

AECOM Technical Services of North Carolina, Inc.  
701 Corporate Center Drive, Suite 475, Raleigh, North Carolina 27607  
T 919.854.6200 F 919.854.6259 www.earthtech.aecom.com

October 7, 2009

Mr. Ethan Caldwell  
North Carolina Department of Transportation  
Geotechnical Engineering Unit  
1589 Mail Service Center  
Raleigh, North Carolina 27699-1589

Reference: Preliminary Site Assessment  
Linda Fulcher Property (Parcel #7)  
5569 NC 211  
West End, Moore County, North Carolina  
NCDOT Tip No. R-2812  
WBS Element 34504.1.1  
AECOM Project No. 114365

Dear Mr. Caldwell:

AECOM Technical Services of North Carolina, Inc., (AECOM) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated August 28, 2009, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated August 28, 2009. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for laboratory analysis, and reviewing applicable North Carolina Department of Environment and Natural Resources (NCDENR) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

### **Location and Description**

The Linda Fulcher Property (Parcel #7) is located at 5569 NC 211 in West End, Moore County, North Carolina. The property is situated approximately 1,500 feet south of the intersection of NC 211 and NC 73 (Figure 1). Based on information supplied by the NCDOT and the site visit, AECOM understands that the site is a former gas station that has been converted to a retail store (LeJardin Florals and Antiques). According to the NCDOT, several underground storage tanks (USTs) were removed from the property in 1993. However, no closure information was available for review and the locations of the USTS were unknown. The structures on the property consist of one block building and one residential home (Figure 2). The NCDOT has advised that the right-of-way/easement will affect the property from the front of the block building to existing NC 211. Because of the unknown location of the former USTs, the NCDOT requested a Preliminary Site Assessment. The scope of work as defined in the Request for Technical and Cost Proposal was to evaluate the site with respect to the presence of USTs and assess where

contamination exists on the property. An estimate of the quantity of impacted soil was to be provided.

AECOM reviewed the North Carolina Department of Environment and Natural Resources (NCDENR) Incident Management database and Incident Number FA-2829 has been assigned to the address. However, the responsible party indicated for the incident is the Colon and Jean Williams Estate, not Linda Fulcher. According to the NCDENR on-line database, no additional information was available. AECOM also reviewed the UST registration database to obtain UST ownership information. No USTs have been registered for the address.

### **Geophysical Survey**

Prior to AECOM's mobilization to the site, Pyramid Environmental conducted a geophysical survey as part of this project to evaluate if USTs were present on the proposed right-of-way/easement. The geophysical survey consisted of an electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, specifically USTs. A survey grid was laid out at the property with the X-axis oriented approximately parallel to NC 211 Road and the Y-axis oriented approximately perpendicular to NC 211. The grid was located to cover the accessible portions of the proposed right-of-way. The survey lines were spaced 5 feet apart. Magnetic data was collected continuously along each survey line with a data logger. After collection, the data was reviewed in the field with graphical computer software. Following the electromagnetic survey, a ground penetrating radar (GPR) survey was conducted to further evaluate any significant metallic anomalies if such a survey was considered necessary.

Access was available to all areas of the proposed right-of-way/easement on the property and several anomalies were detected with the geophysical survey. However, these anomalies were generally attributed to buried utility lines or conduits, or vehicles. The survey concluded that no metallic USTs were present on the proposed right-of-way/easement. A detailed report of findings and interpretations is presented in Attachment A.

### **Site Assessment Activities**

On September 17, 2009, AECOM mobilized to the site to conduct a Geoprobe<sup>®</sup> direct push investigation to evaluate soil conditions within the proposed right-of-way/easement. Continuous sampling using direct push technology (American Environmental Drilling of Aberdeen, North Carolina) resulted in generally good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in 5-foot long acetate sleeves inside the direct push sampler. Each of these sleeves was divided into 2-foot long sections for soil sample screening. Each 2-foot interval was placed in a resealable plastic bag and the bag was set aside for a sufficient amount of time to allow volatilization of organic compounds from the soil to the bag headspace. The probe of a flame ionization detector/photo ionization detector (FID/PID) was inserted into the bag and the reading was recorded. After terminating the sample hole, the soil

sample from the depth interval with the highest FID/PID reading was submitted to Prism Laboratories in Charlotte, North Carolina, using standard chain-of-custody procedures. The laboratory analyzed the soil samples for total petroleum hydrocarbons (TPH) in the diesel range organics (DRO) and gasoline range organics (GRO).

Eight direct-push holes (CR-1 through CR-8) were advanced within the proposed right-of-way to a depth of 15 feet as shown in Figure 2 and Attachment B. The borings were located to evaluate the entire right-of-way/easement (Attachment C). Borings CR-1 through CR-6 were located to evaluate the soil conditions along the right-of-way/easement line and borings CR-7 and CR-8 were placed to assess the horizontal extent of potential contamination. The lithology encountered by the direct-push samples generally was consistent throughout the site. The ground surface was covered with about 2 inches of topsoil. Below the surface to a depth of 6 feet was a medium brown, loose, medium- to coarse-grained sand. Below this sand was a medium to light brown clayey sand to sandy clay. All the borings were terminated at a depth of 15 feet and no groundwater was encountered to that depth. Based on field screening, soil samples were submitted for laboratory analysis, which are summarized in Table 1. Following the completion of each boring, it was backfilled in accordance with 15A NCAC 2C.

### **Analytical Results**

Based on the laboratory reports, summarized in Table 1 and presented in Attachment D, petroleum hydrocarbon compounds identified as DRO and/or GRO were detected in two of the eight soil samples collected from the site (Figure 3). Soil samples from borings CR-4 and CR-5 contained DRO or GRO concentrations above the method quantitation limit. According to the North Carolina Underground Storage Tank Section's Underground Storage Tank Closure Policy dated August 24, 1998, the action level for TPH analyses is 10 milligrams per kilogram (mg/kg) for both gasoline and diesel fuel. However, that agency's "Guidelines for Assessment and Corrective Action," dated April 2001, does not allow for use of TPH analyses for confirmation of the extent of petroleum contamination or its cleanup. As a result, while TPH concentrations are no longer applicable in determining if soil contamination is present, this analysis is a legitimate screening tool. Based on the TPH action level for UST closures, the assumed action level for this report is 10 mg/kg. The DRO concentration (44 mg/kg) and GRO concentration (1000 mg/kg) in the soil sample from boring CR-4, and the DRO concentration (61 mg/kg) and GRO concentration (40 mg/kg) in the soil sample from boring CR-5 were present at concentrations above the 10 mg/kg assumed action level.

### **Conclusions and Recommendations**

A Preliminary Site Assessment was conducted to evaluate the Linda Fulcher Property (Parcel #7) located at 5569 NC 211 in West End, Moore County, North Carolina. Eight soil borings were advanced to evaluate the soil conditions throughout the right-of-way/easement. The laboratory reports of the soil samples from these borings suggest that DRO and/or GRO concentrations were present above the assumed action level in two of the eight soil samples analyzed.

In reviewing the site data, it was noted that the area in which the DRO/GRO concentrations were present was the same area where the geophysical survey detected metallic conduits. AECOM contacted Pyramid Environmental to determine if the geophysical signatures could be interpreted as potential USTs. According to Pyramid Environmental, GPR was conducted in the area and the wave patterns observed were consistent with metal utilities or conduits approximately 1.5 feet below ground surface. The presence of petroleum contamination adjacent to the metal conduits suggests that the conduits may be product lines from the former UST area to a former pump island.

To evaluate the volume of soil requiring possible remediation, the soil samples with TPH concentrations above 10 mg/kg were considered. The analytical results of the soil samples suggest that the soil from borings CR-4 and CR-5 contained TPH concentrations identified as DRO and GRO above the assumed action level. A review of the field screening readings (Table 1) and Figure 3 suggests that the thickness of the potentially contaminated soil is at about 6 feet, but at a depth of about 8 to 14 feet. From Figure 3, AECOM has assumed that the contamination is confined to a small area around these borings. Based on the plume geometry, AECOM assumes a thickness of 6 feet and a measured affected area of about 1,000 ft<sup>2</sup>, which results in an estimated contaminated soil volume of approximately 222 cubic yards. This volume is estimated from TPH analytical data, which are no longer valid for remediation of sites reported after January 2, 1998. After this date, MADEP EPH/VPH and EPA Method 8260/8270 analyses will likely be required to confirm cleanup. However, these analyses do not correlate exactly with TPH data and, as a result, the actual volume of contaminated soil may be higher or lower.

The attached Figure 3 shows that a cut section is proposed for the area where the contaminated soil is located. The estimated 222 cubic yards of affected soil is below 8 feet of clean soil and would require removal of approximately 300 cubic yards of overburden to reach the contaminated soil. According to the NCDOT, the cut section will not penetrate to the 8-foot depth and the contaminated soil will likely not affect the project.

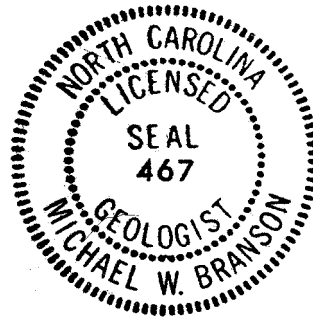
Mr. Ethan Caldwell  
October 20, 2009  
Page 5

AECOM appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the applicable action levels in the soil samples, AECOM recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Fayetteville Regional Office. If you have any questions, please contact me at (919)854-6238.

Sincerely,



Michael W. Branson, P.G.  
Project Manager



Attachments

c: Project File

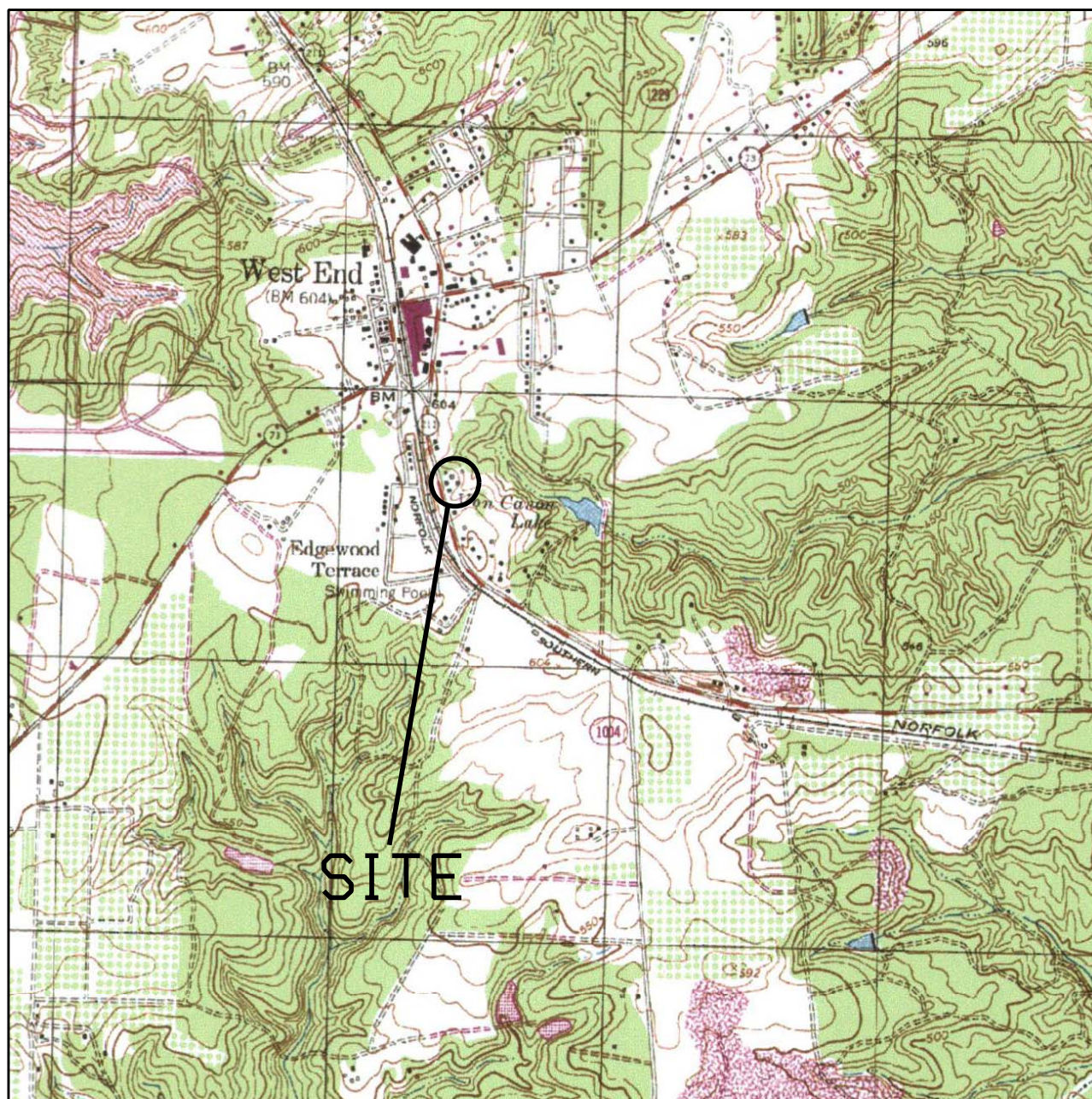
<p style="text-align: center;"><b>TABLE 1</b>  <b>SOIL FIELD SCREENING AND ANALYTICAL RESULTS</b>  <b>FULCHER PROPERTY (PARCEL #7)</b>  <b>WEST END, MOORE COUNTY, NORTH CAROLINA</b>  <b>NCDOT PROJECT NO. R-2812</b>  <b>WBS ELEMENT 34504.1.1</b>  <b>EARTH TECH PROJECT NO. 114365</b></p>					
LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ASSUMED ACTION LEVEL (mg/kg)
CR-1	0 - 2	0.77			
	2 - 4	0.86			
	4 - 6	1.07			
	6 - 8	0.81			
	8 - 10	0.93			
	10 - 12	0.82			
	12 - 14	1.09			
CR-2	14 - 15	1.23	CR-1	DRO (BQL) GRO (BQL)	10 10
	0 - 2	1.03			
	2 - 4	1.15	CR-2	DRO (BQL) GRO (BQL)	10 10
	4 - 6	1.02			
	6 - 8	0.95			
	8 - 10	0.93			
	10 - 12	1			
CR-3	12 - 14	1.06			
	14 - 15	1.05			
	0 - 2	0.38			
	2 - 4	0.59			
	4 - 6	0.73			
	6 - 8	1.02			
	8 - 10	1.02			
CR-4	10 - 12	1.74			
	12 - 14	2.73	CR-3	DRO (BQL) GRO (BQL)	10 10
	14 - 15	2.68			
	0 - 2	2.15			
	2 - 4	2.25			
	4 - 6	1.87			
	6 - 8	2.55			
CR-5	8 - 10	804			
	10 - 12	4530	CR-4	<b>DRO (44)</b> <b>GRO (1,000)</b>	10 10
	12 - 14	390			
	14 - 15	72			
	0 - 2	2.22			
	2 - 4	2.45			
	4 - 6	2.87			
CR-6	6 - 8	44			
	8 - 10	563			
	10 - 12	602	CR-5	<b>DRO (61)</b> <b>GRO (40)</b>	10 10
	12 - 14	17.5			
	14 - 15	8.37			
	0 - 2	2.01			
	2 - 4	2.32			
CR-7	4 - 6	2.36			
	6 - 8	1.63			
	8 - 10	1.92			
	10 - 12	2.06			
	12 - 14	2.49			
	14 - 15	3.14	CR-6	DRO (BQL) GRO (BQL)	10 10
	0 - 2	2.06			
DP-8	2 - 4	2.19			
	4 - 6	2.57			
	6 - 8	1.22			
	8 - 10	1.92			
	10 - 12	1.8			
	12 - 14	2.61			
	14 - 15	2.68	CR-7	DRO (BQL) GRO (BQL)	10 10
CR-8	0 - 2	1.7			
	2 - 4	2.18			
	4 - 6	2.64			
	6 - 8	1.15			
	8 - 10	1.9			
	10 - 12	1.91			
	12 - 14	3.37	CR-8	DRO (BQL) GRO (BQL)	10 10
14 - 15	1.85				

Soil samples were collected on September 17, 2009.

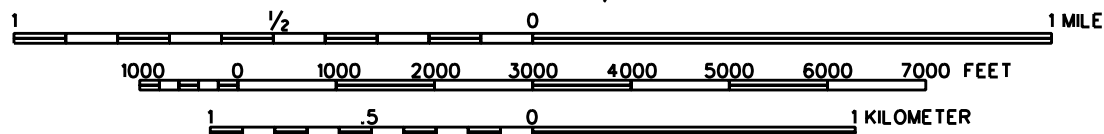
DRO - Diesel range organics.  
GRO - Gasoline range organics.  
BQL - Below quantitation limit.  
ppm - parts per million.  
mg/kg - milligrams per kilogram.

## **FIGURES**





SCALE 1:24,000



SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: WEST END, NC (REV 1982)

**AECOM**

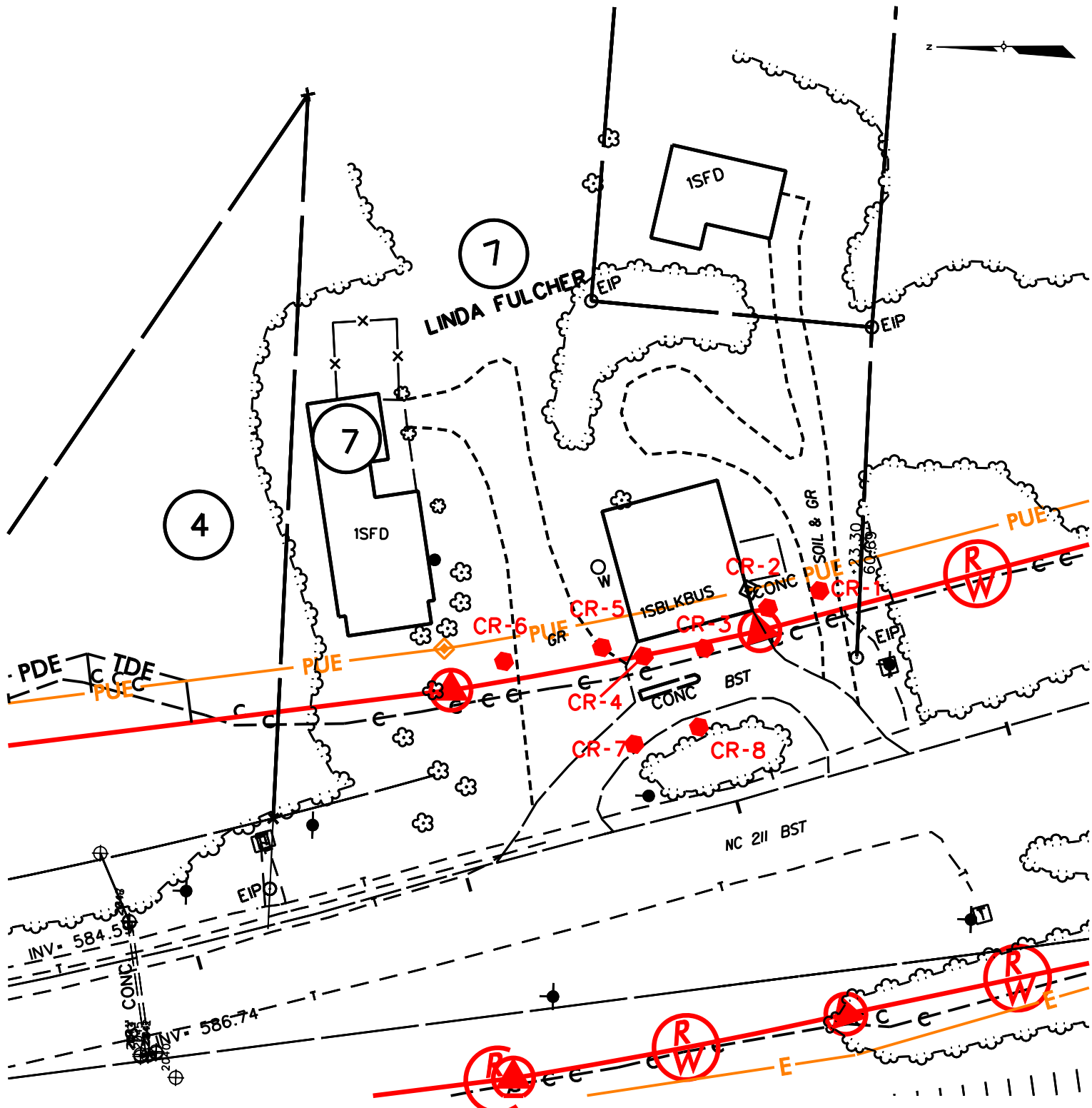
**FIGURE 1  
VICINITY MAP**

LINDA FULCHER PROPERTY (PARCEL •7)  
WEST END, MOORE COUNTY NORTH CAROLINA

SEPTEMBER 2009

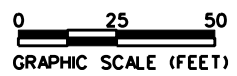
114365





**LEGEND**

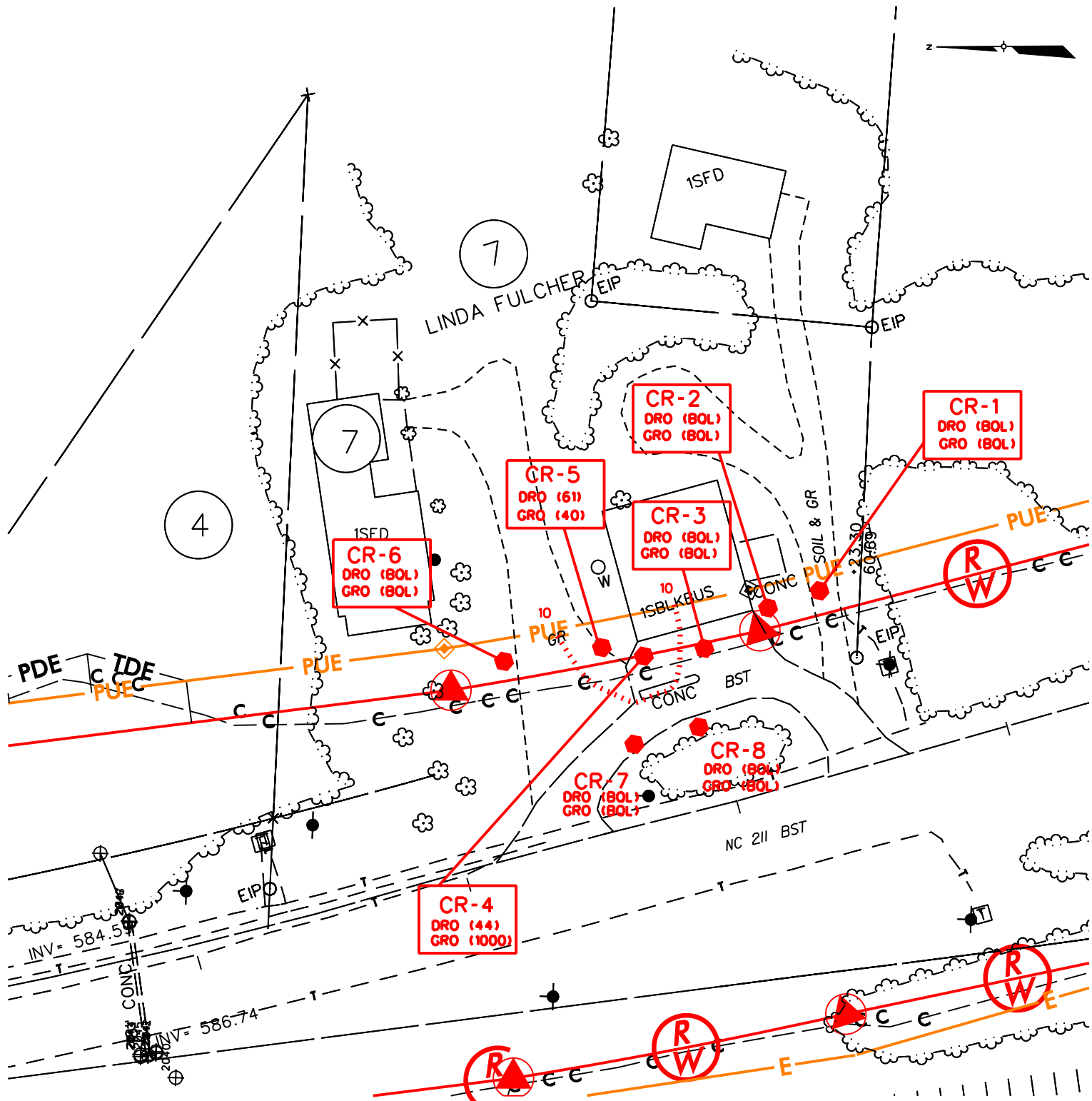
- ◆ CR-1
- ◆ SOIL SAMPLE LOCATION AND IDENTIFICATION



**AECOM**

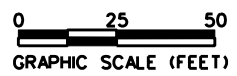
**FIGURE 2**  
**SITE MAP**  
 LINDA FULCHER PROPERTY (PARCEL #7)  
 WEST END, MOORE COUNTY, NORTH CAROLINA  
 SEPTEMBER 2009

114365



**LEGEND**

- CR-1** SOIL SAMPLE LOCATION AND IDENTIFICATION
- DRO (123)** TPH AS DIESEL FUEL IN MG/KG
- GRO (123)** TPH AS GASOLINE IN MG/KG
- BOL** BELOW QUANTITATION LIMIT
- 10 TPH ISOCONCENTRATION CONTOUR IN MG/KG



**AECOM**

**FIGURE 3**  
**SOIL SAMPLE ANALYTICAL RESULTS MAP**  
 LINDA FULCHER PROPERTY (PARCEL #7)  
 WEST END, MOORE COUNTY, NORTH CAROLINA  
 SEPTEMBER 2009 114 365

**ATTACHEMENT A**

## **GEOPHYSICAL INVESTIGATION REPORT**

*EM61 & GPR SURVEYS*

**FULCHER PROPERTY (PARCEL 7)  
West End, North Carolina**

**September 30, 2009**

**Report prepared for: Michael W. Branson, PG  
AECOM Environment  
701 Corporate Center Drive, Suite 475  
Raleigh, North Carolina 27607**

**Prepared by: \_\_\_\_\_  
Mika Trifunovic**

**Reviewed by: \_\_\_\_\_  
Douglas Canavello, PG**

**PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.  
P.O. Box 16265  
GREENSBORO, NC 27416-0265  
(336) 335-3174**

**AECOM Environment**  
**GEOPHYSICAL INVESTIGATION REPORT**  
**FULCHER PROPERTY (PARCEL 7)**  
**West End, North Carolina**

	<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1.0 INTRODUCTION .....		1
2.0 FIELD METHODOLOGY .....		1
3.0 DISCUSSION OF RESULTS .....		2
4.0 SUMMARY & CONCLUSIONS .....		3
5.0 LIMITATIONS .....		4

FIGURES

Figure 1	Geophysical Equipment & Site Photographs
Figure 2	EM61 Metal Detection - Bottom Coil Results
Figure 3	EM61 Metal Detection - Differential Results
Figure 4	GPR Image of Survey Line Y=75



## **1.0 INTRODUCTION**

Pyramid Environmental conducted geophysical investigations for AECOM Environment across the proposed Right-of-Way (ROW) portion of the Fulcher property (Parcel 7) located at 5569, NC- 211 in West End, North Carolina. The flat-lying site contains the LeJardin Florals & Antiques store and an occupied house surrounded primarily by grass yards and wooded terrain. The geophysical survey area consists of the property located between NC-211 and the front of the floral store building.

The geophysical investigation was conducted on September 8 and 11, 2009 to determine if unknown, metallic underground storage tanks (USTs) were present beneath the proposed ROW area. On the morning of September 8, 2009, AECOM Environment representative Mr. Michael Branson, PG identified the geophysical survey area to Pyramid Environmental personnel. The survey area has a maximum length and width of 250 feet and 65 feet, respectively. Photographs of the geophysical equipment used in this investigation and the geophysical survey area at the Fulcher property are shown in **Figure 1**.

## **2.0 FIELD METHODOLOGY**

Prior to conducting the geophysical investigation, a 10-foot by 20-foot survey grid was established across the geophysical survey area using measuring tapes, pin flags and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection surveys and ground penetrating radar (GPR) surveys. The EM survey was performed on September 8, 2009 using a Geonics EM61-MK1 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. All of the EM61 data were digitally collected at approximately 0.8 foot intervals along northerly-southerly, parallel survey lines spaced five feet apart. All of the data were downloaded to a computer and

reviewed in the office using the Geonics DAT61W and Surfer for Windows Version 7.0 software programs.

GPR surveys were conducted on September 11, 2009 across selected EM61 differential anomalies using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. Data were digitally collected in a continuous mode along X-axis and/or Y-axis survey lines, spaced 2.5 to 5.0 feet apart using a vertical scan of 512 samples, at a rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were collected down to a maximum depth of approximately 5 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. All of the GPR data were downloaded to a field computer and reviewed in the field and office using Radprint software.

Contour plots of the EM61 bottom coil and differential results are presented in **Figures 2 and 3**, respectively. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines, small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drum and UST-size objects and ignore the smaller insignificant metal objects.

Preliminary contour plots of the EM61 bottom coil and differential results for the survey area were emailed to Mr. Branson during the week of September 14, 2009.

### **3.0 DISCUSSION OF RESULTS**

GPR data acquired across the linear EM61 bottom coil anomalies intersecting grid coordinates X=180 Y=70 and X=204 Y=40 suggest the anomalies are in response to 8 or more buried utility lines or conduits. The probable buried lines or conduits appear to run in an easterly-westerly direction along the north side of the floral store and are buried within the depth interval of 0.5 to 1.5 feet below surface. However, the majority of the lines appear to terminate prior to crossing grid line

Y=60. Although the geophysical data cannot determine the identity of the conduits or lines, there is a possibility that one or more of the detected lines may be former product line(s). An image of GPR survey line Y=75 is presented in **Figure 4** which shows the high amplitude, hyperbolic, GPR reflections that are probably in response to the buried lines or conduits.

The low amplitude linear bottom coil anomaly intersecting grid coordinates X=135 Y=55 is also probably in response to a buried utility line or conduit. GPR data acquired across the bottom coil anomalies centered near grid coordinates X=45 Y=55 suggest the anomalies are probably in response to buried utility lines, conduits and/or miscellaneous metal debris. Refer to Figures 2 and 3 for detailed information on the geophysical results.

The EM61 results suggest that the proposed ROW area does not contain buried metallic USTs.

#### **4.0 SUMMARY & CONCLUSIONS**

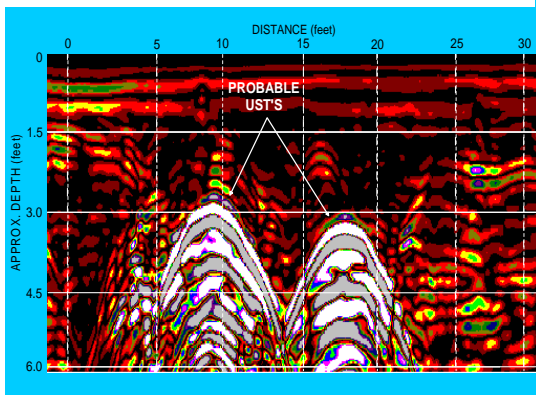
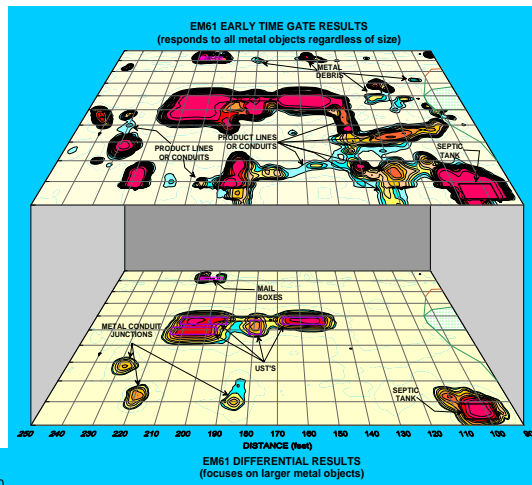
Our evaluation of the EM61 and GPR data collected across the proposed ROW portion of the Fulcher property (Parcel 7) located at 5569, NC-211 in West End, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the surveyed portion of the site.
- GPR data acquired across the linear EM61 bottom coil anomalies intersecting grid coordinates X=180 Y=70 and X=204 Y=40 suggest the anomalies are in response to 8 or more buried utility lines or conduits.
- The low amplitude linear bottom coil anomaly intersecting grid coordinates X=135 Y=55 is also probably in response to a buried utility line or conduit. GPR data acquired across the bottom coil anomalies centered near grid coordinates X=45 Y=55 suggest the anomalies are probably in response to buried utility lines, conduits and/or miscellaneous metal debris.

- The geophysical investigation suggests that the proposed ROW area does not contain buried, metallic USTs.

## **5.0 LIMITATIONS**

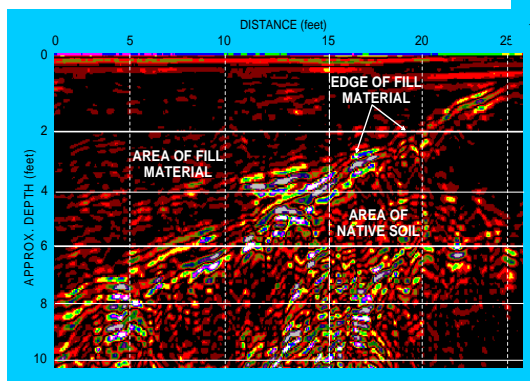
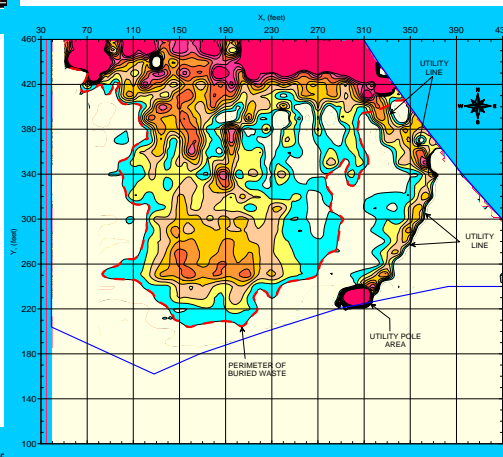
EM61 and GPR surveys have been performed and this report prepared for AECOM Environment in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determine that surveyed portion of the site does not contain buried metallic USTs, but that none were detected.



## FIGURES

(on the following pages)

Figures shown on this page are for esthetic purposes only and are not related to the geophysical results discussed in this report.





The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey across the proposed Right-of-Way portion of the Fulcher property on September 8, 2009.



The photographs show the SIR-2000 GPR system equipped with a 400 MHz antenna that were used to conduct the ground penetrating radar investigation at the Fulcher property on September 11, 2009.



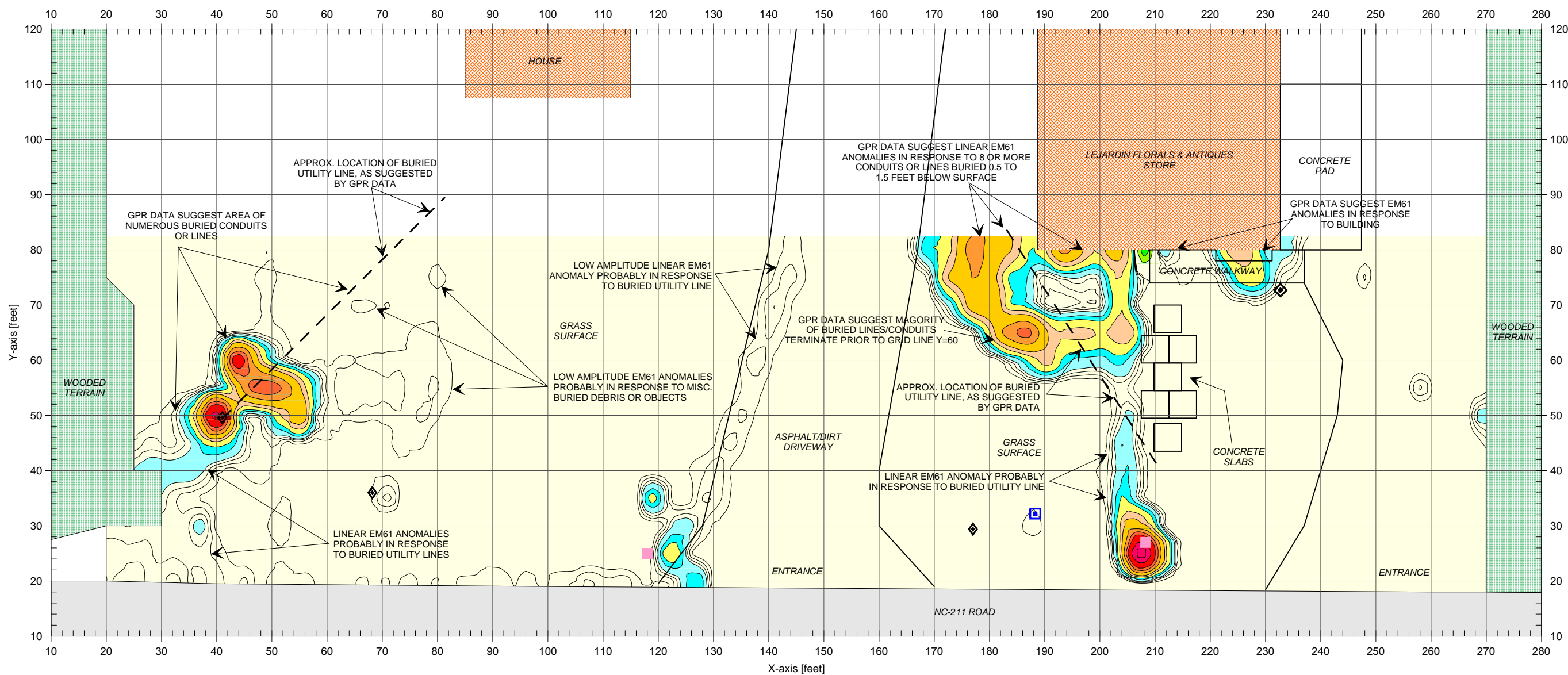
The photograph shows the Right-of-Way portion of the Fulcher property (Parcel 7). The photograph is viewed in an easterly direction.



CLIENT	AECOM ENVIRONMENT		DATE	09/28/09	DRAWN	MJD
SITE	FULCHER PROPERTY - PARCEL 7		LAY		CHKD	
CITY	WEST END	STATE	NORTH CAROLINA	ENG		
TITLE	GEOPHYSICAL RESULTS		NO	2009-235	PROJECT	

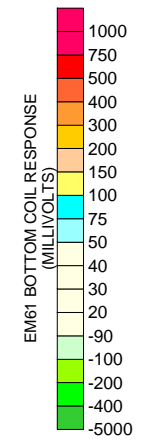
GEOPHYSICAL EQUIPMENT  
& SITE PHOTOGRAPHS

FIGURE 1



**LEGEND**

- SURVEY AREA: EM61 DATA ACQUIRED ALONG Y-AXIS TRENDING LINES SPACED 5 FEET APART
- BUILDING OR HOUSE
- WOODED TERRAIN
- ASPHALT ROAD
- ELECTRICAL OR UTILITY BOX
- PROPOSED RIGHT-OF-WAY MARKER
- MAIL BOX
- UTILITY POLE
- WATER METER BOX



Note: The contour plot shows the bottom coil (most sensitive) response of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The EM metal detection data were collected on September 8, 2009 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on September 11, 2009 using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

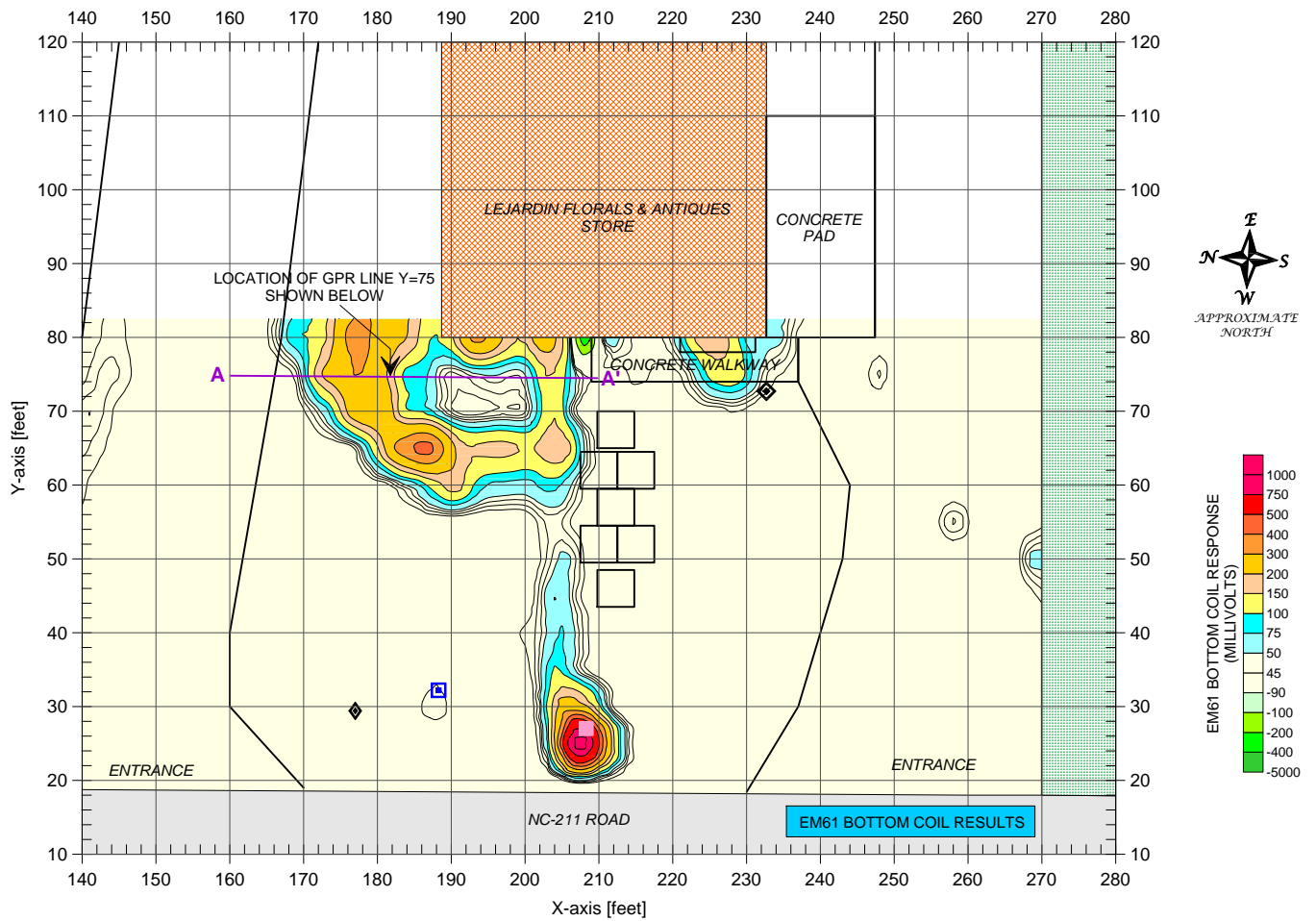
The geophysical investigation suggests the proposed ROW area does not contain buried metallic USTs.

CLIENT	AECOM ENVIRONMENT
SITE	FULCHER PROPERTY - PARCEL 7
CITY	WEST END
STATE	NORTH CAROLINA
TITLE	GEOPHYSICAL RESULTS
DATE	09/29/09
DWG	LAY
FIGURE	2009-235
MJD	
DRWN	
CHKD	

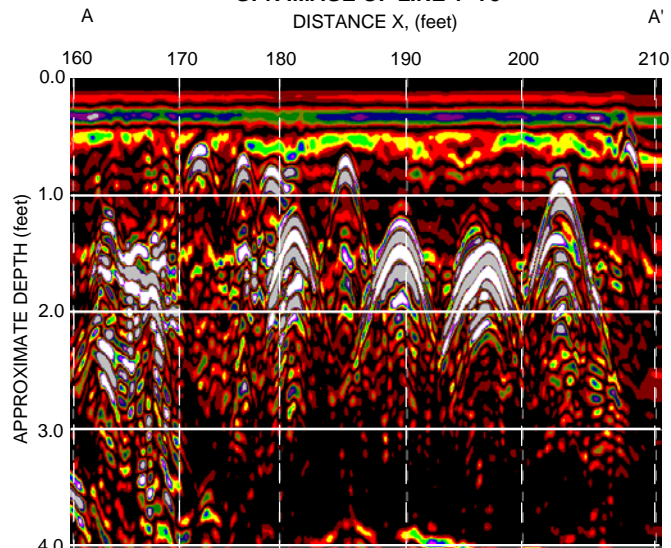








**GPR IMAGE OF LINE Y=75**



The image of GPR survey line Y=75 recorded high-amplitude hyperbolic reflections that are probably in response to 8 or more easterly-westerly trending, utility lines or conduits buried within the depth interval of 0.5 to 1.5 feet below surface. The solid purple line in the EM61 bottom coil results map represents the approximate location of GPR survey line Y=75.



CLIENT	AECOM ENVIRONMENT		DATE	09/28/09	DRWN	MJD
SITE	FULCHER PROPERTY - PARCEL 7		LAY		DATE	
CITY	WEST END	STATE	NORTH CAROLINA		DWG	
TITLE	GEOPHYSICAL RESULTS		NO.	2009-235	SCALE	

GPR IMAGE OF SURVEY LINE Y=75

**ATTACHMENT B**



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-1</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			0.77		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			0.86		AS ABOVE, DRY, NO ODOR.
			1.07		AS ABOVE, DRY, NO ODOR.
10.0			0.81		AS ABOVE, DRY, NO ODOR.
			0.93		MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, MOIST, NO ODOR.
			0.82		AS ABOVE, DRY, NO ODOR.
15.0			1.09		AS ABOVE, DRY, NO ODOR.
			1.23		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-2</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			1.03		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			1.15		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			1.02		AS ABOVE, DRY, NO ODOR.
10.0			0.95		AS ABOVE TO 7 FEET. BECOMES MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			0.93		AS ABOVE, DRY, NO ODOR.
			1.00		AS ABOVE, DRY, NO ODOR.
15.0			1.06		AS ABOVE, DRY, NO ODOR.
			1.05		AS ABOVE, DRY, NO ODOR.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-3</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			1.38		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			0.59		AS ABOVE, DRY, NO ODOR.
			0.73		AS ABOVE, DRY, NO ODOR.
10.0			1.02		AS ABOVE TO 7 FEET. BECOMES MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			1.02		AS ABOVE, DRY, NO ODOR.
			1.74		AS ABOVE, DRY, NO ODOR.
15.0			2.73		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			2.68		AS ABOVE, DRY, NO ODOR.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-4</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.15		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			2.25		AS ABOVE, DRY, NO ODOR.
			1.87		AS ABOVE, DRY, NO ODOR.
10.0			2.55		AS ABOVE TO 7 FEET. BECOMES MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			804		AS ABOVE, DRY, NO ODOR.
			4530		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
15.0			390		AS ABOVE, DRY, NO ODOR.
			72		AS ABOVE, DRY, NO ODOR.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u> <b>CLIENT</b> <u>NCDOT</u> <b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u> <b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u> <b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>BORING NUMBER</b> <u>CR-5</u> <b>PAGE</b> <u>1</u> <b>ELEVATION</b> _____ <b>DATE</b> <u>9/17/2009</u> <b>DRILLER</b> <u>AED</u> <b>PREPARED BY</b> <u>BRANSON</u>
---	--

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.22		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			2.45		AS ABOVE, DRY, NO ODOR.
			2.87		AS ABOVE, DRY, NO ODOR.
10.0			44		MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			563		AS ABOVE, DRY, NO ODOR.
			602		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
15.0			17.5		AS ABOVE, DRY, NO ODOR.
			8.37		AS ABOVE, DRY, NO ODOR.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-6</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.01		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			2.32		AS ABOVE, DRY, NO ODOR.
			2.36		AS ABOVE, DRY, NO ODOR.
10.0			1.63		MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			1.92		AS ABOVE, DRY, NO ODOR.
			2.06		AS ABOVE, DRY, NO ODOR.
15.0			2.49		AS ABOVE, DRY, NO ODOR.
			3.14		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-7</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.06		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			2.19		AS ABOVE, DRY, NO ODOR.
			2.57		AS ABOVE, DRY, NO ODOR.
10.0			1.22		MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			1.92		AS ABOVE, DRY, NO ODOR.
			1.80		AS ABOVE, DRY, NO ODOR.
15.0			2.61		AS ABOVE, DRY, NO ODOR.
			2.68		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					



# TEST BORING REPORT

<b>PROJECT</b> <u>LINDA FULCHER PROPERTY</u>	<b>BORING NUMBER</b> <u>CR-8</u>
<b>CLIENT</b> <u>NCDOT</u>	<b>PAGE</b> <u>1</u>
<b>PROJECT NUMBER</b> <u>114365 (WBS 34504.1.1)</u>	<b>ELEVATION</b> _____
<b>CONTRACTOR</b> <u>AMERICAN ENVIRONMENTAL DRILLING</u>	<b>DATE</b> <u>9/17/2009</u>
<b>EQUIPMENT</b> <u>GEOPROBE</u>	<b>DRILLER</b> <u>AED</u>
	<b>PREPARED BY</b> <u>BRANSON</u>

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			1.70		MEDIUM BROWN, LOOSE, MEDIUM- TO COARSE-GRAINED SAND, DRY, NO ODOR.
			2.18		AS ABOVE, DRY, NO ODOR.
			2.64		AS ABOVE, DRY, NO ODOR.
10.0			1.15		MEDIUM TO LIGHT BROWN CLAYEY COARSE-GRAINED SAND TO SANDY CLAY, DRY, NO ODOR.
			1.90		AS ABOVE, DRY, NO ODOR.
			1.91		AS ABOVE, DRY, NO ODOR.
15.0			3.37		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			1.85		AS ABOVE, DRY, NO ODOR.
					BORING TERMINATED AT 15 FEET. NO GROUNDWATER ENCOUNTERED.
20.0					





**ATTACHMENT C**



PHOTO 1 - BORING IN PROPOSED R/W LOOKING EAST



PHOTO 2 - BORINGS IN PROPOSED R/W LOOKING EAST





PHOTO 3 - BORING ALONG PROPOSED R/W LOOKING EAST



PHOTO 4 - BORING WITHIN PROPOSED R/W LOOKING EAST





PHOTO 5 - BORINGS ALONG PROPOSED R/W LOOKING NORTHEAST



PHOTO 6 - BORINGS WITHIN PROPOSED R/W LOOKING SOUTHEAST

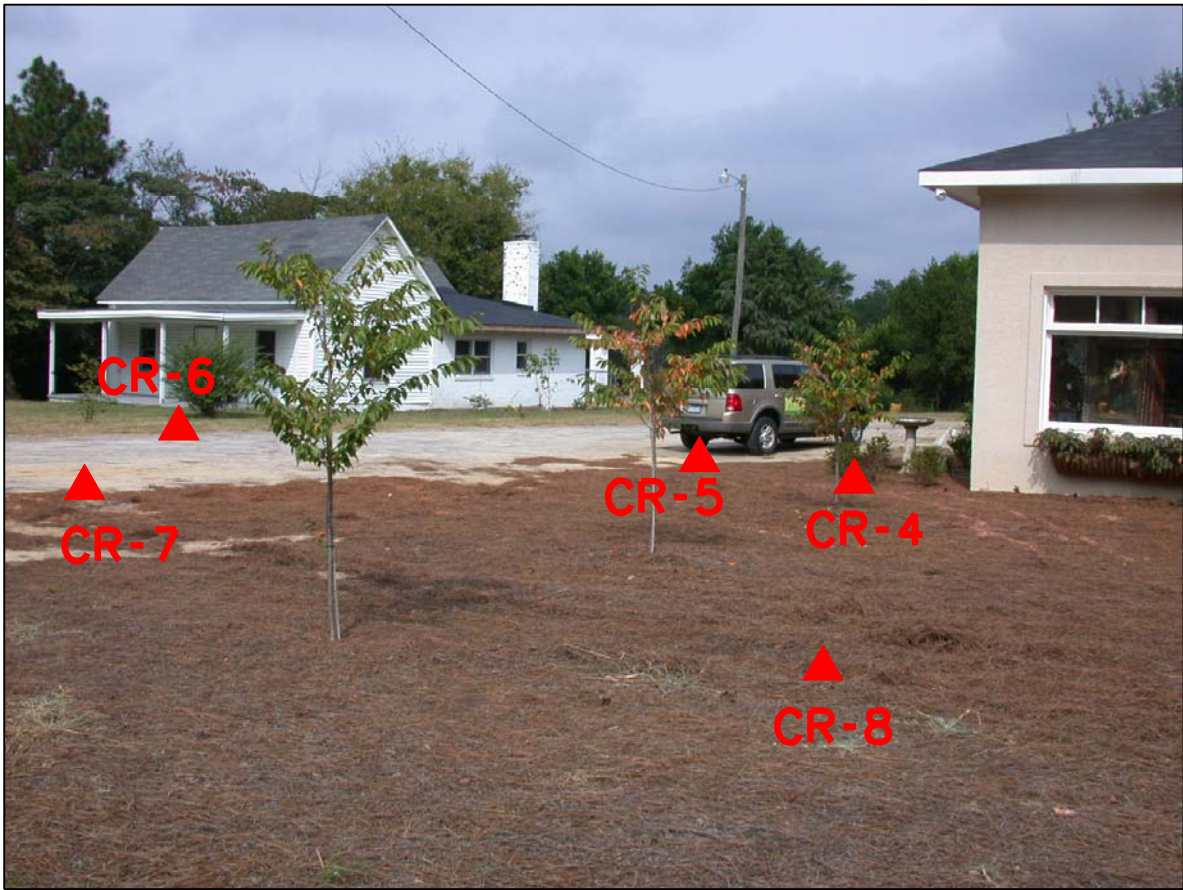


PHOTO 7 - BORINGS WITHIN PROPOSED R/W LOOKING NORTHEAST

**ATTACHMENT D**



## Case Narrative

**Date:** 09/30/09  
**Company:** N. C. Department of Transportation  
**Contact:** Mike Branson/AECOM Earth Tech  
**Address:** c/o AECOM Technical Services (Earth Tech)  
701 Corporate Center Dr. Ste 475  
Raleigh, NC 27607

**Client Project ID:** NCDOT Moore County (Fulcher)  
**Prism COC Group No:** G0909524  
**Collection Date(s):** 09/17/09  
**Lab Submittal Date(s):** 09/18/09  
**Client Project Name Or No:** 34504.1.1

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 11 pages. A chain-of-custody is also attached for the samples submitted to Prism for this project.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative. Quality control statements and/or sample specific remarks are included in the sample comments section of the laboratory report for each sample affected.

### Semi Volatile Analysis

No Anomalies Reported

### Volatile Analysis

No Anomalies Reported

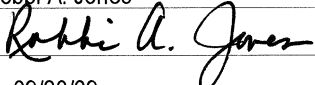
### Metals Analysis

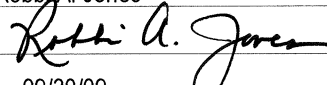
N/A

### Wet Lab and Micro Analysis

N/A

Please call if you have any questions relating to this analytical report.

**Data Reviewed by:** Robbi A. Jones  
**Signature:**   
**Review Date:** 09/30/09

**Project Manager:** Robbi A. Jones  
**Signature:**   
**Approval Date:** 09/30/09

### **Data Qualifiers Key Reference:**

- B: Compound also detected in the method blank.
- #: Result outside of the QC limits.
- DO: Compound diluted out.
- E: Estimated concentration, calibration range exceeded.
- J: The analyte was positively identified but the value is estimated below the reporting limit.
- H: Estimated concentration with a high bias.
- L: Estimated concentration with a low bias.
- M: A matrix effect is present.

Notes: This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc. The results in this report relate only to the samples submitted for analysis.





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

# Laboratory Report

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-1  
 Prism Sample ID: 258293  
 COC Group: G0909524  
 Time Collected: 09/17/09 11:30  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	86.5	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.0	1.3	1	8015B	09/24/09 22:01	ivogel	Q44792
Sample Preparation:			25.14 g	/	1 mL	3545	09/23/09 16:00	aguptill	P25639
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	89	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.27	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	5.80	g			1	GRO	09/22/09 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.8	0.71	50	8015B	09/24/09 3:56	grappaccioli	Q44682
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	104	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-2  
 Prism Sample ID: 258294  
 COC Group: G0909524  
 Time Collected: 09/17/09 11:50  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	94.1	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	BRL	mg/kg	7.5	1.2	1	8015B	09/24/09 22:36	javogel	Q44792
Sample Preparation:			24.86 g	/	1 mL	3545	09/23/09 16:00	aguptill	P25639
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		85	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	6.31	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	6.16	g			1	GRO	09/22/09 0:00	lbrown	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.3	0.65	50	8015B	09/24/09 4:28	grappaccioli	Q44682
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		111	55 - 129	

**Sample Comment(s):**

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL*

*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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-3  
 Prism Sample ID: 258295  
 COC Group: G0909524  
 Time Collected: 09/17/09 13:10  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	86.2	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.2	1.3	1	8015B	09/24/09 23:12	jvogel	Q44792
Sample Preparation:			24.84 g	/	1 mL	3545	09/23/09 16:00	aguptill	P25639
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		93	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	6.26	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	6.25	g			1	GRO	09/22/09 0:00	lbrown	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.8	0.71	50	8015B	09/24/09 5:00	grappaccioli	Q44682
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		106	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-4  
 Prism Sample ID: 258296  
 COC Group: G0909524  
 Time Collected: 09/17/09 13:30  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
-----------	--------	-------	--------------	-----	-----------------	--------	--------------------	---------	----------

**Percent Solids Determination**

Percent Solids	86.6	%			1	SM2540 G	09/23/09 14:00	mbarber	
----------------	------	---	--	--	---	----------	----------------	---------	--

**Diesel Range Organics (DRO) by GC-FID**

Diesel Range Organics (DRO)	44	mg/kg	8.1	1.3	1	8015B	09/24/09 23:47	jvogel	Q44792
-----------------------------	----	-------	-----	-----	---	-------	----------------	--------	--------

Sample Preparation: 24.95 g / 1 mL 3545 09/23/09 16:00 aguptill P25639

Surrogate	% Recovery	Control Limits
o-Terphenyl	96	49 - 124

**Sample Weight Determination**

Weight 1	7.61	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	7.51	g			1	GRO	09/22/09 0:00	lbrown	

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

Gasoline Range Organics (GRO)	1000	mg/kg	120	72	1000	8015B	09/24/09 7:41	grappaccioli	Q44682
-------------------------------	------	-------	-----	----	------	-------	---------------	--------------	--------

Surrogate	% Recovery	Control Limits
aaa-TFT	DO #	55 - 129

Sample Comment(s):

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL*

*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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-5  
 Prism Sample ID: 258297  
 COC Group: G0909524  
 Time Collected: 09/17/09 14:00  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	89.6	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	61	mg/kg	7.8	1.3	1	8015B	09/25/09 21:26	jbvogel	Q44793
Sample Preparation:			24.96 g	/	1 mL	3545	09/24/09 14:00	aguptill	P25651
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		111	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.40	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	6.33	g			1	GRO	09/22/09 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	40	mg/kg	5.6	0.68	50	8015B	09/24/09 5:33	grappaccioli	Q44682
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		119	55 - 129	

**Sample Comment(s):**

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL*

*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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-6  
 Prism Sample ID: 258298  
 COC Group: G0909524  
 Time Collected: 09/17/09 14:15  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	91.2	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	7.8	1.3	1	8015B	09/25/09 22:01	jvogel	Q44793
Sample Preparation:			24.75 g	/	1 mL	3545	09/24/09 14:00	aguptill	P25651
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		106	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.16	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	6.17	g			1	GRO	09/22/09 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.5	0.67	50	8015B	09/24/09 6:05	grappaccioli	Q44682
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		103	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-7  
 Prism Sample ID: 258299  
 COC Group: G0909524  
 Time Collected: 09/17/09 14:45  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	83.5	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.4	1.4	1	8015B	09/25/09 22:36	jvogel	Q44793
Sample Preparation:			24.86 g	/	1 mL	3545	09/24/09 14:00	aguptill	P25651
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		128 #	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	6.52	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	4.98	g			1	GRO	09/22/09 0:00	lbrown	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.0	0.73	50	8015B	09/24/09 6:37	grappaccioli	Q44682
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		107	55 - 129	

**Sample Comment(s):**

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL*

*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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

09/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth  
 Tech)  
 701 Corporate Center Dr. Ste 475  
 Raleigh, NC 27607

Project ID: NCDOT Moore County  
 (Fulcher)  
 Project No.: 34504.1.1  
 Sample Matrix: Soil

Client Sample ID: CR-8  
 Prism Sample ID: 258300  
 COC Group: G0909524  
 Time Collected: 09/17/09 15:00  
 Time Submitted: 09/18/09 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	88.4	%			1	SM2540 G	09/23/09 14:00	mbarber	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	7.9	1.3	1	8015B	09/25/09 23:12	javogel	Q44793
Sample Preparation:			24.93 g	/	1 mL	3545	09/24/09 14:00	aguptill	P25651
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		109	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.05	g			1	GRO	09/22/09 0:00	lbrown	
Weight 2	6.96	g			1	GRO	09/22/09 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.7	0.69	50	8015B	09/24/09 7:09	grappaccioli	Q44682
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		104	55 - 129	

**Sample Comment(s):**

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

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

# Level II QC Report

9/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth Tech)  
 701 Corporate Center Dr. Ste 475

Project ID: NCDOT Moore County (Fulcher)  
 Project No.: 34504.1.1

COC Group Number: G0909524  
 Date/Time Submitted: 9/18/09 15:10

## Gasoline Range Organics (GRO) by GC-FID, method 8015B

<b>Method Blank</b>									
	Result	RL	Control Limit	Units					QC Batch ID
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg					Q44682
<b>Laboratory Control Sample</b>									
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Gasoline Range Organics (GRO)	48	50		mg/kg	96	67-116			Q44682
<b>Matrix Spike</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
258189 Gasoline Range Organics (GRO)	43	50		mg/kg	86	57-113			Q44682
<b>Matrix Spike Duplicate</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
258189 Gasoline Range Organics (GRO)	39.85	50		mg/kg	80	57-113	8	0 - 23	Q44682

## Diesel Range Organics (DRO) by GC-FID, method 8015B

<b>Method Blank</b>									
	Result	RL	Control Limit	Units					QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg					Q44792
<b>Laboratory Control Sample</b>									
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Diesel Range Organics (DRO)	70.1	80		mg/kg	88	55-109			Q44792
<b>Matrix Spike</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
258288 Diesel Range Organics (DRO)	57.4	80		mg/kg	72	50-117			Q44792
<b>Matrix Spike Duplicate</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
258288 Diesel Range Organics (DRO)	70.7	80		mg/kg	88	50-117	21	0 - 24	Q44792





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

# Level II QC Report

9/30/09

N. C. Department of Transportation  
 Attn: Mike Branson/AECOM Earth Tech  
 c/o AECOM Technical Services (Earth Tech)  
 701 Corporate Center Dr. Ste 475

Project ID: NCDOT Moore County  
 Project No.: (Fulcher)  
 34504.1.1

COC Group Number: G0909524  
 Date/Time Submitted: 9/18/09 15:10

**Diesel Range Organics (DRO) by GC-FID, method 8015B**

**Method Blank**

	Result	RL	Control Limit	Units	QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg	Q44793

**Laboratory Control Sample**

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Diesel Range Organics (DRO)	78.4	80	mg/kg	98	55-109	Q44793

**Matrix Spike**

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
258298 Diesel Range Organics (DRO)	77.4	80	mg/kg	97	50-117	Q44793

**Matrix Spike Duplicate**

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
258298 Diesel Range Organics (DRO)	80.4	80	mg/kg	101	50-117	4	0 - 24	Q44793

#-See Case Narrative

