Preliminary Site Assessment Report
William E. Andrews Property

Parcel 128
Durham
Durham County, North Carolina

H&H Job No. ROW-416
State Project U-0071
WBS Element #34745.1.1
August 15, 2013

hart hickman
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2923 South Tryon Street, Suite 100
Charlotte, NC 28203
704.586.0007 main

3334 Hillsborough Street
Raleigh, NC 27607
919.847.4241 main

www.harthickman.com

Preliminary Site Assessment Report
William E. Andrews Property Parcel #128
Durham, Durham County, North Carolina
H&H Project ROW-416

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1.0 Introduction

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the William E. Andrews property (Parcel 128) located at 2215 Holloway Street in Durham, Durham County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with H&H's May 8, 2013 proposal.

The purpose of this assessment was to collect data to evaluate the potential for underground storage tank (UST) systems and the presence or absence of impacted soil in proposed right-of-way and construction easement areas on the subject property related to the proposed widening of Holloway Street (State Project U-0071). Because the Parcel 128 property is a potential total take, PSA activities were conducted on the entire property. The Parcel 128 property currently operates as a used car dealership. A site location map is included as Figure 1, and a site map is presented as Figure 2. The NC DOT preliminary plan of the proposed road widening area near the Parcel 128 property is attached as Appendix A.

Based on information provided by NC DOT and H&H field observations, the facility previously operated as a gasoline service station. During PSA activities, H&H identified two below-ground hydraulic lifts inside the garage in the main building at the site. A former dispenser island also appeared to be located beneath the canopy of the main building at the site. H&H contacted the North Carolina Department of Environment and Natural Resources (DENR) Raleigh and Central Offices and searched for underground storage tank (UST) incident files for the Parcel 128 property to better target UST system areas and to find locations of previously reported petroleum impacts. No UST incident files were available for review.

The PSA activities conducted by H&H on the Parcel 128 property are discussed below.

2.0 Site Assessment

Soil Assessment Field Activities

H&H mobilized to the Parcel 128 property on July 8 and 11, 2013 and advanced 14 soil borings (128-1 through 128-14) by direct push technology (DPT). Prior to advancing the soil borings, H&H reviewed the results of a geophysical survey performed at the subject site by Schnabel Engineering (Schnabel) in May and June 2013. Schnabel utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to identify potential geophysical anomalies and potential USTs at the site. The EM results indicated the presence of anomalies attributed to buried utilities, small pieces of metal, metal structures at the ground surface (signs, guy wires, reinforced concrete, etc.), and anomalies due to unknown cause. Follow up with GPR indicated the presence of a probable UST in the southeastern corner of Parcel 128 within the NC DOT proposed right of way. The probable UST appears to be buried approximately 3 to 4 ft below ground surface (bgs) and is approximately 9 ft long and 5.5 ft in diameter with an estimated capacity of 1,500 gallons. Schnabel's report, including a site map depicting the results of the EM and GPR survey, is provided in Appendix B.

Prior to conducting soil borings, utilities were marked by NC One Call and a private utility locator. Borings were also cleared to a five foot depth by hand auger. H&H utilized Probe Technology, Inc. (PTI) of Concord, North Carolina to advance the soil borings (Figure 2). During soil sampling activities, H&H attempted to advance all borings to a total depth of 12 ft bgs. DPT refusal was encountered at depths ranging from 7 ft bgs to 11 ft bgs in borings 128-7 through 128-11, 128-13, and 128-14. To facilitate the selection of soil samples for laboratory analysis, soil from each boring was screened continuously for the presence of volatile organic compounds (VOCs) with an organic vapor analyzer (OVA). Additionally, H&H observed the soil for visual and olfactory indications of petroleum impacts. During soil screening, there were moderate indications of potential impacts in soil borings 128-3, 128-6, and 128-9 and strong indications of potential impacts in borings 128-1, 128-2, 128-4, 128-5, 128-7, and 128-8. There were no significant indications of potential impacts in borings 128-10 through 128-14. Soil samples were collected at depths ranging from 1 ft to 2 ft to 7 ft to 8 ft bgs from the soil boring locations. Soil boring logs are included in Appendix C.

Soil borings 128-1, 128-2, 128-4 and 128-5 were advanced near the probable UST. Soil boring 128-3 was advanced to the northwest of the UST area. Soil boring 128-6 was advanced in asphalt parking area in the northeast portion of the property. Soil borings 128-7 and 128-8 were advanced near a former dispenser island and soil boring 128-9 was advanced to the south of the dispenser island. Soil borings 128-10 through 128-12 were advanced in the asphalt parking areas in the western portion of the property. Soil borings 128-13 and 128-14 were advanced near two hydraulics lifts inside the garage area of the site building. GPS coordinate data for soil borings are included in Table 1.

H&H submitted a total of 14 soil samples (128-1 through 128-14) for laboratory analysis. Samples were sent to Pace Analytical Services, Inc. of Huntersville, NC using standard chain-of-custody protocol for analysis of total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015. Sample depths and analytical results are summarized in Table 2. Laboratory analytical data sheets for the Parcel 128 soil samples and chain-of-custody documentation are provided in Appendix D. The analytical results are discussed below.

3.0 Analytical Results

Widespread TPH impacts were detected on Parcel 128. TPH was detected in 13 of the 14 soil samples collected from Parcel 128. Concentrations of TPH DRO (up to 485 mg/kg) were detected in soil samples 128-1 through 128-13 above the DENR Action Level of 10 mg/kg. TPH GRO (up to 2,150 mg/kg) was detected in soil samples 128-1 through 128-5, 128-7, and 128-8 above the DENR Action Level of 10 mg/kg. TPH GRO (5.2 mg/kg) was also detected in soil sample 128-10 below the DENR Action Level.

The TPH DRO and GRO impacted soils are located near the probable UST and near the former dispenser island area. TPH DRO impacted soils are located in the asphalt parking areas in the northeast, southern, and western portions of the property and near a hydraulic lift in the garage area inside the site building.

- H&H estimates that there are roughly 3,500 cubic yards (5,300 tons) of petroleum impacted soil between the surface and up to 12 ft near the probable UST and the former dispenser island near soil borings 128-1 through 128-5 and 128-7 through 128-9.
- There are roughly 80 cubic yards (120 tons) of petroleum impacted soil between the surface and 6 ft in the northeast portion of the property near boring 128-6.
- There are roughly 350 cubic yards (525 tons) of petroleum impacted soil between the surface and 4 ft in the southwest portion of the property near soil borings 128-10 and 128-11.
- There are roughly 100 cubic yards (150 tons) of petroleum impacted soil between the surface and 6 ft in the western portion of the property near soil boring 128-12.
- There are roughly 80 cubic yards (120 tons) of petroleum impacted soil between the surface and 6 ft near the hydraulic lift inside the site building near soil boring 128-13.

The estimated depth of impacted soils is based on field screening results. However, field screening and lab results did not provide information that defines the impacted soil interval or extent in most locations. Therefore, impacts may extend beyond the depths and amounts indicated above. The approximate areas of petroleum impacted soils are shown on Figure 2.

4.0 Summary and Regulatory Considerations

H&H has reviewed geophysical survey results and analytical results of soil samples collected at the Parcel 128 property. The property formerly operated as a gasoline service station. Based on GPR survey, one probable UST was identified in the southeast portion of the property within the NC DOT proposed right of way. In addition, two existing below-ground hydraulic lifts were identified by H&H in the garage area of the site building. These lifts likely have below grade reservoirs of hydraulic fluid.

Widespread TPH impacts were detected on Parcel 128. Analytical results of soil samples collected by H&H indicate TPH DRO and GRO above the DENR Action Levels in 13 of 14 soil samples collected on Parcel 128.

- Based on analytical results and OVA readings, H&H estimates that there are roughly 3,500 cubic yards (5,300 tons) of petroleum impacted soil between the surface and up to 12 ft near the probable UST and the former dispenser island near soil borings 128-1 through 128-5 and 128-7 through 128-9.
- There are roughly 80 cubic yards (120 tons) of petroleum impacted soil between the surface and 6 ft in the northeast portion of the property near boring 128-6.
- There are roughly 350 cubic yards (525 tons) of petroleum impacted soil between the surface and 4 ft in the southwest portion of the property near soil borings 128-10 and 128-11.
- There are roughly 100 cubic yards (150 tons) of petroleum impacted soil between the surface and 6 ft in the western portion of the property near soil boring 128-12.
- There are roughly 80 cubic yards (120 tons) of petroleum impacted soil between the surface and 6 ft near the hydraulic lift inside the site building near soil boring 128-13.

H&H estimates there are roughly 4,110 cubic yards of impacted soil on the Parcel 128 property. However, field screening and lab results did not provide information that defines the extent of impacts. NC DOT plans indicate a proposed cut and installation of drainage pipes in proposed NC DOT work areas. Impacted soil that is removed during road construction activities and drainage pipe installations should be properly managed and disposed at a permitted facility. The probable UST identified the southeastern portion of the property and its contents should be removed in accordance with DENR regulations and properly disposed. H&H also recommends that the hydraulic lifts and associated fluids be removed. If impacted soil is encountered and removed from the UST area or hydraulic lift areas, it should also be properly managed and disposed at a permitted facility.

5.0 Signature Page

This report was prepared by:

David Graham
Senior Project Geologist for
Hart and Hickman, PC

This report was reviewed by:

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

NORTH CAROLINA PROFESSIONAL SEAL 25069 ENGINEER MATTHEW V. BRAMBLETT 8/15/13

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Table 1
Soil Boring GPS Coordinate Data
William E. Andrews Property (Parcel 128)
Durham, Durham County, North Carolina
H&H Job No. ROW-416

Sample ID	Latitude	Longitude
128-1	35.991083775	-78.861129096
128-2	35.991122848	-78.861098008
128-3	35.991207395	-78.861200363
128-4	35.991040979	-78.861141119
128-5	35.991071396	-78.861087567
128-6	35.991240794	-78.861019150
128-7	35.991117377	-78.861317031
128-8	35.991125063	-78.861351756
128-9	35.991090337	-78.861396862
128-10	35.991181757	-78.861438108
128-11	35.991172325	-78.861570094
128-12	35.991344028	-78.861531562
128-13	NA	NA
128-14	NA	NA

Notes:
GPS coordinate data points collected using a Trimble GeoExplorer 6000 series unit with external satellite for increased accuracy.
NA = Sample collected indoors. Coordinate data unavailable.

Table 2
Soil Analytical Results
William E. Andrews Property (Parcel 128)
Durham, Durham County, North Carolina
H&H Job No. ROW-416

Sample ID	128-1	128-2	128-3	128-4	128-5	128-6	128-7	128-8	128-9	128-10	128-11	128-12	128-13	128-14	**Regulatory Standard**
Sample Depth (ft)	7-8	2-3	3-4	5-6	7-8	3-4	6-7	4-5	3-4	1-2	1-2	1-2	3-4	3-4	
Sample Date	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/8/2013	7/11/2013	7/11/2013	
TPH-DRO/GRO (8015) (mg/kg)															**NCDENR Action Level (mg/kg)**
Diesel-Range Organics (DRO)	**137**	**485**	**102**	**48.5**	**145**	**36**	**65.6**	**24.8**	**13.3**	**34.5**	**70.3**	**259**	**22.9**	<6.2	10
Gasoline-Range Organics (GRO)	**2,150**	**359**	**34.3**	**315**	**409**	<5.7	**177**	**17.2**	<6.0	5.2	<5.1	<5.3	<5.4	<6.0	10

Notes:
EPA Method follows parameter in parenthesis
TPH = total petroleum hydrocarbons
Bold indicates above DENR Action Level.

U.S.G.S. QUADRANGLE MAP

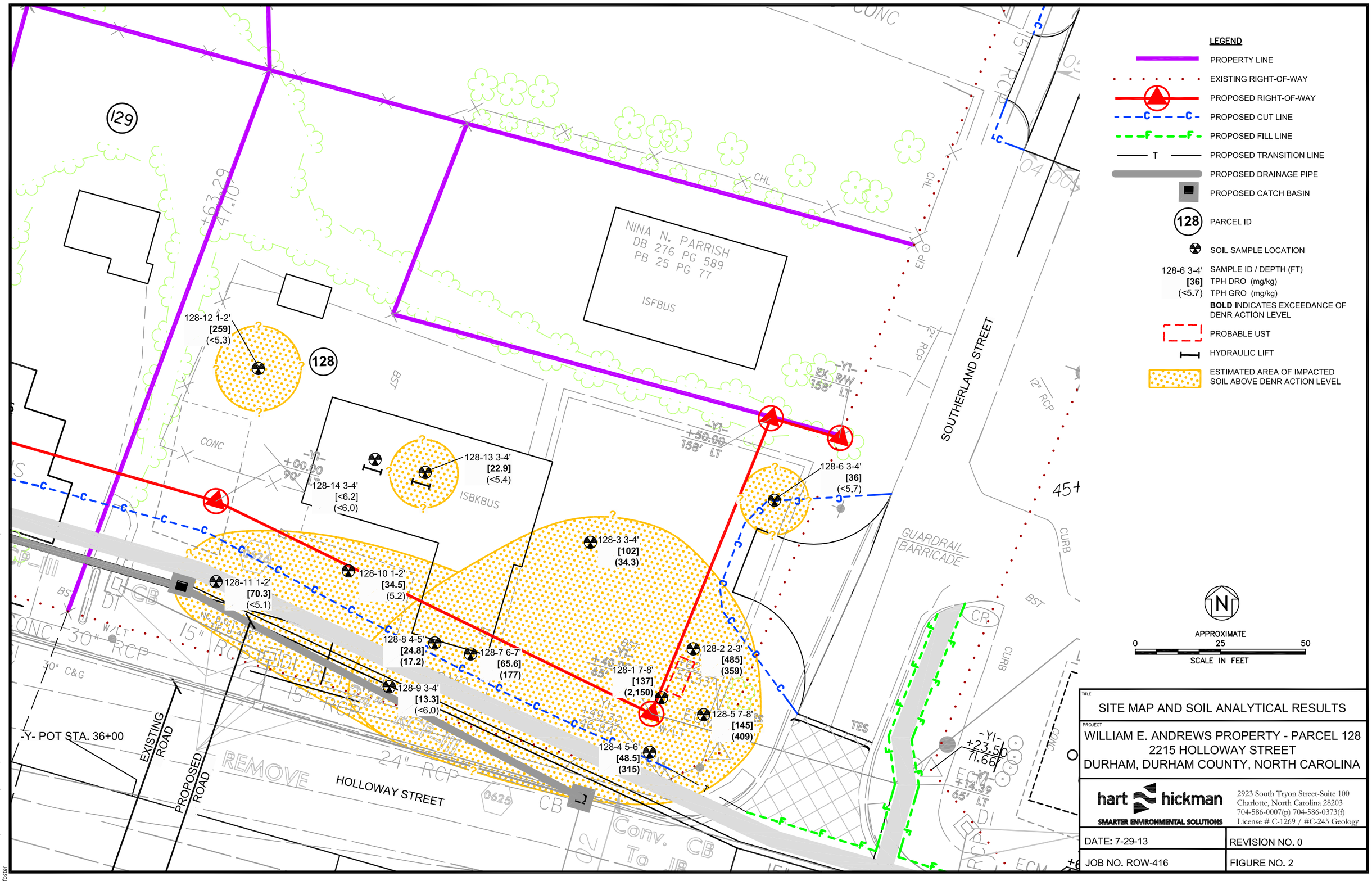
SOUTHEAST DURHAM, NORTH CAROLINA 2002

QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	**SITE LOCATION MAP**
PROJECT	WILLIAM E. ANDREWS PROPERTY PARCEL 128 2215 HOLLOWAY STREET, DURHAM, NC

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

DATE:	7-8-2013	REVISION NO:	0
JOB NO:	ROW-416	FIGURE:	1



TITLE
SITE MAP AND SOIL ANALYTICAL RESULTS

PROJECT
WILLIAM E. ANDREWS PROPERTY - PARCEL 128
2215 HOLLOWAY STREET
DURHAM, DURHAM COUNTY, NORTH CAROLINA

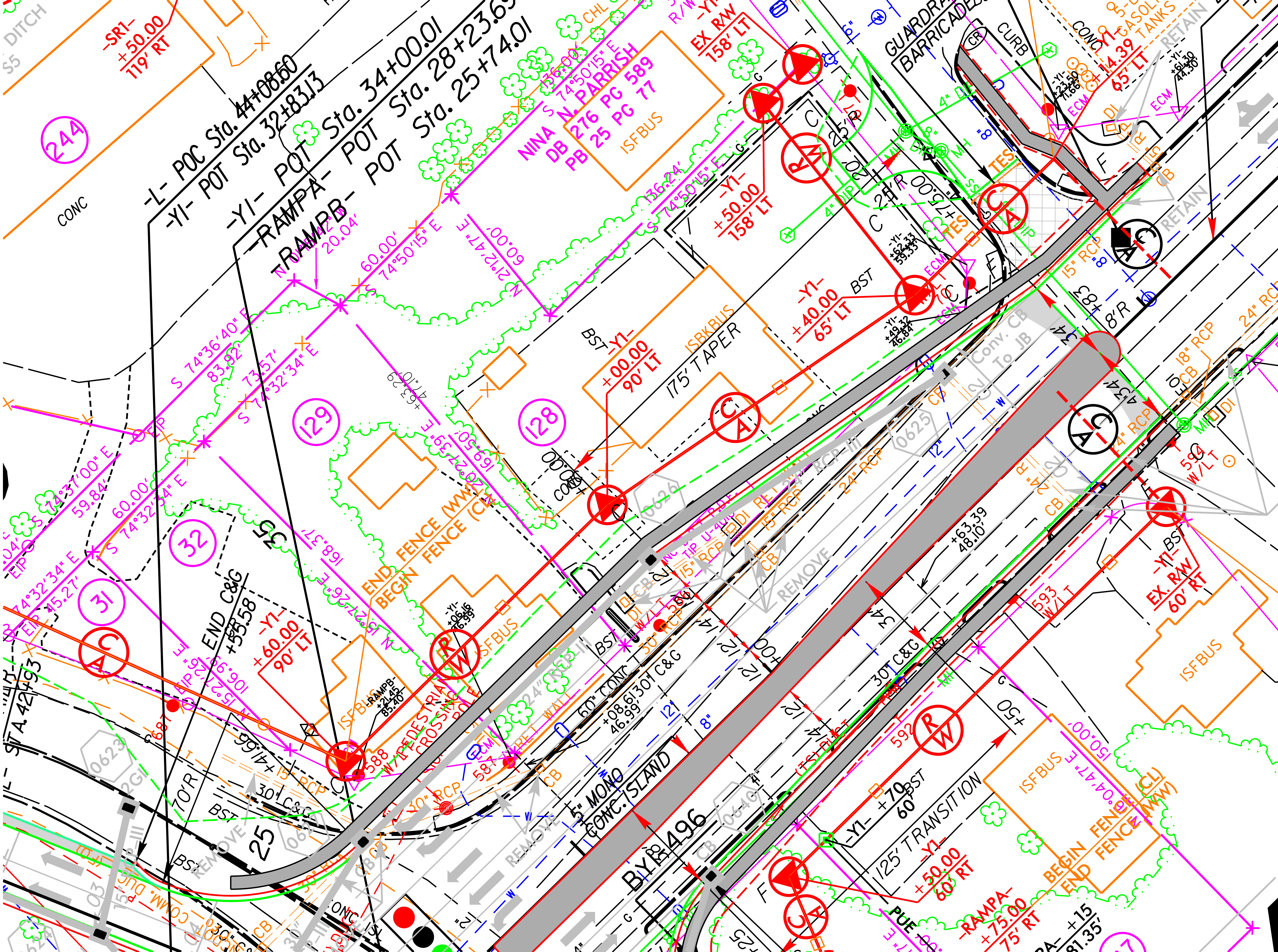
hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 7-29-13	REVISION NO. 0
JOB NO. ROW-416	FIGURE NO. 2

S:\AAA-Master Projects\NC DOT Right-of-Way - ROW\ROW-416 U-0071 Durham PSAs\DOT Files\CADD\CONVERTED\ROW-416.dwg, 128, 8/14/2013 4:08:03 PM, nfoster

Appendix A

NC DOT Preliminary Plan


-L- POC Sta. 44+08.60
-Y1- POT Sta. 32+83.13
-Y1- POT Sta. 34+00.01
-RAMPA- POT Sta. 28+23.63
-RAMPB- POT Sta. 25+74.01
NINA N. PARRISH
DB 276 PG 589
PB 25 PG 77
ISFBUS
175' TAPER
125' TRANSITION
END FENCE (WW)
BEGIN FENCE (CL)
BEGIN FENCE (CL)
END FENCE (WW)
PEDESTRIAN CROSSING
4" MONO CONC. ISLAND
BY RD 1496
REMOVE
GUARDRAIL
BARRICADE
GASOLINE TANKS
RETAIN
CONC
DITCH

Appendix B

Schnabel Engineering Geophysical Survey Report

Schnabel ENGINEERING

July 25, 2013

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

RE:	State Project:	U-0071
	WBS Element:	34745.1.1
	County:	Durham
	Description:	Durham East End Connector from NC 147 (Buck Dean Freeway) to North of NC 98

Subject: **Project 11821014.28, Report on Geophysical Surveys**
Parcel 128, William E. Andrews Property, Durham, North Carolina

Dear Mr. Bramblett:

SCHNABEL ENGINEERING SOUTH, PC (Schnabel) is pleased to present this report on the geophysical surveys we performed on the subject property. The report includes two 11x17 color figures and three 8.5x11 color figures. This study was performed in accordance with our proposal for Geophysical Surveys to Locate Possible USTs dated May 21, 2013, as approved by Cathy Houser on May 30, 2013, and our agreement dated June 2, 2011. Terry Fox provided a verbal notice to proceed on May 24, 2013.

INTRODUCTION

The field work described in this report was performed on May 29 and June 25, 2013, by Schnabel under our 2011 contract with the NCDOT. The purpose of the geophysical surveys is to evaluate the potential presence of metal underground storage tanks (USTs) in the accessible areas of Parcel 128. Photographs of the property are included on Figure 1. The property is located in the northwest quadrant of NC 98 (Holloway Street) and Southerland Street, in Durham, NC (2215 Holloway Street).

The geophysical surveys consisted of an electromagnetic (EM) induction survey and a ground penetrating radar (GPR) survey. The EM survey was performed using a Geonics EM61-MK2 instrument. The EM61 is a time domain metal detector that stores data digitally for later processing and review. Sensitivity to metallic objects is dependent on the size, depth, and orientation of the buried object and the amount of noise (i.e. response from spurious metallic objects) in the area. The EM61 can generally observe a single buried 55 gallon drum at a depth of 10 feet or less. The EM61 makes measurements by creating an

electromagnetic pulse and then measuring the response from metallic objects with time after the pulse is generated. We recorded the response at several times after the pulse to help evaluate relative size and depth of metallic objects in the earth.

The GPR survey was performed over selected EM61 anomalies using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna to further evaluate EM responses that could indicate a potential UST.

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 differential global positioning system (DGPS). 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. We recorded the locations of existing site features (metal objects, signs, etc.) with the DGPS for later correlation with the geophysical data and a site plan provided by the NCDOT.

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 approximately one to two feet apart in orthogonal directions over 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 128 and the GPR survey area locations are shown on Figure 3, EM61 Early Time Gate Response, and Figure 4, EM61 Differential Response. Areas outside the colored, contoured EM61 data were not surveyed. Early time data refer to the response measured at a short time after the initial EM pulse is generated. Early time data are sensitive to all metal objects, small or large and shallow or deep, within the sensitivity range of the instrument. Differential data represent the difference in response between the top and bottom coils of the EM61 instrument at a later time after the initial pulse than early time data. Differential data naturally tend to filter out 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 EM data contain multiple anomalies on the site, most of which appear to be the result of buried utilities, small pieces of metal at the ground surface or at shallow depths, or metal structures at the ground surface, including signs, guy wires, reinforced concrete slabs, etc. However, we collected GPR data over several EM anomalies of an unknown cause as shown on Figures 3 and 4 to further investigate the EM anomalies. The GPR data collected near the southeastern corner of Parcel 128 over an EM anomaly of unknown cause indicated the presence of a probable UST, as shown on Figures 3 and 4. The identification of Probable UST No. 1 was selected in accordance with the anomaly categories provided by the NCDOT in their letter, dated May 19, 2009, entitled “Geophysical Surveys to Identify USTs”. The location of Probable UST No. 1 is shown on Figures 3 and 4. Example GPR images from lines oriented

over the marked location of Probable UST No. 1 are also shown on Figures 3 and 4. The GPR data suggest the top of Probable UST No. 1 is approximately 3.0 to 4.0 feet below ground surface and that the possible UST is about 5.5 feet in diameter and about 9 feet long, equivalent to a capacity of a 1500 gallon UST. Photographs of the approximate location of the probable UST that was marked in the field are included on Figure 5.

CONCLUSIONS

As shown in Figures 3 and 4, the EM data we collected at Parcel 128 cover most of the planned survey area with the exception of vegetated areas on the northern and western portions of the site, in addition to other inaccessible areas where there are buildings and other obstacles. The EM data include responses from several visible metallic objects at grade (e.g. signs and guy wires from utility poles) and reinforced concrete.

The geophysical data indicate the presence of a probable UST within the right-of-way/easement on Parcel 128. The EM and GPR data suggest Probable UST No. 1 is about the size of a 1500-gallon capacity UST and the top is about 3.0 to 4.0 feet below ground surface.

LIMITATIONS

These services have been performed and this report prepared for Hart & Hickman, PC 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

James W. Whitt, PG
Senior Staff Geophysicist

Gary D. Rogers, PG
Senior Associate

JWW:MAP:GDR
Attachments: Figures (5)
CC: NCDOT, Terry Fox
FILE: G:\2011-SDE-JOBS\11821014_00_NCDOT_2011_GEOTECHNICAL_UNIT_SERVICES\11821014_28_U-0071_DURHAM_COUNTY\REPORT\PARCEL 128\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 128 (U-0071).DOCX

Attachments:

- Figure 1 - Parcel 128 Site Photos
- Figure 2 - Photos of Geophysical Equipment Used
- Figure 3 - Parcel 128 Early Time Gate Response
- Figure 4 - Parcel 128 Differential Response
- Figure 5 - Parcel 128 Photos of Probable UST Location

Parcel 128 (William E. Andrews Property), looking northeast

Parcel 128 (William E. Andrews Property), looking northwest

Schnabel ENGINEERING	STATE PROJECT U-0071 NC DEPT. OF TRANSPORTATION DURHAM COUNTY, NC PROJECT NO. 11821014.28	PARCEL 128 SITE PHOTOS FIGURE 1

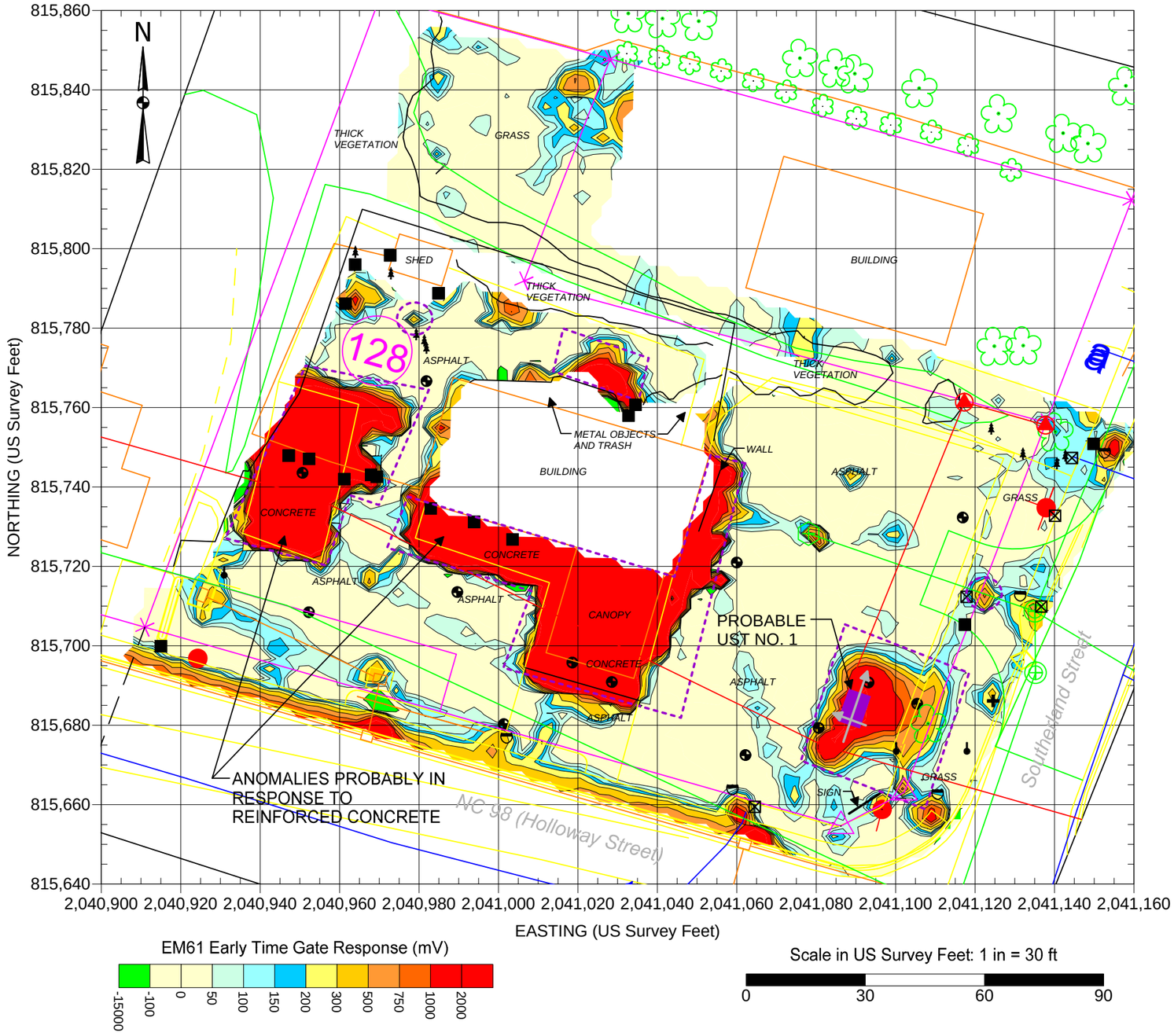
Geonics EM61-MK2 Metal Detector with Trimble DGPS Unit

GSSI SIR-3000 Ground-Penetrating Radar with 400 MHz Antenna

Note: Stock photographs – not taken on site.

Schnabel ENGINEERING	STATE PROJECT U-0071 NC DEPT. OF TRANSPORTATION DURHAM COUNTY, NC PROJECT NO. 11821014.28	PHOTOS OF GEOPHYSICAL EQUIPMENT USED FIGURE 2

PARCEL 128

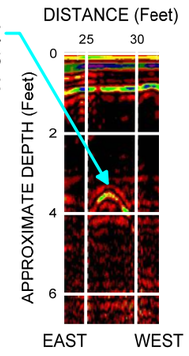


EXPLANATION

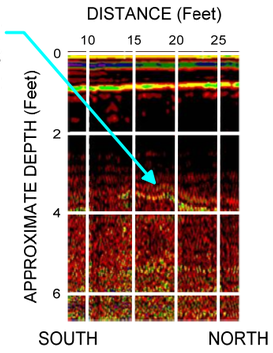
- UTILITY POLE
- PROPOSED BORING LOCATION (HART & HICKMAN)
- SIGN
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- GUY WIRE
- EDGE OF NCDOT PROPOSED R/W
- APPROXIMATE SUPPLEMENTAL EM61 SURVEY AREA LIMITS
- GPR SURVEY AREA
- LOCATION OF SUSPECT UST MARKED ON SITE
- EXAMPLE GPR LINE LOCATION

BASE PLAN FROM NCDOT FILE:
u0071_rdy_psh06.dgn
(FOR SOME SITE FEATURES)

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



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



EM61 Early Time Gate Response (mV)

Scale in US Survey Feet: 1 in = 30 ft

Note: The contour plot shows the earliest and more sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on May 29, 2013, 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 June 25, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

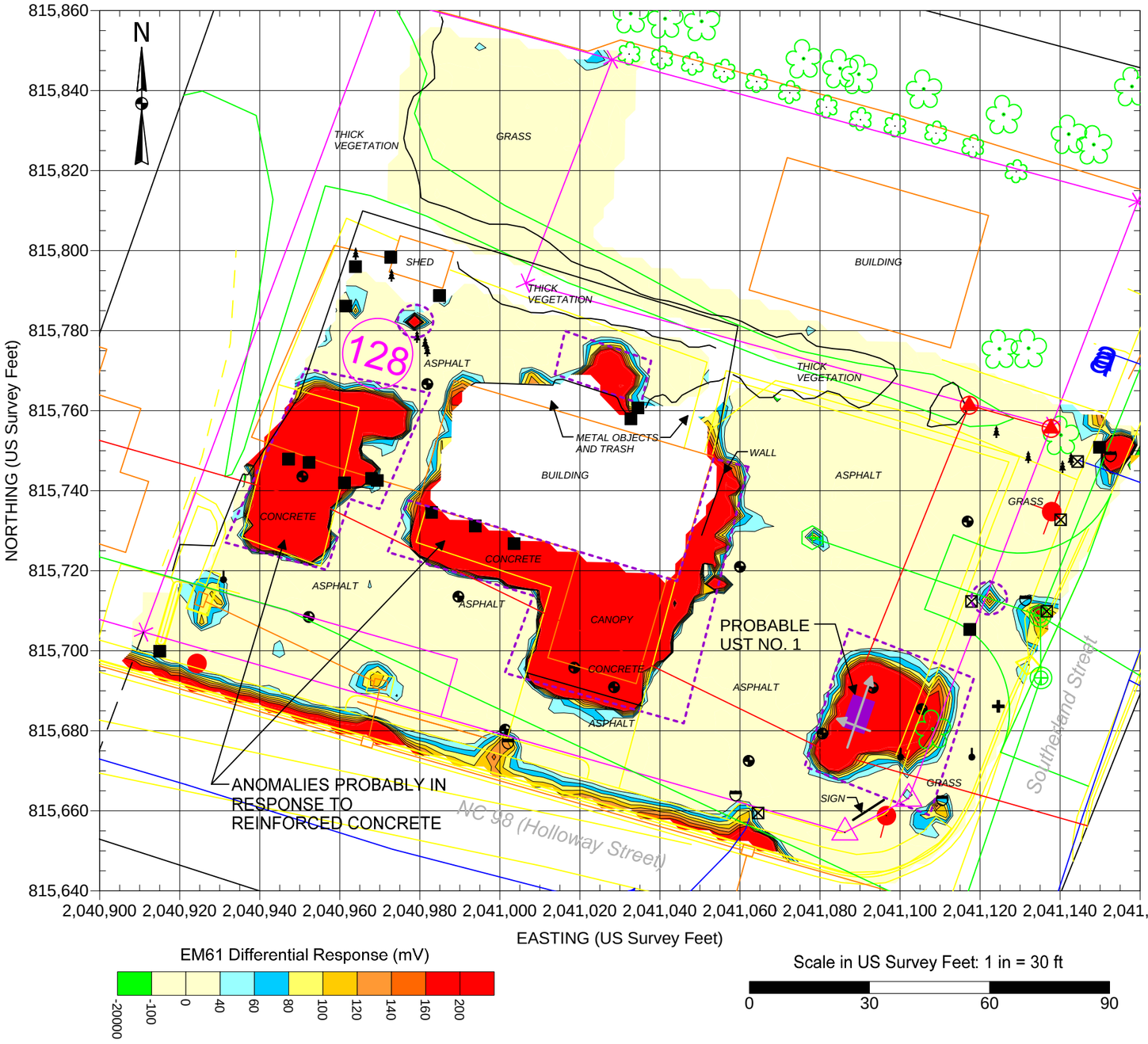
Schnabel ENGINEERING

STATE PROJECT U-0071
NC DEPARTMENT OF TRANSPORTATION
DURHAM COUNTY, NC
PROJECT NO. 11821014.28

EM61
EARLY TIME GATE
RESPONSE

FIGURE 3

PARCEL 128



EXPLANATION

- UTILITY POLE
- PROPOSED BORING LOCATION (HART & HICKMAN)
- SIGN
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
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- EDGE OF NCDOT PROPOSED R/W
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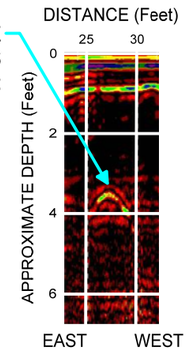
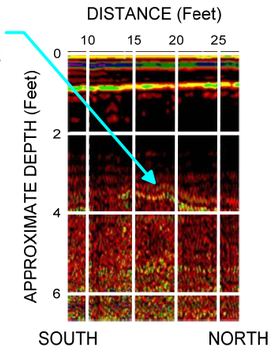
- GPR SURVEY AREA
- LOCATION OF SUSPECT UST MARKED ON SITE
- EXAMPLE GPR LINE LOCATION

BASE PLAN FROM NCDOT FILE:
u0071_rdy_psh06.dgn
(FOR SOME SITE FEATURES)

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



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



EM61 Differential Response (mV)

Scale in US Survey Feet: 1 in = 30 ft

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 May 29, 2013, 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 June 25, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

Schnabel ENGINEERING

STATE PROJECT U-0071
NC DEPARTMENT OF TRANSPORTATION
DURHAM COUNTY, NC
PROJECT NO. 11821014.28

EM61
DIFFERENTIAL
RESPONSE

FIGURE 4

Parcel 128 (William E. Andrews Property), looking west. Photo shows approximate marked location of Probable UST No. 1 near the southeast corner of the parcel.

Parcel 128 (William E. Andrews Property), looking east. Photo shows approximate marked location of Probable UST No. 1 near the southeast corner of the parcel.

Schnabel ENGINEERING	STATE PROJECT U-0071 NC DEPT. OF TRANSPORTATION DURHAM CO., NORTH CAROLINA PROJECT NO. 11821014.28	PARCEL 128 PHOTOS OF PROBABLE UST LOCATION FIGURE 5

Appendix C

Soil Boring Logs

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

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

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

BORING NUMBER 128-1

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Asphalt	
						Dark brown, sandy SILT with clay	
2.5			0	101			
			0	259			
			0	589			
5.0			0	554			
						Tan brown, sandy SILT, strong petroleum odor	
			0	1767			
7.5		GB	0	2243			
			0	1882			
			0	1681			
10.0						Wet, tan brown, sandy SILT	
						Bottom of borehole at 12.0 feet.	
12.5							

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 7 to 8 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-2

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Asphalt	
			0	1021		Brown, sandy SILT, strong petroleum odor	
2.5		GB	0	1378			
			0	650			
			0	532		Orange/gray, silty CLAY, strong petroleum odor	
5.0						Red brown, clayey SILT	
			0	73			
			0	45.8			
						Red tan, sandy SILT	
7.5			0	85			
			0	138			
						Wet, tan, sandy SILT	
			0	242			
10.0							
						Bottom of borehole at 12.0 feet.	
12.5							

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 2 to 3 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-3

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION
0.0						Asphalt
			0	0.9		Dark brown, sandy SILT
2.5			0	2.4		
		GB	0	28.3		Orange gray, silty CLAY
			0	1.4		Purple brown, fine sandy SILT
5.0			0	3.8		
			0	0.6		
7.5			0	1.2		
			0	0		Purple brown, silty CLAY
			0	0		
10.0			0	0		Wet, brown, silty CLAY
			0	0		
12.5						Bottom of borehole at 12.0 feet.

BORING DIAGRAM

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 3 to 4 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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704-586-0007(p) 704-586-0373(f)

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

BORING NUMBER 128-4

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION
0.0						Asphalt
						Gravel
			0	90.7		Brown, sandy SILT
2.5			0	243		
			0	1519		Orange gray, silty CLAY, petroleum odor
			0	1934		
5.0		GB	0	2711		
			0	905		Tan brown, fine silty SAND with mica, petroleum odor
7.5			0	1983		
			0	1983		
			0	1951		Wet, red brown, sandy SILT, petroleum odor
10.0			0	1401		
						Bottom of borehole at 12.0 feet.
12.5						

BORING DIAGRAM

DEPTH (ft)

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 5 to 6 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-5

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Asphalt	
						Gravel	
			0	801		Brown, sandy SILT	
2.5			0	698			
			0	1312		Red brown, clayey SILT	
			0	2405			
5.0			0	2331		Tan brown, coarse sandy SILT with mica	
			0	2721			
		GB	0	3115			
7.5			0	2731			
						Wet, red brown, sandy SILT	
10.0							
						Bottom of borehole at 12.0 feet.	
12.5							

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 7 to 8 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

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

BORING NUMBER 128-6

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION
0.0						Asphalt
						Gravel
			0	6.1		Brown, sandy SILT
2.5			0	13.3		
		GB	0	14.1		Orange gray, clayey SILT
			0	2.1		
5.0			0	0		
			0	0		Orange brown, sandy SILT with mica
7.5			0	0		
			0	0		Gray and red silty CLAY
			0	0		
10.0			0	0		
			0	0		
12.5						Bottom of borehole at 12.0 feet.

BORING DIAGRAM

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 3 to 4 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

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

BORING NUMBER 128-7

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Asphalt	
						Gravel	
			0	1		Orange brown, sandy SILT	
2.5			0	1.3			
			0	1.3		Orange brown, sandy SILT with clay	
			0	0			
5.0			0	12.4			
		GB	0	180		Orange brown, sandy SILT	
7.5			0	89			
			0	12.9		Wet, orange brown, sandy SILT	
10.0						Refusal at 9.0 feet. Bottom of borehole at 9.0 feet.	

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 9 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 6 to 7 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-8

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION
0.0						Asphalt
						Gravel
			0	6.5		Moist, orange brown, sandy SILT
2.5			0	52.1		Moist, orange brown, sandy SILT with clay
			0	62.5		
		GB	0	285		Moist, red brown, clayey SILT
5.0			0	103		
			0	20.3		
7.5			0	16.2		
						Wet, red brown, clayey SILT
						Refusal at 9.0 feet. Bottom of borehole at 9.0 feet.
10.0						

BORING DIAGRAM

DEPTH (ft): 0.0, 2.5, 5.0, 7.5, 10.0

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 9 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 4 to 5 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

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

BORING NUMBER 128-9

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Asphalt	
			0	6.8		Brown, sandy SILT	
			0	10.3		Orange brown, sandy SILT with clay	
2.5		GB	0	20.2			
			0	0		Red brown, fine sandy SILT	
5.0			0	1.3			
			0	0			
7.5			0	0			
			0	0			
10.0						Refusal at 9.0 feet. Bottom of borehole at 9.0 feet.	

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 9 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 3 to 4 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-10

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Asphalt	
		GB	0	0		Tan brown, sandy SILT with clay	
2.5			0	0			
			0	0		Red brown, sandy SILT	
			0	0			
5.0			0	0			
			0	0		Red brown, clayey SILT	
7.5			0	0			
			0	0		Wet, tan brown silty SAND	
			0	0			
10.0			0	0			
						Refusal at 11.0 feet. Bottom of borehole at 11.0 feet.	

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 11 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 1 to 2 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-11

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
0.0						Asphalt		0.0
		GB	0	0		Orange brown, sandy SILT		
2.5			0	0				2.5
						Orange brown, sandy SILT with clay		
			0	0				
			0	0				
5.0						Gray, sandy SILT		5.0
			0	0				
						Red brown, clayey SILT		
			0	0				
						Refusal at 7.0 feet. Bottom of borehole at 7.0 feet.		
7.5								7.5

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 7 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 1 to 2 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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

BORING NUMBER 128-12

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION
0.0						Asphalt
		GB	0	1.3		Brown, sandy SILT
2.5			0	1.2		Moist, tan brown, sandy SILT with clay
			0	0.7		
			0	0		
5.0			0	0		Moist, gray, silty SAND
			0	0		Moist, red brown, clayey SILT
7.5			0	0		
			0	0		
10.0			0	0		
			0	0		
			0	0		
12.5						Bottom of borehole at 12.0 feet.

BORING DIAGRAM

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/8/13
BORING COMPLETED: 7/8/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 1 to 2 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

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Raleigh, North Carolina 27607
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BORING NUMBER 128-13

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
0.0						Concrete		0.0
			0	0		Orange tan, sandy SILT		
2.5			0	0				2.5
		GB	0	0		Red brown, fine sandy SILT		
			0	0				
5.0			0	0				5.0
			0	0				
7.5			0	0				7.5
						Refusal at 8.0 feet. Bottom of borehole at 8.0 feet.		

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 8 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 3 to 4 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

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Raleigh, North Carolina 27607
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BORING NUMBER 128-14

PROJECT: NC DOT State Project U-0071 - Parcel 128
JOB NUMBER: ROW-416
LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM
0.0						Concrete	
			0	0		Orange tan, sandy SILT	
2.5			0	0			
		GB	0	0		Red brown, fine sandy SILT	
5.0			0	0			
			0	0		Orange gray, silty CLAY	
7.5			0	0			
			0	0		Red brown, fine sandy SILT	
10.0						Refusal at 9.0 feet. Bottom of borehole at 9.0 feet.	

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: TCD

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 9 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil samples collected from 3 to 4 ft bgs

BORING LOG - HART HICKMAN.GDT - 7/26/13 15:10 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 128.GPJ

Appendix D

Laboratory Analytical Report

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

July 18, 2013

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory between July 09, 2013 and July 11, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin

kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: David Graham, NCDOT East Central

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

Pace Analytical
www.pacelabs.com

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

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9800 Kincey Ave. Suite 100
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(704)875-9092

SAMPLE ANALYTE COUNT

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92164373001	**128-1 @ 7-8'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373002	**128-2 @ 2-3'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373003	**128-3 @ 3-4'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373004	**128-4 @ 5-6'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373005	**128-5 @ 7-8'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373006	**128-6 @ 3-4'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373007	**128-7 @ 6-7'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373008	**128-8 @ 4-5'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373009	**128-9 @ 3-4'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373010	**128-10 @ 1-2'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373011	**128-11 @ 1-2'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164373012	**128-12 @ 1-2'**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164739001	**128-13@3-4**	EPA 8015 Modified	EJK	2	PASI-C

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SAMPLE ANALYTE COUNT

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164739002	**128-14@3-4**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C

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PROJECT NARRATIVE

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Method: **EPA 8015 Modified**
Description: 8015 GCS THC-Diesel
Client: NCDOT East Central
Date: July 18, 2013

General Information:
14 samples were analyzed for EPA 8015 Modified. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: OEXT/22922

S5: Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

- 128-12 @ 1-2' (Lab ID: 92164373012)
  - n-Pentacosane (S)

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Method: **EPA 8015 Modified**
Description: Gasoline Range Organics
Client: NCDOT East Central
Date: July 18, 2013

General Information:
14 samples were analyzed for EPA 8015 Modified. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 5035A/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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205 East Meadow Road - Suite A
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Asheville, NC 28804
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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-1 @ 7-8' **Lab ID: 92164373001** Collected: 07/08/13 10:10 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**137**	mg/kg	5.7	1	07/09/13 19:16	07/10/13 15:44	68334-30-5	
Surrogates								
n-Pentacosane (S)	77	%	41-119	1	07/09/13 19:16	07/10/13 15:44	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**2150**	mg/kg	50.0	10	07/12/13 15:58	07/13/13 01:33	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	122	%	70-167	10	07/12/13 15:58	07/13/13 01:33	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**12.5**	%	0.10	1		07/10/13 13:58		

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-2 @ 2-3' **Lab ID: 92164373002** Collected: 07/08/13 10:30 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**485**	mg/kg	10.8	2	07/09/13 19:16	07/11/13 13:40	68334-30-5	
Surrogates								
n-Pentacosane (S)	93	%	41-119	2	07/09/13 19:16	07/11/13 13:40	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**359**	mg/kg	5.4	1	07/10/13 18:56	07/10/13 20:55	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	125	%	70-167	1	07/10/13 18:56	07/10/13 20:55	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**7.8**	%	0.10	1		07/10/13 13:58		

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-3 @ 3-4' **Lab ID: 92164373003** Collected: 07/08/13 10:45 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**102**	mg/kg	6.2	1	07/09/13 19:16	07/10/13 16:32	68334-30-5	
Surrogates								
n-Pentacosane (S)	79	%	41-119	1	07/09/13 19:16	07/10/13 16:32	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**34.3**	mg/kg	5.9	1	07/12/13 15:58	07/12/13 22:30	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	109	%	70-167	1	07/12/13 15:58	07/12/13 22:30	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**19.0**	%	0.10	1		07/10/13 13:58		

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-4 @ 5-6' **Lab ID: 92164373004** Collected: 07/08/13 11:05 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**48.5**	mg/kg	5.7	1	07/09/13 19:16	07/10/13 16:32	68334-30-5	
Surrogates								
n-Pentacosane (S)	78	%	41-119	1	07/09/13 19:16	07/10/13 16:32	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**315**	mg/kg	5.1	1	07/10/13 21:56	07/11/13 00:46	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	155	%	70-167	1	07/10/13 21:56	07/11/13 00:46	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**12.1**	%	0.10	1		07/10/13 13:59		

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205 East Meadow Road - Suite A
Eden, NC 27288
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Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-5 @ 7-8' **Lab ID: 92164373005** Collected: 07/08/13 11:15 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**145**	mg/kg	6.1	1	07/09/13 19:16	07/10/13 16:56	68334-30-5	
Surrogates								
n-Pentacosane (S)	82	%	41-119	1	07/09/13 19:16	07/10/13 16:56	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**409**	mg/kg	10.1	2	07/12/13 15:58	07/13/13 00:47	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	119	%	70-167	2	07/12/13 15:58	07/13/13 00:47	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.1**	%	0.10	1		07/10/13 13:59		

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ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-6 @ 3-4' **Lab ID: 92164373006** Collected: 07/08/13 11:30 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**36.0**	mg/kg	5.8	1	07/09/13 19:16	07/10/13 16:56	68334-30-5	
Surrogates								
n-Pentacosane (S)	82	%	41-119	1	07/09/13 19:16	07/10/13 16:56	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.7	1	07/12/13 15:58	07/12/13 22:53	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	85	%	70-167	1	07/12/13 15:58	07/12/13 22:53	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.9**	%	0.10	1		07/10/13 13:59		

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(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-7 @ 6-7' **Lab ID: 92164373007** Collected: 07/08/13 12:00 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**65.6**	mg/kg	7.4	1	07/09/13 19:16	07/10/13 17:20	68334-30-5	
Surrogates								
n-Pentacosane (S)	78	%	41-119	1	07/09/13 19:16	07/10/13 17:20	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**177**	mg/kg	8.5	1	07/10/13 21:56	07/10/13 22:27	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	160	%	70-167	1	07/10/13 21:56	07/10/13 22:27	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**32.8**	%	0.10	1		07/10/13 13:59		

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ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-8 @ 4-5' **Lab ID: 92164373008** Collected: 07/08/13 12:20 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**24.8**	mg/kg	6.5	1	07/09/13 19:16	07/10/13 17:20	68334-30-5	
Surrogates								
n-Pentacosane (S)	79	%	41-119	1	07/09/13 19:16	07/10/13 17:20	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**17.2**	mg/kg	5.8	1	07/12/13 15:58	07/12/13 23:16	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	104	%	70-167	1	07/12/13 15:58	07/12/13 23:16	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**22.8**	%	0.10	1		07/10/13 13:59		

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ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-9 @ 3-4' **Lab ID: 92164373009** Collected: 07/08/13 13:40 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**13.3**	mg/kg	5.9	1	07/09/13 19:16	07/10/13 17:44	68334-30-5	
Surrogates								
n-Pentacosane (S)	81	%	41-119	1	07/09/13 19:16	07/10/13 17:44	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	6.0	1	07/10/13 21:56	07/10/13 23:13	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	85	%	70-167	1	07/10/13 21:56	07/10/13 23:13	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**14.7**	%	0.10	1		07/10/13 14:00		

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ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-10 @ 1-2' **Lab ID: 92164373010** Collected: 07/08/13 14:00 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**34.5**	mg/kg	5.8	1	07/09/13 19:16	07/10/13 17:44	68334-30-5	
Surrogates								
n-Pentacosane (S)	63	%	41-119	1	07/09/13 19:16	07/10/13 17:44	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**5.2**	mg/kg	4.9	1	07/10/13 21:56	07/11/13 01:09	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	86	%	70-167	1	07/10/13 21:56	07/11/13 01:09	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.7**	%	0.10	1		07/10/13 14:00		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-11 @ 1-2' **Lab ID: 92164373011** Collected: 07/08/13 14:15 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**70.3**	mg/kg	5.6	1	07/09/13 19:16	07/10/13 18:08	68334-30-5	
Surrogates								
n-Pentacosane (S)	80	%	41-119	1	07/09/13 19:16	07/10/13 18:08	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.1	1	07/11/13 12:04	07/11/13 12:15	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	80	%	70-167	1	07/11/13 12:04	07/11/13 12:15	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**10.9**	%	0.10	1		07/10/13 14:00		

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205 East Meadow Road - Suite A
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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-12 @ 1-2' **Lab ID: 92164373012** Collected: 07/08/13 14:45 Received: 07/09/13 16:21 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**259**	mg/kg	5.5	1	07/09/13 19:16	07/10/13 18:08	68334-30-5	
Surrogates								
n-Pentacosane (S)	121	%	41-119	1	07/09/13 19:16	07/10/13 18:08	629-99-2	S5
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.3	1	07/11/13 12:04	07/11/13 12:47	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	86	%	70-167	1	07/11/13 12:04	07/11/13 12:47	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**8.4**	%	0.10	1		07/10/13 14:01		

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205 East Meadow Road - Suite A
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(336)623-8921

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-13@3-4 **Lab ID: 92164739001** Collected: 07/11/13 13:10 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**22.9**	mg/kg	6.4	1	07/13/13 15:00	07/15/13 15:57	68334-30-5	
Surrogates								
n-Pentacosane (S)	80	%	41-119	1	07/13/13 15:00	07/15/13 15:57	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.4	1	07/14/13 18:02	07/14/13 19:40	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	79	%	70-167	1	07/14/13 18:02	07/14/13 19:40	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.6**	%	0.10	1		07/16/13 09:10		

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(336)623-8921

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Sample: 128-14@3-4 **Lab ID: 92164739002** Collected: 07/11/13 13:30 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	ND	mg/kg	6.2	1	07/13/13 15:00	07/15/13 16:21	68334-30-5	
Surrogates								
n-Pentacosane (S)	81	%	41-119	1	07/13/13 15:00	07/15/13 16:21	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	6.0	1	07/14/13 18:02	07/14/13 20:03	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	81	%	70-167	1	07/14/13 18:02	07/14/13 20:03	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**19.5**	%	0.10	1		07/16/13 09:11		

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Eden, NC 27288
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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: GCV/7064 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164373002, 92164373004, 92164373007, 92164373009, 92164373010

METHOD BLANK: 1007474 Matrix: Solid
Associated Lab Samples: 92164373002, 92164373004, 92164373007, 92164373009, 92164373010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	07/10/13 17:50	
4-Bromofluorobenzene (S)	%	81	70-167	07/10/13 17:50	

LABORATORY CONTROL SAMPLE: 1007475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.6	53.0	107	70-165	
4-Bromofluorobenzene (S)	%			87	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1007496 1007497

Parameter	Units	92164373010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	5.2	41.3	41.3	49.7	47.2	108	102	47-187	5	
4-Bromofluorobenzene (S)	%						85	85	70-167		

REPORT OF LABORATORY ANALYSIS

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205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: GCV/7066
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015 Modified
Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164373011, 92164373012

METHOD BLANK: 1007926 Matrix: Solid
Associated Lab Samples: 92164373011, 92164373012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	5.9	07/11/13 10:52	
4-Bromofluorobenzene (S)	%	89	70-167	07/11/13 10:52	

LABORATORY CONTROL SAMPLE: 1007927

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.5	50.6	102	70-165	
4-Bromofluorobenzene (S)	%			86	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1007955 1007956

Parameter	Units	92164373011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	ND	42.6	42.6	41.2	49.5	96	116	47-187	18	
4-Bromofluorobenzene (S)	%						83	85	70-167		

REPORT OF LABORATORY ANALYSIS

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Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: GCV/7072 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164373001, 92164373003, 92164373005, 92164373006, 92164373008

METHOD BLANK: 1009045 Matrix: Solid
Associated Lab Samples: 92164373001, 92164373003, 92164373005, 92164373006, 92164373008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	07/12/13 15:39	
4-Bromofluorobenzene (S)	%	90	70-167	07/12/13 15:39	

LABORATORY CONTROL SAMPLE: 1009046

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	50	49.2	98	70-165	
4-Bromofluorobenzene (S)	%			90	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1009173 1009174

Parameter	Units	92164612003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	ND	49.7	49.7	60.6	58.7	122	118	47-187	3	
4-Bromofluorobenzene (S)	%						87	92	70-167		

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Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: GCV/7074
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015 Modified
Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164739001, 92164739002

METHOD BLANK: 1009905 Matrix: Solid
Associated Lab Samples: 92164739001, 92164739002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	07/14/13 13:10	
4-Bromofluorobenzene (S)	%	81	70-167	07/14/13 13:10	

LABORATORY CONTROL SAMPLE: 1009906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.6	47.7	96	70-165	
4-Bromofluorobenzene (S)	%			79	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1009907 1009908

Parameter	Units	92164612004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	ND	51.2	51.2	58.3	58.3	113	113	47-187	0	
4-Bromofluorobenzene (S)	%						82	83	70-167		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: OEXT/22922 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92164373001, 92164373002, 92164373003, 92164373004, 92164373005, 92164373006, 92164373007, 92164373008, 92164373009, 92164373010, 92164373011, 92164373012

METHOD BLANK: 1006978 Matrix: Solid
Associated Lab Samples: 92164373001, 92164373002, 92164373003, 92164373004, 92164373005, 92164373006, 92164373007, 92164373008, 92164373009, 92164373010, 92164373011, 92164373012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	07/10/13 15:21	
n-Pentacosane (S)	%	84	41-119	07/10/13 15:21	

LABORATORY CONTROL SAMPLE: 1006979

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	48.9	73	49-113	
n-Pentacosane (S)	%			72	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1006980 1006981

Parameter	Units	92164373001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Components	mg/kg	137	76.2	76.2	194	226	76	117	10-146	15	
n-Pentacosane (S)	%						67	77	41-119		

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205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: OEXT/22977
QC Batch Method: EPA 3546
Analysis Method: EPA 8015 Modified
Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92164739001, 92164739002

METHOD BLANK: 1009863 Matrix: Solid
Associated Lab Samples: 92164739001, 92164739002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	07/15/13 15:33	
n-Pentacosane (S)	%	77	41-119	07/15/13 15:33	

LABORATORY CONTROL SAMPLE: 1009864

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	48.6	73	49-113	
n-Pentacosane (S)	%			75	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1009865 1009866

Parameter	Units	92164739001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Components	mg/kg	22.9	85.1	85.1	56.6	68.7	40	54	10-146	19	
n-Pentacosane (S)	%						82	80	41-119		

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(336)623-8921

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: PMST/5660 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92164373001, 92164373002, 92164373003, 92164373004, 92164373005, 92164373006, 92164373007, 92164373008, 92164373009, 92164373010, 92164373011, 92164373012

SAMPLE DUPLICATE: 1007043

Parameter	Units	92164287003 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	23.1	22.8	2	

SAMPLE DUPLICATE: 1007044

Parameter	Units	92164373014 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	4.8	4.6	4	

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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

QC Batch: PMST/5672
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92164739001, 92164739002

SAMPLE DUPLICATE: 1009692

Parameter	Units	92164739001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	21.6	20.0	8	

SAMPLE DUPLICATE: 1009693

Parameter	Units	92164950003 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	16.7	16.4	2	

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Asheville, NC 28804
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Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALIFIERS

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCDOT ROW-416 WBS#34745.1.1
Pace Project No.: 92164373

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92164373001	**128-1 @ 7-8'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373002	**128-2 @ 2-3'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373003	**128-3 @ 3-4'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373004	**128-4 @ 5-6'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373005	**128-5 @ 7-8'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373006	**128-6 @ 3-4'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373007	**128-7 @ 6-7'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373008	**128-8 @ 4-5'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373009	**128-9 @ 3-4'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373010	**128-10 @ 1-2'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373011	**128-11 @ 1-2'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164373012	**128-12 @ 1-2'**	EPA 3546	OEXT/22922	EPA 8015 Modified	GCSV/15047
92164739001	**128-13@3-4**	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164739002	**128-14@3-4**	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164373001	**128-1 @ 7-8'**	EPA 5035A/5030B	GCV/7072	EPA 8015 Modified	GCV/7076
92164373002	**128-2 @ 2-3'**	EPA 5035A/5030B	GCV/7064	EPA 8015 Modified	GCV/7067
92164373003	**128-3 @ 3-4'**	EPA 5035A/5030B	GCV/7072	EPA 8015 Modified	GCV/7076
92164373004	**128-4 @ 5-6'**	EPA 5035A/5030B	GCV/7064	EPA 8015 Modified	GCV/7067
92164373005	**128-5 @ 7-8'**	EPA 5035A/5030B	GCV/7072	EPA 8015 Modified	GCV/7076
92164373006	**128-6 @ 3-4'**	EPA 5035A/5030B	GCV/7072	EPA 8015 Modified	GCV/7076
92164373007	**128-7 @ 6-7'**	EPA 5035A/5030B	GCV/7064	EPA 8015 Modified	GCV/7067
92164373008	**128-8 @ 4-5'**	EPA 5035A/5030B	GCV/7072	EPA 8015 Modified	GCV/7076
92164373009	**128-9 @ 3-4'**	EPA 5035A/5030B	GCV/7064	EPA 8015 Modified	GCV/7067
92164373010	**128-10 @ 1-2'**	EPA 5035A/5030B	GCV/7064	EPA 8015 Modified	GCV/7067
92164373011	**128-11 @ 1-2'**	EPA 5035A/5030B	GCV/7066	EPA 8015 Modified	GCV/7068
92164373012	**128-12 @ 1-2'**	EPA 5035A/5030B	GCV/7066	EPA 8015 Modified	GCV/7068
92164739001	**128-13@3-4**	EPA 5035A/5030B	GCV/7074	EPA 8015 Modified	GCV/7077
92164739002	**128-14@3-4**	EPA 5035A/5030B	GCV/7074	EPA 8015 Modified	GCV/7077
92164373001	**128-1 @ 7-8'**	ASTM D2974-87	PMST/5660		
92164373002	**128-2 @ 2-3'**	ASTM D2974-87	PMST/5660		
92164373003	**128-3 @ 3-4'**	ASTM D2974-87	PMST/5660		
92164373004	**128-4 @ 5-6'**	ASTM D2974-87	PMST/5660		
92164373005	**128-5 @ 7-8'**	ASTM D2974-87	PMST/5660		
92164373006	**128-6 @ 3-4'**	ASTM D2974-87	PMST/5660		
92164373007	**128-7 @ 6-7'**	ASTM D2974-87	PMST/5660		
92164373008	**128-8 @ 4-5'**	ASTM D2974-87	PMST/5660		
92164373009	**128-9 @ 3-4'**	ASTM D2974-87	PMST/5660		
92164373010	**128-10 @ 1-2'**	ASTM D2974-87	PMST/5660		
92164373011	**128-11 @ 1-2'**	ASTM D2974-87	PMST/5660		
92164373012	**128-12 @ 1-2'**	ASTM D2974-87	PMST/5660		
92164739001	**128-13@3-4**	ASTM D2974-87	PMST/5672		
92164739002	**128-14@3-4**	ASTM D2974-87	PMST/5672		

REPORT OF LABORATORY ANALYSIS

Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.11	Issuing Authority: Pace Huntersville Quality Office

Client Name: Hart Hickman

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1102 (T1301) **Type of Ice:** (Wet) Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor T1102: No Correction T1301: No Correction

Corrected Cooler Temp.: 3.9 C **Biological Tissue is Frozen:** Yes (No) N/A

Temp should be above freezing to 6°C

Date and Initials of person examining contents: JCA 07/09/13

Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: SC		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: JD Date: 7/9/13

SRF Review: JD Date: 7/10/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Place label here

WO# : 92164373

92164373

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1686028

Section A — **Required** Client Information:

Company: Hart & Hickman
Address: 2923 S. Tryon Street
Suite 100 Charlotte, NC
Email To: DGraham@harthickman.com
Phone: 704-887-4630 Fax:
Requested Due Date/TAT:

Section B — **Required** Project Information:

Report To: David Graham
Copy To:
Purchase Order No.: WBS# 34745.1.1
Project Name: PCDOT - ROW-416
Project Number: ROW-416

Section C — Invoice Information:

Attention: Cynthia Wells
Company Name: Hart & Hickman
Address: Charlotte, NC
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 5279-2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

Section D — **Required** Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TPH - GRO	TPH - DRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	128-1 @7-8'	SL	G	7/8/13		7/8/13	1010		4										X	X		92164373 001
2	128-2 @2-3'						1030												X	X		002
3	128-3 @3-4'						1045												X	X		003
4	128-4 @5-6'						1105												X	X		004
5	128-5 @7-8'						1115												X	X		005
6	128-6 @3-4'						1130												X	X		006
7	128-7 @6-7'						1200												X	X		007
8	128-8 @4-5'						1220												X	X		008
9	128-9 @3-4'						1340												X	X		009
10	128-10 @1-2'						1400												X	X		010
11	128-11 @1-2'						1415												X	X		011
12	128-12 @1-2'						1445												X	X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
		7/9/13	0946		7/9/13	0946	
		7/9/13	16:21		7/9/13	1621	3.7 / Y / N / Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matt Gillis
SIGNATURE of SAMPLER: Matthew DATE Signed (MM/DD/YY): 7/8/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical® www.pacelabs.com

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1686035

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Hart & Hickman	Report To: David Graham	Attention: Cynthia Wells
Address: 2923 S. Tryon Street Suite 100 Charlotte, NC	Copy To:	Company Name: Hart & Hickman
Email To: DGraham@harthickman.com	Purchase Order No.: WBS# 34745.1.1	Address: CWells@harthickman.com
Phone: 704-887-4630 Fax:	Project Name: NCDOT - ROW - 4/6	Pace Quote Reference:
Requested Due Date/TAT:	Project Number: ROW-416	Pace Project Manager:
		Pace Profile #: 5279-2

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TPH - GRO	TPH - DRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	128-13 @ 3-4	SL	G			7/11/13	1310		4	X						X		Y	X	X		001
2	128-14 @ 3-4	SL	G			7/11/13	1330		4	X						X		Y	X	X		002
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

92164739

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*Include this data in the report w/ 128 samples collected on 7/8/13	Matt Gillis	7/11/13	1425	Pace	7/11/13	14:20	18.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Matt Gillis

SIGNATURE of SAMPLER: Matt Gillis DATE Signed (MM/DD/YY): 7/11/13

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007