



**NC Department of Transportation  
Preliminary Site Assessment  
State Project: R-3405  
WBS Element: 35579.1.1**

**James C. Pardue Property  
Parcel #1  
February 14, 2011**

**AMEC Earth and Environmental, Inc. of North Carolina  
AMEC Project: 562113405**

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## **1.0 INTRODUCTION**

In accordance with the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated November 19, 2010, AMEC Earth and Environmental, Inc. of North Carolina (AMEC) has performed a Preliminary Site Assessment (PSA) for the James C. Pardue Property (the Site) to be effected by a road improvement project along NC 18, Sparta Rd. The Site which is located at 418 Sparta Rd currently operates as a convenience/feed and seed store and gas station, Chris's Feed and Seed Inc. The property is located on the southeastern corner of Sparta and Fan Key Roads in North Wilkesboro of Wilkes County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated December 3, 2010.

NCDOT contracted AMEC to perform a PSA on the James C. Pardue Property due to NCDENR's Underground Storage Tanks (UST) section registry reporting three tanks currently in use and five tanks listed as removed in 1986. The PSA was performed to determine if soils have been impacted by petroleum compounds as a result of past and present uses of the property within the proposed design project area. This parcel will be affected by construction activities associated with road widening and new drainage features along Sparta Rd.

The following report summarizes the site history, geophysical survey, location and capacities of any USTs, and describes our field investigation with results of chemical analyses. The report includes the evaluation of the analytical data with regards to the presence or absence of soil contamination within the NCDOT design area of parcel #1 and estimates the extent of soil contamination.

### **1.1 Site Location and Vicinity**

The James C. Pardue Property parcel is located on the southeastern corner of the intersection of Sparta and Fan Key Roads in North Wilkesboro, Wilkes County, North Carolina, as shown in Figure 1. The properties to the south, southwest and to the northwest are residential with single family homes. The property to the north across Fan Key Rd is a graveyard, Mount Lawn Memorial Park. The property to the west and across Sparta Rd is agricultural.



## 1.2 Site Description and History

The Site is currently operating as a convenience/feed and seed store, and a gas station. The Site has one pump island with three dispensers, which are covered by a canopy. The building is brick. The convenience store is located in the southern three quarters of the building. The northern portion of the brick building is a garage that is used to store feed and seed. To the north of the storage garage is a wood sided shed, also used for feed and seed storage. The proposed DOT project will parallel the western property edge of Parcel #1 along Sparta Rd. Eight USTs were observed at this facility. Appendix A includes a photo log for Parcel #1.

AMEC studied the NCDENR UST Registered Tanks Database, which listed a total of eight tanks associated with this parcel. Five of the tanks were installed on April 30, 1961 and their information is tabulated below.

UST capacity in gallons	UST contents
560	Diesel
560	Kerosene
560	Unknown
1,000	Unknown
1,000	Unknown

The aforementioned tanks were all permanently closed on January 8, 1986 according to the NCDENR Database. The remaining three tanks are all currently in use and contain gasoline or a gasoline mixture, according to the Database. Their tank capacities are 4,000, 6,000 and 8,000 gallons in capacity. AMEC also reviewed the NCDENR Incident Management Database and there is no known Groundwater incident associated with this parcel.

## 2.0 GEOLOGY

### 2.1 Regional Geology

The James C. Pardue Property is located within the Alligator Back Formation of the Ocoee Supergroup located in the Blue Ridge Physiographic Province of western North Carolina. The Alligator Back Formation comprises metamorphic sedimentary rocks that are 750 million years

in age. The rocks include mica schist and phyllite that are interlayered with minor biotite. The Alligator Back rocks were named for the large sections of gneiss that descend from the peak of Bluff Mountain that resemble an alligator.

## **2.2 Site Geology**

Site geology was observed through the sampling of 9 shallow direct push probe soil borings (SB) onsite. Borings ranged in total depth from 10 feet to 15 feet below ground surface (bgs). Native soils generally consisted of orange, well sorted and clayey silt. Boring logs are presented in Appendix B.

Damp soil conditions were typically first encountered at a depth of 0.5 feet (ft) bgs.

## **3.0 FIELD ACTIVITIES**

### **3.1 Preliminary Activities**

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. The Health and Safety Plan (HSP) was modified to include the site-specific health and safety information. On January 17, 2011 a private utility locating company, Priority Underground Locating of Huntersville, North Carolina cleared the proposed drilling locations that were marked in the field by AMEC personnel. North Carolina-1-Call was contacted on January 19 to report the proposed drilling activities and subsequently notify all affected utilities for the parcel. Carolina Soil Investigations, LLC (CSI Drilling) of Olin, North Carolina was retained by AMEC to perform the direct push drilling and sampling. AMEC coordinated with Schnabel Engineering South (Schnabel) who performed two geophysical surveys (electromagnetic and ground penetrating radar) onsite during December. The geophysical results were reviewed and discussed at the completion of each survey. Prism Laboratories, Inc. was contacted for acquisition of sample bottles. Soil boring locations were focused just beyond the existing ROW. Boring locations were strategically placed as close to or around the probable USTs and along the front of the parcel to maximize the likelihood of intercepting any potential soil contamination.



### 3.2 Site Reconnaissance

AMEC personnel completed site reconnaissance on November 22, 2010. During reconnaissance, the area was visually examined for the presence of any UST or areas/obstructions that could potentially affect the subsurface investigation and the number of boring locations was discussed. Boring locations were marked on December 17, 2011.

### 3.3 Geophysical Survey

Schnabel performed the geophysical surveys from December 10 to 21, 2010. Schnabel utilized a Geonics EM61-MK2 to perform the electromagnetic induction surveys and a Geophysical Survey Systems SIR-3000 to conduct the ground-penetrating radar (GPR) investigations. These instruments are specifically calibrated to detect metal anomalies that are buried deeply and are characteristically large. The data collected by Schnabel indicates the presence of eight USTs within the proposed design area. The eight USTs are denoted in Figure 2 and their capacities and depths buried are tabulated below. The complete geophysical survey report can be found in Appendix C.

Known UST-1	4,000 gal.	2-3 ft bgs
Known UST-2	8,000 gal.	1.5-2.5 ft bgs
Known UST-3	6,000 gal.	2-3 ft bgs
Probable UST-1	560 gal.	3.5-5.5 ft bgs
Probable UST-2	560 gal.	3.5-5.5 ft bgs
Probable UST-3	560 gal.	3.5-5.5 ft bgs
Probable UST-4	1,000 gal.	3.5-5.5 ft bgs
Probable UST-5	1,000 gal.	3.5-5.5 ft bgs

### 3.4 Well Survey

No well survey was performed as part of this PSA and no monitoring wells were observed on the parcel.

### 3.5 Soil Sampling

Soil boring occurred on January 27, 2011 at Parcel #1. Nine direct push soil borings were conducted within the NCDOT design project on Parcel #1, which includes the western side

of the site. Figure 2 presents the Site Map with boring locations and identifications. These samples were located to optimize the likelihood of intercepting any potential soil contamination by targeting the eight USTs and the western edge of the site which runs parallel to Sparta Rd. The first boring, P1-SB-1, was placed at the southern end of the site just inside the proposed ROW and west of probable UST-3. Soil boring P1-SB-2 was also placed just inside proposed ROW and west of probable UST-5. Soil borings P1-SB-3 through P1-SB-8 were placed adjacent to or between probable UST-4 and probable UST-1. Boring P1-SB-9 was placed in front of the known UST tank bed on the northern end of the parcel. Boring location P1-SB-4 was the only boring location to exhibit an elevated Photo Ionized Detector (PID) reading at an interval of 8-10 feet bgs. AMEC personnel decided to add a boring location (P1-SB-6) five feet west of P1-SB-4. P1-SB-6 did not exhibit elevated PID readings although due to utilities the boring couldn't penetrate as deeply as the observed contamination in P1-SB-4. None of displayed field indication of impacted soil; therefore AMEC personnel concluded that adequate coverage of the site had been attained.

During soil boring activities CSI and AMEC personnel believed to have struck and punctured the top of probable UST-1 at a depth of 7 ft bgs. The boring did not puncture the tank bottom since the drilling ceased at the 7 ft depth. CSI and AMEC personnel determined that the UST was approximately 7 feet bgs to its surface and 10 ft bgs to its floor. There was approximately a two foot thickness of product measured in the UST. After consulting with the NCDOT project manager AMEC personnel instructed CSI to plug the void in the UST with a two inch PVC solid casing, which was capped on the bottom end and inserted to rest on the UST floor at x ft bgs. The PVC casing was then filled with bentonite to approximately 2 inches bgs. The remaining two inches were then filled with asphalt patch.

Soil samples were collected in accordance with EPA protocols in laboratory-supplied containers. The soil samples for Total Petroleum Hydrocarbons (TPH) –Gasoline Range Organics (GRO) analysis were collected using the 5030 prep method with methanol preservation. Samples for TPH-Diesel Range Organics (DRO) analysis were collected in 4oz. glass containers. Once placed in the containers, the samples were labeled with the sample number, time of collection, date of collection, name of the collector, and the requested analysis. The samples were packed on ice, and then hand delivered to Prism Laboratories in Charlotte, a North Carolina Certified Laboratory following proper chain-of-custody procedures.



## 4.0 SOIL SAMPLING RESULTS

AMEC conducted soil sampling at the Site on January 27, 2011. The purpose of the sampling was to determine if releases of petroleum hydrocarbons had occurred, and if so, to estimate the volume of soil that might require special handling during construction activities. The sampling was accomplished using direct push methods accompanied by field screening for organic vapors with a PID. The laboratory results with PID readings are tabulated in Table 1.

A minimum of one soil sample was collected from each of the 9 completed soil borings from Parcel #1. Typically, if impacted soil is identified, then additional soil samples are obtained. Since P1-SB-4 had an elevated PID reading of 985 ppm at the 8-10 foot interval an additional sample was collected and analyzed from the 3-5 foot interval. No other soil borings produced elevated PID readings consequently additional soil samples were not warranted. Two of the ten results of for DRO analyses reported values higher than the NC Action Level of 10 mg/kg for samples P1-SB-3 at 3-5 ft and P1-SB-4 at 8-10 ft. Their respective results were 60 mg/kg and 690 mg/kg. The remaining soil boring sample results were all below reporting limits. Results of analyses of soil samples for GRO were below reporting limits for all soil boring locations except for P1-SB-4 at 8-10 ft where the concentration of 1,600 mg/kg exceeds the NC Action Level of 10 mg/kg. Figure 3 shows the Site Map with Analytical Data.

Based on the field investigation and laboratory data indicated contamination, AMEC drew an estimated area of contamination as shown on Figure 4. This area equals 114 square ft and has a thickness from below 5 ft bgs to at least 10 ft bgs. Using a thickness of 5 ft, the resultant volume of estimated contamination would be 570 cubic feet, which is roughly 21 cubic yards.

Copies of the original laboratory report and chain-of-custody documentation are included as Appendix D.

## 5.0 CONCLUSIONS

The following conclusions are based upon AMEC's evaluation of field observations and laboratory analyses of samples collected from the Site on January 27, 2011.

- The property presently operates as a Convenience/Feed and Seed store and a gas station.
- The NCDENR's UST Registered Tanks Database lists five USTs as permanently closed as of January 8, 1986 and three UST's as currently operational.
- The geophysical data indicate the presence of three known USTs and five probable USTs. The eight USTs are partially or totally within the planned ROW or easement.
- AMEC personnel identified the presence of petroleum in probable UST-1.
- Ten soil samples were collected and analyzed for TPH GRO and DRO.
- Laboratory analyses did indicate DRO and/or GRO detections above the analytical method reporting level in two soil samples.

## 6.0 RECOMMENDATIONS

Two of the UST's are within the proposed ROW, 5 of the remaining 6 UST's are within the construction easement. All though all UST's are not in the propose ROW removal of USTs and any associated piping by the UST owner is recommended. The UST database states that the USTs have been closed; however, field observations indicate otherwise. Soil will have to be sampled during closure activities and handled following NCDENR's Tank Closure Guidelines.

AMEC understands that a party other than NCDOT may implement the UST closure and following such a situation NCDOT should be cautious of intercepting contaminated soil during road construction activities. If potentially impacted soils are intercepted, AMEC recommends the following action:

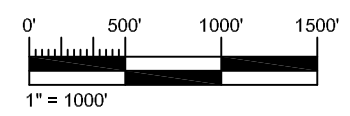
- Segregation, followed by proper assessment and handling, of potentially petroleum-impacted soil during roadway improvement construction operations.

## **TABLES**

**Table 1**  
**Soil Sampling Analytical Results, DRO-GRO**  
**Parcel 1, James C Pardue Property**  
**NC DOT**  
**North Wilkesboro, Wilkes County, North Carolina**

SAMPLE ID	SAMPLE DATE	SAMPLE DEPTH (ft bgs)	PID READINGS (ppm)	EPA Method 8015B	
				DRO (mg/kg)	GRO (mg/kg)
<b>NC Action Levels</b>				<b>10</b>	<b>10</b>
P1-SB-1	1/27/2011	3 - 5	0	<9.2	<4.8
P1-SB-2	1/27/2011	8 - 10	1	<7.6	<4.2
P1-SB-3	1/27/2011	3 - 5	0	<b>60</b>	<4.6
P1-SB-4	1/27/2011	3 - 5	0	<8.8	<5.2
P1-SB-4	1/27/2011	8 - 10	985	<b>690</b>	<b>1600</b>
P1-SB-5	1/27/2011	2 - 4	0	<8.3	5.1
P1-SB-6	1/27/2011	1.5 - 3	0	<8.3	<4.6
P1-SB-7	1/27/2011	4 - 6	2	<9.5	<4.6
P1-SB-8	1/27/2011	3 - 5	0	<8.6	<4.6
P1-SB-9	1/27/2011	3 - 5	0	<8.9	<4.9
<p><b>NOTES:</b>  ft bgs = feet below ground surface; ppm = parts per million  mg/kg = milligrams per kilogram  <b>Bold</b> Concentrations Exceed Action Levels  DRO = Diesel Range Organics  GRO = Gasoline Range Organics  Standards derived from the North Carolina UST Section Guidelines for Assessment and Corrective Action</p>					


## FIGURES

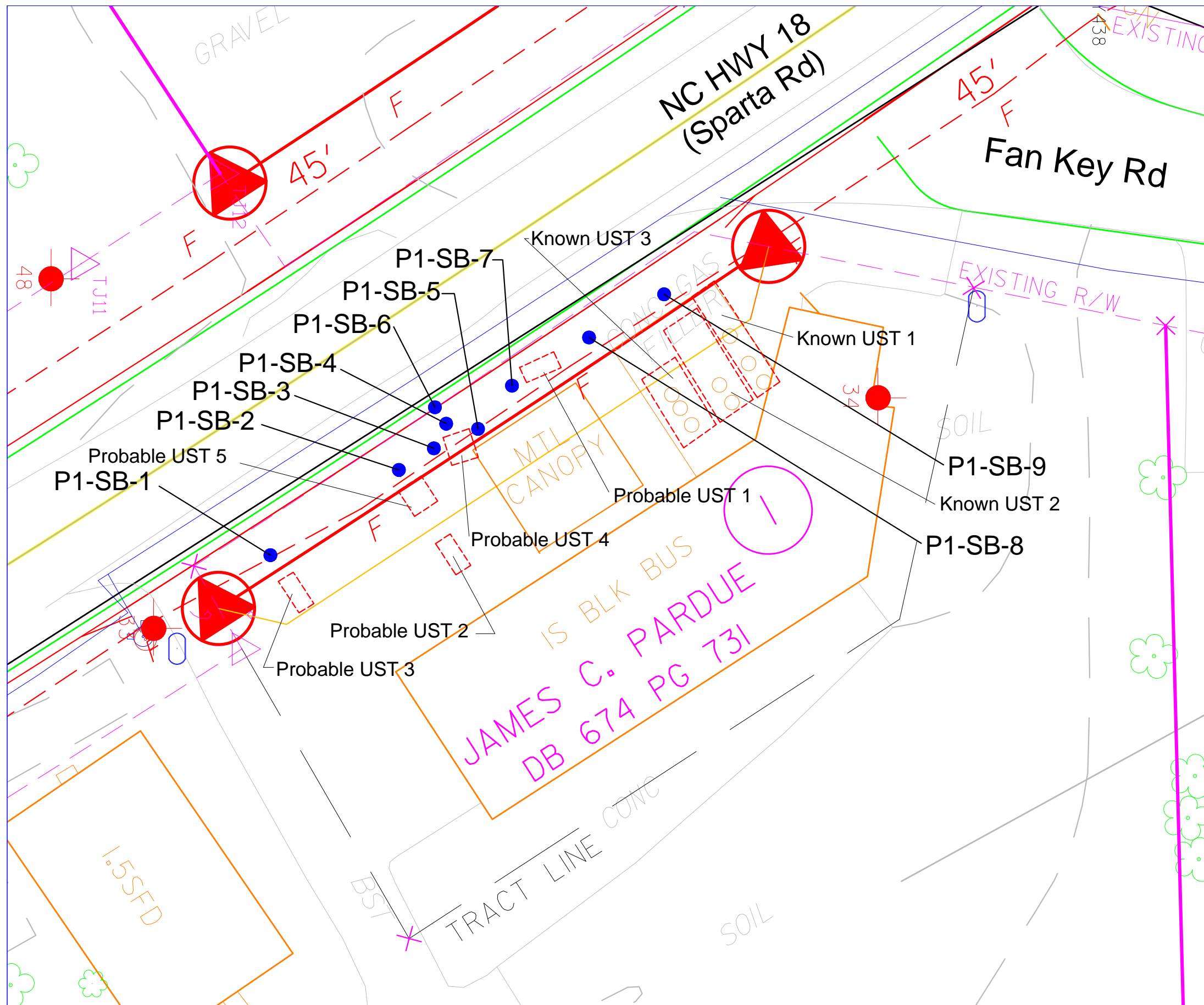


7.5 Minute Quadrangle  
 North Carolina, 1983  
 Photorevised 1993










### VICINITY MAP

Parcel #1, James C. Pardue Property  
 (Chris's Feed and Seed Inc.)  
 North Wilkesboro, Wilkes County, NC

DRAWING NAME: J:\NCDOT\Wilkes\FIC1		DATE: 2/24/11	
SCALE: 1 INCH = 1,000 FEET	DR: TLH	CHK: HPC	REV:
PREPARED FOR: NC Department Of Transportation Geotechnical Unit WBS Element: 35579.1.1 TIP# R-3405			
Prepared By:  338 N Elm Ave Suite 112 Greensboro, NC 27401 (336) 691-5398	Figure: Figure 1		



**LEGEND**

-  Proposed Right of Way
-  Existing Property Line
-  Existing Right of Way
-  Cut Line
-  Fill Line
-  Soil Boring Location January 2011
-  Probable UST
-  Utility Easement
-  Utility Pole

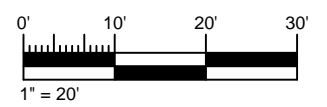
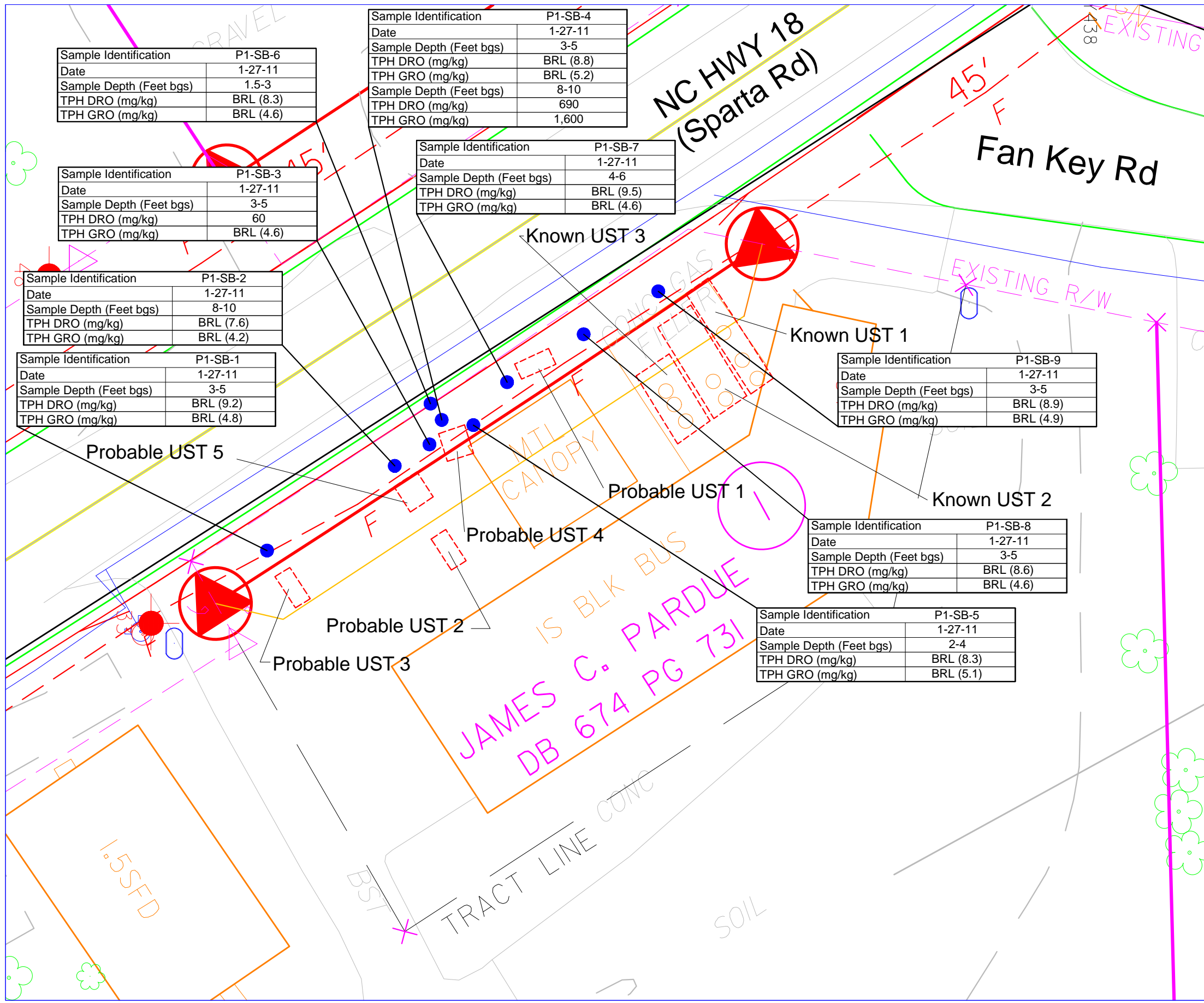


Figure 2  
Parcel #1 James C. Pardue Property  
Site Map

NC Department of Transportation  
Geotechnical Unit  
WBS Element: 35579.1.1  
TIP# R-3405





Sample Identification	P1-SB-6
Date	1-27-11
Sample Depth (Feet bgs)	1.5-3
TPH DRO (mg/kg)	BRL (8.3)
TPH GRO (mg/kg)	BRL (4.6)

Sample Identification	P1-SB-4
Date	1-27-11
Sample Depth (Feet bgs)	3-5
TPH DRO (mg/kg)	BRL (8.8)
TPH GRO (mg/kg)	BRL (5.2)
Sample Depth (Feet bgs)	8-10
TPH DRO (mg/kg)	690
TPH GRO (mg/kg)	1,600

Sample Identification	P1-SB-3
Date	1-27-11
Sample Depth (Feet bgs)	3-5
TPH DRO (mg/kg)	60
TPH GRO (mg/kg)	BRL (4.6)

Sample Identification	P1-SB-7
Date	1-27-11
Sample Depth (Feet bgs)	4-6
TPH DRO (mg/kg)	BRL (9.5)
TPH GRO (mg/kg)	BRL (4.6)

Sample Identification	P1-SB-2
Date	1-27-11
Sample Depth (Feet bgs)	8-10
TPH DRO (mg/kg)	BRL (7.6)
TPH GRO (mg/kg)	BRL (4.2)

Sample Identification	P1-SB-1
Date	1-27-11
Sample Depth (Feet bgs)	3-5
TPH DRO (mg/kg)	BRL (9.2)
TPH GRO (mg/kg)	BRL (4.8)

Sample Identification	P1-SB-9
Date	1-27-11
Sample Depth (Feet bgs)	3-5
TPH DRO (mg/kg)	BRL (8.9)
TPH GRO (mg/kg)	BRL (4.9)

Sample Identification	P1-SB-8
Date	1-27-11
Sample Depth (Feet bgs)	3-5
TPH DRO (mg/kg)	BRL (8.6)
TPH GRO (mg/kg)	BRL (4.6)

Sample Identification	P1-SB-5
Date	1-27-11
Sample Depth (Feet bgs)	2-4
TPH DRO (mg/kg)	BRL (8.3)
TPH GRO (mg/kg)	BRL (5.1)

### LEGEND

- Proposed Right of Way
- Existing Property Line
- Existing Right of Way
- Cut Line
- Fill Line
- Soil Boring Location January 2011
- Probable UST
- Utility Easement
- Utility Pole

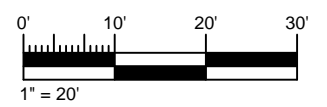
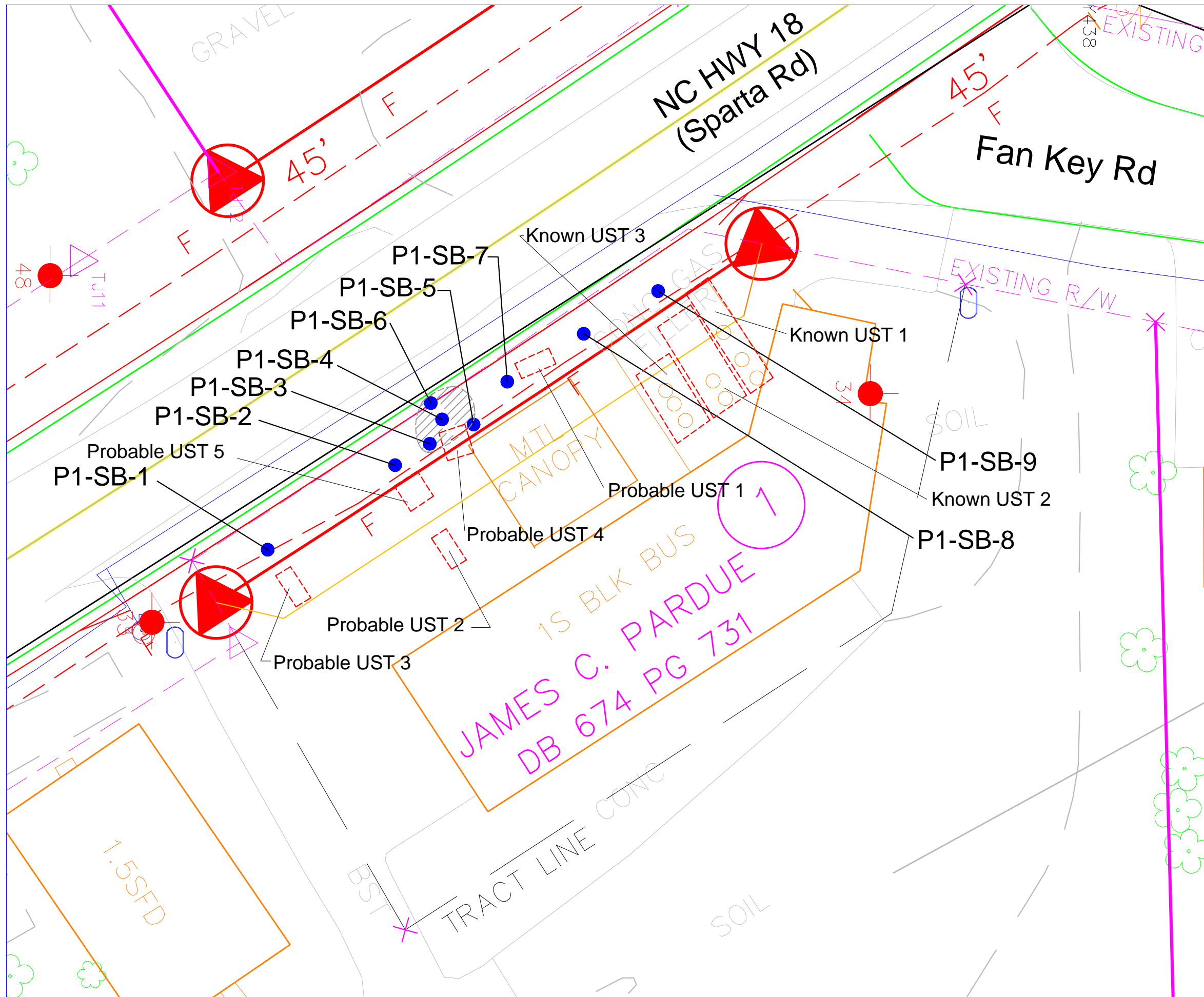


Figure 3  
Parcel #1 James C. Pardue Property  
Site Map With Analytical Data

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**LEGEND**







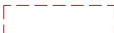




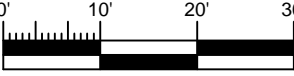
-  Proposed Right of Way
-  Existing Property Line
-  Existing Right of Way
-  Cut Line
-  Fill Line
-  Soil Boring Location January 2011
-  Probable UST
-  Utility Easement
-  Utility Pole
-  Estimated Area of Contamination = 114 ft<sup>2</sup>
- 
-  0' 10' 20' 30'  
1" = 20'

Figure 4  
Parcel #1 James C. Pardue Property  
Site Map With Estimated Area of Contamination

NC Department of Transportation  
Geotechnical Unit  
WBS Element: 35579.1.1  
TIP# R-3405



**APPENDIX A**  
**PHOTO LOG**



**Photo 1**

Viewing southeast from the north western corner of the parcel. The proposed ROW is in the foreground.



**Photo 2**

Viewing east from the southwestern corner of the site. The photo shows probable UST-3.



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PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 1, Sparta Road, North Wilkesboro, NC



**Photo 3**

Viewing northeast from southwestern portion of the site. The Photo is of probable UST-5



**Photo 4**

Viewing west from western central portion of the site. The photo shows evidence of product in probable UST-1



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PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 1, Sparta Road, North Wilkesboro, NC



**Photo 5**

Viewing northeast from western portion of the site. The Photo is of known UST's 1,2 and 3



**Photo 6**

Viewing northwest from southern portion of the site. The photo shows CSI preparing to drill.



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PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 1, Sparta Road, North Wilkesboro, NC

**APPENDIX B**  
**BORING LOGS**





















**APPENDIX C**  
**GEOPHYSICAL SURVEY REPORT**





March 4, 2011

Ms. Helen Corley, LG  
AMEC Earth and Environmental of North Carolina, Inc.  
101 W. Friendly Avenue, Suite 603  
Greensboro, NC 27401

RE:           State Project: R-3405  
              WBS Element: 35579.1.1  
              County: Wilkes  
              Description: NC 18 from SR 1002 (Mountain View Road) to SR 1717 (Yellow Banks Road)

**Subject:       Project 09210013.34 Revised Report on Geophysical Surveys  
                  Parcel 1, Wilkes County, North Carolina**

Dear Ms. Corley:

**SCHNABEL ENGINEERING SOUTH, PC** (Schnabel) is pleased to present this 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 three 11x17 color figures and four 8.5x11 color figures.

## **INTRODUCTION**

The work described in this report was conducted on December 10 and 21, 2010, by Schnabel under our 2009 contract with the NCDOT. The work was conducted over the accessible areas of the parcel as indicated by the NCDOT to support their environmental assessment of the subject property. Photographs of the parcel are included on Figure 1. The property is located on the east quadrant of the intersection of Fan Key Road and Sparta Road in North Wilkesboro, NC. The purpose of the geophysical surveys was to locate known and suspect metal underground storage tanks (USTs) in the accessible areas of the right-of-way and/or easement.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61-MK2 instrument. The EM61 metal detector is used to locate metal objects buried up to about eight feet below ground surface. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies, including areas of reinforced concrete, were conducted using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna. Photographs of the equipment used are shown on Figure 2.

## **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 (monitoring wells, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

The EM61 data were collected along parallel survey lines spaced approximately 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 areas of reinforced concrete and anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of USTs. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

## **DISCUSSION OF RESULTS**

The contoured EM61 data collected over Parcel 1 are shown on Figures 3 and 4. The EM61 early time gate results are plotted on Figure 3. The early time gate data provide the more sensitive detection of metal objects. Figure 4 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 USTs.

The early time gate and differential results show anomalies of unknown cause, in addition to those apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected near the northwestern side of the canopy indicated the presence of three known USTs located approximately 15 to 30 feet northwest of the northernmost canopy corner. The known USTs are partially inside the limits of the planned right-of way and/or easement. Example GPR images showing the reflections from the known USTs are shown on Figures 3 and 4. Figures 3 and 4 also include the location of the known USTs as marked in the field. The GPR data indicate that the known USTs are buried approximately 1.5 to 3.5 feet below ground surface. The GPR data indicate that the northernmost known UST (Known UST No. 1) is about 5.5 feet in diameter and about 24 feet long, equivalent to a capacity of about 4,000 gallons. The GPR data indicate that the middle known UST (Known UST No. 2) is about 8 feet in diameter and about 21.5 feet long, equivalent to a capacity of about 8,000 gallons. The GPR data indicate that the southernmost known UST (Known UST No. 3) is about 8 feet in diameter and about 16 feet long, equivalent to a capacity of about 6,000 gallons.

The GPR data collected to the west and south of the canopy indicated the presence of five probable USTs located within approximately 50 feet of the canopy. The probable USTs are inside or partially inside the limits of the planned right-of way and/or easement. Example GPR images showing the reflections from the probable USTs are shown on Figure 5. Figures 3 and 4 include the locations of the probable USTs as marked in the field. The GPR data indicate that the probable USTs are buried approximately 3.5 to 5.5 feet below ground surface. The GPR data indicate that three of the probable USTs (Probable UST Nos. 1 through 3) are about 3.5 feet in diameter and about 7.5 feet long, equivalent to a capacity of about

560 gallons. The GPR data indicate that the other two probable USTs (Probable UST Nos. 4 and 5) are about 5.5 feet in diameter and about 6 feet long, equivalent to a capacity of about 1000 gallons. Photographs of the known and probable UST locations, as marked in the field, are included on Figures 6 and 7.

## **CONCLUSIONS**

Our evaluation of the geophysical data collected on the subject property on Project R-3405 in North Wilkesboro, NC indicates the following:

The geophysical data indicate the presence of three known USTs and five probable USTs on Parcel 1. The eight USTs are partially or totally within the planned right-of-way and/or easement. The northern known UST is about 4,000-gallon capacity and is buried about 2.0 to 3.0 feet below ground surface. The southern known UST is about 6,000-gallon capacity and is buried about 2.0 to 3.0 feet below ground surface. The other known UST is about 8,000-gallon capacity and is buried about 1.5 to 2.5 feet below ground surface. Three of the probable USTs are about 560-gallon capacity and are buried about 3.5 to 5.5 feet below ground surface. The other two probable USTs are about 1,000-gallon capacity and are buried about 3.5 to 5.0 feet below ground surface.

## **LIMITATIONS**

These services have been performed and this report prepared for AMEC Earth and Environmental of North Carolina, Inc. 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.

We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

### **SCHNABEL ENGINEERING SOUTH, PC**



Jeremy S. Strohmeier, LG  
Project Manager



Edward D. Billington, LG  
Senior Vice President

JW:JS:NB

Attachments: Figures (7)

FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.34 (R-3405, WILKES COUNTY)\REPORT\PARCEL 1\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 1 (R-3405)\_REVISED.DOCX



Parcel 1 – James C. Pardue Property, looking northeast



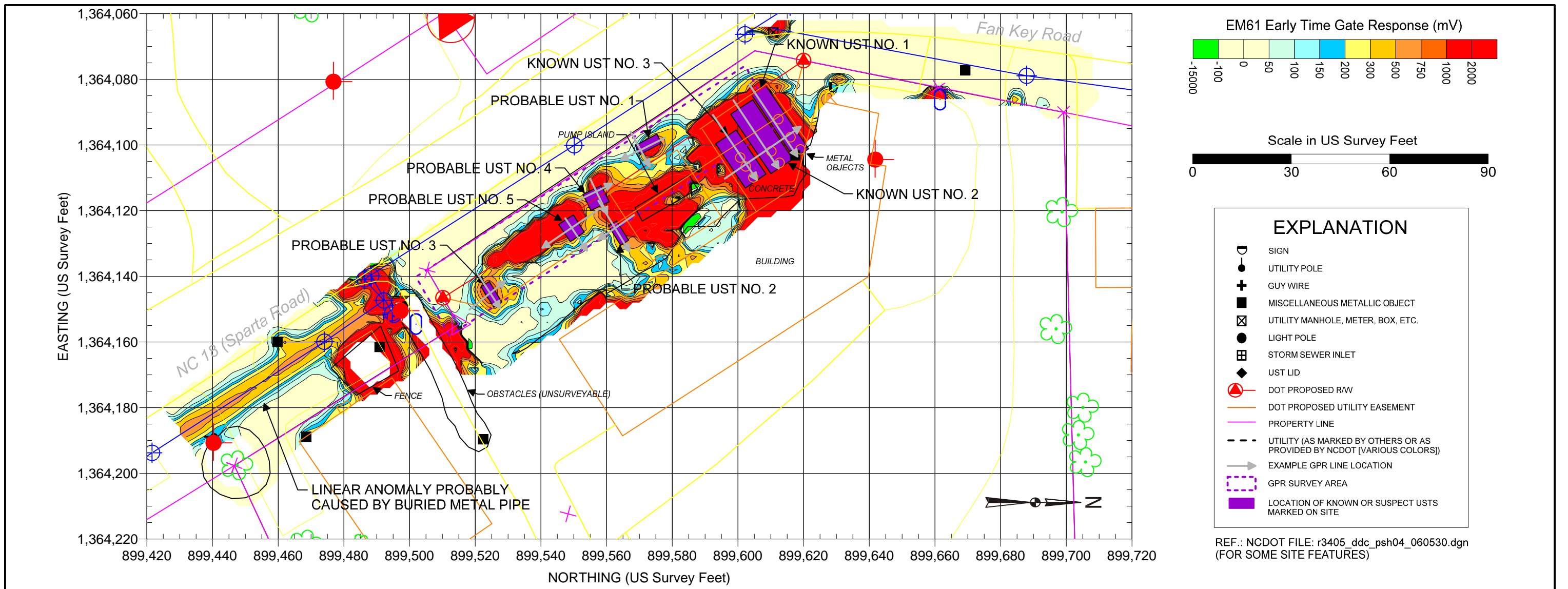
Parcel 1 – James C. Pardue Property, looking southeast



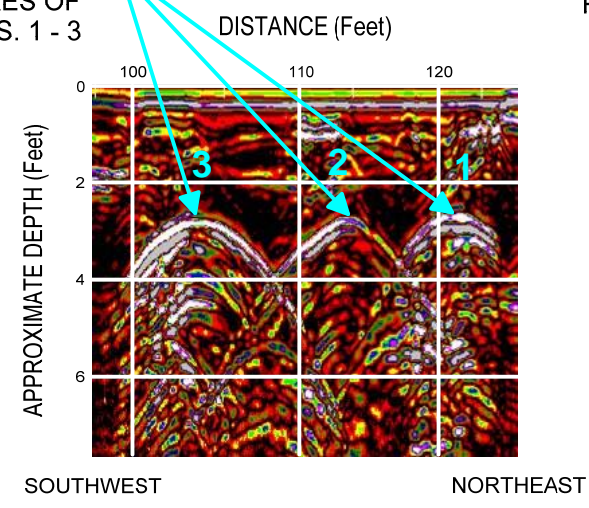
Geonics EM61-MK2



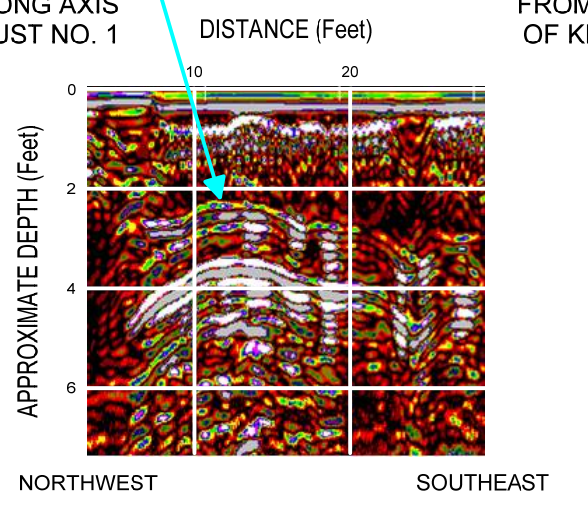
GSSI SIR-3000



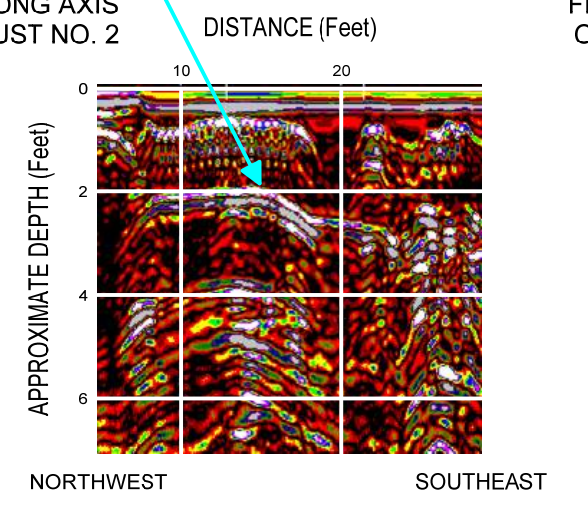
EXAMPLE GPR RESPONSE FROM THE SHORT AXES OF KNOWN UST NOS. 1 - 3



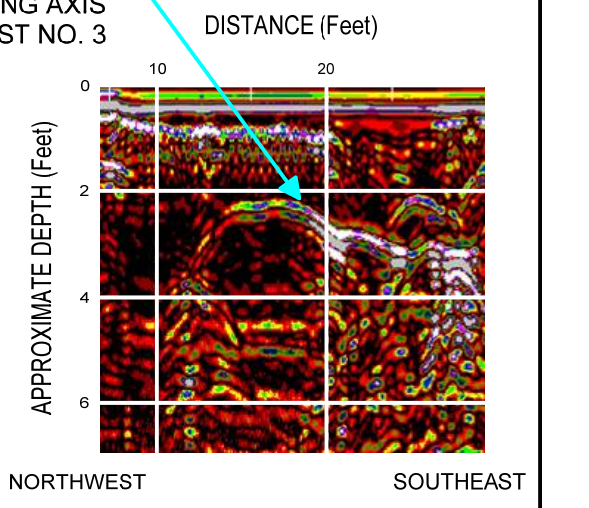
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 1



EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 2



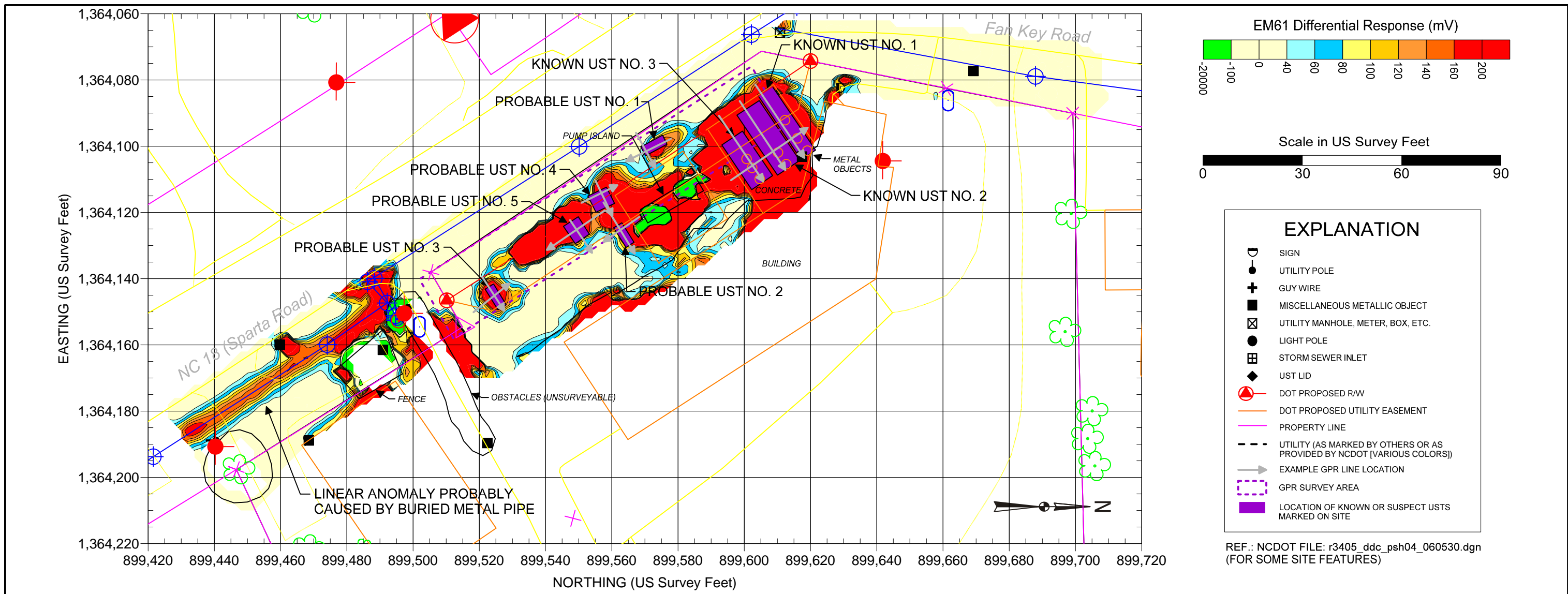
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 3



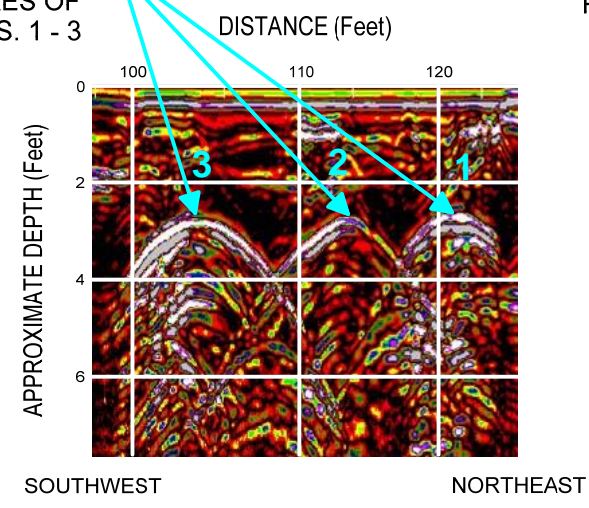
Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on December 10, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on December 21, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	<p>STATE PROJECT R-3405 WILKES COUNTY, NORTH CAROLINA NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.34</p>	<p>PARCEL 1 EARLY TIME GATE RESPONSE</p>
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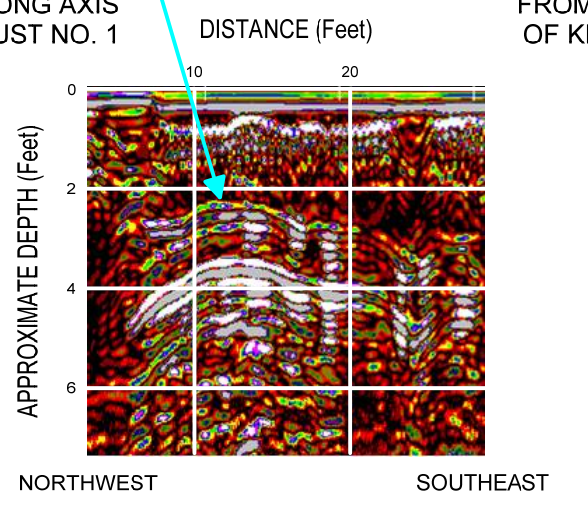
FIGURE 3



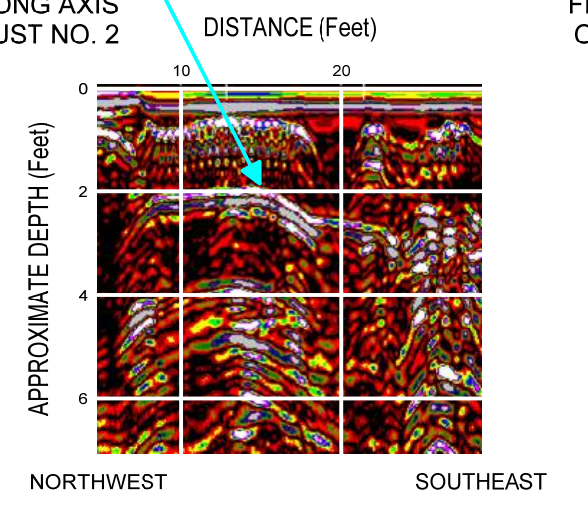
EXAMPLE GPR RESPONSE FROM THE SHORT AXES OF KNOWN UST NOS. 1 - 3



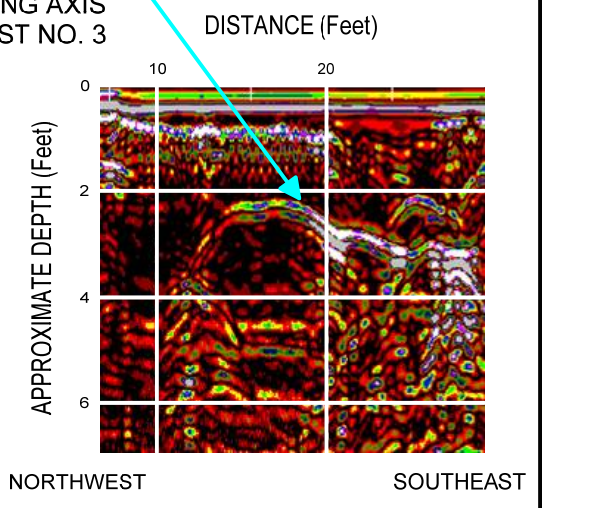
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 1



EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 2



EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 3

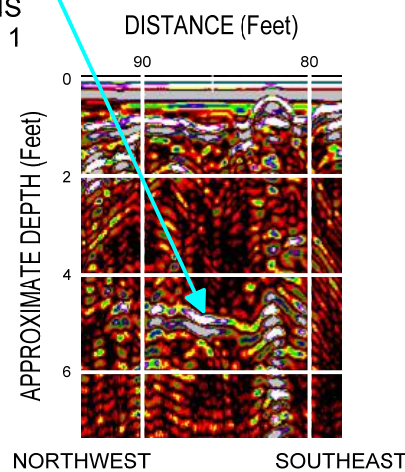


Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on December 10, 2010, 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 December 21, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

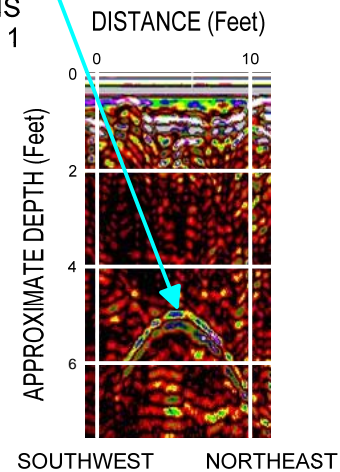
	<p>STATE PROJECT R-3405 WILKES COUNTY, NORTH CAROLINA NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.34</p>	<p>PARCEL 1 DIFFERENTIAL RESPONSE</p>
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FIGURE 4

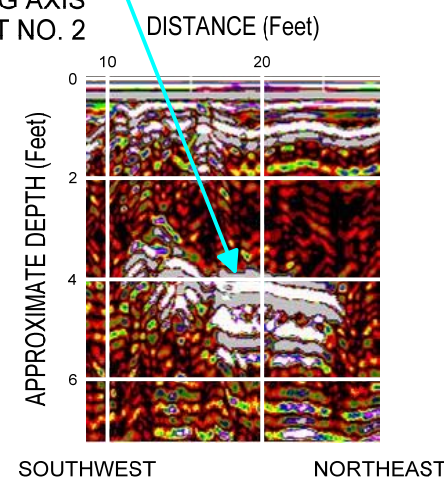
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF PROBABLE UST NO. 1



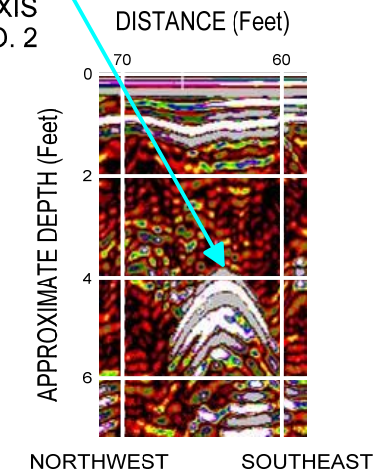
EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF PROBABLE UST NO. 1



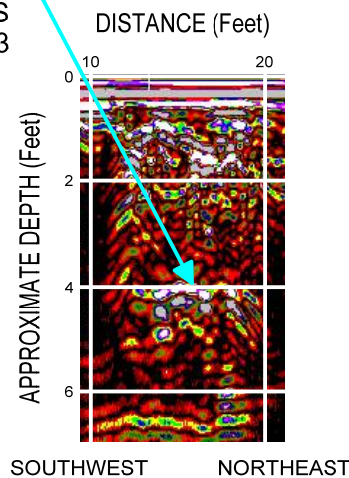
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF PROBABLE UST NO. 2



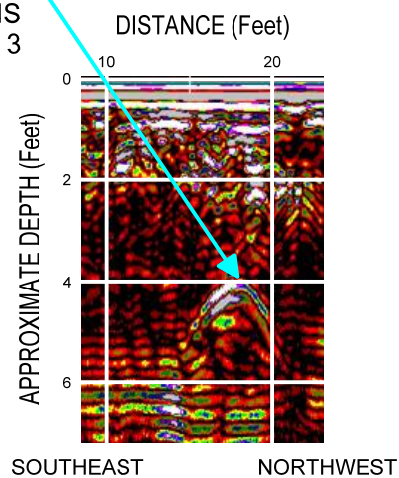
EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF PROBABLE UST NO. 2



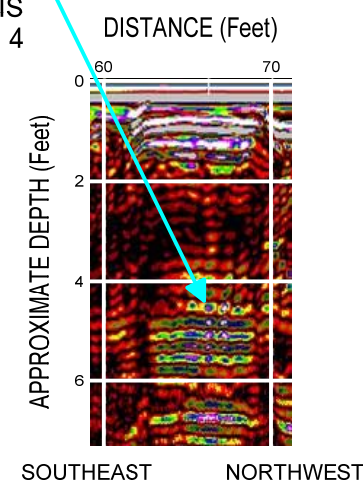
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF PROBABLE UST NO. 3



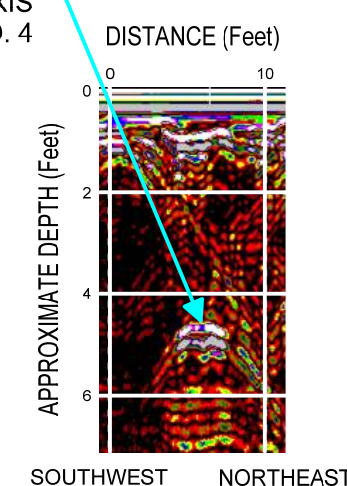
EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF PROBABLE UST NO. 3



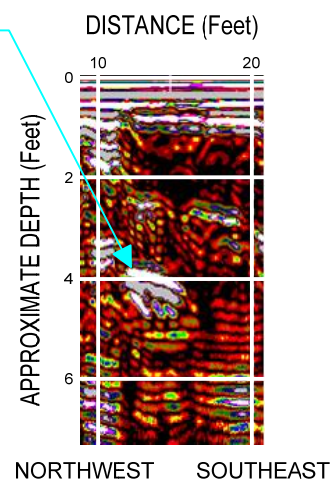
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF PROBABLE UST NO. 4



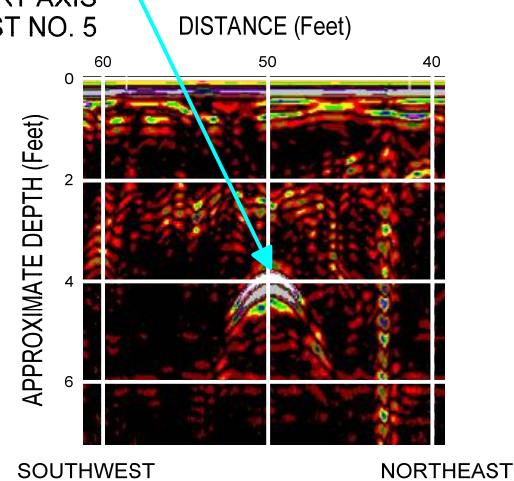
EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF PROBABLE UST NO. 4



EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF PROBABLE UST NO. 5



EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF PROBABLE UST NO. 5



STATE PROJECT R-3405  
 WILKES COUNTY, NORTH CAROLINA  
 NC DEPARTMENT OF TRANSPORTATION  
 PROJECT NO. 09210013.34

PARCEL 1  
 ADDITIONAL GPR IMAGES





Parcel 1 – James C. Pardue Property, looking east. Photo shows approximate marked location of Known UST Nos. 1-3 on the northwest side of the canopy.



Parcel 1 – James C. Pardue Property, looking southeast. Photo shows approximate marked location of Probable UST No. 1 near the southwest edge of the canopy.



STATE PROJECT R-3405  
 WILKES CO., NORTH CAROLINA  
 NC DEPT. OF TRANSPORTATION  
 PROJECT NO. 09210013.34

PHOTOS OF  
 KNOWN AND PROBABLE  
 UST LOCATIONS

FIGURE 6



Parcel 1 – James C. Pardue Property, looking east. Photo shows approximate marked location of Probable UST Nos. 2 and 4 near the southeast edge of the canopy.



Parcel 1 – James C. Pardue Property, looking north. Photo shows approximate marked location of Probable UST Nos. 3 and 5 near the southernmost building corner.



STATE PROJECT R-3405  
 WILKES CO., NORTH CAROLINA  
 NC DEPT. OF TRANSPORTATION  
 PROJECT NO. 09210013.34

PHOTOS OF  
 PROBABLE  
 UST LOCATIONS

FIGURE 7

## **APPENDIX D**

### **LABORATORY ANALYTICAL RESULTS**

AMEC Earth & Env. Inc.(DOT Gree)  
Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County Parcel 1  
Project No.: WBS #35579.1.1  
Lab Submittal Date: 01/28/2011  
Prism Work Order: 1010640

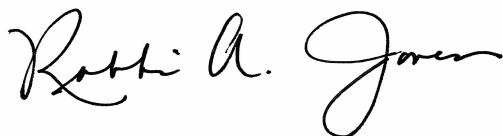
This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

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

Respectfully,

**PRISM LABORATORIES, INC.**



President/Project Manager



Reviewed By

**Data Qualifiers Key Reference:**

- DO Surrogates diluted out.
- BRL Below Reporting Limit
- MDL Method Detection Limit
- RPD Relative Percent Difference
- \* Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
P1-SB-1(3-5)	1010640-01	Solid	01/27/11	01/28/11
P1-SB-2(8-10)	1010640-02	Solid	01/27/11	01/28/11
P1-SB-3(3-5)	1010640-03	Solid	01/27/11	01/28/11
P1-SB-4(3-5)	1010640-04	Solid	01/27/11	01/28/11
P1-SB-4(8-10)	1010640-05	Solid	01/27/11	01/28/11
P1-SB-5(2-4)	1010640-06	Solid	01/27/11	01/28/11
P1-SB-6(1.5-3)	1010640-07	Solid	01/27/11	01/28/11
P1-SB-7(4-6)	1010640-08	Solid	01/27/11	01/28/11
P1-SB-8(3-5)	1010640-09	Solid	01/27/11	01/28/11
P1-SB-9(3-5)	1010640-10	Solid	01/27/11	01/28/11

Samples received in good condition at 2.7 degrees C unless otherwise noted.

AMEC Earth & Env. Inc.(DOT Gree)  
 Attn: Helen Corley  
 338 North Elm St. Suite 112  
 Greensboro, NC 27401

Project: NCDOT: Wilkes County  
 Parcel 1  
 Project No.: WBS #35579.1.1  
 Sample Matrix: Solid

Client Sample ID: P1-SB-1(3-5)  
 Prism Sample ID: 1010640-01  
 Prism Work Order: 1010640  
 Time Collected: 01/27/11 09:40  
 Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	2/3/11 4:01	JMV	P1B0050
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			102 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	4.8	0.62	50	*8015C	2/2/11 4:40	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			69 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	75.7	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078

AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-2(8-10)  
Prism Sample ID: 1010640-02  
Prism Work Order: 1010640  
Time Collected: 01/27/11 09:45  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	7.6	1.2	1	*8015C	2/3/11 4:36	JMV	P1B0050
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			93 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.2	0.55	50	*8015C	2/2/11 5:11	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			102 %		55-129	

### General Chemistry Parameters

% Solids	91.7	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-3(3-5)  
Prism Sample ID: 1010640-03  
Prism Work Order: 1010640  
Time Collected: 01/27/11 09:50  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	60	mg/kg dry	8.9	1.4	1	*8015C	2/3/11 3:26	JMV	P1B0050
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			98 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	4.6	0.60	50	*8015C	2/2/11 5:43	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			92 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	78.6	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078



AMEC Earth & Env. Inc.(DOT Gree)  
 Attn: Helen Corley  
 338 North Elm St. Suite 112  
 Greensboro, NC 27401

Project: NCDOT: Wilkes County  
 Parcel 1  
 Project No.: WBS #35579.1.1  
 Sample Matrix: Solid

Client Sample ID: P1-SB-4(3-5)  
 Prism Sample ID: 1010640-04  
 Prism Work Order: 1010640  
 Time Collected: 01/27/11 10:00  
 Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	8.8	1.4	1	*8015C	2/2/11 19:46	JMV	P1B0050
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			103 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.2	0.67	50	*8015C	2/2/11 6:14	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			77 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	78.4	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078

AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-4(8-10)  
Prism Sample ID: 1010640-05  
Prism Work Order: 1010640  
Time Collected: 01/27/11 10:05  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	690	mg/kg dry	76	12	10	*8015C	2/3/11 9:52	JMV	P1B0050
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			0 %		49-124	DO
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	1600	mg/kg dry	88	11	1000	*8015C	2/2/11 7:48	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			0 %		55-129	DO
<b>General Chemistry Parameters</b>									
% Solids	91.4	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078

AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-5(2-4)  
Prism Sample ID: 1010640-06  
Prism Work Order: 1010640  
Time Collected: 01/27/11 10:10  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	8.3	1.3	1	*8015C	2/3/11 2:50	JMV	P1B0050
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			96 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	5.1	mg/kg dry	4.3	0.56	50	*8015C	2/2/11 6:45	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			84 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	84.4	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078

AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-6(1.5-3)  
Prism Sample ID: 1010640-07  
Prism Work Order: 1010640  
Time Collected: 01/27/11 10:20  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	8.3	1.3	1	*8015C	2/4/11 17:32	JMV	P1B0092
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			91 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.6	0.60	50	*8015C	2/2/11 7:17	HPE	P1B0015
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			76 %		55-129	

### General Chemistry Parameters

% Solids	84.8	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-7(4-6)  
Prism Sample ID: 1010640-08  
Prism Work Order: 1010640  
Time Collected: 01/27/11 10:35  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	9.5	1.5	1	*8015C	2/4/11 18:08	JMV	P1B0092
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			82 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.6	0.59	50	*8015C	2/2/11 22:07	HPE	P1B0047
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			111 %		55-129	

### General Chemistry Parameters

% Solids	73.4	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-8(3-5)  
Prism Sample ID: 1010640-09  
Prism Work Order: 1010640  
Time Collected: 01/27/11 11:10  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	8.6	1.4	1	*8015C	2/4/11 18:43	JMV	P1B0092
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			80 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.6	0.60	50	*8015C	2/2/11 22:38	HPE	P1B0047
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			91 %		55-129	

### General Chemistry Parameters

% Solids	81.5	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 1  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P1-SB-9(3-5)  
Prism Sample ID: 1010640-10  
Prism Work Order: 1010640  
Time Collected: 01/27/11 11:20  
Time Submitted: 01/28/11 14:40

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	8.9	1.4	1	*8015C	2/4/11 19:18	JMV	P1B0092
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			87 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.9	0.63	50	*8015C	2/3/11 0:13	HPE	P1B0047
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			114 %		55-129	

### General Chemistry Parameters

% Solids	78.1	% by Weight	0.100	0.100	1	*SM2540 G	2/3/11 15:30	JAB	P1B0078
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AMEC Earth & Env. Inc.(DOT Gree)  
 Attn: Helen Corley  
 338 North Elm St. Suite 112  
 Greensboro, NC 27401

Project: NCDOT: Wilkes County Parcel  
 1  
 Project No: WBS #35579.1.1

Prism Work Order: 1010640  
 Time Submitted: 1/28/11 2:40:00PM

**Gasoline Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P1B0015 - 5035</b>										
<b>Blank (P1B0015-BLK1)</b> Prepared & Analyzed: 02/01/11										
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	4.85		mg/kg wet	5.00		97	55-129			
<b>LCS (P1B0015-BS1)</b> Prepared & Analyzed: 02/01/11										
Gasoline Range Organics	34.0	5.0	mg/kg wet	50.0		68	67-116			
Surrogate: a,a,a-Trifluorotoluene	4.05		mg/kg wet	5.00		81	55-129			
<b>LCS Dup (P1B0015-BSD1)</b> Prepared & Analyzed: 02/01/11										
Gasoline Range Organics	35.2	5.0	mg/kg wet	50.0		70	67-116	4	200	
Surrogate: a,a,a-Trifluorotoluene	4.10		mg/kg wet	5.00		82	55-129			
<b>Batch P1B0047 - 5035</b>										
<b>Blank (P1B0047-BLK1)</b> Prepared & Analyzed: 02/02/11										
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	5.10		mg/kg wet	5.00		102	55-129			
<b>LCS (P1B0047-BS1)</b> Prepared & Analyzed: 02/02/11										
Gasoline Range Organics	39.4	5.0	mg/kg wet	50.0		79	67-116			
Surrogate: a,a,a-Trifluorotoluene	5.15		mg/kg wet	5.00		103	55-129			
<b>LCS Dup (P1B0047-BSD1)</b> Prepared & Analyzed: 02/02/11										
Gasoline Range Organics	40.2	5.0	mg/kg wet	50.0		80	67-116	2	200	
Surrogate: a,a,a-Trifluorotoluene	5.10		mg/kg wet	5.00		102	55-129			
<b>Matrix Spike (P1B0047-MS1)</b> Source: 1010640-08 Prepared & Analyzed: 02/02/11										
Gasoline Range Organics	50.3	6.8	mg/kg dry	68.1	BRL	74	57-113			
Surrogate: a,a,a-Trifluorotoluene	7.36		mg/kg dry	6.81		108	55-129			



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Project: NCDOT: Wilkes County Parcel  
1  
Project No: WBS #35579.1.1

Prism Work Order: 1010640  
Time Submitted: 1/28/11 2:40:00PM

**Gasoline Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P1B0047 - 5035</b>										
<b>Matrix Spike Dup (P1B0047-MSD1)</b>		<b>Source: 1010640-08</b>			<b>Prepared &amp; Analyzed: 02/02/11</b>					
Gasoline Range Organics	51.4	6.8	mg/kg dry	68.1	BRL	75	57-113	2	23	
Surrogate: a,a,a-Trifluorotoluene	7.56		mg/kg dry	6.81		111	55-129			

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Project: NCDOT: Wilkes County Parcel  
1  
Project No: WBS #35579.1.1

Prism Work Order: 1010640  
Time Submitted: 1/28/11 2:40:00PM

**Diesel Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P1B0050 - 3545A</b>										
<b>Blank (P1B0050-BLK1)</b>				Prepared: 02/01/11 Analyzed: 02/02/11						
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: <i>o</i> -Terphenyl	1.34		mg/kg wet	1.60		84	49-124			
<b>LCS (P1B0050-BS1)</b>				Prepared: 02/01/11 Analyzed: 02/02/11						
Diesel Range Organics	55.3	7.0	mg/kg wet	80.0		69	55-109			
Surrogate: <i>o</i> -Terphenyl	1.36		mg/kg wet	1.60		85	49-124			
<b>LCS Dup (P1B0050-BSD1)</b>				Prepared: 02/01/11 Analyzed: 02/02/11						
Diesel Range Organics	57.1	7.0	mg/kg wet	80.0		71	55-109	3	200	
Surrogate: <i>o</i> -Terphenyl	1.41		mg/kg wet	1.60		88	49-124			
<b>Batch P1B0092 - 3545A</b>										
<b>Blank (P1B0092-BLK1)</b>				Prepared: 02/03/11 Analyzed: 02/04/11						
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: <i>o</i> -Terphenyl	1.35		mg/kg wet	1.59		84	49-124			
<b>LCS (P1B0092-BS1)</b>				Prepared: 02/03/11 Analyzed: 02/04/11						
Diesel Range Organics	55.1	7.0	mg/kg wet	79.9		69	55-109			
Surrogate: <i>o</i> -Terphenyl	1.44		mg/kg wet	1.60		90	49-124			
<b>LCS Dup (P1B0092-BSD1)</b>				Prepared: 02/03/11 Analyzed: 02/04/11						
Diesel Range Organics	55.9	7.0	mg/kg wet	79.9		70	55-109	1	200	
Surrogate: <i>o</i> -Terphenyl	1.48		mg/kg wet	1.60		93	49-124			
<b>Matrix Spike (P1B0092-MS1)</b>				Source: 1010640-07 Prepared: 02/03/11 Analyzed: 02/04/11						
Diesel Range Organics	70.7	8.2	mg/kg dry	93.6	BRL	76	50-117			
Surrogate: <i>o</i> -Terphenyl	1.80		mg/kg dry	1.87		96	49-124			

AMEC Earth & Env. Inc.(DOT Gree)  
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338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County Parcel  
1  
Project No: WBS #35579.1.1

Prism Work Order: 1010640  
Time Submitted: 1/28/11 2:40:00PM

**Diesel Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P1B0092 - 3545A</b>										
<b>Matrix Spike Dup (P1B0092-MSD1)</b>										
		<b>Source: 1010640-07</b>			Prepared: 02/03/11		Analyzed: 02/04/11			
Diesel Range Organics	62.0	8.2	mg/kg dry	93.7	BRL	66	50-117	13	24	
Surrogate: <i>o</i> -Terphenyl	1.67		mg/kg dry	1.87		89	49-124			

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Project: NCDOT: Wilkes County Parcel  
1  
Project No: WBS #35579.1.1

Prism Work Order: 1010640  
Time Submitted: 1/28/11 2:40:00PM

**General Chemistry Parameters - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P1B0078 - NO PREP</b>										
<b>Blank (P1B0078-BLK1)</b>					Prepared & Analyzed: 02/03/11					
% Solids	100	0.100	% by Weight							
<b>Duplicate (P1B0078-DUP1)</b>					Source: 1010640-04 Prepared & Analyzed: 02/03/11					
% Solids	77.8	0.100	% by Weight		78.4			0.8	20	

## Sample Extraction Data

**Prep Method: 3545A**

Lab Number	Batch	Initial	Final	Date
1010640-01	P1B0050	25.1 g	1 mL	02/01/11
1010640-02	P1B0050	25 g	1 mL	02/01/11
1010640-03	P1B0050	25.1 g	1 mL	02/01/11
1010640-04	P1B0050	25.24 g	1 mL	02/01/11
1010640-05	P1B0050	25.1 g	1 mL	02/01/11
1010640-06	P1B0050	25 g	1 mL	02/01/11
1010640-07	P1B0092	25 g	1 mL	02/03/11
1010640-08	P1B0092	25.12 g	1 mL	02/03/11
1010640-09	P1B0092	25.02 g	1 mL	02/03/11
1010640-10	P1B0092	25.1 g	1 mL	02/03/11

**Prep Method: 5035**

Lab Number	Batch	Initial	Final	Date
1010640-01	P1B0015	6.92 g	5 mL	02/01/11
1010640-02	P1B0015	6.47 g	5 mL	02/01/11
1010640-03	P1B0015	6.92 g	5 mL	02/01/11
1010640-04	P1B0015	6.16 g	5 mL	02/01/11
1010640-05	P1B0015	6.21 g	5 mL	02/01/11
1010640-06	P1B0015	6.86 g	5 mL	02/01/11
1010640-07	P1B0015	6.43 g	5 mL	02/01/11
1010640-08	P1B0047	7.46 g	5 mL	02/02/11
1010640-09	P1B0047	6.65 g	5 mL	02/02/11
1010640-10	P1B0047	6.56 g	5 mL	02/02/11

**NO PREP**

Lab Number	Batch	Initial	Final	Date
1010640-01	P1B0078	30 g	30 mL	02/03/11
1010640-02	P1B0078	30 g	30 mL	02/03/11
1010640-03	P1B0078	30 g	30 mL	02/03/11
1010640-04	P1B0078	30 g	30 mL	02/03/11
1010640-05	P1B0078	30 g	30 mL	02/03/11
1010640-06	P1B0078	30 g	30 mL	02/03/11
1010640-07	P1B0078	30 g	30 mL	02/03/11
1010640-08	P1B0078	30 g	30 mL	02/03/11
1010640-09	P1B0078	30 g	30 mL	02/03/11
1010640-10	P1B0078	30 g	30 mL	02/03/11



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: AMEC E+E

Report To/Contact Name: Helen Corley

Reporting Address: 338 N Elm St  
Greensboro, NC 27401

Phone: 336-691-5398 Fax (Yes) (No): \_\_\_\_\_

Email (Yes) (No) Email Address: helen.corley@amec.com

EDD Type: PDF  Excel  Other \_\_\_\_\_

Site Location Name: Parcel 1

Site Location Physical Address: North Wilkesboro

# CHAIN OF CUSTODY RECORD

PAGE \_\_\_\_\_ OF \_\_\_\_\_ QUOTE # TO ENSURE PROPER BILLING: WBS-35579-1.1

Project Name: Wilkes County

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: Helen Corley

Address: Same

Purchase Order No./Billing Reference WBS-35579-1.1

Requested Due Date  1 Day  2 Days  3 Days  4 Days  5 Days

"Working Days"  6-9 Days  Standard 10 days  Rush Work Must Be Pre-Approved

Samples received after 15:00 will be processed next business day.

Turnaround time is based on business days, excluding weekends and holidays. (SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY			
	YES	NO	N/A
Samples INTACT upon arrival?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Received ON WET ICE? Temp <u>2.7</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROPER PRESERVATIVES indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Received WITHIN HOLDING TIMES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CUSTODY SEALS INTACT?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
VOLATILES rec'd W/O HEADSPACE?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PROPER CONTAINERS used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 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		DRD	GRD/GRS							
P1-SB-1(3-5)	1-27-11	940	Soil	G VOA	4	2G 2VOA	None/Method	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						2x 40(MeOH) 1x 4oz(Clr) 1x 2oz	01
P1-SB-2(8-10)		945						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							02
P1-SB-3(3-5)		950						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							03
P1-SB-4(3-5)		1000						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							04
P1-SB-4(8-10)		1005						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							05
P1-SB-5(2-4)		1010						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							06
P1-SB-6(1.5-3)		1020						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							07
P1-SB-7(4-6)		1035						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							08
P1-SB-8(3-5)		1110						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							09
P1-SB-9(3-5)		1120						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							10

Sampler's Signature: Troy Holzschuh Sampled By (Print Name): Troy L Holzschuh Affiliation: AMEC

**PRESS DOWN FIRMLY - 3 COPIES**

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) <u>Troy L Holzschuh</u>	Received By: (Signature) _____	Date <u>1-28-11</u>	Military/Hours <u>1440</u>
Relinquished By: (Signature) _____	Received By: (Signature) _____	Date _____	
Relinquished By: (Signature) _____	Received For Prism Laboratories By: _____	Date <u>1/28/11</u>	Military/Hours <u>1440</u>
Method of Shipment: 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.		COC Group No. <u>1010640</u>	

Additional Comments:

## PRISM USE ONLY

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

NPDES:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

GROUNDWATER:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

DRINKING WATER:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

SOLID WASTE:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

RCRA:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

CERCLA:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

LANDFILL:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

OTHER:  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)