



**North Carolina Department of Transportation
Preliminary Site Assessment
State Project: R-3622B
WBS Element: 38068.1.1**

**Fox Ridge of Cherokee County, LLC Property
Parcel #19
June 27, 2014**

**AMEC Environment and Infrastructure, Inc.
AMEC Project: 566773622**

A handwritten signature in black ink that reads "Rodney M. Clark". The signature is written in a cursive style.

Rodney M. Clark, LG
Staff Geologist

A handwritten signature in blue ink that reads "Helen Corley". The signature is written in a cursive style.

Helen Corley, LG
Program Manager



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1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated March 13, 2014, and your additional verbal request, AMEC Environment and Infrastructure, Inc. (AMEC) has performed a Preliminary Site Assessment (PSA) for the northeast portion of Parcel 19, Fox Ridge of Cherokee County, LLC Property, in the vicinity of a reported former gas station (site). The site is on the west side of NC 294 across from a T-intersection of NC 294 and Friendship Church Road to the east. **Figure 1** presents a vicinity map. The site does not have a physical address, but consists of approximately 250 feet of NCDOT Proposed Right of Way (ROW) and Proposed Utility Easement (PUE) southeast of Parcel 20 on the west side of NC 294 in Cherokee County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated March 24, 2014 and revised April 10, 2014.

NCDOT contracted AMEC to perform the PSA on the northeast portion of Parcel 19 due to the reported presence of a former gas station at the site. The PSA was performed to determine if soils have been impacted by a potential petroleum release as a result of past uses of the property within the proposed design project area, and if any buried underground storage tanks (USTs) still are present in the area of investigation.

The following report summarizes a ground penetrating radar survey, presents location and capacities of any USTs, and describes our field investigation at the site. The report includes the evaluation of field screening and quantitative field analyses with regards to the presence or absence of soil contamination within the NCDOT ROW in the northeast portion of Parcel 19. An estimate of the extent of soil contamination is also provided. **Appendix A** includes a Photograph log for the site.

1.1 Site Location and History

The site consists of the northeast portion of Parcel 19, Fox Ridge of Cherokee County, LLC Property, in the vicinity of a reported former gas station in Cherokee County, North Carolina. The site is on the west side of NC 294 across from a T-intersection of NC 294 with Friendship Church Road to the east. The site does not have a physical address, but consists of approximately 250 feet of NCDOT ROW and PUE southeast of Parcel 20 on the west side of NC 294. The site contains a gravel pull-off and has been slightly graded in the past. Mr. Richard Caldwell, ROW agent with NCDOT, indicated to AMEC personnel the approximate location of a former gas station at the parcel on April 4, 2014. He indicated the

store was a wooden building; however there was little evidence of a former building with the exception of a few concrete blocks in the general vicinity and that the parcel was roughly graded. Mr. Caldwell indicated the store closed over 35 years ago. It is unknown if the tanks have been removed. This site did not appear in the UST Section Registry. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated March 24, 2014 and revised April 10, 2014.

1.2 Site Description

The site is located in a rural area of Cherokee County and the general vicinity is primarily residential, grassy areas, pasture and woodlands. The adjacent property to the north is a residence followed by additional residences and Crowe Road. The adjacent properties to the west and south are woodlands/scrubland with a grassy area located southeast along the NCDOT ROW. A private drive, Carolina Fox Drive, and pump house are located further to the southeast. The adjacent property located to the east across NC 294 contains a grassy pasture.

2.0 GEOLOGY

2.1 Regional Geology

The Site is located within the Ocoee Supergroup of the Blue Ridge Belt Physiographic Province of western North Carolina. The site vicinity is underlain by the Hughes Gap Formation, Hothouse Formation, Horse Branch Member of the Ammons Formation and the Grassy Branch Formation, which includes metasandstone, metagraywacke, metasilstone and mica schist.

2.2 Site Geology

Site geology was observed through the sampling of 15 shallow direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations. Borings did not exceed a total depth of 10 feet below ground surface (bgs). Groundwater may have been observed at approximately nine and half feet bgs in the westernmost soil borings B-6 and B-10. Fill material consisting of yellowish to reddish brown silty fine-grained sand with some gravel was generally observed from to ground surface to a maximum of five feet bgs. The

underlying native soils generally consisted of yellowish and/or reddish brown to black, silty, micaceous, fine-grained moist sand with some relict rock structure. 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. The Health and Safety Plan (HSP) was modified to include the site-specific health and safety information necessary for the field activities. North Carolina-1-Call was contacted on April 9, 2014 to report the proposed drilling activities and subsequently notify all affected utilities for the parcel. Geologic Exploration Inc. of Statesville, North Carolina was retained by AMEC to perform the direct push sampling for soil borings. QROS was contacted for acquisition of a UVF Hydrocarbon Analyzer. Soil boring locations were focused in the general vicinity of the reported location of the former gas station and the identified geophysical anomalies within the NCDOT ROW or in the vicinity of the PUE. Initial boring locations were strategically placed at the site to maximize the likelihood of intercepting potential soil contamination.

3.2 Site Reconnaissance

AMEC personnel conducted site reconnaissance on April 4, 2014. During reconnaissance, the area was visually examined for the presence of UST or areas/obstructions that could potentially affect the subsurface investigation and boring locations were discussed. Mr. Dan Shuler and Mr. Richard Caldwell with the NCDOT were present during site reconnaissance. The site was observed to be slightly graded with a gravel pull-off being located in the vicinity of the reported location of the former gas station. A rock pile retaining wall was present in the woodlands to the west and a few scattered concrete blocks were observed in the same area. Additionally, a relatively small concrete slab (less than ten feet long), obscured by tall grass, was observed on the southeast portion of the site.

3.3 Ground Penetrating Radar Survey

AMEC's geophysical surveying subcontractor Vaughn & Melton, Inc. identified two geophysical anomalies as possible USTs in the graveled pull-off area between the NCDOT ROW and Highway 294 via ground penetrating radar on April 4, 2014. As shown in Figure 2, the possible USTs measured approximately 5 by 3 feet, and 7 by 3 feet with approximate depths to top of the anomaly of 2.5 and 3 feet, respectively. In the area of the smaller and more southern possible UST, AMEC was able to extend a push-probe to 4 feet bgs and did not encounter an obstruction suggesting there was no UST within that depth. In the area of the larger and more northern possible UST, AMEC utilized a shovel and pickaxe to soft dig. AMEC did encounter saprolitic rock within the fill material at approximately 1.5 feet bgs and was unable to extend the soft dig with manual tools beyond this point. The lateral extent of the ground penetrating radar survey was limited to an approximate 25-foot swath of NCDOT ROW on Parcel 19 extending approximately 250 feet south of Parcel 20. Thick vegetation (e.g. briars, thick grass and/or woodlands) prevented the use of the ground penetrating radar further to the west and south.

3.4 Well Survey

A well survey was not performed as part of this PSA.

3.5 Soil Sampling

AMEC conducted drilling activities at the site on April 24, 2014. AMEC's drilling subcontractor Geologic Exploration Inc. advanced 15 direct push soil borings within the proposed NCDOT ROW and/or PUE. Boring locations were strategically placed around the identified geophysical anomalies, concrete slab and in the vicinity of the reported location of the former service station to maximize the likelihood of intercepting potential soil contamination. AMEC also attempted to delineate areas of identified soil contamination. Soil boring locations are presented on a Site Map in Figure 2.

The purpose of soil sampling was to determine if a petroleum release has occurred in the vicinity of the former service station at the site, and if so, to estimate the volume of impacted soil that might require special handling during construction activities. Soil sampling was performed utilizing direct push methods accompanied by field screening and quantitative analyses. AMEC conducted field screening of the soil borings utilizing a photoionization detector (PID) and screened recovered soil at approximate one-foot

intervals. An interval of the soil boring exhibiting elevated PID readings was selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) and polycyclic hydrocarbons (PAH) soil via ultraviolet fluorescence (UVF) utilizing a QROS-QED Hydrocarbon Analyzer. The analysis was performed onsite by Troy Holzschuh, a certified QED UVF technician with AMEC, and results were provided concurrent with soil boring activities so that real-time decision making could be used for boring placement.

4.0 SOIL SAMPLING RESULTS

Based on PID field screening and onsite UVF hydrocarbon analysis, there is evidence of a petroleum hydrocarbon release in an area south of the former gas station. Elevated PID readings above 10 parts per million (ppm) and TPH values above 10 milligrams per kilogram (mg/kg) were detected in 4 of the 15 borings conducted at the site. The PID field screening results are summarized in **Table 1**. The soil borings with elevated PID and TPH detections are B-7, B-10, B-12 and B-13 and are located south-southeast and topographically upgradient from the reported gas station location. The elevated PID readings were primarily detected deeper than 5 feet bgs and slightly above the saturated zone. The maximum PID reading detected was 1,371 parts per million at approximately 9 feet bgs in B-13 and the maximum TPH value detected was 3,797 mg/kg, 8.5 feet bgs in B-7. The TPH value of 3,797 mg/kg for B-7 was subdivided into 2,620 diesel range organics (DRO) and 1,177 gasoline range organics (GRO). Onsite UVF hydrocarbon analyses are summarized in **Table 2** and on **Figure 3**, with complete results and output included in **Appendix C**.

Onsite UVF hydrocarbon analysis results also identified elevated total benzene, toluene, ethylbenzene and xylenes (BTEX), total aromatics and/or PAHs in soil borings B-7, B-10, B-12 and B-13. The maximum total BTEX value detected was 711.3 mg/kg from B-7 from 8.5 feet bgs. The maximum total PAH value detected was 8.5 mg/kg from B-7 at 8.5 feet bgs. The maximum total aromatics value detected was 812.6 mg/kg from B-12 at 9.5 feet bgs.

The TPH value reported for soil boring sample B-7 exceeded the NCDENR Action Limit of 10 mg/kg. The TPH values for soil boring samples B-12 and B-13, which are located either side of soil boring B-7 along the proposed ROW, also exceeded the NCDENR Action Limit of 10 mg/kg. The TPH value for soil boring B-10, which is located 10 feet west of soil boring

B-7, across the cut line and outside the NCDOT ROW also exceeded the NCDENR Action Limit of 10 mg/kg but the TPH value did drop by an order of magnitude.

5.0 CONCLUSIONS

Based on site observations, GPR and onsite UVF hydrocarbon analysis, petroleum impacted unsaturated soil contamination was identified. Elevated PID readings and TPH values above 10 mg/kg appear to have been horizontally delineated the identified shallow unsaturated soil contamination within the NCDOT ROW to the north, east and south. The unsaturated soil contamination may extend further to the west beyond the proposed ROW and cut line, in the topographically down gradient direction beyond boring B-10. The vertical extent of unsaturated soil contamination is limited by the presence of groundwater. Wet soil indicative of groundwater was observed at approximately 9.5 to 10 feet bgs in two borings, therefore AMEC anticipates that depth to the water table is approximately 10 feet bgs. AMEC estimates roughly 51 cubic yards of unsaturated contaminated soil is present within the proposed NCDOT ROW and PUE as illustrated on **Figure 4**.

The following bulleted summary is based upon AMEC's evaluation of field observations and onsite analyses of samples collected from the Site on April 24, 2014.

- According to Mr. Richard Caldwell with NCDOT ROW, the site reportedly contained a gas station over 40 years ago.
- Ground penetrating radar identified the presence of two subsurface geophysical anomalies (possible USTs) within the NCDOT ROW in the level gravel pull-off between the NCDOT ROW and NC 294 on April 4, 2014. Elevated PID and/or TPH values were not detected in soil borings performed adjacent to these geophysical anomalies. AMEC was unable to confirm if USTs are present at these locations.
- Fifteen soil borings were performed on April 24, 2014 and one soil sample was selected for analyses from each boring, from an interval that exhibited the highest PID reading when applicable. The analyses were performed with UVF in the field utilizing a QROS QED Hydrocarbon Analyzer.
- Four of the fifteen soil borings, B-7, B-10, B-12 and B-13, contained elevated PID readings and TPH values that exceeded the NCDENR Action Limit of 10 mg/kg.

The four soil borings are localized around soil boring B-7 in an area roughly 40 feet south of the former gas station.

- Shallow unsaturated soil contamination was horizontally delineated ten feet to the north (B-8), east (B-11) and south (SB-9) of the identified maximum soil contamination at soil boring B-7. Shallow unsaturated soil contamination was not horizontally fully delineated to the west (SB-10) beyond the ROW, although TPH values dropped by an order of magnitude. The vertical extent of contamination was assumed from 5 feet to 10 feet bgs, which is roughly the depth to water table.
- Based on the above-described delineation, AMEC estimates approximately 51 cubic yards of unsaturated contaminated soil is present within the NCDOT ROW and cut line.

6.0 RECOMMENDATIONS

AMEC has delineated an area of shallow unsaturated soil contamination within the project area that may be intercepted during grading to the cut elevation. Excavating crews should be made aware of the contaminated soil and possible USTs at NCDOT Parcel 19. Excavated soil contamination should be properly segregated and disposed of as nonhazardous waste.

TABLES

Table 1
PID Field Screening
Parcel 19, NC HWY 294
Cherokee County, North Carolina

SAMPLE ID	Sample Date	Comments	Sample Depth (feet bgs)	Field Screening (ppm)
B-1	4/24/2014	5 feet northwest of 5X3 Geophysical Anomaly	4	0
B-2	4/24/2014	5 feet northwest of 3.5X7 Geophysical Anomaly	2	1.6
B-3	4/24/2014	Approximately 15 feet west of B-2	4	0
B-4	4/24/2014	Approximately 36.5 feet north of B-2	4	0
B-5	4/24/2014	5 feet southeast of 3.5X7 Geophysical Anomaly	4	0
B-6	4/24/2014	Approximately 33 feet east of the 3.5X7 Geophysical Anomaly	4	0
B-7	4/24/2014	Approximately 24 feet southeast of CMP	8.5	1,212
B-8	4/24/2014	5 feet northwest of B-12	2	2.3
B-9	4/24/2014	5 feet southeast of B-13	8.5	0.6
B-10	4/24/2014	10 feet west of B-7	9.5	113
B-11	4/24/2014	10 feet east of B-7	3.5	0
B-12	4/24/2014	5 feet northwest of B-7	9.5	1,229
B-13	4/24/2014	5 feet southeast of B-7	7.5	1,204
B-14	4/24/2014	5 feet northwest of obscure concrete pad	9	0
B-15	4/24/2014	5 feet southeast of obscure concrete pad	9	0
Notes: PPM = Parts Per Million				

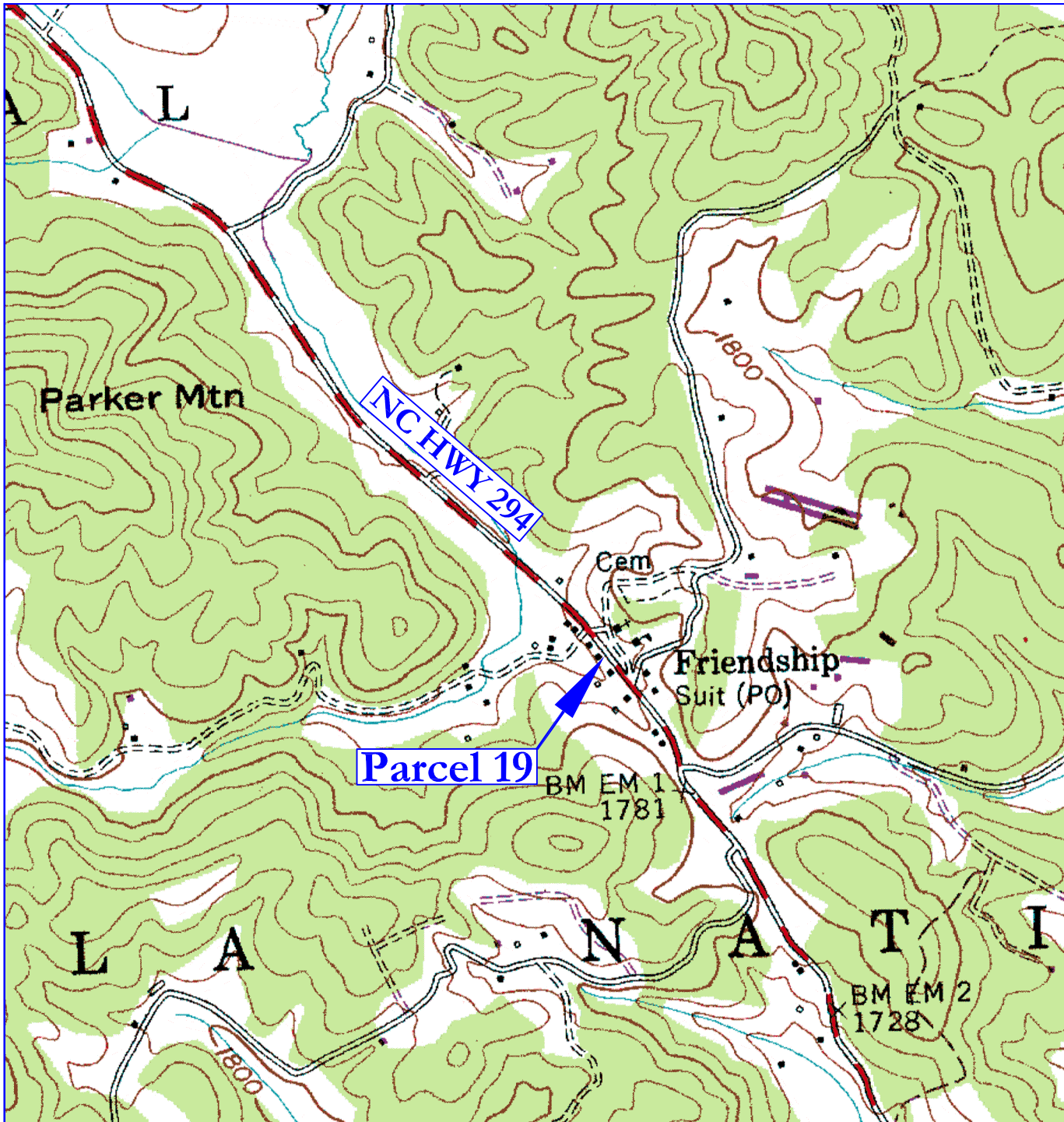
Table 2
UVF Onsite Hydrocarbon Analytical Data
Parcel 19, Fox Ridge of Cherokee County Property
Cherokee, North Carolina

Sample ID Number	Sample Depth (ft bgs)	GRO (mg/kg)	DRO (mg/kg)	BTEX (mg/kg)	PAHs (mg/kg)
B-1	4	<0.9	<0.19	<0.9	<0.02
B-2	2	<0.8	0.19	<0.8	<0.02
B-3	4	<0.8	<0.17	<0.8	<0.02
B-4	4	<1.1	<0.23	<1.1	<0.02
B-5	4	<1.4	<0.29	<1.4	<0.03
B-6	4	<1.1	<0.22	<1.1	<0.02
B-7	8.5	1177	2620	711.3	8.5
B-8	2	1.58	<0.18	1.58	<0.02
B-9	8.5	3.6	4.05	2.28	0.04
B10	9.5	22.26	42.79	10.66	0.19
B-11	3.5	<1.0	<0.21	<1.0	<0.02
B-12	9.5	1716	1044	<234	<4.68
B-13	7.5	622	1535	379.4	3.67
B-14	9	<0.8	<0.15	<0.8	<0.02
B-15	9	<0.8	<0.17	<0.8	<0.02

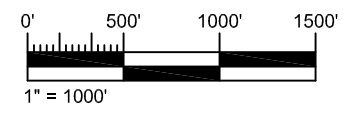
NOTES:

(mg/kg) = Milligrams per kilogram
GRO = Gasoline Organic Compounds
DRO = Diesel Organic Compounds
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
PAHs = Polycyclic Aromatic Hydrocarbon
ft bgs = feet below ground surface

FIGURES



Not to Scale



7.5 Minute Quadrangle
North Carolina, 1983
Photorevised 1993

VICINITY MAP

Parcel #19, NC Hwy 294
Cherokee County, NC

DRAWING NAME: J:\NCDOT\Cherokee\FIG1	DATE: 5/29/14
SCALE: 1 INCH = 1,000 FEET	DR: TLH CHK: HPC REV:

PREPARED FOR:
NC Department Of Transportation
Geotechnical Unit
WBS Element: 38068.1.1
TIP# R-3622B


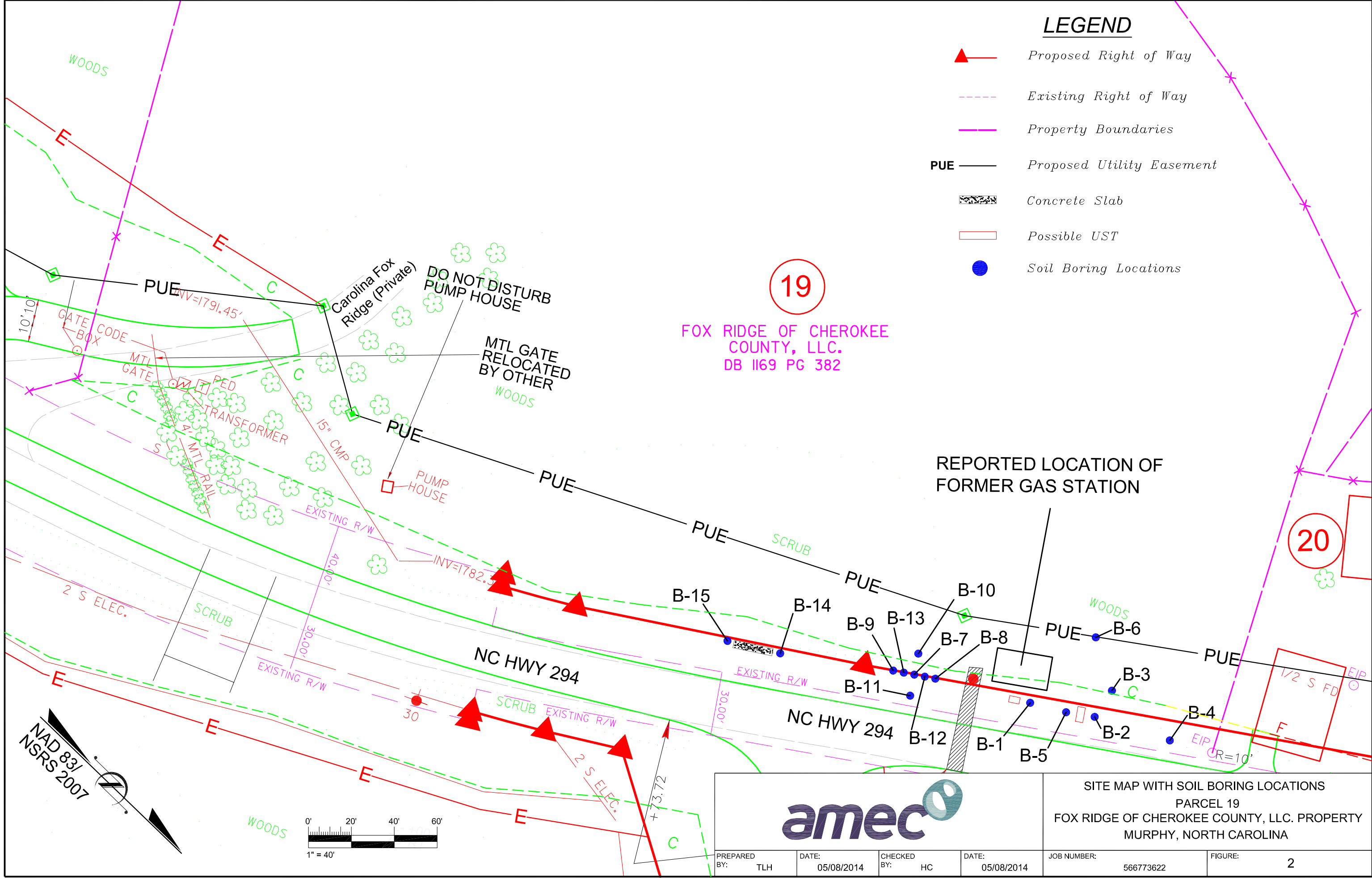
Prepared By:  2801 Yorkmont Rd.
Suite 100
Charlotte, NC 28208
(704) 357-5616

Figure:
Figure 1

LEGEND

-  Proposed Right of Way
-  Existing Right of Way
-  Property Boundaries
- PUE**  Proposed Utility Easement
-  Concrete Slab
-  Possible UST
-  Soil Boring Locations

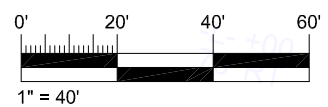
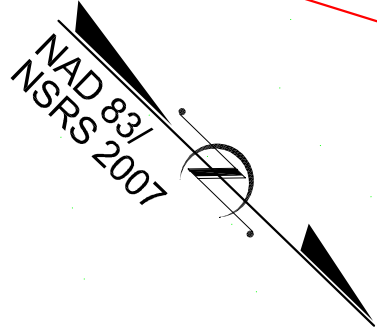



19

FOX RIDGE OF CHEROKEE COUNTY, LLC.
DB 1169 PG 382

REPORTED LOCATION OF FORMER GAS STATION

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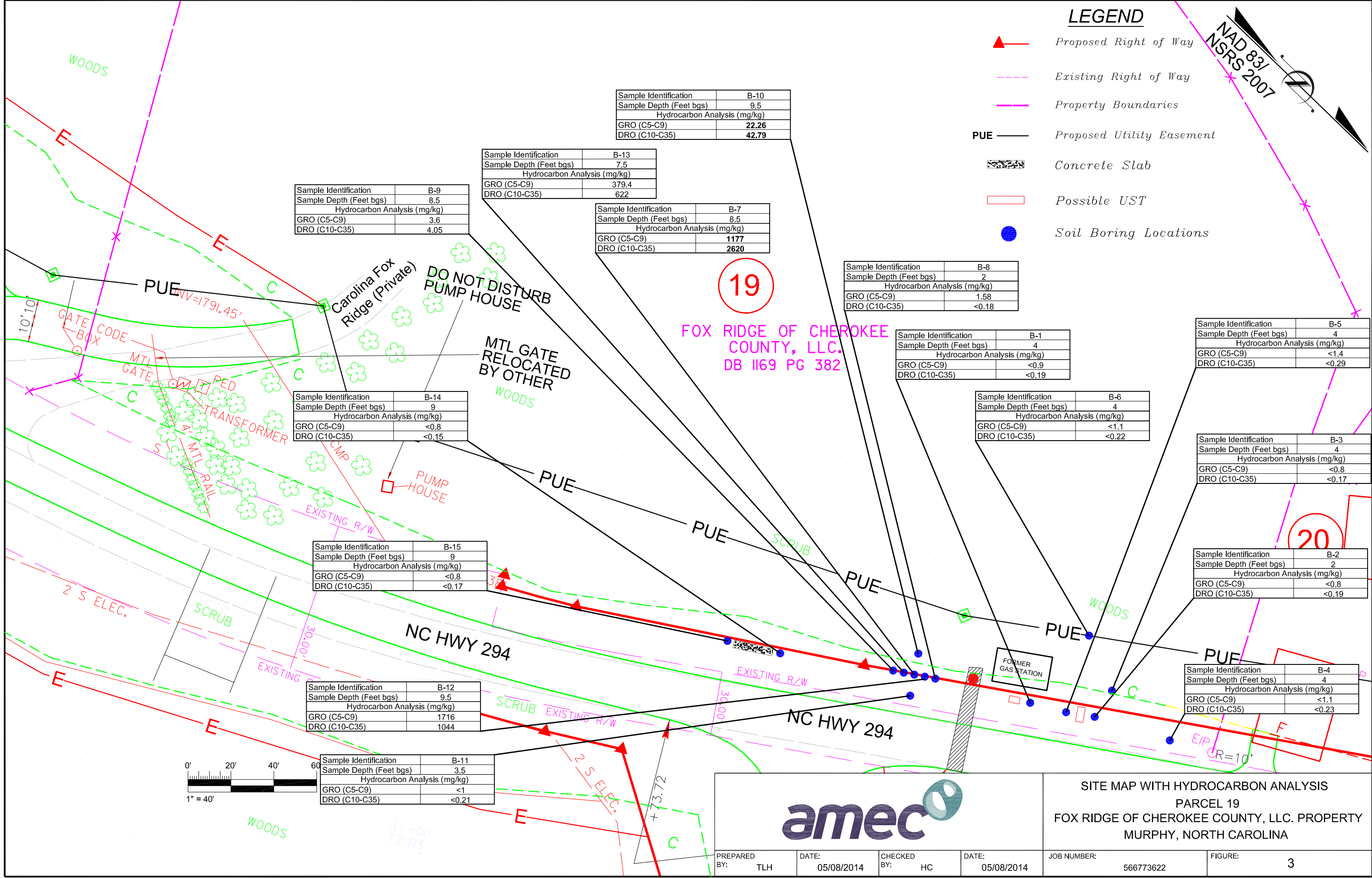
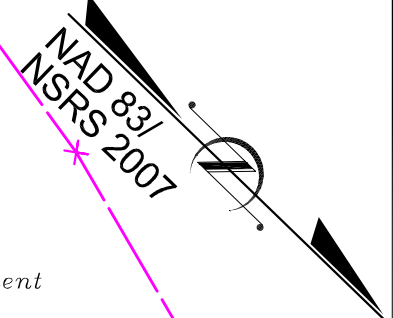


	
PREPARED BY: TLH	DATE: 05/08/2014
CHECKED BY: HC	DATE: 05/08/2014

SITE MAP WITH SOIL BORING LOCATIONS PARCEL 19 FOX RIDGE OF CHEROKEE COUNTY, LLC. PROPERTY MURPHY, NORTH CAROLINA	
JOB NUMBER: 566773622	FIGURE: 2

LEGEND

-  Proposed Right of Way
-  Existing Right of Way
-  Property Boundaries
-  PUE Proposed Utility Easement
-  Concrete Slab
-  Possible UST
-  Soil Boring Locations



Sample Identification	B-10
Sample Depth (Feet bgs)	9.5
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	22.26
DRO (C10-C35)	42.79

Sample Identification	B-13
Sample Depth (Feet bgs)	7.5
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	379.4
DRO (C10-C35)	622

Sample Identification	B-7
Sample Depth (Feet bgs)	8.5
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	1177
DRO (C10-C35)	2620

Sample Identification	B-8
Sample Depth (Feet bgs)	2
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	1.58
DRO (C10-C35)	<0.18

Sample Identification	B-1
Sample Depth (Feet bgs)	4
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<0.9
DRO (C10-C35)	<0.19

Sample Identification	B-5
Sample Depth (Feet bgs)	4
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<1.4
DRO (C10-C35)	<0.29

Sample Identification	B-6
Sample Depth (Feet bgs)	4
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<1.1
DRO (C10-C35)	<0.22

Sample Identification	B-3
Sample Depth (Feet bgs)	4
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<0.8
DRO (C10-C35)	<0.17

Sample Identification	B-9
Sample Depth (Feet bgs)	8.5
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	3.6
DRO (C10-C35)	4.05

Sample Identification	B-14
Sample Depth (Feet bgs)	9
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<0.8
DRO (C10-C35)	<0.15

Sample Identification	B-15
Sample Depth (Feet bgs)	9
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<0.8
DRO (C10-C35)	<0.17

Sample Identification	B-12
Sample Depth (Feet bgs)	9.5
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	1716
DRO (C10-C35)	1044

Sample Identification	B-11
Sample Depth (Feet bgs)	3.5
Hydrocarbon Analysis (mg/kg)	
GRO (C5-C9)	<1
DRO (C10-C35)	<0.21

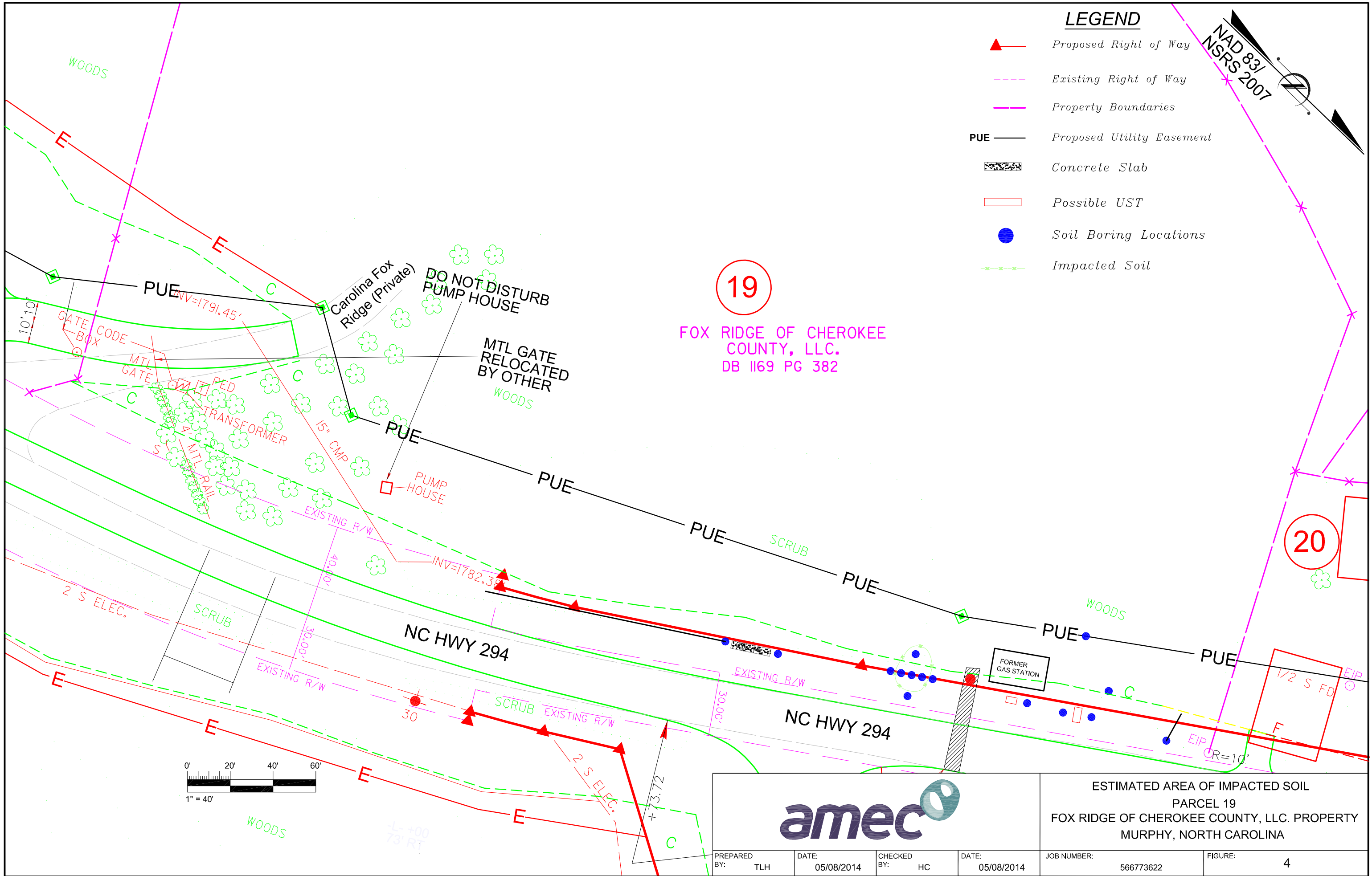
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SITE MAP WITH HYDROCARBON ANALYSIS
 PARCEL 19
 FOX RIDGE OF CHEROKEE COUNTY, LLC. PROPERTY
 MURPHY, NORTH CAROLINA

PREPARED BY: TLH	DATE: 05/08/2014	CHECKED BY: HC	DATE: 05/08/2014	JOB NUMBER: 566773622	FIGURE: 3
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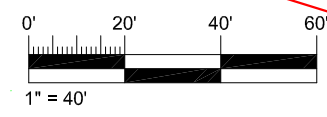
LEGEND

- ▲ Proposed Right of Way
- Existing Right of Way
- Property Boundaries
- PUE** — Proposed Utility Easement
- Concrete Slab
- Possible UST
- Soil Boring Locations
- Impacted Soil

19

FOX RIDGE OF CHEROKEE COUNTY, LLC.
DB 1169 PG 382

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PREPARED BY: TLH	DATE: 05/08/2014	CHECKED BY: HC	DATE: 05/08/2014
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ESTIMATED AREA OF IMPACTED SOIL	
PARCEL 19	
FOX RIDGE OF CHEROKEE COUNTY, LLC. PROPERTY	
MURPHY, NORTH CAROLINA	
JOB NUMBER: 566773622	FIGURE: 4

APPENDIX A
PHOTOGRAPH LOG



Photograph 1: Two geophysical anomalies identified at NCDOT Parcel 19 by GPR and demarcated in orange paint on April 4, 2014. Area demarcated in orange paint on left above did not appear to contain a UST (push-probe extended to four feet bgs). View is to the northwest parallel to NC 294. Friendship Church Road can be seen to the right.



Photograph 2: Two geophysical anomalies identified at NCDOT Parcel 19 by GPR and demarcated in orange paint on April 4, 2014. View is to the southeast parallel to NC 294.



Photograph 3: View of second subsurface anomaly and reported location of the former gas station at the site. View is to the west.



Photograph 5: View of UVF onsite quantitative analysis underway.

APPENDIX B
BORING LOGS



AMEC Environment & Infrastructure, Inc.

BORING LOG

Boring/Well No.: B-1	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct-Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; PPM = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	4.5'/5'	0.0' - 4.0' bgs yellowish to dark brown, silty, fine SAND (SM), some angular gravel, moist, FILL MATERIAL
1-2	0.0		
2-3	0.0		Soil sample collected at 4.0' bgs for HCA; TPH < 1 ppm
3-4	0.0		4.0' - 10.0' bgs reddish to yellowish brown with some black, silty fine SAND (SM), some relict rock structure (e.g. foliation) RESIDUUM
4-5	0.0		
5-6	0.0	4.5'/5'	8.0' - 10.0' bgs same as above, except micaceous
6-7	0.0		
7-8	0.0		
8-9	0.0		
9-10	0.0		Terminate boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.

BORING LOG

Boring/Well No.: B-2	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	4.5'/5'	0.0' - 3.0' bgs reddish brown, silty, fine SAND (SM),
1-2	1.6		some angular gravel and coarse sand, moist, some mica,
2-3	0.0		FILL MATERIAL
3-4	0.0		Soil sample collected at 2.0' bgs for HCA; TPH = 0.19 ppm
4-5	0.0		3.0' - 4.5' bgs SAA, except gray, increased gravel, some mica
5-6	0.0	5'/5'	4.5' - 10.0' bgs gray to yellowish brown, silty, fine SAND (SM),
6-7	0.0		some relict rock structure (e.g. foliation), w/ some angular
7-8	0.0		gravel-sized rock fragments, RESIDUUM
8-9	0.0		
9-10	0.0		
			Terminate boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.
BORING LOG

Boring/Well No.: B-3	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Garb
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579
Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; SAA = same as above; TPH = total petroleum hydrocarbons	

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	5'5'	0.0' - 7.0' bgs reddish brown, silty, fine SAND (SM), moist
1-2	0.0		some angular gravel, FILL MATERIAL
2-3	0.0		
3-4	0.0		
4-5	0.0		Soil sample collected at 4.0' bgs for HCA; TPH < 0.17 ppm
5-6	0.0	4'5'	
6-7	0.0		
7-8	0.0		7.0' - 10.0' bgs yellowish brown to black, silty, fine SAND (SM), moist, micaceous, RESIDUUM
8-9	0.0		
9-10	0.0		Terminate Boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.
BORING LOG

Boring/Well No.: B-5	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	4/5'	0.0' - 3.5' bgs yellowish brown, silty, fine SAND (SM), moist some mica, FILL MATERIAL
1-2	0.0		
2-3	0.0		
3-4	0.0		
4-5		5/5'	Soil sample collected at 4.0' bgs for HCA; TPH < 0.29 ppm
5-6	0.0		3.5' - 10.0' bgs brown to dark brown, silty, fine SAND (SM), micaceous, some relict rock structure (e.g. foliation)
6-7	0.0		
7-8	0.0		
8-9	0.0		
9-10	0.0		
			RESIDUUM
			Terminate Boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.

BORING LOG

Boring/Well No.: B-6	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	4/5'	0.0' - 5.0' bgs brown to reddish brown, silty, fine, SAND (SM), moist, some angular gravel, trace trash (e.g. plastic bag), FILL MATERIAL Soil sample collected at 9.0' bgs for HCA; TPH < 1.1 ppm
1-2	0.0		
2-3	0.0		
3-4	0.0		
4-5		5/5'	5.0' - 10.0' yellow to orange, silty, fine, SAND (SM), moist, some relict rock structure (e.g. foliation), RESIDUUM 9.5' - 10.0' same as above, except wet Terminate boring at 10' bgs
5-6	0.0		
6-7	0.0		
7-8	0.0		
8-9	0.0		
9-10	0.0		

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:		



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BORING LOG

Boring/Well No.: B-8	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	4.5'/5'	0.0' - 4.0' bgs red silty, fine, SAND (SM), moist, FILL MATERIAL Soil sample collected at 2.0' bgs for HCA; TPH = 1.6 ppm
1-2	2.3		
2-3	1.3		
3-4	0.3		4.0' - 10.0' bgs brown - yellowish brown, silty fine SAND, (SM) no relict rock structure (e.g. foliation), RESIDUUM
4-5	0.0		
5-6	0.0		
6-7	0.5		
7-8	0.5	5'/5'	5.5' - 6.0' bgs quartz zone
8-9	0.0		
9-10	0.0		
			Terminate boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.

BORING LOG

Boring/Well No.: B-9	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579
Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons	

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	4.5/5'	0.0' - 4.5' bgs brown silty, fine, SAND (SM), moist, trace angular gravel, FILL MATERIAL
1-2	0.0		
2-3	0.0		
3-4	0.0		
4-5	0.0		
5-6	0.0	5/5'	4.5' - 10.0' bgs brown, silty fine SAND, (SM), moist, trace to some relict rock structure (e.g. foliation), micaceous RESIDUUM
6-7	0.0		
7-8	0.0		
8-9	0.6		
9-10	0.3		
			Soil sample collected at 8.5' bgs for HCA; TPH 7.7 ppm
			4.5' - 10.0' bgs SAA, except slightly wet
			Terminate boring at 10' bgs

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:



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BORING LOG

Boring/Well No.: B-10	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579
Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons; SAA = same as above	

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	5'/5'	0.0' - 9.5' bgs reddish brown, silty, fine, SAND (SM), moist micaceous, RESIDUUM
1-2	0.0		
2-3	0.0		
3-4	0.0		
4-5	0.0		
5-6		4'/5'	6.5' - 10.0' bgs yellowish brown, silty, fine, SAND, (SM), RESIDUUM Soil sample collected at 9.8' bgs for HCA; TPH = 65.1 ppm 9.5' - 10.0' bgs SAA, except stained black w/ slight petroleum-like odor and slightly wet
6-7	0.0		
7-8	0.0		
8-9	0.0		
9-10	113		
			Terminate boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.

BORING LOG

Boring/Well No.: B-11	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; TPH = total petroleum hydrocarbons

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	5/5'	0.0' - 3.5' bgs yellowish brown, silty, fine, SAND (SM), moist
1-2	0.0		FILL MATERIAL
2-3	0.0		
3-4	0.0		Soil sample collected at 4.0' bgs for HCA; TPH < 1.1 ppm
4-5	0.0	5/5'	3.5' - 10.0' bgs brown to yellowish brown, silty, fine, SAND,
5-6	0.0		(SM), moist, micaceous, some relict rock structure
6-7	0.0		(e.g. foliation), RESIDUUM
7-8	0.0		
8-9	0.0		
9-10	0.0		Terminate boring at 10' bgs

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:



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BORING LOG

Boring/Well No.: B-12 Site Name: NC 294 - Parcel 19

Date: April 24, 2014 Location: NC 294, Cherokee County, NC

Job No.: 566773622 Sample Method: Direct Push / Grab

AMEC Rep: Rodney Clark Drilling Method: Direct Push

Drilling Company: Geologic Expl. Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; SAA = same as above; TPH = total petroleum hydrocarbons.

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	5/5'	0.0' - 3.0' bgs brown, silty, fine SAND (SM), moist, no structure
1-2	0.0		FILL MATERIAL
2-3	0.1		
3-4	0.0		3.0' - 8.0' bgs yellowish brown, silty, fine SAND (SM), moist,
4-5	0.0		micaceous, some relict rock structure (e.g. foliation), RESIDUUM
5-6	0.0	5/5'	
6-7	0.7		
7-8	1.0		8.0' - 10.0' bgs SAA, except some staining
8-9	547		
9-10	1229		Soil sample collected at 9.5' bgs for HCA; TPH = 2,760 ppm Terminate boring at 10' bgs

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:



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BORING LOG

Boring/Well No.: B-13	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; SAA = same as above; TPH = total petroleum hydrocarbons.

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	4.2	1'/5'	0.0' - 5.0' bgs brown, silty, fine SAND (SM), moist, no structure FILL MATERIAL (poor recovery)
1-2			
2-3			
3-4			
4-5			
5-6	196	5'/5'	5.0' - 10.0' bgs yellowish brown, silty, fine SAND (SM), moist, micaceous, some relict rock structure (e.g. foliation), RESIDUUM Soil sample collected at 7.5' bgs for HCA; TPH = 2,157 ppm
6-7	552		
7-8	1204		
8-9	1371		
9-10	1311		
			Terminate boring at 10' bgs

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:



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BORING LOG

Boring/Well No.: B-14	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579
Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; SAA = same as above; TPH = total petroleum hydrocarbons.	

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	1.5/5'	0.0' - 5.0' bgs brown, silty, fine SAND (SM), moist, RESIDUUM (poor recovery)
1-2			
2-3			
3-4			
4-5			
5-6	0.0	5/5'	5.0' - 10.0' bgs orange, silty, fine SAND (SM), moist, micaceous, some relict rock structure (e.g. foliation), RESIDUUM
6-7	0.0		
7-8	0.0		
8-9	0.0		
9-10	0.5		
			Soil sample collected at 9.0' bgs for HCA; TPH <0.8 ppm
			Terminate boring at 10' bgs

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:



AMEC Environment & Infrastructure, Inc.

BORING LOG

Boring/Well No.: B-15	Site Name: NC 294 - Parcel 19
Date: April 24, 2014	Location: NC 294, Cherokee County, NC
Job No.: 566773622	Sample Method: Direct Push / Grab
AMEC Rep: Rodney Clark	Drilling Method: Direct Push
Drilling Company: Geologic Expl.	Driller Name/Cert. #: Danny Summers / NC 2579

Remarks: Classified via the Unified Soil Classification System; BGS = below ground surface; ppm = parts per million; HCA = QED Hydrocarbon Analyzer; SAA = same as above; TPH = total petroleum hydrocarbons.

Depth (ft BGS)	PID/OVA Reading (ppm)	Recovery	Soil/Lithologic Description
0-1	0.0	5/5'	0.0' - 5.0' bgs reddish brown, silty, fine SAND (SM), moist, RESIDUUM
1-2	0.0		
2-3	0.0		
3-4	0.0		
4-5	0.0		
5-6	0.0	5/5'	5.0' - 10.0' bgs yellowish brown, silty, fine SAND (SM), moist, trace mica, trace relict rock structure (e.g. foliation), RESIDUUM Soil sample collected at 9.0' bgs for HCA; TPH < 0.17 ppm Terminate boring at 10' bgs
6-7	0.0		
7-8	0.0		
8-9	0.0		
9-10	0.0		

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
HYDROCARBON ANALYSIS RESULTS



Hydrocarbon Analysis Results

Client: NDOT
Address: Parcel 19 Hwy 294

Samples taken
Samples extracted
Samples analysed

B-1 to B-10
 Thursday, April 24, 2014
 Thursday, April 24, 2014

Contact: Craig Haden

Operator

Troy L. Holzschuh

Project: R-3622B

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	B-1	19.0	<0.9	<0.9	<0.19	<1	<0.19	<0.02	<0.019	0	0	0	Background Organics (P)
s	B-2	15.0	<0.8	<0.8	0.19	0.19	<0.15	<0.02	<0.015	0	13	87	Background Organics (P)
s	B-3	17.0	<0.8	<0.8	<0.17	<0.17	<0.17	<0.02	<0.017	0	0	100	Background Organics
s	B-4	23.0	<1.1	<1.1	<0.23	<0.23	<0.23	<0.02	<0.023	0	0	100	Background Organics
s	B-5	29.0	<1.4	<1.4	<0.29	<0.29	<0.29	<0.03	<0.029	0	0	100	Background Organics
s	B-6	22.0	<1.1	<1.1	<0.22	<1.1	<0.22	<0.02	<0.022	0	0	0	Background Organics
s	B-7	103.0	711.3	1177	2620	3797	273.1	8.5	<0.103	99.7	0.3	0	Deg.Gas (FCM) 97.6%
s	B-8	18.0	1.58	1.58	<0.18	1.58	<0.18	<0.02	<0.018	93.9	0	6.1	Deg.Gas (PFM) (FCM) (P) 24.5%
s	B-9	17.0	2.28	3.6	4.05	7.65	1.84	0.04	<0.017	93.3	4.1	2.5	Deg.Gas (FCM) 63.3%
s	B-10	19.0	10.66	22.26	42.79	65.05	8.81	0.19	<0.019	97.9	1.5	0.6	Waste OilWaste Oil (PFM) (FCM) 64.3%
			Initial Calibrator QC check OK										

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



Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 19 HWY 294

Samples taken B-11 to B15
Samples extracted Thursday, April 24, 2014
Samples analysed Thursday, April 24, 2014

Contact: Craig Haden

Operator Troy L. Holzschuh

Project: R-3622B

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	B-11	21.0	<1	<1	<0.21	<1.1	<0.21	<0.02	<0.021	0	0	0	Background Organics
s	B-12	4681.0	<234	1716	1044	2760	812.6	<4.68	<4.681	98.8	1.2	0	Deg.Fuel (P)
s	B-13	101.0	379.4	622	1535	2157	116.3	3.67	<0.101	99.5	0.5	0	Deg.Gas (FCM) 88.6%
s	B-14	15.0	<0.8	<0.8	<0.15	<0.8	<0.15	<0.02	<0.015	0	0	0	Background Organics
s	B-15	17.0	<0.8	<0.8	<0.17	<0.17	<0.17	<0.02	<0.017	0	0	100	Background Organics

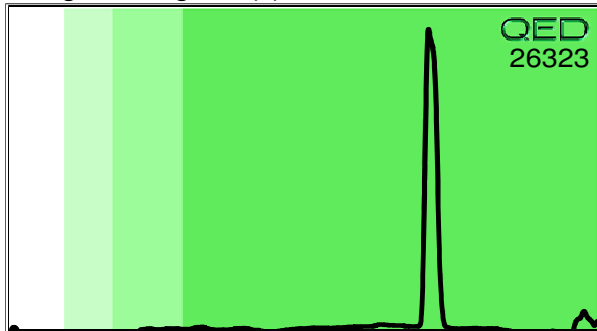
Initial Calibrator QC check **OK**

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

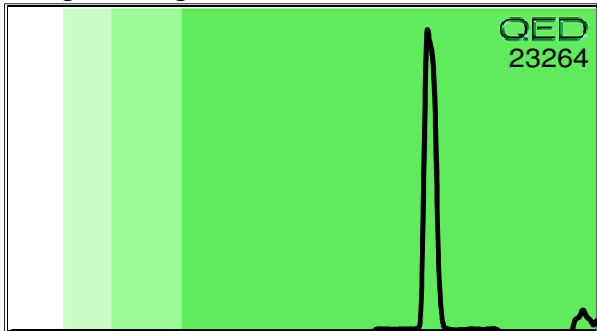
Background Organics (P) B-1



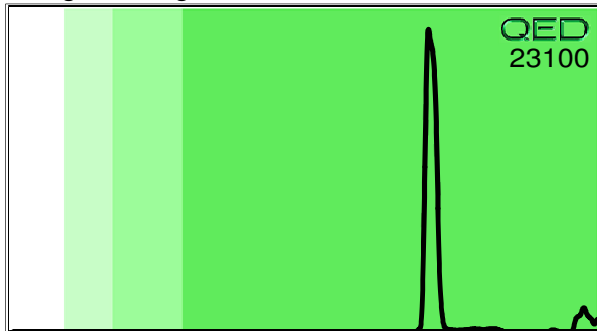
Background Organics (P) B-2



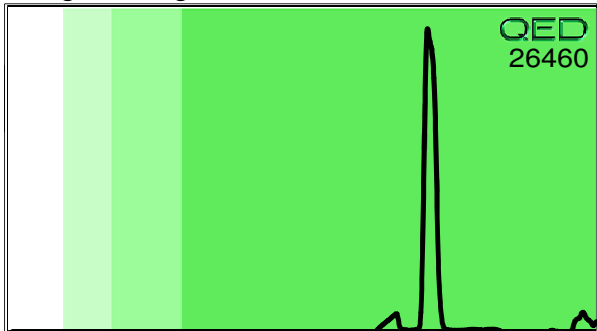
Background Organics B-3



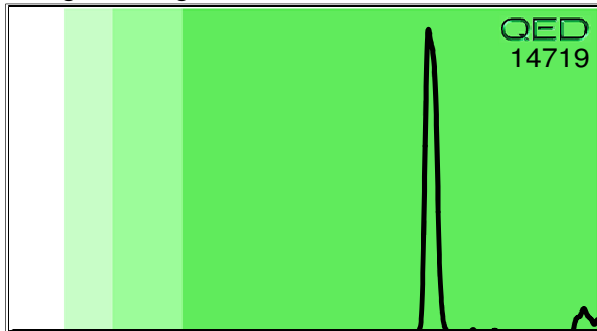
Background Organics B-4



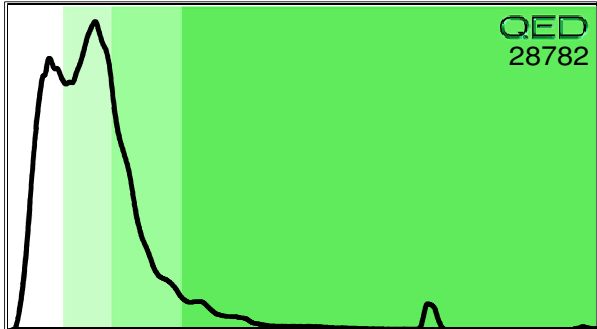
Background Organics B-5



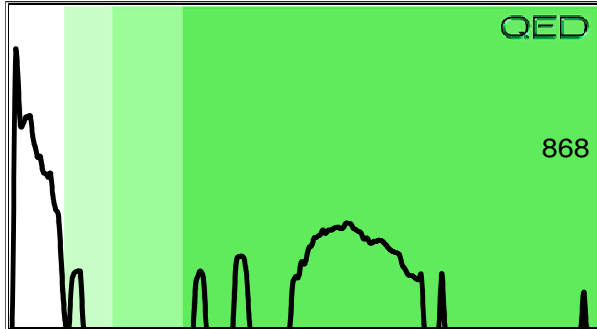
Background Organics B-6



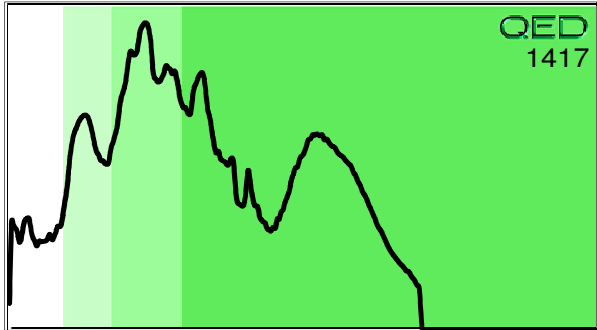
Deg.Gas (FCM) 97.6% B-7



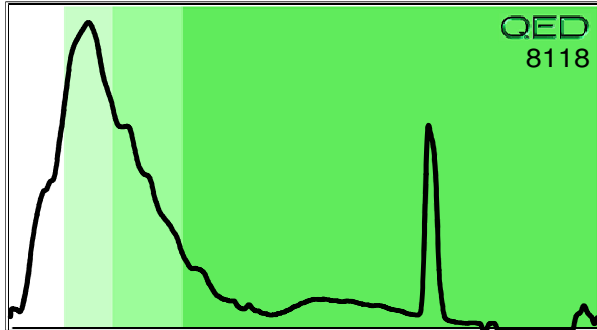
Deg.Gas (PFM) (FCM) (P) 24.5% B-8



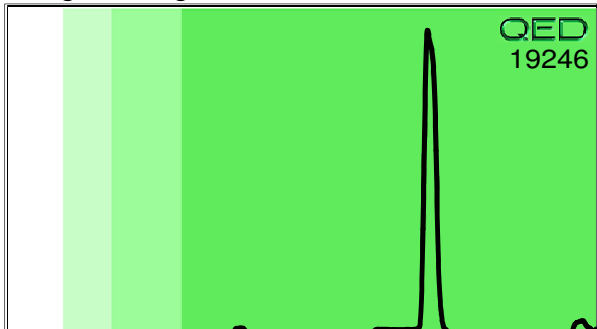
Deg.Gas (FCM) 63.3% B-9



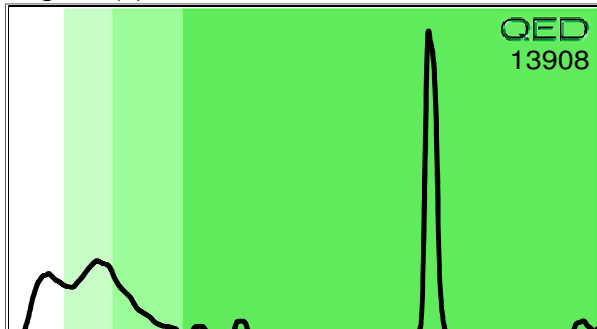
Waste OilWaste Oil (PFM) (FCM) 64.3% B-10



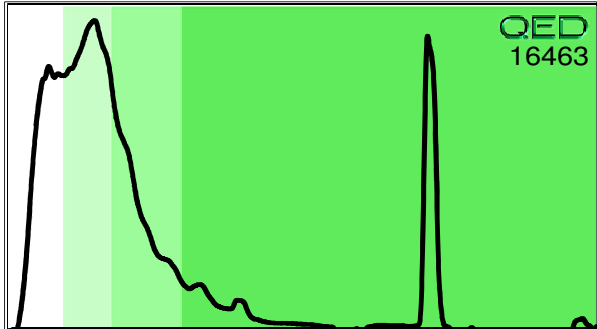
Background Organics B-11



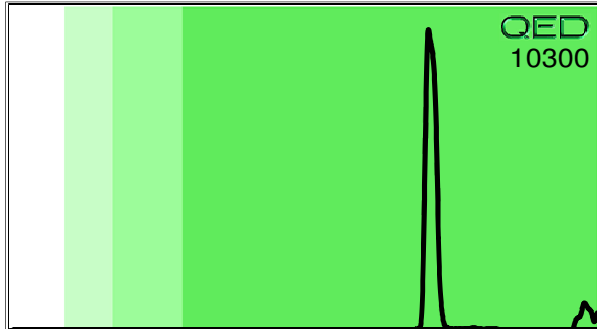
Deg.Fuel (P) B-12



Deg.Gas (FCM) 88.6% B-13



Background Organics B-14



Background Organics B-15

