Preliminary Site Assessment
Charles D. Bramble Property
Parcel #145
Fayetteville, Cumberland County, NC

H&H Job No. ROW-203
State Project U-2810C
WBS Element # 34866.1.1
January 8, 2009

Hart & Hickman

2923 South Tryon Street
Suite 100
Charlotte, NC 28203
704-586-0007

3334 Hillsborough Street
Raleigh, NC 27607
919-847-4241

Preliminary Site Assessment Report
Charles D. Bramble Property Parcel #145
Fayetteville, Cumberland County, North Carolina
H&H Project ROW-203

Table of Contents

List of Tables

List of Figures

List of Appendices

Preliminary Site Assessment Report
Charles D. Bramble Property Parcel #145
Fayetteville, Cumberland County, North Carolina
H&H Project ROW-203

1.0 Introduction

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Charles D. Bramble property (Parcel #145) located at 3119 Camden Road in Fayetteville, Cumberland County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with H&H's November 17, 2008 proposal.

The purpose of this assessment was to determine the presence or absence of impacted soil at the subject property in proposed right-of-way construction areas related to the widening of Camden Road (State Project U-2810C). A site location map is included as Figure 1 and a site map is presented as Figure 2. The NC DOT preliminary plan of the Camden Road widening area near the Charles D. Bramble property is attached as Appendix A.

The subject site currently operates as The Sunroom Store. According to the North Carolina Department of Environment and Natural Resources (DENR) Underground Storage Tank (UST) database, one 1,000-gallon UST was closed at the property in 1982. No DENR incident files for the UST closure were available for review. H&H did not observe surface evidence of current USTs or evidence of UST removal on the property.

2.0 Site Assessment

Soil Assessment Field Activities

H&H mobilized to the Charles D. Bramble property on December 9, 2008 to advance five soil borings (145-1 through 145-5) by direct push technology (DPT). Prior to advancing the soil borings, H&H reviewed a geophysical survey performed at the subject site by Schnabel Engineering (Schnabel) on November 20 and 25, 2008. Schnabel utilized ground penetrating radar (GPR) and time domain electromagnetic (TDEM) technology to identify potential geophysical anomalies and

potential USTs at the site. The Schnabel results indicate several anomalies associated with metallic features; however, follow up with GPR did not indicate the presence of USTs. Schnabel's report including site maps depicting the results of the GPR and TDEM is provided in Appendix B.

Prior to conducting soil borings, utilities were marked by NC One Call. Borings were also cleared to a five foot depth by hand auger. H&H utilized Subsurface Environmental Investigations, LLC of Statesville, North Carolina to advance the soil borings (Figure 2). To facilitate the selection of soil samples for laboratory analysis, soil from each boring was screened continuously for the presence of volatile organic compounds (VOCs) with an organic vapor analyzer (OVA). Additionally, H&H observed the soil for visual and olfactory indications of petroleum impacts. In general, soil samples that exhibited the highest reading on the OVA were selected for laboratory analysis. The only soil samples exhibiting OVA readings were the shallow samples from boring 145-5. The sample for laboratory analysis was collected from a depth of 0 to 2 ft in boring 145-5; otherwise, samples were collected from 6 to 8 ft. Soil boring logs are included in Appendix C.

H&H submitted five soil samples (145-1 through 145-5) for laboratory analysis. Soil samples are identified by the NC DOT Parcel number, soil boring, and the depth interval in ft. Samples were sent to SGS Environmental Services, Inc. using standard chain-of-custody protocol for analysis of total petroleum hydrocarbons (TPH) gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015B. The GRO samples were prepared using EPA Method 5035. Sample depths and analytical results are summarized in Table 1. Laboratory analytical data sheets for Parcel 145 soil samples and chain-of-custody documentation are provided in Appendix D. The analytical results are discussed below.

3.0 Analytical Results

No target analytes were detected in the five soil samples collected from Parcel 145. Based on laboratory analytical results and OVA readings (with only low readings at boring 145-5), impacted soil does not appear to be present at the site in the vicinity of the soil boring locations.

4.0 Summary and Regulatory Considerations

H&H has reviewed geophysical survey results and collected soil samples at Parcel 145. No USTs appear to be present within the NC DOT target area. TPH GRO and DRO were not detected in the five soil samples analyzed by the laboratory. DOT plans indicate proposed fill in this area. Based on results of soil sampling activities, impacted soil should not be encountered at this parcel during proposed NC DOT road work.

5.0 Signature Page

This report was prepared by:

David Graham
Project Geologist for
Hart and Hickman, PC

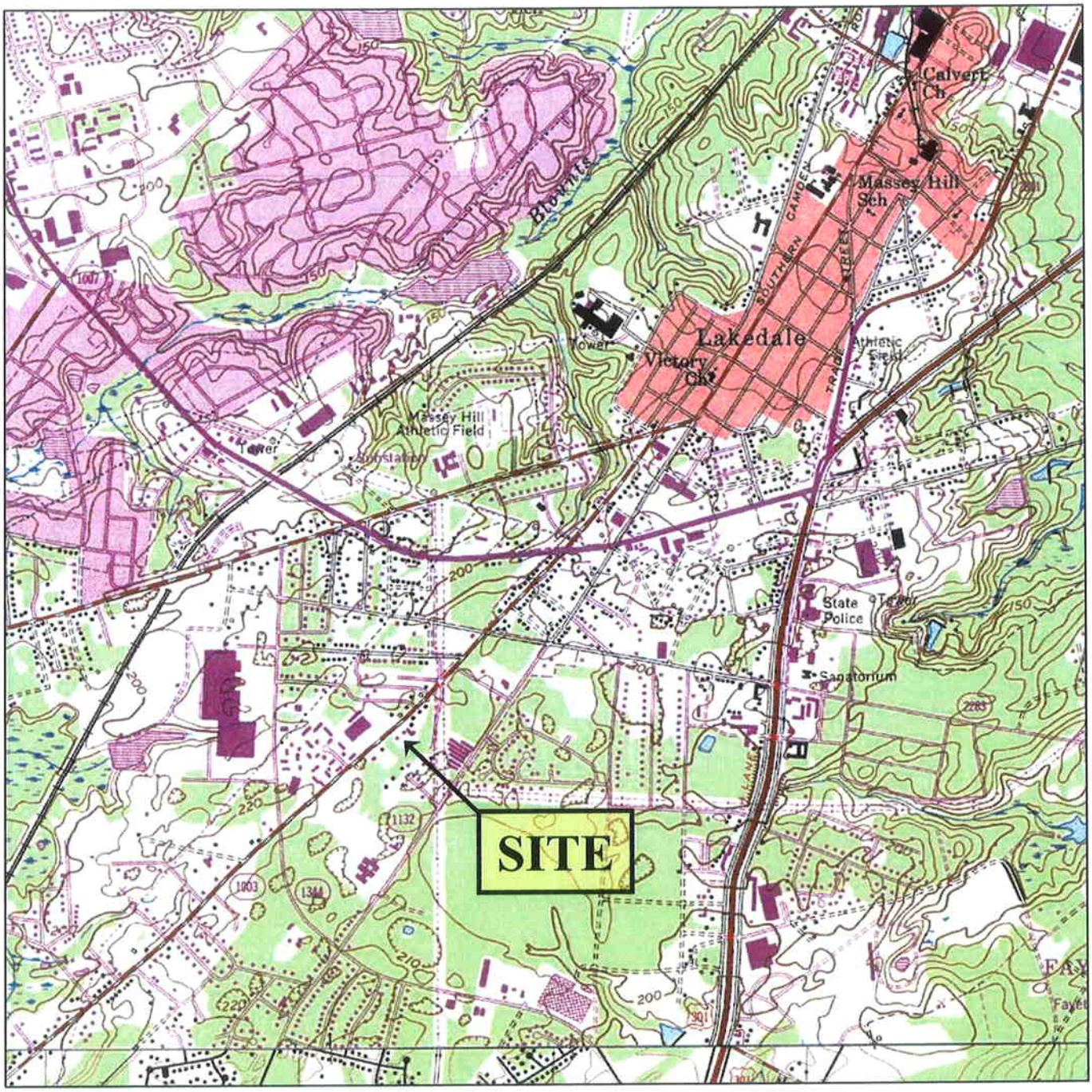
This report was reviewed by:

Matt Bramblett, PE
Principal and Project Manager for
Hart and Hickman, PC

Table 1
Soil Analytical Results
Charles D. Bramble Property, Parcel #145
Fayetteville, North Carolina
H&H Job No. ROW-203

Sample ID	145-1	145-2	145-3	145-4	145-5	NCDENR
Sample Depth (ft)	6-8	6-8	6-8	6-8	0-2	Action
Sample Date	12/9/2008	12/9/2008	12/9/2008	12/9/2008	12/9/2008	Level
Units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
TPH-DRO/GRO (8015B)						
Diesel-Range Organics (DRO)	<5.87	<6.18	<7.49	<6.53	<6.62	10
Gasoline-Range Organics (GRO)	<6.00	<5.78	<6.50	<6.31	<5.92	10

Notes:
EPA Method follows parameter in parenthesis;
TPH=total petroleum hydrocarbons
GRO was prepared using EPA Method 5035



N

APPROXIMATE

0 2000 4000

SCALE IN FEET

U.S.G.S. QUADRANGLE MAP

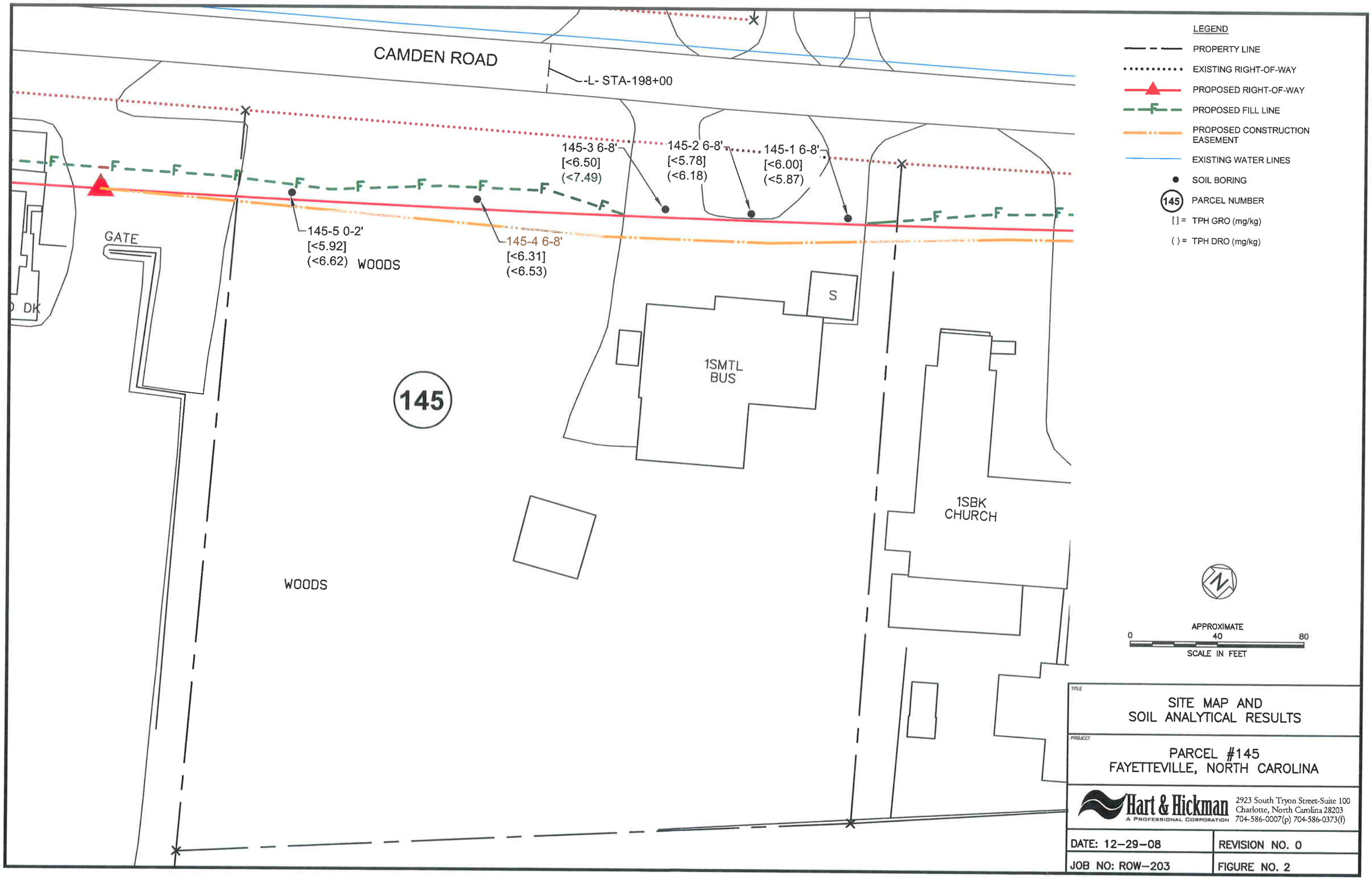
FAYETTEVILLE, NC 1957/1987

7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	SITE LOCATION MAP
PROJECT	PARCEL #145 FAYETTEVILLE, NORTH CAROLINA

Hart & Hickman
A Professional Corporation
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007 (p) 704-586-0373 (f)

DATE:	12-16-08	REVISION NO:	0
JOB NO:	ROW-203	FIGURE:	1



TITLE

SITE MAP AND
SOIL ANALYTICAL RESULTS

PROJECT

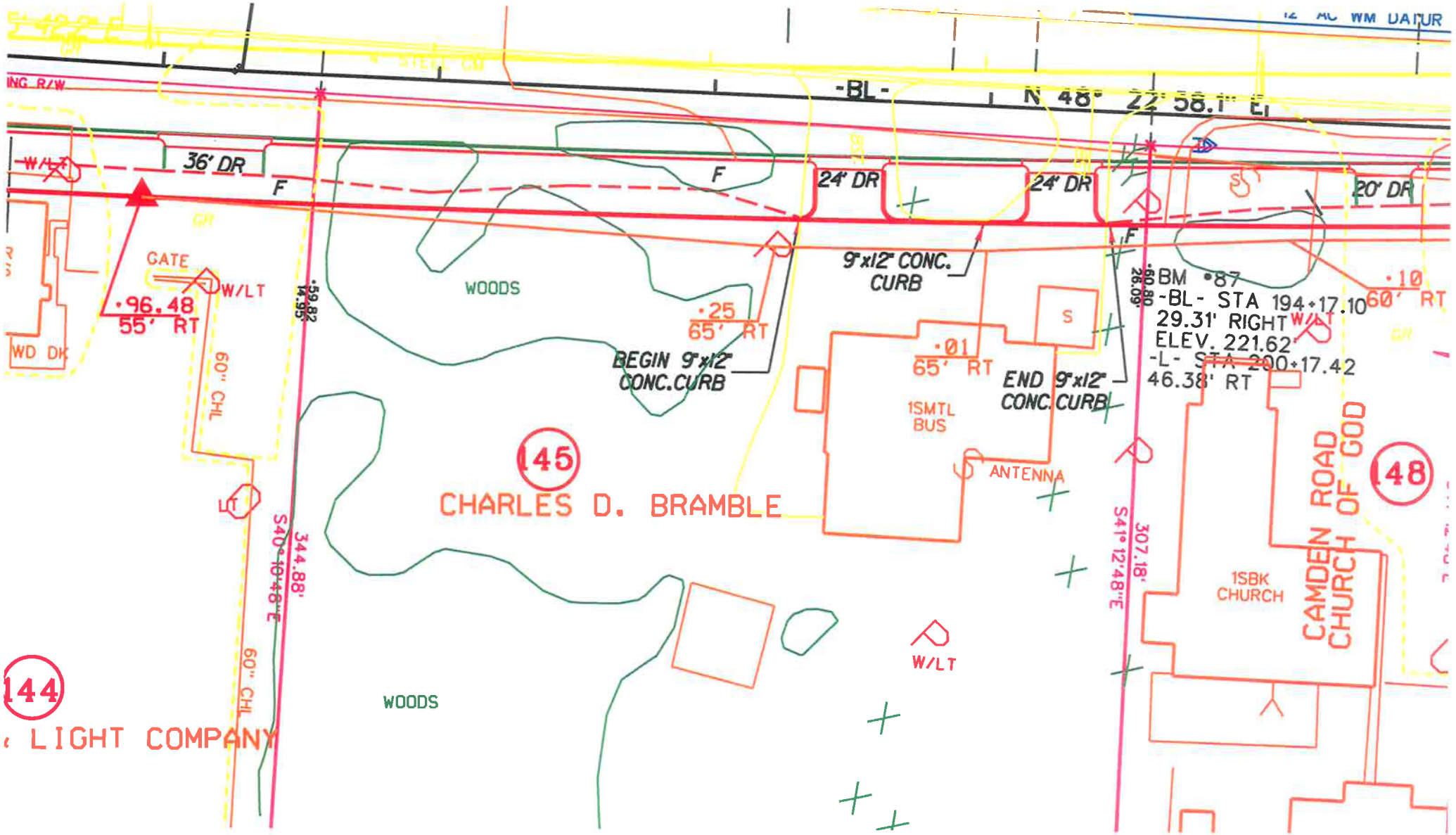
PARCEL #145
FAYETTEVILLE, NORTH CAROLINA

Hart & Hickman
A PROFESSIONAL CORPORATION
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

DATE: 12-29-08	REVISION NO. 0
JOB NO: ROW-203	FIGURE NO. 2

Appendix A

NC DOT Preliminary Plan


-BL- N 48° 22' 58.1" E
36' DR
24' DR
24' DR
20' DR
GATE
W/LT
96.48
55' RT
WOODS
.25
65' RT
9"x12" CONC. CURB
BEGIN 9"x12" CONC.CURB
.01
65' RT
END 9"x12" CONC.CURB
BM #87
-BL- STA 194+17.10
29.31' RIGHT
ELEV. 221.62'
-L- STA 200+17.42
46.38' RT
.10
60' RT
1SMTL
BUS
ANTENNA
145
CHARLES D. BRAMBLE
344.88'
S40°10'48"E
307.18'
S41°12'48"E
1SBK
CHURCH
CAMDEN ROAD CHURCH OF GOD
48
144
LIGHT COMPANY
WOODS
W/LT
60" CHL
WD DK

U-2810C | 8

18 (U-2810)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

MATCH LINE 193+00 -L- SEE SHEET 7

MATCH LINE 206+00 -L- SEE SHEET 9

SEE SHEET 14 FOR -L- PROFILE

41 F.B.C. CORPORATION

42 RAYMOND E. NICHOLSON JR.

43 COLLEGE HOPE LLC

44 CAROLINA POWER & LIGHT COMPANY

45 CAMDEN ROAD CHURCH OF GOD

46 CHARLES D. BRAMBLE

46 KENNETH D. JACOBS

47 RAYMOND GRAHAM

48 MARIE PARKER

49 MARIE PARKER

60 KATHY JEAN JOHNSON

61 HARRY B. JOHNSON

62 RORIE INVESTMENTS LL

63 ARTHUR HARLOW

Appendix B

Schnabel Engineering Geophysical Survey Report

Schnabel Engineering South

11-A Oak Branch Drive
Greensboro, NC 27407
Phone (336) 274-9456
Fax (336) 274-9486
www.schnabel-eng.com

December 16, 2008

Mr. Matt Bramblett, P.E.
Hart & Hickman, PC
2923 South Tryon Street, Suite 100
Charlotte, NC 28203

Via email (pdf)

RE: State Project: U-2810C
WBS Element: 34866.1.1
County: Cumberland
Description: SR 1003 (Camden Road) from SR 1290 (King Charles Road) to north of SR 1007 (Owen Drive)

SUBJECT: Report on Geophysical Surveys of Parcel 145
Schnabel Engineering Project No. 08210020.06

Dear Mr. Bramblett:

This letter contains our report on the geophysical surveys we conducted on the subject property. We understand this letter report will be included as an appendix in your report to the NCDOT. The report includes two 11x17 color figures.

1.0 INTRODUCTION

Schnabel Engineering conducted geophysical surveys on November 20 and 25, 2008, in the accessible areas of the proposed right-of-way (ROW) section of Parcel 145 (Charles D. Bramble Property, The SunRoom Store) under our 2008 contract with the NCDOT. Parcel 145 is located on the south side of SR 1003 (Camden Road) at 3097 Camden Road, in Fayetteville, NC. The work was conducted at the location indicated by Hart & Hickman and the NCDOT to support their environmental assessment of the subject parcel. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (UST's) and associated metal product lines in the accessible areas of the site.

2.0 FIELD METHODOLOGY

Locations of geophysical data points were obtained using a sub-meter Trimble Pro-XRS DGPS system. References to direction and location in this report are based on the US State Plane 1983 system, North Carolina 3200 zone, using the NAD 83 datum, with units in US survey feet. The locations of existing site features (building, curbs, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings. The geophysical investigation consisted of an electromagnetic (EM) induction survey using a Geonics EM61-MK2 instrument, and a ground-penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna.

The EM61 data were collected along parallel survey lines spaced about 2.5 feet apart. The EM61 and DGPS data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected along survey lines spaced one to two feet apart in orthogonal directions over anomalous EM readings not attributed to known metallic features.

Preliminary results were sent to David Graham and Wil Pineda of Hart & Hickman on December 5, 2008.

3.0 DISCUSSION OF RESULTS

The contoured EM61 data are shown on Figures 1 and 2. The EM61 early time gate results are plotted on Figure 1. The early time gate data provide the most sensitive detection of metal object targets, regardless of size. Figure 2 shows the difference between the response of the top and bottom coils of the EM61 instrument (differential response). The difference is taken to remove the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as UST's.

The early time gate and differential results indicate several anomalies probably caused by known metallic features. During the EM61 survey, a vehicle that could not be moved was parked inside the survey area. The associated anomaly in the EM61 data was investigated using GPR after the vehicle

had been moved. The GPR data did not indicate the presence of UST's in the areas surveyed on Parcel 145.

4.0 CONCLUSIONS

Our evaluation of the geophysical data collected on Parcel 145 of Project U-2810C in Fayetteville, NC indicates the following:

- The geophysical data do not indicate the presence of UST's in the areas surveyed.

5.0 LIMITATIONS

These services have been performed and this report prepared for Hart & Hickman and the North Carolina Department of Transportation in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

Thank you for the opportunity to serve you on this project. Please call if you need additional information or have any questions.

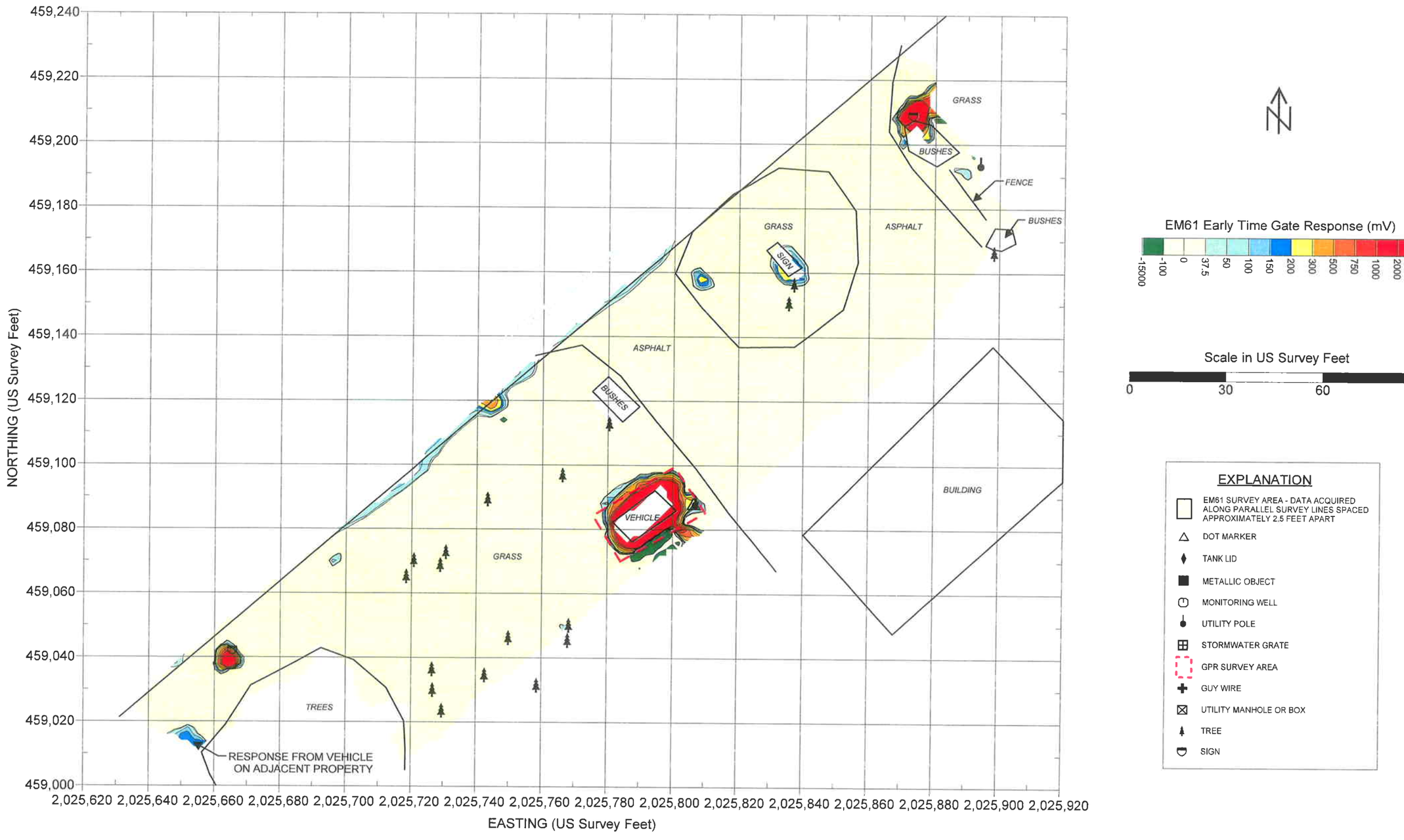
Sincerely,

SCHNABEL ENGINEERING SOUTH, P.C.

Jeremy S. Strohmeyer, P.G.
Project Manager

Edward D. Billington, P.G.
Senior Vice President

JW/JS/NB
Attachment: Figures (2)
FILE: G:\2008 PROJECTS\08210020 (NCDOT 2008 GEOTECH UNIT SERVICES) 08210020.06 (U-2810C, CUMBERLAND COUNTY)\REPORT\PARCEL 135\REPORT ON PARCEL 135.DOC



EM61 Early Time Gate Response (mV)

-15000 -100 0 37.5 50 100 150 200 300 500 750 1000 2000

Scale in US Survey Feet

0 30 60 90

EXPLANATION

- EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
- DOT MARKER
- TANK LID
- METALLIC OBJECT
- MONITORING WELL
- UTILITY POLE
- STORMWATER GRATE
- GPR SURVEY AREA
- GUY WIRE
- UTILITY MANHOLE OR BOX
- TREE
- SIGN

Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on November 20, 2008, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on November 25, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

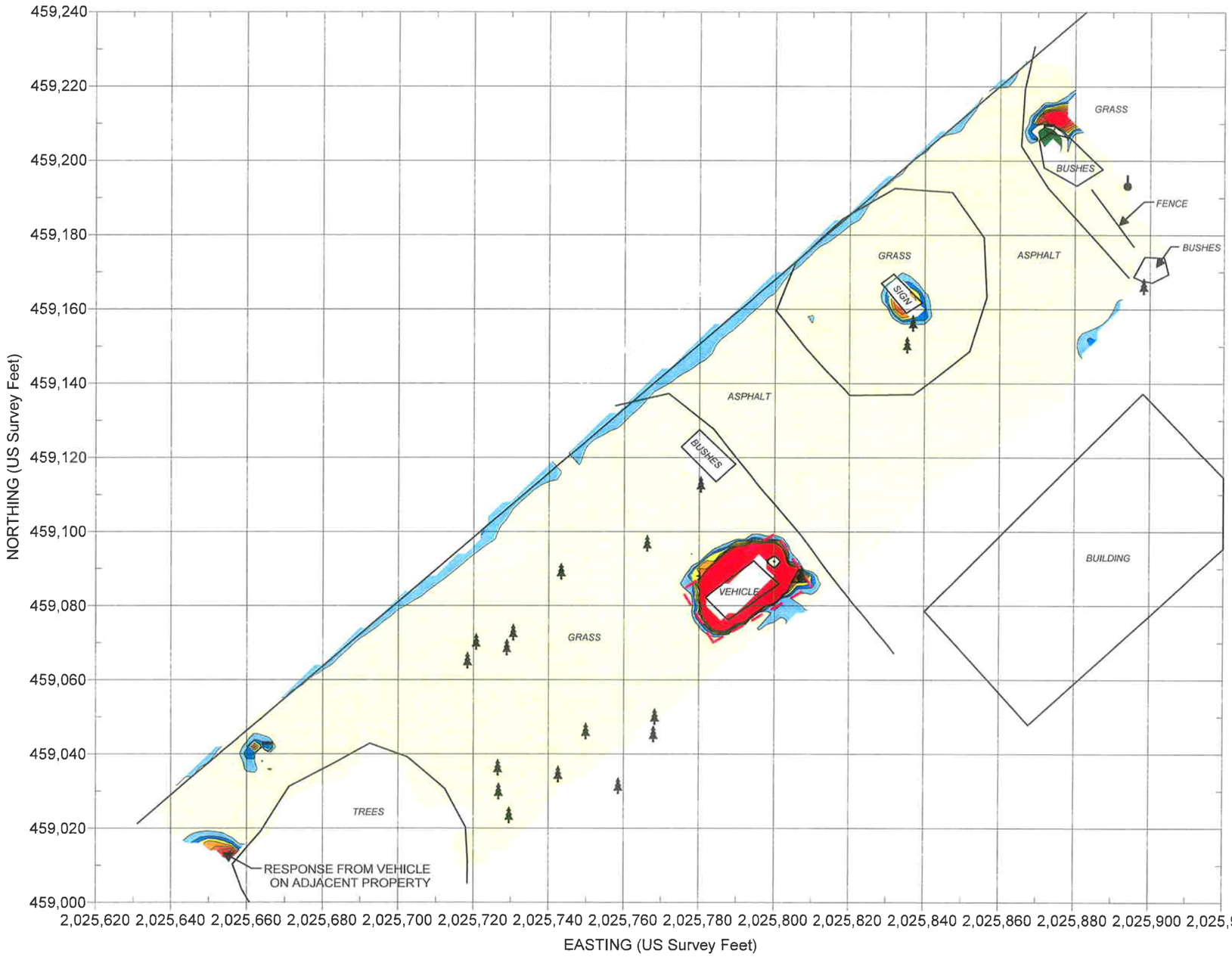
Schnabel Engineering

NC Department of Transportation
Geotechnical Engineering Unit

State Project No. U-2810C
Cumberland County, North Carolina

PARCEL 145
EM61 EARLY TIME GATE RESPONSE

FIGURE 1



Differential Response (mV)

-20000 -500 0 40 60 80 100 120 140 160 200

Scale in US Survey Feet

0 30 60 90

EXPLANATION

- EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
- DOT MARKER
- TANK LID
- METALLIC OBJECT
- MONITORING WELL
- UTILITY POLE
- STORMWATER GRATE
- GPR SURVEY AREA
- GUY WIRE
- UTILITY MANHOLE OR BOX
- TREE
- SIGN

Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on November 20, 2008, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on November 25, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

Schnabel Engineering

NC Department of Transportation
Geotechnical Engineering Unit

State Project No. U-2810C
Cumberland County, North Carolina

PARCEL 145
EM61 DIFFERENTIAL RESPONSE

FIGURE 2

Appendix C

Soil Boring Logs

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough St.
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

BORING NUMBER 145-1

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0						ASPHALT		0
	100		0	0		(SM) Tan-brown, fine silty SAND, dry		
	100		0	0				
						(SW) Tan, fine SAND, dry		
5	100		0	0				5
	100		0	0				
	100		0	0				
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 13:10 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 145.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough St.
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

BORING NUMBER 145-2

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0						ASPHALT		0
	100		0	0		(SM) Tan-brown fine silty SAND, dry		
	100		0	0				
5	100		0	0		(SW) Tan, fine SAND, dry		5
	100		0	0				
	100		0	0				
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 13:10 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 145.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough St.
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

BORING NUMBER 145-3

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0						ASPHALT		0
	100		0	0		(SM) Tan-brown, fine silty SAND, dry		
	100		0	0				
						(SW) Tan, fine SAND, dry		
5	100		0	0				5
	100		0	0				
	100		0	0		(SW) White, fine SAND, dry		
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 13:10 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 145.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough St.
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

BORING NUMBER 145-4

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0								0
	100		0	0		(SM) Tan-brown, fine silty SAND, dry		
	100		0	0				
5	100		0	0		(SW) Tan, fine SAND, dry		5
	100		0	0				
	100		0	0				
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 13:10 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 145.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough St.
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

BORING NUMBER 145-5

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM
0						(SM) Tan-orange, fine silty SAND, dry	
	100		0	40.1			
	100		0	23.8			
5	100		0	0		(SW) Tan, fine SAND, dry	
	100		0	0			
	100		0	0			
10	100		0	0			
						Bottom of borehole at 12.0 feet.	
15							
20							

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 0-2 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 13:10 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 145.GPJ

Appendix D

Laboratory Analytical Report

SGS

Mr. David Graham
Hart & Hickman
2923 S. Tryon St.
Suite 100
Charlotte NC 28203
Report Number: G609-44

Client Project: Row-203

Dear Mr. Graham:

Enclosed are the results of the analytical services performed under the referenced project. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or the services performed during this project, please call SGS at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS Environmental Services for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,
SGS Environmental Services, Inc.

Project Manager
Lori Lockamy

12/19/08
Date

List of Reporting Abbreviations
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

P/D = Detected, but RPD is > 25/40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% soilds = Percent Solids

Special Notes:
1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.
2) Uncertainty for all reported data is less than or equal to 30 percent.

MI34.021808.4

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 145-1 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-1A
Lab Project ID: G609-44
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 15:10
Date Received: 12/12/2008
Matrix: Soil
Solids 98.47

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.00	mg/Kg	1	12/16/08 09:45

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	98	98.2		70-130

Comments:

Batch Information

Analytical Batch: VP121608
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.08 g
Final Volume: 5 mL

Analyst: DVG

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-2 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-2A
Lab Project ID: G609-44
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 15:25
Date Received: 12/12/2008
Matrix: Soil
Solids 96.33

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.78	mg/Kg	1	12/18/08 07:58

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	97	97.4		70-130

Comments:

Batch Information

Analytical Batch: VP121808
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.39 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by GC/FID 8015

Client Sample ID: 145-3 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-3A
Lab Project ID: G609-44
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 15:35
Date Received: 12/12/2008
Matrix: Soil
Solids 81.86

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.50	mg/Kg	1	12/18/08 08:51

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	98	97.8		70-130

Comments:

Batch Information

Analytical Batch: VP121808
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.64 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-4 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-4A
Lab Project ID: G609-44
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 15:50
Date Received: 12/12/2008
Matrix: Soil
Solids 95.11

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.31	mg/Kg	1	12/18/08 09:18

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95	95.2		70-130

Comments:

Batch Information

Analytical Batch: VP121808
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5 g
Final Volume: 5 mL

Analyst: DVG

Reviewed By: GRO

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 145-5 (0-2)
Client Project ID: Row-203
Lab Sample ID: G609-44-5A
Lab Project ID: G609-44
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 16:00
Date Received: 12/12/2008
Matrix: Soil
Solids 91.29

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.92	mg/Kg	1	12/18/08 09:44

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	97	97.5		70-130

Comments:

Batch Information

Analytical Batch: VP121808
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.55 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRC

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK4121808A
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected:
Date Received:
Matrix: Soil
Solids 100.00

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.00	mg/kg	1	12/18/08 06:12

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95	94.9		70-130

Comments:

Batch Information

Analytical Batch: VP121808
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

SGS Environmental Services, Inc.

QC Results for Total Petroleum Hydrocarbons
by GC/FID

Client Sample ID: Batch QC
Lab Sample ID: g609-44-1a
LCS ID: LCS4121808A / VP121808

Analyzed By: DVG
Matrix: Soil
Solids 98.47

MS/MSD

Analyte	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC % #	Spiked MG/KG	MSD MG/KG	REC % #	RPD % #
				(70-130%)			(70-130%)	(30%)
GRO	BQL	16	15.8	98.8 ✓	16	14.9	93.1 ✓	5.94

LCS

Analyte	Spiked MG/KG	Result MG/KG	REC % #	LIMITS Lower	Upper
GRO	16	18	109 ✓	70	130

Comments:

Reviewed By: MH

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-1 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-1D
Lab Project ID: G609-44

Date Collected: 12/9/2008 15:10
Date Received: 12/12/2008
Matrix: Soil
Solids 98.47
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	5.87	mg/Kg	1	12/17/08 16:12

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	36.2	90.5

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 34.59 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-2 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-2D
Lab Project ID: G609-44

Date Collected: 12/9/2008 15:25
Date Received: 12/12/2008
Matrix: Soil
Solids 96.33
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.18	mg/Kg	1	12/17/08 16:40

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	37.3	93.2

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 33.61 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____
DRO.XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-3 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-3D
Lab Project ID: G609-44

Date Collected: 12/9/2008 15:35
Date Received: 12/12/2008
Matrix: Soil
Solids 81.86
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	7.49	mg/Kg	1	12/17/08 17:08

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	34.9	87.2

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 32.62 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

DRO.XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-4 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-44-4D
Lab Project ID: G609-44

Date Collected: 12/9/2008 15:50
Date Received: 12/12/2008
Matrix: Soil
Solids 95.11
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.53	mg/Kg	1	12/17/08 17:37

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	38.2	95.6

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 32.2 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____
DRO XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 145-5 (0-2)
Client Project ID: Row-203
Lab Sample ID: G609-44-5D
Lab Project ID: G609-44

Date Collected: 12/9/2008 16:00
Date Received: 12/12/2008
Matrix: Soil
Solids 91.29
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.62	mg/Kg	1	12/17/08 18:05

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	36	90.1

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 33.08 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB13228
Lab Project ID:

Date Collected:
Date Received:
Matrix: SOIL
Solids 100.00
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.25	mg/Kg	1	12/17/08 12:28

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	38.4	96

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 32 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

SGS Environmental Services, Inc.

QC Results for Total Petroleum Hydrocarbons

by **GC/FID**

Client Sample ID: Batch QC
Lab Sample ID: G609-46-9D
Batch ID: 13228

Analyzed By: EAW
Matrix: Soil
Solids 93.49

MS/MSD

Analyte	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC % #	Spiked MG/KG	MSD MG/KG	REC % #	RPD %
DRO	BQL	64.7	52.1	80.5	61.8	60.3	97.6	19.2

LCS

Analyte	Spiked MG/KG	Result MG/KG	REC % #	LIMITS Lower	LIMITS Upper
DRO	62.5	61	97.6	55.3	137

Reviewed By: MLD

SGS

CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

Locations Nationwide
- Alaska
- Ohio
- New Jersey
- West Virginia
- Hawaii
- Maryland
- North Carolina

www.us.sgs.com

090999

(1)

CLIENT: Hart & Hickman
CONTACT: David Graham PHONE NO.(704) 586-0007
PROJECT: ROW-203 SITE/PWSID#:
REPORTS TO: David Graham E-MAIL: dgraham@harthickman.com
FAX NO.:( )
INVOICE TO: Hart & Hickman QUOTE #
P.O. NUMBER ROW-203

SGS Reference: C609-44

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	(3) Analysis Required: TPH EPA 8015B GRO/DRO	REMARKS
	✓ 145-1 (6-8)	12/9/08	1510	SOIL	3	G	X	
	✓ 145-2 (6-8)	12/9/08	1525	SOIL	3	G	X	
	✓ 145-3 (6-8)	12/9/08	1535	SOIL	3	G	X	
	✓ 145-4 (6-8)	12/9/08	1550	SOIL	3	G	X	
	145-5 (0-2)	12/9/08	1600	SOIL	3	G	X	
	[redacted]							

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
Grant Barrier / H&H	12/11/08	1500		12/12/08	10:15
Relinquished By: (2)	Date	Time	Received By:	Date	Time
Relinquished By: (3)	Date	Time	Received By:	Date	Time
Relinquished By: (4)	Date	Time	Received By:	Date	Time

(4)

Shipping Carrier:
Shipping Ticket No:
Samples Received Cold? (Circle) YES NO
Temperature °C: 5.2
Special Deliverable Requirements:
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Special Instructions:
Requested Turnaround Time:
☐ RUSH _____ Date Needed ☐ STD

SGS Environmental Services, Inc.

N.C. Certification #481

☐ 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
☐ 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557
☐ 1270 Greenbrier Street Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

White - Retained by Lab
Yellow - Returned with Report
Pink - Retained by Sampler