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September 12, 2008

Mr. Mohammed Mulla North Carolina Department of Transportation Geotechnical Engineering Unit 1589 Mail Service Center Raleigh, North Carolina 27699-1589

Reference: Preliminary Site Assessment Gilliani Property 1426 US 19 East Spruce Pine, Mitchell County, North Carolina NCDOT Tip No. R-2519B WBS Element 35609.1.1 Earth Tech Project No. 105676

Dear Mr. Mulla:

Earth Tech of North Carolina, Inc., (Earth Tech) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated June 22, 2008, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated July 22, 2008. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for laboratory analysis, and reviewing applicable North Carolina Department of Environment and Natural Resources (NCDENR) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

#### **Location and Description**

The Amwar Gilliani Property is located at 1426 US 19E in Spruce Pine, North Carolina. The property is situated on the southwest quadrant of the intersection of US 19E and Old US 19E (Figure 1). Based on information supplied by the NCDOT and the site visit, Earth Tech understands that the site is an active gas station/convenience store (Samir's 8 Gas Station) where five underground storage tanks (USTs) are located. Also located on the property are a gravel used car lot (Auto Locators LLC) on the west side of the property and an auto repair shop (Summit Repair Shop) on the east side of the building. A small ATM and telephone booth are situated on the easternmost part of the property (Figure 2). According to available information in the North Carolina Department of Environment and Natural Resources (NCDENR) tank registration database, the USTs consist of one 10,000-gallon, one 6,000-gallon, and one 4,000-gallon gasoline tank; one 4,000-gallon diesel fuel tank; and one 3,000-gallon kerosene tank. The structure on the property is a single-story block building with an asphalt parking area. The USTs are located near the northwest corner of the building.

In early to mid-2008, a NCDOT drilling crew encountered soil containing petroleum odors on the west side of the used car lot. Earth Tech was also advised that the proposed right-of-way will affect the entire property. As a result, the NCDOT requested a Preliminary Site Assessment.

Earth Tech reviewed the North Carolina Department of Environment and Natural Resources (NCDENR) Incident Management database and no incident number has been assigned to the site. Earth Tech also reviewed the UST registration database to obtain UST ownership information. According to the database, the USTs on the property were operated under Facility Number 0-032288. The operator and owner of the tanks are listed as follows:

<u>Owner</u> My Wife LLC Post Office Box 1272 Old Fort, North Carolina 28762 (828) 652-8134 <u>Operator</u> Samir's 8 1426 US 19E Spruce Pine, North Carolina 28777 (828) 765-1218

### **Geophysical Survey**

Prior to Earth Tech's mobilization to the site, Pyramid Environmental conducted a geophysical survey as part of this project to evaluate if additional USTs, other than the ones identified, were present on the proposed right-of-way. The geophysical survey consisted of an electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, specifically USTs. A survey grid was laid out at the property with the X-axis oriented approximately parallel to US 19E and the Y-axis oriented approximately perpendicular to US 19E. The grid was located to cover the accessible portions of the proposed right-of-way. The survey lines were spaced 5 feet apart. Magnetic data was collected continuously along each survey line with a data logger. After collection, the data was reviewed in the field with graphical computer software. Following the electromagnetic survey, a ground penetrating radar (GPR) survey was conducted to further evaluate any significant metallic anomalies if such a survey was considered necessary.

Several anomalies were detected in the geophysical survey. However, these anomalies were generally attributed to buried utility lines or conduits, known USTs, or vehicles. The survey concluded that no metallic USTs were present on the proposed right-of-way. A detailed report of findings and interpretations is presented in Attachment A.

#### **Site Assessment Activities**

On August 25 and 26, 2008, Earth Tech mobilized to the site to conduct a Geoprobe<sup>®</sup> direct push investigation to evaluate soil conditions within the proposed right-of-way and easement. Continuous sampling using direct push technology (Regional Probing of Wake Forest, North Carolina) resulted in generally good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in 4-foot long acetate sleeves inside the direct push

sampler. Each of these sleeves was divided in half for soil sample screening. Each 2-foot interval was placed in a resealable plastic bag and the bag was set aside for a sufficient amount of time to allow volatilization of organic compounds from the soil to the bag headspace. The probe of a flame ionization detector/photo ionization detector (FID/PID) was inserted into the bag and the reading was recorded. After terminating the sample hole, the soil sample from the depth interval with the highest FID/PID reading was submitted to Research and Analytical Laboratories, Inc., in Kernersville, North Carolina, using standard chain-of-custody procedures. The laboratory analyzed the soil samples for total petroleum hydrocarbons (TPH) in the diesel range organics (DRO) and gasoline range organics (GRO).

Sixteen direct-push holes (DP-1 through DP-16) were advanced within the proposed right-of-way to depths ranging from 8 to 12 feet as shown in Figure 2 and Attachment B. The borings were located to evaluate the entire property (Attachment C). Borings DP-1 through DP-9 were located to evaluate the soil conditions within the gravel lot and near the NCDOT geotechnical boring; borings DP-10 through DP-13 were placed to assess the area around the existing USTs and pump island; and borings DP-14 through DP-16 were located to estimate the horizontal extent of potential contamination. The lithology encountered by the direct-push samples generally was consistent throughout the site. The ground surface was covered with about 8 inches of asphalt, concrete, gravel, or topsoil. Below the surface treatment to a depth of about 6 to 8 feet was a tan to yellow/orange fine-grained sand. Below this unit was a gray stained sandy silt to sandy clay. All the borings were terminated at the top of groundwater, which was at about 7 to 11 feet below ground surface. Based on field screening, soil samples were submitted for laboratory analysis, which are summarized in Table 1. Because of its proximity to other borings in the area, a soil sample from DP-6 was not submitted for analysis.

During the drilling of borings DP-15 and DP-16, an unrecognized odor was encountered throughout the borehole. The odor was described as a "sweet" smell and does not appear to be associated with petroleum. No analysis was conducted under this scope of work to identify the potential contaminant.

### **Analytical Results**

Based on the laboratory reports, summarized in Table 1 and presented in Attachment D, petroleum hydrocarbon compounds identified as DRO and/or GRO were detected in twelve of the fifteen soil samples collected from the site (Figure 3). Borings DP-9, DP-14, and DP-16 contained no DRO or GRO concentrations above the method quantitation limit. According to the North Carolina Underground Storage Tank Section's Underground Storage Tank Closure Policy dated August 24, 1998, the action level for TPH analyses is 10 milligrams per kilogram (mg/kg) for both gasoline and diesel fuel. However, that agency's "Guidelines for Assessment and Corrective Action," dated April 2001, does not allow for use of TPH analyses for confirmation of the extent of petroleum contamination or its cleanup. As a result, while TPH concentrations are no longer applicable in determining if soil contamination is present, this analysis is a legitimate screening tool. Based on the TPH action level for UST closures, the assumed action level for this

report is 10 mg/kg. All the soil samples indicating detectable DRO and/or GRO concentrations contained these compounds at concentrations above the 10 mg/kg assumed action level.

### **Conclusions and Recommendations**

A Preliminary Site Assessment was conducted to evaluate the Anwar Gilliani Property located at 1426 US 19E in Spruce Pine, Mitchell County, North Carolina. Sixteen soil borings were advanced to evaluate the soil conditions throughout the property. The laboratory reports of the soil samples from these borings suggest that DRO and/or GRO concentrations were present above the assumed action level in twelve of the fifteen soil samples analyzed.

To evaluate the volume of soil requiring possible remediation, the soil samples with TPH concentrations above 10 mg/kg were considered. The analytical results of the soil samples suggest that the soil from all the borings except DP-9, DP-14, and DP-16 contained TPH concentrations identified as DRO and/or GRO above the assumed action level. A review of the field screening readings (Table 1) and Figure 3 suggests that the thickness of the potentially contaminated soil is consistent throughout the site at about 4 feet, but at varying depths. The depths range from 4 to 8 feet at the UST and pump island area to 8 to 12 feet at the western portion of the site. In addition, site conditions (utilities, traffic, inaccessible areas, etc.) and poor weather conditions did not allow for a comprehensive evaluation of the horizontal extent of contamination. From Figure 3, Earth Tech has assumed the southern extent of the plume as shown, a northern and western extent equal to the property line, and an eastern extent at boring DP-13. Based on the plume geometry, Earth Tech assumes a thickness of 4 feet, an average length of 240 feet, and an average width of 100 feet, which results in an estimated total contaminated soil volume for the site of approximately 3,600 cubic yards. The volume of potentially affected soil was estimated based on the 10 mg/kg isoconcentration contour shown on Figure 3. This volume is estimated from TPH analytical data, which are no longer valid for remediation of sites reported after January 2, 1998. After this date, MADEP EPH/VPH and EPA Method 8260/8270 analyses will likely be required to confirm cleanup. However, these analyses do not correlate exactly with TPH data and, as a result, the actual volume of contaminated soil may be higher or lower.

Earth Tech appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the applicable action levels in the soil samples, Earth Tech recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Asheville Regional Office. If you have any questions, please contact me at (919)854-6238.

Sincerely,

Michael W. Branson

Michael W. Branson, P.G. Project Manager

Attachments

c: Project File



TABLE 1 SOIL FIELD SCREENING AND ANALYTICAL RESULTS GILLIANI PROPERTY SPRUCE PINE, MITCHELL COUNTY, NORTH CAROLINA NCDOT PROJECT NO. R-2519B WBS ELEMENT 35609.1.1 EARTH TECH PROJECT NO. 105676								
LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ASSUMED ACTION LEVEL (mg/kg)			
DP-1	0 - 2	5.92		(IIIg/Kg)	(IIIg/Kg)			
	2 - 4	7.13						
	4 - 6	7.42						
	<u>6 - 8</u> 8 - 10	8.02 15.38	DP-1-8-10	DRO (BQL) GRO (87)	10 10			
	10 - 12	11.52						
DP-2	0 - 2	4.21	<u> </u>					
	2-4	3.21	+					
	6 - 8	3.11						
	8 - 10	4.12	DP-2-8-10	DRO (BQL) GRO (31.9)	10 10			
	10 - 12	5.17						
DP-3	0 - 2	6.41						
	2 - 4	11.71						
	6 - 8	12.21						
	8 - 10	24.76	DP-3-8-10	DRO (282) GRO (1570)	10 10			
DP-4	0 - 2	BG						
	2 - 4	BG						
	4 - 6	BG						
	8 - 10	BG	DP-4-8-10	DRO (BQL) GRO (46.9)	10			
	10 - 12	7		· · · ·				
DP-5	0 - 2	BG						
	2 - 4	BG						
	<u>4 - 6</u> <u>6 - 8</u>	70	DP-5-6-8	DRO (188) GRO (412)	10			
	8 - 10	22			10			
	10 - 12	14						
DP-6	0 - 2	BG	<u> </u>					
	2 - 4	BG	No cample submitted					
	6 - 8	BG	No sample submitted					
	8 - 10	BG						
	10 - 12	BG						
DP-7	0 - 2	BG						
	2 - 4	BG						
	4 - 0	BG						
	8 - 10	BG	DP-7-8-10	DRO (BQL) GRO (23.4)	10 10			
	10 - 12	BG						
DP-8	0 - 2	BG						
	2 - 4	BG	<u> </u>					
	4 - 6	26	+					
	8 - 10	103	DP-8-8-10	DRO (164) GRO (573)	10 10			
	10 - 12	82		(0.0)	10			

TABLE 1 (continued) SOIL FIELD SCREENING AND ANALYTICAL RESULTS GILLIANI PROPERTY SPRUCE PINE, MITCHELL COUNTY, NORTH CAROLINA NCDOT PROJECT NO. R-2519B WBS ELEMENT 35609.1.1 EARTH TECH PROJECT NO. 105676							
LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS	ASSUMED ACTION LEVEL		
	0.2	PC		(mg/kg)	(mg/kg)		
DP-9	2 - 4	BG					
	4 - 6	BG					
	6 - 8	BG					
	8 - 10	BG	DP-9-8-10	DRO (BQL) GRO (BQL)	10 10		
	10 - 12	9					
DP-10	0 - 2	13					
	<u>2 - 4</u> 4 - 6	120 350	DP-10-4-6	DRO (BQL) GRO (35.3)	10 10		
	6 - 8	85					
	8 - 10	BG					
DP-11	0 - 2	9					
	2 - 4	19					
	4 - 6	65					
	6 - 8	111	DP-11-6-8	DRO (BQL) GRO (123)	10 10		
DP-12	0 - 4	10					
	4 - 6	160					
	6 - 8	250	DP-12-6-8	DRO (BQL) GRO (67.1)	10 10		
DP-13	0 - 2	BG					
	2 - 4	BG					
	<u>4 - 6</u> 6 - 8	BG BG	DP-13-6-8	DRO (BQL)	10		
DP-14	0 - 2	BG		GRO (32.3)	10		
D1-14	2 - 4	1					
	4 - 6	BG					
	6 - 8	BG	DP-14-6-8	DRO (BQL) GRO (BQL)	10 10		
DP-15	0 - 2	15					
	2 - 4	54					
	4 - 6	520					
	6 - 8	3200	DP-13-6-8	DRO (230) GRO (1060)	10 10		
DP-16	0 - 2	10					
	2 - 4	4					
	4 - 6	10					
	<u>6 - 8</u> 8 - 10	4 22	DP-16-8-10	DRO (BQL)	10		
	10 - 12	17		UNU (DQL)	10		
L	10-12	1/					

Soil samples were collected on June 18, 2008.

DRO - Diesel range organics.

GRO - Gasoline range organics.

BQL - Below quantitation limit.

ppm - parts per million.

mg/kg - milligrams per kilogram. BG - Background concentration.

FIGURES



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ATTACHEMENT A

Pyramid Project # 2008188

## **GEOPHYSICAL INVESTIGATION REPORT**

### EM61 & GPR SURVEYS

### GILLIANI PROPERTY (SAMIR'S 8 STORE) Spruce Pine, North Carolina

August 26, 2008

Report prepared for:	Mike Branson
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### Earth Tech of North Carolina, Inc. GEOPHYSICAL INVESTIGATION REPORT GILLIANI PROPERTY (SAMIR'S 8 STORE) Spruce Pine, North Carolina

### TABLE OF CONTENTS

#### PAGE

1.0	INTRODUCTION	1
2.0	FIELD METHODOLOGY	1
3.0	DISCUSSION OF RESULTS	2
4.0	SUMMARY & CONCLUSIONS	4
5.0	LIMITATIONS	4

### **FIGURES**

Figure 1	Geophysical Equipment & Site Photographs
Figure 2	Geophysical Survey Line Locations
Figure 3	EM61 Metal Detection - Bottom Coil Results
Figure 4	EM61 Metal Detection - Differential Results

Figure 5 GPR Image & EM61 Plot Across Active UST Pad

### 1.0 INTRODUCTION

Pyramid Environmental conducted geophysical investigations for Earth Tech of North Carolina, Inc. across the Gilliani property (Samir's 8 Store site) located immediately west of the US 19 East and SR 1235 intersection. The site is located approximately 4 miles west of Spruce Pine, North Carolina and contains an active BP gas station and a privately owned auto repair shop. The northern portion of the site consists primarily of an asphalt-paved lot with a pump island and concrete UST pad. A wide and steep grass-covered ditch runs between the asphalt-paved lot and US 19 East. The southern portion of the site (located behind the store and auto repair building) consists of a grass-covered parking area.

The geophysical investigation was conducted on August 7-8, 2008 to determine if unknown, metallic, underground storage tanks (USTs) were present beneath the Gilliani property. Earth Tech representative Mr. Michael Branson, PG, provided site maps that outlined the geophysical survey area. Photographs of the Gilliani property and the geophysical equipment used at this site are shown in **Figure 1**.

### 2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 10-foot by 20-foot survey grid was established across the proposed site using measuring tapes, water-based marking paint and pin flags. These marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigations consisted of electromagnetic (EM) induction-metal detection surveys and ground penetrating radar (GPR) surveys. The EM surveys were performed on August 7-8, 2008 using a Geonics EM61-MK1 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Most of the EM61 data were digitally collected along easterly-westerly parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the office using the Geonics DAT61W and Surfer for Windows Version 7.0 software programs.

GPR surveys were also conducted on August 8, 2008, across selected EM61 differential anomalies, using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. GPR data were digitally collected in a continuous mode along X and/or Y survey lines, spaced two to five feet apart using a vertical scan of 512 samples, at a rate of 48 scans per second. An 80 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were collected down to a maximum depth of approximately five feet, based on an estimated two-way travel time of 9 nanoseconds per foot. All of the GPR data were downloaded to a field computer and reviewed in the field and office using Radprint software.

Locations of the EM61 metal detection survey lines and the GPR survey lines are shown as red dots and purple lines, respectively in **Figure 2**. Each red dot represents an EM61 data point. Contour plots of the EM61 bottom coil results and the EM61 differential results for the Gilliani property are presented in **Figures 3 and 4**, respectively. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines, small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drums and USTs and ignore the smaller insignificant metal objects.

Preliminary contour plots of the EM61 bottom coil and the differential results for the site were emailed to Mr. Branson during the week of August 11, 2008.

### 3.0 DISCUSSION OF RESULTS

The linear EM61 bottom coil anomalies intersecting grid coordinates X=108 Y=180, X=117 Y=130, X=200 Y=193, and X=346 Y=175 are probably in response to the metallic guard rails that separate the asphalt lot from the gravel-covered parking area and border the ditches. The linear anomalies

intersecting grid coordinates X=162 Y=133 and X=180 Y=138 are probably in response to buried conduits and/or utility lines. The high amplitude bottom coil anomalies centered near grid coordinates X=140 Y=160 and X=205 Y=155 are probably in response to the concrete UST pad and the pump island area, respectively.

The high amplitude bottom coil anomalies centered near grid coordinates X=310 Y=110, X=355 Y=170, and X=405 Y=170 are probably in response to known equipment and structures including a dumpster, above ground storage tank (AST), store sign, diesel pump, and an ATM machine. The low amplitude bottom coil anomalies centered near coordinates X=298 Y=140 and X=323 Y=140 are probably in response to nearby parked vehicles which were temporarily moved to accommodate the EM survey. The remaining bottom coil anomalies are probably in response to known surface features such as the building, shed, equipment, parked vehicles, or other metallic objects.

All of the negative EM61 differential anomalies (contours shaded in green) are probably in response to known, surface metal objects, vehicles, guard rails, or equipment. The differential anomalies centered near grid coordinates X=205 Y=155 and X=310 Y=213 are probably in response to the pump island and the steel reinforced concrete culvert, respectively.

GPR surveys across the concrete UST pad centered near grid coordinates X=140 Y=160 suggest the presence of 5 USTs orientated in a northerly southerly direction and buried approximately 1.5 to 2.0 feet below grade. The image from GPR survey line Y=160 and an enlarged map and showing the UST pad are presented in **Figure 5**. The bottom coil results suggest that a smaller "6<sup>th"</sup> UST may be present below the concrete pad and centered near grid coordinates X=132 Y=147. However, the GPR data do not confirm this possible UST and only 5 sets of fill/vent ports are seen on the concrete pad.

The remaining differential anomalies not discussed above are probably in response to known surface structures, features or objects. Excluding the 5 known and active USTs located beneath the concrete UST pad, the geophysical investigation suggests that the remaining portion of the Gilliani property does not contain buried, unknown, metallic USTs.

### 4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the Gilliani property (Samir's 8 Store) located immediately west of the US 19 East and SR 1235 intersection near Spruce Pine, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the surveyed portions of the site.
- The linear EM61 bottom coil anomalies intersecting grid coordinates X=108 Y=180, X=117 Y=130, X=200 Y=193, and X=346 Y=175 are probably in response to the metallic guard rails that separate the asphalt lot from the gravel-covered parking area and border the ditches.
- The high amplitude bottom coil anomalies centered near grid coordinates X=310 Y=110, X=355 Y=170, and X=405 Y=170 are probably in response to known equipment and structures including a dumpster, above ground storage tank (AST), store sign, diesel pump, and an ATM machine.
- GPR surveys across the concrete UST pad centered near grid coordinates X=140 Y=160 suggest the presence of 5 USTs orientated in a northerly southerly direction and buried approximately 1.5 to 2.0 feet below grade.
- Excluding the 5 known and active USTs located beneath the concrete UST pad, the geophysical investigation suggests that the remaining portion of the Gilliani property does not contain buried, unknown, metallic USTs.

### 5.0 LIMITATIONS

EM61 and GPR surveys have been performed and this report prepared for Earth Tech of North Carolina, Inc. in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project do not conclusively determine that the surveyed portion of the site does not contain unknown metallic USTs but that none were detected.





The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey at the Gilliani property (Samir's 8 store) on August 7-8, 2008.



The photographs show the SIR-2000 GPR system equipped with a 400 MHz antenna that were used to conduct the ground penetrating radar investigation at the Gilliani property on August 8, 2008.



The photograph shows a portion of the geophysical survey area located at the Gilliani property. The photograph is viewed in a southeasterly direction.



SITE

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EARTH TECH OF NORTH CAROLINA, INC.	# 08/22/08 MJD
GILLIANI PROPERTY (SAMIR'S 8 STORE SITE)	04:KD
	DWG
GEOPHYSICAL RESULTS	9 2008-188

GEOPHYSICAL EQUIPMENT & SITE PHOTOGRAPHS

FIGURE 1









The GPR image obtained along a portion of survey line Y=160 recorded high-amplitude, hyperbolic anomalies that are probably in response to 5 USTs buried beneath the concrete UST pad. The approximate locations of the USTs, as suggested by the GPR data, are shown in the enlarged EM61 bottom coil map below.



The above map is an enlarged portion of the EM61 bottom coil results presented in Figure 3 and shows the location of GPR survey line Y=160 and the approximate locations of the active 5 USTs at the Gilliani property (solid yellow rectangles). The dashed yellow rectangle represents a possible UST, as suggested by the geometry of the EM61 results but not confirmed by the GPR data.

ENVIRONMENTAL & ENGINEERING, P.C.	

	CLIENT	EARTH TECH OF NORTH CAROLINA, INC.	∦ 08/25/08 K MJD		
	SITE	GILLIANI PROPERTY (SAMIR'S 8 STORE SITE)	C C C C C C C C C C C C C C C C C C C	GPR IMAGE & EM61 PLC	т
	CITY	SPRUCE PINE NORTH CAROLINA	DWG	ACROSS ACTIVE UST PA	٩D
P.C.	TTLLE	GEOPHYSICAL RESULTS	2008-188 Nov	FIG	URE 5

ATTACHMENT B

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

<b>BORING NUMBER</b>	DP-1					
PAGE 1						
ELEVATION NA						
DATE 8/25/2008						
DRILLER Opper						
PREPARED BY	RHW					

DEPTH	CASING	BLOWS	OVA	SAMPLE	
IN FEET	BLOWS FOOT	PER 6 INCHES	(ppm)	DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			5.92		Tan sandy silt. Moist
			7.13		Tan sandy silt. Moist.
5.0			7.42		Tan yellow sandy silt. Few feldspar fragments. Moist.
5.0					
			8.02		Tan yellow sandy silt. Very moist.
			15.38		Same as above to 9 ft., then gray stained silty clay. Diesel odor. Wet at 9 ft.
10.0			11.52		Gray stained silty clay. Diesel odor. Wet.
			11.02		
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			4.21		Orange micaceous clay. Moist.
			3.21		Tan fine sand w/silt. Moist.
5.0			2.17		Tan fine sand w/silt. Moist.
5.0					
			3.11		Tan fine sand w/silt. More yellow than above. Moist.
			4.12		Tan-yellow fine sand w/silt. Very moist. Submitted sample.
10.0					
10.0			5.17		Tan yellow fine sand w/silt. Wet @ 11ft.
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			6.41		Tan fine sand. Moist.
			0.11		
			11.71		Tan fine sand. Moist.
			11.44		Tan fine sand Moist
5.0			11.44		
			12.21		Tan fine sand w/ few quartz fragments. Moist.
			24.76		
			24.70		Gray stained sandy clay. Strong diesel odor. Moist. Submitted sample.
10.0					Gray stained sandy clay. Strong diesel odor. Wet @ 10.5 ft.
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH	CASING	BLOWS	OVA (mrss)	SAMPLE	
IN FEET	FOOT	PER 6 INCHES	(ppm)	RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Orange fine sand w/silt. Moist.
			BG		Orange fine sand w/silt. Moist.
			BG		Orange fine sand w/silt. Moist.
5.0					
			BG		Orange fine sand w/silt. Moist.
			BG		Orange fine sand w/silt. Some gray staining at 10 ft. Wet at 10 ft. Submitted
					sample.
10.0					
10.0			7		Gray stained fine sandy silt. Strong diesel odor. Wet.
15.0					
<b>2</b> 0.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

# BORING NUMBER DP-5 PAGE 1 ELEVATION NA DATE 8/25/2008 DRILLER Opper PREPARED BY RHW

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Tan fine sand w/silt. Moist.
			BG		Tan fine sand w/silt.
5.0			7		I an fine sand w/slif. Some quartz fragments. Dark staining. Diesei odor. Moist.
			70		Gray stained sandy silt. Diesel odor. Very moist. Submitted sample.
			22		Gray stained sandy silt. Diesel odor. Very moist.
10.0					
			14		Gray stained sandy silt. Wet @ 10 ft.
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

# BORING NUMBERDP-6PAGE 1ELEVATION NADATE8/25/2008DRILLER OpperPREPARED BYRHW

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Tan orange fine sand w/silt. Moist.
			BG		Tan orange fine sand w/silt. Moist.
5.0			BG		Tan orange fine sand w/silt. Moist.
3.0					
			BG		Tan orange fine sand w/silt. Some quartz fragments. Vey moist.
			BG		Tan orange fine sand w/silt. Some quartz fragments. Vey moist.
10.0					
10.0					Tan orange fine sand w/silt. Some quartz fragments. Vey moist. Wet @ 11 ft.
					No visible staining or odor. No sample submitted.
15.0					
13.0					
20.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Tan orange fine sand w/silt. Moist.
			BG		Tan orange fine sand w/silt. Moist.
5.0			BG		Tan orange fine sand w/silt. Moist.
			РC		
			во		Tan orange line sand w/siit. Some quartz fragments. Very moist.
			BG		Tan orange fine sand w/silt. Some quartz fragments. Very moist. Sample
					submitted.
10.0			BG		Tan orange fine sand w/silt. Some quartz fragments. Wet at 11 ft.
					No visible staining or odor.
15.0					
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Tan orange fine sand w/silt. Moist.
			BG		Tan orange fine sand w/silt. Moist.
					The second s
5.0			26		diesel odor.
			51		Gray stained fine sand w/silt. Strong diesel odor. Very moist.
			103		Gray stained fine sand w/silt. Strong diesel odor. Very moist. Submitted sample.
10.0					Gray stained fine sand w/silt. Strong diesel odor. Wet @ 11 ft. Medium sand lens
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Tan orange fine sand w/silt. Moist.
			BG		Tan orange fine sand w/silt. Moist.
			BG		Tan orange fine sand w/silt. Moist.
5.0					
			BG		Tan orange fine sand w/silt. Moist.
			BC		Tan annua fina and m/silt Manunsist Na adap Submitted annuls
			DG		Tan orange time sand w/sitt. Very moist. No odor. Submitted sample.
10.0					
			9		Gray stained fine sand w/silt. Wet at 10.5 ft.
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR

EQUIPMENT GeoProbe

# BORING NUMBERDP-10PAGE 1ELEVATION NADATE8/26/2008DRILLER OpperPREPARED BYRHW

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			13		Top foot asphalt and gravel. Fine tan sand w/silt. Moist.
			120		Tan fine sand w/silt. Moist.
			350		Tan fine sand w/silt. Moist. Submitted sample.
5.0					
			85		Tan fine sand w/silt. Very moist @ 8 ft.
			BG		Gray stained fine sand w/silt. Diesel or kerosene odor. Wet @ 9 ft.
10.0					
10.0					
15.0					
15.0					
<b>.</b>					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			9		Top foot asphalt and gravel. Fine tan sand w/silt. Moist.
			-		
			19		Tan fine sand w/silt. Moist.
					Ton fine and w/alt Moiet
5.0			65		Tan fine sand w/snt. Moist.
			111		Tan fine sand w/silt. Very moist @ 8 ft. Submitted sample.
10.0					
10.0					
15.0					
		<u> </u>			
20.0					
					1

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

## BORING NUMBER DP-12 PAGE 1 ELEVATION NA DATE 8/26/2008 DRILLER Opper PREPARED BY RHW

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			10		Hand augered to 4 ft. Asphalt and gravel to 1 ft. Then tan fine sand w/silt and
					some gravel. No staining or odor.
			160		Tan fine sand w/silt. No odor or staining. Moist.
5.0					
			250		Tan fine sand w/silt. No odor or staining. Moist. Submitted sample.
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

## BORING NUMBER DP-13 PAGE 1 ELEVATION NA DATE 8/26/2008 DRILLER Opper PREPARED BY RHW

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Tan fine sand w/silt. Moist.
			BG		Tan fine sand w/silt. Moist.
			BG		Tan fine sand w/silt. Moist.
5.0			DO		
			BG		Tan fine and wait Vary maint @ 9 ft No oder or staining Submitted comple
			DO		Tan fine sand w/snt. Very moist @ 8 ft. No odor of stanning. Submitted sample.
10.0					
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			BG		Orange red micaceous clay. No odor. Wet from heavy rain.
			I		Orange red micaceous clay. Wet from rain.
			BG		Orange red micaceous clay. Very moist.
5.0					
			BG		Orange red micaceous clay. Wet at 7 ft. Submitted sample.
10.0					
10.0					
15.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

BORING NUMBER	DP-15						
PAGE 1							
ELEVATION NA							
DATE 8/26/2008							
DRILLER Opper							
PREPARED BY	RHW						

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			15		Tan fine sand w/silt. No odor. Wet from rain.
			54		Gray stained fine sand w/silt. Strong diesel or kerosene odor. Maybe solvent. Very
					moist.
			520		Gray stained fine sand. Strong unrecognized odor. Very moist. Submitted sample.
5.0					
			3200		Constructed fine and Streng suggesting deday Wet @ 7.64
			3200		Gray stained line sand. Strong unrecognized odor. wet @ 7 ft.
10.0					
10.0					
15.0					
20.0					
20.0					

PROJECT NCDOT Gilliani Project

CLIENT NCDOT

PROJECT NUMBER 105676

CONTRACTOR Regional Probing

EQUIPMENT GeoProbe

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			10		Tan fine sand. Wet from heavy rain. No odor or staining.
			4		Tan fine sand. Wet from havy rain. Unrecognized odor. Some visible staining.
5.0			10		Dark stained fine sand. Strong unrecognized odor. Very moist.
5.0					
			4		Dark stained fine sand. Strong unrecognized odor. Very moist.
			22		Dark stained fine sand. Strong unrecognized odor. Very moist.
10.0					
10.0			17		Dark stained fine sand. Strong unrecognized odor. Wet @ 11 ft.
15.0					
15.0					
20.0					

ATTACHMENT C



PHOTO 1 - VIEW IN GRAVEL LOT LOOKING NORTHWEST



PHOTO 2 - VIEW IN GRAVEL LOT LOOKING SOUTHWEST



PHOTO 3 - VIEW IN GRAVEL LOT LOOKING NORTHEAST



PHOTO 4 - VIEW IN GRAVEL LOT LOOKING NORTHEAST



PHOTO 5 - VIEW IN GRAVEL LOT LOOKING NORTH



PHOTO 6 - VIEW IN GRAVEL LOT LOOKING EAST



PHOTO 7 - VIEW IN GRAVEL LOT LOOKING NORTH



PHOTO 8 - VIEW IN GRAVEL LOT LOOKING NORTHEAST



PHOTO 9 - VIEW IN GRAVEL LOT LOOKING SOUTH



PHOTO 10 - VIEW FROM REAR OF BUILDING LOOKING NORTHWEST



PHOTO 11 - VIEW FROM REAR OF BUILDING LOOKING EAST



PHOTO 12 - VIEW FROM REAR OF BUILDING LOOKING WEST



PHOTO 13 - VIEW FROM FRONT OF BUILDING LOOKUBNG WEST



PHOTO 14 - VIEW FROM SIDE OF BUILDING LOOKING NORTH

ATTACHMENT D





September 9, 2008

Earth Tech 701 Corporate Center Drive Suite 475 Raleigh, NC 27607 Attention: Mike Branson

Chemical Analysis for Total Petroleum Hydrocarbons (TPH) for Selected Soil Samples Identified as NCDOT-Gilliani Property (An Earth Tech Project #WBS35609.1.1, collected 25-26 August 2008)

Sample Identification	RAL <u>Sample#</u>	Date <u>Taken</u>	Time <u>(hrs)</u>	Quantitation Limit <u>(mg/kg)</u>	EPA Method 5030 <u>(mg/kg)</u>	EPA Method 3550 <u>(mg/kg)</u>
DP1-8-10	625335	08/25/08	1325	10	BQL	87.0
DP2-8-10	625336	08/25/08	1345	10	BQL	31.9
DP-3-8-10	<b>625</b> 337	08/25/08	1355	10	282	1,570
DP-4-8-10	625338	08/25/08	1510	10	BQL	46.9
DP-5-6-8	625339	08/25/08	1530	10	188	412
DP-7-8-10	625340	08/25/08	1600	10	BQL	23.4
DP-8-8-10	625341	08/25/08	1635	10	164	573
DP-9-8-10	625342	08/25/08	1700	10	BQL	BQL
DP-10-4-6	625343	08/26/08	0820	10	BQL	35.3
DP-11-6-8	625344	08/26/08	0845	10	BQL	123
DP-12-6-8	625345	08/26/08	0910	10	BQL	67.1
DP-13-6-8	625346	08/26/08	0930	10	BQL	32.5
DP-14-6-8	625347	08/26/08	1010	10	BQL	BQL
DP-15-4-6	625348	08/26/08	1025	10	230	1,060
DP-16-8-10	625349	08/26/08	1110	10	BQL	BQL

EPA Method 3550 = Total Petroleum Hydrocarbons as Diesel EPA Method 5030 = Total Petroleum Hydrocarbons as Gasoline mg/kg = milligrams per kilogram = parts per million (ppm) BQL = Below Quantitation Limit

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