

April 29, 2019

North Carolina Department of Transportation Geotechnical Unit Mail Service Center 1592 Raleigh, North Carolina 27699-1592

Attention: Mr. Craig Haden

email: <u>cehaden@ncdot.gov</u>

Reference: Preliminary Site Assessment Report NCDOT Project I-5986B, WBS Element 47532.1.3 Parcel 214-Lucky's Truck and Trailer Sales 1185 Sadler Drive Dunn, Harnett County, North Carolina S&ME Project 4305-18-175A

Dear Mr. Haden:

S&ME, Inc. (S&ME) is submitting this Preliminary Site Assessment (PSA) Report to the North Carolina Department of Transportation (NCDOT). This report presents the background/project information, field activities, findings, conclusions, and recommendations. These services were performed in general accordance with S&ME Proposal No. 4305-18-175 CO-01 REV-01 dated January 2, 2019, and Contract Number 7000018853 dated April 12, 2018 between NCDOT and S&ME, Inc., authorized by NCDOT in its January 8, 2019 Notice to Proceed Letter.

Background/Project Information

Based on NCDOT's November 2, 2018, Request for Technical and Cost Proposal, the PSA was conducted within the NCDOT right-of-way (ROW) and/or easement as indicated on the preliminary plan sheets provided by NCDOT at the following property:

NCDOT Parcel No.	Property Owner	Site Address
214	RSL, LLC	(Lucky's Truck and Trailer Sales)
		1185 Sadler Drive, Dunn, NC

The property is developed with an active truck and trailer dealership. The property is not listed with registered petroleum underground storage tanks (USTs) (active or closed). The property is also not listed with North Carolina Department of Environmental Quality (NCDEQ) Incidents associated with petroleum releases from USTs or aboveground storage tanks.

The PSA included a geophysical survey and subsequent limited soil sampling (four soil borings up to 10 feet below ground surface (ft.-bgs.), within accessible areas of the proposed ROW/easement in preparation for construction activities. Groundwater was not encountered during the advancement of soil borings at the site. Therefore,



groundwater sampling was not performed. **Figure 1** shows the vicinity and site location, and **Figure 2** shows the site and boring locations. Soil sampling results are shown on **Figure 3**.

Field Services

Prior to field activities, a site specific Health and Safety Plan was prepared as required by the Occupational Health and Safety Act (OSHA). Underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator (Troxler Geologic, Inc.) was also used to locate and mark underground utilities.

Geophysical Survey

On February 6, 2019, S&ME personnel performed a geophysical survey within accessible areas of the proposed ROW/easement at Parcel 214. S&ME used a combination of the Time Domain Electromagnetic (TDEM) and Ground Penetrating Radar (GPR) methods to explore for buried subsurface features at the site such as underground storage tanks (USTs) and other possible buried obstructions. Brief descriptions of these complementary geophysical techniques are presented in the following paragraphs.

Time Domain Electromagnetics (TDEM)

TDEM measures the electrical conductivity of subsurface materials and discriminates between moderately conductive earth materials and very conductive metallic targets within the shallow subsurface. The conductivity is determined by transmitting a time-varying magnetic pulse into the subsurface and measuring the amplitude and phase shift of the secondary magnetic field. The secondary magnetic field is created when the conductive materials become an inductor as the primary magnetic field is passed through them. TDEM data are acquired continuously at a walking pace typically along a series of parallel or perpendicular lines. The system generates audible and visual indications when metallic targets are encountered. These measurements can also be supported with a global positioning system (GPS) which is output directly into the TDEM data file.

We used a Geonics Limited EM-61 MK2 TDEM system in general accordance with ASTM D6820-02 (2007) "Standard Guide for Use of the Time Domain Electromagnetic Method for Subsurface Investigation." Data was collected along lines spaced at approximately five feet using a Juniper[®] Systems Geode[™] sub-meter GPS as positioning support. The presence of vehicles, fences, and other surficial obstructions within the requested survey area however prevented TDEM data collection in several locations. The approximate TDEM data collection paths are presented in **Figure 4**. Golden Software's Surfer[®] program was used to grid and plot the data (**Figures 5 and 6**). The TDEM data has been presented as Plots A and B in order to provide both opaque and transparent views, respectively.

Ground Penetrating Radar (GPR)

GPR transmits electromagnetic waves into the subsurface from an antenna at a specific frequency and measures the time for wave reflections to be received by interfaces between materials with differing material properties (e.g. soil/metal, etc.). The intensity of the reflected GPR wave is a function of the contrast in the material properties (i.e. dielectric permittivity) at the interface, the conductivity of the material that the wave is traveling through, and the frequency of the signal.



We used a Geophysical Survey Systems, Inc. (GSSI) SIR[®] 3000 GPR system equipped with a 400 MHz antenna in general accordance with ASTM D6432-11 "*Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigation*" to further characterize anomalies/features identified during the TDEM survey.

A total of seven GPR profiles (Lines 1 through 7) were collected for documentation (**Figure 7**). The data was post-processed using the GSSI Radan[®] 7 GPR software program for additional analysis.

Geophysical Findings

Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site. Anomalous features unrelated to known surficial targets were not identified in the geophysical data sets collected at the site. However, several potential utilities, including a culvert, were identified (**Figure 7**) and marked in the field with white spray paint.

Soil Sampling

On February 19, 2019, Troxler Geologic, Inc. (Troxler's) drill crew utilized a track mounted Geoprobe® rig to advance four soil borings (B-1 through B-4) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 214. The approximate location of the soil borings are shown in **Figure 2**. A photographic log is included in **Appendix I.** Troxler's drill crew advanced the Geoprobe® borings to a depth of approximately 10 ft.-bgs. During the advancement of the soil borings, groundwater was not encountered. Soil samples were continuously collected in four-foot long disposable acetate-plastic sleeves that line the hollow stainless-steel sample probes. Soil recovered from the sleeves was classified on-site by S&ME personnel and screened with a Photoionization Detector (PID) at approximately two foot depth intervals to measure relative headspace concentrations of volatile organic compounds (VOCs).

VOC headspace readings were obtained from an aliquot of each soil sample that was placed in a re-sealable bag. Another portion of the sample was placed in a separate re-sealable bag and stored in an insulated container with ice for possible laboratory analyses. After waiting approximately 15 minutes to allow the sample to reach ambient temperature and headspace equilibrium, the PID probe was inserted into the bag to obtain a headspace reading. A summary of the PID readings and logs of the soil borings are included in **Appendix II**.

No petroleum odors, staining or elevated PID readings were noted within the collected soil samples. Therefore, two soil samples (two to four foot depth interval and eight to ten foot depth interval) were selected from each boring and provided to RED Lab, LLC (Red Lab) for on-site analysis. A total of eight soil samples (two per boring) were analyzed by RED Lab for Total Petroleum Hydrocarbons (TPH)-Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) using ultra-violet fluorescence (UVF) spectroscopy with product (fuel) identification.

Upon completion of the soil sampling, the soil borings were backfilled with bentonite pellets and soil cuttings. Investigative derived wastes (IDW), such as additional soil cuttings generated during the soil boring advancement and decontamination water, were spread on the ground in accordance with the procedures specified by North Carolina Department of Environmental Quality (NCDEQ). Used gloves, re-sealable bags and acetate sleeves were bagged and disposed off-site.



Soil Analytical Results

Based upon analytical results of soil samples analyzed by RED Lab using UVP spectroscopy, TPH-GRO and TPH-DRO were not reported at concentrations exceeding the North Carolina TPH Action Levels. TPH-DRO was reported at borings B-1 through B-4 at the two to four foot depth intervals at concentrations ranging from 0.1 milligrams per kilograms (mg/kg) to 3.8 mg/kg, which are below its North Carolina TPH Action Level of 100 mg/kg. TPH-GRO was reported at boring B-2 at the two to four foot depth interval at a concentration of 1.8 mg/kg, which is below its North Carolina TPH Action Level of 50 mg/kg. TPH-GRO and TPH-DRO were not reported at concentrations exceeding the laboratory method reporting limits for the remaining soil samples. A summary of the soil analytical results is presented in **Table 1** and shown on **Figure 3.** A copy of the laboratory analytical report provided by RED Lab is presented in **Appendix III.**

Conclusion and Recommendations

The geophysical survey did not identify anomalous features unrelated to known surficial targets in the geophysical data sets collected at the site. However, several potential utilities, including a culvert, were identified. Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site.

S&ME advanced four soil borings (B-1 through B-4) to a depth of approximately 10 ft.-bgs at the site. No petroleum odors, staining or elevated PID readings were noted within soil samples collected from the soil borings. Selected soil samples from the soil borings were analyzed onsite for TPH-GRO and TPH-DRO using UVF spectroscopy. TPH-DRO was reported in the two to four foot depth interval at each soil boring and TPH-GRO was reported at one soil boring at the two to four foot depth interval at concentrations slightly above the laboratory method reporting limits, but well below the North Carolina TPH Action Levels. During the soil boring advancement, groundwater was not encountered. Therefore, groundwater sampling was not performed.

S&ME recommends maintaining an awareness level for the presence of marginally impacted petroleum in soil (below TPH Action Levels) at the site for the safety of workers and the public. If petroleum stained or odorous soils are encountered during construction, these soils should be properly handled and disposed at a licensed facility.

Limitations

The results of this preliminary investigation are limited to the boring locations presented herein. The results of this Preliminary Site Assessment are not all inclusive and may not represent existing conditions across the entire property. These results only reflect the current conditions at the locations sampled on the date this Preliminary Site Assessment was performed. This report has been prepared in accordance with generally accepted environmental engineering and geophysical practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, expressed or implied, is made.

The geophysical methods used for this survey have inherent limitations. Site metallic features (e.g., buildings, reinforced concrete, vehicles, etc.) and overhead transmission lines can produce a false electromagnetic response and may mask subsurface features. The depth of exploration of the GPR signal is highly site specific, and is greatly limited by signal attenuation (absorption) of 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 clay soils, and lowest in relatively low conductivity materials such as unsaturated sand. For this project location, the GPR data sets appear to have a maximum depth of penetration of approximately about five ft.-bgs.

Regardless of the thoroughness of a geophysical study, there is always a possibility that actual conditions may not match the interpretations. The results should be considered accurate only to the degree implied by the methods used and the method's limitations and data coverage. Accordingly, the possibility exists that not all features at a project site will be located due to either subsurface soil conditions or the occurrence of features outside the lateral limits and below the depth of penetration of the methods used. As with most surface geophysical methods, resolution of the subsurface will also decrease with depth. As such, the size and/or contrast of features compared to the imaged subsurface media must be significant enough to produce the anticipated response. The location and/or determination (or the lack thereof) of potential buried features is based on our review of the provided information and of the geophysical survey. Under no circumstances does S&ME assume any responsibility for damages resulting from the presence of subsurface features that may exist but were not identified by our survey.

This Preliminary Site Assessment was performed solely for NCDOT regarding the above-referenced site and assessment area. This report is provided for the sole use of NCDOT. Use of this report by any other parties will be at such party's sole risk. S&ME disclaims liability for any such use or reliance by third parties. The observations presented in this report are indicative of conditions during the time of the assessment and of the specific areas referenced.

Closing

S&ME appreciates the opportunity to provide these services to you. If you have any questions or comments regarding this report, please contact us at your convenience.

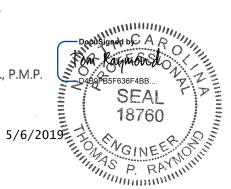
Sincerely,

S&ME, Inc.

DocuSigned by: Jamie T Honeycutt he Honeycutt Environmental Professional C890EAEC25F488. jhoneycutt@smeinc.com

Thomas P. Raymond, P.E., P.M.P. Senior Consultant traymond@smeinc.com

Attachments:



Michael W. Pfeifer Senior Project Manager mpfeifer@smeinc.com

DocuSigned by: Michael Phi 861E52DDEFAF4C7.



Table 1: Summary of Soil Sampling Results

- Figure 1: Vicinity Map Figure 2: Site Map
- Figure 3: Soil Constituent Map
- Figure 4: TDEM Path Location Plan
- Figure 5: TDEM Data Plot A
- Figure 6: TDEM Data Plot B
- Figure 7: Geophysical Anomaly Location Plan
- Appendix I: Photographs
- Appendix II: Boring Logs
- Appendix III: Laboratory Analytical Reports and Chain of Custody

Tables



TABLE 1 SUMMARY OF SOIL SAMPLING RESULTS NCDOT Project I-5986B Parcel 214 - (Lucky's Truck and Trailer Sales) 1185 Sadler Drive Dunn, Harnett County, North Carolina S&ME Project No. 4305-18-175A

Ar	nalytical Metho	d→	Total Petroleum Hydrocarbons (TPH) Gaso Range Organics (GRO) and Diesel Rang Organics (DRO) by Ultraviolet Fluorescen (UVF) Spectrometry				
Sample ID	Date	Contaminant of Concern→ Sample Depth (ftbgs)	TPH-GRO	TPH-DRO			
B-1	2/19/2019	2 to 4	<0.78	2.3			
D-1	2/19/2019	8 to 10	<0.24	<0.1			
B-2	2/19/2019	2 to 4	1.8	3.8			
D-2	2/19/2019	8 to 10	<0.57	<0.23			
B-3	2/19/2019	2 to 4	<0.46	0.88			
6-3	2/19/2019	8 to 10	<0.28	<0.11			
B-4	2/19/2019	2 to 4	<0.55	0.1			
D-4	2/19/2019	8 to 10	<0.61	<0.24			
Notes:	orth Carolina T	PH Action Levels	50	100			

Notes:

1. UVF analysis performed by RED Lab, LLC

2. Concentrations are reported in milligrams per kilogram (mg/Kg).

3. ft.-bgs:- feet below ground surface.

4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.

5. Concentrations exceeding the North Carolina TPH Action Levels are shown

in Shaded and BOLD fields.

Figures

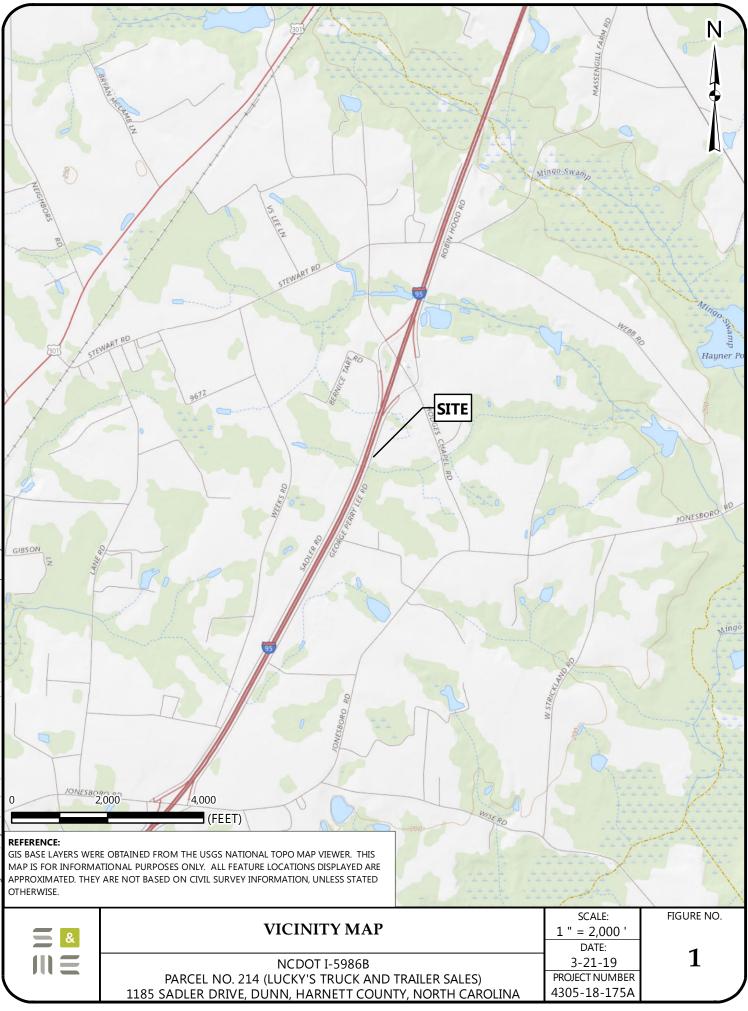
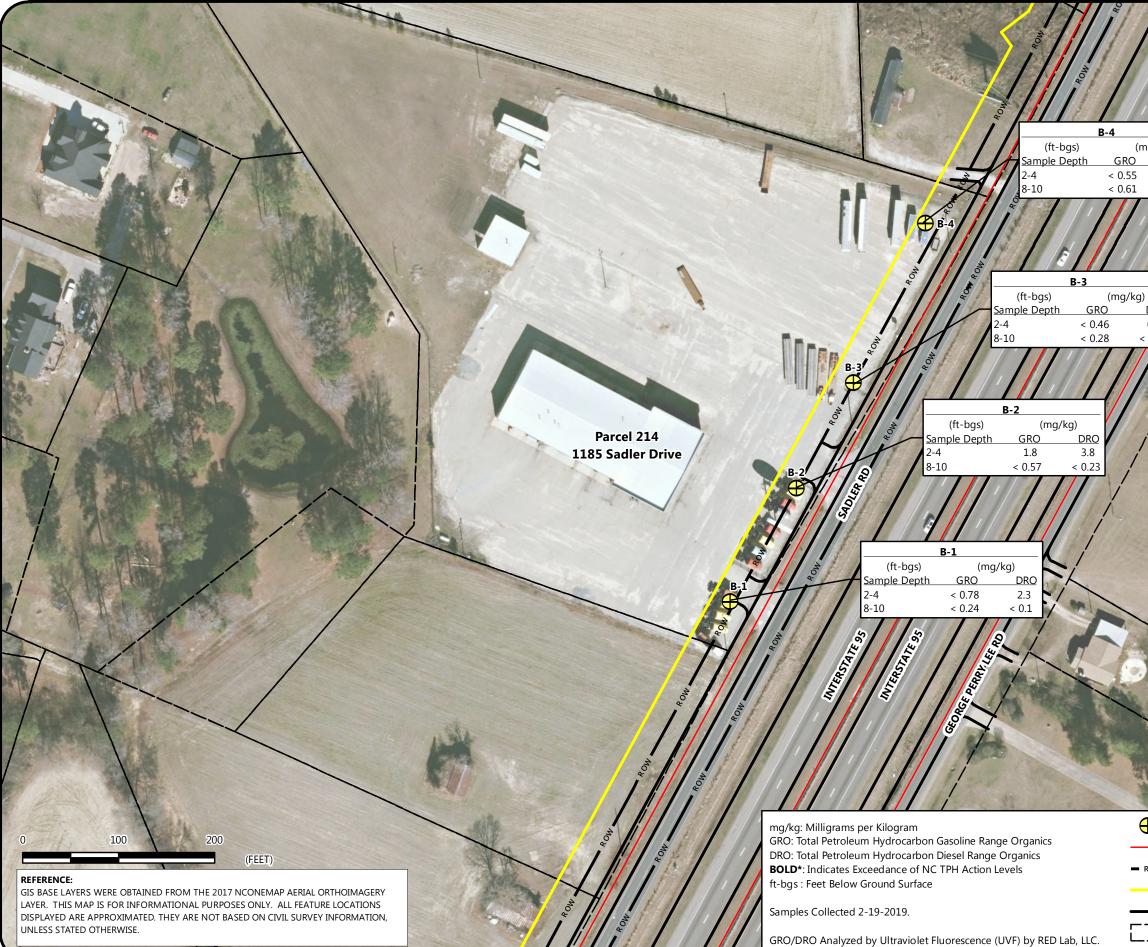


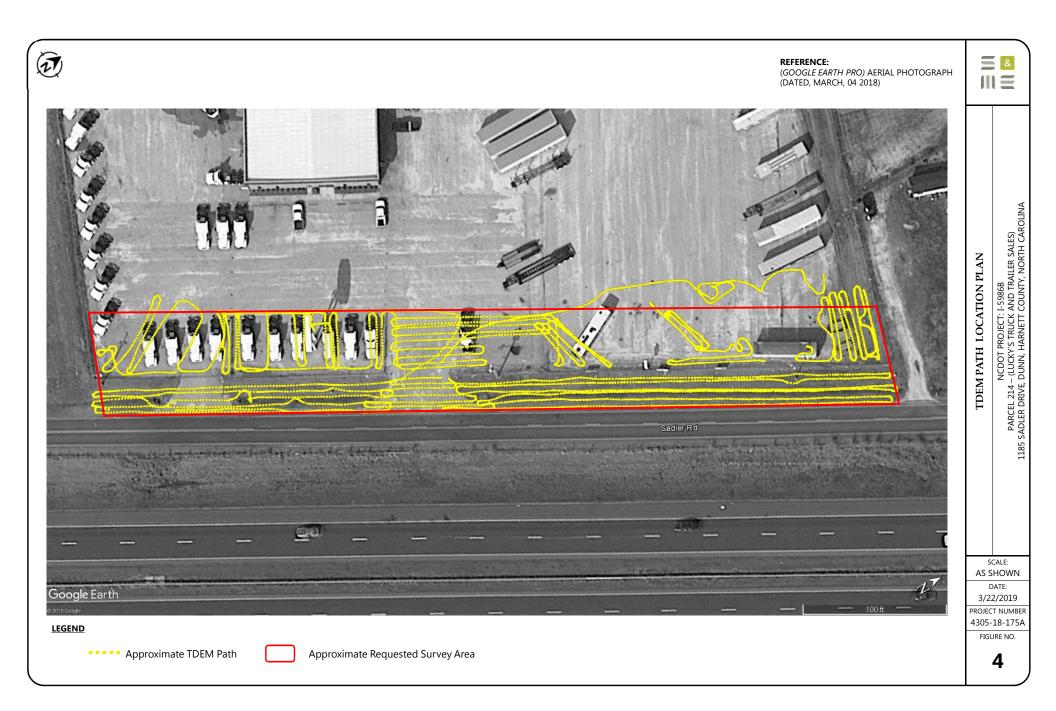


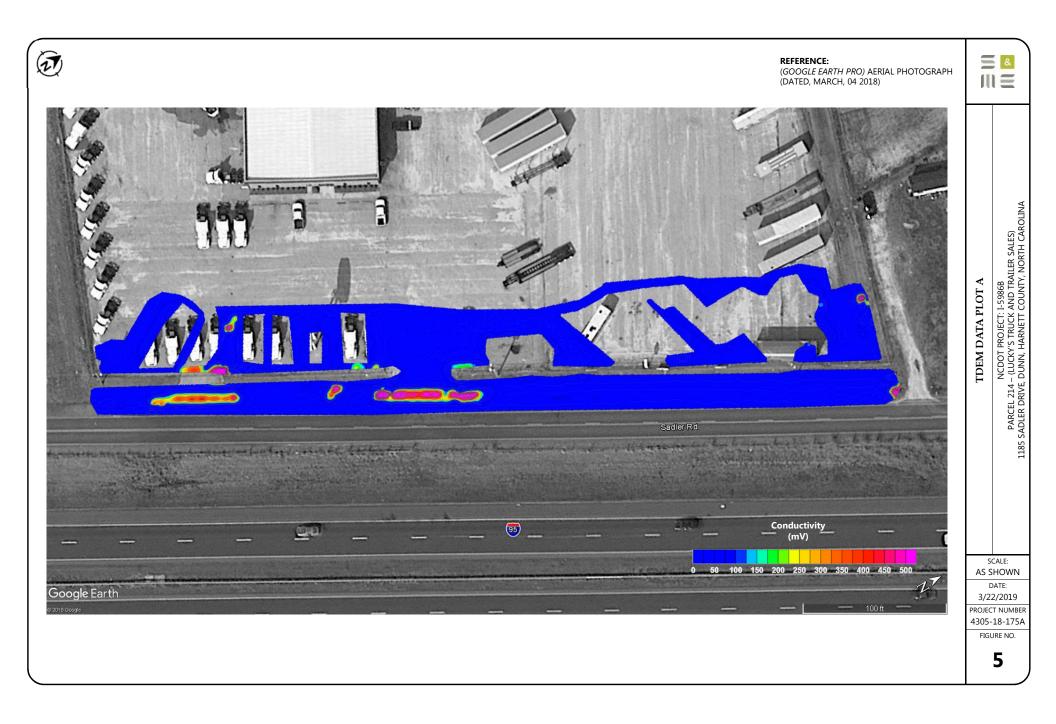
Image Source: NC ONEMAP, I		GRAPHIC SCALE	(IN FEET)
		SCALE:	FIGURE NO.
	SITE MAP	1" = 150'	
_ &		DATE:	
m =	NCDOT Project: I-5986B	MARCH 2019	2
川三	PARCEL 214 - (LUCKY'S TRUCK & TRAILER SALES)	PROJECT NUMBER	
	1185 Sadler Drive, Dunn, Harnett County, North Carolina	4305-18-175A	

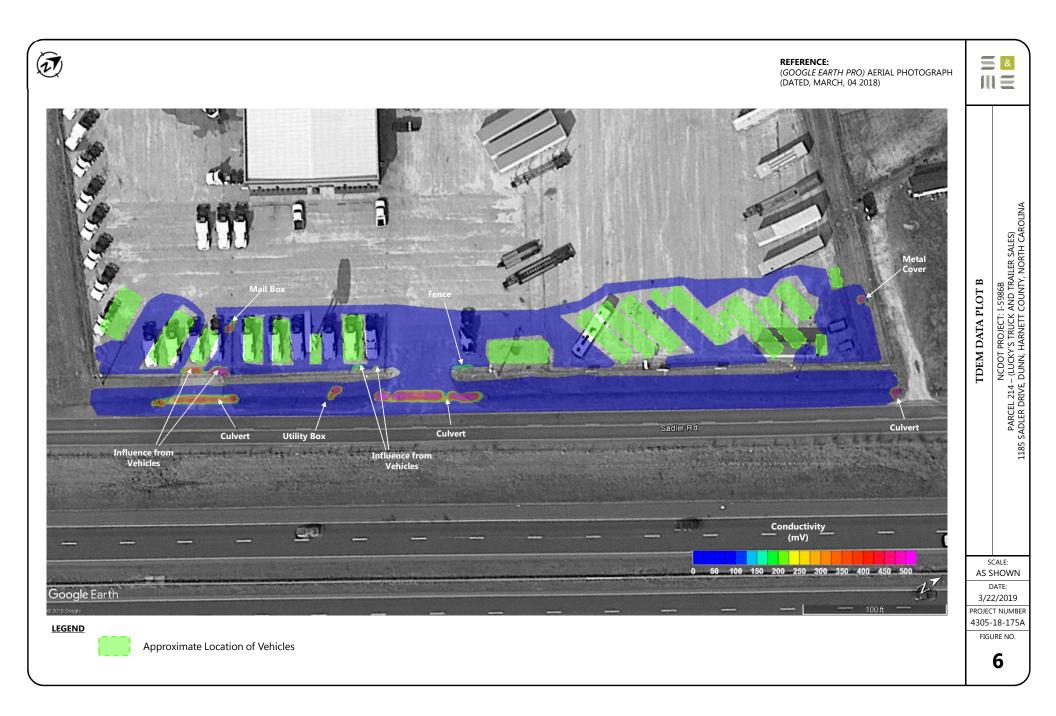


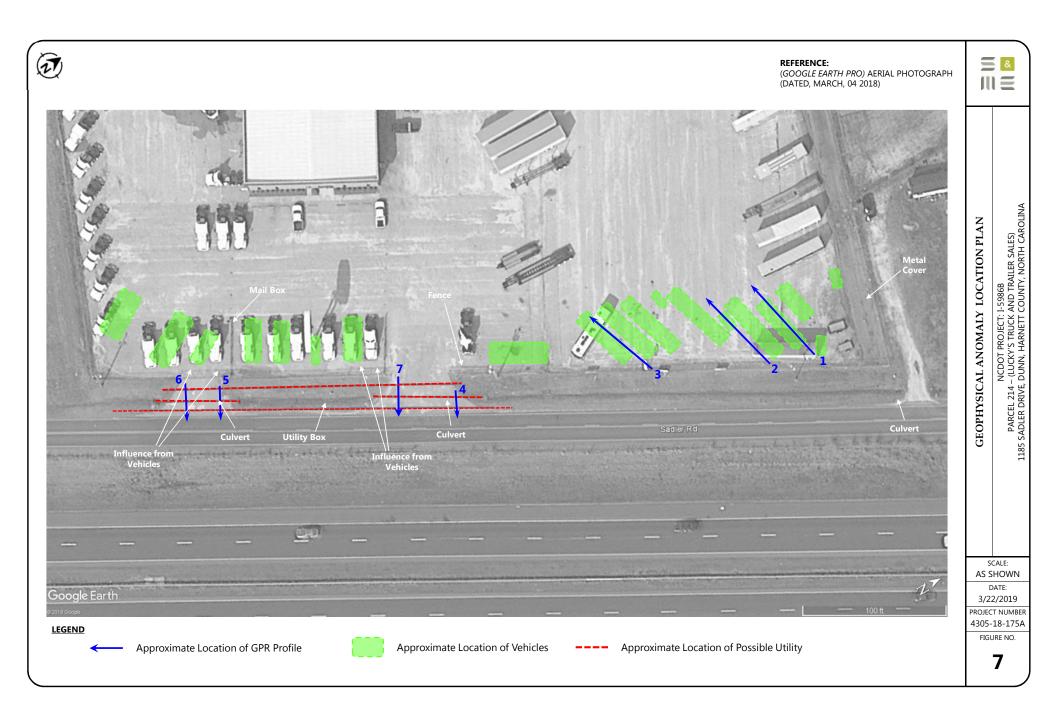
zed by Ultraviolet Fluorescence (UVF) by RED Lab, LLC.

		&
ng/kg) l 2.24	SOIL CONSTITUENT MAP	NCDOT I-5986B PARCEL NO. 214 (LUCKY'S TRUCK AND TRAILER SALES) 1185 SADLER DRIVE, DUNN, HARNETT COUNTY, NORTH CAROLINA
		ALE: 100 '
Sample Location		ATE: 1-19
Proposed Alignment Proposed Permanent ROW	PROJECT 4305-1	NUMBER 18-175
Proposed Permanent Utility Easement		RE NO.
Proposed Edge of Pavement Tax Parcels	3	3



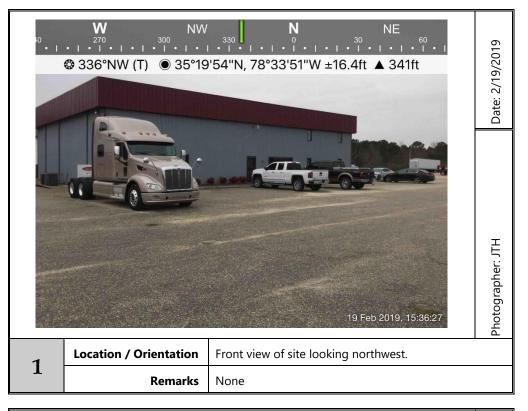






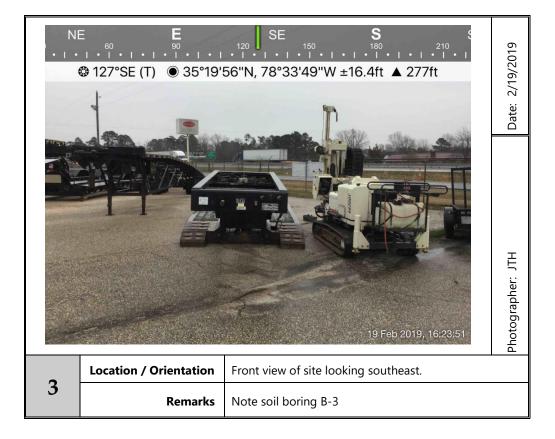
Appendix I – Photographs











Appendix II – Boring Logs

PROJECT:	NCDOT I-5986B Parcel 214-1185 Sadler Drive, Dunn, NC				BORIN	IG LOG:	B-1			
	S&ME Project No. 4305-18-175A									
DATE DRILLED:	Tuesday, February 19, 2019	BORING DEPTH (FT):	10							
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:								
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Appli	icable						
HAMMER TYPE:	Not Applicable	LOGGED BY:								
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:								
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:								
	4 · · · · · · · · · · · · · · · · · · ·									
DEPTH (feet) GRAPHIC LOG	MATERIAL DESCRIPTION		WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
Silt	ihalt, Gravel, y Sand, Orange, Tan, yey Sand, Red, Orange, Tan,				0.1	No				
5					0.6	Yes				
					0.8	No				
					0.7	No				
10 Bor	ing Terminated at 10 Ft-BGS				0.6	Yes				
15 —										
20 —										
25 —										
30										

PROJECT:	BORING LOG: B-2									
	S&ME Project No. 4305-18-175A									
DATE DRILLED:	Tuesday, February 19, 2019	BORING DEPTH (FT):	10							
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:								
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:								
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeyc	utt						
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:								
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:			1	1	r			
DEPTH (feet) GRAPHIC LOG	MATERIAL DESCRIPTION		WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
	ing Terminated at 10 Ft-BGS		WATE		е е 0.4 0.7 0.9 1.0 0.6	No Yes No Yes	Samp 1		λα ματαγραφικά ματαγρα	
25										

PROJECT:	NCDOT I-5986B Parcel 214-1185 Sadler Drive, Dunn, NC	-			PODIA	IG LOG:	D 2			
	S&ME Project No. 4305-18-175A	~			BORI	IG LOG:	В-3			
DATE DRILLED:	Tuesday, February 19, 2019	BORING DEPTH (FT):	10							
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:	-							
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Appli	cable						
HAMMER TYPE:	Not Applicable		J. Honeycutt							
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:								
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:								
DEPTH (feet) (feet) (feet) Cod Capaphic Log	MATERIAL DESCRIPTION bhalt, Gravel, y Sand, Brown,		WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
	y sand, Brown, yey Sand, Red, Orange, Tan,				0.6 0.5	No Yes				
					0.9	No No				
10	ing Terminated at 10 Ft-BGS				0.8	Yes				

PROJECT:	BORING LOG: B-4									
	S&ME Project No. 4305-18-175A									
DATE DRILLED:	Tuesday, February 19, 2019	BORING DEPTH (FT):	10							
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:								
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:								
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeyc	utt						
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:								
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:								
DEPTH (feet) GRAPHIC LOG	MATERIAL DESCRIPTION		WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
	ing Terminated at 10 Ft-BGS		WATE		е е 0.3 0.5 0.3 0.5 0.4	No Yes No Yes	Samp 11	2		
30										

Appendix III – Laboratory Analytical Reports and Chain of Custody





Client: S&ME Address:

Contact: JAMIE HONEYCUTT

Operator

Samples taken

Samples extracted

Samples analysed

MAX MOYER

Tuesday, February 19, 2019

Tuesday, February 19, 2019

Tuesday, February 19, 2019

Project: 4305-18-175A ; PARCEL 214

													F03640		
Matrix	Sampl	e ID Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios		Ratio			HC Fingerprint Match
										% light	% mid	% heavy			
Soil	B-1 (2-4')	31.3	<0.78	<0.78	2.3	2.3	0.92	0.05	<0.009	0	92	8	Deg Fuel 88.4%,(FCM)		
Soil	B-1 (8-10')	9.8	<0.24	<0.24	<0.1	<0.24	<0.005	< 0.005	<0.001	0	0	0	PHC ND,(FCM)		
Soil	B-2 (2-4')	25.1	<0.63	1.8	3.8	5.6	1.4	0.07	0.001	61.3	35.5	3.1	Deg Fuel 89.2%,(FCM)		
Soil	B-2 (8-10')	22.8	<0.57	<0.57	<0.23	<0.57	<0.01	<0.01	<0.007	0	0	0	PHC ND,(FCM)		
Soil	B-3 (2-4')	18.3	<0.46	<0.46	0.88	0.88	0.52	0.01	<0.005	0	87.2	12.8	Deg Fuel 73%,(FCM)		
Soil	B-3 (8-10')	11.4	<0.28	<0.28	<0.11	<0.28	<0.006	<0.006	<0.001	0	0	0	PHC ND,(FCM)		
Soil	B-4 (2-4')	21.8	<0.55	<0.55	0.1	0.1	0.09	0.009	<0.007	0	100	0	Residual HC		
Soil	B-4 (8-10')	24.3	<0.61	<0.61	<0.24	<0.61	<0.01	<0.01	<0.007	0	0	0	PHC ND,(FCM)		
		Initial Calibrator	QC check	OK					Final F	CM QC	Check	OK	107.9%		
0	erated by a QED HC-1 provide a tentative hyd	analyser. Concentration value rocarbon identification. The abb			-										

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

