

## Preliminary Site Assessment Report

November 16, 2018  
WBS Element: 44625.1.1  
State Project: U-5888  
Haywood County

at

**Derek Scott Oates and Jennifer Fish Oates Property**

**Parcel #011**

**847 N Main Street, Waynesville, NC 28786**

**PIN #: 8615-69-0841**

**Facility ID No.: N/A**

**Groundwater Incident No.: 41031**

Prepared For:

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**GeoEnvironmental Section**

**1589 Mail Service Center**

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Prepared By:

**Seramur & Associates, PC**

**165 Knoll Drive**

**Boone, NC 28607**



Keith C. Seramur, P.G.

**TABLE OF CONTENTS**

**SECTION** **PAGE**

---

**1.0 INTRODUCTION..... 3**

    1.1 General Site Background Information..... 3

**2.0 SCOPE OF WORK..... 3**

    2.1 Background Research..... 3

    2.2 Plate 1 – Photos of Parcel #011..... 4

    2.3 Geophysical Surveys..... 5

    2.4 Soil Sampling and Analyses ..... 5

**3.0 RESULTS OF INVESTIGATION ..... 6**

    3.1 Geophysical Surveys..... 6

    3.2 Soil Borings, Sampling and Laboratory Results..... 7

    3.3 Volume and Extent of Soil Contamination..... 8

    3.4 Conclusions..... 8

    3.5 Recommendations..... 8

**Appendix A – Tables and Figures**

- Table 1 – Soil Boring Data
- Table B-3 – Summary of Soil Sampling Results
- Figure 1 – Site Location Map
- Figure 2 – Site Plan
- Figure 3 – Site Plan with Soil Boring Locations and Approx. Cross-Section Locations
- Figure 4 – Magnetometer Survey Results
- Figure 5 – Shallow GPR Depth Slices
- Figure 6 – Intermediate GPR Depth Slices
- Figure 7 – Deep GPR Depth Slices
- Figure 8 – Soil Analytical Results
- Figure 9 – Cross-Sections A-A` and B-B`

**Appendix B – Laboratory Reports and Chain of Custody Records**

**Appendix C – Documents From NCDEQ Incident Files**

## **1.0 Introduction**

### **1.1 General Site Background Information**

Seramur & Associates, PC was contracted to complete a Preliminary Site Assessment (PSA) at:

Derek Scott Oates and Jennifer Fish Oates Property  
Parcel #011  
PIN #: 8615-69-0841  
847 N Main Street, Waynesville, NC 28786  
Facility ID No.: N/A  
Groundwater Incident No.: 41031

This property is located at the intersection of North Main Street, Walnut Street and Bridge Street in Downtown Waynesville (Figure 1). The property is currently developed with a consignment store. The proposed Right-of-Way (R/W) and a permanent utility easement (PUE) cover the south side of the property along N Main Street. A temporary construction easement (TCE) is on the west side of the building along Bridge Street (Figure 2). It is our understanding that the R/W and easements are being investigated as part of a traffic circle being built to replace the current intersection.

## **2.0 Scope of Work**

The PSA scope of work included completing a geophysical survey at the property to investigate the potential for underground storage tanks within the easements and proposed R/W. Following the geophysical survey, soil sampling and analyses were performed to assess soil quality and estimate the volume of potentially contaminated soil at the site (Figure 3).

### **2.1 Background Research**

According to Haywood County Tax Administration records, the property is currently owned by Derek Scott Oates and Jennifer Fish Oates. A review of historic aerial photographs showed that the property was developed in the 1950's. Haywood County Tax Administration records indicate that the building was constructed in 1950. There is no Facility I.D. Number associated with this property. There is an Incident Number (41031) associated with this property.

Seramur and Associates personnel obtained electronic incident files from NCDEQ for our background research. NCDEQ reports indicate that the property once operated as a cabinet shop and any prior use of the property is not known.

NCDEQ reports provided included an Initial Abatement Action Report documenting closure of a 550 gallon heating oil UST in 2006. Soil samples were not collected at the time of closure, but were collected at a later time in October, 2011. Contaminated soil was removed from the property in February, 2012, totaling 42.16 tons. Contaminated soil was removed to a depth of 13 feet BGS. A Notice of No Further Action was issued on February 23, 2012.

Seramur and Associates personnel made a pedestrian reconnaissance of the property during the initial site visit on September 25, 2018. At that time, the proposed work area was marked with white paint for utility locating purposes. A utility locate request was initiated with the North Carolina 811 system on October 14, 2018, approximately one week before commencing with drilling.

## 2.2 Plate 1 – Photos of Parcel #011





## 2.3 Geophysical Surveys

Seramur & Associates set up three grids for a geophysical survey at Parcel #011 (Figures 4 through 7). Grid 1 extended from the west side of the R/W and PUE towards the eastern side of the property. Grid 2 extended from the eastern end of Grid 1 toward the eastern property boundary. Grid 3 extended along the west side of the building covering about half of the TCE. This grid was in the location of the former heating oil UST. The GPR and magnetometer were used to survey areas outside of the three grids that were within the proposed R/W and easements. Geophysical data were collected along transects at a 2-foot spacing.

The Magnetometer survey was completed with a MF-1 Fluxgate magnetometer. The MF-1 Fluxgate magnetometer is designed to measure changes in the Earth's magnetic field associated with larger ferrous objects. It does not respond to smaller objects such as nails or wire, but responds well to variations in the Earth's magnetic field produced by manholes, steel pipe, buried drums and tanks. The sensitivity level is well suited for detecting buried USTs at commercial and industrial facilities. Magnetometer data was compiled in an Excel spreadsheet and a contour map with hill shade was drafted using Golden Software's Surfer® modeling program (Figure 4).

A Ground Penetrating Radar (GPR) survey was completed across the grids using Geophysical Survey Systems, Inc. 400 MHz antenna and a SIR-3000 Single Channel Data Acquisition System with a calibrated survey wheel. The GPR data was downloaded and saved onto a computer. The GPR grid data has been processed and modeled using GPR Slice® software. The GPR data processing included adjusting time zero, completing a background removal and adjusting the time variable gain to enhance deep reflections. GPR transect data collected across the probable USTs were processed using Radan® software.

Three-dimensional models of the GPR grid data were produced with the GPR Slice® software. Three time slices (or depth slices) were imaged in each of the two grids at depths of 0.3 to 0.8 feet, 1.6 to 2.1 feet and 3.2 to 3.7 feet (Figures 5 through 7). Each depth slice is a horizontal slice or plan view of reflections across an approximate 0.5-foot thickness of the subsurface. For example, the shallow GPR depth slices show reflections in the radar data between depths of 0.3 and 0.8 feet.

## 2.4 Soil Sampling and Analyses

Carolina Soil Investigations, LLC mobilized to the site on October 23<sup>rd</sup>, 2018 to drill Geoprobe borings and collect soil samples. Our project design called for collecting a shallow and deep soil sample from each boring (Figure 3). The purpose of collecting samples at a depth of ~3.0 feet is to test for petroleum releases related to surface spills and releases from product lines. The purpose of collecting samples at a depth of ~9.0 feet is to test for petroleum releases related to underground storage tanks. Soil samples were collected at other depths within the Geoprobe cores if soil staining or petroleum vapors were observed or if limited core recovery occurred. Soil borings were drilled in the proposed R/W along North Main Street on the south side of the property and in the easements along the western side of the property (Figure 3).

A track-mounted Geoprobe rig was used to drill a total of seven soil borings. A new pair of Nitrile gloves was worn while collecting each soil sample. A representative portion of each soil sample was placed in a zip lock bag and allowed to rest for a period of time to allow volatile vapors to accumulate in the headspace of the bag. A calibrated Photoionization detector (PID) was used to screen the headspace in each bag and the concentration of volatile petroleum vapors was measured and recorded (Table 1). The texture and type of soil material in the Geoprobe cores was described and recorded. Table 1 lists the soil boring data including sample number, depth, PID reading, lithology and type of soil material.

Samples were collected and shipped on ice to REDLab, LLC, in Wilmington, NC for laboratory analyses. REDLab analyzed the soil samples for petroleum constituents by Ultra-Violet Fluorescence using a QED HC-1 analyzer. The analytical results are reported as Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) and Total Petroleum as Hydrocarbons (TPH). REDLab provides a hydrocarbon spectrum with each of the sample results. This spectrum is used for a tentative identification of the type of hydrocarbon detected by the analytical method. A hydrocarbon fingerprint is interpreted by REDLab for each sample using a library search of spectra for known hydrocarbon types and concentrations. The laboratory reports and fingerprint spectra are included in Appendix B.

### **3.0 Results of Investigation**

Parcel #011 contains a structure that currently operates as a consignment store. A heating oil UST was removed from the property in 2006 and an NCDEQ Incident was opened for the property in 2011. A Notice of No Further Action was issued after the contaminated soil was removed from the property in 2012.

#### **3.1 Geophysical Surveys**

##### **Magnetometer Survey**

Two magnetic anomalies were detected in Grid 1. One anomaly was a localized reading in the vicinity of a metal light pole. The second was a large anomaly just south of the center of the building. This anomaly is large enough to represent a UST. Magnetic anomalies were not detected in Grids 2 and 3.

##### **Shallow GPR Depth Slice**

The shallow GPR depth slices (0.3-0.8 feet) imaged disorganized areas of high amplitude reflections in a background of medium to low amplitude reflections. There was no evidence of buried infrastructure observed at this depth.

##### **Intermediate GPR Depth Slice**

The intermediate GPR depth slices (1.6-2.1 feet) images several sets of reflections related to site features. Grid one showed a linear high amplitude reflection extending from the road back

toward the building. This is interpreted as a utility line, possibly a sewer line. An oblong, high amplitude reflection was recorded south of the building at the same location as the large magnetic anomaly (Figure 4). Two profiles were collected across the oblong anomaly and show reflection characteristics typical of a UST (Insets A & B on Figure 6). An isosurface image was produced and a horizontal depth slice was overlaid on this image (Inset C on Figure 6). This shows the 3-D relationship between the utility line and the probable UST. This image also shows that the utility line is sloping toward the street as would be expected for a sewer line.

Grid 2 shows a linear high amplitude reflection extending from the road back toward the side of the building. This is interpreted as the water line. The water line is mapped about 3 feet west of this anomaly.

A rectangular area of low amplitude reflections (blue) in Grid 3 shows an outline of the UST excavation for the former heating oil UST.

### **Deep GPR Depth Slice**

The deep GPR depth slices (3.2-3.7 feet) do not show any distinct reflections patterns related to buried infrastructure. There are a few small, high amplitude reflectors observed across the grid but there were no magnetic anomalies recorded at these locations.

The geophysical surveys imaged one probable UST on the south side of the building. They also imaged an outline of the former heating oil UST excavation.

### **3.2 Soil Borings, Sampling and Laboratory Results**

The soil type at Parcel #011 consisted of fill material and saprolite, ranging from silty sand to sandy silt. Alluvium was encountered at depth in one boring (Table 1 and Figure 9). Groundwater was not encountered in any of the soil borings.

Borings B-1 and B-2 were drilled southeast of the building in the Proposed R/W (Figure 3). Borings B-3 and B-4 were drilled on either side of the probable UST south of the building. Borings B-5 and B-6 were drilled along the west side of the building around the former heating oil UST excavation. Boring B-7 was drilled in the PUE off of the southwest corner of the building.

Elevated DRO concentrations (28.4 ppm) were detected in S-1 collected from B-1 on the far east side of the property. Petroleum constituents in this soil maybe related to the releases at Parcel #012 to the east. The USTs on Parcel #012 were formerly located along the western side of that property. Concentrations above 5.3 ppm DRO were not detected in any other soil samples collected from Parcel #011.

### 3.3 Volume and Extent of Soil Contamination

Contaminated soil, defined as GRO concentrations above 50 ppm and DRO concentrations above 100 ppm, was not detected in soil samples collected at Parcel #011.

### 3.4 Conclusions

The large magnetic anomaly detected in Grid 1 is interpreted to be a probable UST. GPR profiles show reflection characteristics consistent with a UST in the center of Grid 1. The GPR depth slices and the 3-D isosurface model clearly shows anomalies of the size and shape of buried a UST.

Laboratory analyses of soil samples collected within the proposed Right-of-Way and easement on Parcel #011 did not detect concentrations of GRO and DRO constituents above their respective action levels.

### 3.5 Recommendations

SAPC recommends that the probable UST be properly closed. A licensed geologist or engineer should supervise the excavation and removal of this UST and completion of the UST Closure Report.

## Appendix A

### Tables and Figures

Table 1. Soil Boring Data - Parcel #011 - Derek S. and Jennifer F. Oates Property						
Boring No.	Depth (ft)	Lithology	Soil type	Soil Sample	PID ppm	Comments
B-1	0.0 to 5.0	Silty Sand	Fill	S-1	0.1	Sample at 3.0 feet.
B-1	5.0 to 10.0	Silty Sand	Fill	S-2	0.3	Sample at 9.5 feet.
B-2	0.0 to 2.0	Silty Sand	Fill	S-3	0.1	Sample at 3.0 feet.
	2.0 to 5.0		Saprolite			
B-2	5.0 to 10.0	Silty Sand	Saprolite	S-4	0.2	Sample at 9.0 feet.
B-3	0.0 to 2.0	Silty Sand	Fill	S-5	0.1	Sample at 3.0 feet.
	2.0 to 5.0		Saprolite			
B-3	5.0 to 7.5	Silty Sand	Saprolite	S-6	0.1	Sample at 9.0 feet.
	7.5 to 10.0	Silty Sand with Gravel	Alluvium			
B-4	0.0 to 2.0	Silty Sand	Fill	S-7	0.1	Sample at 3.0 feet.
	2.0 to 5.0	Sandy Silt	Saprolite			
B-4	5.0 to 10.0	Sandy Silt	Saprolite	S-8	0.1	Sample at 6.0 feet.
				S-9	0.4	Sample at 9.0 feet.
B-5	0.0 to 5.0	Sandy Silt	Fill	S-10	0.1	Sample at 3.0 feet.
B-5	5.0 to 10.0	Sandy Silt	Fill	S-11	0.0	Sample at 9.0 feet.
B-6	0.0 to 5.0	Sandy Silt	Fill	S-12	0.1	Sample at 1.5 feet.
B-6	5.0 to 10.0	Sandy Silt	Fill	S-13	0.4	Sample at 9.5 feet.
B-7	0.0 to 2.0	Silty Sand	Fill	S-14	0.2	Sample at 3.0 feet.
	2.0 to 5.0	Sandy Silt	Saprolite			
B-7	5.0 to 10.0	Sandy Silt	Saprolite	S-15	0.1	Sample at 9.0 feet.

**Table B-3: Summary of Soil Sampling Results**

Revision Date: 10/25/18

Incident Number and Name: 41031, Derek S. Oates and Jennifer F. Oates Property

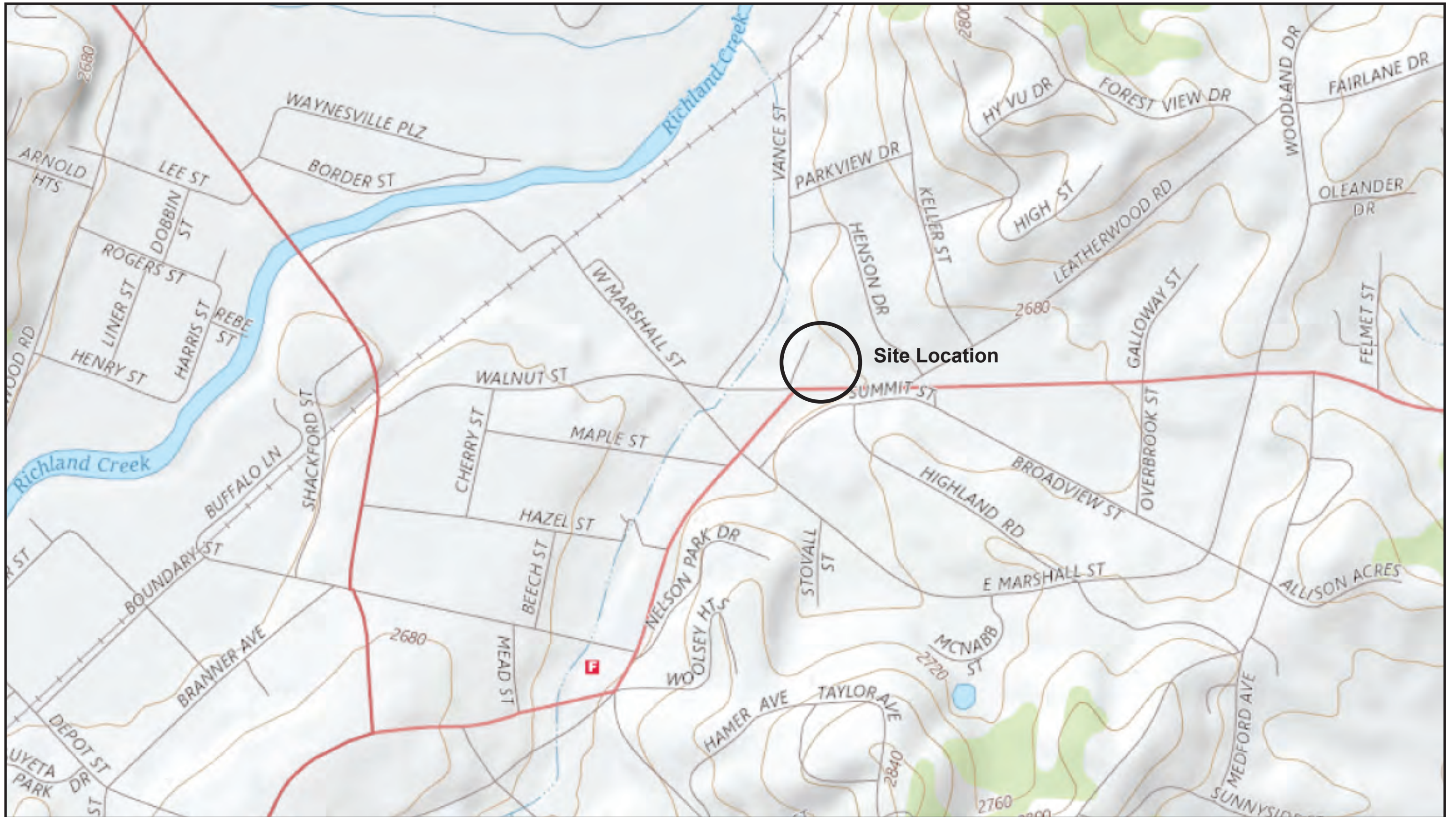
Parcel ID#: 011

Analytical Method (e.g., VOC by EPA 8260) →					UVF	UVF
Contaminant of Concern →					TPH GRO (mg/kg)	TPH DRO (mg/kg)
Sample ID	Date Collected (mm/dd/yy)	Source Area	Sample Depth (ft. BGS)	Incident Phase		
S-1	10/23/18	B-1	3.0	PSA	<0.58	28.4
S-2	10/23/18	B-1	9.5	PSA	<0.52	5.2
S-3	10/23/18	B-2	3.0	PSA	<0.52	0.10
S-4	10/23/18	B-2	9.0	PSA	<0.56	0.30
S-5	10/23/18	B-3	3.0	PSA	<0.61	<0.25
S-6	10/23/18	B-3	9.0	PSA	<0.58	<0.23
S-7	10/23/18	B-4	3.0	PSA	<0.53	0.07
S-8	10/23/18	B-4	6.0	PSA	<0.49	3.0
S-9	10/23/18	B-4	9.0	PSA	<0.75	0.14
S-10	10/23/18	B-5	3.0	PSA	<0.30	0.70
S-11	10/23/18	B-5	9.0	PSA	<0.55	<0.22
S-12	10/23/18	B-6	1.5	PSA	<0.56	0.56
S-13	10/23/18	B-6	9.5	PSA	<0.63	5.3
S-14	10/23/18	B-7	3.0	PSA	<1.0	2.4
S-15	10/23/18	B-7	9.0	PSA	<0.76	2.5
<b>NC DEQ Action Level (mg/kg)</b>					50	100

ft. BGS = feet below ground surface

mg/kg = milligrams per kilogram





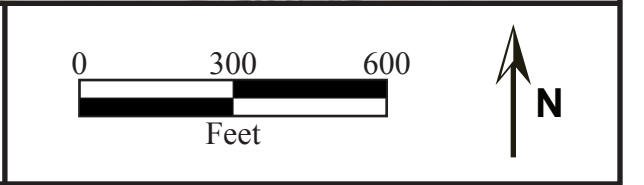
**Figure 1**  
 Site Location Map  
 Source: U.S.G.S.  
 The National Map

State Project: U-5888  
 Haywood County, NC

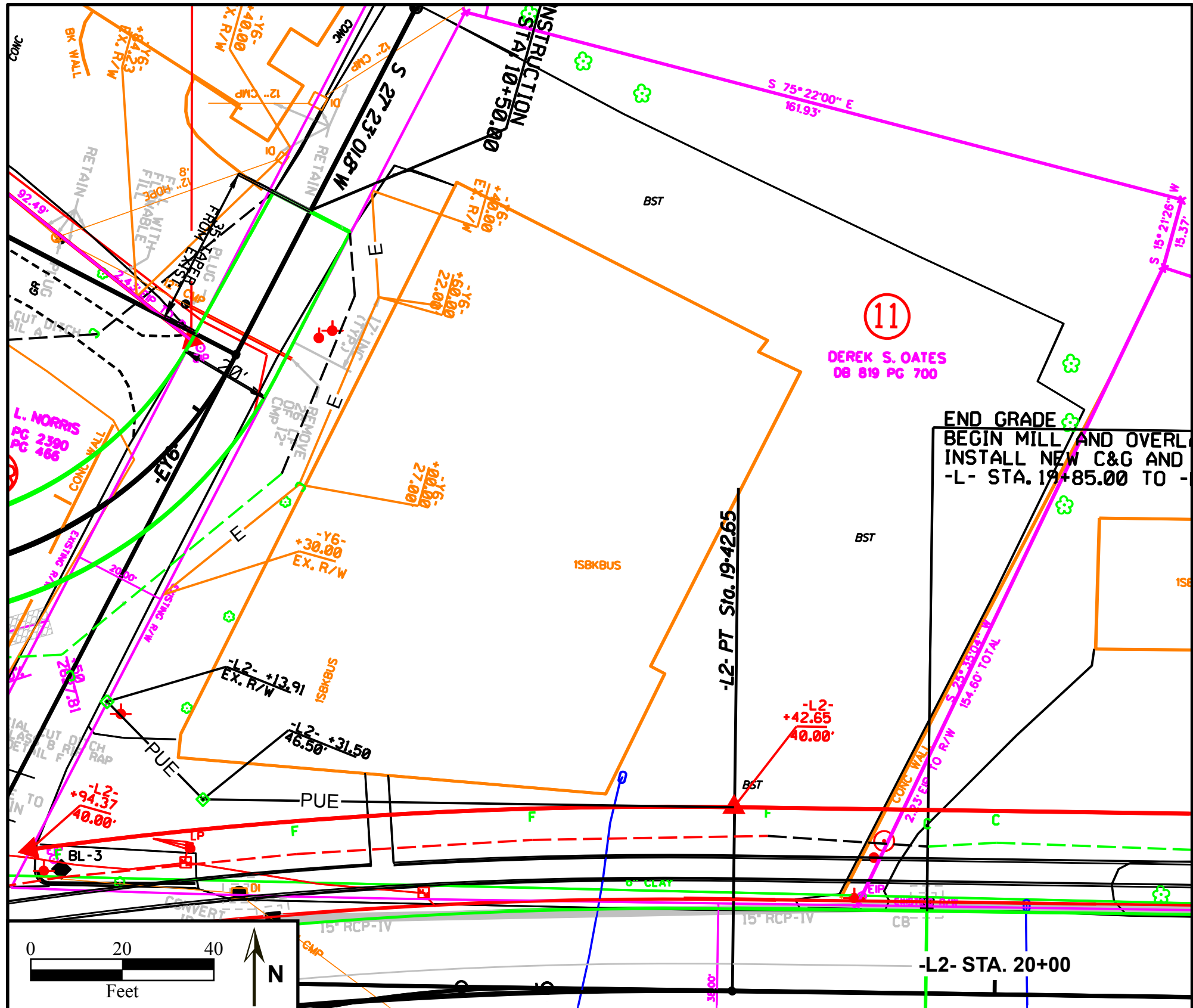
Derek S. Oates Property  
 847 N Main Street  
 Waynesville, NC

Parcel #011  
 Facility I.D.: N/A

Seramur & Associates, PC  
 Boone, NC







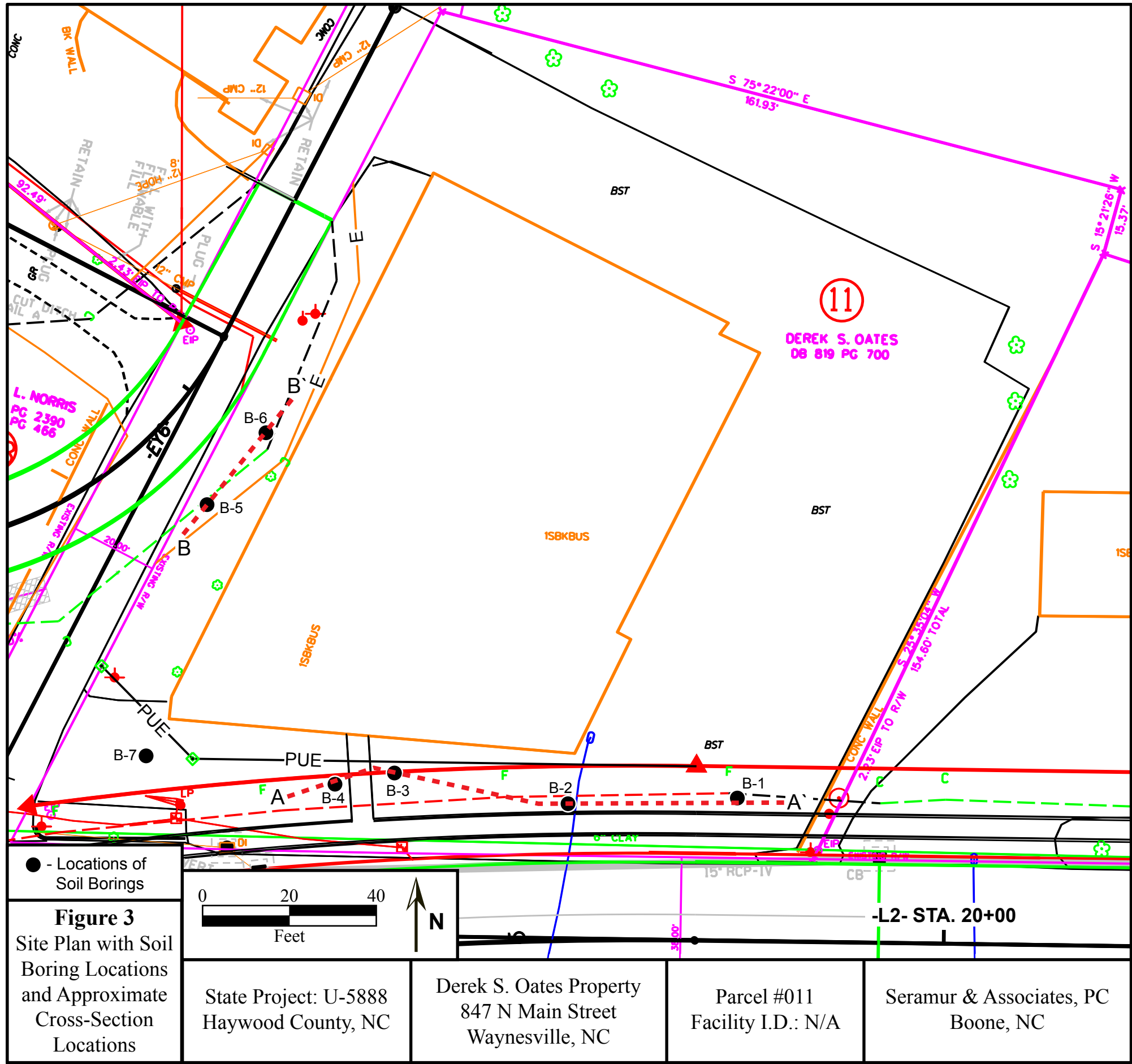
**Figure 2**  
Site Plan

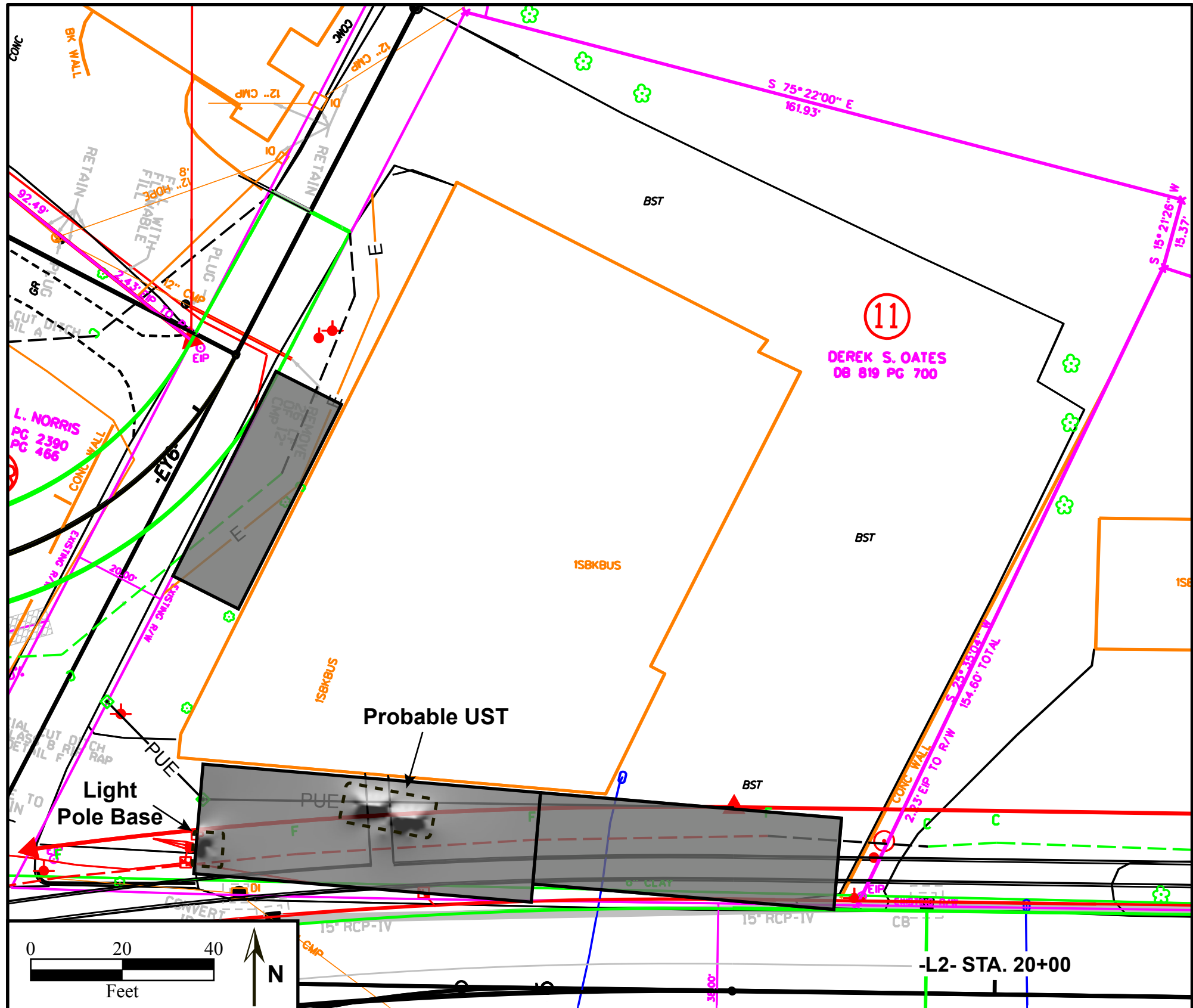
State Project: U-5888  
Haywood County, NC

Derek S. Oates Property  
847 N Main Street  
Waynesville, NC

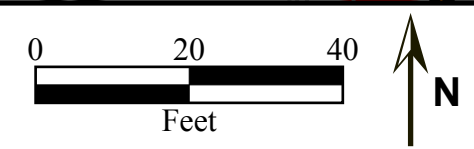
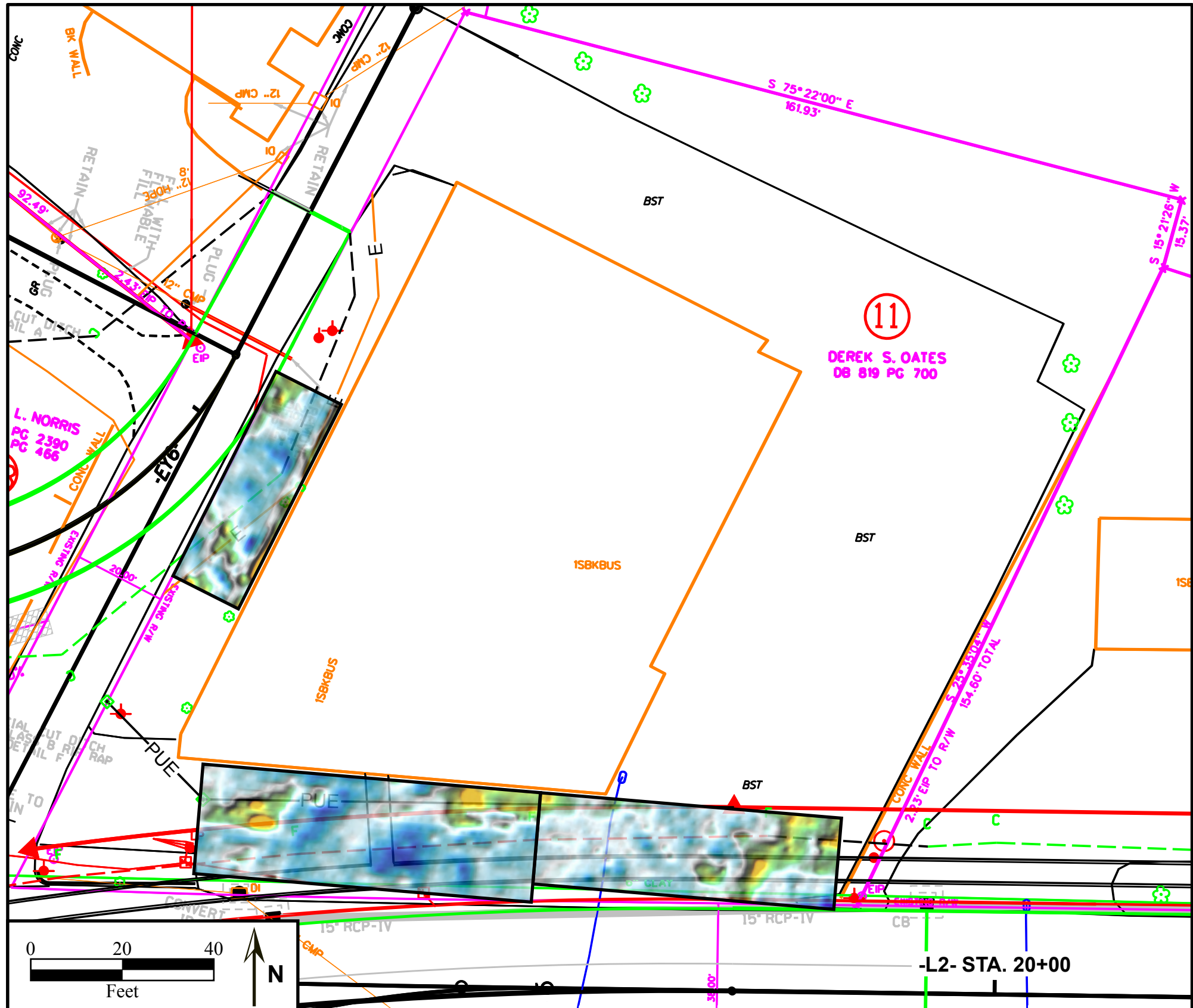
Parcel #011  
Facility I.D.: N/A

Seramur & Associates, PC  
Boone, NC



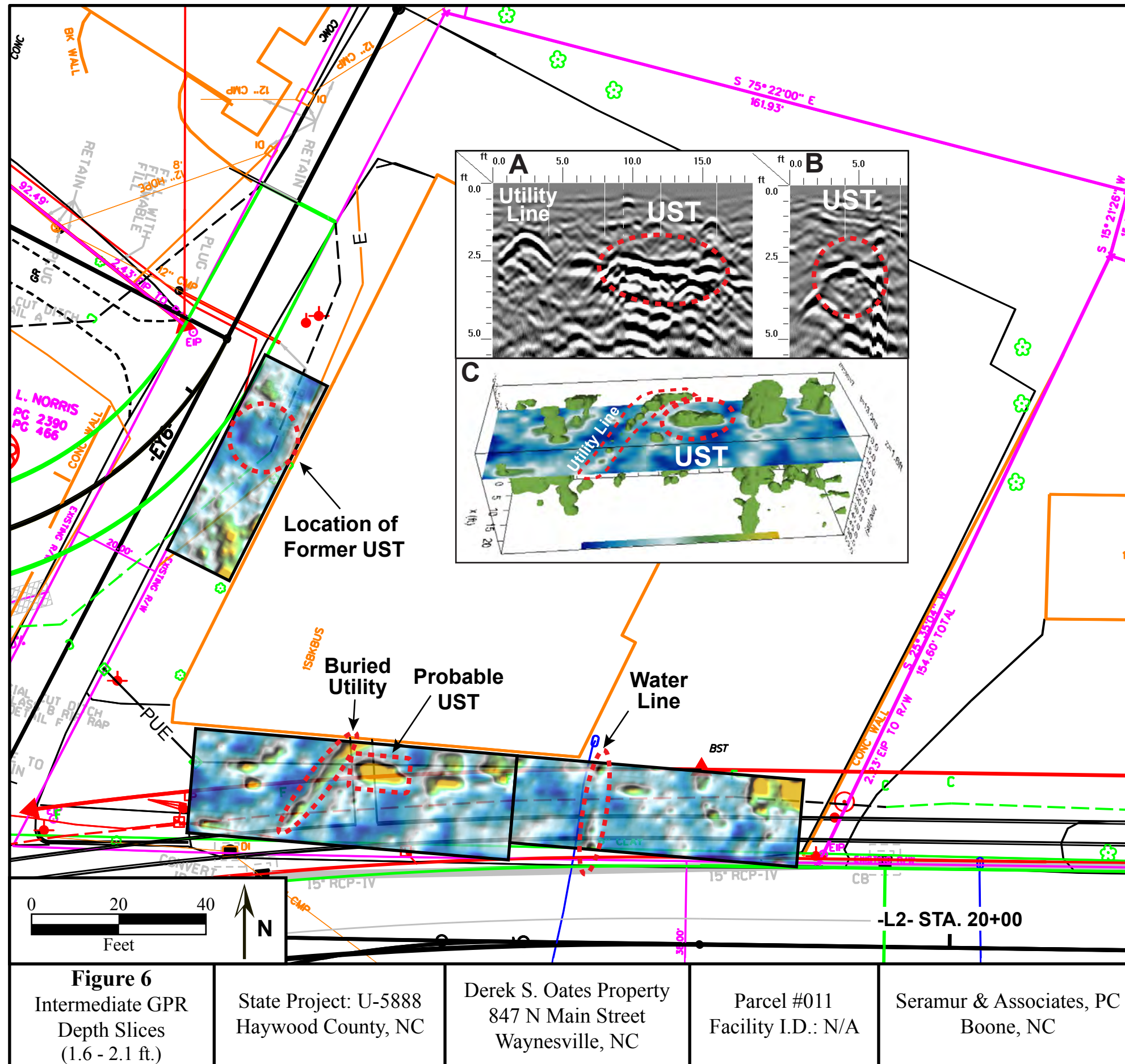


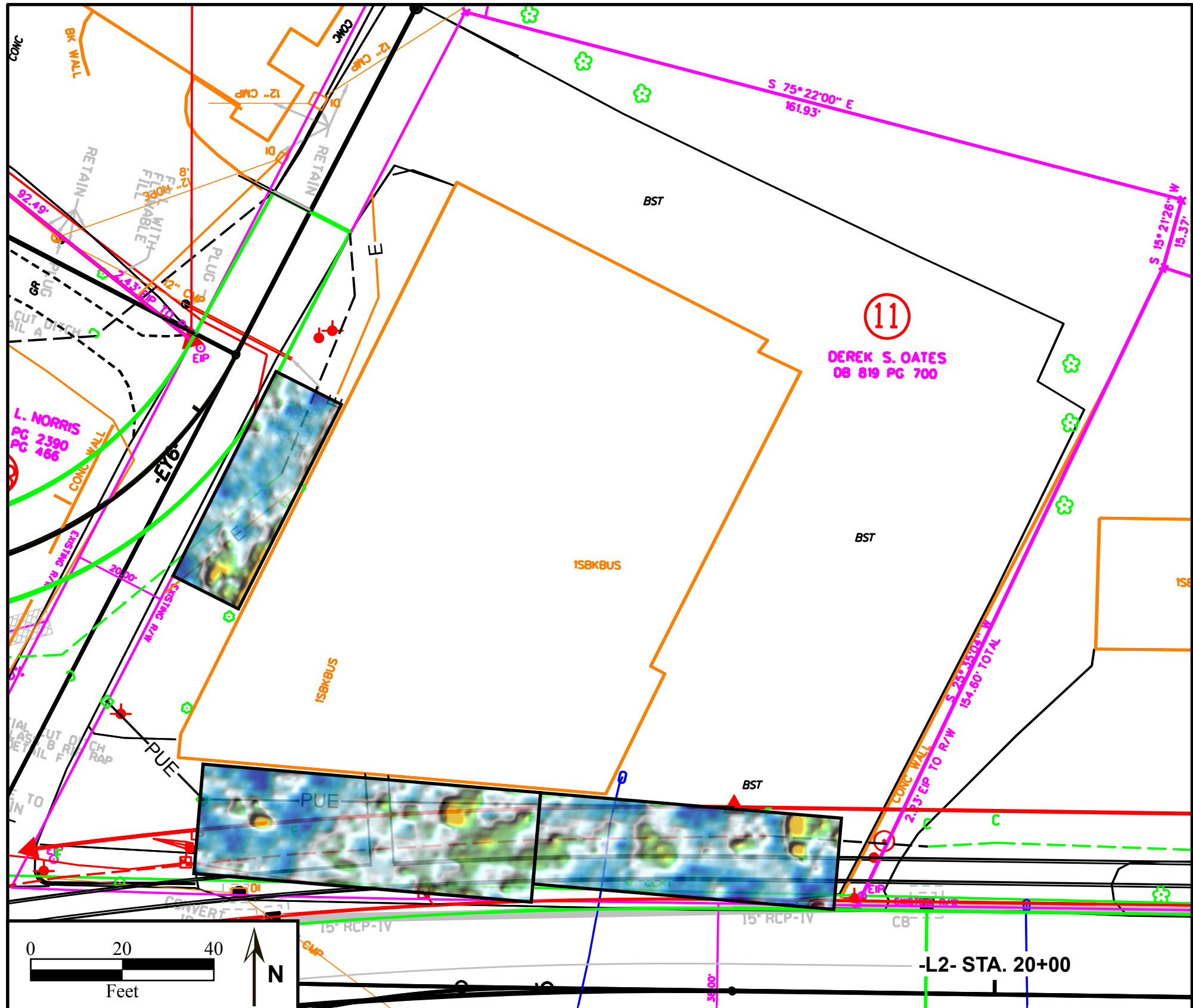
<p><b>Figure 4</b> Magnetometer Survey Results</p>	<p>State Project: U-5888 Haywood County, NC</p>	<p>Derek S. Oates Property 847 N Main Street Waynesville, NC</p>	<p>Parcel #011 Facility I.D.: N/A</p>	<p>Seramur &amp; Associates, PC Boone, NC</p>
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<p><b>Figure 5</b> Shallow GPR Depth Slices (0.3 - 0.8 ft.)</p>	<p>State Project: U-5888 Haywood County, NC</p>	<p>Derek S. Oates Property 847 N Main Street Waynesville, NC</p>	<p>Parcel #011 Facility I.D.: N/A</p>	<p>Seramur &amp; Associates, PC Boone, NC</p>
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**Figure 7**  
 Deep GPR  
 Depth Slices  
 (3.2 - 3.7 ft.)

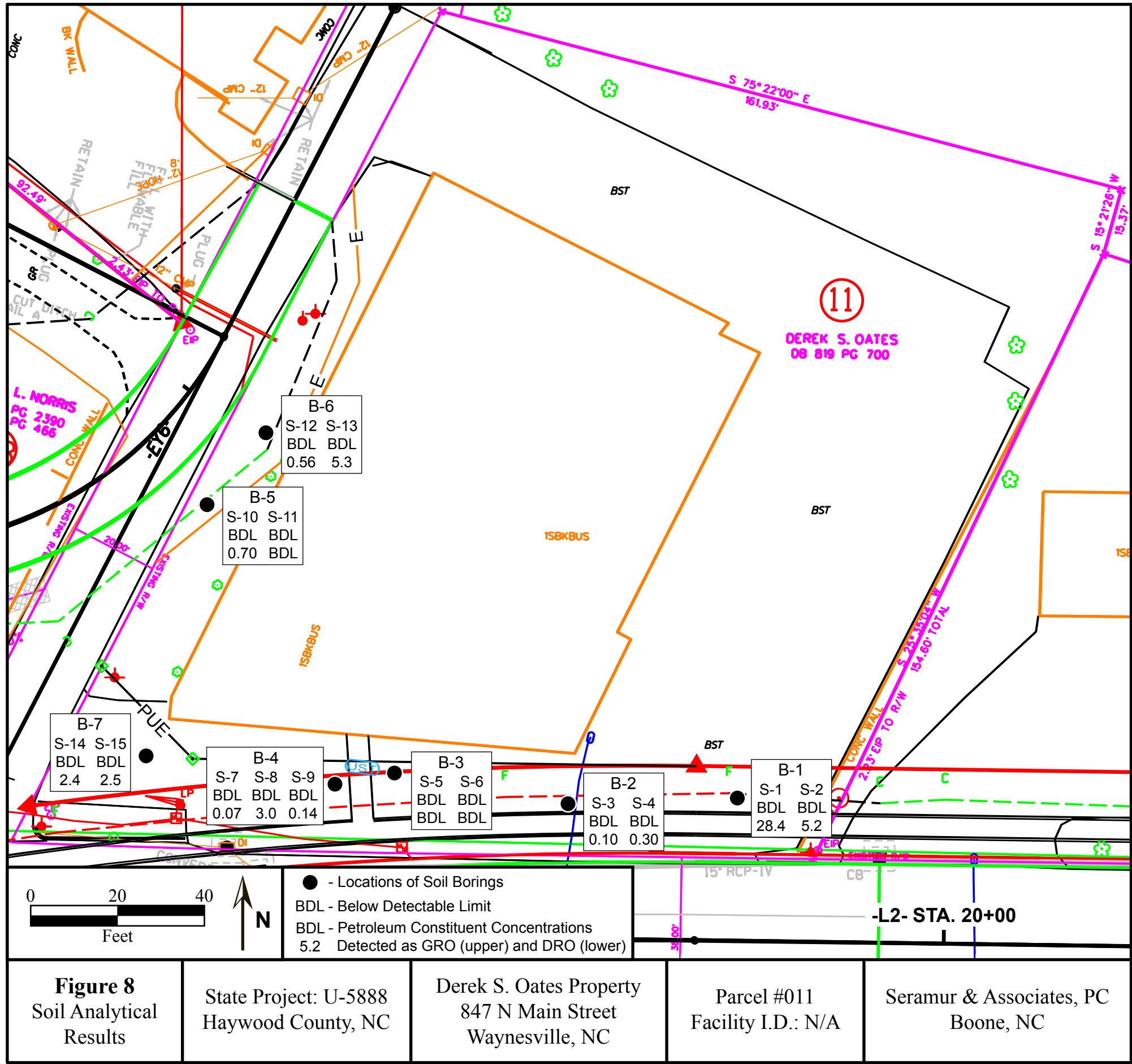
State Project: U-5888  
 Haywood County, NC

Derek S. Oates Property  
 847 N Main Street  
 Waynesville, NC

Parcel #011  
 Facility I.D.: N/A

Seramur & Associates, PC  
 Boone, NC





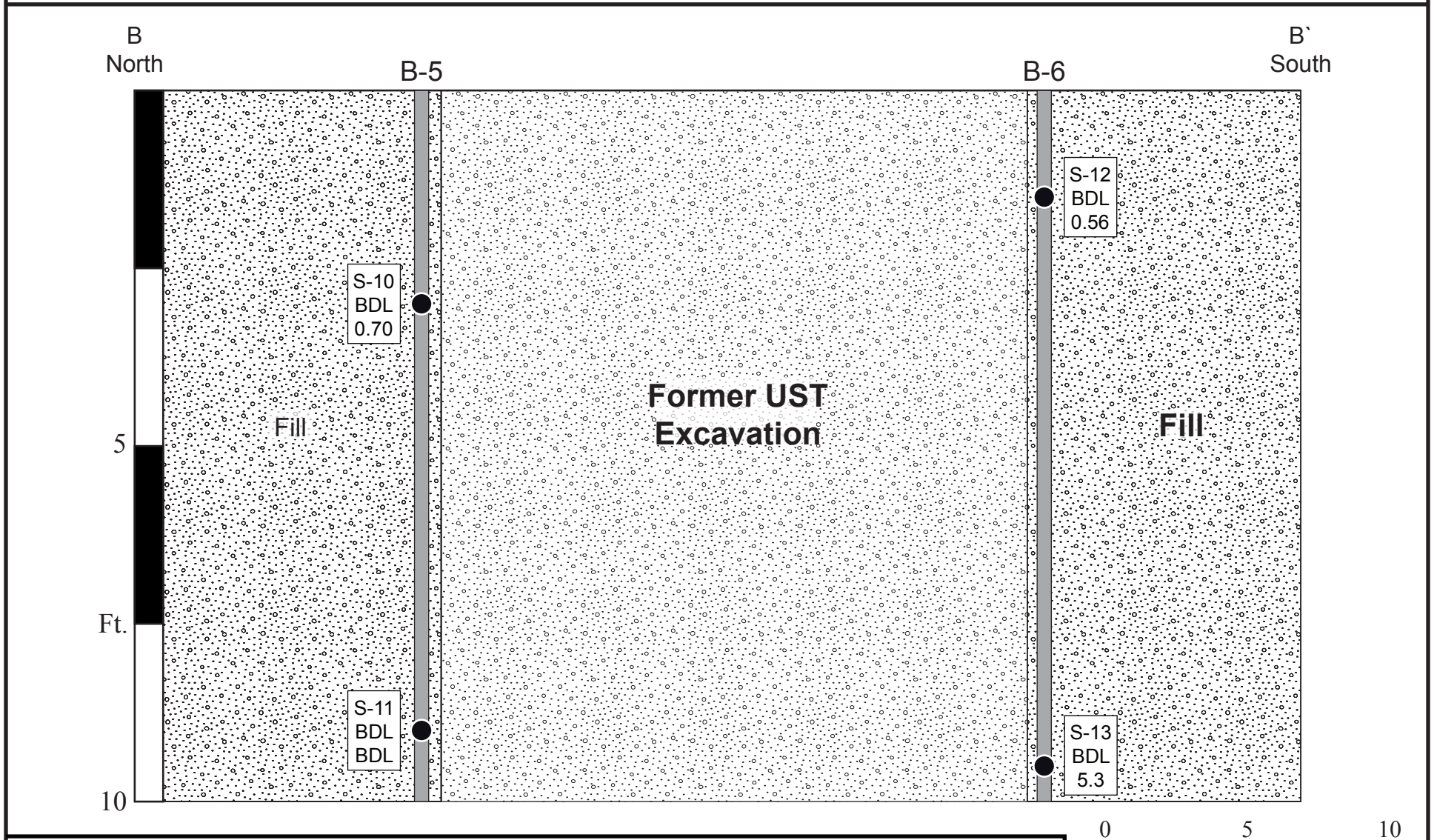
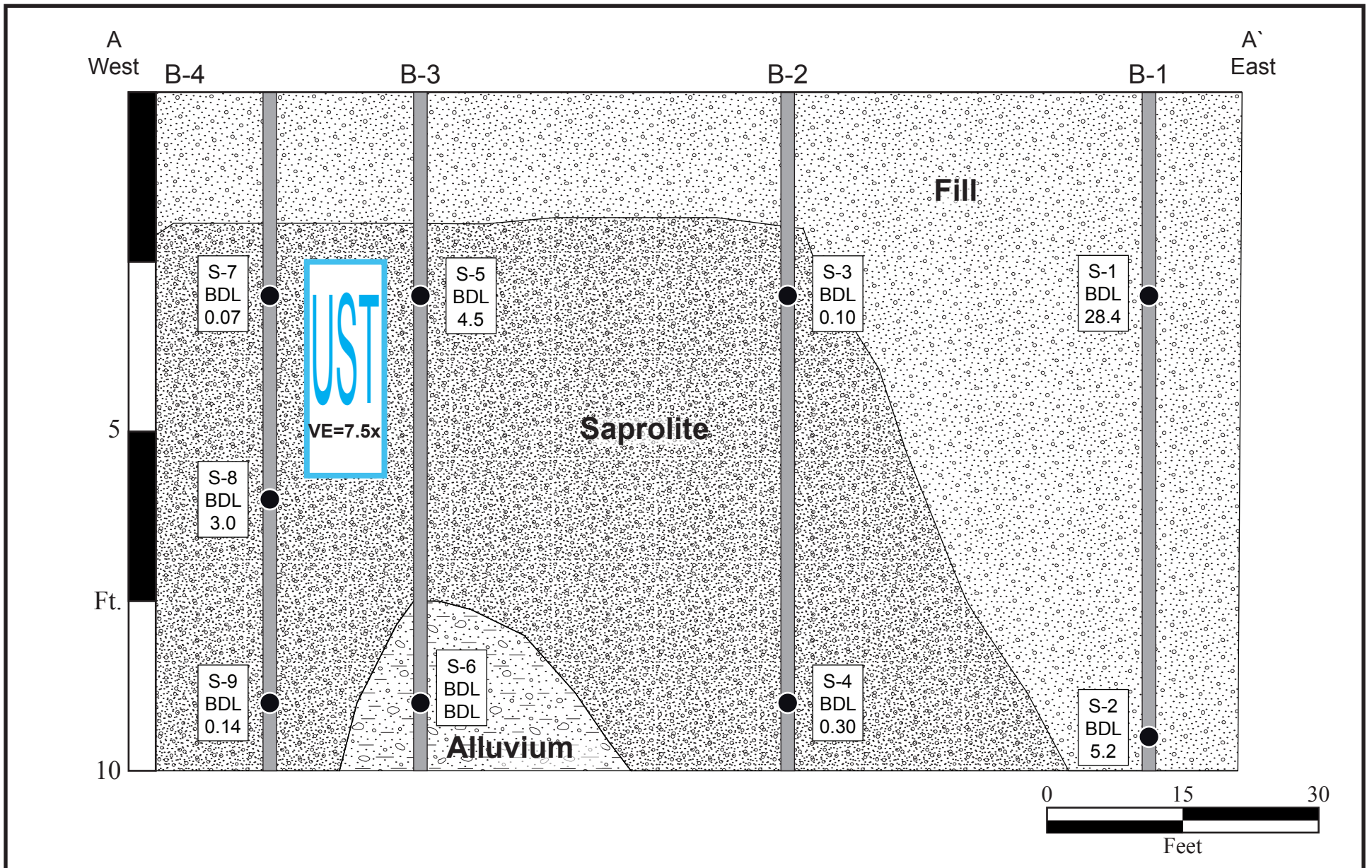
**Figure 8**  
Soil Analytical Results

State Project: U-5888  
Haywood County, NC

Derek S. Oates Property  
847 N Main Street  
Waynesville, NC

Parcel #011  
Facility I.D.: N/A

Seramur & Associates, PC  
Boone, NC



● - Locations of Soil Samples    BDL - Below Detectable Limit    BDL - Petroleum Constituent Concentrations  
 5.2 Detected as GRO (upper) and DRO (lower)

<b>Figure 9</b> Cross-Sections A-A' and B-B'	State Project: U-5888 Haywood County, NC	Derek S. Oates Property 847 N Main Street Waynesville, NC	Parcel #011 Facility I.D.: N/A	Seramur & Associates, PC Boone, NC
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## **Appendix B**

### **Laboratory Reports and Chain of Custody Records**



### Hydrocarbon Analysis Results

**Client:** SERAMUR & ASSOCIATES PC  
**Address:** 165 KNOLL DRIVE  
 BOONE NC 28607

**Samples taken** Tuesday, October 23, 2018  
**Samples extracted** Tuesday, October 23, 2018  
**Samples analysed** Thursday, October 25, 2018

**Contact:** KEITH SERAMUR  
 COLLECTED BY JA  
**Project:** NCDOT U-5888 P011

**Operator** NICK HENDRIX

U04049

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	S-1	23.2	<0.58	<0.58	28.4	28.4	15.4	0.73	0.021	0	88.2	11.8	V.Deg.PHC 75.9%,(FCM)
Soil	S-2	20.8	<0.52	<0.52	5.2	5.2	2	0.11	0.001	0	91.7	8.3	Deg Fuel 75.4%,(FCM)
Soil	S-3	20.8	<0.52	<0.52	0.1	0.1	0.09	0.008	<0.006	0	53.3	46.7	Residual HC
Soil	S-4	22.4	<0.56	<0.56	0.3	0.3	0.36	0.007	<0.00	0	80.5	19.5	V.Deg.PHC 90.1%,(FCM)
Soil	S-5	24.5	<0.61	<0.61	<0.25	0.05	0.05	0.004	<0.007	0	34	66	Residual HC
Soil	S-6	23.2	<0.58	<0.58	<0.23	0.04	0.04	0.003	<0.007	0	34	66	Residual HC,(P)
Soil	S-7	21.3	<0.53	<0.53	0.07	0.07	0.07	0.006	<0.006	0	29	71	Residual HC
Soil	S-8	19.7	<0.49	<0.49	3	3	1.1	0.06	0.001	0	88.7	11.3	Deg Fuel 74%,(FCM)
Soil	S-9	29.9	<0.75	<0.75	0.14	0.14	0.13	0.005	<0.009	0	34	66	Residual HC
Soil	S-10	12.0	<0.3	<0.3	0.7	0.7	0.31	0.02	0.001	0	78.2	21.8	V.Deg.PHC 77.3%,(FCM)

Initial Calibrator QC check **OK**

Final FCM QC Check **OK**

106.6%

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) = Modified Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only.

**Data generated by HC-1 Analyser**



### Hydrocarbon Analysis Results

**Client:** SERAMUR & ASSOCIATES PC  
**Address:** 165 KNOLL DRIVE  
 BOONE NC 28607

**Samples taken** Tuesday, October 23, 2018  
**Samples extracted** Tuesday, October 23, 2018  
**Samples analysed** Thursday, October 25, 2018

**Contact:** KEITH SERAMUR  
 COLLECTED BY JA  
**Project:** NCDOT U-5888 P011

**Operator** NICK HENDRIX

U04049

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	S-11	22.0	<0.55	<0.55	<0.22	0.04	0.04	0.003	<0.007	0	34	66	Residual HC
Soil	S-12	22.2	<0.56	<0.56	0.56	0.56	0.55	0.01	<0.007	0	82.5	17.5	V.Deg.PHC 94.2%,(FCM)
Soil	S-13	25.0	<0.63	<0.63	5.3	5.3	1.5	0.08	0.001	0	83.7	16.3	Deg.PHC 70.8%,(FCM)
Soil	S-14	41.3	<1	<1	2.4	2.4	0.96	0.05	<0.012	0	89.2	10.8	Deg Fuel 75.7%,(FCM)
Soil	S-15	30.2	<0.76	<0.76	2.5	2.5	0.95	0.05	<0.009	0	86.4	13.6	Deg Fuel 71%,(FCM)

Initial Calibrator QC check **OK**

Final FCM QC Check **OK**

**97.2%**

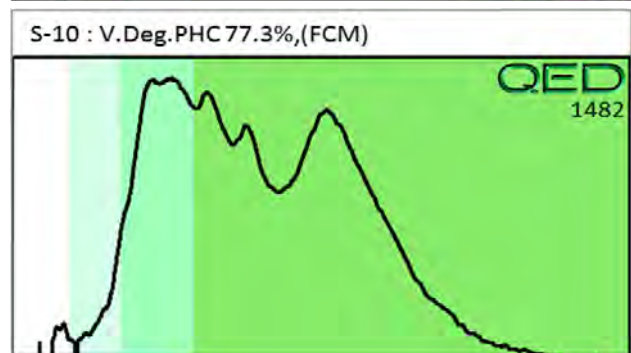
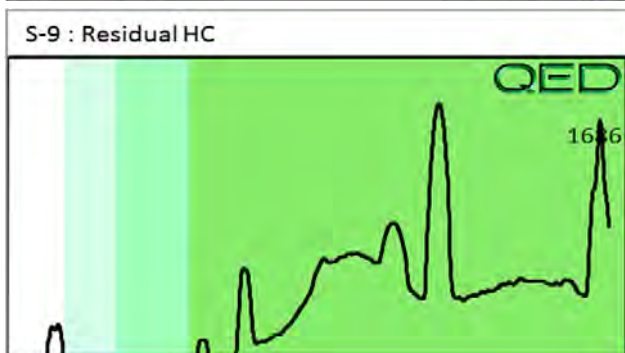
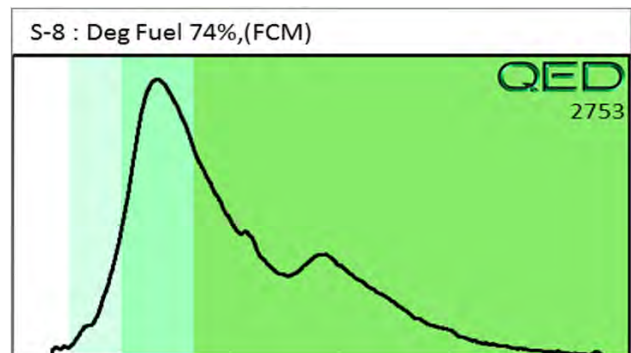
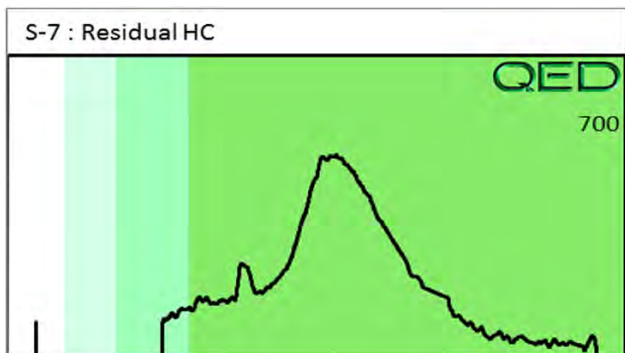
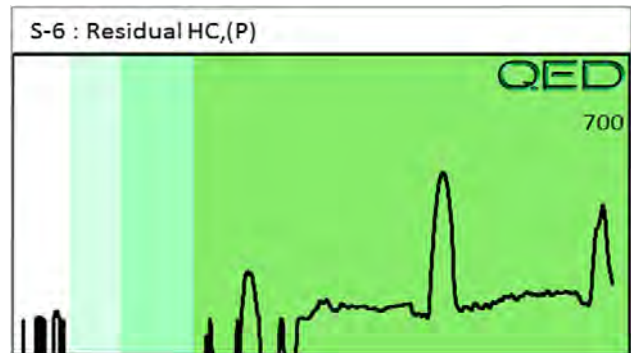
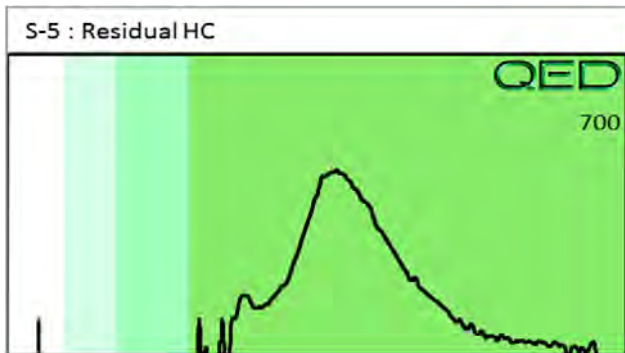
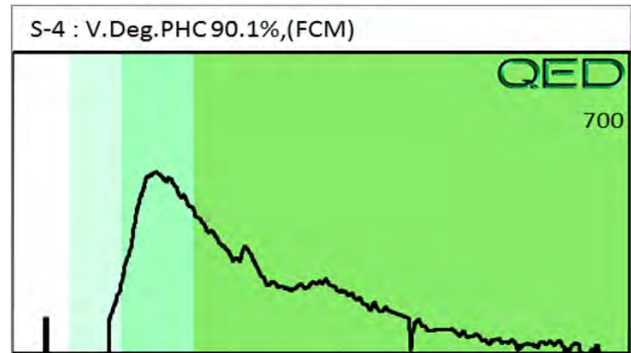
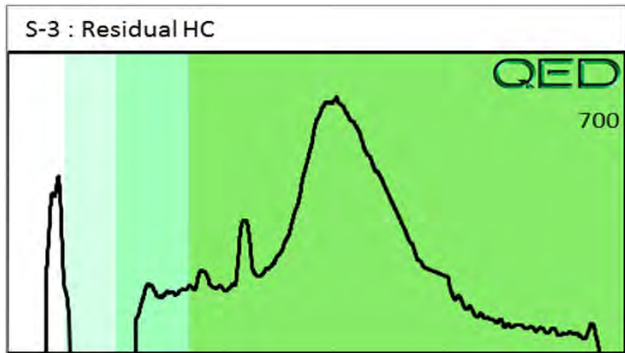
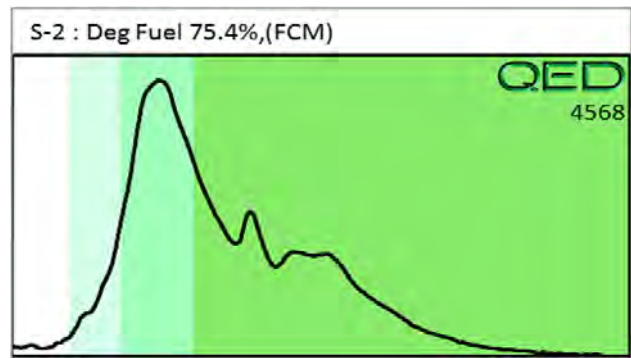
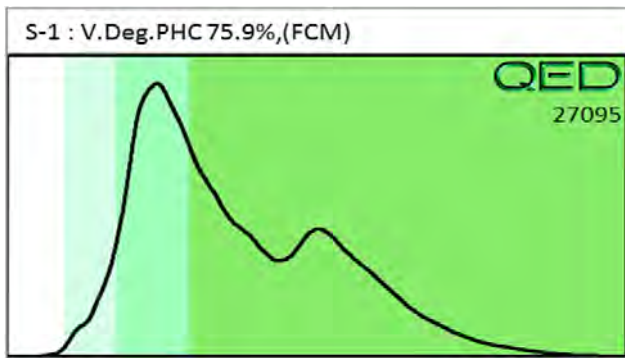
Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

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

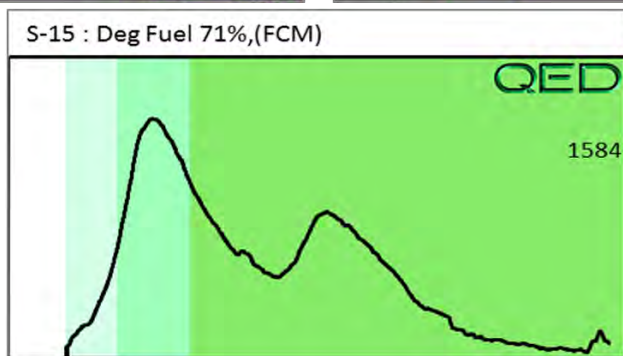
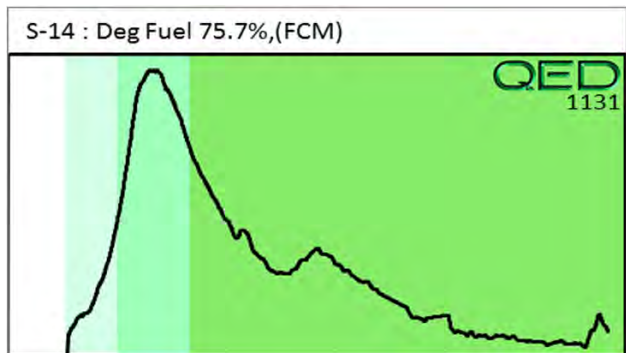
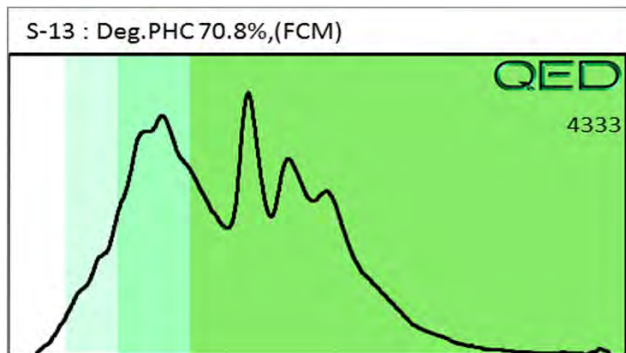
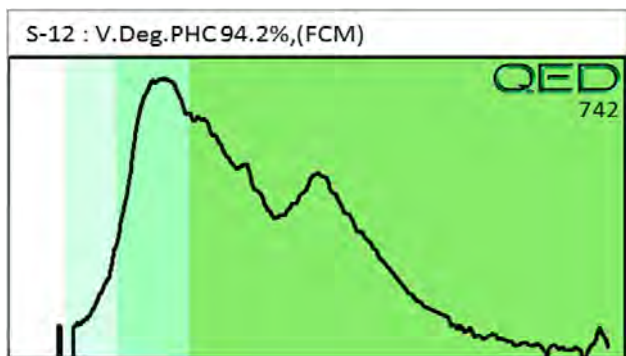
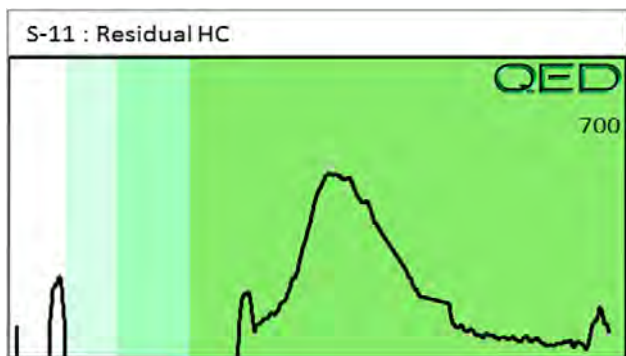
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only.

**Data generated by HC-1 Analyser**









## **Appendix C**

### **Documents From NCDEQ Incident Files**



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue, Governor  
Dee Freeman, Secretary

Division of Waste Management  
Underground Storage Tank Section

Dexter R. Matthews, Director

February 23, 2012

United Community Bank  
Attn: Mike McKinney  
165 North Main Street  
Waynesville, North Carolina 28786

Re: Notice of No Further Action  
15A NCAC 2L .0407(d)  
Risk-based Assessment and Corrective Action  
for Petroleum Underground Storage Tanks

Cabin Company  
847 North Main Street, Waynesville  
Haywood County  
Incident Number: ~~2107~~ 41031 ces  
Risk Classification: Low

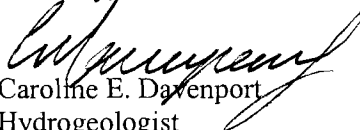
Dear Mr. McKinney:

The 20-Day Report and Initial Abatement Action Report received by the UST Section, Asheville Regional Office on February 21, 2012 have been reviewed. The review indicates that the site is classified as low risk and that after soil excavation soil contamination does not exceed Soil-to-Groundwater Maximum Soil Contaminant Concentrations (MSCCs), established in Title 15A NCAC 2L .0411.

The UST Section determines that no further action is warranted for this incident. This determination shall apply unless the UST Section later finds that the discharge or release poses an unacceptable risk or a potentially unacceptable risk to human health or the environment. Pursuant to Title 15A NCAC 2L .0407(a) you have a continuing obligation to notify the Department of any changes that might affect the risk or land use classifications that have been assigned.

This No Further Action determination applies only to the subject incident; for any other incidents at the subject site, the responsible party must continue to address contamination as required. If you have any questions regarding this notice, please contact Caroline Davenport at (828) 296-4500.

Sincerely,

  
Caroline E. Davenport  
Hydrogeologist  
Asheville Regional Office

cc: Haywood County Health Department  
Singleton Environmental: [Singletonenv@bellsouth.net](mailto:Singletonenv@bellsouth.net)



ENVIRONMENTAL, INC.

February 17, 2012

Ms. Caroline Davenport  
NCDENR-UST Division  
2090 US Hwy 70  
Swannanoa, NC 28778

**RECEIVED**  
FEB 21 2012  
UST SECTION  
Asheville Regional Office

RE: Cabin Company – Incident # ~~29007~~ 41031 *ceb*

Ms. Davenport:

The bank foreclosing on the property is: United Community Bank, 165 North Main Street, Waynesville, NC 28786. The contact is Mike McKinney. Please send the NFA letter to the bank. I do not have the current address for the Stricklands. You can reach me at (828) 667-5001 if you have any questions.

Sincerely,

Chris Singleton, P.G.  
Singleton Environmental, Inc.

# INITIAL ACTIONS & ABATEMENT REPORT

February 17, 2012

**Site Name:** Cabin Company  
847 North Main Street  
Waynesville, NC 28782

**Incident Number:** ~~20007~~ 41031 *oes*

**UST Owner / Operator:** Mike & Jeanne Strickland  
Cabin Company  
847 North Main Street  
Waynesville, NC 28786

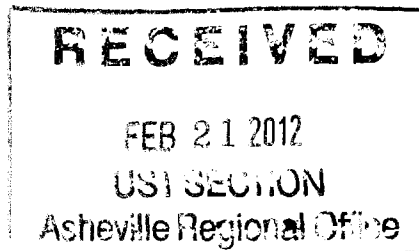
**Consultant / Contractor:** Singleton Environmental, Inc.  
PO Box 2012  
Enka, NC 28728  
Telephone: (828) 667-5001

**Date Release Discovered:** October 24, 2011

**Estimated Quantity of Release:** Unknown/unquantified

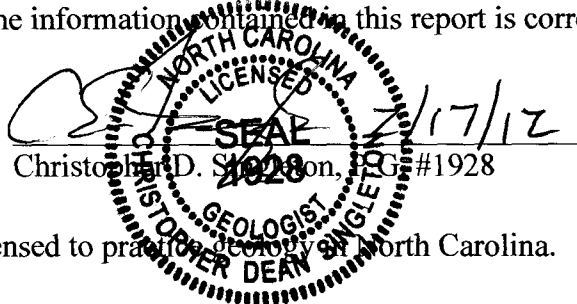
**Cause/Source of Release:** One 550-gallon heating oil UST

**Latitude:** (35° 29' 51.72" North)  
**Longitude:** (82° 58' 45.11" West)



## Signature and Seal of Certifying Professional Geologist:

I, Christopher D. Singleton, a North Carolina Professional Geologist for Singleton Environmental, Inc. do certify that the information contained in this report is correct and accurate to the best of my knowledge.



Singleton Environmental, Inc. is licensed to practice geology in North Carolina.



## Introduction

This report summarizes tank closure and initial site assessment activities for a 550-gallon heating oil underground storage tank (UST) at the property owned by the Cabin Company located at 847 North Main Street in Waynesville, North Carolina. Figure 1 shows the site location, and Figure 2 presents a site map showing the location of the former UST.

## Site History

The following table summarizes information about the UST at the site:

Tank No.	Volume (gallons)	Contents (i.e., gasoline, diesel, kerosene, heating oil, waste oil, etc.)	Use (resale, heating building, distribution, farm or residential, etc.)	Date last used	Indicate whether UST has been removed or closed in place	Date of permanent closure (if applicable)	Was a release detected from this UST system? If yes, give date.
1	550	#2 Heating Oil	Heating Building	2006	Removed	2006	Yes 10/24/11

Ownership of Tank: Mike & Jeanne Strickland  
Cabin Company  
847 North Main Street  
Waynesville, NC 28786

## Initial Abatement Activities

The 550-gallon heating oil UST located at the site was removed in 2006. The UST was located on the western side of the building as shown in Figure 2. On October 24, 2011, Singleton Environmental, Inc. mobilized to the site to collect a confirmation soil sample using a Giddings Drill Rig. Contaminated soils were encountered directly underneath the former UST and on February 6, 2012 soil excavation activities were initiated. The contaminated soils were excavated to a depth of 9 feet below the bottom of the former UST, to a total depth of 13 feet below existing site grade. The final excavation measured 15 feet long by 12 feet wide by 13 feet deep. The completed excavation cavity was backfilled with clean suitable soil and compacted.

Contaminated soils removed from the UST excavation (42.16 tons) were transported to Environmental Soils, Inc. in Lattimore, North Carolina, for disposal.

## Source Investigation

One soil sample (SB-6 in Figure 2) was collected from the UST excavation on October 24, 2011 during the former UST assessment. Soil sample SB-6 was collected from directly beneath the former UST location at a depth of 5 ft-bgs. Sample SB-6 was submitted for laboratory analysis of diesel and gasoline range organics (DRO/GRO) by EPA Method 8015 with 3550 extraction.

Analytical results from SB-6 indicated a DRO concentration of 7,730 mg/kg. Petroleum concentrations detected in SB-6 are representative of soil that was excavated and removed from the site. Soil analytical results are summarized in Table 1.

Five additional soil samples (Soil-A, Soil-B, Soil-C, Soil-D and Soil-E in Figure 2) were collected from the UST excavation on February 7, 2012. Soil-B, Soil-C, Soil-D and Soil-E were collected from the four side walls of the excavation at a depth of approximately 13 feet below existing site grade. Soil-A was collected from the bottom of the excavation at a depth of approximately 13 feet below ground surface. Soil samples Soil-A, Soil-B, Soil-C, Soil-D and Soil-E were submitted for laboratory analysis of volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, volatile petroleum hydrocarbons (VPH) by MADEP methods, and extractable petroleum hydrocarbons (EPH) by MADEP methods.

Analytical results from soil samples Soil-A, Soil-B, Soil-C, Soil-D and Soil-E did not detect any petroleum compounds above the soil-to-groundwater maximum contaminant levels. Refer to Table 1 for a summary of each constituent and the detected contamination level. A copy of the laboratory analytical report is included in Appendix A.

## Conclusions and Recommendations

The results of this investigation indicate that contaminated soil beneath the former 550-gallon heating oil UST located at the Cabin Company property has been removed. Therefore, Singleton Environmental recommends *no further action* at this site.

**TABLE 1**  
**SOIL ANALYTICAL RESULTS**

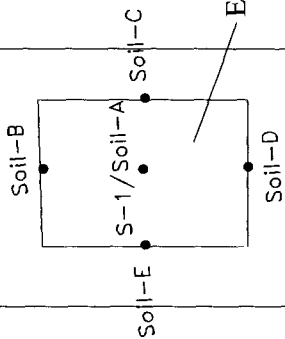
Cabin Company  
Waynesville, North Carolina

	<b>SB-6</b> 10/24/2011 4 ft-bgs	<b>Soil-A</b> 2/7/2012 13 ft-bgs	<b>Soil-B</b> 2/7/2012 13 ft-bgs	<b>Soil-C</b> 2/7/2012 13 ft-bgs	<b>Soil-D</b> 2/7/2012 13 ft-bgs	<b>Soil-E</b> 2/7/2012 13 ft-bgs	<b>Reportable Concentration (mg/kg)</b>	<b>Soil-to-GW Max Soil Cont. Level (mg/kg)</b>	<b>Residential Max Soil Cont. Level (mg/kg)</b>
<b>Concentration in mg/kg</b>									
<b>Diesel Range Organics</b> (EPA Method 8015 with 3550 extraction)									
DRO	<b>7,730</b>	Not Available	Not Available		Not Available	Not Available	<b>10</b>		
<b>Gasoline Range Organics</b> (EPA Method 8015 with 5030 extraction)									
GRO	Not Available	Not Available	Not Available		Not Available	Not Available	<b>10</b>		
<b>Volatile Organic Compounds</b> (EPA Method 8260)	Not Available	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect			
<b>Semivolatile Organic Compounds</b> (EPA Method 8270)	Not Available	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect			
<b>Petroleum Hydrocarbon Fractions</b> (MADEP Methods)	Not Available	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect			
C5-C8 Aliphatics (VPH)							<b>72</b>	<b>939</b>	
C9-C12 Aliphatics (VPH)									
C9-C18 Aliphatics (EPH)									
<b>Total C9-C18 Aliphatics</b>							<b>3,255</b>	<b>9,386</b>	
C19-C36 Aliphatics (EPH)							Immobile	93,680	
C9-C10 Aromatics (VPH)									
C11-C22 Aromatics (EPH)									
<b>Total C9-C22 Aromatics</b>							<b>34</b>	<b>469</b>	

**Note:** 1. Bolded values indicate concentrations which have exceeded at least one maximum allowable soil concentration. Bolded standards indicate those which have been exceeded.



847 North Main Street



Excavation Area

Side Street

W

North Main Street

North Main Street

SCALE  
NTS

LEGEND:

- Soil-A ● SAMPLE POINTS WITH IDs
- ⊕ WATER WELL
- +— WATER LINE
- +—+— ABOVEGROUND UTILITY LINE
- +—+— GAS LINE
- +—+—+— TRAIN TRACKS
- +—+—+— UST SYSTEM (Tank Pit, Product Lines, etc.)

DRAWN BY: C. SINGLETON  
DATE: 09/22/11  
CHECKED BY: C. SINGLETON  
PROJ. NO.: SEI-220

DWG ST-110909-261

FIGURE 2  
SITE MAP

CABIN COMPANY  
WAYNESVILLE, BUNCOMBE COUNTY, NC  
FACILITY ID NO. N/A

ENVIRONMENTAL, INC