P S A R E P O R T

PRELIMINARY SITE ASSESSMENT
PARCEL #056
TIMBERLAKE BROTHERS, LLC PROPERTY
5174 US 401 S
YOUNGSVILLE, FRANKLIN COUNTY, NC
STATE PROJECT R-2814C
WBS ELEMENT 34506.1.4

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

23 March 2015

URS Corporation – North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, North Carolina 27560
Tel. (919) 461-1100
Fax. (919) 461-1415

URS Job No. 3182 9895

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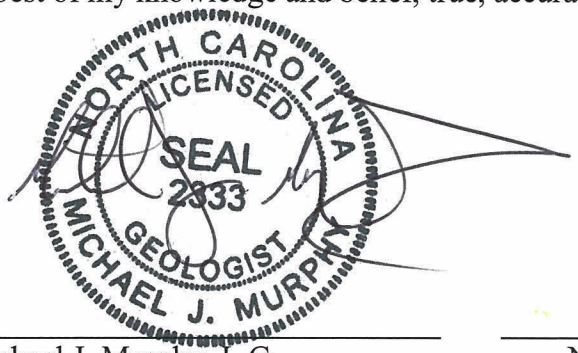
Certification

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.



Michael J. Murphy, L.G.	2333	3/23/15
Project Manager	NC License No.	Date
URS Corporation – North Carolina		

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). This PSA was conducted at 5174 US 401 South, Youngsville, Wake County, North Carolina (**Figure 1**), owned by Timberlake Brothers, LLC (the Site). The assessment area is located on the north quadrant of the US 401 (Louisburg Road) and SR 1100 (Tarboro Road) intersection. The PSA was performed within the proposed right-of-way and/or easement for this parcel as well as in the fenced-in construction area extending to the northwest portion of the parcel.

This PSA was performed in general accordance with:

- NCDOT's 1 December 2014 Request for Technical and Cost Proposal (RFP) for the Site. 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 17 December 2014 Technical and Cost Proposal for the Site.
- NCDOT's 10 January 2015 Notice to Proceed for the Site.

The scope of work included a geophysical survey, soil sampling using a direct push technology (DPT) rig, and onsite soil testing services for Total Petroleum Hydrocarbons (TPH) using Ultra Violet Florescence Spectroscopy (UVF) technology. URS conducted the geophysical survey first in order to identify potential UST and/or anomaly locations within the Site. Based on the results of the geophysical survey and anecdotal evidence, boring locations were identified and completed by a drilling subcontractor (Regional Probing Services of Wake Forest, 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. Onsite analysis of soil samples was performed by QROS of Wilmington, NC.

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 as provided in the NCDOT project plans are shown on **Figures 1** and **2**. The parcel is bounded by Tarboro Road to the south and Louisburg Road to the east. It should be noted that the property currently serves as a Dollar General Store location which was apparently designed and built after the NCDOT project plans were developed. The original NCDOT plans are shown on **Figure 3** and the current Dollar Store building footprint is shown on **Figure 2** along with the boring locations.

According to information supplied by NCDOT, three (3) USTs were removed from the parcel in 1982. A groundwater incident (RA-449) was assigned to this location in 1998 and closed out in 1999. No evidence of monitoring wells were observed onsite.

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 the 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 during the week of January 5, 2015. Ground surface conditions consisted primarily of concrete, asphalt, and recently graded and seeded grass.

The geophysical investigation was conducted using the electromagnetic (EM) method augmented by ground-penetrating radar (GPR). The EM survey was completed using a Geonics, Ltd. EM-61 MK2A (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. In areas inaccessible to the EM-61 (e.g. between trees, man-made obstructions, etc.), data were interpolated to provide a continuous electromagnetic surface.

A Hemisphere A100 global positioning system (GPS) was used to record positional data coincident with the EM-61 data. The A100 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 less. URS also used the GPS system to record the locations of relevant site features within the survey area (e.g. utility poles, parked cars, etc.).

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.

In areas where the EM-61 encountered heavy surficial interference or where EM anomalies could not be readily attributed to site features, GPR was used to conduct a search for potential USTs. GPR surveying consisted of in-field analysis of real-time data. As a result, no post-processing of the GPR data was completed. Relevant GPR profiles were saved to a data file. GPR was selected to augment the EM-61 data due to its effectiveness at characterizing large subsurface metallic objects such as USTs.

The EM-61 data were pre-processed utilizing the accompanying software package, DAT61 MK2 (Geonics, Ltd), which is required before the data can be contoured and graphically displayed via Surfer (Golden Software, Inc.). The presented contoured data represent the Channel 3 response. The Channel 3 response represents the amplitude recorded at the third time interval along the EM-61 response decay curve. These data are applicable to detection of subsurface objects including USTs and other underground obstructions while simultaneously reducing the near-surface component. Common USTs are of sufficient size to resonate the induced magnetic field for long enough to be recorded in this time gate.

2.2 SOIL BORING INSTALLATION AND MEDIA SAMPLING

Eight direct-push soil borings, P056-SB1 through P056-SB8, were completed on January 22, 2015, 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.

Based on field screening results or other evidence of contamination (e.g., visual, olfactory, etc.), soil samples from select intervals were collected from each boring for on-site soil analysis of TPH using UVF technology.

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 was assigned a unique sample identification number and placed in a discrete container for UVF analyses.

Quality Assurance/Quality Control (QA/QC) of field analyzed data was done by and in accordance with QROS Basic QED QA/QC Components. The QA/QC process includes a five point standard PAH curve, initial calibration, and final calibration after the analyses of each 10 sample set. If any QA/QC measures failed, the QED did not produce data.

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 3 response results are provided as a plan view, color-enhanced contour map in **Figure 3**. The results presented in **Figure 3** are superimposed on the parcel base drawing provided by NCDOT (includes the original pre-Dollar Store configuration). The interpreted background response is represented by the light blue to light green contours and generally corresponds to the range of -40 to 40 milliVolts (mV).

The Channel 3 results indicate an excited response (red) where known surface or near-surface metallic features exist. Observable surface features at the site include utility poles, street signs, a traffic box, and a fenced in area (silt fence and steel posts). These features are responsible for higher than background near surface response over the site, as evident in **Figure 3**.

Two areas without obvious surface features creating elevated EM responses were noted along the southeastern and central sections of the survey area. A GPR sweep was performed across these areas. Results from the GPR did not indicate any anomalies representative of a UST, therefore, the GPR data were not saved to disk. The EM anomalies may be an artifact of trash or fill in the subsurface.

3.2 SOIL SAMPLING RESULTS

A total of eight soil borings were advanced to 4-8 feet below ground surface (ft bgs) during the PSA investigation at the Site. Boring locations are shown in **Figure 2** and analytical results are summarized in **Appendix B**. Encountered soils consisted of brown and yellowish orange sandy clay and clayey sand. As shown in **Appendix A**, soil headspace screening in the field detected organic vapors at background levels ranging from 0.6 to 12.1 parts per million (ppm) and are not presumed to be impacted.

The hydrocarbon analyses results for the sixteen (16) samples submitted to QROS are shown in **Appendix B**. Results indicate minor detections of gasoline range organics (GRO) in P056 SB-8-2 and P056 SB-8-4. Minor detections of DRO were encountered in 14 of the 16 samples submitted for TPH analysis, but no samples submitted for TPH analysis exceeded the NCDENR TPH Action Level of 10 milligrams per kilogram (mg/kg). Based on these data, no additional borings were installed at the Site.

3.3 SUMMARY

The following summarizes the findings of NCDOT Parcel 56, located at 5174 US 401 South:

- Geophysical anomalies along the southeastern and central portions of the Site are of an unknown origin but are not representative of a UST. The anomalies are depicted in **Figure 3**.

- Field screening detected the presence of organic vapors at very low levels in all eight soil borings at the Site (likely background); however, due to onsite results provided by QROS, no further delineation was warranted;
- Neither TPH (GRO) nor TPH (DRO) were detected above the NCDENR TPH Action Level of 10 mg/kg in soil samples collected from the Site.

Based on the Site investigation, future Site workers are unlikely to encounter impacted soil. If encountered, all impacted soil should be properly handled and disposed of in accordance with NCDENR regulations.

SECTION FOUR Limitations

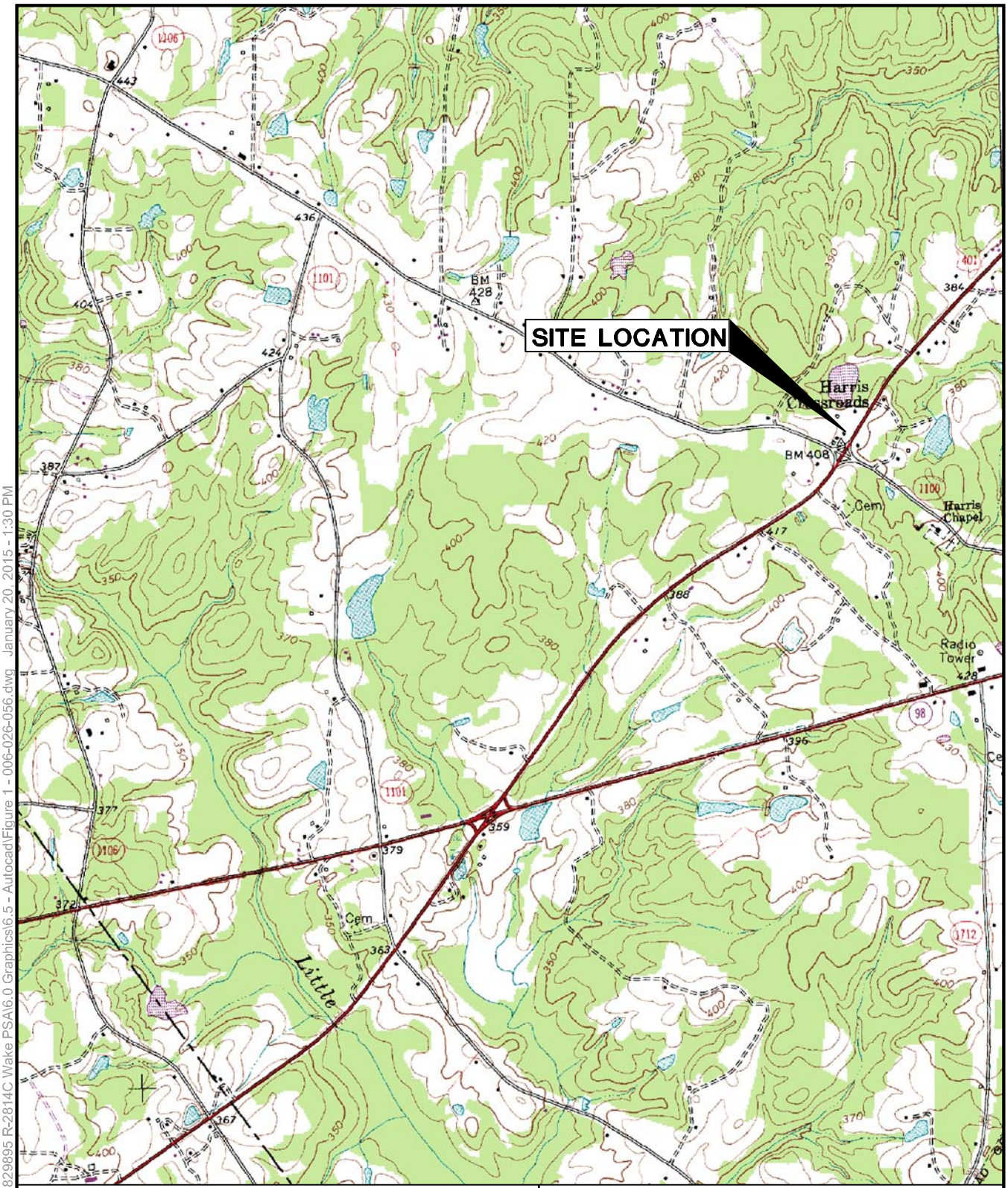
Opinions relating to environmental, geologic, and geotechnical conditions at this parcel are based on limited data, and actual conditions may vary from those encountered at the times and locations where the data was obtained, despite the use of due professional care. The geophysical investigation was 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-2814C, December 1, 2014.

North Carolina Department of Transportation, Notice to Proceed - Preliminary Site Assessment, R-2814C, January 10, 2015.

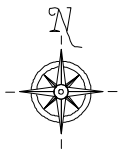
URS Corporation, Technical and Cost Proposal, Preliminary Site Assessment, R-2814, December 17, 2014.

Figures



SCALE IN FEET
0 2000

QUADRANGLE LOCATION



SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE
ROLESVILLE, NC – DATED 1967, PHOTOREVISED 1980

FIGURE 1. LOCATION MAP

PARCEL 056, 5174 US 401 S
STATE PROJECT R-2814
YOUNGSVILLE, NC

Prepared for: NC DOT	URS RDU, NORTH CAROLINA 27560
DRAWN BY: TSH	
DATE: 1/19/15	
PROJECT NO. 31829895	Fig. 1

P:\Jobs4_Projects\NCDOT\31829895 R-2814C Wake PSA\6.0 Graphics\6.5 - Autocad\Figure 1 - 006-026-056.dwg January 20, 2015 - 1:30 PM

Hydrocarbon Analysis Results		
Sample ID	GRO (C5 - C10)	DRO (C10 - C35)
All Results below detection limits		

Results generated by a QED HC-1 analyzer.
Concentration values in mg/kg for soil samples.
For clarity purposes, only those wells with exceedances are presented in the above table.
Bold data above the NCDENR Action Level
GRO = gasoline range organics
DRO = diesel range organics

PROJECT REFERENCE NO.	SHEET
R-2814C	

GeoEnvironmental

0 50 100
FEET

LEGEND

- P2-SB6 — SOIL BORING LOCATION
- RW — PROPOSED RIGHT-OF-WAY
- E — PROPOSED EASEMENT
- PROPOSED DRAINAGE STRUCTURE
- KNOWN SOIL CONTAMINATION
- EXISTING MONITORING WELL
- UST — UNDERGROUND STORAGE TANK
- P2-SBI-10 — ID - DEPTH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y7- PC Sta. 10+81.74
-Y7- PT Sta. 14+66.89
-L- POT Sta. 215+78.98=
-Y7- POT Sta. 16+03.73
-L- Sta. 215+32.61
+90.00 -L-
EXISTING R/W
RETAIN CLEAN OUT
ISFBUILDING (APPROXIMATE LOCATION FROM AERIAL)
SR 1100 TARBORO RD
24' BST
US 401 36' BST
30" RCP-IV
24" RCP
15" RCP
15" RCP-IV
18" RCP END NOT FOUND
POSSIBLE JUNCTION BOX
SIG
TDE
PUE
P056-SB1
P056-SB2
P056-SB3
P056-SB4
P056-SB5
P056-SB6
P056-SB7
P056-SB8
56
TIMBERLAKE BROTHERS LLC
DB 1568 PG 300
PB 2004 PG 422
N 56°35'51" W 255.95'

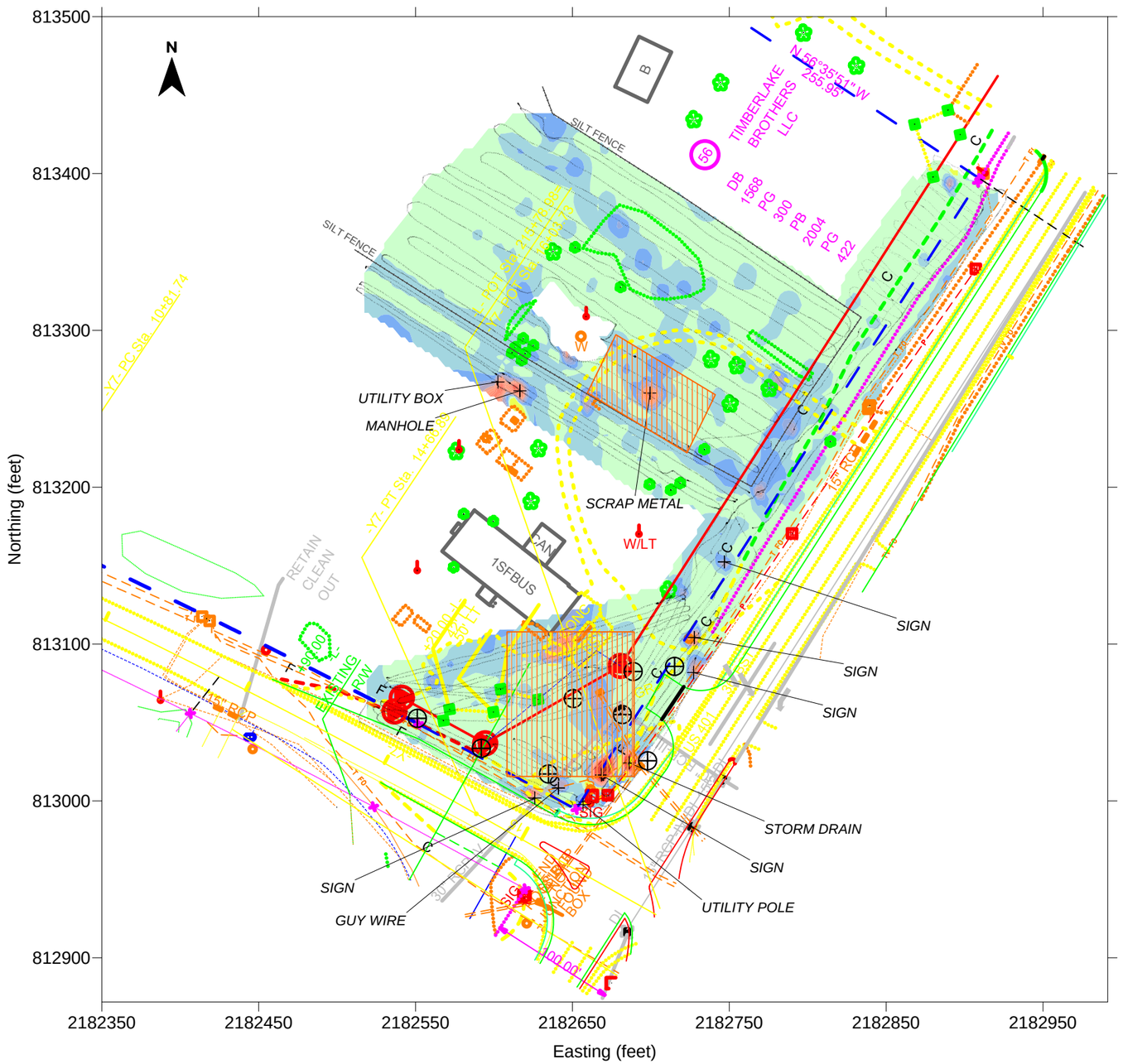
CONSTRUCTION COMPLETED AS OF 01/22/15 SITE VISIT

FIGURE 2 SOIL SAMPLING LOCATIONS
PARCEL 056
TIMBERLAKE BROTHERS, LLC PROPERTY
STATE PROJECT R-2814C, WAKE 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: 12-11-14	STATE PROJECT:
CHECKED BY: VK	DATE: 12-12-14	R-2814C

PARCEL LOCATION MAP — FIGURE 2



EM-61 MKII Channel 3 Response (milliVolts)

Interpreted Increasing Response from Subsurface Metal

10000
2800
2300
1800
1300
800
300

Interpreted Background Response

-200

Interpreted Increasing Response from Subsurface Metal

-10000

Map Scale
(1 inch = 80 feet)

0' 80' 160'

Legend

- Soil Boring Location
- Interpreted Subsurface Utility Center Line
- Utility Termination Point not Known
- Property Boundary
- Inaccessible Area
- EM Anomalies selected for GPR survey
- Proposed Right-of-Way

Notes:

1. Coordinates in NC State Plane NAD 83 (US Feet).
2. Data from Geonics, Ltd. EM-61 MKII instrument.
3. Base drawing after file "Parcel 056.dxf" provided by NCDOT.
4. Location control from DGPS survey by URS.
5. GPR survey across indicated areas did not reflect any subsurface anomalies.

URS Geophysical Services
1600 Perimeter Park Drive, Suite 400
Raleigh, NC 27560
(919) 461-1387

EM-61 MKII Channel 3 Response Contours
Timberlake Brothers, LLC Property
(Parcel #056; Tax PIN: 042137)

NCDOT WBS 34506.1.4, Wake-Franklin County

Youngsville, Franklin County, North Carolina

DESIGNED BY		DRAWN BY		CHECKED BY		JOB NUMBER	Figure
MJM	02/05/15	CMS	02/05/15	MJM	02/05/15	31829895	3

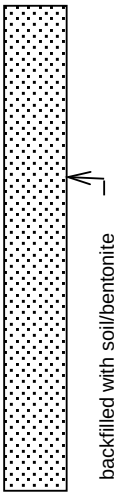
Appendix A
Boring Logs

BORING LOG: P056-SB1

Permit #		Drill Date	*01/22/15*	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB1-2	0-2'		3.1	Olive gray to light gray sandy SILT to stiff yellowish-orange silty CLAY with 1/2"-6"interbedded seams of yellowish-orange to light gray to olive gray f. SAND
2	P056-SB1-4	2-4'		4.4	Olive gray to light gray SILT Med. Stiff, yellowish-orange CLAY
4	P056-SB1-6	4-6'		2.8	Stiff, yellowish-orange to light brown to light gray mottled silty CLAY
6	P056-SB1-8	6-8'		12.1	Yellowish-orange to light brown mottled clayey SILT with trace f. SAND
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

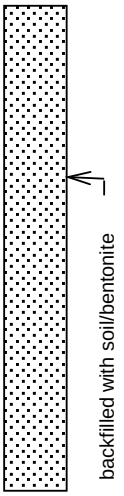
Notes:	P056-SB1-6 and P056-SB1-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

BORING LOG: P056-SB2

Permit #		Drill Date	*01/22/15*	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB2-2	0-2'		2.9	Olive gray to light gray sandy SILT to light gray clayey SILT with 1/2"-4"interbedded seams of yellowish-orange to light gray f. SAND
2	P056-SB2-4	2-4'		3.2	Olive gray SILT to stiff yellowish-orange silty CLAY
					Light gray silty f. SAND
4	P056-SB2-6	4-6'		2.8	Stiff, yellowish-orange to light brown to light gray mottled, silty CLAY
6	P056-SB2-8	6-8'		2.8	Moist, light gray m-f SAND with trace silt
					Olive gray SILT
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

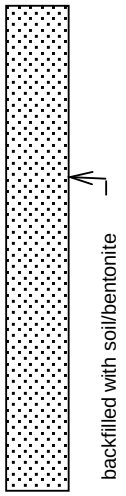
Notes:	P056-SB2-6 and P056-SB2-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P056-SB3

Permit #		Drill Date	***01/22/15***	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB3-2	0-2'		3.0	Olive gray sandy SILT to stiff light brown silty CLAY with 4"-9" layers of light gray f. SAND
2	P056-SB3-4	2-4'		2.0	
4	P056-SB3-6	4-6'		2.7	Stiff, yellowish-orange to light brown to light gray mottled silty CLAY
6	P056-SB3-8	6-8'		2.5	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

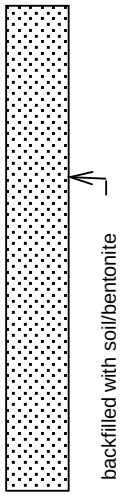
Notes:	P056-SB3-6 and P056-SB3-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P056-SB4

Permit #		Drill Date	*01/22/15*	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0					
	P056-SB4-2	0-2'		2.2	Stiff, yellowish-orange silty CLAY interbedded with 1/4"-2" seams of light gray m-f SAND
2	P056-SB4-4	2-4'		2.8	
					Olive gray SILT with trace clay
4	P056-SB4-6	4-6'		1.3	Stiff, yellowish-orange silty CLAY
6	P056-SB4-8	6-8'		0.6	Stiff, yellowish-orange to light brown to light gray mottled silty CLAY
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

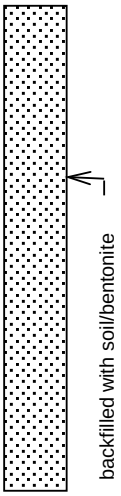
Notes:	P056-SB4-6 and P056-SB4-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P056-SB5

Permit #		Drill Date	*01/22/15*	Site	*Parcel #056*
Client	*NCDOT*	Use		URS Corporation	
Address	*5174 US 401 S, Youngsville, NC 27596*			Total Depth (ft)	*8'*
Drilling Method	*Geoprobe Direct Push*	Boring Depth (ft)	*8'*	Boring Diam. (in)	*1.5*
Backfill Material	*Soil/Bentonite*			Static Water Level	*unknown*
Remarks:		TOC Elevation	**NA**	Sample Method	*Acetate Liner (4 ft)*

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB5-2	0-2'		2.9	Olive gray to light gray m-f SAND
2	P056-SB5-4	2-4'		3.4	Stiff, yellowish-orange silty CLAY interbedded with <4" seams of light gray m-f SAND
					Dark gray sandy SILT
4	P056-SB5-6	4-6'		4.0	Light gray silty f. SAND with 1" layer of yellowish-orange m-f SAND 4.90'
					Moist, olive gray silty m-f SAND
6	P056-SB5-8	6-8'		1.3	Stiff, light brown to yellowish-orange silty CLAY
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

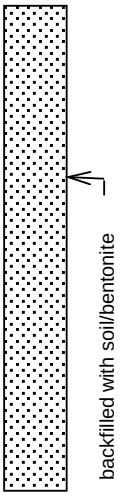
Notes:	P056-SB5-6 and P056-SB5-8 submitted to QROS for analysis		
Geologist:	*Joseph Kiker*	Driller:	*RPS*

BORING LOG: P056-SB6

Permit #		Drill Date	***01/22/15***	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***7'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***7'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB6-2	0-2'		3.8	Olive gray to light gray m-f SAND
2	P056-SB6-4	2-4'		3.7	Stiff, light brown to yellowish-orange silty CLAY interbedded with <4" seams of light gray m-f SAND
4	P056-SB6-6	4-6'		2.4	Stiff, light brown to yellowish-orange silty CLAY
6	P056-SB6-8	6-7'		1.6	(WEATHERED GRANITE)
					Boring Terminated at 7' bgs
8					
10					

Typical Diagram



Not to Scale

Notes: P056-SB6-6 and P056-SB6-8 submitted to QROS for analysis; refusal at 7' bgs

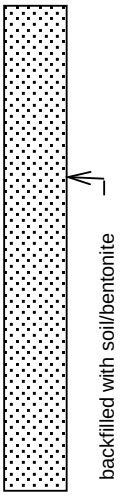
Geologist: ***Joseph Kiker*** Driller: ***RPS***

BORING LOG: P056-SB7

Permit #		Drill Date	*01/22/15*	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB7-2	0-2'		4.9	Yellowish-orange sandy SILT with trace clay
					Stiff, yellowish-orange to light brown silty CLAY with interbedded <1" seams of light gray m-f SAND
2	P056-SB7-4	2-4'		4.7	Olive gray to light brown SILT with interbedded <1" seams and layers of light gray m-f SAND
4	P056-SB7-6	4-6'		3.2	Soft to stiff, light brown to yellowish-orange silty CLAY
6	P056-SB7-8	6-8'		0.9	Stiff, yellowish-orange to light brown mottled silty CLAY
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

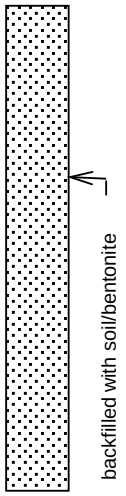
Notes:	P056-SB7-6 and P056-SB7-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P056-SB8

Permit #		Drill Date	*01/22/15*	Site	***Parcel #056***
Client	***NCDOT***	Use		URS Corporation	
Address	***5174 US 401 S, Youngsville, NC 27596***			Total Depth (ft)	***4'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***4'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P056-SB8-2	0-2'		3.0	Light gray m-f SAND
					Yellowish-orange sandy SILT
					Yellowish-orange to light gray m-f SAND
2	P056-SB8-4	2-4'		2.4	Olive gray SILT
					Yellowish-orange, silty f. SAND
					Soft to stiff, yellowish-orange silty CLAY
4					Boring Terminated at 4' bgs
6					
8					
10					

Typical Diagram



Not to Scale

Notes: P056-SB8-2 and P056-SB8-4 submitted to QROS for analysis; Boring terminated at 4' bgs due to refusal

Geologist: ***Joseph Kiker*** Driller: ***RPS***

Appendix B
QED Hydrocarbon Analysis Results

QED

AQROS

Hydrocarbon Analysis Results

Client: AECOM
Address:

Samples taken Thursday, January 22, 2015
Samples extracted Thursday, January 22, 2015
Samples analysed Thursday, January 22, 2015

Contact: MIKE MURPHY

Operator RACHEL MENOHER

Project: P056

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P056 SB-1-6	8.8	<0.4	<0.4	3.77	3.77	2.96	0.15	<0.009	55.4	34.2	10.4	V.Deg.PHC (FCM) 91.8%
s	P056 SB-1-8	10.9	<0.5	<0.5	1.12	1.12	0.35	<0.01	<0.011	68	7.8	24.2	Deg Fuel (FCM) 58.5%
s	P056 SB-2-6	9.3	<0.5	<0.5	0.33	0.33	0.27	0.14	<0.009	76.2	0	23.8	PAH (P)
s	P056 SB-2-8	11.8	<0.6	<0.6	1.48	1.48	0.68	0.03	<0.012	66	14.6	19.4	Deg Fuel (FCM) 77%
s	P056 SB-3-6	12.4	<0.6	<0.6	9.05	9.05	3.47	0.14	<0.012	52.1	36.6	11.3	Road Tar (FCM) 99%
s	P056 SB-3-8	9.6	<0.5	<0.5	0.35	0.35	0.27	0.15	<0.01	72.3	3.8	23.9	Match not possible
s	P056 SB-4-6	10.9	<0.5	0.89	<0.11	0.89	<0.11	<0.01	<0.011	91.9	0.4	7.7	Deg.Gas (P)
s	P056 SB-4-8	9.4	<0.5	<0.5	1.51	1.51	0.64	0.03	<0.009	79	6.8	14.3	Deg Fuel (FCM) 63%
s	P056 SB-5-6	9.6	<0.5	<0.5	0.89	0.89	0.81	0.04	<0.01	61.6	18.3	20.1	V.Deg.PHC (FCM) 65.5%
s	P056 SB-5-8	8.2	<0.4	<0.4	0.28	0.28	0.21	0.1	<0.008	98.8	1.2	0	Deg.Fuel
	Initial Calibrator QC check			OK					Final FCM QC Check			OK	97.8%

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED

AQROS

Hydrocarbon Analysis Results

Client: AECOM
Address:

Samples taken Thursday, January 22, 2015
Samples extracted Thursday, January 22, 2015
Samples analysed Thursday, January 22, 2015

Contact: MIKE MURPHY

Operator RACHEL MENOHER

Project: P056

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P056 SB-6-6	9.9	<0.5	<0.5	1.02	1.02	0.27	<0.01	<0.01	78.2	5.2	16.5	Deg Fuel (FCM) 64.4%
s	P056 SB-6-8	8.1	<0.4	<0.4	0.25	0.25	0.23	0.12	<0.008	74.6	4.6	20.9	PAH
s	P056 SB-7-6	12.3	<0.6	<0.6	0.31	0.31	0.29	0.16	<0.012	68.9	0	31.1	Particulate (P)
s	P056 SB-7-8	12.5	<0.6	<0.6	0.29	0.29	0.28	0.07	<0.013	69.2	0	30.8	Match not possible
s	P056 SB-8-2	8.1	<0.4	0.86	1.71	2.57	1.17	0.06	<0.008	71	17.9	11.1	V.Deg.PHC (FCM) 74.3%
s	P056 SB-8-4	12.0	<0.6	0.71	<0.12	0.71	<0.12	<0.01	<0.012	88.9	0	11.1	Particulate (P)

Initial Calibrator QC check OK

Final FCM QC Check OK 97.8%

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present