wood.

North Carolina Department of Transportation

Preliminary Site Assessment
State Project: R-2707D
WBS Element: 34497.1.2
Cleveland County

Parcel 626
Michael J. & Connie H. Norman
2026 Elizabeth Avenue
Shelby, North Carolina
May 8, 2019

Wood Environment and Infrastructure Solutions, Inc.
Project: 1883R2707

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1.0 INTRODUCTION

In response to the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated March 27, 2019, Wood Environment & Infrastructure Solutions, Inc. (Wood) has performed a Preliminary Site Assessment (PSA) for Parcel 626. The investigation was conducted in accordance with Wood's Technical and Cost proposal dated April 5, 2019 and revised April 11, 2019. NCDOT contracted Wood to perform the PSA at the parcel, within the area to be affected by future road construction activities, in order to identify potential impacts from the former use of the property.

The parcel is located at 2026 Elizabeth Avenue along the southern side of Elizabeth Avenue as shown on the Vicinity Map, **Figure 1**. At the time of this PSA, the parcel was occupied with a junk yard and auto repair garage (Norman's of Shelby Auto Parts), a single-family residence, and farmland. It is identified as Parcel 626, Michael J. & Connie H. Norman property, (the Site) within the NCDOT R-2707D design file. The parcel is in Shelby of Cleveland County, North Carolina. The area of investigation within the parcel is shown on **Figure 2**.

The following report describes our subsurface field investigation at the Site and presents on-site UVF soil analyses and off-site metals analysis to evaluate soil contamination within the Site.

1.1 Site History

Based on our historical review, the junk yard and Norman's of Shelby Auto Parts have occupied the Site since at least 1976. The Site is not identified on the North Carolina Department of Environmental Quality (NCDEQ) Underground Storage Tank (UST) Facility Database registry and no known groundwater incidents are identified at the Site. The Site is listed as RCRA non-generator (NCS000000649) with several RCRA compliance violations reported for generator compliance.

1.2 Site Description

The Site is located in a mixed-use commercial and residential area of Shelby in Cleveland County and covers approximately 16.2 acres. The majority of the Site is occupied by the

junk yard associated with Norman's of Shelby Auto Parts. Remaining portions of the site are occupied by an auto repair garage, two aboveground storage tanks (ASTs), dispensers, several small storage buildings associated with Norman's of Shelby Auto Parts, a single-family residence, and farmland. A photographic log of the property is included as **Appendix A**.

2.0 GEOLOGY

2.1 Regional Geology

The Site is located within the Inner Piedmont Belt of the Piedmont Physiographic Province of North Carolina. According to the 1985 State Geologic Map of North Carolina, the area is underlain by biotite gneiss and schist.

2.2 Site Geology

Site geology was observed through the advancement of seven shallow hand augered soil borings (P626-SB1 to P626-SB7). Figure 2 presents the boring locations and site layout. Boring depth targeted a total depth of two feet below ground surface (bgs) for borings P626-SB1 to P626-SB5 and six inches bgs for borings P626-SB6 and P626-SB7. Soils encountered in the borings consisted mostly of red to tan to brown sandy silts and silty clays. No petroleum odors or staining were observed in the borings and groundwater was not encountered. Based on observations of topography of the Site vicinity, the groundwater flow direction is inferred to be generally to the southeast. 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 created including the Site-specific health and safety information necessary for the field activities.

North Carolina 811 was contacted on April 9, 2019 to report the proposed sampling activities and subsequently notify all affected utilities for the parcel. RED Lab instrumentation was scheduled for the use in the on-site UVF analysis.

Wood understands that acquisition of the right-of-way is necessary for the construction of the US 74 – Shelby Bypass. Boring locations were strategically placed within the parcel to maximize the opportunity to encounter potential contaminated soil.

3.2 Site Reconnaissance

Wood personnel performed a Site reconnaissance with property owner notification on April 9, 2019. During the Site reconnaissance, the area was visually examined for the presence of any areas/obstructions that could potentially affect the subsurface investigation. During the Site reconnaissance, a junk yard, an auto repair garage, two ASTs with dispensers, several small storage buildings associated with Norman's of Shelby Auto Parts, a single-family residence and farmland were observed.

3.3 Soil Sampling

On April 16, 2019, Wood personnel advanced seven soil borings via a stainless-steel hand auger across the area of investigation to depths ranging from six inches to two feet bgs. Borings P626-SB1, P626-SB3, P626-SB4, and P626-SB5 were located near the junk cars and/or proposed drainage features. Boring P626-SB2 was located in the farm field, while borings P626-SB6 and P626-SB7 were located near the ASTs.

The purpose of the soil sampling was to determine if a petroleum release had impacted the Site and if so, to estimate the volume of impacted soil that might require special handling during NCDOT construction activities. Soil sampling was performed utilizing a stainless-steel hand auger accompanied by field screening. The hand auger was decontaminated between boring locations using a Liquinox® wash and distilled water rinse. Wood conducted field screening for volatile organic compounds (VOCs) of the soil borings with a photoionization detector (PID). The soil borings were screened with the PID at approximate one-foot intervals. A portion of the interval of the soil boring exhibiting the highest PID reading was retained for analysis of total petroleum hydrocarbons (TPH), diesel range organics (DRO), gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylene

(BTEX), total aromatics, and polycyclic aromatic hydrocarbons (PAH) soil via on-site ultraviolet fluorescence (UVF).

The remaining portion of the interval of the soil boring exhibiting the highest PID reading was retained for off-site laboratory analysis and placed in laboratory provided containers and immediately placed on ice. The samples were delivered under standard chain-of-custody protocol via courier to Prism Laboratories, Inc. in Charlotte, North Carolina and analyzed for eight Resource Conservation and Recovery Act (RCRA) metals via EPA methods 6010/7471 by Prism Laboratories, Inc. (Prism) in Charlotte, North Carolina. Seven total samples were collected from the site from the borings for UVF on-site analysis and for eight RCRA Metals off-site analysis.

4.0 SOIL SAMPLING RESULTS

Based on PID field screening and UVF hydrocarbon analysis from April 16, 2019, evidence of petroleum hydrocarbon impact was not identified within the area of investigation.

4.1 Soil Screening and UVF Analyses

PID readings for the seven borings ranged from 0.3 parts per million (ppm) in sample P626-SB6-0.5 collected between the ground surface and six inches bgs to 8.8 ppm in sample P626-SB1-1 collected between the ground surface and one foot bgs. The PID field screening results are summarized in **Table 1** and provided on the boring logs in Appendix B.

Results from the on-site UVF petroleum soil analyses are presented in **Table 2**, with instrument generated tables in **Appendix C**. Several categories of analyses were measured such as: DRO, GRO, TPH, PAHs, and total aromatics. **Figure 3** presents the GRO and DRO results at each boring.

Elevated TPH values above the NCDEQ Action Limit of 50 milligrams per kilogram (mg/kg) for GRO or 100 mg/kg for DRO were not detected in the seven samples collected from the borings advanced at the Site. GRO was detected in one sample (P626-SB7-0.5) at a concentration of 1.4 mg/kg, while DRO was detected in each of the seven samples ranging

from 0.05 mg/kg in P626-SB4-2 to 21.7 mg/kg in P626-SB6-0.5. The hydrocarbon results from the QED QROS Hydrocarbon Analyzer are provided in Appendix C.

4.2 Off-site Laboratory Analyses

The laboratory analytical report and chain-of-custody form for the off-site soil sample analyses conducted by Prism is included in **Appendix D**. The results of the seven soil samples analyzed for eight RCRA Metals by Prism are summarized in **Table 3**, as well as below:

- Concentrations of arsenic, barium, total chromium, lead, and mercury were identified in each of the seven soil samples collected at the site. In two of the seven samples collected at the site, the mercury concentrations were J-flagged, indicating the values were identified above the method detection limit but below the reporting limit and are considered an estimate. Cadmium J-flagged concentrations were identified in samples P626-SB6-0.5 and P626-SB7-0.5.

- The arsenic concentrations identified in the seven samples collected at the Site ranged from 5.1 mg/kg in sample P626-SB2-1 to 10 mg/kg in samples P626-SB3-2 and P626-SB5-1. In addition, the arsenic concentrations identified in the seven samples exceeded the EPA Composite Worker Soil Carcinogenic Target Risk of $1e^{-06}$ (TR) Regional Screening Level (RSL) for arsenic of 3.0 mg/kg.

- The total chromium concentrations identified in the seven samples collected at the Site ranged from 25 mg/kg in sample P626-SB4-2 to 55 mg/kg in sample P626-SB5-1. In addition, the total chromium concentrations identified exceeded the NCDEQ Soil-to-Water Maximum Soil Contaminant Concentration (MSCC) for total chromium of 5.4 mg/kg. Furthermore, the concentrations exceeded the EPA Composite Worker Soil Carcinogenic TR RSL for chromium (VI) of 6.3 mg/kg. Note, separate EPA RSLs are established for chromium (III) and chromium (VI) variants. Speciated chromium samples were not analyzed as part of this assessment. The EPA Composite Worker Soil Carcinogenic TR RSL for chromium (VI) of 6.3 mg/kg was conservatively compared to these samples.

- The barium, cadmium, lead, and mercury concentrations identified in the samples did not exceeded their respective NCDEQ MSCCs or EPA RSLs.

5.0 CONCLUSIONS

Based on the Site observations, UVF analysis, and laboratory analysis, petroleum-impacted just minor DRO soil contamination was identified in two borings near the ASTs but the NCDEQ Action level of 100 mg/kg for DRO and 50 mg/kg for GRO were not exceeded.

Concentrations of arsenic and total chromium were identified in the seven soil samples collected at the Site which exceeded their respective EPA Composite Worker Soil TR RSLs. In addition, the concentrations of total chromium identified exceeded the NCDEQ Soil-to-Water MSCC in each of the seven soil samples. However, the concentrations of arsenic and total chromium identified in the soil samples collected at the site are within the naturally occurring trace element content of soils as identified in the EPA Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW874 (dated April 1983), page 273, Table 6.46. Based on the absence of petroleum-impacted soils identified at the site and that the concentrations of arsenic and total chromium were identified within naturally occurring background levels, Wood does not consider the metal concentrations to indicate a release has occurred at the Site.

6.0 RECOMMENDATIONS

Based on these PSA results, Wood does not recommend further assessment in the area of investigation or special soil handling during construction.

TABLES

Table 1: Summary of PID Screening Results
Parcel 626 - Michael J. & Connie H. Norman
Shelby, North Carolina
Wood Project: 1883R2707D

Boring ID	Depth of Sample Interval	PID Reading
P626-SB1	0-1	8.8
P626-SB2	0-1	4.8
P626-SB3	1-2	0.8
P626-SB4	1-2	4.2
P626-SB5	0-1	2.7
P626-SB6	0-0.5	0.3
P626-SB7	0-0.5	0.3

Notes:

1. Samples collected on April 16, 2019
2. Depths shown in feet below ground surface (bgs)
3. PID = Photoionization Detector
4. PID readings shown in parts per million (ppm)

Prepared By/Date: AJF 4/23/19

Checked By/Date: DRH 5/6/19

Table 2: Summary of UVF Petroleum Soil Results
Parcel 626 - Michael J. & Connie H. Norman
Shelby, North Carolina
Wood Project: 1883R2707D

Sample ID Number	Sample Depth	BTEX	GRO	DRO	PAHs
P626-SB1-1	0-1	<0.65	<0.65	0.18	0.02
P626-SB2-1	0-1	<0.57	<0.57	0.14	0.01
P626-SB3-2	1-2	<0.48	<0.48	0.06	0.003
P626-SB4-2	1-2	<0.43	<0.43	0.05	0.003
P626-SB5-1	0-1	<0.45	<0.45	0.16	0.01
P626-SB6-0.5	0-0.5	<0.52	<0.52	21.7	0.52
P626-SB7-0.5	0-0.5	<0.4	1.4	7.5	0.06
NC State Action Level		**N/A**	**50**	**100**	**N/A**

Notes:

1. Samples collected on April 16, 2019
2. Depths shown in feet below ground surface (bgs)
3. Concentrations shown in milligrams per kilogram (mg/kg)
4. BTEX = Benzene, toluene, ethylbenzene, xylene
5. GRO = Gasoline Range Organics
6. DRO = Diesel Range Organics
7. PAHs = Polycyclic aromatic hydrocarbons
8. N/A = Not applicable
9. Bold values exceed respective NC State Action Level

Prepared By/Date: AJF 4/23/19

Checked By/Date: DRH 5/6/19

Table 3: Summary of Off-Site RCRA Metal Analytical Results
Parcel 626 - Michael J. & Connie H. Norman
Shelby, North Carolina
Wood Project: 1883R2707D

Constituent	P626-SB1-1	P626-SB2-1	P626-SB3-2	P626-SB4-2	P626-SB5-1	P626-SB6-0.5	P626-SB7-0.5	Soil-to-Water MSCCs	Industrial/ Commercial MSCCs	EPA Composite Worker Soil Carcinogenic TR RSLs	EPA Composite Worker Soil Non-Carcinogenic HI RSLs	Trace Element Content of Soils*
Sample Depth	0-1	0-1	1-2	1-2	0-1	0-0.5	0-0.5					
Arsenic	9.3	5.1	10	6.3	10	9.9	7.7	NE	NE	3.0	48	1-50
Barium	87	29	28	20	69	71	71	290	8,100	NE	22,000	100-3,000
Cadmium	<0.046	<0.044	<0.048	<0.040	<0.047	0.47J	0.42J	NE	NE	9,300	98	0.01-0.7
Chromium	**40**	**48**	**52**	**25**	**55**	**36**	**43**	5.4	1,226	(III) NE (VI) 6.3	(III) 180,000 (VI) 350	1-1,000
Lead	36	25	30	16	31	71	110	270	400	NE	800	2-200
Mercury	0.082	0.028J	0.073	0.041J	0.10	0.079	0.10	NE	NE	NE	4.6	0.01-0.3
Selenium	<0.37	<0.36	<0.39	<0.33	<0.38	<0.36	<0.34	NE	NE	NE	580	0.1-2
Silver	<0.042	<0.040	<0.043	<0.036	<0.043	<0.040	<0.038	0.3	2,044	NE	580	0.01-5

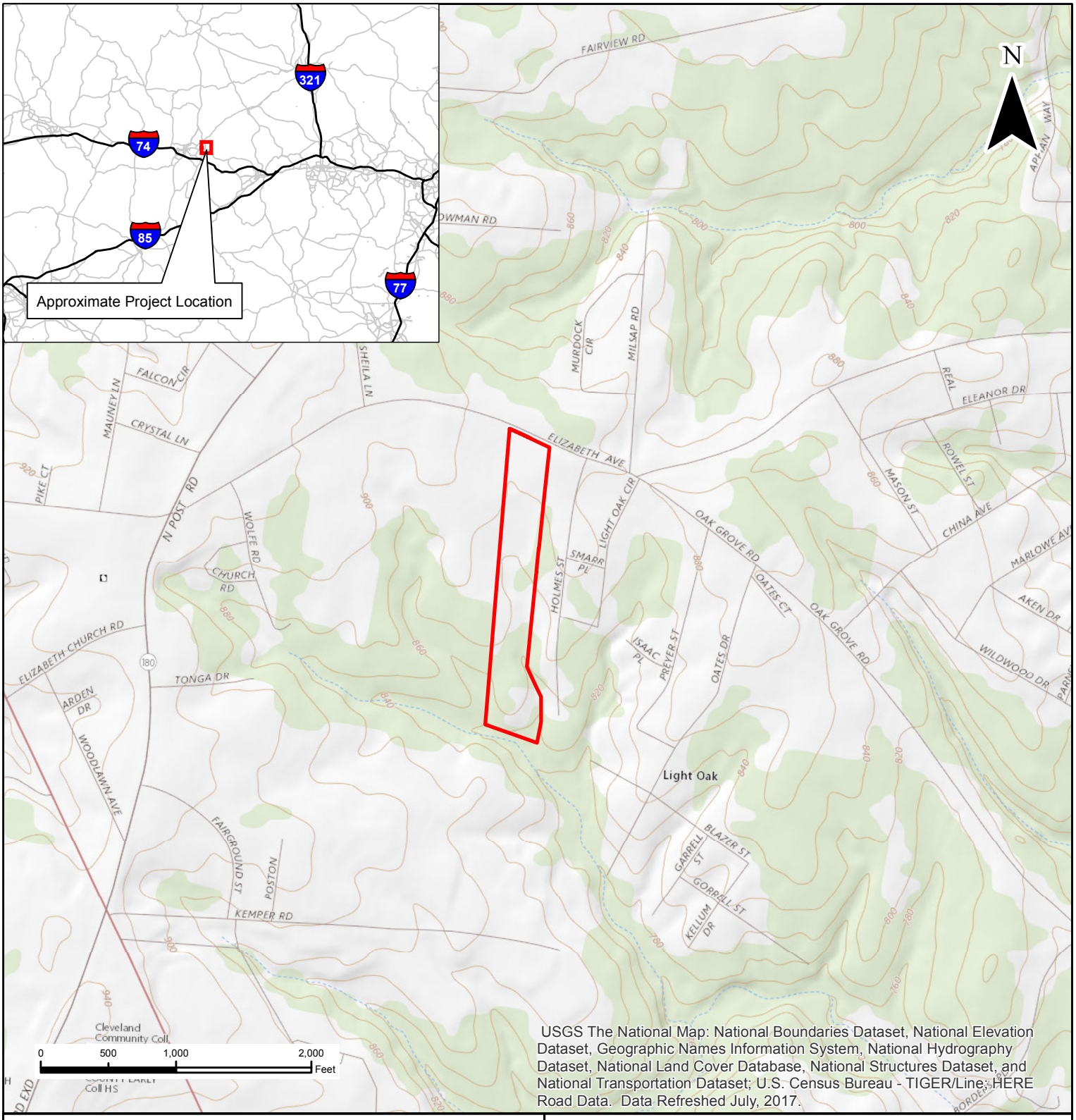
Notes:

1. Samples collected on April 16, 2019
2. Concentrations reported in milligrams per kilogram (mg/kg)
3. Depths shown in feet below ground surface (bgs)
4. MSCC = NCDEQ Division of Waste Management, Maximum Soil Contaminant Concentration Levels, dated April 2012
5. EPA RSLs = EPA Regional Screening Levels (RSLs), Carcinogenic Target Risk (TR) = 1e-06, Non-carcinogenic Hazard Index (HI) 0.1, dated November 2018
6. Bold value indicates concentration exceeds Soil-to-Water MSCC
7. Shaded value indicates concentration exceeds Industrial/Commercial MSCC
8. Underlined value indicates concentration exceeds EPA RSL for either Carcinogenic TR or Non-carcinogenic HI
9. J-flag indicates value was identified above method detection limit but below laboratory reporting limit, value is considered an estimate
10. Separate RSLs are established for Chromium (III) and (VI) variants. Speciated chromium samples were not analyzed during this assessment
11. NE = Not established

*Reference: USEPA Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW-874 (April 1983) page 273, Table 6.46

Prepared By/Date: RPD 4/29/19
Checked By/Date: DRH 5/6/19

FIGURES



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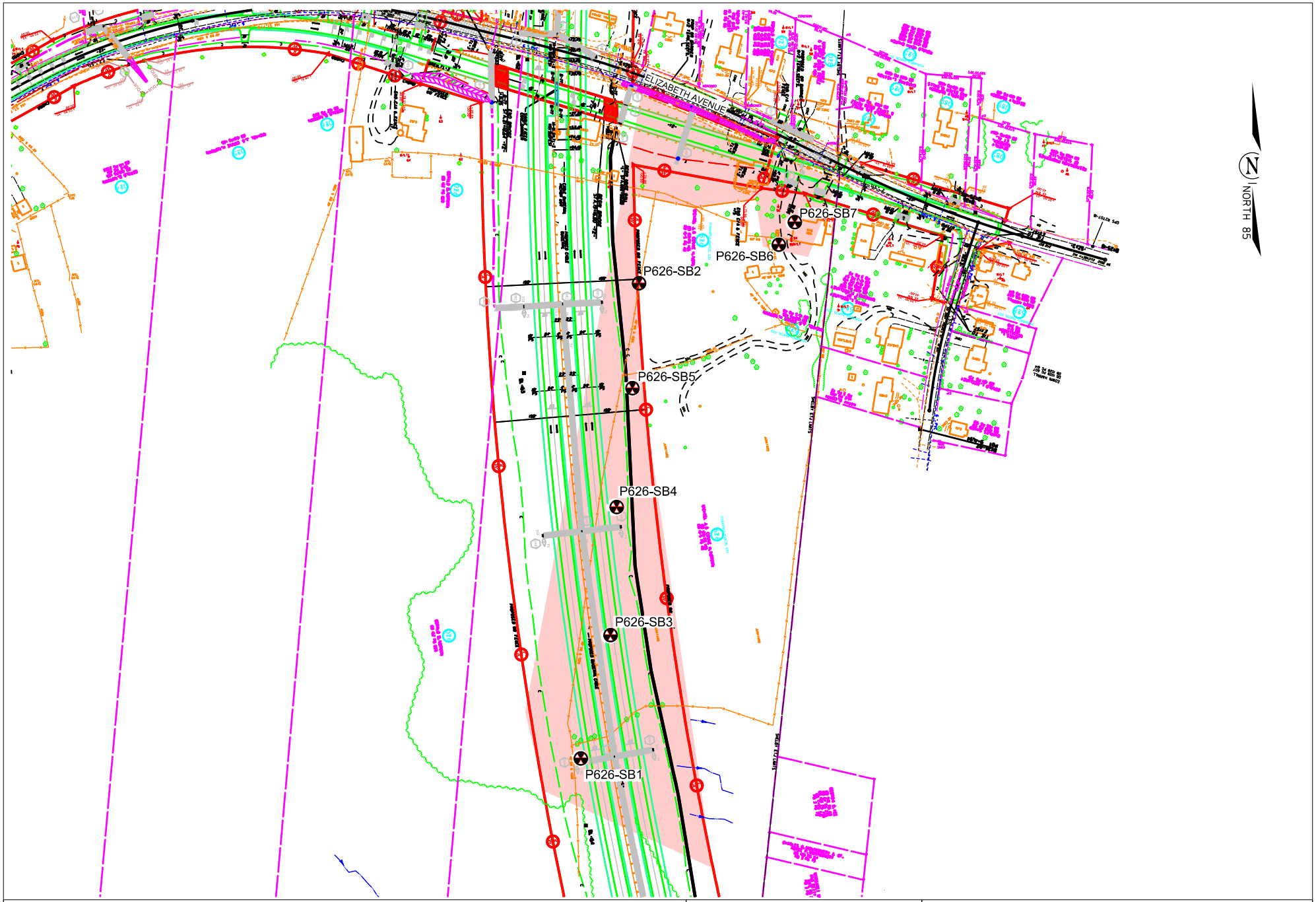
SITE VICINITY
R2707D - Parcel 626
Michael James Norman
2026 Elizabeth Avenue
Shelby, North Carolina 28150

Site Boundary

Prepared By: LMM Date: 4/4/2019	Checked By: AJF Date: 4/4/2019	Project No.: 1883R2707	Figure No.: 1



BORING LOCATION

AREA OF INVESTIGATION

125′ 0′ 125′ 250′

75′

(ENGLISH)

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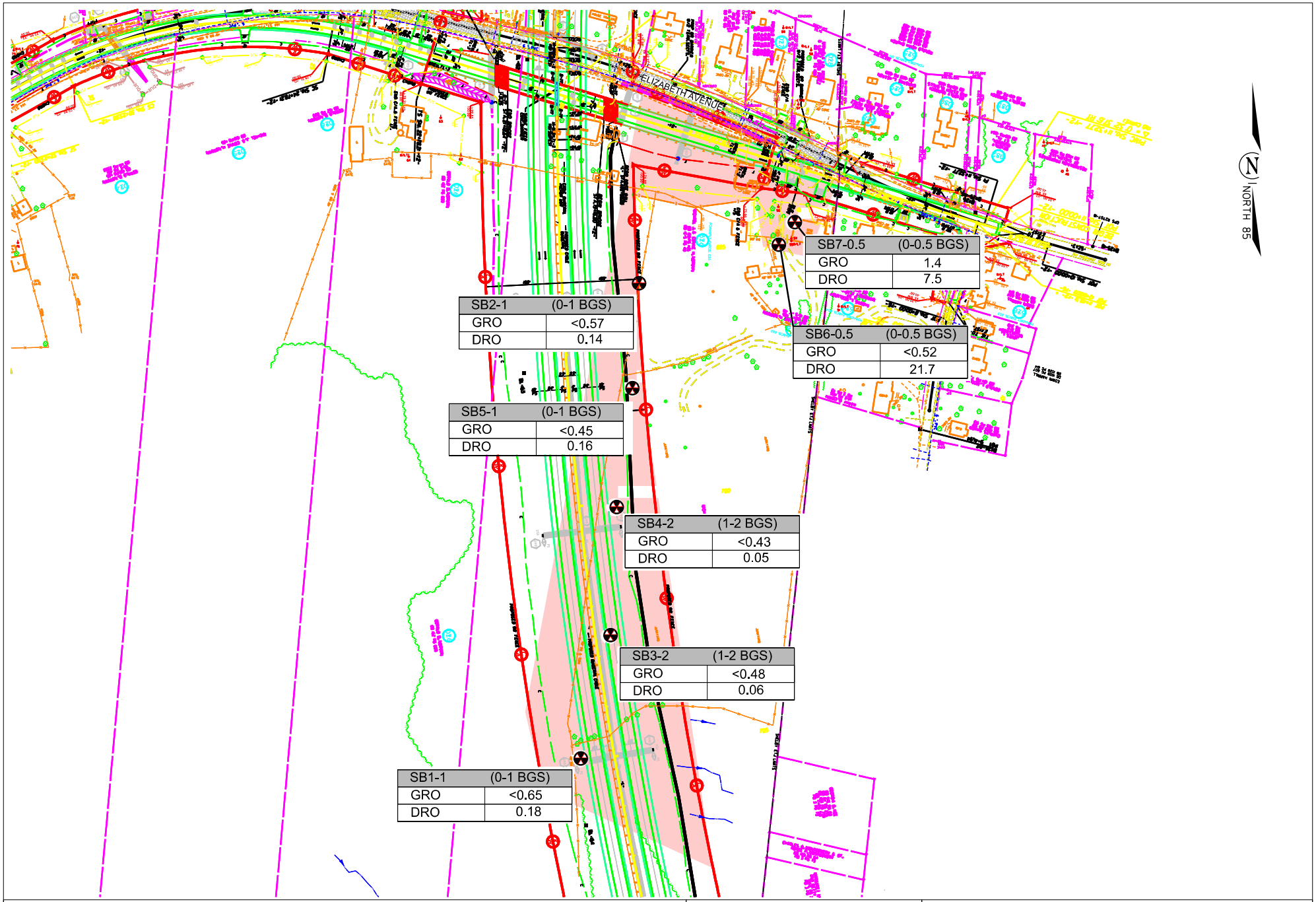
AREA OF INVESTIGATION WITH SOIL BORING LOCATIONS- PARCEL 626
MICHAEL J. & CONNIE H. NORMAN PROPERTY
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.FS6
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LM	04/24/2019	HPC	4/24/2019	188322707	2



BORING LOCATION

AREA OF INVESTIGATION

GRO=GASOLINE RANGE ORGANICS
DRO=DIESEL RANGE ORGANICS
CONCENTRATIONS SHOWN IN MILLIGRAMS PER KILOGRAM (mg/kg)
SHADED CONCENTRATIONS EXCEED NCDEQ STATE ACTION LIMITS
BGS=FEET BELOW GROUND SURFACE

125′ 0′ 125′ 250′

75′

(ENGLISH)

wood.

UVF PETROLEUM RESULTS- PARCEL 626
MICHAEL J. & CONNIE H. NORMAN PROPERTY
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.FS6
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LM	04/24/2019	HPC	4/24/2019	188322707	3

APPENDIX A

PHOTOGRAPHIC LOG

PHOTO 1:

View of Norman's of Shelby, facing south.

Photo taken 4/16/19.

PHOTO 2:

View of AST and dispensers at the western side of Norman's of Shelby, looking east.

Photo taken 4/16/19.

PHOTO 3:

Looking down at AST and soil boring P626-SB7.

Photo taken 4/16/19.

PHOTO 4:

View of second AST, approximately 35 feet west of Norman's of Shelby. View of soil boring P626-SB6 and future easement stake, facing northwest.

Photo taken 4/16/19.

PHOTO 5:

View of junk vehicles throughout the property, looking south.

Photo taken 4/16/19.

APPENDIX B

BORING LOGS

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SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB1**	BORING DEPTH (ft)	**2**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	8.8	Red fine-grained sandy SILT w/small gravel	
2	4.1	Red brown fine-grained sandy SILT	
3		Boring terminated at 2ft. UVF sample taken at 0-1ft. Sample for off-site analysis taken at 0-1ft.	
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Log Completed By: **DRH**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB2**	BORING DEPTH (ft)	**2**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	4.8	Red silty CLAY	
2	3.1		
3		Boring terminated at 2ft. UVF sample taken at 0-1ft. Sample for off-site analysis taken at 0-1ft.	
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Log Completed By: **DRH**

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SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB3**	BORING DEPTH (ft)	**2**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	0.2	Red brown silty CLAY w/ fine-grained sand	
2	0.8		
3		Boring terminated at 2ft. UVF sample taken at 1-2ft. Sample for off-site analysis taken at 1-2ft.	
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Log Completed By: **DRH**

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SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB4**	BORING DEPTH (ft)	**2**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	1.7	Tan brown fine-grained sandy SILT w/clay	
2	4.2	Red brown fine-grained sandy SILT w/clay	
3		Boring terminated at 2ft. UVF sample taken at 1-2ft. Sample for off-site analysis taken at 1-2ft.	
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Log Completed By: **DRH**

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SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB5**	BORING DEPTH (ft)	**2**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	2.7	Red silty CLAY, moist	
2	1.4		
3		Boring terminated at 2ft. UVF sample taken at 0-1ft. Sample for off-site analysis taken at 0-1ft.	
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SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB6**	BORING DEPTH (ft)	**0.5**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	0.3	Tan brown silty CLAY	
2		Boring terminated at 0.5ft. UVF sample taken at 0-0.5ft. Sample for off-site analysis taken at 0-0.5ft.	
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SOIL BORING FIELD WORKSHEET

BORING #	**P626-SB7**	BORING DEPTH (ft)	**0.5**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707D**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/16/2019**			WEATHER CONDITIONS	**75˚F Sunny**
DRILLING SUB-CONTRACTOR	**N/A**			DRILL RIG	**Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	0.3	Red orange silty CLAY	
2		Boring terminated at 0.5ft. UVF sample taken at 0-0.5ft. Sample for off-site analysis taken at 0-0.5ft.	
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Log Completed By: **DRH**

APPENDIX C

RESULTS FROM ON-SITE UVF SOIL ANALYSES

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Tuesday, April 16, 2019
Samples extracted Tuesday, April 16, 2019
Samples analysed Tuesday, April 16, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P626-SB6-0.5	20.6	<0.52	<0.52	21.7	21.7	10.6	0.52	0.002	0	95.6	4.4	Deg.PHC 69.3%,(FCM)
Soil	P626-SB7-0.5	15.9	<0.4	1.4	7.5	8.9	1.1	0.06	0.001	58.9	38.3	2.8	Deg.FuelDeg.Gas 83.8%,(FCM),(P)
Soil	P626-SB1-1	26.0	<0.65	<0.65	0.18	0.18	0.18	0.02	<0.008	80.5	16.9	2.6	Residual HC,(P)
Soil	P626-SB2-1	22.6	<0.57	<0.57	0.14	0.14	0.13	0.01	<0.007	0	80	20	Residual HC
Soil	P626-SB3-2	19.3	<0.48	<0.48	0.06	0.06	0.05	0.003	<0.006	0	34	66	Residual HC
Soil	P626-SB4-2	17.1	<0.43	<0.43	0.05	0.05	0.05	0.003	<0.005	0	34	66	Residual HC
Soil	P626-SB5-1	17.9	<0.45	<0.45	0.16	0.16	0.15	0.01	<0.005	0	72.4	27.6	Residual HC

Initial Calibrator QC check OK

Final FCM QC Check OK 101.4%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

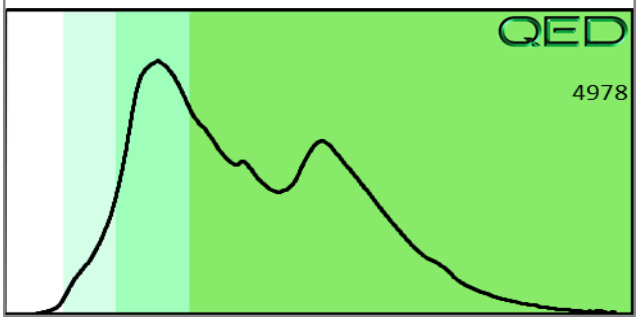
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED Hydrocarbon Fingerprints

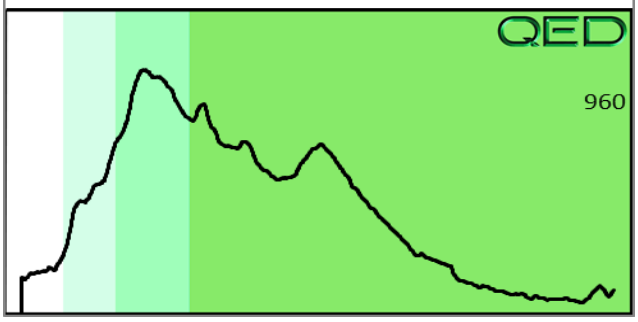
Project: NCDOT Shelby

4/16/2019

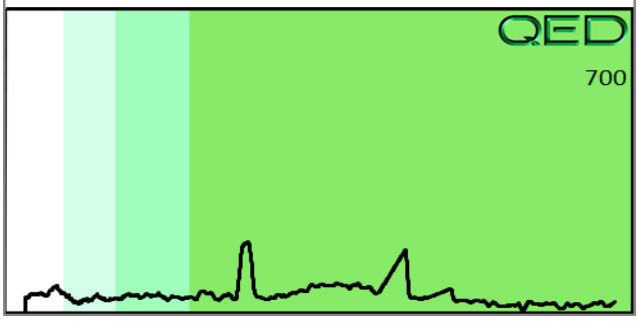
P626-SB6-0.5 : Deg.PHC 69.3%,(FCM)



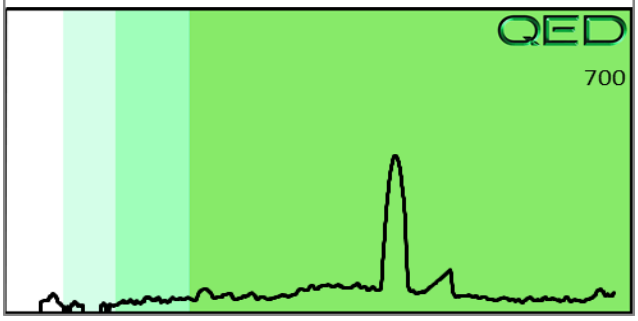
P626-SB7-0.5 : Deg.FuelDeg.Gas 83.8%,(FCM),(P)



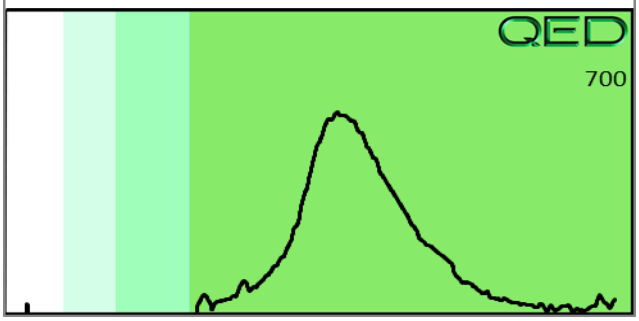
P626-SB1-1 : Residual HC,(P)



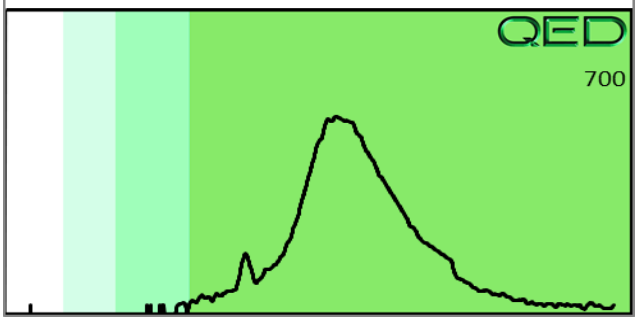
P626-SB2-1 : Residual HC



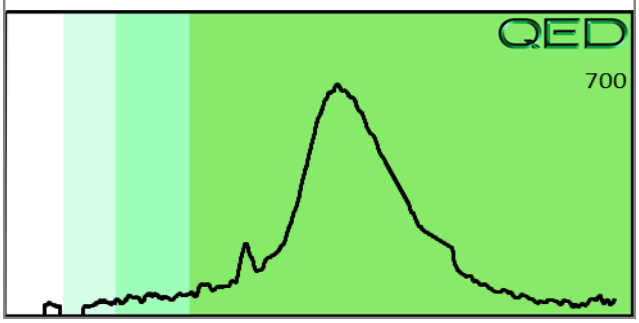
P626-SB3-2 : Residual HC



P626-SB4-2 : Residual HC



P626-SB5-1 : Residual HC



APPENDIX D

LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY FORM

PRISM LABORATORIES, INC.
Full-Service Analytical & Environmental Solutions

NC Certification No. 402
NC Drinking Water Cert No. 37735
SC Certification No. 99012

Case Narrative

4/30/19 11:24

Wood Environ. & Infrastructure Solutions (Charl)
Andrew Frantz
2801 Yorkmont Rd. #100
Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E
Project No.: 1883R2707 Parcel 626
Lab Submittal Date: 04/17/2019
Prism Work Order: 9040276

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Narrative Notes:

This is a Revised Report and supercedes the original laboratory report dated 4/26/19. Client Sample ID P626-SB5-2 was changed to read P626-SB5-1 at the request of Derick Haydin of Wood PLC.
Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.

Robbi A. Jones

President/Project Manager

Reviewed By Robbi A. Jones

President/Project Manager

Data Qualifiers Key Reference:

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
M	Matrix spike outside of the control limits.
MC	Sample concentration too high for recovery evaluation.
PS	Post Spike recovery is outside of the control limits.
U	Not Detected at the MDL
MDL	Method Detection Limit
RPD	Relative Percent Difference
*	Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

PRISM LABORATORIES, INC. Full-Service Analytical & Environmental Solutions

Sample Receipt Summary

04/30/2019

Prism Work Order: 9040276

Client Sample ID	Lab Sample ID	Matrix	Date/Time Sampled	Date/Time Received
P626-SB1-1	9040276-01	Solid	04/16/19 10:30	04/17/19 8:25
P626-SB2-1	9040276-02	Solid	04/16/19 10:50	04/17/19 8:25
P626-SB3-2	9040276-03	Solid	04/16/19 11:15	04/17/19 8:25
P626-SB4-2	9040276-04	Solid	04/16/19 11:30	04/17/19 8:25
P626-SB5-1	9040276-05	Solid	04/16/19 11:50	04/17/19 8:25
P626-SB6-0.5	9040276-06	Solid	04/16/19 12:40	04/17/19 8:25
P626-SB7-0.5	9040276-07	Solid	04/16/19 12:50	04/17/19 8:25

Samples were received in good condition at 1.6 degrees C unless otherwise noted.

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543
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Summary of Detections

04/30/2019

Prism Work Order: 9040276

Prism ID	Client ID	Parameter	Method	Result		Units
9040276-01	P626-SB1-1	Mercury	7471B	0.082		mg/kg dry
9040276-01	P626-SB1-1	Arsenic	6010D	9.3		mg/kg dry
9040276-01	P626-SB1-1	Barium	6010D	87		mg/kg dry
9040276-01	P626-SB1-1	Chromium	6010D	40		mg/kg dry
9040276-01	P626-SB1-1	Lead	6010D	36		mg/kg dry
9040276-02	P626-SB2-1	Mercury	7471B	0.028	J	mg/kg dry
9040276-02	P626-SB2-1	Arsenic	6010D	5.1		mg/kg dry
9040276-02	P626-SB2-1	Barium	6010D	29		mg/kg dry
9040276-02	P626-SB2-1	Chromium	6010D	48		mg/kg dry
9040276-02	P626-SB2-1	Lead	6010D	25		mg/kg dry
9040276-03	P626-SB3-2	Mercury	7471B	0.073		mg/kg dry
9040276-03	P626-SB3-2	Arsenic	6010D	10		mg/kg dry
9040276-03	P626-SB3-2	Barium	6010D	28		mg/kg dry
9040276-03	P626-SB3-2	Chromium	6010D	52		mg/kg dry
9040276-03	P626-SB3-2	Lead	6010D	30		mg/kg dry
9040276-04	P626-SB4-2	Mercury	7471B	0.041	J	mg/kg dry
9040276-04	P626-SB4-2	Arsenic	6010D	6.3		mg/kg dry
9040276-04	P626-SB4-2	Barium	6010D	20		mg/kg dry
9040276-04	P626-SB4-2	Chromium	6010D	25		mg/kg dry
9040276-04	P626-SB4-2	Lead	6010D	16		mg/kg dry
9040276-05	P626-SB5-1	Mercury	7471B	0.10		mg/kg dry
9040276-05	P626-SB5-1	Arsenic	6010D	10		mg/kg dry
9040276-05	P626-SB5-1	Barium	6010D	69		mg/kg dry
9040276-05	P626-SB5-1	Chromium	6010D	55		mg/kg dry
9040276-05	P626-SB5-1	Lead	6010D	31		mg/kg dry
9040276-06	P626-SB6-0.5	Mercury	7471B	0.079		mg/kg dry
9040276-06	P626-SB6-0.5	Arsenic	6010D	9.9		mg/kg dry
9040276-06	P626-SB6-0.5	Barium	6010D	71		mg/kg dry
9040276-06	P626-SB6-0.5	Cadmium	6010D	0.47	J	mg/kg dry
9040276-06	P626-SB6-0.5	Chromium	6010D	36		mg/kg dry
9040276-06	P626-SB6-0.5	Lead	6010D	71		mg/kg dry
9040276-07	P626-SB7-0.5	Mercury	7471B	0.10		mg/kg dry
9040276-07	P626-SB7-0.5	Arsenic	6010D	7.7		mg/kg dry
9040276-07	P626-SB7-0.5	Barium	6010D	71		mg/kg dry
9040276-07	P626-SB7-0.5	Cadmium	6010D	0.42	J	mg/kg dry
9040276-07	P626-SB7-0.5	Chromium	6010D	43		mg/kg dry
9040276-07	P626-SB7-0.5	Lead	6010D	110		mg/kg dry

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Wood Environ. & Infrastructure Solutions (Ch
Attn: Andrew Frantz
2801 Yorkmont Rd. #100
Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB1-1
Prism Sample ID: 9040276-01
Prism Work Order: 9040276
Time Collected: 04/16/19 10:30
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**73.4**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.082**	**mg/kg dry**	**0.068**	**0.024**	**1**	**7471B**	**4/18/19 12:41**	**MMR**	**P9D0323**
Arsenic	**9.3**	**mg/kg dry**	**1.4**	**0.18**	**1**	**6010D**	**4/23/19 14:49**	**JAB**	**P9D0350**
Barium	**87**	**mg/kg dry**	**14**	**4.1**	**1**	**6010D**	**4/23/19 14:49**	**JAB**	**P9D0350**
Cadmium	0.046 U	mg/kg dry	0.68	0.046	1	6010D	4/23/19 14:49	JAB	P9D0350
Chromium	**40**	**mg/kg dry**	**1.4**	**0.10**	**1**	**6010D**	**4/23/19 14:49**	**JAB**	**P9D0350**
Lead	**36**	**mg/kg dry**	**1.4**	**0.23**	**1**	**6010D**	**4/23/19 14:49**	**JAB**	**P9D0350**
Selenium	0.37 U	mg/kg dry	1.4	0.37	1	6010D	4/23/19 14:49	JAB	P9D0350
Silver	0.042 U	mg/kg dry	0.68	0.042	1	6010D	4/23/19 14:49	JAB	P9D0350

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB2-1
Prism Sample ID: 9040276-02
Prism Work Order: 9040276
Time Collected: 04/16/19 10:50
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**76.7**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.028** J	**mg/kg dry**	**0.065**	**0.023**	**1**	**7471B**	**4/18/19 12:45**	**MMR**	**P9D0323**
Arsenic	**5.1**	**mg/kg dry**	**1.3**	**0.17**	**1**	**6010D**	**4/23/19 15:18**	**JAB**	**P9D0350**
Barium	**29**	**mg/kg dry**	**13**	**3.9**	**1**	**6010D**	**4/23/19 15:18**	**JAB**	**P9D0350**
Cadmium	0.044 U	mg/kg dry	0.65	0.044	1	6010D	4/23/19 15:18	JAB	P9D0350
Chromium	**48**	**mg/kg dry**	**1.3**	**0.099**	**1**	**6010D**	**4/23/19 15:18**	**JAB**	**P9D0350**
Lead	**25**	**mg/kg dry**	**1.3**	**0.22**	**1**	**6010D**	**4/23/19 15:18**	**JAB**	**P9D0350**
Selenium	0.36 U	mg/kg dry	1.3	0.36	1	6010D	4/23/19 15:18	JAB	P9D0350
Silver	0.040 U	mg/kg dry	0.65	0.040	1	6010D	4/23/19 15:18	JAB	P9D0350

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB3-2
Prism Sample ID: 9040276-03
Prism Work Order: 9040276
Time Collected: 04/16/19 11:15
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**70.7**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.073**	**mg/kg dry**	**0.071**	**0.024**	**1**	**7471B**	**4/18/19 12:50**	**MMR**	**P9D0323**
Arsenic	**10**	**mg/kg dry**	**1.4**	**0.19**	**1**	**6010D**	**4/23/19 15:26**	**JAB**	**P9D0350**
Barium	**28**	**mg/kg dry**	**14**	**4.2**	**1**	**6010D**	**4/23/19 15:26**	**JAB**	**P9D0350**
Cadmium	0.048 U	mg/kg dry	0.71	0.048	1	6010D	4/23/19 15:26	JAB	P9D0350
Chromium	**52**	**mg/kg dry**	**1.4**	**0.11**	**1**	**6010D**	**4/23/19 15:26**	**JAB**	**P9D0350**
Lead	**30**	**mg/kg dry**	**1.4**	**0.24**	**1**	**6010D**	**4/23/19 15:26**	**JAB**	**P9D0350**
Selenium	0.39 U	mg/kg dry	1.4	0.39	1	6010D	4/23/19 15:26	JAB	P9D0350
Silver	0.043 U	mg/kg dry	0.71	0.043	1	6010D	4/23/19 15:26	JAB	P9D0350

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB4-2
Prism Sample ID: 9040276-04
Prism Work Order: 9040276
Time Collected: 04/16/19 11:30
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**84.5**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.041** J	**mg/kg dry**	**0.059**	**0.020**	**1**	**7471B**	**4/18/19 12:54**	**MMR**	**P9D0323**
Arsenic	**6.3**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/23/19 15:34**	**JAB**	**P9D0350**
Barium	**20**	**mg/kg dry**	**12**	**3.5**	**1**	**6010D**	**4/23/19 15:34**	**JAB**	**P9D0350**
Cadmium	0.040 U	mg/kg dry	0.59	0.040	1	6010D	4/23/19 15:34	JAB	P9D0350
Chromium	**25**	**mg/kg dry**	**1.2**	**0.090**	**1**	**6010D**	**4/23/19 15:34**	**JAB**	**P9D0350**
Lead	**16**	**mg/kg dry**	**1.2**	**0.20**	**1**	**6010D**	**4/23/19 15:34**	**JAB**	**P9D0350**
Selenium	0.33 U	mg/kg dry	1.2	0.33	1	6010D	4/23/19 15:34	JAB	P9D0350
Silver	0.036 U	mg/kg dry	0.59	0.036	1	6010D	4/23/19 15:34	JAB	P9D0350

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB5-1
Prism Sample ID: 9040276-05
Prism Work Order: 9040276
Time Collected: 04/16/19 11:50
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**71.9**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.10**	**mg/kg dry**	**0.070**	**0.024**	**1**	**7471B**	**4/18/19 12:59**	**MMR**	**P9D0323**
Arsenic	**10**	**mg/kg dry**	**1.4**	**0.18**	**1**	**6010D**	**4/23/19 15:42**	**JAB**	**P9D0350**
Barium	**69**	**mg/kg dry**	**14**	**4.2**	**1**	**6010D**	**4/23/19 15:42**	**JAB**	**P9D0350**
Cadmium	0.047 U	mg/kg dry	0.70	0.047	1	6010D	4/23/19 15:42	JAB	P9D0350
Chromium	**55**	**mg/kg dry**	**1.4**	**0.11**	**1**	**6010D**	**4/23/19 15:42**	**JAB**	**P9D0350**
Lead	**31**	**mg/kg dry**	**1.4**	**0.23**	**1**	**6010D**	**4/23/19 15:42**	**JAB**	**P9D0350**
Selenium	0.38 U	mg/kg dry	1.4	0.38	1	6010D	4/23/19 15:42	JAB	P9D0350
Silver	0.043 U	mg/kg dry	0.70	0.043	1	6010D	4/23/19 15:42	JAB	P9D0350

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB6-0.5
Prism Sample ID: 9040276-06
Prism Work Order: 9040276
Time Collected: 04/16/19 12:40
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**76.9**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.079**	**mg/kg dry**	**0.065**	**0.022**	**1**	**7471B**	**4/18/19 13:03**	**MMR**	**P9D0323**
Arsenic	**9.9**	**mg/kg dry**	**1.3**	**0.17**	**1**	**6010D**	**4/23/19 15:52**	**JAB**	**P9D0350**
Barium	**71**	**mg/kg dry**	**13**	**3.9**	**1**	**6010D**	**4/23/19 15:52**	**JAB**	**P9D0350**
Cadmium	**0.47** J	**mg/kg dry**	**0.65**	**0.044**	**1**	**6010D**	**4/23/19 15:52**	**JAB**	**P9D0350**
Chromium	**36**	**mg/kg dry**	**1.3**	**0.099**	**1**	**6010D**	**4/23/19 15:52**	**JAB**	**P9D0350**
Lead	**71**	**mg/kg dry**	**1.3**	**0.22**	**1**	**6010D**	**4/23/19 15:52**	**JAB**	**P9D0350**
Selenium	0.36 U	mg/kg dry	1.3	0.36	1	6010D	4/23/19 15:52	JAB	P9D0350
Silver	0.040 U	mg/kg dry	0.65	0.040	1	6010D	4/23/19 15:52	JAB	P9D0350

Wood Environ. & Infrastructure Solutions (Ch
Attn: Andrew Frantz
2801 Yorkmont Rd. #100
Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 626
Sample Matrix: Solid

Client Sample ID: P626-SB7-0.5
Prism Sample ID: 9040276-07
Prism Work Order: 9040276
Time Collected: 04/16/19 12:50
Time Submitted: 04/17/19 08:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**80.7**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**4/25/19 10:15**	**KBS**	**P9D0447**
Total Metals									
Mercury	**0.10**	**mg/kg dry**	**0.062**	**0.021**	**1**	**7471B**	**4/22/19 12:31**	**MMR**	**P9D0347**
Arsenic	**7.7**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/23/19 16:00**	**JAB**	**P9D0350**
Barium	**71**	**mg/kg dry**	**12**	**3.7**	**1**	**6010D**	**4/23/19 16:00**	**JAB**	**P9D0350**
Cadmium	**0.42** J	**mg/kg dry**	**0.62**	**0.042**	**1**	**6010D**	**4/23/19 16:00**	**JAB**	**P9D0350**
Chromium	**43**	**mg/kg dry**	**1.2**	**0.094**	**1**	**6010D**	**4/23/19 16:00**	**JAB**	**P9D0350**
Lead	**110**	**mg/kg dry**	**1.2**	**0.21**	**1**	**6010D**	**4/23/19 16:00**	**JAB**	**P9D0350**
Selenium	0.34 U	mg/kg dry	1.2	0.34	1	6010D	4/23/19 16:00	JAB	P9D0350
Silver	0.038 U	mg/kg dry	0.62	0.038	1	6010D	4/23/19 16:00	JAB	P9D0350

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Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E
Project No: 1883R2707 Parcel 626

Prism Work Order: 9040276
Time Submitted: 4/17/2019 8:25:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9D0323 - 7471B										
Blank (P9D0323-BLK1)				Prepared & Analyzed: 04/18/19						
Mercury	BRL	0.050	mg/kg wet							
LCS (P9D0323-BS1)				Prepared & Analyzed: 04/18/19						
Mercury	0.427	0.050	mg/kg wet	0.4167		102	80-120			
Batch P9D0347 - 7471B										
Blank (P9D0347-BLK1)				Prepared & Analyzed: 04/22/19						
Mercury	BRL	0.050	mg/kg wet							
LCS (P9D0347-BS1)				Prepared & Analyzed: 04/22/19						
Mercury	0.446	0.050	mg/kg wet	0.4167		107	80-120			
Matrix Spike (P9D0347-MS1)		**Source: 9040276-07**		Prepared & Analyzed: 04/22/19						
Mercury	0.617	0.062	mg/kg dry	0.5164	0.102	100	80-120			
Matrix Spike Dup (P9D0347-MSD1)		**Source: 9040276-07**		Prepared & Analyzed: 04/22/19						
Mercury	0.596	0.062	mg/kg dry	0.5164	0.102	96	80-120	4	20	
Batch P9D0350 - 3050B										
Blank (P9D0350-BLK1)				Prepared: 04/22/19 Analyzed: 04/23/19						
Arsenic	BRL	1.0	mg/kg wet							
Barium	BRL	10	mg/kg wet							
Cadmium	BRL	0.50	mg/kg wet							
Chromium	BRL	1.0	mg/kg wet							
Lead	BRL	1.0	mg/kg wet							
Selenium	BRL	1.0	mg/kg wet							
Silver	BRL	0.50	mg/kg wet							

Wood Environ. & Infrastructure Solutions (Ch
Attn: Andrew Frantz
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Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E
Project No: 1883R2707 Parcel 626

Prism Work Order: 9040276
Time Submitted: 4/17/2019 8:25:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9D0350 - 3050B										
LCS (P9D0350-BS1)				Prepared: 04/22/19 Analyzed: 04/23/19						
Arsenic	11.7	1.0	mg/kg wet	12.50		94	80-120			
Barium	12.1	10	mg/kg wet	12.50		96	80-120			
Cadmium	11.9	0.50	mg/kg wet	12.50		95	80-120			
Chromium	12.0	1.0	mg/kg wet	12.50		96	80-120			
Lead	11.8	1.0	mg/kg wet	12.50		94	80-120			
Selenium	11.6	1.0	mg/kg wet	12.50		93	80-120			
Silver	4.65	0.50	mg/kg wet	5.000		93	80-120			
Matrix Spike (P9D0350-MS1)		**Source: 9040276-01**		Prepared: 04/22/19 Analyzed: 04/23/19						
Arsenic	20.6	1.4	mg/kg dry	17.02	9.34	66	75-125			M
Barium	102	14	mg/kg dry	17.02	87.4	84	75-125			
Cadmium	12.9	0.68	mg/kg dry	17.02	BRL	76	75-125			
Chromium	50.7	1.4	mg/kg dry	17.02	39.7	65	75-125			M
Lead	49.1	1.4	mg/kg dry	17.02	35.9	78	75-125			
Selenium	11.1	1.4	mg/kg dry	17.02	BRL	65	75-125			M
Silver	5.06	0.68	mg/kg dry	6.808	BRL	74	75-125			M
Matrix Spike Dup (P9D0350-MSD1)		**Source: 9040276-01**		Prepared: 04/22/19 Analyzed: 04/23/19						
Arsenic	21.5	1.4	mg/kg dry	17.02	9.34	71	75-125	4	20	M
Barium	100	14	mg/kg dry	17.02	87.4	77	75-125	1	20	
Cadmium	13.5	0.68	mg/kg dry	17.02	BRL	79	75-125	5	20	
Chromium	52.1	1.4	mg/kg dry	17.02	39.7	73	75-125	3	20	M
Lead	50.2	1.4	mg/kg dry	17.02	35.9	84	75-125	2	20	
Selenium	12.5	1.4	mg/kg dry	17.02	BRL	73	75-125	12	20	M
Silver	5.32	0.68	mg/kg dry	6.808	BRL	78	75-125	5	20	
Post Spike (P9D0350-PS1)		**Source: 9040276-01**		Prepared: 04/22/19 Analyzed: 04/23/19						
Arsenic	0.708		mg/L	0.5001	0.275	87	75-125			
Barium	2.91		mg/L	0.5000	2.57	69	75-125			MC, PS
Cadmium	0.433		mg/L	0.5000	-0.00282	87	75-125			
Chromium	1.58		mg/L	0.5001	1.17	82	75-125			
Lead	1.46		mg/L	0.5001	1.05	81	75-125			
Selenium	0.434		mg/L	0.4999	-0.0216	87	75-125			
Silver	0.171		mg/L	0.2000	-0.0216	85	75-125			

Sample Extraction Data

Prep Method: Solids, Dry Weight

Lab Number	Batch	Initial	Final	Date/Time
9040276-01	P9D0447	30 g	30 g	04/25/19 8:48
9040276-02	P9D0447	30 g	30 g	04/25/19 8:48
9040276-03	P9D0447	30 g	30 g	04/25/19 8:48
9040276-04	P9D0447	30 g	30 g	04/25/19 8:48
9040276-05	P9D0447	30 g	30 g	04/25/19 8:48
9040276-06	P9D0447	30 g	30 g	04/25/19 8:48
9040276-07	P9D0447	30 g	30 g	04/25/19 8:48

Prep Method: 3050B

Lab Number	Batch	Initial	Final	Date/Time
9040276-01	P9D0350	2 g	50 mL	04/22/19 8:05
9040276-02	P9D0350	2 g	50 mL	04/22/19 8:05
9040276-03	P9D0350	2 g	50 mL	04/22/19 8:05
9040276-04	P9D0350	2 g	50 mL	04/22/19 8:05
9040276-05	P9D0350	2 g	50 mL	04/22/19 8:05
9040276-06	P9D0350	2 g	50 mL	04/22/19 8:05
9040276-07	P9D0350	2 g	50 mL	04/22/19 8:05

Prep Method: 7471B

Lab Number	Batch	Initial	Final	Date/Time
9040276-01	P9D0323	0.6 g	50 mL	04/18/19 9:00
9040276-02	P9D0323	0.6 g	50 mL	04/18/19 9:00
9040276-03	P9D0323	0.6 g	50 mL	04/18/19 9:00
9040276-04	P9D0323	0.6 g	50 mL	04/18/19 9:00
9040276-05	P9D0323	0.6 g	50 mL	04/18/19 9:00
9040276-06	P9D0323	0.6 g	50 mL	04/18/19 9:00
9040276-07	P9D0347	0.6 g	50 mL	04/22/19 10:45

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

CHAIN OF CUSTODY RECORD

PRISM LABORATORIES, INC. — Full-Service Analytical & Environmental Solutions

449 Springbrook Road • Charlotte, NC 28217
Phone 704/529-6364 • Fax: 704/525-0409

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING: ~~1883R2707~~

Project Name: NCDOT Shelby
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: ~~Andrew Frantz~~
Address: Jackie.Williams@woodplc.com

Client Company Name: Wood
Report To/Contact Name: Andrew Frantz
Reporting Address: 2901 Yorkmont RD Charlotte, NC
Phone: 704-357-5542 Fax (Yes) (No):
Email Address: Andrew.Frantz@woodplc.com
EDD Type: PDF ✓ Excel ✓ Other
Site Location Name: Parcel 626
Site Location Physical Address: Shelby, NC

Purchase Order No./Billing Reference 1883R2707
Requested Due Date ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days ☐ 5 Days
"Working Days" ☐ 6-9 Days ☒ ~~Standard 10 days~~ 10 day ☐ Rush Work Must Be Pre-Approved
Samples received after 14:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	—		
Received ON WET ICE?	—		
PROPER PRESERVATIVES indicated?	—		
Received WITHIN HOLDING TIMES?	—		
CUSTODY SEALS INTACT?			—
VOLATILES rec'd W/OUT HEADSPACE?			—
PROPER CONTAINERS used?	—		

TEMP: Therm ID: IRT-13 Observed: 1.5 °C / Corr: 1.6 °C

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL
Certification: NELAC___ DoD___ FL___ NC ✓
SC___ OTHER___ N/A___
Water Chlorinated: YES___ NO___
Sample Iced Upon Collection: YES ✓ NO___

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	ANALYSIS REQUESTED (RUSH Days)	REMARKS	PRISM LAB ID NO.
P626-SB1-1	4/16/19	1030	Soil	CG	1	4oz	None	X		01
P626-SB2-1		1050						X		02
P626-SB3-2		1115						X		03
P626-SB4-2		1130						X		04
P626-SB5-2		1150						X		05
P626-SB6-0.5		1240						X		06
P626-SB7-0.5		1250						X		07

Sampler's Signature [signature] Sampled By (Print Name) Derick Hagdin Affiliation Wood

PRESS DOWN FIRMLY - 3 COPIES

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

		Date	Military/Hours
Relinquished By: (Signature) [signature]	Received By: (Signature) [signature]	4/17/19	800
Relinquished By: (Signature) [signature]	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Prism Laboratories By: [signature]	4.17.19	0825

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.
☐ Fed Ex ☐ UPS ☑ Hand-delivered ☐ Prism Field Service ☐ Other

COC Group No. 9040276

Additional Comments:

PRISM USE ONLY
Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC
☐	☐	☐	☐	☐	☐	☐	☐	☐

*CONTAINER TYPE CODES: A = Amber C = Clear G= Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

North Carolina Department of Transportation

Preliminary Site Assessment
State Project: R-2707D
WBS Element: 34497.1.2
Cleveland County

Parcel 655
J.A. Injejikian
East Dixon Boulevard
Shelby, North Carolina
May 14, 2019

Wood Environment & Infrastructure Solutions, Inc.
Project: 1883R2707

Derick Haydin, GIT
Staff Geologist

Helen Corley, LG, BCES
Senior Assoc. Hydrogeologist

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Table 3 Summary of RCRA Metals Analytical Results

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Figure 3 UVF Petroleum Soil Results – 4/23/19 & 4/24/19

APPENDICES

Appendix A Photographic Log
Appendix B Boring Logs
Appendix C On-site UVF Hydrocarbon Analytical Results
Appendix D Laboratory Analytical Reports and Chain-of-Custody Forms

1.0 INTRODUCTION

In response to the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated March 27, 2019, Wood Environment & Infrastructure Solutions, Inc. (Wood) has performed a Preliminary Site Assessment (PSA) for Parcel 655. The investigation was conducted in accordance with Wood's Technical and Cost proposal dated April 5, 2019 and revised April 11, 2019. NCDOT contracted Wood to perform the PSA at the parcel, within the area to be affected by future road construction activities, in order to identify potential impacts from the former use of the property.

The parcel is located along the eastern side of East Dixon Boulevard at the intersection of Hoey Church Road and East Dixon Boulevard as shown on the Vicinity Map, **Figure 1**. At the time of this PSA, the parcel was undeveloped and occupied by wooded and grass-covered areas. It is identified as Parcel 655, the J.A. Injejikian property, (Site) within the NCDOT R-2707D design file. The parcel is in Shelby of Cleveland County, North Carolina. The area of investigation within the parcel is shown on **Figure 2**.

The following report describes our subsurface field investigation at the Site and presents on-site UVF soil analyses and eight RCRA Metal analysis to evaluate potential soil contamination within the Site.

1.1 Site History

Historical aerial photographs depicted an auto salvage yard on the property in the 1964 photograph and the ground was heavily disturbed in the 1983 photograph. The Site is not identified on the North Carolina Department of Environmental Quality (NCDEQ) Underground Storage Tank (UST) Facility Database registry and no known groundwater incidents are identified at the Site. No files associated with the Site were available for review on the NCDEQ Laserfiche website.

1.2 Site Description

The Site is located in a mixed-use commercial and residential area of Shelby in Cleveland County and covers approximately 47.8 acres. The Site is undeveloped and occupied by

wooded and grass-covered areas. A photographic log of the property is included as **Appendix A**.

2.0 GEOLOGY

2.1 Regional Geology

The Site is located within the Inner Piedmont Belt of the Piedmont Physiographic Province of North Carolina. According to the 1985 State Geologic Map of North Carolina, the area is underlain by massive to weakly foliated Cherryville Granite.

2.2 Site Geology

Site geology was observed through the advancement of 14 shallow soil borings (P655-SB1 to P655-SB14). The borings were advanced to a target depth of eight feet below ground surface (bgs). Figure 2 presents the boring locations and site layout. Soils encountered in the borings consisted mostly of red to tan to brown clayey sandy silt, overlying a few feet of tan to white silty sand saprolite. Petroleum odor and staining was not observed in the borings and groundwater was not encountered. Based on observations of topography of the Site vicinity, the groundwater flow direction is inferred to be generally to the northeast. 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 created including the Site-specific health and safety information necessary for the field activities. North Carolina 811 was contacted on April 9, 2019 to report the proposed sampling activities and subsequently notify all affected utilities for the parcel. Probe Utility Locating (PUL) was retained by Wood to perform utility locating at the Site. South Atlantic Environmental Drilling and Construction Co. Inc. (SAEDACCO) was selected to conduct the

direct-push drilling services at the Site. RED Lab instrumentation was scheduled for the use in the on-site UVF analysis.

Wood understands that acquisition of the expanded right-of-way is necessary for the construction of the US 74 – Shelby Bypass. Boring locations were strategically placed within the parcel to maximize the opportunity to encounter potential contaminated soil.

3.2 Site Reconnaissance

Wood personnel performed a Site reconnaissance with property owner notification on April 9, 2019. During the Site reconnaissance, the area was visually examined for the presence of any areas/obstructions that could potentially affect the subsurface investigation. At the time of the Site reconnaissance, the Site was undeveloped and occupied by used tires and household debris piles within wooded and grass-covered areas.

3.3 Soil Sampling

In advance of drilling activities, PUL performed utility locating at the Site on April 18, 2019. On April 23 and 24, 2019, Wood and SAEDACCO mobilized to the Site to advance 14 shallow soil borings at the Site across the area of investigation. The borings were advanced via direct-push technology to an approximate depth of eight feet bgs. Borings were advanced in locations targeting debris piles, historic auto storage areas viewed on historical aerials and proposed drainage features.

The purpose of the soil sampling was to determine if a petroleum or metals release had impacted the Site and if so, to estimate the volume of impacted soil that might require special handling during NCDOT construction activities. To minimize potential for cross-contamination between boring locations with the direct-push rig, a new PVC liner (tube) was inserted into the sampler for each soil interval. Soil sampling was accompanied by field screening. Wood conducted field screening for volatile organic compounds (VOCs) of the soil borings with a photoionization detector (PID). The direct-push soil borings were screened with the PID at two-foot intervals. A portion of the interval of the soil boring exhibiting the highest PID reading was retained for analysis of total petroleum hydrocarbons (TPH), diesel range organics (DRO), gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylene (BTEX), total aromatics, and polycyclic aromatic

hydrocarbons (PAH) soil via on-site ultraviolet fluorescence (UVF). Eighteen total samples were collected from the Site from the borings for UVF on-site analysis.

Samples from each boring were also retained for laboratory analysis and placed in laboratory provided containers and immediately placed on ice. The samples were delivered under standard chain-of-custody protocol via courier to Prism Laboratories, Inc. in Charlotte, North Carolina and analyzed for eight RCRA Metals via EPA Methods 6010/7471 by Prism Laboratories, Inc. (Prism) in Charlotte, North Carolina.

One mineral sample was collected from P655-SB11 at 7 feet bgs for laboratory analysis for asbestos content. Wood personnel, Mr. John Maas. (N.C. Asbestos Inspector No. 12757), observed minerals included within the soil to be a suspect asbestos-containing material (ACM). The mineral appeared to be a light-colored mica; however, because numerous fine fibrous splinters were observed, a sample was collected of the material as a conservative precaution. One additional sample classified as being of the same homogeneous material was collected from the adjoining parcel to the west, Parcel 67. Upon NCDOT approval, the samples were submitted to EMSL Analytical, Inc. (EMSL) a National Voluntary Laboratory Accreditation Program accredited laboratory in Charlotte, North Carolina for analysis by Polarized Light Microscopy (PLM) coupled with dispersion staining (EPA Method 600/R-93/116). A signed chain-of-custody form is maintained with the samples until they are returned or disposed.

4.0 SOIL SAMPLING RESULTS

Based on PID field screening and UVF hydrocarbon analysis from April 23 and 24, 2019, evidence of petroleum hydrocarbon impacts was not identified. As a result, the NCDEQ Action levels of 100 mg/kg for DRO and 50 mg/kg for GRO within the area of investigation were not exceeded.

4.1 Soil Screening and UVF Analyses

PID readings for the 14 borings ranged from 1.9 parts per million (ppm) in sample P655-SB11-2-4 collected from two to four feet bgs to 8.9 ppm in sample P655-SB7-0-2 collected

from the ground surface to two foot bgs. The PID field screening results are summarized in **Table 1** and provided on the boring logs in Appendix B.

Results from the on-site UVF petroleum soil analyses are presented in **Table 2**, with instrument generated tables in **Appendix C**. Several categories of analyses were measured such as: DRO, GRO, TPH, PAHs, and total aromatics. **Figure 3** presents the GRO and DRO results at each boring.

Elevated TPH values above the NCDEQ Action Limit of 50 milligrams per kilogram (mg/kg) for GRO or 100 mg/kg for DRO were not detected in the 18 samples collected from the borings advanced at the Site. GRO was detected in one sample (P655-SB6-0-2) at a concentration of 1.3 mg/kg, while DRO was detected in five of the 18 samples ranging from 0.32 mg/kg in sample P655-SB4-6-8 to 1.8 mg/kg in sample P655-SB3-6-8. The hydrocarbon results from the QED QROS Hydrocarbon Analyzer are provided in Appendix C.

4.2 Laboratory Analyses

The laboratory analytical report and chain-of-custody form for the soil sample analyses conducted by Prism and EMSL are presented in **Appendix D**. The results of the 15 soil samples analyzed for eight RCRA Metals by Prism and the PLM analyses by EMSL are summarized as well as below. In addition, the eight RCRA Metals analysis results are summarized in **Table 3**.

- Concentrations of arsenic, barium, total chromium and lead were identified in each of the 15 soil samples collected at the Site. In one of the 15 samples collected, (P655-SB12-6-8) at the Site, the arsenic and total chromium concentrations were J-flagged, indicating the values were identified above the method detection limit but below the reporting limit and are considered an estimate. Twelve out of 15 soil samples identified cadmium concentrations but were J-flagged. Six out of 15 soil samples identified mercury concentrations but four were J-flagged.

- The arsenic concentrations identified in the 15 samples collected at the Site ranged from 0.31J mg/kg in P655-SB12-6-8 to 8.0 mg/kg in sample P655-SB1-0-2. In addition, six of the 15 arsenic concentrations identified in the samples exceeded the

EPA Composite Worker Soil Carcinogenic Target Risk of $1e^{-06}$ (TR) Regional Screening Level (RSL) for arsenic of 3.0 mg/kg.

- The total chromium concentrations identified in the 15 samples collected at the Site ranged from 0.25J in sample P655-SB12-6-8 to 40 mg/kg in sample P655-SB1-0-2. In addition, 11 total chromium concentrations identified exceeded the NCDEQ Soil-to-Water Maximum Soil Contaminant Concentration (MSCC) for total chromium of 5.4 mg/kg. Furthermore, 10 total chromium concentrations identified exceeded both the NCDEQ Soil-to-Water MSCC and the EPA Composite Worker Soil Carcinogenic TR RSL for chromium (VI) of 6.3 mg/kg. Note, separate EPA RSLs are established for chromium (III) and chromium (VI) variants. Speciated chromium samples were not analyzed as part of this assessment. The EPA Composite Worker Soil Carcinogenic TR RSL for chromium (VI) of 6.3 mg/kg was conservatively compared to these samples.

- The barium, cadmium, lead and mercury concentrations identified in the samples did not exceed their respective NCDEQ MSCCs or EPA RSLs.

- The U.S. EPA defines asbestos-containing materials as materials containing more than one percent asbestos. OSHA considers any detectable amount of asbestos to be an asbestos-containing material. Asbestos was not detected in the Parcel 655 sample (nor the sample from Parcel 67, discussed in a separate report) collected and analyzed as a part of this assessment.

5.0 CONCLUSIONS

Based on the Site observations, UVF analysis, and laboratory analysis, petroleum-impacted soil contamination was not identified and thus the NCDEQ Action levels of 100 mg/kg for DRO and 50 mg/kg for GRO were not exceeded.

Concentrations of arsenic were identified in six of the 15 soil samples collected at the Site which exceeded their respective EPA Composite Worker Soil TR RSL. Concentrations of total chromium were identified in 11 of the 15 soil samples that exceeded their respective NCDEQ Soil-to-Water MSCC and 10 of the 15 soil samples exceeded their respective EPA

Composite Worker Soil Carcinogenic TR RSL. However, the concentrations of arsenic and total chromium identified in the soil samples collected at the site are within the naturally occurring trace element content of soils as identified in the EPA Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW874 (dated April 1983), page 273, Table 6.46. Based on the absence of petroleum-impacted soils identified at the site and the fact that the concentrations of arsenic and total chromium were identified within naturally occurring background levels, Wood does not consider the metal concentrations to indicate a release has occurred at the Site.

Based on the results of the asbestos sampling and assessment activities at the Site, ACM were not identified in the sub-surface on Site.

6.0 RECOMMENDATIONS

Based on these PSA results, Wood does not recommend further assessment in the area of investigation or special soil handling during construction.

TABLES

Table 1: Summary of PID Screening Results
R-2707D, Parcel 655 - J.A. Injejikian
Shelby, North Carolina
Wood Project: 1883R2707D

Boring ID	Depth of Sample Interval	PID Reading
P655-SB1	0-2	5.2
P655-SB2	2-4	6.8
P655-SB3	0-2	6.8
P655-SB3	6-8	4.0
P655-SB4	0-2	8.3
P655-SB4	6-8	7.0
P655-SB5	0-2	8.0
P655-SB6	0-2	7.5
P655-SB7	0-2	8.9
P655-SB8	2-4	7.5
P655-SB9	2-4	3.7
P655-SB10	0-2	4.7
P655-SB10	4-6	5.0
P655-SB11	2-4	1.9
P655-SB12	0-2	6.0
P655-SB12	6-8	6.0
P655-SB13	2-4	5.9
P655-SB14	2-4	4.2

Notes:

1. Samples collected on April 23 and 24, 2019
2. Depths shown in feet below ground surface (bgs)
3. PID = Photoionization Detector
4. PID readings shown in parts per million (ppm)

Prepared By/Date: AJF 4/26/19

Checked By/Date: DRH 5/7/19

Table 2: Summary of UVF Petroleum Soil Results
R-2707D, Parcel 655 - J.A. Injejikian
Shelby, North Carolina
Wood Project: 1883R2707D

Sample ID Number	Sample Depth	BTEX	GRO	DRO	PAHs
P655-SB1-0-2	0-2	<0.33	<0.33	<0.13	<0.007
P655-SB2-2-4	2-4	<0.49	<0.49	0.63	0.03
P655-SB3-0-2	0-2	<0.45	<0.45	0.9	0.03
P655-SB3-6-8	6-8	<0.41	<0.41	1.8	0.04
P655-SB4-0-2	0-2	<0.41	<0.41	<0.16	<0.008
P655-SB4-6-8	6-8	<0.43	<0.43	0.32	0.03
P655-SB5-0-2	0-2	<0.48	<0.48	<0.19	<0.01
P655-SB6-0-2	0-2	<0.39	1.3	0.42	0.01
P655-SB7-0-2	0-2	<0.37	<0.37	<0.15	<0.007
P655-SB8-2-4	2-4	<0.37	<0.37	<0.15	<0.007
P655-SB9-2-4	2-4	<0.42	<0.42	<0.17	<0.008
P655-SB10-0-2	0-2	<0.41	<0.41	<0.16	<0.008
P655-SB10-4-6	4-6	<0.42	<0.42	<0.17	<0.008
P655-SB11-2-4	2-4	<0.48	<0.48	<0.19	<0.01
P655-SB12-0-2	0-2	<0.4	<0.4	<0.16	<0.008
P655-SB12-6-8	6-8	<0.47	<0.47	<0.19	<0.009
P655-SB13-2-4	2-4	<0.41	<0.41	<0.17	<0.008
P655-SB14-2-4	2-4	<0.39	<0.39	<0.16	<0.008
NC State Action Level		**N/A**	**50**	**100**	**N/A**

Notes:

1. Samples collected on April 23 and 24, 2019
2. Depths shown in feet below ground surface (bgs)
3. Concentrations shown in milligrams per kilogram (mg/kg)
4. BTEX = Benzene, toluene, ethylbenzene, xylene
5. GRO = Gasoline Range Organics
6. DRO = Diesel Range Organics
7. PAHs = Polycyclic aromatic hydrocarbons
8. N/A = Not applicable
9. Bold values exceed respective NC State Action Level

Prepared By/Date: AJF 4/26/19

Checked By/Date: DRH 5/7/19

Table 3: Summary of RCRA Metal Analytical Results
Parcel 655, J.A. Injejikian
Shelby, North Carolina
Wood Project: 1883R2707D

Constituent	Soil-to-Water MSCCs	Industrial/ Commercial MSCCs	EPA Composite Worker Soil Carcinogenic TR RSLs	EPA Composite Worker Soil Non-carcinogenic HI RSLs	Trace Element Content of Soils*	P655-SB2-2-4	P655-SB3-0-2	P655-SB4-0-2	P655-SB5-0-2	P655-SB6-0-2	P655-SB7-0-2	P655-SB8-2-4
Sample Depth	--	--	--	--	--	2-4	0-2	0-2	0-2	0-2	0-2	2-4
Arsenic	NE	NE	3.0	48	1-50	1.6	2.0	7.2	4.4	4.9	4.5	5.0
Barium	290	81,000	NE	22,000	100-3,000	20	27	36	48	34	39	20
Cadmium	NE	NE	9,300	98	0.01-0.7	0.096J	0.097J	0.16J	0.098J	0.10J	0.085J	0.20J
Chromium	5.4	1,226	(III) NE (VI) 6.3	(III) 180,000 (VI) 350	1-1,000	3.5	4.5	**35**	**17**	**22**	**16**	**17**
Lead	270	400	NE	800	2-200	12	14	25	37	24	23	30
Mercury	NE	NE	NE	4.6	0.01-0.3	<0.019	<0.020	0.031J	0.032J	0.024J	<0.021	0.036J
Selenium	NE	NE	NE	580	0.1-2	<0.31	<0.32	<0.35	<0.35	<0.34	<0.33	<0.34
Silver	0.25	2,044	NE	580	0.01-5	<0.034	<0.035	<0.039	<0.039	<0.038	<0.037	<0.038

Notes:

1. Samples collected on April 23 and 24, 2019
2. Concentrations reported in milligrams per kilogram (mg/kg)
3. Depths shown in feet below ground surface (bgs)
4. MSCC = NCDEQ Division of Waste Management, Maximum Soil Contaminant Concentration Levels, dated April 2012
5. EPA RSLs = EPA Regional Screening Levels (RSLs), Carcinogenic Target Risk (TR) = 1e-06, Non-carcinogenic Hazard Index (HI) 0.1, dated November 2018
6. Bold value indicates concentration exceeds Soil-to-Water MSCC
7. Shaded value indicates concentration exceeds Industrial/Commercial MSCC
8. Underlined value indicates concentration exceeds EPA RSL for either Carcinogenic TR or Non-carcinogenic HI
9. J-flag indicates value was identified above method detection limit but below laboratory reporting limit, value is considered an estimate
10. Separate RSLs are established for Chromium (III) and (VI) variants. Speciated chromium samples were not analyzed during this assessment
11. NE = Not established

*Reference: USEPA Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW-874 (April 1983) page 273, Table 6.46

Table 3: Summary of RCRA Metal Analytical Results
Parcel 655, J.A. Injejikian
Shelby, North Carolina
Wood Project: 1883R2707D

Constituent	Soil-to-Water MSCCs	Industrial/ Commercial MSCCs	EPA Composite Worker Soil Carcinogenic TR RSLs	EPA Composite Worker Soil Non-carcinogenic HI RSLs	Trace Element Content of Soils*	P655-SB9-2-4	P655-SB10-0-2	P655-SB11-2-4	P655-SB12-0-2	P655-SB12-6-8	P655-SB13-2-4	P655-SB14-2-4
Sample Depth	--	--	--	--	--	2-4	0-2	2-4	0-2	6-8	2-4	2-4
Arsenic	NE	NE	3.0	48	1-50	2.8	1.3	2.8	1.4	0.31J	2.7	2.0
Barium	290	81,000	NE	22,000	100-3,000	33	16	24	16	11	25	41
Cadmium	NE	NE	9,300	98	0.01-0.7	0.083J	<0.039	0.064J	0.057J	<0.037	0.081J	<0.038
Chromium	5.4	1,226	(III) NE (VI) 6.3	(III) 180,000 (VI) 350	1-1,000	**10**	1.9	**8.7**	**6.3**	0.25J	**16**	**8.6**
Lead	270	400	NE	800	2-200	45	28	22	31	9.2	20	23
Mercury	NE	NE	NE	4.6	0.01-0.3	<0.021	<0.020	<0.021	<0.020	<0.019	0.062	<0.020
Selenium	NE	NE	NE	580	0.1-2	<0.34	<0.32	<0.34	<0.32	<0.30	<0.34	<0.31
Silver	0.25	2,044	NE	580	0.01-5	<0.038	<0.035	<0.038	<0.036	<0.033	<0.038	<0.035

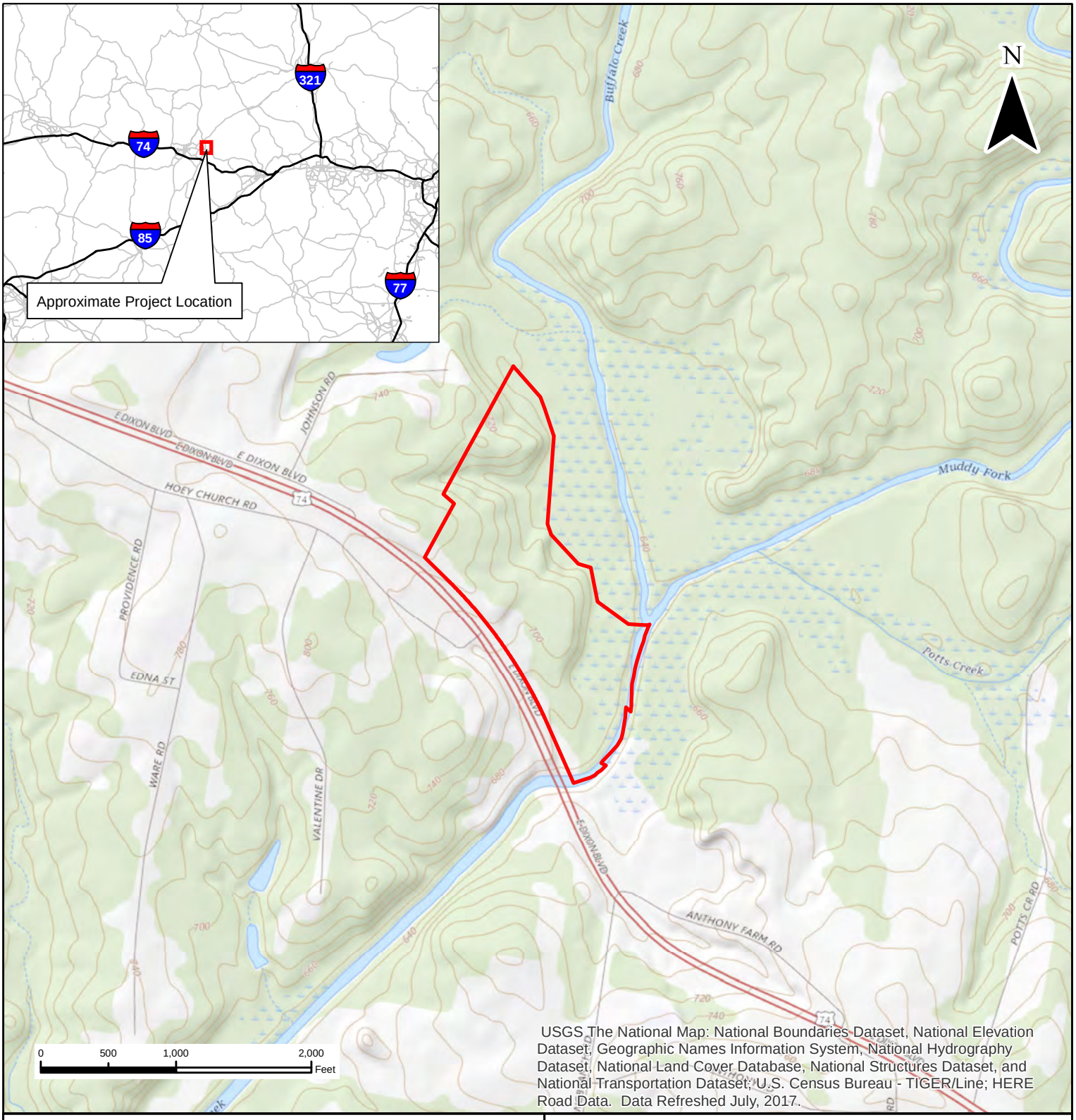
Notes:

1. Samples collected on April 23 and 24, 2019
2. Concentrations reported in milligrams per kilogram (mg/kg)
3. Depths shown in feet below ground surface (bgs)
4. MSCC = NCDEQ Division of Waste Management, Maximum Soil Contaminant Concentration Levels, dated April 2012
5. EPA RSLs = EPA Regional Screening Levels (RSLs), Carcinogenic Target Risk (TR) = 1e-06, Non-carcinogenic Hazard Index (HI) 0.1, dated November 2018
6. Bold value indicates concentration exceeds Soil-to-Water MSCC
7. Shaded value indicates concentration exceeds Industrial/Commercial MSCC
8. Underlined value indicates concentration exceeds EPA RSL for either Carcinogenic TR or Non-carcinogenic HI
9. J-flag indicates value was identified above method detection limit but below laboratory reporting limit, value is considered an estimate
10. Separate RSLs are established for Chromium (III) and (VI) variants. Speciated chromium samples were not analyzed during this assessment
11. NE = Not established

*Reference: USEPA Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW-874 (April 1983) page 273, Table 6.46

Prepared By/Date: DRH 5/7/19
Checked By/Date: RPD 5/9/19

FIGURES

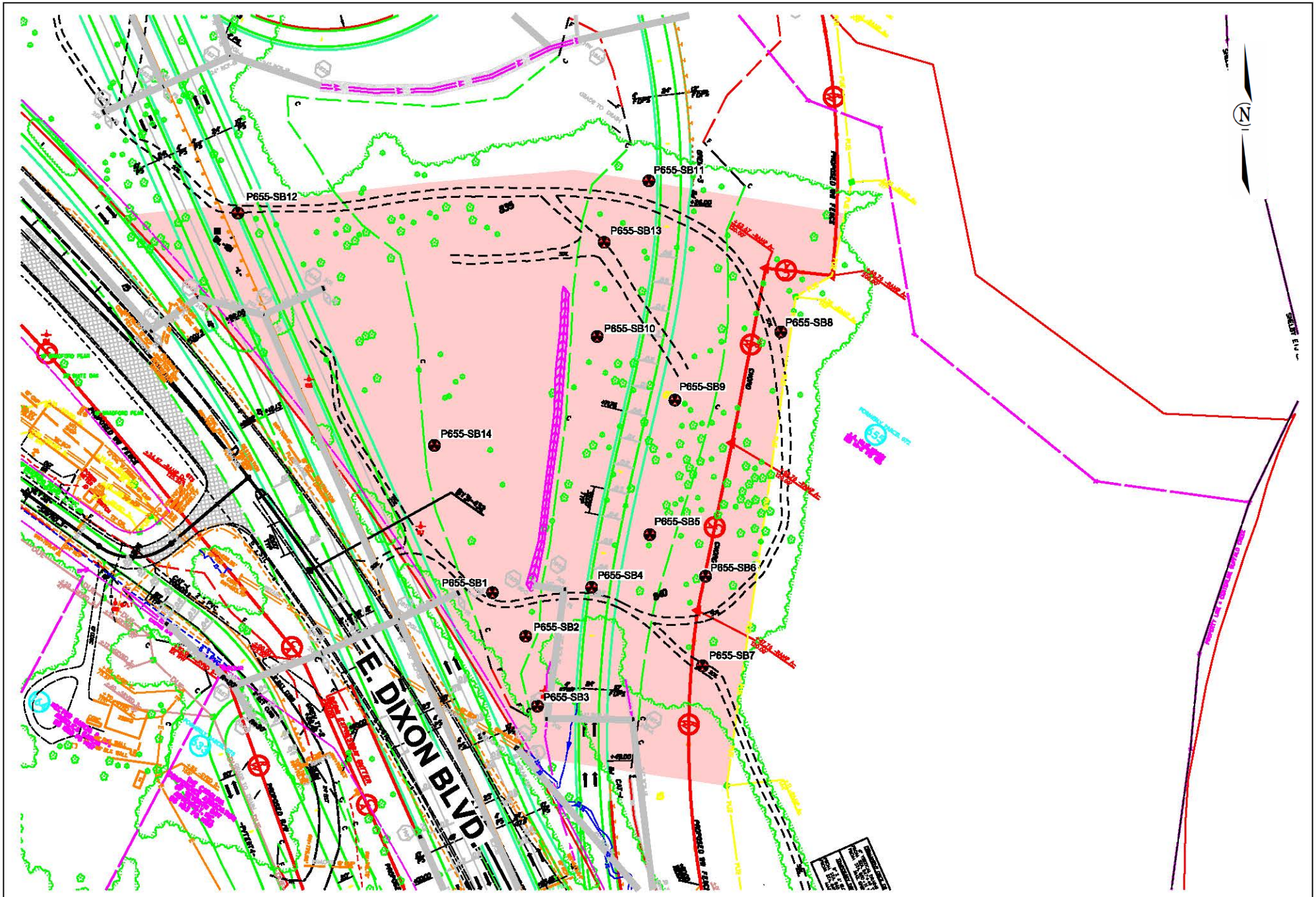


wood.

SITE VICINITY
R2707D - Parcel 655
J.A. Injejikian
East Dixon Boulevard
Shelby, North Carolina

Site Boundary

Prepared By: LMM Date: 4/4/2019	Checked By: AJF Date: 4/4/2019	Project No.: 1883R2707	Figure No.: 1



BORING LOCATION

AREA OF INVESTIGATION

75′ 0′ 75′ 150′

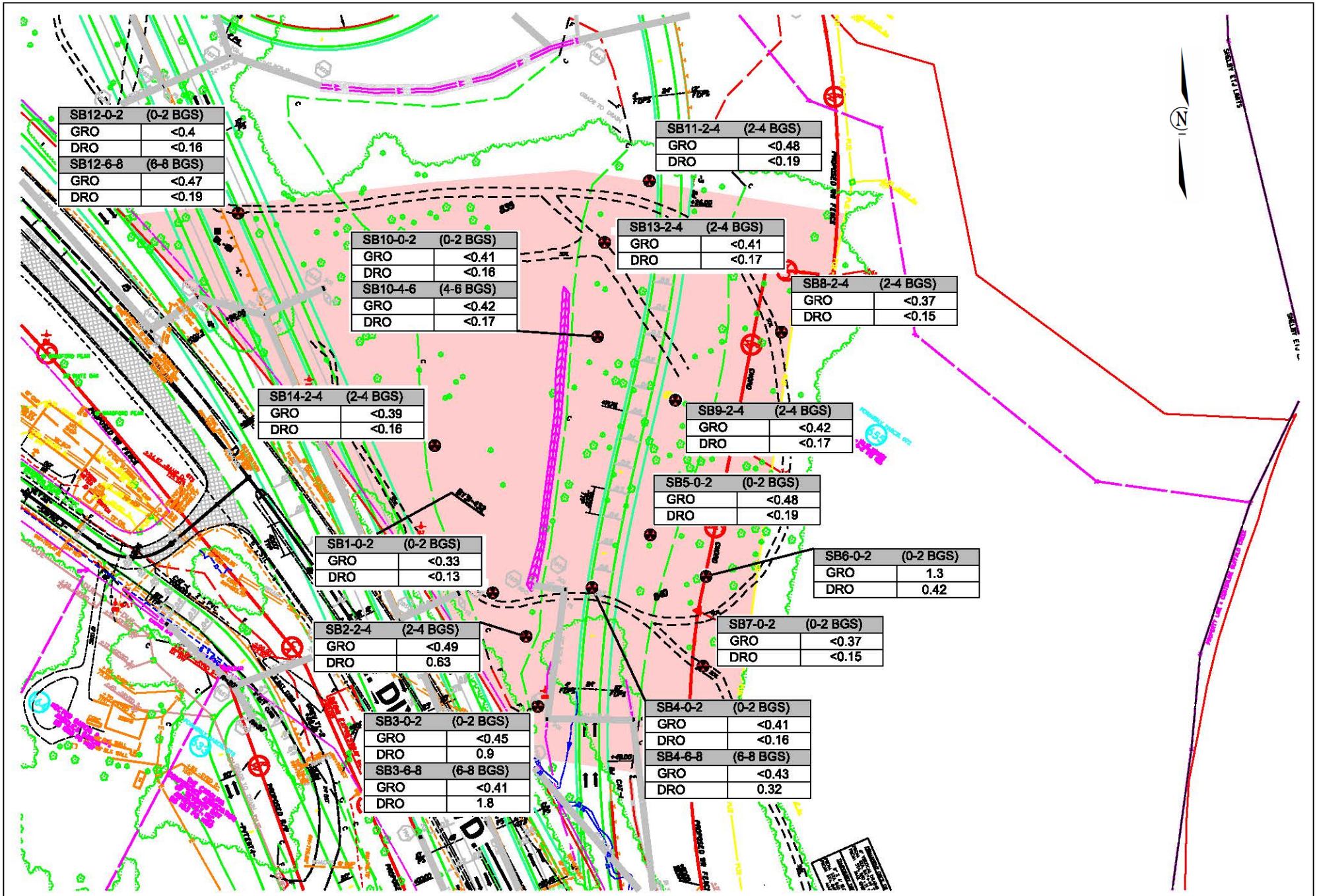
37.5′

(ENGLISH)

wood.

AREA OF INVESTIGATION WITH SOIL BORING LOCATIONS - PARCEL 655
INJEJIKIAN PROPERTY
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.2
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LMM	5/9/19	HPC	5/9/19	188322707	2



BORING LOCATION
AREA OF INVESTIGATION
GRO=GASOLINE RANGE ORGANICS
DRO=DIESEL RANGE ORGANICS
CONCENTRATIONS SHOWN IN MILLIGRAMS PER KILOGRAM (mg/kg)
SHADED CONCENTRATIONS EXCEED NCDEQ STATE ACTION LIMITS
BGS=FEET BELOW GROUND SURFACE
BRL=BELOW REPORTING LIMIT

75′ 0′ 75′ 150′
37.5′
(ENGLISH)

wood.

UVF PETROLEUM RESULTS - PARCEL 655
INJEJIKIAN PROPERTY
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.2
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LMM	5/9/19	HPC	5/9/19	188322707	3

APPENDIX A

PHOTOGRAPHIC LOG

PHOTO 1:

View of drilling sub-contractor SAEDACCO advancing soil boring P655-SB10.

Photo taken 4/24/19.

PHOTO 2:

View of tires and household debris, near boring P655-SB8.

Photo taken 4/24/19.

PHOTO 3:

View of southwestern corner of the area of investigation, a change in elevation located along powerline easement.

Photo taken 4/24/19

APPENDIX B

BORING LOGS

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB1**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Tan, sandy SILT, moist	
2	5.2		
3			
4	5.2		
5			
6	1.7		
7			
8	2.8	Red brown, sandy silty CLAY, moist	
9		Boring terminated at 8ft. UVF sample taken at 0-2ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB2**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red brown, sandy silty CLAY, moist	
2	5.2		
3		Tan, sandy SILT, moist, quartz and mica	
4	6.8		
5			
6	7.8	Red brown, sandy silty CLAY, moist, mica	
7			
8	3.7		
9		Boring terminated at 8ft. UVF sample taken at 2-4ft. Sample for off-site analysis taken at 2-4ft.	
10			
11			
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14			
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16			
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18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB3**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red brown, sandy silty CLAY, moist	
2	6.8		
3		Tan, sandy SILT, moist, quartz and mica	
4	5.2		
5			
6	3.7	Red brown, sandy silty CLAY, moist, mica	
7			
8	4.0		
9		Boring terminated at 8ft. UVF sample taken at 0-2 and 6-8ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
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21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB4**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red brown, clayey sandy SILT, moist	
2	8.3		
3			
4	6.5		
5			
6	6.9	Brown, clayey silty SAND, moist, some quartz	
7			
8	7.0		
9		Boring terminated at 8ft. UVF sample taken at 0-2 and 6-8ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
12			
13			
14			
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16			
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19			
20			
21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB5**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	8.0		
3			
4	7.8		
5			
6	7.5		
7		Tan, white, silty SAND, saprolite	
8	8.0		
9		Boring terminated at 8ft. UVF sample taken at 0-2ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
12			
13			
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21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB6**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	7.5		
3			
4	7.4		
5			
6	6.7		
7		Tan, white, silty SAND, saprolite	
8	7.8		
9		Boring terminated at 8ft. UVF sample taken at 0-2ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
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13			
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16			
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19			
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21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB7**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	8.9		
3			
4	8.7		
5			
6	10.1		
7		Tan, white, silty SAND, saprolite	
8	10.2		
9		Boring terminated at 8ft. UVF sample taken at 0-2ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
12			
13			
14			
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16			
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18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB8**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	6.8		
3			
4	7.5		
5			
6	6.9		
7		Tan, white, silty SAND, saprolite	
8	7.2		
9		Boring terminated at 8ft. UVF sample taken at 2-4ft. Sample for off-site analysis taken at 2-4ft.	
10			
11			
12			
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14			
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16			
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19			
20			
21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB9**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	1.7		
3			
4	3.7		
5			
6	3.7		
7		Tan, white, silty SAND, saprolite	
8	3.8		
9		Boring terminated at 8ft. UVF sample taken at 2-4ft. Sample for off-site analysis taken at 2-4ft.	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB10**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	4.7		
3			
4	4.4		
5			
6	5.0		
7		Tan, white, silty SAND, saprolite	
8	4.7		
9		Boring terminated at 8ft. UVF sample taken at 0-2 and 4-6ft. Sample for off-site analysis taken at 0-2ft.	
10			
11			
12			
13			
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16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB11**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	1.4		
3			
4	1.9		
5			
6	2.6		
7		Tan, white, silty SAND, saprolite	
8	2.8		
9		Boring terminated at 8ft. UVF sample taken at 2-4ft. Sample for off-site analysis taken at 2-4ft.	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB12**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	6.0		
3			
4	5.9		
5			
6	5.7		
7		Tan, white, silty SAND, saprolite	
8	6.0		
9		Boring terminated at 8ft. UVF sample taken at 0-2 and 6-8ft. Samples for off-site analysis taken at 0-2 and 6-8ft.	
10			
11			
12			
13			
14			
15			
16			
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18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB13**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	5.8		
3			
4	5.9		
5			
6	6.3		
7		Tan, white, silty SAND, saprolite	
8	6.0		
9		Boring terminated at 8ft. UVF sample taken at 2-4ft. Sample for off-site analysis taken at 2-4ft.	
10			
11			
12			
13			
14			
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16			
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19			
20			
21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P655-SB14**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**82˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Red orange, clayey sandy SILT, moist	
2	4.2		
3			
4	4.9		
5			
6	4.9		
7		Tan, white, silty SAND, saprolite	
8	5.4		
9		Boring terminated at 8ft. UVF sample taken at 2-4ft. Sample for off-site analysis taken at 2-4ft.	
10			
11			
12			
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14			
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16			
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21			

Log Completed By: **JRM**

APPENDIX C

RESULTS FROM ON-SITE UVF SOIL ANALYSES

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte

Samples taken Tuesday, April 23, 2019
Samples extracted Tuesday, April 23, 2019
Samples analysed Tuesday, April 23, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P655-SB1-0-2	13.1	<0.33	<0.33	<0.13	<0.33	<0.007	<0.007	<0.001	0	0	0	PHC ND,(FCM)
Soil	P655-SB2-2-4	19.5	<0.49	<0.49	0.63	0.63	0.3	0.03	<0.006	0	100	0	Deg Fuel 65.9%,(FCM)
Soil	P655-SB3-0-2	18.2	<0.45	<0.45	0.9	0.9	0.39	0.03	<0.005	0	98.9	1.1	Deg Fuel 64%,(FCM)
Soil	P655-SB4-0-2	16.3	<0.41	<0.41	<0.16	<0.41	<0.008	<0.008	<0.005	0	100	0	Residual HC
Soil	P655-SB5-0-2	19.3	<0.48	<0.48	<0.19	<0.48	<0.01	<0.01	<0.006	0	0	0	PHC ND,(FCM)
Soil	P655-SB6-0-2	15.5	<0.39	1.3	0.42	1.72	0.23	0.01	<0.005	89.9	10.1	0	69.3%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.6%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Tuesday, April 23, 2019
Samples extracted Wednesday, April 24, 2019
Samples analysed Wednesday, April 24, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P655-SB7-0-2	14.6	<0.37	<0.37	<0.15	<0.37	<0.007	<0.007	<0.004	0	0	0	PHC ND,(FCM)
Soil	P655-SB8-2-4	14.9	<0.37	<0.37	<0.15	<0.37	<0.007	<0.007	<0.004	0	0	0	PHC ND,(FCM)
Soil	P655-SB9-2-4	17.0	<0.42	<0.42	<0.17	<0.42	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)
Soil	P655-SB10-0-2	16.5	<0.41	<0.41	<0.16	<0.41	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)

Initial Calibrator QC check OK Final FCM QC Check OK 100.1%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Wednesday, April 24, 2019
Samples extracted Wednesday, April 24, 2019
Samples analysed Wednesday, April 24, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P655-SB11-2-4	19.3	<0.48	<0.48	<0.19	<0.48	<0.01	<0.01	<0.006	0	0	0	PHC ND,(FCM)
Soil	P655-SB12-0-2	15.9	<0.4	<0.4	<0.16	<0.4	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)
Soil	P655-SB12-6-8	18.8	<0.47	<0.47	<0.19	<0.47	<0.009	<0.009	<0.006	0	0	0	PHC ND,(FCM)
Soil	P655-SB13-2-4	16.6	<0.41	<0.41	<0.17	<0.41	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)
Soil	P655-SB14-2-4	15.8	<0.39	<0.39	<0.16	<0.39	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)

Initial Calibrator QC check OK Final FCM QC Check OK 100.2%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Wednesday, April 24, 2019
Samples extracted Wednesday, April 24, 2019
Samples analysed Wednesday, April 24, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P655-SB3-6-8	16.4	<0.41	<0.41	1.8	1.8	0.87	0.04	<0.005	0	95.6	4.4	V.Deg.PHC 75.9%,(FCM)
Soil	P655-SB4-6-8	17.3	<0.43	<0.43	0.32	0.32	0.28	0.03	<0.005	0	100	0	Residual PHC
Soil	P655-SB10-4-6	16.9	<0.42	<0.42	<0.17	<0.42	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)

Initial Calibrator QC check OK Final FCM QC Check OK 99.9%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

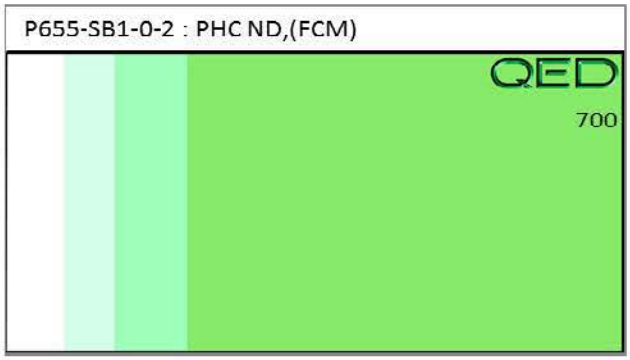
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

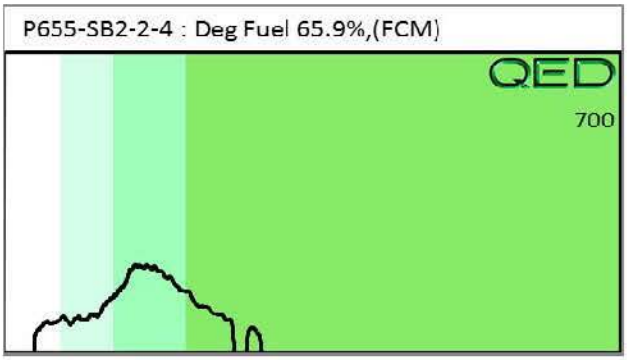
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

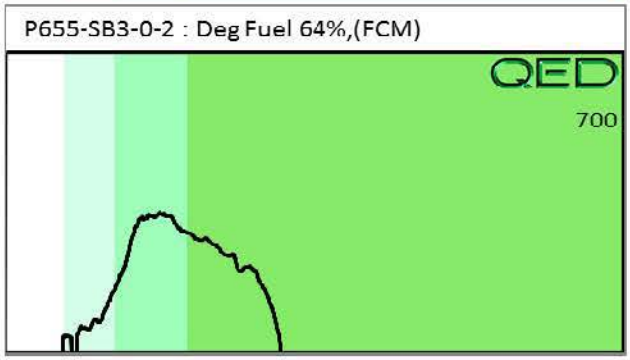
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

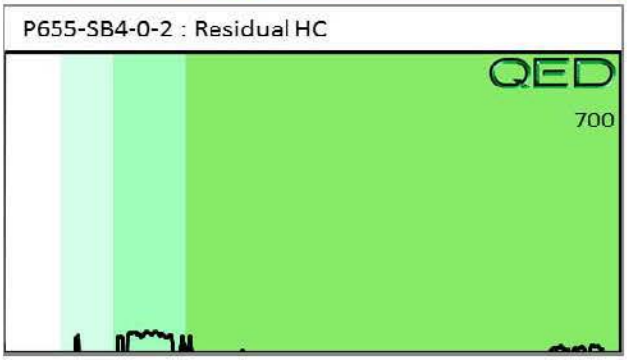
QED Hydrocarbon Fingerprints

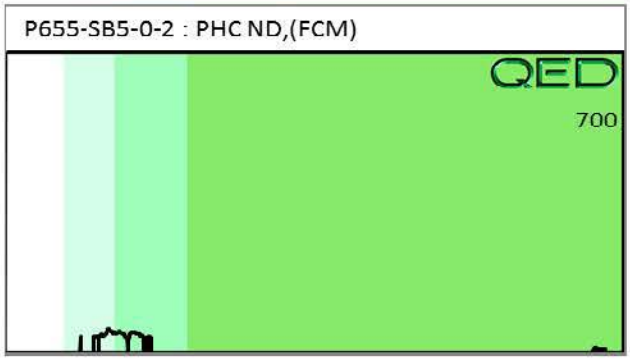
Project: NCDOT Shelby Tuesday, April 23, 2019

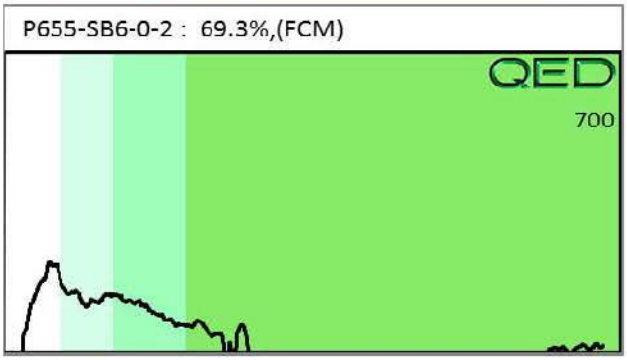






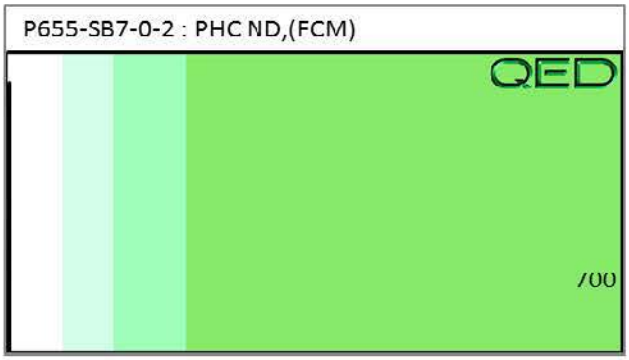


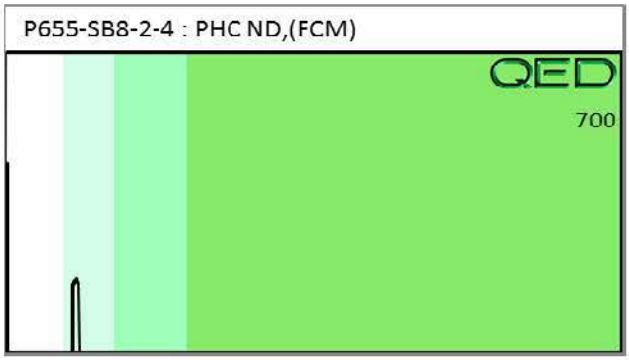


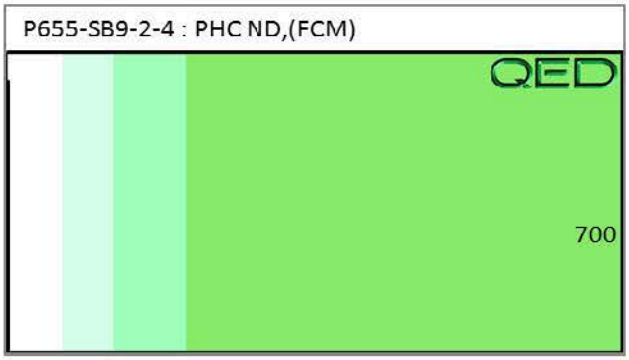


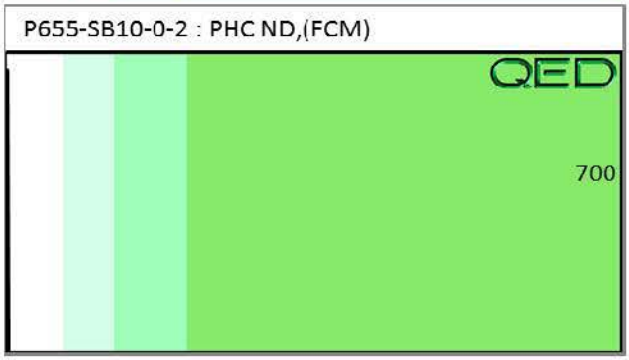
QED Hydrocarbon Fingerprints

Project: NCDOT Shelby 4/24/2019



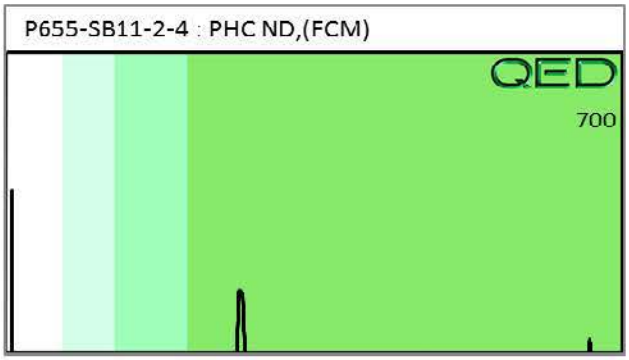


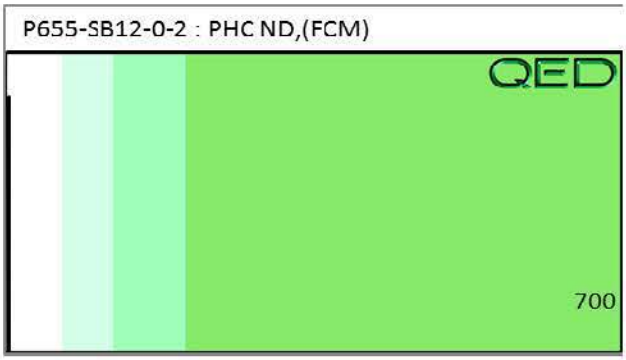


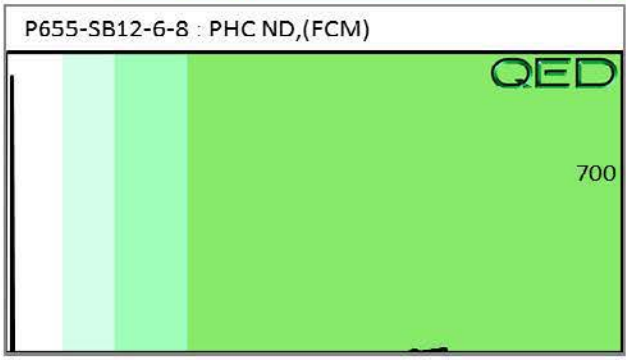


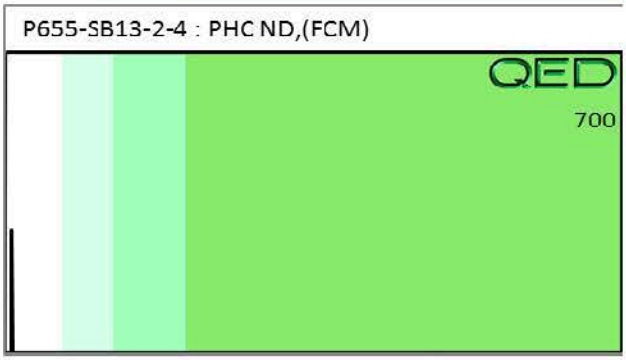
QED Hydrocarbon Fingerprints

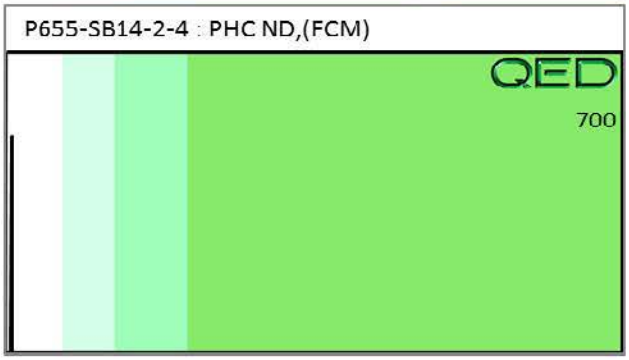
Project: NCDOT Shelby 4/24/2019





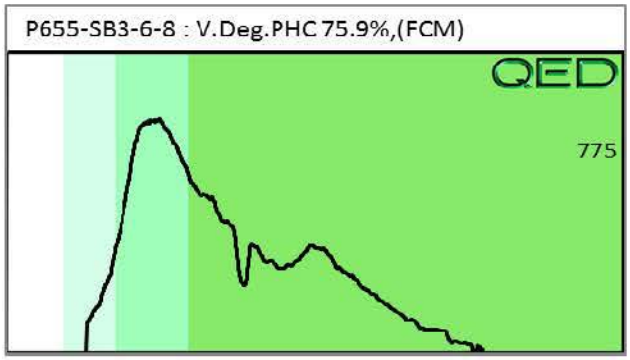


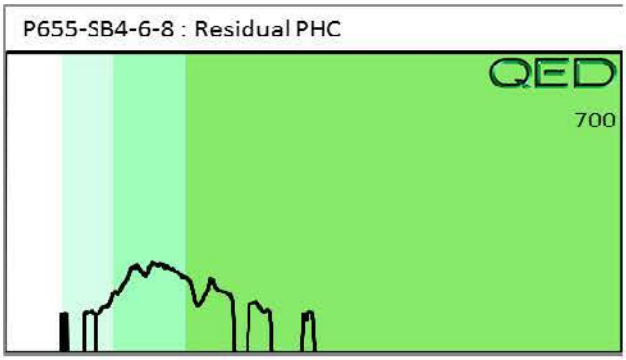


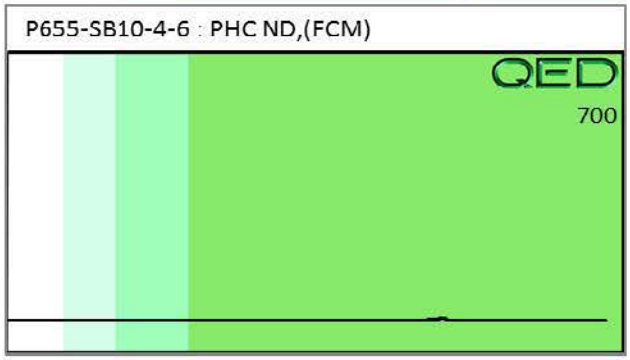


QED Hydrocarbon Fingerprints

Project: NCDOT Shelby 4/24/2019







APPENDIX D

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

PRISM LABORATORIES, INC.
Full-Service Analytical & Environmental Solutions

NC Certification No. 402
NC Drinking Water Cert No. 37735
SC Certification No. 99012

Case Narrative

5/7/19 14:39

Wood Environ. & Infrastructure Solutions (Charl)
John Maas
2801 Yorkmont Rd. #100
Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E
Project No.: 1883R2707 Parcel 655
Lab Submittal Date: 04/25/2019
Prism Work Order: 9040402

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.

Robbi A. Jones

President/Project Manager

Reviewed By Robbi A. Jones

President/Project Manager

Data Qualifiers Key Reference:

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
U	Not Detected at the MDL
MDL	Method Detection Limit
RPD	Relative Percent Difference
*	Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

PRISM LABORATORIES, INC. Full-Service Analytical & Environmental Solutions

Sample Receipt Summary

05/07/2019

Prism Work Order: 9040402

Client Sample ID	Lab Sample ID	Matrix	Date/Time Sampled	Date/Time Received
P655-SB1-0-2	9040402-01	Solid	04/23/19 15:00	04/25/19 12:11
P655-SB2-2-4	9040402-02	Solid	04/23/19 15:15	04/25/19 12:11
P655-SB3-0-2	9040402-03	Solid	04/23/19 15:30	04/25/19 12:11
P655-SB4-0-2	9040402-04	Solid	04/23/19 15:45	04/25/19 12:11
P655-SB5-0-2	9040402-05	Solid	04/23/19 16:00	04/25/19 12:11
P655-SB6-0-2	9040402-06	Solid	04/23/19 16:15	04/25/19 12:11
P655-SB7-0-2	9040402-07	Solid	04/24/19 9:30	04/25/19 12:11
P655-SB8-2-4	9040402-08	Solid	04/24/19 9:45	04/25/19 12:11
P655-SB9-2-4	9040402-09	Solid	04/24/19 10:00	04/25/19 12:11
P655-SB10-0-2	9040402-10	Solid	04/24/19 10:15	04/25/19 12:11
P655-SB11-2-4	9040402-11	Solid	04/24/19 10:30	04/25/19 12:11
P655-SB12-6-8	9040402-12	Solid	04/24/19 11:00	04/25/19 12:11
P655-SB13-2-4	9040402-13	Solid	04/24/19 11:15	04/25/19 12:11
P655-SB14-2-4	9040402-14	Solid	04/24/19 11:30	04/25/19 12:11
P655-SB12-0-2	9040402-15	Solid	04/24/19 10:45	04/25/19 12:11

Samples were received in good condition at 2.9 degrees C unless otherwise noted.

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

PRISM LABORATORIES, INC. | Full-Service Analytical & Environmental Solutions

Summary of Detections

05/07/2019

Prism Work Order: 9040402

Prism ID	Client ID	Parameter	Method	Result		Units
9040402-01	P655-SB1-0-2	Mercury	7471B	0.18		mg/kg dry
9040402-01	P655-SB1-0-2	Arsenic	6010D	8.0		mg/kg dry
9040402-01	P655-SB1-0-2	Barium	6010D	37		mg/kg dry
9040402-01	P655-SB1-0-2	Cadmium	6010D	0.25	J	mg/kg dry
9040402-01	P655-SB1-0-2	Chromium	6010D	40		mg/kg dry
9040402-01	P655-SB1-0-2	Lead	6010D	23		mg/kg dry
9040402-02	P655-SB2-2-4	Arsenic	6010D	1.6		mg/kg dry
9040402-02	P655-SB2-2-4	Barium	6010D	20		mg/kg dry
9040402-02	P655-SB2-2-4	Cadmium	6010D	0.096	J	mg/kg dry
9040402-02	P655-SB2-2-4	Chromium	6010D	3.5		mg/kg dry
9040402-02	P655-SB2-2-4	Lead	6010D	12		mg/kg dry
9040402-03	P655-SB3-0-2	Arsenic	6010D	2.0		mg/kg dry
9040402-03	P655-SB3-0-2	Barium	6010D	27		mg/kg dry
9040402-03	P655-SB3-0-2	Cadmium	6010D	0.097	J	mg/kg dry
9040402-03	P655-SB3-0-2	Chromium	6010D	4.5		mg/kg dry
9040402-03	P655-SB3-0-2	Lead	6010D	14		mg/kg dry
9040402-04	P655-SB4-0-2	Mercury	7471B	0.031	J	mg/kg dry
9040402-04	P655-SB4-0-2	Arsenic	6010D	7.2		mg/kg dry
9040402-04	P655-SB4-0-2	Barium	6010D	36		mg/kg dry
9040402-04	P655-SB4-0-2	Cadmium	6010D	0.16	J	mg/kg dry
9040402-04	P655-SB4-0-2	Chromium	6010D	35		mg/kg dry
9040402-04	P655-SB4-0-2	Lead	6010D	25		mg/kg dry
9040402-05	P655-SB5-0-2	Mercury	7471B	0.032	J	mg/kg dry
9040402-05	P655-SB5-0-2	Arsenic	6010D	4.4		mg/kg dry
9040402-05	P655-SB5-0-2	Barium	6010D	48		mg/kg dry
9040402-05	P655-SB5-0-2	Cadmium	6010D	0.098	J	mg/kg dry
9040402-05	P655-SB5-0-2	Chromium	6010D	17		mg/kg dry
9040402-05	P655-SB5-0-2	Lead	6010D	37		mg/kg dry
9040402-06	P655-SB6-0-2	Mercury	7471B	0.024	J	mg/kg dry
9040402-06	P655-SB6-0-2	Arsenic	6010D	4.9		mg/kg dry
9040402-06	P655-SB6-0-2	Barium	6010D	34		mg/kg dry
9040402-06	P655-SB6-0-2	Cadmium	6010D	0.10	J	mg/kg dry
9040402-06	P655-SB6-0-2	Chromium	6010D	22		mg/kg dry
9040402-06	P655-SB6-0-2	Lead	6010D	24		mg/kg dry
9040402-07	P655-SB7-0-2	Arsenic	6010D	4.5		mg/kg dry
9040402-07	P655-SB7-0-2	Barium	6010D	39		mg/kg dry
9040402-07	P655-SB7-0-2	Cadmium	6010D	0.085	J	mg/kg dry
9040402-07	P655-SB7-0-2	Chromium	6010D	16		mg/kg dry
9040402-07	P655-SB7-0-2	Lead	6010D	23		mg/kg dry
9040402-08	P655-SB8-2-4	Mercury	7471B	0.036	J	mg/kg dry
9040402-08	P655-SB8-2-4	Arsenic	6010D	5.0		mg/kg dry
9040402-08	P655-SB8-2-4	Barium	6010D	20		mg/kg dry

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Summary of Detections

05/07/2019

Prism Work Order: 9040402

Prism ID	Client ID	Parameter	Method	Result		Units
9040402-08	P655-SB8-2-4	Cadmium	6010D	0.20	J	mg/kg dry
9040402-08	P655-SB8-2-4	Chromium	6010D	17		mg/kg dry
9040402-08	P655-SB8-2-4	Lead	6010D	30		mg/kg dry
9040402-09	P655-SB9-2-4	Arsenic	6010D	2.8		mg/kg dry
9040402-09	P655-SB9-2-4	Barium	6010D	33		mg/kg dry
9040402-09	P655-SB9-2-4	Cadmium	6010D	0.083	J	mg/kg dry
9040402-09	P655-SB9-2-4	Chromium	6010D	10		mg/kg dry
9040402-09	P655-SB9-2-4	Lead	6010D	45		mg/kg dry
9040402-10	P655-SB10-0-2	Arsenic	6010D	1.3		mg/kg dry
9040402-10	P655-SB10-0-2	Barium	6010D	16		mg/kg dry
9040402-10	P655-SB10-0-2	Chromium	6010D	1.9		mg/kg dry
9040402-10	P655-SB10-0-2	Lead	6010D	28		mg/kg dry
9040402-11	P655-SB11-2-4	Arsenic	6010D	2.8		mg/kg dry
9040402-11	P655-SB11-2-4	Barium	6010D	24		mg/kg dry
9040402-11	P655-SB11-2-4	Cadmium	6010D	0.064	J	mg/kg dry
9040402-11	P655-SB11-2-4	Chromium	6010D	8.7		mg/kg dry
9040402-11	P655-SB11-2-4	Lead	6010D	22		mg/kg dry
9040402-12	P655-SB12-6-8	Arsenic	6010D	0.31	J	mg/kg dry
9040402-12	P655-SB12-6-8	Barium	6010D	11		mg/kg dry
9040402-12	P655-SB12-6-8	Chromium	6010D	0.25	J	mg/kg dry
9040402-12	P655-SB12-6-8	Lead	6010D	9.2		mg/kg dry
9040402-13	P655-SB13-2-4	Mercury	7471B	0.062		mg/kg dry
9040402-13	P655-SB13-2-4	Arsenic	6010D	2.7		mg/kg dry
9040402-13	P655-SB13-2-4	Barium	6010D	25		mg/kg dry
9040402-13	P655-SB13-2-4	Cadmium	6010D	0.081	J	mg/kg dry
9040402-13	P655-SB13-2-4	Chromium	6010D	16		mg/kg dry
9040402-13	P655-SB13-2-4	Lead	6010D	20		mg/kg dry
9040402-14	P655-SB14-2-4	Arsenic	6010D	2.0		mg/kg dry
9040402-14	P655-SB14-2-4	Barium	6010D	41		mg/kg dry
9040402-14	P655-SB14-2-4	Chromium	6010D	8.6		mg/kg dry
9040402-14	P655-SB14-2-4	Lead	6010D	23		mg/kg dry
9040402-15	P655-SB12-0-2	Arsenic	6010D	1.4		mg/kg dry
9040402-15	P655-SB12-0-2	Barium	6010D	16		mg/kg dry
9040402-15	P655-SB12-0-2	Cadmium	6010D	0.057	J	mg/kg dry
9040402-15	P655-SB12-0-2	Chromium	6010D	6.3		mg/kg dry
9040402-15	P655-SB12-0-2	Lead	6010D	31		mg/kg dry

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Wood Environ. & Infrastructure Solutions (Ch
Attn: John Maas
2801 Yorkmont Rd. #100
Charlotte, NC 28208

Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB1-0-2
Prism Sample ID: 9040402-01
Prism Work Order: 9040402
Time Collected: 04/23/19 15:00
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**75.9**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	**0.18**	**mg/kg dry**	**0.066**	**0.023**	**1**	**7471B**	**5/6/19 12:02**	**MMR**	**P9E0080**
Arsenic	**8.0**	**mg/kg dry**	**1.3**	**0.17**	**1**	**6010D**	**4/30/19 19:33**	**JAB**	**P9D0538**
Barium	**37**	**mg/kg dry**	**13**	**4.0**	**1**	**6010D**	**4/30/19 19:33**	**JAB**	**P9D0538**
Cadmium	**0.25** J	**mg/kg dry**	**0.66**	**0.045**	**1**	**6010D**	**4/30/19 19:33**	**JAB**	**P9D0538**
Chromium	**40**	**mg/kg dry**	**1.3**	**0.10**	**1**	**6010D**	**4/30/19 19:33**	**JAB**	**P9D0538**
Lead	**23**	**mg/kg dry**	**1.3**	**0.22**	**1**	**6010D**	**4/30/19 19:33**	**JAB**	**P9D0538**
Selenium	0.36 U	mg/kg dry	1.3	0.36	1	6010D	4/30/19 19:33	JAB	P9D0538
Silver	0.040 U	mg/kg dry	0.66	0.040	1	6010D	4/30/19 19:33	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB2-2-4
Prism Sample ID: 9040402-02
Prism Work Order: 9040402
Time Collected: 04/23/19 15:15
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**89.8**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.019 U	mg/kg dry	0.056	0.019	1	7471B	5/6/19 12:16	MMR	P9E0080
Arsenic	**1.6**	**mg/kg dry**	**1.1**	**0.15**	**1**	**6010D**	**4/30/19 19:41**	**JAB**	**P9D0538**
Barium	**20**	**mg/kg dry**	**11**	**3.3**	**1**	**6010D**	**4/30/19 19:41**	**JAB**	**P9D0538**
Cadmium	**0.096** J	**mg/kg dry**	**0.56**	**0.038**	**1**	**6010D**	**4/30/19 19:41**	**JAB**	**P9D0538**
Chromium	**3.5**	**mg/kg dry**	**1.1**	**0.084**	**1**	**6010D**	**4/30/19 19:41**	**JAB**	**P9D0538**
Lead	**12**	**mg/kg dry**	**1.1**	**0.19**	**1**	**6010D**	**4/30/19 19:41**	**JAB**	**P9D0538**
Selenium	0.31 U	mg/kg dry	1.1	0.31	1	6010D	4/30/19 19:41	JAB	P9D0538
Silver	0.034 U	mg/kg dry	0.56	0.034	1	6010D	4/30/19 19:41	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB3-0-2
Prism Sample ID: 9040402-03
Prism Work Order: 9040402
Time Collected: 04/23/19 15:30
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**87.1**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.020 U	mg/kg dry	0.057	0.020	1	7471B	5/6/19 12:20	MMR	P9E0080
Arsenic	**2.0**	**mg/kg dry**	**1.1**	**0.15**	**1**	**6010D**	**4/30/19 19:49**	**JAB**	**P9D0538**
Barium	**27**	**mg/kg dry**	**11**	**3.4**	**1**	**6010D**	**4/30/19 19:49**	**JAB**	**P9D0538**
Cadmium	**0.097 J**	**mg/kg dry**	**0.57**	**0.039**	**1**	**6010D**	**4/30/19 19:49**	**JAB**	**P9D0538**
Chromium	**4.5**	**mg/kg dry**	**1.1**	**0.087**	**1**	**6010D**	**4/30/19 19:49**	**JAB**	**P9D0538**
Lead	**14**	**mg/kg dry**	**1.1**	**0.19**	**1**	**6010D**	**4/30/19 19:49**	**JAB**	**P9D0538**
Selenium	0.32 U	mg/kg dry	1.1	0.32	1	6010D	4/30/19 19:49	JAB	P9D0538
Silver	0.035 U	mg/kg dry	0.57	0.035	1	6010D	4/30/19 19:49	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB4-0-2
Prism Sample ID: 9040402-04
Prism Work Order: 9040402
Time Collected: 04/23/19 15:45
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**79.1**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	**0.031 J**	**mg/kg dry**	**0.063**	**0.022**	**1**	**7471B**	**5/6/19 12:29**	**MMR**	**P9E0080**
Arsenic	**7.2**	**mg/kg dry**	**1.3**	**0.17**	**1**	**6010D**	**4/30/19 19:57**	**JAB**	**P9D0538**
Barium	**36**	**mg/kg dry**	**13**	**3.8**	**1**	**6010D**	**4/30/19 19:57**	**JAB**	**P9D0538**
Cadmium	**0.16 J**	**mg/kg dry**	**0.63**	**0.043**	**1**	**6010D**	**4/30/19 19:57**	**JAB**	**P9D0538**
Chromium	**35**	**mg/kg dry**	**1.3**	**0.096**	**1**	**6010D**	**4/30/19 19:57**	**JAB**	**P9D0538**
Lead	**25**	**mg/kg dry**	**1.3**	**0.21**	**1**	**6010D**	**4/30/19 19:57**	**JAB**	**P9D0538**
Selenium	0.35 U	mg/kg dry	1.3	0.35	1	6010D	4/30/19 19:57	JAB	P9D0538
Silver	0.039 U	mg/kg dry	0.63	0.039	1	6010D	4/30/19 19:57	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB5-0-2
Prism Sample ID: 9040402-05
Prism Work Order: 9040402
Time Collected: 04/23/19 16:00
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**79.7**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	**0.032** J	**mg/kg dry**	**0.063**	**0.022**	**1**	**7471B**	**5/6/19 12:38**	**MMR**	**P9E0080**
Arsenic	**4.4**	**mg/kg dry**	**1.3**	**0.17**	**1**	**6010D**	**4/30/19 20:06**	**JAB**	**P9D0538**
Barium	**48**	**mg/kg dry**	**13**	**3.8**	**1**	**6010D**	**4/30/19 20:06**	**JAB**	**P9D0538**
Cadmium	**0.098** J	**mg/kg dry**	**0.63**	**0.042**	**1**	**6010D**	**4/30/19 20:06**	**JAB**	**P9D0538**
Chromium	**17**	**mg/kg dry**	**1.3**	**0.095**	**1**	**6010D**	**4/30/19 20:06**	**JAB**	**P9D0538**
Lead	**37**	**mg/kg dry**	**1.3**	**0.21**	**1**	**6010D**	**4/30/19 20:06**	**JAB**	**P9D0538**
Selenium	0.35 U	mg/kg dry	1.3	0.35	1	6010D	4/30/19 20:06	JAB	P9D0538
Silver	0.039 U	mg/kg dry	0.63	0.039	1	6010D	4/30/19 20:06	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB6-0-2
Prism Sample ID: 9040402-06
Prism Work Order: 9040402
Time Collected: 04/23/19 16:15
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**80.3**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	**0.024** J	**mg/kg dry**	**0.062**	**0.022**	**1**	**7471B**	**5/6/19 12:43**	**MMR**	**P9E0080**
Arsenic	**4.9**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/30/19 20:14**	**JAB**	**P9D0538**
Barium	**34**	**mg/kg dry**	**12**	**3.7**	**1**	**6010D**	**4/30/19 20:14**	**JAB**	**P9D0538**
Cadmium	**0.10** J	**mg/kg dry**	**0.62**	**0.042**	**1**	**6010D**	**4/30/19 20:14**	**JAB**	**P9D0538**
Chromium	**22**	**mg/kg dry**	**1.2**	**0.094**	**1**	**6010D**	**4/30/19 20:14**	**JAB**	**P9D0538**
Lead	**24**	**mg/kg dry**	**1.2**	**0.21**	**1**	**6010D**	**4/30/19 20:14**	**JAB**	**P9D0538**
Selenium	0.34 U	mg/kg dry	1.2	0.34	1	6010D	4/30/19 20:14	JAB	P9D0538
Silver	0.038 U	mg/kg dry	0.62	0.038	1	6010D	4/30/19 20:14	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB7-0-2
Prism Sample ID: 9040402-07
Prism Work Order: 9040402
Time Collected: 04/24/19 09:30
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**82.6**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.021 U	mg/kg dry	0.061	0.021	1	7471B	5/6/19 12:48	MMR	P9E0080
Arsenic	**4.5**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/30/19 20:22**	**JAB**	**P9D0538**
Barium	**39**	**mg/kg dry**	**12**	**3.6**	**1**	**6010D**	**4/30/19 20:22**	**JAB**	**P9D0538**
Cadmium	**0.085 J**	**mg/kg dry**	**0.61**	**0.041**	**1**	**6010D**	**4/30/19 20:22**	**JAB**	**P9D0538**
Chromium	**16**	**mg/kg dry**	**1.2**	**0.092**	**1**	**6010D**	**4/30/19 20:22**	**JAB**	**P9D0538**
Lead	**23**	**mg/kg dry**	**1.2**	**0.20**	**1**	**6010D**	**4/30/19 20:22**	**JAB**	**P9D0538**
Selenium	0.33 U	mg/kg dry	1.2	0.33	1	6010D	4/30/19 20:22	JAB	P9D0538
Silver	0.037 U	mg/kg dry	0.61	0.037	1	6010D	4/30/19 20:22	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB8-2-4
Prism Sample ID: 9040402-08
Prism Work Order: 9040402
Time Collected: 04/24/19 09:45
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**80.5**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	**0.036** J	**mg/kg dry**	**0.062**	**0.021**	**1**	**7471B**	**5/6/19 12:52**	**MMR**	**P9E0080**
Arsenic	**5.0**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/30/19 20:30**	**JAB**	**P9D0538**
Barium	**20**	**mg/kg dry**	**12**	**3.7**	**1**	**6010D**	**4/30/19 20:30**	**JAB**	**P9D0538**
Cadmium	**0.20** J	**mg/kg dry**	**0.62**	**0.042**	**1**	**6010D**	**4/30/19 20:30**	**JAB**	**P9D0538**
Chromium	**17**	**mg/kg dry**	**1.2**	**0.094**	**1**	**6010D**	**4/30/19 20:30**	**JAB**	**P9D0538**
Lead	**30**	**mg/kg dry**	**1.2**	**0.21**	**1**	**6010D**	**4/30/19 20:30**	**JAB**	**P9D0538**
Selenium	0.34 U	mg/kg dry	1.2	0.34	1	6010D	4/30/19 20:30	JAB	P9D0538
Silver	0.038 U	mg/kg dry	0.62	0.038	1	6010D	4/30/19 20:30	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB9-2-4
Prism Sample ID: 9040402-09
Prism Work Order: 9040402
Time Collected: 04/24/19 10:00
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**80.6**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.021 U	mg/kg dry	0.062	0.021	1	7471B	5/6/19 12:57	MMR	P9E0080
Arsenic	**2.8**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/30/19 20:52**	**JAB**	**P9D0538**
Barium	**33**	**mg/kg dry**	**12**	**3.7**	**1**	**6010D**	**4/30/19 20:52**	**JAB**	**P9D0538**
Cadmium	**0.083 J**	**mg/kg dry**	**0.62**	**0.042**	**1**	**6010D**	**4/30/19 20:52**	**JAB**	**P9D0538**
Chromium	**10**	**mg/kg dry**	**1.2**	**0.094**	**1**	**6010D**	**4/30/19 20:52**	**JAB**	**P9D0538**
Lead	**45**	**mg/kg dry**	**1.2**	**0.21**	**1**	**6010D**	**4/30/19 20:52**	**JAB**	**P9D0538**
Selenium	0.34 U	mg/kg dry	1.2	0.34	1	6010D	4/30/19 20:52	JAB	P9D0538
Silver	0.038 U	mg/kg dry	0.62	0.038	1	6010D	4/30/19 20:52	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB10-0-2
Prism Sample ID: 9040402-10
Prism Work Order: 9040402
Time Collected: 04/24/19 10:15
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**87.3**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.020 U	mg/kg dry	0.057	0.020	1	7471B	5/6/19 13:01	MMR	P9E0080
Arsenic	**1.3**	**mg/kg dry**	**1.1**	**0.15**	**1**	**6010D**	**4/30/19 21:00**	**JAB**	**P9D0538**
Barium	**16**	**mg/kg dry**	**11**	**3.4**	**1**	**6010D**	**4/30/19 21:00**	**JAB**	**P9D0538**
Cadmium	0.039 U	mg/kg dry	0.57	0.039	1	6010D	4/30/19 21:00	JAB	P9D0538
Chromium	**1.9**	**mg/kg dry**	**1.1**	**0.087**	**1**	**6010D**	**4/30/19 21:00**	**JAB**	**P9D0538**
Lead	**28**	**mg/kg dry**	**1.1**	**0.19**	**1**	**6010D**	**4/30/19 21:00**	**JAB**	**P9D0538**
Selenium	0.32 U	mg/kg dry	1.1	0.32	1	6010D	4/30/19 21:00	JAB	P9D0538
Silver	0.035 U	mg/kg dry	0.57	0.035	1	6010D	4/30/19 21:00	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB11-2-4
Prism Sample ID: 9040402-11
Prism Work Order: 9040402
Time Collected: 04/24/19 10:30
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**80.9**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.021 U	mg/kg dry	0.062	0.021	1	7471B	5/6/19 13:15	MMR	P9E0080
Arsenic	**2.8**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/30/19 21:08**	**JAB**	**P9D0538**
Barium	**24**	**mg/kg dry**	**12**	**3.7**	**1**	**6010D**	**4/30/19 21:08**	**JAB**	**P9D0538**
Cadmium	**0.064 J**	**mg/kg dry**	**0.62**	**0.042**	**1**	**6010D**	**4/30/19 21:08**	**JAB**	**P9D0538**
Chromium	**8.7**	**mg/kg dry**	**1.2**	**0.094**	**1**	**6010D**	**4/30/19 21:08**	**JAB**	**P9D0538**
Lead	**22**	**mg/kg dry**	**1.2**	**0.21**	**1**	**6010D**	**4/30/19 21:08**	**JAB**	**P9D0538**
Selenium	0.34 U	mg/kg dry	1.2	0.34	1	6010D	4/30/19 21:08	JAB	P9D0538
Silver	0.038 U	mg/kg dry	0.62	0.038	1	6010D	4/30/19 21:08	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB12-6-8
Prism Sample ID: 9040402-12
Prism Work Order: 9040402
Time Collected: 04/24/19 11:00
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**92.3**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.019 U	mg/kg dry	0.054	0.019	1	7471B	5/6/19 13:19	MMR	P9E0080
Arsenic	**0.31** J	**mg/kg dry**	**1.1**	**0.14**	**1**	**6010D**	**4/30/19 21:15**	**JAB**	**P9D0538**
Barium	**11**	**mg/kg dry**	**11**	**3.2**	**1**	**6010D**	**4/30/19 21:15**	**JAB**	**P9D0538**
Cadmium	0.037 U	mg/kg dry	0.54	0.037	1	6010D	4/30/19 21:15	JAB	P9D0538
Chromium	**0.25** J	**mg/kg dry**	**1.1**	**0.082**	**1**	**6010D**	**4/30/19 21:15**	**JAB**	**P9D0538**
Lead	**9.2**	**mg/kg dry**	**1.1**	**0.18**	**1**	**6010D**	**4/30/19 21:15**	**JAB**	**P9D0538**
Selenium	0.30 U	mg/kg dry	1.1	0.30	1	6010D	4/30/19 21:15	JAB	P9D0538
Silver	0.033 U	mg/kg dry	0.54	0.033	1	6010D	4/30/19 21:15	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB13-2-4
Prism Sample ID: 9040402-13
Prism Work Order: 9040402
Time Collected: 04/24/19 11:15
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**80.6**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	**0.062**	**mg/kg dry**	**0.062**	**0.021**	**1**	**7471B**	**5/6/19 13:24**	**MMR**	**P9E0080**
Arsenic	**2.7**	**mg/kg dry**	**1.2**	**0.16**	**1**	**6010D**	**4/30/19 21:23**	**JAB**	**P9D0538**
Barium	**25**	**mg/kg dry**	**12**	**3.7**	**1**	**6010D**	**4/30/19 21:23**	**JAB**	**P9D0538**
Cadmium	**0.081** J	**mg/kg dry**	**0.62**	**0.042**	**1**	**6010D**	**4/30/19 21:23**	**JAB**	**P9D0538**
Chromium	**16**	**mg/kg dry**	**1.2**	**0.094**	**1**	**6010D**	**4/30/19 21:23**	**JAB**	**P9D0538**
Lead	**20**	**mg/kg dry**	**1.2**	**0.21**	**1**	**6010D**	**4/30/19 21:23**	**JAB**	**P9D0538**
Selenium	0.34 U	mg/kg dry	1.2	0.34	1	6010D	4/30/19 21:23	JAB	P9D0538
Silver	0.038 U	mg/kg dry	0.62	0.038	1	6010D	4/30/19 21:23	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB14-2-4
Prism Sample ID: 9040402-14
Prism Work Order: 9040402
Time Collected: 04/24/19 11:30
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**88.3**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.020 U	mg/kg dry	0.057	0.020	1	7471B	5/6/19 13:28	MMR	P9E0080
Arsenic	**2.0**	**mg/kg dry**	**1.1**	**0.15**	**1**	**6010D**	**4/30/19 21:30**	**JAB**	**P9D0538**
Barium	**41**	**mg/kg dry**	**11**	**3.4**	**1**	**6010D**	**4/30/19 21:30**	**JAB**	**P9D0538**
Cadmium	0.038 U	mg/kg dry	0.57	0.038	1	6010D	4/30/19 21:30	JAB	P9D0538
Chromium	**8.6**	**mg/kg dry**	**1.1**	**0.086**	**1**	**6010D**	**4/30/19 21:30**	**JAB**	**P9D0538**
Lead	**23**	**mg/kg dry**	**1.1**	**0.19**	**1**	**6010D**	**4/30/19 21:30**	**JAB**	**P9D0538**
Selenium	0.31 U	mg/kg dry	1.1	0.31	1	6010D	4/30/19 21:30	JAB	P9D0538
Silver	0.035 U	mg/kg dry	0.57	0.035	1	6010D	4/30/19 21:30	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E

Project No.: 1883R2707 Parcel 655
Sample Matrix: Solid

Client Sample ID: P655-SB12-0-2
Prism Sample ID: 9040402-15
Prism Work Order: 9040402
Time Collected: 04/24/19 10:45
Time Submitted: 04/25/19 12:11

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	**85.5**	**% by Weight**	**0.100**	**0.100**	**1**	**SM2540 G**	**5/3/19 9:30**	**KBS**	**P9E0052**
Total Metals									
Mercury	0.020 U	mg/kg dry	0.059	0.020	1	7471B	5/6/19 13:33	MMR	P9E0080
Arsenic	**1.4**	**mg/kg dry**	**1.2**	**0.15**	**1**	**6010D**	**4/30/19 21:38**	**JAB**	**P9D0538**
Barium	**16**	**mg/kg dry**	**12**	**3.5**	**1**	**6010D**	**4/30/19 21:38**	**JAB**	**P9D0538**
Cadmium	**0.057 J**	**mg/kg dry**	**0.59**	**0.040**	**1**	**6010D**	**4/30/19 21:38**	**JAB**	**P9D0538**
Chromium	**6.3**	**mg/kg dry**	**1.2**	**0.089**	**1**	**6010D**	**4/30/19 21:38**	**JAB**	**P9D0538**
Lead	**31**	**mg/kg dry**	**1.2**	**0.20**	**1**	**6010D**	**4/30/19 21:38**	**JAB**	**P9D0538**
Selenium	0.32 U	mg/kg dry	1.2	0.32	1	6010D	4/30/19 21:38	JAB	P9D0538
Silver	0.036 U	mg/kg dry	0.59	0.036	1	6010D	4/30/19 21:38	JAB	P9D0538

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Project: NCDOT Shelby R-2707 D&E
Project No: 1883R2707 Parcel 655

Prism Work Order: 9040402
Time Submitted: 4/25/2019 12:11:00PM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9D0538 - 3050B										
Blank (P9D0538-BLK1)				Prepared & Analyzed: 04/30/19						
Arsenic	BRL	1.0	mg/kg wet							
Barium	BRL	10	mg/kg wet							
Cadmium	BRL	0.50	mg/kg wet							
Chromium	BRL	1.0	mg/kg wet							
Lead	BRL	1.0	mg/kg wet							
Selenium	BRL	1.0	mg/kg wet							
Silver	BRL	0.50	mg/kg wet							
LCS (P9D0538-BS1)				Prepared & Analyzed: 04/30/19						
Arsenic	12.6	1.0	mg/kg wet	12.50		101	80-120			
Barium	13.1	10	mg/kg wet	12.50		105	80-120			
Cadmium	12.8	0.50	mg/kg wet	12.50		102	80-120			
Chromium	13.2	1.0	mg/kg wet	12.50		105	80-120			
Lead	12.8	1.0	mg/kg wet	12.50		102	80-120			
Selenium	12.5	1.0	mg/kg wet	12.50		100	80-120			
Silver	4.84	0.50	mg/kg wet	5.000		97	80-120			
Batch P9E0080 - 7471B										
Blank (P9E0080-BLK1)				Prepared & Analyzed: 05/06/19						
Mercury	BRL	0.050	mg/kg wet							
LCS (P9E0080-BS1)				Prepared & Analyzed: 05/06/19						
Mercury	0.416	0.050	mg/kg wet	0.4167		100	80-120			
Matrix Spike (P9E0080-MS1)		**Source: 9040402-01**		Prepared & Analyzed: 05/06/19						
Mercury	0.729	0.066	mg/kg dry	0.5489	0.176	101	80-120			

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Project: NCDOT Shelby R-2707 D&E
Project No: 1883R2707 Parcel 655

Prism Work Order: 9040402
Time Submitted: 4/25/2019 12:11:00PM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9E0080 - 7471B										
Matrix Spike Dup (P9E0080-MSD1)		**Source: 9040402-01**		Prepared & Analyzed: 05/06/19						
Mercury	0.726	0.066	mg/kg dry	0.5489	0.176	100	80-120	0.4	20	

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Project: NCDOT Shelby R-2707 D&E
Project No: 1883R2707 Parcel 655

Prism Work Order: 9040402
Time Submitted: 4/25/2019 12:11:00PM

General Chemistry Parameters - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9E0052 - Solids, Dry Weight										
Duplicate (P9E0052-DUP2)		**Source: 9040402-03**		Prepared: 05/02/19	Analyzed: 05/03/19					
% Solids	88.4	0.100	% by Weight		87.1			1	20	
Duplicate (P9E0052-DUP3)		**Source: 9040402-09**		Prepared: 05/02/19	Analyzed: 05/03/19					
% Solids	80.5	0.100	% by Weight		80.6			0.1	20	

Sample Extraction Data

Prep Method: Solids, Dry Weight

Lab Number	Batch	Initial	Final	Date/Time
9040402-01	P9E0052	30 g	30 g	05/02/19 16:20
9040402-02	P9E0052	30 g	30 g	05/02/19 16:20
9040402-03	P9E0052	30 g	30 g	05/02/19 16:20
9040402-04	P9E0052	30 g	30 g	05/02/19 16:20
9040402-05	P9E0052	30 g	30 g	05/02/19 16:20
9040402-06	P9E0052	30 g	30 g	05/02/19 16:20
9040402-07	P9E0052	30 g	30 g	05/02/19 16:20
9040402-08	P9E0052	30 g	30 g	05/02/19 16:20
9040402-09	P9E0052	30 g	30 g	05/02/19 16:20
9040402-10	P9E0052	30 g	30 g	05/02/19 16:20
9040402-11	P9E0052	30 g	30 g	05/02/19 16:20
9040402-12	P9E0052	30 g	30 g	05/02/19 16:20
9040402-13	P9E0052	30 g	30 g	05/02/19 16:20
9040402-14	P9E0052	30 g	30 g	05/02/19 16:20
9040402-15	P9E0052	30 g	30 g	05/02/19 16:20

Prep Method: 3050B

Lab Number	Batch	Initial	Final	Date/Time
9040402-01	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-02	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-03	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-04	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-05	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-06	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-07	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-08	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-09	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-10	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-11	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-12	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-13	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-14	P9D0538	2 g	50 mL	04/30/19 9:05
9040402-15	P9D0538	2 g	50 mL	04/30/19 9:05

Prep Method: 7471B

Lab Number	Batch	Initial	Final	Date/Time
9040402-01	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-02	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-03	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-04	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-05	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-06	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-07	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-08	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-09	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-10	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-11	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-12	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-13	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-14	P9E0080	0.6 g	50 mL	05/06/19 8:40
9040402-15	P9E0080	0.6 g	50 mL	05/06/19 8:40

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

CHAIN OF CUSTODY RECORD

PRISM LABORATORIES, INC. — Full-Service Analytical & Environmental Solutions

449 Springbrook Road • Charlotte, NC 28217
Phone 704/529-6364 • Fax: 704/525-0409

PAGE 1 OF X2 QUOTE # TO ENSURE PROPER BILLING: _____

Project Name: NCDOT Shelby
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (NO)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: John Maas
Address: _____

Client Company Name: Wood
Report To/Contact Name: John Maas
Reporting Address: 2801 Yorkmont Rd Charlotte, NC
Phone: 704-681-1717 Fax (Yes) (No): _____
Email Address: John.maas@woodpk.com
EDD Type: PDF ✓ Excel ✓ Other _____
Site Location Name: Parcel 655
Site Location Physical Address: _____

Purchase Order No./Billing Reference _____

Requested Due Date ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days ☐ 5 Days
"Working Days" ☐ 6-9 Days ☑ Standard 10 days ☐ Rush Work Must Be Pre-Approved

Samples received after 14:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE?	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?			
CUSTODY SEALS INTACT?			✓
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TEMP: Therm ID: IR-13 Observed 2.8 °C / Corr 2.9 °C

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NELAC____ DoD____ FL____ NC✓____
SC____ OTHER____ N/A____
Water Chlorinated: YES___ NO✓___
Sample Iced Upon Collection: YES✓___ NO___

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	SAMPLE CONTAINER NO.	SAMPLE CONTAINER SIZE	PRESERVATIVES	ANALYSIS REQUESTED RCRA Metals	REMARKS	PRISM LAB ID NO.
P655-SB1-0-2	4/23/19	1500	Soil	AG	1	4oz	None	X		01
P655-SB2-2-4		1515						X		02
P655-SB3-0-2		1530						X		03
P655-SB4-0-2		1545						X		04
P655-SB5-0-2		1600						X		05
P655-SB6-0-2		1615						X		06
P655-SB7-0-2	4/24/19	930						X		07
P655-SB8-2-4		945						X		08
P655-SB9-2-4		1000						X		09
P655-SB10-0-2		1015						X		10

Sampler's Signature _____ Sampled By (Print Name) Derick Haydin Affiliation Wood

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Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

		Date	Military/Hours
Relinquished By: (Signature)	Received By: (Signature)	4/25/19	1210
Relinquished By: (Signature)	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Prism Laboratories By:	Date 04/25/19	12:17

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

Fed Ex ☐ UPS ☑ Hand-delivered ☐ Prism Field Service ☐ Other _____

COC Group No. 9040402

Additional Comments:

PRISM USE ONLY

Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

CODES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC
_____	☐ _____	☐ _____	☐ _____	☐ _____	☐ _____	☐ _____	☐ _____	☐ _____

*CONTAINER TYPE CODES: A = Amber C = Clear G= Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

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ORIGINAL

CHAIN OF CUSTODY RECORD

PRISM LABORATORIES, INC. — Full-Service Analytical & Environmental Solutions

449 Springbrook Road • Charlotte, NC 28217
Phone 704/529-6364 • Fax: 704/525-0409

PAGE X2 OF X2 QUOTE # TO ENSURE PROPER BILLING: _____

Project Name: NCDOT Shelby
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (NO)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: John Maas
Address: _____

Client Company Name: Wood
Report To/Contact Name: John Maas
Reporting Address: 2801 Yorkmont Rd Charlotte, NC
Phone: 704-681-1717 Fax (Yes) (No): _____
Email Address: John.maas@woodplc.com
EDD Type: PDF ✓ Excel ✓ Other _____
Site Location Name: Parcel 655
Site Location Physical Address: _____

Purchase Order No./Billing Reference _____

Requested Due Date ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days ☐ 5 Days
"Working Days" ☐ 6-9 Days ☑ Standard 10 days ☐ Rush Work Must Be Pre-Approved

Samples received after 14:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE?	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?			✓
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TEMP: Therm ID: IR-T-13 Observed: 2.8 °C / Corr: 2.9 °C

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NELAC___ DoD___ FL___ NC ✓
SC___ OTHER___ N/A___
Water Chlorinated: YES___ NO ✓
Sample Iced Upon Collection: YES ✓ NO___

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	SAMPLE CONTAINER NO.	SAMPLE CONTAINER SIZE	PRESERVATIVES	ANALYSIS REQUESTED RCRA Metals	REMARKS	PRISM LAB ID NO.
P655-SB11-2-4	4/24/19	1030	Soil	CG	1	4oz	None	X		11
P655-SB12-6-8		1045 1100						X		12
P655-SB13-2-4		1100 1115						X		13
P655-SB14-2-4		1130						X		14
P655-SB12-02		1045						X		15

Sampler's Signature: [signature] Sampled By (Print Name): Derick Haydin Affiliation: Wood

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		Date	Military/Hours
Relinquished By: (Signature) [signature]	Received By: (Signature)	4/25/19	1210
Relinquished By: (Signature)	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Prism Laboratories By: [signature]	Date 04/25/19	12:15

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☐ Fed Ex ☐ UPS ☑ Hand-delivered ☐ Prism Field Service ☐ Other _____

COC Group No. 4040402

Additional Comments:

PRISM USE ONLY

Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

CODES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC
	☐	☐	☐	☐	☐	☐	☐	☐

CONTAINER TYPE CODES: A = Amber C = Clear G= Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

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ORIGINAL

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041911977
Customer ID:	AMECE25
Customer PO:	1883R2707
Project ID:	

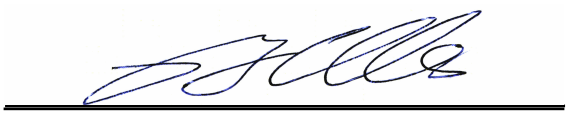
Attention:	John Maas	**Phone:**	(704) 357-5649
	Wood Env. & Infrastructure Solutions	**Fax:**	(704) 357-8639
	2801 Yorkmont Rd.	**Received Date:**	05/03/2019 9:30 AM
	Suite 100	**Analysis Date:**	05/07/2019
	Charlotte, NC 28208	**Collected Date:**	04/23/2019
Project:	Parcels 67 and 655		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1	Parcel 67, SB-1 at 13 ft - Light Colored Laminate Mineral	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
041911977-0001					
Sample milled prior to analysis.					
2	Parcel 655, SB-11 at 7 ft - Light Colored Laminate Mineral	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
041911977-0002					
Insufficient material for milling process, standard PLM EPA/600 analysis performed.					

Analyst(s)

Benjamin Verghese (2)



Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

Initial report from: 05/07/2019 11:56:31

OrderID: 041911977

041911977

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only): ~~191103925~~

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

CINNAMINSON NJ
2019 MAY -3 A 11:09

Company: Wood E&I Solutions	**EMSL-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments**
Street: 2901 Yorkmont Rd, Suite 100	*Third Party Billing requires written authorization from third party*
City: Charlotte **State/Province:** NC	**Zip/Postal Code:** 28208 **Country:** USA
Report To (Name): John Maas	**Telephone #:** 704-357-1649
Email Address: John.Maas@woodplc.com	**Fax #:** **Purchase Order:** 1883R2707
Project Name/Number: Parcels 67 and 655	**Please Provide Results:** ☐ Fax ☒ Email
U.S. State Samples Taken: NC	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☒ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
☒ PLM EPA 600/R-93/116 (<1%)	☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

☐ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 4/23/19

Samplers Name: John Maas **Samplers Signature:**

Sample #	HA #	Sample Location	Material Description
1	A	Parcel 67, SB-1 at 13ft	Light Colored Laminar Mineral
2	A	Parcel 655, SB-11 at 7ft	↓

Client Sample # (s): 1 - 2 **Total # of Samples:** 2

Relinquished (Client): **Date:** 4/30/19 **Time:** 1005

Received (Lab): **Date:** 4/30/19 **Time:** 10:05AM

Comments/Special Instructions: 5-3-19

North Carolina Department of Transportation

Preliminary Site Assessment
State Project: R-2707D
WBS Element: 34497.1.2
Cleveland County

Parcel 67
NCDOT
East Dixon Boulevard
Shelby, North Carolina
May 20, 2019

Wood Environment and Infrastructure Solutions, Inc.
Project: 1883R2707

Andrew Frantz, REM
Senior Scientist

John Maas, LG
Senior Geologist

NORTH CAROLINA LICENSED SEAL 2399 GEOLOGIST JOHN R. MAAS

DocuSigned by:
A4F5620B3F62410...

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APPENDICES

Appendix A Base Site Diagram and Analytical Results (Figure from 2000 Triangle Environmental, Inc. PSA)
Appendix B Photographic Log
Appendix C Boring Logs
Appendix D Geophysical Report
Appendix E UVF Hydrocarbon Analytical Results
Appendix F Laboratory Results of Analysis of Bulk Samples for Asbestos Content

1.0 INTRODUCTION

In response to the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated March 27, 2019, Wood Environment & Infrastructure Solutions, Inc. (Wood) has performed a Preliminary Site Assessment (PSA) for Parcel 67. The investigation was conducted in accordance with Wood's Technical and Cost proposal dated April 5, 2019 and revised April 11, 2019. NCDOT contracted Wood to perform the PSA at the parcel, within the area to be affected by future road construction activities, in order to identify potential impacts from the former use of the property.

The parcel is located along the northern side of East Dixon Boulevard approximately 750 feet southeast of the intersection of Johnson Road and East Dixon Boulevard as shown on the Vicinity Map, **Figure 1**. It is identified as Parcel 67, the NCDOT property, (Site) within the NCDOT R-2707D design file. The parcel is in Shelby of Cleveland County, North Carolina. The Site does not currently have an associated address, though 4521 East Dixon Boulevard has historically been associated with one of the former residences on Site. At the time of this PSA, parcel 67 was vacant and mostly wooded. The area of investigation within the parcels is shown on **Figure 2**.

The following report describes our subsurface field investigation at the Site and presents UVF soil analyses to evaluate soil contamination within the Site.

1.1 Site History

Based on our historical review, the Site appears to have had two residences present from at least 1961 to 1997. The Site is identified on the North Carolina Department of Environmental Quality (NCDEQ) Underground Storage Tank (UST) Facility Database registry as Former Johnson Property (LUST Incident #22345) and the incident remains open. Reportedly, one 550-gallon heating oil UST and one 1,000-gallon heating oil UST were removed from the former residence located on the eastern portion of the Site (4521 East Dixon Boulevard) in September 1997. No evidence of a release was noted at the time of the removal of the USTs. A PSA was performed in 2000 by Triangle Environmental, Inc. and reported soil contamination (diesel and gasoline constituents) at a depth of 5.5 to 15 feet below ground surface (bgs) beneath the former 550 gallon UST. **Appendix A** includes a copy of the Base Site Diagram and Analytical Results figure from the 2000 PSA. A Phase I

LSA was recommended to be performed by the responsible party; however, no record of the Phase I LSA being completed was found and the incident remains open. The former western residence was not identified in the NCDEQ UST Facility Database registry and no known incidents are associated with this former residence.

1.2 Site Description

The Site is located in a mixed-use commercial and residential area of Shelby in Cleveland County and covers approximately 12.86 acres. The majority of the Site is occupied by wooded land with some open grass fields. The area of investigation was located on the southern portion of the Site in the vicinity of the former Site residential buildings. Both areas where the former residences were located were observed to have remnant brick and concrete demolition debris and evidence of a water supply well near each former residence. The water supply well identified at the former eastern residence was observed to be an open steel pipe surrounded by a concrete ring and was blocked with soil at 3.5 feet bgs. The water supply well near the former western residence was enclosed in concrete housing and not accessible. The approximate locations of the former residences and water supply wells are shown on Figure 2. A photographic log of the property is included as **Appendix B**.

2.0 GEOLOGY

2.1 Regional Geology

The Site is located within the Inner Piedmont Belt of the Piedmont Physiographic Province of North Carolina. According to the 1985 State Geologic Map of North Carolina, the area is underlain by massive to weakly foliated Cherryville granite.

2.2 Site Geology

Site geology was observed through the advancement of nine shallow soil borings advanced via a direct-push rig (P67-SB1 to P67-SB8) and stainless steel hand auger (P67-SB9). Boring P67-SB9 was advanced using a stainless steel hand auger due to restricted access for the direct-push rig in the vicinity of the boring location. Figure 2 presents the boring locations and the site layout. Borings were advanced to a minimum depth of 8 feet bgs, with select

borings advanced deeper (12-16 feet bgs) for potential contaminant screening (near former USTs) and observation of underlying soil characteristics. In addition, boring P67-SB9 encountered hand auger refusal at one foot bgs. Soils encountered in the borings consisted mostly of brown to orange to white to tan sandy clay and silty saprolite. Some inclusions of minerals appearing to be mica and quartz were observed in the borings. A petroleum odor was observed in boring P67-SB1; however, no staining was noted. Groundwater was not encountered in the nine borings advanced at the Site. Based on observations of topography of the Site vicinity, the groundwater flow direction is inferred to be generally to the south and east. Boring logs are presented in **Appendix C**.

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 created including the Site-specific health and safety information necessary for the field activities. North Carolina 811 was contacted on April 9, 2019 to report the proposed sampling activities and subsequently notify affected utilities for the parcel. Probe Utility Locating (PUL) was retained by Wood to perform utility locating at the Site and GEL Solutions (GEL) was procured by would to perform a geophysical survey of the area of investigation. South Atlantic Environmental Drilling and Construction Co. Inc. (SAEDACCO) from Fort Mill, South Carolina was retained by Wood to perform the direct-push sampling and RED Lab instrumentation was scheduled for the use in UVF analysis.

Wood understands that acquisition of the right-of-way is necessary for the construction of the US 74 – Shelby Bypass. Boring locations were strategically placed within the parcel to maximize the opportunity to encounter potential contaminated soil resulting from previous Site usage (USTs).

3.2 Site Reconnaissance

The property owner (NCDOT) approved Site PSA activities at the time of approval of Wood's Technical and Cost Proposal. Wood personnel performed a Site reconnaissance on April 9, 2019. During the Site reconnaissance, the area was visually examined for the

presence of areas/obstructions that could potentially affect the subsurface investigation. The area of investigation included the area surrounding the two former residences and a grass field in between them. Brick and concrete demolition debris remnants were observed at the locations of both former residences.

3.3 Geophysical Survey Results

The geophysical survey of the Site occurred between April 15 and 18, 2019. GEL performed a time-domain electromagnetic (TDEM) survey of the Site with a ground penetrating radar (GPR) survey conducted across select EM anomalies. The GEL geophysical report is presented as **Appendix D**. GEL reported two anomalies within the area of investigation with a level of "No Confidence" with respect to the UST level of confidence rating.

3.4 Soil Sampling

In advance of drilling activities, PUL performed utility locating at the Site on April 10, 2019. On April 23, 2019, Wood and SAEDACCO mobilized to the Site to advanced eight soil borings via direct-push rig across the area of investigation to depths ranging from 8 to 16 feet bgs and one boring was advanced via a stainless steel hand auger (P67-SB9) on the western identified geophysical anomaly to a depth of one foot bgs (auger refusal on gravel and concrete). A soil boring was not advanced at the eastern identified geophysical anomaly as remnant brick and concrete demolition debris was found immediately beneath leaves at the ground surface.

The purpose of the soil sampling was to determine if a release had impacted the Site and if so, to estimate the volume of impacted soil that might require special handling during NCDOT construction activities. Soil sampling was performed utilizing direct-push methods accompanied by field screening. To minimize potential for cross-contamination between boring locations with the direct-push rig, a new PVC liner (tube) was inserted into the sampler for each soil interval. Wood conducted field screening for volatile organic compounds (VOCs) of the soil borings with a photoionization detector (PID). The soil borings were screened with the PID at approximate two-foot intervals. A portion of the interval of the soil boring exhibiting the highest PID reading was retained for analysis of total petroleum hydrocarbons (TPH), diesel range organics (DRO), gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylene (BTEX), total aromatics, and polycyclic aromatic hydrocarbons (PAH) soil via ultraviolet fluorescence (UVF). In addition, for select

borings, multiple intervals were analyzed via UVF in order to vertically assess potentially impacted soils. A total of 18 samples were collected from the borings at the Site for UVF analysis. No sample was collected for UVF analysis from boring P67-SB9 based on the PID screening and visual observations. Results from the UVF petroleum soil analyses are presented in **Table 2**, with instrument generated tables in **Appendix E**.

One mineral sample was collected from P67-SB1 at 13 feet bgs for laboratory analysis for asbestos content. Wood personnel, Mr. John Maas. (N.C. Asbestos Inspector No. 12757), observed minerals included within the soil to be a suspect asbestos-containing material (ACM). The mineral appeared to be a light-colored mica; however, because numerous fine fibrous splinters were observed, a sample was collected of the material as a conservative precaution. One additional sample classified as being of the same homogeneous material was collected from the adjoining parcel to the east, Parcel 655. Upon NCDOT approval, the samples were submitted to EMSL Analytical, Inc. a National Voluntary Laboratory Accreditation Program accredited laboratory in Charlotte, North Carolina for analysis by Polarized Light Microscopy (PLM) coupled with dispersion staining (EPA Method 600/R-93/116). A signed chain-of-custody form is maintained with the samples until they are returned or disposed. The laboratory results of the PLM analyses and chain-of-custody forms are presented in **Appendix F**.

4.0 SOIL SAMPLING RESULTS

Based on PID field screening and UVF hydrocarbon analysis from April 23, 2019, evidence of petroleum hydrocarbon impacts were identified within the area of investigation.

4.1 Soil Screening and UVF Analyses

PID readings for the nine borings ranged from 1.2 parts per million (ppm) in sample P67-SB9-0-1 collected between the zero and one feet bgs to 111.3 ppm in sample P67-SB1-6-8 collected between six and eight feet bgs. The PID field screening results are summarized in **Table 1** and provided on the boring logs in Appendix C.

Several categories of analyses were measured such as: DRO, GRO, TPH, PAHs, and total aromatics. **Figure 3** presents the GRO and DRO results at each boring.

Elevated TPH values above the NCDEQ Action Limit of 50 milligrams per kilogram (mg/kg) for GRO were not detected in the samples collected from the Site.

An elevated TPH value above the NCDEQ Action Limit of 100 mg/kg for DRO was detected in sample P67-SB1-6-8 (144.7 mg/kg). Soil boring P612-SB1 was located near the former 550-gallon UST. Elevated TPH values above the NCDEQ Action Limit for DRO were not detected in the remaining 17 soil samples collected at the Site. The hydrocarbon results from the QED QROS Hydrocarbon Analyzer are provided in Appendix E.

4.2 Asbestos Analysis Results

The U.S. EPA defines asbestos-containing materials as materials containing more than one percent asbestos. OSHA considers any detectable amount of asbestos to be an asbestos-containing material. Asbestos was not detected in the Parcel 67 sample (nor the sample from Parcel 655, discussed in a separate report) collected and analyzed as a part of this assessment. Results of samples obtained are presented in Appendix F.

5.0 CONCLUSIONS

Based on the Site observations and UVF analysis, petroleum-impacted soil contamination was identified as defined by exceedances of the NCDEQ Action Limits of 100 mg/kg for TPH DRO. The area of identified impact was located near the former 550-gallon UST. The overburden soil (0 to 6 feet bgs) in this area is classified as non-impacted soil based on UVF analytical data, PID screening, and field observations. The estimated area of petroleum-impacted soil is shown on **Figure 4**. Estimated impacted soil volume for the area near the former 550-gallon UST is 330 cubic feet (12.2 cubic yards) based on an average unsaturated thickness of 4 feet (6 to 10 feet bgs).

Surficial or shallow inert debris including brick, concrete, and gravel were encountered at each of the two geophysical anomalies identified. It is assumed the anomalies can be attributed to this shallow debris.

Based on the results of the asbestos sampling and assessment activities at the Site, ACM were not identified in the sub-surface on Site.

6.0 RECOMMENDATIONS

Based on these PSA results, Wood does not recommend further assessment in the area of investigation. Based on review of the NCDOT R-2707D design file cross sections, a significant amount of soil cutting is proposed in this area, and petroleum-impacted soil that may be intercepted during the road construction should require special handling and be excavated and disposed offsite.

TABLES

Table 1: Summary of PID Screening Results
R-2702D, Parcel 067 - Former Johnson Property
Shelby, North Carolina
Wood Project: 1883R2707D

Boring ID	Depth of Sample Interval	PID Reading
P67-SB1	2-4	4.3
	6-8	111.3
	10-12	15.3
	14-16	12.4
P67-SB2	0-2	3.5
	6-8	3.0
P67-SB3	0-2	2.5
	6-8	3.4
P67-SB4	0-2	2.3
	6-8	2.6
P67-SB5	0-2	3.6
	6-8	4.5
P67-SB6	2-4	3.2
	8-10	3.6
P67-SB7	0-2	3.5
	6-8	5.3
P67-SB8	0-2	2.1
	6-8	4.8
P67-SB9	0-1	1.2

Notes:

1. Samples collected on April 23, 2019
2. Depths shown in feet below ground surface (bgs)
3. PID = Photoionization Detector
4. PID readings shown in parts per million (ppm)

Prepared By/Date: RPD 4/26/2019
Checked By/Date: DRH 5/2/2019

Table 2: Summary of UVF Petroleum Soil Results
R-2707D, Parcel 067 - Former Johnson Property
Shelby, North Carolina
Wood Project: 1883R2707D

Sample ID Number	Sample Depth	BTEX	GRO	DRO	PAHs
P67-SB1-2-4	2-4	<0.4	<0.4	<0.16	<0.0
P67-SB1-6-8	6-8	<12	<12	**144.7**	2.9
P67-SB1-10-12	10-12	<0.45	0.99	1.6	0.04
P67-SB1-14-16	14-16	<0.43	0.79	0.41	0.02
P67-SB2-0-2	0-2	<0.36	<0.36	0.12	0.01
P67-SB2-6-8	6-8	<0.39	0.55	0.11	0.009
P67-SB3-0-2	0-2	<0.37	<0.37	0.55	0.008
P67-SB3-6-8	6-8	<0.41	0.57	0.5	0.01
P67-SB4-0-2	0-2	<0.42	<0.42	<0.17	<0.008
P67-SB4-6-8	6-8	<0.51	<0.51	<0.2	<0.01
P67-SB5-0-2	0-2	<0.43	<0.43	<0.17	<0.009
P67-SB5-6-8	6-8	<0.43	<0.43	<0.17	<0.009
P67-SB6-2-4	2-4	<0.41	<0.41	0.35	0.007
P67-SB6-8-10	8-10	<0.67	<0.67	<0.27	<0.01
P67-SB7-0-2	0-2	<0.78	<0.39	0.09	0.009
P67-SB7-6-8	6-8	<0.53	0.54	0.17	0.02
P67-SB8-0-2	0-2	<0.45	1	0.39	0.009
P67-SB8-6-8	6-8	<0.64	<0.64	<0.25	<0.01
NC State Action Level		**N/A**	**50**	**100**	**N/A**

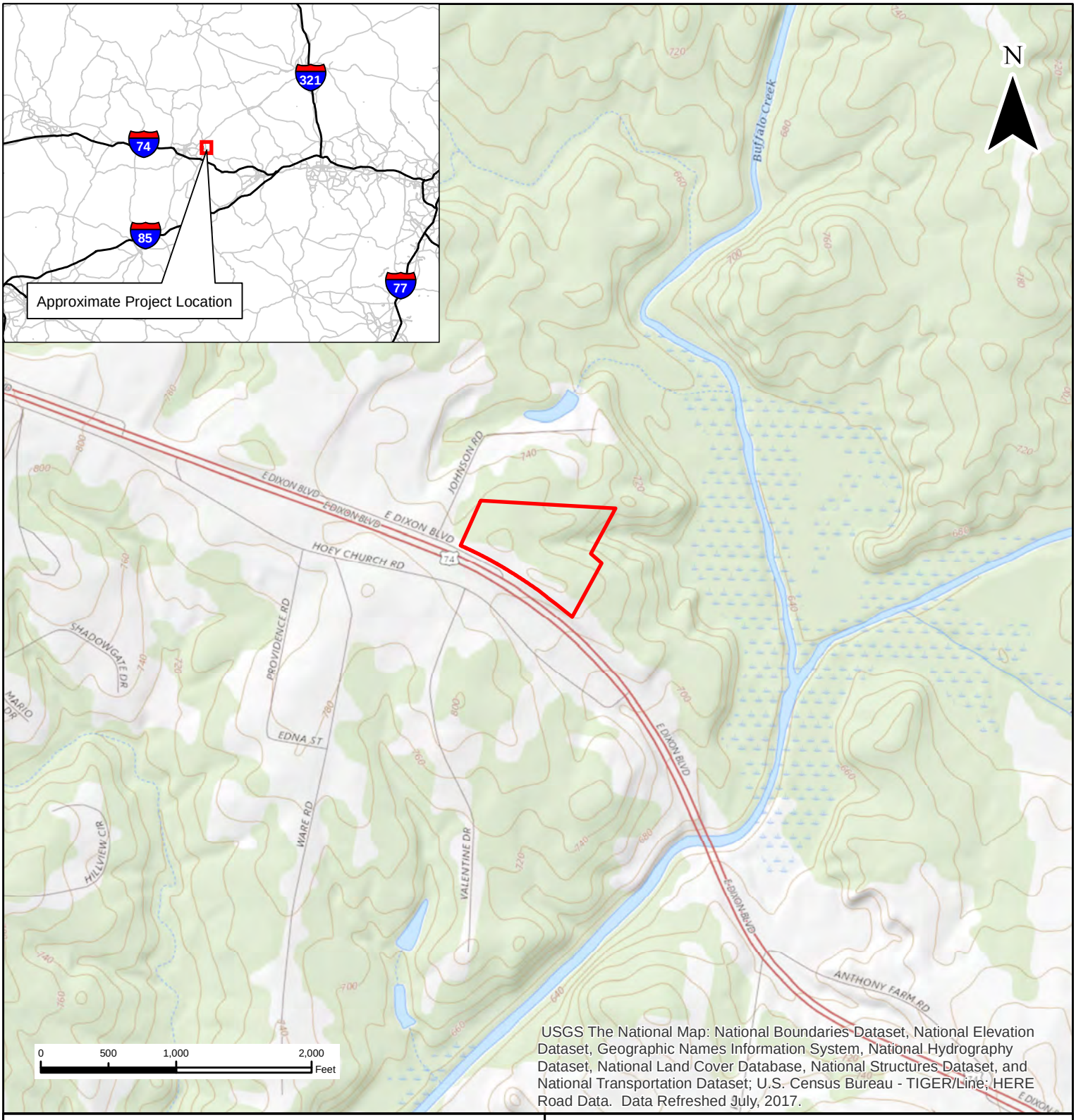
Notes:

1. Samples collected on April 23, 2019
2. Depths shown in feet below ground surface (bgs)
3. Concentrations shown in milligrams per kilogram (mg/kg)
4. BTEX = Benzene, toluene, ethylbenzene, xylene
5. GRO = Gasoline Range Organics
6. DRO = Diesel Range Organics
7. PAHs = Polycyclic aromatic hydrocarbons
8. N/A = Not applicable
9. Bold values exceed respective NC State Action Level

Prepared By/Date: RPD 4/26/2019

Checked By/Date: DRH 5/2/2019

FIGURES



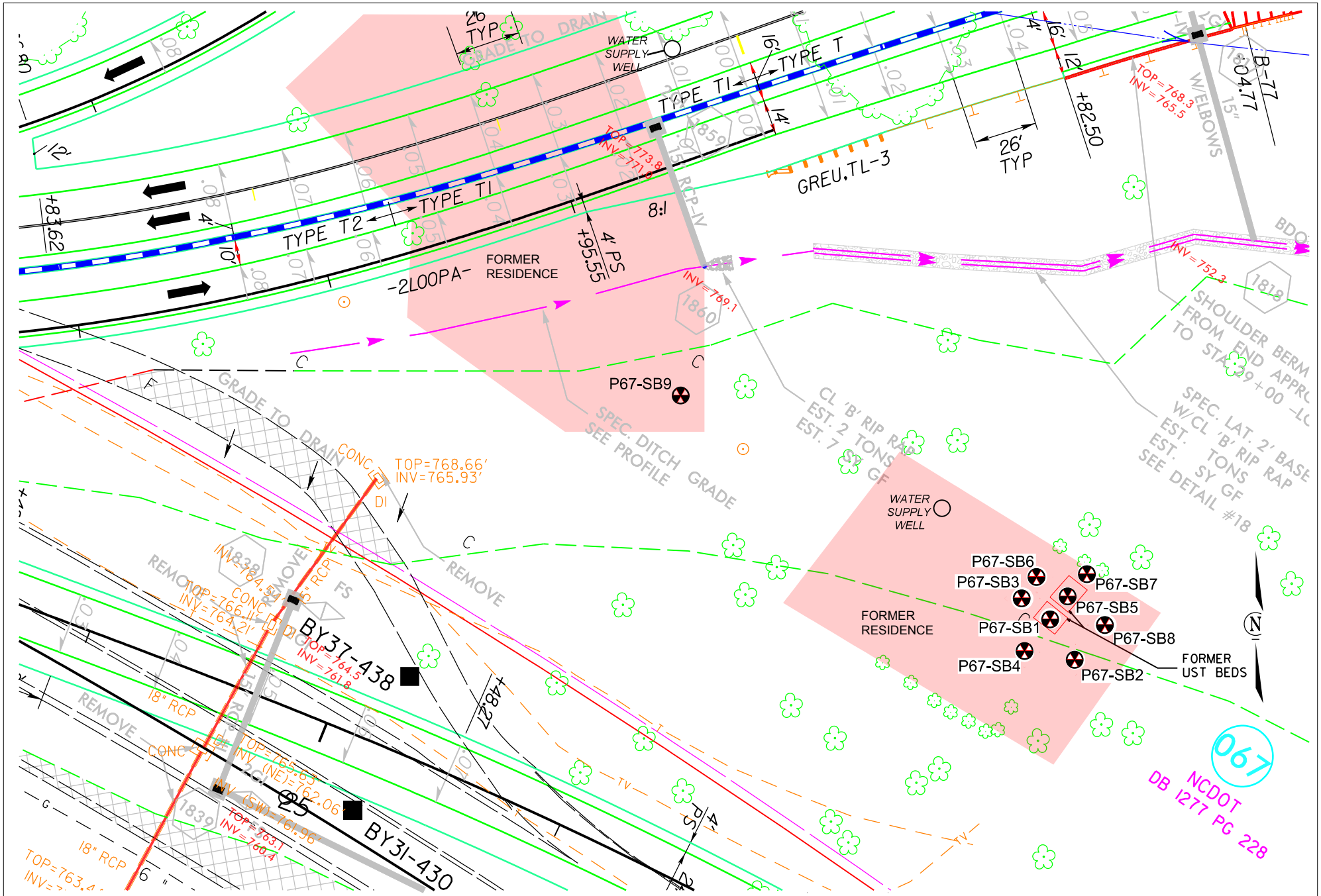
USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data. Data Refreshed July, 2017.

wood.

SITE VICINITY
R2707D - Parcel 067
NCDOT
East Dixon Boulevard
Shelby, North Carolina

Site Boundary

Prepared By: LMM Date: 4/4/2019	Checked By: AJF Date: 4/4/2019	Project No.: 1883R2707	Figure No.: 1



BORING LOCATION

AREA OF INVESTIGATION

25′ 0′ 25′ 50′

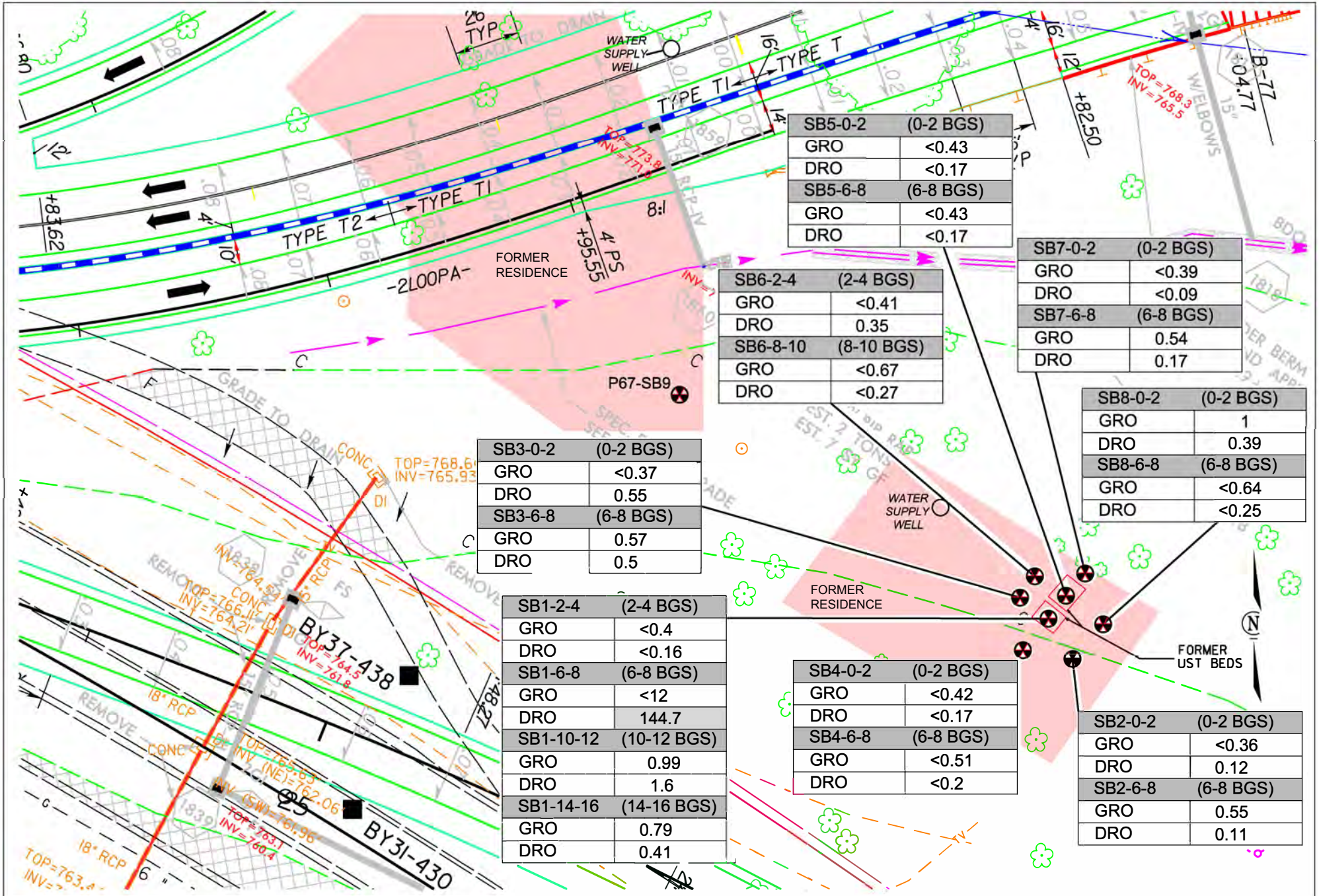
12.5′

(ENGLISH)

wood.

AREA OF INVESTIGATION WITH SOIL BORING LOCATIONS - PARCEL 67
NCDOT - FORMER JOHNSON PROPERTY AREA OF CONCERN
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.2
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LMM	5/13/19	HPC	5/13/19	188322707	2



SB5-0-2	(0-2 BGS)
GRO	<0.43
DRO	<0.17
SB5-6-8	(6-8 BGS)
GRO	<0.43
DRO	<0.17

SB6-2-4	(2-4 BGS)
GRO	<0.41
DRO	0.35
SB6-8-10	(8-10 BGS)
GRO	<0.67
DRO	<0.27

SB7-0-2	(0-2 BGS)
GRO	<0.39
DRO	<0.09
SB7-6-8	(6-8 BGS)
GRO	0.54
DRO	0.17

SB8-0-2	(0-2 BGS)
GRO	1
DRO	0.39
SB8-6-8	(6-8 BGS)
GRO	<0.64
DRO	<0.25

SB3-0-2	(0-2 BGS)
GRO	<0.37
DRO	0.55
SB3-6-8	(6-8 BGS)
GRO	0.57
DRO	0.5

SB1-2-4	(2-4 BGS)
GRO	<0.4
DRO	<0.16
SB1-6-8	(6-8 BGS)
GRO	<12
DRO	144.7
SB1-10-12	(10-12 BGS)
GRO	0.99
DRO	1.6
SB1-14-16	(14-16 BGS)
GRO	0.79
DRO	0.41

SB4-0-2	(0-2 BGS)
GRO	<0.42
DRO	<0.17
SB4-6-8	(6-8 BGS)
GRO	<0.51
DRO	<0.2

SB2-0-2	(0-2 BGS)
GRO	<0.36
DRO	0.12
SB2-6-8	(6-8 BGS)
GRO	0.55
DRO	0.11

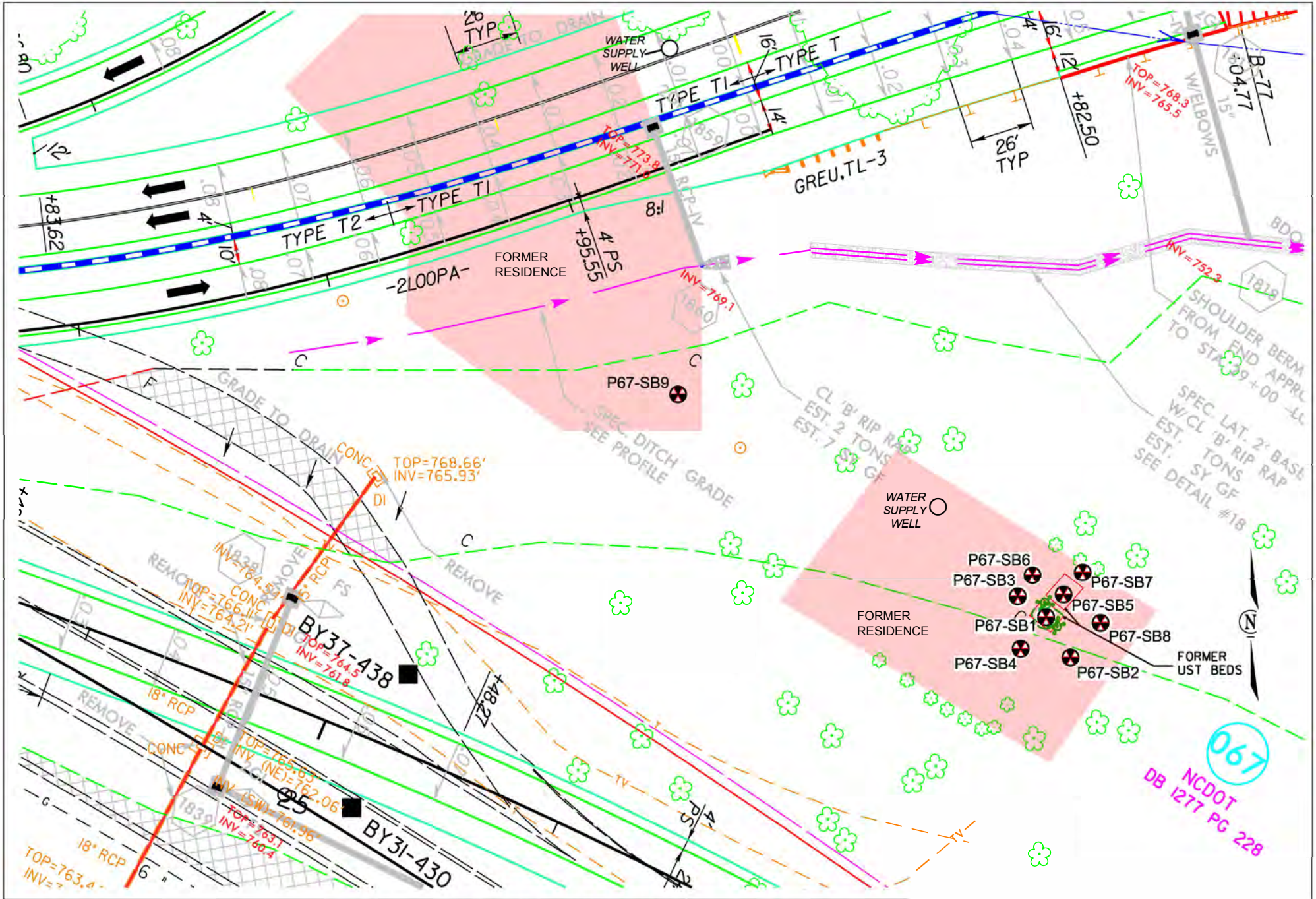
BORING LOCATION
AREA OF INVESTIGATION
GRO=GASOLINE RANGE ORGANICS
DRO=DIESEL RANGE ORGANICS
CONCENTRATIONS SHOWN IN MILLIGRAMS PER KILOGRAM (mg/kg)
SHADED CONCENTRATIONS EXCEED NCDEQ STATE ACTION LIMITS
BGS=FEET BELOW GROUND SURFACE
BRL=BELOW REPORTING LIMIT

25' 0' 25' 50'
12.5'
(ENGLISH)

wood.

UVF PETROLEUM RESULTS - PARCEL 67
NCDOT - FORMER JOHNSON PROPERTY AREA OF CONCERN
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.2
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LMM	5/13/19	HPC	5/13/19	188322707	3



BORING LOCATION

AREA OF INVESTIGATION

KNOWN CONTAMINATION - SOIL

25' 0' 25' 50'

12.5'

(ENGLISH)

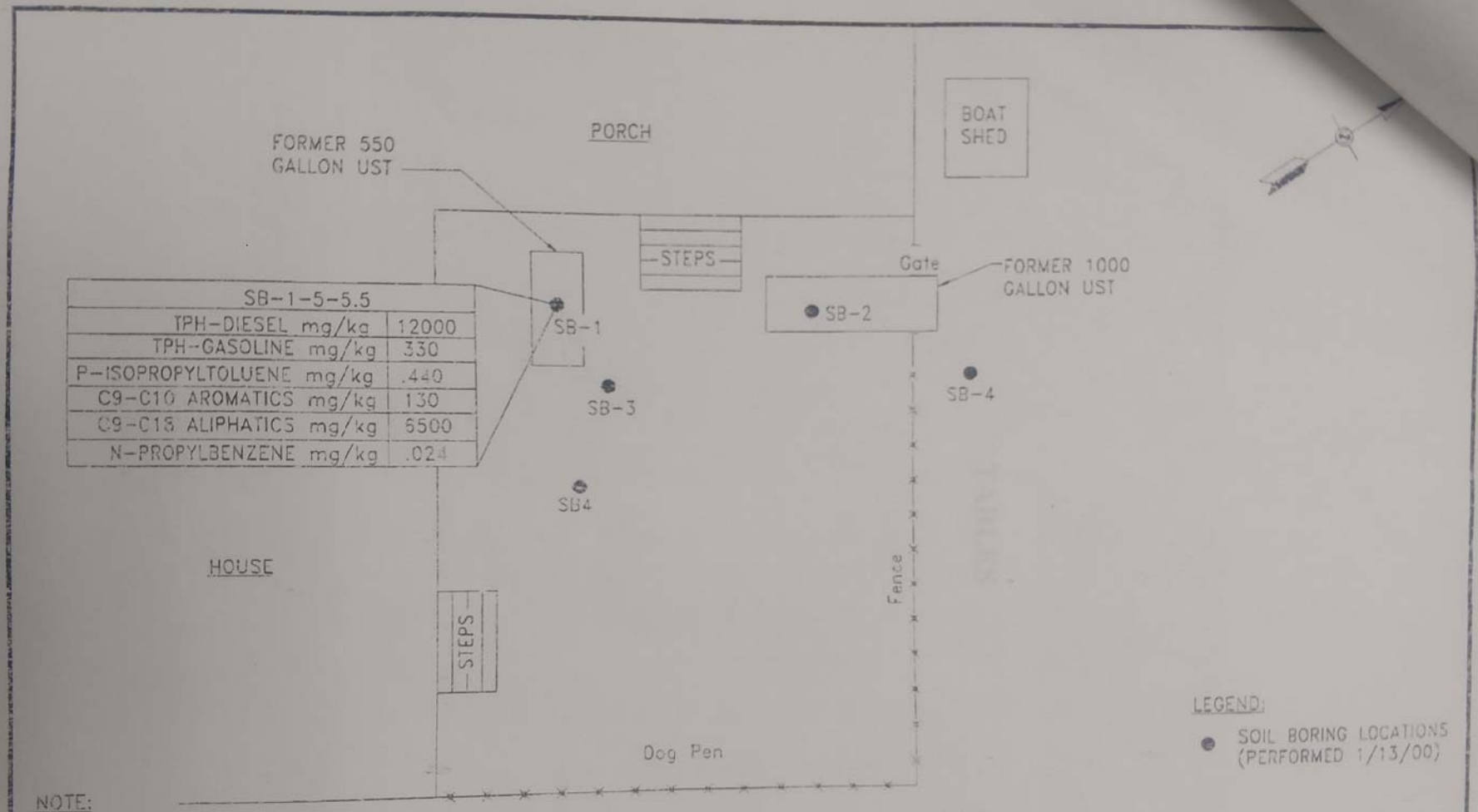
wood.

KNOWN CONTAMINATION AREA - PARCEL 67
NCDOT - FORMER JOHNSON PROPERTY AREA OF CONCERN
STATE PROJECT: R-2707D
WBS ELEMENT:34497.1.2
CLEVELAND COUNTY, SHELBY, NORTH CAROLINA

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER	FIGURE
LMM	5/13/19	HPC	5/13/19	188322707	4

APPENDIX A

BASE SITE DIAGRAM AND ANALYTICAL RESULTS FIGURE FROM THE 2000 PSA



NOTE:

THIS DRAWING IS FOR GENERAL LOCATION INFORMATION ONLY. SCALE IS AN APPROXIMATION.

FORMER UST LOCATIONS ARE APPROXIMATE. DERIVED FROM DATA OBTAINED BY ROYSTER OIL CO.

0 5 10

APPROXIMATE GRAPHIC SCALE (FT.)

NOTE:

ENTIRE PROPERTY AND STRUCTURES ARE LOCATED WITHIN THE NCDOT RIGHT-OF-WAY AS INDICATED IN THE REQUEST FOR TECHNICAL AND COST PROPOSAL DATED DECEMBER 22, 1999.

TRIANGLE ENVIRONMENTAL INC.

RALEIGH, N.C.
WILMINGTON, N.C.
CHARLOTTE, N.C.

NCDOT #8.1801001
4521 E. DIXON BLVD., SHELBY, NORTH CAROLINA
BASE SITE DIAGRAM AND ANALYTICAL RESULTS
FILE:P:\668\3505\FIGURES | DATE: JAN.2000

FIG. 3

APPENDIX B

PHOTOGRAPHIC LOG

PHOTO 1:

View of the concrete well housing near the western former residence.

Photo taken: 4/23/2019

PHOTO 2:

View of the western former residence location and brick debris.

Photo taken: 4/23/2019

PHOTO 3:

View of the eastern former residence location.

Photo taken: 4/23/2019

PHOTO 4:

View of the mineral material sampled for asbestos analysis (results indicated no asbestos detected).

Photo taken: 4/23/2019

PHOTO 5:

View of the former UST bed area near the former eastern residence, facing north.

Photo taken: 4/23/2019

PHOTO 6:

View of the suspected water supply well for the eastern former residence.

Photo taken: 4/23/2019

APPENDIX C

BORING LOGS

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB1**	BORING DEPTH (ft)	**16**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange sandy CLAY, saprolitic, moist, mica	
2	3.9		
3			
4	4.3		
5		Tan clayey silty SAPROLITE, sand, mica, petroleum odor (5-7ft)	
6	63.1		
7			
8	111.3	White, tan, silty SAPROLITE, mica, some quartz pieces, petroleum odor (7-10ft)	
9			
10	50.3		
11			
12	15.3		
13			
14	10.2		
15			
16	12.4		
17		Boring terminated at 16ft. UVF sample taken at 2-4, 6-8, 10-12 and 14-16ft.	
18			
19			
20			
21			

Log Completed By: **JRM**

Page: **1**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB2**	BORING DEPTH (ft)	**16**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange sandy CLAY, saprolitic, moist, mica	
2	3.5		
3			
4	2.9		
5		Tan clayey silty SAPROLITE, sand, mica	
6	2.3		
7			
8	3.0	White, tan, silty SAPROLITE, mica, some quartz pieces	
9			
10	2.0		
11			
12	3.1		
13			
14	1.7		
15			
16	3.2		
17		Boring terminated at 16ft. UVF samples taken at 0-2 and 6-8ft.	
18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB3**	BORING DEPTH (ft)	**12**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange sandy CLAY, saprolitic, moist, mica	
2	2.5		
3			
4	4.8		
5		Tan clayey silty SAPROLITE, sand, mica	
6	3.9		
7			
8	3.4	White, tan, silty SAPROLITE, mica, some quartz pieces	
9			
10	2.5		
11			
12	3.0		
13		Boring terminated at 12ft. UVF samples taken at 0-2 and 6-8ft.	
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB4**	BORING DEPTH (ft)	**12**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange sandy CLAY, saprolitic, moist, mica	
2	2.3		
3			
4	2.6		
5		Tan clayey silty SAPROLITE, sand, mica	
6	2.8		
7			
8	2.6	White, tan, silty SAPROLITE, mica, some quartz pieces	
9			
10	2.3		
11			
12	2.2		
13		Boring terminated at 12ft. UVF samples taken at 0-2 and 6-8ft.	
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

Page: **1**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB5**	BORING DEPTH (ft)	**12**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange sandy CLAY, saprolitic, moist, mica	
2	3.6		
3			
4	3.2		
5		Tan clayey silty SAPROLITE, sand, mica	
6	3.8		
7			
8	4.5	White, tan, silty SAPROLITE, mica, some quartz pieces	
9			
10	3.0		
11			
12	3.2		
13		Boring terminated at 12ft. UVF samples taken at 0-2 and 6-8ft.	
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB6**	BORING DEPTH (ft)	**12**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange sandy CLAY, saprolitic, moist, mica	
2	3.0		
3			
4	3.2		
5		Tan clayey silty SAPROLITE, sand, mica	
6	3.1		
7			
8	3.4	White, tan, silty SAPROLITE, mica, some quartz pieces	
9			
10	3.6		
11			
12	3.2		
13		Boring terminated at 12ft. UVF samples taken at 2-4 and 8-10ft.	
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB7**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange, sandy CLAY, saprolitic, moist, mica	
2	3.5		
3			
4	4.2		
5		Tan, clayey silty SAPROLITE, sand, mica	
6	4.9		
7			
8	5.3	White, tan, silty SAPROLITE, mica, some quartz pieces	
9		Boring terminated at 8ft. UVF samples taken at 0-2 and 6-8ft.	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

Page: **1**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB8**	BORING DEPTH (ft)	**8**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**SAEDACCO**			DRILL RIG	**Geoprobe 54DT**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1		Brown orange, sandy CLAY, saprolitic, moist, mica	
2	2.1		
3			
4	3.7		
5		Tan, clayey silty SAPROLITE, sand, mica	
6	4.7		
7			
8	4.8	White, tan, silty SAPROLITE, mica, some quartz pieces	
9		Boring terminated at 8ft. UVF samples taken at 0-2 and 6-8ft.	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

Log Completed By: **JRM**

Page: **1**

wood.

SOIL BORING FIELD WORKSHEET

BORING #	**P67-SB9**	BORING DEPTH (ft)	**1**	NUMBER OF PAGES	**1**
PROJECT #	**1883R2707**			PROJECT NAME	**NCDOT Shelby R-2707D**
DATE DRILLED	**4/23/2019**			WEATHER CONDITIONS	**86˚F Sunny**
DRILLING SUB-CONTRACTOR	**n/a**			DRILL RIG	**Stainless Steel Hand Auger**

DEPTH (ft bgs)	PID (ppm)	SOIL DESCRIPTION	SAMPLE INFO
1	1.2	Brown orange, sandy CLAY, saprolitic, moist, mica	
2		Boring terminated at 1ft. Auger advancement refusal on gravel and concrete.	
3			
4			
5			
6			
7			
8			
9			
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12			
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14			
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21			

Log Completed By: **JRM**

APPENDIX D

GEOPHYSICAL REPORT

GEL Engineering of NC, Inc. DBA
GEL Solutions

55 Shiloh Road, Suite 6
Asheville, NC 28803
P 828.782.3523

www.gel-solutions.com

April 29, 2019

Mr. John Maas, PG
Wood, PLC
2801 Yorkmont Road, Suite 100
Charlotte, NC 28208

Re: Report for Geophysical Survey to Identify Underground Storage Tanks
Parcel #067
E. Dixon Blvd.
Kings Mountain, North Carolina

Dear Mr. Maas,

GEL Solutions appreciates the opportunity to provide Wood with this report of our geophysical investigation for the referenced project. This investigation was designed to determine the potential presence of underground storage tanks (USTs) at the site and underground utilities that would obstruct drilling activities at the site. The geophysical field investigation was successfully performed on April 15, 2019 through April 18, 2019.

1.0 Summary of Results

Two subsurface anomalies were identified in the geophysical data. Figure 1 depicts the approximate location and size of the anomalies. The anomalies were denoted as "No Confidence" with respect to the UST level of confidence rating. Any anomalies not denoted with the UST level of confidence rating in post processed data (Figure 1) are consistent with known metallic surface objects, utilities, and/or cultural interference. A portion of this parcel was not accessible to collect a grid of data; therefore, data was analyzed in the field where available. Although geophysical methods provide a high level of assurance for the location of subsurface objects, the possibility exists that not all features can or will be identified. Therefore, due caution should be used when performing any subsurface excavation, and GEL Solutions, LLC will not be liable for any damages that may occur. Descriptions of the technologies employed during this geophysical investigation are provided below.

2.0 Overview of Geophysical Investigation

The geophysical evaluation included the deployment ground penetrating radar (GPR) and time-domain electromagnetic (TDEM) technologies to the site. These technologies were used in concert with one another in order to identify the presence of potential USTs at the site. A brief description of each technology is presented in the following paragraphs.

Ground Penetrating Radar Methodology

An Impulse Radar digital radar control system configured with a 160-Megahertz and 600-Megahertz (MHz) antenna array was used in this investigation. GPR is an electromagnetic geophysical method that detects interfaces between subsurface materials with differing dielectric constants. The GPR system consists of an antenna which houses the transmitter and receiver, a digital control unit which both generates and digitally records the GPR data, and a color video monitor to view data as it is collected in the field.

The transmitter radiates repetitive short-duration electromagnetic waves (at radar frequencies) into the earth from an antenna moving across the ground surface. These radar waves are reflected back to the receiver from the interface of

materials with different dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant between the materials, the conductivity of the material through which the wave is traveling, and the frequency of the signal.

Subsurface features that commonly cause such reflections are: 1) natural geologic conditions, such as changes in sediment composition, bedding, and cementation horizons and voids; or 2) unnatural changes to the subsurface such as disturbed soils, soil backfill, buried debris, tanks, pipelines, and utilities. The digital control unit processes the signal from the receiver and produces a continuous cross-section of the subsurface interface reflection events.

GPR data profiles were collected along transects covering the entire rights of ways. Depth of investigation of the GPR signal is highly site-specific and is limited by signal attenuation (absorption) in the subsurface materials. Signal attenuation is dependent upon the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities such as clays, brackish groundwater, or groundwater with a high dissolved solid content from natural or manmade sources. Signal attenuation is lowest in relatively low conductivity materials such as dry sand or rock. Depth of investigation is also dependent on the antenna's transmitting frequency. Depth of investigation generally increases as transmitting frequency decreases; however, the ability to resolve smaller subsurface features is diminished as frequency is decreased. The average depth of penetration at this site was approximately 2-5 feet below the surface.

The GPR antenna used at this site is internally shielded from aboveground interference sources. Accordingly, the GPR response is not affected by overhead power lines, metallic buildings, or nearby objects.

Time Domain Electromagnetic Methodology

TDEM methods measure the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) a time or frequency-varying magnetic field and measuring (with a receiver) the amplitude and phase shift of an induced secondary magnetic field. The secondary magnetic field is created by subsurface conductive materials behaving as an inductor as the primary magnetic field is passed through them.

The Geonics EM-61 system used in this investigation operates within these principles. However, the EM-61 TDEM system can discriminate between moderately conductive earth materials and very conductive metallic targets. The EM-61 consists of a portable coincident loop time domain transmitter and receiver with a 1.0-meter by 0.5-meter coil system. The EM-61 generates 150 pulses per second and measures the response from the ground after transmission or between pulses. The secondary EM responses from metallic targets are of longer duration than those created by conductive earth materials. By recording the later time EM arrivals, only the response from metallic targets is measured, rather than the field generated by the earth material.

3.0 Field Procedures and Results

The geophysical field investigation was successfully performed on April 15 through April 18, 2019 at the referenced site located in the immediate vicinity of E. Dixon Blvd. in Kings Mountain, NC. Interpretation of the GPR data was conducted in the field and any potential anomalies were marked in the field. TDEM was also used to scan the project site with a spacing of 2.5 feet. Any electromagnetic anomalies detected during field activities that were indicative of buried metallic objects were also marked in the field. Due to vegetation and other surface obstructions, GPS data was not available in all areas. These areas were covered with TDEM and GPR where accessible.

Two subsurface anomalies were identified in the geophysical data. Figure 1 depicts the approximate location and size of the anomalies. The anomalies were denoted as “No Confidence” with respect to the UST level of confidence rating. Any anomalies not denoted with the UST level of confidence rating in post processed data (Figure 1) are consistent with

known metallic surface objects, utilities, and/or cultural interference. A portion of this parcel was not accessible to collect a grid of data; therefore, data was analyzed in the field where available

4.0 Closing

GEL Solutions appreciates the opportunity to assist Wood with this project. If you have any questions or need further information regarding the project, please do not hesitate to call me at (828) 782-3523.

Yours very truly,

Jeff Tallent
Director of Western NC Operations

Enclosures
fc: 067.AMEC00419.Report.pdf

Site Photos

Photo 1: EM Anomaly – No Confidence

Photo 2: EM Anomaly – No Confidence

NOTES

1) UNDERGROUND FEATURES WERE LOCATED USING VISUAL EVIDENCE, GROUND PENETRATING RADAR (GPR), AND TIME DOMAIN ELECTROMAGNETIC (TDEM) METHODS. OTHER BURIED FEATURES MAY EXIST BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE GEOPHYSICAL METHODS, SITE ACCESS, AUTHORIZED SCOPE-OF-WORK, AND/OR HIGH TARGET CONGESTION. THEREFORE, DUE CAUTION SHOULD BE USED WHEN PERFORMING SUBSURFACE EXCAVATION ACTIVITIES WHERE POTENTIAL CONFLICTS EXIST. GEL SOLUTIONS IS NOT RESPONSIBLE FOR DAMAGES THAT MAY OCCUR. IDENTIFYING THE LOCATION OF SOME FEATURES MAY ONLY BE POSSIBLE WITH VACUUM OR OTHER EXCAVATION METHODS.
2) FIELD SURVEY CONDUCTED ON 04.15.2019 - 04.18.2019.
3) GEOPHYSICAL DATA GENERATED USING AN IMPULSE RADAR CROSSOVER GPR SYSTEM CONFIGURED WITH A 170MHZ AND 600MHZ ANTENNA AND A GEONICS EM-61 TDEM SYSTEM. APPROXIMATE POSITIONING WAS PROVIDED USING TRIMBLE RTK/GPS.
4) GEL SOLUTIONS IS NOT LIABLE FOR ACCURACY OF BASE MAP PROVIDED BY WOOD.

GRAPHIC SCALE

0' 15' 30' 60' 120'

(IN FEET)
1 inch = 30 ft.

GEL ENGINEERING OF NC, INC. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
55 SHILOH ROAD, SUITE E
ASHEVILLE, NC 28803
(828) 782-3523
WWW.GEL-SOLUTIONS.COM

PROJECT: AMEC00419

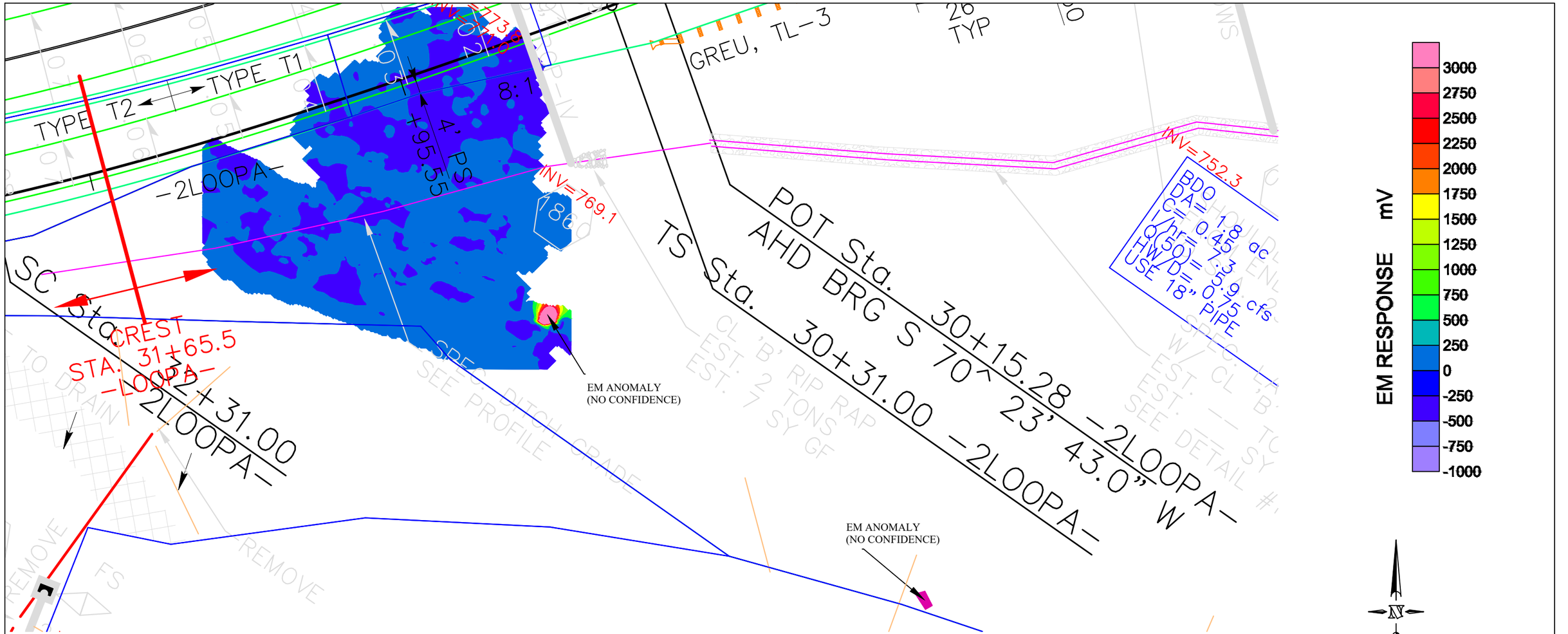
GEOPHYSICAL INVESTIGATION FOR USTs
PARCEL 67
E. DIXON BLVD.
KINGS MOUNTAIN, NORTH CAROLINA

RESULTS OF GEOPHYSICAL INVESTIGATION

FIGURE
1

DATE: 4/25/19

DRAWN BY: JAT APPRV. BY: WRA



NOTES

1) UNDERGROUND FEATURES WERE LOCATED USING VISUAL EVIDENCE, GROUND PENETRATING RADAR (GPR), AND TIME DOMAIN ELECTROMAGNETIC (TDEM) METHODS. OTHER BURIED FEATURES MAY EXIST BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE GEOPHYSICAL METHODS, SITE ACCESS, AUTHORIZED SCOPE-OF-WORK, AND/OR HIGH TARGET CONGESTION. THEREFORE, DUE CAUTION SHOULD BE USED WHEN PERFORMING SUBSURFACE EXCAVATION ACTIVITIES WHERE POTENTIAL CONFLICTS EXIST. GEL SOLUTIONS IS NOT RESPONSIBLE FOR DAMAGES THAT MAY OCCUR. IDENTIFYING THE LOCATION OF SOME FEATURES MAY ONLY BE POSSIBLE WITH VACUUM OR OTHER EXCAVATION METHODS.
2) FIELD SURVEY CONDUCTED ON 04.15.2019 - 04.18.2019.
3) GEOPHYSICAL DATA GENERATED USING AN IMPULSE RADAR CROSSOVER GPR SYSTEM CONFIGURED WITH A 170MHZ AND 600MHZ ANTENNA AND A GEONICS EM-61 TDEM SYSTEM. APPROXIMATE POSITIONING WAS PROVIDED USING TRIMBLE RTK/GPS.
4) GEL SOLUTIONS IS NOT LIABLE FOR ACCURACY OF BASE MAP PROVIDED BY WOOD.

GRAPHIC SCALE

0' 15' 30' 60' 120'

(IN FEET)
1 inch = 30 ft.

GEL ENGINEERING OF NC, INC. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
55 SHILOH ROAD, SUITE E
ASHEVILLE, NC 28803
(828) 782-3523
WWW.GEL-SOLUTIONS.COM

PROJECT: AMEC00419		
GEOPHYSICAL INVESTIGATION FOR USTs PARCEL 67 E. DIXON BLVD. KINGS MOUNTAIN, NORTH CAROLINA	RESULTS OF GEOPHYSICAL INVESTIGATION	FIGURE 1
DATE: 4/25/19	DRAWN BY: JAT APPRV. BY: WRA	

APPROXIMATE

NOTES

1) UNDERGROUND FEATURES WERE LOCATED USING VISUAL EVIDENCE, GROUND PENETRATING RADAR (GPR), AND TIME DOMAIN ELECTROMAGNETIC (TDEM) METHODS. OTHER BURIED FEATURES MAY EXIST BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE GEOPHYSICAL METHODS, SITE ACCESS, AUTHORIZED SCOPE-OF-WORK, AND/OR HIGH TARGET CONGESTION. THEREFORE, DUE CAUTION SHOULD BE USED WHEN PERFORMING SUBSURFACE EXCAVATION ACTIVITIES WHERE POTENTIAL CONFLICTS EXIST. GEL SOLUTIONS IS NOT RESPONSIBLE FOR DAMAGES THAT MAY OCCUR. IDENTIFYING THE LOCATION OF SOME FEATURES MAY ONLY BE POSSIBLE WITH VACUUM OR OTHER EXCAVATION METHODS.
2) FIELD SURVEY CONDUCTED ON 04.15.2019 - 04.18.2019.
3) GEOPHYSICAL DATA GENERATED USING AN IMPULSE RADAR CROSSOVER GPR SYSTEM CONFIGURED WITH A 170MHZ AND 600MHZ ANTENNA AND A GEONICS EM-61 TDEM SYSTEM. APPROXIMATE POSITIONING WAS PROVIDED USING TRIMBLE RTK/GPS.
4) GEL SOLUTIONS IS NOT LIABLE FOR ACCURACY OF BASE MAP PROVIDED BY WOOD.

GRAPHIC SCALE

0' 15' 30' 60' 120'

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55 SHILOH ROAD, SUITE E
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PROJECT: AMEC00419

GEOPHYSICAL INVESTIGATION FOR USTs
PARCEL 67
E. DIXON BLVD.
KINGS MOUNTAIN, NORTH CAROLINA

DATE: 4/25/19

RESULTS OF GEOPHYSICAL INVESTIGATION

DRAWN BY: JAT APPRV. BY: WRA

FIGURE
2

APPENDIX E

RESULTS FROM UVF SOIL ANALYSES

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Tuesday, April 23, 2019
Samples extracted Tuesday, April 23, 2019
Samples analysed Tuesday, April 23, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P67-SB1-2-4	15.9	<0.4	<0.4	<0.16	0.02	0.02	<0.0	<0.005	0	34	66	Residual HC
Soil	P67-SB1-6-8	480.0	<12	<12	144.7	144.7	85	2.9	<0.14	0	99.4	0.6	Deg.Diesel 78.3%,(FCM),(P)
Soil	P67-SB1-10-12	17.8	<0.45	0.99	1.6	2.6	0.89	0.04	<0.005	57.2	39.7	3.1	Deg.PHC 59.5%,(FCM)
Soil	P67-SB1-14-16	17.3	<0.43	0.79	0.41	1.2	0.39	0.02	<0.005	70.8	26.1	3.1	Deg.Light.Fuel,(FCM)
Soil	P67-SB2-0-2	14.5	<0.36	<0.36	0.12	0.12	0.11	0.01	<0.004	0	76.7	23.3	Residual HC
Soil	P67-SB2-6-8	15.6	<0.39	0.55	0.11	0.66	0.08	0.009	<0.005	89.4	10.6	0	PHC ND,(FCM)
Soil	P67-SB3-0-2	14.8	<0.37	<0.37	0.55	0.55	0.27	0.008	<0.004	0	100	0	Bit.Road Tar 73.9%,(FCM)
Soil	P67-SB3-6-8	16.4	<0.41	0.57	0.5	1.07	0.21	0.01	<0.005	76.5	23.5	0	Deg.Light.FuelDegraded Oil 86.5%,(FCM)

Initial Calibrator QC check OK Final FCM QC Check OK 98.0%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED

REDLAB
RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Tuesday, April 23, 2019
Samples extracted Tuesday, April 23, 2019
Samples analysed Tuesday, April 23, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P67-SB4-0-2	16.9	<0.42	<0.42	<0.17	<0.42	<0.008	<0.008	<0.005	0	0	0	PHC ND,(FCM)
Soil	P67-SB4-6-8	20.3	<0.51	<0.51	<0.2	<0.51	<0.01	<0.01	<0.006	0	0	0	PHC ND,(FCM)
Soil	P67-SB5-0-2	17.3	<0.43	<0.43	<0.17	<0.43	<0.009	<0.009	<0.005	0	0	0	PHC ND,(FCM),(P)
Soil	P67-SB5-6-8	17.2	<0.43	<0.43	<0.17	<0.43	<0.009	<0.009	<0.005	0	0	0	PHC ND,(FCM)
Soil	P67-SB6-2-4	16.5	<0.41	<0.41	0.35	0.35	0.18	0.007	<0.005	0	87.4	12.6	Deg.PHC 56.7%,(FCM)
Soil	P67-SB6-8-10	26.8	<0.67	<0.67	<0.27	<0.67	<0.01	<0.01	<0.008	0	0	0	PHC ND,(FCM)
Soil	P67-SB7-0-2	15.6	<0.78	<0.39	0.09	0.09	0.08	0.009	<0.005	0	100	0	Residual HC
Soil	P67-SB7-6-8	21.1	<0.53	0.54	0.17	0.71	0.16	0.02	<0.006	79.9	18.1	2	PHC ND,(FCM)
Soil	P67-SB8-0-2	17.8	<0.45	1	0.39	1.39	0.27	0.009	<0.005	88.2	11.8	0	V.Deg.PHC 61.2%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 88.0%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

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% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED

REDLAB
RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: Wood
Address: 2801 Yorkmont Road
Charlotte, NC

Samples taken Tuesday, April 23, 2019
Samples extracted Tuesday, April 23, 2019
Samples analysed Tuesday, April 23, 2019

Contact: Helen Corley

Operator Derick Haydin

Project: NCDOT Shelby

H09382

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
										C5 - C10	C10 - C18	C18	
Soil	P67-SB8-6-8	25.5	<0.64	<0.64	<0.25	<0.64	<0.01	<0.01	<0.008	0	0	0	PHC ND,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 100.2%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

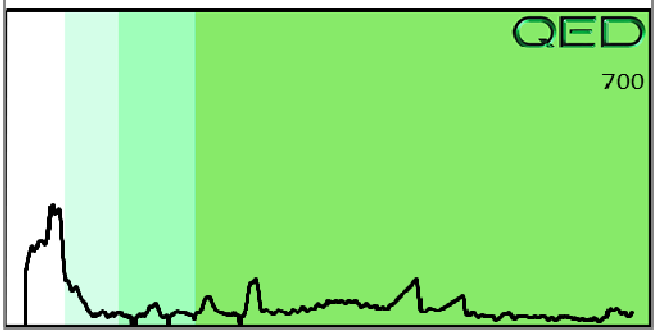
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED Hydrocarbon Fingerprints

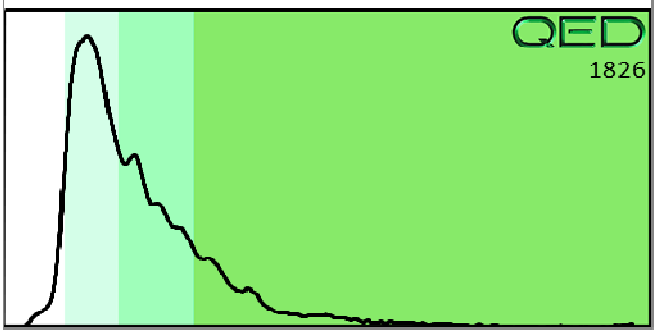
Project: NCDOT Shelby

Tuesday, April 23, 2019

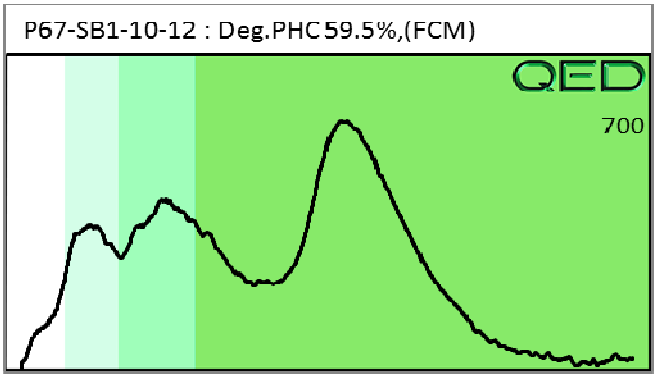
P67-SB1-2-4 : Residual HC



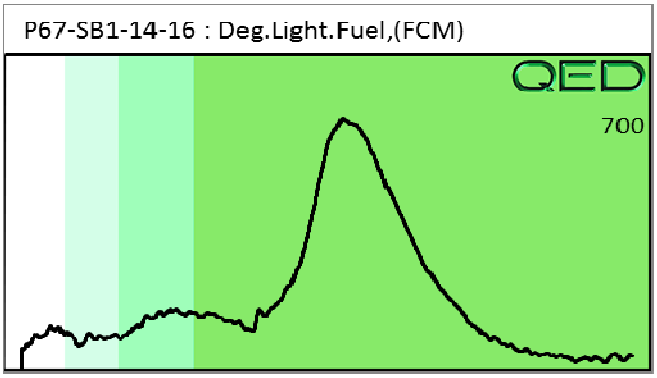
P67-SB1-6-8 : Deg.Diesel 78.3%,(FCM),(P)



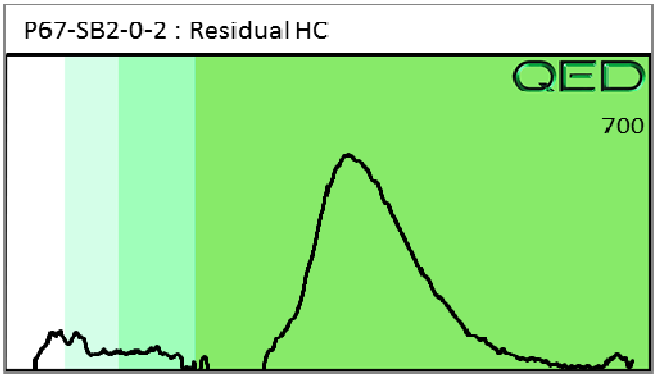
P67-SB1-10-12 : Deg.PHC 59.5%,(FCM)



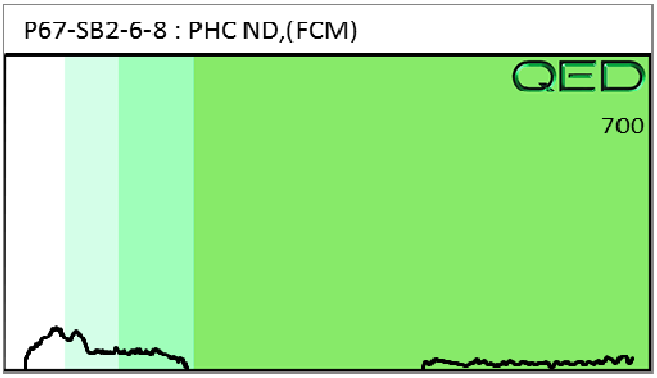
P67-SB1-14-16 : Deg.Light.Fuel,(FCM)



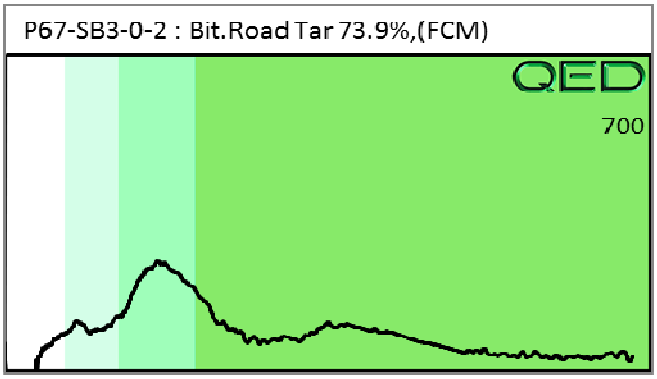
P67-SB2-0-2 : Residual HC



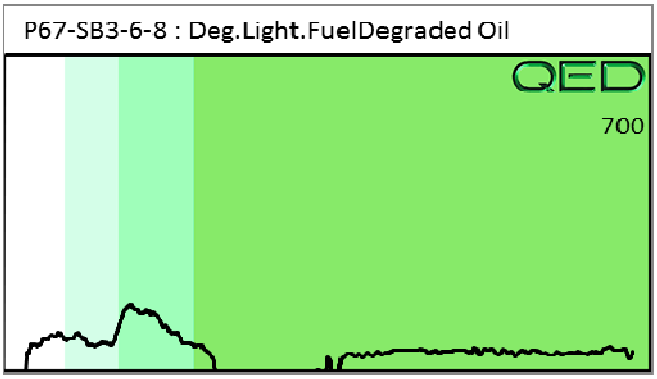
P67-SB2-6-8 : PHC ND,(FCM)



P67-SB3-0-2 : Bit.Road Tar 73.9%,(FCM)



P67-SB3-6-8 : Deg.Light.FuelDegraded Oil

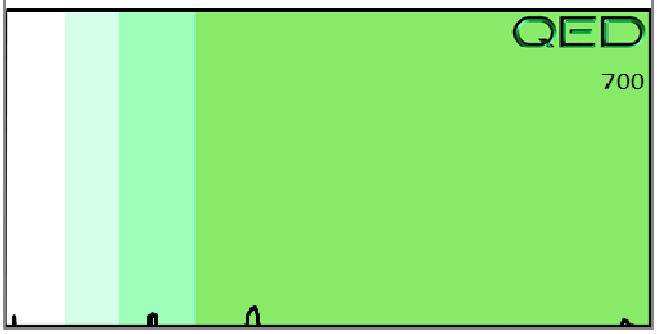


QED Hydrocarbon Fingerprints

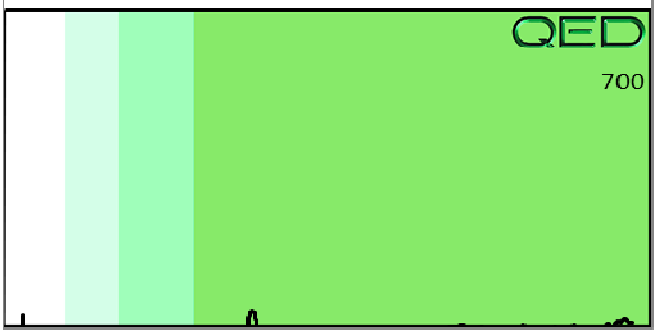
Project: NCDOT Shelby

Tuesday, April 23, 2019

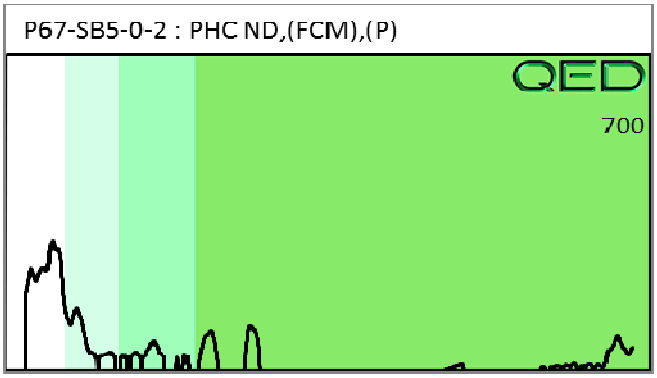
P67-SB4-0-2 : PHC ND,(FCM)



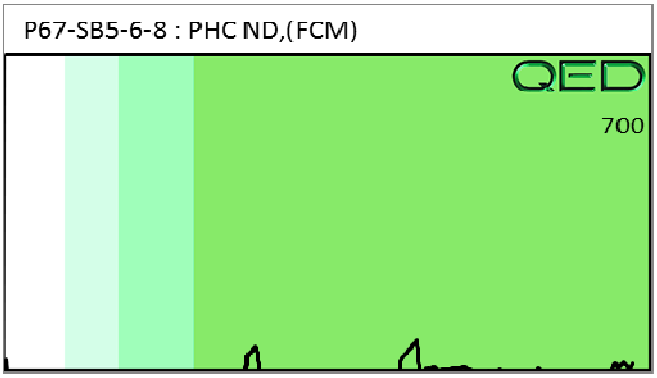
P67-SB4-6-8 : PHC ND,(FCM)



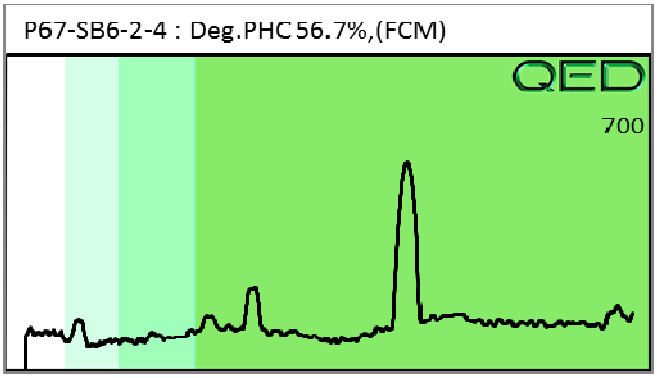
P67-SB5-0-2 : PHC ND,(FCM),(P)



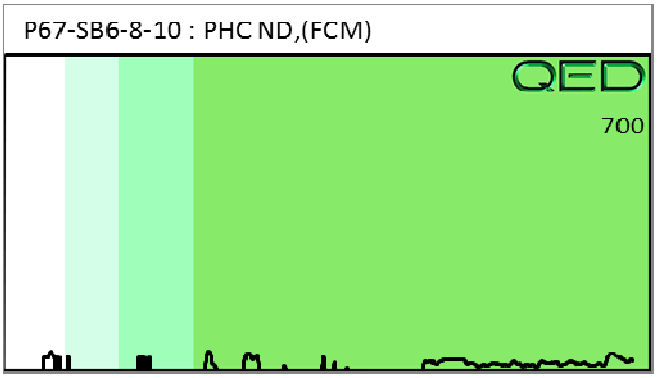
P67-SB5-6-8 : PHC ND,(FCM)



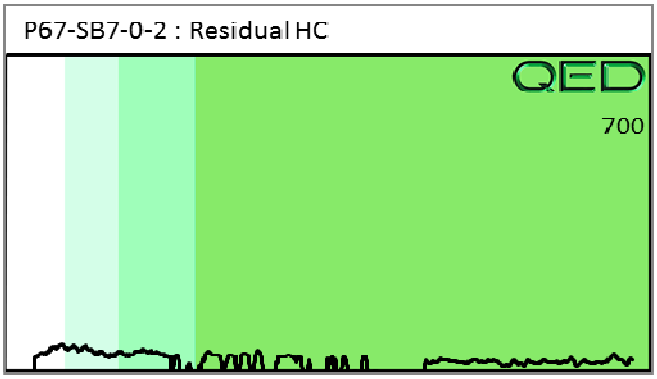
P67-SB6-2-4 : Deg.PHC 56.7%,(FCM)



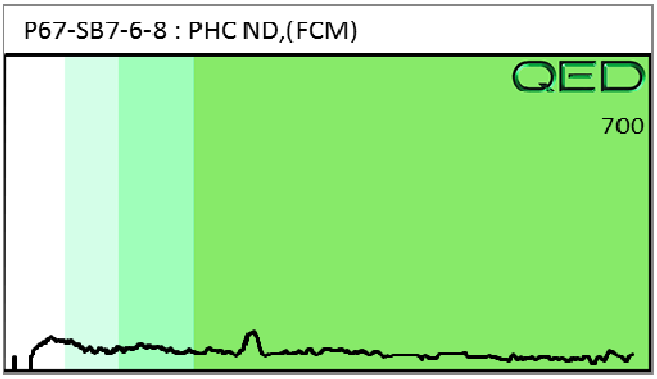
P67-SB6-8-10 : PHC ND,(FCM)



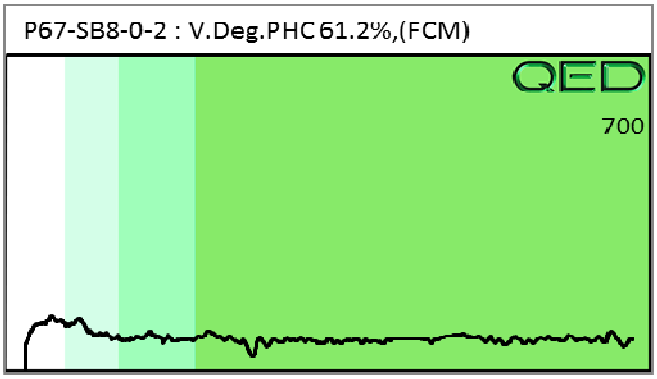
P67-SB7-0-2 : Residual HC



P67-SB7-6-8 : PHC ND,(FCM)

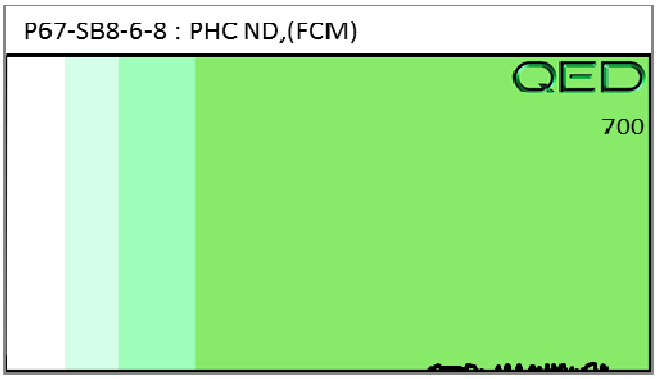


P67-SB8-0-2 : V.Deg.PHC 61.2%,(FCM)



Project: NCDOT Shelby

Tuesday, April 23, 2019



APPENDIX F

LABORATORY RESULTS OF ANALYSIS OF BULK SAMPLES FOR ASBESTOS CONTENT

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041911977
Customer ID:	AMECE25
Customer PO:	1883R2707
Project ID:	

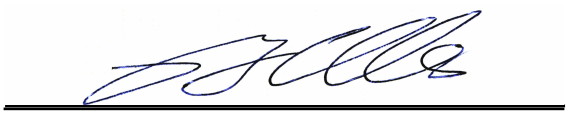
Attention:	John Maas	**Phone:**	(704) 357-5649
	Wood Env. & Infrastructure Solutions	**Fax:**	(704) 357-8639
	2801 Yorkmont Rd.	**Received Date:**	05/03/2019 9:30 AM
	Suite 100	**Analysis Date:**	05/07/2019
	Charlotte, NC 28208	**Collected Date:**	04/23/2019
Project:	Parcels 67 and 655		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
1	Parcel 67, SB-1 at 13 ft - Light Colored Laminate Mineral	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
041911977-0001					
Sample milled prior to analysis.					
2	Parcel 655, SB-11 at 7 ft - Light Colored Laminate Mineral	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
041911977-0002					
Insufficient material for milling process, standard PLM EPA/600 analysis performed.					

Analyst(s)

Benjamin Verghese (2)



Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

Initial report from: 05/07/2019 11:56:31

OrderID: 041911977

041911977

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only): ~~191103923~~

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

CINNAMINSON NJ 08077 EMSL
2019 APR -3 A 11:09

Company: Wood E&I Solutions	**EMSL-Bill to:** ☒ Same ☐ Different If Bill to is Different note Instructions in Comments**
Street: 2901 Yorkmont Rd, Suite 100	*Third Party Billing requires written authorization from third party*
City: Charlotte **State/Province:** NC	**Zip/Postal Code:** 28208 **Country:** USA
Report To (Name): John Moss	**Telephone #:** 704-357-1649
Email Address: John.Moss@woodplc.com	**Fax #:** **Purchase Order:** 1883R2707
Project Name/Number: Parcels 67 and 655	**Please Provide Results:** ☐ Fax ☒ Email
U.S. State Samples Taken: NC	**CT Samples:** ☒ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☒ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
☒ PLM EPA 600/R-93/116 (<1%)	☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

☐ Check For Positive Stop – Clearly Identify Homogenous Group **Date Sampled:** 4/23/19

Samplers Name: John Moss **Samplers Signature:**

Sample #	HA #	Sample Location	Material Description
1	A	Parcel 67, SB-1 at 13ft	Light Colored Laminar Mineral
2	A	Parcel 655, SB-11 at 7ft	↓

Client Sample # (s): 1 - 2 **Total # of Samples:** 2

Relinquished (Client): **Date:** 4/30/19 **Time:** 1005

Received (Lab): **Date:** 4/30/19 **Time:** 10:05 AM

Comments/Special Instructions: 5-3-19