Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina, 27699-1589

Preliminary Site Assessment Report

Campbell Rentals LLC
Parcel # 71
306 W. Oliver Street
Whiteville, Columbus County, North Carolina
US 701 Bypass (Madisson St-Powell Blvd) from SR 1437 (Virgil Ave) to US 74/76
TIP Number: R-5020B
WBS Element: 41499.1.3

Apex Companies, LLC
(dba Apex Engineering, PC)
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November 21, 2018

not considered final unless all signatures are completed

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1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) Parcel 71, Campbell Rentals, LLC. property performed by Apex Companies, LLC (Apex) (dba Apex Engineering, PC) on behalf of the NCDOT. The subject site of this PSA report will be affected by the widening of J.K. Powell Blvd. (US 701 Bypass) from Virgil Ave. to US 74/76. The Site is comprised of one parcel and is located at 306 W. Oliver Street and is identified as Parcel 71, Campbell Rental Property, within the NCDOT R-5020B design project. The property is located at the southwest corner of the intersection of N. JK Powell Boulevard and Smyrna Road in Whiteville, Columbus County, North Carolina, as shown in the attached Site Location Map (**Figure 1**). The site investigation was conducted in accordance with Apex Company's Technical and Cost proposal dated May 15, 2018.

NCDOT contracted Apex to perform the PSA within the proposed right-of-way (ROW) and/or easement of the Parcel 71, Campbell Rentals, LLC. property due to the potential presence of contamination at the site and the fact that excavation and grading may occur within the area. The PSA was performed to evaluate if soils have been impacted as a result of past and present uses of the property within the proposed investigation area, if buried underground storage tanks (USTs) are present in the area of investigation, and if groundwater is impacted.

The following report presents the results of electromagnetic (EM) and ground penetrating radar (GPR) evaluation to identify USTs in the investigation area and describes the subsurface field investigation conducted. The report includes the evaluation of field screening, as well as field and laboratory analyses with regards to the presence or absence of soil and groundwater contamination within the area of investigation across Parcel 71. **Appendix A** includes a Photograph log for the site.

1.1 Site History

The Campbell Rentals, LLC. property has been identified with the address of 306 W. Oliver Street. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, four registered tanks were identified for the 306 W. Oliver Street associated with Facility ID Number 0-034187. The USTs registered include two 12,000-gallon capacity gasoline USTs, one 10,000-gallon capacity diesel UST and one 2,000-gallon capacity kerosene UST. Historically the property was identified as 1105 N. JK Powell Boulevard. The known USTs were located outside of the geophysical survey area and were not verified. Apex personnel did note fuel ports for a UST bed while on site. Currently the site consists of a one-story convenience store, fuel station, and an automated car wash. Apex personnel also reviewed the NCDEQ Incident Management Database and no groundwater incidents are associated with this parcel.

1.2 Site Description

The site is located in a mixed commercial and residential area of Whiteville in Columbus County. The property is developed with a one-story brick structure located in the southern portion of the parcel, an open, single bay, one-story brick structure located in the northwestern portion of the property, and a fuel station canopy located in the northern portion of the property. The rest of the parcel is covered with paved asphalt and concrete. Smyrna Road followed by a restaurant is located to the north of the property. N. JK Powell Boulevard followed by commercial properties are located to the east. Oliver Street followed by a commercial property is located to the south. Smyrna Drive followed by residential properties are located to the west of the property. Additionally, the geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) identified 21 anomalies. However, none of the EM anomalies were indicative of larger structures such as USTs. Pyramid concluded the geophysical data did not indicate the presence of unknown metallic USTs in the investigation area.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 71, the Campbell Rentals LLC. property is located within the Coastal Plain Physiographic Province. The Coastal Plain is the largest physiographic province in the state, covering about 45% of the land area. According to the US Geological Survey Hydrogeological framework of the North Carolina coastal plain, the geology consists of eastward-dipping and eastward-thickening series of sedimentary strata which range in age from Holocene to Cretaceous. The most common type of sediment types are sand and clay, although a significant amount of limestone occurs in the southern part of the coastal plain. The Site overlies surficial sediments (to approximately 30 to 40 feet bls), the PeeDee Confining unit (approximately 10 feet thick in this area), and the Late Cretaceous age Peedee Formation. The Peedee Formation is named for exposures along the great Peedee River, it preserves belemnites and foraminifera fossils dating from the Late Cretaceous. It generally consists of marine sand, clayey sand and clay (M.D. Winner Jr. and R.W. Coble, 1996, *Hydrogeologic Framework of the North Carolina Coastal Plain, Regional Aquifer-System Analysis – Northern Atlantic Coastal Plain*, USGS Professional Paper 1404-I).

2.2 Site Geology

Site geology was observed through the drilling and sampling of nine direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of five feet below ground surface (bgs) since that depth was the maximum excavation depth for proposed drainage features. Soil consisting predominantly of tan to

orange sandy, clayey silt was observed across the parcel. The soils were unconsolidated, and as a result the borings often collapsed. According to the topographical maps found on the Columbus County Geographic Information System (GIS) site, the parcel slopes from southeast to the northwest. Although groundwater does not always follow topographic changes, the topography may suggest that the direction of groundwater flow is to the northwest. Boring logs are presented in **Appendix B**.

3.0 FIELD ACTIVITIES

3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. A Health and Safety Plan (HASP) was prepared to include the site-specific health and safety information necessary for the field activities. North Carolina-One Call was contacted on May 25, 2018 to report the proposed drilling activities and notify affected utilities. Apex subcontracted Pyramid to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina was retained by Apex to perform DPT borings for soil sampling. REDLAB, LLC (REDLAB) provided an ultraviolet fluorescence (UVF) Hydrocarbon Analyzer and Eastern Solutions provided a calibrated Flame Ionization/Photoionization Detector (FID/PID). Boring locations were strategically placed in a pattern within the area of investigation to maximize the opportunity to encounter potentially contaminated soil.

3.2 Site Reconnaissance

Apex personnel performed a site reconnaissance on June 4, 2018. During the site reconnaissance, the area was visually examined for the presence of potential USTs or areas/obstructions that could potentially affect the subsurface investigation. The proposed boring locations were marked based on the site inspection and geophysical survey results. Apex personnel also used the site visit as an opportunity to contact the property manager/owner to inform them of upcoming field activities.

3.3 Geophysics Survey Results

The geophysical survey of the site was conducted from May 29 to May 31, 2018. Pyramid performed an electromagnetic (EM) induction metal survey followed by a GPR survey. A total of 21 EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. No evidence of larger structures such as USTs were observed beneath the reinforcement. Pyramid concluded the geophysical data did not indicate evidence of unknown metallic USTs in the investigation area. Known USTs supplying

fuel to the station are located outside of the survey area. A copy of the Geophysical Report is presented in **Appendix C**. The anomaly locations are depicted on **Figure 2** of the Geophysical report.

3.4 Well Survey

No water supply or groundwater monitoring wells were observed on-site.

3.5 Soil Sampling

Apex conducted drilling activities at the site on June 4, 2018. The purpose of soil sampling was to determine if a petroleum release had occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities. Apex drilling subcontractor, CSI, advanced nine direct push soil borings within the proposed investigation area. The nine boring locations were placed in locations to target former dispenser islands and in a pattern to maximize the likelihood of identifying potential soil contamination. **Figure 2** presents the Site Map with boring locations and site structures.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening of volatile organic vapors with the FID/PID unit and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. One to two intervals of the soil boring exhibiting the most elevated FID/PID readings were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) in soil using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Troy Holzschuh, a certified REDLAB UVF technician with Apex. The UVF results were generated concurrent with soil boring activities so that rapid assessment could be utilized for strategic boring placement.

3.6 Groundwater Sampling

Groundwater was encountered on site at a depth ranging from three to five feet bgs. Groundwater impact was not evident based UVF hydrocarbon analysis of soil samples collected within the smear zone. There is no evidence of significant petroleum hydrocarbon contamination of groundwater onsite within the area of investigation.

4.0 SAMPLING RESULTS

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the June 2018 soil sampling there is no significant evidence of petroleum hydrocarbon contamination onsite, within the area of investigation.

Elevated PID readings, above ten parts per million (ppm), were observed in soils in several of the borings. The PID readings ranged from below detectable levels to 60 ppm (P71-SB3 at 1 to 2 feet bgs). Elevated FID readings were also detected in several borings. The highest value recorded was observed in boring P71-SB4 at 3 to 4 feet bgs (120 ppm). The FID/PID field screening results are provided on the boring logs in **Appendix B**.

Soil samples which exhibited elevated PID and/or FID readings were analyzed using the UVF for the presence of TPH as diesel range organics (DRO) and gasoline range organics (GRO). These analytical results are provided in **Table 1**, with instrument generated tables and chromatographs included as **Appendix D**. **Figure 3** presents the TPH-GRO and TPH-DRO results at each boring.

TPH-GRO was not detected at concentrations above the detection limits in soils on the Campbell Rentals, LLC property. TPH-DRO was detected in soil samples but at concentrations less than one milligram per kilogram (mg/Kg). TPH-GRO and the TPH-DRO concentrations did not exceed their regulatory action levels of 50 mg/kg and 100 mg/kg respectively.

5.0 CONCLUSIONS

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on June 4, 2018.

- Results of the geophysical survey did not produce anomalies characteristic of USTs.
- Nine soil borings were advanced onsite. Soil samples collected from each boring were analyzed in the field using a REDLAB UVF Hydrocarbon Analyzer.
- Soil samples analyzed using the UVF did not contain either TPH-DRO or TPH-GRO concentrations above their respective NCDEQ Action levels of 100 mg/kg and 50 mg/kg.

6.0 RECOMMENDATIONS

The subject property is designed as a fill area. Based on these PSA results, NCDOT will not need to manage any soil and groundwater encountered during excavation activities. Groundwater may be encountered during construction activities due to shallow groundwater levels.

TABLES

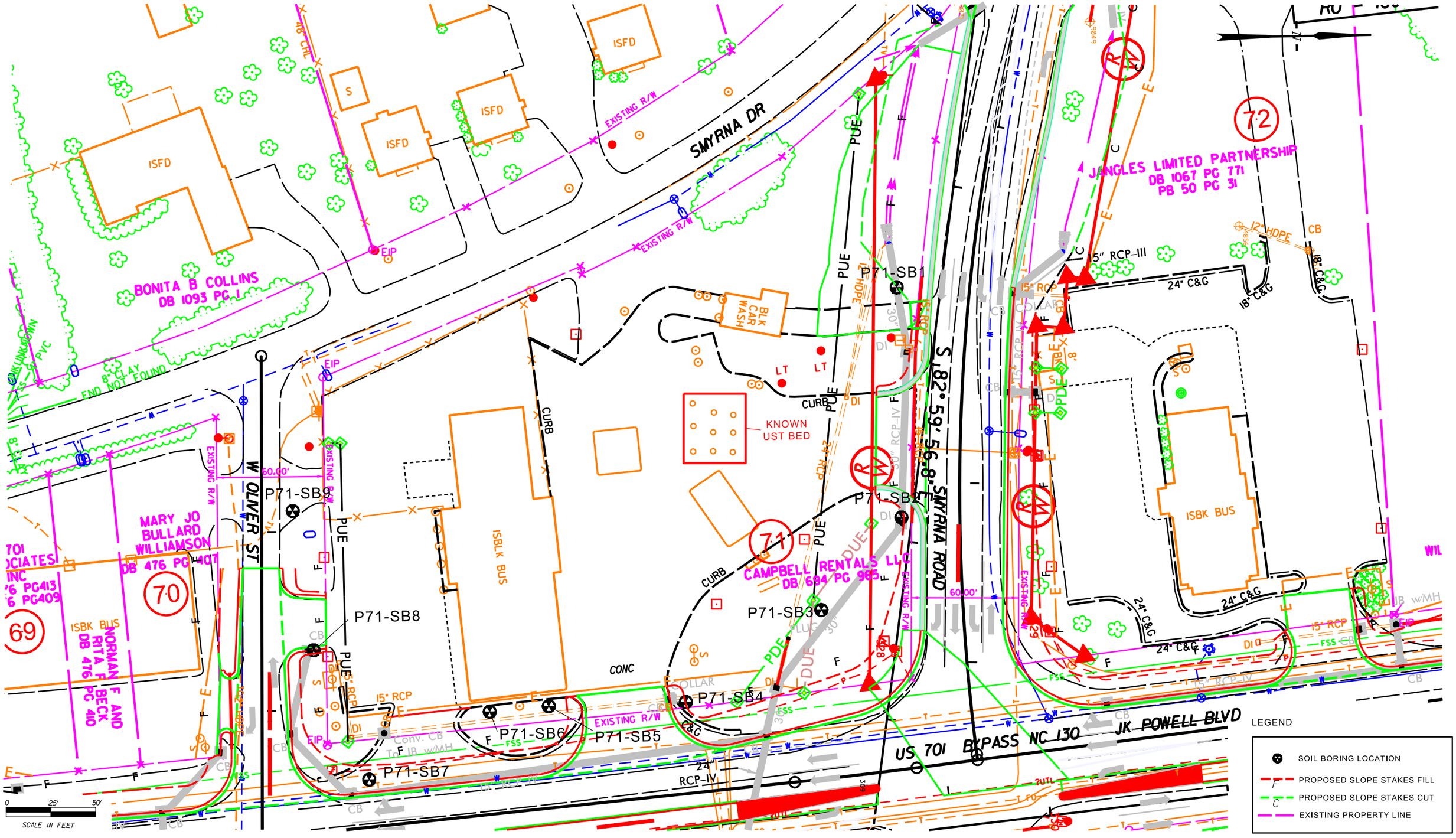
Table 1
UVF Onsite Hydrocarbon Analytical Soil Data from June 2018
R-5020B, Parcel 71, Campbell Rentals LLC Property
Whiteville, Columbus County, North Carolina

Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
SOIL				
NCDEQ Action Level in mg/kg			**50**	**100**
P71-SB-1	6/4/2018	2 - 3	<0.68	0.68
P71-SB1	6/4/2018	5 - 6	<0.52	0.52
P71-SB2	6/4/2018	2 - 3	<0.57	0.57
P71-SB2	6/4/2018	5 - 6	<0.48	<0.48
P71-SB3	6/4/2018	2 - 2.5	<0.64	<0.64
P71-SB3	6/4/2018	5 - 6	<0.67	<0.67
P71-SB4	6/4/2018	2 - 2.5	<0.46	0.46
P71-SB4	6/4/2018	5 - 6	<0.5	0.5
P71-SB5	6/4/2018	2 - 2.5	<0.55	0.55
P71-SB5	6/4/2018	5-6	<0.42	<0.42
P71-SB6	6/4/2018	2.5 - 3	<0.63	<0.63
P71-SB6	6/4/2018	5 - 6	<0.63	<0.63
P71-SB7	6/4/2018	2.5 - 3	<0.64	<0.64
P71-SB7	6/4/2018	5 - 6	<0.76	<0.76
P71-SB8	6/4/2018	2.5 - 3	<0.58	<0.58
P71-SB8	6/4/2018	5 - 6	<0.54	0.54
P71-SB9	6/4/2018	2.5 - 3	<0.5	<0.5
P71-SB9	6/4/2018	5 - 6	<0.76	<0.76

NOTES:
(mg/kg) = m illigrams per kilogram
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
ft bgs = feet below ground surface
TPH - GRO values in exceedance of NCDEQ Action Level of 50 mg/kg are shown in Bold
TPH - DRO values in exceedance of NCDEQ Action Level of 100 mg/kg are shown in Bold

FIGURES

CHECK BY: TH	SITE LOCATION MAP	APEX	FIGURE
DRAWN BY: SP			1
DATE: 7/6/2018	PARCEL #71		
SCALE: AS SHOWN	306 W. OLIVER STREET		
CAD NO:. NCDOT-001	WHITEVILLE, NORTH CAROLINA		
PRJ NO.: NCDOT-001			



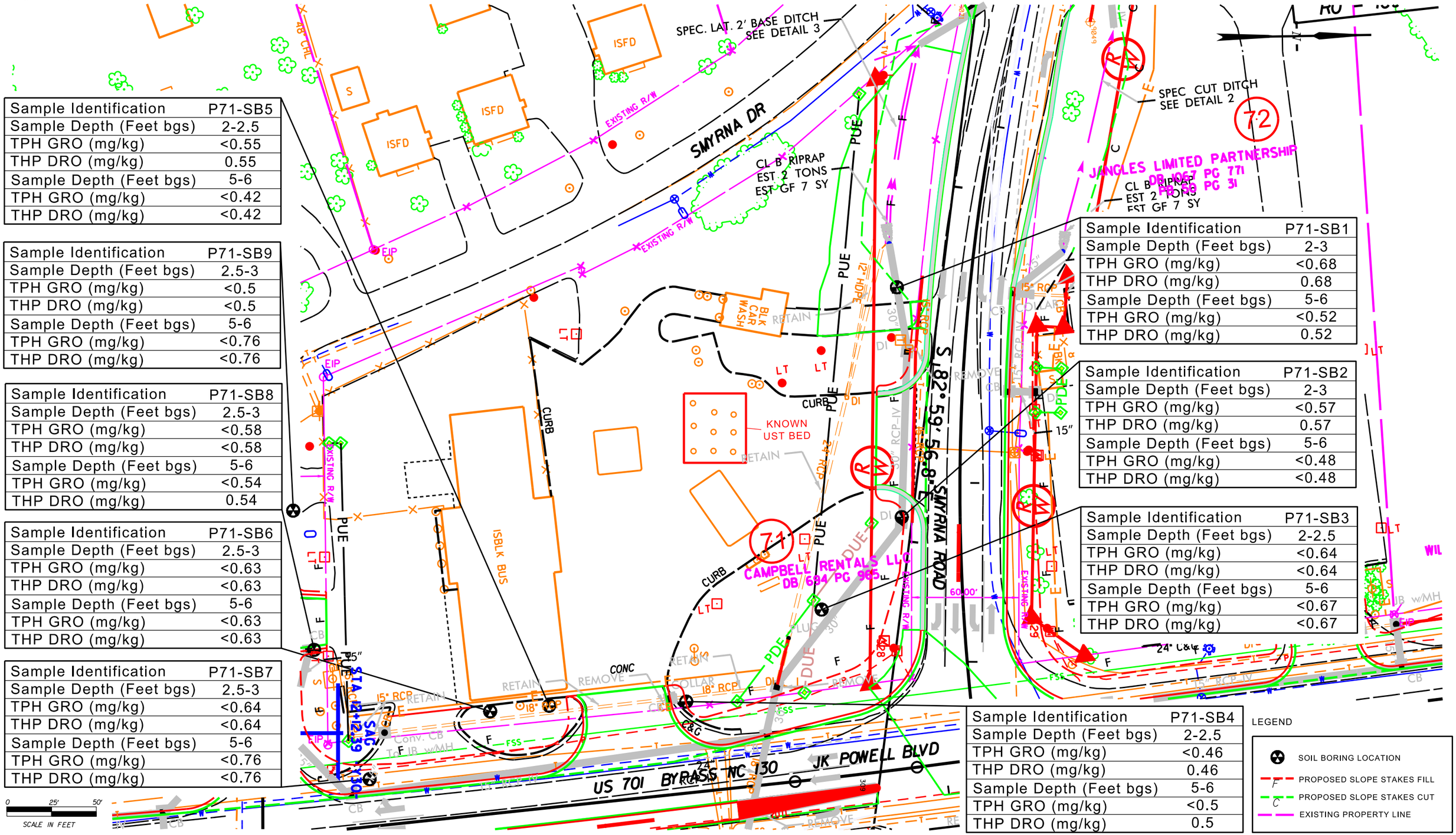
LEGEND

- SOIL BORING LOCATION
- PROPOSED SLOPE STAKES FILL
- PROPOSED SLOPE STAKES CUT
- EXISTING PROPERTY LINE

APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 2
PARCEL 071
306 W. OLIVER STREET
SITE MAP WITH SOIL BORING LOCATIONS

Date: 6/6/18	R-5020B US 701 BYPASS COLUMBUS COUNTY
Proj. # NCDOT-001	
CAD File: pc_071_fig 2.dgn	Project Title:
Approx. Scale: 1" = 50'	Drawn by: MJO
	Client: NC DOT



Sample Identification	P71-SB5
Sample Depth (Feet bgs)	2-2.5
TPH GRO (mg/kg)	<0.55
THP DRO (mg/kg)	0.55
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.42
THP DRO (mg/kg)	<0.42

Sample Identification	P71-SB9
Sample Depth (Feet bgs)	2.5-3
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	<0.5
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.76
THP DRO (mg/kg)	<0.76

Sample Identification	P71-SB8
Sample Depth (Feet bgs)	2.5-3
TPH GRO (mg/kg)	<0.58
THP DRO (mg/kg)	<0.58
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.54
THP DRO (mg/kg)	0.54

Sample Identification	P71-SB6
Sample Depth (Feet bgs)	2.5-3
TPH GRO (mg/kg)	<0.63
THP DRO (mg/kg)	<0.63
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.63
THP DRO (mg/kg)	<0.63

Sample Identification	P71-SB7
Sample Depth (Feet bgs)	2.5-3
TPH GRO (mg/kg)	<0.64
THP DRO (mg/kg)	<0.64
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.76
THP DRO (mg/kg)	<0.76

Sample Identification	P71-SB1
Sample Depth (Feet bgs)	2-3
TPH GRO (mg/kg)	<0.68
THP DRO (mg/kg)	0.68
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.52
THP DRO (mg/kg)	0.52

Sample Identification	P71-SB2
Sample Depth (Feet bgs)	2-3
TPH GRO (mg/kg)	<0.57
THP DRO (mg/kg)	0.57
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	<0.48

Sample Identification	P71-SB3
Sample Depth (Feet bgs)	2-2.5
TPH GRO (mg/kg)	<0.64
THP DRO (mg/kg)	<0.64
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.67
THP DRO (mg/kg)	<0.67

Sample Identification	P71-SB4
Sample Depth (Feet bgs)	2-2.5
TPH GRO (mg/kg)	<0.46
THP DRO (mg/kg)	0.46
Sample Depth (Feet bgs)	5-6
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	0.5

LEGEND

- SOIL BORING LOCATION
- PROPOSED SLOPE STAKES FILL
- PROPOSED SLOPE STAKES CUT
- EXISTING PROPERTY LINE

APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 3
PARCEL 071
306 W. OLIVER STREET
ONSITE UVF HYDROCARBON ANALYSIS RESULTS - SOIL
6/4/18

Date: 7/24/18		R-5020B US 701 BYPASS COLUMBUS COUNTY
Proj. # NCDOT-001		
CAD File: pc__071__fig 3.dgn		Project Title:
Approx. Scale: 1" = 50'	Drawn by: MJO	Client: NC DOT

APPENDIX A

PHOTOGRAPH LOG

Photo 1

Overview of site prior to preliminary site assessment activities.

Photo 2

View of drainage feature located at the north-west corner of the property boundary along North Smyrna Road.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269

APEX

WBS	41499.1.3
PROCESSED	TLH
DATE	June 2018

PHOTOGRAPHIC LOG
PSA Field Activities
Parcel 71
Campbell rentals LLC Property
Whiteville, NC

APPENDIX B

BORING LOGS

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB1	**Site Name: Parcel 71**
Date: 6/4/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	7.3		0 -2' Grass-Gray fine sandy **CLAY**, plastic, oxidation present, moist.
1				
2				2'-4.5' Gray fine **SAND**, loose, saturated at 4'
	<0.1	58		
3				
4				
	NS	NS		
5				4.5'-5' Gray **CLAY**, plastic, very sticky, trace of sand.
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB2	**Site Name: Parcel 71**
Date: 6/4/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	<0.1	17		0-3' Grass-Tan **SAND**, loose, dry.
1				
2				
	1.0	30		
3				3'-3.5' Brown sandy **CLAY**, saturated at 3'.
				3.5'-4' Gray silty **SAND**
4				4'-5' Brown and reddish orange fine sandy **CLAY**, very plastic, slightly sticky.
	0.6	25		
5				
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB3	**Site Name: Parcel 71**
Date: 6/4/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	2.0	60		0-2' Grass- Gray tan **SAND**, loose, slightly moist.
2				2'-3.5' Gray and Dark Gray silty **SAND**, slightly moist, saturated at 3.5'
3	2.0	23		
4				3.5'-5' Dark Gray, clayey **SILT**, saturated.
5	2.5	12		
6				Boring terminated at 5 feet
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB4	**Site Name: Parcel 71**
Date: 06/08/18	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	3.5	40		0-1' Grass-Tan **SAND**, loose,
1				
				1'-2' Tan and light orange silty **SAND**, slightly dense
2				
	120	40		2'-3' Dark Gray **SAND**, moist.
3				
				3'-5' Blackish Gray fine sandy **SILT**, saturated at 3'.
4				
	20	3.7		
5				
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB5	**Site Name: Parcel 71**
Date: 06/08/18	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	6.6	20		0-2' Grass-Tan **SAND**, loose with traces of clay.
2				
3	6.0	9.5		2'-2.5' Light gray **SAND**, with some gravel. 2.5'-2.75' Tan **SAND**, loose. 2.75'-3.5' Orange and gray **CLAY**, very stiff, plastic.
4				3.5'-5' Tan and orange clayey **SAND**, slightly loose, saturated at 4'.
5	31	5.6		
6				Boring terminated at 5 feet
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB6	**Site Name: Parcel 71**
Date: 06/08/18	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	5	11		0-2' Grass-Brown silty **SAND**, with gravel slightly moist.
1				
2				
	6	12		2'-4' Brownish orange clayey **SAND.**
3				
4				
	2	4		4'-5' Gray and orange clayey **SAND**, slightly moist.
5				
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB7	**Site Name: Parcel 71**
Date: 06/08/18	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	4.5	2.5		0-5' Grass-Gray and orange sandy **CLAY**, slightly plastic, moist at 4'.
1				
2				
	5.0	3.5		
3				
4				
	6.0	3.5		
5				
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB8	**Site Name: Parcel 71**
Date: 06/08/18	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	8	3		0-2' Grass-Gray and orange sandy **CLAY**.
2				
3	3	7		2'-3.5' Gray and orange clayey **SAND**, slightly plastic, saturated at 3.5'
4				3.5'-5' Gray and orange **CLAY**, very stiff, very plastic.
5	17	4		
6				Boring terminated at 5 feet
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P71-SB9	**Site Name: Parcel 71**
Date: 06/08/18	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Thomas Fisher	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	8	4		0-5' Grass-Brown clayey **SILT**, plastic.
1				
2				
	7	3		
3				
4				
	6	3		
5				
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

APPENDIX C

GEOPHYSICAL REPORT

PYRAMID GEOPHYSICS

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2018-139)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 71
NCDOT PROJECT R-5020B (41499.1.3)

306 W. OLIVER ST., WHITEVILLE, NC

JUNE 22, 2018

Report prepared for: **Katie Lippard**
Apex Companies, LLC
1071 Pemberton Hill Rd., Suite 203
Apex, NC 27502

Prepared by: _____

Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____

Douglas A. Canavello, P.G.
NC License #1066

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P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 71 – 306 W. Oliver St.
Whiteville, Columbus County, North Carolina

Table of Contents

Figures

Appendices

LIST OF ACRONYMS

CADD .....Computer Assisted Drafting and Design
DF .....Dual Frequency
EM.....Electromagnetic
GPR.....Ground Penetrating Radar
GPS .....Global Positioning System
NCDOT.....North Carolina Department of Transportation
ROW .....Right-of-Way
UST .....Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Apex Companies, LLC at Parcel 71, located at 306 W. Oliver St., in Whiteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-5020B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from May 29 – 31, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of twenty-one EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Several EM anomalies were associated with suspected reinforced concrete, suspected buried metallic debris, a storm sewer, and vehicle interference and were further investigated with GPR. GPR was performed across Anomaly 15, where vehicles caused EM interference at the time of the survey. No evidence of larger structures, such as USTs, was observed. GPR transects at EM Anomalies 5 and 19 recorded evidence of small, hyperbolic reflectors and increases in signal amplitude that were suggestive of buried metallic debris. No evidence of a larger structure such as a UST was observed in this area. GPR confirmed the presence of a storm sewer around the perimeter of the site (Anomalies 6 and 12), as well as a buried manhole (Anomaly 6). GPR also verified the presence of metal reinforcement within the concrete on the northern portion of the site (Anomaly 3). No evidence of larger structures such as USTs was observed beneath the reinforcement. Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 71. Known USTs supplying fuel to the station were located outside of the survey area.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Apex Companies, LLC at Parcel 71, located at 306 W. Oliver St., in Whiteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-5020B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from May 29 – 31, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an active gas station surrounded by asphalt/concrete and grass surfaces. The known USTs supplying the service station were located outside of the geophysical survey area. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending,

generally parallel survey lines, spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on May 31, 2018, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Storm Sewer	
2	Drop Inlet	
3	Reinforced Concrete	☑
4	Utilities	
5	Suspected Buried Metallic Debris	☑
6	Storm Sewer/Buried Manhole	☑
7	Drop Inlet	
8	Sign	
9	Storm Sewer	
10	Drop Inlets	
11	Reinforced Concrete	
12	Storm Sewer	☑
13	Concrete Curb	
14	Drop Inlet	
15	Vehicles	☑
16	Utility	
17	Pole	
18	Utility	
19	Suspected Buried Metallic Debris	☑
20	Sign/Light	
21	Sign	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including a storm sewer, drop inlets, utilities, signs, a concrete curb, a pole, and a light. Several EM anomalies were associated with suspected reinforced concrete, suspected buried metallic debris, a storm sewer, and vehicle interference and were further investigated with GPR. GPR scans were performed in a grid-like fashion across the suspected reinforced concrete (Anomaly 3) to verify the presence of metal reinforcement and confirm that no other metal structures were present beneath the reinforcement.

Anomalies 5 and 19 were associated with unknown buried metal and were investigated further by GPR. Anomaly 6 was associated with a storm sewer/buried manhole and was investigated further by GPR. Anomaly 15 was associated with vehicle interference and was

further investigated with GPR to verify that no larger substructures were obscured by the interference.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property, as well as select transect images. A total of eight GPR transects were performed at the site. All of the transect images are included in **Appendix A**. GPR Transect 1 was performed across Anomaly 15, where vehicles caused EM interference at the time of the survey. No evidence of larger structures, such as USTs, was observed.

GPR Transects 2 and 4 were performed across Anomalies 19 and 5, respectively. These transects recorded evidence of small hyperbolic reflectors and increases in signal amplitude that were suggestive of buried metallic debris. No evidence of larger structures, such as USTs, was observed in these areas.

GPR Transect 3 was performed across Anomaly 12. This transect recorded evidence of the storm sewer and verified that the anomaly was not a result of a larger structure, such as a UST.

GPR Transects 5 and 6 verified the presence of metal reinforcement within the concrete (Anomaly 3). No evidence of larger structures such as USTs was observed beneath the reinforcement.

GPR Transects 7 and 8 showed evidence of a buried manhole/storm sewer at Anomaly 6. No evidence of a larger structure, such as a UST, was observed in this area.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 71. Known USTs supplying fuel to the station were located outside of the survey area. **Figure 4** provides an overlay of the geophysical survey onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 71 in Whiteville, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- Several EM anomalies were associated with suspected reinforced concrete, suspected buried metallic debris, a storm sewer, and vehicle interference and were further investigated with GPR.
- GPR was performed across Anomaly 15, where vehicles caused EM interference at the time of the survey. No evidence of larger structures, such as USTs, was observed.
- GPR transects at EM Anomalies 5 and 19 recorded evidence of small, hyperbolic reflectors and increases in signal amplitude that were suggestive of buried metallic debris. No evidence of a larger structure such as a UST was observed in this area.
- GPR confirmed the presence of a storm sewer around the perimeter of the site (Anomalies 6 and 12), as well as a buried manhole (Anomaly 6).
- GPR also verified the presence of metal reinforcement within the concrete on the northern portion of the site (Anomaly 3). No evidence of larger structures such as USTs was observed beneath the reinforcement.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 71. Known USTs supplying fuel to the station were located outside of the survey area.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Apex Companies, LLC in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately South)

View of Survey Area
(Facing Approximately West)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
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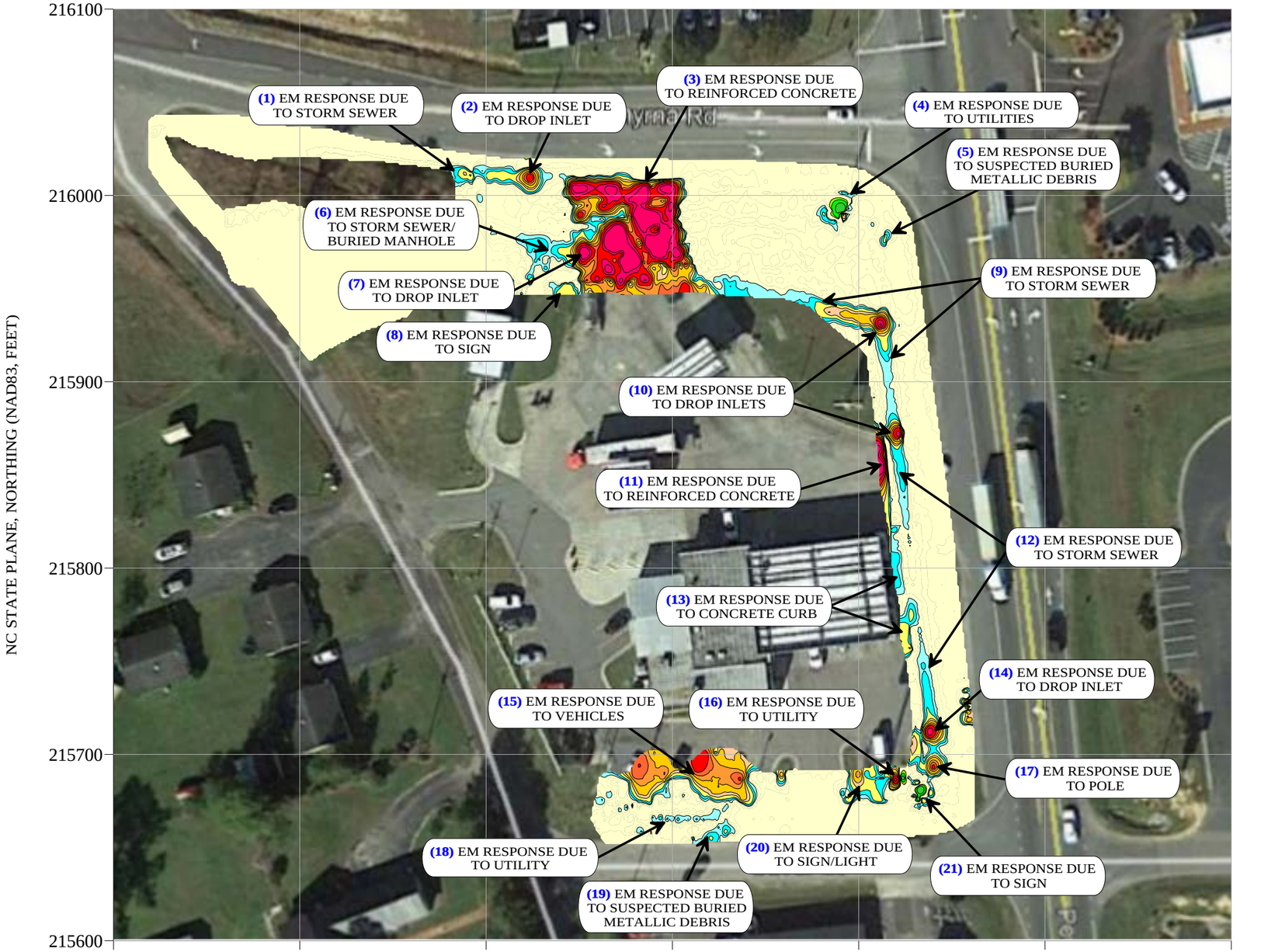
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 71 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT R-5020B
TITLE	PARCEL 71 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	5/29/2018
PYRAMID PROJECT #:	2018-139
CLIENT	Apex Companies, LLC
	FIGURE 1

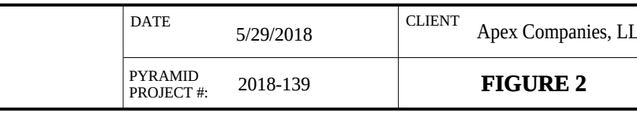
EM61 METAL DETECTION RESULTS



NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on May 29, 2018, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on May 31, 2018.

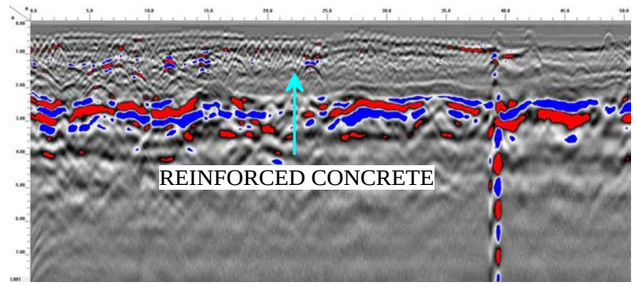
EM61 Metal Detection Response (millivolts)



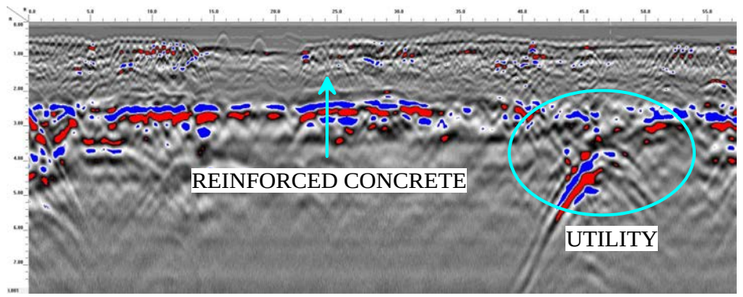
N

PYRAMID GEOPHYSICS 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT PARCEL 71 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT R-5020B	TITLE PARCEL 71 - EM61 METAL DETECTION CONTOUR MAP	DATE 5/29/2018 PYRAMID PROJECT #: 2018-139	CLIENT Apex Companies, LLC **FIGURE 2**

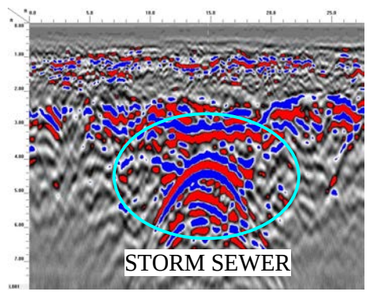
LOCATIONS OF GPR TRANSECTS



GPR TRANSECT 5 (T5)



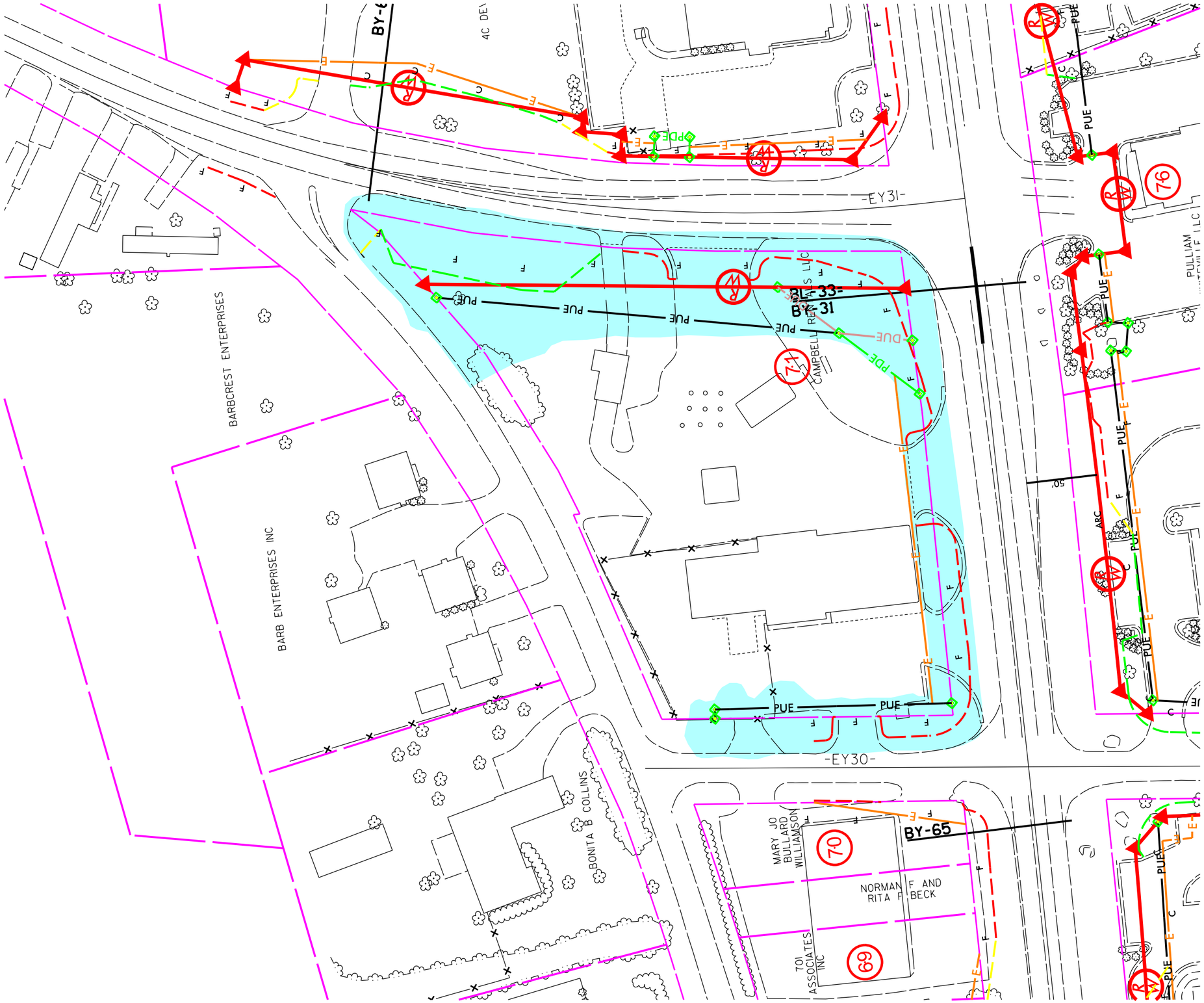
GPR TRANSECT 6 (T6)



GPR TRANSECT 8 (T8)

N

PYRAMID GEOPHYSICS 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT PARCEL 71 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT R-5020B	TITLE PARCEL 71 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	DATE 5/31/2018 PYRAMID PROJECT #: 2018-139	CLIENT Apex Companies, LLC **FIGURE 3**



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- E — TEMPORARY CONSTRUCTION EASEMENT
- PDE — PROPOSED PERMANENT DRAINAGE
- PUE — PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- GEOPHYSICAL SURVEY AREA

0 50 100
FEET

N

TITLE
OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS

PROJECT
PARCEL 71
WHITEVILLE, NORTH CAROLINA
NCDOT PROJECT W-5020B

PYRAMID GEOPHYSICS
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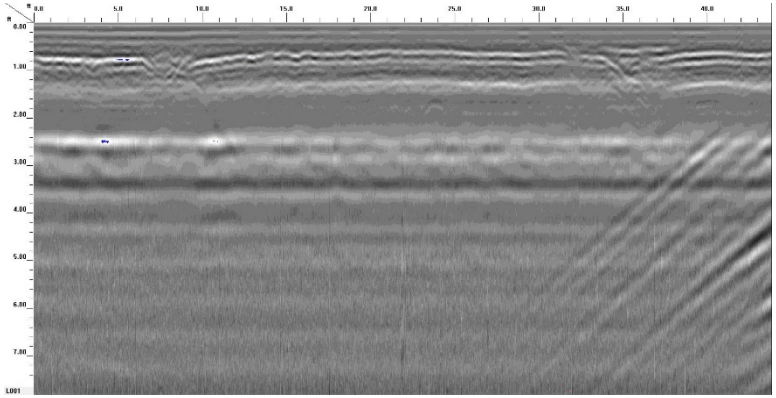
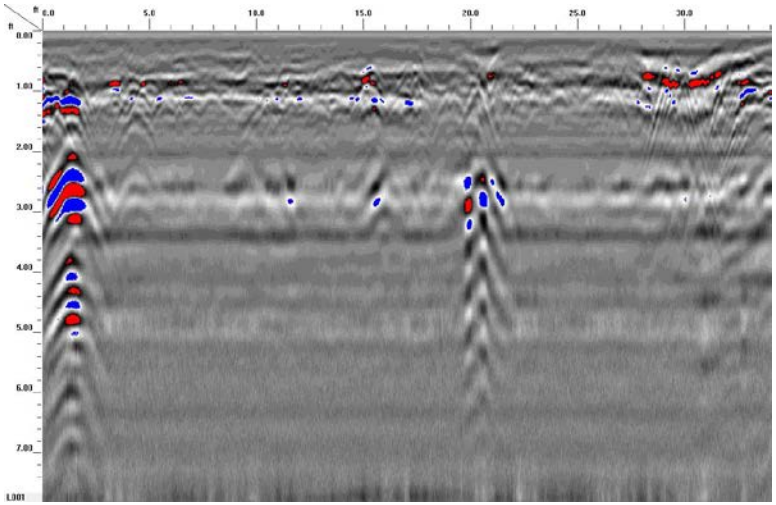
License # C1251 Eng. / #C257 Geology

DATE: 06-26-2018	REVISION NO. 0
PYRAMID PROJECT NO. 2018-139	FIGURE NO. 4

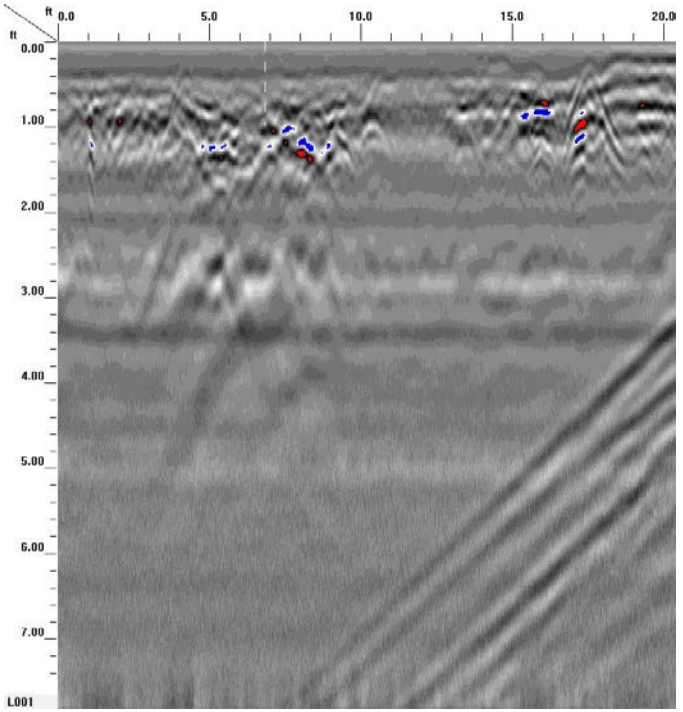
Appendix A – GPR Transect Images



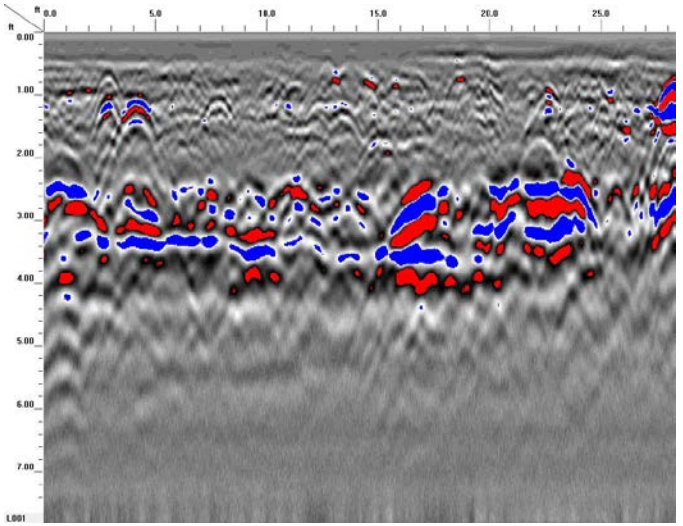
Transect 1



Transect 2



Transect 3



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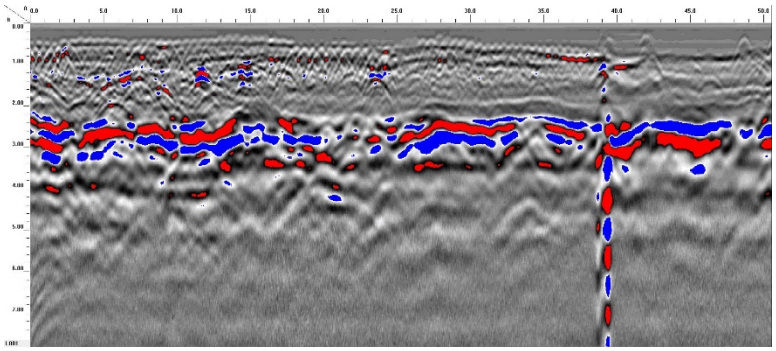
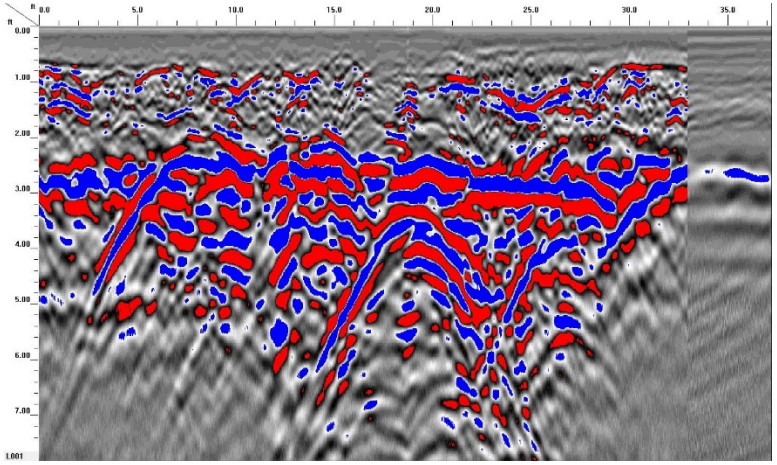
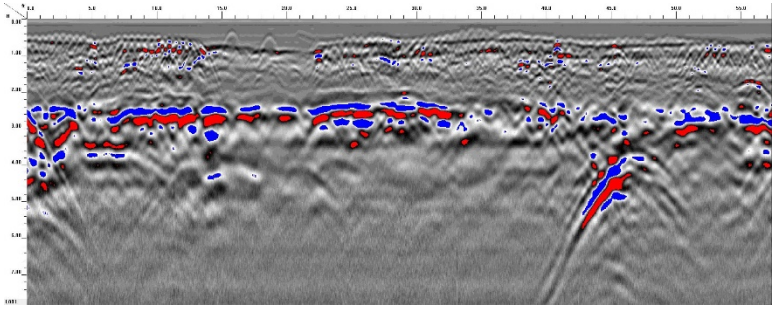


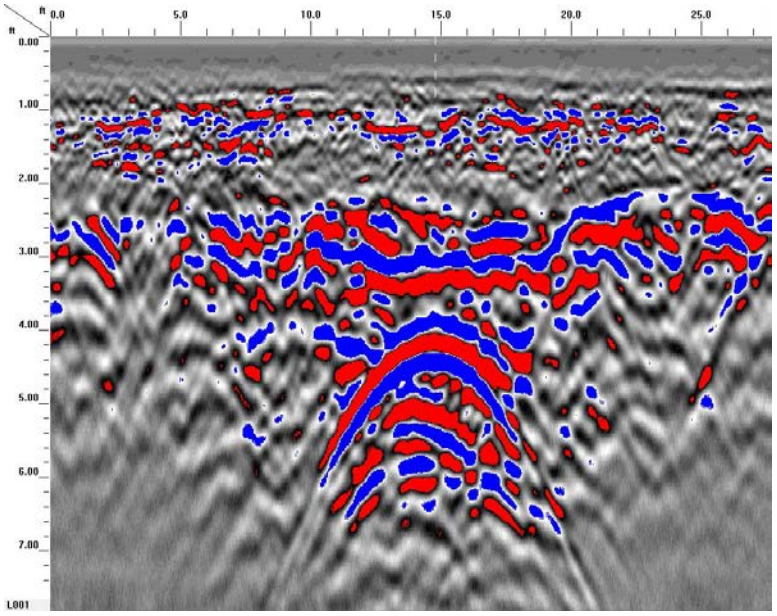
Transect 5



Transect 7



Transect 6



Transect 8

APPENDIX D

HYDROCARBON ANALYSIS RESULTS

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 1105 N J.K. Powell Blvd.

Samples taken Monday, June 4, 2018
Samples extracted Monday, June 4, 2018
Samples analysed Monday, June 4, 2018

Contact: Craig Haden

Operator Troy L. Holzschuh

Project: R-5020B Whiteville

F03640

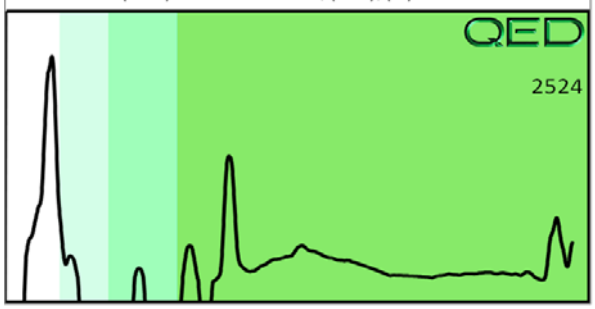
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P71-SB1 (2-3)	27.1	<0.68	<0.68	0.68	0.68	0.66	<0.22	<0.027	0	0	100	Residual HC,(BO),(P)
s	P71-SB-1 (5-6)	20.8	<0.52	<0.52	0.52	0.52	0.5	<0.17	<0.021	0	65.7	34.3	Residual HC
s	P71-SB2 (2-3)	22.6	<0.57	<0.57	0.57	0.57	0.6	<0.18	<0.023	0	54.7	45.3	Residual HC
s	P71-SB2 (5-6)	19.3	<0.48	<0.48	<0.48	<0.48	<0.1	<0.15	<0.019	0	0	0	PHC not detected
s	P71-SB3 (2-2.5)	25.5	<0.64	<0.64	<0.64	<0.64	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	P71-SB3 (5-6)	26.8	<0.67	<0.67	<0.67	<0.67	<0.13	<0.21	<0.027	0	0	0	PHC not detected
s	P71-SB4 (2-2.5)	18.6	<0.46	<0.46	0.46	0.46	0.39	<0.15	<0.019	0	52.2	47.8	Residual HC
s	P71-SB4 (5-6)	19.8	<0.5	<0.5	0.5	0.5	0.47	<0.16	<0.02	0	69.9	30.1	Road Tar 73.6%,(FCM)
s	P71-SB5 (2-2.5)	22.0	<0.55	<0.55	0.55	0.55	0.32	<0.18	<0.022	0	64.2	35.8	Residual HC,(P)
s	P71-SB5 (5-6)	16.8	<0.42	<0.42	<0.42	<0.42	<0.08	<0.13	<0.017	0	0	0	#DIV/0!

Initial Calibrator QC check OK Final FCM QC Check OK 92 %

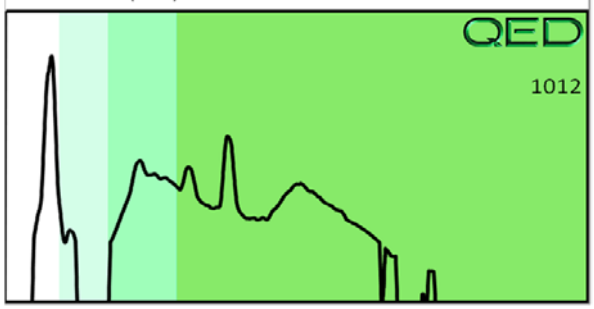
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

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

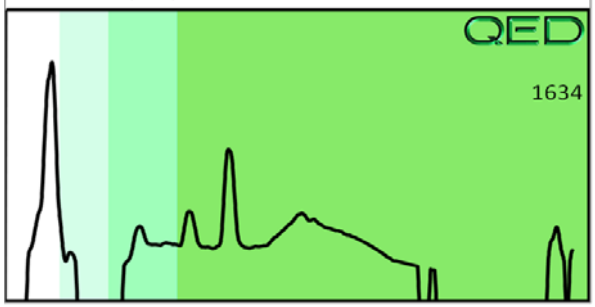
P71-SB1 (2-3) : Residual HC,(BO),(P)



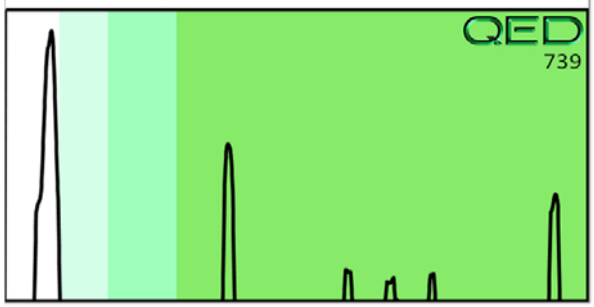
P71-SB-1 (5-6) : Residual HC



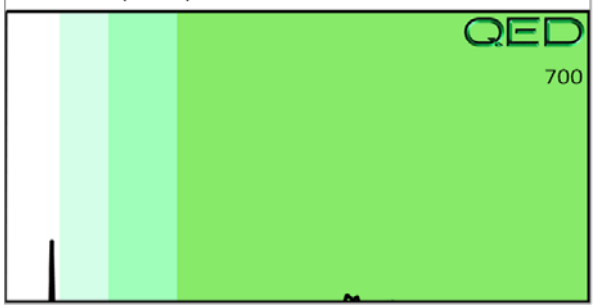
P71-SB2 (2-3) : Residual HC



P71-SB2 (5-6) : PHC not detected

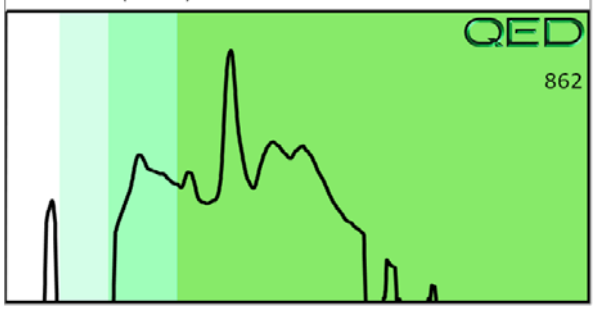


P71-SB3 (2-2.5) : PHC not detected

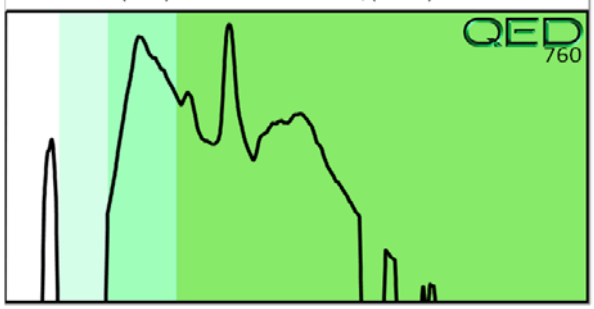


P71-SB3 (5-6) : PHC not detected

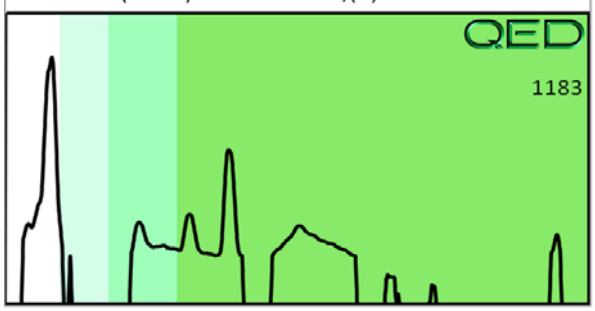
P71-SB4 (2-2.5) : Residual HC



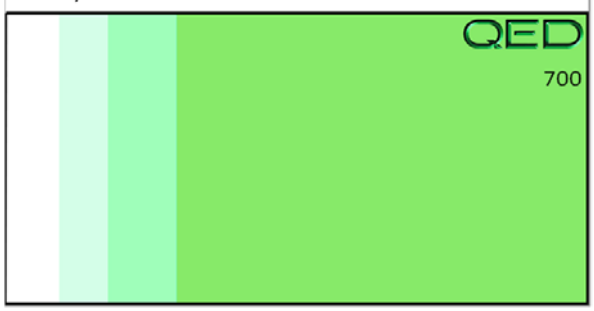
P71-SB4 (5-6) : Road Tar 73.6%,(FCM)



P71-SB5 (2-2.5) : Residual HC,(P)



#DIV/0!



QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 1105 N J.K. Powell Blvd.

Samples taken Monday, June 4, 2018
Samples extracted Monday, June 4, 2018
Samples analysed Monday, June 4, 2018

Contact: Craig Haden

Operator Troy L. Holzschuh

Project: R-5020B Whiteville

F03640

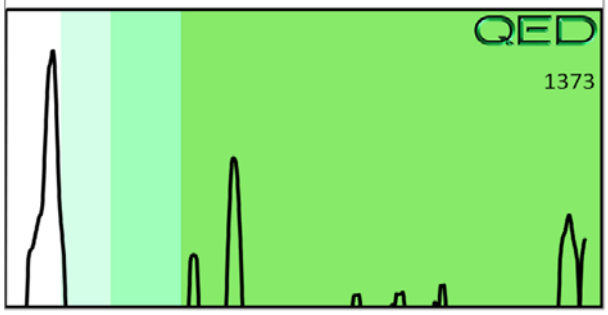
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P71-SB6 (2.5-3)	25.2	<0.63	<0.63	<0.63	<0.63	<0.13	<0.2	<0.025	0	0	0	PHC not detected,(P)
s	P71-SB6 (5-6)	25.2	<0.63	<0.63	<0.63	<0.63	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	P71-SB7 (2.5-3)	25.7	<0.64	<0.64	<0.64	<0.64	<0.13	<0.21	<0.026	0	0	0	PHC not detected
s	P71-SB7 (5-6)	30.6	<0.76	<0.76	<0.76	<0.76	<0.15	<0.24	<0.031	0	0	0	PHC not detected
s	P71-SB8 (2.5-3)	23.2	<0.58	<0.58	<0.58	<0.58	<0.12	<0.19	<0.023	0	0	0	PHC not detected,(P)
s	P71-SB8 (5-6)	21.5	<0.54	<0.54	0.54	0.54	0.28	<0.17	<0.021	0	0	100	PHC not detected,(P)
s	P71-SB9 (2.5-3)	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	0	PHC not detected
s	P71-SB9 (5-6)	30.2	<0.76	<0.76	<0.76	<0.76	<0.15	<0.24	<0.03	0	0	0	Residual HC,(P)

Initial Calibrator QC check OK Final FCM QC Check OK 111.5 %

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

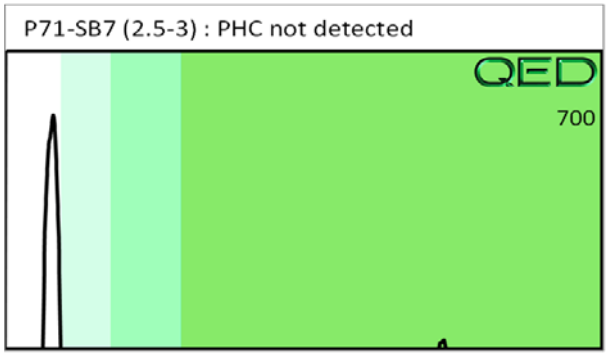
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

P71-SB6 (2.5-3) : PHC not detected,(P)

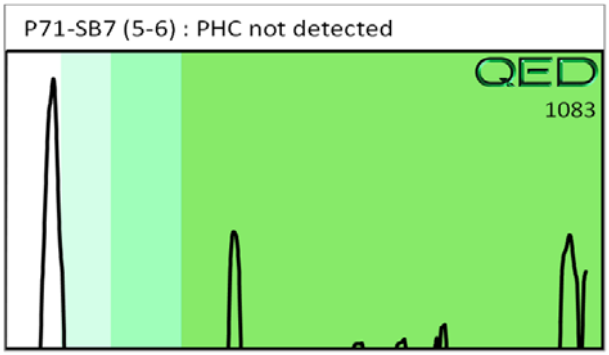


P71-SB6 (5-6) : PHC not detected

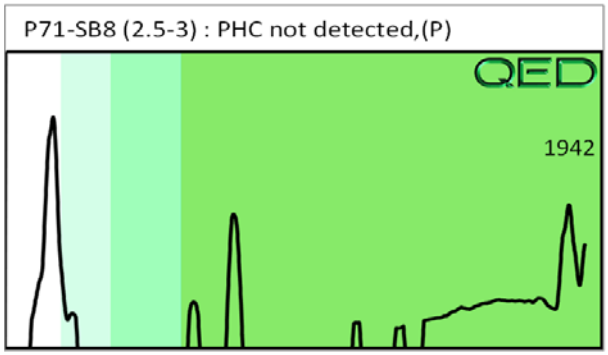
P71-SB7 (2.5-3) : PHC not detected



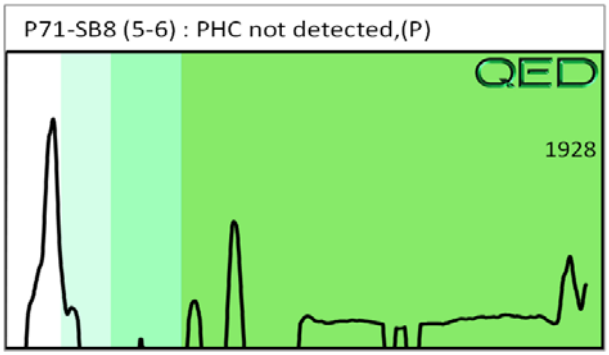
P71-SB7 (5-6) : PHC not detected



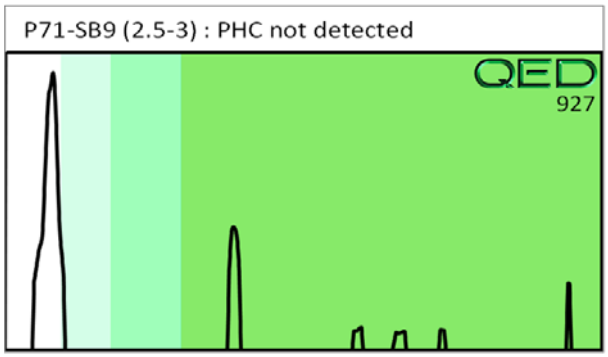
P71-SB8 (2.5-3) : PHC not detected,(P)



P71-SB8 (5-6) : PHC not detected,(P)



P71-SB9 (2.5-3) : PHC not detected



P71-SB9 (5-6) : Residual HC,(P)