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

Eagle's Nest, LLC. Property
Parcel # 18
1003 Beaman Street
Clinton, Sampson County, North Carolina
Replace Bridge 378 over Williams Old Mill Branch on SR 1838
TIP Number: B-3507
WBS Element: 46021.1.1

Apex Companies, LLC
10610 Metromont Parkway, Suite 206
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August 17, 2017

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 18 performed by Apex Companies, LLC (Apex) on behalf of the NCDOT. The subject site of this PSA report will be affected by the bridge 378 replacement over Williams Old Mill Branch on SR 1838. The Site is comprised of one parcel and is located at 1003 Beaman Street and is identified as Parcel 18, Eagle's Nest, LLC. Property, within the NCDOT B-5307 design project. The property is located on the northwestern quadrant of Beaman Street and Williams Old Mill Branch in Clinton, Sampson 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 June 16, 2017.

NCDOT contracted Apex to perform the PSA within the proposed right-of-way (ROW) and/or easement of the Parcel 18 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 a ground penetrating radar (GPR) evaluation to identify underground storage tanks (USTs) in the investigation area, and describes the subsurface field investigation at the site. 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 18. **Appendix A** includes a Photograph log for the site.

1.1 Site History

Parcel 18 has been identified with the address of 1003 Beaman Street. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, no registered tanks were identified for the 1003 Beaman Street site. No visual evidence of USTs were noted during field activities. Currently the site operates as Billy Hinson & Sons Used Tires in a one-story brick building. 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 area of Clinton in Wayne County. The property currently operates as Billy Hinson & Sons Used Tires and is developed with one brick building a detached garage and an asphalt parking area to the north and east. The site is bordered by a surface water body (Williams Old Mill Branch) to the south and Beamon Street to the East.

Woods are located to the south of Williams Old Mill Branch. Woods are also located to the west of the site and to the east beyond Beamon Street. Beaman Street Fire Station is located to the southeast beyond Beaman Street. A vacant building is located to the north of the site. The parcel does not appear on the NCDEQ UST database registry and is not associated with known USTs. The geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) did not identify anomalies characteristic of a UST in the investigation area.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 18 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 Professional Paper 1404-I entitled "Hydrogeologic Framework of the North Carolina Coastal Plain" (Winner and Coble, 1996), the geology consists of an eastward-dipping and eastward-thickening series of sedimentary rocks 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 the Black Creek Formation. The Black Creek Formation is Late Cretaceous in age and was deposited in a lagoonal to marine environment. It generally consists of thinly laminated gray to black clay with interbedded gray to tan sands. The most notable characteristic of the formation is the high concentration of wood and organic material. Shells and glauconite are also common.

2.2 Site Geology

Site geology was observed through the drilling and sampling of five direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of ten feet below ground surface (bgs) since that depth was the maximum excavation depth for proposed drainage features. Soil consisting predominantly of red and tan to yellow clayey silts was observed across the parcel in the zero to five foot range. Soils within the five to eight range were predominately orange sandy silt, and white sand from eight to ten feet bgs. The soils in the upper five to six feet were unconsolidated and as a result the borings often collapsed. Groundwater flows toward the Williams Old Mill Branch which borders the south end of the parcel. Groundwater was encountered at depths ranging from five to six feet across the parcel. 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 June 16, 2017 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 the direct push sampling for soil borings. 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 21, 2017. During the site reconnaissance, the area was visually examined for the presence of 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 called the property owner prior to the site visit and spoke with them on-site the morning prior to field activities.

3.3 Geophysics Survey Results

The geophysical survey of the site was conducted on June 20, 2017. Pyramid performed an electromagnetic (EM) induction metal survey followed by a GPR survey. A copy of the Geophysical Report is presented in **Appendix C**. The results of the geophysical survey did not record any evidence of unknown metallic USTs at the property. Follow-up GPR scans associated with private utility locating did not record any evidence of subsurface structures such as USTs.

3.4 Well Survey

No water supply or groundwater monitoring wells were observed on Parcel 18.

3.5 Soil Sampling

Apex conducted drilling activities at the site on June 21, 2017. Apex drilling subcontractor, CSI, advanced five direct push soil borings within the proposed investigation area. These five boring

locations (P18-SB1 through P18-SB5) were placed in a pattern to maximize the likelihood of intercepting potential soil contamination. **Figure 2** presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if a petroleum release has occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening 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) and polycyclic aromatic hydrocarbons (PAH) 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

Apex personnel mobilized to the Site on June 21, 2017 to obtain a groundwater grab sample. The groundwater grab sample location was chosen based on data generated from the UVF analyzer and on site conditions such as the likely groundwater gradient and the location of the bay door of the on-site facility. The soils encountered were very sandy and unconsolidated in the upper five to six feet, and as a result, the borings would not stand open. Apex instructed CSI personnel to temporarily install a one inch diameter 10-slot screen into one of the soil borings for the purposes of collecting a groundwater grab sample. Apex personnel collected a groundwater grab sample from boring P18-SB2 for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Troy Holzschuh, a certified REDLAB UVF technician with Apex.

4.0 SAMPLING RESULTS

4.1 Soil Sampling Results

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the June 2017 soil sampling there is no evidence of significant petroleum hydrocarbon contamination onsite, within the area of investigation.

Elevated FID/PID readings, above ten parts per million (ppm), were not observed in the borings conducted at the site above the smear zone. The FID readings were non-detectable and the

PID readings ranged from non-detectable to 0.9 ppm. The FID/PID field screening results are provided on the boring logs in **Appendix B**.

Soil concentrations of TPH gasoline range organics (GRO) and diesel range organics (DRO) measured using the onsite UVF unit are presented in **Table 1**, with instrument generated tables and chromatographs in **Appendix D**. **Figure 3** presents the TPH-GRO and TPH-DRO results at each boring.

Based on the UVF analyses, TPH-GRO and TPH-DRO was identified in soils on Parcel 18. TPH-GRO concentrations ranged from below detectable levels to 3.9 milligram per kilogram (mg/kg) (P18-SB2). TPH-DRO concentrations ranged from below detectable levels to 2.5 mg/kg (P9-SB4). TPH-GRO concentrations did not exceed the regulatory action level of 50 mg/kg and the TPH-DRO concentrations did not exceed the regulatory action level of 100 mg/kg.

4.2 Groundwater Sampling Results

Apex personnel collected groundwater grab samples from soil boring P18-SB2 for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. Based on the real time UVF analysis of the groundwater grab sample, significant groundwater impact is not present on Parcel 18. Water sample P18-SB2-WATER indicated TPH-GRO concentrations of <0.025 milligrams per liter (mg/L) and TPH-DRO concentrations of <0.03 mg/L. The groundwater UVF results are tabulated in **Table 1.** The instrument generated tables and chromatographs are included in **Appendix D.** Groundwater analytical data are summarized on **Figure 4**.

5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, no petroleum-impacted soil contamination was identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO or above the NCDEQ Action level of 100 mg/kg for TPH-DRO. The onsite UVF analysis of groundwater did not indicate significant groundwater contamination to be present.

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 21, 2017.

- Results of the geophysical survey did not produce evidence of anomalies characteristic of USTs.

- Five 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.

- One groundwater grab sample was collected and analyzed for TPH-DRO and TPH-GRO with the REDLAB UVF Hydrocarbon Analyzer. This sample did not contain any detectable concentrations of TPH-GRO or TPH-DRO.

6.0 RECOMMENDATIONS

Based on these PSA results, there is no evidence of soil or groundwater impact which will require additional assessment or removal. No USTs were identified in the investigation area during the assessment. Apex does not recommend any further assessment or remediation for this parcel.

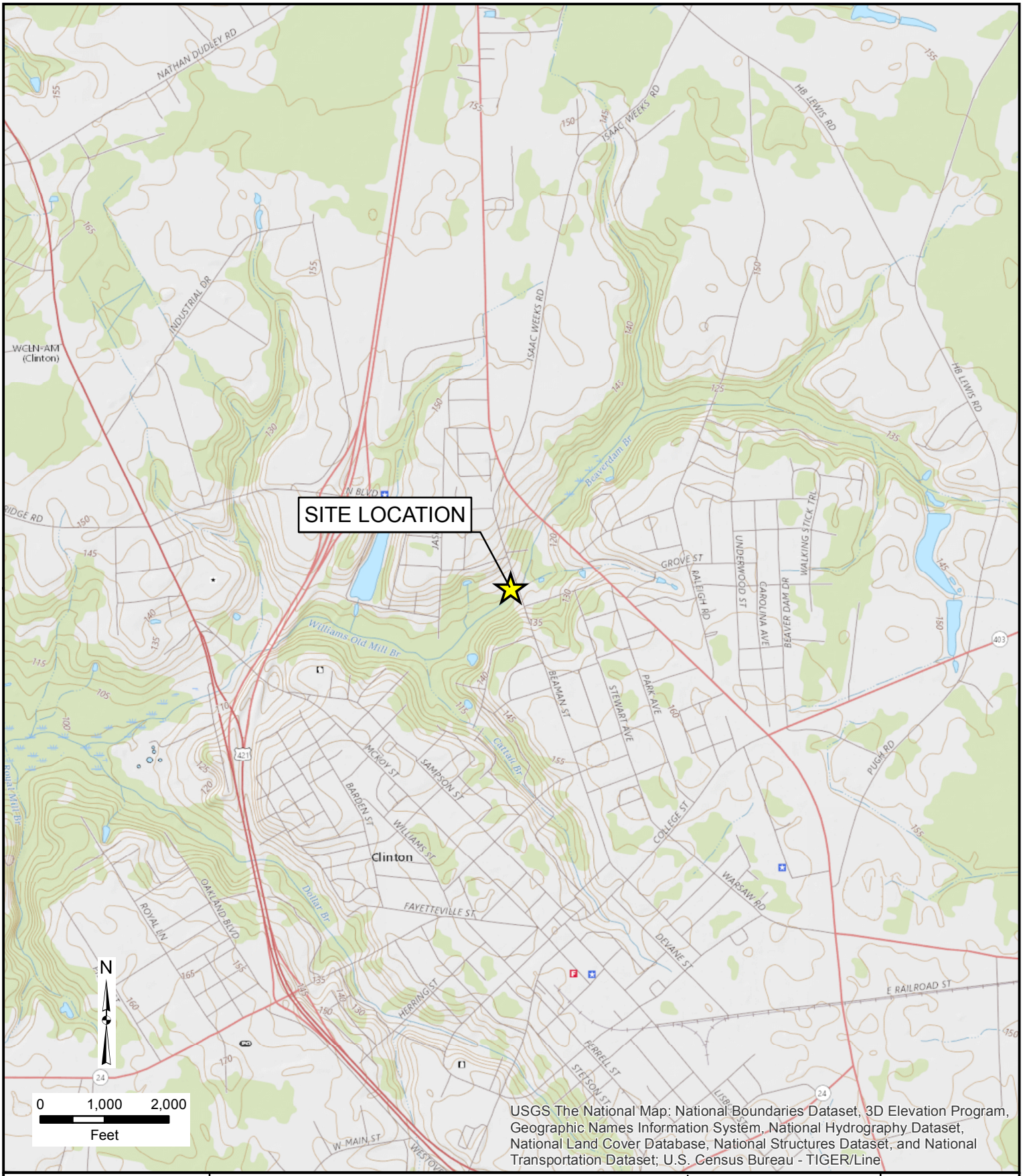
TABLES

Table 1
UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data from June 2017
B-5307, Parcel 18, Eagle's Nest LLC., Property
Clinton, North Carolina

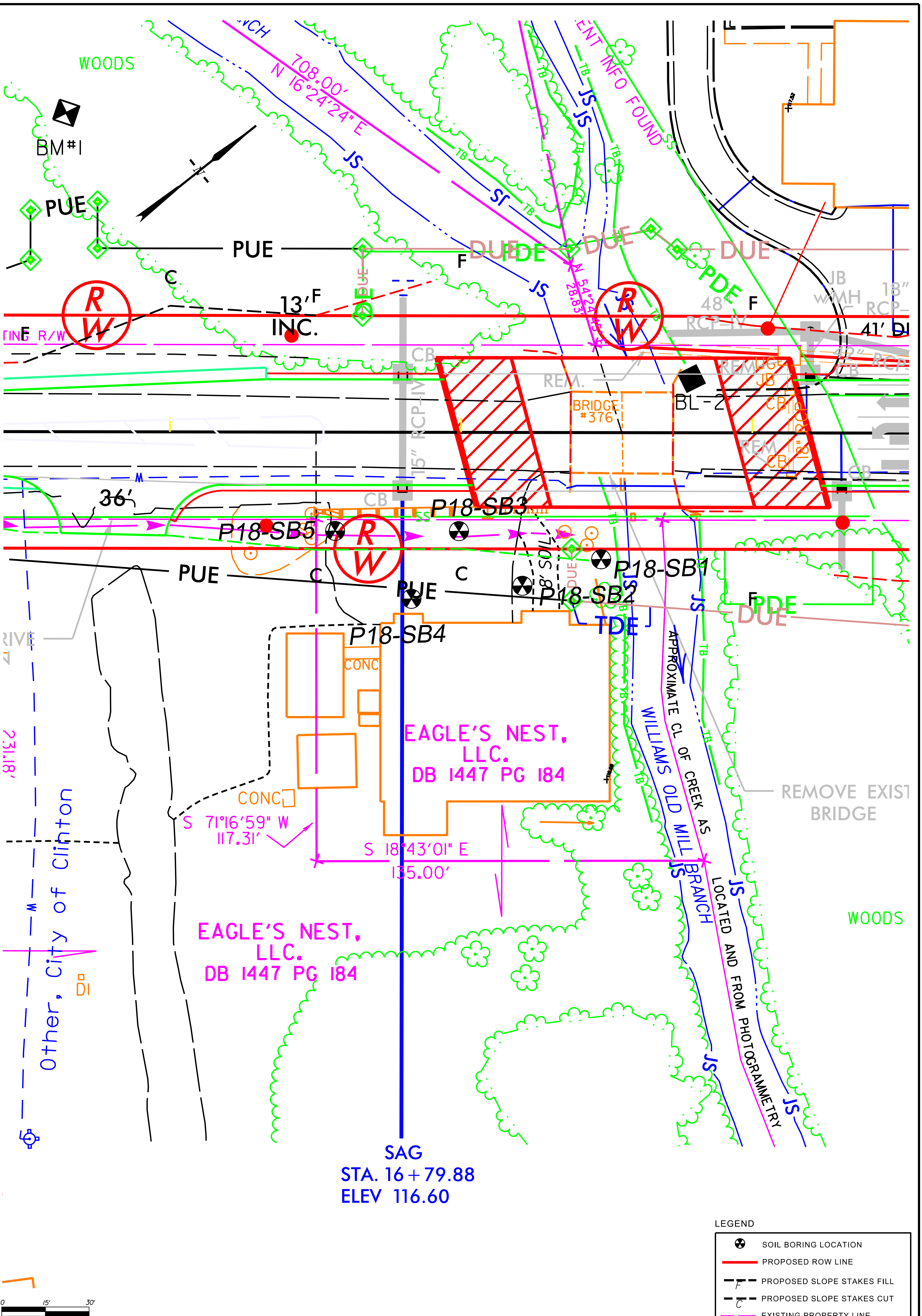
Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
SOIL				
NCDEQ Action Level in mg/kg			**50**	**100**
P18-SB1	6/21/2017	2	<0.61	0.61
P18-SB2	6/21/2017	2	3.9	2
P18-SB3	6/21/2017	2	<0.7	<0.7
P18-SB4	6/21/2017	2	<0.79	2.5
P18-SB5	6/21/2017	2	<0.66	0.88
GROUNDWATER (mg/L)				
P9-SB1-WATER	6/21/2017	10	<0.025	<0.03

NOTES:
(mg/kg) = Milligrams per kilogram
(mg/L) = Milligrams per liter
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
ft bgs = feet below ground surface
NM = Not Measured
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: 7/17/17	PARCEL #18		
SCALE: AS SHOWN	1003 BEAMON STREET		
CAD NO.: 510497-004	CLINTON, NORTH CAROLINA		
PRJ NO.: 510497-004			



LEGEND

Symbol	Description
☢	SOIL BORING LOCATION
red line	PROPOSED ROW LINE
F	PROPOSED SLOPE STAKES FILL
C	PROPOSED SLOPE STAKES CUT
magenta dashed	EXISTING PROPERTY LINE

APEX

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

FIGURE 2
PARCEL 18
SITE MAP WITH SOIL BORING LOCATIONS

Date: 7/31/17	Project Title: B-5307
Proj. #: 510497.004	
CAD File: pc_18_fig 2.dgn	
Approx. Scale: 1" = 30'	Drawn by: MJO / Client: NC DOT

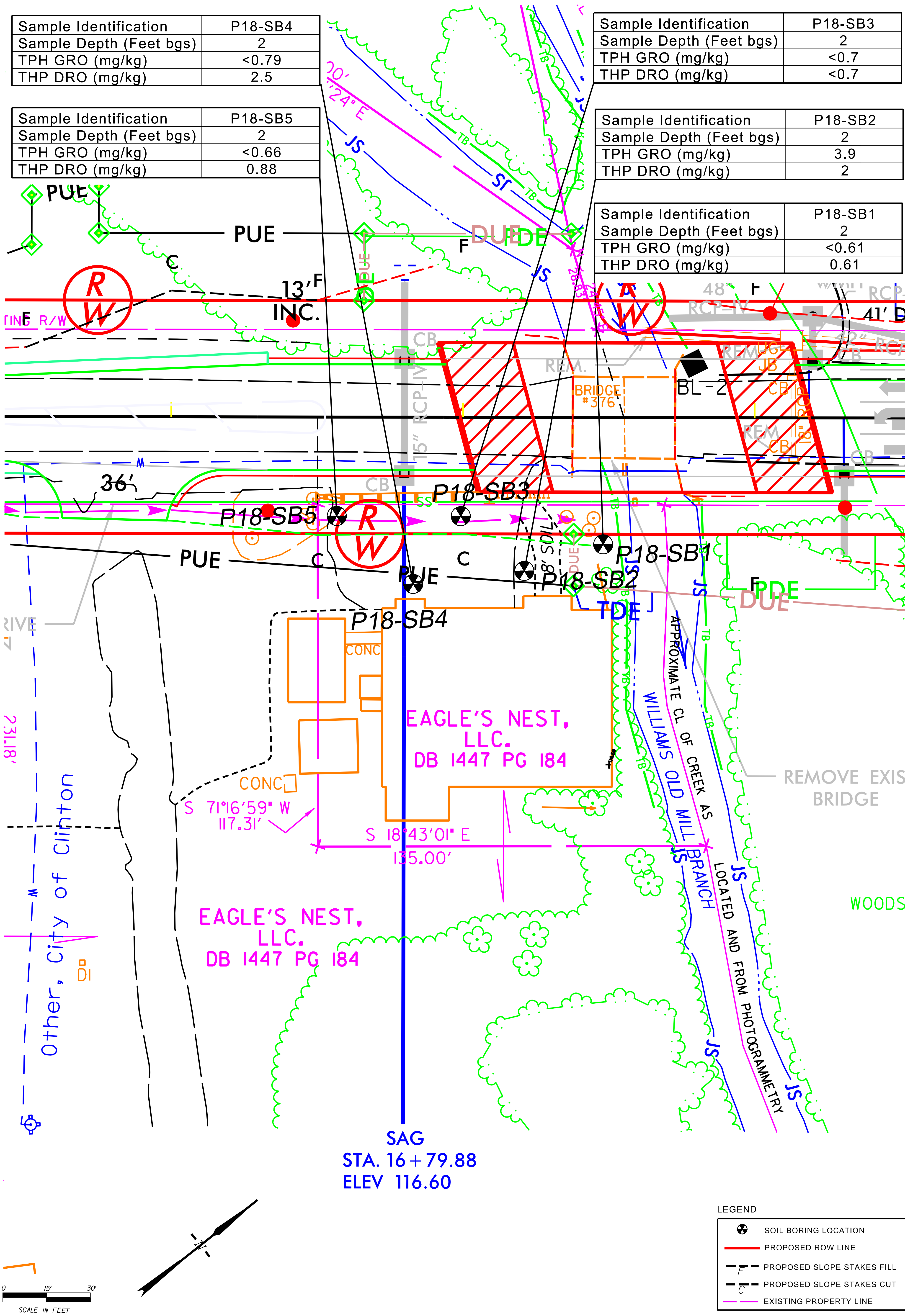
Sample Identification	P18-SB4
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.79
THP DRO (mg/kg)	2.5

Sample Identification	P18-SB5
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.66
THP DRO (mg/kg)	0.88

Sample Identification	P18-SB3
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.7
THP DRO (mg/kg)	<0.7

Sample Identification	P18-SB2
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	3.9
THP DRO (mg/kg)	2

Sample Identification	P18-SB1
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.61
THP DRO (mg/kg)	0.61



LEGEND

Symbol	Description
⊗	SOIL BORING LOCATION
—	PROPOSED ROW LINE
– F –	PROPOSED SLOPE STAKES FILL
– C –	PROPOSED SLOPE STAKES CUT
— —	EXISTING PROPERTY LINE

APEX

APEX COMPANIES, LLC
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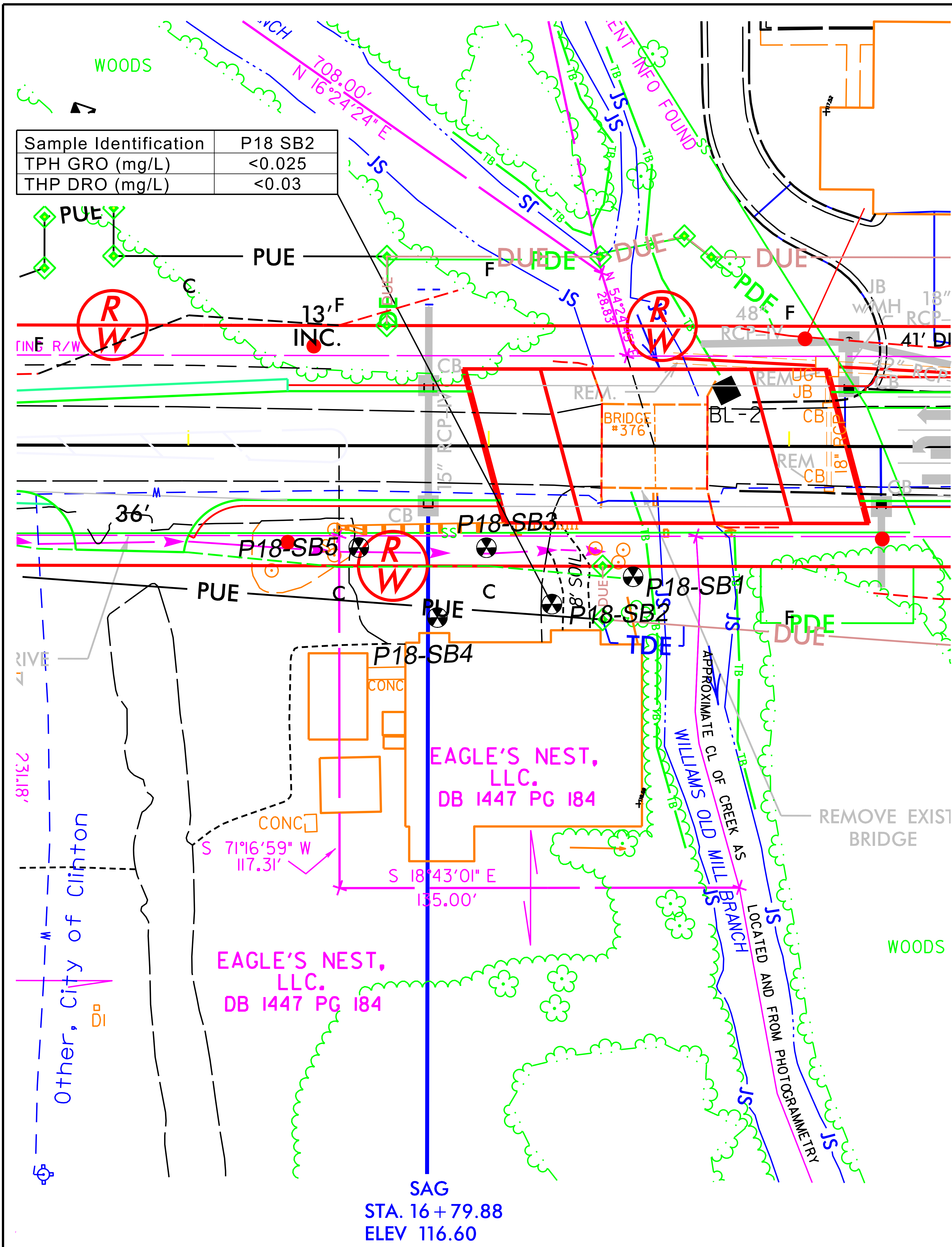
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 3
PARCEL 18
ONSITE UVF HYDROCARBON
ANALYSIS RESULTS - SOIL
6/21/17

Date:	7/31/17
Proj. #	510497.004
CAD File:	pc__18__fig 3.dgn
Project Title:	B-5307
Approx. Scale:	1" = 30'
Drawn by:	MJO
Client:	NC DOT

Sample Identification	P18 SB2
TPH GRO (mg/L)	<0.025
THP DRO (mg/L)	<0.03



LEGEND

- SOIL BORING LOCATION
- PROPOSED ROW LINE
- 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 4
PARCEL 18
ONSITE UVF HYDROCARBON
ANALYSIS RESULTS -
GROUNDWATER 6/21/17

Date: 7/31/17	Project Title: B-5307	
Proj. # 510497.004		
CAD File: P18__FIG 4.DGN		
Approx. Scale: 1" = 30'	Drawn by: MJO	Client: NC DOT

APPENDIX A
PHOTOGRAPH LOG

Photo 1

Overview of site prior to preliminary site assessment activities.

Photo 2

View ROW markers and utility mark-outs in the southern end of the investigation area.

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Suite 206
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APEX

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PHOTOGRAPHIC LOG

PSA Field Activities
Parcel 18
1003 Beamon Street, Clinton, NC

Photo 3

View of the site taken from the northern end of the parcel.

Photo 4

View of CSI preparing to drill.

APPENDIX B

BORING LOGS

Apex Companies, LLC

Boring Log

Boring/Well No.: P18-SB1	**Site Name: Parcel 18 - Eagle's Nest LLC. Property**
Date: 06/21/17	**Location: Clinton, Sampson County, NC**
Job No.: 510497-004	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**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
				Grass
1				Red, Clayey Silt
2	0	0	Sample at 2'	
3				
				Tan, Clayey Silt. Water at 5 feet
4	0	0		
5				
6	0	0		
				Boring terminated at 6 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.: P18-SB2	**Site Name: Parcel 18 - Eagle's Nest LLC. Property**
Date: 06/21/17	**Location: Clinton, Sampson County, NC**
Job No.: 510497-004	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**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
				Asphalt and Gravel
1				Red, Clayey Silt
2	0	0.6	Sample at 2'	
3				
				Tan, Clayey Silt. Water at 5 feet
4	0	0.9		
5				
6	0	0		
				Orange, Sandy Silt, Wet.
7				
8	0	0		
				White, Sand, Medium Grain.
9				
10	0	0		
				Boring terminated at 10 feet
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.: P18-SB3	**Site Name: Parcel 18 - Eagle's Nest LLC. Property**
Date: 06/21/17	**Location: Clinton, Sampson County, NC**
Job No.: 510497-004	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**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
				Asphalt and Gravel
1				Red, Clayey Silt
2	0	0	Sample at 2'	
3				
				Yellow, Clayey Silt. Water at 5 feet
4	0	0		
5				
6	0	0		
				Boring terminated at 6 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.: P18-SB4	**Site Name: Parcel 18 - Eagle's Nest LLC. Property**
Date: 06/21/17	**Location: Clinton, Sampson County, NC**
Job No.: 510497-004	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**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
				Asphalt and Gravel
1				Red, Clayey Silt
2	0	0	Sample at 2'	
3				
				Yellow, Clayey Silt. Water at 6 feet
4	0	0		
5				
6	0	0		
				Boring terminated at 6 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.: P18-SB5	**Site Name: Parcel 18 - Eagle's Nest LLC. Property**
Date: 06/21/17	**Location: Clinton, Sampson County, NC**
Job No.: 510497-004	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**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
				Asphalt and Gravel
1				Brown, Sandy Silt
2	0	0	Sample at 2'	
3				
				Tan, Sand, Medium Grained, Water at 6 feet
4	0	0		
5				
6	0	0		
				Boring terminated at 6 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:

APPENDIX C

GEOPHYSICAL REPORT

July 14, 2017

Mr. Troy Holzschuh
Apex Companies, LLC
10610 Metromont Parkway, Suite 206
Charlotte, NC 28269
Sent via email to THolzschuh@apexcos.com

SUBJECT: **Results of Geophysical Survey for Metallic Underground Storage Tanks**
Parcel 018 - NCDOT Project B-5307
1003 Beaman Street, Clinton, Sampson County, North Carolina

Mr. Holzschuh:

Pyramid Environmental & Engineering, P.C. (Pyramid) conducted a geophysical investigation for Apex Companies, LLC (Apex) at Parcel 018, located at 1003 Beaman Street, Clinton, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project B-5307). Apex directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement into the proposed Right-Of-Way (ROW) and/or proposed easements, whichever distance was greater. Conducted on June 20, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Based on the technical cost proposal provided by Pyramid and discussions with Apex and the NCDOT, an abbreviated letter report will be submitted for the parcel if no evidence of unknown metallic USTs was recorded by the geophysical survey. As discussed below, this is the case for Parcel 018.

Figure 1 provides an overlay of the geophysical survey area onto the NCDOT MicroStation engineering plans (proposed ROW and easements) for reference.

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 14.0 software programs.

GPR data were acquired across select EM anomalies on June 20, 2017, 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.

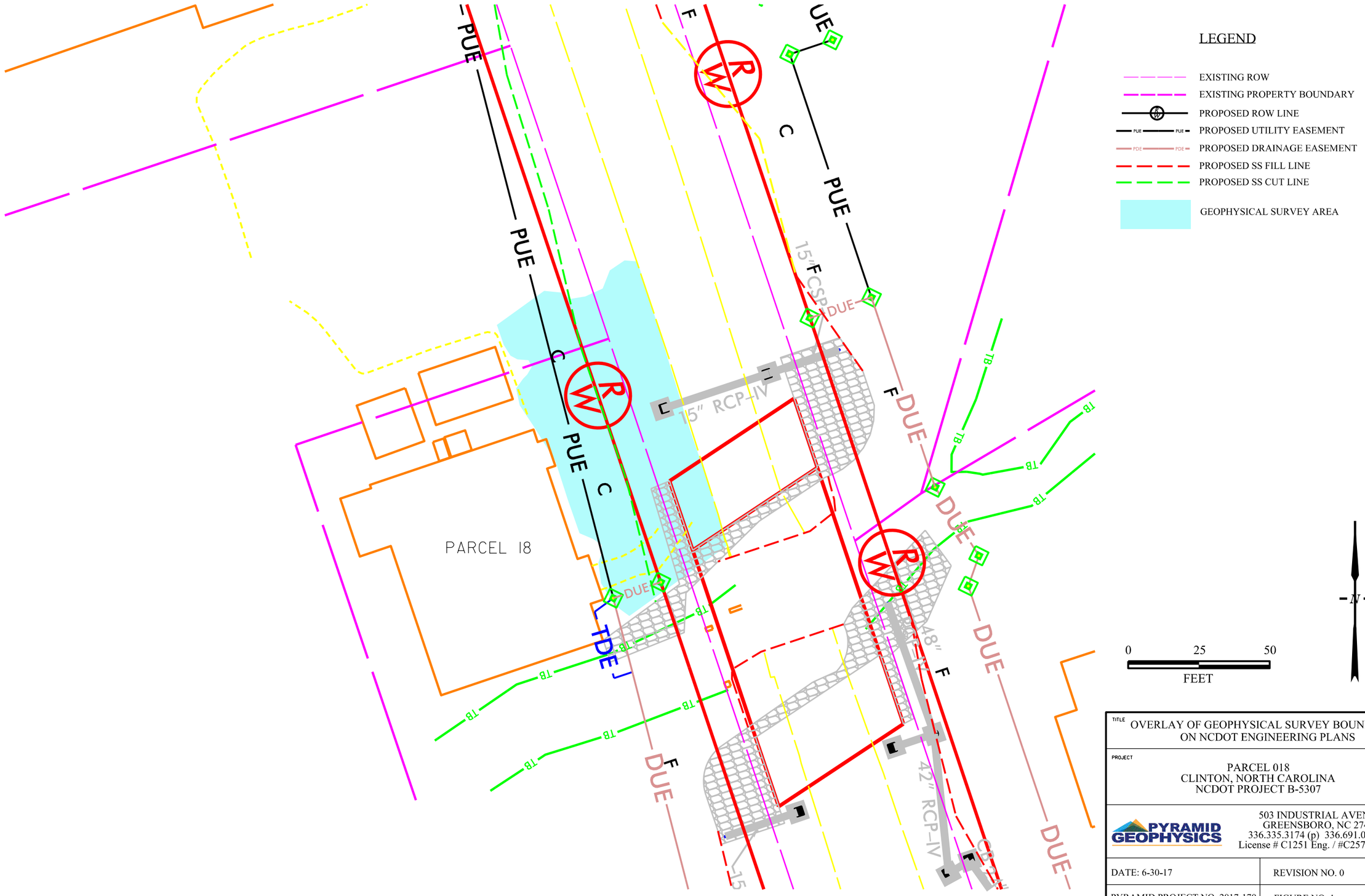
The results of the geophysical survey did not record any evidence of unknown metallic USTs at the property. All of the EM features observed were the result of visible cultural features at the ground surface. Follow-up GPR scans associated with private utility locating did not record any evidence of subsurface structures such as USTs.

This abbreviated letter report is being submitted based on the guidelines in Pyramid's technical cost proposal and discussions with Apex and the NCDOT. All electronic data files from the EM and GPR surveys will be stored on Pyramid's internal servers for retrieval in the future, if necessary.

Geophysical surveys have been performed and this report was prepared for Apex 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.

Sincerely,

Eric Cross, P.G.
Senior Geophysicist



TITLE: OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS

PROJECT:
PARCEL 018
CLINTON, NORTH CAROLINA
NCDOT PROJECT B-5307

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology

DATE: 6-30-17	REVISION NO. 0
PYRAMID PROJECT NO. 2017-170	FIGURE NO. 1

APPENDIX D

UVF HYDROCARBON ANALYSIS RESULTS

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 1003 Beaman Street
Clinton, NC 28328

Contact: Dennis Li

Project: 510497-004

Samples taken Wednesday, June 21, 2017
Samples extracted Wednesday, June 21, 2017
Samples analysed Wednesday, June 21, 2017

Operator Troy L. Holzschuh

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	P18 SB 1 (2)	24.3	<0.61	<0.61	0.61	0.61	0.51	0.06	<0.002	0	74.9	25.1	Residual.PHC (FCM)
s	P18 SB 2 (2)	27.1	<0.68	3.9	2	5.9	1.9	0.1	<0.003	68.9	24.1	6.9	Deg.PHC (FCM) 64.7%
s	P18 SB 3 (2)	28.0	<0.7	<0.7	<0.7	<0.7	<0.14	<0.02	<0.003	0	92.6	7.4	PHC not detected
s	P18 SB 4 (2)	31.7	<0.79	<0.79	2.5	2.5	2.3	0.12	<0.003	1.1	79.4	19.5	Deg Fuel (FCM) 70.3%
s	P18 SB 5 (2)	26.5	<0.66	<0.66	0.88	0.88	0.84	0.1	<0.003	0	81	19	Residual.PHC (FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 104.4 %

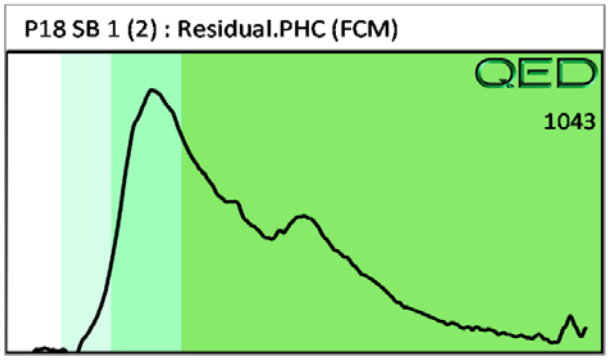
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

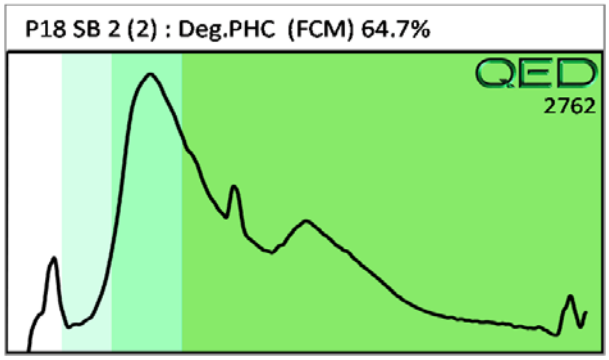
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

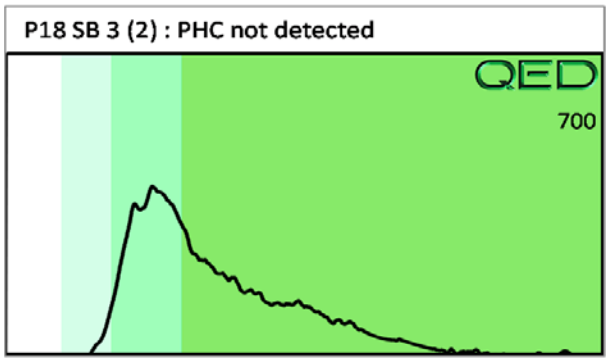
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

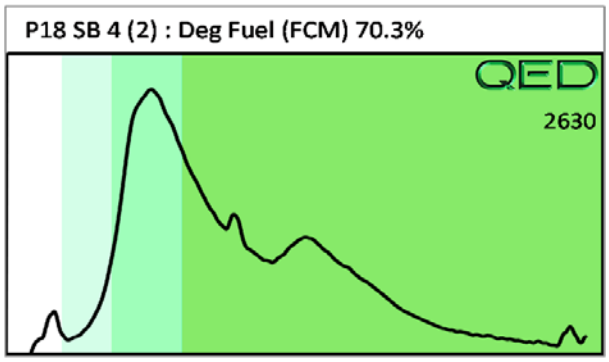
QED Hydrocarbon Fingerprints

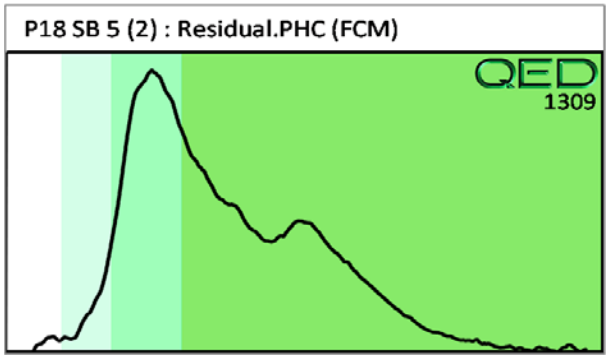
Project:











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F03640

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										% light	% mid	% heavy	
W	P18 SB-2 Water	1.0	<0.025	<0.025	<0.03	<0.025	<0.009	<0.001	<0	0	0	100	(P) (BO)

Initial Calibrator QC check OK Final FCM QC Check OK 93.7 %

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

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Project: Wednesday, June 21, 2017