

**Preliminary Site Assessment**  
**Toyota of Boone Property Parcel #51**  
**Boone, Watauga County, NC**

**State Project U-4020**  
**WBS Element # 35015.1.1**  
**H&H Job No. ROW-148**  
**May 29, 2008**



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  
Toyota of Boone Property Parcel #51  
Boone, Watauga County, North Carolina  
H&H Project ROW-148**

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**Preliminary Site Assessment Report  
Toyota of Boone Property Parcel #51  
Boone, Watauga County, North Carolina  
H&H Project ROW-148**

**1.0 Introduction**

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Toyota of Boone property (Parcel #51) located at 665 East King Street in Boone, Watauga County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with the scope of work outlined in our February 29, 2008 proposal.

The purpose of this assessment was to determine the presence or absence of impacted soil at the subject property in the proposed construction areas related to the widening of US Highway 421 (State Project U-4020). 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 US Highway 421 widening area near the Toyota of Boone property is attached as Appendix A.

Based on information provided by NC DOT and property neighbors, the subject site was reported to be a gas station at some unspecified time in the past. According to an Environmental Data Resources (EDR) report for the site vicinity, the property does not appear on the North Carolina Underground Storage Tank (UST) database and H&H did not observe surface evidence of current USTs or of a previous UST removal on the property.

**2.0 Site Assessment**

Soil Assessment Field Activities

H&H mobilized to the Toyota of Boone property on April 8, 2008 to advance 9 soil borings (51-1 through 51-9) by direct push technology (DPT). Prior to advancing the soil borings, H&H reviewed a geophysical survey performed by Schnabel Engineering (Schnabel) on March 11, 2008. Schnabel utilized ground penetrating radar (GPR) and time domain electromagnetic (TDEM) technology to identify geophysical anomalies and potential USTs at the site. The Schnabel results indicated magnetic anomalies on the southeastern portion of the property as two potential USTs. Follow-up

with GPR also showed evidence of two potential USTs. Schnabel estimated the UST sizes to be 1,000-gal and 4,000-gal. There is no surface evidence of the USTs. The USTs appear to be situated on both sides of the proposed utility easement line. Schnabel's report including a site map depicting the results of the GPR and TDEM results is included in Appendix B.

Prior to conducting soil borings, utilities were marked by NC One Call and by DOT's contractor, Vaughn and Melton. Borings were also cleared of potential utilities to 5 foot depth by hand auger. H&H utilized Geologic Exploration of Statesville, North Carolina to advance soil borings 51-1 through 51-9 by DPT (see Figure 2). The borings were installed to depths of 10 to 12 ft. To facilitate the selection of soil samples for laboratory analysis from these borings, soil 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, a soil sample from each boring that exhibited the highest reading on the OVA was selected for laboratory analysis. Soil boring logs are included in Appendix C.

H&H submitted 9 samples (51-1 @ 5-7 ft; 51-2 @ 5-7 ft; 51-3 @ 2-5 ft; 51-4 @ 2-5 ft; 51-5 @ 0-2 ft; 51-6 @ 0-2 ft; 51-7 @ 0-2 ft; 51-8 @ 0-2 ft; and 51-9 @ 0-2 ft). Soil samples are identified by the NC DOT Parcel number, soil boring, and the depth interval in feet of sample collection. Samples were sent to Prism Laboratories Inc. of Charlotte, North Carolina, under standard chain-of-custody procedure, for analysis of total petroleum hydrocarbons (TPH) for gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015B. Sample depths and analytical results are summarized in Table 1. Laboratory analytical data sheets for Parcel 51 soil samples and chain-of-custody documentation for this site are provided in Appendix D. The chain-of-custody form includes samples collected from other properties during the same mobilization. The analytical results are discussed below.

### **3.0 Analytical Results**

Target analytes were detected in the soil samples collected from Parcel 51. Low concentrations of TPH GRO and DRO were detected in eight of the nine soil samples analyzed. TPH DRO concentrations were detected in samples 51-2 (5-7 ft), 51-4 (2-5 ft), 51-5 (0-2 ft), 51-6 (0-2 ft), 51-7 (0-2 ft), 51-8 (0-2 ft), and 51-9 (0-2 ft) above the NC DENR Action Level of 10 mg/kg. TPH GRO

concentrations were detected above NC DENR Action Levels in 51-2 (5-7 ft), 51-3 (2-5 ft), 51-5 (0-2 ft), and 51-6 (0-2 ft).

Based on laboratory analytical results and OVA readings, widespread low level TPH concentrations are situated on Parcel 51 between the existing curb of East King Street and the proposed utility easement line. H&H estimates that there are a total of 1,900 cubic yards (2,600 tons) of impacted soil above 10 ft at Parcel 51. The impacted soil is situated between the existing northern curb of East King Street and the proposed utility easement line. DOT plans indicate a proposed fill of 1.5 to 2 ft in this area. Because this is a fill area, most of the impacted soil will not likely be disturbed, except for utility and piping installation work. Of the above impacted soil amount, H&H estimates that 250 cubic yards (350 tons) of impacted soil will be removed during installation of the proposed drainage pipe and catch basin. Additional impacted soil will be generated by any soil grading work below the existing grade and during any utility line installations. Impacted soil that is removed should be properly managed and disposed at a permitted facility.

Two USTs appear to be present within the proposed utility easement area. Soil impacts were detected near these USTs in borings 51-2 (5-7 ft) and 51.7 (0-2 ft). These USTs and their contents should be removed and disposed in accordance with NCDENR regulations.

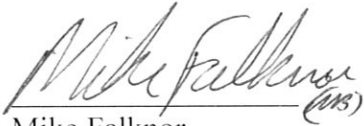
#### **4.0 Summary and Regulatory Considerations**

H&H has reviewed Geophysical survey results and collected soil samples at Parcel 51. Two USTs appear to be present within the proposed utility easement area. Analytical results and OVA readings indicate widespread low level concentrations of TPH GRO and TPH DRO above NC DENR Action Levels. H&H estimates that there are a total of 1,900 cubic yards (2,600 tons) of impacted soil above 10 ft at Parcel 51. The impacted soil is situated between the existing northern curb of East King Street and the proposed utility easement line. DOT plans indicate a proposed fill of 1.5 to 2 ft in this area. Because this is a fill area, most of the impacted soil will not likely be disturbed by the road work. Of the above impacted soil amount, H&H estimates that 250 cubic yards (350 tons) of impacted soil will be removed during installation of a proposed drainage pipe and catch basin. Additional impacted soil will be generated by any grading work below the existing grade, during potential UST removal work, and during any utility line installations. Impacted soil

that is removed should be properly managed and disposed at a permitted facility. The USTs and their contents should be removed and disposed in accordance with NCDENR regulations.

## 5.0 Signature Page

This report was prepared by:

Handwritten signature of Mike Falknor in cursive script, with the initials "MS" written in parentheses below the signature.

Mike Falknor  
Staff Geologist for  
Hart and Hickman, PC

This report was reviewed by:

Handwritten signature of Matt Bramblett in cursive script.

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

Table 1  
 Soil Analytical Results  
 Toyota of Boone Property, Parcel #51  
 Boone, North Carolina  
 H&H Job No. ROW-148

Sample ID Sample Depth (ft) Sample Date Units	51-1	51-2	51-3	51-4	51-5	51-6	51-7	51-8	51-9	NC DENR Action Level (mg/kg)
	5-7 4/8/2008 (mg/kg)	5-7 4/8/2008 (mg/kg)	2-5 4/8/2008 (mg/kg)	2-5 4/8/2008 (mg/kg)	0-2 4/8/2008 (mg/kg)	0-2 4/8/2008 (mg/kg)	0-2 4/8/2008 (mg/kg)	0-2 4/8/2008 (mg/kg)	0-2 4/8/2008 (mg/kg)	
<b>TPH-DRO/GRO (8015B)</b>										
Diesel-Range Organics (DRO)	<9.9	<b>35</b>	<8.6	<b>55</b>	<b>55</b>	<b>56</b>	<b>51</b>	<b>30</b>	<b>17</b>	10
Gasoline-Range Organics (GRO)	<7.1	<b>13</b>	<b>11</b>	<6.5	<b>28</b>	<b>11</b>	<6.6	<6.0	<6.5	10

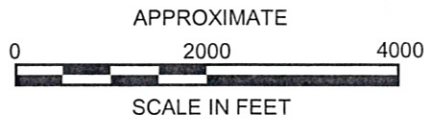
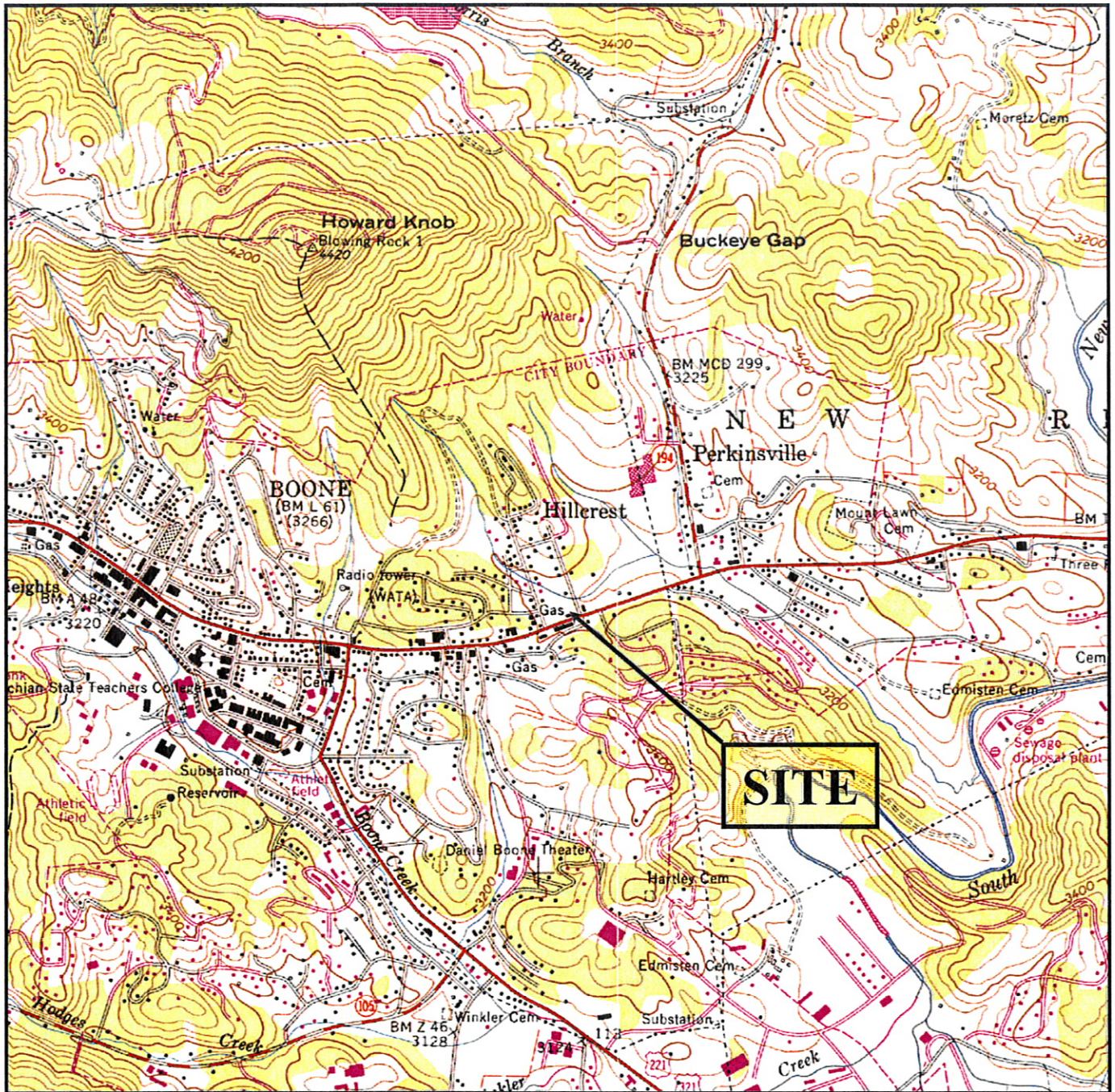
**Notes:**

EPA Method follows parameter in parenthesis

**Bold** denotes value in excess of NC DENR Action Levels

TPH=total petroleum hydrocarbons






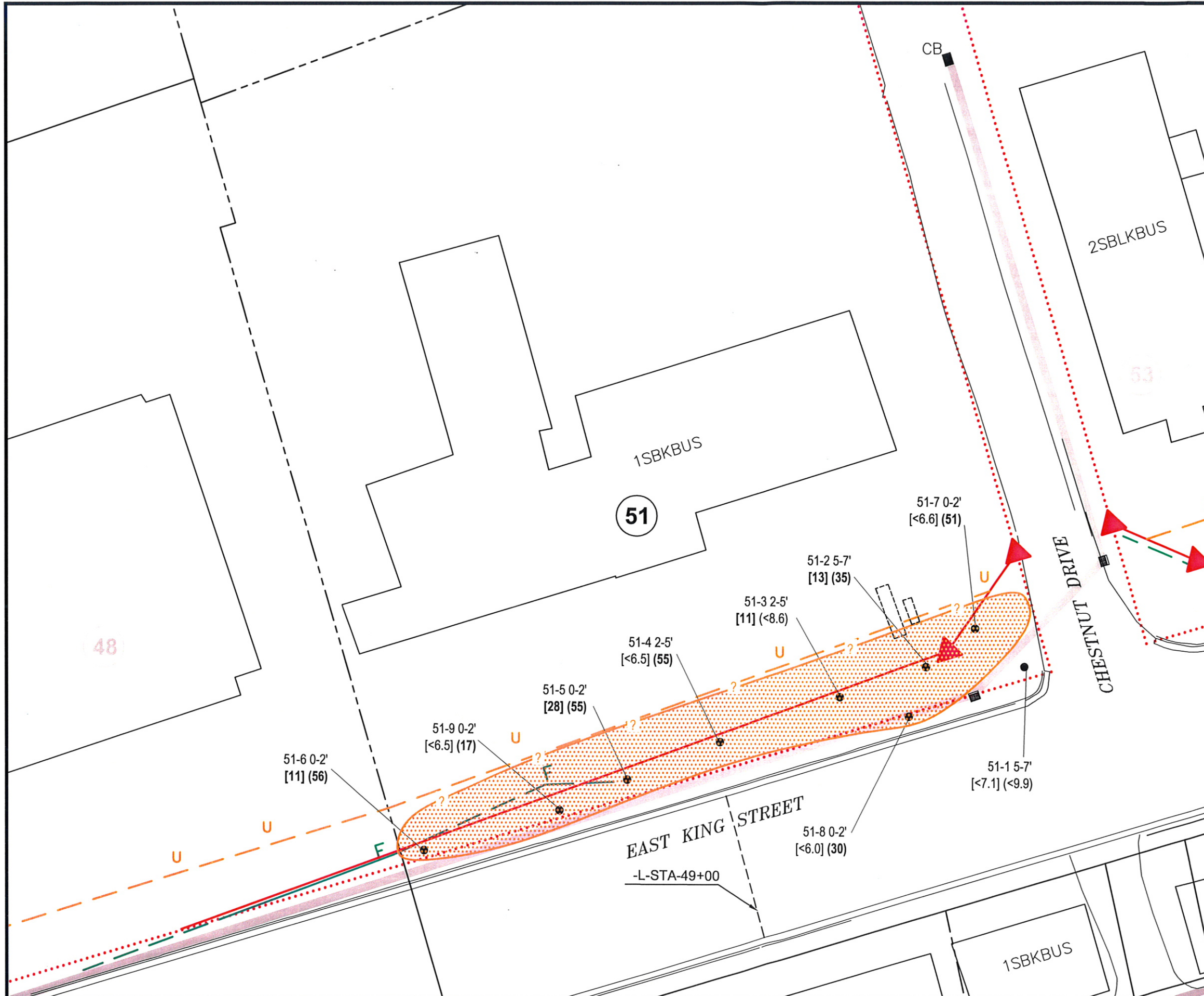
U.S.G.S. QUADRANGLE MAP

**BOONE, NC 1959  
PHOTOREVISED 1978**

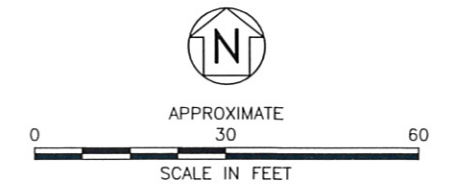
QUADRANGLE  
7.5 MINUTE SERIES (TOPOGRAPHIC)


TITLE	SITE LOCATION MAP		
PROJECT	TOYOTA OF BOONE PROPERTY PARCEL #51 BOONE, NORTH CAROLINA		
	 <b>Hart &amp; Hickman</b> 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 A PROFESSIONAL CORPORATION 704-586-0007 (p) 704-586-0370 (f)		
DATE:	4-28-08	REVISION NO:	0
JOB NO:	ROW-148	FIGURE NO:	1

S:\AAA-Master Projects\NC DOT Right-of-Way - ROW\ROW-148 Boone PSA\Figures\50-54 Advdg. 51\_5282008 124-45 PM 11



- LEGEND**
- PROPERTY LINE
  - ..... EXISTING RIGHT-OF-WAY
  - ▲ PROPOSED RIGHT-OF-WAY
  - F- PROPOSED FILL LINE
  - U- PROPOSED UTILITY EASEMENT
  - ▨ IMPACTED SOIL AREA
  - PROPOSED DRAINAGE PIPE
  - PROPOSED CATCH BASIN
  - SOIL BORING
  - POSSIBLE USTs IDENTIFIED BY SCHNABEL
  - 51 PARCEL NUMBER
  - [ ] = TPH GRO mg/kg
  - ( ) = TPH DRO mg/kg
  - BOLD DENOTES EXCEEDANCE OF NCDENR ACTION LEVEL**

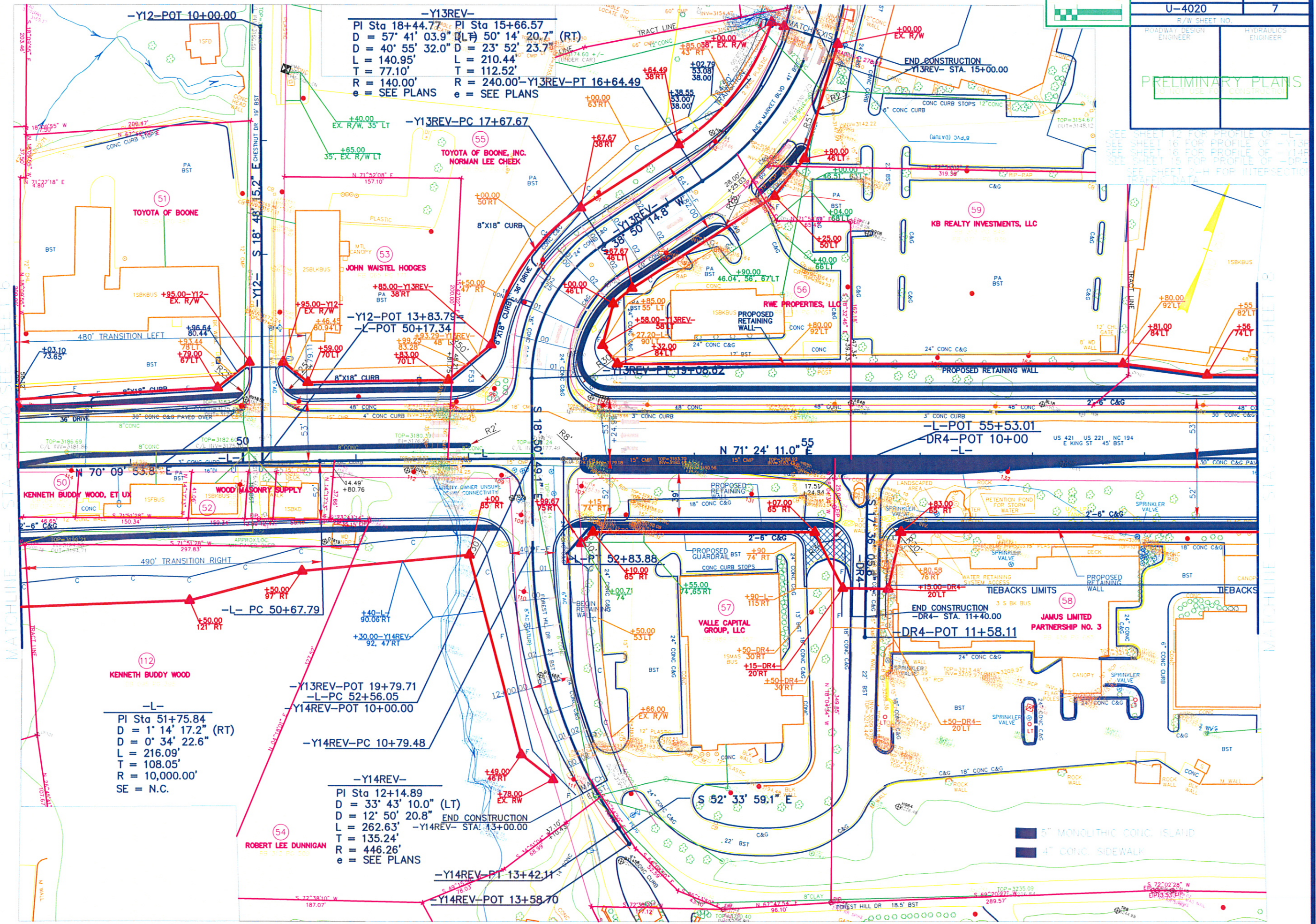


TITLE	
SITE MAP AND SOIL ANALYTICAL RESULTS	
PROJECT	
TOYOTA OF BOONE PROPERTY PARCEL # 51 BOONE, NORTH CAROLINA	
 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f)	
DATE: 4-24-08	REVISION NO. 0
JOB NO: ROW-148	FIGURE: 2

**Appendix A**  
**NC DOT Preliminary Plan**

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

SEE SHEET 12 FOR PROFILE OF -L-  
SEE SHEET 16 FOR PROFILE OF -Y13R-  
SEE SHEET 15 FOR PROFILE OF -Y14R-  
SEE SHEET 2-H FOR INTERSECTION  
DATA



**-Y13REV-**  
 PI Sta 18+44.77 PI Sta 15+66.57  
 D = 57' 41' 03.9" (RT) D = 23' 14' 20.7" (RT)  
 L = 140.95' L = 210.44'  
 T = 77.10' T = 112.52'  
 R = 140.00' R = 240.00' -Y13REV-PT 16+64.49  
 e = SEE PLANS e = SEE PLANS

**-Y13REV-PC 17+67.67**

**-Y12-POT 13+83.79**  
**-L-POT 50+17.34**

**-Y13REV-PT 19+06.02**

**-L-POT 55+53.01**  
**DR4-POT 10+00**  
**-L-**

**-Y13REV-POT 19+79.71**  
**-L-PC 52+56.05**  
**Y14REV-POT 10+00.00**

**-Y14REV-PC 10+79.48**

**-Y14REV-**  
 PI Sta 12+14.89  
 D = 33' 43' 10.0" (LT)  
 D = 12' 50' 20.8" END CONSTRUCTION  
 L = 262.63' -Y14REV- STA. 13+00.00  
 T = 135.24'  
 R = 446.26'  
 e = SEE PLANS

**-Y14REV-PT 13+42.11**  
**-Y14REV-POT 13+58.70**

**-L-**  
 PI Sta 51+75.84  
 D = 1' 14' 17.2" (RT)  
 D = 0' 34' 22.6"  
 L = 216.09'  
 T = 108.05'  
 R = 10,000.00'  
 SE = N.C.

5" MONOLITHIC CONC. ISLAND  
 4" CONC. SIDEWALK

**Appendix B**

**Schnabel Engineering Geophysical Survey Report**

April 28, 2008

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

RE: State Project: U-4020  
WBS Element: 35015.1.1  
County: Watauga  
Description: US 421 (King Street) from US 321 (Hardin Street) to east  
of NC 194 (Jefferson Road) in Boone

SUBJECT: Report on Geophysical Surveys of Parcel 51  
Schnabel Engineering Project No. 07210023.07

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 one 8.5x11 color figure and two 11x17 color figures.

## **1.0 INTRODUCTION**

Schnabel Engineering conducted geophysical surveys on March 11 and March 19, 2008, in the accessible areas of the proposed right-of-way (ROW) sections of Parcel 51 (Toyota of Boone Property) under our 2007 contract with the NCDOT. Parcel 51 is located at the northwest corner of the intersection US 421 (King Street) and Chestnut Drive. The work was conducted at the location indicated by 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 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 cultural features. Two possible UST's were located and marked on the ground at this site. Pictures of the locations of these possible UST's as marked in the field are shown in Figure 1.

Preliminary results were sent to David Graham and Matt Bramblett of Hart & Hickman on March 24, 2008.

## **3.0 DISCUSSION OF RESULTS**

The contoured EM61 data are shown on Figures 2 and 3. The EM61 early time gate results are plotted on Figure 2. The early time gate data provide the most sensitive detection of metal object targets, regardless of size. Figure 3 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 show several anomalies not attributed to known site features (Figures 1 and 2). These anomalies were surveyed with GPR, and the GPR data indicated the presence of two possible UST's located outside of the NCDOT right-of-way/easement on the eastern side of the parcel. The other anomalies are likely a result of vehicles parked close to the survey area. An example GPR image showing the reflections from the possible UST's is shown on Figures 1 and 2. Figures 1 and 2 also include the location of the possible UST's as marked in the field. The GPR data indicate that one of the possible UST's is buried about 1 to 2 feet below the ground surface, and it is about 5 feet in diameter and about 24 feet long, equivalent to a capacity of about 4000 gallons. The other possible UST is buried about 2 to 3 feet below the ground surface, and it is approximately 4 feet in diameter and 10 feet long, equivalent to a capacity of approximately 1000 gallons.

#### **4.0 CONCLUSIONS**

Our evaluation of the geophysical data collected on Parcel 51 of Project U-4020 in Boone, NC indicates the following:

- The geophysical data indicate the presence of two possible UST's outside of the NCDOT right-of-way/easement on Parcel 51. One of the possible UST's is about 4000-gallon capacity and is buried approximately 1 to 2 feet below ground surface. The other possible UST is about 1000-gallon capacity and is approximately about 2 to 3 feet below ground surface.



## 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,



Jeremy S. Strohmeyer, P.G.  
Project Manager

JW/JS/NB

Attachment: Figures (3)

FILE: G:\2007 PROJECTS\07210023 (NCDOT 2007 GEOPHYSICAL SERVICES) PHASE 07 (U-4020 - WATAUGA COUNTY) REPORT HART & HICKMAN\PARCEL 51 REPORT ON PARCEL 51.DOC



Parcel 51 – Toyota of Boone, looking north  
 UST's: 5' x 24', 4' x 10'



Parcel 51 – Toyota of Boone, looking east  
 UST's: 5' x 24', 4' x 10'

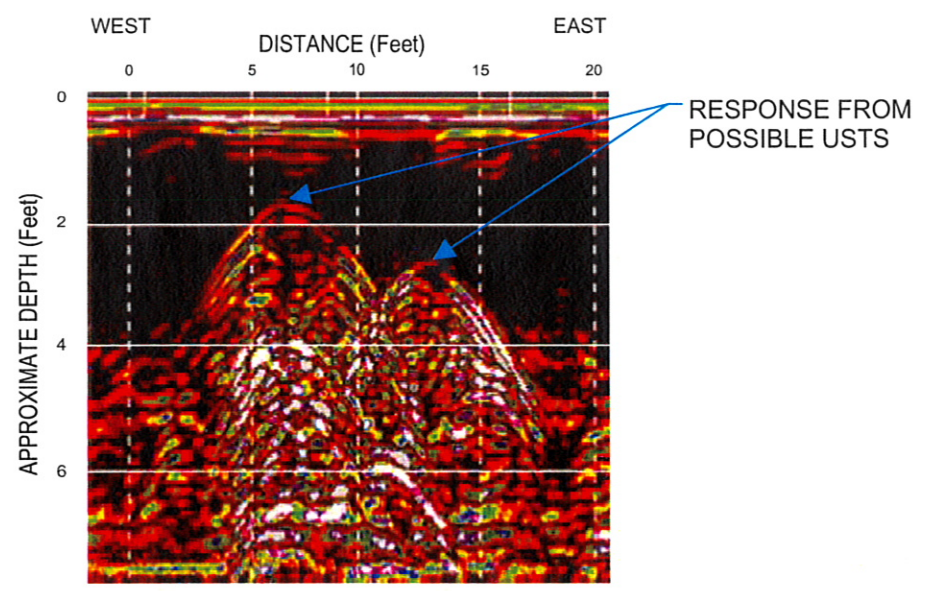
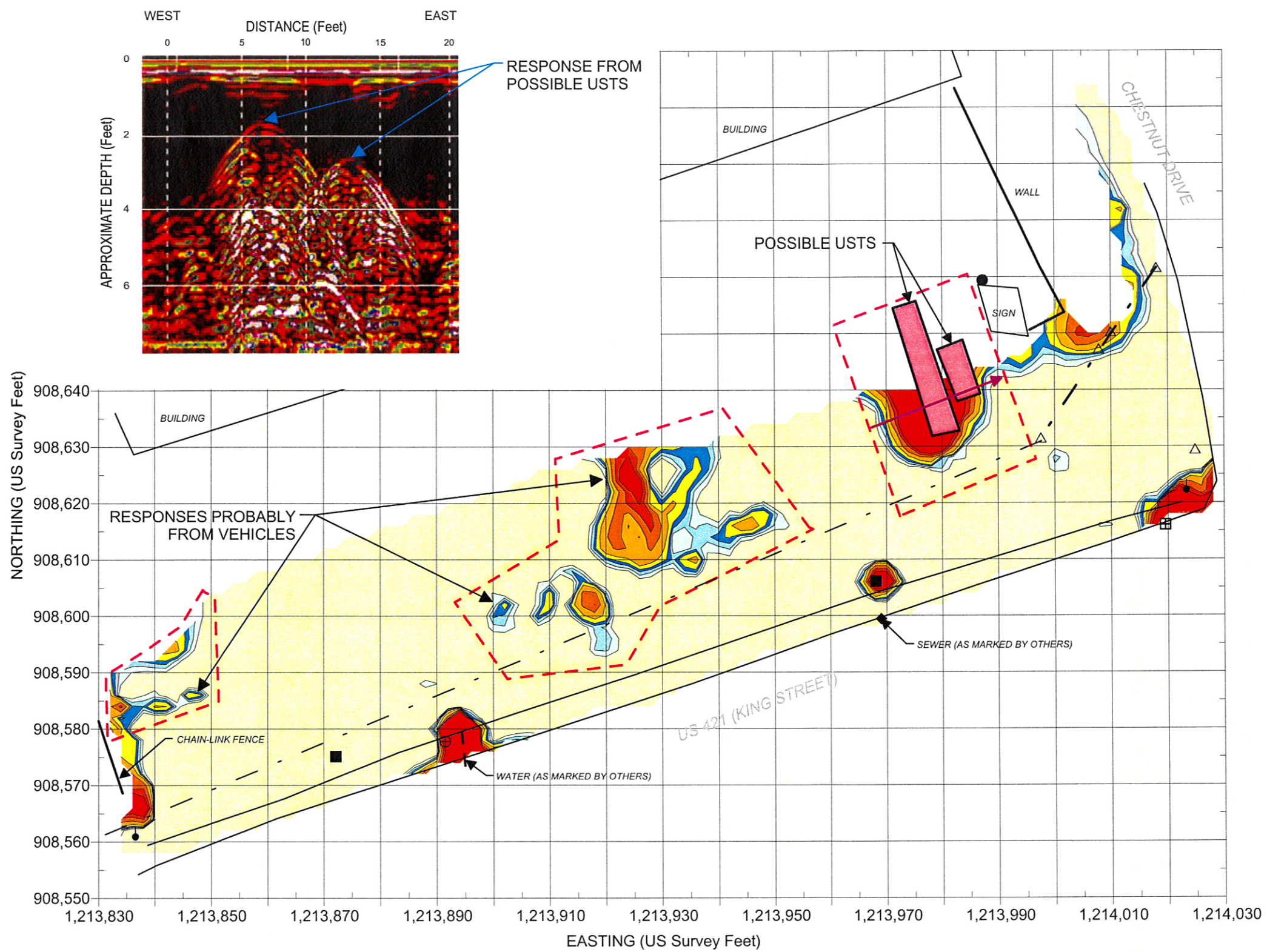


NC Department of Transportation  
 Geotechnical Engineering Unit

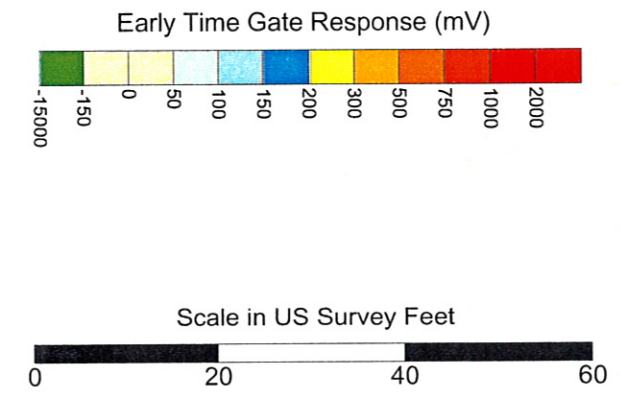
State Project No. U-4020  
 Watauga County, North Carolina

**PARCEL 51  
 PHOTOS OF POSSIBLE  
 UST LOCATIONS**

FIGURE 1



EXPLANATION	
	EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
	GUY WIRE
	SIGN
	METALLIC OBJECT
	NCDOT MARKER
	UTILITY POLE
	STORMWATER GRATE
	UTILITY MANHOLE
	MONITORING WELL
	LIGHTPOLE
	GPR SURVEY AREA
	LOCATION OF GPR SURVEY LINE SHOWN
	APPROXIMATE LOCATION OF POSSIBLE UTILITY (SOME MARKED IN FIELD)
	APPROXIMATE LOCATION OF POSSIBLE BURIED UST AS MARKED IN FIELD
	APPROXIMATE LIMITS OF NCDOT PROJECT



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 March 11, 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 March 19, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



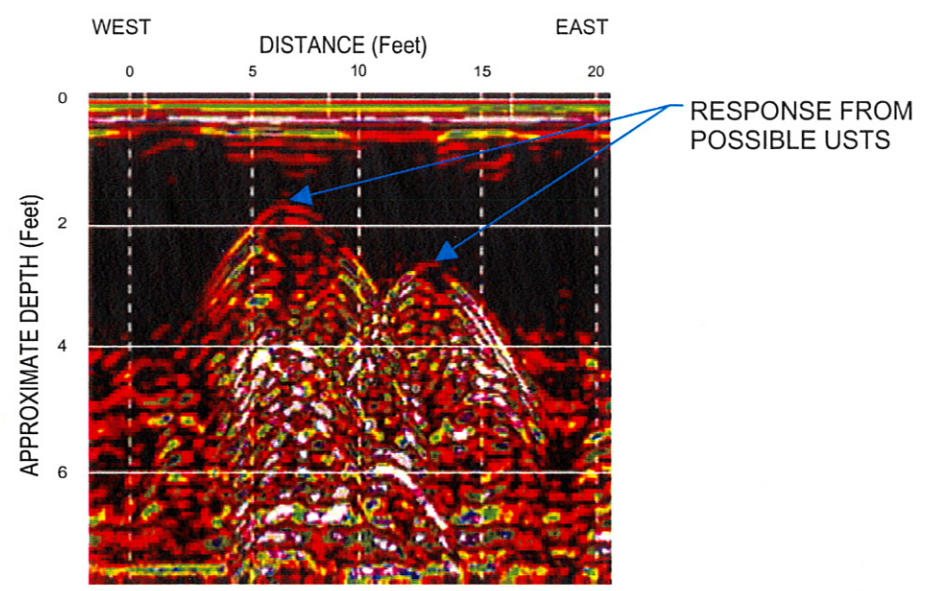
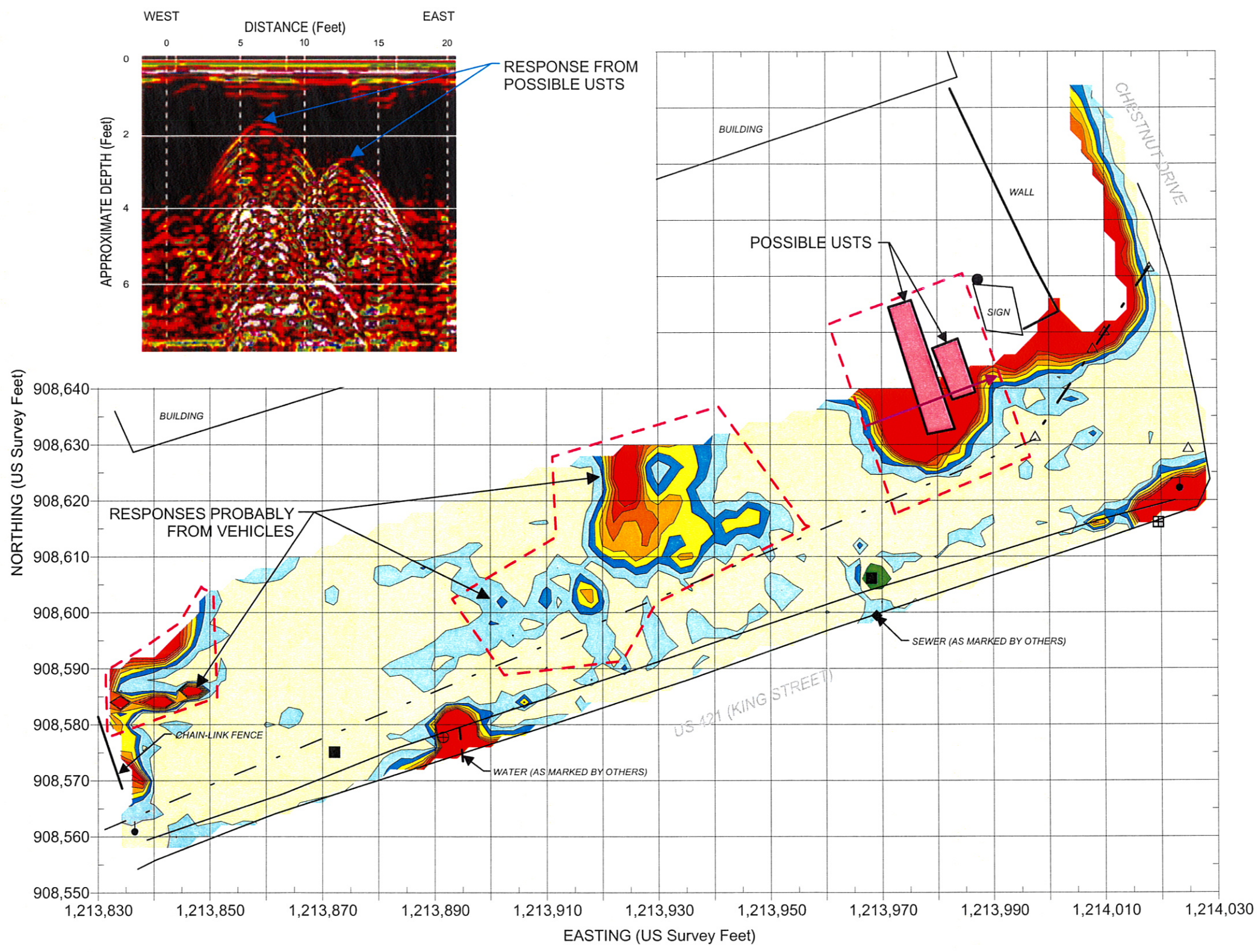
NC Department of Transportation  
Geotechnical Engineering Unit

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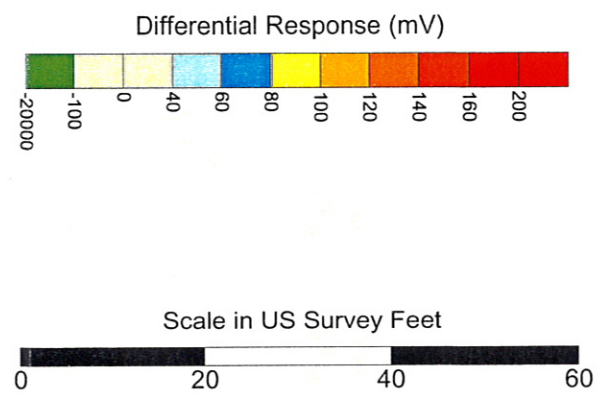
State Project No. U-4020  
Watauga County, North Carolina

**PARCEL 51  
EM61 EARLY TIME  
GATE RESPONSE**

FIGURE 2



EXPLANATION	
	EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
	GUY WIRE
	SIGN
	METALLIC OBJECT
	NCDOT MARKER
	UTILITY POLE
	STORMWATER GRATE
	UTILITY MANHOLE
	MONITORING WELL
	LIGHTPOLE
	GPR SURVEY AREA
	LOCATION OF GPR SURVEY LINE SHOWN
	APPROXIMATE LOCATION OF POSSIBLE UTILITY (SOME MARKED IN FIELD)
	APPROXIMATE LOCATION OF POSSIBLE BURIED UST AS MARKED IN FIELD
	APPROXIMATE LIMITS OF NCDOT PROJECT



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 pipes and tanks. The EM data were collected on March 11, 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 March 19, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



NC Department of Transportation  
Geotechnical Engineering Unit  
  
State Project No. U-4020  
Watauga County, North Carolina

**PARCEL 51  
EM61 DIFFERENTIAL  
RESPONSE**  
  
FIGURE 3

**Appendix C**  
**Soil Boring Logs**



# BORING NUMBER 51-1

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\INC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PS\ASIBORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Brown, sandy SILT, slightly moist with partially weathered rock fragments		0.0
2.5	75		0.1	1				2.5
5.0			0.3	1.2		Brown, sandy SILT with partially weathered rock fragments, slightly moist		5.0
7.5	75		0.4	1		Brown, sandy SILT with partially weathered rock fragments, slightly moist		7.5
10.0			0.9			Brown, sandy SILT with partially weathered rock fragments, saturated		10.0
						Bottom of borehole at 10.0 feet.		10.0
12.5								12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 10  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 5 to 7 ft for laboratory analysis



# BORING NUMBER 51-2

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Reddish brown, sandy SILT with partially weathered rock fragments		0.0
2.5	75		0.4	16.9		Dark brown/tan, clayey sandy SILT with some partially weathered rock fragments		2.5
5.0			1	13.2		Brown, sandy CLAY, damp		5.0
7.5	75					Orange/brown, sandy SILT with partially weathered rock fragments, slightly damp		7.5
10.0						Grey, sandy SILT, saturated		10.0
12.5	50					Bottom of borehole at 12.0 feet.		12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 5 to 7 ft for laboratory analysis



# BORING NUMBER 51-3

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\INC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Grey/brown, sandy SILT with partially weathered rock, dry		0.0
2.5	50		0.3	4.1		Grey/brown, sandy SILT with partially weathered rock, dry		2.5
5.0				5.9		Orange/grey, sandy SILT with partially weathered rock, dry		5.0
7.5	50			3.1		Grey, sandy SILT, wet		7.5
10.0				1.9		Grey, sandy SILT, saturated		10.0
12.5	50			1.9		Bottom of borehole at 12.0 feet.		12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 2 to 5 ft for laboratory analysis





# BORING NUMBER 51-4

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

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

**PROJECT:** Parcel 51

**JOB NUMBER:** ROW-148 (51)

**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\INC.DOT RIGHT-OF-WAY - ROW\ROW-148 BOONE PS\ASIBORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Orange/brown, sandy SILT, dry		0.0
2.5	75		0.3	0.5		Orange/brown, sandy SILT, dry		2.5
5.0				1.9		Orange/brown, sandy SILT, dry with some grey, clay, damp		5.0
7.5	50			1.7		Light orange/tan, fine sandy CLAY, very damp		7.5
10.0	25			1.8		Light orange/tan, fine sandy CLAY with partially weathered rock, wet		10.0
12.5				1.6		Bottom of borehole at 12.0 feet.		12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 2 to 5 ft for laboratory analysis



# BORING NUMBER 51-5

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY -ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0			0.3	33.8		Dark brown, silty SAND, dry		0.0
2.5	50					Dark brown, silty SAND, with some clay, damp		2.5
5.0				11.7				5.0
7.5	75			3.4		Light gray/orange, silty sandy CLAY, damp		7.5
10.0				2.4		Red/brown/orange, silty SAND, partially weathered rock, dry		10.0
12.5	25			1.4		Red/brown/orange, silty SAND, partially weathered rock, dry		12.5
15.0						Bottom of borehole at 12.0 feet.		15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
 Hand auger to 5 ft and sample collected from 0 to 2 ft for laboratory analysis



# BORING NUMBER 51-6

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\INC DOT RIGHT-OF-WAY -ROW-148 BOONE PS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0			0.3	24.4		Dark brown, sandy SILT with partially weathered rock, slightly damp		0.0
2.5	50					Orange/tan, silty SAND with partially weatered rock, slightly damp		2.5
5.0						Grey, sandy CLAY, damp		5.0
7.5	100					Light orange, sandy SILT with partially weathered rock		7.5
10.0	75					Light orange, sandy SILT with partially weathered rock		10.0
12.5						Bottom of borehole at 12.0 feet.		12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
 Hand auger to 5 ft and sample collected from 0 to 2 ft for laboratory analysis



# BORING NUMBER 51-7

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0			0.4	5.6		Light brown with red streaking, silty SAND, partially weathered rock, slightly damp		0.0
2.5	75					Light brown with red streaking, silty SAND, partially weathered rock, slightly damp		2.5
5.0						Gray, clayey sandy SILT, damp		5.0
7.5	75					Gray, clayey sandy SILT, damp		7.5
10.0						Gray/tan, partially weathered rock, saturated at 11 ft		10.0
12.5						Bottom of borehole at 12.0 feet.		12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 0 to 2 ft for laboratory analysis



# BORING NUMBER 51-8

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\INC DOT RIGHT-OF-WAY -ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0			0.4	2.5		Yellow/tan, mottled silty SAND		0.0
2.5	50			1.6		Dark brown/tan, sandy SILT, some partially weathered rock fragments		2.5
5.0				1.1		Brown, sandy SILT, damp		5.0
7.5	50					Orange/brown, sandy SILT, very damp at 11 ft		7.5
10.0				1.1				10.0
12.5						Bottom of borehole at 12.0 feet.		12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 12  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 0 to 2 ft for laboratory analysis



# BORING NUMBER 51-9

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

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

**PROJECT:** Parcel 51  
**JOB NUMBER:** ROW-148 (51)  
**LOCATION:** Boone, North Carolina

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:02 - S:\AAA-MASTER PROJECTS\INC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (51).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0			0.5	4.4		Dark brown/tan, sandy SILT with some red clay		0.0
2.5	75					Orange/tan, silty SAND with partially weathered rock		2.5
5.0				4.1				5.0
7.5	75			2.9		Grey, sandy SILT, damp		7.5
10.0				1.3		Orange, sandy SILT, saturated at 10 ft		10.0
10.0						Bottom of borehole at 10.0 feet.		10.0
12.5								12.5
15.0								15.0

**DRILLING CONTRACTOR:** Geologic Exploration  
**DRILL RIG/ METHOD:** 6620DT / Geoprobe  
**SAMPLING METHOD:** DPT Sleeves  
**LOGGED BY:** M. Falknor  
**DRAWN BY:**

**BORING STARTED:** 4/8/08  
**BORING COMPLETED:** 4/8/08  
**TOTAL DEPTH:** 10  
**SURFACE ELEV:**  
**DEPTH TO WATER:**

**Remarks:**  
Hand auger to 5 ft and sample collected from 0 to 2 ft for laboratory analysis

**Appendix D**

**Laboratory Analytical Report**



NC Certification No. 402  
 SC Certification No. 99012  
 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-1 (5-7)  
 Prism Sample ID: 211232  
 COC Group: G0408351  
 Time Collected: 04/08/08 9:20  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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**Percent Solids Determination**

Percent Solids	70.5	%			1	SM2540 G	04/14/08 14:15	mbarber	
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**Diesel Range Organics (DRO) by GC-FID**

Diesel Range Organics (DRO)	BRL	mg/kg	9.9	1.6	1	8015B	04/18/08 23:23	jvogel	Q31877
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Sample Preparation: 25.04 g / 1 mL 3545 04/16/08 16:00 wconder P21362

Surrogate	% Recovery	Control Limits
o-Terphenyl	64	49 - 124

**Sample Weight Determination**

Weight 1	5.68	g			1	GRO	04/17/08 0:00	athao	
Weight 2	5.63	g			1	GRO	04/17/08 0:00	athao	

**Gasoline Range Organics (GRO) by GC-FID**

Gasoline Range Organics (GRO)	BRL	mg/kg	7.1	4.4	50	8015B	04/16/08 7:31	wbradley	Q31784
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Surrogate	% Recovery	Control Limits
aaa-TFT	86	55 - 129

**Sample Comment(s):**

BRL = Below Reporting Limit

Values are reported down to the reporting limit only. No J-Flags applied.

The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.

All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543

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NC Certification No. 402  
 SC Certification No. 99012  
 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-2 (5-7)  
 Prism Sample ID: 211420  
 COC Group: G0408351  
 Time Collected: 04/08/08 7:20  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	75.4	%			1	SM2540 G	04/16/08 15:15	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	35	mg/kg	9.2	1.5	1	8015B	04/18/08 17:18	javogel	Q31787
Sample Preparation:			25.12 g	/	1 mL	3545	04/15/08 16:45	wconder	P21349
<b>Sample Weight Determination</b>									
Weight 1	5.20	g			1	GRO	04/17/08 0:00	athao	
Weight 2	6.58	g			1	GRO	04/17/08 0:00	athao	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	13	mg/kg	6.6	4.2	50	8015B	04/19/08 21:52	grappaccioli	Q31853

Surrogate	% Recovery	Control Limits
aaa-TFT	90	55 - 129

**Sample Comment(s):**

*BRL = Below Reporting Limit  
 Values are reported down to the reporting limit only. No J-Flags applied.  
 The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.  
 All results are reported on a dry-weight basis*

Angela D. Overcash, V.P. Laboratory Services



NC Certification No. 402  
 SC Certification No. 99012  
 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-3 (2-5)  
 Prism Sample ID: 211233  
 COC Group: G0408351  
 Time Collected: 04/08/08 9:35  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	81.1	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.6	1.4	1	8015B	04/18/08 23:59	javogel	Q31877
Sample Preparation:			25.21 g	/	1 mL	3545	04/16/08 16:00	wconder	P21362
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	64	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	7.87	g			1	GRO	04/17/08 0:00	athao	
Weight 2	6.29	g			1	GRO	04/17/08 0:00	athao	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	11	mg/kg	6.2	3.9	50	8015B	04/16/08 8:02	wbradley	Q31784
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	113	55 - 129	

**Sample Comment(s):**

BRL = Below Reporting Limit  
 Values are reported down to the reporting limit only. No J-Flags applied.  
 The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.  
 All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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NC Certification No. 402  
 SC Certification No. 99012  
 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-4 (2-5)  
 Prism Sample ID: 211234  
 COC Group: G0408351  
 Time Collected: 04/08/08 9:45  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	76.9	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	55	mg/kg	8.9	1.4	1	8015B	04/19/08 0:35	javogel	Q31877
Sample Preparation:			25.6 g	/	1 mL	3545	04/16/08 16:00	wconder	P21362
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	82	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.21	g			1	GRO	04/17/08 0:00	athao	
Weight 2	6.50	g			1	GRO	04/17/08 0:00	athao	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.5	4.1	50	8015B	04/16/08 8:34	wbradley	Q31784
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	100	55 - 129	

**Sample Comment(s):**

BRL = Below Reporting Limit  
 Values are reported down to the reporting limit only. No J-Flags applied.  
 The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.  
 All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409



NC Certification No. 402  
 SC Certification No. 99012  
 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-5 (0-2)  
 Prism Sample ID: 211235  
 COC Group: G0408351  
 Time Collected: 04/08/08 9:55  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	70.7	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	55	mg/kg	9.7	1.6	1	8015B	04/19/08 2:22	jvoegel	Q31877
Sample Preparation:			25.44 g	/	1 mL	3545	04/16/08 16:00	wconder	P21362
					<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>		
					o-Terphenyl	73	49 - 124		
<b>Sample Weight Determination</b>									
Weight 1	5.98	g			1	GRO	04/17/08 0:00	athao	
Weight 2	6.34	g			1	GRO	04/17/08 0:00	athao	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	28	mg/kg	7.1	4.4	50	8015B	04/16/08 9:40	wbradley	Q31784
					<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>		
					aaa-TFT	108	55 - 129		

**Sample Comment(s):**

BRL = Below Reporting Limit  
 Values are reported down to the reporting limit only. No J-Flags applied.  
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 All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543

Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409



NC Certification No. 402  
 SC Certification No. 99012  
 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-6 (0-2)  
 Prism Sample ID: 211236  
 COC Group: G0408351  
 Time Collected: 04/08/08 10:05  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	76.0	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	56	mg/kg	9.2	1.5	1	8015B	04/19/08 2:58	jbogel	Q31877
Sample Preparation:			25.04 g	/	1 mL	3545	04/16/08 16:00	wcander	P21362
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	73	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	5.75	g			1	GRO	04/17/08 0:00	athao	
Weight 2	5.47	g			1	GRO	04/17/08 0:00	athao	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	11	mg/kg	6.6	4.1	50	8015B	04/16/08 10:59	wbradley	Q31784
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	99	55 - 129	

**Sample Comment(s):**

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# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-7 (0-2)  
 Prism Sample ID: 211237  
 COC Group: G0408351  
 Time Collected: 04/08/08 10:50  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	76.0	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	51	mg/kg	9.1	1.5	1	8015B	04/19/08 3:34	jvogel	Q31877
Sample Preparation:			25.43 g	/	1 mL	3545	04/16/08 16:00	wcorder	P21362
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	69	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	6.31	g			1	GRO	04/17/08 0:00	athao	
Weight 2	5.85	g			1	GRO	04/17/08 0:00	athao	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.6	4.1	50	8015B	04/16/08 11:35	wbradley	Q31784
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	118	55 - 129	

**Sample Comment(s):**

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# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-8 (0-2)  
 Prism Sample ID: 211238  
 COC Group: G0408351  
 Time Collected: 04/08/08 11:10  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	82.8	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	30	mg/kg	8.4	1.4	1	8015B	04/19/08 4:10	jvogel	Q31877
Sample Preparation:			25.19 g	/	1 mL	3545	04/16/08 16:00	wconder	P21362
					<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>		
					o-Terphenyl	74	49 - 124		
<b><u>Sample Weight Determination</u></b>									
Weight 1	6.18	g			1	GRO	04/17/08 0:00	athao	
Weight 2	7.00	g			1	GRO	04/17/08 0:00	athao	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.0	3.8	50	8015B	04/16/08 21:39	wbradley	Q31784
					<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>		
					aaa-TFT	80	55 - 129		

**Sample Comment(s):**

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# Laboratory Report

04/28/08

North Carolina Department of  
 Transportation  
 Attn: David Graham  
 c/o Hart and Hickman  
 2923 South Tryon St. Ste 100  
 Charlotte, NC 28203

Project Name: Boone PSAs  
 Project ID: ROW-148  
 Project No.: WBS# 35015.1.1  
 Sample Matrix: Soil

Client Sample ID: 51-9 (0-2)  
 Prism Sample ID: 211239  
 COC Group: G0408351  
 Time Collected: 04/08/08 11:17  
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	77.0	%			1	SM2540 G	04/14/08 14:15	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	17	mg/kg	9.0	1.5	1	8015B	04/19/08 4:45	jvogel	Q31877
Sample Preparation:			25.23 g	/	1 mL	3545	04/16/08 16:00	wconder	P21362
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	71	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.27	g			1	GRO	04/17/08 0:00	athao	
Weight 2	4.90	g			1	GRO	04/17/08 0:00	athao	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.5	4.1	50	8015B	04/16/08 13:50	wbradley	Q31784
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	99	55 - 129	

**Sample Comment(s):**

*BRL = Below Reporting Limit*

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# PRISM LABORATORIES, INC.

Full Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
 Phone: 704/529-6364 • Fax: 704/525-0409

Client Company Name: HARTF HICKMAN  
 Report To/Contact Name: D. Graham  
 Reporting Address: 2023 S TAYLOR ST

Phone: 704-536-0007 Fax (Yes) (No):  
 Email (Yes) (No) Email Address: d.graham@hartfhickman.com  
 EDD Type: PDF  Excel  Other   
 Site Location Name: Boone Det  
 Site Location Physical Address: Boone, NC

# CHAIN OF CUSTODY RECORD

PAGE 3 OF 10 QUOTE # TO ENSURE PROPER BILLING:

Project Name: Row-148  
 Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)  
 \*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements  
 Invoice To:  
 Address:

## LAB USE ONLY

Samples INTACT upon arrival? YES NO N/A  
 Received ON WET ICE? Temp 1.2  
 PROPER PRESERVATIVES indicated?  
 Received WITHIN HOLDING TIMES?  
 CUSTODY SEALS INTACT?  
 VOLATILES rec'd W/OUT HEADSPACE?  
 PROPER CONTAINERS used?

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL  
 Certification: NELAC USACE FL NC  
 SC OTHER N/A  
 Water Chlorinated: YES NO  
 Sample Iced Upon Collection: YES NO

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER		PRESERVATIVES	ANALYSES REQUESTED	REMARKS	PRISM LAB ID NO.
				TYPE SEE BELOW	NO. SIZE				
55-1(5-7)	4/8/08	0810	soil	you	4	40ml none	X		211231
51-1(5-7)		0920			3		X		211232
51-3(2-5)		0935					X		211233
51-4(2-5)		0945					X		211234
51-5(0-2)		0955					X		211235
51-6(0-2)		1005					X		211236
51-7(0-2)		1050					X		211237
51-8(0-2)		1110					X		211238
51-9(0-2)		1117					X		211239
48-1(2-5)		1158					X		211240

PRISM USE ONLY

Site Arrival Time:  
 Site Departure Time:  
 Field Tech Fee:  
 Mileage:

PRESS DOWN FIRMLY - 3 COPIES

Additional Comments:  
 Date: 4/11/08 Military/Hours: 2120  
 Date: 4/11/08  
 Date: 4/11/08 COC Group No. 60403351  
 Received By: (Signature) [Signature]  
 Received By: (Signature) [Signature]  
 Received For Prism Laboratories By: [Signature]  
 Method of Shipment:  Hand-delivered  Prism Field Service  Other  
 NPDES:  NC  SC  NC  SC  NC  SC  
 DRINKING WATER:  NC  SC  NC  SC  
 SOLID WASTE:  NC  SC  NC  SC  
 RCRA:  NC  SC  NC  SC  
 CERCLA:  NC  SC  NC  SC  
 LANDFILL:  NC  SC  NC  SC  
 OTHER:  NC  SC

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

\*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic T1 = Teflon-lined Can VOA = Volatile Organics Analysis (Zero Head Space)



Full Service Analytical & Environmental Solutions

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Phone: 704/529-6364 • Fax: 704/525-0409

Client Company Name: HSH  
Report To/Contact Name: \_\_\_\_\_  
Reporting Address: \_\_\_\_\_

# CHAIN OF CUSTODY RECORD

PAGE \_\_\_ OF \_\_\_ QUOTE # TO ENSURE PROPER BILLING:

Project Name: \_\_\_\_\_  
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)  
\*Please ATTACH any project specific reporting (QC LEVEL I II III IV)  
provisions and/or QC Requirements  
Invoice To: \_\_\_\_\_  
Address: \_\_\_\_\_

## LAB USE ONLY

Samples INTACT upon arrival? YES NO N/A  
Received ON WET ICE? Temp \_\_\_\_\_  
PROPER PRESERVATIVES indicated? \_\_\_\_\_  
Received WITHIN HOLDING TIMES? \_\_\_\_\_  
CUSTODY SEALS INTACT? \_\_\_\_\_  
VOLATILES rec'd W/OUT HEADSPACE? \_\_\_\_\_  
PROPER CONTAINERS used? \_\_\_\_\_

Phone: \_\_\_\_\_ Fax (Yes) (No): \_\_\_\_\_  
Email (Yes) (No) Email Address: \_\_\_\_\_  
EDD Type: PDF \_\_\_\_\_ Excel \_\_\_\_\_ Other \_\_\_\_\_  
Site Location Name: \_\_\_\_\_  
Site Location Physical Address: \_\_\_\_\_

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL  
Certification: NELAC \_\_\_\_\_ USACE \_\_\_\_\_ FL \_\_\_\_\_ NC \_\_\_\_\_  
SC \_\_\_\_\_ OTHER \_\_\_\_\_ N/A \_\_\_\_\_  
Water Chlorinated: YES \_\_\_\_\_ NO \_\_\_\_\_  
Sample Iced Upon Collection: YES \_\_\_\_\_ NO \_\_\_\_\_

CLIENT DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER		PRESERVATIVES	ANALYSES REQUESTED		REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO. SIZE		PRO	GR		
53-4 (5-7)	4/7/08	1745	Soil	VOA/GC	3 40ml 4oz	Meath	X	X		211413
53-5 (5-7)	4/7/08	1715	Soil	I	I	I	X	X		211419
51-a (5-7)	4/6/08	0720	Soil	I	I	I	X	X		211420

PRISM USE ONLY

Site Arrival Time: \_\_\_\_\_  
Site Departure Time: \_\_\_\_\_  
Field Tech Fee: \_\_\_\_\_  
Mileage: \_\_\_\_\_

Additional Comments: HSH  
Samples not on C.O.C

Military/Hours \_\_\_\_\_  
Date \_\_\_\_\_  
Date \_\_\_\_\_  
Date \_\_\_\_\_  
COC Group No. 60408351

Sampler's Signature \_\_\_\_\_ Affiliation \_\_\_\_\_  
Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.  
Relinquished By: (Signature) \_\_\_\_\_ Received By: (Signature) \_\_\_\_\_  
Relinquished By: (Signature) \_\_\_\_\_ Received By: (Signature) \_\_\_\_\_  
Relinquished By: (Signature) \_\_\_\_\_ Received For Prism Laboratories By: \_\_\_\_\_  
Method of Shipment:  Fed Ex  UPS  Hand-delivered  Prism Field Service  Other \_\_\_\_\_  
NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

NPDES:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  
CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)  
LANDFILL:  NC  SC  NC  SC  NC  SC  NC  SC  
OTHER:  NC  SC  NC  SC  NC  SC  
SEE REVERSE FOR TERMS & CONDITIONS ORIGINAL