P S A R E P O R T

PRELIMINARY SITE ASSESSMENT
PARCEL #38
LARMIE PENDRY PROPERTY
504 ELKIN HIGHWAY
WILKESBORO, WILKES COUNTY, NC
STATE PROJECT R-2603
WBS ELEMENT 36001.1.2

Prepared for

North Carolina Department of Transportation
Geotechnical Engineering Unit
Geoenvironmental Section
Century Center Complex, Building B
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Tel. (919) 250-4088

July 31, 2013

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URS Job No. 3182 8761

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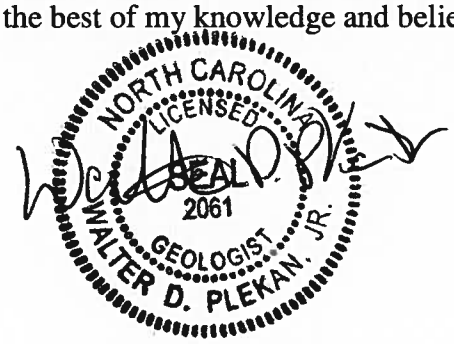
CERTIFICATION

This Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my thorough inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



Walter Plekan, L.G. Project Manager URS Corporation – North Carolina	2061 NC License No.	7-13-2013 Date

1.1 INTRODUCTION

This report documents a Preliminary Site Assessment (PSA) conducted by URS Corporation – North Carolina (URS) on behalf of the North Carolina Department of Transportation (NCDOT). The assessment area includes a site located on the south side of NC 268 (Elkin Highway) at the Shaver Street intersection. This PSA was conducted at 504 Elkin Highway Wilkesboro, Wilkes County, North Carolina (**Figure 1**), owned by Larmie Pendry (the Site). The PSA was performed only within the proposed right-of-way and/or easement for this parcel.

This PSA was performed in general accordance with:

- NCDOT's 22 March 2013 Request for Technical and Cost Proposal (RFP) for the Site property. The RFP established the following scope of work (SOW) for the project:
  - Locate USTs and estimate approximate size and contents (if any).
  - Evaluate whether contaminated soils are present with emphasis along planned drainage lines and ditches.
  - If contamination is evident, estimate the quantity of impacted soils and indicate the approximate area of soil contamination on a site map.
  - Prepare a report including field activities, findings, and recommendations for each site and submit to this office in triplicate and one electronic copy.
- URS's 3 April 2013 Technical and Cost Proposal for the Site property.
- NCDOT's 25 April 2013 Notice to Proceed for the Site property.

The scope of work included a geophysical survey, soil sampling using a direct push technology (DPT) rig, and laboratory analyses (Total Petroleum Hydrocarbons or TPH) of selected soil samples from within the Site property. The geophysical survey was first conducted by URS in order to identify potential UST and/or anomaly locations within the Site property. Based on the results of the geophysical survey and anecdotal evidence, boring locations were identified and the DPT borings were completed by a qualified drilling subcontractor (Geologic Exploration of Statesville, North Carolina) under the supervision of a URS geologist. Soil borings were located in areas that were cleared of underground utilities by NC One-Call. Analysis of soil samples were performed by Pace Analytical Services, Inc. under direct contract with NCDOT.

1.2 BACKGROUND

The objective for this PSA is to assess the Site for USTs, impacted soil, and to delineate potential impacts found in soils. The major Site features and the surrounding area are shown on **Figures 1** and **2**. The parcel is bounded by Elkin Highway to the north, commercial properties to the west and east and wooded land to the south. The building on the property has been razed and was vacant at the time of the PSA.

Several sources were reviewed for historical information including Wilkes County GIS, Sanborn Maps and NCDENR files. No aerials were located, NCDENR's UST Registration Database did not provided a Facility ID, and no groundwater incidents were associated with the property.

2.1 GEOPHYSICAL SURVEY

The primary objective of the geophysical survey was to locate potential USTs or anomalies within the property, and a secondary objective was to identify general locations of underground utilities at the property in advance of the planned subsurface investigation. The geophysical survey for the property was conducted by URS between May 6 and 8, 2013. Ground surface conditions consisted primarily of concrete or asphalt with some grassy areas.

The geophysical investigation was conducted using the electromagnetic (EM) method augmented by ground-penetrating radar (GPR). The EM survey was completed using the hand-held Schonstedt GA-52Cx Magnetic Locator and the Geonics, Ltd. EM-61 MKII (EM-61). The GPR survey was completed using a Sensors & Software, Inc. Noggin PLUS Smart Cart System with a 250 MHz scanning antenna.

EM-61 data were collected along parallel profiles with a nominal spacing of 5 feet where accessible. EM-61 data were recorded at a rate of 8 readings per second, which equates to an along-profile data point spacing of less than 1 foot. URS utilized the Schonstedt GA-52Cx to conduct a search of the portions of the survey area not accessible due to the size of the EM-61 instrument in order to identify anomalies indicative of USTs (i.e. between trees, man-made obstructions, etc.).

A Trimble ProXRT global positioning system (GPS) was used to record positional data coincident with the EM-61 data. The ProXRT system provided real-time differential corrections via an Omnistar subscription service. The horizontal accuracy of the differential GPS (DGPS) data is generally 3 feet or better. URS also used the GPS system to record the locations of relevant site features within the survey area.

Prior to conducting the GPR investigation, URS performed in-field analysis of the EM-61 data to identify anomalies indicative of potential USTs. Preliminary interpretations were based on an evaluation of the magnitude of the EM response as well as the dimensions of the anomaly in plan view.

The GPR was used to conduct a broad search of the parcel in areas where metal detection methods proved unreliable due to metallic interference, or where further investigation of EM anomalies were determined necessary. GPR surveying consisted of in-field analysis of real-time data. As a result, no post-processing of the GPR data was completed. However, GPR anomalies that appeared to be indicative of USTs were saved to a data file. The objective of augmenting the EM-61 survey with follow-up GPR surveying was to further characterize EM-61 anomalies that could not be readily attributed to existing site features.

The EM-61 data were pre-processed using the program DAT61 MK2 (Geonics Ltd). The program was used to prepare the data for contouring in Surfer (Golden Software, Inc.). Contoured data represent EM-61 Channel 1 and differential responses. The Channel 1 response represents data recorded at the earliest time interval along the EM-61 response decay curve. These data are applicable to detection of subsurface objects including USTs and other underground obstructions (e.g. utility lines).

2.2 SOIL BORING INSTALLATION AND MEDIA SAMPLING

Five direct-push soil borings, P38-SB1 through P38-SB5, were installed on May 30, 2013 to assess the Site for impacted soil as shown on **Figure 2**. Soil samples were collected and logged continuously at each soil boring location. Soil sample aliquots were field screened for organic vapors with a MiniRae® brand photo-ionization detection (PID) instrument calibrated daily with 100 parts per million (ppm) isobutylene.

Soil samples from select intervals were collected from each boring during the soil investigations for laboratory analysis. The samples were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline range organics (GRO) and diesel range organics (DRO) using USEPA Method 8015B.

2.3 QUALITY CONTROL/QUALITY ASSURANCE PROCEDURES

While in the field, pertinent observations were recorded in a logbook maintained by the URS field representative. This included pertinent field data collection activities and other observations as appropriate. Each sample collected for laboratory analysis was assigned a unique sample identification number and placed in laboratory supplied containers appropriate for the parameters being analyzed. Samples collected for laboratory analyses were stored on ice in insulated coolers immediately following collection. Information on the custody, transfer, handling, and shipping of all samples was recorded on a chain-of-custody form that accompanied the samples to the laboratory.

Soil analytical data were evaluated based on the *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999). Sample results have been qualified based on the results of the data review process and are considered representative and valid for the purpose of this report.

3.1 GEOPHYSICAL SURVEY RESULTS

The results of the geophysical survey are presented in accordance with the NCDOT guidelines, dated May 19, 2009, for identifying and ranking potential USTs on NCDOT projects.

The EM-61 Channel 1 and differential response results are provided as plan view, color-enhanced contour maps in **Figures 3** and **4**, respectively. The results presented in **Figures 3** and **4** are superimposed on the parcel base drawing provided by NCDOT. The interpreted background response is represented by the light blue to light green contours and corresponds to the range of -5 to 20 milliVolts (mV).

The Channel 1 results in **Figure 3** indicate high response anomalies, red in color, where known metallic features exist. Features of note include utility lines, a section of 30-inch corrugated metal pipe, and an unknown anomaly on the southwestern portion of the surveyed area.

In addition, Channel 1 results in **Figure 3** indicate an increase in negative response values across the surveyed area. This increase in negative response values is indicated in **Figure 3** by the yellow contours. Because the ground surface consists of asphalt across this portion of the site, the localized increase in negative response values suggests a slightly elevated background metallic signature of the materials beneath the asphalt. These near-surface conditions may include sub-base or fill materials with a relatively higher metallic mineral content. The effects of these conditions appear to be more prevalent in the Channel 1 data (**Figure 3**) compared to the differential response data (**Figure 4**).

The effects of surface and near-surface conditions appear to be muted in the differential response data, thus facilitating the identification of deeper anomalies characteristic of USTs. Because the differential response data in **Figure 4** depict more well-defined footprints of EM signatures and enable muting of surface effects, these response data were utilized to select the target locations for inclusion in the follow-up GPR survey. One anomaly indicative of a potential UST is identified in **Figures 3** and **4** by the orange-shaded rectangle. The anomaly is characterized in the EM-61 data by dimensions and response amplitude consistent with the characteristics of a UST. The footprint of the interpreted peak EM-61 signature is approximately 6 feet by 10 feet, and the response magnitude appears to be greater than background condition, approximately 300 mV.

The results of the follow-up GPR survey across the anomaly identified in the EM-61 data did not indicate reflections consistent with the characteristic of a UST. Therefore, this anomaly is considered "No Confidence" in accordance with the NCDOT guidelines for identifying and ranking potential USTs.

The results of the sweep search with the Schonstedt in areas inaccessible by the EM-61 and GPR did not identify anomalies indicative of buried metallic obstructions.

3.2 SOIL SAMPLING RESULTS

A total of five soil borings were advanced to depths between 6 and 10 feet below ground surface (ft bgs) during the PSA investigation at the Site property. Boring locations are shown in **Figure**

2 and analytical results (TPH) are summarized in **Table 1**. The soil was described as silty sand and sandy clay. The boring logs are included as **Appendix A** and the complete laboratory report is included in **Appendix B**.

As shown in **Appendix A**, soil headspace screening in the field detected concentrations of organic vapors ranging from 0 to 14.2 parts per million (ppm). TPH (GRO) was not detected in any of the soil samples collected for laboratory analysis. TPH (DRO) was detected in the soil sample collected from boring P38-SB3 (6 ft bgs) at a concentration of 39.2 milligrams per kilogram (mg/kg). This concentration exceeds the NCDENR Non-UST Petroleum Action Level of 10 mg/kg. TPH (DRO) was also detected in the soil sample collected from boring P38-SB4 (10 ft bgs) at a concentration of 9.1 mg/kg at a depth of approximately 10 ft bgs, which does not exceed the Action Level. As soil impacts were not evident in the field, additional soil borings were not installed.

The approximate extents of potential impacts are depicted on **Figure 2** as a conservative approach. The area shown is approximately 1,800 square feet, using a uniform depth of 8-ft (from 2 to 10 ft bgs); the volume of impacted soil that potentially could be encountered at depth is approximately 525 cubic yards.

3.3 SUMMARY

The following summarizes the findings of NCDOT Parcel 38, located at 504 Elkin Highway:

- No historical files were located for the property. A NCDENR incident number was not identified for the site;
- The geophysical survey indicated one “No Confidence” anomaly in the EM-61 data;
- Field screening did detect the presence of organic vapors above background concentrations in SB-3;
- The soil sample from SB-3 reported a concentration in excess of the regulatory standards for TPH (DRO); and
- The estimated area of impacted soil is depicted on **Figure 2**.

Depending on the depth of construction activities in this area, future site workers have the potential to encounter impacted soil due to the depth of identified impacts (beginning at approx. 2 ft bgs). Impacted soil encountered during construction activities should be properly handled and disposed of in accordance with NCDENR regulations.

Opinions relating to environmental, geologic, and geotechnical conditions at this parcel are based on limited data, and actual conditions may vary from those encountered at the times and locations where the data was obtained, despite the use of due professional care. The geophysical investigation was conducted in accordance with reasonable and accepted engineering geophysics practices, and the interpretations and conclusions are rendered in a manner consistent with other consultants in our profession. All geophysical techniques have some level of uncertainty and limitations. No other representations of the reported information is expressed or implied, and no warranty or guarantee is included or intended. The results of the geophysical survey are presented in accordance with the NCDOT guidelines, dated May 19, 2009, for identifying and ranking potential USTs on NCDOT projects.

North Carolina Department of Transportation, *Request for Technical and Cost Proposal, Preliminary Site Assessment, R-2603*, March 22, 2013.

North Carolina Department of Transportation, Notice to Proceed - Preliminary Site Assessment, R-2603, April 25, 2013.

URS Corporation, *Technical and Cost Proposal, Preliminary Site Assessment*, R-2603, April 3, 2013.

United States Environmental Protection Agency, *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, 1999.

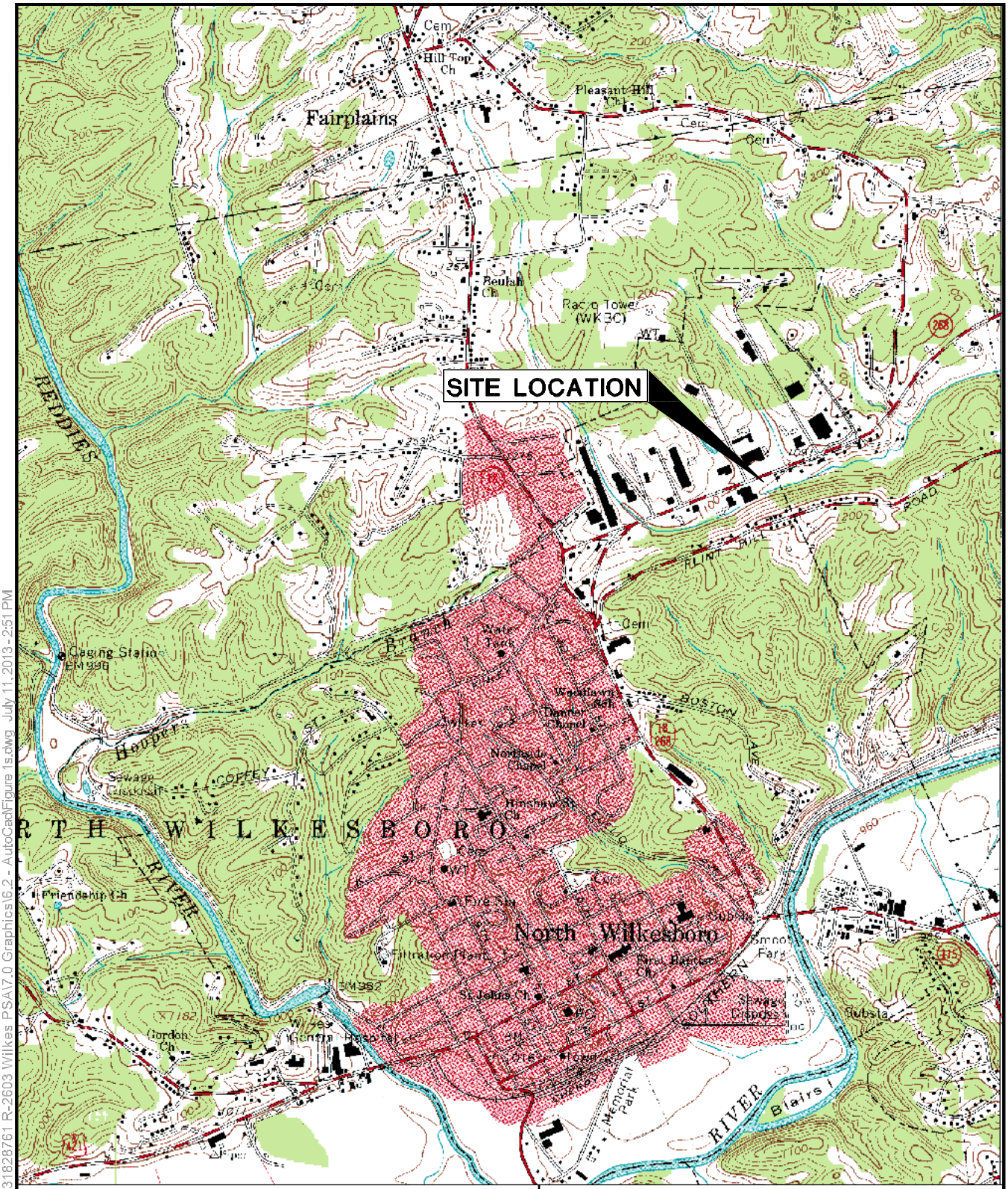
Tables

Table 1
Parcel 38 - Larmie Pendry
Summary of Soil TPH Analytical Results
TIP #R-2603 36001.1.2

Analytical Method			EPA 8015 Modified by EPA 3546	EPA 8015 Modified by EPA 5035A/5030B
Sample ID	**Constituent of Concern**		TPH - Diesel Range Organics (DRO)	TPH - Gasoline Range Organics (GRO)
	Date Collected (mm/dd/yy)	Sample Depth (ft. BGS)	mg/kg	mg/kg
P38-SB1-10	05/30/2013	10	ND	ND
P38-SB2-10	05/30/2013	10	ND	ND
P38-SB3-6	05/30/2013	6	**39.2**	ND
P38-SB4-10	05/30/2013	10	9.1	ND
P38-SB5-10	05/30/2013	10	ND	ND
NCDENR UST Section Action Level			10	10
NCDENR Non-UST Petroleum Action Level			10	10

NOTES:
ND = Not Detected
TPH = Total Petroleum Hydrocarbons
ft. BGS = feet below ground surface
mg/kg = milligrams per kilogram
Bold data above the NCDENR Action Levels

Figures



SCALE IN FEET
0 2000

N.C.
QUADRANGLE LOCATION

N

SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE
WILKESBORO, NC – DATED 1966

FIGURE 1. LOCATION MAP

PARCEL 38, 504 ELKIN HIGHWAY
STATE PROJECT R-2603, WILKESBORO, NC

Prepared for: NC DOT	URS RDU, NORTH CAROLINA 27560
DRAWN BY: TSH	
DATE: 07/11/13	
PROJECT NO. 31828761	Fig. 1

P:\Jobs4_Projects\NCDOT\31828761 R-2603 Wilkes PSA\7.0 Graphics\6.2 - AutoCad\Figure 1s.dwg July 11, 2013 - 2:51 PM

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET
R-2603	

GeoEnvironmental

0 50 100
FEET

LEGEND

- SB2 — SOIL BORING LOCATION
- PROPOSED RIGHT-OF-WAY
- PROPOSED EASEMENT
- PROPOSED DRAINAGE STRUCTURE
- KNOWN SOIL CONTAMINATION
- EXISTING MONITORING WELL
- UST — UNDERGROUND STORAGE TANK

SBI-10	ID - DEPTH
ND	TPH / DRO
ND	TPH / GRO

SOIL RESULTS ARE IN mg/kg

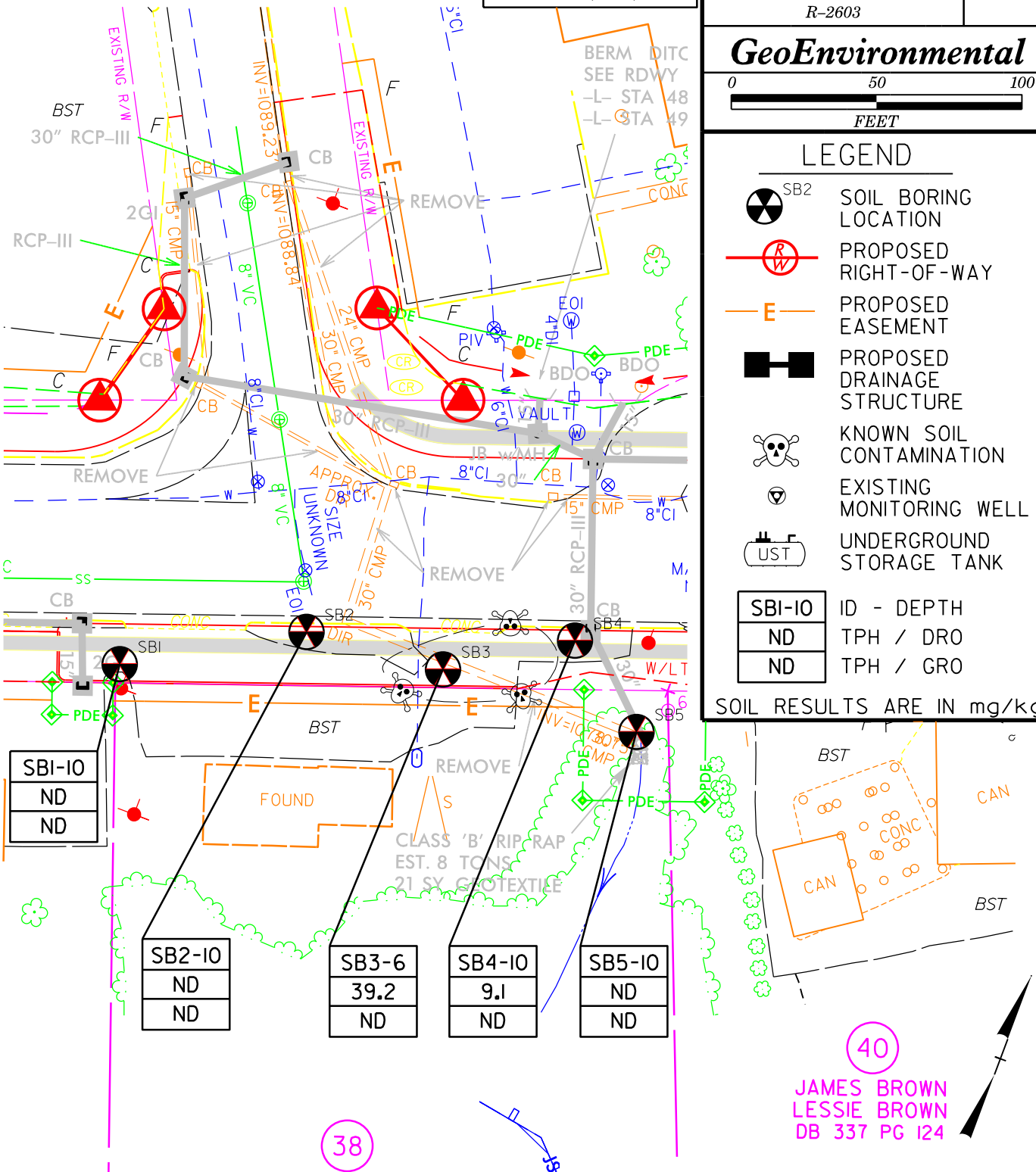


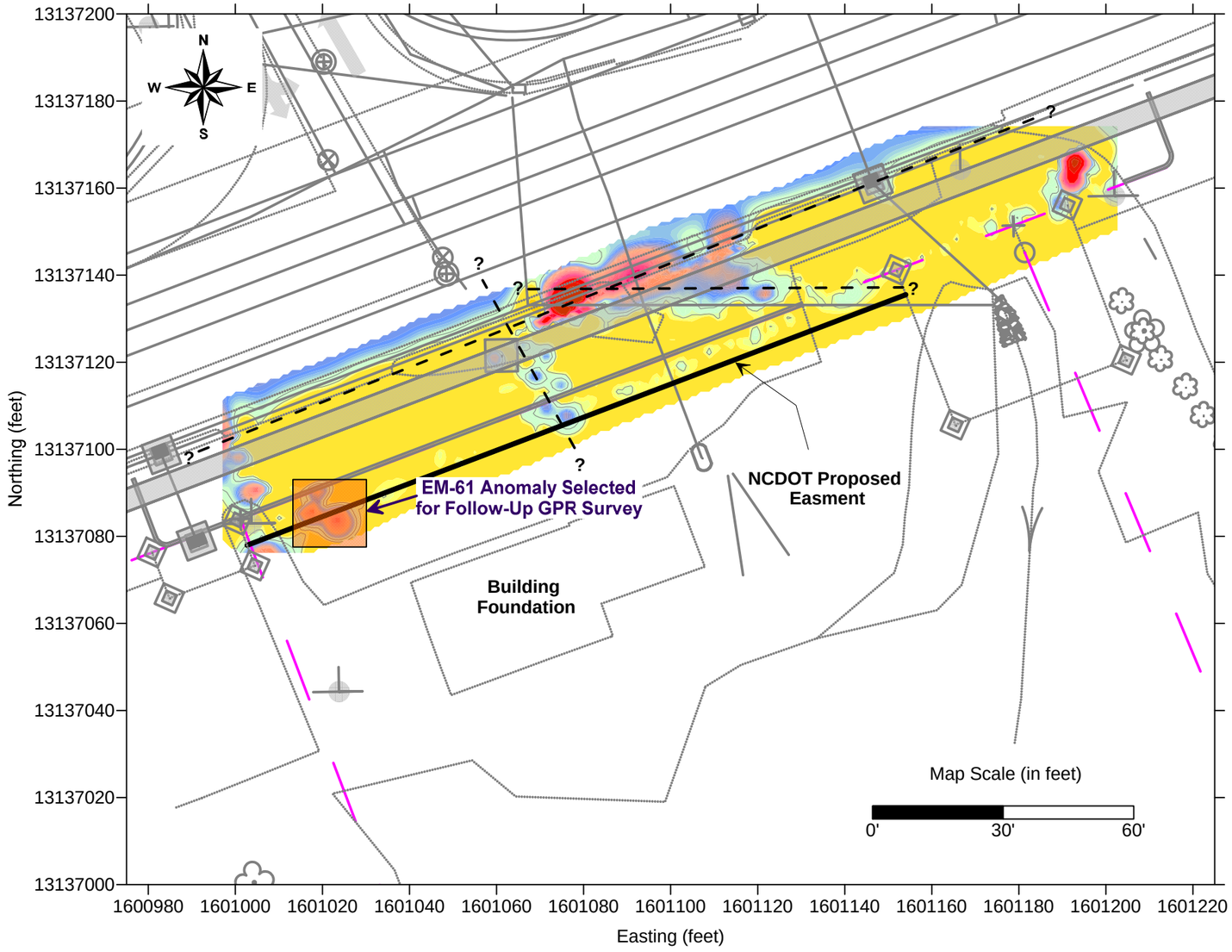
FIGURE 2 SOIL SAMPLING LOCATIONS
PARCEL 38 - LARMIE PENDRY
STATE PROJECT R-2603
WILKES COUNTY, NC

URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
NC LIC * C-2243
TELEPHONE (919) 461-1100 FAX (919) 461-1415

	DRN BY: LHM	DATE: 6-27-13	STATE PROJECT:
	CHECKED BY: VK	DATE: 6-28-13	R-2603

PARCEL LOCATION MAP

FIGURE 2



EM-61 MKII Channel 1 Response (milliVolts)

Interpreted Increasing Response from Subsurface Metal

20000
6000
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-20

Interpreted Background Response

Interpreted Increasing Response from Surface Metal

Legend

- Interpreted Subsurface Utility Center Line
- ? Utility Termination Point not Known
- Property Boundary

Notes:

1. Coordinates in NC State Plane NAD 83 grid.
2. Data from Geonics, Ltd. EM-61 MKII instrument.
3. Base drawing after file "r2603_parcel_038.dxf" provided by NCDOT.
4. Location control from DGPS survey by URS.

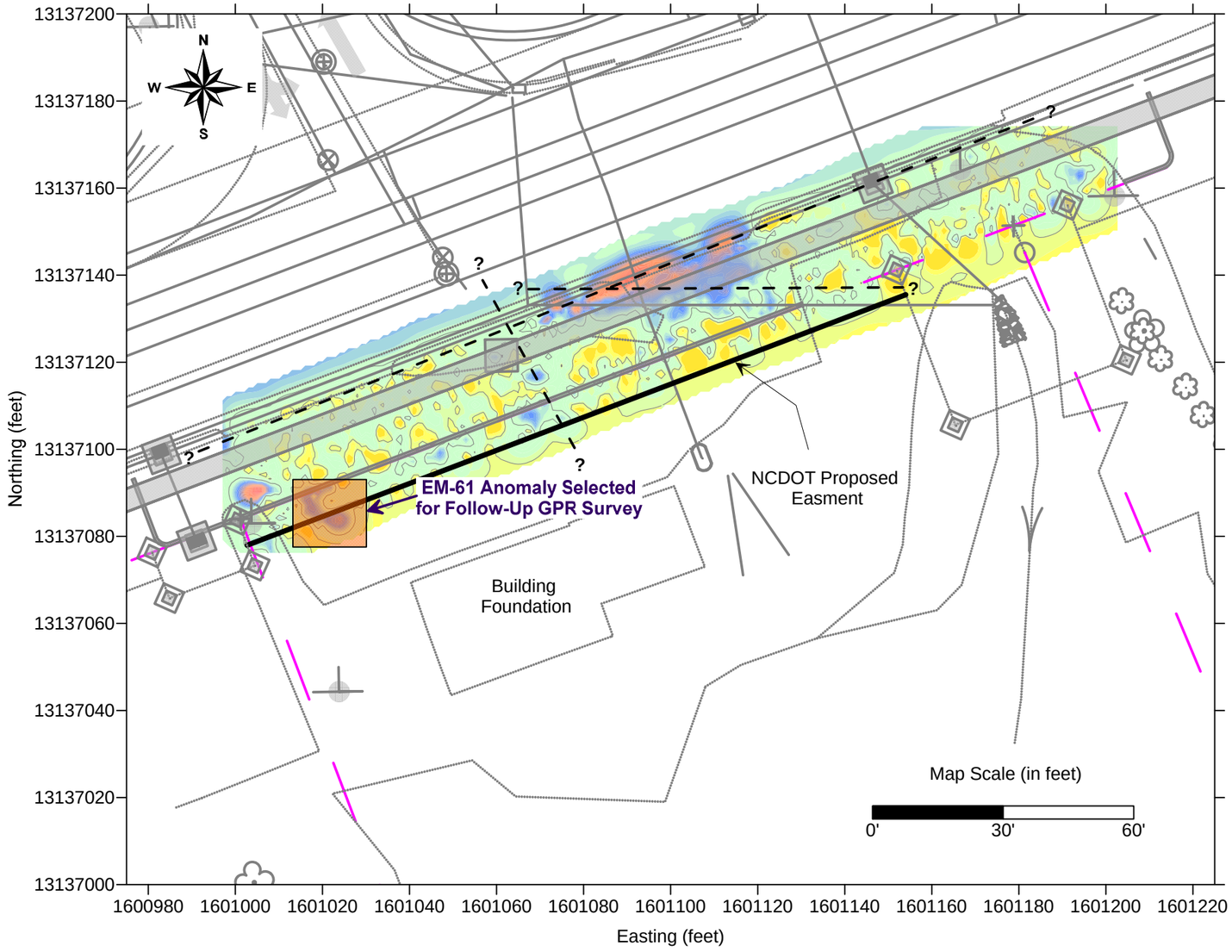
URS Geophysical Services
1600 Perimeter Park Drive, Suite 400
Raleigh, NC 27560
(910)-508-3869

EM-61 MKII Channel 1 Response Contours
LARMIE PENDRY PROPERTY
(Parcel #38)

NCDOT WBS 36000.1.1, Wilkes County

Wilkesboro, North Carolina

DESIGNED BY		DRAWN BY		CHECKED BY		JOB NUMBER	Figure
MJM	03/06/13	MJM	06/03/13	TJK	07/19/10	31828761	3



EM-61 MKII Differential Channel Response (milliVolts)

Interpreted Increasing Response from Subsurface Metal

20000
6000
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
Interpreted Background Response
0
Interpreted Increasing Response from Surface Metal
-20

Legend

- – – – Interpreted Subsurface Utility Center Line
- ? Utility Termination Point not Known
- —— —— Property Boundary

Notes:

1. Coordinates in NC State Plane NAD 83 grid.
2. Data from Geonics, Ltd. EM-61 MKII instrument.
3. Base drawing after file "r2603_parcel_038.dxf" provided by NCDOT.
4. Location control from DGPS survey by URS.

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Raleigh, NC 27560
(910)-508-3869

EM-61 MKII Differential Channel Response Contours
LARMIE PENDRY PROPERTY
(Parcel #38)

NCDOT WBS 36000.1.1, Wilkes County

Wilkesboro, North Carolina

DESIGNED BY		DRAWN BY		CHECKED BY		JOB NUMBER	Figure
MJM	03/06/13	MJM	06/03/13	TJK	07/19/10	31828761	4

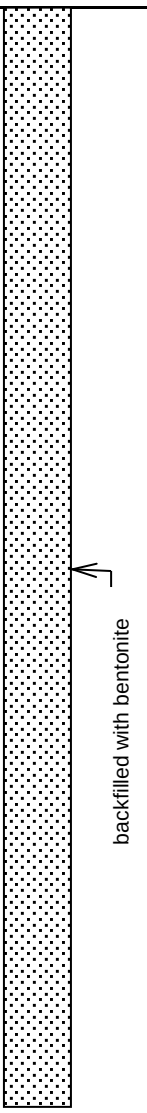
Appendix A
Boring Logs

BORING LOG: P38-SB1

Permit #		Drill Date	***05/30/13***	Site	***Parcel 38***
Client	***NCDOT***	Use		URS Corporation	
Address	***North Wilkesboro, North Carolina***			Total Depth (ft)	***10***
Drilling Method	***Geoprobe direct push***	Boring Depth (ft)	***10***	Boring Diam. (in)	***2.25***
Backfill Material	***bentonite***		***NA***	Static Water Level	***unknown***
Rmrks	***Groundwater not encountered***	TOC Elevation		Sample Method	***Acetate liner***
in boring					

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0				0.0 ppm	Asphalt
2				0.0 ppm	Loose, dry, dark gray, silty Sand
4				0.0 ppm	Medium stiff, dry, reddish-orange, sandy Clay
6				0.0 ppm	
8				0.0 ppm	Loose, dry, light brown, silty Sand
10	P38-SB1-10	10'			Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

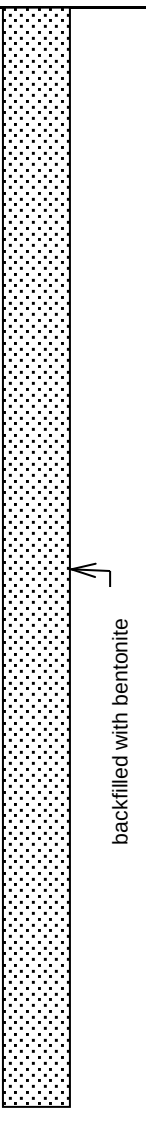
Driller: ***Geologic Exploration***

BORING LOG: P38-SB2

Permit #		Drill Date	***05/30/13***	Site	***Parcel 38***
Client	***NCDOT***	Use		URS Corporation	
Address	***North Wilkesboro, North Carolina***			Total Depth (ft)	***10***
Drilling Method	***Geoprobe direct push***	Boring Depth (ft)	***10***	Boring Diam. (in)	***2.25***
Backfill Material	***bentonite***		***NA***	Static Water Level	***unknown***
Rmrks	***Groundwater not encountered***	TOC Elevation		Sample Method	***Acetate liner***
in boring					

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0				0.0 ppm	Asphalt
2				0.0 ppm	Loose, dry, dark gray, silty Sand
4				0.0 ppm	
6				0.0 ppm	
8				0.0 ppm	Loose, dry, light brown, silty Sand
10	P38-SB2-10	10'			Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

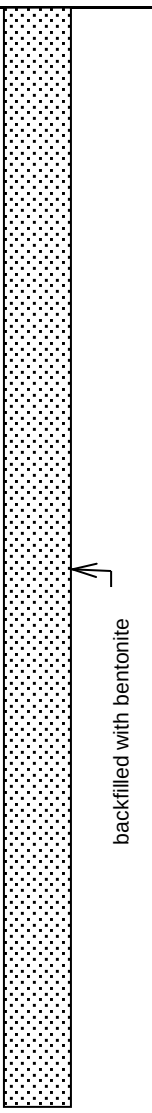
Driller: ***Geologic Exploration***

BORING LOG: P38-SB3

Permit #		Drill Date	***05/30/13***	Site	***Parcel 38***
Client	***NCDOT***	Use		URS Corporation	
Address	***North Wilkesboro, North Carolina***			Total Depth (ft)	***10***
Drilling Method	***Geoprobe direct push***	Boring Depth (ft)	***10***	Boring Diam. (in)	***2.25***
Backfill Material	***bentonite***		***NA***	Static Water Level	***unknown***
Rmrks	***Groundwater not encountered***	TOC Elevation		Sample Method	***Acetate liner***
in boring					

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0					Asphalt
2				2.1 ppm	Loose, dry, dark gray, silty Sand
				10.1 ppm	
4				14.2 ppm	
6	P38-SB3-6	6'		8.7 ppm	Loose, dry, light brown, silty Sand
8				5.0 ppm	
10					Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

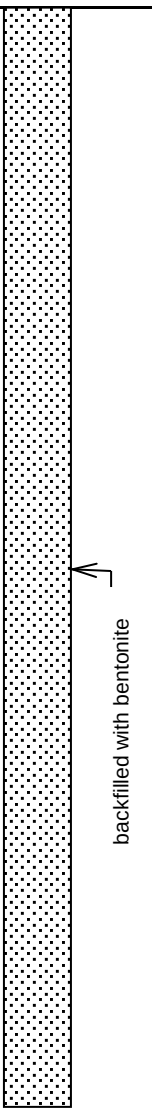
Driller: ***Geologic Exploration***

BORING LOG: P38-SB4

Permit #		Drill Date	***05/30/13***	Site	***Parcel 38***
Client	***NCDOT***	Use		URS Corporation	
Address	***North Wilkesboro, North Carolina***			Total Depth (ft)	***10***
Drilling Method	***Geoprobe direct push***	Boring Depth (ft)	***10***	Boring Diam. (in)	***2.25***
Backfill Material	***bentonite***		***NA***	Static Water Level	***unknown***
Rmrks	***Groundwater not encountered***	TOC Elevation		Sample Method	***Acetate liner***
in boring					

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0				0.2 ppm	Loose, dry, dark gray, silty Sand
2				0.5 ppm	Medium stiff, dry, reddish-orange, sandy Clay
4				0.4 ppm	
6				0.4 ppm	Loose, dry, light brown, silty Sand
8				0.7 ppm	
10	P38-SB4-10	10'			Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

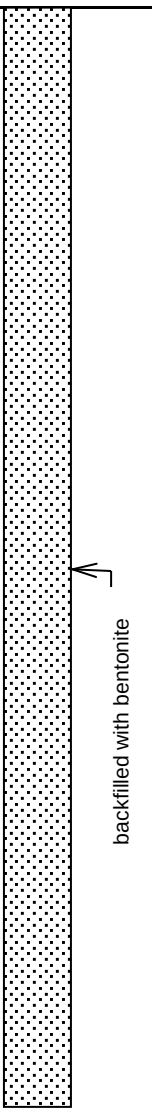
Driller: ***Geologic Exploration***

BORING LOG: P38-SB5

Permit #		Drill Date	***05/30/13***	Site	***Parcel 38***
Client	***NCDOT***	Use		URS Corporation	
Address	***North Wilkesboro, North Carolina***			Total Depth (ft)	***10***
Drilling Method	***Geoprobe direct push***	Boring Depth (ft)	***10***	Boring Diam. (in)	***2.25***
Backfill Material	***bentonite***		***NA***	Static Water Level	***unknown***
Rmrks	***Groundwater not encountered in boring***	TOC Elevation		Sample Method	***Acetate liner***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0				0.0 ppm	
2				0.0 ppm	Loose, dry, light brown, silty Sand
4				0.0 ppm	
6				0.0 ppm	Soft, dry, reddish-orange, sandy Clay
8				0.0 ppm	
10	P38-SB5-10	10'			Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

Driller: ***Geologic Exploration***

Appendix B
Laboratory Report

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

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

June 11, 2013

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

RE: Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on May 30, 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 Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

cc: Martha Meyers-Lee, URS
Walt Plekan, URS

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CERTIFICATIONS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

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

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SAMPLE SUMMARY

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92159846015	**P38-SB1-10**	Solid	05/30/13 12:50	05/30/13 14:45
92159846016	**P38-SB2-10**	Solid	05/30/13 13:10	05/30/13 14:45
92159846017	**P38-SB3-6**	Solid	05/30/13 13:30	05/30/13 14:45
92159846018	**P38-SB4-10**	Solid	05/30/13 13:55	05/30/13 14:45
92159846019	**P38-SB5-10**	Solid	05/30/13 14:15	05/30/13 14:45

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SAMPLE ANALYTE COUNT

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92159846015	**P38-SB1-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92159846016	**P38-SB2-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92159846017	**P38-SB3-6**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92159846018	**P38-SB4-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92159846019	**P38-SB5-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C

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HITS ONLY

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92159846015	**P38-SB1-10**					
ASTM D2974-87	Percent Moisture	21.4	%	0.10	06/04/13 07:58	
92159846016	**P38-SB2-10**					
ASTM D2974-87	Percent Moisture	18.7	%	0.10	06/04/13 07:58	
92159846017	**P38-SB3-6**					
EPA 8015 Modified	Diesel Components	39.2	mg/kg	6.5	06/03/13 20:22	
ASTM D2974-87	Percent Moisture	22.8	%	0.10	06/04/13 07:58	
92159846018	**P38-SB4-10**					
EPA 8015 Modified	Diesel Components	9.1	mg/kg	6.6	06/03/13 20:22	
ASTM D2974-87	Percent Moisture	24.2	%	0.10	06/04/13 07:58	
92159846019	**P38-SB5-10**					
ASTM D2974-87	Percent Moisture	21.9	%	0.10	06/04/13 07:58	

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PROJECT NARRATIVE

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Method: **EPA 8015 Modified**
Description: 8015 GCS THC-Diesel
Client: NCDOT West Central
Date: June 11, 2013

General Information:
5 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.

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:

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PROJECT NARRATIVE

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Method: **EPA 8015 Modified**
Description: Gasoline Range Organics
Client: NCDOT West Central
Date: June 11, 2013

General Information:
5 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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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Sample: P38-SB1-10 **Lab ID: 92159846015** Collected: 05/30/13 12:50 Received: 05/30/13 14:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.4	5.7	1	05/31/13 15:10	06/03/13 19:59	68334-30-5	
Surrogates									
n-Pentacosane (S)	99	%	41-119		1	05/31/13 15:10	06/03/13 19:59	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.3	6.3	1	06/04/13 10:36	06/04/13 17:17	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	92	%	70-167		1	06/04/13 10:36	06/04/13 17:17	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.4**	%	0.10	0.10	1		06/04/13 07:58		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Sample: P38-SB2-10 **Lab ID: 92159846016** Collected: 05/30/13 13:10 Received: 05/30/13 14:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.1	5.5	1	05/31/13 15:10	06/03/13 19:59	68334-30-5	
Surrogates									
n-Pentacosane (S)	94	%	41-119		1	05/31/13 15:10	06/03/13 19:59	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	5.6	5.6	1	06/04/13 10:36	06/04/13 17:40	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-167		1	06/04/13 10:36	06/04/13 17:40	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.7**	%	0.10	0.10	1		06/04/13 07:58		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Sample: P38-SB3-6 **Lab ID: 92159846017** Collected: 05/30/13 13:30 Received: 05/30/13 14:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	**39.2**	mg/kg	6.5	5.8	1	05/31/13 15:10	06/03/13 20:22	68334-30-5	
Surrogates									
n-Pentacosane (S)	102	%	41-119		1	05/31/13 15:10	06/03/13 20:22	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.4	6.4	1	06/04/13 10:36	06/04/13 18:03	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	90	%	70-167		1	06/04/13 10:36	06/04/13 18:03	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.8**	%	0.10	0.10	1		06/04/13 07:58		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Sample: P38-SB4-10 **Lab ID: 92159846018** Collected: 05/30/13 13:55 Received: 05/30/13 14:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	**9.1**	mg/kg	6.6	5.9	1	05/31/13 15:10	06/03/13 20:22	68334-30-5	
Surrogates									
n-Pentacosane (S)	55	%	41-119		1	05/31/13 15:10	06/03/13 20:22	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	7.2	7.2	1	06/04/13 10:36	06/04/13 18:26	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-167		1	06/04/13 10:36	06/04/13 18:26	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**24.2**	%	0.10	0.10	1		06/04/13 07:58		

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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Sample: P38-SB5-10 **Lab ID: 92159846019** Collected: 05/30/13 14:15 Received: 05/30/13 14:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.4	5.8	1	05/31/13 15:10	06/03/13 20:46	68334-30-5	
Surrogates									
n-Pentacosane (S)	96	%	41-119		1	05/31/13 15:10	06/03/13 20:46	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.4	6.4	1	06/04/13 10:36	06/04/13 18:49	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	92	%	70-167		1	06/04/13 10:36	06/04/13 18:49	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.9**	%	0.10	0.10	1		06/04/13 07:58		

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QUALITY CONTROL DATA

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

QC Batch: GCV/6953 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92159846015, 92159846016, 92159846017, 92159846018, 92159846019

METHOD BLANK: 985983 Matrix: Solid
Associated Lab Samples: 92159846015, 92159846016, 92159846017, 92159846018, 92159846019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	5.9	06/04/13 11:26	
4-Bromofluorobenzene (S)	%	83	70-167	06/04/13 11:26	

LABORATORY CONTROL SAMPLE: 985984

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.5	45.8	93	70-165	
4-Bromofluorobenzene (S)	%			85	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 985985 985986

Parameter	Units	92159846003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	52.3	52.3	58.9	64.7	112	123	47-187	9	30	
4-Bromofluorobenzene (S)	%						90	88	70-167			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

QC Batch: OEXT/22382 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92159846015, 92159846016, 92159846017, 92159846018, 92159846019

METHOD BLANK: 984379 Matrix: Solid
Associated Lab Samples: 92159846015, 92159846016, 92159846017, 92159846018, 92159846019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	05/31/13 11:33	
n-Pentacosane (S)	%	89	41-119	05/31/13 11:33	

LABORATORY CONTROL SAMPLE & LCSD: 984380 984381

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Components	mg/kg	66.7	53.0	50.5	80	76	49-113	5	30	
n-Pentacosane (S)	%				97	93	41-119			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 984837 984838

Parameter	Units	92159846021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Components	mg/kg	ND	86	86	75.1	70.9	86	81	10-146	6	30	
n-Pentacosane (S)	%						98	110	41-119			

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QUALITY CONTROL DATA

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

QC Batch: PMST/5568 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92159846015, 92159846016, 92159846017, 92159846018, 92159846019

SAMPLE DUPLICATE: 984261

Parameter	Units	92159846004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.9	22.1	1	25	

SAMPLE DUPLICATE: 984262

Parameter	Units	92159632002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	79.3	78.7	1	25	

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QUALIFIERS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

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.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Wilkes County 36000.1.1
Pace Project No.: 92160970

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92159846015	**P38-SB1-10**	EPA 3546	OEXT/22382	EPA 8015 Modified	GCSV/14753
92159846016	**P38-SB2-10**	EPA 3546	OEXT/22382	EPA 8015 Modified	GCSV/14753
92159846017	**P38-SB3-6**	EPA 3546	OEXT/22382	EPA 8015 Modified	GCSV/14753
92159846018	**P38-SB4-10**	EPA 3546	OEXT/22382	EPA 8015 Modified	GCSV/14753
92159846019	**P38-SB5-10**	EPA 3546	OEXT/22382	EPA 8015 Modified	GCSV/14753
92159846015	**P38-SB1-10**	EPA 5035A/5030B	GCV/6953	EPA 8015 Modified	GCV/6954
92159846016	**P38-SB2-10**	EPA 5035A/5030B	GCV/6953	EPA 8015 Modified	GCV/6954
92159846017	**P38-SB3-6**	EPA 5035A/5030B	GCV/6953	EPA 8015 Modified	GCV/6954
92159846018	**P38-SB4-10**	EPA 5035A/5030B	GCV/6953	EPA 8015 Modified	GCV/6954
92159846019	**P38-SB5-10**	EPA 5035A/5030B	GCV/6953	EPA 8015 Modified	GCV/6954
92159846015	**P38-SB1-10**	ASTM D2974-87	PMST/5568		
92159846016	**P38-SB2-10**	ASTM D2974-87	PMST/5568		
92159846017	**P38-SB3-6**	ASTM D2974-87	PMST/5568		
92159846018	**P38-SB4-10**	ASTM D2974-87	PMST/5568		
92159846019	**P38-SB5-10**	ASTM D2974-87	PMST/5568		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	URS Corporation	Report To:	Martha Meyers-Lee	Attention:	
Address:	1600 Perimeter Park Drive, Suite 400	Copy To:	Walt Plekan	Company Name:	
	Morrisville, NC 27560			Address:	
Email To:	Martha.Meyers-Lee@urs.com	Purchase Order No.:	State TIP #R-2603; WBS# 36000.1.1	Pace Quote Reference:	
Phone:	919-461-1519 Fax: 919-461-1415	Project Name:	Wilkes County	Pace Project Manager:	Kevin Herring
Requested Due Date/TAT:	Standard	Project Number:	31828761	Pace Profile #:	56970-1

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

Site Location STATE: NC

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,) Sample IDs MUST BE UNIQUE	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	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: DRO N	TPH: GRO Y	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P38-SB1-10		SL	G			05/30/13	12:50		4	X						X			X	X			92159846015
2	P38-SB2-10		SL	G			05/30/13	13:10		4	X						X			X	X			016
3	P38-SB3-~~10~~ 6		SL	G			05/30/13	13:30		4	X						X			X	X			017
4	P38-SB4-10		SL	G			05/30/13	13:55		4	X						X			X	X			018
5	P38-SB5-10		SL	G			05/30/13	14:15		4	X						X			X	X			019
6																								
7																								
8																								
9																								
10																								
11																								
12																								

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)
COC Addendum	Walt Plekan for Mike Meyers	5/30/13	1445							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Walt Plekan for Mike Meyers

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY):

*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.