4593

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS PETROLEUM CONTAMINATED WATER	02	DR		
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERALD
PO BOX 3050
SUMTER, SC 29151

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name | Signature | Month | Day | Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Richard Smoot | Signature: Richard Smoot | Month 09 | Day 10 | Year 02

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: S. Collett | Signature: S. Collett | Month 9 | Day 10 | Year 02

GENERATOR

TRANSPORTER

FACILITY

ORIGINAL - RETURN TO GENERATOR



Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1-800-800-6840 • FAX: (803) 494-8598

Certificate of Disposal

Tons 2 Drums
Heath Self Servé
Sumter, SC

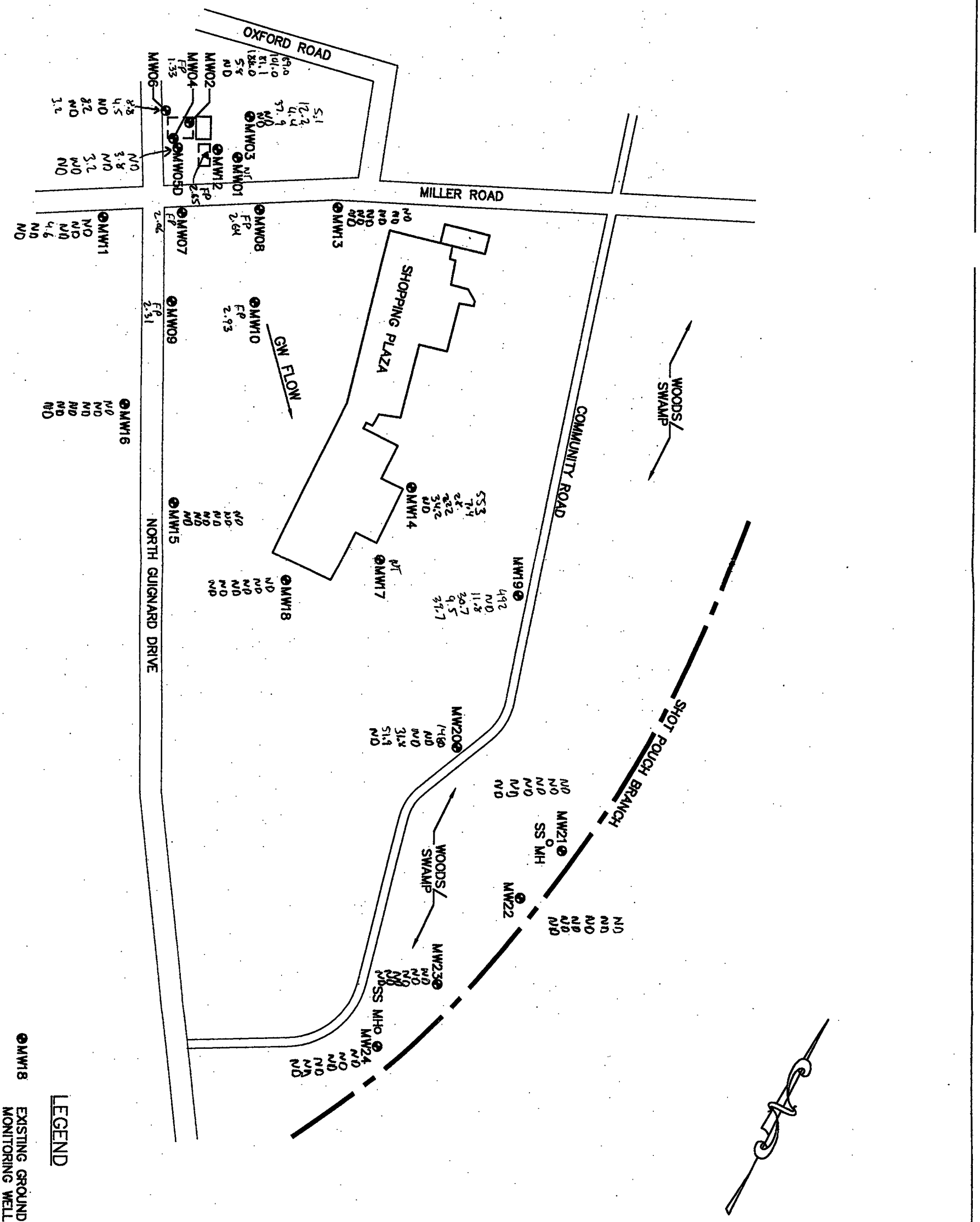
Contaminant NonHazardous Petroleum
Contaminanted Water

This is to cerify the above ~~soil~~ water has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by S. Gilley

Date 09/10/02

C:\E562HSLO.dwg, 09/05/2002 05:07:54 PM, 1:250.3



Project: HEATH SELF SERVE #2 N. GUIGNARD DRIVE AND MILLER ROAD SUMTER, SOUTH CAROLINA	SITE PLAN	File Number: E562HSLO Field Work Date(s): 08/28/02	Emerald, Inc. Sumter, South Carolina

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

BUREAU OF LAND AND WASTE MANAGEMENT
UNDERGROUND STORAGE TANK PROGRAM

Phone (803) 896-6240 Fax (803) 896-6245

SEP 2 5 2002

DOUG LEONARD
COCA COLA BOTTLING CO
4115 COCA COLA PLZ
CHARLOTTE NC 28211-3400

Re: Heath Self Serve #2, 501 N. Guignard Dr., Sumter, South Carolina
UST Permit #08932
Release reported July 31, 1996
Monitoring Report received September 23, 2002
Sumter County

Dear Mr. Leonard:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced Monitoring Report submitted by Emerald, Inc. The results of the report indicate that chemicals-of-concern (CoC) are present in concentrations above allowable risk-based screening levels (RBSLs) and that the horizontal extent of the CoC has not been defined northeast of Community Rd. Future necessary actions include additional assessment to determine what risk the CoC pose to human health and the environment.

Your contractor should complete and submit a Tier II Plan and Assessment Component Cost Agreement form within 30 days of the date of this letter. Please note that every component will not be necessary to complete the above scope of work. The SUPERB allowable cost for each component is included on the Assessment Component Cost Agreement.

On all correspondence regarding this site, please reference **UST Permit #08932.** Please be sure to include the requested information so that the appropriate approvals can be issued. **Note: Approval from the Program must be issued before work begins.** Please call me at (803) 896-6675 if you have questions or need additional information.

Sincerely,

Stephen R. Maxwell, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Division

cc: Ronny Lowder, Emerald, Inc.
PO Box 3050
Sumter, SC 29151

Technical File

SCANNED
UST PROGRAM
DOCKETING # 717

SCDHEC/BLWM/UST/SRM/092402

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Columbia, SC 29201-1708

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

Phone (803) 896-6240 Fax (803) 896-6245

DEC 16 2002

DOUG LEONARD
COCA COLA BOTTLING COMPANY CONSOLIDATED
PO BOX 31487
CHARLOTTE NC 28231

Re: HQ Heath Self Serve #2, 501 N. Guignard Dr., Sumter, SC
UST Permit #08932; Cost Agreement#17837; UMW-16818
Release Reported July 31, 1996
Tier II Assessment Plan & Cost Agreement Received December 10, 2002
Sumter County

Dear Mr. Leonard:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) recognizes your commitment to continue work at this site utilizing Emerald, Inc. The UST Program has reviewed the referenced Tier II assessment plan and cost agreement.

Assessment activities at the site should begin immediately upon receipt of this letter. Characterization of all exposure pathways should be completed using field-screening points. Based on the field screening results, monitoring wells should be installed in appropriate locations to monitor the migration of chemicals of concern (CoC) along these pathways and for rehabilitation. The required monitoring well approval is enclosed. Please contact the Program prior to well installation for concurrence regarding the final well locations.

Cost Agreement #17837 has been approved for the amount shown on the enclosed cost agreement form. Please note the following adjustments to the submitted cost agreement to insure compliance with SUPERB allowable costs:

- Item 11E has been denied; previous analyses showed non-detect.

Emerald, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

A Tier II Report and invoice are due within **90 days** from the date of this letter. An interim well drilling invoice may be submitted for this scope of work. If the invoice and completed report are not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

UST PROGRAM
DOCKETING # 121

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Program is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be preapproved by the Program for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Program grants preapproval for transportation of virgin petroleum-contaminated soil and groundwater from the referenced site to a permitted treatment facility. The contaminated soil or groundwater must be properly stored in labeled containers or covered with plastic as appropriate. The contaminated soil and/or groundwater must be accepted by the approved treatment facility. There can be no spillage or leakage in transport. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the final report. If the levels of petroleum contamination based on laboratory analysis are below risk-based screening levels, please contact the project manager for approval to dispose of soil and/or groundwater on-site. The SUPERB Account will not compensate for transportation or treatment of clean soil and/or groundwater.

On all correspondence concerning this site, please reference UST Permit #08932 and CA #17837. If there are any questions concerning this project, please contact me at (803) 896-6396 or (800) 826-5435 (within South Carolina only).

Sincerely,

John D. Abernathy, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Division

enc: Approved Cost Agreement
Monitoring Well Approval

cc: Technical (w/enc)
Read Files (w/out enc)
Emerald, Inc., P.O. Box 3150, Sumter, SC 29151(w/enc)

SCDHEC/SLFSS/UST/8932_tr2/JDA/12.12.02

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2600 Bull Street
Columbia, SC 29201-1708

Monitoring Well Installation Approval Form

Date of Issue: December 12, 2002 Approval No.: UMW-16818

Approval is hereby granted to: Emerald, Inc.
(On behalf of): Coca Cola Company
UST Permit #: 08932
County: Sumter

This approval is for the construction of four permanent monitoring wells and 120 feet of temporary wells in accordance with the construction plans and technical specifications outlined in the Tier II Assessment Document. The well(s) are to be constructed within the surficial aquifer for the intended purpose of monitoring groundwater quality and/or water level(s) at the referenced facility. Approval is provided with the following conditions:

1. The latitude and longitude, surveyed elevations, boring and/or geologist logs and actual (as built) construction details for each well will be submitted with the technical report.
2. Each well will be labeled with an identification plate constructed of a durable material affixed to the casing or surface pad where it is readily visible. The plate will provide monitoring well I.D.#, date of construction, static water level, and driller name and state certification #.
3. Well construction and sampling derived waste including, but not necessarily limited to, drill cuttings, drilling fluids, development and purge water should be managed properly and in compliance with applicable requirements. If containerized, each vessel should be clearly labeled with regard to contents, source, and date of activity.
4. **A minimum of forty-eight (48) hours prior to initiation of drilling activities, please provide notice to John Abernathy at (803) 896-6396 or abernajd@dhec.sc.gov**
5. Please provide groundwater quality analytical data (chemical analysis and/or water level(s)) and associated measurements (i.e., in-situ field measurements) in the technical report.
6. Monitoring wells and temporary monitoring wells will be installed by or under the direct supervision of a licensed well driller certified by the State of South Carolina.
7. Monitoring wells and temporary monitoring wells will be abandoned by or under the direct supervision of a licensed well driller certified by the State of South Carolina. Temporary monitoring wells shall not remain in place for longer than 30 days from the date of installation. Monitoring wells may be abandoned only upon concurrence by this Division.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and the Department of Health and Environmental Control Regulations R.61-71. Please remember to have a copy of this approval on the site during well installation.

Approved by:

John D. Abernathy, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Division
Underground Storage Tank Program
Bureau of Land and Waste Management

cc: Wateree EQC District
Doug Leonard, Coca Cola Company
Technical File

Approved Cost Agreement [redacted]37

Facility: 08932 H Q HEATH SELF SERVE 2
ABERNAJD

PO Number: 447417

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A	PLAN PREPARATION	1.0000	100.00	100.00
04 MOB/DEMOB						
		A	EQUIPMENT	2.0000	500.00	1,000.00
		B	PERSONNEL	3.0000	250.00	750.00
06 SOIL BORINGS (DRILLED)						
			SOIL BORINGS & FLD SCREENING	120.0000	17.00	2,040.00
08 ABANDONMENT						
			ABANDONMENT	120.0000	4.00	480.00
09 WELL INSTALLATION						
		A	WATER TABLE (HAND AUGER)	24.0000	20.00	480.00
		B	WATER TABLE (DRILLED)	35.0000	38.00	1,330.00
10 SAMPLE COLLECTION						
		A	GROUND WATER	26.0000	55.00	1,430.00
11 ANALYSES						
	GW GROUNDWATER	A	BTEX+NAPTH+MTBE	26.0000	100.00	2,600.00
		K	NITRATE	24.0000	20.00	480.00
		L	SULFATE	24.0000	20.00	480.00
		M	FERROUS IRON	24.0000	20.00	480.00
16 SUBSEQUENT SURVEY						
			SUBSEQUENT SURVEY	1.0000	260.00	260.00
17 DISPOSAL						
		A1	WASTEWATER - PURGING/SAMPLING	2.0000	90.00	180.00
		C	SOIL (TREATMENT/DISPOSAL)	4.0000	50.00	200.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	12,290.00	1,843.50
				Total Amount		14,133.50

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2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

Phone (803) 896-6240 Fax (803) 896-6245

APR 14 2003

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve #2, 501 N. Guignard Dr., Sumter, SC
UST Permit #08932
Sumter County
Notice of Violation

Dear Mr. Leonard:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control directed you to complete additional groundwater assessment in December 2002 with the report due on March 17, 2003. To date the required report has not been received. In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations the assessment must be conducted as documented chemicals of concern are above the risk-based-screening levels.

Implementation of this scope of work should proceed upon receipt of this correspondence. **The report must be submitted within 30 days from the date of this letter. If the report is not received in accordance with this schedule, enforcement procedures will be initiated.**

On all correspondence regarding this site, please reference UST Permit #08932. If you have any questions concerning this correspondence, please call me at (803) 896-6396 or 1-800-826-5435 (within South Carolina only).

Sincerely,

John D. Abernathy, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Division

cc: Emerald, Inc., PO Box 3050, Sumter, SC 29151
Technical File

SCDHEC/SLFSS/UST/8932_nov-mr/JDA/4.10.03

UST PROGRAM
DOCKETING # 131

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

[redacted]E TANK PROGRAM
BUREAU OF LAN WASTE MANAGEMENT

Phone (803) 896-6240 Fax (803) 896-6245

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UST PROGRAM
DOCKETING # 106 T

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

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TIER II ASSESSMENT REPORT
(ADDENDUM 03)
FORMER HEATH SELF SERVE #2
NORTH GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA
UST PERMIT# 08932

Prepared For:

South Carolina Department of Health & Environmental Control
Owner/Operator Assistance Section
Assessment and Corrective Action Branch
Division of UST Management
2600 Bull Street
Columbia, SC 29201

Prepared By:

EMERALD, INC.
214 W. Liberty Street
P.O. Box 3050
Sumter, SC 29151

July 30, 2003

UST PROGRAM
DOCKETING # 971

Signature Page

This document entitled "Tier II Assessment Report - Addendum 03", has been prepared for the South Carolina Department of Health and Environmental Control to describe investigative activities initiated at the former Heath Self Serve #2 site located in Sumter, South Carolina. It has been prepared by Emerald, Inc. in accordance with accepted quality control practices.

Emerald, Inc.

Ronny L. Lowder, President
Emerald, Inc.
UST Rehabilitation Contractor No. 67

Former Heath Self Serve #2
Sumter, SC

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1.0 Introduction

The Former Heath Self Serve #2 (HSS #2) site is located on the northeast corner of the intersection of North Guignard Drive and Miller Road in Sumter, S.C. The subject facility is currently closed but was previously operated as a gasoline convenience store (Phillips 66) in a heavily developed commercial area with a variety of commercial businesses nearby. Appendices A and B contain a General Location Map and a Site Map respectively.

Eleven USTs were previously used for onsite storage of petroleum products. One 10,000 gallon tank, one 6,000 gallon tank and seven 3,000 gallon tanks were used for the storage of gasoline. One 1,000 gallon tank was used for the storage of diesel fuel. One 550 gallon tank was used for the storage of used oil. Each of the eleven USTs have either been removed from the ground or permanently abandoned in place. New USTs were installed at the facility in December 1998. The USTs are still in-place but out-of-service.

A release of petroleum hydrocarbons was identified within the former tank pit area during closure assessment activities. In December of 1998, a Standard Limited Assessment (SLA) was conducted by personnel from Kleen Sites Geoservices, Inc. (KSG) on the subject property at the request of the SCDHEC. Following a review of the SLA, SCDHEC requested that a Rapid Assessment should be conducted in a letter dated May 13, 1999. KSG personnel implemented Rapid Assessment activities at the subject property in order to better define the vertical and horizontal extent of the soil and ground water contamination plumes. A Rapid Assessment Report dated November 19, 1999 was submitted to the SCDHEC Bureau of UST Management for review and comment.

Data generated during the Rapid Assessment indicated the presence of a large free

product plume that originated from the southern portion of the subject property. Field measurements indicated that the free product plume extended beneath Miller Road in a southerly direction for approximately 300 feet. The dissolved phase ground water contaminant plume was found to be present beneath much of the Palmetto Plaza property extending approximately 875 feet from the source area along North Guignard Drive. However, the lateral extent of the dissolved phase plume remained undefined in the area located southeast of the former Heath Self Serve #2 facility. The SCDHEC requested by letter dated August 10, 2000, that additional assessment work should be conducted to generate current data on free product and dissolved phase plumes and to define the downgradient extent of ground water contamination. Four additional shallow ground water monitoring wells were installed in October 2000. A Rapid Assessment Report - Addendum 01 dated November 28, 2000, was submitted to the SCDHEC Bureau of UST Management.

Data generated during the October 2000 field event revealed that the dissolved phase ground water contaminant plume extended at least 600 feet in a southeasterly (i.e. downgradient) direction from the former UST pits. Impact to a tributary of Shot Pouch Creek was also confirmed. Additional assessment work was requested in a SCDHEC letter addressed to Mr. Doug Leonard of Coca-Cola Bottling Company. Four additional shallow ground water monitoring wells were installed under the direction of KSG personnel adjacent to Shot Pouch Creek during a Tier II Assessment Report (Addendum 02) dated September 10, 2001.

Subsequently, SCDHEC requested a ground water sampling event in a letter to Mr. Leonard dated June 7, 2002. Such event was conducted on August 17 and 18, 2002.

During the August 2002 sampling event, six monitoring wells were observed to contain free product. In addition, two monitoring wells (MW1 and MW17) could not be located and were apparently destroyed during construction activities. MW1 was located in the former tank pit area and MW17 was located behind Palmetto Plaza, southeast of the source area.

In December 2002, SCDHEC requested additional assessment along the northern boundary of the contaminant plume including Shot Pouch Creek plus a ground water sampling event. This report covers the installation of three additional monitoring wells along with the sampling event.

2.0 Site Activities

Emerald, Inc. personnel conducted the additional Tier II Assessment activities to define the lateral extent of dissolved phase ground water contamination along the northern boundary of the plume extending from Palmetto Plaza to Shot Pouch Creek. Field activities required to generate site-specific information for the HSS #2 site are described in detail within this section.

2.1 Field Screening

During this event, nine (9) temporary wells were utilized at the subject facility to check ground water quality at selected locations (see map in Appendix C). The temporary wells were northeast of Palmetto Plaza, along Community Road and along the western side of Shot Pouch Creek. A Geoprobe® rig was used to advance nine (9) temporary wells to various depths below ground surface. A decontaminated, stainless steel bailer was inserted inside the Geoprobe® rods and used for the collection of ground water samples. Once ground water collection activities were completed at each Geoprobe® location, the

rods were removed from the ground and each borehole was properly abandoned by filling with a lean grout mixture to ground surface. A copy of the Field Screening Log is provided in Appendix C.

All ground water samples collected during the Field Screening event at the HSS #2 site were packed in crushed ice immediately following collection. A Chain of Custody was completed prior to offsite sample removal. Samples were shipped to Test America, Inc. and analyzed for benzene, toluene, ethyl benzene, total xylenes (BTEX), naphthalene and MTBE using EPA Method 8260B. Table 1 below shows the analytical results for the field screening at each point. Analytical data sheets for each ground water sample are provided in Appendix E.

Table 1
Field Screening Results (Ground Water) - Addendum 03
Former HSS #2

FIELD SCREENING POINT	Benzene	Toluene	Ethyl Benzene	Xylene	MTBE	Naphthalene
GP - 1	ND	ND	ND	ND	ND	ND
GP - 2	ND	ND	ND	ND	ND	ND
GP - 3	ND	ND	ND	ND	ND	ND
GP - 4	ND	ND	ND	ND	ND	ND
GP - 5	ND	ND	ND	ND	ND	ND
GP - 6	ND	ND	ND	ND	ND	ND
GP - 7	ND	ND	ND	ND	3.0	ND
GP - 8	ND	1.0	ND	ND	ND	ND
GP - 9	ND	ND	ND	ND	21.4	ND

NOTE: GP - Geoprobe
ND - Not Detected at the report limit
All results are ug/l.

2.2 Monitoring Well Installation

After receiving the field screening results for the ground water samples, potential monitoring well locations were marked on a site map and sent to the DHEC project manager along with the analytical results for approval. Upon confirmation from the project manager, the drilling schedule was determined. All drilling activities were performed by a licensed SC well driller using a drilling rig equipped with hollow stem augers. Three (3) shallow wells (MWs 25,26,27) were installed (see site map in Appendix B) as per the approval of the project manager.

2.3 Ground Water Elevations

Prior to well development or sample collection, static water levels were taken to the nearest 0.01 foot using a graduated electronic indicator that indicated liquid phase hydrocarbon (LPH) levels as well. All measurements were taken from the surveyed top of the well casing so they could be referenced to a common datum. (Free product was observed in six monitoring wells during this event.) Using the static water level measurements and the surveyed top of the well casing measurements as determined by a registered surveyor, ground water elevations were calculated. Table 2 on the following page shows the ground water elevation for each monitoring well at the former HSS #2 site during this event. The direction of ground water flow continues to be toward the southeast.

2.4 Ground Water Sampling

Ground water samples were collected from each monitoring well on July 17 and 18, 2003. Prior to sampling, all wells were purged to ensure that a representative sample of the aquifer was collected (see Well Purge Logs - Appendix D). All wells were purged and sampled with a clear, disposable PVC bailer. Dissolved oxygen readings were taken at each well

Table 2 - Ground Water Elevations
Former Heath Self Serve #2 Site

Date: 7/17/03 and 7/18/03

WELL ID#	STATIC WATER LEVEL*	FREE PRODUCT THICKNESS	TOP OF CASING ELEVATIONS	GROUND WATER ELEVATION
MW01	Well not found		99.88	-
MW02	17.12	ND	Not Available	
MW03	18.83	ND	101.09	82.26
MW04	16.70	0.30'	98.72	82.02
MW05	17.45	ND	98.83	81.38
MW06	16.74	ND	98.98	82.24
MW07	17.15	0.35'	98.64	81.49
MW08	17.85	0.03'	99.58	81.73
MW09	16.85	0.12'	97.93	81.08
MW10	17.56	1.07'	97.71	80.15
MW11	15.96	ND	97.60	81.64
MW 12	17.90	0.30'	99.68	81.78
MW 13	18.21	ND	99.88	81.67
MW 14	12.81	ND	91.12	78.31
MW 15	11.34	ND	91.29	79.95
MW 16	13.02	ND	94.15	81.13
MW 17	Well not found		89.83	-
MW 18	13.39	ND	92.29	78.90
MW 19	4.45	ND	76.76	72.31
MW 20	2.71	ND	76.16	73.45
MW 21	0.70	ND	73.49	72.79
MW 22	0.85	ND	73.79	72.94
MW 23	0.10	ND	73.06	72.96
MW 24	0.08	ND	72.25	72.17
MW25	10.08	ND	95.48	85.40
MW26	5.51	ND	83.42	77.91
MW27	2.05	ND	78.96	76.91

Notes: * - Depth below top of Casing, in feet
ND - Not Detected

location. Following well purging activities, a ground water sample was collected from each well and placed into appropriate containers. All purge waters were placed in 55 gallon drums and delivered to G&K Tank Services in Sumter, SC for disposal (See Appendix F for a copy of the waste disposal manifest.)

All ground water samples were packed in crushed ice and shipped to Test America, Inc. for chemical analysis. Each sample was analyzed for BTEX, MTBE, and naphthalene using EPA Method 8260B, Nitrates/Sulfates and Ferrous Iron. A summary of the ground water analytical is provided in Table 3.

3.0 Analytical Results

Table 3 shows the analytical results for the ground water samples collected. Appendix E contains the Analytical Results from the laboratory.

Table 3 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW01* 8-02	MW01* 7-03	MW02 8-17-02	MW02 7-17-03	MW03 8-17-02	MW03 7-17-03
Benzene (µg/l)	NT	NT	69.0	280	5.1	1.3
Ethylbenzene (µg/l)	NT	NT	81.1	726	4.4	ND
MTBE (µg/l)	NT	NT	ND	ND	ND	ND
Naphthalene (µg/l)	NT	NT	5.80	6.60	ND	ND
Toluene (µg/l)	NT	NT	101	680	12.1	1.6
Total Xylenes (µg/l)	NT	NT	188	2120	37.9	11.5
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	NT	NT	NT	NT	ND	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	NT	NT	7650	NT	480
Nitrates (mg/l)	NT	NT	NT	ND	NT	0.480
Sulfates (mg/l)	NT	NT	NT	44.0	NT	ND
Dissolved Oxygen (mg/l)	NT	NT	NT	0.15	NT	2.71
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW04 8-17-02	MW04 7-17-03	MW05 8-17-02	MW05 7-17-03	MW06 8-17-02	MW06 7-17-03
Benzene (µg/l)	FP - 0.33'	FP - 0.30'	ND	ND	8.8	48.5
Ethylbenzene (µg/l)	FP	FP	ND	ND	ND	31.8
MTBE (µg/l)	FP	FP	ND	ND	3.2	5.9
Naphthalene (µg/l)	FP	FP	ND	ND	ND	ND
Toluene (µg/l)	FP	FP	3.8	ND	4.5	33.2
Total Xylenes (µg/l)	FP	FP	3.2	1.5	8.2	129
Methane (µg/l)	FP	FP	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	FP	FP	ND	NT	ND	NT
PAH - Naphthalene (µg/l)	FP	FP	NT	NT	NT	NT
Acenaphthene (µg/l)	FP	FP	NT	NT	NT	NT
Phenanthrene (µg/l)	FP	FP	NT	NT	NT	NT
Flouranthene (µg/l)	FP	FP	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	FP	FP	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	FP	FP	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	FP	FP	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	FP	FP	NT	NT	NT	NT
Acenaphthylene (µg/l)	FP	FP	NT	NT	NT	NT
Fluorene (µg/l)	FP	FP	NT	NT	NT	NT
Anthracene (µg/l)	FP	FP	NT	NT	NT	NT
Pyrene (µg/l)	FP	FP	NT	NT	NT	NT
Chrysene (µg/l)	FP	FP	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	FP	FP	NT	NT	NT	NT
Dibenzo(a,h)anthracene	FP	FP	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	FP	FP	NT	NT	NT	NT
Ferrous Iron (mg/l)	FP	FP	NT	100	NT	11000
Nitrates (mg/l)	FP	FP	NT	1.07	NT	ND
Sulfates (mg/l)	FP	FP	NT	ND	NT	11.5
Dissolved Oxygen (mg/l)	FP	FP	NT	3.90	NT	0.39
Lead (mg/l)	FP	FP	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW07 8-17-02	MW07 7-17-03	MW08 8-17-02	MW08 7-17-03	MW09 8-17-02	MW09 7-17-03
Benzene (µg/l)	FP - 2.60'	FP - 0.35'	FP - 2.64'	FP - 0.03'	FP - 2.31'	FP - 0.12'
Ethylbenzene (µg/l)	FP	FP	FP	FP	FP	FP
MTBE (µg/l)	FP	FP	FP	FP	FP	FP
Naphthalene (µg/l)	FP	FP	FP	FP	FP	FP
Toluene (µg/l)	FP	FP	FP	FP	FP	FP
Total Xylenes (µg/l)	FP	FP	FP	FP	FP	FP
Methane (µg/l)	FP	FP	FP	FP	FP	FP
1, 2 Dibromoethane (µg/l)	FP	FP	FP	FP	FP	FP
PAH - Naphthalene (µg/l)	FP	FP	FP	FP	FP	FP
Acenaphthene (µg/l)	FP	FP	FP	FP	FP	FP
Phenanthrene (µg/l)	FP	FP	FP	FP	FP	FP
Flouranthene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)anthracene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(b)fluoranthene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)pyrene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(ghi)perylene (µg/l)	FP	FP	FP	FP	FP	FP
Acenaphthylene (µg/l)	FP	FP	FP	FP	FP	FP
Fluorene (µg/l)	FP	FP	FP	FP	FP	FP
Anthracene (µg/l)	FP	FP	FP	FP	FP	FP
Pyrene (µg/l)	FP	FP	FP	FP	FP	FP
Chrysene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(k)fluoranthene (µg/l)	FP	FP	FP	FP	FP	FP
Dibenzo(a,h)anthracene	FP	FP	FP	FP	FP	FP
Indeno(1,2,3-cd)pyrene	FP	FP	FP	FP	FP	FP
Ferrous Iron (mg/l)	FP	FP	FP	FP	FP	FP
Nitrates (mg/l)	FP	FP	FP	FP	FP	FP
Sulfates (mg/l)	FP	FP	FP	FP	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	FP	FP	FP	FP
Lead (mg/l)	FP	FP	FP	FP	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW10 8-17-02	MW10 7-17-03	MW11 8-17-02	MW11 7-18-03	MW12 8-17-02	MW12 7-17-03
Benzene (µg/l)	FP - 2.93'	FP - 1.07'	ND	ND	FP - 2.65'	FP - 0.30'
Ethylbenzene (µg/l)	FP	FP	ND	1.1	FP	FP
MTBE (µg/l)	FP	FP	ND	ND	FP	FP
Naphthalene (µg/l)	FP	FP	ND	ND	FP	FP
Toluene (µg/l)	FP	FP	ND	2.2	FP	FP
Total Xylenes (µg/l)	FP	FP	4.6	7.0	FP	FP
Methane (µg/l)	FP	FP	NT	NT	FP	FP
1, 2 Dibromoethane (µg/l)	FP	FP	ND	NT	FP	FP
PAH - Naphthalene (µg/l)	FP	FP	NT	NT	FP	FP
Acenaphthene (µg/l)	FP	FP	NT	NT	FP	FP
Phenanthrene (µg/l)	FP	FP	NT	NT	FP	FP
Flouranthene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(a)anthracene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(b)fluoranthene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(a)pyrene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(ghi)perylene (µg/l)	FP	FP	NT	NT	FP	FP
Acenaphthylene (µg/l)	FP	FP	NT	NT	FP	FP
Fluorene (µg/l)	FP	FP	NT	NT	FP	FP
Anthracene (µg/l)	FP	FP	NT	NT	FP	FP
Pyrene (µg/l)	FP	FP	NT	NT	FP	FP
Chrysene (µg/l)	FP	FP	NT	NT	FP	FP
Benzo(k)fluoranthene (µg/l)	FP	FP	NT	NT	FP	FP
Dibenzo(a,h)anthracene	FP	FP	NT	NT	FP	FP
Indeno(1,2,3-cd)pyrene	FP	FP	NT	NT	FP	FP
Ferrous Iron (mg/l)	FP	FP	NT	9100	FP	FP
Nitrates (mg/l)	FP	FP	NT	ND	FP	FP
Sulfates (mg/l)	FP	FP	NT	ND	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	NT	0.46	FP	FP
Lead (mg/l)	FP	FP	NT	NT	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW13 8-17-02	MW13 7-17-03	MW14 8-17-02	MW14 7-18-03	MW15 8-17-02	MW15 7-18-03
Benzene (μg/l)	ND	ND	553	33.1	ND	ND
Ethylbenzene (μg/l)	ND	ND	28.0	ND	ND	ND
MTBE (μg/l)	ND	ND	ND	ND	ND	ND
Naphthalene (μg/l)	ND	ND	34.2	ND	ND	ND
Toluene (μg/l)	ND	ND	7.4	ND	ND	ND
Total Xylenes (μg/l)	ND	1.5	222	3.0	ND	ND
Methane (μg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (μg/l)	ND	NT	0.05	NT	ND	NT
PAH - Naphthalene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (μg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (μg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (μg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (μg/l)	NT	NT	NT	NT	NT	NT
Fluorene (μg/l)	NT	NT	NT	NT	NT	NT
Anthracene (μg/l)	NT	NT	NT	NT	NT	NT
Pyrene (μg/l)	NT	NT	NT	NT	NT	NT
Chrysene (μg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	110	NT	9250	NT	ND
Nitrates (mg/l)	NT	0.640	NT	2.79	NT	1.05
Sulfates (mg/l)	NT	ND	NT	2.80	NT	ND
Dissolved Oxygen (mg/l)	NT	3.99	NT	0.34	NT	1.89
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW16 8-17-02	MW16 7-18-03	MW17* 8-17-02	MW17* 7-18-03	MW18 8-17-02	MW18 7-18-03
Benzene (µg/l)	ND	ND	NT	NT	ND	ND
Ethylbenzene (µg/l)	ND	ND	NT	NT	ND	ND
MTBE (µg/l)	ND	ND	NT	NT	ND	ND
Naphthalene (µg/l)	ND	ND	NT	NT	ND	ND
Toluene (µg/l)	ND	ND	NT	NT	ND	ND
Total Xylenes (µg/l)	ND	ND	NT	NT	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	ND
1, 2 Dibromoethane (µg/l)	ND	NT	NT	NT	ND	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	ND	NT	NT	NT	290
Nitrates (mg/l)	NT	0.720	NT	NT	NT	1.30
Sulfates (mg/l)	NT	5.40	NT	NT	NT	ND
Dissolved Oxygen (mg/l)	NT	3.40	NT	NT	NT	0.14
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW19 8-17-02	MW19 7-18-03	MW20 8-17-02	MW20 7-18-03	MW21 8-18-02	MW21 7-18-03
Benzene (µg/l)	492	760	1480	874	ND	ND
Ethylbenzene (µg/l)	11.8	ND	ND	1.9	ND	ND
MTBE (µg/l)	39.7	30.8	ND	ND	ND	ND
Naphthalene (µg/l)	9.50	16.1	51.9	46.1	ND	ND
Toluene (µg/l)	ND	8.5	ND	2.7	ND	ND
Total Xylenes (µg/l)	30.7	267	31.8	31.0	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	0.04	NT	0.74	NT	ND	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	1590	NT	610	NT	35600
Nitrates (mg/l)	NT	ND	NT	0.140	NT	ND
Sulfates (mg/l)	NT	ND	NT	ND	NT	116
Dissolved Oxygen (mg/l)	NT	0.51	NT	0.58	NT	NT
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW22 8-18-02	MW22 7-18-03	MW23 8-18-02	MW23 7-18-03	MW24 8-18-02	MW24 7-18-03
Benzene (µg/l)	ND	ND	ND	ND	ND	ND
Ethylbenzene (µg/l)	ND	ND	ND	ND	ND	ND
MTBE (µg/l)	ND	ND	ND	ND	ND	ND
Naphthalene (µg/l)	ND	ND	ND	ND	ND	ND
Toluene (µg/l)	ND	ND	ND	ND	ND	ND
Total Xylenes (µg/l)	ND	ND	ND	ND	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	ND	NT	ND	NT	ND	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	6260	NT	9450	NT	9600
Nitrates (mg/l)	NT	ND	NT	ND	NT	ND
Sulfates (mg/l)	NT	14.0	NT	24.0	NT	105
Dissolved Oxygen (mg/l)	NT	NT	NT	NT	NT	NT
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 3 - Continued
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03 and 7/18/03

Chemical of Concern (units)	MW25 7-18-03	MW26 7-18-03	MW27 7-18-03
Benzene (μg/l)	ND	ND	ND
Ethylbenzene (μg/l)	ND	ND	ND
MTBE (μg/l)	ND	ND	2.0
Naphthalene (μg/l)	ND	ND	ND
Toluene (μg/l)	ND	ND	ND
Total Xylenes (μg/l)	ND	ND	ND
Methane (μg/l)	NT	NT	NT
1, 2 Dibromoethane (μg/l)	NT	NT	NT
PAH - Naphthalene (μg/l)	NT	NT	NT
Acenaphthene (μg/l)	NT	NT	NT
Phenanthrene (μg/l)	NT	NT	NT
Flouranthene (μg/l)	NT	NT	NT
Benzo(a)anthracene (μg/l)	NT	NT	NT
Benzo(b)fluoranthene (μg/l)	NT	NT	NT
Benzo(a)pyrene (μg/l)	NT	NT	NT
Benzo(ghi)perylene (μg/l)	NT	NT	NT
Acenaphthylene (μg/l)	NT	NT	NT
Fluorene (μg/l)	NT	NT	NT
Anthracene (μg/l)	NT	NT	NT
Pyrene (μg/l)	NT	NT	NT
Chrysene (μg/l)	NT	NT	NT
Benzo(k)fluoranthene (μg/l)	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT
Ferrous Iron (mg/l)	130	1520	262000
Nitrates (mg/l)	4.67	0.770	ND
Sulfates (mg/l)	ND	ND	ND
Dissolved Oxygen (mg/l)	3.27	4.42	NT
Lead (mg/l)	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

4.0 Conclusions

During this event, six monitoring wells were found to contain free product; however, the level of free product in each well had diminished considerably since the last sampling event in August 2002. The installation of the three monitoring wells (MW25-27) along the northern boundary of the contaminant plume was successful in defining the lateral extent of the plume in that area.

5.0 Appendices

A) General Location Map

B) Site Map

C) Field Screening Map

D) Monitoring Well Purge Log

E) Analytical Results

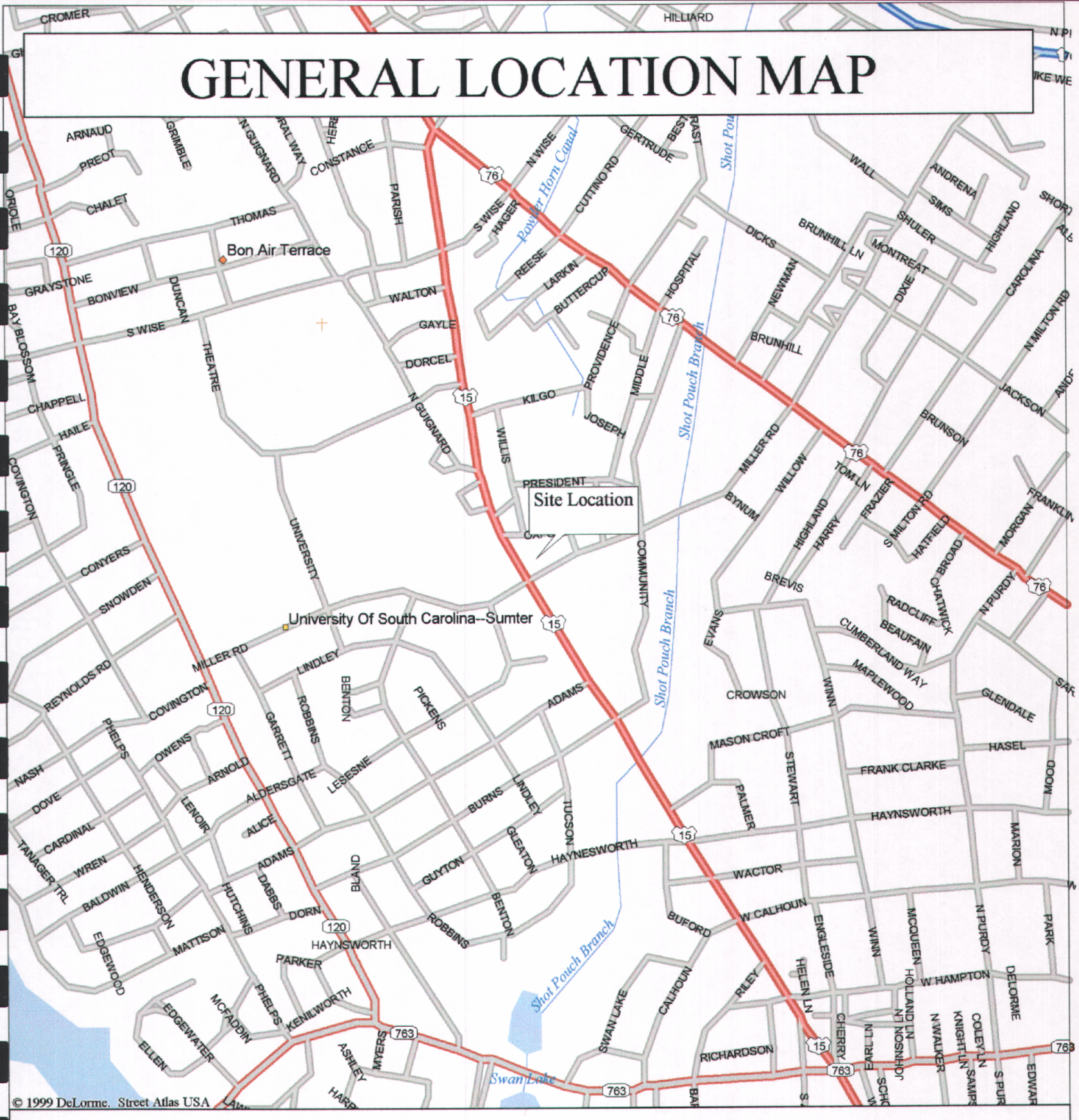
F) Disposal Manifest

APPENDICES

APPENDIX A

GENERAL LOCATION MAP

GENERAL LOCATION MAP



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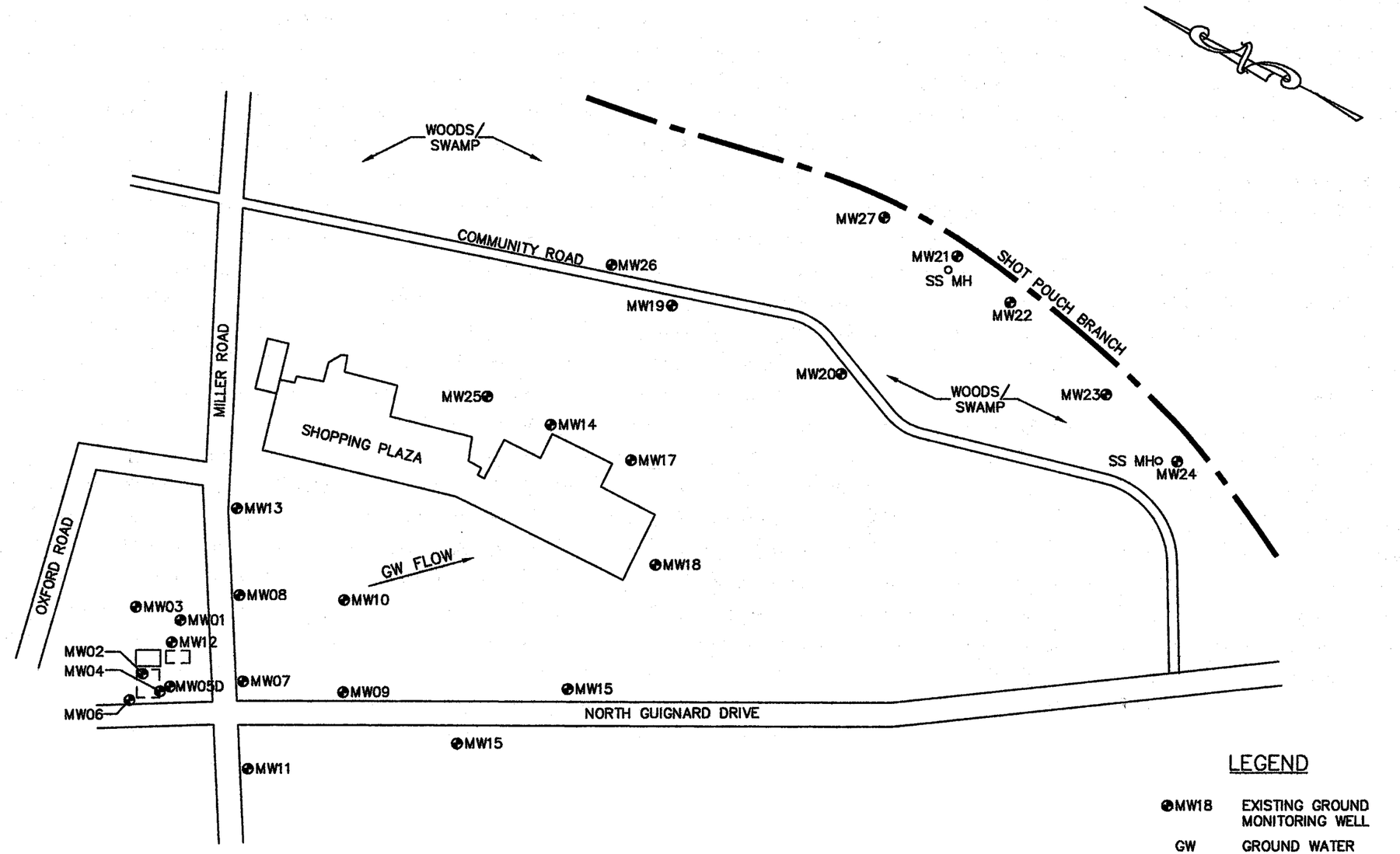
Mag 15.00
Thu Jul 31 09:49 2003
Scale 1:15,625 (at center)
1000 Feet
500 Meters

- Local Road
- State Route
- Interstate/Limited Access
- US Highway
- Point of Interest
- Locale
- Cemetery
- Water
- River/Canal

APPENDIX B

SITE MAP



Emerald, Inc.
Sumter, South Carolina

File Number:
E562HSLO

Field Work Date(s):
08/28/02

SITE PLAN

Project:
HEATH SELF SERVE #2
N. GUIGNARD DRIVE AND MILLER ROAD
SUMTER, SOUTH CAROLINA

APPENDIX C

FIELD SCREENING MAP

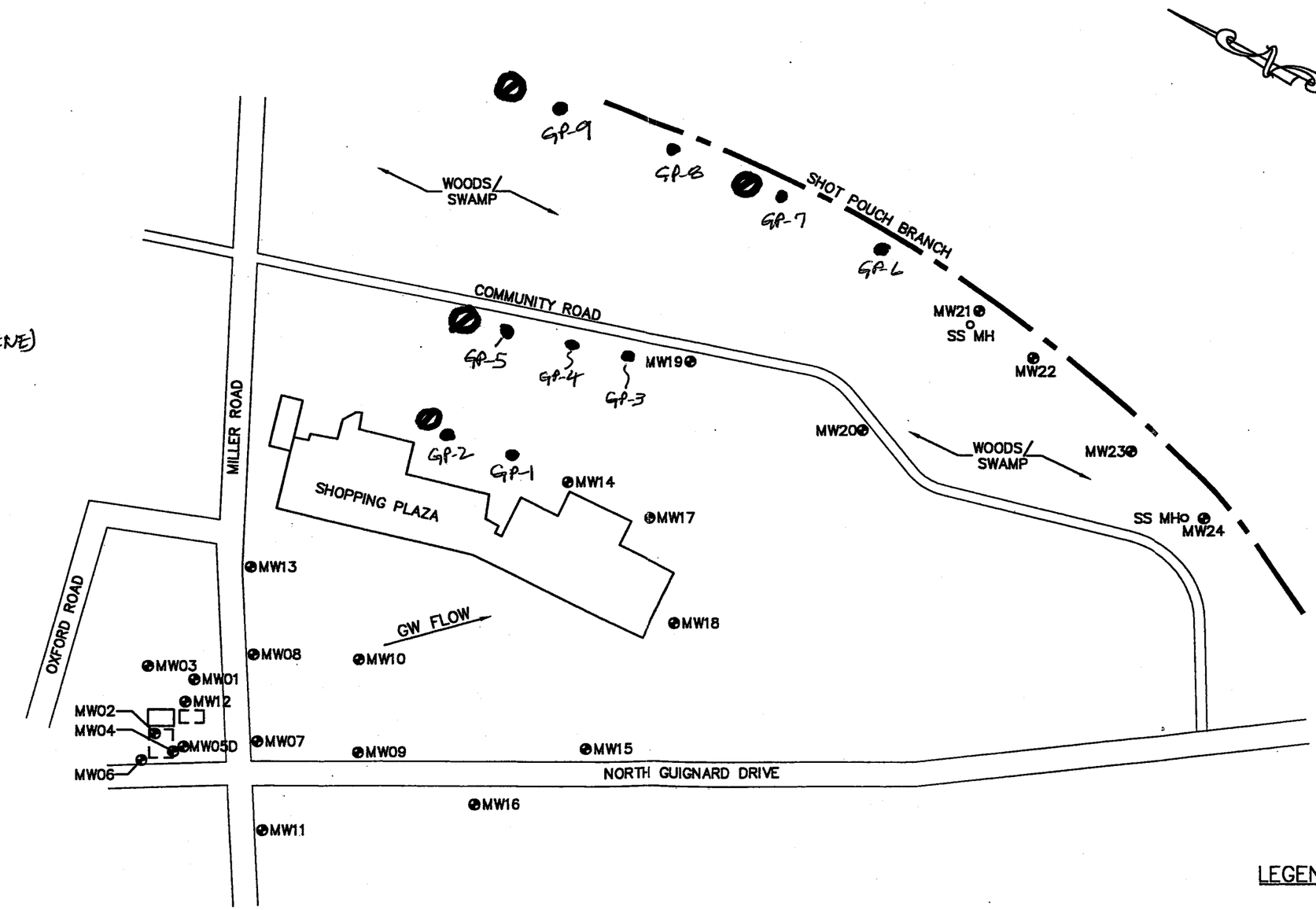
FIELD SCREENING
ANALYTICAL RESULTS

GP#	B	N	M
GP-1	ND	ND	ND
GP-2	ND	ND	ND
GP-3	ND	ND	ND
GP-4	ND	ND	ND
GP-5	ND	ND	ND
GP-6	ND	ND	ND
GP-7	ND	ND	ND — 3.0
GP-8	1.0*	ND	ND — *(TOLUENE)
GP-9	ND	ND	21.4

B - BTEX
N - NAPHTHALENE
M - MTBE

ALL RESULTS ARE ug/L

• [redacted] FIELD SCREENING POINTS
• PROPOSED MW LOCATIONS



LEGEND

MW18	EXISTING GROUND MONITORING WELL
GW	GROUND WATER
SS MH	SANITARY SEWER MANHOLE

0 125' 250' 500'
SCALE: 1"=250'

C:\E562HSLO.dwg, 09/05/2002 05:07:54 PM, 1:250.3

Emerald, Inc.
Sumter, South Carolina

File Number: E562HSLO
Field Work Date(s): [redacted] 4/30/03

SITE PLAN

Project:
HEATH SELF SERVE #2
N. GUIGNARD DRIVE AND MILLER ROAD
SUMTER, SOUTH CAROLINA

APPENDIX D

MONITORING WELL PURGE LOG

FIELD SCREENING LOG

Site: HSS #2

Date: 4/30/03

Personnel: Ronny Lowder - Emerald; Rhashaad - Saedacco

LOCATION	TIME	DEPTH	HNU	COMMENTS
GP-1	13:50	24'	-	Orange, no sheen, no odor
GP-2	14:25	20'	-	Tan, no sheen, no odor
GP-3	15:45	12'	-	Tan, no sheen, no odor
GP-4	16:00	8'	-	Brown, no sheen, no odor
GP-5	16:35	12'	-	Tan, no sheen, no odor
GP-6	18:00	5'	-	Black, no sheen, no odor
GP-7	18:10	5'	-	Black, no sheen, no odor
GP-8	18:20	6'	-	Black, no sheen, no odor
GP-9	18:45	6'	-	Black, no sheen, no odor

FIELD ACTIVITY LOG - MW INSTALLATION

Site: HSS #2

Date: 5/21/03

Personnel: Emerald - Ronny Lowder; Saedacco - Tate, Rhashaad, Michael

LOCATION	TIME	SPOON	PID	SOIL DESCRIPTION	MOISTURE CONTENT	COMMENTS
MW25	10:35	4'-6'	0	Tan silty sand with orange clay	Dry	4-3-3-4
	10:45	9'-11'	0	Tan to gray sand	Dry to damp	3-6-11-14
	10:53	14'-16'	0	Tan sand	Wet	5-14-15-11
	Set MW @ 16' with 10' screen.					
MW26	14:00	4'-6'	0	Brown silty sand	Dry	2-6-5-2
	14:05	9'-11'	0	Brown sand	Wet	-
	Set MW @ 15' with 10' screen.					
MW27	15:40	Grassy surface - hand auger				
		0-4'	0	Black silty sand	Dry to damp	-
		4'-8'	0	Black sand	Wet	
	Set MW @ 7' with 5' screen.					

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW01

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 83°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
Monitoring well has been destroyed					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW02

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 24.00 ft.

STATIC WATER LEVEL: 17.12 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: 3 gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 85°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
9:35	1	23.0	210	5.90	Cloudy, no sheen, heavy odor
9:40	2	23.0	230	6.04	Cloudy, no sheen, heavy odor
9:45	3	22.5	210	6.09	Cloudy, no sheen, heavy odor
9:50	Sample				

DO = 0.15 mg/l @ 22.2 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW03

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 24.00 ft.

STATIC WATER LEVEL: 18.83 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: 3 gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 83°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
8:40	1	23.5	30	5.09	Cloudy, no sheen, no odor
8:45	2	22.1	30	5.21	Cloudy, no sheen, no odor
8:50	3	22.2	30	5.20	Cloudy, no sheen, no odor
8:55	Sample				

DO = 2.71 mg/l @ 20.17 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW04

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 24.00 ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 87°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 0.30 ft.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW05

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 45.00 ft.

STATIC WATER LEVEL: 17.45 ft.

WATER HEIGHT (Hw): ____ ft.

WELL DIAMETER (Dw): ____ ft.

WELL VOLUME (Vw): ____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: 3 gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 88°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
10:30	1	24.0	-	5.69	Clear, no sheen, no odor
10:35	2	23.6	-	5.42	Clear, no sheen, no odor
10:40	3	23.5		5.34	Clear, no sheen, no odor
10:45	Sample				

DO = 3.90 mg/l @ 22.3 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW06

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 22.00 ft.

STATIC WATER LEVEL: 16.74 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: 3 gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
11:30	1	23.9	90	5.69	Clear, no sheen, heavy odor
11:35	2	24.0	100	5.77	Clear, no sheen, heavy odor
11:40	3	24.2	90	5.71	Clear, no sheen, heavy odor
11:45	Sample				

DO = 0.39 mg/l @ 22.2 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW07

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 22.00 ft.

STATIC WATER LEVEL: 17.15 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 91°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 0.35 ft.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW08

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 17.85 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 91°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 0.03 ft.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW09

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 16.85 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Cloudy 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 0.12 ft.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW10

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 23.00 ft,

STATIC WATER LEVEL: 17.56 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 1.07 ft.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW11

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 22.00 ft.

STATIC WATER LEVEL: 15.96 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
10:25	1	23.2	50	5.61	Clear, no sheen, mild odor
10:30	2	23.1	50	5.47	Clear, no sheen, mild odor
10:33	3	22.9	50	5.41	Clear, no sheen, mild odor
10:35	Sample				

DO = 0.46 mg/l @ 21.9 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW12

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 30.00 ft.

STATIC WATER LEVEL: 17.90 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 83°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
FP - 0.30 ft.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW13

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/17/03

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 18.21 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: 3 gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 91°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
13:25	1	23.9	35	5.31	Clear, no sheen, no odor
13:30	2	23.6	30	5.32	Clear, no sheen, no odor
13:35	3	23.4	30	5.25	Clear, no sheen, no odor
13:40	Sample				

DO = 3.99 mg/l @ 21.9°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW14

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 20.00 ft.

STATIC WATER LEVEL: 12.81 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
12:35	1	23.1	70	5.37	Clear, no sheen, no odor
12:38	2	22.9	70	5.21	Clear, no sheen, no odor
12:42	3	22.7	70	5.09	Clear, no sheen, no odor
12:45	Sample				

DO = 0.34 mg/l @ 21.2°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW15

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 18.00 ft.

STATIC WATER LEVEL: 11.34 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 80°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
8:35	1	26.7	55	5.74	Cloudy, no sheen, no odor
8:40	2	26.5	50	5.21	Cloudy, no sheen, no odor
8:45	3	26.2	50	5.08	Cloudy, no sheen, no odor
8:50	Sample				

DO = 1.89 mg/l @ 24.2 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW16

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: _____

TOTAL WELL DEPTH: 20.00 ft.

STATIC WATER LEVEL: 13.02 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
11:00	1	22.8	50	5.54	Cloudy, no sheen, no odor
11:05	2	22.3	60	5.32	Cloudy, no sheen, no odor
11:10	3	22.2	60	5.24	Cloudy, no sheen, no odor
11:15	Sample				

DO = 3.40 mg/l @ 21.3 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW17

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: _____

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 83°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
MW has been destroyed apparently during new construction - could not find.					

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW18

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 20.00 ft.

STATIC WATER LEVEL: 13.39 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: 3 gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 83°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
9:08	1	25.7	60	5.37	Gray, no sheen, no odor
9:13	2	25.4	60	5.35	Gray, no sheen, no odor
9:18	3	25.6	50	5.21	Gray, no sheen, no odor
9:23	Sample				

DO = 0.14 mg/l @ 23.8 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW19

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 13.00 ft.

STATIC WATER LEVEL: 4.45 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
13:30	1	24.8	30	5.39	Clear, no sheen, mild odor
13:35	2	24.2	30	5.20	Clear, no sheen, mild odor
13:40	3	23.8	30	5.16	Clear, no sheen, mild odor
13:45	Sample				

DO = 0.51 mg/l @ 20.2 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW20

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 13.00 ft.

STATIC WATER LEVEL: 2.71 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions:

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:20	Sample				Clear, no sheen, mild odor

DO = 0.58 mg/l @ 18.4 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW21

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: _____

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 \text{ gal/ft}^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions:

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:00	1				
16:05	2				
16:10	3				
16:15	Sample				

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW22

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: _____

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions:

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:35	1				
15:40	2				
15:45	3				
15:50	Sample				

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW23

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: _____

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions:

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:05					
15:10					
15:20					
15:25	Sample				

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW24

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 90°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:45	1				
14:48	2				
14:53	3				
14:55	Sample				

DO = _____ mg/l @ _____ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW25

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 16.00 ft.

STATIC WATER LEVEL: 10.08 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
12:00	1	25.0	70	5.02	Clear, no sheen, no odor
12:05	2	24.5	70	4.93	Clear, no sheen, no odor
12:10	3	24.4	70	4.92	Clear, no sheen, no odor
12:15	Sample				

DO = 3.27 mg/l @ 23.1 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW26

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 7/18/03

TOTAL WELL DEPTH: 15.00 ft.

STATIC WATER LEVEL: 5.51 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 89°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
13:05	1	22.1	40	6.02	Brown, no sheen, no odor
13:10	2	21.8	40	6.00	Brown, no sheen, no odor
13:15	3	21.5	40	5.93	Brown, no sheen, no odor
13:20	Sample				

DO = 4.42 mg/l @ 19.8 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW27

PROJECT: HSS#2

STREET: 501 N. Guignard

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: _____

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: _____ ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL

Conditions: Sunny 83°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:25	1				
16:30	2				
16:35	3				
16:40	Sample				

DO = _____ mg/l @ _____ °C

APPENDIX E

ANALYTICAL RESULTS

FIELD SCREENING RESULTS

FAX CHAIN
TO COLUMBIA

TestAmerica INCORPORATED

Division/Laboratory Name: 1 803 865-5503

To ... is th... **330327** ...alytical methods, ...egulatory purposes?

Compliance Monitoring: YES

Client Name: EMERALD, INC. Client #: 8583

Address: PO BOX 3050

City/State/Zip Code: SUMTER, SC 29151

Project Manager: R. LOWDER

Telephone Number: (803) 773-5454 Fax: (803) 775-1970

Sampler Name: (Print Name) RONNY LOWDER

Sampler Signature: [signature]

Project Name: HSS # 2

Project #: —

Site/Location ID: SUMTER State: SC

Report To: EMERALD, INC.

Invoice To: SAME

Quote #: — PO#: —

TAT
___ Standard
___ Rush (surcharges may apply)

Date Needed: 5/8/03

~~Fax~~ Results: (Y) N
E-MAIL

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: (8260B) BTEX/NAPH/MTBE									REMARKS
GP-1	4/30/03	13:56	G	N	GW		2						✓									68491
GP-2		14:25	G	N	GW		2						✓									92
GP-3		15:45	G	N	GW		2						✓									93
GP-4		16:00	G	N	GW		2						✓									94
GP-5		16:35	G	N	GW		2						✓									95
GP-6		18:00	G	N	GW		2						✓									96
GP-7		18:10	G	N	GW		2						✓									97
GP-8		18:20	G	N	GW		2						✓									98
GP-9		18:45	G	N	GW		2						✓									68499

Special Instructions:

Relinquished By: [signature]	Date: 5/1/03	Time: 18:30	Received By: FedEx	Date: 5/1/03	Time: 18:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 5/2/03	Time: 820

LABORATORY COMMENTS:
Init Lab Temp:
Rec Lab Temp:
Custody Seals: Y N N/A
Bottles Supplied by TestAmerica: Y N
Method of Shipment:

TEST AMERICA ANALYTICAL TESTING CORP.-NASHVILLE

COOLER RECEIPT FORM

BC# 330327

Client: EMERALD, INC

Cooler Received On: 5/2/03 And Opened On: 5/2/03 By: Ben Wright

(Signature)

1. Temperature of Cooler when opened 2.5 Degrees Celsius
2. Were custody seals on outside of cooler?.....(YES)..NO....NA
   a. If yes, how many, what kind and where: 2- TAPE - FRONT
3. Were custody seals on containers and intact?.....(NO)..YES...NA
4. Were the seals intact, signed, and dated correctly?.....(YES)...NO...NA
5. Were custody papers inside cooler?.....(YES)....NO...NA
6. Were custody papers properly filled out (ink,signed,etc)?.....(YES)...NO...NA
7. Did you sign the custody papers in the appropriate place?.....(YES)....NO...NA
8. What kind of packing material used? (Bubblewrap) Peanuts Vermiculite Other None
9. Was sufficient ice used (if appropriate)?.....(YES)..NO...NA
10. Did all bottles arrive in good condition(unbroken)?.....(YES)...NO...NA
11. Were all bottle labels complete (#,date,signed,pres,etc)?.....(YES)..NO...NA
12. Did all bottle labels and tags agree with custody papers?.....(YES)...NO...NA
13. Were correct bottles used for the analysis requested?.....(YES)...NO...NA
14. a. Were VOA vials received?.....(YES)...NO...NA
    b. Was there any observable head space present in any VOA vial?.....(NO)...YES...NA
15. Was sufficient amount of sample sent in each bottle?.....(YES)...NO...NA
16. Were correct preservatives used?.....(YES)..NO...NA
    If not, record standard ID of preservative used here_____
17. Was residual chlorine present?.....NO...YES...(NA)
18. See attached for resolution of non-conformance:

(Fed-Ex) UPS Velocity Airborne Route Off-street Misc.

TestAmerica
ANALYTICAL TESTING CORPORATION

2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

5/ 8/03

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name: HSS #2
Project Number: .
Laboratory Project Number: 330327.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980.

Sample Identification	Lab Number	Collection Date
GP-1	03-A68491	4/30/03
GP-2	03-A68492	4/30/03
GP-3	03-A68493	4/30/03
GP-4	03-A68494	4/30/03
GP-5	03-A68495	4/30/03
GP-6	03-A68496	4/30/03
GP-7	03-A68497	4/30/03
GP-8	03-A68498	4/30/03
GP-9	03-A68499	4/30/03

TestAmerica
ANALYTICAL TESTING CORPORATION

2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: Roxanne L Connor Report Date: 5/ 8/03

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director
Roxanne L. Connor, Technical Services
Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 84009

TestAmerica
ANALYTICAL TESTING CORPORATION

2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68491
Sample ID: GP-1
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 13:56
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	7:38	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	7:38	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	7:38	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	7:38	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	7:38	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	7:38	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	101.	73. - 133.
VOA Surr Toluene-d8	111.	80. - 121.
VOA Surr, 4-BFB	106.	80. - 128.
VOA Surr, DBFM	103.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL TESTING CORPORATION

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68492
Sample ID: GP-2
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 14:25
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	8:07	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	8:07	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	8:07	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	8:07	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	8:07	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	8:07	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	100.	73. - 133.
VOA Surr Toluene-d8	107.	80. - 121.
VOA Surr, 4-BFB	107.	80. - 128.
VOA Surr, DBFM	102.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68493
Sample ID: GP-3
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 15:45
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	8:37	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	8:37	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	8:37	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	8:37	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	8:37	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	8:37	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	99.	73. - 133.
VOA Surr Toluene-d8	110.	80. - 121.
VOA Surr, 4-BFB	109.	80. - 128.
VOA Surr, DBFM	101.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68494
Sample ID: GP-4
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 16:00
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	16:36	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	16:36	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	16:36	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	16:36	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	16:36	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	16:36	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	101.	73. - 133.
VOA Surr Toluene-d8	113.	80. - 121.
VOA Surr, 4-BFB	106.	80. - 128.
VOA Surr, DBFM	104.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68495
Sample ID: GP-5
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 16:35
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	17:06	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	17:06	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	17:06	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	17:06	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	17:06	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	17:06	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	101.	73. - 133.
VOA Surr Toluene-d8	112.	80. - 121.
VOA Surr, 4-BFB	108.	80. - 128.
VOA Surr, DBFM	103.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68496
Sample ID: GP-6
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 18:00
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	17:35	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	17:35	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	17:35	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	17:35	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	17:35	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	17:35	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	104.	73. - 133.
VOA Surr Toluene-d8	112.	80. - 121.
VOA Surr, 4-BFB	108.	80. - 128.
VOA Surr, DBFM	102.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68497
Sample ID: GP-7
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 18:10
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	18:04	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	18:04	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	18:04	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	18:04	CHollingsw	8260B	8715
Methyl-t-butyl ether	3.0	ug/L	1.0	1.0	5/ 7/03	18:04	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	18:04	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	100.	73. - 133.
VOA Surr Toluene-d8	108.	80. - 121.
VOA Surr, 4-BFB	107.	80. - 128.
VOA Surr, DBFM	102.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68498
Sample ID: GP-8
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 18:20
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	18:33	CHollingsw	8260B	8715
Toluene	1.0	ug/L	1.0	1.0	5/ 7/03	18:33	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	18:33	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	18:33	CHollingsw	8260B	8715
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	5/ 7/03	18:33	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	18:33	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	102.	73. - 133.
VOA Surr Toluene-d8	110.	80. - 121.
VOA Surr, 4-BFB	107.	80. - 128.
VOA Surr, DBFM	103.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 03-A68499
Sample ID: GP-9
Sample Type: Water
Site ID:

Date Collected: 4/30/03
Time Collected: 18:45
Date Received: 5/ 2/03
Time Received: 8:20
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	5/ 7/03	19:03	CHollingsw	8260B	8715
Toluene	ND	ug/L	1.0	1.0	5/ 7/03	19:03	CHollingsw	8260B	8715
Ethylbenzene	ND	ug/L	1.0	1.0	5/ 7/03	19:03	CHollingsw	8260B	8715
Xylenes (Total)	ND	ug/L	1.0	1.0	5/ 7/03	19:03	CHollingsw	8260B	8715
Methyl-t-butyl ether	21.4	ug/L	1.0	1.0	5/ 7/03	19:03	CHollingsw	8260B	8715
Naphthalene	ND	ug/L	5.00	1.0	5/ 7/03	19:03	CHollingsw	8260B	8715

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	103.	73. - 133.
VOA Surr Toluene-d8	113.	80. - 121.
VOA Surr, 4-BFB	107.	80. - 128.
VOA Surr, DBFM	103.	81. - 121.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 1
Laboratory Receipt Date: 5/ 2/03

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
VOA PARAMETERS								
Benzene	mg/l	< 0.0005	0.0516	0.0500	103	78. - 132.	8715	blank
Toluene	mg/l	< 0.0006	0.0528	0.0500	106	77. - 134.	8715	blank
VOA Surr 1,2-DCA-d4	% Rec				100	73. - 133.	8715	
VOA Surr Toluene-d8	% Rec				114	80. - 121.	8715	
VOA Surr, 4-BFB	% Rec				107	80. - 128.	8715	
VOA Surr, DBFM	% Rec				104	81. - 121.	8715	

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.0516	0.0526	1.92	15.	8715
Toluene	mg/l	0.0528	0.0538	1.88	16.	8715
VOA Surr 1,2-DCA-d4	% Rec		101.			8715
VOA Surr Toluene-d8	% Rec		114.			8715
VOA Surr, 4-BFB	% Rec		106.			8715
VOA Surr, DBFM	% Rec		104.			8715

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA PARAMETERS						

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 2
Laboratory Receipt Date: 5/ 2/03

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Benzene	mg/l	0.0500	0.0521	104	78 - 127	8715
Benzene	mg/l	0.0500	0.0524	105	78 - 127	8715
Ethylbenzene	mg/l	0.0500	0.0542	108	78 - 125	8715
Ethylbenzene	mg/l	0.0500	0.0564	113	78 - 125	8715
Naphthalene	mg/l	0.0500	0.0456	91	52 - 140	8715
Naphthalene	mg/l	0.0500	0.0446	89	52 - 140	8715
Toluene	mg/l	0.0500	0.0531	106	78 - 127	8715
Toluene	mg/l	0.0500	0.0541	108	78 - 127	8715
Xylenes (Total)	mg/l	0.150	0.160	107	77 - 126	8715
Xylenes (Total)	mg/l	0.150	0.163	109	77 - 126	8715
Methyl-t-butyl ether	mg/l	0.0500	0.0520	104	66 - 137	8715
Methyl-t-butyl ether	mg/l	0.0500	0.0506	101	66 - 137	8715
VOA Surr 1,2-DCA-d4	% Rec			99	73 - 133	8715
VOA Surr 1,2-DCA-d4	% Rec			100	73 - 133	8715
VOA Surr Toluene-d8	% Rec			114	80 - 121	8715
VOA Surr Toluene-d8	% Rec			115	80 - 121	8715
VOA Surr, 4-BFB	% Rec			108	80 - 128	8715
VOA Surr, 4-BFB	% Rec			108	80 - 128	8715
VOA Surr, DBFM	% Rec			105	81 - 121	8715
VOA Surr, DBFM	% Rec			102	81 - 121	8715

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
VOA PARAMETERS					
Benzene	< 0.0005	mg/l	8715	5/ 7/03	4:43
Benzene	< 0.0005	mg/l	8715	5/ 7/03	16:07
Ethylbenzene	< 0.0003	mg/l	8715	5/ 7/03	4:43
Ethylbenzene	< 0.0003	mg/l	8715	5/ 7/03	16:07

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 3
Laboratory Receipt Date: 5/ 2/03

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
Naphthalene	< 0.00120	mg/l	8715	5/ 7/03	4:43
Naphthalene	< 0.00120	mg/l	8715	5/ 7/03	16:07
Toluene	< 0.0006	mg/l	8715	5/ 7/03	4:43
Toluene	< 0.0006	mg/l	8715	5/ 7/03	16:07
Xylenes (Total)	< 0.0009	mg/l	8715	5/ 7/03	4:43
Xylenes (Total)	< 0.0009	mg/l	8715	5/ 7/03	16:07
Methyl-t-butyl ether	< 0.0005	mg/l	8715	5/ 7/03	4:43
Methyl-t-butyl ether	< 0.0005	mg/l	8715	5/ 7/03	16:07
VOA Surr 1,2-DCA-d4	99.	% Rec	8715	5/ 7/03	4:43
VOA Surr 1,2-DCA-d4	100.	% Rec	8715	5/ 7/03	16:07
VOA Surr Toluene-d8	114.	% Rec	8715	5/ 7/03	4:43
VOA Surr Toluene-d8	115.	% Rec	8715	5/ 7/03	16:07
VOA Surr, 4-BFB	106.	% Rec	8715	5/ 7/03	4:43
VOA Surr, 4-BFB	109.	% Rec	8715	5/ 7/03	16:07
VOA Surr, DBFM	102.	% Rec	8715	5/ 7/03	4:43
VOA Surr, DBFM	101.	% Rec	8715	5/ 7/03	16:07

= Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 330327

GROUND WATER ANALYTICAL RESULTS

APPENDIX F

DISPOSAL MANIFEST

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. GK5727 | 2. Page 1 of

GENERATOR

3. Generator's Name and Mailing Address
HEATH SELF SERV. #2
MILLER ROAD/GUIGNARD DRIVE
SUMTER, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name: G&K TANK SERVICE | 6. US EPA ID Number . . . . . | A. Transporter's Phone: 1-800-800-6840

7. Transporter 2 Company Name | 8. US EPA ID Number . . . . . | B. Transporter's Phone

9. Designated Facility Name and Site Address
G & K TANK SERVICES, INC
2070 BROAD STREET EXT
SUMTER, SC 29151

10. US EPA ID Number . . . . . | C. Facility's Phone: 803-494-4593

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS PETROLEUM CONTAMINANTED SOIL	04	DM		
b. NON HAZARDOUS PETROLEUM CONTAMINANTED WATER	01	DM		
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERALD
PO BOX 3050
SUMTER, SC 29151

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name | Signature | Month . | Day . | Year .

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Donald Lee | Signature: Donald Lee | Month 07 | Day 24 | Year 03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month . | Day . | Year .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: S. Collett | Signature: S. Collett | Month 7 | Day 24 | Year 03

Printed by J. J. KELLER & ASSOCIATES, INC.
Neenah, WI 54957-0368

ORIGINAL - RETURN TO GENERATOR

G & K
TANK SERVICES, INC.

Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1-800-800-6840 • FAX: (803) 494-8598

Certificate of Disposal

Tons 4 Drums
Heath Self Serv #2
Sumter, SC

Contaminant NonHazardous Petroleum
Contaminanted Soil

This is to cerify the above soil has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by S. Solley

Date 07/24/03



Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-2694 • 1-800-800-6840 • FAX: (803) 494-8598

Certificate of Disposal

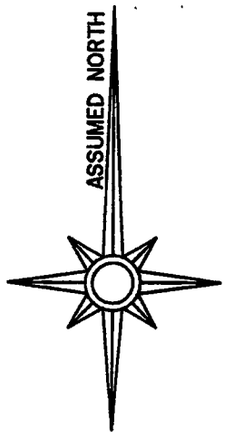
Tons 1 Drum
Heath Self Serv. #2
Sumter, SC

Contaminant NonHazardous Petroleum
Contaminanted Water

This is to cerify the above ~~soil~~ water has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by S. [illegible]

Date 07/24/03



mw27
CAS. EL. 78.96

mw21
CAS. EL. 78.38

mw22
CAS. EL. 78.73

mw26
CAS. EL. 83.42

mw25
CAS. EL. 95.48

SOUTH CAROLINA SUMTER COUNTY CITY OF SUMTER

NEW MONITOR WELL LOCATIONS (MW25, 26 & 27) REFERENCED TO EXISTING MW 21 & 22.

DRAWING REFERENCE: E562HSLO
DATE: JULY 22, 2003
SURVEY BY:
EDMUNDS LAND SURVEYORS, INC.
P.O. BOX 905
SUMTER, S.C. 29151
PH: 773-1030
FILE: 03176
SCALE: 1" = 200'

200 0 200 400 600

GRAPHIC SCALE – FEET

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Chairman

Mark B. Kent
Vice Chairman

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Secretary

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

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JAN 15 2004

DOUG LEONARD
COCA COLA BOTTLING COMPANY CONSOLIDATED
PO BOX 31487
CHARLOTTE NC 28231

Re: HQ Heath Self Serve #2, 501 N. Guignard Dr., Sumter, SC
UST Permit #08932; Cost Agreement #21035
Release Reported July 31, 1996
Assessment Report received August 1, 2003
Sumter County

Dear Mr. Leonard:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) recognizes your commitment to continue work at this site utilizing your own contractor. The Program has reviewed the referenced report and determined the next necessary scope of work to be a comprehensive groundwater sampling event. Sampling is required in order to obtain the most recent analytical data so that it may be included in the Active Corrective Action (ACA) solicitation package. ACA will be initiated once the solicitation process is complete.

Cost Agreement #21035 has been approved in the amount shown on the enclosed cost agreement form for the sampling. Samples should be collected from all monitoring wells and analyzed for BTEX + Naph. + MTBE by EPA method 8260B.

Please have your contractor submit groundwater sampling results to the Program in a monitoring report containing the following items:

- A narrative portion documenting current site conditions and noting the names of field personnel, date, time, ambient air temperature, and general weather conditions during the sampling event. The report shall also contain well purging data, pH, specific conductivity, water temperature, PID readings (where applicable) and turbidity comments.
- Groundwater elevations, depth to groundwater, measurable free product thickness (where applicable), total well depth and screened interval for all monitoring wells associated with the site, unless otherwise directed by the Department, shall be presented in tabular form. Groundwater laboratory analytical data for all monitoring wells shall be presented in tabular format.
- A groundwater elevation contour map of the site based on current groundwater potentiometric data.
- A CoC map based on current groundwater laboratory analytical data. The groundwater data should be adjacent to the relevant monitoring well.
- Manifests for any contaminated soil and/or groundwater removed from the site for treatment and/or disposal.
- Signed and sealed by a professional geologist or engineer registered in the State of South Carolina.

UST PROGRAM
DOCKETING # 41

Emerald, Inc. can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina-certified Underground Storage Tank Site Rehabilitation Contractor. All documents involving geologic interpretation or engineering must be prepared by a qualified professional registered in the State of South Carolina.

Please have your contractor fax the laboratory results to my attention upon receipt. A Report of Findings and invoice are due within 45 days from the date of this letter. Interim invoices may not be submitted for this scope of work. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Program is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be preapproved by the Program for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable, and reserves the right to audit project records at any time during the project or after completion of work.

The Program grants preapproval for transportation of virgin petroleum-contaminated soil and groundwater from the referenced site to a permitted treatment facility. The contaminated soil or groundwater must be properly stored in labeled containers or covered with plastic as appropriate. The contaminated soil and/or groundwater must be accepted by the approved treatment facility. There can be no spillage or leakage in transport. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the final report. If the levels of petroleum contamination based on laboratory analysis are below risk-based screening levels, please contact the project manager for approval to dispose of soil and/or groundwater on-site. The SUPERB Account will not compensate for transportation or treatment of clean soil and/or groundwater.

On all correspondence concerning these sites, please reference **UST Permit #08932.** If there are any questions concerning this project, please contact me at (803) 896-6396, (803) 896-6245 (fax) or (800) 826-5435 (within South Carolina only).

Sincerely,

John D. Abernathy, Hydrogeologist
Owner/Operator Assistance Section
Assessment and Corrective Action Division
Underground Storage Tank Program
Bureau of Land and Waste Management

enc: Approved Cost Agreement #21035

cc: Emerald, Inc., 11 W. Hampton St., Sumter, SC 29151 (w/enc)
Technical File (w/out enc)

USTprogram/OO/JDA/8932_ACAbaseline/11.17.2003

Approved Cost Agreement 21035

Facility: 08932 H Q HEATH SELF SERVE 2

ABERNAJD

PO Number:

Task / Description	Categories	Item Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB					
		B PERSONNEL	3.0000	250.00	750.00
10 SAMPLE COLLECTION					
		A GROUND WATER	24.0000	55.00	1,320.00
11 ANALYSES					
	GW GROUNDWATER	A BTEX+NAPTH+MTBE	24.0000	100.00	2,400.00
		K NITRATE	24.0000	20.00	480.00
		L SULFATE	24.0000	20.00	480.00
		M FERROUS IRON	24.0000	20.00	480.00
17 DISPOSAL					
		A1 WASTEWATER - PURGING/SAMPLING	2.0000	90.00	180.00
19 RPT/PROJECT MNGT & COORDINATIO					
		PCT PERCENT	0.1500	6,090.00	913.50
			Total Amount		7,003.50

Emerald, Inc.

CONSULTING AND ENGINEERING
SERVICES IN ENVIRONMENTAL AFFAIRS

214 WEST LIBERTY STREET • POST OFFICE BOX 3050 • SUMTER, SC 29151

E-MAIL:
rlemerald@acmenet.net

TELEPHONE (803) 773-5454
FAX (803) 775-1970

GROUND WATER SAMPLING REPORT
(FEBRUARY 2004)
FORMER HEATH SELF SERVE #2
NORTH GUIGNARD DRIVE & MILLER ROAD
SUMTER, SOUTH CAROLINA
UST PERMIT# 08932

Prepared For:

South Carolina Department of Health & Environmental Control
Owner/Operator Assistance Section
Assessment and Corrective Action Branch
Division of UST Management
2600 Bull Street
Columbia, SC 29201

Prepared By:

EMERALD, INC.
214 W. Liberty Street
P.O. Box 3050
Sumter, SC 29151

March 6, 2004

UST PROGRAM
DOCKETING # 98T

Signature Page

This report was prepared by Emerald, Inc. using generally accepted practices. Any questions regarding such should be directed to Ronny L. Lowder at the office of Emerald, Inc. located at 214 W. Liberty Street, Sumter, South Carolina, or telephone (803) 773-5454.

Ronny L. Lowder, President
EMERALD, INC.
UST Rehabilitation Contractor No. 67

RECEIVED
MAR 3 2004
UNDERGROUND STORAGE
TANK PROGRAM

Ground Water Sampling Report
(February 2004)
Former Heath Self Serve #2
Sumter, SC

Table of Contents

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1.0 Introduction

The Former Heath Self Serve #2 site is located on the northeast corner of the intersection of North Guignard Drive and Miller Road in Sumter, S.C. The subject facility is currently closed but was formerly operated as a gasoline convenience store (Phillips 66) in a heavily developed commercial area with a variety of commercial businesses nearby. Appendices A and B contain a General Location Map and a Site Map respectively.

Eleven USTs were previously used for onsite storage of petroleum products. One 10,000 gallon tank, one 6,000 gallon tank and seven 3,000 gallon tanks were used for the storage of gasoline. One 1,000 gallon tank was used for the storage of diesel fuel. One 550 gallon tank was used for the storage of used oil. Each of the original eleven USTs have either been removed from the ground or permanently abandoned in place. New USTs were installed at the facility in December 1998.

A release of petroleum hydrocarbons was identified within the former tank pit area during closure assessment activities. In December of 1998, a Standard Limited Assessment (SLA) was conducted by personnel from Kleen Sites Geoservices, Inc. (KSG) on the subject property at the request of the SCDHEC. Following a review of the SLA, the SCDHEC requested that a Rapid Assessment be conducted in a letter dated May 13, 1999. KSG personnel implemented Rapid Assessment activities at the subject property in order to better define the vertical and horizontal extent of the soil and ground water contamination plumes. A Rapid Assessment Report dated November 19, 1999 was submitted to the SCDHEC Bureau of UST Management for review and comment.

Data generated during the Rapid Assessment indicated the presence of a large free product plume that originated from the southern portion of the subject property. Field

measurements indicated that the free product plume extended beneath Miller Road in a southernly direction for approximately 300 feet. The dissolved phase ground water contaminant plume was found to be present beneath much of the Palmetto Plaza property extending approximately 875 feet from the source area along North Guignard Drive. However, the lateral extent of the dissolved phase plume remained undefined in the area located southeast of the former Heath Self Serve #2 facility. The SCDHEC requested by letter dated August 10, 2000, that additional assessment work be conducted to generate current data on free product and dissolved phase plumes and to define the downgradient extent of ground water contamination. Four additional shallow ground water monitoring wells were installed in October of 2000. A Rapid Assessment Report - Addendum 01 dated November 28, 2000 was submitted to the SCDHEC Bureau of UST Management.

Data generated during the October 2000 field event revealed that the dissolved phase ground water contaminant plume extended at least 600 feet in a southeasterly (i.e. downgradient) direction from the former UST pits. Impact to a tributary of Shot Pouch Creek was also confirmed. Additional assessment work was requested in a SCDHEC letter addressed to Mr. Doug Leonard of Coca-Cola Bottling Company. Four additional shallow ground water monitoring wells were installed under the direction of KSG personnel adjacent to Shot Pouch Creek during a Tier II Assessment Report (Addendum 02) dated September 10, 2001.

In July 2003, Emerald, Inc. personnel installed three additional monitoring wells (MWs 25, 26, 27) to delineate the northern boundary of the contaminant plume.

Subsequently, SCDHEC requested a ground water sampling event in a letter to Mr. Leonard dated June 7, 2002. This report provides the data generated during this event.

2.0 Field Sampling Methodology

On February 21, 2004, and March 6, 2004, Emerald, Inc. personnel gauged the water level in each of the twenty-five (25) monitoring wells prior to sampling activities. The water level measurements are included in the Monitoring Well Purge Log in Appendix C. After gauging each well, Emerald, Inc. personnel removed three (3) well volumes (if available) of water from each well using a clear disposable PVC bailer for each well. Ground water samples from each well were placed in laboratory-prepared bottles, labeled, and placed in the field ice chest for storage and shipment to the laboratory. The water removed from each well was placed in a 55 gallon drum and shipped to G & K Tank Services in Sumter, S.C. for treatment and disposal.

Table I on the next page shows the ground water elevations at the site on the date of the sampling event. All measurements were taken from the surveyed top of well casing which was conducted during a prior assessment. Free product was observed in six (6) monitoring wells during this event. Two monitoring wells (MWs 1 and17) could not be located and have apparently been destroyed during construction activities.

Table I - Ground Water Elevations
Former Heath Self Serve #2 Site

Date: 2/21/04 and 3/6/04

WELL ID#	STATIC WATER LEVEL*	FREE PRODUCT THICKNESS	TOP OF CASING ELEVATIONS	GROUND WATER ELEVATION
MW01	Well not found		99.88	-
MW02	17.77	ND	Not Available	
MW03	19.60	ND	101.09	81.49
MW04	17.68	0.41'	98.72	81.04
MW05	17.79	ND	98.83	81.04
MW06	17.33	ND	98.98	81.65
MW07	18.51	1.09'	98.64	80.13
MW08	18.63	0.07'	99.58	80.95
MW09	17.77	0.51'	97.93	80.16
MW10	18.65	1.71'	97.71	79.06
MW11	16.51	ND	97.60	81.09
MW 12	19.18	1.10'	99.68	80.50
MW 13	19.06	ND	99.88	80.82
MW 14	12.35	ND	91.12	78.77
MW 15	11.75	ND	91.29	79.54
MW 16	13.70	ND	94.15	80.45
MW 17	Well not found		89.83	-
MW 18	13.43	ND	92.29	78.86
MW 19	3.65	ND	76.76	73.11
MW 20	1.85	ND	76.16	74.31
MW 21	TOC	ND	73.49	73.49
MW 22	TOC	ND	73.79	73.79
MW 23	TOC	ND	73.06	73.06
MW 24	TOC	ND	72.25	72.25
MW25	9.87	ND	95.48	85.61
MW26	4.00	ND	83.42	79.42
MW27	TOC	ND	78.96	78.96

Notes: * - Depth below top of Casing, in feet
ND - Not Detected

3.0 Analytical Results

Table II shows the analytical results for the ground water samples collected from the twenty-five (25) monitoring wells at the Former Heath Self Serve #2 site. Appendix D contains the Analytical Results from the laboratory.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW01* 8-02	MW01* 7-03	MW01* 2-21-04	MW02 8-17-02	MW02 7-17-03	MW02 2-21-04
Benzene (µg/l)	NT	NT	NT	69.0	280	77.8
Ethylbenzene (µg/l)	NT	NT	NT	81.1	726	140
MTBE (µg/l)	NT	NT	NT	ND	ND	4.5
Naphthalene (µg/l)	NT	NT	NT	5.80	6.60	5.40
Toluene (µg/l)	NT	NT	NT	101	680	84.4
Total Xylenes (µg/l)	NT	NT	NT	188	2120	212
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	NT	NT	NT	ND	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	NT	NT	NT	7650	3170
Nitrates (mg/l)	NT	NT	NT	NT	ND	0.40
Sulfates (mg/l)	NT	NT	NT	NT	44.0	11.0
Dissolved Oxygen (mg/l)	NT	NT	NT	NT	0.15	0.79
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW03 8-17-02	MW03 7-17-03	MW03 2-21-04	MW04 8-17-02	MW04 7-17-03	MW04 2-21-04
Benzene (µg/l)	5.1	1.3	ND	FP - 0.33'	FP - 0.30'	FP - 0.41'
Ethylbenzene (µg/l)	4.4	ND	ND	FP	FP	FP
MTBE (µg/l)	ND	ND	ND	FP	FP	FP
Naphthalene (µg/l)	ND	ND	ND	FP	FP	FP
Toluene (µg/l)	12.1	1.6	1.1	FP	FP	FP
Total Xylenes (µg/l)	37.9	11.5	6.7	FP	FP	FP
Methane (µg/l)	NT	NT	NT	FP	FP	FP
1, 2 Dibromoethane (µg/l)	ND	NT	NT	FP	FP	FP
PAH - Naphthalene (µg/l)	NT	NT	NT	FP	FP	FP
Acenaphthene (µg/l)	NT	NT	NT	FP	FP	FP
Phenanthrene (µg/l)	NT	NT	NT	FP	FP	FP
Flouranthene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(a)anthracene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(a)pyrene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(ghi)perylene (µg/l)	NT	NT	NT	FP	FP	FP
Acenaphthylene (µg/l)	NT	NT	NT	FP	FP	FP
Fluorene (µg/l)	NT	NT	NT	FP	FP	FP
Anthracene (µg/l)	NT	NT	NT	FP	FP	FP
Pyrene (µg/l)	NT	NT	NT	FP	FP	FP
Chrysene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	FP	FP	FP
Dibenzo(a,h)anthracene	NT	NT	NT	FP	FP	FP
Indeno(1,2,3-cd)pyrene	NT	NT	NT	FP	FP	FP
Ferrous Iron (mg/l)	NT	480	ND	FP	FP	FP
Nitrates (mg/l)	NT	0.480	0.71	FP	FP	FP
Sulfates (mg/l)	NT	ND	ND	FP	FP	FP
Dissolved Oxygen (mg/l)	NT	2.71	2.40	FP	FP	FP
Lead (mg/l)	NT	NT	NT	FP	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW05 8-17-02	MW05 7-17-03	MW05 2-21-04	MW06 8-17-02	MW06 7-17-03	MW06 2-21-04
Benzene (µg/l)	ND	ND	ND	8.8	48.5	14.0
Ethylbenzene (µg/l)	ND	ND	ND	ND	31.8	3.2
MTBE (µg/l)	ND	ND	ND	3.2	5.9	3.4
Naphthalene (µg/l)	ND	ND	ND	ND	ND	ND
Toluene (µg/l)	3.8	ND	ND	4.5	33.2	ND
Total Xylenes (µg/l)	3.2	1.5	ND	8.2	129	7.5
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	ND	NT	NT	ND	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	100	ND	NT	11000	16000
Nitrates (mg/l)	NT	1.07	1.14	NT	ND	ND
Sulfates (mg/l)	NT	ND	ND	NT	11.5	13.4
Dissolved Oxygen (mg/l)	NT	3.90	5.11	NT	0.39	0.97
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW07 8-17-02	MW07 7-17-03	MW07 2-21-04	MW08 8-17-02	MW08 7-17-03	MW08 2-21-04
Benzene (µg/l)	FP - 2.60'	FP - 0.35'	FP - 1.09'	FP - 2.64'	FP - 0.03'	FP - 0.07'
Ethylbenzene (µg/l)	FP	FP	FP	FP	FP	FP
MTBE (µg/l)	FP	FP	FP	FP	FP	FP
Naphthalene (µg/l)	FP	FP	FP	FP	FP	FP
Toluene (µg/l)	FP	FP	FP	FP	FP	FP
Total Xylenes (µg/l)	FP	FP	FP	FP	FP	FP
Methane (µg/l)	FP	FP	FP	FP	FP	FP
1, 2 Dibromoethane (µg/l)	FP	FP	FP	FP	FP	FP
PAH - Naphthalene (µg/l)	FP	FP	FP	FP	FP	FP
Acenaphthene (µg/l)	FP	FP	FP	FP	FP	FP
Phenanthrene (µg/l)	FP	FP	FP	FP	FP	FP
Flouranthene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)anthracene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(b)fluoranthene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)pyrene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(ghi)perylene (µg/l)	FP	FP	FP	FP	FP	FP
Acenaphthylene (µg/l)	FP	FP	FP	FP	FP	FP
Fluorene (µg/l)	FP	FP	FP	FP	FP	FP
Anthracene (µg/l)	FP	FP	FP	FP	FP	FP
Pyrene (µg/l)	FP	FP	FP	FP	FP	FP
Chrysene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(k)fluoranthene (µg/l)	FP	FP	FP	FP	FP	FP
Dibenzo(a,h)anthracene	FP	FP	FP	FP	FP	FP
Indeno(1,2,3-cd)pyrene	FP	FP	FP	FP	FP	FP
Ferrous Iron (mg/l)	FP	FP	FP	FP	FP	FP
Nitrates (mg/l)	FP	FP	FP	FP	FP	FP
Sulfates (mg/l)	FP	FP	FP	FP	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	FP	FP	FP	FP
Lead (mg/l)	FP	FP	FP	FP	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW09 8-17-02	MW09 7-17-03	MW09 2-21-04	MW10 8-17-02	MW10 7-17-03	MW10 2-21-04
Benzene (µg/l)	FP - 2.31'	FP - 0.12'	FP - 0.51'	FP - 2.93'	FP - 1.07'	FP - 1.71'
Ethylbenzene (µg/l)	FP	FP	FP	FP	FP	FP
MTBE (µg/l)	FP	FP	FP	FP	FP	FP
Naphthalene (µg/l)	FP	FP	FP	FP	FP	FP
Toluene (µg/l)	FP	FP	FP	FP	FP	FP
Total Xylenes (µg/l)	FP	FP	FP	FP	FP	FP
Methane (µg/l)	FP	FP	FP	FP	FP	FP
1, 2 Dibromoethane (µg/l)	FP	FP	FP	FP	FP	FP
PAH - Naphthalene (µg/l)	FP	FP	FP	FP	FP	FP
Acenaphthene (µg/l)	FP	FP	FP	FP	FP	FP
Phenanthrene (µg/l)	FP	FP	FP	FP	FP	FP
Flouranthene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)anthracene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(b)fluoranthene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(a)pyrene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(ghi)perylene (µg/l)	FP	FP	FP	FP	FP	FP
Acenaphthylene (µg/l)	FP	FP	FP	FP	FP	FP
Fluorene (µg/l)	FP	FP	FP	FP	FP	FP
Anthracene (µg/l)	FP	FP	FP	FP	FP	FP
Pyrene (µg/l)	FP	FP	FP	FP	FP	FP
Chrysene (µg/l)	FP	FP	FP	FP	FP	FP
Benzo(k)fluoranthene (µg/l)	FP	FP	FP	FP	FP	FP
Dibenzo(a,h)anthracene	FP	FP	FP	FP	FP	FP
Indeno(1,2,3-cd)pyrene	FP	FP	FP	FP	FP	FP
Ferrous Iron (mg/l)	FP	FP	FP	FP	FP	FP
Nitrates (mg/l)	FP	FP	FP	FP	FP	FP
Sulfates (mg/l)	FP	FP	FP	FP	FP	FP
Dissolved Oxygen (mg/l)	FP	FP	FP	FP	FP	FP
Lead (mg/l)	FP	FP	FP	FP	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW11 8-17-02	MW11 7-18-03	MW11 2-21-04	MW12 8-17-02	MW12 7-17-03	MW12 2-21-04
Benzene (µg/l)	ND	ND	ND	FP - 2.65'	FP - 0.30'	FP - 1.10'
Ethylbenzene (µg/l)	ND	1.1	1.0	FP	FP	FP
MTBE (µg/l)	ND	ND	ND	FP	FP	FP
Naphthalene (µg/l)	ND	ND	ND	FP	FP	FP
Toluene (µg/l)	ND	2.2	1.8	FP	FP	FP
Total Xylenes (µg/l)	4.6	7.0	11.1	FP	FP	FP
Methane (µg/l)	NT	NT	NT	FP	FP	FP
1, 2 Dibromoethane (µg/l)	ND	NT	NT	FP	FP	FP
PAH - Naphthalene (µg/l)	NT	NT	NT	FP	FP	FP
Acenaphthene (µg/l)	NT	NT	NT	FP	FP	FP
Phenanthrene (µg/l)	NT	NT	NT	FP	FP	FP
Flouranthene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(a)anthracene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(a)pyrene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(ghi)perylene (µg/l)	NT	NT	NT	FP	FP	FP
Acenaphthylene (µg/l)	NT	NT	NT	FP	FP	FP
Fluorene (µg/l)	NT	NT	NT	FP	FP	FP
Anthracene (µg/l)	NT	NT	NT	FP	FP	FP
Pyrene (µg/l)	NT	NT	NT	FP	FP	FP
Chrysene (µg/l)	NT	NT	NT	FP	FP	FP
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	FP	FP	FP
Dibenzo(a,h)anthracene	NT	NT	NT	FP	FP	FP
Indeno(1,2,3-cd)pyrene	NT	NT	NT	FP	FP	FP
Ferrous Iron (mg/l)	NT	9100	2940	FP	FP	FP
Nitrates (mg/l)	NT	ND	ND	FP	FP	FP
Sulfates (mg/l)	NT	ND	ND	FP	FP	FP
Dissolved Oxygen (mg/l)	NT	0.46	0.75	FP	FP	FP
Lead (mg/l)	NT	NT	NT	FP	FP	FP

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW13 8-17-02	MW13 7-17-03	MW13 2-21-04	MW14 8-17-02	MW14 7-18-03	MW14 3-6-04
Benzene (µg/l)	ND	ND	ND	553	33.1	67.7
Ethylbenzene (µg/l)	ND	ND	ND	28.0	ND	3.9
MTBE (µg/l)	ND	ND	ND	ND	ND	ND
Naphthalene (µg/l)	ND	ND	ND	34.2	ND	ND
Toluene (µg/l)	ND	ND	ND	7.4	ND	ND
Total Xylenes (µg/l)	ND	1.5	ND	222	3.0	20.5
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	ND	NT	NT	0.05	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	110	ND	NT	9250	12500
Nitrates (mg/l)	NT	0.640	0.43	NT	2.79	3.14
Sulfates (mg/l)	NT	ND	ND	NT	2.80	2.22
Dissolved Oxygen (mg/l)	NT	3.99	4.52	NT	0.34	3.47
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW15 8-17-02	MW15 7-18-03	MW15 2-21-04	MW16 8-17-02	MW16 7-18-03	MW16 2-21-04
Benzene (µg/l)	ND	ND	ND	ND	ND	ND
Ethylbenzene (µg/l)	ND	ND	ND	ND	ND	ND
MTBE (µg/l)	ND	ND	ND	ND	ND	ND
Naphthalene (µg/l)	ND	ND	ND	ND	ND	ND
Toluene (µg/l)	ND	ND	ND	ND	ND	ND
Total Xylenes (µg/l)	ND	ND	ND	ND	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	ND	NT	NT	ND	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	ND	ND	NT	ND	ND
Nitrates (mg/l)	NT	1.05	0.88	NT	0.720	1.01
Sulfates (mg/l)	NT	ND	ND	NT	5.40	ND
Dissolved Oxygen (mg/l)	NT	1.89	5.41	NT	3.40	4.78
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW17* 8-17-02	MW17* 7-18-03	MW17* 2-21-04	MW18 8-17-02	MW18 7-18-03	MW18 2-21-04
Benzene (µg/l)	NT	NT	NT	ND	ND	ND
Ethylbenzene (µg/l)	NT	NT	NT	ND	ND	ND
MTBE (µg/l)	NT	NT	NT	ND	ND	ND
Naphthalene (µg/l)	NT	NT	NT	ND	ND	ND
Toluene (µg/l)	NT	NT	NT	ND	ND	ND
Total Xylenes (µg/l)	NT	NT	NT	ND	ND	ND
Methane (µg/l)	NT	NT	NT	NT	ND	NT
1, 2 Dibromoethane (µg/l)	NT	NT	NT	ND	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	NT	NT	NT	290	248
Nitrates (mg/l)	NT	NT	NT	NT	1.30	0.49
Sulfates (mg/l)	NT	NT	NT	NT	ND	ND
Dissolved Oxygen (mg/l)	NT	NT	NT	NT	0.14	1.26
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW19 8-17-02	MW19 7-18-03	MW19 3-6-04	MW20 8-17-02	MW20 7-18-03	MW20 3-6-04
Benzene (µg/l)	492	760	166	1480	874	1760
Ethylbenzene (µg/l)	11.8	ND	ND	ND	1.9	ND
MTBE (µg/l)	39.7	30.8	196	ND	ND	ND
Naphthalene (µg/l)	9.50	16.1	ND	51.9	46.1	79.6
Toluene (µg/l)	ND	8.5	ND	ND	2.7	2.1
Total Xylenes (µg/l)	30.7	267	15.8	31.8	31.0	35.3
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	0.04	NT	NT	0.74	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	1590	1640	NT	610	200
Nitrates (mg/l)	NT	ND	ND	NT	0.140	ND
Sulfates (mg/l)	NT	ND	2.52	NT	ND	ND
Dissolved Oxygen (mg/l)	NT	0.51	0.98	NT	0.58	1.13
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW21 8-18-02	MW21 7-18-03	MW21 3-6-04	MW22 8-18-02	MW22 7-18-03	MW22 3-6-04
Benzene (µg/l)	ND	ND	ND	ND	ND	ND
Ethylbenzene (µg/l)	ND	ND	ND	ND	ND	ND
MTBE (µg/l)	ND	ND	ND	ND	ND	ND
Naphthalene (µg/l)	ND	ND	ND	ND	ND	ND
Toluene (µg/l)	ND	ND	ND	ND	ND	ND
Total Xylenes (µg/l)	ND	ND	ND	ND	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	ND	NT	NT	ND	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	35600	1440	NT	6260	3300
Nitrates (mg/l)	NT	ND	0.90	NT	ND	ND
Sulfates (mg/l)	NT	116	77.6	NT	14.0	9.34
Dissolved Oxygen (mg/l)	NT	NT	NT	NT	NT	NT
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found; ** - Well Not Sampled on this Date.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW23 8-18-02	MW23 7-18-03	MW23 3-6-04	MW24 8-18-02	MW24 7-18-03	MW24 3-6-04
Benzene (µg/l)	ND	ND	ND	ND	ND	ND
Ethylbenzene (µg/l)	ND	ND	ND	ND	ND	ND
MTBE (µg/l)	ND	ND	ND	ND	ND	ND
Naphthalene (µg/l)	ND	ND	ND	ND	ND	ND
Toluene (µg/l)	ND	ND	ND	ND	ND	ND
Total Xylenes (µg/l)	ND	ND	ND	ND	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	ND	NT	NT	ND	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	NT	9450	998	NT	9600	8570
Nitrates (mg/l)	NT	ND	ND	NT	ND	ND
Sulfates (mg/l)	NT	24.0	8.14	NT	105	60.2
Dissolved Oxygen (mg/l)	NT	NT	NT	NT	NT	NT
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

Table 2 - Ground Water Analytical Data Summary
Former Heath Self Serve #2 Site

Sample Dates: 8/18/02; 7/17/03; 7/18/03; 2/21/04 and 3/6/04

Chemical of Concern (units)	MW25 7-18-03	MW25 3-6-04	MW26 7-18-03	MW26 3-6-04	MW27 7-18-03	MW27 3-6-04
Benzene (µg/l)	ND	ND	ND	ND	ND	ND
Ethylbenzene (µg/l)	ND	ND	ND	ND	ND	ND
MTBE (µg/l)	ND	ND	ND	ND	2.0	1.1
Naphthalene (µg/l)	ND	ND	ND	ND	ND	ND
Toluene (µg/l)	ND	ND	ND	ND	ND	ND
Total Xylenes (µg/l)	ND	ND	ND	ND	ND	ND
Methane (µg/l)	NT	NT	NT	NT	NT	NT
1, 2 Dibromoethane (µg/l)	NT	NT	NT	NT	NT	NT
PAH - Naphthalene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthene (µg/l)	NT	NT	NT	NT	NT	NT
Phenanthrene (µg/l)	NT	NT	NT	NT	NT	NT
Flouranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene (µg/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene (µg/l)	NT	NT	NT	NT	NT	NT
Fluorene (µg/l)	NT	NT	NT	NT	NT	NT
Anthracene (µg/l)	NT	NT	NT	NT	NT	NT
Pyrene (µg/l)	NT	NT	NT	NT	NT	NT
Chrysene (µg/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene (µg/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	NT	NT
Ferrous Iron (mg/l)	130	212	1520	1070	262000	2040
Nitrates (mg/l)	4.67	4.66	0.770	ND	ND	ND
Sulfates (mg/l)	ND	ND	ND	13.5	ND	29.7
Dissolved Oxygen (mg/l)	3.27	6.70	4.42	1.91	NT	NT
Lead (mg/l)	NT	NT	NT	NT	NT	NT

ND - Not Detected; NT - Not Tested; FP - Free Product; * - Well Not Found.

4.0 Appendices

A) General Location Map

B) Site Map

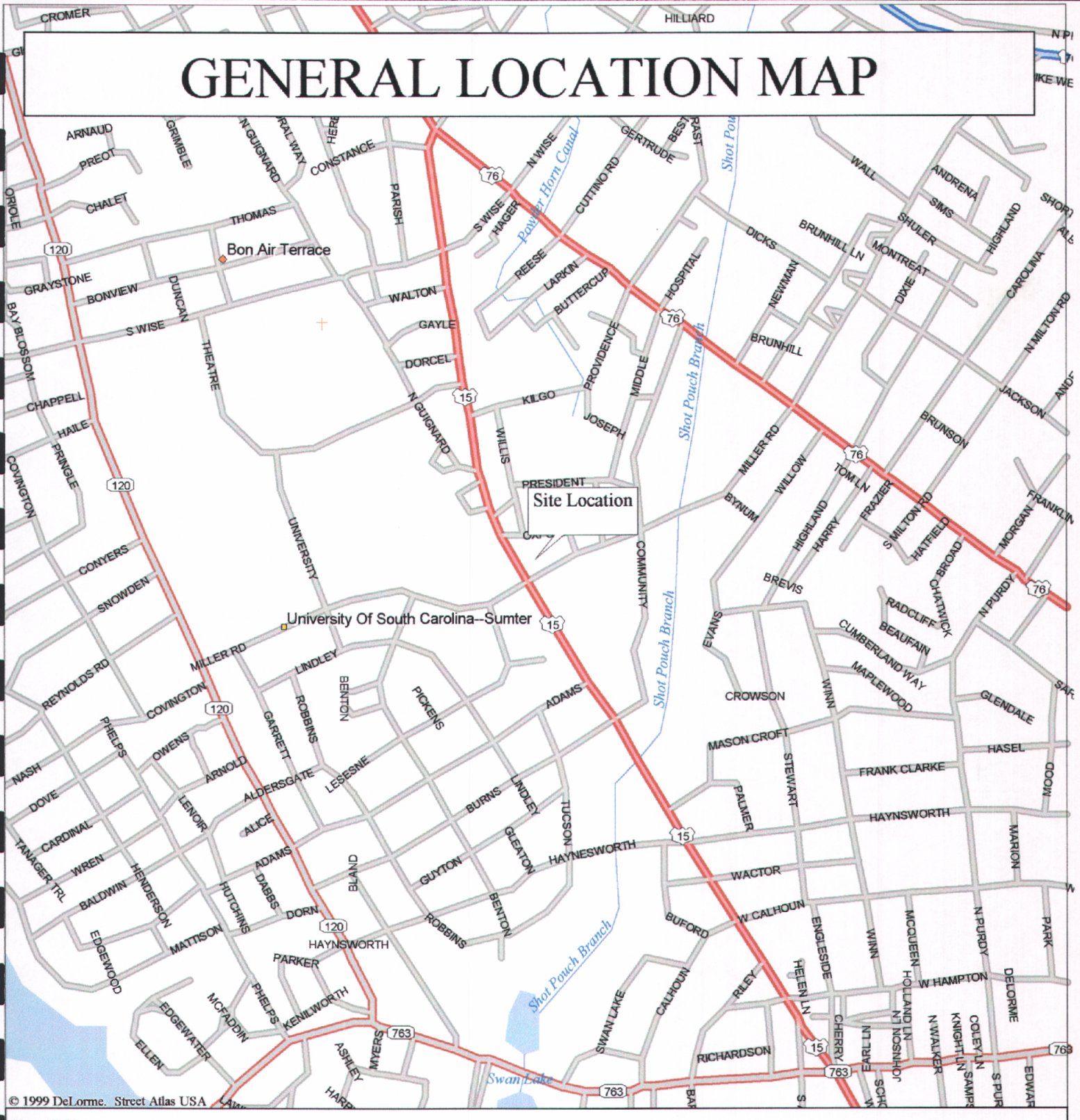
C) Monitoring Well Purge Log

D) Analytical Results

APPENDIX A

GENERAL LOCATION MAP

GENERAL LOCATION MAP



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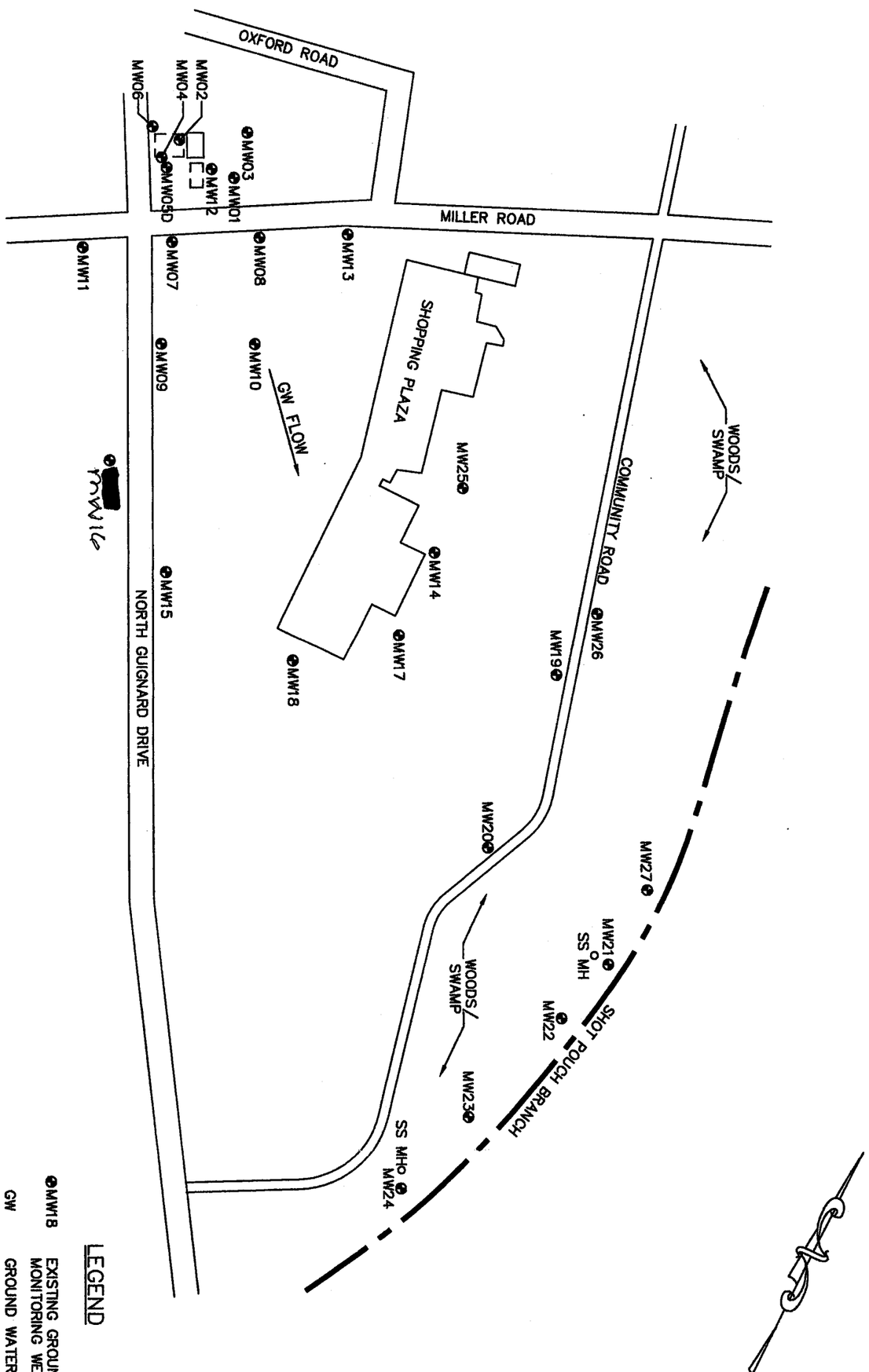
Mag 15.00
Wed Mar 24 11:24 2004
Scale 1:15,625 (at center)
1000 Feet
500 Meters

- Local Road
- State Route
- Interstate/Limited Access
- US Highway
- Point of Interest
- Locale
- Cemetery
- Water
- River/Canal

APPENDIX B

SITE MAP



Project: HEATH SELF SERVE #2 N. GUIGNARD DRIVE AND MILLER ROAD SUMTER, SOUTH CAROLINA	SITE PLAN	File Number: E562HSL0 Field Work Date(s): [redacted] & 2/21/04 & 3/6/04	Emerald, Inc. Sumter, South Carolina

APPENDIX C

MONITORING WELL PURGE LOG

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-02

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 24.00 ft.

STATIC WATER LEVEL: 17.77 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.
$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:40	1	21.9	70	5.74	Clear, no sheen, heavy odor
14:43	2	21.9	70	5.78	Clear, no sheen, heavy odor
14:45	Sample				
					DO = 0.79mg/l @ 21.3°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 03

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

TOTAL WELL DEPTH: 24.00 ft.

STATIC WATER LEVEL: 19.60 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

DATE: 2/21/04

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:15	1	21.0	30	5.00	Clear, no sheen, no odor
14:18	2	21.7	30	4.96	Clear, no sheen, no odor
14:20	Sample for B, N, M, Nitrate, Sulfate, Fl				
					DO = 2.40mg/l @ 20.9°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 04

PROJECT: Heath Self Serve # 2 **TOTAL WELL DEPTH:** 24.00 ft.

STREET: N. Guignard Drive **STATIC WATER LEVEL:** ft.

CITY: Sumter **WATER HEIGHT (Hw):** ft.

COUNTY: Sumter **WELL DIAMETER (Dw):** ft.

STATE: SC **WELL VOLUME (Vw):** gals.

$Vw = (Hw)\ (Dw^2)\ (7.5\ gal/ft^3)\ (0.785)$

PURGE VOLUME: gals.

DATE: 2/21/04 **EMERALD PERSONNEL:** RL, JB

Conditions: Sunny 70°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
No Sample - Free Product - 0.41ft.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 05

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 45.00 ft.

STATIC WATER LEVEL: 17.79 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 71°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:20	1	23.2	40	5.73	Clear, no sheen, no odor
15:23	2	23.5	40	5.66	Clear, no sheen, no odor
15:25	Sample				
					DO = 5.11mg/l @ 22.4 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 06

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 22.00 ft.

STATIC WATER LEVEL: 17.33 ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.
$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:55	1	21.6	100	5.95	Clear, no sheen, medium odor
14:58	2	21.9	90	5.87	Clear, no sheen, medium odor
15:00	Sample				
					DO = 0.97mg/l @ 21.2°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 07

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 22.00 ft.

STATIC WATER LEVEL: 18.51 ft.

WATER HEIGHT (Hw): ____ ft.

WELL DIAMETER (Dw): ____ ft.

WELL VOLUME (Vw): ____ gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: ____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 71°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
No Sample - Free Product - 1.09ft.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 08

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 18.63 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.
$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 71°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
No Sample - Free Product - 0.07ft.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 09

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 17.77 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: gals.

DATE: 2/21/04

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 71°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
No Sample - Free Product - 0.51ft.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 10

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 18.65 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 71°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
No Sample - Free Product - 1.71ft.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 11

PROJECT: Heath Self Serve # 2 **TOTAL WELL DEPTH:** 22.00 ft.

STREET: N. Guignard Drive **STATIC WATER LEVEL:** 16.51 ft.

CITY: Sumter **WATER HEIGHT (Hw):** ft.

COUNTY: Sumter **WELL DIAMETER (Dw):** ft.

STATE: SC **WELL VOLUME (Vw):** gals.
$Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)$

PURGE VOLUME: gals.

DATE: 2/21/04 **EMERALD PERSONNEL:** RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:45	1	22.3	40	5.28	Clear, no sheen, mild odor
15:47	2	22.3	40	5.19	Clear, no sheen, mild odor
15:50	Sample				
					DO = 0.75mg/l @ 21.7 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 12

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

TOTAL WELL DEPTH: 30.00 ft.

STATIC WATER LEVEL: 19.18 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

DATE: 2/21/04

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
No Sample - Free Product - 1.10ft.					
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 13

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 23.00 ft.

STATIC WATER LEVEL: 19.06 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 70°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:50	1	22.4	20	4.99	Clear, no sheen, no odor
16:53	2	22.7	20	5.02	Clear, no sheen, no odor
16:55	Sample				
					DO = 4.52mg/l @ 22.2 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-14

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: 20.00 ft.

STATIC WATER LEVEL: 12.35 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Cloudy 59°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:45	1	18.6	60	5.17	Clear, no sheen, no odor
14:47	2	18.5	70	5.61	Clear, no sheen, no odor
14:50	Sample				
					DO = 3.47mg/l @ 17.9°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 15

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

TOTAL WELL DEPTH: 18.00 ft.

STATIC WATER LEVEL: 11.75 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: gals.

DATE: 2/21/04

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
17:05	1	22.2	40	5.17	Clear, no sheen, no odor
17:08	2	22.4	40	5.05	Clear, no sheen, no odor
17:10	Sample				
					DO = 5.41mg/l @ 22.0 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 16

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 20.00 ft.

STATIC WATER LEVEL: 13.70 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:05	1	20.5	40	4.95	Clear, no sheen, no odor
16:08	2	20.6	40	4.91	Clear, no sheen, no odor
16:10	Sample				
					DO = 4.78mg/l @ 19.7°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 18

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 2/21/04

TOTAL WELL DEPTH: 20.00 ft.

STATIC WATER LEVEL: 13.43 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 69°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
17:25	1	22.9	40	5.06	Clear, no sheen, no odor
17:27	2	23.0	40	4.93	Clear, no sheen, no odor
17:30	Sample				
					DO = 1.26mg/l @ 22.2 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 19

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: 13.00 ft.

STATIC WATER LEVEL: 3.65 ft.

WATER HEIGHT (Hw): ____ ft.

WELL DIAMETER (Dw): ____ ft.

WELL VOLUME (Vw): ____ gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: ____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 62°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:40	1	17.1	30	5.30	Clear, no sheen, mild odor
15:43	2	16.9	30	5.42	Clear, no sheen, mild odor
15:45	Sample				
					DO = 0.98mg/l @ 16.6°C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 20

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: 13.00 ft.

STATIC WATER LEVEL: 1.85 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 65°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:10	1	16.3	30	5.21	Clear, no sheen, mild odor
16:13	2	16.5	30	5.16	Clear, no sheen mild odor
16:15	Sample				
					DO = 1.13 mg/l @ 14.8 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 21

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 03/06/04

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: ToC ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

w = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 68°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:45	Sample				

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 22

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 03/06/04

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: ToC ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 68°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:40	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW-23

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 03/06/04

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: ToC ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 68°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:35	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 24

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: ToC ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 71°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:30	Sample				
					DO = mg/l @ °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 25

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: 16.00 ft.

STATIC WATER LEVEL: 9.87 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.
Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Cloudy 59°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
14:15	1	19.3	60	4.93	Clear, no sheen, no odor
14:17	2	19.4	70	4.75	Clear, no sheen, no odor
14:20	Sample				
					DO = 6.70 mg/l @ 18.4 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 26

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: 15.00 ft.

STATIC WATER LEVEL: 4.00 ft.

WATER HEIGHT (Hw): ft.

WELL DIAMETER (Dw): ft.

WELL VOLUME (Vw): gals.

Vw = (Hw) (Dw^2) (7.5 gal/ft^3) (0.785)

PURGE VOLUME: gals.

EMERALD PERSONNEL: RL, JB

Conditions: Cloudy 59°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
15:10	1	15.2	80	4.85	Clear, no sheen, no odor
15:12	2	15.4	80	4.84	Clear, no sheen, no odor
15:15	Sample				
					DO = 1.91mg/l @ 14.7 °C

EMERALD, INC.

GROUND WATER MONITORING WELL PURGE LOG

WELL NUMBER - MW- 27

PROJECT: Heath Self Serve # 2

STREET: N. Guignard Drive

CITY: Sumter

COUNTY: Sumter

STATE: SC

DATE: 3/06/04

TOTAL WELL DEPTH: _____ ft.

STATIC WATER LEVEL: ToC ft.

WATER HEIGHT (Hw): _____ ft.

WELL DIAMETER (Dw): _____ ft.

WELL VOLUME (Vw): _____ gals.

$Vw = (Hw) (Dw^2) (7.5\ gal/ft^3) (0.785)$

PURGE VOLUME: _____ gals.

EMERALD PERSONNEL: RL, JB

Conditions: Sunny 68°F

TIME	VOLUME PURGED (gallons)	TEMPERATURE (°C)	CONDUCTIVITY (µs/cm)	pH (STU)	NOTES
16:50	Sample				
					DO = mg/l @ °C

APPENDIX D

ANALYTICAL RESULTS

365113

FAX CHAIN
TO COLUMBIA

TestAmerica INCORPORATED

Division/Laboratory Name: _____

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring ~~HSS #2~~ YES

Client Name: Emerald, Inc. Client #: 8583
Address: PO BOX 3050
City/State/Zip Code: Sumter SC 29151
Project Manager: R. Lowder
Telephone Number: (803) 773-5454 Fax: (803) 775-1970
Sampler Name: (Print Name) Ronny Lowder
Sampler Signature: [signature]

Project Name: HSS # 2
Project #: —
Site/Location ID: SUMTER State: SC
Report To: Emerald, Inc.
Invoice To: Same
Quote #: — PO#: —

TAT
___ Standard
___ Rush (surcharges may apply)
Date Needed: 3/1/04
Fax Results: Y N

Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify Other
Preservation & # of Containers
Analyze For:

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify Other	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	BTEX (8260B) (NAPH/POTAB)	FERROUS IRON	NITRATE/SULFATE							REMARKS
✓ MW02	2/21	14:45	G	N	GW		4				1		✓	✓	✓							04A24701
✓ MW03	2/21	14:20	G	N	GW		4				1		✓	✓	✓							02
✓ MW05	2/21	15:25	G	N	GW		4				1		✓	✓	✓							03
✓ MW06	2/21	15:00	G	N	GW		4				1		✓	✓	✓							04
✓ MW11	2/21	15:50	G	N	GW		4				1		✓	✓	✓							05
✓ MW13	2/21	16:55	G	N	GW		4				1		✓	✓	✓							06
✓ MW15	2/21	17:10	G	N	GW		4				1		✓	✓	✓							07
✓ MW16	2/21	16:10	G	N	GW		4				1		✓	✓	✓							08
✓ MW18	2/21	17:30	G	N	GW		4				1		✓	✓	✓							24709

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

Special Instructions:
RUN FERROUS IRON + NITRATE/SULFATE

Relinquished By: [signature]	Date: 2/23/04	Time: 18:15	Received By: Fed Ex	Date: 2/23/04	Time: 18:15
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 2-24-04	Time: 0850

LABORATORY COMMENTS:
Init Lab Temp:
Rec Lab Temp: 2.3c
Custody Seals: Y N N/A
Bottles Supplied by TestAmerica: Y N
Method of Shipment:

TestAmerica
ANALYTICAL TESTING CORPORATION
Nashville Division

COOLER RECEIPT FORM BC#



Client: Emerald, Inc

Cooler Received On: 2/24/04 And Opened On: 2/24/04 By: Mike McBride

(Signature)

1. Temperature of Cooler when opened 2.3 Degrees Celsius
2. Were custody seals on outside of cooler?.....(YES)...NO....NA
   a. If yes, how many, what kind and where: (2) Front
3. Were custody seals on containers and intact?.....(NO)..YES...NA
4. Were the seals intact, signed, and dated correctly?.....(YES)...NO...NA
5. Were custody papers inside cooler?.....(YES)...NO...NA
6. Were custody papers properly filled out (ink,signed,etc)?.....(YES)....NO...NA
7. Did you sign the custody papers in the appropriate place?.....(YES)...NO...NA
8. What kind of packing material used? (Bubblewrap) Peanuts Vermiculite Other (None)
9. Cooling process: (Ice) Ice pack Ice(direct contact) Dry ice Other None
10. Did all containers arrive in good condition(unbroken)?.....(YES)..NO...NA
11. Were all container labels complete (#,date,signed,pres,etc)?.....(YES)...NO...NA
12. Did all container labels and tags agree with custody papers?.....(YES)..NO...NA
13. Were correct containers used for the analysis requested?.....(YES).NO...NA
14. a. Were VOA vials received?.....(YES)..NO...NA
    b. Was there any observable head space present in any VOA vial?.....(NO)..YES...NA
15. Was sufficient amount of sample sent in each container?.....(YES).NO...NA
16. Were correct preservatives used?.....(YES)..NO...NA
    If not, record standard ID of preservative used here_____
17. Was residual chlorine present?.....(NO)..YES...NA
18. See attached for resolution of non-conformance:

(Fed-Ex) UPS Velocity Airborne Route Off-street Misc.

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3/ 1/04 CASE NARRATIVE

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name: HSS #2
Project Number: RONNY LOWDER.
Laboratory Project Number: 365113.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accredidation.

Sample Identification	Lab Number	Collection Date
MW02	04-A24701	2/21/04
MW03	04-A24702	2/21/04
MW05	04-A24703	2/21/04
MW06	04-A24704	2/21/04
MW11	04-A24705	2/21/04
MW13	04-A24706	2/21/04
MW15	04-A24707	2/21/04
MW16	04-A24708	2/21/04
MW18	04-A24709	2/21/04

Additional Laboratory Comments:

The samples for Nitrate analysis received outside method prescribed holding time.

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Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: Glenn L. Norton Report Date: 3/ 1/04

Johnny A. Mitchell, Operations Manager	Gail A. Lage, QA/QC
Michael H. Dunn, M.S., Technical Director	Glenn L. Norton, QA/QC
Pamela A. Langford, Technical Serv	Kelly S. Comstock, QA/QC
Eric S. Smith, QA/QC	Roxanne L. Connor, QA/QC

Laboratory Certification Number: 84009

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24701
Sample ID: MW02
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 14:45
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	77.8	ug/L	1.0	1.0	2/25/04	7:21	S. Udeze	8260B	3169
Toluene	84.4	ug/L	1.0	1.0	2/25/04	7:21	S. Udeze	8260B	3169
Ethylbenzene	140.	ug/L	1.0	1.0	2/25/04	7:21	S. Udeze	8260B	3169
Xylenes (Total)	212.	ug/L	1.0	1.0	2/25/04	7:21	S. Udeze	8260B	3169
Methyl-t-butyl ether	4.5	ug/L	1.0	1.0	2/25/04	7:21	S. Udeze	8260B	3169
Naphthalene	5.40	ug/L	5.00	1.0	2/25/04	7:21	S. Udeze	8260B	3169
METALS									
Ferrous Iron	3170	ug/L	200.	2.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	0.40	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	11.0	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	97.	71. - 128.
VOA Surr Toluene-d8	97.	77. - 119.
VOA Surr, 4-BFB	114.	79. - 123.
VOA Surr, DBFM	105.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24701
Sample ID: MW02
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24702
Sample ID: MW03
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 14:20
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/25/04	7:50	S. Udeze	8260B	3169
Toluene	1.1	ug/L	1.0	1.0	2/25/04	7:50	S. Udeze	8260B	3169
Ethylbenzene	ND	ug/L	1.0	1.0	2/25/04	7:50	S. Udeze	8260B	3169
Xylenes (Total)	6.7	ug/L	1.0	1.0	2/25/04	7:50	S. Udeze	8260B	3169
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/25/04	7:50	S. Udeze	8260B	3169
Naphthalene	ND	ug/L	5.00	1.0	2/25/04	7:50	S. Udeze	8260B	3169
METALS									
Ferrous Iron	ND	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	0.71	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	93.	71. - 128.
VOA Surr Toluene-d8	96.	77. - 119.
VOA Surr, 4-BFB	103.	79. - 123.
VOA Surr, DBFM	102.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24702
Sample ID: MW03
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24703
Sample ID: MW05
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 15:25
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/25/04	8:18	S. Udeze	8260B	3169
Toluene	ND	ug/L	1.0	1.0	2/25/04	8:18	S. Udeze	8260B	3169
Ethylbenzene	ND	ug/L	1.0	1.0	2/25/04	8:18	S. Udeze	8260B	3169
Xylenes (Total)	ND	ug/L	1.0	1.0	2/25/04	8:18	S. Udeze	8260B	3169
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/25/04	8:18	S. Udeze	8260B	3169
Naphthalene	ND	ug/L	5.00	1.0	2/25/04	8:18	S. Udeze	8260B	3169
METALS									
Ferrous Iron	ND	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	1.14	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	104.	71. - 128.
VOA Surr Toluene-d8	99.	77. - 119.
VOA Surr, 4-BFB	95.	79. - 123.
VOA Surr, DBFM	121.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24703
Sample ID: MW05
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24704
Sample ID: MW06
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 15:00
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	14.0	ug/L	1.0	1.0	2/27/04	23:35	S. Udeze	8260B	3209
Toluene	ND	ug/L	1.0	1.0	2/27/04	23:35	S. Udeze	8260B	3209
Ethylbenzene	3.2	ug/L	1.0	1.0	2/27/04	23:35	S. Udeze	8260B	3209
Xylenes (Total)	7.5	ug/L	1.0	1.0	2/27/04	23:35	S. Udeze	8260B	3209
Methyl-t-butyl ether	3.4	ug/L	1.0	1.0	2/27/04	23:35	S. Udeze	8260B	3209
Naphthalene	ND	ug/L	5.00	1.0	2/27/04	23:35	S. Udeze	8260B	3209
METALS									
Ferrous Iron	16000	ug/L	1000	10.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	13.4	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	103.	71. - 128.
VOA Surr Toluene-d8	102.	77. - 119.
VOA Surr, 4-BFB	102.	79. - 123.
VOA Surr, DBFM	97.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24704
Sample ID: MW06
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24705
Sample ID: MW11
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 15:50
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/25/04	9:14	S. Udeze	8260B	3169
Toluene	1.8	ug/L	1.0	1.0	2/25/04	9:14	S. Udeze	8260B	3169
Ethylbenzene	1.0	ug/L	1.0	1.0	2/25/04	9:14	S. Udeze	8260B	3169
Xylenes (Total)	11.1	ug/L	1.0	1.0	2/25/04	9:14	S. Udeze	8260B	3169
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/25/04	9:14	S. Udeze	8260B	3169
Naphthalene	ND	ug/L	5.00	1.0	2/25/04	9:14	S. Udeze	8260B	3169
METALS									
Ferrous Iron	2940	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	112.	71. - 128.
VOA Surr Toluene-d8	93.	77. - 119.
VOA Surr, 4-BFB	102.	79. - 123.
VOA Surr, DBFM	112.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24705
Sample ID: MW11
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24706
Sample ID: MW13
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 16:55
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/25/04	9:42	S. Udeze	8260B	3169
Toluene	ND	ug/L	1.0	1.0	2/25/04	9:42	S. Udeze	8260B	3169
Ethylbenzene	ND	ug/L	1.0	1.0	2/25/04	9:42	S. Udeze	8260B	3169
Xylenes (Total)	ND	ug/L	1.0	1.0	2/25/04	9:42	S. Udeze	8260B	3169
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/25/04	9:42	S. Udeze	8260B	3169
Naphthalene	ND	ug/L	5.00	1.0	2/25/04	9:42	S. Udeze	8260B	3169
METALS									
Ferrous Iron	ND	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	0.43	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	116.	71. - 128.
VOA Surr Toluene-d8	90.	77. - 119.
VOA Surr, 4-BFB	95.	79. - 123.
VOA Surr, DBFM	114.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24706
Sample ID: MW13
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

TestAmerica
ANALYTICAL TESTING CORPORATION

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24707
Sample ID: MW15
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 17:10
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/25/04	10:11	S. Udeze	8260B	3169
Toluene	ND	ug/L	1.0	1.0	2/25/04	10:11	S. Udeze	8260B	3169
Ethylbenzene	ND	ug/L	1.0	1.0	2/25/04	10:11	S. Udeze	8260B	3169
Xylenes (Total)	ND	ug/L	1.0	1.0	2/25/04	10:11	S. Udeze	8260B	3169
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/25/04	10:11	S. Udeze	8260B	3169
Naphthalene	ND	ug/L	5.00	1.0	2/25/04	10:11	S. Udeze	8260B	3169
METALS									
Ferrous Iron	ND	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	0.88	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	114.	71. - 128.
VOA Surr Toluene-d8	93.	77. - 119.
VOA Surr, 4-BFB	97.	79. - 123.
VOA Surr, DBFM	116.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24707
Sample ID: MW15
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24708
Sample ID: MW16
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 16:10
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/25/04	12:09	S. Udeze	8260B	3169
Toluene	ND	ug/L	1.0	1.0	2/25/04	12:09	S. Udeze	8260B	3169
Ethylbenzene	ND	ug/L	1.0	1.0	2/25/04	12:09	S. Udeze	8260B	3169
Xylenes (Total)	ND	ug/L	1.0	1.0	2/25/04	12:09	S. Udeze	8260B	3169
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/25/04	12:09	S. Udeze	8260B	3169
Naphthalene	ND	ug/L	5.00	1.0	2/25/04	12:09	S. Udeze	8260B	3169
METALS									
Ferrous Iron	ND	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	1.01	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	110.	71. - 128.
VOA Surr Toluene-d8	117.	77. - 119.
VOA Surr, 4-BFB	118.	79. - 123.
VOA Surr, DBFM	121.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24708
Sample ID: MW16
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project: RONNY LOWDER
Project Name: HSS #2
Sampler:

Lab Number: 04-A24709
Sample ID: MW18
Sample Type: Water
Site ID:

Date Collected: 2/21/04
Time Collected: 17:30
Date Received: 2/24/04
Time Received: 8:50
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	2/26/04	9:10	S. Udeze	8260B	6168
Toluene	ND	ug/L	1.0	1.0	2/26/04	9:10	S. Udeze	8260B	6168
Ethylbenzene	ND	ug/L	1.0	1.0	2/26/04	9:10	S. Udeze	8260B	6168
Xylenes (Total)	ND	ug/L	1.0	1.0	2/26/04	9:10	S. Udeze	8260B	6168
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	2/26/04	9:10	S. Udeze	8260B	6168
Naphthalene	ND	ug/L	5.00	1.0	2/26/04	9:10	S. Udeze	8260B	6168
METALS									
Ferrous Iron	248.	ug/L	100.	1.0	2/24/04	21:42	W. Choate	3500D	1932
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	0.49	mg/L	0.10	1.0	2/24/04	13:28	S. Overton	9056	1904
Sulfate	ND	mg/L	1.00	1.0	2/24/04	13:28	S. Overton	9056	1904

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	106.	71. - 128.
VOA Surr Toluene-d8	113.	77. - 119.
VOA Surr, 4-BFB	115.	79. - 123.
VOA Surr, DBFM	121.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A24709
Sample ID: MW18
Project: RONNY LOWDER

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.

End of Sample Report.

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 1
Laboratory Receipt Date: 2/24/04

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
VOA PARAMETERS								
Benzene	mg/l	< 0.0005	0.0458	0.0500	92	73 - 135	3169	blank
Benzene	mg/l	< 0.0005	0.0524	0.0500	105	73 - 135	6168	blank
Benzene	mg/l	< 0.0010	0.0576	0.0500	115	73 - 135	3209	04-A24864
Toluene	mg/l	< 0.0006	0.0460	0.0500	92	69 - 139	3169	blank
Toluene	mg/l	< 0.0006	0.0569	0.0500	114	69 - 139	6168	blank
Toluene	mg/l	< 0.0010	0.0602	0.0500	120	69 - 139	3209	04-A24864
VOA Surr 1,2-DCA-d4	% Rec				103	71 - 128	3169	
VOA Surr 1,2-DCA-d4	% Rec				107	71 - 128	6168	
VOA Surr 1,2-DCA-d4	% Rec				101	71 - 128	3209	
VOA Surr Toluene-d8	% Rec				101	77 - 119	3169	
VOA Surr Toluene-d8	% Rec				115	77 - 119	6168	
VOA Surr Toluene-d8	% Rec				101	77 - 119	3209	
VOA Surr, 4-BFB	% Rec				107	79 - 123	3169	
VOA Surr, 4-BFB	% Rec				122	79 - 123	6168	
VOA Surr, 4-BFB	% Rec				105	79 - 123	3209	
VOA Surr, DBFM	% Rec				115	78 - 124	3169	
VOA Surr, DBFM	% Rec				134	78 - 124	6168	
VOA Surr, DBFM	% Rec				105	78 - 124	3209	
METALS								
Ferrous Iron	mg/l	3.17	5.60	2.00	122#	80 - 120	1932	04-A24701
Ferrous Iron	mg/l	3.17	5.51	2.00	117	80 - 120	1932	04-A24701

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 2
Laboratory Receipt Date: 2/24/04

MISC PARAMETERS								
Nitrate-N as N	mg/l	0.40	3.43	3.00	101	80 - 120	1904	04-A24701
Sulfate	mg/l	11.0	23.4	15.0	83	80 - 120	1904	04-A24701

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.0458	0.0496	7.97	21.	3169
Benzene	mg/l	0.0524	0.0586	11.17	21.	6168
Benzene	mg/l	0.0576	0.0570	1.05	21.	3209
Toluene	mg/l	0.0460	0.0488	5.91	24.	3169
Toluene	mg/l	0.0569	0.0613	7.45	24.	6168
Toluene	mg/l	0.0602	0.0596	1.00	24.	3209
VOA Surr 1,2-DCA-d4	% Rec		98.			3169
VOA Surr 1,2-DCA-d4	% Rec		117.			6168
VOA Surr 1,2-DCA-d4	% Rec		103.			3209
VOA Surr Toluene-d8	% Rec		95.			3169
VOA Surr Toluene-d8	% Rec		118.			6168
VOA Surr Toluene-d8	% Rec		103.			3209
VOA Surr, 4-BFB	% Rec		108.			3169
VOA Surr, 4-BFB	% Rec		128.			6168
VOA Surr, 4-BFB	% Rec		99.			3209
VOA Surr, DBFM	% Rec		111.			3169
VOA Surr, DBFM	% Rec		148.			6168
VOA Surr, DBFM	% Rec		103.			3209
METALS						
Ferrous Iron	mg/l	5.60	5.51	1.62	20	1932

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 3
Laboratory Receipt Date: 2/24/04

Nitrate-N as N	mg/l	3.43	3.43	0.00	20	1904
Sulfate	mg/l	23.4	23.2	0.86	20	1904

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.0500	0.0493	99	81 - 121	3169
Benzene	mg/l	0.0500	0.0563	113	81 - 121	6168
Benzene	mg/l	0.0500	0.0527	105	81 - 121	3209
Benzene	mg/l	0.0500	0.0526	105	81 - 121	3209
Ethylbenzene	mg/l	0.0500	0.0493	99	78 - 126	3169
Ethylbenzene	mg/l	0.0500	0.0525	105	78 - 126	6168
Ethylbenzene	mg/l	0.0500	0.0536	107	78 - 126	3209
Ethylbenzene	mg/l	0.0500	0.0517	103	78 - 126	3209
Naphthalene	mg/l	0.0500	0.0583	117	53 - 152	3169
Naphthalene	mg/l	0.0500	0.0542	108	53 - 152	6168
Naphthalene	mg/l	0.0500	0.0717	143	53 - 152	3209
Naphthalene	mg/l	0.0500	0.0781	156 #	53 - 152	3209
Toluene	mg/l	0.0500	0.0508	102	77 - 125	3169
Toluene	mg/l	0.0500	0.0537	107	77 - 125	6168
Toluene	mg/l	0.0500	0.0581	116	77 - 125	3209
Toluene	mg/l	0.0500	0.0569	114	77 - 125	3209
Xylenes (Total)	mg/l	0.150	0.141	94	78 - 127	3169
Xylenes (Total)	mg/l	0.150	0.166	111	78 - 127	6168
Xylenes (Total)	mg/l	0.150	0.191	127 #	78 - 127	3209
Xylenes (Total)	mg/l	0.150	0.160	107	78 - 127	3209
Methyl-t-butyl ether	mg/l	0.0500	0.0528	106	68 - 134	3169
Methyl-t-butyl ether	mg/l	0.0500	0.0574	115	68 - 134	6168
Methyl-t-butyl ether	mg/l	0.0500	0.0511	102	68 - 134	3209
Methyl-t-butyl ether	mg/l	0.0500	0.0596	119	68 - 134	3209

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 4
Laboratory Receipt Date: 2/24/04

VOA Surr 1,2-DCA-d4	% Rec			119	71 - 128	3169
VOA Surr 1,2-DCA-d4	% Rec			138	71 - 128	6168
VOA Surr 1,2-DCA-d4	% Rec			99	71 - 128	3209
VOA Surr 1,2-DCA-d4	% Rec			107	71 - 128	3209
VOA Surr Toluene-d8	% Rec			104	77 - 119	3169
VOA Surr Toluene-d8	% Rec			95	77 - 119	6168
VOA Surr Toluene-d8	% Rec			102	77 - 119	3209
VOA Surr Toluene-d8	% Rec			101	77 - 119	3209
VOA Surr, 4-BFB	% Rec			115	79 - 123	3169
VOA Surr, 4-BFB	% Rec			114	79 - 123	6168
VOA Surr, 4-BFB	% Rec			103	79 - 123	3209
VOA Surr, 4-BFB	% Rec			104	79 - 123	3209
VOA Surr, DBFM	% Rec			115	78 - 124	3169
VOA Surr, DBFM	% Rec			143	78 - 124	6168
VOA Surr, DBFM	% Rec			104	78 - 124	3209
VOA Surr, DBFM	% Rec			106	78 - 124	3209
METALS						
Ferrous Iron	mg/l	1.00	1.02	102	80 - 120	1932
MISC PARAMETERS						
Nitrate-N as N	mg/l	3.00	3.16	105	90 - 110	1904
Sulfate	mg/l	15.0	15.3	102	90 - 110	1904

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd
Ferrous Iron	mg/l	0.248	0.248	0.00	15.	1932	04-A24709

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 5
Laboratory Receipt Date: 2/24/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
VOA PARAMETERS					
Benzene	< 0.0005	mg/l	3169	2/24/04	16:41
Benzene	< 0.0005	mg/l	3169	2/25/04	4:32
Benzene	< 0.0005	mg/l	6168	2/25/04	16:13
Benzene	< 0.0005	mg/l	6168	2/26/04	4:28
Benzene	< 0.0005	mg/l	3209	2/27/04	11:02
Benzene	< 0.0005	mg/l	3209	2/27/04	22:43
Ethylbenzene	< 0.0003	mg/l	3169	2/24/04	16:41
Ethylbenzene	< 0.0003	mg/l	3169	2/25/04	4:32
Ethylbenzene	< 0.0003	mg/l	6168	2/25/04	16:13
Ethylbenzene	< 0.0003	mg/l	6168	2/26/04	4:28
Ethylbenzene	< 0.0003	mg/l	3209	2/27/04	11:02
Ethylbenzene	< 0.0003	mg/l	3209	2/27/04	22:43
Naphthalene	< 0.00120	mg/l	3169	2/24/04	16:41
Naphthalene	< 0.00120	mg/l	3169	2/25/04	4:32
Naphthalene	0.00470	mg/l	6168	2/25/04	16:13
Naphthalene	0.00480	mg/l	6168	2/26/04	4:28
Naphthalene	0.00160	mg/l	3209	2/27/04	11:02
Naphthalene	< 0.00120	mg/l	3209	2/27/04	22:43
Toluene	< 0.0006	mg/l	3169	2/24/04	16:41
Toluene	< 0.0006	mg/l	3169	2/25/04	4:32
Toluene	< 0.0006	mg/l	6168	2/25/04	16:13
Toluene	< 0.0006	mg/l	6168	2/26/04	4:28
Toluene	< 0.0006	mg/l	3209	2/27/04	11:02
Toluene	< 0.0006	mg/l	3209	2/27/04	22:43
Xylenes (Total)	< 0.0009	mg/l	3169	2/24/04	16:41
Xylenes (Total)	< 0.0009	mg/l	3169	2/25/04	4:32
Xylenes (Total)	< 0.0009	mg/l	6168	2/25/04	16:13

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 6
Laboratory Receipt Date: 2/24/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
Xylenes (Total)	< 0.0009	mg/l	6168	2/26/04	4:28
Xylenes (Total)	< 0.0009	mg/l	3209	2/27/04	11:02
Xylenes (Total)	< 0.0009	mg/l	3209	2/27/04	22:43
Methyl-t-butyl ether	< 0.0005	mg/l	3169	2/24/04	16:41
Methyl-t-butyl ether	< 0.0005	mg/l	3169	2/25/04	4:32
Methyl-t-butyl ether	< 0.0005	mg/l	6168	2/25/04	16:13
Methyl-t-butyl ether	< 0.0005	mg/l	6168	2/26/04	4:28
Methyl-t-butyl ether	< 0.0005	mg/l	3209	2/27/04	11:02
Methyl-t-butyl ether	< 0.0005	mg/l	3209	2/27/04	22:43
VOA Surr 1,2-DCA-d4	116.	% Rec	3169	2/24/04	16:41
VOA Surr 1,2-DCA-d4	112.	% Rec	3169	2/25/04	4:32
VOA Surr 1,2-DCA-d4	107.	% Rec	6168	2/25/04	16:13
VOA Surr 1,2-DCA-d4	106.	% Rec	6168	2/26/04	4:28
VOA Surr 1,2-DCA-d4	97.	% Rec	3209	2/27/04	11:02
VOA Surr 1,2-DCA-d4	105.	% Rec	3209	2/27/04	22:43
VOA Surr Toluene-d8	102.	% Rec	3169	2/24/04	16:41
VOA Surr Toluene-d8	97.	% Rec	3169	2/25/04	4:32
VOA Surr Toluene-d8	115.	% Rec	6168	2/25/04	16:13
VOA Surr Toluene-d8	118.	% Rec	6168	2/26/04	4:28
VOA Surr Toluene-d8	103.	% Rec	3209	2/27/04	11:02
VOA Surr Toluene-d8	103.	% Rec	3209	2/27/04	22:43
VOA Surr, 4-BFB	121.	% Rec	3169	2/24/04	16:41
VOA Surr, 4-BFB	96.	% Rec	3169	2/25/04	4:32
VOA Surr, 4-BFB	115.	% Rec	6168	2/25/04	16:13
VOA Surr, 4-BFB	114.	% Rec	6168	2/26/04	4:28
VOA Surr, 4-BFB	102.	% Rec	3209	2/27/04	11:02
VOA Surr, 4-BFB	102.	% Rec	3209	2/27/04	22:43
VOA Surr, DBFM	116.	% Rec	3169	2/24/04	16:41
VOA Surr, DBFM	0.	% Rec	3169	2/25/04	4:32
VOA Surr, DBFM	136.	% Rec	6168	2/25/04	16:13
VOA Surr, DBFM	122.	% Rec	6168	2/26/04	4:28

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number: RONNY LOWDER
Project Name: HSS #2
Page: 7
Laboratory Receipt Date: 2/24/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
VOA Surr, DBFM	98.	% Rec	3209	2/27/04	11:02
VOA Surr, DBFM	103.	% Rec	3209	2/27/04	22:43
METALS					
Ferrous Iron	< 0.100	mg/l	1932	2/24/04	21:42
MISC PARAMETERS					
Nitrate-N as N	< 0.10	mg/l	1904	2/24/04	13:28
Sulfate	< 1.00	mg/l	1904	2/24/04	13:28

= Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 365113

366829

FAX CHAIN TO COLUMBIA

TestAmerica INCORPORATED

Division/Laboratory Name: _____

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes? Compliance Monitoring YES

Client Name: EMERALD, INC. Client #: 85583

Address: PO BOX 3050

City/State/Zip Code: SUMTER SC 29151

Project Manager: R. LOWDER

Telephone Number: (803) 773-5454 Fax: (803) 775-1970

Sampler Name: (Print Name) RONNIE LOWDER

Sampler Signature: [signature]

Project Name: HSS #7

Project #: —

Site/Location ID: SUMTER State: SC

Report To: EMERALD, INC.

Invoice To: SAME

Quote #: — PO#: —

TAT: ___ Standard ___ Rush (surcharges may apply)

Date Needed: 3/15/04

Fax Results: Y N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix (SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify Other)	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: BTEX (8260.0B) / NAPHTHALENE	NITRATE / SULFATE	FERROUS IRON	REMARKS
MW14	3/16	14:50	G	N	GW		4				1		2	1	1	33022
MW19	3/16	15:45	G	N	GW		4				1		1	1	1	23
MW20	3/16	16:15	G	N	GW		4				1		1	1	1	24
MW21	3/16	16:45	G	N	GW		4				1		1	1	1	25
MW22	3/16	16:40	G	N	GW		4				1		1	1	1	26
MW23	3/16	16:35	G	N	GW		4				1		1	1	1	27
MW24	3/16	16:30	G	N	GW		4				1		1	1	1	28
MW25	3/16	14:20	G	N	GW		4				1		1	1	1	29
MW26	3/16	15:15	G	N	GW		4				1		1	1	1	30
MW27	3/16	16:50	G	N	GW		4				1		1	1	1	33031

QC Deliverables: ___ None ___ Level 2 (Batch QC) ___ Level 3 ___ Level 4 Other: _____

Special Instructions:

FOR FERROUS IRON & NITRATE/SULFATE

Relinquished By:	Date: 3/17/04	Time: 18:30	Received By: FedEx	Date: 3/18/04	Time: 18:30	
Relinquished By:	Date:	Time:	Received By:	Date: 3/19/04	Time: 8:10	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	

LABORATORY COMMENTS:

Init Lab Temp:

Rec Lab Temp: 4.0 °C

Custody Seals: Y N N/A

Bottles Supplied by TestAmerica: Y N

Method of Shipment:

TestAmerica
ANALYTICAL TESTING CORPORATION

Nashville Division

COOLER RECEIPT FORM **BC#**



Client Name : Emerald

Cooler Received/Opened On: 3/9/04 **Accessioned By:** Mark Beasley

M. Bly
Log-in Personnel Signature

1. Temperature of Cooler when triaged: -0.5 **Degrees Celsius**
2. Were custody seals on outside of cooler?..... (YES)...NO...NA
   a. If yes, how many, what kind and where: 2 Front
3. Were custody seals on containers and intact?..... (NO)...YES...NA
4. Were the seals intact, signed, and dated correctly?..... (YES)...NO...NA
5. Were custody papers inside cooler?..... (YES)...NO...NA
6. Were custody papers properly filled out (ink, signed, etc)?..... (YES)...NO...NA
7. Did you sign the custody papers in the appropriate place?..... (YES)...NO...NA
8. What kind of packing material used? (Bubblewrap) Peanuts Vermiculite Other None
9. Cooling process: (Ice) Ice-pack Ice (direct contact) Dry ice Other None
10. Did all containers arrive in good condition (unbroken)?..... (YES)...NO...NA
11. Were all container labels complete (#, date, signed, pres., etc)?..... (YES)...NO...NA
12. Did all container labels and tags agree with custody papers?..... (YES)...NO...NA
13. Were correct containers used for the analysis requested?..... (YES)...NO...NA
14. a. Were VOA vials received?..... (YES)...NO...NA
    b. Was there any observable head space present in any VOA vial?..... (NO)...YES...NA
15. Was sufficient amount of sample sent in each container?..... (YES)...NO...NA
16. Were correct preservatives used?..... (YES)...NO...NA
    If not, record standard ID of preservative used here_____
17. Was residual chlorine present?..... (NO)...YES...NA
18. Indicate the Airbill Tracking Number (last 4 digits for Fedex only) and Name of Courier below:

0245						
UPS	Velocity	Airborne	Route	Off-street	(Fedex)	Misc.

19. If a Non-Conformance exists, see attached or comments below:

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3/16/04 CASE NARRATIVE

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name: HSS #2
Project Number: .
Laboratory Project Number: 366829.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accredidation.

Sample Identification	Lab Number	Collection Date
MW-14	04-A33022	3/ 6/04
MW-19	04-A33023	3/ 6/04
MW-20	04-A33024	3/ 6/04
MW-21	04-A33025	3/ 6/04
MW-22	04-A33026	3/ 6/04
MW-23	04-A33027	3/ 6/04
MW-24	04-A33028	3/ 6/04
MW-25	04-A33029	3/ 6/04
MW-26	04-A33030	3/ 6/04
MW-27	04-A33031	3/ 6/04

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Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: Roxanne L Connor Report Date: 3/16/04

Johnny A. Mitchell, Operations Manager
Michael H. Dunn, M.S., Technical Director
Pamela A. Langford, Technical Serv
Eric S. Smith, QA/QC
Gail A. Lage, QA/QC
Glenn L. Norton, QA/QC
Kelly S. Comstock, QA/QC
Roxanne L. Connor, QA/QC

Laboratory Certification Number: 84009

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33022
Sample ID: MW-14
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 14:50
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	67.7	ug/L	1.0	1.0	3/12/04	7:11	S. Edwards	8260B	220
Toluene	ND	ug/L	1.0	1.0	3/12/04	7:11	S. Edwards	8260B	220
Ethylbenzene	3.9	ug/L	1.0	1.0	3/12/04	7:11	S. Edwards	8260B	220
Xylenes (Total)	20.5	ug/L	1.0	1.0	3/12/04	7:11	S. Edwards	8260B	220
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/12/04	7:11	S. Edwards	8260B	220
Naphthalene	ND	ug/L	5.00	1.0	3/12/04	7:11	S. Edwards	8260B	220
METALS									
Ferrous Iron	12500	ug/L	500.	5.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	3.14	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	2.22	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	103.	71. - 128.
VOA Surr Toluene-d8	97.	77. - 119.
VOA Surr, 4-BFB	104.	79. - 123.
VOA Surr, DBFM	106.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33022
Sample ID: MW-14
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method
prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33023
Sample ID: MW-19
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 15:45
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	166.	ug/L	5.0	5.0	3/14/04	2:55	S. Edwards	8260B	1556
Toluene	ND	ug/L	1.0	1.0	3/12/04	3:25	S. Edwards	8260B	220
Ethylbenzene	ND	ug/L	1.0	1.0	3/12/04	3:25	S. Edwards	8260B	220
Xylenes (Total)	15.8	ug/L	1.0	1.0	3/12/04	3:25	S. Edwards	8260B	220
Methyl-t-butyl ether	196.	ug/L	5.0	5.0	3/14/04	2:55	S. Edwards	8260B	1556
Naphthalene	ND	ug/L	5.00	1.0	3/12/04	3:25	S. Edwards	8260B	220
METALS									
Ferrous Iron	1640	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	2.52	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	99.	71. - 128.
VOA Surr Toluene-d8	98.	77. - 119.
VOA Surr, 4-BFB	98.	79. - 123.
VOA Surr, DBFM	103.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33023
Sample ID: MW-19
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Lab Number: 04-A33024
Sample ID: MW-20
Sample Type: Water
Site ID:

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Date Collected: 3/ 6/04
Time Collected: 16:15
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	1760	ug/L	50.0	50.0	3/14/04	4:19	S. Edwards	8260B	1556
Toluene	2.1	ug/L	1.0	1.0	3/12/04	7:40	S. Edwards	8260B	220
Ethylbenzene	ND	ug/L	1.0	1.0	3/12/04	7:40	S. Edwards	8260B	220
Xylenes (Total)	35.3	ug/L	1.0	1.0	3/12/04	7:40	S. Edwards	8260B	220
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/12/04	7:40	S. Edwards	8260B	220
Naphthalene	79.6	ug/L	5.00	1.0	3/12/04	7:40	S. Edwards	8260B	220
METALS									
Ferrous Iron	200.	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	ND	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	105.	71. - 128.
VOA Surr Toluene-d8	102.	77. - 119.
VOA Surr, 4-BFB	105.	79. - 123.
VOA Surr, DBFM	109.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33024
Sample ID: MW-20
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33025
Sample ID: MW-21
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 16:45
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/12/04	8:08	S. Edwards	8260B	220
Toluene	ND	ug/L	1.0	1.0	3/12/04	8:08	S. Edwards	8260B	220
Ethylbenzene	ND	ug/L	1.0	1.0	3/12/04	8:08	S. Edwards	8260B	220
Xylenes (Total)	ND	ug/L	1.0	1.0	3/12/04	8:08	S. Edwards	8260B	220
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/12/04	8:08	S. Edwards	8260B	220
Naphthalene	ND	ug/L	5.00	1.0	3/12/04	8:08	S. Edwards	8260B	220
METALS									
Ferrous Iron	1440	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	0.90	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	77.6	mg/L	2.00	2.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	102.	71. - 128.
VOA Surr Toluene-d8	96.	77. - 119.
VOA Surr, 4-BFB	106.	79. - 123.
VOA Surr, DBFM	105.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33025
Sample ID: MW-21
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33026
Sample ID: MW-22
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 16:40
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/12/04	8:37	S. Edwards	8260B	220
Toluene	ND	ug/L	1.0	1.0	3/12/04	8:37	S. Edwards	8260B	220
Ethylbenzene	ND	ug/L	1.0	1.0	3/12/04	8:37	S. Edwards	8260B	220
Xylenes (Total)	ND	ug/L	1.0	1.0	3/12/04	8:37	S. Edwards	8260B	220
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/12/04	8:37	S. Edwards	8260B	220
Naphthalene	ND	ug/L	5.00	1.0	3/12/04	8:37	S. Edwards	8260B	220
METALS									
Ferrous Iron	3300	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	9.34	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	99.	71. - 128.
VOA Surr Toluene-d8	94.	77. - 119.
VOA Surr, 4-BFB	102.	79. - 123.
VOA Surr, DBFM	109.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33026
Sample ID: MW-22
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33027
Sample ID: MW-23
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 16:35
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/12/04	9:05	S. Edwards	8260B	220
Toluene	ND	ug/L	1.0	1.0	3/12/04	9:05	S. Edwards	8260B	220
Ethylbenzene	ND	ug/L	1.0	1.0	3/12/04	9:05	S. Edwards	8260B	220
Xylenes (Total)	ND	ug/L	1.0	1.0	3/12/04	9:05	S. Edwards	8260B	220
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/12/04	9:05	S. Edwards	8260B	220
Naphthalene	ND	ug/L	5.00	1.0	3/12/04	9:05	S. Edwards	8260B	220
METALS									
Ferrous Iron	998.	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	8.14	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	104.	71. - 128.
VOA Surr Toluene-d8	96.	77. - 119.
VOA Surr, 4-BFB	107.	79. - 123.
VOA Surr, DBFM	106.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33027
Sample ID: MW-23
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33028
Sample ID: MW-24
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 16:30
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/14/04	10:50	A. Bruton	8260B	2306
Toluene	ND	ug/L	1.0	1.0	3/14/04	10:50	A. Bruton	8260B	2306
Ethylbenzene	ND	ug/L	1.0	1.0	3/14/04	10:50	A. Bruton	8260B	2306
Xylenes (Total)	ND	ug/L	1.0	1.0	3/14/04	10:50	A. Bruton	8260B	2306
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/14/04	10:50	A. Bruton	8260B	2306
Naphthalene	ND	ug/L	5.00	1.0	3/14/04	10:50	A. Bruton	8260B	2306
METALS									
Ferrous Iron	8570	ug/L	500.	5.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	60.2	mg/L	2.00	2.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	98.	71. - 128.
VOA Surr Toluene-d8	97.	77. - 119.
VOA Surr, 4-BFB	115.	79. - 123.
VOA Surr, DBFM	96.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33028
Sample ID: MW-24
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33029
Sample ID: MW-25
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 14:20
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/14/04	7:38	S. Edwards	8260B	1556
Toluene	ND	ug/L	1.0	1.0	3/14/04	7:38	S. Edwards	8260B	1556
Ethylbenzene	ND	ug/L	1.0	1.0	3/14/04	7:38	S. Edwards	8260B	1556
Xylenes (Total)	ND	ug/L	1.0	1.0	3/14/04	7:38	S. Edwards	8260B	1556
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/14/04	7:38	S. Edwards	8260B	1556
Naphthalene	ND	ug/L	5.00	1.0	3/14/04	7:38	S. Edwards	8260B	1556
METALS									
Ferrous Iron	212.	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	4.66	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	ND	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	115.	71. - 128.
VOA Surr Toluene-d8	90.	77. - 119.
VOA Surr, 4-BFB	98.	79. - 123.
VOA Surr, DBFM	122.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33029
Sample ID: MW-25
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33030
Sample ID: MW-26
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 15:15
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/14/04	13:19	A. Bruton	8260B	2306
Toluene	ND	ug/L	1.0	1.0	3/14/04	13:19	A. Bruton	8260B	2306
Ethylbenzene	ND	ug/L	1.0	1.0	3/14/04	13:19	A. Bruton	8260B	2306
Xylenes (Total)	ND	ug/L	1.0	1.0	3/14/04	13:19	A. Bruton	8260B	2306
Methyl-t-butyl ether	ND	ug/L	1.0	1.0	3/14/04	13:19	A. Bruton	8260B	2306
Naphthalene	ND	ug/L	5.00	1.0	3/14/04	13:19	A. Bruton	8260B	2306
METALS									
Ferrous Iron	1070	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	13.5	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	98.	71. - 128.
VOA Surr Toluene-d8	100.	77. - 119.
VOA Surr, 4-BFB	118.	79. - 123.
VOA Surr, DBFM	98.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33030
Sample ID: MW-26
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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ANALYTICAL REPORT

EMERALD, INC. 8583
RON LOWDER
PO BOX 3050
SUMTER, SC 29151

Project:
Project Name: HSS #2
Sampler: RONNY LOWDER

Lab Number: 04-A33031
Sample ID: MW-27
Sample Type: Water
Site ID:

Date Collected: 3/ 6/04
Time Collected: 16:50
Date Received: 3/ 9/04
Time Received: 8:10
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
VOLATILE ORGANICS									
Benzene	ND	ug/L	1.0	1.0	3/14/04	13:49	A. Bruton	8260B	2306
Toluene	ND	ug/L	1.0	1.0	3/14/04	13:49	A. Bruton	8260B	2306
Ethylbenzene	ND	ug/L	1.0	1.0	3/14/04	13:49	A. Bruton	8260B	2306
Xylenes (Total)	ND	ug/L	1.0	1.0	3/14/04	13:49	A. Bruton	8260B	2306
Methyl-t-butyl ether	1.1	ug/L	1.0	1.0	3/14/04	13:49	A. Bruton	8260B	2306
Naphthalene	ND	ug/L	5.00	1.0	3/14/04	13:49	A. Bruton	8260B	2306
METALS									
Ferrous Iron	2040	ug/L	100.	1.0	3/ 9/04	21:42	W. Choate	3500D	5088
MISCELLANEOUS CHEMISTRY									
Nitrate-N as N	ND	mg/L	0.10	1.0	3/13/04	3:36	S. Overton	9056	5085
Sulfate	29.7	mg/L	1.00	1.0	3/13/04	3:36	S. Overton	9056	5085

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	98.	71. - 128.
VOA Surr Toluene-d8	97.	77. - 119.
VOA Surr, 4-BFB	114.	79. - 123.
VOA Surr, DBFM	98.	78. - 124.

Sample report continued . . .

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ANALYTICAL REPORT

Laboratory Number: 04-A33031
Sample ID: MW-27
Project:

LABORATORY COMMENTS:
ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.
Sample for Ferrous Iron analysis received outside method prescribed holding time.
Nitrate and ferrous iron were received outside of holding time.

End of Sample Report.

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 1
Laboratory Receipt Date: 3/ 9/04

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
VOA PARAMETERS								
Benzene	mg/l	< 0.0010	0.0708	0.0500	142#	73 - 135	1556	04-A35808
Benzene	mg/l	< 0.0010	0.0488	0.0500	98	73 - 135	2306	32753
Toluene	mg/l	< 0.0010	0.0536	0.0500	107	69 - 139	220	04-A33023
Toluene	mg/l	< 0.0010	0.0550	0.0500	110	69 - 139	1556	04-A35808
Toluene	mg/l	< 0.0010	0.0488	0.0500	98	69 - 139	2306	32753
VOA Surr 1,2-DCA-d4	% Rec				98	71 - 128	220	
VOA Surr 1,2-DCA-d4	% Rec				128	71 - 128	1556	
VOA Surr 1,2-DCA-d4	% Rec				98	71 - 128	2306	
VOA Surr Toluene-d8	% Rec				98	77 - 119	220	
VOA Surr Toluene-d8	% Rec				96	77 - 119	1556	
VOA Surr Toluene-d8	% Rec				100	77 - 119	2306	
VOA Surr, 4-BFB	% Rec				94	79 - 123	220	
VOA Surr, 4-BFB	% Rec				94	79 - 123	1556	
VOA Surr, 4-BFB	% Rec				112	79 - 123	2306	
VOA Surr, DBFM	% Rec				111	78 - 124	220	
VOA Surr, DBFM	% Rec				138	78 - 124	1556	
VOA Surr, DBFM	% Rec				99	78 - 124	2306	
MISC PARAMETERS								
Nitrate-N as N	mg/l	3.14	6.18	3.00	101	80 - 120	5085	04-A33022
Sulfate	mg/l	2.22	18.4	15.0	108	80 - 120	5085	04-A33022

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 2
Laboratory Receipt Date: 3/ 9/04

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.348	0.302	14.15	21.	220
Benzene	mg/l	0.0708	0.0736	3.88	21.	1556
Benzene	mg/l	0.0488	0.0486	0.41	21.	2306
Toluene	mg/l	0.0536	0.0542	1.11	24.	220
Toluene	mg/l	0.0550	0.0576	4.62	24.	1556
Toluene	mg/l	0.0488	0.0495	1.42	24.	2306
VOA Surr 1,2-DCA-d4	% Rec		95.			220
VOA Surr 1,2-DCA-d4	% Rec		131.			1556
VOA Surr 1,2-DCA-d4	% Rec		99.			2306
VOA Surr Toluene-d8	% Rec		96.			220
VOA Surr Toluene-d8	% Rec		97.			1556
VOA Surr Toluene-d8	% Rec		103.			2306
VOA Surr, 4-BFB	% Rec		96.			220
VOA Surr, 4-BFB	% Rec		100.			1556
VOA Surr, 4-BFB	% Rec		110.			2306
VOA Surr, DBFM	% Rec		106.			220
VOA Surr, DBFM	% Rec		137.			1556
VOA Surr, DBFM	% Rec		102.			2306
Nitrate-N as N	mg/l	6.18	6.19	0.16	20	5085
Sulfate	mg/l	18.4	18.5	0.54	20	5085

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 3
Laboratory Receipt Date: 3/ 9/04

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.0500	0.0488	98	81 - 121	220
Benzene	mg/l	0.0500	0.0536	107	81 - 121	1556
Benzene	mg/l	0.0500	0.0500	100	81 - 121	2306
Ethylbenzene	mg/l	0.0500	0.0521	104	78 - 126	220
Ethylbenzene	mg/l	0.0500	0.0573	115	78 - 126	1556
Ethylbenzene	mg/l	0.0500	0.0510	102	78 - 126	2306
Naphthalene	mg/l	0.0500	0.0476	95	53 - 152	220
Naphthalene	mg/l	0.0500	0.0503	101	53 - 152	1556
Naphthalene	mg/l	0.0500	0.0623	125	53 - 152	2306
Toluene	mg/l	0.0500	0.0496	99	77 - 125	220
Toluene	mg/l	0.0500	0.0544	109	77 - 125	1556
Toluene	mg/l	0.0500	0.0496	99	77 - 125	2306
Xylenes (Total)	mg/l	0.150	0.136	91	78 - 127	220
Xylenes (Total)	mg/l	0.150	0.149	99	78 - 127	1556
Xylenes (Total)	mg/l	0.150	0.161	107	78 - 127	2306
Methyl-t-butyl ether	mg/l	0.0500	0.0475	95	68 - 134	220
Methyl-t-butyl ether	mg/l	0.0500	0.0507	101	68 - 134	1556
Methyl-t-butyl ether	mg/l	0.0500	0.0559	112	68 - 134	2306
VOA Surr 1,2-DCA-d4	% Rec			97	71 - 128	220
VOA Surr 1,2-DCA-d4	% Rec			94	71 - 128	1556
VOA Surr 1,2-DCA-d4	% Rec			99	71 - 128	2306
VOA Surr Toluene-d8	% Rec			96	77 - 119	220
VOA Surr Toluene-d8	% Rec			95	77 - 119	1556
VOA Surr Toluene-d8	% Rec			102	77 - 119	2306
VOA Surr, 4-BFB	% Rec			94	79 - 123	220
VOA Surr, 4-BFB	% Rec			96	79 - 123	1556
VOA Surr, 4-BFB	% Rec			107	79 - 123	2306

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 4
Laboratory Receipt Date: 3/ 9/04

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA Surr, DBFM	% Rec			104	78 - 124	220
VOA Surr, DBFM	% Rec			105	78 - 124	1556
VOA Surr, DBFM	% Rec			113	78 - 124	2306
METALS						
Ferrous Iron	mg/l	1.00	0.992	99	80 - 120	5088
MISC PARAMETERS						
Nitrate-N as N	mg/l	3.00	3.11	104	90 - 110	5085
Sulfate	mg/l	15.0	14.6	97	90 - 110	5085

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd
Ferrous Iron	mg/l	2.04	2.03	0.49	15.	5088	04-A33031

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
VOA PARAMETERS					
Benzene	< 0.0005	mg/l	220	3/12/04	1:03
Benzene	< 0.0005	mg/l	1556	3/13/04	23:36
Benzene	< 0.0005	mg/l	2306	3/14/04	9:51
Ethylbenzene	< 0.0003	mg/l	220	3/12/04	1:03
Ethylbenzene	< 0.0003	mg/l	1556	3/13/04	23:36

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 5
Laboratory Receipt Date: 3/ 9/04

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
Ethylbenzene	< 0.0003	mg/l	2306	3/14/04	9:51
Naphthalene	< 0.00120	mg/l	220	3/12/04	1:03
Naphthalene	< 0.00120	mg/l	1556	3/13/04	23:36
Naphthalene	< 0.00120	mg/l	2306	3/14/04	9:51
Toluene	< 0.0006	mg/l	220	3/12/04	1:03
Toluene	< 0.0006	mg/l	1556	3/13/04	23:36
Toluene	< 0.0006	mg/l	2306	3/14/04	9:51
Xylenes (Total)	< 0.0009	mg/l	220	3/12/04	1:03
Xylenes (Total)	< 0.0009	mg/l	1556	3/13/04	23:36
Xylenes (Total)	< 0.0009	mg/l	2306	3/14/04	9:51
Methyl-t-butyl ether	< 0.0005	mg/l	220	3/12/04	1:03
Methyl-t-butyl ether	< 0.0005	mg/l	1556	3/13/04	23:36
Methyl-t-butyl ether	< 0.0005	mg/l	2306	3/14/04	9:51
VOA Surr 1,2-DCA-d4	100.	% Rec	220	3/12/04	1:03
VOA Surr 1,2-DCA-d4	96.	% Rec	1556	3/13/04	23:36
VOA Surr 1,2-DCA-d4	99.	% Rec	2306	3/14/04	9:51
VOA Surr Toluene-d8	94.	% Rec	220	3/12/04	1:03
VOA Surr Toluene-d8	99.	% Rec	1556	3/13/04	23:36
VOA Surr Toluene-d8	102.	% Rec	2306	3/14/04	9:51
VOA Surr, 4-BFB	98.	% Rec	220	3/12/04	1:03
VOA Surr, 4-BFB	103.	% Rec	1556	3/13/04	23:36
VOA Surr, 4-BFB	108.	% Rec	2306	3/14/04	9:51
VOA Surr, DBFM	105.	% Rec	220	3/12/04	1:03
VOA Surr, DBFM	105.	% Rec	1556	3/13/04	23:36
VOA Surr, DBFM	109.	% Rec	2306	3/14/04	9:51
METALS					
Ferrous Iron	< 0.100	mg/l	5088	3/ 9/04	21:42

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
Project Name: HSS #2
Page: 6
Laboratory Receipt Date: 3/ 9/04

MISC PARAMETERS					
Nitrate-N as N	< 0.10	mg/l	5085	3/13/04	3:36
Sulfate	< 1.00	mg/l	5085	3/13/04	3:36

= Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 366829

APPENDIX E

DISPOSAL MANIFEST

DT

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

APR 05 2004

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 20135
Release reported July 31, 1996
Groundwater Sampling Report received May 31, 2004
Sumter County

Dear Mr. Leonard:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced report submitted by Emerald, Inc. The results of the investigation reveal the presence of chemicals of concern (CoC) in excess of calculated site-specific target levels (SSTL). The next scope of work to be performed at this site is Active Corrective Action to ensure there is no potential impact to human health or the environment.

The site's priority classification is **1D**. Therefore, funds from the State Underground Petroleum Environmental Response Bank (SUPERB) Account are available for implementation of an acceptable method of corrective action. The selected technology must reduce the petroleum CoC to concentrations site-specific target levels determined by the Department. These concentrations will be listed in the Corrective Action Solicitation. All rehabilitation activities associated with a UST release must be performed by a SCDHEC certified site rehabilitation contractor as required by SUPERB Site Rehabilitation and Fund Access Regulations, R.61-98.

As required in R.61-98, Section II.B.3.a, the UST owner or operator is required to develop and implement a reasonable, cost-effective response for soil and/or ground water contamination. In order to assist you determine the clean-up technology, a reasonable time frame and all associated costs, the Department will prepare a technical specification package which will specify site specific clean-up levels and mail them to you. In addition to the solicitations you may personally seek, the Department will announce the request for solicitations in the South Carolina Business Opportunities, a bi-weekly state government publication. This announcement will clearly indicate that the UST owner/operator will make the contractor selection to implement an accepted method of corrective action at a reasonable cost. If you wish to utilize this option and select the contractor to perform the corrective actions, please return the enclosed Active Corrective Action Options Form within 15 days. Should you select this option, the Department strongly suggests that a written contract between you and the selected contractor be developed following the completion of the solicitation process. The only parties to this contract would be you and the contractor you choose. Since the Department's only function would be to monitor the corrective action activities, rather than perform and/or oversee the associated activities, the Department would not be party to your contract.

If you prefer, the UST Program can directly procure a contractor to perform corrective action activities on your behalf. If you wish to utilize this option and relinquish the right to choose the contractor, please return the enclosed Permission and Right-of-Entry forms within 15 days. Please understand that under either option the site rehabilitation contractor must provide a performance bond or an irrevocable letter of credit and you remain responsible for completion of site rehabilitation activities.

If the UST Program does not receive a selection from you within 30 days from the date of this letter, we will assume you wish to select the active corrective action contractor and we will proceed accordingly.

On all future correspondence, please reference the **UST Permit #08932.** Please note that approval from the Department must be issued before corrective action begins. Questions concerning this correspondence should be addressed to my attention at (803) 896-6397 or (800) 826-5435 (within South Carolina only).

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

enc: Active Corrective Action Options Form
Permission / Right of Entry Forms

cc: Technical File (w/o enc.)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MAY 03 2004

PERRY MOSES III
PERRY MOSES & SON REAL ESTATE
PO BOX 1666
SUMTER SC 29151

Re: Heath Self Serve #2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932
Correspondence Received April 28, 2004
Sumter County

Dear Mr. Moses:

Thank you for providing the sketch showing the proposed improvements to the above property. The UST Program will inform the corrective action contractor of the situation so that they may coordination with the Mrs. Sutton, Mr. Burns, and Tucker Oil regarding the installation of the corrective action system. Mrs. Sutton and Mr. Burns will receive a copy of the corrective action plan for review prior to the installation of the corrective action system. The selection of a corrective action contractor will likely take 45 days. Once a contractor is selected, another 30 days is allowed for submittal of the corrective action plan. Once the UST Program receives the plan, it usually takes 30 days to complete the public notice period. So it is unlikely that corrective action would be initiated before the beginning of August.

Regarding any upgrades to the property, all efforts should be made to protect the integrity of the monitoring wells. If any well is damaged or destroyed as a result of the improvements, the UST Program will require that those wells be replaced or repaired. The UST Program cannot compensate for those costs.

If you have any questions or need additional information, please feel free to contact me at (803) 896-6397, (800) 826-5435 (within SC only), via fax at (803) 896-6245, or via e-mail at thomadl@dhec.sc.gov.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Cc: Doug Leonard, Coca-Cola Bottling Co., PO Box 21487, Charlotte, NC, 28231-1487
Technical File

UST PROGRAM DOCKETING # 761

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6240

MEMORANDUM

DATE: May 20, 2004

TO: E. Madison Winslow, Procurement Officer
Bureau of Business Management

FROM: Laura Pace, CGFO, CPM, Manager lp
Financial Section
Underground Storage Tank Program

SUBJECT: Bid Request

Attached is a hard copy of the bid specifications for corrective action at UST Permit #08932. This bid package should be sent out in SCBO. The information is also on the enclosed disk under file name 08932.doc. **The corrective action is funded by the SUPERB Fund.**

Purchase Requisition #25841 for UST Permit #08932 has been created on the AIMS System.

Please send a copy of the final bid package to Chris Doll so that it can be placed in the technical file as outlined in the bid specifications. If you have any questions, contact Debra Thoma at 896-6397.

cc: Chris Doll. P.G., Manager, Northeastern SC Corrective Action Section
Debra Thoma, Northeastern SC Corrective Action Section
Pat Holland, Financial Section
Technical File

DHEC/UST/5.20.04

SCANNED nd

UST PROGRAM
DOCKETING # 105T

#08932

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

BUREAU OF
BUSINESS MANAGEMENT
DIVISION OF PROCUREMENT SERVICES
2600 Bull Street
Columbia, SC 29201-1708
Telephone (803) 898-3501 Fax (803) 898-3505

SEALED BID INVITATION

BID MUST BE SUBMITTED ON THIS FORM TO BE ACCEPTED

SOLICITATION NUMBER: SB-25841-6/24/04-EMW
(Number Must Be Shown On Front Of Envelope)

DATE ISSUED: 5/24/04
PAGE 1 OF 84

SEALED BIDS WILL BE RECEIVED UNTIL:

TIME: 2:30 pm (ET) DATE: 6/24/04

AND THEN PUBLICLY OPENED

Mail To:
ATTENTION: BID CLERK
SOLICITATION NO.: SB-25841-6/24/04-EMW
S.C. Department of Health & Environmental Control
Division of Procurement Services
2600 Bull Street
Columbia, South Carolina 29201-1708

DIRECT INQUIRIES TO: E. Madison Winslow, CPPB Phone: (803) 898 - 3487

E. Madison Winslow

***SC DHEC Solicitations are available online at http://www.scdhec.net/procurement*
Vendors can also register for amendments and view award statements.

REASON FOR NO BID:

This Section Must Be Completed By Vendor:

_____
Vendor Name

_____
Mailing Address

_____
City State Zip Code

Telephone Number: ( ) _____

Fax Number: ( ) _____

E-mail Address: _____

Toll Free Number: ( ) _____

FEIN Or SSN: _____

By signing this bid I certify:

- This bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same materials, supplies or equipment and is in all respects fair and without collusion or fraud.

By signing this bid I agree:

- To abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder.
- If this quotation is accepted within 60 days from date of opening, to furnish any and all items/services at the prices quoted.

Drug-Free Workplace: Required by Section 44-107-10 (Drug Free Workplace Act) of the South Carolina Code of Laws, 1976, as amended. By submission of a bid, the bidder certifies that he/she will comply with all aspects of the Drug-Free Workplace Act and will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the performance of this contract. This certification also applies to any individual or firm employed by the contractor.

_____ _____ ___/___/___
Authorized Signature (Manual) Authorized Signature (Typed) Title Date Signed

COMMODITY: Perform corrective action of a petroleum release from a regulated underground storage tank site.

METHOD OF BID AWARD: Award will be made to a South Carolina Certified UST Site Rehabilitation Contractor based on the total cost of active correction action and other factors. (See Special Conditions #3)

UST PROGRAM
DOCKETING # 3

PURPOSE and SCOPE OF WORK

The Bureau of Land and Waste Management Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (DHEC) is seeking services to perform active corrective action of a petroleum release from a regulated underground storage tank site in accordance with defined remediation goals. The objective is to remove free product and reduce the levels of chemicals of concern (CoC) in the ground water to or below defined site-specific target levels (SSTLs). All offerors must be South Carolina Certified Class I Site Rehabilitation Contractors. The scope of work defined in this solicitation is to be implemented at Heath Self Serve #2 (UST Permit #08932), 501 N Guignard Road, Sumter, South Carolina for the release reported on July 31, 1996.

The following table summarizes the deadlines for deliverables associated with this contract.

DELIVERABLE DUE	DEADLINE
Questions	By Close of Business 6/16/04
Sealed Bids	Before 2:30p.m. 6/24/04
Corrective Action Plan	30 days from date of award
Performance Bond or Letter of Credit	30 days from date of award
Initial Monitoring Report	45 days from date of award
CAP Implementation	30 days from Notice to Proceed
System Start Up	15 days from receipt of Permit to Operate and/or CAP Approval
Notify Project Manager of Sampling	At least two (2) weeks prior to the event
Corrective Action Monitoring Report	Quarterly from date of start up
Abandon Monitor Wells and Corrective Action System	Within 60 days from notice by DHEC

SPECIAL CONDITIONS

1. CONTRACT PERIOD: The contract will be effective from date of award until the corrective action is complete as described in this contract.

2. This contract is for active corrective action in addition to natural attenuation at only one (1) facility in South Carolina. Compensation from the SUPERB Account is not considered a state contract for purposes of procurement or subject to state bid requirements in accordance with Section 44-2-130(D) of the SUPERB Act.

3. AWARD: Award will be made to a South Carolina Certified UST Site Rehabilitation Contractor based on the total cost, method(s), and estimated time for active corrective action to SSTLs and removal or abandonment of assessment and rehabilitation items. The proposed implementation schedule and the proposed remediation technology(ies) or method(s) for active corrective action to achieve the remediation goals must be protective of public health and the environment and be eligible for permitting by DHEC. The total cost, methods, and estimated time to complete the contract must be advantageous to the State of South Carolina.

4. REASONABLE COST: DHEC reserves the right to reject any and all bids that appear to be above the customary and reasonable cost for the same scope of work in a similar geologic setting, that propose a technology that cannot be permitted in the State of South Carolina, or that propose an estimated time frame for cleanup that is not protective of human health or the environment.

5. Contractor must agree to make positive efforts to employ women, other minorities, and minority-owned businesses.

6. AMENDMENTS: All amendments to this solicitation will be in writing from the DHEC Procurement Officer indicated on page one of this solicitation. DHEC will not be legally bound by any amendment, interpretation or settlement that is not in writing.

7. QUESTIONS: Questions or requests for information must be submitted in writing and received by 5:00 P.M., June 16, 2004. After this date, no further questions will be addressed. A written response will be mailed to all requestors of the solicitation. The questions may be faxed to E. Madison Winslow, fax number (803) 898-3505.

8. **NOTE . . . THE ONLY OFFICIAL CONTACT PERSON AT DHEC DURING THE SOLICITATION AND AWARDING PROCESS IS THE PROCUREMENT OFFICER INDICATED ON PAGE 1 OF THIS SOLICITATION. OFFERORS ARE NOT TO CONTACT DHEC PERSONNEL LOCATED OUTSIDE THE BUREAU OF BUSINESS MANAGEMENT.**

9. The contractor will be required to treat the area where the dissolved petroleum chemicals of concern are above site-specific target levels (see figure #2). Verification that interim corrective action goals have been met will be based upon ground-water quality samples collected from monitoring wells MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-12, MW-14, MW-19, MW-20, MW-21, and MW-27. Verification that final corrective goals have been met will be based upon ground-water quality samples collected from all existing monitoring wells and additional verification wells to be installed at locations designated by SCDHEC (see specification #11 for more detail).

10. REPORTS: Deliver the reports to: SCDHEC, Bureau of Land and Waste Management, UST Program, ATTN: **Debra Thoma**, 2600 Bull Street, Columbia, SC 29201. A minimum of two (2) copies of each plan and two (2) copies of each report must be delivered to the above address. Based on permitting and other requirements, an engineering report, UIC permits, air-modeling forms or NPDES Permits may be required. Please contact the Department for the exact number of copies of each document to be submitted.

11. INVOICING: Invoices will be submitted to: SCDHEC, Bureau of Land and Waste Management, UST Program, ATTN: **Financial Section**, 2600 Bull Street, Columbia, SC 29201, using the Department's Corrective Action (CA) Invoice form. The initial invoice must be received at the above address within four months of CAP approval or funds will be uncommitted as required by the Section 44-2-40(B) of the SUPERB Act. If funds are uncommitted the submitted invoice will be held until funding is available. **Payment will only be made for achieving the corrective action goals as specified in this contract. No interim or partial payments will be made once corrective action is initiated, except as outlined in Specification #4.** Payment to the contractor will be on a pay-for-performance basis as follows:

A. Payment of forty percent (40%) of the total corrective action price will be made within 90 days of operation of the remediation system or implementation of corrective action as described in the approved corrective action plan (CAP), subject to the limitations of Section 44-2-40 of the SUPERB Act. The implementation should be documented in the first corrective action system evaluation (CASE) report. The first CASE report must include the construction logs for all treatment/recovery wells installed in accordance with the CAP.

B. Payment of thirty-five percent (35%) of the total corrective action price will be made based on removal of free product to .01 foot as verified in monitoring wells **MW-4, MW-7, MW-8, MW-9, MW-10, and MW-12** and achieving interim CoC mass reduction goals at the site as verified in monitoring wells MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-12, MW-14, MW-19, MW-20, MW-21, and MW-27. Payment will be made for interim goals of 25, 50, and 75 percent reduction of total CoC mass by the implementation of corrective action. The CoC mass requiring reduction is as follows:

TABLE 1

CoC mass in parts per billion (µg/l) based on February 21, 2004 and March 6, 2004 sampling: (CoC may increase or decrease in the future)

Well	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	Total Mass
MW-2	78	84	140	212	5	5	524
MW-3	<1	1	<1	7	<1	<5	n/a
MW-4^	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
MW-5	<1	<1	<1	<1	<1	<5	n/a
MW-6	14	<1	3	8	3	<5	34
MW-7^	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
MW-8^	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
MW-9^	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
MW-10^	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
MW-11	<1	2	1	11	<1	<5	21
MW-12^	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
MW-13	<1	<1	<1	<1	<1	<5	n/a
MW-14	68	<1	4	21	<1	<5	100
MW-15	<1	<1	<1	<1	<1	<5	n/a
MW-16	<1	<1	<1	<1	<1	<5	n/a
MW-18	<1	<1	<1	<1	<1	<5	n/a
MW-19	166	<1	<1	16	196	<5	385
MW-20	1,760	2	<1	35	80	<5	1,883
MW-21	<1	<1	<1	<1	<1	<5	10
MW-22	<1	<1	<1	<1	<1	<5	n/a
MW-23	<1	<1	<1	<1	<1	<5	n/a
MW-24	<1	<1	<1	<1	<1	<5	n/a
MW-25	<1	<1	<1	<1	<1	<5	n/a
MW-26	<1	<1	<1	<1	<1	<5	n/a
MW-27	<1	<1	<1	<1	1	<5	10

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BID NUMBER: SB-25841-6/24/04-EMW

Initial Mass*	434,089	1,560,093	240,152	1,080,305	5,640,288	120,040	9,074,967
SSTL Mass	24,512	1,560,093	240,152	1,080,305	548	120,040	3,025,650
Initial Mass above SSTL	409,577	0	0	0	5,639,740	0	6,049,317

* CoC mass may change due to seasonal fluctuations in the groundwater. The Initial Mass is calculated only for those monitoring wells that are shaded.

^ MW-4, MW-7, MW-8, MW-9, MW-10, & MW-12 contained 0.41', 1.09', 0.07', 0.51', 1.71', and 1.10'of free phase product, respectively. Concentration values listed are representative of worst-case analyses from a review of UST Program technical files. Actual analytical values after free product removal could exceed these numbers.

(1) 25 percent total mass reduction will be achieved when free product has been removed to .01 foot from **MW-4, MW-7, MW-8, MW-9, MW-10, and MW-12** and one-quarter of the initial BTEX, MTBE, and Naphthalene mass from monitoring wells MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-12, MW-14, MW-19, MW-20, MW-21, and MW-27 is removed as compared to the SSTL mass. The following formula will be used to calculate the percent total mass reduction: total mass above SSTLs from initial sampling less total mass above SSTLs from subsequent sampling divided by total mass above SSTLs from initial sampling. Payment of 10 percent (10%) of the total bid price will be made upon verification (see Specifications item 11 for the method of verification) of at least one-quarter of the total CoC mass above SSTLs is removed.

The following is an example to demonstrate the CoC Mass Reduction Calculation:

Well		Benzene	Toluene	Ethylbenzene	Xylene	MTBE	Naphthalene	Mass > SSTL
MW-1	Initial A	7,500	4,000	2,000	15,000	3,000	1,000	[redacted] A
	SSTL B	10	2,000	1,400	10,000	80	50	[redacted] B
	Initial > SSTL C	7,490	2,000	600	5,000	2,920	950	18,960 C
	Subsequent D	3,000	1,000	900	13,000	2,000	5	[redacted] D
	SSTL E	10	2,000	1,400	10,000	80	50	[redacted] E
	Subsequent > SSTL F	2,990	0	0	3,000	1,920	0	7,910 F
MW-4	Initial G	150	400	50	250	300	25	[redacted] G
	SSTL H	5	400	50	250	40	25	[redacted] H
	Initial > SSTL I	145	0	0	0	260	0	405 I
	Subsequent J	100	100	1	1	100	1	[redacted] J
	SSTL K	5	400	50	250	40	25	[redacted] K

	Subsequent > SSTL [L]	95	0	0	0	60	0	155 [L]
Totals	Initial > SSTL [M]	(sum of initial mass above SSTL for all wells) (C+I)						19,365 [M]
	Subsequent > SSTL [N]	(sum of subsequent mass above SSTL for all wells) (F+L)						8,065 [N]

Notes: If subsequent sampling indicates a CoC concentration at or below the SSTL and/or a CoC concentration at BDL but the reporting limit is at/or below the SSTL value for any constituent, the value for the mass reduction will be 0 (no negative numbers).

If subsequent sampling indicates a CoC concentration at BDL but the reporting limit is above the SSTL, the value for any constituent will be the analytical reporting limit.

Mass Reduction Calculation

$$\text{CoC Mass Reduction} = \frac{(M-N)}{(M)} = \frac{(19{,}365-8{,}065)}{19{,}365} = 0.5835 * 100 = 58.35\% \text{ CoC Reduction}$$

(2) 50 percent total mass reduction will be achieved when one-half of the initial BTEX, MTBE, and Naphthalene mass from monitoring wells MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-12, MW-14, MW-19, MW-20, MW-21, and MW-27 is removed as compared to the SSTL mass. The formula outlined in item 11. B. (1) will be used. Payment of 10 percent (10%) of the total corrective action price will be made upon verification (see Specifications item 11 for the method of verification) of at least one-half of the total CoC mass above SSTLs is removed.

(3) 75 percent total mass reduction will be achieved when three-quarters of the initial BTEX, MTBE, and Naphthalene mass from monitoring wells MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-12, MW-14, MW-19, MW-20, MW-21, and MW-27 is removed as compared to the SSTL mass. The formula outlined in item 11 B (1) will be used. Payment of 15 percent (15%) of the total corrective action price will be made upon verification (see Specifications item 11 for the method of verification) of at least three-quarters of the total CoC mass above SSTLs is removed.

C. **The final 25 percent (25%) of the total corrective action price will be paid upon: 1) verification that the levels of CoC do not exceed the site-specific target levels (SSTLs) defined in item 11.C. and SSTLs calculated for any point in the area of concern (see figure #2). Verification that the SSTLs have been achieved will be based upon ground-water quality samples collected from all existing monitoring wells and additional verification wells to be installed at locations designated by DHEC (see specification #11 for more detail); and 2) all remediation and assessment items installed by the contractor (e.g., wells [including preexisting wells], trenches, etc.) are removed from the site or properly abandoned.** The SSTLs are as follows:

TABLE 2

Site-specific target levels (SSTLs) in parts per billion (µg/l)

Well	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-2	78*	84*	140*	212*	5*	5*
MW-4	246	260,000*	40,000*	180,000*	119	20,000*
MW-6	14*	<1**	3*	8*	3*	5**
MW-7	7,620	260,000*	40,000*	180,000*	85	20,000*
MW-8	3,307	260,000*	40,000*	180,000*	57	20,000*
MW-9	4,075	260,000*	40,000*	180,000*	63	20,000*
MW-10	2,179	260,000*	40,000*	180,000*	52	20,000*
MW-11	<1**	2*	1*	11*	<1**	<5**
MW-12	6,865	260,000*	40,000*	180,000*	80	20,000*
MW-14	68*	<1**	4*	21*	<1**	<5**
MW-19	31	<1**	<1**	16*	40	<5**
MW-20	26	2	<1**	35*	40	<5**
MW-21	<1**	<1**	<1**	<1**	<1**	<5**
MW-27	<1**	<1**	<1**	<1**	1*	<5**
Total	24,512	1,560,093	240,152	1,080,305	548	120,040

* Laboratory analysis is less than calculated SSTLs; therefore, SSTL mass is set equal to laboratory mass.

** Laboratory analysis is below detection limits; therefore, SSTL mass is set equal to detection limits.

12. NOTIFICATION FOR FAILURE TO PERFORM: **If the contractor fails to meet any deadline established in this document the contractor will be in breach of contract and the corrective action award may be voided by DHEC.** If the contractor fails to meet any other specification of corrective action as outlined in this document, DHEC will notify the contractor by certified letter of the deficiency (ies). If the contractor does not correct the deficiency(ies) within 30 days, the contractor will be in breach of contract and the corrective action award may be voided by DHEC. DHEC will notify the contractor by certified letter that the corrective action award is void and any invoices are payable upon review and approval of DHEC. **In the event that the corrective action award is voided due to a breach of contract as outlined above or the missing of an established deadline, payment of any invoices is at the sole discretion of DHEC. Costs associated with data or plans that cannot be used by DHEC cannot be reimbursed.** If the contractor corrects the deficiency(ies) within 30 days, the corrective action award will continue.

13. Contractor-owned items used on-site for the contract that are destroyed by acts of nature, improper maintenance or handling, theft or vandalism will not be replaced or reimbursed by the SUPERB Account. The accepted corrective action cost bid will be final and will not be increased or cancelled for any reason (e.g., unanticipated iron fouling of a system, wells clogging because of biological activity or sediments, increased subcontractor costs, loss of utilities, modification to the system to meet the remediation goals, etc.) with the exception of unforeseen subsurface conditions as determined solely at the discretion of the Department or identification of additional CoC from a release occurring after the award of this contract that adversely impacts the corrective action. **Payment will only be made for achieving the corrective action goals as specified in this contract. No interim or partial payments will be made once corrective action is initiated, except as outlined in Specification #4.**

Once site rehabilitation has been initiated under this contract, in the event of a cancellation due to the prescribed circumstances, final payment will be a percentage of the contract amount equal to the actual percent reduction of the CoC mass as calculated based on the last sampling results from all wells listed in Special Condition 11.C. of the contract less the amount previously paid.

14. SITE SPECIFIC DETAILS: A brief technical summary of the release, including a location map and specifics of existing wells, is attached. The complete technical file will be available for review through the Freedom of Information (FOI) Office located at the Stern Building, 8911 Farrow Road, Columbia, SC. **Review of the detailed technical file is not mandatory; however, offerors are strongly encouraged to review the file to ensure a complete understanding of the contract requirements. The successful offeror will be responsible for all information included in the technical file.** Appointments to view the technical file may be scheduled on weekdays between the hours of 8:30 A.M. to 5:00 P.M. by calling the SCDHEC Freedom of Information Office at (803) 898-3882. Please request file #08932. ***NOTE: Free phase product is present at this site. Free phase product was detected in the baseline-sampling event; however, application of corrective action technologies or natural fluctuations in the water table can result in the mobilization and possible appearance of free phase product or elevated CoC concentrations in the monitoring wells.*** . The following facilities adjacent to the site have regulated USTs (operating/abandoned) registered with DHEC:
   - Palmer & Mallard & Associates, 517 N Guignard Dr, UST Permit #08753, 0 operating/2 abandoned.
   - Former Palmetto Plaza Texaco, 471 N Guignard Dr, UST Permit #12575, 0 operating/5 abandoned.

15. **The contractor will submit a Corrective Action Plan (CAP) within 30 days from the date the Award is issued from the Bureau of Business Management in accordance with Specification item 2.** A performance bond or irrevocable standby letter of credit, equal to the award price, will be required by DHEC. The issuing institution for an irrevocable standby letter of credit must be an entity that has the authority to issue letters of credit in South Carolina and whose letter-of-credit operations are regulated and examined by a federal or state agency. **Bonds must be obtained from a surety that is on the Secretary of the Treasury's list of acceptable sureties for Federal bonds.** The original performance bond or irrevocable standby letter of credit will be submitted to the Bureau of Land and Waste Management, UST Program, Attn: Financial Section, within 30 days of award. The performance bond or irrevocable standby letter of credit will specify that the SUPERB Account will be the recipient of any forfeiture. **The performance bond or irrevocable standby letter of credit must bear the DHEC Permit ID Number and the Bid Number.** Since DHEC is responsible for the disbursement of funds from the SUPERB Account, the financial responsibility mechanism (i.e., bond or letter of credit) will be held by the Bureau of Land and Waste Management, UST Program until the work is successfully completed. **The performance bond or letter of credit must be kept current for the duration of the corrective action. Failure to maintain the performance bond or letter of credit may result in the corrective action award being voided by DHEC in accordance with Special Condition 12.** The implementation of the CAP will proceed within thirty (30) days of issuance of the Notice to Proceed from DHEC. **When it has been demonstrated that levels of CoC above the calculated SSTLs have been reduced by 90 percent, the contractor may request that the performance bond or letter of credit be reduced by up to 50 percent. Approval of any such reduction is at the sole discretion of DHEC.**

16. **MINIMUM REQUIREMENTS: Corrective action will be considered complete once the levels of CoC are verified to be at or below the SSTLs listed in Table 2 and SSTLs calculated for any point in the**

area of concern (see figure #2), and all remediation and assessment items installed by the contractor (e.g., wells [including preexisting wells], trenches, etc.) are removed or abandoned. See Specification #11 for the method of verification. All rehabilitation activities associated with a UST release must be performed by a SCDHEC certified Class I site rehabilitation contractor as required by R. 61-98. All corrective action plans and reports must be sealed by a Professional Engineer or Professional Geologist registered in the State of South Carolina. A Professional Engineer registered in the State of South Carolina must seal all engineering reports, drawings and plans. A SC certified laboratory must perform all laboratory analysis for CoC. All monitoring, verification, injection, or recovery wells must be installed and abandoned by a SC certified well driller. **The corrective action method or technology will be designed to prevent vapors from entering onsite or adjacent structures.** All applicable certification, training, permits, applications, and fees associated with well installation; injection, discharge, treatment, or transportation of ground water, air, or soil; construction or operation of a remediation system; and any other action requiring a permit are the responsibility of the contractor. Any required business or occupation license and occupational safety and health training (e.g., OSHA) as defined by the laws and regulations of the United States of America, State of South Carolina, county or city is also the responsibility of the contractor. The terms and conditions of all applicable permits will be met. Any contaminated ground water, soil, or construction material must be properly transported and disposed of, or treated at an approved facility with prior approval from DHEC. Any costs for utilities construction and service (electric, telephone, sewer, etc.) required by the corrective action are the responsibility of the contractor.

SPECIFICATIONS for CORRECTIVE ACTION

All offerors must meet the following specifications as required by the proposed treatment method(s) or corrective action technology(ies):

1. Submit the Corrective Action Solicitation Response. The response will outline in general terms an approach to achieve the remediation goals (e.g., reduction of each CoC to SSTL). The response must outline the following:

   A. A description of the proposed treatment method(s) or technology(ies) for corrective action.

   B. The estimated amount of time in months to complete site rehabilitation to meet the remediation goals, install verification wells, and remove or abandon all assessment and remediation items.

   C. The total cost (in U. S. dollars) to complete site rehabilitation to meet the remediation goals and to remove or abandon all assessment and remediation items.

2. The successful contractor must complete and submit a detailed CAP (three copies) for the release at Heath Self Serve #2 (UST Permit #08932), 501 N Guignard Road, Sumter, South Carolina **within 30 days from the date the Purchase Order is issued by the Bureau of Business Management. NOTE:** ***Use of monitoring well(s) for injection, extraction, or free phase product recovery purposes is not allowed.*** A condition of the plan may include installation of additional recovery, sparge, compliance, or injection wells. The plan must define all active (pump and treat, sparge, vapor extraction, excavation of impacted soils, bioremediation, etc.) and passive (intrinsic remediation, monitoring, etc.) corrective action

method(s) proposed to reduce CoC to SSTLs. It must be shown, by use of scientific models, computations, or discussion, how each CoC will be reduced to the SSTL for each remediation method proposed for the release. Any assumptions used in a model will be listed or shown, as well as, appropriate references. Intrinsic corrective action will require monitoring to verify remediation. General construction details will be included (e.g., install four additional recovery wells, construct a compliance point, install four air injection wells, excavate 3,000 cubic yards of impacted soils, etc.) as well as details of well abandonment and equipment removal. **The corrective action method or technology will be designed to prevent vapors from entering onsite or adjacent structures.** A remediation timetable including abandonment of wells and removal of equipment will be included with the CAP. The Bureau of Land and Waste Management, UST Program will review the CAP and initiate a public notice period for a maximum of 30 days. The contractor must obtain a copy of the applicable portion of the tax map. This map will depict the location of the facility, all impacted properties, and all properties located adjacent to the impacted properties. The names and addresses of the owners of each of these properties will be provided. The contractor may be required to attend or provide input at a public meeting upon request by DHEC. Any CAP amendments and modifications arising from public notice must be submitted within 15 days of notification by DHEC. The CAP and any amendments or modifications must be sealed by a qualified Professional Engineer or Geologist registered in the State of South Carolina. The owner/operator, Coca-Cola Bottling Company, James Burns and Ida Sutton, and any other affected property owners will be consulted and will approve the location of the corrective action system. If permanent, the system must be enclosed in a fenced area or small building.

3. Complete and submit all applications for permits (injection, NPDES, BAQC modeling form, thermal treatment, construction, etc.; 3 copies) and an engineering report (ER; 4 copies) with the CAP. Any required permit changes or corrections will be submitted within 15 days of notification by DHEC. A Professional Engineer registered in the State of South Carolina must seal the ER and any ER amendments and modifications.

4. An initial monitoring report documenting CoC concentrations in all wells and potentiometric conditions prior to start up must be submitted to the Bureau of Land and Waste Management, UST Program within 45 days after award.

Based on naturally occurring conditions, the dissolved concentration of petroleum chemicals of concern (CoC) will increase or decrease. For the purposes of this contract, the total CoC mass for the wells included in the bid package may reasonably increase up to 150 percent or decrease as much as 50 percent. If the total CoC concentration in all wells listed in Table 1 increases more than 150 percent based on this initial sampling or if measurable free product that has not been previously documented in any report is detected during the initial sampling event, the contractor may request in writing that the award be canceled. **If either of these conditions occurs, the contractor will contact the UST project manager within two days of problem identification and will submit written documentation within five days of notification.** The contractor will be reimbursed based on the following rate schedule (not to exceed 40% of the award price):

Subcontract Costs*	Invoice + 15%
Personnel Mobilization	$ 125.00
Equipment Mobilization	$ 250.00
Groundwater Sample Collection	$ 35.00 each

Gauging Free Phase Product	$ 30.00 per well
Wastewater Disposal	$ 90.00 per drum
CAP Preparation and Assoc. Costs	$6,000.00

* Includes laboratory, drilling, electrical, etc.

The rate schedule above does not apply in the event that the corrective action award is voided due to a breach of contract in accordance with Special Condition 12. The contract will be canceled and the performance bond or irrevocable letter of credit will be returned to the company. If the total CoC concentration in all wells listed in Table 1 decreases more than 50 percent based on this initial sampling the DHEC may cancel the award. If the contract is canceled by DHEC, the contractor will be notified by certified letter and an invoice for the above outlined items shall be submitted within 20 days from the date of the certified letter canceling the contract. If the corrective action system is started or treatment is performed, the contractor will be required to complete the contract unless circumstances as outlined in Special Condition #13 are encountered. **Once CAP implementation has been initiated under this contract, in the event of a cancellation due to the prescribed circumstances and before any mass reduction has been achieved, final payment will not exceed 40 percent of the award price under any circumstances as no reduction of CoC mass has been accomplished.**

5. After review of the CAP and all permit applications by DHEC, the Bureau of Land and Waste Management, UST Program will issue a notice to proceed with CAP implementation. **Implement the CAP within 30 days of receipt of notice to proceed and any required permit to construct**. Disruption to the owner/operator's normal business will be kept to a minimum. The contractor will repair the site to the condition as it existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas will be replaced with concrete, grass areas will have soil replaced to the original grade and reseeded or sodded with grass, etc.) Upon completion of any required construction, DHEC will inspect the system and issue a permit to operate. The contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action. Until completion of the corrective action, the contractor will keep the premises in a clean, neat and workmanlike condition satisfactory to DHEC. All generated soil and wastewater will be removed from the site promptly. Manifests documenting the proper disposal of the soil and wastewater must be included in the appropriate report.

   Implementation of the corrective action plan before the completion of the public notice process and approval of all permits by DHEC is not authorized. If premature implementation occurs, the Department will not reimburse those costs from the SUPERB Account, and the bid award will be reduced by that amount. If the Department agrees with early implementation to better protect human health in an emergency and provides approval in writing, early implementation without any reduction to the bid amount will be authorized.

6. Gain access to the adjacent property to sample monitoring wells and to install any corrective action equipment, as required. The contractor will repair the site to the condition as it existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas will be replaced with concrete, grass areas will have soil replaced to the original grade and reseeded or sodded with grass, etc.) Contractor will be responsible for any equipment/wells installed on adjacent properties. Costs to repair/replace components of the remediation system damaged due to actions of adjacent property owners can not be paid by the SUPERB Account.

7. Initiate system startup within 15 days of receipt of the permit to operate. Remediation as defined in the CAP and ER will begin upon system startup. **If any problem with CAP implementation occurs, the contractor will contact the UST project manager within 24 hours of problem identification and will submit written documentation within five days of notification.** ***NOTE: Free phase product is present at this site. Free phase product was detected in the baseline-sampling event; however, application of corrective action technologies or natural fluctuations in the water table can result in the mobilization and possible appearance of free phase product or elevated CoC concentrations in the monitoring wells.*** The following facilities adjacent to the site have regulated USTs (operating/abandoned) registered with DHEC:
   - Palmer & Mallard & Associates, 517 N Guignard Dr, UST Permit #08753, 0 operating/2 abandoned.
   - Former Palmetto Plaza Texaco, 471 N Guignard Dr, UST Permit #12575, 0 operating/5 abandoned.

8. Complete and submit a corrective action monitoring report (3 copies plus one copy for any DHEC Bureau that issued a permit) on a quarterly basis. The first quarter corrective action monitoring report is due within 90 days of the permit to operate. The corrective action monitoring reports must include:

   A. A narrative portion that documents current site conditions, verification of system operation or CAP implementation, and system effectiveness in achieving the remediation goals (e.g., free product removal, reducing CoC to the SSTLs) as outlined in the CAP. Any system down time and the associated reason(s) will be included in the report.

   B. Conclusions and recommendations based on the reported data.

   C. Ground-water laboratory analytical data for all monitoring wells in the following format (additional parameters such as dissolved oxygen may be required; do not sample wells containing free product):

Analytical Data (µg/l)

Monitoring Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-1	7/15/97 10/15/97	145 140	200 190	146 140	1,000 900	170 50	47 165
MW-2	7/15/97 10/15/97	580 480	800 690	300 257	1,000 912	60 50	20 19

   D. Ground-water potentiometric data for all monitoring wells in the following format:

Ground water Data (feet)

Monitoring Well	Date	TOC Elevation	TOC to GW	TOC to FP	FP Thickness	GW Elevation
MW-1	7/15/97 10/15/97	98.0 98.0	17.54 17.90			80.46 80.10
MW-2	7/15/97 10/15/97	100.0 100.0	20.50 21.50	20.47 21.48	0.03 0.02	79.50 78.50

E. A ground-water elevation contour map of the site based on current ground-water potentiometric data.

F. A CoC map based upon current ground-water laboratory analytical data. The ground-water data should be adjacent to the relevant monitoring well using the following format (additional parameters such as dissolved oxygen may be required):

MW - Number
Benzene (µg/l)
Toluene (µg/l)
Ethylbenzene (µg/l)
Xylenes (µg/l)
MTBE (µg/l)
Naphthalene (µg/l)

G. Calculation of CoC mass reduction as outlined in Special Condition 11.B(1).

H. A copy of the DHEC approval letter and manifests for any contaminated soil and ground water removed from the site for treatment and/or disposal.

I. Additional data required by permits (e.g., air analyses, wastewater effluent analyses and amounts, etc.). The data should be reported on a form or in a format specified in the permits, and attached to the monitoring report as an addendum.

A SCDHEC Certified Site Rehabilitation Contractor must perform all rehabilitation activities associated with the UST release. All air, soil, and ground-water analyses must be performed by a South Carolina certified laboratory. The corrective action system evaluation report must be sealed by a Professional Engineer or Geologist registered in the State of South Carolina. **A total of 25** wells (MW-2 through MW-16 and MW-18 through MW-27) will be sampled on a quarterly basis for the first year following implementation/system start-up. CASE reports must be submitted in accordance with the established monitoring schedule regardless of the operational status of the corrective action system. Thereafter, the number of wells sampled may be reduced and/or the interval between corrective action monitoring reports may be lengthened upon clear demonstration of CoC reduction, unless restricted by permit requirements. Approval of any reduction in the number of wells to be sampled or change in the interval between submittal of CASE reports is at the sole discretion of DHEC. Any approval to reduce the number of wells sampled or the frequency of sampling must be in writing from the UST Program. DHEC may require data to be reported on a form or in a specific format. The contractor will be provided with the proper report forms and format prior to system startup. The contractor will be notified of any revisions to the report forms or format 90 days prior to the due date for the corrective action system evaluation report.

9. Collect one (1) ground-water sample per monitoring event for all monitoring wells associated with the release. Each well should be purged prior to sampling. Purging is considered complete once the ground-water temperature and pH have stabilized. Sampling logs should note all temperature and pH measurements, as well as the location and type of each sample submitted for laboratory analysis. Each ground-water sample will be collected in accordance with established QA/QC protocol and submitted to a certified laboratory for analysis. The samples must be analyzed for the following parameters:

Analyte	Analytical Method	Reporting Limit (µg/l)
BTEX	8260B/5030B	5
Naphthalene	8260B/5030B	5
MTBE	8260B/5030B	5

Additional samples (air, groundwater, effluent, soil) required by permits must be collected in accordance with established QA/QC protocol and submitted to a certified laboratory for analysis. The samples will be analyzed for parameters stipulated in the permits. Sampling and analytical data for each sample (e.g., field sampling logs, chain of custody forms, certificates of analysis, and the lab certification number) will be included in the corrective action monitoring report.

10. Properly dispose of all contaminated soil and ground water generated during the implementation of the CAP and installation of verification wells. DHEC must approve the disposal facility selected for treatment and disposal of the free product and contaminated soil and ground water. The owner/operator of the facility is considered the generator for any contaminated soil and ground water. The contractor must document all disposal of free product and contaminated soil and ground water in the quarterly corrective action monitoring report.

11. SCDHEC personnel will conduct verification for the removal of free product with an interface probe. If the remediation technology is in-situ (e.g., pump and treat, air sparging, vapor extraction): suspend operation of the system once the remediation goals for all CoC have been maintained for a period of 30 days. Samples are to be taken one (1) quarter **after the date established by the DHEC as the start of the post-remediation verification period** and again after a second quarter. Along with the parameters listed in Specification #9, the ground-water samples should also be sampled for the following parameters:

Analyte	Analytical Method*	Reporting Limit (µg/l)
Dissolved Oxygen	SM4500-O G	500
Ferrous Iron	SM3500-Fe D	30
Methane	Kerr Method	1000
Nitrate	9056/9210	100
Sulfate	9038/9056	1000

*or EPA equivalent method that can achieve the same reporting level

If sample results indicate that the remediation goals are not sustained, the contractor must submit a corrective action status report (3 copies) that outlines the deficiency(ies) and offers recommendations for achieving the remediation goals with a revised timetable. Modifying and restarting of the system may be necessary. All remediation goals must be again maintained for a minimum of 30 days.

Corrective action will then be suspended again and samples taken to verify that remediation goals are sustained. This cycle of activity, including status reports, will be repeated until all CoC levels remain below SSTLs for all wells listed in Special Conditions item 11 C for two (2) consecutive quarters. **Four (4)** verification wells may be installed at locations designated by DHEC. Costs for verification well installation are considered part of this bid price. Each well will be sampled in accordance with Specifications item 9 and the analyses compared to the calculated SSTLs for the CoC at that well location. If the laboratory analyses are at or below the SSTLs, corrective action will be considered complete. If any analyte is above the SSTL, the corrective action will not be considered complete, and the activity cycle described above must be repeated until all CoC levels remain below SSTLs for those wells listed in Special Conditions item 11 C. Split or duplicate samples may be collected by DHEC (or its subcontractors) to verify achievement of remediation goals. In addition to the ground water collected from the monitoring wells, the UST Program may provide up to three standards or prepared blanks for the contractor's laboratory to analyze. The laboratory analysis from the contractor's and the UST Program's laboratory will be compared. In the event of substantial variance (more than 15%), a second sampling event with field and trip blanks will be sent to a SC certified laboratory by the UST Program for analysis. The contractor will be notified when the wells will be resampled, can observe this second sampling event, and will be provided analytical results for comment. DHEC Laboratory Certification will be provided copies of all sample data sets with all relevant quality assurance/quality control data to assist the UST program in determining the cause of a laboratory variation. The Director of the Assessment and Corrective Action Division will make the final decision on which analytical values will be the basis for payment or closure based on the recommendation of the site rehabilitation contractor, DHEC Laboratory Certification, the UST Section Manager, and the UST Project Manager. The site rehabilitation contractor will be provided a written record of any decision. **At least two weeks notice will be provided to the UST Project Manager prior to mobilizing to the site for sampling to verify attainment of remediation goals.** Costs for transportation and analysis of split or duplicate samples will be paid by DHEC.

or

If the remediation technology is a single event (e. g. excavation of impacted soils, vacuum enhanced recovery): collect sufficient samples as outlined in the CAP to verify the reduction of CoC to the remediation goals. The contractor may be required to install and sample four (4) verification wells at locations designated by DHEC. If the levels of CoC in all samples are at or below SSTLs, corrective action will be considered complete. If the level of any CoC is above the SSTL, additional corrective action will be required. The contractor will submit one (1) corrective action status report to document the reduction of CoC to the remediation goals. Split or duplicate samples will be collected by DHEC (or its subcontractors) to verify achievement of remediation goals. **At least two weeks notice will be provided to the UST Project Manager prior to mobilizing to the site for sampling to verify attainment of remediation goals.** Costs for transportation and analysis of split or duplicate samples will be paid by DHEC.

12. Disassemble and remove the remediation system and all associated remediation items including utilities from the site within 60 days of notification by DHEC that the remediation goal for the release associated with the UST(s) at the site has been achieved. Disruption to the owner/operator's normal business will be kept to a minimum.

13. Properly abandon all monitoring, recovery, and/or injection wells (including preexisting wells), borings, trenches, and piping/utility runs installed by the contractor as part of corrective action within 60 days of notification by DHEC that the remediation goal for the release associated with the UST(s) at the site has been achieved. The abandonment will be in accordance with South Carolina Well Standards and Regulations R. 61-71 and accepted industry standards for abandonment of trenches and piping/utility runs. Disruption to the property owner's normal business will be kept to a minimum. The contractor must notify DHEC of the method of well abandonment and final disposal of any free product and contaminated soil or ground water. The contractor will return the site to the condition prior to corrective action (e.g., asphalt paved areas will be repaved with asphalt, concrete areas will be replaced with concrete, grass areas will have soil replaced to the original grade and reseeded or sodded with grass, etc.).

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BID NUMBER: SB-25841-6/24/04-EMW

CORRECTIVE ACTION SOLICITATION RESPONSE
for Heath Self Serve #2 (UST Permit #08932), 501 N Guignard Road, Sumter, South Carolina

Please respond to the following questions:

1. The corrective action method(s) or technology (ies) that will be proposed in the CAP will be (list all active and/or intrinsic methods or technologies for remediation of the aquifer:

   _____

   _____

   _____

   _____

2. The estimated time in months to complete the corrective action from the date of bid award until corrective action goals are met, and all corrective action items are removed from the site or properly abandoned is approximately _____ months. **This estimate includes time necessary for permitting, system construction, and the minimum six months of verification monitoring and assumes all submitted plans and reports will be reviewed by DHEC within 30 days of receipt.**

3. The total cost in dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern (see figure # 2) such that the thickness of free product does not exceed .01 foot and the levels of CoC do not exceed the site-specific target levels (SSTLs) defined in item 11.C. at any point, complete all associated monitoring and post-remediation verification, prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and remediation items installed as part of corrective action; provide evidence of performance bond; and other items outlined in this solicitation is: $_____

ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the offeror agrees, if this bid is accepted within _____ days from date of opening, to complete the corrective action as specified at the price set forth.

For the purpose of this submittal and acceptance of financial approval should it occur, I certify that this company understands the nature of the release and the geologic conditions at this facility as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method above are estimates and changes to those quantities or to the listed method(s) will not affect the bid price.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

_____ Certification No. _____
Contractor (Print)

_____ _____
Authorized Representative (Print) Signature

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BID NUMBER: SB-25841-6/24/04-EMW

PLEASE READ THE FOLLOWING CAREFULLY PRIOR TO COMPLETING BID

INSTRUCTIONS TO BIDDERS

DISCUSSIONS AND NEGOTIATIONS: By submission of a bid, bidder agrees that during the period following issuance of this solicitation and prior to notification of intent or award of a contract, the bidder shall not discuss this procurement with any party except members of the DHEC Procurement Division or other parties designated in this solicitation. Bidder shall not discuss or attempt to negotiate with the using area or program any aspects of the procurement without prior approval of the DHEC Procurement Division Buyer responsible for the procurement. Infractions may result in rejection of the violator's bid.

1. Unless otherwise required herein, only one signed copy of the invitation to bid is required.
2. Bids "faxed" directly to the DHEC Procurement Office will not be accepted or considered for award.
3. Bids, amendments thereto or withdrawal request must be received by the time advertised for bid opening. It is the bidder's sole responsibility to insure that these documents are received by the person (or office) at the time indicated in this solicitation document. DHEC Underground Storage Tank Environmental Remediation Procedures shall govern any withdrawal request received after the time of the bid opening.
4. When specifications or descriptive papers are submitted with the bid submission, enter bidder's name thereon.
5. Submit your signed bid on this form. Show the bid number on the envelope as instructed. DHEC assumes no responsibility for unmarked or improperly marked envelopes. All envelopes received showing a bid number are placed directly under locked security until the date and time of opening. Do not include more than one bid invitation per envelope. If directing any other correspondence, address the envelope to the Procurement Officer but do not include the bid number on the envelope since it does not include your bid.
6. Bidders must clearly mark as "CONFIDENTIAL" each part of their bid which they consider to be proprietary information that could be **exempt from disclosure** under Section 30-4-40, Code of Laws of South Carolina 1976 (1986 Cum. Supp.; Freedom of Information Act). If any part is designated as confidential, there must be attached to that part an explanation of how this information fits within one or more categories listed in Section 30-4-40. DHEC reserves the right to determine whether this information should be exempt from disclosure and no legal action may be brought against the State, DHEC or its agents for its determination in this regard.
7. By submission of a bid, **you are guaranteeing** that all goods and services meet the requirements of this solicitation during the contract period.
8. **Tie bids** will be resolved as outlined in DHEC Underground Storage Tank Environmental Remediation Procedures.
9. **Do not include any taxes** that DHEC may be required to pay in the bid price. Upon submission of a bid by a state agency, the Procurement Officer will compute a 5% sales and use tax to the non-state agency bids when applicable (service and labor excluded) in determining the low bidder. This procedure conforms to the SC Tax Commission Sales and Use Tax Regulation 117-174-.95.
10. **Correction of errors on this bid form:** All prices and notations should be printed in ink or typewritten. Errors should be crossed out, corrections entered and initialed by the person signing the bid. Erasures or use of typewriter correction fluid may be cause for rejection. No bid shall be altered or amended after the time specified for the bid opening.
11. **Ambiguous bids** that are uncertain as to terms, delivery, quantity, or compliance with this solicitation may be rejected or otherwise disregarded.
12. Any bidder desiring to exercise a grievance may do so under section IV of DHEC Underground Storage Tank Environmental Remediation Procedures. All correspondence should be directed to the Director of Procurement Services, Bureau of Business Management, 2600 Bull Street, Columbia, SC 29201.
13. **Failure to respond** to three consecutive bid notices may result in removal of bidder's name from the mailing list.

GENERAL PROVISIONS

14. DHEC reserves the right to reject any and all bids, and to cancel this solicitation.
15. **Unit prices** will govern over extended prices unless otherwise stated in this solicitation.
16. **Prohibition of Gratuities:** Amended section 8-13-420 of the 1976 Code of Laws of South Carolina States: "Whoever gives or offers to any public official or public employee any compensation, including a promise of future

employment, to influence his action, vote, opinion or judgment as a public official or public employee or such public official solicits or accepts such compensation to influence his action, vote, opinion or judgment shall be subject to the punishment as provided by Section 16-9-210 and Section 16-9-220. The provisions of this section shall not apply to political contributions unless such contributions are conditioned upon the performance of specific actions of the person accepting such contribution nor shall they prohibit a parent, grand-parent or relative from making a gift to a child, grandchild, or other close relative for love and affection except as hereafter provided".

17. **Bidder's Qualification:** Bidders must, upon request of DHEC, furnish satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. DHEC reserves the right to make the final determination as to the bidder's ability to provide the products or services requested herein.
18. **Bidder's Responsibility:** Each bidder shall fully acquaint himself with conditions relating to the scope and restrictions attending the execution of the work under the conditions of this solicitation. It is expected that this will sometimes require on-site observation. The failure or omission of a bidder to acquaint himself with existing conditions shall in no way relieve him of any obligation with respect to this bid or to the subsequent contract.
19. **Amendments:** All amendments to and interpretations of this solicitation shall be in writing from the DHEC Procurement Office. Neither DHEC nor the Procurement Officer shall be legally bound by any amendment or interpretation that is not in writing.
20. **Award Criteria:** Award shall be as indicated herein to the lowest responsible and responsive bidder whose bid meets the requirements and criteria set forth in this solicitation. Award may take longer than fourteen days. A copy of the award notice should be posted on the Procurement Bulletin Board located at 2600 Bull Street in the Aycock Building directly across from the Personnel Division and next to the Bureau of Business Management Procurement Services Division.
21. **Rejection:** DHEC reserves the right to reject any bid that contains prices for individual items or services that are unreasonable when compared to the same or other bids if the rejection is in the best interest of the State.
22. **Competition:** This solicitation is intended to promote competition. If the language, specifications, terms and conditions, or any combination thereof restricts or limits the requirements in this solicitation to a single source, it shall be the responsibility of the interested bidders to notify the DHEC Procurement Office in writing so as to be received five days prior to the opening date. Notification may be "faxed" to the DHEC Procurement Office, (803) 734-4874. The solicitation may or may not be changed but a review of such notification will be made prior to award.
23. **Order of Precedence:** In the event of inconsistency between provisions of this solicitation, the inconsistency shall be resolved by giving precedence in the following order; (A) the bidding schedule, (B) the specifications, (C) general conditions, (D) special provisions or special conditions of the contract whether incorporated by reference or otherwise, and (E) instruction to bidders.

GENERAL CONDITIONS

24. **Contract Administration:** Questions or problems arising after award of this solicitation/contract shall be directed to the DHEC Procurement Office, 2600 Bull Street, Columbia, SC, 29201. Reference the solicitation and contract number.
25. **Default:** In case of default by the contractor, DHEC reserves the right to purchase any or all items in default in the open market, charging the contractor with any additional costs. The defaulting contractor shall not be considered a responsible bidder until the assessed charge has been satisfied.
26. **Save Harmless:** (This General Condition does not apply to solicitations for service requirements). The successful bidder shall indemnify and save harmless the State of South Carolina and DHEC and all its officers, agents and employees from all suits or claims of any character brought by reason of infringing on any patent, trade mark or copyright. The bidder shall have no liability to DHEC if such patent, trademark or copyright infringement or claim is based upon the bidder's use of material furnished to the bidder by the State.
27. **Publicity Releases:** By submission of a bid, the contractor agrees not to refer to award of this contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by DHEC or user.

28. **Tax Credit Availability:** Bidders interested in income tax credit availability by subcontracting with Certified Minority Firms should contact the Office of Minority Business Assistance, 1205 Pendleton Street, Columbia, SC, 29201. (803-734-0562)
29. **Affirmative Action:** The successful bidder will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of the handicapped, and concerning the treatment of all employees, without regard or discrimination by reason of race, color, religion, sex, national origin or physical handicap.
30. **Assignment:** Unless otherwise indicated in this solicitation, no contract or its provisions may be assigned, sublet, subcontracted, or transferred without the prior written consent of the DHEC Procurement Office.
31. **Termination:** Any contract resulting from this solicitation may be terminated by DHEC by providing a thirty-day advance notice in writing to the successful contractor.
32. **Non-Appropriations:** Any contract entered into by DHEC resulting from this solicitation shall be subject to cancellation without damages or further obligation when funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period or appropriated year.
33. **Convenience:** In the event that this contract is terminated or canceled upon request and for the convenience of DHEC without the required thirty days advance written notification, then DHEC shall negotiate reasonable applicable termination costs.
34. **Cause:** Any contract resulting from this solicitation may be terminated without advance notice by DHEC for cause, default or negligence on the part of the successful contractor.
35. **S.C. Law Clause:** Upon award of a contract under this bid, the person/partnership, association or corporation to whom the award is made must comply with the laws of South Carolina which require such person or entity to be authorized and/or licensed to do business with this State. Notwithstanding the fact that applicable statutes may exempt or exclude the successful bidder from requirements that it be authorized and/or licensed to do business in this State. By submission of a bid, the bidder agrees to subject himself to the jurisdiction and process of the courts of the State of South Carolina as to all matters and disputes arising or to arise under the contract and the performance thereof, including any questions as to the liability for taxes, licenses or fees levied by the State of South Carolina.
36. **Quality of Product:** (This general condition does not apply to solicitations for printing or service requirements.) Unless otherwise indicated in this solicitation, it is understood and agreed that any item offered or shipped as a result of this solicitation shall be new and in first class condition, that all containers shall be new and suitable for storage or shipment, and that prices include standard commercial packaging. If items that are other than new (i.e., remanufactured or refurbished) are desired to be bid, the bidder must obtain written permission to bid such items at least five days in advance of the bid opening date. Written permission must be obtained from the DHEC Procurement Office.
37. **Compliance with Federal Requirements:** S.C. State or Federal requirements that are more restrictive shall be followed in bidding, awarding and performance of this contract.
38. **Drug-Free Workplace:** Required by Section 44-107-10 (Drug Free Work-Place Act) of the SC Code of Laws, 1976, as amended. By submission of a bid, the bidder certifies that he will comply with all aspects of the Drug-Free Workplace Act and will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the performance of this contract. This certification also applies to any individual or firm employed by the contractor.
39. **Confidentiality Policy:** The successful contractor agrees to abide by DHEC's policy of confidentiality which states in part that all information as to personal facts and circumstances given or made available to employees and/or contractors of DHEC in administration of programs shall be held confidential and shall not be divulged without the express written consent of the individual(s) to which it pertains.
40. **Item Substitution:** No substitution of items will be allowed on any purchase made from the awarded contract without written permission from the DHEC Procurement Office.
41. **Outside Contractor Program:** If applicable to scope of contract, contracted employees working on DHEC properties are entitled to information about hazardous chemicals present at DHEC; and DHEC's personnel are entitled to information about hazardous chemicals brought to the facilities by contractors. In order to assure

continued compliance with the Hazard Communication Standards while contractors are on DHEC property and to control potential compliance obligations under the Superfund Amendments and Re-authorization Act, it is DHEC's policy to:

A. Obtain written assurance that the contractor's employees have been trained to understand the hazards of the chemicals at DHEC and how to use appropriate personal protective equipment. All personal protective equipment and training required for the contractor's employees will be provided by the contractor at the contractor's expense. (This includes SC State General Services employees).

B. Require the contractor to notify the DHEC Bureau of Business Management or the appropriate DHEC unit Director when introducing hazardous chemicals into DHEC work areas, which may harmfully expose DHEC employees. If the contractor is introducing such hazardous chemicals into any DHEC facility or onto DHEC property, the contractor shall provide the DHEC Division of Procurement Services or the DHEC unit Director copies of the Material Safety Data Sheets (MSDS) for those chemicals. The DHEC Division of Procurement Services or the DHEC unit Director should provide appropriate information to the DHEC employees before the contractor(s) enter any DHEC facility with chemicals.

C. DHEC reserves the right to refuse to allow any contractor to bring any chemical onto DHEC property. The Department also reserves the right to refuse to allow any contractor to bring certain quantities of chemicals on DHEC property.

Bid Attachments can be located in technical file with hard copy of bid solicitation

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

BUREAU OF
BUSINESS MANAGEMENT
DIVISION OF PROCUREMENT SERVICES
2600 Bull Street
Columbia, SC 29201-1708
Telephone (803) 898-3501 Fax (803) 898-3505
June 24, 2004

RECEIVED
JUN 25 2004
UNDERGROUND STORAGE
TANK PROGRAM

TO: Laura Pace

FROM: Matt Winslow
Division of Procurement Services
SC Department of Health and Environmental Control

08932

SUBJECT: SB-25841-6/24/04-EMW

The bidding has been completed on this solicitation. I am enclosing copies of the apparent low bids for your review. The anticipated date for posting the award is July 2, 2004. Please call or e-mail me with any questions or comments. Thanks!

UST PROGRAM
DOCKETING # 4

RECEIVED

JUN 2 5 2004

UNDERGROUND STORAGE TANK PROGRAM

UST BID SHEET

SOUTH CAROLINA
DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL

SOLICITATION NUMBER: SB-25841

PROCUREMENT OFFICER: E. Madison Wasden

OPENING/CLOSING DATE: 6-24-04

BID CLERK: Dina Brazell

TIME: 2:30 pm

DATE AWARD WILL BE POSTED: 7/1/04

COMPANY NAME					
PHA	338,179				
Consultech Environmental	[redacted]	195,000			
Envirosouth	677,770				
Terry Environmental	634,000				
Gage Group	288,000				
Palmetto Environmental	349,000				
SRS Remediation	298,000				
Midlands Environmental	[redacted]	unable to secure bond			
Schnabel	445,000				

Revised 02/11/00 JSS

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

BUREAU OF
BUSINESS MANAGEMENT
DIVISION OF PROCUREMENT SERVICES
2600 Bull Street
Columbia, SC 29201-1708
Telephone (803) 898-3501 Fax (803) 898-3505

RECEIVED
JUN 25 2004

UNDERGROUND STORAGE TANK PROGRAM

SEALED BID INVITATION

BID MUST BE SUBMITTED ON THIS FORM TO BE ACCEPTED

SOLICITATION NUMBER: SB-25841-6/24/04-EMW
(Number Must Be Shown On Front Of Envelope)

DATE ISSUED: 5/24/04
PAGE 1 OF 84

SEALED BIDS WILL BE RECEIVED UNTIL:

TIME: 2:30 pm (ET) DATE: 6/24/04

AND THEN PUBLICLY OPENED

Mail To:
ATTENTION: BID CLERK
SOLICITATION NO.: SB-25841-6/24/04-EMW
S.C. Department of Health & Environmental Control
Division of Procurement Services
2600 Bull Street
Columbia, South Carolina 29201-1708

DIRECT INQUIRIES TO: E. Madison Winslow, CPPB Phone: (803) 898 - 3487
E. Madison Winslow

***SC DHEC Solicitations are available online at http://www.scdhec.net/procurement*
Vendors can also register for amendments and view award statements.

REASON FOR NO BID:

This Section Must Be Completed By Vendor:

Midlands Environmental Consultants, Inc.
Vendor Name

P.O. Box 854
Mailing Address

Lexington SC 29071
City State Zip Code

Telephone Number: (803) 808-2043

Fax Number: (803) 808-2048

E-mail Address:

Toll Free Number: ( )

FEIN Or SSN: 57-1052403

By signing this bid I certify:

- This bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same materials, supplies or equipment and is in all respects fair and without collusion or fraud.

By signing this bid I agree:

- To abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder.
- If this quotation is accepted within 60 days from date of opening, to furnish any and all items/services at the prices quoted.

Drug-Free Workplace: Required by Section 44-107-10 (Drug Free Workplace Act) of the South Carolina Code of Laws, 1976, as amended. By submission of a bid, the bidder certifies that he/she will comply with all aspects of the Drug-Free Workplace Act and will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the performance of this contract. This certification also applies to any individual or firm employed by the contractor.

BTShane
Authorized Signature (Manual)

Bryan T. Shane
Authorized Signature (Typed) Title

6/24/04
Date Signed

COMMODITY: Perform corrective action of a petroleum release from a regulated underground storage tank site.

METHOD OF BID AWARD: Award will be made to a South Carolina Certified UST Site Rehabilitation Contractor based on the total cost of active correction action and other factors. (See Special Conditions #3)

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BID NUMBER: SB-25841-6/24/04-EMW

CORRECTIVE ACTION SOLICITATION RESPONSE
for Heath Self Serve #2 (UST Permit #08932), 501 N Guignard Road, Sumter, South Carolina

Please respond to the following questions:

1. The corrective action method(s) or technology (ies) that will be proposed in the CAP will be (list all active and/or intrinsic methods or technologies for remediation of the aquifer:
Air Sparge, Vapor Extraction, Enhanced Fluid Recovery, ORC Injection

2. The estimated time in months to complete the corrective action from the date of bid award until corrective action goals are met, and all corrective action items are removed from the site or properly abandoned is approximately 24 months. **This estimate includes time necessary for permitting, system construction, and the minimum six months of verification monitoring and assumes all submitted plans and reports will be reviewed by DHEC within 30 days of receipt.**

3. The total cost in dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern (see figure # 2) such that the thickness of free product does not exceed .01 foot and the levels of CoC do not exceed the site-specific target levels (SSTLs) defined in item 11.C. at any point, complete all associated monitoring and post-remediation verification, prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and remediation items installed as part of corrective action; provide evidence of performance bond; and other items outlined in this solicitation is: $ 150,000

ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the offeror agrees, if this bid is accepted within 365 days from date of opening, to complete the corrective action as specified at the price set forth.

For the purpose of this submittal and acceptance of financial approval should it occur, I certify that this company understands the nature of the release and the geologic conditions at this facility as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method above are estimates and changes to those quantities or to the listed method(s) will not affect the bid price.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

Midlands Environmental Consultants, Inc.
Contractor (Print)

Certification No. 09

Bryan T. Shane
Authorized Representative (Print)

B.T. Shane
Signature

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

BUREAU OF
BUSINESS MANAGEMENT
DIVISION OF PROCUREMENT SERVICES
2600 Bull Street
Columbia, SC 29201-1708
Telephone (803) 898-3501 Fax (803) 898-3505

SEALED BID INVITATION

BID MUST BE SUBMITTED ON THIS FORM TO BE ACCEPTED

SOLICITATION NUMBER: SB-25841-6/24/04-EMW
(Number Must Be Shown On Front Of Envelope)

DATE ISSUED: 5/24/04
PAGE 1 OF 84

SEALED BIDS WILL BE RECEIVED UNTIL:

TIME: 2:30 pm DATE: 6/24/04
(ET)

AND THEN PUBLICLY OPENED

Mail To:
ATTENTION: BID CLERK
SOLICITATION NO.: SB-25841-6/24/04-EMW
S.C. Department of Health & Environmental Control
Division of Procurement Services
2600 Bull Street
Columbia, South Carolina 29201-1708

DIRECT INQUIRIES TO: E. Madison Winslow, CPPB Phone: (803) 898 - 3487
E. Madison Winslow

***SC DHEC Solicitations are available online at http://www.scdhec.net/procurement*
Vendors can also register for amendments and view award statements.

REASON FOR NO BID:

This Section Must Be Completed By Vendor:

GAGE Group, Inc.
Vendor Name

521 Clemson Road
Mailing Address

Columbia SC 29229
City State Zip Code

Telephone Number: 803-741-9000
Fax Number: (803-741-9900
E-mail Address: cclymer@gagegroup.org
Toll Free Number: ( )
FEIN Or SSN: 20-0350125

By signing this bid I certify:

- This bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same materials, supplies or equipment and is in all respects fair and without collusion or fraud.

By signing this bid I agree:

- To abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder.
- If this quotation is accepted within 60 days from date of opening, to furnish any and all items/services at the prices quoted.

Drug-Free Workplace: Required by Section 44-107-10 (Drug Free Workplace Act) of the South Carolina Code of Laws, 1976, as amended. By submission of a bid, the bidder certifies that he/she will comply with all aspects of the Drug-Free Workplace Act and will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the performance of this contract. This certification also applies to any individual or firm employed by the contractor.

Authorized Signature (Manual) | Authorized Signature (Typed) Title | Date Signed: 6/24/04

COMMODITY: Perform corrective action of a petroleum release from a regulated underground storage tank site.

METHOD OF BID AWARD: Award will be made to a South Carolina Certified UST Site Rehabilitation Contractor based on the total cost of active correction action and other factors. (See Special Conditions #3)

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BID NUMBER: SB-25841-6/24/04-EMW

CORRECTIVE ACTION SOLICITATION RESPONSE
for Heath Self Serve #2 (UST Permit #08932), 501 N Guignard Road, Sumter, South Carolina

Please respond to the following questions:

1. The corrective action method(s) or technology (ies) that will be proposed in the CAP will be (list all active and/or intrinsic methods or technologies for remediation of the aquifer:

   VEFR and air sparging

2. The estimated time in months to complete the corrective action from the date of bid award until corrective action goals are met, and all corrective action items are removed from the site or properly abandoned is approximately 21 months. **This estimate includes time necessary for permitting, system construction, and the minimum six months of verification monitoring and assumes all submitted plans and reports will be reviewed by DHEC within 30 days of receipt.**

3. The total cost in dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern (see figure # 2) such that the thickness of free product does not exceed .01 foot and the levels of CoC do not exceed the site-specific target levels (SSTLs) defined in item 11.C. at any point, complete all associated monitoring and post-remediation verification, prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and remediation items installed as part of corrective action; provide evidence of performance bond; and other items outlined in this solicitation is: $ 288,000.00

ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the offeror agrees, if this bid is accepted within 90 days from date of opening, to complete the corrective action as specified at the price set forth.

For the purpose of this submittal and acceptance of financial approval should it occur, I certify that this company understands the nature of the release and the geologic conditions at this facility as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method above are estimates and changes to those quantities or to the listed method(s) will not affect the bid price.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

GAGE Group, Inc
Contractor (Print)

Certification No. 246

Chuck Clymer
Authorized Representative (Print)

Chuck Clymer
Signature

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

BUREAU OF
BUSINESS MANAGEMENT
DIVISION OF PROCUREMENT SERVICES
2600 Bull Street
Columbia, SC 29201-1708
Telephone (803) 898-3501 Fax (803) 898-3505

SEALED BID INVITATION

BID MUST BE SUBMITTED ON THIS FORM TO BE ACCEPTED

SOLICITATION NUMBER: SB-25841-6/24/04-EMW
(Number Must Be Shown On Front Of Envelope)

DATE ISSUED: 5/24/04
PAGE 1 OF 84

SEALED BIDS WILL BE RECEIVED UNTIL:

TIME: 2:30 pm (ET) DATE: 6/24/04

AND THEN PUBLICLY OPENED

Mail To:
ATTENTION: BID CLERK
SOLICITATION NO.: SB-25841-6/24/04-EMW
S.C. Department of Health & Environmental Control
Division of Procurement Services
2600 Bull Street
Columbia, South Carolina 29201-1708

DIRECT INQUIRIES TO: E. Madison Winslow, CPPB Phone: (803) 898 - 3487

E. Madison Winslow

***SC DHEC Solicitations are available online at http://www.scdhec.net/procurement*
Vendors can also register for amendments and view award statements.

REASON FOR NO BID:

This Section Must Be Completed By Vendor:

Consultech Environmental, Inc.
Vendor Name

1800 MacLeod Drive Suite F
Mailing Address

Lawrenceville, GA 30043
City State Zip Code

Telephone Number: (678) 377-0400

Fax Number: (678) 377-0051

E-mail Address:

Toll Free Number: (888) 368-9222

FEIN Or SSN: 58-1975219

By signing this bid I certify:

- This bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same materials, supplies or equipment and is in all respects fair and without collusion or fraud.

By signing this bid I agree:

- To abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder.
- If this quotation is accepted within 60 days from date of opening, to furnish any and all items/services at the prices quoted.

Drug-Free Workplace: Required by Section 44-107-10 (Drug Free Workplace Act) of the South Carolina Code of Laws, 1976, as amended. By submission of a bid, the bidder certifies that he/she will comply with all aspects of the Drug-Free Workplace Act and will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the performance of this contract. This certification also applies to any individual or firm employed by the contractor.

James R. Wilson
Authorized Signature (Manual)

James R. Wilson, Vice President
Authorized Signature (Typed) Title

6/23/04
Date Signed

COMMODITY: Perform corrective action of a petroleum release from a regulated underground storage tank site.

METHOD OF BID AWARD: Award will be made to a South Carolina Certified UST Site Rehabilitation Contractor based on the total cost of active correction action and other factors. (See Special Conditions #3)

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

BID NUMBER: SB-25841-6/24/04-EMW

CORRECTIVE ACTION SOLICITATION RESPONSE

for Heath Self Serve #2 (UST Permit #08932), 501 N Guignard Road, Sumter, South Carolina

Please respond to the following questions:

1. The corrective action method(s) or technology (ies) that will be proposed in the CAP will be (list all active and/or intrinsic methods or technologies for remediation of the aquifer:
   Air Sparge and SVE

2. The estimated time in months to complete the corrective action from the date of bid award until corrective action goals are met, and all corrective action items are removed from the site or properly abandoned is approximately 24 months. **This estimate includes time necessary for permitting, system construction, and the minimum six months of verification monitoring and assumes all submitted plans and reports will be reviewed by DHEC within 30 days of receipt.**

3. The total cost in dollars, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern (see figure # 2) such that the thickness of free product does not exceed .01 foot and the levels of CoC do not exceed the site-specific target levels (SSTLs) defined in item 11.C. at any point, complete all associated monitoring and post-remediation verification, prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon or remove all assessment and remediation items installed as part of corrective action; provide evidence of performance bond; and other items outlined in this solicitation is: $ 195,000

ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the offeror agrees, if this bid is accepted within 30 days from date of opening, to complete the corrective action as specified at the price set forth.

For the purpose of this submittal and acceptance of financial approval should it occur, I certify that this company understands the nature of the release and the geologic conditions at this facility as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method above are estimates and changes to those quantities or to the listed method(s) will not affect the bid price.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

Consultech Environmental, Inc.
Contractor (Print)

Certification No. 65

James R. Wilson
Authorized Representative (Print)

James R. Wilson
Signature

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6240

MEMORANDUM

Date: July 1, 2004

TO: E. Madison Winslow, Procurement Officer
Bureau of Business Management

FROM: Laura Pace, CGFO, CPM, Manager
Financial Section
Underground Storage Tank Program

Subject: Bid Award, SB-25841-6/24/04-EMW, Requisition #25841
Heath Self Serve #2, UST Permit #08932, 501 N Guignard Rd., Sumter, SC

This Program has reviewed the submittals received June 25, 2004 for the referenced bid. As the proposed corrective action methodology can be permitted in South Carolina and the estimated time frame is protective of human health, the low bid submitted by Midlands Environmental Consultants, Inc. is acceptable. The UST Program recommends immediate award of the contract to Midlands Environmental Consultants, Inc.

The purchase order should be generated for one half of the accepted bid award amount, $75,000.00. Please note, the full amount of the bid award ($150,000.00) should be noted in the body of the generated purchase order. The purchase order should indicate it is for the referenced facility indicated above. Please provide Pat Holland a copy of the purchase order.

cc: Christopher S. Doll, P.G., Manager, NESCCA Section
Debra Thoma, NESCCA Section
Pat Holland, Financial Section
Technical File

UST PROGRAM
DOCKETING # 777

BOARD:
Elizabeth M. Hagood
Chairman

Mark B. Kent
Vice Chairman

Howard L. Brilliant, MD
Secretary

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

BOARD:
Carl L. Brazell

Louisiana W. Wright

L. Michael Blackmon

Coleman F. Buckhouse, MD

JUL 12 2004

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #536793
Sumter County

Dear Mr. Leonard:

As you are aware, the Underground Storage Tank Program determined that active corrective action was necessary at the referenced facility to reduce levels of petroleum constituents to acceptable levels. You selected to allow the SCDHEC to procure a contractor on your behalf, per your signed permission form. On July 2, 2004, the SCDHEC awarded Midlands Environmental Consultants, Inc. (MECI) the corrective action contract. MECI submitted the lowest bid in the amount of $150,000.00. Per the requirements of the contract, MECI is required to submit a corrective action plan and performance bond or letter of credit within 30 days of the award date (on or before August 5, 2004). You will receive a copy of the corrective action plan and be given an opportunity to comment on the proposed remediation. MECI is also required to submit an Initial Monitoring Report within 45 days of the award date (on or before August 20, 2004).

On all future correspondence, please reference the **UST Permit #08932.** If you have any questions or need additional information, please feel free to contact me at (803) 896-6397 or (800) 826-5435 (within South Carolina only), via fax at (803) 896-6245, or via e-mail at thomadl@dhec.sc.gov.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

cc: Bryan Shane, Midlands Environmental Consultants, Inc., PO Box 854, Lexington, SC, 29071
Technical File

UST PROGRAM
DOCKETING # 181

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

CERTIFIED MAIL
7001 2510 0008 8148 3934

AUG 2 6 2004

BRYAN SHANE
MIDLANDS ENVIRONMENTAL CONSULTANTS
PO BOX 854
LEXINGTON SC 29071

Re: Heath Self Serve, 501 N Guignard St., Sumter, SC
UST Permit #08932; CA#21908
SB-25841-6/24/04-EMW; PO#536793
Awarded July 2, 2004
Sumter County

Dear Mr Shane:

The referenced contract was awarded to your company on July 2, 2004. In accordance with Special Condition15 of the contract, a performance bond or irrevocable letter of credit and the Corrective Action Plan was to be submitted to this office on or before August 5, 2004. As of this writing, the required surety has not been received. At this time, Midlands Environmental Consultants is in breach of the terms and conditions of the referenced contract and is subject to the immediate termination of said contract.

However, for reasons befitting the Department, if the required surety is received by the Underground Storage Tank Program no later than fifteen (15) working days from your receipt of this letter, the Department will forego cancellation.

Please feel free to contact me at (803) 896-6585 if you have any questions or need additional information.

Sincerely,

Debra L Thoma for

Christopher S. Doll, P.G., Manager
Northeastern SC Corrective Action Section
Assessment and Corrective Action Division
Underground Storage Tank Program
Bureau of Land and Waste Management

cc: Matt Winslow, Bureau of Business Management
Technical File
Contractor Certification File

UST PROGRAM
DOCKETING # 91

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6240

MEMORANDUM

Date: September 14, 2004

TO: E. Madison Winslow, Procurement Officer
Bureau of Business Management

FROM: Laura Jean Pace, CGFO, CPM, Manager
Financial Section
Underground Storage Tank Program

Subject: Bid SB-25841-6/24/04-EMW, PO 536793
Heath Self Serve #2, UST Permit #08932, 501 N Guignard Rd., Sumter, SC

Midlands Environmental, Inc. has been unable to secure a performance bond as required in Special Condition #15; therefore, in accordance with Special Condition #12 the UST Program requests that Purchase Order Number 536793 be cancelled.

Based on the bids submitted on June 25, 2004, as the proposed corrective action methodology can be permitted in South Carolina and the estimated time frame is protective of human health, the second low bid submitted by Consultech Environmental, Inc. is acceptable. The UST Program recommends immediate award of the contract to Consultech Environmental, Inc.

The purchase order should be generated for one half of the accepted bid award amount, $97,500.00. Please note, the full amount of the bid award ($195,000.00) should be noted in the body of the generated purchase order. The purchase order should indicate it is for the referenced facility indicated above. Please provide Pat Holland a copy of the purchase order.

cc: Christopher S. Doll, P.G., Manager, NESCCA Section
Debra Thoma, NESCCA Section
Pat Holland, Financial Section
Technical File

UST PROGRAM
DOCKETING # 807

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

SEP 28 2004

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Sumter County

Dear Mr. Leonard:

As you are aware, the Underground Storage Tank Program determined that active corrective action was necessary at the referenced facility to reduce levels of petroleum constituents to acceptable levels. On July 2, 2004, the SCDHEC awarded Midlands Environmental Consultants, Inc. (MECI) the corrective action contract. However, MECI was unable to secure a performance bond for the contract amount. As a result, the UST Program cancelled the contract with MECI. On September 15, 2004, the SCDHEC awarded Consultech Environmental, Inc. the corrective action contract. Consultech submitted the second lowest bid in the amount of $195,000.00. Per the requirements of the contract, Consultech is required to submit a corrective action plan and performance bond or letter of credit within 30 days of the award date (on or before October 15, 2004). You will receive a copy of the corrective action plan and be given an opportunity to comment on the proposed remediation. Consultech is also required to submit an Initial Monitoring Report within 45 days of the award date (on or before October 30, 2004).

On all future correspondence, please reference the **UST Permit #08932.** If you have any questions or need additional information, please feel free to contact me at (803) 896-6397 or (800) 826-5435 (within South Carolina only), via fax at (803) 896-6245, or via e-mail at thomadl@dhec.sc.gov.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

cc: James Wilson, Consultech Environmental, Inc., 1800 MacLeod Dr., #F, Lawrenceville, GA, 30043
Technical File

UST PROGRAM
DOCKETING # 81 T

Approved Cost Agreement 21908

Facility: 08932 H Q HEATH SELF SERVE
THOMADL

PO Number: 548324

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
22 CORRECTIVE ACTION						
		1	CAM/TI AND/OR OPERATE	1.0000	195,000.00	78,000.00
		2	25% REDUCTION IN COC	1.0000	195,000.00	19,500.00
		3	50% REDUCTION IN COC	1.0000	195,000.00	19,500.00
		4	75% REDUCTION IN COC	1.0000	195,000.00	29,250.00
		5	100% REDUCTION IN COC	1.0000	195,000.00	48,750.00
				Total Amount		195,000.00

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

UNDERGROUND STORAGE TANK PROGRAM
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6240
Fax (803) 896-6245

MEMORANDUM

DATE: October 19, 2004

TO: Todd Adams
Water Monitoring, Assessment & Protection Division
Bureau of Water

FROM: Debra L. Thoma
Assessment & Corrective Action Division
Underground Storage Tank Program

SUBJECT: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932
Corrective Action Plan received October 18, 2004
Sumter County

Attached for your review and approval is an Underground Injection Control Permit Application for the above referenced site submitted by Consultech Environmental, Inc. Initial review by this Department indicates the Corrective Action Plan is approvable. Please send the completed Permit to Install to my attention once your review and approval is completed.

Questions may be referred to my attention at (803) 896-6397.

Enc: UIC Permit Application

Cc: Technical File

UST PROGRAM
DOCKETING # 821

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

CENTRAL CAROLINA TECH COLLEGE
506 N GUIGNARD DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280101038
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280101038) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

UST PROGRAM
DOCKETING # 831

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

PAUL & BOBBY JEAN BJORKMAN
2075 OLD ORANGEBURG RD
LEXINGTON 29073

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280101039
Sumter County

Dear Mr & Mrs. Bjorkman:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280101039) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

MR E K LATHAN JR
466 N GUIGNARD DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #228101058
Sumter County

Dear Mr. Lathan:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#228101058) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

OCT 20 2004

I H MOSES & FAMILY LP
613 HIGH MARKET ST
GEORGETOWN SC 29440

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280101059
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280101059) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

OCT 20 2004

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Sumter County

Dear Mr. Leonard:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. To protect human health, Consultech Environmental, Inc. has been retained your behalf to initiate corrective action of the impacted groundwater by reducing the concentration of gasoline constituents to acceptable levels using the extraction of water and free product combined with the injection of ambient air into the subsurface.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells is necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued cooperation is appreciated. A copy of the public notice is enclosed for your information.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397 or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Corrective Action Plan
Public Notice

cc: Technical File

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

JAMES C BURNS JR & IDA B SUTTON
103 BURNS DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2291603037 & 2291603038
Sumter County

Dear Mr. Burns & Ms Sutton:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2291603037 & 2291603038) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

EDENS & AVANT PROPERTIES LP
1901 MAIN ST STE 900
COLUMBIA SC 29201

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280001002
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280001002) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

GMF LLC
534 BULTMAN DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2291604002
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2291604002) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER
C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

OCT 20 2004

EDWIN B BRADING
3005 LEEDS GARDEN LANE
ALPHARETTA GA 30022

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280001001
Sumter County

Dear Mr. Brading:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280001001) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

WILLIAM B BOYLE REVOCABLE TRUST
2825 CARTER RD UNIT 184
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280102020, 2280102009, 2280102010, & 2280102011
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280102020, 2280102009, 2280102010, & 2280102011) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER
C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

OCT 20 2004

MR JOHN W SHAW III
463 GUIGNARD DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280102008
Sumter County

Dear Mr. Shaw:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280102008) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

MR CHARLES E GUPTON
323 ADAMS AVE
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280102012
Sumter County

Dear Mr. Gupton:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280102012) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER
C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

OCT 20 2004

MR WADE H JONES JR
PO BOX 3188
AIKEN SC 29802

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280102016 & 2280102013
Sumter County

Dear Mr. Jones:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280102016 & 2280102013) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

SOUTHERN NATIONAL BANK OF SC
BB&T TAX DEPT
PO BOX 1290
WINSTON-SALEM NC 27102

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2280101030
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2280101030) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Va por Extraction and Air Sparging

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C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

WILLIAM T NOONAN
SUMTER COUNTY
13 EAST CANAL ST
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2291601003 & 2280101032
Sumter County

Dear Mr. Noonan:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2291601003 & 2280101032) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

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Excerpts of Corrective Action Plan
Citizen's Guide to Soil Va por Extraction and Air Sparging

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OCT 20 2004

ELIZABETH CUNNING SEGARS
513 GUIGNARD DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2291603039
Sumter County

Dear Ms. Segars:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2291603039) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

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OCT 20 2004

PALMER & MALLARD AND ASSOCIATES INC
517 GUIGNARD
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2291603026
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2291603026) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

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C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 20 2004

FIRST SOUTHERN METHODIST CHURCH
321 MILLER RD
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Property located at Tax Map #2291603034
Sumter County

Dear Sir or Madam:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted a Corrective Action Plan to clean up the impacted soil and groundwater using the injection of ambient air into the subsurface combined with the extraction of water and free phase product.

Section 280.67 of the South Carolina Underground Storage Tank Regulations requires the Bureau of Land and Waste Management Underground Storage Tank Program to provide notice to those members of the public that may be affected by the planned corrective action. According to the Sumter County Tax Assessor, you own property (TM#2291603034) in close proximity to the referenced facility. The installation of the permanent injection wells, associated piping, and the collection of groundwater samples from the monitoring wells may be necessary as part of the corrective action measures; however, Consultech has been directed to coordinate with you and to minimize any inconvenience to you. Your continued patience is appreciated.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov. All comments should be submitted within thirty (30) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Public Notice
Excerpts of Corrective Action Plan
Citizen's Guide to Soil Vapor Extraction and Air Sparging

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C. Earl Hunter, Commissioner

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NOV 22 2004

KENNETH BROOKE
CONSULTECH ENVIRONMENTAL INC
1800 MACLEOD DR STE F
LAWRENCEVILLE GA 30043

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Corrective Action Plan received October 18, 2004
Initial Monitoring Report received November 19, 2004
Sumter County

Dear Mr. Brooke:

The Underground Storage Tank Program has reviewed the referenced documents. As required by Section 280.67 of the South Carolina Underground Storage Tank Regulations R.61-92, the Bureau has provided a public notice period including notice of the pending corrective actions to the surrounding landowners. No objections to the proposed actions were expressed; therefore, the Corrective Action Plan (CAP) is approved. All work must be completed in accordance with the referenced bid specifications. The Department recognizes that modifications to the CAP are usually necessary as site conditions change during implementation. If changes to the CAP are later deemed necessary to achieve the Site-Specific Target Levels in a timely manner, please notify the Department. Any changes or modifications to the CAP will not result in a change order.

As stated in specification #5, the Corrective Action Plan is to be implemented within 30 days from receipt of the UIC Permit to Construct. As stated in specification #8, monitoring reports are to be submitted on a quarterly basis. The first Corrective Action Status (CASE) Report will be due 3 months from the date the UIC Permit to Operate. The details of the system installation, including well logs, should be documented in the first CASE Report unless a separate System Installation Report will be submitted.

The Bureau grants pre-approval for transportation of drums of virgin petroleum contaminated soil and/or drums of groundwater from the referenced site to a permitted treatment facility. The contaminated soil and/or groundwater must be properly stored in labeled 55-gallon drums or equivalent containers. The contaminated soil and/or groundwater must be accepted by the approved treatment facility. There can be no spillage or leakage in transport. A copy of the disposal manifest from the receiving facility that clearly designates the quantity received must be included in the monitoring reports.

UST PROGRAM
DOCKETING # 847

All future invoices and/or other rehabilitation activities must comply with current SUPERB criteria per Section 44-2-20(2) and the referenced bid special conditions. Please reference **Cost Agreement Number 21908** on all pay-for-performance invoices. Please note, per Section 44-2-40 of the SUPERB Statute, an invoice for site rehabilitation activities must be submitted on or before January 15, 2004 or the Cost Agreement will be uncommitted.

On all correspondence regarding this site, please reference the UST Permit Number. On the invoices, please reference the UST Permit Number and Cost Agreement Number. If you have questions concerning this correspondence, feel free to contact me at (803) 896-6397, (800) 826-5435 (within SC only), or thomadl@dhec.sc.gov.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Cc: Doug Leonard, Coca-Cola Bottling Co., PO Box 31487, Charlotte, NC, 28331-1487
Technical File

D H E C

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C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

NOV 23 2004

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Initial Monitoring Report received November 19, 2004
Sumter County

Dear Mr. Leonard:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. To protect human health, Consultech Environmental has been retained your behalf to initiate corrective action of the impacted groundwater by reducing the concentration of gasoline constituents to acceptable levels using extraction of water and free product combined with the injection of ambient air into the subsurface. Please find enclosed a copy of the Initial Monitoring Report. This report documents site conditions prior to the initiation of corrective action.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397 or thomadl@dhec.sc.gov. All comments should be submitted within twenty (20) days of the date of this correspondence.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Initial Monitoring Report

cc: Technical File

UST PROGRAM DOCKETING # 85.T

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

JAN 0 6 2005

JAMES C BURNS JR & IDA B SUTTON
103 BURNS DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
System Installation Report Received December 28, 2004
Property located at Tax Map #2291603037 & 2291603038
Sumter County

Dear Mr. Burns & Ms. Sutton:

As you are aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted the system installation report documenting the installation of the extraction wells for the remediation.

If you have any questions or comments regarding the proposed corrective actions, please contact me at (803) 896-6397 or thomadl@dhec.sc.gov.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: System Installation Report

cc: Technical File

UST PROGRAM
DOCKETING # 860T

CONSULTECH ENVIRONMENTAL, INC.

September 13, 2005

RECEIVED
SEP 19 2005
UNDERGROUND STORAGE
TANK PROGRAM

Ms. Debra Thoma
Hydrogeologist
NE SC Corrective Action Branch
South Carolina Department of Health and Environmental Control
Division of Underground Storage Tank Management
2600 Bull Street
Columbia, South Carolina 29201-1708

Re: Quarterly Monitoring Report #1
Former Heath Self Serve #2
501 N. Guignard Rd. Sumter County, SC
SCDHEC Facility ID # 08932
SB#25841-6/24/04-EMW, PO#54834
Consultech Project C-1383

Dear Ms. Thoma:

Consultech Environmental, Inc. (Consultech) is pleased to present this Initial Groundwater Monitoring Report for the above referenced facility. Should you have any questions regarding this report or the project in general, please do not hesitate to contact us at (678) 377-0400.

Sincerely,

CONSULTECH ENVIRONMENTAL, INC.

James R. Wilson, P.G.
Senior Project Manager

cc: File C-1383

1800 MacLeod Drive, Suite F * Lawrenceville, GA 30043-5376
678 377-0400 * FAX 678 377-0051

UST PROGRAM
DOCKETING # 991

Groundwater Monitoring Report #1

Heath Self Serve #2
UST Permit # 08932
501 North Guignard Road
Sumter, Sumter County, South Carolina

Prepared for:
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

Prepared by:
Consultech Environmental, Inc.
1800 MacLeod Drive, Suite F
Lawrenceville, Georgia 30043-5736

Kenneth L. Brooke
Project Manager

James R. Wilson, P.G.
Sr. Project Manager



September 2005

Consultech Project No.: C-1383

Groundwater Monitoring Report #1

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Groundwater Monitoring Report #1

1.0 Project Summary

The subject site is located at 501 North Guignard Road, Sumter, Sumter County, South Carolina, South Carolina (see Figure 1). Based upon the information released by the South Carolina Department of Health and Environmental Control (SCDHEC), Total Fluids Removal (TFR), and In-situ Air Sparging (AS), are the selected technologies that will be used to remediate the groundwater contaminate plume at this site. This report presents the groundwater monitoring results for the sampling event conducted on August 22-23, 2005.

A Mobile Multi-Phase Extraction (MMPE) Unit was mobilized to the Former Heath Self Serve #2 site located at 501 North Guignard Road, Sumter, South Carolina on June 13, 2005. The MMPE unit was permitted by the SCDHEC Bureau of Water as a wastewater treatment system and operated under Permit 18934-IW. The emissions from MMPE unit were determined by the SCDHEC Bureau of Air to be exempt from regulation per South Carolina Regulation 62.1, Section II(F)(2)(g). The effluent generated from the MMPE unit was approved for discharge to the City of Sumter sewer provided that the effluent met the discharge requirements. G&K Tank Services were approved to collect and dispose the sludge and waste oil generated from the MMPE unit.

The MMPE unit was set-up initially at the current Shell Station. The MMPE unit consisted of the following equipment: dual phase pump, moisture separator, oil water separator, air stripper, carbon units and an electric catalytic oxidizer. The MMPE treats extracted liquid and vapors from recovery wells. The extracted groundwater is pumped to the unit and transferred to the oil water separator (OWS) via the moisture separator. The liquid petroleum hydrocarbons (LPHs) are removed from the groundwater in the OWS and collected in a small container that is vented to the oxidizer. The liquid from the OWS is collected in a holding tank prior to treatment in the air stripper and carbon units. The treated groundwater is pumped to a holding tank and subsequently discharged to the sewer. The vapors extracted from the recovery wells and the vapors generated from the liquid treatment section of the unit are transported to the oxidizer and combusted. The electric catalytic oxidizer is designed to operate up to a level of 25 percent of the lower explosive limit (LEL) and has a destruction and removal efficiency (DRE) of 99 percent.

The unit was initially set-up at the Shell Station and drop pipes were installed in total fluid recovery (TFR) wells TFR-1 and TFR-2. The unit was started and an initial batch of approximately 500 gallons of contaminated groundwater was extracted and processed in the MMPE Unit. During the initial batch, treated water samples were collected. A flow-composite sample was prepared and submitted to the laboratory. The analytical results met the requirements of the City of Sumter. Therefore, the treated groundwater from the MMPE unit was approved for discharge to the City sewer.

The MMPE unit was operated over a six weeks from June 13 to July 31, 2005 using TFR-1 through TFR-12. Approximately 32,000 gallons of groundwater was treated and discharged to the City of Sumter sewer. During the operation of the MMPE unit, 125 gallons of sludge/waste oil was generated. The waste was collected and managed properly by G&K Services.

2.0 Groundwater Monitoring Results

Consultech personnel gauged monitoring wells MW-2 through MW-10, MW-12 through MW-16, MW-18, and MW-25 for groundwater elevations and for liquid phase hydrocarbons (LPH). Monitoring wells MW-11, MW-19 through MW-24, MW-26, and MW-27 were not found nor gauged due to heavily wooded swampy areas. A weed eater will be brought to the site for the next sampling event to clear out these areas for locating these wells. None of the monitoring wells contained free product. Strong petroleum odors were recorded for monitoring wells: MW-7, MW-9, and MW-10. The groundwater elevations for the shallow wells ranged between 82.56 feet in MW-6 and 78.21 feet in MW-14. Table 1 provides a summary of the groundwater elevations.

Fluid level measurements were taken to create a groundwater elevation contour map for the shallow wells as presented in Figure 3. This data illustrates the static groundwater surface, direction of groundwater flow, and hydraulic gradient across the site. According to Figure 3, the groundwater at this site flows generally toward the east. The groundwater has an average hydraulic gradient between MW-6 and MW-14 of 0.0041 ft./ft. Figures 6 and 7 are graphs showing the elevations of monitoring wells over time.

3.0 Groundwater Sampling Results

Consultech personnel collected groundwater samples from monitoring wells MW-2 through MW-10, MW-12 through MW-16, MW-18, and MW-25. Monitoring wells MW-11, MW-19 through MW-24, MW-26, and MW-27 were not found nor sampled due to heavily wooded swampy areas. None of the monitoring wells contained free product. The groundwater analytical results are listed in Appendix I.

Please reference Consultech's Standard Operating Procedures document dated October 2002 for detailed sampling protocol. The groundwater analytical results are shown on Table 2. Laboratory data sheets and chain-of-custody forms are included under Appendix 1. A comparison was made between the recent groundwater analytical results and previous analytical data on October 20, 2004. The following paragraphs discuss this comparison for the chemicals of concern.

Benzene

The dissolved benzene concentration decreased in monitoring wells MW-2, MW-3, MW-4, MW-6, MW-7, MW-10, and MW-12. The dissolved benzene concentration increased in monitoring wells MW-5, MW-8, and MW-9. All other monitoring wells remained below the laboratory detection limit for benzene. The following wells were higher than the SSTLs for benzene: MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, and MW-10.

MTBE

The dissolved MTBE concentration decreased in monitoring wells MW-2, MW-4, MW-6, MW-7, MW-9, MW-10, and MW-12. The dissolved MTBE concentration increased in monitoring wells MW-5 and MW-8. All other monitoring wells remained below the laboratory detection limit for MTBE. The following wells were higher than the SSTLs for MtBE: MW-2, MW-4, MW-7, MW-8, MW-9, MW-10, and MW-12.

Naphthalene

The dissolved naphthalene concentration decreased in monitoring wells MW-2, MW-4, MW-6, MW-9, MW-10, and MW-12. The dissolved naphthalene concentration increased in monitoring wells MW-5, MW-7, and MW-8. All other monitoring wells remained below the laboratory detection limit for naphthalene. The following wells were higher than the SSTLs for naphthalene: MW-2.

Total Mass Concentration

There has been a 91.27 percent decrease in Total Mass according to Table 2. The Total Mass at the site has decreased from 5,048,071 µg/l to 792,253 µg/l. According to Table 3, Mass Reduction Calculations, there has been an approximate 99.11 percent decrease in Mass above the SSTL's. A "Chemicals of Concern in Groundwater" map is presented as Figure 4. Figure 8 illustrates the changes in Total Mass present over time.

4.0 Conclusions and Recommendations

The groundwater at the site flows generally to the east of the site. Consultech personnel conducted free product and high dissolved BTEX concentrations removal from the total fluid recovery wells TFR-1 through TFR-12 from June 13 to July 31, 2005. A total of 32,000 gallons of fluid was removed and remediated to below the laboratory detection limit and then released to the sanitary sewer by means of the Mobile Multi-Phase Extraction (MMPE) Unit. During the operation of the MMPE unit, 125 gallons of sludge/waste oil was generated. The waste was collected and managed properly by G&K Services. The free product has been removed from all of the wells due to the six week long use of the MMPE Unit.

Due to the remaining high dissolved petroleum hydrocarbon concentrations, Consultech will conduct a week long Advanced Fluid Vapor Recovery (AFVR) event before the next groundwater sampling event. A weed eater will be brought to the site for the next sampling event in the fall to clear out these areas for locating all of the wells that could not be found during this summer event. Consultech is requesting the 25% reduction payment since all of the free product has been removed and the monitoring wells have had a 99.11% decrease in Mass above the SSTL's during this event. Consultech also requests that SCDHEC split samples during the next sampling event in November for further reduction payments.

The monitoring wells will continue to be checked on a quarterly basis for the evaluation of further BTEX, MTBE, and naphthalene concentration reductions in the dissolved plume. The next quarterly sampling event is scheduled for November 2005. Consultech will be sampling all of the monitoring wells during the next sampling event.

TABLES

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft-bgs)	TOC to FP (ft-bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-2	03/06/04	98.83	17.77			81.06				
Note 1	10/20/04	98.83	17.49			81.34	6.5	28.5	216	2.0
	08/22/05	98.83	17.03			81.80	6.0	26.8	171	2.4
MW-3	03/06/04	101.09	18.83			82.26				
	10/20/04		19.25			81.84	6.1	26.5	75	2.1
	08/22/05		18.87			82.22	6.8	23.7	28	2.9
MW-4	03/06/04	98.72	16.70		0.30'	82.02				
	10/20/04		17.05	16.93	0.12	81.76	5.9	26.5	151	1.6
	08/22/05		16.73		0.00	81.99	6.4	27.3	87	2.1
MW-5	03/06/04	98.83	17.45			81.38				
	10/20/04		17.53			81.30	5.6	26.8	60	3.4
	08/22/05		17.17			81.66	6.5	27.1	168	2.7
MW-6	03/06/04	98.98	16.74			82.24				
	10/20/04		16.76			82.22	5.3	26.6	49	2.0
	08/22/05		16.42			82.56	6.2	27.3	145	2.6
MW-7	03/06/04	98.64	17.15		0.35'	81.49				
	10/20/04		17.39			81.25	5.7	26.4	92	2.2
	08/22/05		17.00	sheen	sheen	81.64	5.2	27.3	61	2.0
MW-8	03/06/04	99.58	17.85		0.03'	81.73				
	10/20/04		18.30			81.28	6.0	27.0	336	2.8
	08/22/05		17.90			81.68	5.1	27.4	29	2.4
MW-9	03/06/04	97.93	16.85		0.12'	81.08				
	10/20/04		17.25			80.68	6.3	27.2	254	1.2
	08/22/05		16.80			81.13	5.3	27.9	20	1.8
MW-10	03/06/04	97.71	17.56		1.07'	80.15				
	10/20/04		17.95	16.97	0.98	80.52	5.2	27.4	1139	1.1
	08/22/05		16.79		0.00	80.92	4.8	27.7	28	1.6
MW-11	03/06/04	97.60	15.96			81.64				
	10/20/04	Unable to Locate								
	08/22/05	Unable to Locate								
MW-12	03/06/04	99.68	17.90		0.30'	81.78				
	10/20/04		18.57	17.93	0.64	81.61	6.4	29.3	173	2.0
	08/22/05		17.65	sheen	0.00	82.03	6.4	27.3	232	2.5
MW-13	03/06/04	99.88	18.21			81.67				
	10/20/04		18.78			81.10	6.2	27.1	256	3.6
	08/22/05		18.37			81.51	5.6	26.8	28	3.8
MW-14	03/06/04	91.12	12.81			78.31				
	10/20/04		13.21			77.91	6.6	25.9	155	4.2
	08/22/05		12.91			78.21	5.9	28.4	86	4.0
MW-15	03/06/04	91.29	11.34			79.95				
	10/20/04		13.46			77.83	6.5	26.1	162	2.8
	08/23/05		11.81			79.48	5.9	29.2	45	2.9
MW-16	03/06/04	94.15	13.02			81.13				
	10/20/04		11.84			82.31	6.3	29.2	13	3.3
	08/23/05		13.15			81.00	5.5	27.9	52	3.6

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft bgs)	TOC to FP (ft bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-18	03/06/04	92.29	13.39			78.90				
	10/20/04		13.80			78.49	6.7	28.4	46	3.0
	08/23/05		13.50			78.79	5.9	28.6	49	3.5
MW-19	03/06/04	76.76	4.45			72.31				
	10/20/04		Unable to Locate							
	08/23/05		Unable to Locate							
MW-20	03/06/04	76.16	2.71			73.45				
	10/20/04		Unable to Locate							
	08/23/05		Unable to Locate							
MW-21	03/06/04	73.49	0.70			72.79				
	10/20/04		1.22			72.27	6.8	23.1	334	5.6
	08/23/05		Unable to Locate							
MW-22	03/06/04	73.79	0.85			72.94				
	10/20/04		0.60			73.19	6.7	23.7	152	5.5
	08/23/05		Unable to Locate							
MW-23	03/06/04	73.06	0.10			72.96				
	10/20/04		0.60			72.46	6.9	24.0	265	3.9
	08/23/05		Unable to Locate							
MW-24	03/06/04	72.25	0.08			72.17				
	10/20/04		0.60			71.65	7.0	23.5	308	4.2
	08/23/05		Unable to Locate							
MW-25	03/06/04	95.48	10.08			85.40				
	10/20/04		10.61			84.87	6.8	25.2	113	4.0
	08/23/05		10.28			85.20	5.7	28.1	83	3.8
MW-26	03/06/04	83.42	5.51			77.91				
	10/20/04		5.56			77.86	6.7	23.9	192	3.5
	08/23/05		Unable to Locate							
MW-27	03/06/04	78.96	2.05			76.91				
	10/20/04		1.53			77.43	7.0	24.2	NM	6.0
	08/23/05		Unable to Locate							

Notes: (1) TOC for MW-2 is assumed to be at mid-height between MW-6 and MW-12.

NM = Not Measured

TABLE 2: Heath Self Serve 2
Chemicals of Concern in Groundwater
Groundwater Analytical Data Through August 23, 2005
SCDHEC UST Permit # 08932
Sumter, South Carolina - Consultech Project # C-1383

Well No.	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Naphthalene	Total Mass
SSTL		78	84	140	212	5	5	
MW-2	03/06/04	78	84	140	212	5	5	524
	10/20/04	9,600	46,000	7,100	30,000	510	13,000	106,210
	08/22/05	390	100	270	480	31	50	1,321
MW-3	03/06/04	1	1	<1	7	<1	<5	16
	10/20/04	7.1	4.0	3.4	34	<1.0	<5.0	54.5
	08/22/05	<1	<1	<1	<1	<1	<5	10
SSTL		246	260,000	40,000	180,000	119	20,000	
MW-4	03/06/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	10/20/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	08/22/05	720	13,000	5,900	40,000	250	2,300	62,170
MW-5	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	2.0	81	74	370	<1.0	74	602
	08/22/05	<10	120	170	990	<10	140	1421
SSTL		14	<1	3	8	3	5	
MW-6	03/06/04	14	<1	3	8	3	<5	34
	10/20/04	7,900	30,000	15,000	77,000	<250	9,100	139250
	08/22/05	200	56	39	130	<1	<5	675
SSTL		7,620	260,000	40,000	180,000	85	20,000	
MW-7	03/06/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	10/20/04	21,000	47,000	9,400	37,000	5,400	1,100	120900
	08/22/05	13,000	57,000	17,000	82,000	4,300	11,000	184300
SSTL		3,307	260,000	40,000	180,000	57	20,000	
MW-8	03/06/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	10/20/04	1,700	11,000	2,300	9,400	<25	1,000	25425
	08/22/05	6,000	30,000	6,600	32,000	200	1,700	76525
SSTL		4,075	260,000	40,000	180,000	63	20,000	
MW-9	03/06/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	10/20/04	20,000	48,000	9,800	50,000	590	10,000	138,390
	08/22/05	23,000	77,000	15,000	75,000	270	4,400	194,670

TABLE 2: Heath Self Serve 2
Chemicals of Concern in Groundwater
Groundwater Analytical Data Through August 23, 2005
SCDHEC UST Permit # 08932
Sumter, South Carolina - Consultech Project # C-1383

Well No.	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Naphthalene	Total Mass
SSTL		2,179	260,000	40,000	180,000	52	20,000	
MW-10	03/06/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	10/20/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	08/22/05	20,000	34,000	34,000	25,000	250	9,900	123,150
SSTL		<1	2	1	11	<1	<5	
MW-11	03/06/04	<1	2	1	11	<1	<5	21
	10/20/04	Not Found						21
	08/22/05	Not Found						21
SSTL		6,865	260,000	40,000	180,000	80	20,000	
MW-12	03/06/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	10/20/04	72,000	260,000	40,000	180,000	940,000	20,000	1,512,000
	08/22/05	4,100	44,000	15,000	75,000	250	7,800	146,150
MW-13	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	1.9	<1	1.7	<1	<5	12
	08/22/05	<1	<1	<1	<1	<1	<5	10
SSTL		68	<1	4	21	<1	<5	
MW-14	03/06/04	68	<1	4	21	<1	<5	100
	10/20/04	<1	2.2	<1	1.4	<1	<5	12
	08/22/05	<1	<1	<1	<1	<1	<5	10
MW-15	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	2.1	<1	2.3	<1	<5	12
	08/23/05	<1	2.2	1.2	7.1	<1	<5	18
MW-16	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	2.4	<1	1.6	<1	<5	12
	08/23/05	<1	<1	<1	1.2	<1	<5	12
MW-18	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	2.3	<1	1.3	<1	<5	12
	08/23/05	<1	<1	<1	<1	<1	<5	10
SSTL		31	<1	<1	16	40	<5	
MW-19	03/06/04	166	<1	<1	16	196	<5	385
	10/20/04	Not Found						385
	08/23/05	Not Found						385

TABLE 2: Heath Self Serve 2
Chemicals of Concern in Groundwater
Groundwater Analytical Data Through August 23, 2005
SCDHEC UST Permit # 08932
Sumter, South Carolina - Consultech Project # C-1383

Well No.	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Naphthalene	Total Mass
SSTL		26	2	<1	35	40	<5	
MW-20	03/06/04	1,760	2	<1	35	80	<5	1883
	10/20/04	Not Found						1883
	08/23/05	Not Found						1883
SSTL		<1	<1	<1	<1	<1	<5	
MW-21	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	1.9	<1	<1	<1	<5	11
	08/23/05	Not Found						11
MW-22	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	1.9	<1	<1	<1	<5	11
	08/23/05	Not Found						11
MW-23	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	1.0	<1	<1	<1	<5	10
	08/23/05	Not Found						10
MW-24	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	<1	<1	<1	<1	<5	10
	08/23/05	Not Found						10
MW-25	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	1.7	<1	<1	<1	<5	11
	08/23/05	<1	<1	<1	<1	<1	<5	10

TABLE 2: Heath Self Serve 2
Chemicals of Concern in Groundwater
Groundwater Analytical Data Through August 23, 2005
SCDHEC UST Permit # 08932
Sumter, South Carolina - Consultech Project # C-1383

Well No.	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Naphthalene	Total Mass
MW-26	03/06/04	<1	<1	<1	<1	<1	<5	10
	10/20/04	<1	3.5	<1	2.9	<1	<5	14
	08/23/05	Not Found						14
SSTL		<1	<1	<1	<1	1	<5	
MW-27	03/06/04	<1	<1	<1	<1	1	<5	10
	10/20/04	<1	2.1	<1	2.2	<1	<5	14
	08/23/05	Not Found						14
Initial Mass	03/06/04	434,089	1,560,093	240,152	1,080,305	5,640,288	120,040	9,074,967
SSTL Mass	03/06/04	24,512	1,560,093	240,152	1,080,305	548	120,040	3,025,650
Initial Mass	03/06/04	434,089	1,560,093	240,152	1,080,305	5,640,288	120,040	9,074,967
	10/20/04	257,321	962,109	163,690	743,822	2,826,789	94,339	5,048,071
Current Mass	08/23/05	69,336	255,156	93,980	330,660	5,831	37,290	792,253
% Decrease	3/04 to 10/04	40.72%	38.33%	31.84%	31.15%	49.88%	21.41%	44.37%
% Decrease	3/04 to 8/05	84.03%	83.64%	60.87%	69.39%	99.90%	68.94%	91.27%

NS - Not Sampled - Wells were either unaccessible or not found

Table 3
Mass Reduction Calculations Through August 23, 2005
Health Self Serve 2, Sumter, SC
SCDHEC UST Permit #08932 - Consultech Project # C-1383

		Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	Mass>SSTL
MW-2	SSTL	**78**	**84**	**140**	**212**	**5**	**5**	
	Initial	78	84	140	212	5	5	
08/22/05	Subsequent	390	100	270	480	31	50	
	Initial > SSTL	0	0	0	0	0	0	0
	Subsequent > SSTL	312	16	130	268	26	45	797
MW-4	SSTL	**246**	**260,000**	**40,000**	**180,000**	**119**	**20,000**	
	Initial	72,000	260,000	40,000	180,000	940,000	20,000	
08/22/05	Subsequent	720	13,000	5,900	40,000	250	2,300	
	Initial > SSTL	71,754	0	0	0	939,881	0	1,011,635
	Subsequent > SSTL	474	0	0	0	131	0	605
MW-6	SSTL	**14**	**1**	**3**	**8**	**3**	**5**	
	Initial	14	1	3	8	3	5	
08/22/05	Subsequent	200	56	39	130	1	5	
	Initial > SSTL	0	0	0	0	0	0	0
	Subsequent > SSTL	186	55	36	122	0	0	399
MW-7	SSTL	**7,620**	**260,000**	**40,000**	**180,000**	**85**	**20,000**	
	Initial	72,000	260,000	40,000	180,000	940,000	20,000	
08/22/05	Subsequent	13,000	57,000	17,000	82,000	4,300	11,000	
	Initial > SSTL	64,380	0	0	0	939,915	0	1,004,295
	Subsequent > SSTL	5,380	0	0	0	4,215	0	9,595
MW-8	SSTL	**3,307**	**260,000**	**40,000**	**180,000**	**57**	**20,000**	
	Initial	72,000	260,000	40,000	180,000	940,000	20,000	
08/22/05	Subsequent	6,000	30,000	6,600	32,000	200	1,700	
	Initial > SSTL	68,693	0	0	0	939,943	0	1,008,636
	Subsequent > SSTL	2,693	0	0	0	143	0	2,836
MW-9	SSTL	**4,075**	**260,000**	**40,000**	**180,000**	**63**	**20,000**	
	Initial	72,000	260,000	40,000	180,000	940,000	20,000	
08/22/05	Subsequent	23,000	77,000	15,000	75,000	270	4,400	
	Initial > SSTL	67,925	0	0	0	939,937	0	1,007,862
	Subsequent > SSTL	18,925	0	0	0	207	0	19,132
MW-10	SSTL	**2,179**	**260,000**	**40,000**	**180,000**	**52**	**20,000**	
	Initial	72,000	260,000	40,000	180,000	940,000	20,000	
08/22/05	Subsequent	20,000	34,000	34,000	25,000	250	9,900	
	Initial > SSTL	69,821	0	0	0	939,948	0	1,009,769
	Subsequent > SSTL	17,821	0	0	0	198	0	18,019
MW-11	SSTL	**1**	**2**	**1**	**11**	**1**	**5**	
	Initial	1	2	1	11	1	5	
10/20/04	Subsequent	1	2	1	11	1	5	
	Initial > SSTL	0	0	0	0	0	0	0
	Subsequent > SSTL	0	0	0	0	0	0	0
MW-12	SSTL	**6,865**	**260,000**	**40,000**	**180,000**	**80**	**20,000**	
	Initial	72,000	260,000	40,000	180,000	940,000	20,000	
08/22/05	Subsequent	4,100	44,000	15,000	75,000	250	7,800	
	Initial > SSTL	65,135	0	0	0	939,920	0	1,005,055
	Subsequent > SSTL	0	0	0	0	170	0	170
MW-14	SSTL	**68**	**1**	**4**	**21**	**1**	**5**	
	Initial	68	1	4	21	1	5	
08/22/05	Subsequent	1	1.0	1	1.0	1	5	
	Initial > SSTL	0	0	0	0	0	0	0
	Subsequent > SSTL	0	0	0	0	0	0	0

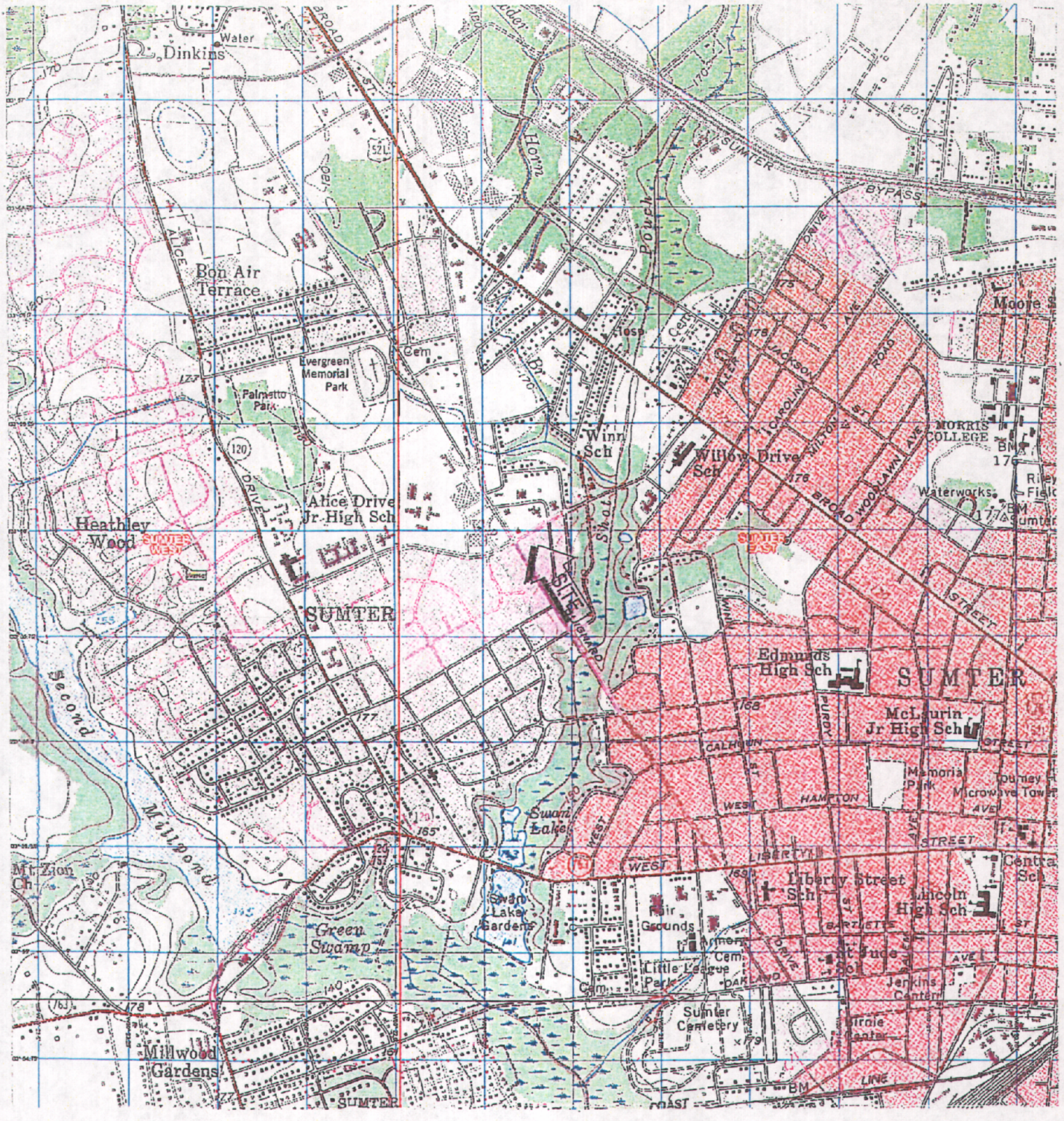
Table 3
Mass Reduction Calculations Through August 23, 2005
Health Self Serve 2, Sumter, SC
SCDHEC UST Permit #08932 - Consultech Project # C-1383

		Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	Mass>SSTL
MW-19	SSTL	**31**	**1**	**1**	**16**	**40**	**5**	
	Initial	166	1	1	16	196	5	
10/20/04	Subsequent	166	1	1	16	196	5	
	Initial > SSTL	135	0	0	0	156	0	291
	Subsequent > SSTL	135	0	0	0	156	0	291
MW-20	SSTL	**26**	**2**	**1**	**35**	**40**	**5**	
	Initial	1,760	2	1	35	80	5	
10/20/04	Subsequent	1,760	2	1	35	80	5	
	Initial > SSTL	1,729	1	0	19	40	0	1,789
	Subsequent > SSTL	1,729	1	0	19	40	0	1,789
MW-21	SSTL	**1**	**1**	**1**	**1**	**1**	**5**	
	Initial	1	1	1	1	1	5	
10/20/04	Subsequent	1	1.9	1	1	1	5	
	Initial > SSTL	0	0	0	0	0	0	0
	Subsequent > SSTL	0	1	0	0	0	0	1
MW-27	SSTL	**1**	**1**	**1**	**1**	**1**	**5**	
	Initial	1	1	1	1	1	5	
10/20/04	Subsequent	1	2.1	1	2.2	1	5	
	Initial > SSTL	0	0	0	0	0	0	0
	Subsequent > SSTL	0	1	0	1	0	0	2

Total Initial > SSTL 6,049,623
Subsequent > SSTL 53,927

Percent Mass Reduction= $\frac{(\text{Initial>STTL})-(\text{Subsequent>SSTL})}{(\text{Initial>SSTL})}$ **99.11%**

FIGURES



SUMTER, SOUTH CAROLINA QUADRANGLE MAP, 7.5 MINUTE SERIES, U.S. GEOLOGIC SURVEY

SCALE 1 : 24,000

0 2,000 4,000

QUADRANGLE LOCATION

DRAWN: L.B.I.	DATE: 10/12/04
REV.: 08932	
PROJECT: HEATH SELF SERVE 2	
PROJECT No.: C-1383	
LOCATION: SUMTER, SOUTH CAROLINA	

FIGURE 1
SITE TOPOGRAPHIC MAP

CONSULTECH ENVIRONMENTAL, INC
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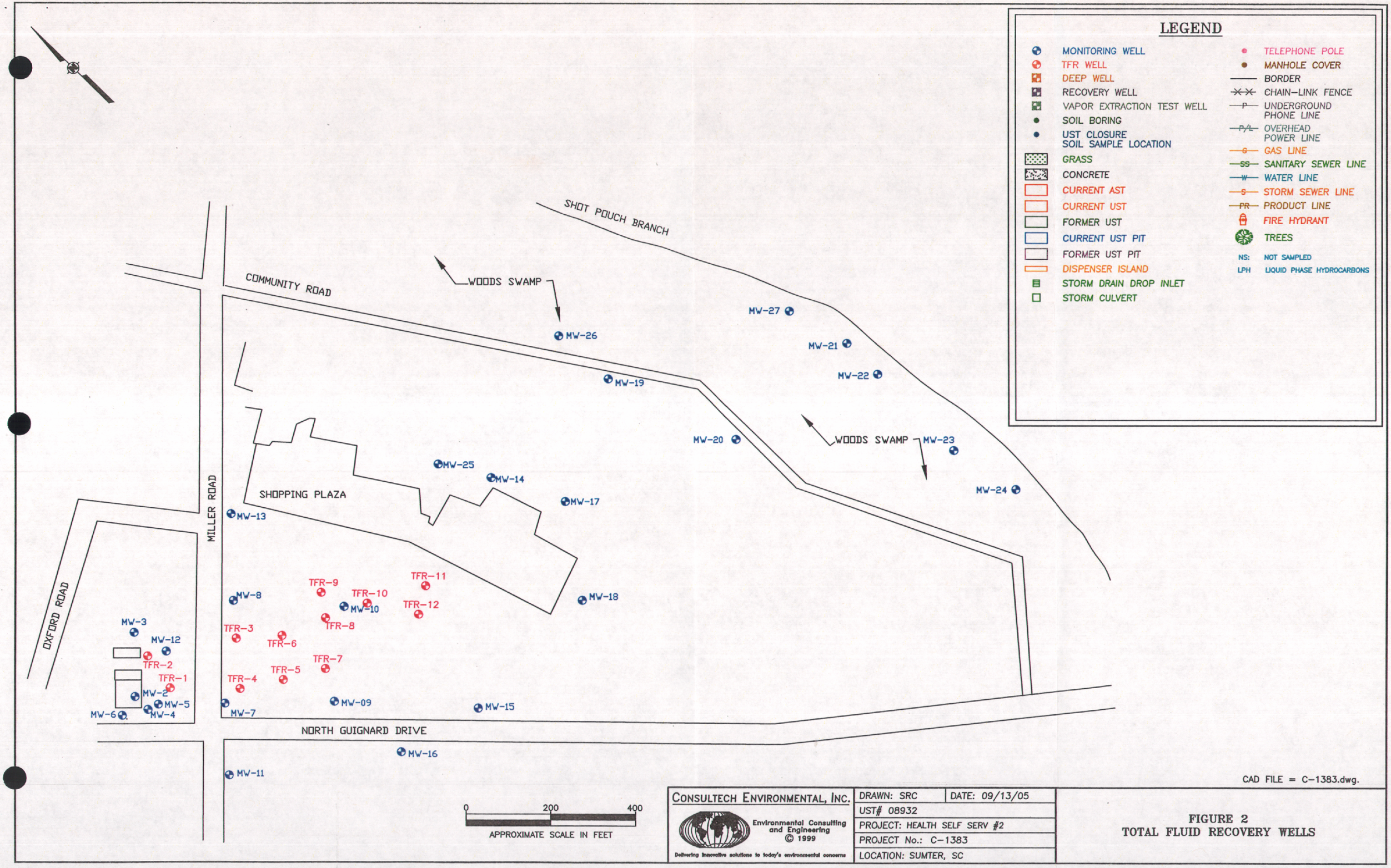

CAD FILE = C-1383.dwg.

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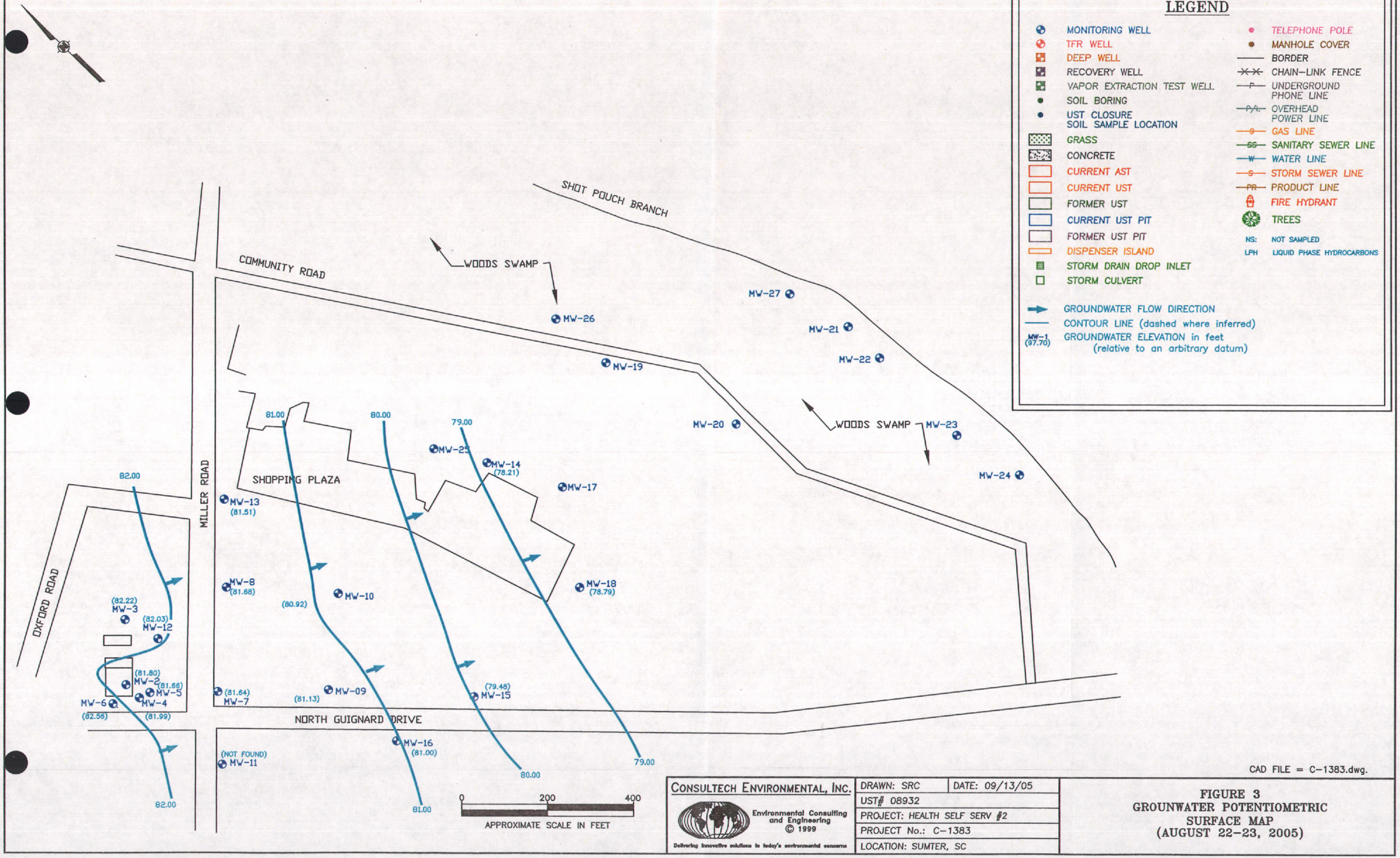
DRAWN: SRC	DATE: 09/13/05
UST# 08932	
PROJECT: HEALTH SELF SERV #2	
PROJECT No.: C-1383	
LOCATION: SUMTER, SC	

FIGURE 2
TOTAL FLUID RECOVERY WELLS


LEGEND
MONITORING WELL
TFR WELL
DEEP WELL
RECOVERY WELL
VAPOR EXTRACTION TEST WELL
SOIL BORING
UST CLOSURE SOIL SAMPLE LOCATION
GRASS
CONCRETE
CURRENT AST
CURRENT UST
FORMER UST
CURRENT UST PIT
FORMER UST PIT
DISPENSER ISLAND
STORM DRAIN DROP INLET
STORM CULVERT
TELEPHONE POLE
MANHOLE COVER
BORDER
CHAIN-LINK FENCE
UNDERGROUND PHONE LINE
OVERHEAD POWER LINE
GAS LINE
SANITARY SEWER LINE
WATER LINE
STORM SEWER LINE
PRODUCT LINE
FIRE HYDRANT
TREES
NS: NOT SAMPLED
LPH LIQUID PHASE HYDROCARBONS
GROUNDWATER FLOW DIRECTION
CONTOUR LINE (dashed where inferred)
MW-1 (97.70) GROUNDWATER ELEVATION in feet (relative to an arbitrary datum)
COMMUNITY ROAD
SHOT POUCH BRANCH
WOODS SWAMP
MW-26
MW-27
MW-21
MW-22
MW-19
MW-20
WOODS SWAMP
MW-23
MW-24
MILLER ROAD
SHOPPING PLAZA
MW-25
MW-14 (78.21)
MW-17
MW-13 (81.51)
MW-18 (78.79)
MW-8 (81.68)
MW-10 (80.92)
OXFORD ROAD
(82.22) MW-3
(82.03) MW-12
(81.80) MW-2
(81.66) MW-5
MW-6 (82.56)
MW-4 (81.99)
(81.64) MW-7
(81.13) MW-09
(79.48) MW-15
NORTH GUIGNARD DRIVE
MW-16 (81.00)
(NOT FOUND) MW-11
81.00
80.00
79.00
82.00
0 200 400
APPROXIMATE SCALE IN FEET
CAD FILE = C-1383.dwg.
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Delivering innovative solutions to today's environmental concerns
DRAWN: SRC
DATE: 09/13/05
UST# 08932
PROJECT: HEALTH SELF SERV #2
PROJECT No.: C-1383
LOCATION: SUMTER, SC
FIGURE 3
GROUNWATER POTENTIOMETRIC SURFACE MAP
(AUGUST 22-23, 2005)

WATER SAMPLE LOCATION
DATE COLLECTED

B	BENZENE CONCENTRATION in ug/l
T	TOLUENE CONCENTRATION in ug/l
E	ETHYLBENZENE CONCENTRATION in ug/l
X	XYLENES CONCENTRATION in ug/l
M	MTBE CONCENTRATION in mg/l
N	NAPHTHALENE CONCENTRATION in mg/l

LEGEND

- MONITORING WELL
- TFR WELL
- DEEP WELL
- RECOVERY WELL
- VAPOR EXTRACTION TEST WELL
- SOIL BORING
- UST CLOSURE SOIL SAMPLE LOCATION
- GRASS
- CONCRETE
- CURRENT AST
- CURRENT UST
- FORMER UST
- CURRENT UST PIT
- FORMER UST PIT
- DISPENSER ISLAND
- STORM DRAIN DROP INLET
- STORM CULVERT
- TELEPHONE POLE
- MANHOLE COVER
- BORDER
- CHAIN-LINK FENCE
- UNDERGROUND PHONE LINE
- OVERHEAD POWER LINE
- GAS LINE
- SANITARY SEWER LINE
- WATER LINE
- STORM SEWER LINE
- PRODUCT LINE
- FIRE HYDRANT
- TREES

NS: NOT SAMPLED
LPH LIQUID PHASE HYDROCARBONS

SHOT POUCH BRANCH
COMMUNITY ROAD
WOODS SWAMP
MILLER ROAD
OXFORD ROAD
SHOPPING PLAZA
NORTH GUIGNARD DRIVE
WOODS SWAMP

MW-1 08/22/05: B <1.0, T <1.0, E <1.0, X <1.0, M <1.0, N <5.0
MW-2 08/22/05: B 390, T 100, E 270, X 480, M 31, N 50
MW-3 08/22/05: B <1.0, T <1.0, E <1.0, X <1.0, M <1.0, N <5.0
MW-4 08/22/05: B 720, T 13,000, E 5,900, X 40,000, M 250, N 2,300
MW-5 08/22/05: B <10, T 120, E 170, X 990, M <10, N 140
MW-6 08/22/05: B 200, T 56, E 39, X 130, M <1.0, N <5.0
MW-7 08/22/05: B 13,000, T 57,000, E 17,000, X 82,000, M 4,300, N 11,000
MW-8 08/22/05: B 6,000, T 30,000, E 6,800, X 32,000, M 200, N 1,700
MW-9 08/22/05: B 23,000, T 77,000, E 15,000, X 75,000, M 270, N 4,400
MW-10 08/22/05: B 20,000, T 34,000, E 34,000, X 25,000, M 250, N 9,900
MW-11
MW-12 08/22/05: B 4,100, T 44,000, E 15,000, X 75,000, M 250, N 7,800
MW-13 08/22/05: B <1.0, T <1.0, E <1.0, X <1.0, M <1.0, N <5.0
MW-14 08/22/05: B <1.0, T <1.0, E <1.0, X <1.0, M <1.0, N <5.0
MW-15 08/22/05: B <1.0, T 2.2, E 1.2, X 7.1, M <1.0, N <5.0
MW-16 08/22/05: B <1.0, T <1.0, E <1.0, X 1.2, M <1.0, N <5.0
MW-17
MW-18 08/22/05: B <1.0, T <1.0, E <1.0, X <1.0, M <1.0, N <5.0
MW-19
MW-20
MW-21
MW-22
MW-23
MW-24
MW-25 08/22/05: B <1.0, T <1.0, E <1.0, X <1.0, M <1.0, N <5.0
MW-26
MW-27

0 200 400
APPROXIMATE SCALE IN FEET

CAD FILE = C-1383.dwg.

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Environmental Consulting and Engineering
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DRAWN: SRC	DATE: 09/13/05
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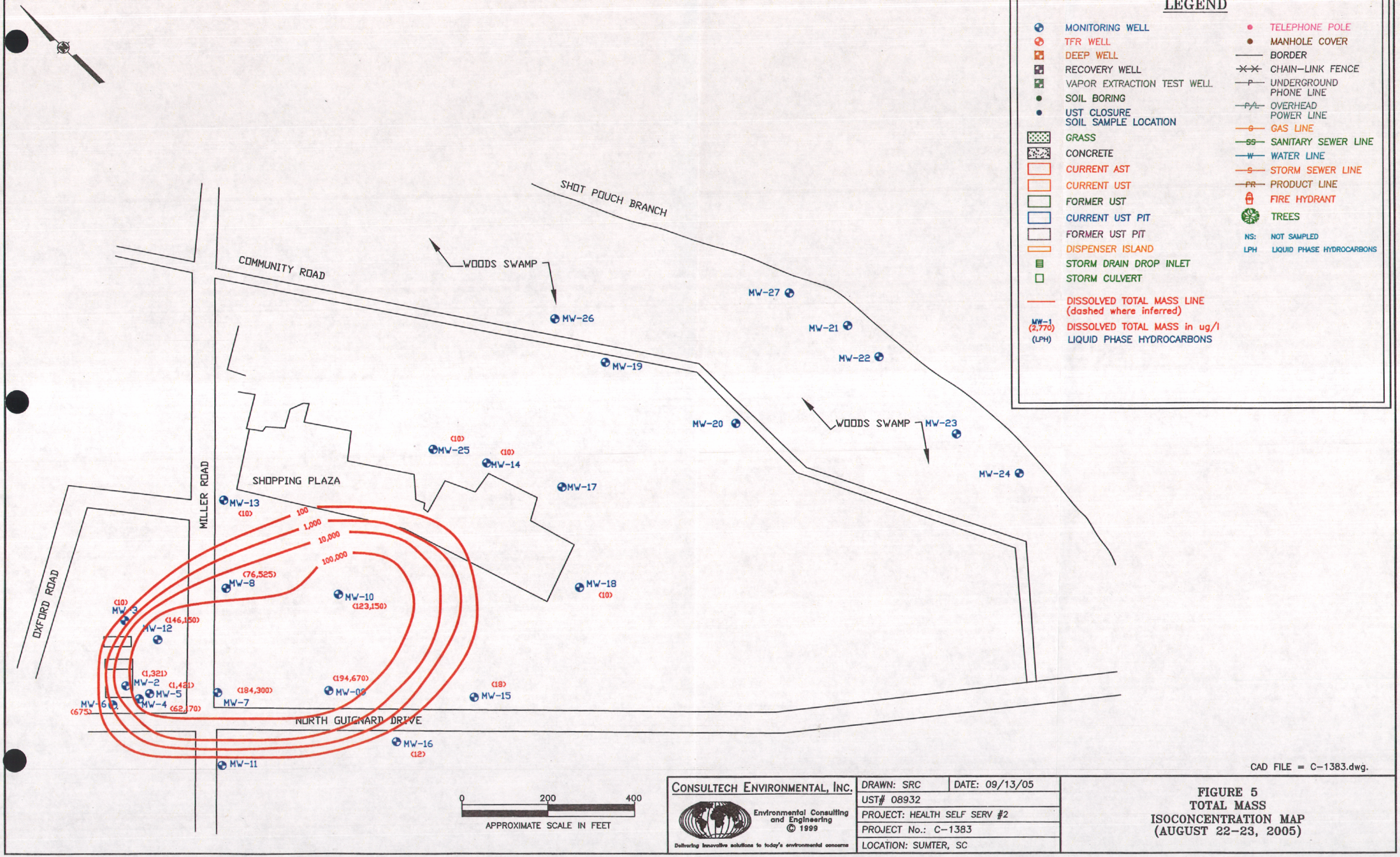
PROJECT: HEALTH SELF SERV #2	
PROJECT No.: C-1383	
LOCATION: SUMTER, SC	

FIGURE 4
CHEMICALS OF CONCERN IN GROUNDWATER (AUGUST 22-23, 2005)



LEGEND

- MONITORING WELL
- TFR WELL
- DEEP WELL
- RECOVERY WELL
- VAPOR EXTRACTION TEST WELL
- SOIL BORING
- UST CLOSURE SOIL SAMPLE LOCATION
- GRASS
- CONCRETE
- CURRENT AST
- CURRENT UST
- FORMER UST
- CURRENT UST PIT
- FORMER UST PIT
- DISPENSER ISLAND
- STORM DRAIN DROP INLET
- STORM CULVERT
- DISSOLVED TOTAL MASS LINE (dashed where inferred)
- MW-1 (2,770) DISSOLVED TOTAL MASS in ug/l
- (LPH) LIQUID PHASE HYDROCARBONS
- TELEPHONE POLE
- MANHOLE COVER
- BORDER
- CHAIN-LINK FENCE
- UNDERGROUND PHONE LINE
- OVERHEAD POWER LINE
- GAS LINE
- SANITARY SEWER LINE
- WATER LINE
- STORM SEWER LINE
- PRODUCT LINE
- FIRE HYDRANT
- TREES
- NS: NOT SAMPLED
- LPH LIQUID PHASE HYDROCARBONS

CAD FILE = C-1383.dwg.

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Delivering innovative solutions to today's environmental concerns	PROJECT: HEALTH SELF SERV #2
	PROJECT No.: C-1383
	LOCATION: SUMTER, SC

FIGURE 5
TOTAL MASS ISOCONCENTRATION MAP (AUGUST 22-23, 2005)

FIGURE 6

Groundwater Elevations vs Time

Heath Self Serve #2 Sumter, SC

SCDHEC Facility ID # 08932- Consultech Project C-1383

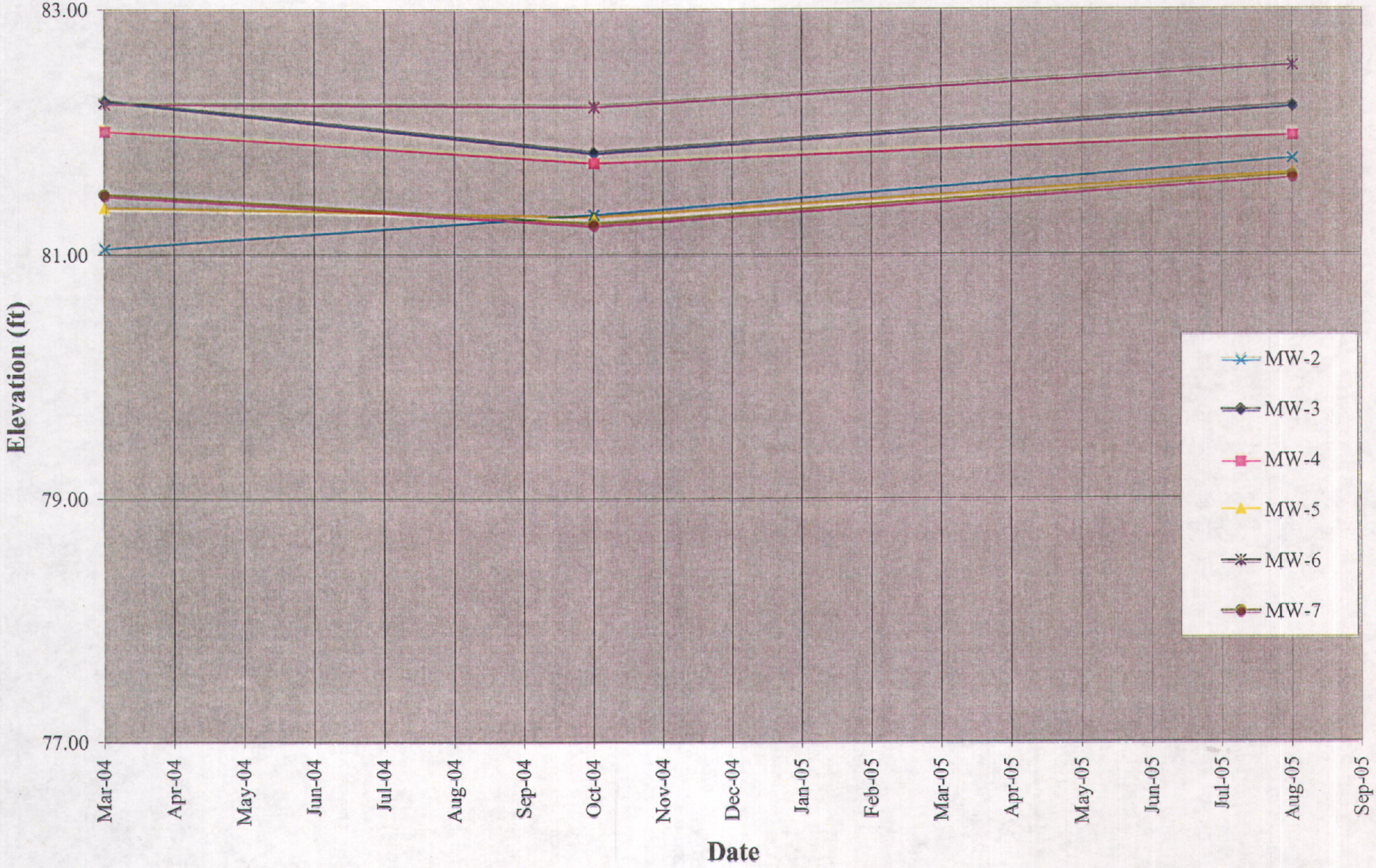


FIGURE 7

Groundwater Elevations vs Time
Heath Self Serve #2, Sumter, SC
SCDHEC Facility ID # 08932- Consultech Project C-1383

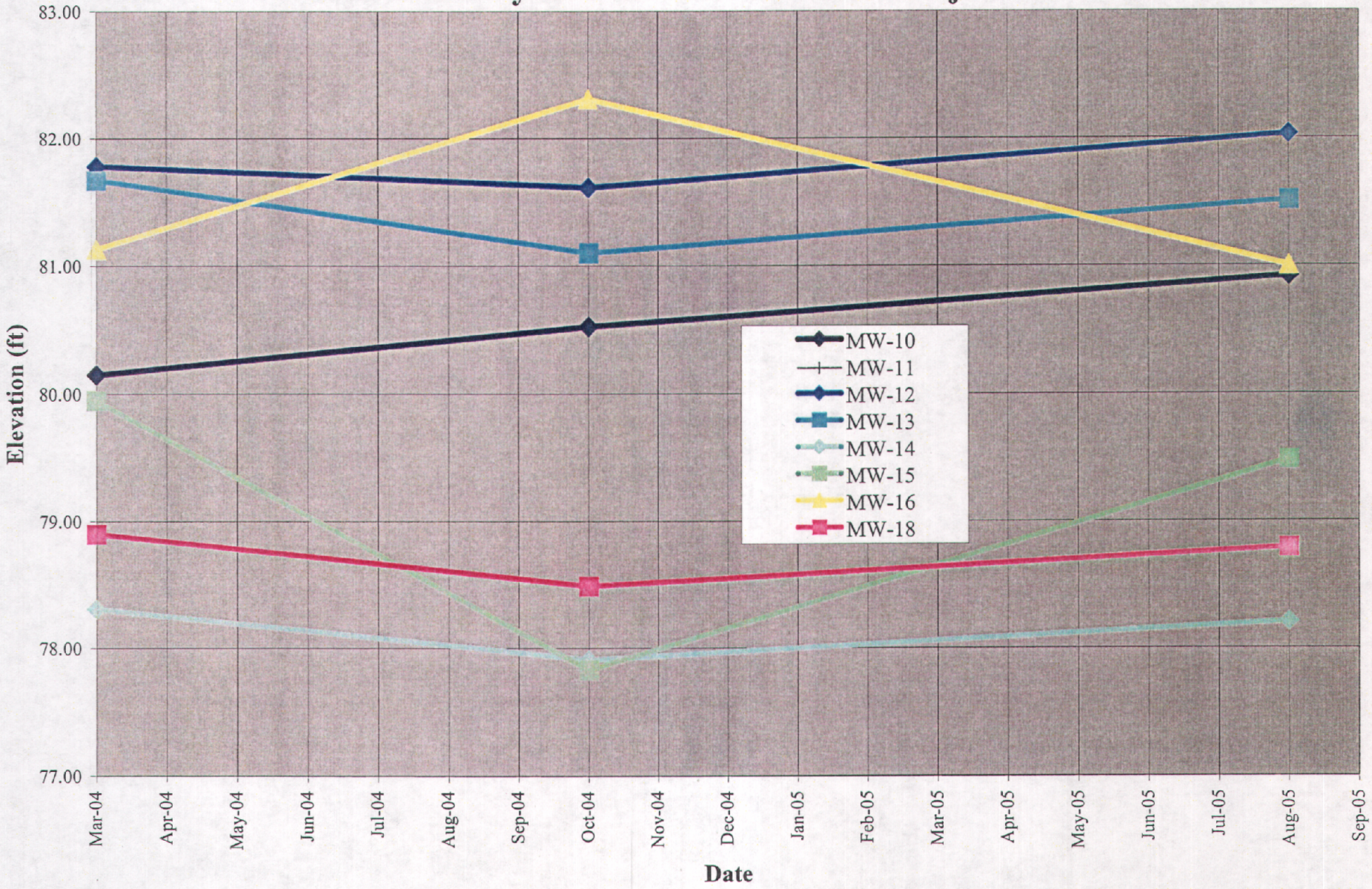
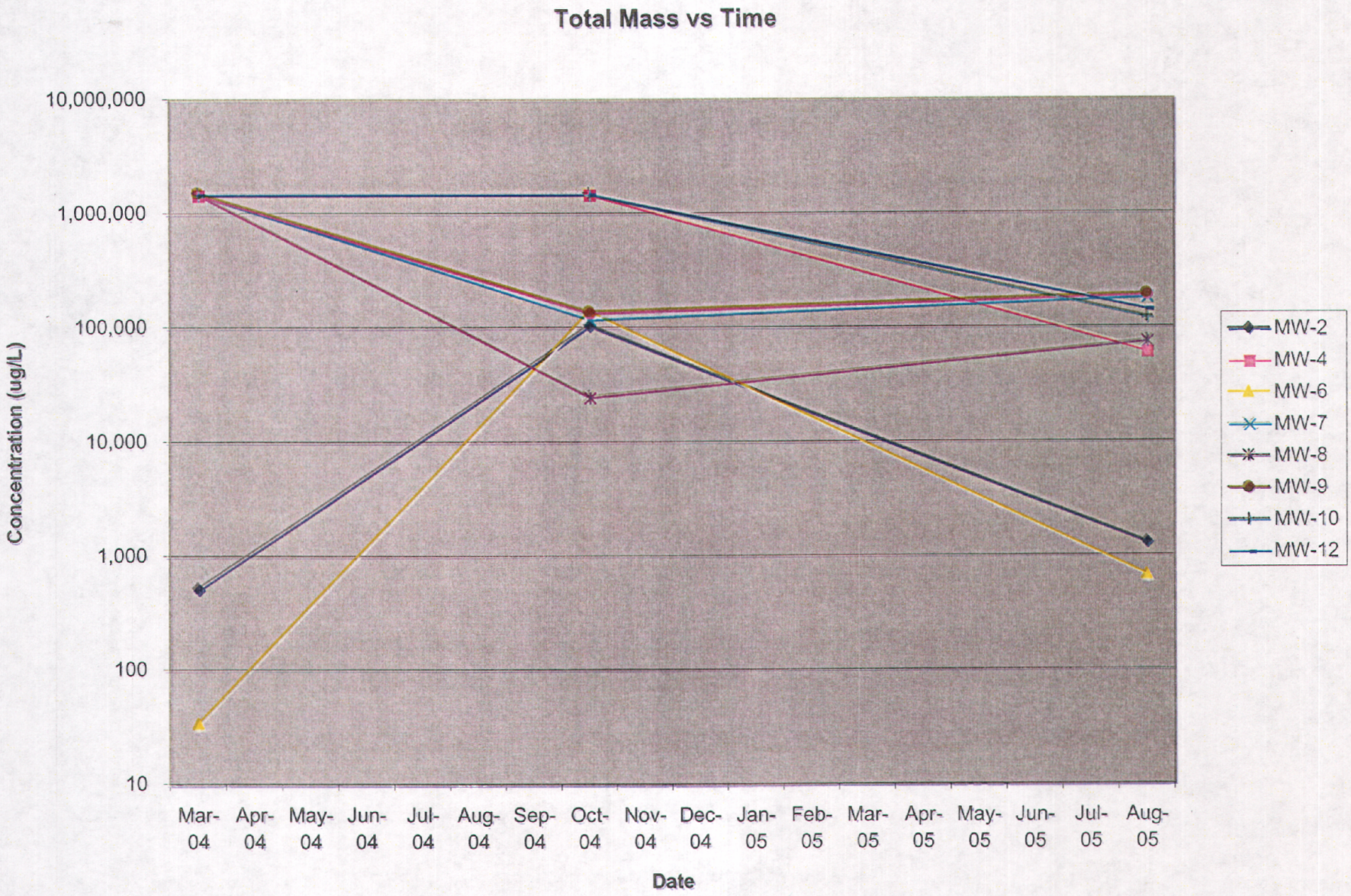


FIGURE 8


Total Mass vs Time
Concentration (ug/L)
10,000,000
1,000,000
100,000
10,000
1,000
100
10
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
May-05
Jun-05
Jul-05
Aug-05
Date
MW-2
MW-4
MW-6
MW-7
MW-8
MW-9
MW-10
MW-12

APPENDIX 1

GROUNDWATER LABORATORY ANALYTICAL RESULTS

ACCURA ANALYTICAL LABORATORY, INC.

Environmental Analytical Services

CHAIN OF CUSTODY

2217

Page 1 of 2

6017 Financial Drive, Norcross, GA 30071
Phone # (770) 449-8800 Fax # (770) 449-5477

Company Name: Consultech Environmental
Address: 1800 Macleod Dr Suite F
Results Sent to: (Client Contact): Jim Wilson
Email address:
Contact Phone #: (678) 377-0400 Fax#: (678) 377-0051
Project (Site) Name: Heath Self Serve 2
Project Number: C-1383

Billing address:
P.O.# (if required):

For Laboratory Use Only: Keenan Earth Located: V
AAL LIMS System ID: 14637
QC Level: 1 2 3 4 CLP-Like
Receiver's Initials/Temp: 22/6 BM 22
Custody Seal(s): Missing Y (N) Tape yes
AAL Work Order # 216799 BM

Preservation Code: (See below)

Sampler(s): (signature)

Sampler(s): (printed) Nathan Thacker

Analysis Requested

Field Comments: 8778

Line No.	Sample ID #	Sample Date / Time	Composite	Grab	Matrix (See below)	Sample Location	No. of Containers	8260 BTEX MTBE Neph											AAL Lab ID: 8778
1	MW-2	8/22 1500		X	GW		2	Y										1	001
2	MW-3	1515																2	002
3	4	1530																3	003
4	5D	1545																4	004
5	6	1600																5	005
6	7	1615																6	006
7	8	1630																7	007
8	9	1645																8	008
9	10	1700																9	009
10	12	1715																10	010

8/26/05 1432

1) Relinquished By: Date / Time 8/24 1300
2) Received By: Date / Time 8/26/05 1120 BM
3) Relinquished By: ASI Date / Time 8/26/05
4) Received By: Date / Time 8/26/05 1120

Delivered by: (Circle One) 9:25am
Fed Ex / UPS / DHL / AAL Pickup / Hand / Other

Turnaround Time Requested:

Matrix Guide: (W=Water) (DW=Drinking Water) (GW=Groundwater) (SW=Surface Water) (L=Liquid) (O=Oil) (S=Soil) (SD=Solid) (SL=Sludge) (A=Air) (C=Air Cartridge)

Preservation Codes: 1=HCL / 2=HNO_3 / 3=H_2SO_4 / 4=NaOH+$NaAsO_2$ / 5=NaOH+ZnAc / 6=$Na_2S_2O_3$ / 7=$NaHSO_4$ / 8=MeOH

ACCURA ANALYTICAL LABORATORY, INC.

Environmental Analytical Services

CHAIN OF CUSTODY

6017 Financial Drive, Norcross, GA 30071
Phone # (770) 449-8800 Fax # (770) 449-5477

Company Name: Consultech Environmental

Address: 1800 Macleod Dr Suite F

Results Sent to: (Client Contact): Jim Wilson

Email address:

Contact Phone #: (678) 377-0400 Fax#: (678) 377-0051

Project (Site) Name: Heath Self Serve 2

Project Number: C1383

Billing address:

P.O.# (if required):

For Laboratory Use Only: Keenan Earn located V 14637

AAL LIMS System ID:

QC Level: 1 2 3 4 CLP-Like

Receiver's Initials/Temp: 28/6 2c

Custody Seal(s): Missing Y (N) Tape yes

AAL Work Order # ~~216799~~ 3m

Preservation Code: (See below)

Sampler(s): (signature)

Sampler(s): (printed)

Analysis Requested

Field Comments: 8778

Line No.	Sample ID #	Sample Date / Time	Composite	Grab	Matrix (See below)	Sample Location	No. of Containers	1 BTEX MTBE Naph 8260											AAL Lab ID: 8778
1	MW-13	8/22 1730		X	GW		2	X									11		011
2	14	8/22 1745															12		012
3	15	8/23 0900															13		013
4	16	8/23 0915															14		014
5	18	8/23 0930															15		015
6	25	8/23 1045															16		016
7																			
8																			
9																			
10																			

8/26/05 1432

1) Relinquished By: [signature] Date / Time 8/24 1300

2) Received By: [signature] Date / Time 8/26/05 1120

Delivered by: (Circle One) 9:25am

Fed Ex / UPS / DHL / AAL Pickup / Hand / Other

3) Relinquished By: ASI Date / Time 8/26/05 1120

4) Received By: [signature] Date / Time 8/26/05 1120

Turnaround Time Requested:

Matrix Guide: (W=Water) (DW=Drinking Water) (GW=Groundwater) (SW=Surface Water) (L=Liquid) (O=Oil) (S=Soil) (SD=Solid) (SL=Sludge) (A=Air) (C=Air Cartridge)

Preservation Codes: 1=HCL / 2=HNO_3 / 3=H_2SO_4 / 4=NaOH+$NaAsO_2$ / 5=NaOH+ZnAc / 6=$Na_2S_2O_3$ / 7=$NaHSO_4$ / 8=MeOH

APPENDIX 2

FREE PRODUCT DISPOSAL MANIFEST

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. GK7796 | 2. Page 1 of

3. Generator's Name and Mailing Address
HEATH SELF SERV SITE
501 NORTH GUIGNARD
SUMTER, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name
G&K TANK SERVICE

6. US EPA ID Number
987573557

A. Transporter's Phone
803-494-4593

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
G & K TANK SERVICES
5378 BROAD STREET EXT.
SUMTER, SC 29154

10. US EPA ID Number
987573557

C. Facility's Phone
800-800-6840

	11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a.	NON HAZARDOUS PETROLEUM CONTAMINATED WATER PROFILE # 435	1	AP	150 GAL.	
b.					
c.					
d.					

D. Additional Descriptions for Materials Listed Above
Actual weight 125. gals

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Printed/Typed Name: Nathan Thacker | Signature | Month 7 Day 26 Year 05

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JOSEPH W. STANTON | Signature | Month 7 Day 26 Year 05

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: S. GILLETT | Signature: S. GILLETT | Month 7 Day 26 Year 05

Printed by J. J. KELLER & ASSOCIATES, INC.
Neenah, WI 54957-0368

ORIGINAL - RETURN TO GENERATOR

12-BLC-M5

C-1383

G & K
TANK SERVICES, INC.
Broad St. Extension • PO Box 1384 • Sumter, SC 29151
(803) 494-4593 • 1-800-800-6840 • FAX: (803) 494-8598

Certificate of Disposal

Tons 125 gallons
Old Heath Self Serve
Sumter, SC

Contaminant NonHazardous Petroleum
Contaminated Water

This is to certify the above ~~soil~~ water has been processed and disposed of by G & K Tank Services, Inc., in accordance with and exceeding EPA regulations on petroleum contaminated soils.

Certified by S Sisley

Date 07/26/05

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

SEP 22 2005

JAMES C BURNS JR & IDA B SUTTON
103 BURNS DR
SUMTER SC 29150

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Quarterly Monitoring Report received September 19, 2005
Property located at Tax Map #2291603037 & 2291603038
Sumter County

Dear Mr. Burns & Ms. Sutton:

As you are aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. Cleanup is warranted to protect human health and the environment. Consultech Environmental, Inc. has been retained on behalf of Coca-Cola Bottling Company to respond to the petroleum release. Consultech has submitted the quarterly monitoring report that provides and overview of corrective action activities to date.

If there are any questions concerning this project, please contact me at (803) 896-6397, via email at thomadl@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Debra L. Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Quarterly Monitoring Report

cc: Technical File

UST PROGRAM
DOCKETING # 87

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

SEP 22 2005

DOUG LEONARD
COCA COLA BOTTLING COMPANY
PO BOX 31487
CHARLOTTE NC 28231-1487

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Quarterly Monitoring Report received September 19, 2005
Sumter County

Dear Mr. Leonard:

As you may be aware, gasoline constituents have been identified in the soil and groundwater at the referenced facility. To protect human health, Consultech Environmental has been retained your behalf to initiate corrective action of the impacted groundwater by reducing the concentration of gasoline constituents to acceptable levels using extraction of water and free product combined with the injection of ambient air into the subsurface. Consultech has submitted the quarterly monitoring report that provides and overview of corrective action activities to date.

If there are any questions concerning this project, please contact me at (803) 896-6397, via email at thomadl@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Debra L Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

Enc.: Quarterly Monitoring Report

cc: Technical File

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

SEP 22 2005

KENNETH BROOKE
CONSULTECH ENVIRONMENTAL INC
1800 MACLEOD DR STE F
LAWRENCEVILLE GA 30043

Re: HQ Heath Self Serve 2, 501 N Guignard Dr., Sumter, SC
UST Permit #08932; CA# 21908
Bid #SB-25841-6/24/04-EMW; PO #548324
Quarterly Monitoring Report received September 19, 2005
Sumter County

Dear Mr. Brooke:

The UST Program has reviewed the submitted monitoring report. The UST Program is pleased with the progress of the corrective action to date, which includes the removal of the free-phase product from the site. The next quarterly monitoring report should be submitted on or before December 20, 2005.

If there are any questions concerning this project, please contact me at (803) 896-6397, via email at thomadl@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Debra L Thoma

Debra L. Thoma, Hydrogeologist
Northeastern SC Corrective Action Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

cc: Technical File

CONSULTECH ENVIRONMENTAL, INC.

December 19, 2005

RECEIVED
DEC 21 2005
UNDERGROUND STORAGE
TANK PROGRAM

Ms. Debra Thoma
Hydrogeologist
NE SC Corrective Action Branch
South Carolina Department of Health and Environmental Control
Division of Underground Storage Tank Management
2600 Bull Street
Columbia, South Carolina 29201-1708

Re: Quarterly Monitoring Report #2
Former Heath Self Serve #2
501 N. Guignard Rd. Sumter County, SC
SCDHEC Facility ID # 08932
SB#25841-6/24/04-EMW, PO#54834
Consultech Project C-1383

Dear Ms. Thoma:

Consultech Environmental, Inc. (Consultech) is pleased to present this Initial Groundwater Monitoring Report for the above referenced facility. Should you have any questions regarding this report or the project in general, please do not hesitate to contact us at (678) 377-0400.

Sincerely,

CONSULTECH ENVIRONMENTAL, INC.

James R. Wilson, P.G.
Senior Project Manager

cc: File C-1383

1800 MacLeod Drive, Suite F * Lawrenceville, GA 30043-5376
678 377-0400 * FAX 678 377-0051

UST PROGRAM
DOCKETING # 1001

Groundwater Monitoring Report #2

Heath Self Serve #2
UST Permit # 08932
501 North Guignard Road
Sumter, Sumter County, South Carolina

RECEIVED
DEC 2 1 2005
UNDERGROUND STORAGE
TANK PROGRAM

Prepared for:
SCDHEC
2600 Bull Street
Columbia, SC 29201-1708

Prepared by:
Consultech Environmental, Inc.
1800 MacLeod Drive, Suite F
Lawrenceville, Georgia 30043-5736

Kenneth L. Brooke
Kenneth L. Brooke, P. E.
Project Manager

James R. Wilson
James R. Wilson, P.G.
Sr. Project Manager

December 2005

Consultech Project No.: C-1383



Groundwater Monitoring Report #2

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3.0 Groundwater Sampling Results 2

4.0 Conclusions and Recommendations 4

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TABLE 2 Groundwater Analytical Data

TABLE 3 Mass Reduction Calculations

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Figure 4 Chemicals of Concern in Groundwater, November 28, 2005

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Figure 7 Groundwater Elevations vs. Time - MW-10 through MW-18

Figure 8 Total Mass vs. Time

List of Appendices

Appendix 1 Groundwater Laboratory Analytical Results

Appendix 2 Free Product Disposal Manifest

Groundwater Monitoring Report #2

RECEIVED
DEC 2 1 2005
UNDERGROUND STORAGE
TANK PROGRAM

1.0 Project Summary

The subject site is located at 501 North Guignard Road, Sumter, Sumter County, South Carolina, South Carolina (see Figure 1). Based upon the information released by the South Carolina Department of Health and Environmental Control (SCDHEC), Total Fluids Removal (TFR), and In-situ Air Sparging (AS), are the selected technologies that will be used to remediate the groundwater contaminate plume at this site. This report presents the groundwater monitoring results for the sampling event conducted on November 28, 2005.

An Advanced Fluid Vapor Recovery (AFVR) event was conducted on November 10 and 11, 2005, which was pulled from total fluid recovery (TFR) wells TFR-3 through TFR-10 to remove any residual LPH and high dissolved concentrations and pulled a total of 3,070 gallons of contaminated groundwater from these eight TFR wells. Waste manifest reports are included in Appendix 2.

2.0 Groundwater Monitoring Results

Consultech personnel gauged monitoring wells MW-2 through MW-10, MW-12 through MW-16, and MW-18 through MW-27 for groundwater elevations and for liquid phase hydrocarbons (LPH). Monitoring well MW-11 was not found nor gauged due to probably being paved over. None of the monitoring wells contained free product. Strong petroleum odors were recorded for monitoring wells: MW-8, MW-9, MW-10, and MW-12. The groundwater elevations for the shallow wells ranged between 82.17 feet in MW-6 and 66.48 feet in MW-24. Table 1 provides a summary of the groundwater elevations.

Fluid level measurements were taken to create a groundwater elevation contour map for the shallow wells as presented in Figure 3. This data illustrates the static groundwater surface, direction of groundwater flow, and hydraulic gradient across the site. According to Figure 3, the groundwater at this site flows generally toward the east. The groundwater has an average hydraulic gradient between MW-6 and MW-24 of 0.0071 ft./ft. Figures 6 and 7 are graphs showing the elevations of monitoring wells over time.

3.0 Groundwater Sampling Results

Consultech personnel collected groundwater samples from monitoring wells MW-2 through MW-10, MW-12 through MW-16, and MW-18 through MW-27. Monitoring well MW-11 was not found nor sampled due to probably being paved over. None of the monitoring wells contained free product. The groundwater analytical results are listed in Appendix I.

Please reference Consultech's Standard Operating Procedures document dated October 2002 for detailed sampling protocol. The groundwater analytical results are shown on Table 2. Laboratory data sheets and chain-of-custody forms are included under Appendix 1. A comparison was made between the recent groundwater analytical results and previous analytical data on October 20, 2004 or August 22-23, 2005. The following paragraphs discuss this comparison for the chemicals of concern.

Benzene

The dissolved benzene concentration decreased in monitoring wells MW-2, MW-4, MW-5, MW-8, MW-9, MW-19, and MW-20. The dissolved benzene concentration increased in monitoring wells MW-6, MW-7, MW-10, MW-12, and MW-13. All other monitoring wells remained below the laboratory detection limit for benzene. The following wells were higher than the SSTLs for benzene: MW-4, MW-6, MW-7, MW-8, and MW-10.

MTBE

The dissolved MTBE concentration decreased in monitoring wells MW-4, MW-7, MW-8, MW-9, MW-10, MW-12, MW-19, and MW-20. The dissolved MTBE concentration increased in monitoring well MW-2. All other monitoring wells remained below the laboratory detection limit for MTBE. The following wells were higher than the SSTLs for MtBE: MW-2, MW-4, MW-6, MW-7, MW-8, MW-10, and MW-12.

Naphthalene

The dissolved naphthalene concentration decreased in monitoring wells MW-4, MW-5, MW-7, MW-8, MW-9, MW-10, and MW-12. The dissolved naphthalene concentration increased in monitoring well MW-2. All other monitoring wells remained below the laboratory detection limit for naphthalene. The following wells were higher than the SSTLs for naphthalene: MW-2, MW-3, and MW-6.

Total Mass Concentration

There has been a 94.37 percent decrease in Total Mass according to Table 2. The Total Mass at the site has decreased from 792,253 µg/l to 511,221 µg/l. According to Table 3, Mass Reduction Calculations, there has been an approximate 99.05 percent decrease in Mass above the SSTL's. A "Chemicals of Concern in Groundwater" map is presented as Figure 4. Figure 8 illustrates the changes in Total Mass present over time.

4.0 Conclusions and Recommendations

The groundwater at the site flows generally to the east of the site. Consultech personnel conducted free product and high dissolved BTEX concentrations removal from the total fluid recovery wells TFR-3 through TFR-10 to remove any residual LPH and high dissolved concentrations and pulled a total of 3,070 gallons of contaminated groundwater from these eight TFR wells on November 10 and 11, 2005. Waste manifest reports are included in Appendix 2. None of the monitoring wells contained free product. Due to the remaining high dissolved petroleum hydrocarbon concentrations, Consultech will conduct another Advanced Fluid Vapor Recovery (AFVR) event before the next groundwater sampling event. Consultech is requesting the 50% reduction payment since none of the free product has returned and the monitoring wells have had a 99.05% decrease in Mass above the SSTL's during this event. Consultech also requests that SCDHEC split samples during the next sampling event in February for further reduction payments.

The monitoring wells will continue to be checked on a quarterly basis for the evaluation of further BTEX, MTBE, and naphthalene concentration reductions in the dissolved plume. The next quarterly sampling event is scheduled for February 2006. Consultech will be sampling all of the monitoring wells during the next sampling event.

TABLES

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft bgs)	TOC to FP (ft bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-2	03/06/04	98.83	17.77			81.06				
Note 1	10/20/04	98.83	17.49			81.34	6.5	28.5	216	2.0
	08/22/05	98.83	17.03			81.80	6.0	26.8	171	2.4
	11/28/05	98.83	17.51			81.32	5.7	22.2	162	2.8
MW-3	03/06/04	101.09	18.83			82.26				
	10/20/04		19.25			81.84	6.1	26.5	75	2.1
	08/22/05		18.87			82.22	6.8	23.7	28	2.9
	11/28/05		19.13			81.96	7.2	20.4	82	2.8
MW-4	03/06/04	98.72	16.70		0.30'	82.02				
	10/20/04		17.05	16.93	0.12	81.76	5.9	26.5	151	1.6
	08/22/05		16.73		0.00	81.99	6.4	27.3	87	2.1
	11/28/05		17.18		0.00	81.54	6.3	21.2	93	2.3
MW-5	03/06/04	98.83	17.45			81.38				
	10/20/04		17.53			81.30	5.6	26.8	60	3.4
	08/22/05		17.17			81.66	6.5	27.1	168	2.7
	11/28/05		17.66			81.17	6.8	20.9	194	2.9
MW-6	03/06/04	98.98	16.74			82.24				
	10/20/04		16.76			82.22	5.3	26.6	49	2.0
	08/22/05		16.42			82.56	6.2	27.3	145	2.6
	11/28/05		16.81			82.17	6.4	21.1	137	2.5
MW-7	03/06/04	98.64	17.15		0.35'	81.49				
	10/20/04		17.39			81.25	5.7	26.4	92	2.2
	08/22/05		17.00	sheen	sheen	81.64	5.2	27.3	61	2.0
	11/28/05		17.46			81.18	5.8	21.6	217	2.1
MW-8	03/06/04	99.58	17.85		0.03'	81.73				
	10/20/04		18.30			81.28	6.0	27.0	336	2.8
	08/22/05		17.90			81.68	5.1	27.4	29	2.4
	11/28/05		18.35			81.23	6.1	20.8	88	2.3
MW-9	03/06/04	97.93	16.85		0.12'	81.08				
	10/20/04		17.25			80.68	6.3	27.2	254	1.2
	08/22/05		16.80			81.13	5.3	27.9	20	1.8
	11/28/05		17.33			80.60	5.3	21.4	236	2.3
MW-10	03/06/04	97.71	17.56		1.07'	80.15				
	10/20/04		17.95	16.97	0.98	80.52	5.2	27.4	1139	1.1
	08/22/05		16.79		0.00	80.92	4.8	27.7	28	1.6
	11/28/05		16.83		0.00	80.88	5.8	21.1	129	1.5

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft bgs)	TOC to FP (ft bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-11	03/06/04	97.60	15.96			81.64				
	10/20/04	Unable to Locate								
	08/22/05	Unable to Locate								
	11/28/05	Unable to Locate								
MW-12	03/06/04	99.68	17.90		0.30'	81.78				
	10/20/04		18.57	17.93	0.64	81.61	6.4	29.3	173	2.0
	08/22/05		17.65	sheen	0.00	82.03	6.4	27.3	232	2.5
	11/28/05		18.04		0.00	81.64	5.9	21.0	277	2.2
MW-13	03/06/04	99.88	18.21			81.67				
	10/20/04		18.78			81.10	6.2	27.1	256	3.6
	08/22/05		18.37			81.51	5.6	26.8	28	3.8
	11/28/05		18.72			81.16	6.3	20.3	82	3.2
MW-14	03/06/04	91.12	12.81			78.31				
	10/20/04		13.21			77.91	6.6	25.9	155	4.2
	08/22/05		12.91			78.21	5.9	28.4	86	4.0
	11/28/05		13.28			77.84	5.1	22.4	75	3.8
MW-15	03/06/04	91.29	11.34			79.95				
	10/20/04		13.46			77.83	6.5	26.1	162	2.8
	08/23/05		11.81			79.48	5.9	29.2	45	2.9
	11/28/05		12.26			79.03	5.7	20.5	52	3.3
MW-16	03/06/04	94.15	13.02			81.13				
	10/20/04		11.84			82.31	6.3	29.2	13	3.3
	08/23/05		13.15			81.00	5.5	27.9	52	3.6
	11/28/05		13.74			80.41	6.0	21.5	61	3.5
MW-18	03/06/04	92.29	13.39			78.90				
	10/20/04		13.80			78.49	6.7	28.4	46	3.0
	08/23/05		13.50			78.79	5.9	28.6	49	3.5
	11/28/05		13.87			78.42	5.5	22.1	41	3.6
MW-19	03/06/04	76.76	4.45			72.31				
	10/20/04	Unable to Locate								
	08/23/05	Unable to Locate								
	11/28/05	76.76	5.87			70.89	5.7	21.6	62	3.7
MW-20	03/06/04	76.16	2.71			73.45				
	10/20/04	Unable to Locate								
	08/23/05	Unable to Locate								
	11/28/05	76.16	6.14			70.02	6.4	21.4	69	3.8

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft-bgs)	TOC to FP (ft-bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-21	03/06/04	73.49	0.70			72.79				
	10/20/04		1.22			72.27	6.8	23.1	334	5.6
	08/23/05		Unable to Locate							
	11/28/05	73.49	6.21			67.28	6.1	20.3	83	4.1
MW-22	03/06/04	73.79	0.85			72.94				
	10/20/04		0.60			73.19	6.7	23.7	152	5.5
	08/23/05		Unable to Locate							
	11/28/05	73.79	5.88			67.91	6.2	21.7	73	3.9
MW-23	03/06/04	73.06	0.10			72.96				
	10/20/04		0.60			72.46	6.9	24.0	265	3.9
	08/23/05		Unable to Locate							
	11/28/05	73.06	5.91			67.15	5.9	21.1	49	4.2
MW-24	03/06/04	72.25	0.08			72.17				
	10/20/04		0.60			71.65	7.0	23.5	308	4.2
	08/23/05		Unable to Locate							
	11/28/05	72.25	5.77			66.48	5.6	20.8	72	3.7
MW-25	03/06/04	95.48	10.08			85.40				
	10/20/04		10.61			84.87	6.8	25.2	113	4.0
	08/23/05		10.28			85.20	5.7	28.1	83	3.8
	11/28/05		9.78			85.70	6.4	21.4	86	3.6
MW-26	03/06/04	83.42	5.51			77.91				
	10/20/04		5.56			77.86	6.7	23.9	192	3.5
	08/23/05		Unable to Locate							
	11/28/05	83.42	10.22			73.20	6.1	21.2	44	3.3
MW-27	03/06/04	78.96	2.05			76.91				
	10/20/04		1.53			77.43	7.0	24.2	NM	6.0
	08/23/05		Unable to Locate							
	11/28/05	78.96	5.91			73.05	5.7	20.6	61	4.3

Notes: (1) TOC for MW-2 is assumed to be at mid-height between MW-6 and MW-12.

NM = Not Measured

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft-bgs)	TOC to FP (ft-bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-2	03/06/04	98.83	17.77			81.06				
Note 1	10/20/04	98.83	17.49			81.34	6.5	28.5	216	2.0
	08/22/05	98.83	17.03			81.80	6.0	26.8	171	2.4
	11/28/05	98.83	17.51			81.32	5.7	22.2	162	2.8
MW-3	03/06/04	101.09	18.83			82.26				
	10/20/04		19.25			81.84	6.1	26.5	75	2.1
	08/22/05		18.87			82.22	6.8	23.7	28	2.9
	11/28/05		19.13			81.96	7.2	20.4	82	2.8
MW-4	03/06/04	98.72	16.70		0.30'	82.02				
	10/20/04		17.05	16.93	0.12	81.76	5.9	26.5	151	1.6
	08/22/05		16.73		0.00	81.99	6.4	27.3	87	2.1
	11/28/05		17.18		0.00	81.54	6.3	21.2	93	2.3
MW-5	03/06/04	98.83	17.45			81.38				
	10/20/04		17.53			81.30	5.6	26.8	60	3.4
	08/22/05		17.17			81.66	6.5	27.1	168	2.7
	11/28/05		17.66			81.17	6.8	20.9	194	2.9
MW-6	03/06/04	98.98	16.74			82.24				
	10/20/04		16.76			82.22	5.3	26.6	49	2.0
	08/22/05		16.42			82.56	6.2	27.3	145	2.6
	11/28/05		16.81			82.17	6.4	21.1	137	2.5
MW-7	03/06/04	98.64	17.15		0.35'	81.49				
	10/20/04		17.39			81.25	5.7	26.4	92	2.2
	08/22/05		17.00	sheen	sheen	81.64	5.2	27.3	61	2.0
	11/28/05		17.46			81.18	5.8	21.6	217	2.1
MW-8	03/06/04	99.58	17.85		0.03'	81.73				
	10/20/04		18.30			81.28	6.0	27.0	336	2.8
	08/22/05		17.90			81.68	5.1	27.4	29	2.4
	11/28/05		18.35			81.23	6.1	20.8	88	2.3
MW-9	03/06/04	97.93	16.85		0.12'	81.08				
	10/20/04		17.25			80.68	6.3	27.2	254	1.2
	08/22/05		16.80			81.13	5.3	27.9	20	1.8
	11/28/05		17.33			80.60	5.3	21.4	236	2.3
MW-10	03/06/04	97.71	17.56		1.07'	80.15				
	10/20/04		17.95	16.97	0.98	80.52	5.2	27.4	1139	1.1
	08/22/05		16.79		0.00	80.92	4.8	27.7	28	1.6
	11/28/05		16.83		0.00	80.88	5.8	21.1	129	1.5

Table 1

Groundwater Monitoring Data through August 22-23, 2005

Health Self Serve 2, Sumter, South Carolina, UST Permit #08932 Consultech Project # C-1383

Monitoring Well	Date	TOC Elevation	TOC to GW (ft-bgs)	TOC to FP (ft-bgs)	FP Thickness (ft.)	GW Elevation	pH	Temperature (C°)	Conductivity (µS/cm)	Dissolved O_2 (mg/L)
MW-11	03/06/04	97.60	15.96			81.64				
	10/20/04	Unable to Locate								
	08/22/05	Unable to Locate								
	11/28/05	Unable to Locate								
MW-12	03/06/04	99.68	17.90		0.30'	81.78				
	10/20/04		18.57	17.93	0.64	81.61	6.4	29.3	173	2.0
	08/22/05		17.65	sheen	0.00	82.03	6.4	27.3	232	2.5
	11/28/05		18.04		0.00	81.64	5.9	21.0	277	2.2
MW-13	03/06/04	99.88	18.21			81.67				
	10/20/04		18.78			81.10	6.2	27.1	256	3.6
	08/22/05		18.37			81.51	5.6	26.8	28	3.8
	11/28/05		18.72			81.16	6.3	20.3	82	3.2
MW-14	03/06/04	91.12	12.81			78.31				
	10/20/04		13.21			77.91	6.6	25.9	155	4.2
	08/22/05		12.91			78.21	5.9	28.4	86	4.0
	11/28/05		13.28			77.84	5.1	22.4	75	3.8
MW-15	03/06/04	91.29	11.34			79.95				
	10/20/04		13.46			77.83	6.5	26.1	162	2.8
	08/23/05		11.81			79.48	5.9	29.2	45	2.9
	11/28/05		12.26			79.03	5.7	20.5	52	3.3
MW-16	03/06/04	94.15	13.02			81.13				
	10/20/04		11.84			82.31	6.3	29.2	13	3.3
	08/23/05		13.15			81.00	5.5	27.9	52	3.6
	11/28/05		13.74			80.41	6.0	21.5	61	3.5
MW-18	03/06/04	92.29	13.39			78.90				
	10/20/04		13.80			78.49	6.7	28.4	46	3.0
	08/23/05		13.50			78.79	5.9	28.6	49	3.5
	11/28/05		13.87			78.42	5.5	22.1	41	3.6
MW-19	03/06/04	76.76	4.45			72.31				
	10/20/04	Unable to Locate								
	08/23/05	Unable to Locate								
	11/28/05	76.76	5.87			70.89	5.7	21.6	62	3.7
MW-20	03/06/04	76.16	2.71			73.45				
	10/20/04	Unable to Locate								
	08/23/05	Unable to Locate								
	11/28/05	76.16	6.14			70.02	6.4	21.4	69	3.8