P S A R E P O R T

PRELIMINARY SITE ASSESSMENT
PARCEL #128
JOHNSON OIL & TRACTOR, INC. PROPERTY
1612 2ND STREET
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
1020 Birch Ridge Drive
Raleigh, NC 27610
Tel. (919) 250-4088

July 31, 2013

URS Corporation – North Carolina
1600 Perimeter Park Drive, Suite 400
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URS Job No. 3182 8761

TABLE OF CONTENTS

Section 1 Introduction 1-1

1.1 Introduction 1-1
1.2 Background 1-1

Section 2 Methods of Investigation 2-1

2.1 Geophysical Survey 2-1
2.2 Soil Boring Installation and Media Sampling 2-2
2.3 Quality Control/Quality Assurance Procedures 2-2

Section 3 Results 3-1

3.1 Geophysical Survey Results 3-1
3.2 Soil Sampling Results 3-1
3.3 Summary 3-2

Section 4 Limitations 4-1

Section 5 References 5-1

TABLES

Table 1 Summary of Soil TPH Analytical Results

FIGURES

Figure 1 Location Map

Figure 2 Soil Sampling Locations

Figure 3 EM-61 MKII Channel 1 Response Contours

Figure 4 EM-61 MKII Differential Response Contours & GPR Survey Results

APPENDICES

Appendix A Boring Logs

Appendix B Laboratory Report

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.	7-31-2013 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 adjacent to NC18 at the southeast quadrant of intersection of Elkin Hwy and Sparta Road. This PSA was conducted 1612 2nd Street Wilkesboro, Wilkes County, North Carolina (**Figure 1**), owned by Johnson Oil & Tractor, Inc (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, 2nd Street to the south, commercial property to the south and east. The property currently operates as a gas station.

Several sources were reviewed for historical information including Wilkes County GIS, Sanborn Maps and NCDENR files. No aerials were located and NCDENR's UST Registration Database

provided the Facility ID as 0-005497. However, 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

Three direct-push soil borings, P128-SB1 through P128-SB3, were installed on May 28, 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 a parked vehicle, subsurface utility lines, and an unknown anomaly located on the northwest portion of the surveyed area, adjacent to Elkin Highway.

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 80 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 three soil borings were advanced to approximately 10 feet below ground surface 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 reddish 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 very low concentrations of organic vapors (0-0.7 parts per million). TPH (DRO and GRO) were not detected in any of the soil samples collected for laboratory analysis.

3.3 SUMMARY

The following summarizes the findings of NCDOT Parcel 128, located at 1612 2nd Street:

- No historical files were located for the property. A NCDENR incident number was not identified for the site;
- The geophysical survey identified one "No Confidence" anomaly in the EM-61 data;
- Field screening did not detect the presence of organic vapors above background concentrations;
- TPH (DRO and GRO) were not detected in any of the soil samples collected for laboratory analysis.

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.

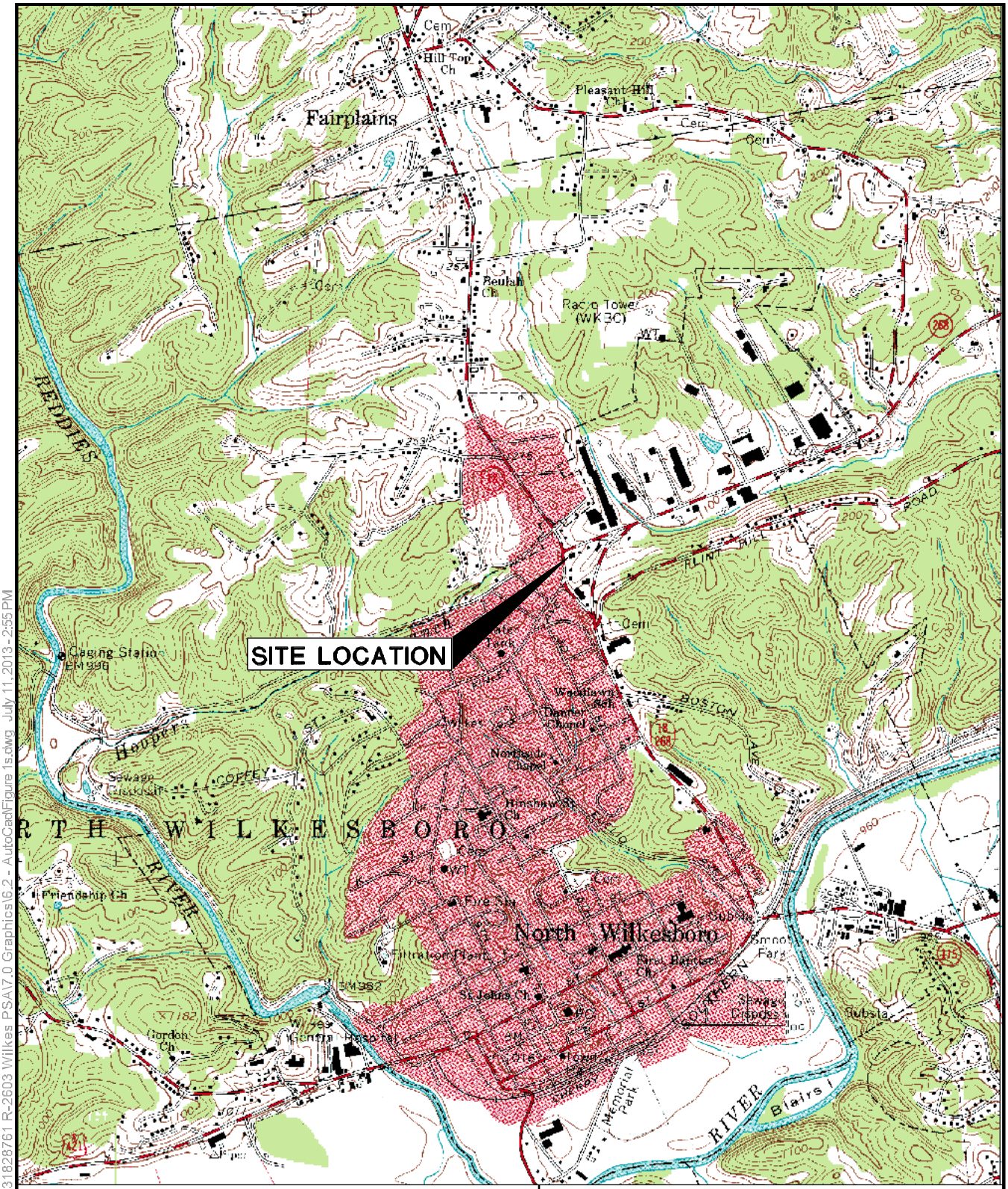
Tables

Table 1
Parcel 128 - Johnson Oil and Tractor, Inc.
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
P128-SB1-10	05/28/2013	10	ND	ND
P128-SB2-10	05/28/2013	10	ND	ND
P128-SB3-10	05/28/2013	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



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

FIGURE 1. LOCATION MAP

PARCEL 128, 1612 2nd STREET
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 - 2:55 PM

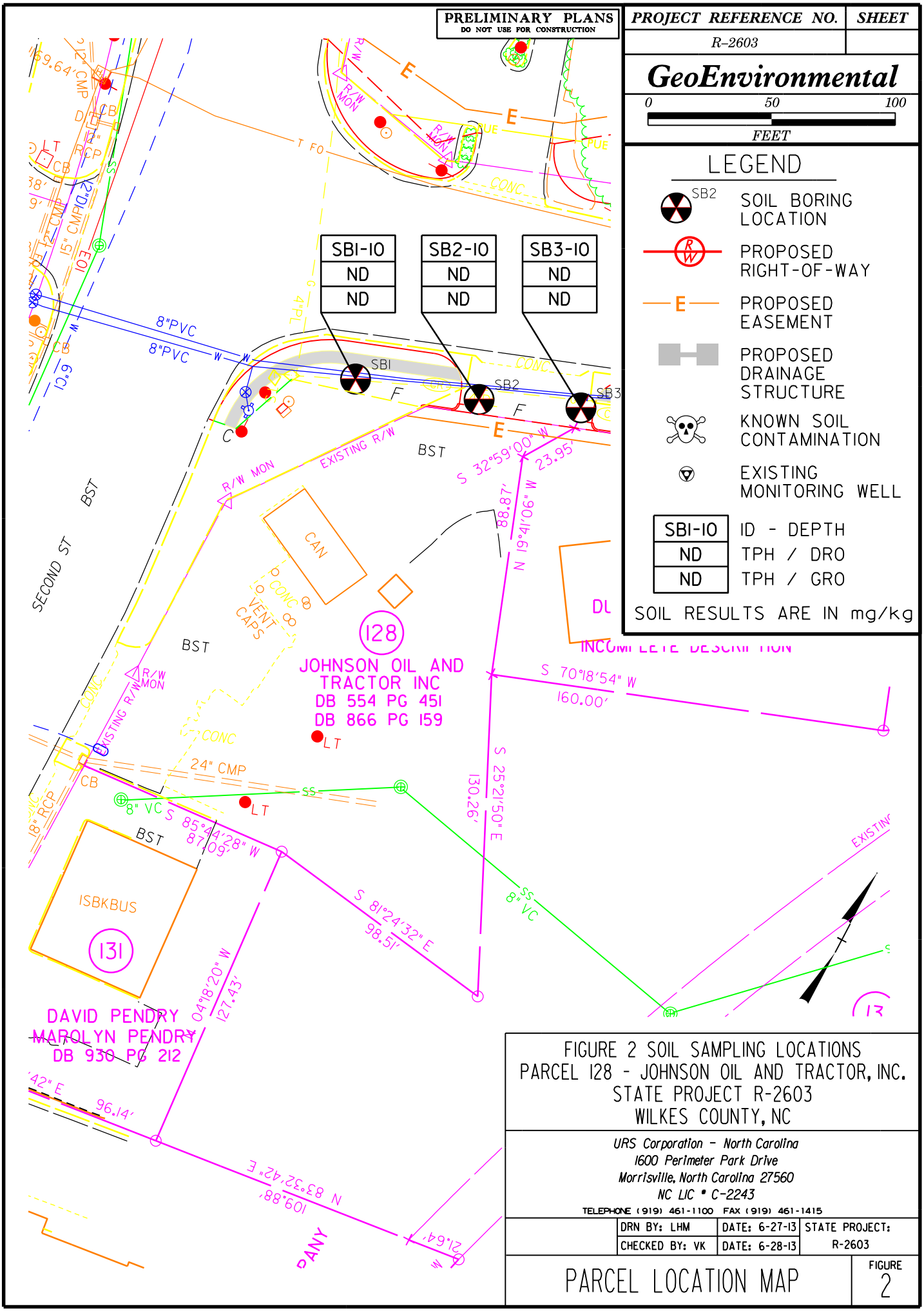


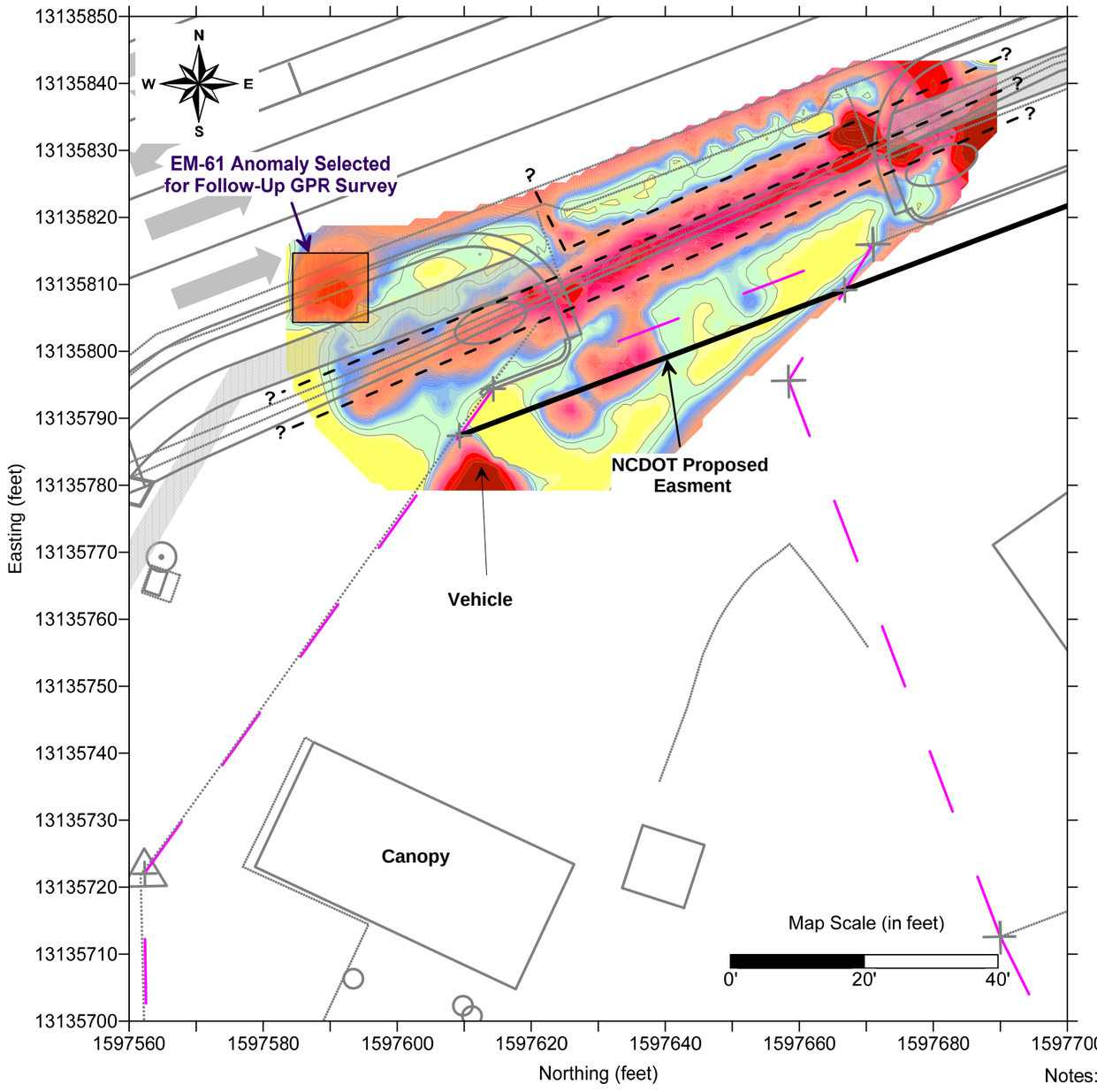
FIGURE 2 SOIL SAMPLING LOCATIONS
PARCEL 128 - JOHNSON OIL AND TRACTOR, INC.
STATE PROJECT R-2603
WILKES COUNTY, NC

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: R-2603
	CHECKED BY: VK	DATE: 6-28-13	

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

Interpreted Background Response

0
-20

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_128.dxf" provided by NCDOT.
4. Location control from DGPS survey by URS.

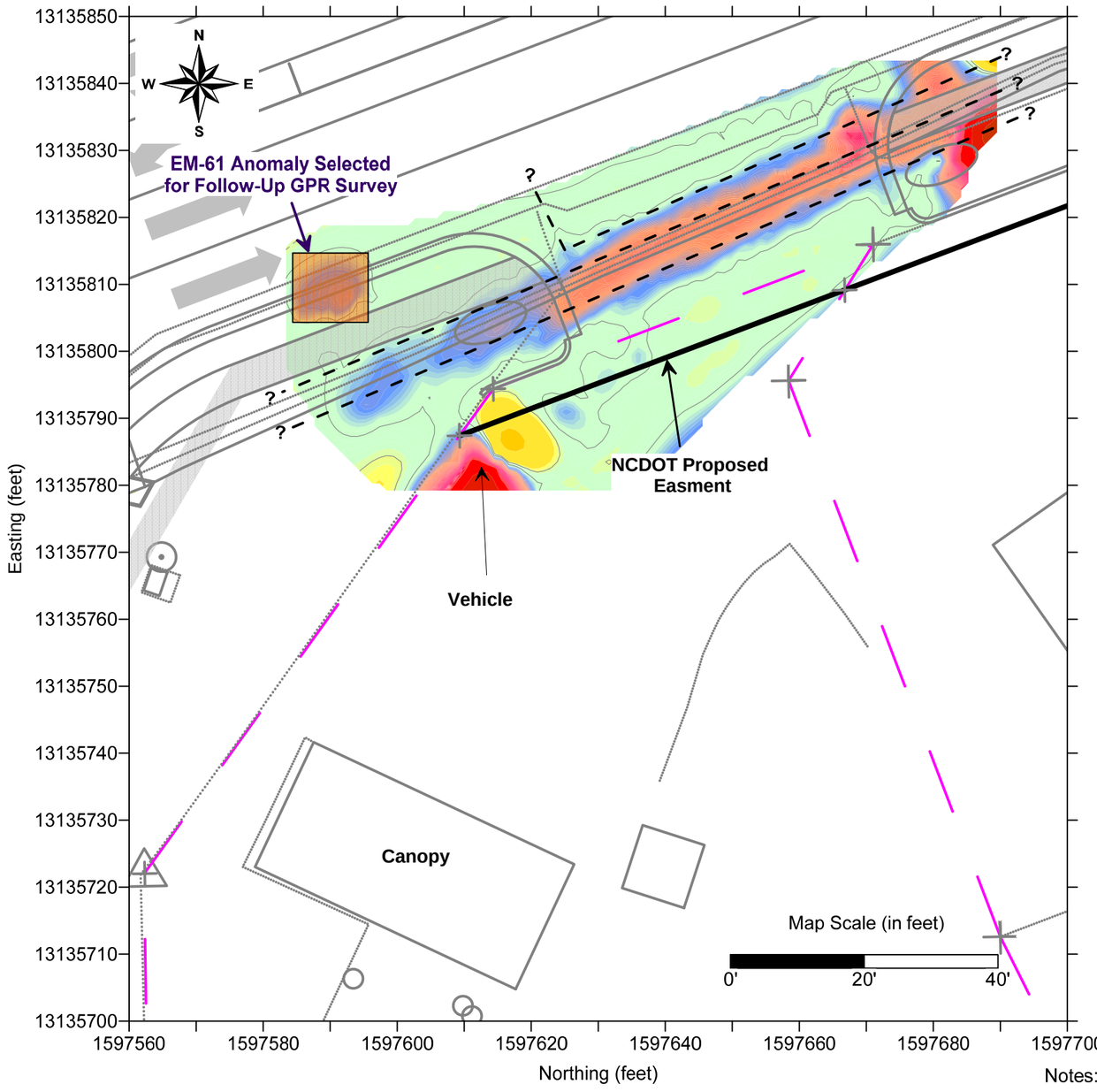
URS Geophysical Services
1600 Perimeter Park Drive, Suite 400
Raleigh, NC 27560
(910)-508-3869

EM-61 MKII Channel 1 Response Contours
JOHNSON OIL AND TRACTOR, INC. PROPERTY
(Parcel #128)

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
-20

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_128.dxf" provided by NCDOT.
4. Location control from DGPS survey by URS.

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EM-61 MKII Differential Channel Response Contours
JOHNSON OIL AND TRACTOR, INC. PROPERTY
(Parcel #128)

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

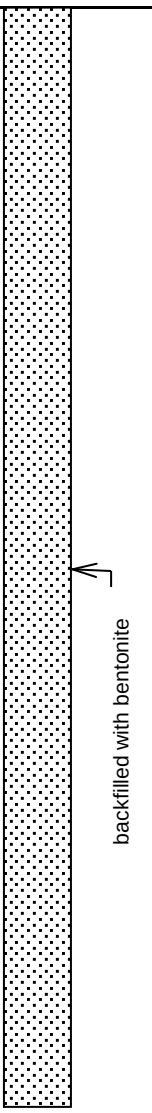
Appendix A
Boring Logs

BORING LOG: P128-SB1

Permit #		Drill Date	***05/28/13***	Site	***Parcel 128***
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
				0.0 ppm	Loose, dry, light gray, silty Sand
2				0.2 ppm	
4				0.6 ppm	
6				0.4 ppm	Medium stiff, dry, reddish-orange, sandy Clay
8				0.4 ppm	
10	P128-SB1-10	10'			Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

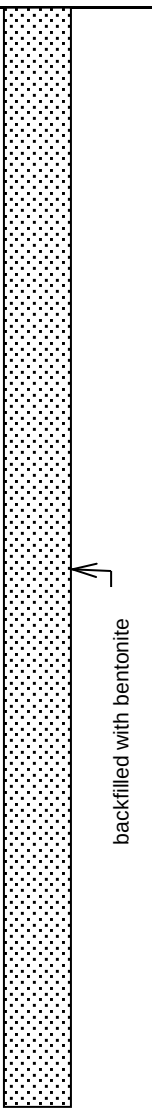
Driller: ***Geologic Exploration***

BORING LOG: P128-SB2

Permit #		Drill Date	***05/28/13***	Site	***Parcel 128***
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
				0.0 ppm	Loose, dry, light gray, silty Sand
2				0.2 ppm	
4				0.4 ppm	Medium stiff, dry, reddish-orange, sandy Clay
6				0.0 ppm	
8				0.7 ppm	
10	P128-SB2-10	10'			Bottom of boring
12					

Typical Diagram



Not to Scale

Notes:

Geologist: ***Michael Meese***

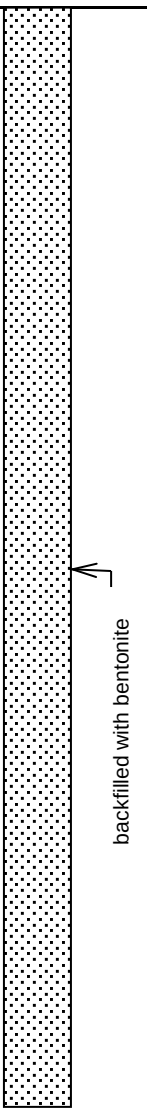
Driller: ***Geologic Exploration***

BORING LOG: P128-SB3

Permit #		Drill Date	***05/28/13***	Site	***Parcel 128***
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					Asphalt
2				0.0 ppm	Loose, dry, light brown, silty Sand
4				0.0 ppm	
6				0.0 ppm	Medium stiff, dry, reddish-orange, sandy Clay
8				0.0 ppm	
10	P128-SB3-10	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
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

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.: 92160972

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on May 29, 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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205 East Meadow Road - Suite A
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(828)254-7176

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

CERTIFICATIONS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

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

SAMPLE SUMMARY

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92159620004	**P128-SB1-10**	Solid	05/28/13 14:05	05/29/13 14:40
92159620005	**P128-SB2-10**	Solid	05/28/13 14:25	05/29/13 14:40
92159620006	**P128-SB3-10**	Solid	05/28/13 14:45	05/29/13 14:40

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
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(828)254-7176

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

SAMPLE ANALYTE COUNT

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92159620004	**P128-SB1-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92159620005	**P128-SB2-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92159620006	**P128-SB3-10**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	RGF	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

REPORT OF LABORATORY ANALYSIS

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

HITS ONLY

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92159620004	**P128-SB1-10**					
ASTM D2974-87	Percent Moisture	19.4	%	0.10	05/31/13 08:13	
92159620005	**P128-SB2-10**					
ASTM D2974-87	Percent Moisture	24.7	%	0.10	05/31/13 08:13	
92159620006	**P128-SB3-10**					
ASTM D2974-87	Percent Moisture	23.0	%	0.10	05/31/13 08:13	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PROJECT NARRATIVE

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

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

General Information:
3 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.: 92160972

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

General Information:
3 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.: 92160972

Sample: P128-SB1-10 **Lab ID: 92159620004** Collected: 05/28/13 14:05 Received: 05/29/13 14:40 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	6.2	5.6	1	05/30/13 08:33	05/31/13 17:05	68334-30-5	
Surrogates									
n-Pentacosane (S)	90	%	41-119		1	05/30/13 08:33	05/31/13 17:05	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.6	6.6	1	06/03/13 10:44	06/03/13 12:24	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	93	%	70-167		1	06/03/13 10:44	06/03/13 12:24	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**19.4**	%	0.10	0.10	1		05/31/13 08:13		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

Sample: P128-SB2-10 **Lab ID: 92159620005** Collected: 05/28/13 14:25 Received: 05/29/13 14:40 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	6.6	6.0	1	05/30/13 08:33	05/31/13 17:29	68334-30-5	
Surrogates									
n-Pentacosane (S)	99	%	41-119		1	05/30/13 08:33	05/31/13 17:29	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	06/03/13 10:44	06/03/13 12:47	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-167		1	06/03/13 10:44	06/03/13 12:47	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**24.7**	%	0.10	0.10	1		05/31/13 08:13		

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ANALYTICAL RESULTS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

Sample: P128-SB3-10 **Lab ID: 92159620006** Collected: 05/28/13 14:45 Received: 05/29/13 14:40 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	6.5	5.8	1	05/30/13 08:33	05/31/13 17:29	68334-30-5	
Surrogates									
n-Pentacosane (S)	89	%	41-119		1	05/30/13 08:33	05/31/13 17:29	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	7.0	7.0	1	06/03/13 10:44	06/03/13 13:10	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-167		1	06/03/13 10:44	06/03/13 13:10	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.0**	%	0.10	0.10	1		05/31/13 08:13		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

QC Batch: GCV/6949 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92159620004, 92159620005, 92159620006

METHOD BLANK: 985346 Matrix: Solid
Associated Lab Samples: 92159620004, 92159620005, 92159620006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	06/03/13 10:06	
4-Bromofluorobenzene (S)	%	88	70-167	06/03/13 10:06	

LABORATORY CONTROL SAMPLE: 985347

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.8	46.3	93	70-165	
4-Bromofluorobenzene (S)	%			90	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 985348 985349

Parameter	Units	92159620001 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	50.5	50.5	60.3	61.1	119	121	47-187	1	30	
4-Bromofluorobenzene (S)	%						87	92	70-167			

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QUALITY CONTROL DATA

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

QC Batch: OEXT/22357 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92159620004, 92159620005, 92159620006

METHOD BLANK: 983389 Matrix: Solid
Associated Lab Samples: 92159620004, 92159620005, 92159620006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	05/31/13 16:18	
n-Pentacosane (S)	%	97	41-119	05/31/13 16:18	

LABORATORY CONTROL SAMPLE: 983390

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	65.5	98	49-113	
n-Pentacosane (S)	%			95	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 983391 983392

Parameter	Units	92159620020 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	86.5	86.5	53.0	61.4	54	64	10-146	15	30	
n-Pentacosane (S)	%						75	80	41-119			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

QC Batch: PMST/5564 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92159620004, 92159620005, 92159620006

SAMPLE DUPLICATE: 983263

Parameter	Units	92159608004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.6	20.0	3	25	

SAMPLE DUPLICATE: 983264

Parameter	Units	92159620011 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.7	10.2	4	25	

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QUALIFIERS

Project: Wilkes County 36000.1.1
Pace Project No.: 92160972

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.: 92160972

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92159620004	**P128-SB1-10**	EPA 3546	OEXT/22357	EPA 8015 Modified	GCSV/14755
92159620005	**P128-SB2-10**	EPA 3546	OEXT/22357	EPA 8015 Modified	GCSV/14755
92159620006	**P128-SB3-10**	EPA 3546	OEXT/22357	EPA 8015 Modified	GCSV/14755
92159620004	**P128-SB1-10**	EPA 5035A/5030B	GCV/6949	EPA 8015 Modified	GCV/6950
92159620005	**P128-SB2-10**	EPA 5035A/5030B	GCV/6949	EPA 8015 Modified	GCV/6950
92159620006	**P128-SB3-10**	EPA 5035A/5030B	GCV/6949	EPA 8015 Modified	GCV/6950
92159620004	**P128-SB1-10**	ASTM D2974-87	PMST/5564		
92159620005	**P128-SB2-10**	ASTM D2974-87	PMST/5564		
92159620006	**P128-SB3-10**	ASTM D2974-87	PMST/5564		

REPORT OF LABORATORY ANALYSIS

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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:

Company:	URS Corporation
Address:	1600 Perimeter Park Drive, Suite 400
	Morrisville, NC 27560
Email To:	Martha.Meyers-Lee@urs.com
Phone:	919-461-1519 Fax: 919-461-1415
Requested Due Date/TAT:	Standard

Section B
Required Project Information:

Report To:	Martha Meyers-Lee
Copy To:	Walt Plekan
Purchase Order No.:	State TIP #R-2603; WBS# 36000.1.1
Project Name:	Wilkes County
Project Number:	31828761

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	56970-1

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

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

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	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED 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. 92160972
1	P128-SB1-10	SL	G			05/28/13	14:05		4	X						X			X	X		92159620 004
2	P128-SB2-10	SL	G			05/28/13	14:25		4	X						X			X	X		005
3	P128-SB3-10	SL	G			05/28/13	14:45		4	X						X			X	X		006
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
COC Addendum	Mike Sam — SoftMikeMeer	5/29/13	1235				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

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

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

*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.08, 12-Oct-2007