

**PRELIMINARY SITE ASSESSMENT  
FOR  
PARCEL #907 SYLVIA GUY MATTHEWS PROPERTY**

**STATE PROJECT: R-2303A  
WBS ELEMENT: 34416.1.1  
NC 24 FROM WEST OF SR 1006 (MAXWELL RD./CLINTON RD.) IN  
CUMBERLAND COUNTY TO SR 1853 (JOHN NUNNERY RD.)**

**PREPARED FOR:**



**NCDOT GEOTECHNICAL ENGINEERING UNIT  
GEOENVIRONMENTAL SECTION  
1589 MSC  
RALEIGH, NORTH CAROLINA 27699-1589**

**JANUARY 7, 2011  
REVISED JANUARY 12, 2011**

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**CATLIN PROJECT NO. 210124**

**CORPORATE GEOLOGY LICENSE CERTIFICATION NO. C-118  
CORPORATE LICENSURE NO. FOR ENGINEERING SERVICES C-0585**

## TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE OF INVESTIGATION AND DESCRIPTION	1
2.0 METHODS	2
2.1 FIELD METHODS	2
2.2 LABORATORY TESTING	4
3.0 RESULTS	4
4.0 SUMMARY AND RECOMMENDATIONS	5
5.0 LIMITATIONS	6
6.0 SIGNATURES	6

## TABLES

TABLE 1	SUMMARY OF SOIL LABORATORY RESULTS – EPA METHOD 8015 – PARCEL #907
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## FIGURES

FIGURE 1	GENERAL LOCATION
FIGURE 2	STATE PROJECT R-2303A STA 16+90.00 TO 376+28.96
FIGURE 3	PARCEL #907 – SYLVIA GUY MATTHEWS PROPERTY

## APPENDICES

APPENDIX A	BORING LOGS
APPENDIX B	LABORATORY REPORT AND CHAIN OF CUSTODY RECORD
APPENDIX C	SCHNABEL GEOPHYSICAL REPORT

**Preliminary Site Assessment  
for  
Parcel #907 Sylvia Guy Matthews Property**

**State Project: R-2303A  
WBS Element: 34416.1.1  
NC 24 from West of SR 1006 (Maxwell Rd./Clinton Rd.) in Cumberland County  
to SR 1853 (John Nunnery Rd.)**

**January 7, 2011  
Revised January 12, 2011**

**1.0 PURPOSE OF INVESTIGATION AND DESCRIPTION**

CATLIN Engineers and Scientists (CATLIN) were retained by the North Carolina Department of Transportation (NCDOT) Geotechnical Engineering Unit to provide a field investigation concluding with a Preliminary Site Assessment (PSA) for the above referenced properties. In response to a Request for Technical and Cost Proposal (RFP) dated October 22, 2010, and subsequent site reconnaissance and discussions with NCDOT GeoEnvironmental Project Manager Mr. Ethan Caldwell, PE, LG, CATLIN submitted a proposal for conducting an investigation at nine (9) parcels near Stedman, North Carolina. Figure 1 illustrates the general location and the State Project is illustrated on Figure 2.

This report documents our activities and findings at Parcel #907, Sylvia Guy Matthews Property. The following specific parcel information was provided by NCDOT:

Parcel #907 Sylvia Guy Matthews Property

Vacant White Store  
6449 Clinton Rd.  
Stedman, NC 28391  
Plan Sheet 15/16  
Facility ID: None Identified

**Property Owner:**  
Anna M. Moore  
PO Box 414  
Stedman, NC 28391

Currently this site is a vacant store. Historically the site operated as a gas station. The site is located on north side of Clinton Road approximately 1800 feet west of Windwood Drive. A UST was observed in front of the store. According to NCDENR's UST Section registry there are no known Facility IDs or Groundwater Incidents associated with this site.

The site is illustrated on Figure 3.

According to the RFP:

Acquisition of the right-of-way is necessary for NC 24 roadway construction (above referenced State Project R-2303A) and specifically at the above referenced parcel. A site investigation is necessary to determine the presence of USTs and/or contaminated soil in the proposed right-of-way and/or easement.

The work scope as requested includes:

- Notify property owners/occupants of intent as applicable.
- Locate all USTs and determine approximate size and contents (if any). Locate all USTs and determine approximate size and contents (if any).
- Locate monitoring wells that may be impacted during construction.
- Determine if contaminated soils are present.
- If contamination is evident, estimate the quantity of impacted soils and indicate the approximate area of soil contamination on a site map.
- Prepare and submit one report of findings including field activities, findings, and recommendations for each site in triplicate and electronically to the NCDOT GeoEnvironmental Section.

In addition to the RFP, NCDOT provided plan sheets associated with the roadway construction. CATLIN and NCDOT personnel agreed to approximate proposed boring and sample locations within the right-of-way and/or easement for soil sample collection and total petroleum hydrocarbons (TPH) diesel and gasoline range organics (DRO and GRO) laboratory analysis during a October 26, 2010 site reconnaissance meeting.

## **2.0 METHODS**

Approximate proposed borings were indicated in the field with NCDOT personnel during initial site reconnaissance and before final Workplan submittal. Per NCDOT request, borings (soil samples) were located near known or suspect UST systems and proposed drainage features (as indicated on NCDOT provided plan sheets).

CATLIN coordinated geophysical activities concurrently with soil boring and sampling. Final sampling activities were completed after the geophysical survey. CATLIN's field activities concluded on November 22, 2010.

### **2.1 FIELD METHODS**

All field work was conducted in general accordance with state and federal guidelines and industry standards.

Underground utility locating was coordinated by CATLIN personnel. The North Carolina One Call Center (NC-1-Call) was contacted for underground utility location. Proposed boring locations were marked before NC-1-Call personnel were on-site. The areas around the proposed boring locations were checked and found to be clear of any underground utilities or alternate locations were indicated by NC-1-Call personnel.

CATLIN personnel gathered subsurface soil data at the site by Direct Push Technology (DPT) boring advancement using an AMS PowerProbe™ 9600D (PowerProbe). The borings were advanced to depth by static force and a 90-pound hydraulic percussion hammer. Two and one-quarter inch diameter by four-foot length steel is used as casing. Soil samples were continuously collected in four-foot long and one and one-half inch diameter clear liners. Liners are removed from the casing and then cut in half longitudinally to allow for visual/manual classification utilizing the Unified Soil Classification System (USCS). Borings were identified by the parcel number (as indicated by NCDOT) followed by "DPT" and consecutive numbers starting with "01" at each parcel (example: 907DPT-01). Soil samples were collected continuously from near the surface to boring termination. Soils were removed from the liners in two-foot intervals and placed in sealable polyethylene bags for organic vapor analysis (OVA) headspace screening utilizing a photo ionization detector (PID). The USCS and OVA/PID information was recorded on field logs and has been transferred to the Boring Logs provided in Appendix A.

Soil samples were collected for laboratory analysis above the water table using roughly a one-foot interval of the two-foot sample revealing the highest OVA/PID reading. Sample identification was based on the boring identification followed by sample depth in parentheses (example: 907DPT-01 (2-3')).

New disposable nitrile gloves were worn during sampling activities. All samples were placed into laboratory provided glassware and packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity was maintained by following proper Chain of Custody procedures. A copy of the Chain of Custody is provided following the analytical report in Appendix B.

Boreholes were abandoned to just below the surface using three-eighth inch bentonite chips. Bentonite and water were poured into the borehole simultaneously to facilitate hydration. Borings located in asphalt or gravel were topped with asphalt cold patch. Final borehole and sample locations were surveyed utilizing a Trimble® GPS survey instrument.

## **2.2 LABORATORY TESTING**

Following boring advancement, selected soils were placed in the appropriately labeled glassware. In an attempt to provide information regarding petroleum impact to soils and groundwater with reasonable analytical expense, soil samples were analyzed for TPH DRO and GRO by Environmental Protection Agency (EPA) Methods 5030 and 3550 with analysis by modified 8015.

A total of nine (9) soil samples were submitted to SGS North America Inc. (NC Certification # 481). Chain of Custody documentation is included in Appendix B.

## **3.0 RESULTS**

In the event a cut is required for roadway construction or utility installation, any soil samples revealing detectable TPH concentrations will be considered petroleum impacted for handling and disposal purposes. The complete laboratory analytical reports are provided in Appendix B. Results of Schnabel's geophysical investigation including site photographs were submitted directly to NCDOT and a copy is provided in Appendix C. Schnabel's investigation results will be generally discussed in the following section.

One geophysical anomaly indicative of a potential UST was identified near the southwest corner of the building. According to the geophysical report, the possible UST is approximately four (4) to five (5) feet BLS and about 150-gallon capacity. A vent pipe was also identified on the west side of the southwest building corner. The suspected UST location is illustrated on Figure 3. Photographs of the site including the suspected UST location and vent pipe are included in the geophysical report provided in Appendix C. A suspected, former dispenser location was identified centrally along the south side (front) of the building.

Nine (9) borings were advanced for soil sample collection and one sample was collected from each boring for laboratory analysis. Borings were advanced near the suspected UST, dispenser, and along the proposed drainage feature. Boring/sample locations are illustrated on Figure 3. Borings were terminated at four (4) feet BLS except boring 907DPT-01, which was advanced to eight (8) feet BLS. Predominately clayey sands were encountered with a mix of clays and sands. Damp to saturated soils were encountered across the site approximately four (4) feet BLS. Soil samples were collected for laboratory analysis from within the two (2) foot interval with the highest OVA/PID reading. Soil samples for laboratory analysis were generally collected from within one (1) to three (3) feet BLS. Boring logs including USCS classification and OVA/PID

screening results are provided in Appendix A. Summarized analytical results are provided on Table 1 and Figure 3.

The soil samples 907DPT-09 (2-3') and 907DPT-03 (1-2') collected near the suspected UST and dispenser, respectively, revealed 8.08 milligrams per kilogram (mg/kg) and 10.1 mg/kg TPH DRO, correspondingly. This area encompasses approximately 300 square feet (ft<sup>2</sup>). Based on an assumed zone of contamination from one (1) foot BLS to the assumed water table depth of four (4) feet, approximately 33 cubic yards (yds<sup>3</sup>) of diesel impacted soils may be in the area. However, it should be noted (as illustrated on Figure 3), there is not a clean soil sample location to the south of the 907DPT-03 and 907DPT-09 borings and the estimated extent of impacted soils includes soils beneath the existing building.

The sample collected from boring 907DPT-07 along the proposed drainage feature at one (1) to two (2) feet BLS revealed 9.61 mg/kg TPH DRO. The estimated extent of petroleum impacted soils illustrated on Figure 3 only included soils within 20 feet of the boring 907DPT-07 and within the proposed drainage feature. This area is approximately 240 ft<sup>2</sup>. Based on an assumed zone of contamination from one (1) foot BLS to the assumed water table depth of four (4) feet, approximately 27 yds<sup>3</sup> of diesel impacted soils may be in the proposed drainage area.

#### **4.0 SUMMARY AND RECOMMENDATIONS**

A preliminary site assessment was conducted at the subject site as requested by NCDOT. Right-of-Way acquisition for NC 24 roadway construction is proposed at the site. In the event a cut is required for roadway construction or utility installation, any soil samples revealing detectable TPH concentrations will be considered petroleum impacted for handling and disposal purposes.

One geophysical anomaly indicative of a potential UST was identified near the southwest corner of the building. A vent pipe was also identified on the west side of the southwest building corner.

Nine (9) borings were advanced for soil sample collection and one sample was collected from each boring for laboratory analysis. Six (6) of the nine (9) soil samples did not reveal TPH concentrations above the laboratory reporting limit. One soil sample [907DPT03 (1-2')] revealed TPH DRO concentrations above the NCDENR Action Level of 10 mg/kg TPH DRO or TPH GRO (result = 10.1 mg/kg TPH DRO). The estimated extent of petroleum impact near the suspected UST encompasses approximately 300 ft<sup>2</sup> (+/- 33 yds<sup>3</sup>), however, clean soil sample locations do not completely define this estimated extent of petroleum impact soils but it is not within the proposed drainage feature.

The sample collected from boring 907DPT-07 along the proposed drainage revealed 9.61 mg/kg TPH DRO. The estimated extent of petroleum impacted soils illustrated on Figure 3 only includes soils within 20 feet of the boring 907DPT-07 and within the proposed drainage feature. This area is approximately 240 ft<sup>2</sup> (+/- 27 yds<sup>3</sup>); however, clean soil sample locations do not completely define this estimated extent of petroleum impact soils beyond the proposed drainage feature limits.

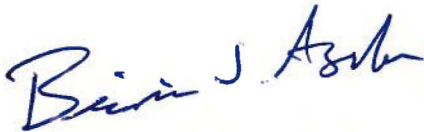
Soils encountered during drainage feature construction near the 907DPT-07 boring should be properly managed as petroleum impacted waste. Additionally, if petroleum impacts are observed during drainage feature construction north of the 907DPT03 and 907DPT-09 borings, additional steps may be required to manage the soils as petroleum impacted wastes.

CATLIN recommends forwarding a copy of this report to the NCDENR Fayetteville Regional Office UST Section with a cover letter indicating the presence of a possible UST and petroleum impacted soils above NCDENR Action Level at this site.

## 5.0 LIMITATIONS

This report is based on the agreed work scope and a review of available data from limited sampling. It is possible that this investigation may have failed to reveal the presence of contamination in the project area where such contamination may exist. Although CATLIN has used accepted methods appropriate for soil and groundwater sampling, CATLIN cannot guarantee that additional soil and/or groundwater contamination does not exist.

## 6.0 SIGNATURES



Benjamin J. Ashba  
Project Manager



G. Richard Garrett, P.G.  
Senior Project Manager



## TABLES

**TABLE 1**  
**SUMMARY OF SOIL LABORATORY RESULTS**  
**EPA METHOD 8015**

Parcel #907  
Sylvia Guy Matthews Property (Anna M. Moore - Property Owner)  
6449 Clinton Road

Sample ID	Contaminant of Concern →	Diesel Range Organics	Gasoline Range Organics
	Date Collected		
907 DPT-01 (2-3')	11/15/2010	<6.86	<4.99
907 DPT-02 (2-3')	11/15/2010	<6.70	<4.84
907 DPT-03 (1-2')	11/15/2010	<b>10.1</b>	<4.91
907 DPT-04 (2-3')	11/15/2010	<6.85	<4.73
907 DPT-05 (2-3')	11/15/2010	<6.54	<4.99
907 DPT-06 (1-2')	11/15/2010	<6.91	<4.25
907 DPT-07 (1-2')	11/15/2010	<b>9.61</b>	<6.43
907 DPT-08 (2-3')	11/15/2010	<6.96	<5.03
907 DPT-09 (2-3')	11/22/2010	<b>8.08</b>	<4.60


All results in milligrams per kilogram (mg/kg).

Sample depth in feet provide in parenthesis ( ) as part of the Sample ID.

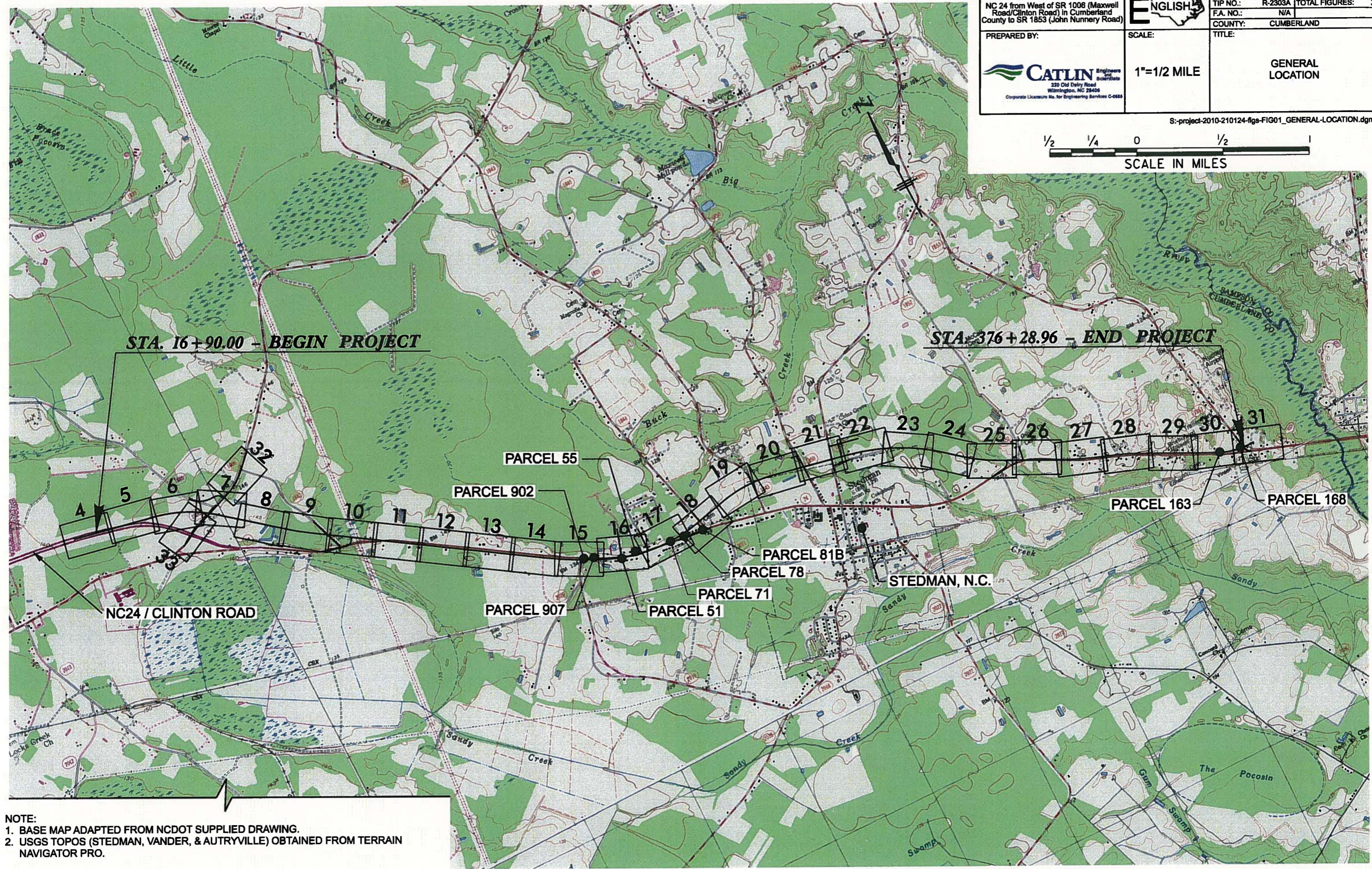
< = Less than reporting limit

Results in bold exceed the reporting limit.



## FIGURES

DESCRIPTION: NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)	ENGLISH	WBS ELEM.: 34416.1.1	FIGURE NO. 1
PREPARED BY:  220 Old Dairy Road Wilmington, NC 28405 Corporate License No. for Engineering Services C-0585	SCALE:  1"=1/2 MILE	TIP NO.: R-2303A	TOTAL FIGURES: 3
		F.A. NO.: N/A	
		COUNTY: CUMBERLAND	
		TITLE:  GENERAL LOCATION	

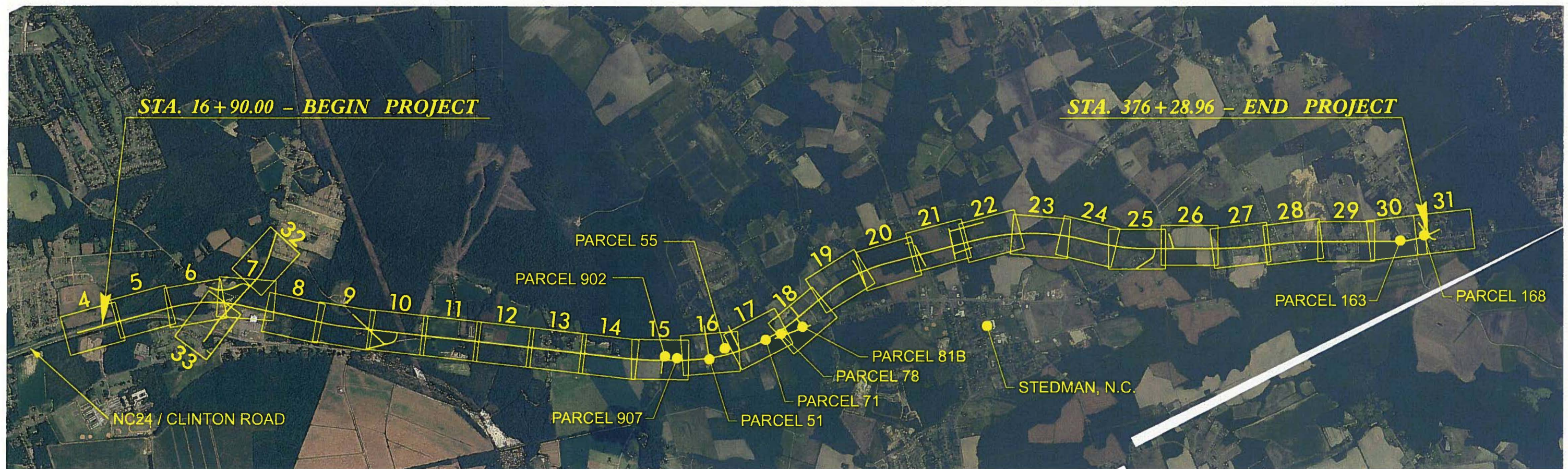
S:\project-2010-210124-figs-FIG01\_GENERAL-LOCATION.dgn



NOTE:  
 1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.  
 2. USGS TOPOS (STEDMAN, VANDER, & AUTRYVILLE) OBTAINED FROM TERRAIN NAVIGATOR PRO.

DESCRIPTION: NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunery Road)		WBS ELEM.: 34418.1.1	FIGURE NO. 2
		TIP NO.: R-2303A	TOTAL FIGURES: 3
		F.A. NO.: N/A	
PREPARED BY:	SCALE:	COUNTY: CUMBERLAND	
 220 Old Dalry Road Wilmington, NC 28408 Corporate License No. for Engineering Services C-6585	1"=1/2 MILE	TITLE:  STATE PROJECT R-2303A STA 16+90.00 TO 376+28.96	

S:-project-2010-210124-figs-FIG02\_AERIAL-LAYOUT.dgn



NOTE:  
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.  
2. AERIAL PHOTOS OBTAINED FROM TERRAIN NAVIGATOR PRO.

DESCRIPTION: NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)

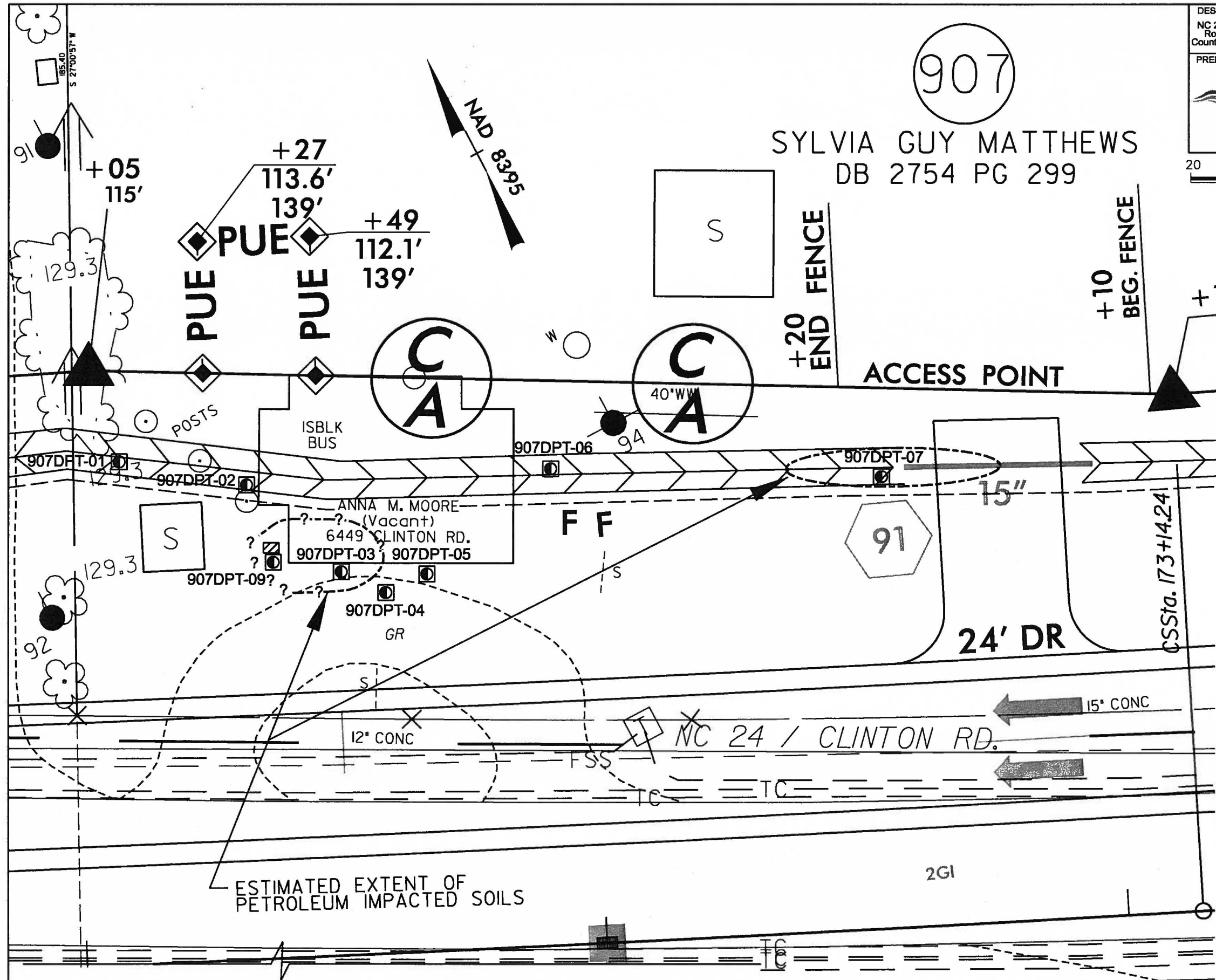
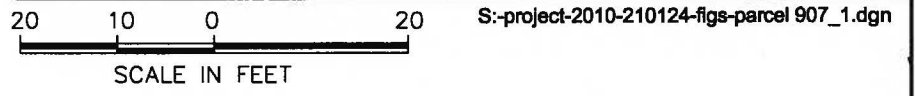
PREPARED BY: CATLIN Engineers and Scientists  
220 Old Dairy Road  
Wilmington, NC 28405  
Corporate License No. for Engineering Services C-4558

SCALE: 1"=20'

WBS ELEM.: 34418.1.1  
TIP NO.: R-2303A  
FA. NO.: N/A  
COUNTY: CUMBERLAND

FIGURE NO.: 3  
TOTAL FIGURES: 3

TITLE: PARCEL #907  
SYLVIA GUY MATTHEWS  
PROPERTY



**SUMMARY OF SOIL LABORATORY RESULTS  
EPA METHOD 8015**

Sample ID	Contaminant of Concern Date Collected	Diesel Range Organics	Gasoline Range Organics
907 DPT-02 (2-3')	11/15/2010	<6.70	<4.84
907 DPT-03 (1-2')	11/15/2010	<b>10.1</b>	<4.91
907 DPT-04 (2-3')	11/15/2010	<6.85	<4.73
907 DPT-05 (2-3')	11/15/2010	<6.54	<4.99
907 DPT-06 (1-2')	11/15/2010	<6.91	<4.25
907 DPT-07 (1-2')	11/15/2010	<b>9.61</b>	<6.43
907 DPT-08 (2-3')	11/15/2010	<6.96	<5.03
907 DPT-09 (2-3')	11/22/2010	<b>8.08</b>	<4.60

All results in milligrams per kilogram (mg/kg).  
Sample depth in feet provide in parenthesis ( ) as part of the Sample ID  
< = Less than reporting limit  
Results in bold exceed the reporting limit.

**NOTE:**  
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.  
2. UNDERGROUND UTILITIES IDENTIFIED BY NC-ONE-CALL AND GEOPHYSICAL INVESTIGATION NOT SHOWN.

**LEGEND**

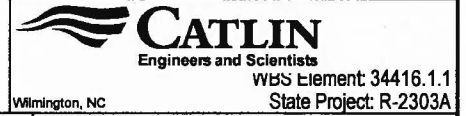
NEW	DESCRIPTION
	SOIL BORING/SAMPLE
	SUSPECTED USTS IDENTIFIED DURING GEOPHYSICAL INVESTIGATION

## APPENDICES

**APPENDIX A**  
**BORING LOGS**



# BORING LOG



PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 907DPT-01
NORTHING: 462,046.00		EASTING: 2,084,414.00	DRILLER: Michael D. Mason
SYSTEM: NCSP NAD 83 (USft)		BORING LOCATION: Western property line @ proposed drainage.	CREW:
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 8.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --


DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm)				LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
			0	1000	2000	3000						
0.0									0.0	LAND SURFACE		
	DIRECT PUSH		▲2.0				SC		1.0	Clayey, f. SAND. Brown.		
									1.5	Wood.		
2.0												
	DIRECT PUSH		▲5.6				SC			Clayey, f. to med. SAND. Orangish brown. Moist @ 4ft. Sat. @ 5ft.		
3.0												
	DIRECT PUSH		▲1.7				SP		5.0	Med. SAND. Poorly graded. Light gray.		
4.0												
	DIRECT PUSH		▲3.0				SC		6.0	Clayey, f. to med. SAND. Orangish brown.		
6.0									6.5			
	DIRECT PUSH						CH			CLAY. High plast. Med. stiff. Gray.		
8.0									8.0	Boring Terminated at Depth 8.0 ft		

CATLIN ENVIRO. LOG - 210124 - 907 - NC24-MATTHEWS PROPERTY.GPJ CATLIN.GDT - 12/28/10

▽ = 0hr. DTW      ▼ = 24hr. DTW

# BORING LOG

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 907DPT-02
NORTHING: 462,031.00		EASTING: 2,084,433.00	DRILLER: Michael D. Mason
SYSTEM: NCSP NAD 83 (USft)		BORING LOCATION: West side of building @ proposed drainage.	CREW:
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm)				LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000				4000	DEPTH
0.0									0.0	LAND SURFACE	
	DIRECT PUSH		▲2.1				SC			Clayey, f. to med. SAND. Brown. Moist @ 4ft.	
2.0											
3.0	DIRECT PUSH		▲2.7								
4.0									4.0	Boring Terminated at Depth 4.0 ft	

CATLIN\ENVIRO.LOG\_210124\_907\_NC24\MATTHEWS.PROPERTY.GPJ.CATLIN.GDT\_12/28/10

▽ = 0hr. DTW      ▼ = 24hr. DTW

# BORING LOG

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 907DPT-03
NORTHING: 462,007.00		EASTING: 2,084,442.00	CREW:
SYSTEM: NCSP NAD 83 (USft)		BORING LOCATION: West side of suspected dispenser.	LAND ELEV.: NM
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	
							DEPTH	ELEVATION
0.0							0.0	LAND SURFACE
1.0	DIRECT PUSH		▲2.8			SC		Clayey, f. to med. SAND. Varying browns. Moist @ 4ft.
2.0								
4.0	DIRECT PUSH		▲2.6				4.0	Boring Terminated at Depth 4.0 ft

CATLIN ENVRO LOG 210124\_907\_NC24-MATTHEWS-PROPERTY.GPJ CATLIN.GDI 12/28/10

▽ = 0hr. DTW      ▼ = 24hr. DTW

# BORING LOG


PROJECT NO.:	210124	STATE:	NC	COUNTY:	Cumberland	LOCATION:	Stedman
PROJECT NAME:	NC 24 from West of SR 1006 in Cumberland County to SR 1853			LOGGED BY:	Ben Ashba	BORING ID:	907DPT-04
NORTHING:	462,000.00	EASTING:	2,084,447.00	DRILLER:	Michael D. Mason	CREW:	
SYSTEM:	NCSP NAD 83 (USft)	BORING LOCATION:	South of suspected dispenser.			LAND ELEV.:	NM
DRILL MACHINE:	Power Probe	METHOD:	Direct Push	0 HOUR DTW:	Dry	BORING DEPTH:	4.0
START DATE:	11/15/10	FINISH DATE:	11/15/10	24 HOUR DTW:	N/A	ROCK DEPTH:	--

DEPTH	BLOW COUNT				MOI.	PID RESULTS (ppm)				LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
	0.5	0.5	0.5	0.5		0	1000	2000	3000						
0.0													0.0	LAND SURFACE	
2.0					▲2.9									Clayey, f. to med. SAND. Varying browns. Moist @ 4ft.	
3.0					▲4.6					907 DPT-03 (2-3)	SC				
4.0													4.0	Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG. 210124\_907\_NC24-MATTHEWS PROPERTY.GPJ.CATLIN.GDT. 12/28/10

# BORING LOG

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 907DPT-05
NORTHING: 461,999.00		EASTING: 2,084,456.00	DRILLER: Michael D. Mason
SYSTEM: NCSP NAD 83 (USft)		BORING LOCATION: East side of suspected dispenser.	CREW:
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm)				LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000				4000	DEPTH
0.0									0.0	LAND SURFACE	
2.0	DIRECT PUSH		2.2				SC			Clayey, f. to med. SAND. Varying browns. Moist @ 4ft.	
3.0	DIRECT PUSH		2.6			907 DPT-05 (2-3)					
4.0									4.0	Boring Terminated at Depth 4.0 ft	

CATLIN ENVISO LOG 210124\_907\_NC24-MATTHEWS-PROPERTY.GPJ CATLIN.GDT 12/28/10

# BORING LOG

PROJECT NO.:	210124	STATE:	NC	COUNTY:	Cumberland	LOCATION:	Stedman
PROJECT NAME:	NC 24 from West of SR 1006 in Cumberland County to SR 1853			LOGGED BY:	Ben Ashba	BORING ID:	
				DRILLER:	Michael D. Mason	907DPT-06	
NORTHING:	462,006.00	EASTING:	2,084,487.00	CREW:			
SYSTEM:	NCSP NAD 83 (USft)	BORING LOCATION: East side of building along proposed drainage.				LAND ELEV.:	NM
DRILL MACHINE:	Power Probe	METHOD:	Direct Push	0 HOUR DTW:	Dry	BORING DEPTH: 4.0	
START DATE:	11/15/10	FINISH DATE:	11/15/10	24 HOUR DTW:	N/A	ROCK DEPTH: --	

DEPTH	BLOW COUNT				MOI.	PID RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		
	0.5	0.5	0.5	0.5		0	1000	2000	3000	4000				DEPTH	ELEVATION	
0.0														0.0	LAND SURFACE	
1.0					2.6						907 DPT-06 (1-2)	SP	F. to med. SAND. Brown to orangish brown. Moist @ 4ft.			
2.0																
					2.1											
4.0														4.0	Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG 210124\_907\_NC24-MATTHEWS PROPERTY.GPJ\_CATLIN.GDT 12/28/10

▽ = 0hr. DTW

▼ = 24hr. DTW

# BORING LOG

**CATLIN**  
Engineers and Scientists  
Wilmington, NC  
WBS Element: 34416.1.1  
State Project: R-2303A

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 907DPT-07
DRILLER: Michael D. Mason			
NORTHING: 461,975.00	EASTING: 2,084,542.00	CREW:	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: East of building along proposed drainage.		LAND ELEV.: NM
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm)				LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000				4000	DEPTH
0.0									0.0	LAND SURFACE	
1.0	DIRECT PUSH		4.5				907 DPT-07 (1-2)	SC	4.0	Clayey, f. to med. SAND. Brown. Moist @ 4ft.	
2.0	DIRECT PUSH		2.4								
4.0									4.0	Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG. 210124\_907\_NC24MATTHEWS.PROPRTY.GP.L.CATLIN.GDT.12/28/10

▽ = 0hr. DTW      ▼ = 24hr. DTW

# BORING LOG

PROJECT NO.:	210124	STATE:	NC	COUNTY:	Cumberland	LOCATION:	Stedman	
PROJECT NAME:	NC 24 from West of SR 1006 in Cumberland County to SR 1853			LOGGED BY:	Ben Ashba		BORING ID:	
				DRILLER:	Michael D. Mason		<b>907DPT-08</b>	
NORTHING:	461,940.00	EASTING:	2,084,614.00		CREW:			
SYSTEM:	NCSP NAD 83 (USft)	BORING LOCATION:	Far East side along proposed drainage.				LAND ELEV.:	NM
DRILL MACHINE:	Power Probe	METHOD:	Direct Push		0 HOUR DTW:	Dry	BORING DEPTH:	4.0
START DATE:	11/15/10	FINISH DATE:	11/15/10		24 HOUR DTW:	N/A	ROCK DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm)					LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
			0	1000	2000	3000	4000						
0.0										0.0	LAND SURFACE		
	DIRECT PUSH		▲1.5										
2.0								SC			Clayey, f. to med. SAND. Brown to orangish brown. Moist @ 4ft.		
							907 DPT-08 (2-3)						
3.0	DIRECT PUSH		▲2.3										
4.0										4.0	Boring Terminated at Depth 4.0 ft		

CATLIN ENVIRO. LOG. 210124\_907\_NC24-MATTHEWS PROPERTY.GPJ.CATLIN.GDT\_12/28/10

▽ = 0hr. DTW

▼ = 24hr. DTW



# BORING LOG

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 907DPT-09
DRILLER: Michael D. Mason			
NORTHING: 462,015.00	EASTING: 2,084,431.00	CREW:	
SYSTEM: NCSP NAD 83 (USft)		BORING LOCATION: Near SW corner of building and UST.	
LAND ELEV.: NM			
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/22/10	FINISH DATE: 11/22/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	U S C S	L O G	SOIL AND ROCK		
							DEPTH	DESCRIPTION	ELEVATION
0.0							0.0	LAND SURFACE	
					SM		0.3	Topsoil	
1.0	DIRECT PUSH		4.7						
2.0	DIRECT PUSH		4.7		SP			F. SAND. Brown.	
3.0	DIRECT PUSH		4.8	907 DPT-09 (2-3)					
4.0	DIRECT PUSH		3.7		SC			Clayey, f. SAND. Brown.	
							4.0	Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG. 210124\_907\_NC24-MATTHEWS PROPERTY.GP.L.CATLIN.GDT. 12/28/10

**APPENDIX B**

**LABORATORY REPORT AND CHAIN OF CUSTODY RECORD**



Ben Ashba  
Richard Catlin & Associates  
P.O. Box 10279  
Wilmington, NC 28404-0279

Report Number: G128-2619

Client Project: NCDOT Stedman PSAs

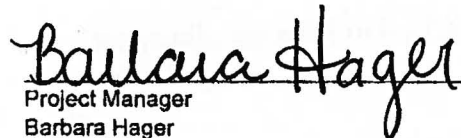
Dear Ben Ashba,

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

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

Thank you for using SGS North America, Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America, Inc.

 12/2/10  
Project Manager Date  
Barbara Hager

List of Reporting Abbreviations  
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

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

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are  $10\% < \%R < LCL$ ; # of MEs are allowable and compounds are not detected in the sample.

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

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

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

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

% Rec = Percent Recovery

% solids = Percent Solids

**Special Notes:**

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

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: 907 DPT-01 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-1A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 13:30  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 86.45

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.99	mg/Kg	1	11/22/10 14:26

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	98.1	98.1		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 6.95 g  
 Final Volume: 5 mL

Analyst: WMC

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-02 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-2A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 14:00  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 87.36

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.84	mg/Kg	1	11/22/10 14:53

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	101.0	101.0		70-130

Comments:

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 7.1 g  
 Final Volume: 5 mL

Analyst: 

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: 907 DPT-03 (1-2')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-3A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 14:15  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 91.42

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.91	mg/Kg	1	11/22/10 15:20

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	102.0	102.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 6.69 g  
 Final Volume: 5 mL

Analyst: WML

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-04 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-4A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 14:30  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 87.21

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.73	mg/Kg	1	11/22/10 15:46

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	97.3	97.3		70-130

Comments:

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 7.27 g  
 Final Volume: 5 mL

Analyst: ml



**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: 907 DPT-05 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-5A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 14:45  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 88.41

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.99	mg/Kg	1	11/22/10 16:13

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	98.6	98.6		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 6.8 g  
 Final Volume: 5 mL

Analyst: mm

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-06 (1-2')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-6A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 15:00  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 89.71

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.25	mg/Kg	1	11/22/10 16:41

**Surrogate Spike Results**

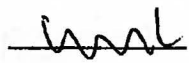
	Added	Result	Recovery	Flag	Limits
BFB	100	105.0	105.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 7.87 g  
 Final Volume: 5 mL

Analyst: 

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-07 (1-2')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-7A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 15:15  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 90.74

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.43	mg/Kg	1	11/22/10 17:07

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	96.3	96.3		70-130

Comments:

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 5.14 g  
 Final Volume: 5 mL

Analyst: ml

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-08 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-8A  
 Lab Project ID: G128-2619  
 Report Basis: Dry Weight

Analyzed By: BAO  
 Date Collected: 11/15/2010 15:30  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 90.02

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.03	mg/Kg	1	11/22/10 17:35

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	99.8	99.8		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP112210  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: BAO

Prep Method: 5035  
 Initial Wt/Vol: 6.63 g  
 Final Volume: 5 mL

Analyst: WML

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-01 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-1D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 13:30  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 86.45  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.86	mg/Kg	1	11/22/10 23:05
<b>Surrogate Spike Results</b>					
		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	26.8	66.9

**Comments:**

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 33.72 G  
 Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481  
 N.C. Certification #481

Reviewed By:   
 Page 89 of 101

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-02 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-2D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 14:00  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 87.36  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.70	mg/Kg	1	11/22/10 23:33
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	28.8	72.1

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 34.15 G  
 Prep Final Vol: 10 mL

Analyst: FK

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-03 (1-2')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-3D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 14:15  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 91.42  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	10.1	6.81	mg/Kg	1	11/23/10 00:01
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	31.6	79

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 32.13 G  
 Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481  
 N.C. Certification #481

Reviewed By:   
 Page 91 of 103

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-04 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-4D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 14:30  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 87.21  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.85	mg/Kg	1	11/23/10 00:29
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	30.7	76.7

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC8  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 33.49 G  
 Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481  
 N.C. Certification #481

Reviewed By: [Signature]  
 Page 92 of 100 XLS



**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-05 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-5D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 14:45  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 88.41  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.54	mg/Kg	1	11/23/10 00:58
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	31	77.6

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 34.61 G  
 Prep Final Vol: 10 mL

Analyst: FL

NC Certification #481  
 N.C. Certification #481

Reviewed By: [Signature]  
 Page 93 of 109

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-08 (1-2')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-6D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 15:00  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 89.71  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.91	mg/Kg	1	11/23/10 01:28
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	31.8	79.6

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 32.28 G  
 Prep Final Vol: 10 mL

Analyst: FA

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-07 (1-2')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-7D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 15:15  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 90.74  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	9.61	6.75	mg/Kg	1	11/23/10 01:54
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	32.6	81.5

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC8  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 32.65 G  
 Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481  
 N.C. Certification #481

Reviewed By: [Signature]  
 Page 95 of 95

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-08 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2619-8D  
 Lab Project ID: G128-2619

Date Collected: 11/15/2010 15:30  
 Date Received: 11/19/2010  
 Matrix: Soil  
 Solids 90.02  
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.96	mg/Kg	1	11/23/10 02:22
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	30.3	75.8

Comments:

**Batch Information**

Analytical Batch: EP112210  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 17794  
 Prep Method: 3541  
 Prep Date: 11/22/10  
 Initial Prep Wt/Vol: 31.9 G  
 Prep Final Vol: 10 mL



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<b>1</b> CLIENT: <u>CATLIN / NCDOT</u> CONTACT: <u>Ben Ashba @ CATLIN</u> PHONE NO: <u>910 1452-5861</u> PROJECT: <u>NCDOT Stedman PSAs</u> STATE PROJECT: <u>R-2303A</u> WBS: <u>34416.1</u> REPORTS TO: <u>Ben @ CATLIN</u> email: <u>ben.ashba@catlinusa.com</u> <u>NCDOT</u> FAX NO: <u>( )</u> INVOICE TO: <u>NCDOT Geo Enviro</u> <u>Cumberland County</u> P.O. NUMBER: <u>6300025660</u>					SGS Reference: <u>G128-2619</u>			PAGE <u>1</u> OF <u>9</u>																																																																																																																																					
<b>2</b> <table border="1"> <thead> <tr> <th>LAB NO.</th> <th>SAMPLE IDENTIFICATION</th> <th>DATE</th> <th>TIME</th> <th>MATRIX</th> <th>No CONTAINERS</th> <th>SAMPLE TYPE</th> <th>Preservatives Used</th> <th>Analysis Required</th> <th>COMB</th> <th>GRAB</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>✓ 907</td> <td>DPT-01 (2-3')</td> <td>11-15-10</td> <td>1330</td> <td>SOIL</td> <td>3</td> <td>G</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-02 (2-3')</td> <td></td> <td>1400</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-03 (1-2')</td> <td></td> <td>1415</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-04 (2-3')</td> <td></td> <td>1430</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-05 (2-3')</td> <td></td> <td>1445</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-06 (1-2')</td> <td></td> <td>1500</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-07 (1-2')</td> <td></td> <td>1515</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 907</td> <td>DPT-08 (2-3')</td> <td>✓</td> <td>1530</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 51</td> <td>DPT-01 (2-3')</td> <td>11-16-10</td> <td>815</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>✓ 51</td> <td>DPT-02 (2-3')</td> <td>✓</td> <td>1000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required	COMB	GRAB	REMARKS	✓ 907	DPT-01 (2-3')	11-15-10	1330	SOIL	3	G	✓	✓				✓ 907	DPT-02 (2-3')		1400									✓ 907	DPT-03 (1-2')		1415									✓ 907	DPT-04 (2-3')		1430									✓ 907	DPT-05 (2-3')		1445									✓ 907	DPT-06 (1-2')		1500									✓ 907	DPT-07 (1-2')		1515									✓ 907	DPT-08 (2-3')	✓	1530									✓ 51	DPT-01 (2-3')	11-16-10	815									✓ 51	DPT-02 (2-3')	✓	1000									<b>3</b>			<b>4</b>	
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<b>5</b> Collected/Relinquished By: (1) <u>Ben Ashba</u> Date <u>11/19/10</u> Time <u>1455</u> Received By: <u>[Signature]</u>				Shipping Carrier:		Samples Received Cold? (Circle) <u>YES</u> NO																																																																																																																																							
Relinquished By: (2)				Shipping Ticket No:		Temperature °C: <u>5.8, 5.8, 5.5, 5.6</u>																																																																																																																																							
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				<input type="checkbox"/> RUSH _____ Date Needed																																																																																																																																									

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Page 171 of 179



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<b>1</b> CLIENT: <u>CATLIN / NCDOT</u>					SGS Reference: <u>G(28-2619)</u>					PAGE <u>2</u> OF <u>9</u>				
CONTACT: <u>Ben Ashba@CATLIN</u> PHONE NO: <u>(910) 452-5864</u>					No CONTAINERS SAMPLE TYPE Preservatives Used Analysis Required C= COMP G= GRAS <u>Meat ICE</u> <u>GRO DZO</u> <u>3</u>					REMARKS				
PROJECT: <u>NCDOT Stedman PSAS</u> STATE PROJECT # <u>R-2303A</u> WBS: <u>34416.1.1</u>														
REPORTS TO: <u>Ben @CATLIN</u> <u>NCDOT</u> email: <u>ben.ashba@catlinusa.com</u>														
INVOICE TO: <u>NCDOT Geo Enviro</u> QUOTE # <u>Cumberland County</u> DOT P.O. NUMBER: <u>6300025660</u>														
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required	C= COMP	G= GRAS	REMARKS			
✓	SI DPT-03 (2-3')	11-16-10	930	SOIL	3	G	✓	✓						
✓	SI DPT-04 (2.5-3.5')		915											
✓	SI DPT-05 (2-3')		900								HOT			
✓	SI DPT-06 (2-3')		845											
✓	SI DPT-07 (3-4')		830											
✓	SI DPT-08 (2.5-3.5')		945											
✓	SI DPT-09 (2-3')	11-19-10	745								HOT			
✓	SI DPT-10 (2-3')		800								HOT			
✓	SI DPT-13 (1-2')		850								maybe hot			
✓	SI DPT-14 (2-3')		905								maybe hot			
<b>5</b> Collected/Relinquished By: (1) <u>Ben Ashba</u>		Date	Time	Received By:		Shipping Carrier:		Samples Received Cold? (Circle) <u>YES</u> NO						
		<u>11/19/10</u>	<u>1455</u>	<u>[Signature]</u>				Temperature °C: <u>58, 58, 55, 56</u>						
Relinquished By: (2)		Date	Time	Received By:		Special Deliverable Requirements:		Chain of Custody Seal: (Circle)						
						<u>Summary EDD</u>		INTACT      BROKEN <u>ABSENT</u>						
Relinquished By: (3)		Date	Time	Received By:		Special Instructions:								
Relinquished By: (4)		Date	Time	Received By:		Requested Turnaround Time:								
						<input type="checkbox"/> RUSH _____ Date Needed <input checked="" type="checkbox"/> <u>STD 2 week</u>								

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Form containing client information (CLIENT: CATLIN/NCDOT), project details (PROJECT: NCDOT Stedman PSAS), reports to (Ben@CATLIN), and a table of samples with columns for Lab No., Sample Identification, Date, Time, Matrix, Containers, Sample Type, Preservatives Used, Analysis Required, and Remarks. Includes a signature section at the bottom.

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Page 173 of 179

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<b>1</b> CLIENT: <u>CATLIN / NCDOT</u>					SGS Reference: <u>G128-2619</u>			PAGE <u>4</u> OF <u>9</u>	
CONTACT: <u>Ben Ashby @ CATLIN</u> PHONE NO: <u>910 452-5861</u>					<b>C O N T A I N E R S</b>	SAMPLE TYPE C= COMP G= GRAB	Preservative Used Analysis Required <u>MOOTH ICE</u> <u>3</u> <u>GRAB DIRTY</u>		
PROJECT: <u>NCDOT Stedman PSAS</u> STATE # <u>R-2303A</u> WBS: <u>34416.1.1</u>									
REPORTS TO: <u>Ben @ CATLIN</u> <u>NCDOT</u> FAX NO: <u>          </u>									
INVOICE TO: <u>NCDOT</u> QUOTE # <u>          </u> <u>Cumberland County</u> <u>Geo Enviro</u> DUT P.O. NUMBER: <u>6300025660</u>									
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX					REMARKS
✓	71 DPT-08 (7-8')	11-16-10	1420	SOIL	3	6	✓	✓	
✓	71 DPT-09 (5-6')		1440						
✓	71 DPT-10 (3-4')	✓	1500						
✓	78 DPT-01 (7-8')	11-17-10	815						
✓	78 DPT-02 (7-8')		840						maybe Hot
✓	78 DPT-03 (6-7')		930						
✓	78 DPT-04 (7-8')		1000						
✓	78 DPT-05 (6-7')		900						HOT
✓	78 DPT-06 (1-2')		1020						
✓	78 DPT-07 (7-8')	✓	1040						
<b>5</b> Collected/Relinquished By: (1) <u>Ben Ashby</u>		Date	Time	Received By:		Shipping Carrier:		Samples Received Cold? (Circle) <u>YES</u> NO	
Relinquished By: (2)		Date	Time	Received By:		Shipping Ticket No:		Temperature °C: <u>5.8, 5.8, 5.5, 5.6</u>	
Relinquished By: (3)		Date	Time	Received By:		Special Deliverable Requirements: <u>Summary EDD</u>		Chain of Custody Seal: (Circle) INTACT      BROKEN <u>ABSENT</u>	
Relinquished By: (4)		Date	Time	Received By:		Special Instructions:		Requested Turnaround Time: <input type="checkbox"/> RUSH <input checked="" type="checkbox"/> <u>STD 2 week</u>	

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Page 174 of 179

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<b>1</b> CLIENT: CATUN / NCDOT					SGS Reference: <b>G128-2619</b>					PAGE <b>5</b> OF <b>9</b>	
CONTACT: <b>Ben Ashba @ CATUN</b> PHONE NO: <b>(910) 452-5861</b>					No CONTAINERS					Preservation Used: <b>Meat Ice</b> Analysis Required: <b>(3) GPO DPO</b>	
PROJECT: <b>NCDOT Stedman PSAs State Route R-2303A</b>											
REPORTS TO: <b>Ben Ashba @ CATUN NCDOT</b> email: <b>ben.ashba@catunusa.com</b>											
INVOICE TO: <b>NCDOT</b> QUOTE#: <b>amberland County</b>											
<b>2</b> <b>Geo Enviro</b> DOTPO. NUMBER: <b>6300025660</b>											
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	3	G	✓	✓	REMARKS		
✓	81B DPT-01 (7-8')	11-18-10	1130	SOIL					HOT		
✓	81B DPT-02 (6-7')		1210						maybe Hot		
✓	81B DPT-03 (4-5')		1230						maybe Hot		
✓	81B DPT-04 (1-2')		1250								
✓	81B DPT-05 (1-2')		1315						<del>maybe Hot</del>		
✓	81B DPT-06 (1-2')		1340						maybe Hot		
✓	81B DPT-07 (2-3')		1400						maybe HOT		
✓	81B DPT-08 (1-2')		1420								
✓	81B DPT-09 (1-2')		1440								
✓	81B DPT-10 (1-2')	✓	1500	✓	✓	✓	✓	✓			
<b>5</b> Collected/Relinquished By: (1) <b>Ben Ashba</b>		Date: <b>11-19-10</b>	Time: <b>1455</b>	Received By: <b>[Signature]</b>		Shipping Carrier:		Samples Received Cold? (Circle) <b>YES</b> NO			
Relinquished By: (2)		Date:	Time:	Received By:		Shipping Ticket No:		Temperature °C: <b>58, 58, 55, 56</b>			
Relinquished By: (3)		Date:	Time:	Received By:		Special Deliverable Requirements: <b>Summary EDD</b>		Chain of Custody Seal: (Circle) INTACT BROKEN <b>ABSENT</b>			
Relinquished By: (4)		Date:	Time:	Received By:		Special Instructions:		Requested Turnaround Time: <b>2 Week</b>			
<input type="checkbox"/> RUSH _____ Date Needed:						<b>2 Week</b>					

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Page 175 of 179

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<b>1</b> CLIENT: <u>CATLYN / NCDOT</u>					SGS Reference: <u>G129-2619</u>			PAGE <u>6</u> OF <u>9</u>																																																																																																															
CONTACT: <u>Ben Ashba@CATLYN</u> PHONE NO: <u>910 452-5861</u>					<b>CONTAINERS</b>	No SAMPLE TYPE C= CGMP G= GRAB	Preservatives Used <u>meth ice</u>	Analysis Required <b>3</b>	REMARKS																																																																																																														
PROJECT: <u>NCDOT Stedman PSAs SITE # 12-2303A</u> <u>WBS: 34416.1.1</u>																																																																																																																							
REPORTS TO: <u>Ben@CATLYN</u> <u>NCDOT</u> email: <u>benashba@catlyn.usa.com</u> FAX NO: ( )																																																																																																																							
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Page 176 of 179

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<b>1</b> CLIENT: <u>CATLIN/ NCDOT</u> CONTACT: <u>Ben Ashbar @ CATLIN</u> PHONE NO: <u>(910) 452-5861</u> PROJECT: <u>NCDOT Stedman PSAs</u> <sup>State Proj # R-2303A</sup> <sub>WBS: 34416.1.1</sub> REPORTS TO: <u>Ben @ CATLIN</u> <u>NCDOT</u> <sub>email: ben.ashbar@catlinusa.com</sub> INVOICE TO: <u>NCDOT</u> <u>Geo ENVIRO</u> <sub>DOT P.O. NUMBER: 6300025660</sub>					SGS Reference: <u>G128-2619</u>					PAGE <u>7</u> OF <u>9</u>					
					No CONTAINERS	SAMPLE TYPE C= COMP G= GRAB	Preservation Used <u>Milk ICE</u>	Analysis Required <u>3</u>	<u>5/10 DPT</u>	REMARKS					
✓	163 DPT-04 (2-3')	11-17-10	1330	501L							3	G	✓	✓	
✓	163 DPT-05 (1-2')		1400												maybe Hot
✓	163 DPT-06 (1-2')		1420												maybe Not
✓	163 DPT-07 (2-3')		1440												HOT
✓	163 DPT-08 (2-3')		1530												HOT
✓	163 DPT-09 (1-2')		1600												maybe Hot
✓	163 DPT-10 (1-2')		1610												maybe Hot
✓	163 DPT-11 (3-4')		1620												
	163 DPT-12 (6-7')	11-17-10	1645												
	163 DPT-13 (6-7')	11-18-10	715												
<b>5</b> Collected/Relinquished By: (1) <u>Ben Ashbar</u>			Date	Time	Received By:			Shipping Carrier:							
Relinquished By: (2)			Date	Time	Received By:			Shipping Ticket No:							
Relinquished By: (3)			Date	Time	Received By:			Special Deliverable Requirements:							
Relinquished By: (4)			Date	Time	Received By:			Requested Turnaround Time:							
							Samples Received Cold? (Circle) <u>YES</u> NO		Temperature °C: <u>5.8, 5.8, 5.5, 5.6</u>						
							Chain of Custody Seal: (Circle) INTACT BROKEN <u>ABSENT</u>		Special Instructions: <u>Summary EDD</u>						
							<input type="checkbox"/> RUSH _____ Date Needed		<input checked="" type="checkbox"/> <u>STD 2 week</u>						

N.C. Certification #481

Page 177 of 179

SGS NORTH AMERICA, INC.



# CHAIN OF CUSTODY RECORD

## SGS North America Inc.

2/01/24

- Locations Nationwide
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  - New Jersey
  - North Carolina
  - Maryland
  - New York
  - Ohio

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099561

1 CLIENT: CATLIN/NC DOT

CONTACT: Ben Ashba@CATLIN PHONE NO: (910) 452-5861

PROJECT: NC DOT Stedman PSAs STATE PROJ # R-2303A WBS: 34416.1.1

REPORTS TO: Ben@CATLIN email: ben.ashba@catlinusa.com

INVOICE TO: NC DOT Geotech Enviro DTP.O. NUMBER: 6300025662

SGS Reference: G128-2619

PAGE 8 OF 9

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required	C= COMP	G= GRAB	REMARKS
TS ✓	163 DPT-14 (6-7')	11-18-10	740	SOIL	3	G					
(3-4) ✓	163 DPT-15 <sup>2(2-3) or (3-4)</sup>		805								check sample label
✓	163 DPT-16 (1-2')		820								maybe Hot
✓	163 DPT-17 (5-6')		850								
✓	163 DPT-18 (6-7')		920								Maybe Hot
✓	163 DPT-19 (6-7')	✓	940								maybe Hot
✓	168 DPT-01 (3-4')	11-15-10	1630								
✓	168 DPT-02 (3-4')		1645								} check sample label ID maybe (2-4') not (3-4')
✓	168 DPT-03 (3-4')		1700								
✓	168 DPT-04 (2-4')	✓	1715								

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Collected/Relinquished By: (1) Ben Ashba Date 11-19-10 Time 1455 Received By: [Signature]

Shipping Carrier: [Blank] Samples Received Cold? (Circle) YES NO

Shipping Ticket No: [Blank] Temperature °C: 5.8, 5.8, 5.5, 5.6

Relinquished By: (2) [Blank] Date [Blank] Time [Blank] Received By: [Blank]

Special Deliverable Requirements: Summary EPP Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Relinquished By: (3) [Blank] Date [Blank] Time [Blank] Received By: [Blank]

Special Instructions: [Blank]

Relinquished By: (4) [Blank] Date [Blank] Time [Blank] Received By: [Blank]

Requested Turnaround Time: [Blank]  RUSH  STD 2 weeks

N.C. Certification #481

Page 178 of 179

SGS North America, Inc.



CHAIN OF CUSTODY RECORD  
SGS North America Inc.

210 124

- Locations Nationwide
- Alaska
  - New Jersey
  - North Carolina
  - Maryland
  - New York
  - Ohio

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099562

1 CLIENT: CATUN/NCDOT

CONTACT: Ben Ashba@CATUN PHONE NO: 910 1452-5861

PROJECT: NCDOT Stedman PSAs STATE PROJ # R-2303A WBS: 34416.1.1

REPORTS TO: Bene CATUN email: ben.ashba@catunusa.com

INVOICE TO: NCDOT Geo FAVIRO DOT P.O. NUMBER: 6300025660

SGS Reference: G128-2619 PAGE 9 OF 9

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required				REMARKS
								Met	IC	HV	IC	
✓ 168	DPT-05 (3-4')	11-15-10	1730	SOIL	3	G	✓	✓				
✓ 168	DPT-06 (0-2')	11-15-10	1735	SOIL	3	G	✓	✓				
✓ 813	DPT-02	11-18-10	1730	H2O	4	G			X	X		NO LABELS <i>maybe HOT</i>

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Collected/Relinquished By: (1) Ben Ashba Date 11-19-10 Time 1455 Received By: Judy Plon

Relinquished By: (2) \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By: \_\_\_\_\_

Relinquished By: (3) \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By: \_\_\_\_\_

Relinquished By: (4) \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By: \_\_\_\_\_

Shipping Carrier: \_\_\_\_\_ Samples Received Cold? (Circle YES) NO

Shipping Ticket No: \_\_\_\_\_ Temperature °C: 5.8, 5.8, 5.5, 5.6

Special Deliverable Requirements: Summary EOP Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions: Please report any 8260/8270 Low Runs, screening OK

Requested Turnaround Time:  RUSH \_\_\_\_\_  STD 2 week

N.C. Certification #481

Page 179 of 179

SGS North America, Inc.



Ben Ashba  
Richard Catlin & Associates  
P.O. Box 10279  
Wilmington, NC 28404-0279

Report Number: G128-2622

Client Project: NCDOT Stedman PSAs

Dear Ben Ashba,

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

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

Thank you for using SGS North America, Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America, Inc.

*Barbara Hager*

Project Manager  
Barbara Hager

12/2/10

Date

List of Reporting Abbreviations  
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

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

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are  $10\% < \%R < LCL$ ; # of MEs are allowable and compounds are not detected in the sample.

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

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

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

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

% Rec = Percent Recovery

% solids = Percent Solids

**Special Notes:**

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

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: 907 DPT-09 (2-3')  
 Client Project ID: NCDOT Stedman PSAs  
 Lab Sample ID: G128-2622-1A  
 Lab Project ID: G128-2622  
 Report Basis: Dry Weight

Analyzed By: LMC  
 Date Collected: 11/22/2010 15:50  
 Date Received: 11/23/2010  
 Matrix: Soil  
 Solids 91.83

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.60	mg/Kg	1	12/01/10 16:57

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	93.8	93.8		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP120110  
 Analytical Method: 8015  
 Instrument ID: GC4  
 Analyst: LMC

Prep Method: 5035  
 Initial Wt/Vol: 7.1 g  
 Final Volume: 5 mL

Analyst: LMC



**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: 907 DPT-09 (2-3')  
Client Project ID: NCDOT Stedman PSAs  
Lab Sample ID: G128-2622-1D  
Lab Project ID: G128-2622

Date Collected: 11/22/2010 15:50  
Date Received: 11/23/2010  
Matrix: Soil  
Solids 91.83  
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	8.08	6.78	mg/Kg	1	11/30/10 03:31
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	28.2	70.5

Comments:

**Batch Information**

Analytical Batch: EP112910  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 17812  
Prep Method: 3541  
Prep Date: 11/24/10  
Initial Prep Wt/Vol: 32.13 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By: DA  
DRO.XLS  
Page 12 of 21



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  - New Jersey
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210124.  
 099711

1 CLIENT: **CATUN / NCDOT**

CONTACT: **Ben Ashb. @CATUN** PHONE NO: **(910) 452-5861**

PROJECT: **NCDOT Stearns PSAs** STATE # **R-2303A** WBS: **34416.1**

REPORTS TO: **Ben @ CATUN** email: **ben.ashb@catunusa.com**  
**NCDOT** FAX NO: **( )**

INVOICE TO: **NCDOT** QUOTE #: **Cumberland County**  
**Geo ENVIRO** State P.O. NUMBER: **630025660**

SGS Reference: **G128-2622** PAGE **1** OF **1**

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required		REMARKS
								Meq/L	IC	
✓	907 DPT-09 (2-3')	11-22-10	1550	SOIL	3	G	✓	✓		
✓	78 DPT-08 (6-7')		1410							HOT
✓	78 DPT-09 (6-7')		1430							HOT
25-532 ✓	78 DPT-10 (6-7')		1500							HOT
✓	78 DPT-11 (6-7')		1520							HOT
✓	81B DPT-18 (1-2')		1200							HOT
✓	81B DPT-19 (2-3')		1230							HOT
✓	81B DPT-20 (2-3')		1300							HOT
✓	168 DPT-07 (3-4')		1715							

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Collected/Relinquished By: (1) **Ben Ashb.** Date: **11-23-10** Time: **1100** Received By: **Barbara Hager**

Shipping Carrier: \_\_\_\_\_ Samples Received Cold? (Circle YES) NO

Shipping Ticket No: \_\_\_\_\_ Temperature °C: **2.0**

Relinquished By: (2) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_

Special Deliverable Requirements: **Summary EDO** Chain of Custody Seal: (Circle) INTACT BROKEN **ABSENT**

Relinquished By: (3) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_

Special Instructions: \_\_\_\_\_

Relinquished By: (4) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_

Requested Turnaround Time:  RUSH \_\_\_\_\_  **STD 2 week**

Date Needed

**APPENDIX C**  
**SCHNABEL GEOPHYSICAL REPORT**



December 14, 2010

Mr. Richard Garrett, LG  
Catlin Engineers and Scientists, Inc.  
P.O. Box 10279  
Wilmington, NC 28404-0279

RE:           State Project: R-2303A  
              WBS Element: 34416.1.1  
              County: Cumberland  
              Description: Stedman – NC 24 from West of SR 1006 (Maxwell Road/Clinton Road)  
                                  in Cumberland County to SR 1853 (John Nunnery Road)

**Subject:       Project 09210013.31 Report on Geophysical Surveys  
                  Parcel 907, Cumberland County, North Carolina**

Dear Mr. Garrett:

**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 two 11x17 color figures and three 8.5x11 color figures.

## **INTRODUCTION**

The work described in this report was conducted on November 9 and 19, 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 north side of Clinton Road approximately 1800 feet west of Windwood Drive in Stedman, NC. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (UST's) 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 UST's. 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 907 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 UST's.

The early time gate and differential results show anomalies apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected near the westernmost corner of the building on Parcel 907 indicated the presence of a possible UST located approximately 5 feet northwest of the westernmost, front building corner. The UST is inside the limits of the planned right-of-way and/or easement. An example GPR image showing the reflection from the possible UST on Parcel 907 is shown on Figures 3 and 4. Figures 3 and 4 also include the location of the possible UST as marked in the field. The GPR data indicate that the possible UST on Parcel 907 is buried approximately 4.0 to 5.0 feet below ground surface and is about 3 feet in diameter and about 3 feet long, equivalent to a capacity of about 150 gallons. Photographs of the possible UST location, as marked in the field, are included on Figure 5.

## **CONCLUSIONS**

Our evaluation of the geophysical data collected on the subject property on Project R-2303A in Stedman, NC indicates the following:

The geophysical data indicate the presence of a possible UST on Parcel 907 located approximately 5 feet northwest of the westernmost, front building corner. The UST is inside the planned right-of-way and/or easement. The possible UST is about 150-gallon capacity and is buried about 4.0 to 5.0 feet below ground surface.

**LIMITATIONS**

These services have been performed and this report prepared for Catlin Engineers and Scientists, 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. Strohmeyer, LG  
Project Manager



Edward D. Billington, LG  
Senior Vice President

JW:JS:NB

**Attachments: Figures (5)**

FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.31 (R-2303A, CUMBERLAND CO.)\REPORT\PARCEL 907\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 907 (R-2303A).DOCX



Parcel 907 – Sylvia Guy Matthews Property, looking north



Parcel 907 – Sylvia Guy Matthews Property, looking east



STATE PROJECT R-2303A  
NC DEPT. OF TRANSPORTATION  
CUMBERLAND CO., NORTH CAROLINA  
PROJECT NO. 09210013.31

PARCEL 907  
SITE PHOTOS

FIGURE 1



Geonics EM61-MK2



GSSI SIR-3000

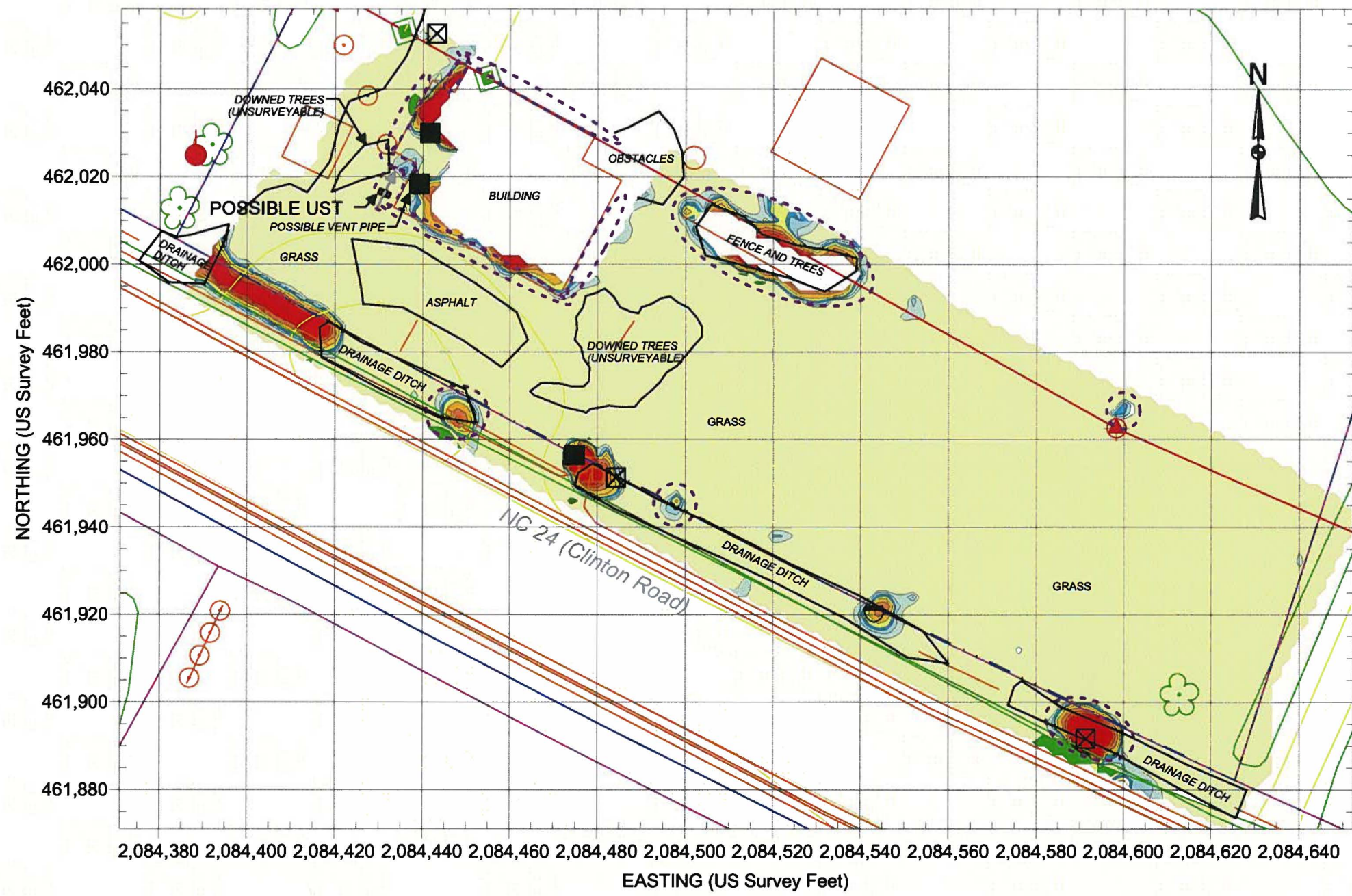


STATE PROJECT R-2303A  
NC DEPT. OF TRANSPORTATION  
CUMBERLAND CO., NORTH CAROLINA  
PROJECT NO. 09210013.31

PHOTOS OF  
GEOPHYSICAL  
EQUIPMENT USED

FIGURE 2

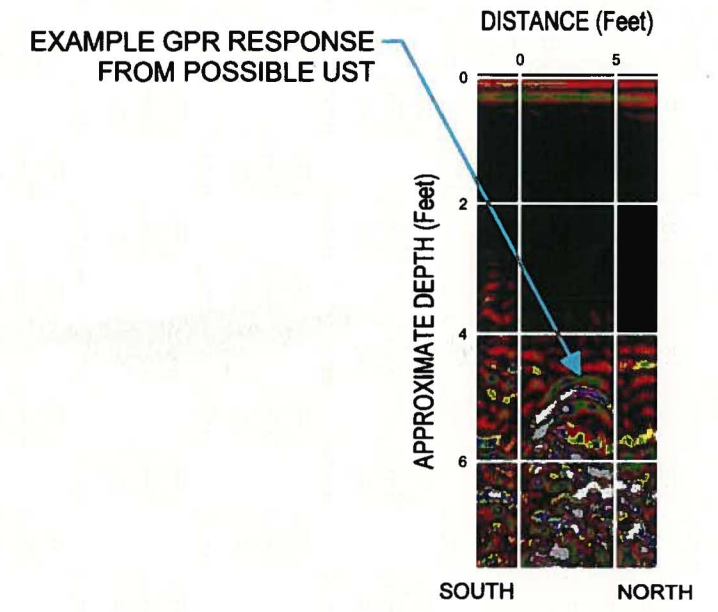
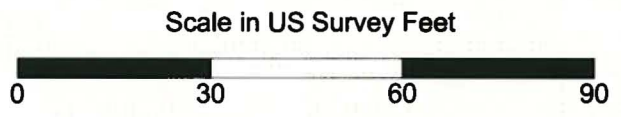
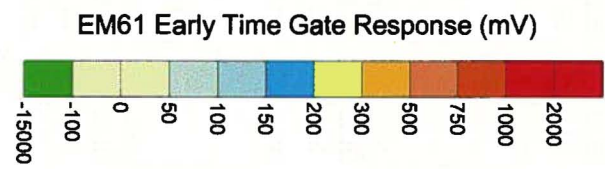




### EXPLANATION

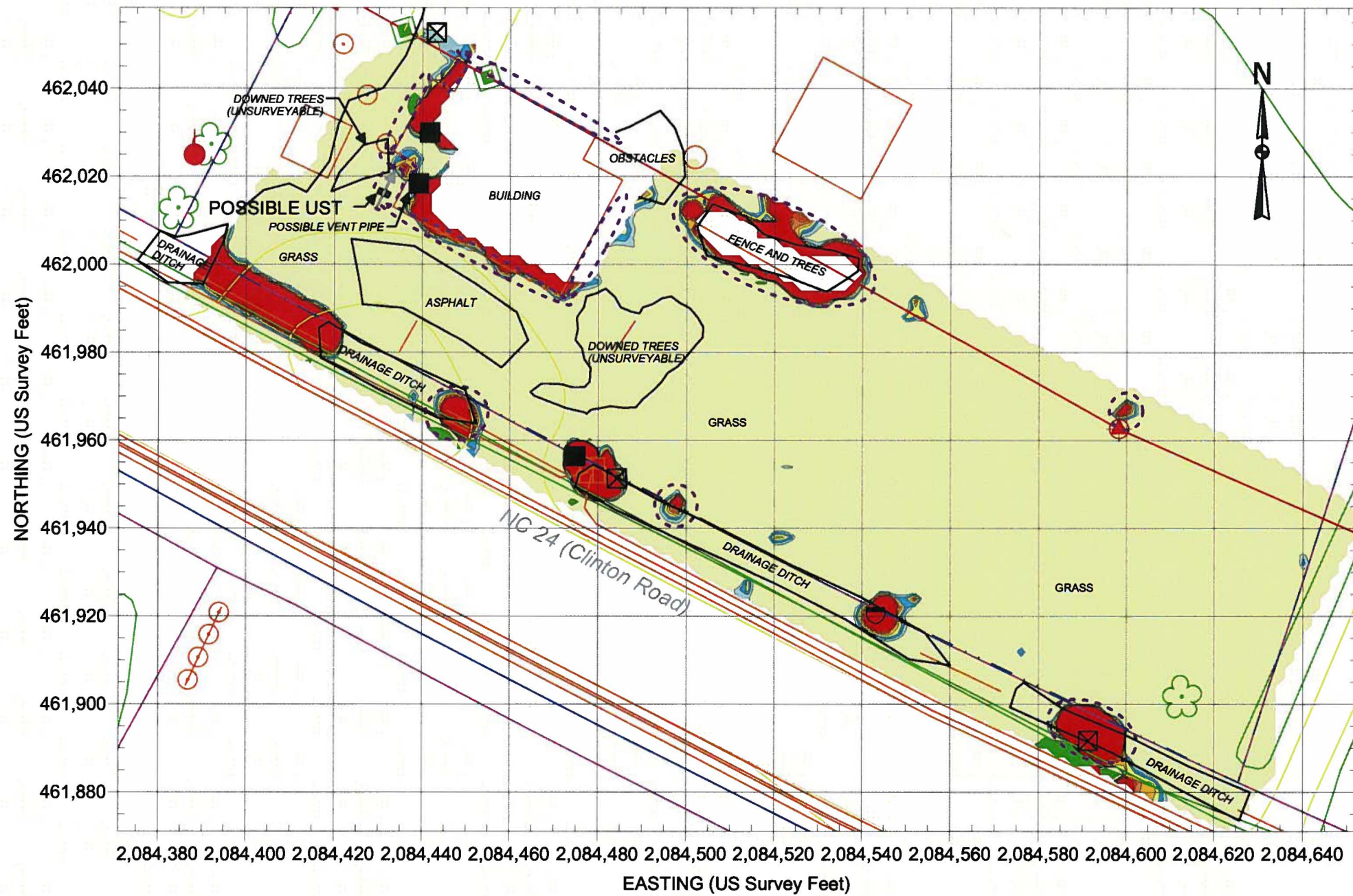
- SIGN
- UTILITY POLE
- GUY WIRE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- LIGHT POLE
- STORM SEWER INLET
- UST LID
- DOT PROPOSED RW
- DOT PROPOSED UTILITY EASEMENT
- PROPERTY LINE
- UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT [VARIOUS COLORS])
- EXAMPLE GPR LINE LOCATION
- GPR SURVEY AREA
- LOCATION OF SUSPECT UST MARKED ON SITE

REF.: NCDOT FILE: r2303a\_rdy\_psh\_15.dgn  
& r2303a\_rdy\_psh\_16.dgn  
(FOR SOME SITE FEATURES)



Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on November 9, 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 November 19, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

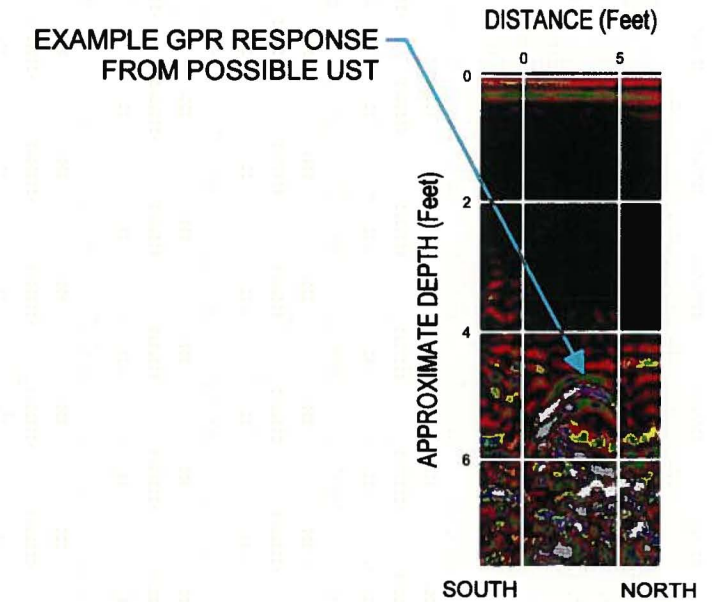
	STATE PROJECT R-2303A CUMBERLAND COUNTY, NC NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.31	PARCEL 907 EM61 EARLY TIME GATE RESPONSE <b>FIGURE 3</b>
--	--	---



### EXPLANATION

- SIGN
- UTILITY POLE
- GUY WIRE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- LIGHT POLE
- STORM SEWER INLET
- UST LID
- DOT PROPOSED RW
- DOT PROPOSED UTILITY EASEMENT
- PROPERTY LINE
- UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT (VARIOUS COLORS))
- EXAMPLE GPR LINE LOCATION
- GPR SURVEY AREA
- LOCATION OF SUSPECT UST MARKED ON SITE

REF.: NCDOT FILE: r2303a\_rdy\_psh\_15.dgn  
 & r2303a\_rdy\_psh\_16.dgn  
 (FOR SOME SITE FEATURES)



Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on November 9, 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 November 19, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	STATE PROJECT R-2303A CUMBERLAND COUNTY, NC NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.31	PARCEL 907 EM61 DIFFERENTIAL RESPONSE <b>FIGURE 4</b>
--	--	--



Parcel 907 – Sylvia Guy Matthews Property, looking southeast. Photo shows approximate marked location of the possible UST near the westernmost building corner. Note possible vent pipe next to building.



Parcel 907 – Sylvia Guy Matthews Property, looking northeast. Photo shows approximate marked location of the possible UST near the westernmost building corner.



STATE PROJECT R-2303A  
CUMBERLAND CO., NORTH CAROLINA  
NC DEPT. OF TRANSPORTATION  
PROJECT NO. 09210013.31

PHOTOS OF  
POSSIBLE  
UST LOCATION

FIGURE 5