

Phase II Site Assessment Report

October 17, 2019
WBS Element: 45778.1.1
State Project: B-5825
Forsyth County

At
Donnaha Mart LLC Property
Parcel #008
9995 Reynolda Road, Tobaccoville, NC 27050
PIN #: 5970-80-2552.00
Facility ID No.: 00-0-0000015037
Groundwater Incident No.: N/A

Prepared For:

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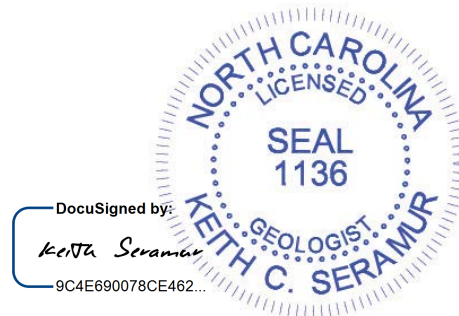


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1.0 Introduction

1.1 General Site Background Information

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

Donnaha Mart LLC Property
Parcel #008
PIN #: 5970-80-2550.00
9995 Reynolda Road, Tobaccoville, NC 27050
Facility ID No.: 00-0-0000015037

This property is located on the north side of Reynolda Road/Highway 67 east of the intersection with Donnaha Road. It is approximately 500 feet west of the Yadkin River which is the boundary between Yadkin and Forsyth Counties (Figure 1). Our scope of work included investigating the entire parcel where possible. This parcel last operated as a gas station in 1988 and currently is a convenience store and sweepstakes parlor. The entire parcel appears to be within the Proposed Right-of-Way (R/W) (Figure 2). NCDOT Right-of-Way personnel indicated that the parcel was to be a “total take”. Most of the property was surveyed and drilled. There is a steep drop-off north of the building that slopes down to a tributary of the Yadkin River. This area could not be accessed with the geophysical equipment or the Geoprobe rig.

2.0 Scope of Work

The Phase II Site Assessment scope of work included completing a geophysical survey at the property to investigate the potential for unknown underground storage tanks and remnant gas station infrastructure. The geophysical survey was followed by soil borings, sample collection and laboratory analyses to assess soil quality across the property (Figure 3).

2.1 Background Research

According to Forsyth County Tax Administration records, the parcel is owned by Donnaha Mart LLC. The existing building was reportedly built in 1940 and remodeled around 2010. Aerial photographs show that a house was formerly located on the east side of the property. This house appears to have been demolished in the 1990s. According to the NCDEQ UST Database, the former UST system was installed on May 5, 1971 and removed on December 1, 1988, shortly before regulations requiring soil sampling and reporting went into effect. The tanks were owned by the Beroth Oil Company in Winston-Salem. The tanks were reportedly two 1,000 gallon gasoline tanks and one 275 gallon gasoline tank.

Historic aerial photographs indicate that the property was developed later than 1940. A 1948 aerial photograph appears to show the property undeveloped and covered with trees. There is a different bridge with an aligned further to the north across Donnaha Park Road on the west side of the river. The 1949 aerial photograph is blurry, but it appears that the former house to the east of the convenience store building is present and the rest of the property has been graded. In

1950, work had begun on realigning the road and installing the current bridge (Plate 2). The building does not appear to be present in this photograph. The next available aerial photograph is from 1962 and it shows the former house with the bridge and Reynolda Road in their current alignment. The convenience store does not appear to be present in this photograph. The aerial photograph from 1966 shows the eastern half of the building only. The dispenser island appears to be in front of the building in this 1966 photograph (Plate 2). The NCDEQ UST Database indicates that the tanks were installed in 1971, but it is not unusual to see incorrect dates listed for these older UST systems. It is likely that the tanks were installed when the building was built sometime between 1962 and 1966.

SAPC personnel made a pedestrian reconnaissance of the property during the initial site visit on Friday, September 27, 2019. No evidence of a UST system was observed, but patches and depressions in the pavement were scattered throughout the asphalt parking area. 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 approximately one week before commencing with drilling and soil sampling.

2.2 Geophysical Surveys

Seramur & Associates set up five grids for a geophysical survey at Parcel #008 (Figure 4). Grid 1 extends across the southwest corner of the property in the paved parking area. Grid 2 extends from the building out towards Reynolda Road/Highway 67 across the location of the former UST system. Grid 3 runs between the building and the shed across the footprint of the former house. Grid 4 covers the grassy area to the east of the current structures up to a rock outcrop. Grid 5 extends along the west side of the building from the parking area towards the tributary stream. Geophysical grid data were collected along transects at a two-foot spacing. Additional GPR transects were collected around the building and in areas where collecting grid data was impractical. Several transects were collected in Grids 1 and 2 perpendicular to the direction of the grid transects to further investigate patched and depressed pavement (Figure 4).

The magnetometer and gradiometer data were collected with a GEM Systems GSM-19W Walking Overhauser Gradiometer. This data was compiled in an Excel spreadsheet and hillshade maps were drafted using Golden Software's Surfer® modeling program (Figures 5 and 6). A low pass filter of 500 nT was applied to the gradiometer data.

A Ground Penetrating Radar (GPR) survey was completed across the grids using Geophysical Survey Systems, Inc. UtilityScan GPR System with a 350 MHz hyperstacking antenna. This GPR system is equipped 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. Three-dimensional models of the GPR grid data were produced with GPR Slice® software. Four time slices (or depth slices) were imaged in each grid at depths of 0.0 to 0.2 feet, 0.6 to 0.9 feet, 2.1 to 2.3 feet and 2.8 to 3.0 feet (Figures 7 through 10). Each depth slice is a horizontal slice or plan view of the reflections across an approximate 0.2-foot thickness of the subsurface. For example, the

deep GPR depth slices for the grids show reflections in the radar data between depths of 2.8 and 3.0 feet. Additional GPR transects were processed using Radan® software (Figures 11a, 11b and 11c).

2.3 Soil Sampling and Analyses

On October 08, 2019, Carolina Soil Investigations, LLC, mobilized to the site to drill Geoprobe borings and collect soil samples. Our project design typically calls 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 ~9.5 feet is to test for petroleum releases related to underground storage tanks. Soil samples are 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 across the paved parking area, around the building and near the former house (Figure 3).

A track-mounted Geoprobe rig was used to drill a total of 19 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 (fill material or saprolite) in the Geoprobe cores were described and recorded. Table 1 lists the 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 provided 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.

2.4 Plate 1 – Photographs of Parcel #008



Collecting gradiometer data at Parcel #008.



Bedrock outcrop was observed in front of the store and along the eastern side of Parcel #008.

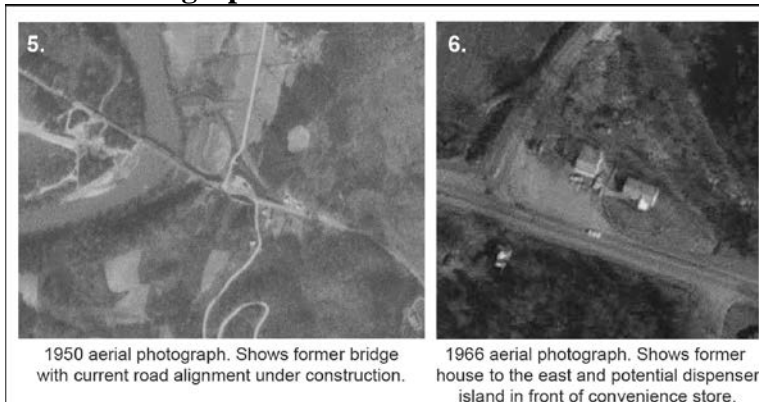


Collecting GPR data at Parcel #008. Red circles show location of soil borings B-5, B-6 and B-8 where contaminated soil was documented.



Describing Geoprobe cores collected at Parcel #008.

Plate 2 – Historic Aerial Photographs



1950 aerial photograph. Shows former bridge with current road alignment under construction.

1966 aerial photograph. Shows former house to the east and potential dispenser island in front of convenience store.

3.0 Results of Investigation

Parcel #008 currently operates as a convenience store and sweepstakes parlor and last operated as a gas station in the late 1980's. The UST system was closed prior to the current NCDEQ regulations taking effect. As a result, closure reports and incident files for the former UST system do not exist. The only UST system documentation is a listing in the NCDEQ UST Database. The installation date on the UST Database appears to be incorrect.

3.1 Geophysical Surveys

The magnetometer and gradiometer data was drafted into hillshade images for each grid (Figures 5). The magnetometer data shows areas with elevated magnetic field readings. The gradiometer data shows more subtle variations in the earth's magnetic field as it was filtered with a 500 nT low pass filter. Magnetic anomalies in Grids 1 and 5 are likely related to buried utilities including the mapped water lines. A rectangular stippled area south of the store is likely a wire re-enforced concrete slab that has been covered with pavement (Figure 5). The magnetic anomalies in Grid 2 are attributed to buried utilities and possibly some remnant steel associated with the former UST system. The area around Grid 3 has a significant amount of variation in the magnetic field, particularly the northern half of Grid 3. This area was the front of the former house. The only magnetic anomalies in Grid 4 are related to a steel dumpster and shed at the northwest corner of the grid (Figures 5 and 6).

The GPR depth slices typically prove very useful at developed properties as they show a plan view of the buried infrastructure. The GPR depth slices show dispersed patterns of high (yellow) and low (blue) amplitude reflections across the parcel. These patterns are related to shallow bedrock, changes in soil type with depth and buried infrastructure.

The shallow 0.0 – 0.2 foot depth slices of Grids 1 and 5 show patches of medium to high amplitude reflections across the grid with areas of low amplitude reflections related to utility excavations and the edge of the existing roadways (Figure 7). A rectangular low amplitude to reflection free area in the northern portion of Grid 2 outlines the former UST excavation. This area of disturbed soil extends up toward the northeast corner of the grid. A rectangular low amplitude, reflection free area in the northern portion of Grid 3 outlines the western footprint of the former house (Figure 7).

The 0.6 – 0.9 foot GPR depth slices show a long linear set of reflections that extends across Grid 1 and into Grid 5 (Figure 8). This is some type of utility line. A linear high amplitude reflector extends across the northern portion of Grid 2. This reflector extends from the interpreted former UST excavation to the northeast corner of the grid (Figure 8). The dispenser island observed in the 1966 aerial photograph show the dispenser island directly in front of the store in the vicinity of borings B-5 and B-6. This high amplitude reflector could be the vent lines from the former UST system. A rectangular high amplitude set of reflections in the northern portion of Grid 3 outlines the western footprint of the former house (Figure 7).

The 2.1 – 2.3 foot and 2.8 – 3.0 foot GPR depth slices show a couple of interesting linear reflection free areas (Figures 9 and 10). One extends from southeast to northwest across Grid 1 and could be related to a utility line (Figure 9). The other is an arcuate, reflection-free area that extends across both Grids 1 and 2 (Figures 9 and 10). The origin of the arcuate anomaly is not known. These deeper depth slices do not show evidence of the former UST system.

Thirteen transects of GPR data were collected outside of the five grids (Figures 11a, 11b and 11c). These profiles did not show evidence of the former UST system. Three hyperbolae at a depth of about 2 feet on profile 9 are spaced 5 to 7 feet apart as one would expect to see buried USTs (Figure 11b). These reflections are relatively low amplitude. USTs would be represented by distinct high amplitude reflections. These reflections are limited to profile 9 and do not show up on adjacent profiles 10 and 11. Further investigation with the GPR and magnetometer determined that the hyperbola do not represent buried USTs.

3.2 Soil Borings, Sampling and Laboratory Results

The soil at Parcel #008 consisted of fill material above residuum (saprolite). The fill material and residuum is primarily sandy loam (Table 1). Groundwater was not encountered in any of the soil borings. All boring locations were checked for utilities with the GPR prior to drilling. This ensures that the Geoprobe would not encounter unmarked utilities or other infrastructure that could result in disrupting planned work activities.

Borings B-1, B-2 and B-3 were drilled into patched pavement at the southwest corner of the property. Petroleum constituents were detected in soil samples collected from these borings, but they were below the NCDEQ Action Levels.

Borings B-4 through B-8 and B-17 through B-19 were drilled in the pavement south of the convenience store. Borings B-5, B-6 and B-8 were drilled immediately in front of the building in the suspected location of the former UST system. Petroleum constituents were detected in all of the samples collected from these borings. The highest petroleum concentrations were detected in Boring B-6. The shallow and deep samples had petroleum constituent concentrations of 1,753 ppm and 7,358 ppm, respectively. Boring B-5 contained GRO concentrations in the deep sample at 3,397 ppm. Boring B-8 contained GRO and DRO concentrations between 150 ppm and 800 ppm in both samples (Table B-3 and Figure 12). Borings B-4, B-7, B-17, B-18 and B-19 delineate the extent of contaminated soil (Figure 12). Boring B-18 contained elevated concentrations of DRO in both samples, although they were not above the NCDEQ Action Levels.

Borings B-9 and B-10 were drilled in the drive-thru to the east of the convenience store and B-11 was drilled in the pavement to the west of the dumpster. Borings B-12 and B-13 were drilled in the grassy area near where the former house was located. Borings B-14 through B-16 were drilled to the north and west of the convenience store. Samples collected from these borings did not contain petroleum constituents above the NCDEQ Action Levels. Three of the samples from these borings did contain petroleum constituents above 10 ppm (Table B-3). The sample collected from boring B-9 contained DRO at a concentration of 24.3 ppm. This likely migrated

from the area of the former UST system. The sample from Boring B-12 was collected at the end of the driveway for the former house (Figure 12). DRO was detected at a concentration of 69.6 ppm in the shallow soil sample from Boring B-14. Historic aerials show a driveway around the back of the building and cars parked in various areas behind the building as well. This DRO concentration is likely from vehicles leaking fuel/oil in the vicinity.

3.3 Volume and Extent of Soil Contamination

Contaminated soil defined as GRO concentrations above 50 ppm and DRO concentrations above 100 ppm was detected in three borings drilled in front of the building at Parcel #008 (Figures 12 and 13). This appears to be the location of the former UST system. Refusal was encountered at depths of 7.0 feet in Boring B-6 and 4.0 feet in Boring B-8. Both samples from these two borings contained petroleum constituents above the NCDEQ Action Levels. Only the deep sample from Boring B-5 contained petroleum constituents above the NCDEQ Action Levels. Four feet will be used for our estimated thickness of contaminated soil in this area. The area of contaminated soil is approximately 700 square feet (Figure 13). An estimate of the volume of contaminated soil in the vicinity of the former UST system is calculated using the thickness of contaminated soil and the horizontal extent. This volume is calculated as follows:

$$\begin{aligned} 4.0 \text{ ft.} \times 700.0 \text{ ft}^2 &= 2,800.0 \text{ ft}^3 \\ 2,800.0 \text{ ft}^3 / 27.0 \text{ ft}^3/\text{yd}^3 &= 103.7 \text{ yd}^3 \\ 103.7 \text{ yd}^3 \times 1.5 \text{ tons}/\text{yd}^3 &= 155.6 \text{ tons} \end{aligned}$$

The total volume of contaminated soil detected at the Parcel #008 is estimated to be 103.7 yd³ or 155.6 tons.

3.4 Conclusions

Parcel #008 formerly operated as a gas station until the late 1980s. It currently operates as a convenience store and sweepstakes parlor. Only one UST system is known to have been used on the property. According to the owner of the store, the structure formerly located on the east side of the property was a house. It appears to have been torn down some time in the early 1990's.

The GPR depth slices imaged utility lines at several locations on the property. They also show the possible locations of the UST excavation and the former vent lines. The geophysical surveys did not find evidence of additional USTs on the property.

Contaminated soil defined as GRO/DRO concentrations above NCDEQ Action Levels was detected in the front of the convenience store building. The total volume of contaminated soil at the Parcel #008 is estimated to be 103.7 yd³ or 155.6 tons.

3.5 Recommendations

The CAD files for the proposed grading work at Parcel #008 show a cut line encompassing the store building and the edge of the area of contaminated soil. Shallow soil in this area could be

contaminated as the 1.5 foot sample from Boring B-8 was contaminated. It is possible that the proposed cut area will encounter minimal quantities of contaminated soil. SAPC recommends that a licensed geologist or engineer supervise the removal of contaminated soil near the proposed cut area at the Donnaha Mart LLC Property. This work should take place after the store building has been demolished. Contaminated soil excavated at Parcel #008 should be sent to a remediation facility.

Appendix A

Tables and Figures

Table B-3: Summary of Soil Sampling Results

Revision Date: 10/11/19

Property Name: Donnaha Mart LLC Property Parcel ID#: 008

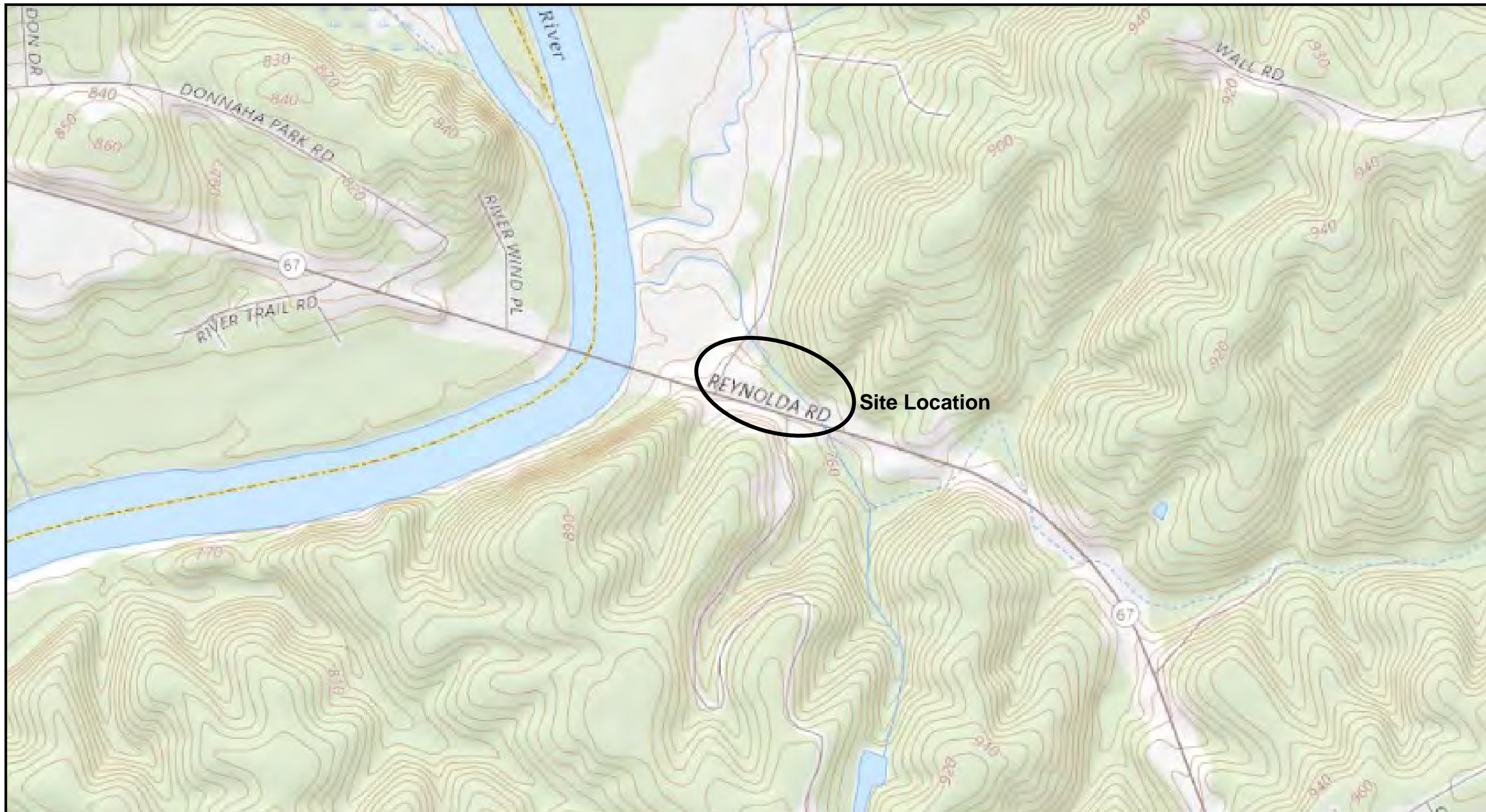
Analytical Method (e.g., VOC by EPA 8260) →					UVF	UVF
Contaminant of Concern →					TPH GRO (mg/kg)	TPH DRO (mg/kg)
Sample ID	Date Collected (mm/dd/yy)	Source Area	Sample Depth (ft. BGS)	Incident Phase		
S-1	10/08/19	B-1	2.0	PSA	<0.8	30.4
S-2	10/08/19	B-1	5.0 – 10.0	PSA	<0.64	3.2
S-3	10/08/19	B-2	3.0	PSA	2.1	2.0
S-4	10/08/19	B-2	5.5	PSA	<0.61	0.61
S-5	10/08/19	B-3	3.0	PSA	<0.72	3.6
S-6	10/08/19	B-3	9.0	PSA	<0.62	<0.62
S-7	10/08/19	B-4	2.0	PSA	<0.66	4.4
S-8	10/08/19	B-4	7.0	PSA	<0.61	5.2
S-9	10/08/19	B-5	1.5	PSA	7.5	2.1
S-10	10/08/19	B-5	6.0	PSA	3,397	<77.1
S-11	10/08/19	B-6	3.5	PSA	1,753	7,358
S-12	10/08/19	B-6	6.0	PSA	5,243	5,993
S-13	10/08/19	B-7	2.0	PSA	<0.68	1.3
S-14	10/08/19	B-8	1.5	PSA	613.3	503.9
S-15	10/08/19	B-8	4.0	PSA	158.6	790.6
S-16	10/08/19	B-9	2.0	PSA	<0.69	24.3
S-17	10/08/19	B-10	2.0	PSA	NA	NA
S-18	10/08/19	B-10	8.0	PSA	<0.63	1.4
S-19	10/08/19	B-11	2.0	PSA	NA	NA
S-20	10/08/19	B-11	8.0	PSA	<0.62	0.62
S-21	10/08/19	B-12	1.5	PSA	<0.76	15.4
S-22	10/08/19	B-13	3.0	PSA	NA	NA
S-23	10/08/19	B-13	6.0	PSA	<0.38	<0.38
S-24	10/08/19	B-14	1.5	PSA	<0.73	69.6
S-25	10/08/19	B-15	3.0	PSA	<0.39	<0.39
S-26	10/08/19	B-15	8.5	PSA	<0.42	<0.42
S-27	10/08/19	B-16	3.0	PSA	NA	NA
S-28	10/08/19	B-16	8.0	PSA	<0.27	0.27
S-29	10/08/19	B-17	3.5	PSA	<0.34	<0.34
S-30	10/08/19	B-18	2.5	PSA	<1.1	72.5
S-31	10/08/19	B-18	6.0	PSA	<0.76	32.5
S-32	10/08/19	B-19	3.5	PSA	<0.58	3.6
NC DEQ Action Level (mg/kg)					50	100


ft. BGS = feet below ground surface

mg/kg = milligrams per kilogram

NA = Not Analyzed

Table 1. Soil Boring Data - Parcel #008 - Donnaha Mart LLC Property						
Boring No.	Depth (ft)	Lithology	Soil type	Soil Sample	PID ppm	Comments
B-1	0.0 to 5.0	Loam	Fill	S-1	0.0	Sample at 2.0 feet.
B-1	5.0 to 10.0	Loam	Fill	S-2	0.0	Very limited recovery with rocks blocking core. Exact sample depth is unknown.
B-2	0.0 to 5.0	Sandy Loam	Fill	S-3	0.0	Sample at 3.0 feet.
B-2	5.0 to 6.0	Sandy Loam	Fill	S-4	59.1	Sample at 5.5 feet. Refusal at 6.0 feet. No odor initially.
B-3	0.0 to 5.0	Sandy Loam	Fill	S-5	0.0	Sample at 3.0 feet.
B-3	5.0 to 10.0	Sandy Loam	Fill	S-6	0.0	Sample at 9.0 feet.
B-4	0.0 to 5.0	Loam / Sandy Loam	Fill	S-7	0.0	Sample at 2.0 feet.
B-4	5.0 to 10.0	Sandy Loam	Fill	S-8	0.0	Sample at 7.0 feet. Rocks blocking bottom ~2.0 feet of core.
B-5	0.0 to 5.0	Sandy Loam	Fill	S-9	0.0	Sample at 1.5 feet. Strong petroleum odor.
B-5	5.0 to 10.0	Sandy Loam	Fill	S-10	192.0	Sample at 6.0 feet. Strong petroleum odor.
B-6	0.0 to 5.0	Sandy Loam	Fill	S-11	159.0	Sample at 3.5 feet. Strong petroleum odor.
B-6	5.0 to 7.0	Sandy Loam	Fill	S-12	217.0	Sample at 6.0 feet. Strong petroleum odor. Refusal at 7.0 feet.
B-7	0.0 to 5.0	Sandy Loam	Fill	S-13	0.0	Sample at 2.0 feet. Refusal at 5.0 feet.
B-8	0.0 to 4.0	Sandy Loam	Fill	S-14	138.0	Sample at 1.5 feet. Strong petroleum odor.
				S-15	33.0	Sample at 4.0 feet. Strong petroleum odor. Refusal at 4.0 feet.
B-9	0.0 to 4.0	Sandy Loam	Fill	S-16	0.0	Sample at 2.0 feet. Refusal at 4.0 feet.
B-10	0.0 to 5.0	Sandy Loam	Fill	S-17	0.0	Sample at 2.0 feet. Not analyzed.
B-10	5.0 to 7.0	Sandy Loam	Fill	N/A	N/A	
B-10	7.0 to 10.0	Sandy Loam	Residuum	S-18	0.0	Sample at 8.0 feet.
B-11	0.0 to 1.0	Sandy Loam	Fill	N/A	N/A	
B-11	1.0 to 5.0	Sandy Loam	Residuum	S-19	0.0	Sample at 2.0 feet. Not analyzed.
B-11	5.0 to 10.0	Sandy Loam	Residuum	S-20	0.0	Sample at 8.0 feet.
B-12	0.0 to 5.0	Sandy Loam	Fill	S-21	0.0	Sample at 1.5 feet. Limited recovery with refusal at 5.0 feet.
B-13	0.0 to 2.25	Sandy Loam	Fill	N/A	N/A	
B-13	2.25 to 5.0	Sandy Loam	Residuum	S-22	0.0	Sample at 3.0 feet. Not analyzed.
B-13	5.0 to 7.0	Sandy Loam	Residuum	S-23	0.0	Sample at 6.0 feet. Refusal at 7.0 feet.
B-14	0.0 to 5.0	Sandy Loam	Fill	S-24	0.0	Sample at 1.5 feet. Refusal at 5.0 feet.
B-15	0.0 to 4.5	Sandy Loam	Fill	S-25	0.0	Sample at 3.0 feet.
B-15	4.5 to 5.0	Sandy Loam	Residuum	N/A	N/A	
B-15	5.0 to 10.0	Sandy Loam	Residuum	S-26	0.0	Sample at 8.5 feet.
B-16	0.0 to 5.0	Loam	Fill	S-27	0.0	Sample at 3.0 feet. Not analyzed.
B-16	5.0 to 10.0	Sandy Loam	Residuum	S-28	0.0	Sample at 8.0 feet.
B-17	0.0 to 3.25	Loam	Fill	N/A	N/A	
B-17	3.25 to 5.0	Sandy Loam	Residuum	S-29	25.1	Sample at 3.5 feet. Refusal at 5.0 feet. Slight petroleum odor.
B-18	0.0 to 3.5	Sandy Loam	Fill	S-30	0.0	Sample at 2.5 feet.
B-18	3.5 to 5.0	Sandy Loam	Residuum	N/A	N/A	
B-18	5.0 to 10.0	Sandy Loam	Residuum	S-31	0.0	Sample at 6.0 feet.
B-19	0.0 to 5.0	Sandy Loam	Fill	S-32	0.0	Sample at 3.5 feet. Refusal at 5.0 feet.



<p>Figure 1 Site Location Map Source: U.S.G.S. The National Map</p>	<p>State Project: B-5825 Forsyth County, NC</p>	<p>Donnaha Mart LLC Property 9995 Reynolda Rd Tobaccoville, NC</p>	<p>Parcel #008 Facility I.D.: 0-0-15037</p>	<p>Seramur & Associates, PC Boone, NC</p>	<p>0 400 800 Feet</p> 
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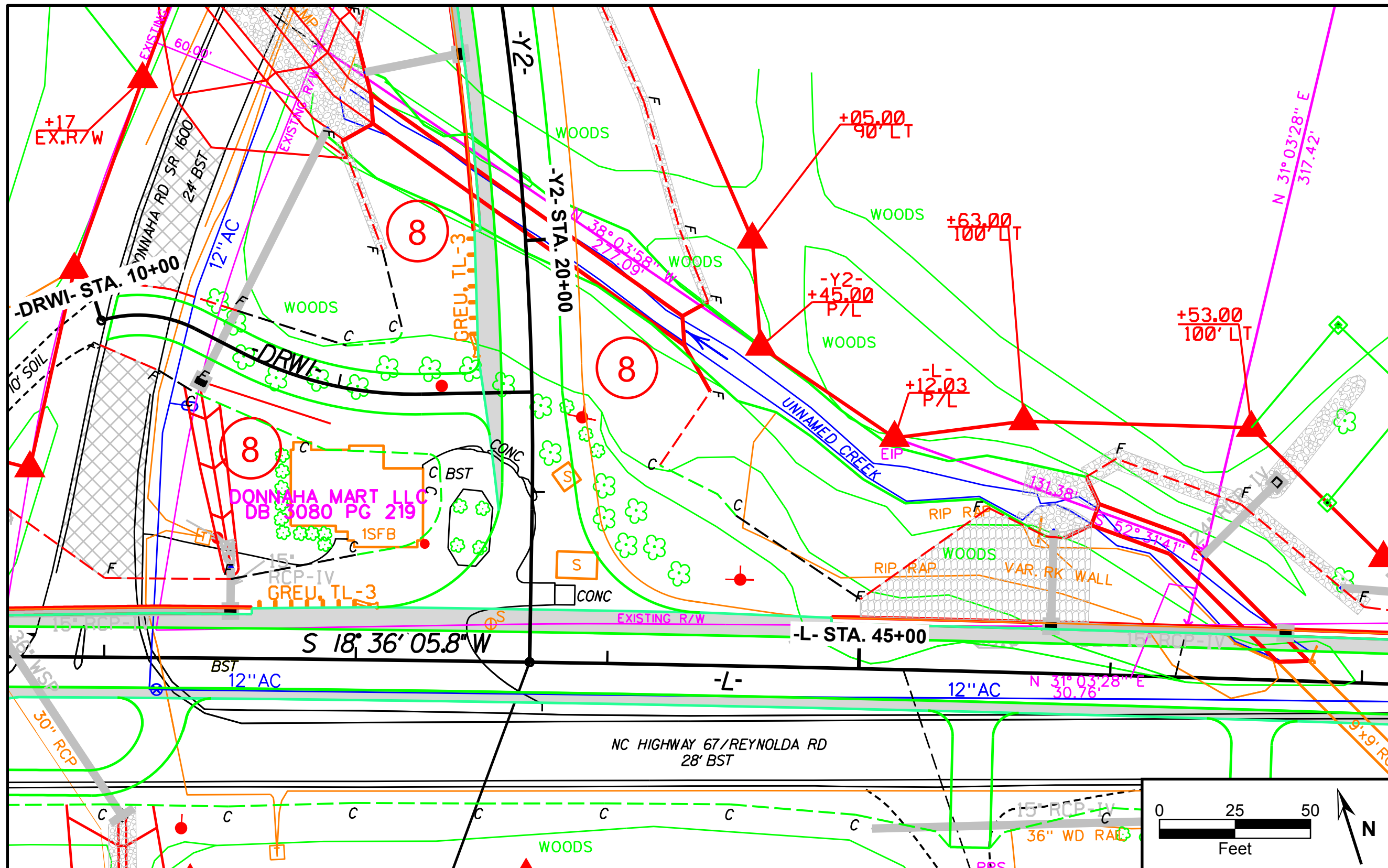


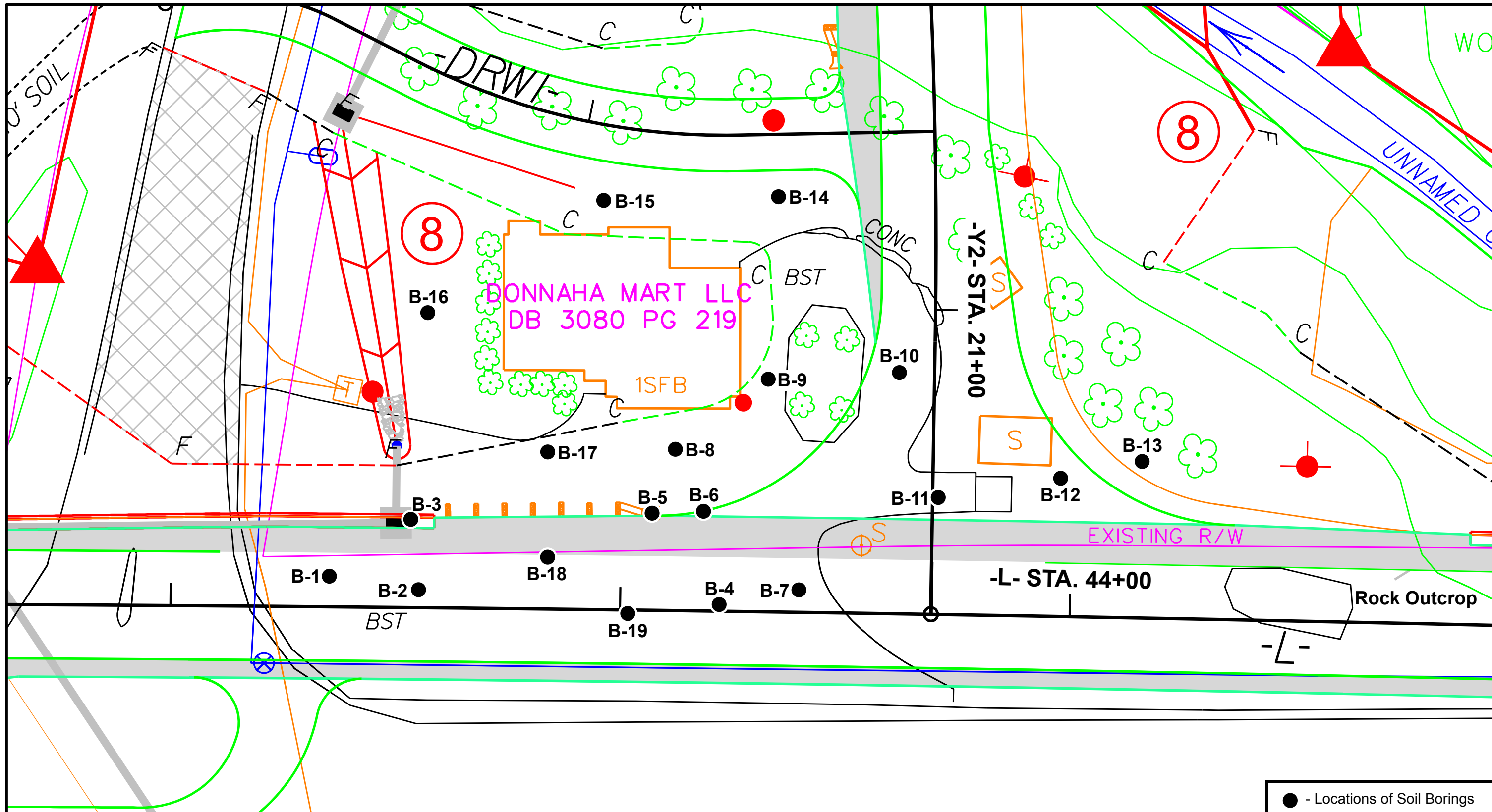
Figure 2
Site Plan

State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

Seramur & Associates, PC
Boone, NC



● - Locations of Soil Borings

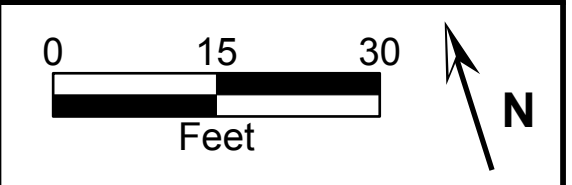
Figure 3
Site Plan with Soil Boring Locations

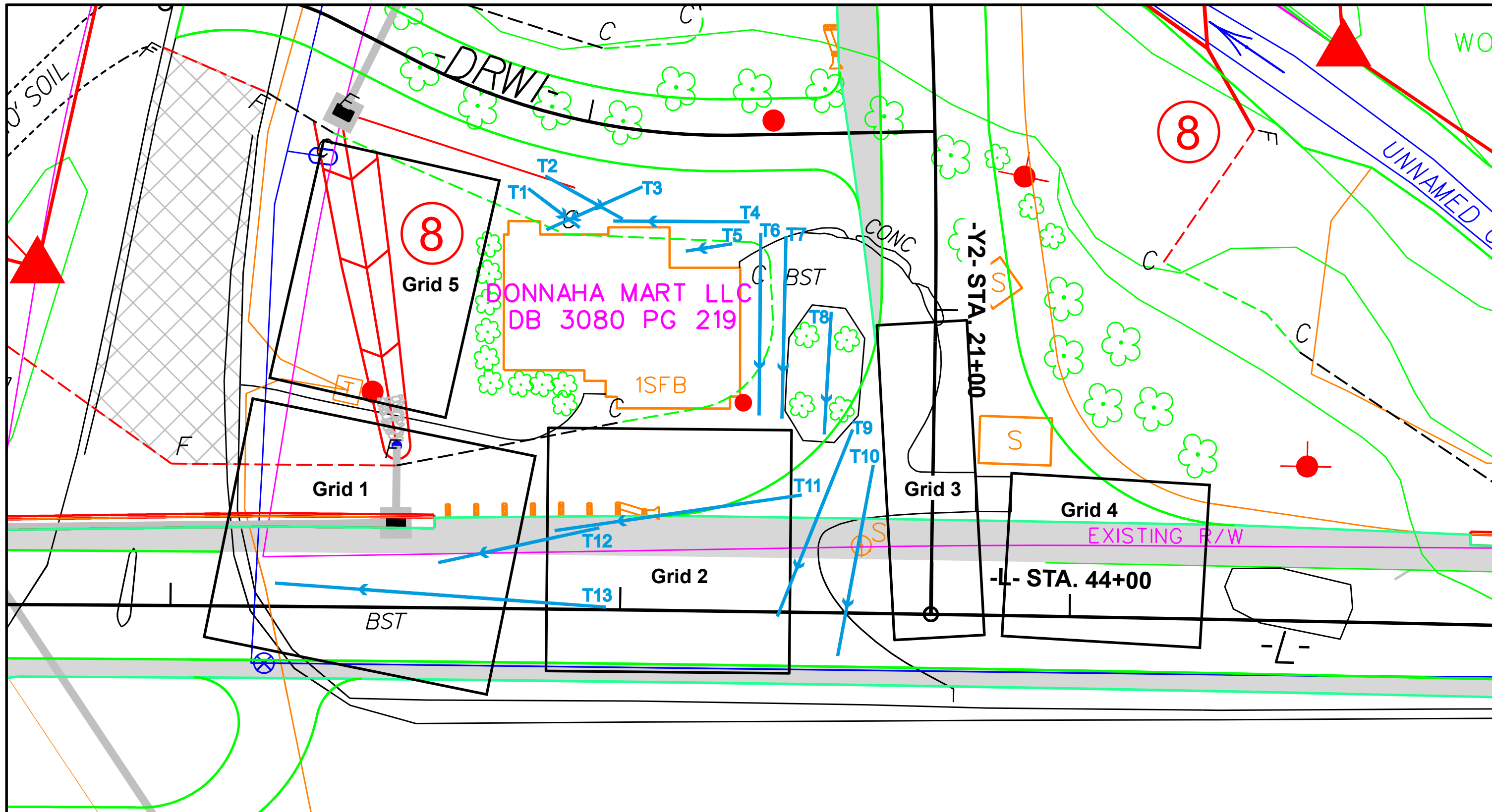
State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

Seramur & Associates, PC
Boone, NC





<p>Figure 4 Site Plan with GPR Transect and Grid Locations</p>	<p>State Project: B-5825 Forsyth County, NC</p>	<p>Donnaha Mart LLC Property 9995 Reynolda Rd Tobaccoville, NC</p>	<p>Parcel #008 Facility I.D.: 0-0-15037</p>	<p>Seramur & Associates, PC Boone, NC</p>	<p>0 15 30 Feet</p> <p>N</p>
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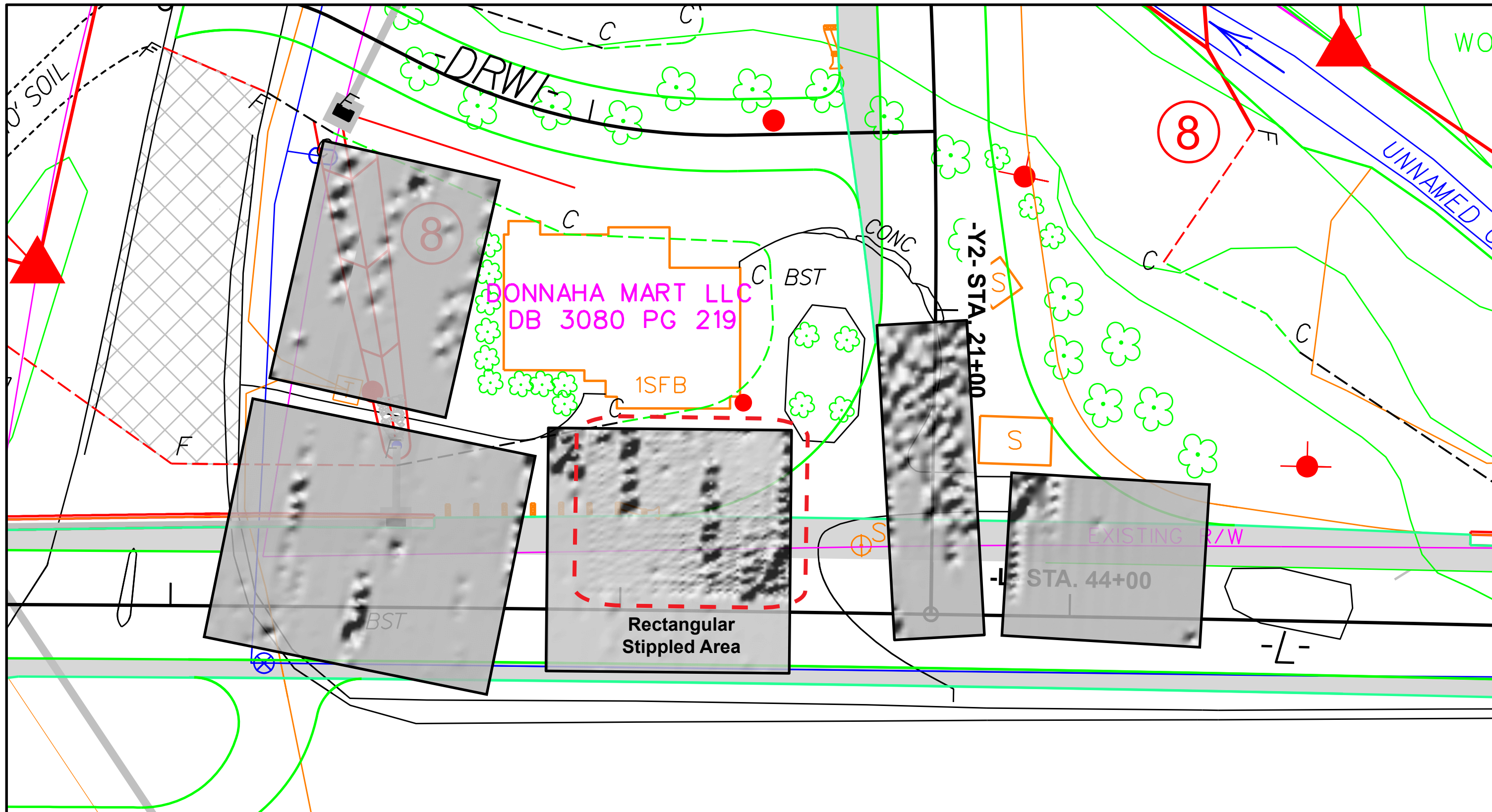


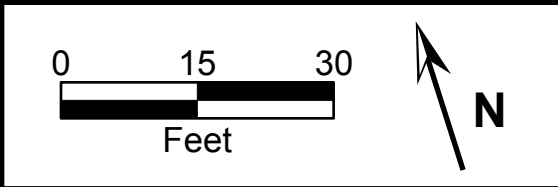
Figure 5
Magnetometer
Survey Results

State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

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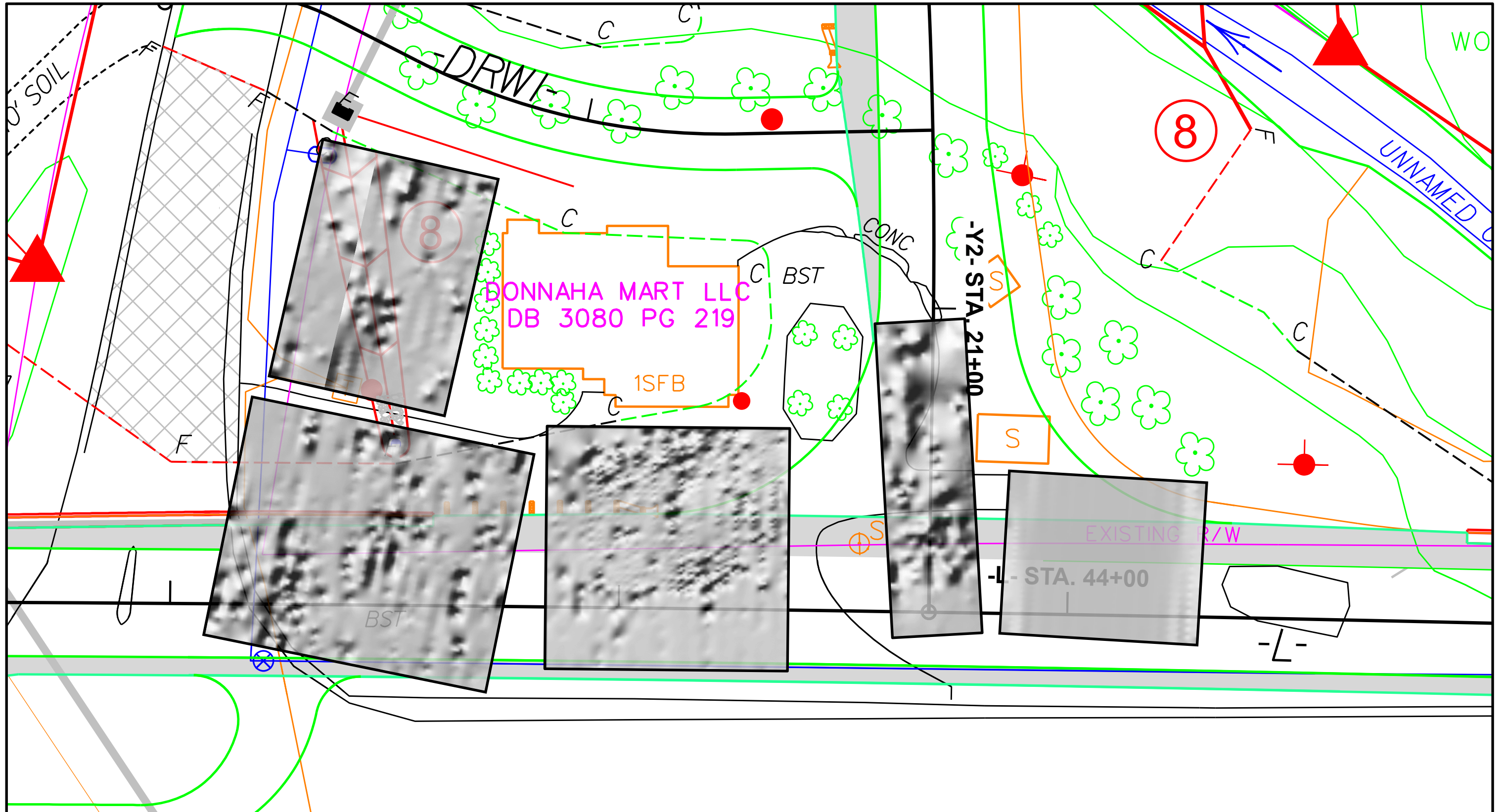


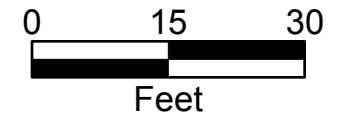
Figure 6
Gradiometer
Survey Results

State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

Seramur & Associates, PC
Boone, NC



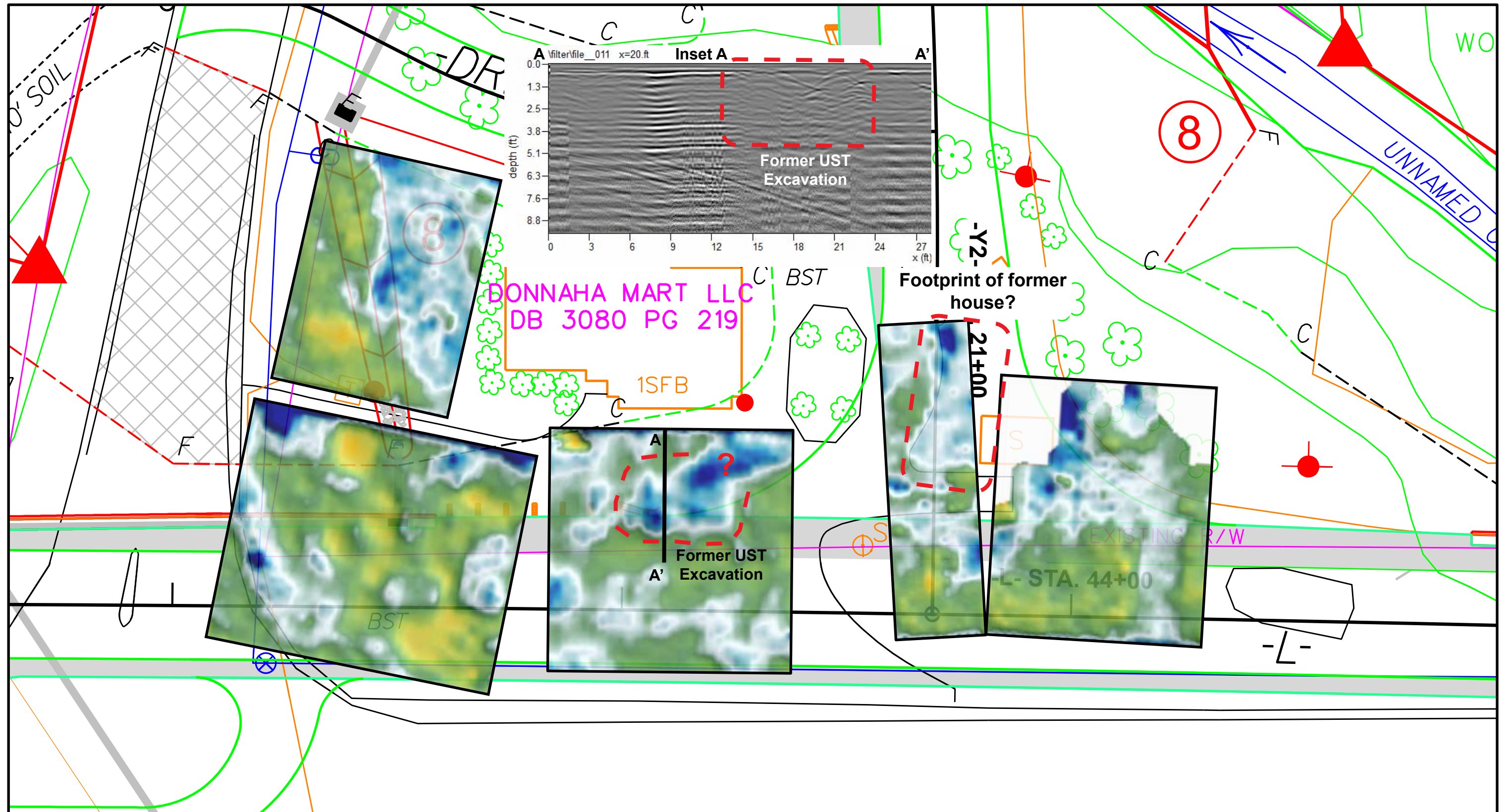


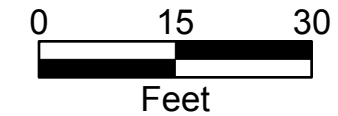
Figure 7
Shallow GPR
Depth Slices
(0.0 to 0.2 feet)

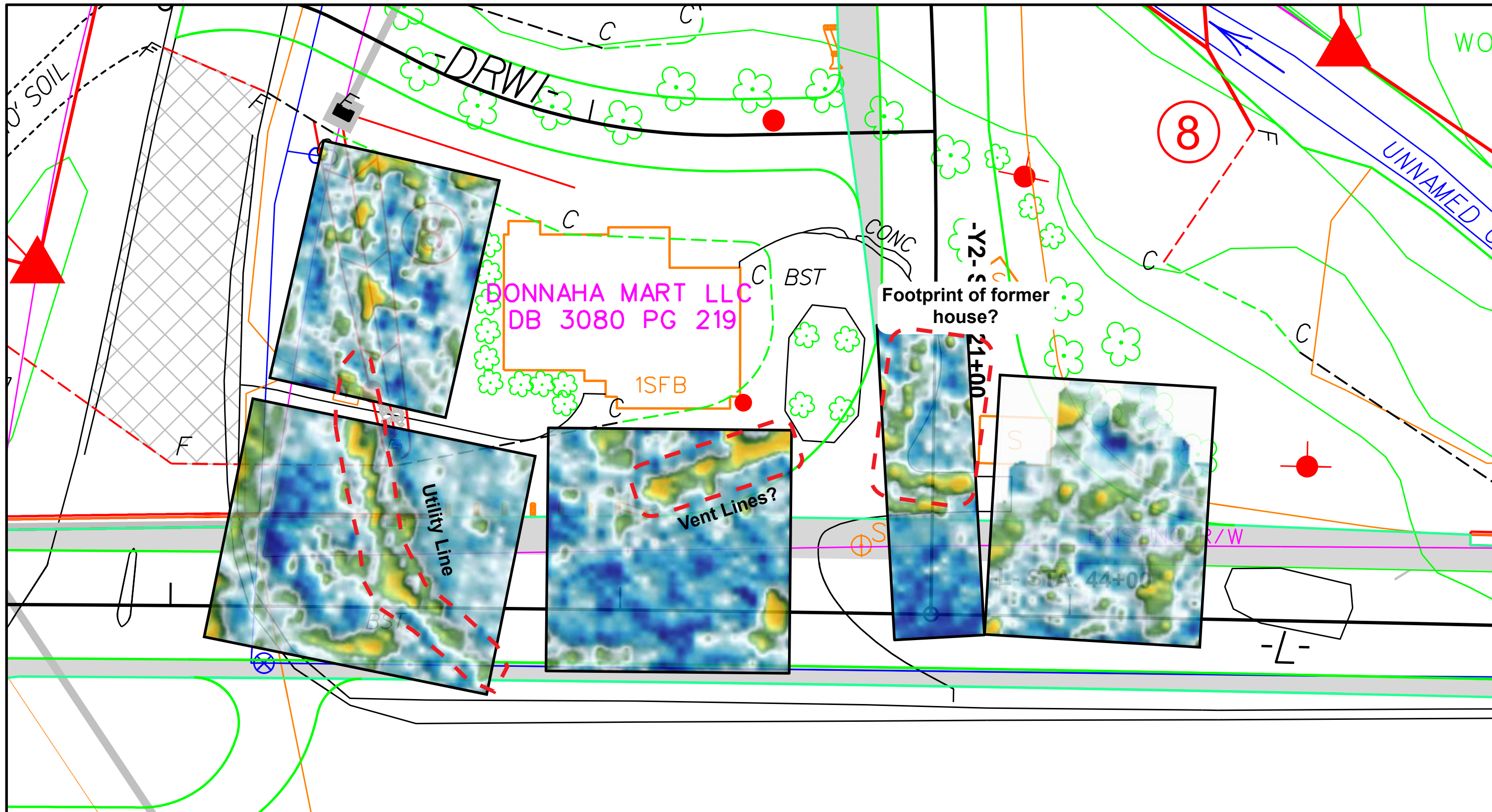
State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

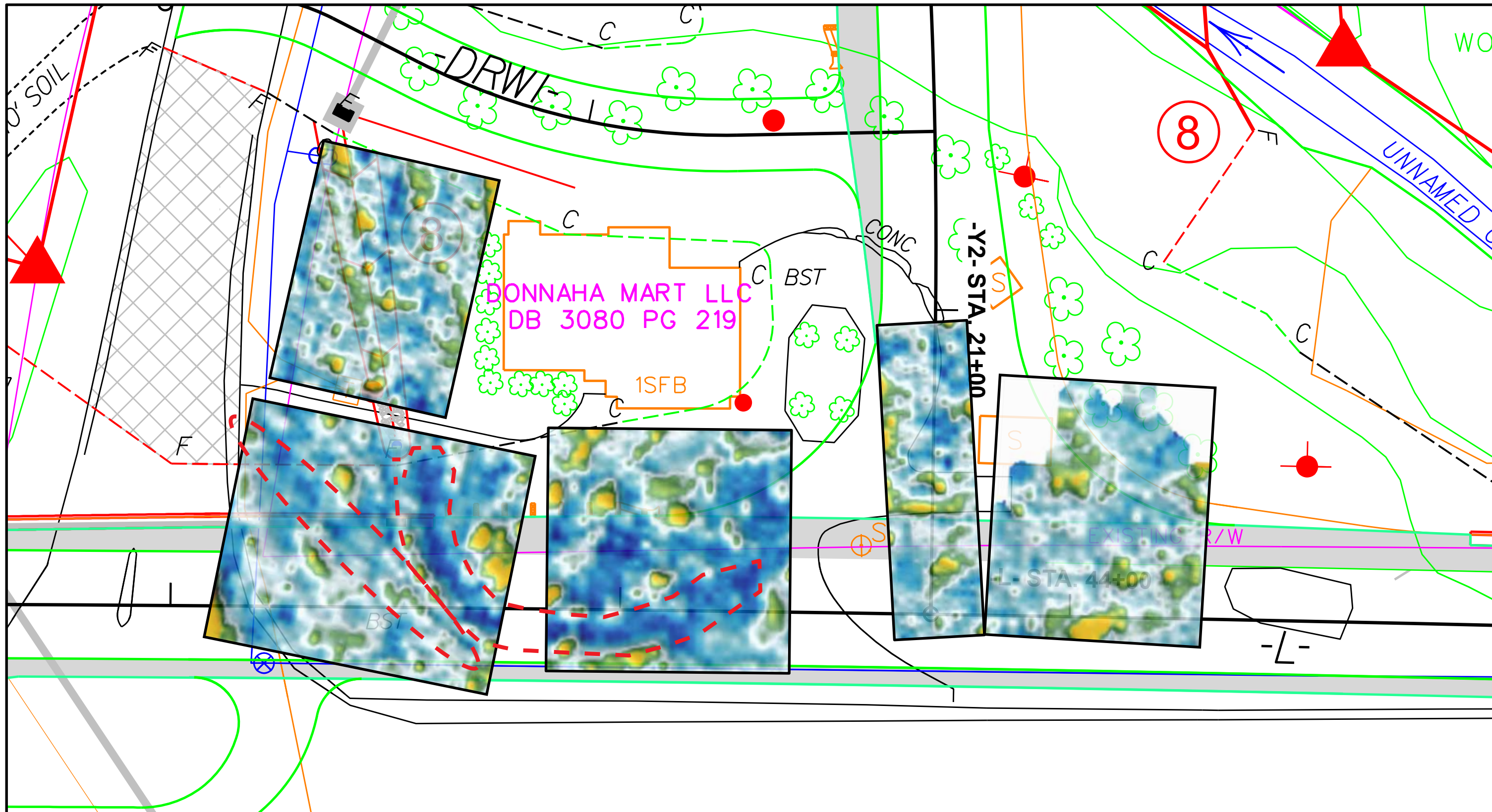
Parcel #008
Facility I.D.: 0-0-15037

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<p>Figure 8 Intermediate GPR Depth Slices 1 (0.6 to 0.9 feet)</p>	<p>State Project: B-5825 Forsyth County, NC</p>	<p>Donnaha Mart LLC Property 9995 Reynolda Rd Tobaccoville, NC</p>	<p>Parcel #008 Facility I.D.: 0-0-15037</p>	<p>Seramur & Associates, PC Boone, NC</p>	<p>0 15 30 Feet</p> <p>N</p>
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<p>Figure 9 Intermediate GPR Depth Slices 2 (2.1 to 2.3 feet)</p>	<p>State Project: B-5825 Forsyth County, NC</p>	<p>Donnaha Mart LLC Property 9995 Reynolda Rd Tobaccoville, NC</p>	<p>Parcel #008 Facility I.D.: 0-0-15037</p>	<p>Seramur & Associates, PC Boone, NC</p>	<p>0 15 30 Feet</p> <p>N</p>
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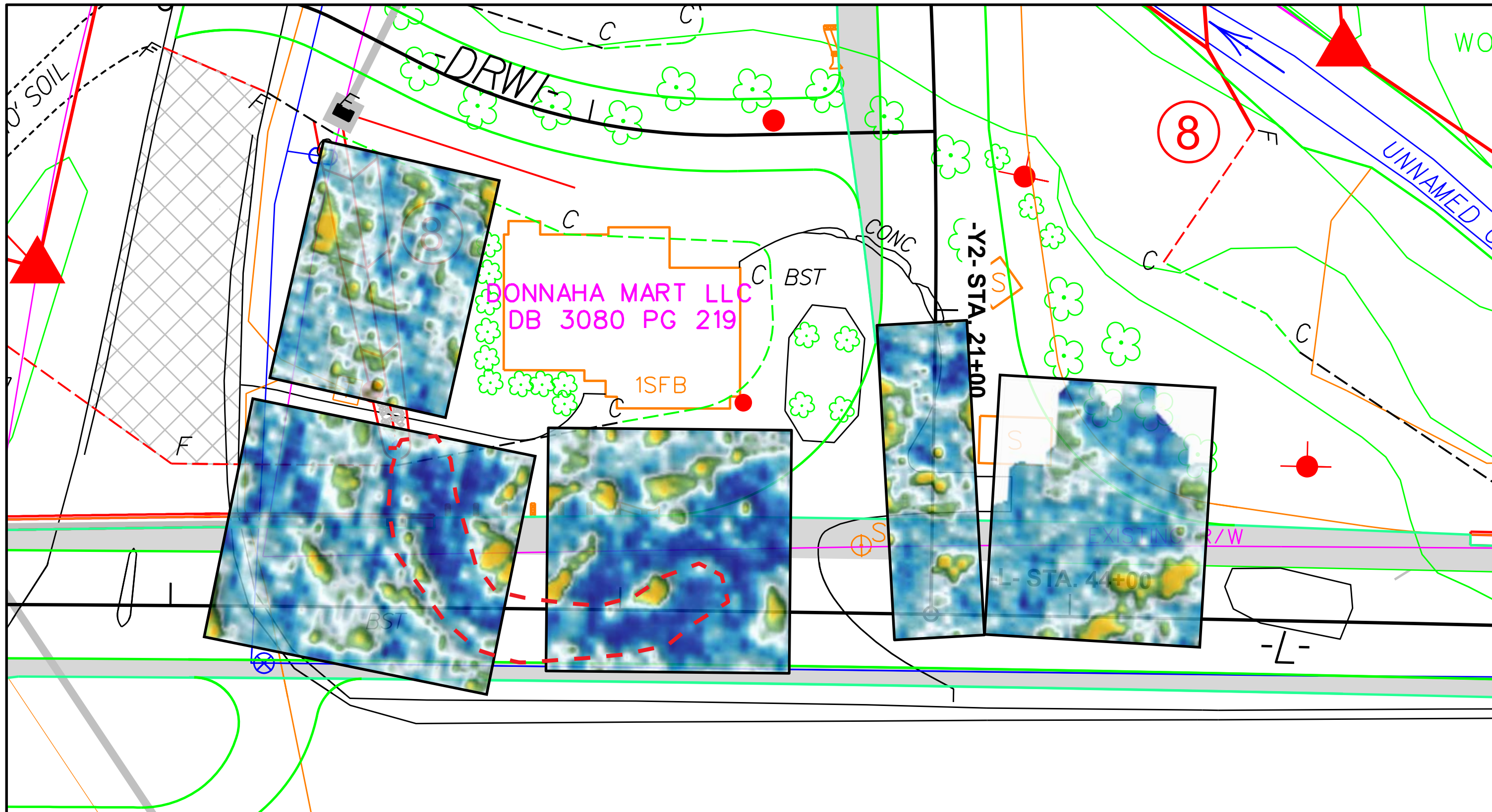


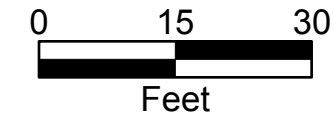
Figure 10
 Deep GPR
 Depth Slices
 (2.8 to 3.0 feet)

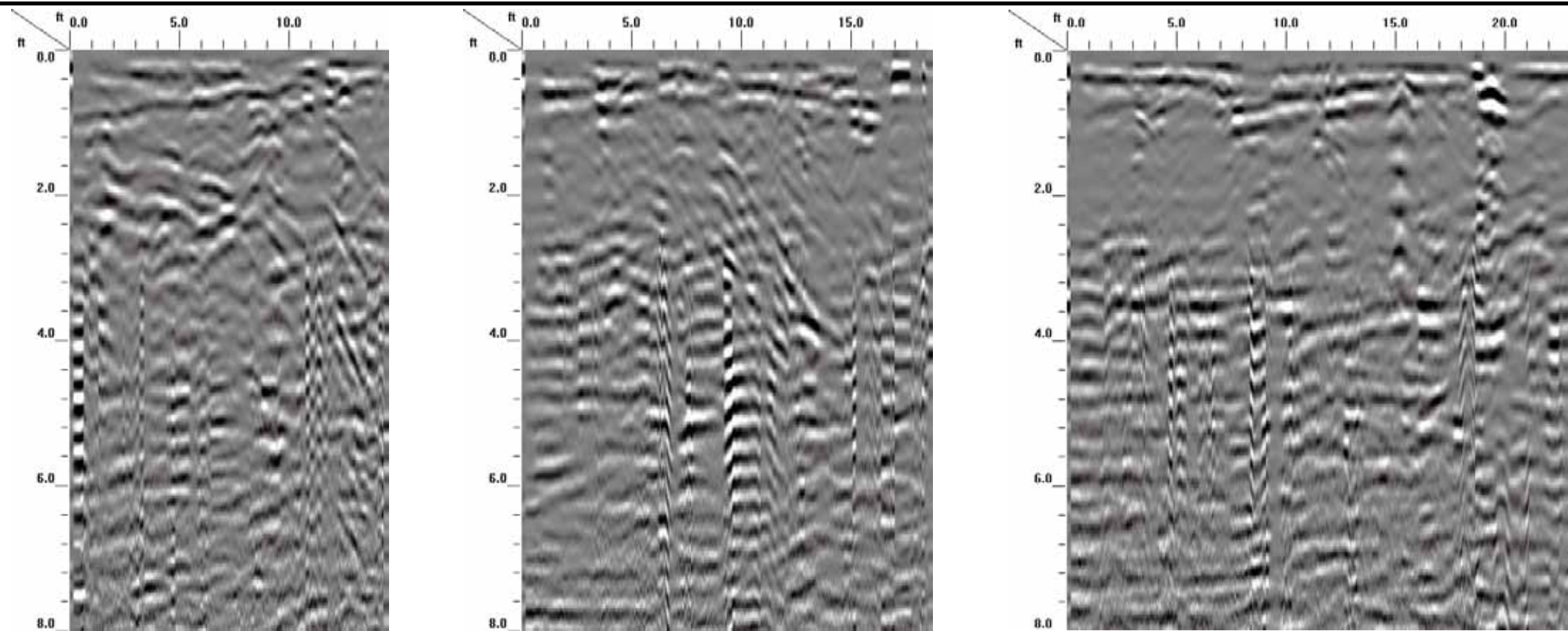
State Project: B-5825
 Forsyth County, NC

Donnaha Mart LLC Property
 9995 Reynolda Rd
 Tobaccoville, NC

Parcel #008
 Facility I.D.: 0-0-15037

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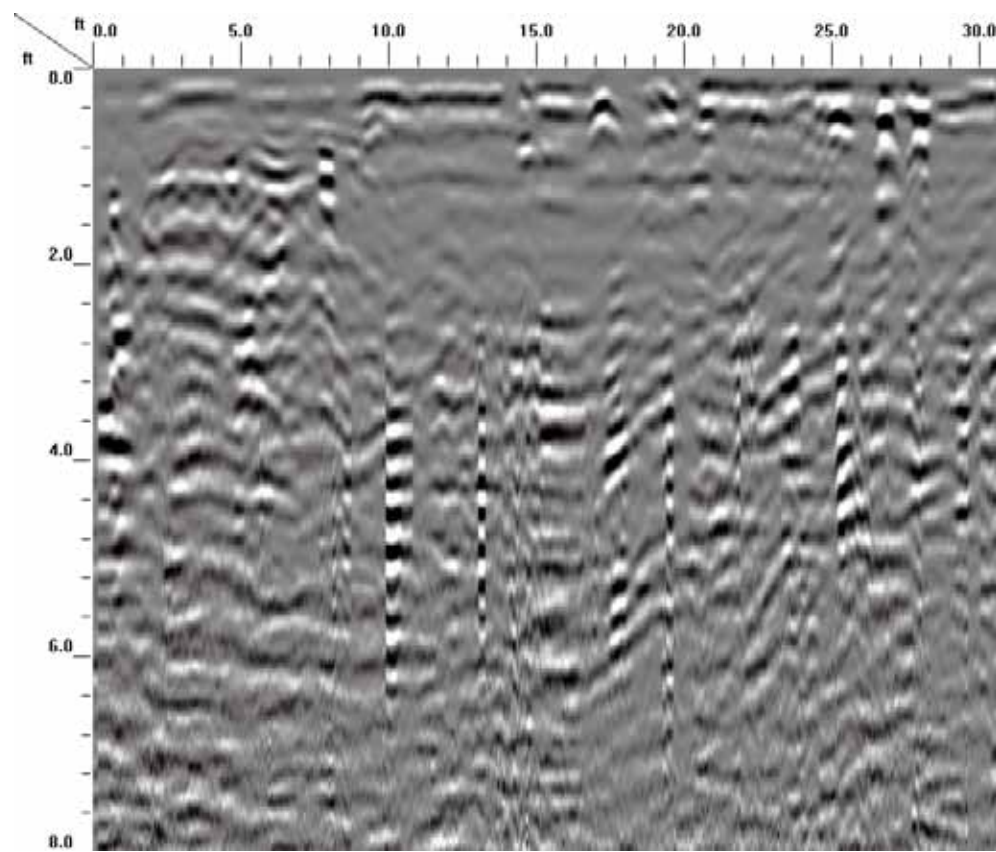




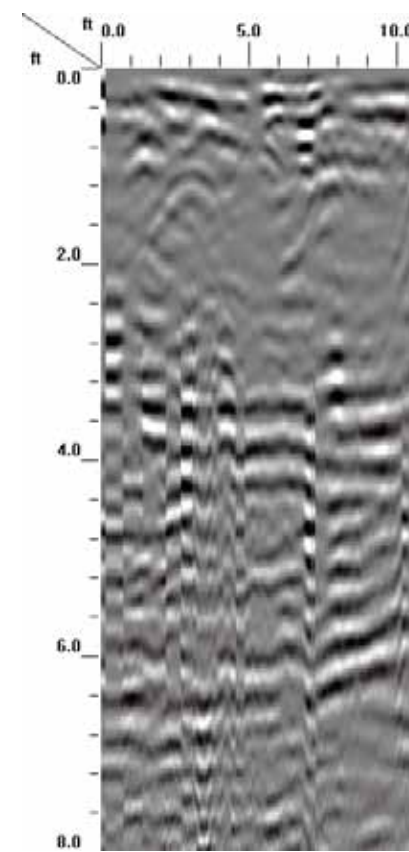
Transect 1

Transect 2

Transect 3



Transect 4



Transect 5

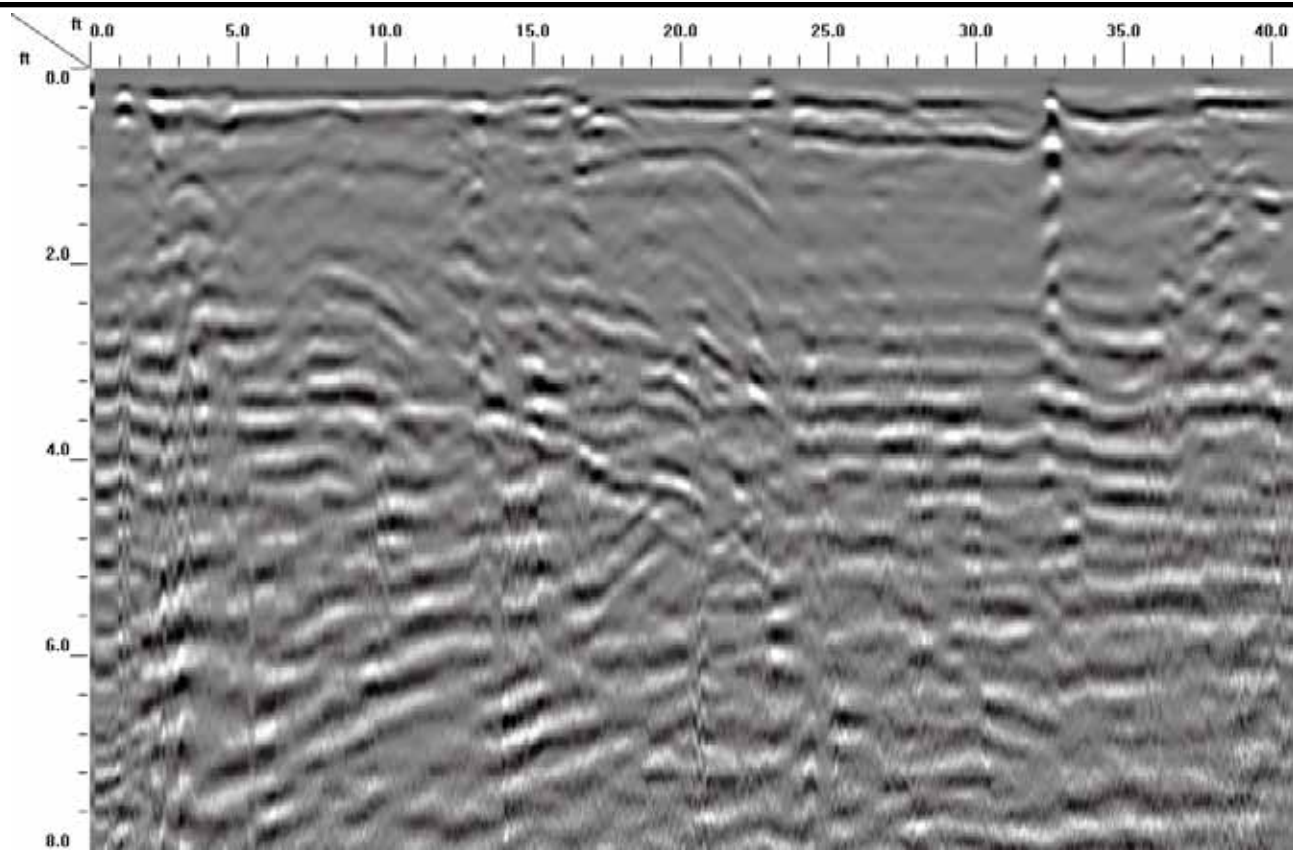
Figure 11a
GPR Transects
1 through 5

State Project: B-5825
Forsyth County, NC

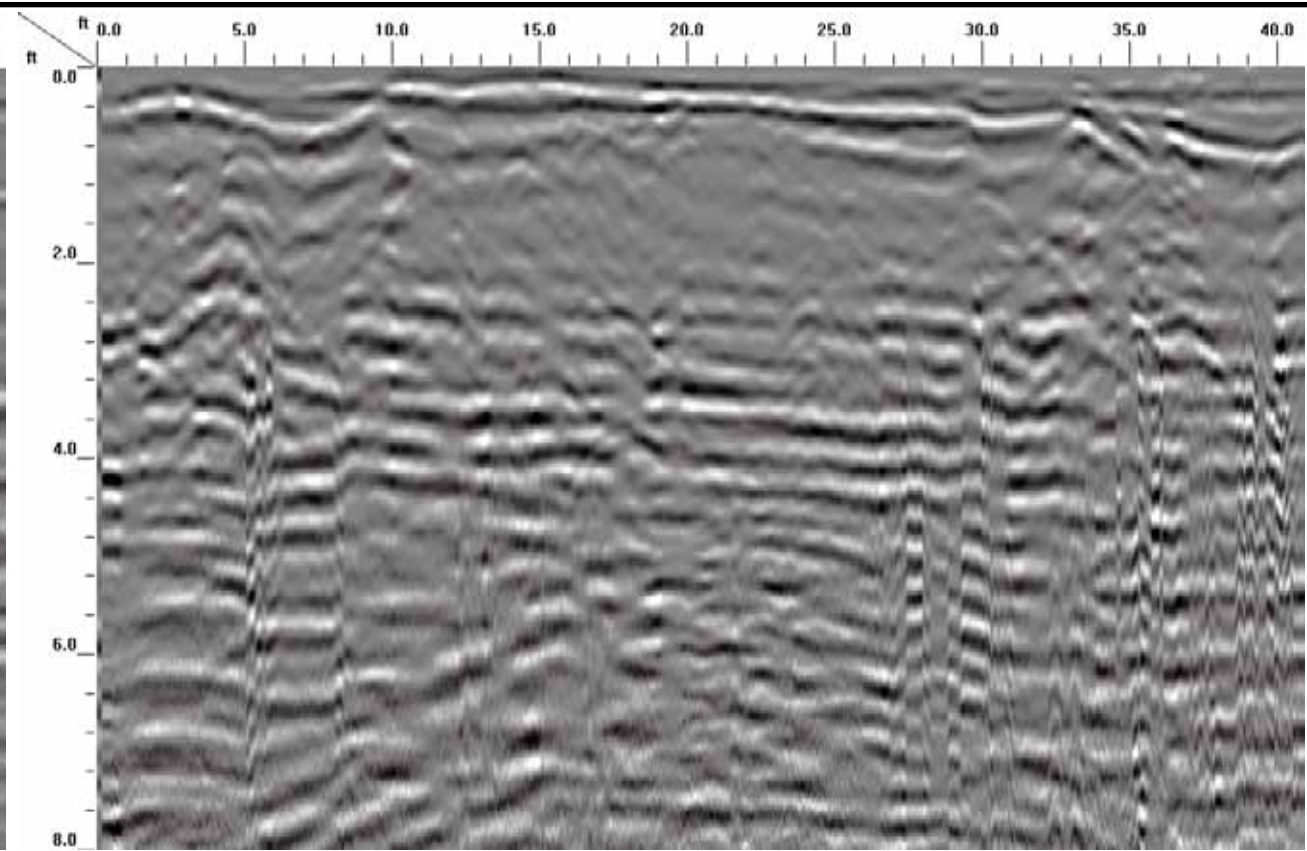
Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

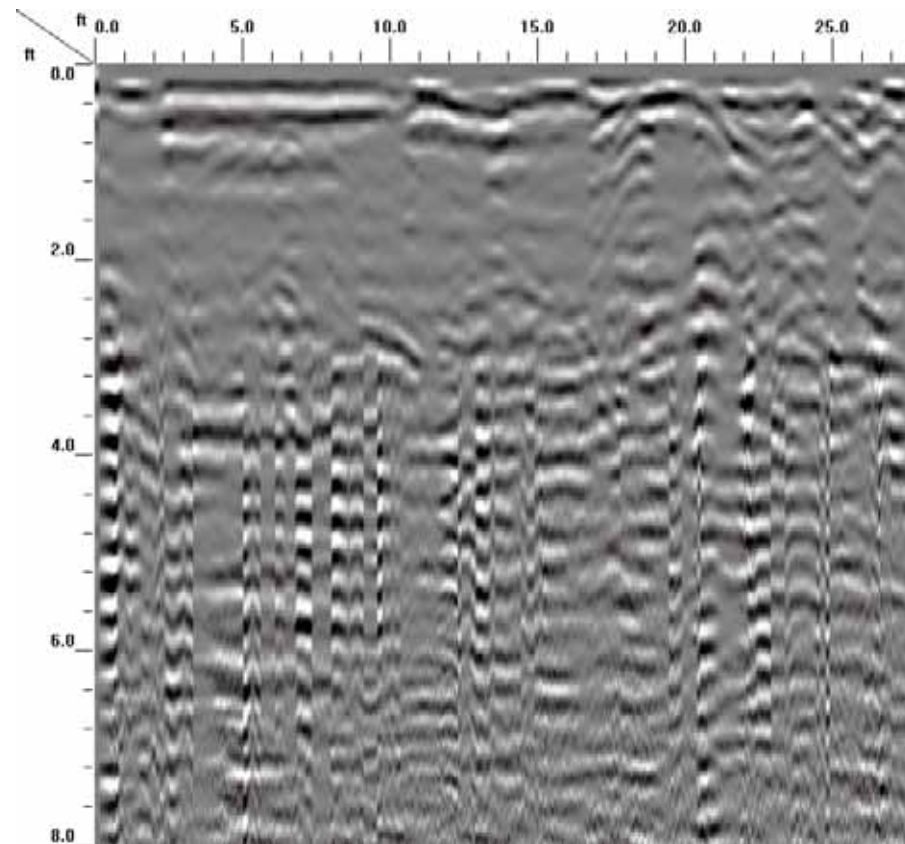
Seramur & Associates, PC
Boone, NC



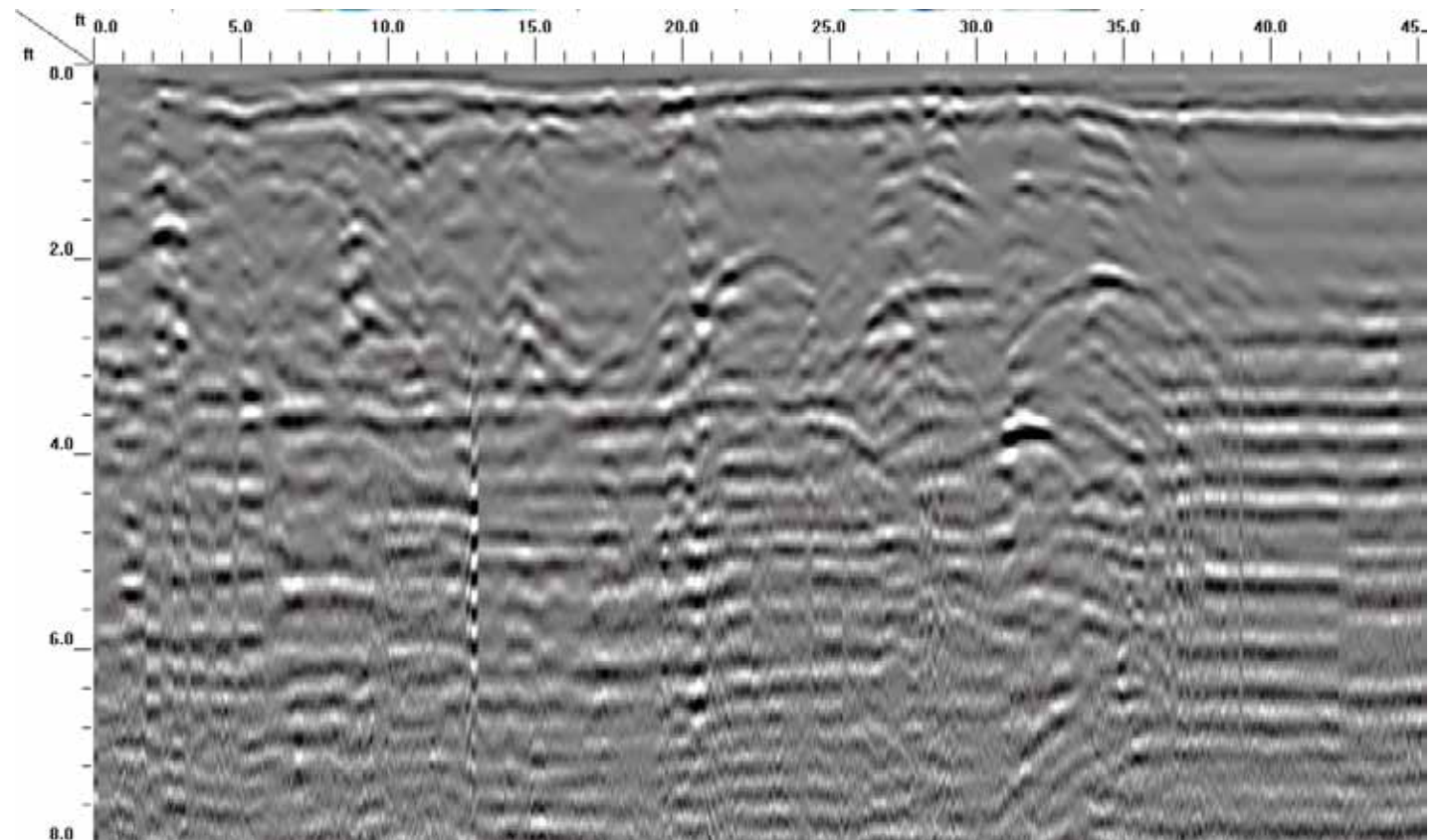
Transect 6



Transect 7



Transect 8



Transect 9

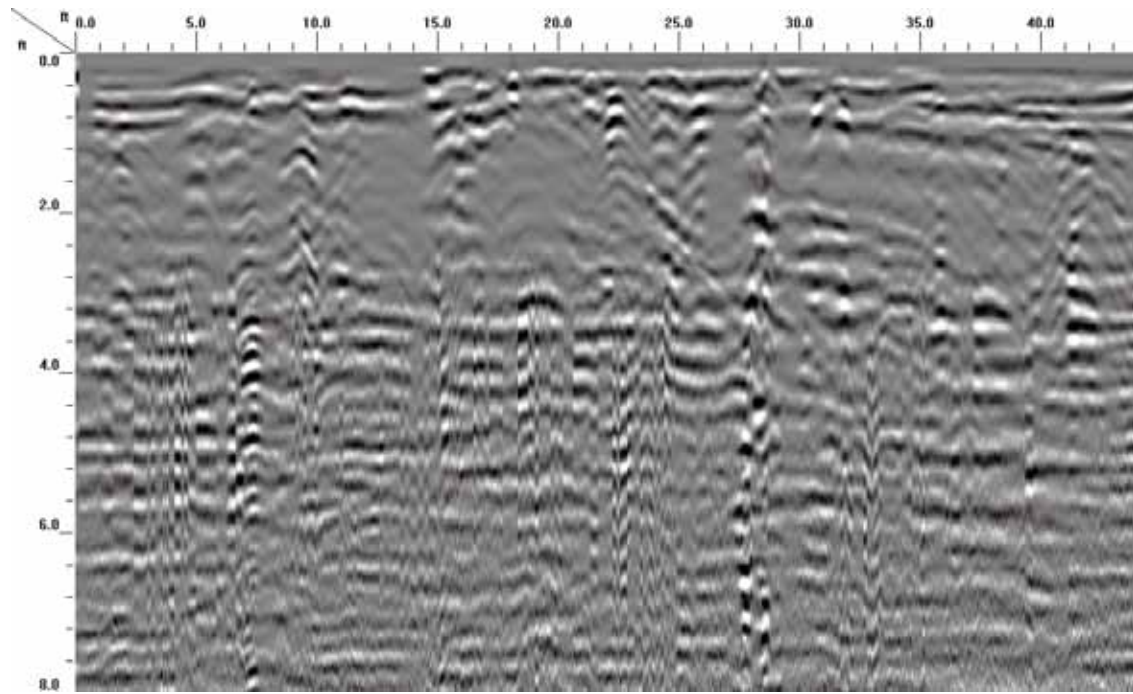
Figure 11b
GPR Transects
6 through 9

State Project: B-5825
Forsyth County, NC

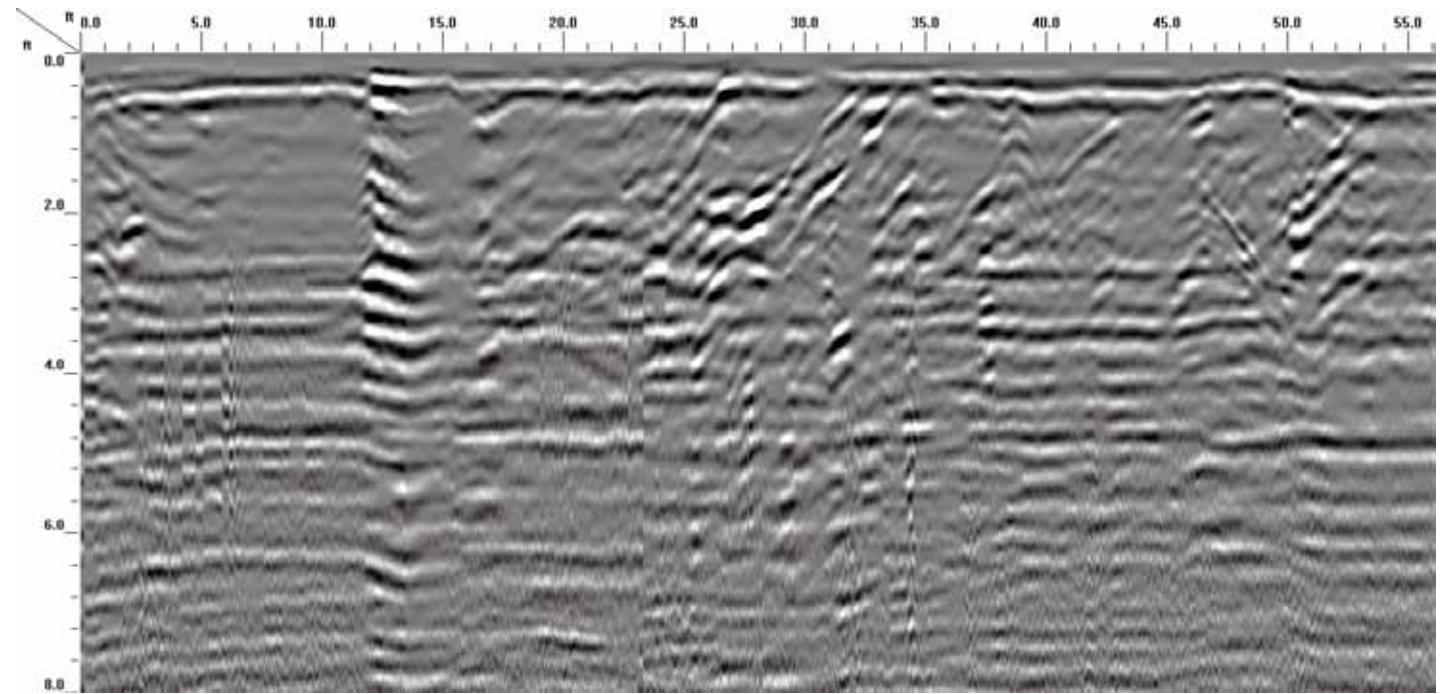
Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

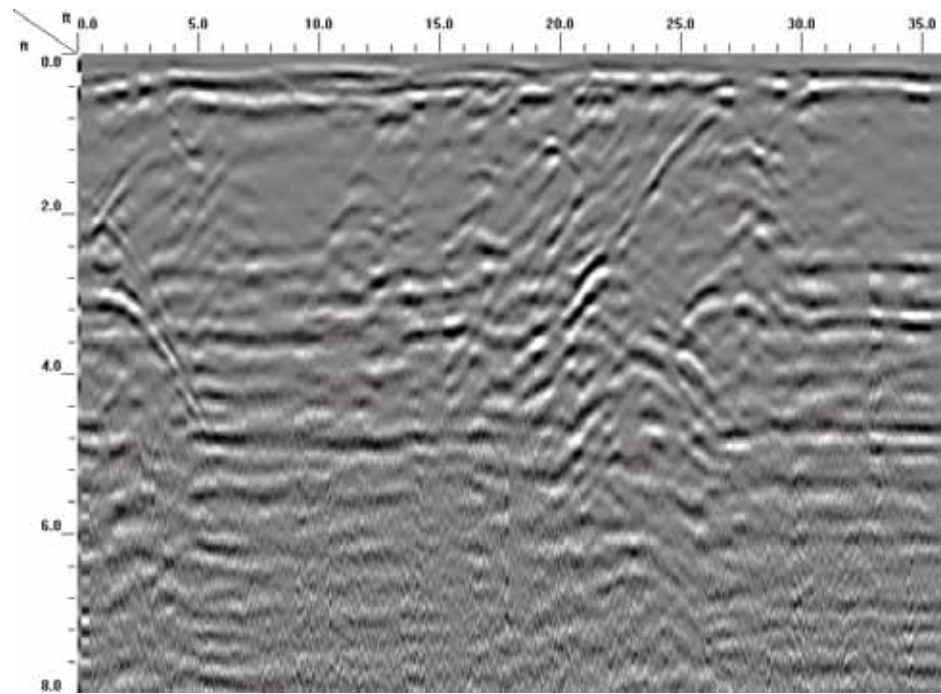
Seramur & Associates, PC
Boone, NC



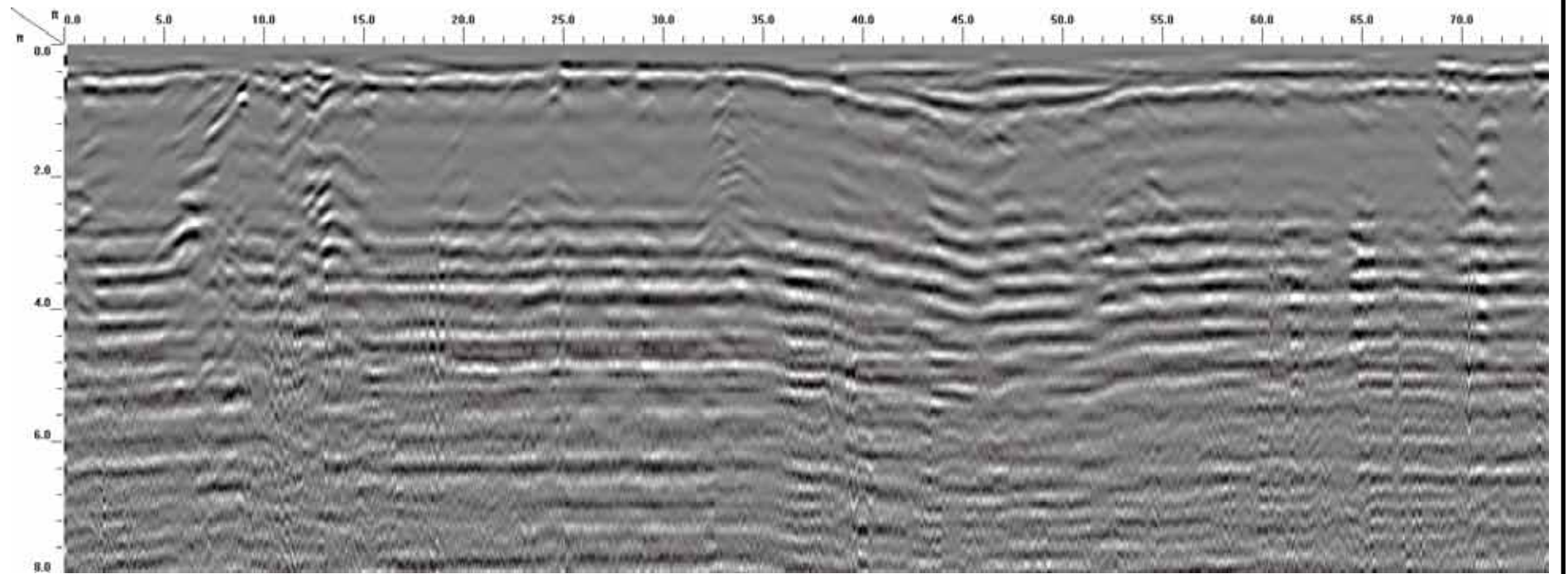
Transect 10



Transect 11



Transect 12



Transect 13

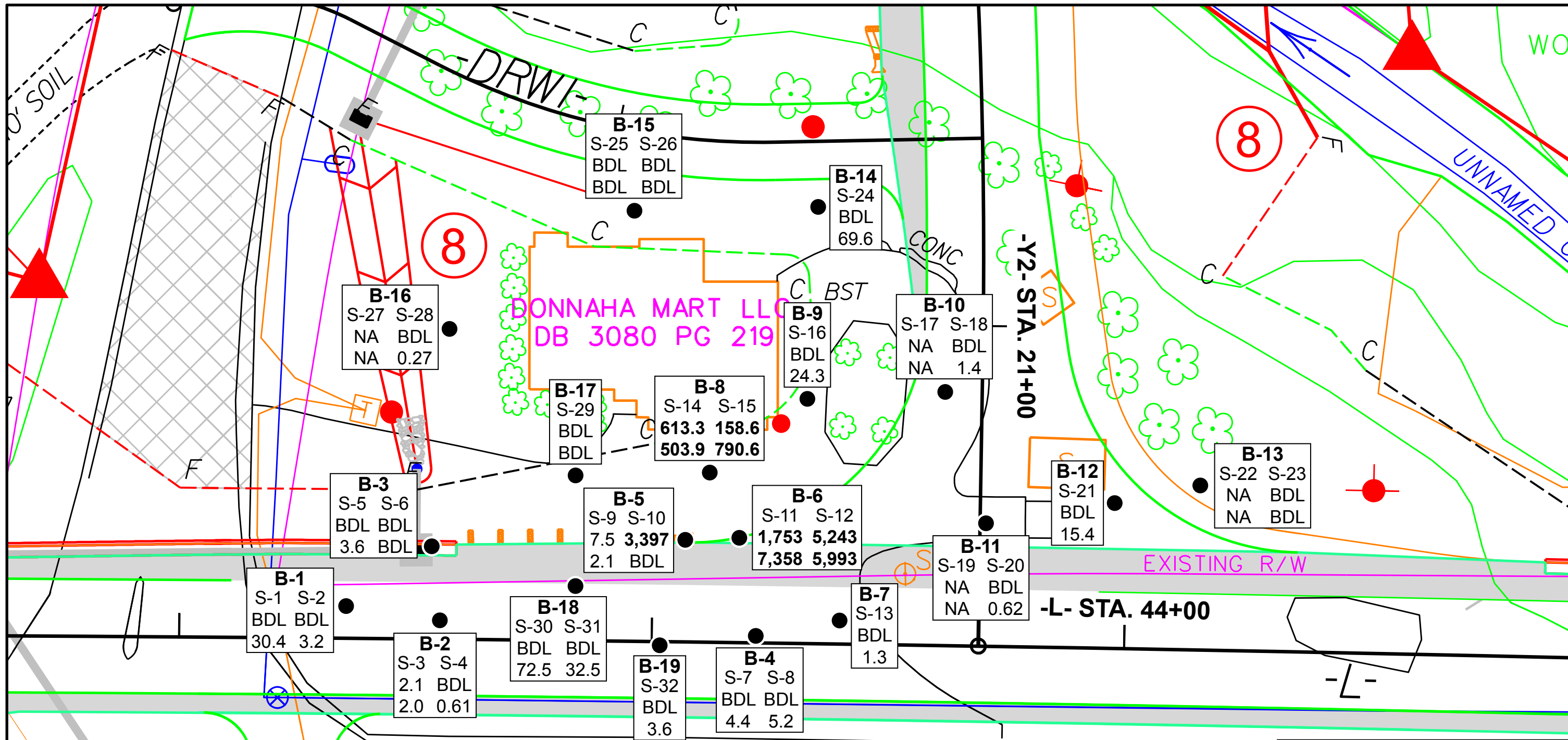
Figure 11c
GPR Transects
10 through 13

State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobacoville, NC

Parcel #008
Facility I.D.: 0-0-15037

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Boone, NC



● - Locations of Soil Borings
 7.5 - Petroleum Constituents Concentrations
 2.1 - Reported as GRO (upper) and DRO (lower)
 BDL - Below Detectable Limit
 NA - Sample Not Analyzed

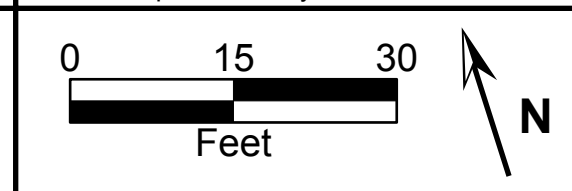
Figure 12
Soil Analytical Results

State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccoville, NC

Parcel #008
Facility I.D.: 0-0-15037

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Boone, NC



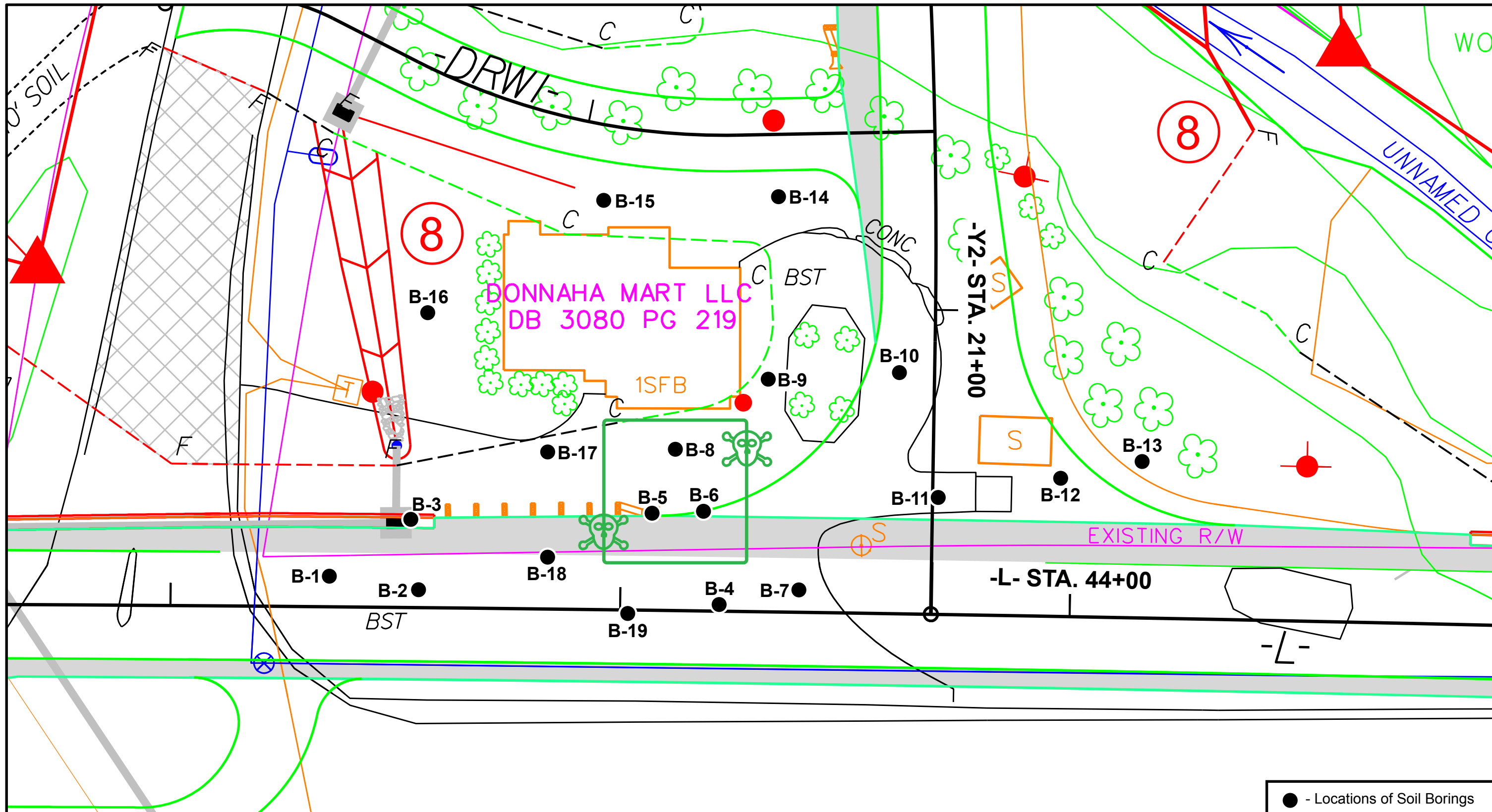


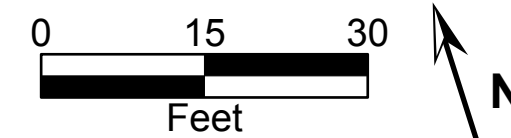
Figure 13
Extent of Soil
Contamination

State Project: B-5825
Forsyth County, NC

Donnaha Mart LLC Property
9995 Reynolda Rd
Tobaccolville, NC

Parcel #008
Facility I.D.: 0-0-15037

Seramur & Associates, PC
Boone, NC



Appendix B

Laboratory Reports and Chain of Custody Records



Hydrocarbon Analysis Results

Client: SAPC
Address: 165 KNOLL DRIVE
 BOONE, NC 28607

Samples taken Tuesday, October 08, 2019
Samples extracted Tuesday, October 08, 2019
Samples analysed Thursday, October 10, 2019

Contact: KEITH SERAMUR

Operator MAX MOYER

Project: NCDOT B-5825

											F03640		
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	S-1	32.1	<0.8	<0.8	30.4	30.4	14.8	1.6	0.042	0	82.1	17.9	Road Tar 76.9%,(FCM)
s	S-2	25.7	<0.64	<0.64	3.2	3.2	2.9	<0.21	<0.026	0	80.9	19.1	Deg Fuel 75.2%,(FCM)
s	S-3	26.8	<0.67	2.1	2	4.1	0.93	<0.21	<0.027	74.7	20.6	4.7	Road Tar 93%,(FCM)
s	S-4	24.5	<0.61	<0.61	0.61	0.61	0.57	<0.2	<0.025	0	72.9	27.1	V.Deg.PHC 75.1%,(FCM)
s	S-5	28.9	<0.72	<0.72	3.6	3.6	3.2	<0.23	<0.029	0	81.5	18.5	Deg Fuel 75.3%,(FCM)
s	S-6	24.8	<0.62	<0.62	<0.62	<0.62	<0.12	<0.2	<0.025	0	0	100	PHC not detected,(BO)
s	S-7	26.3	<0.66	<0.66	4.4	4.4	3.9	<0.21	<0.026	0	79.2	20.8	Deg Fuel 72.3%,(FCM)
s	S-8	24.3	<0.61	<0.61	5.2	5.2	4.5	<0.19	<0.024	0	80.4	19.6	Deg Fuel 73.7%,(FCM)
s	S-9	38.9	<0.97	7.5	2.1	9.6	1.1	<0.31	<0.039	89.2	8.2	2.7	Deg.PHC 77.5%,(FCM)
s	S-10	3084.0	1985	3397	<77.1	3397	<15.4	<24.7	<3.1	99.9	0	0.1	Deg.Gas,(FCM)
Initial Calibrator QC check			OK			Final FCM QC Check			OK			107.5 %	

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content
 Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library
 (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present



Hydrocarbon Analysis Results

Client: SAPC
Address: 165 KNOLL DRIVE
 BOONE, NC 28607

Samples taken Tuesday, October 08, 2019
Samples extracted Tuesday, October 08, 2019
Samples analysed Thursday, October 10, 2019

Contact: KEITH SERAMUR

Operator MAX MOYER

Project: NCDOT B-5825

											F03640		
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	S-11	1045.0	361.6	1753	7358	9111	199.5	<8.4	<1	99.8	0.2	0	Undeg.Kerosene 89.4%,(FCM)
s	S-12	542.0	2972	5243	5993	11236	148.6	5.6	<0.54	100	0	0	Deg.Kerosene 91.1%,(FCM),(OCR)
s	S-13	27.1	<0.68	<0.68	1.3	1.3	0.49	<0.22	<0.027	0	85.9	14.1	Deg Fuel 92.3%,(FCM)
s	S-14	398.0	<9.9	613.3	503.9	1117.2	179.4	7.5	<0.4	93.6	5.7	0.7	No Match found
s	S-15	26.8	<0.67	158.6	790.6	949.2	33.3	1.2	<0.027	99.2	0.7	0.1	Deg.Kerosene 83.2%,(FCM)
s	S-16	27.7	<0.69	<0.69	24.3	24.3	21	0.99	<0.028	0	62.7	37.3	V.Deg.PHC 73.6%,(FCM)
s	S-18	25.0	<0.63	<0.63	1.4	1.4	0.86	<0.2	<0.025	0	83.1	16.9	Deg Fuel 89%,(FCM)
s	S-20	24.8	<0.62	<0.62	0.62	0.62	0.34	<0.2	<0.025	0	73.6	26.4	V.Deg.PHC 73.6%,(FCM)
s	S-21	30.6	<0.76	<0.76	15.4	15.4	5.9	<0.24	<0.031	0	75.2	24.8	Deg.Fuel 84.4%,(FCM)
s	S-23	15.2	<0.38	<0.38	<0.38	<0.38	<0.08	<0.12	<0.015	0	31.5	68.5	PHC not detected,(BO)
Initial Calibrator QC check			OK			Final FCM QC Check			OK			107.5 %	

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content
 Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library
 (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present



Hydrocarbon Analysis Results

Client: SAPC
Address: 165 KNOLL DRIVE
 BOONE, NC 28607

Samples taken Tuesday, October 08, 2019
Samples extracted Tuesday, October 08, 2019
Samples analysed Thursday, October 10, 2019

Contact: KEITH SERAMUR

Operator MAX MOYER

Project: NCDOT B-5825

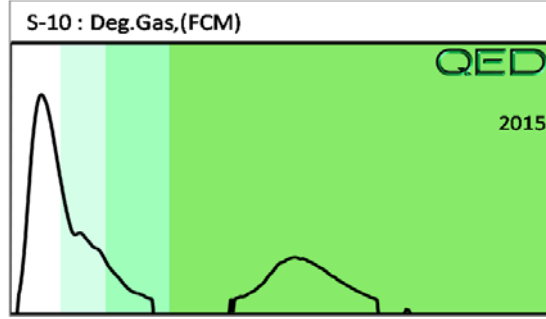
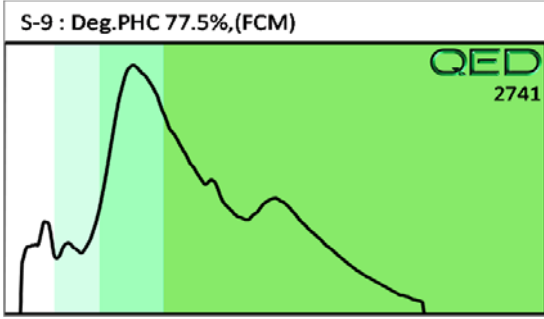
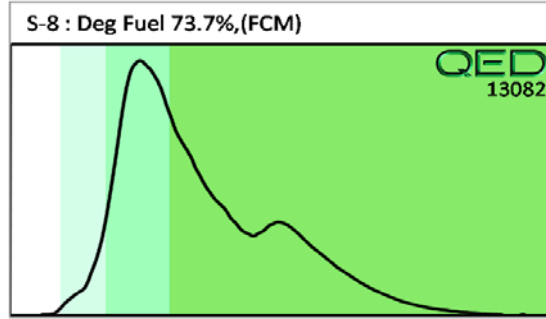
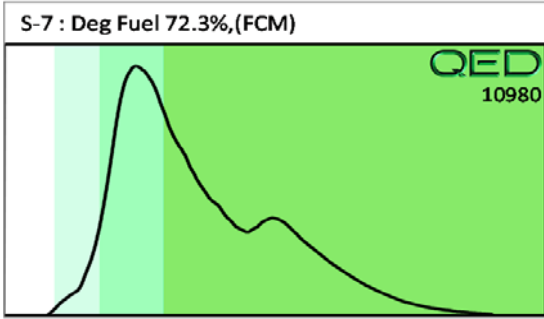
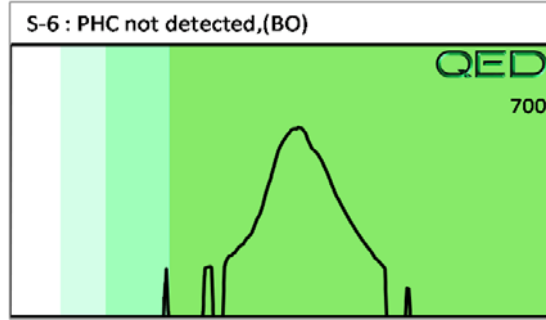
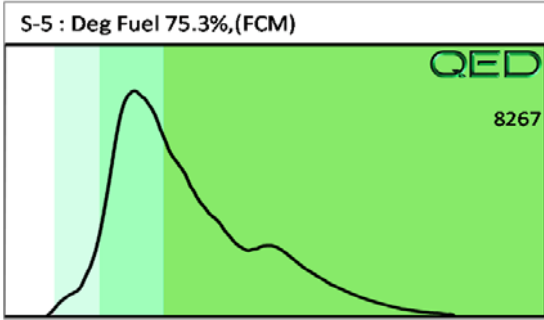
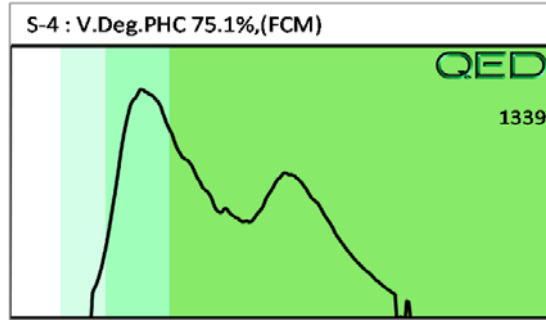
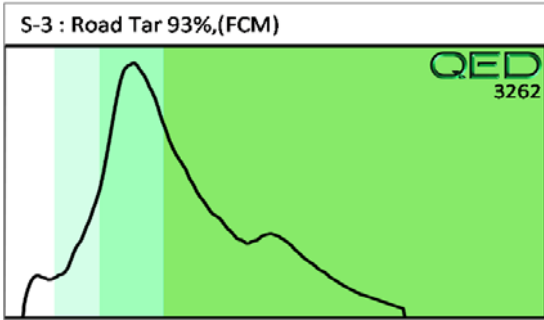
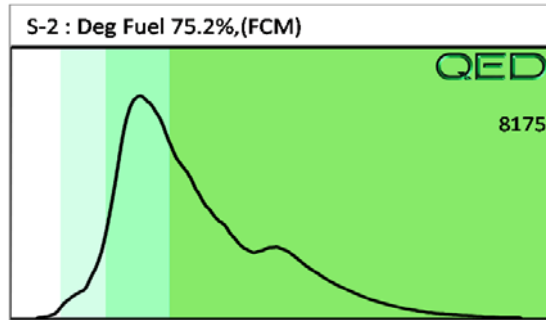
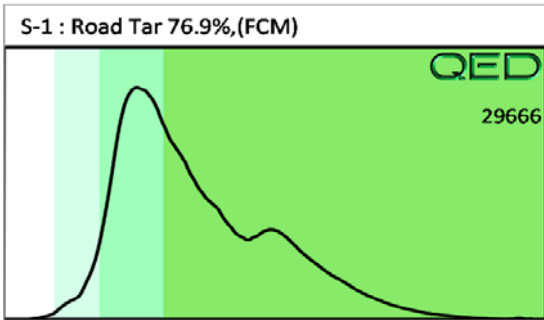
										F03640			
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	S-24	29.2	<0.73	<0.73	69.6	69.6	34.9	3.8	0.4	0	78.5	21.5	Pyrogenic HC 74.4%,(FCM),(P)
s	S-25	15.7	<0.39	<0.39	<0.39	<0.39	<0.08	<0.13	<0.016	0	0	0	PHC not detected
s	S-26	16.9	<0.42	<0.42	<0.42	<0.42	<0.08	<0.13	<0.017	0	100	0	,(FCM),(PFM)
s	S-28	10.9	<0.27	<0.27	0.27	0.27	0.23	<0.09	<0.011	0	67	33	V.Deg.PHC 76.1%,(FCM)
s	S-29	13.7	<0.34	<0.34	<0.34	<0.34	<0.07	<0.11	<0.014	0	0	0	,(FCM)
s	S-30	44.7	<1.1	<1.1	72.5	72.5	41	1.9	<0.045	3	84.3	12.7	Deg Fuel 91.2%,(FCM)
s	S-31	30.2	<0.76	<0.76	32.5	32.5	20.6	0.97	<0.03	0	87.2	12.8	Deg Fuel 92.4%,(FCM)
s	S-32	23.2	<0.58	<0.58	3.6	3.6	0.87	<0.19	<0.023	0	83.8	16.2	V.Deg.Diesel 72.9%,(FCM)
Initial Calibrator QC check										OK			105.9 %
Final FCM QC Check										OK			105.9 %

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content
 Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library
 (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

Project: NCDOT B-5825

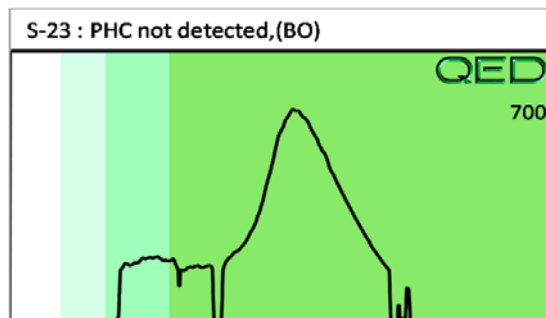
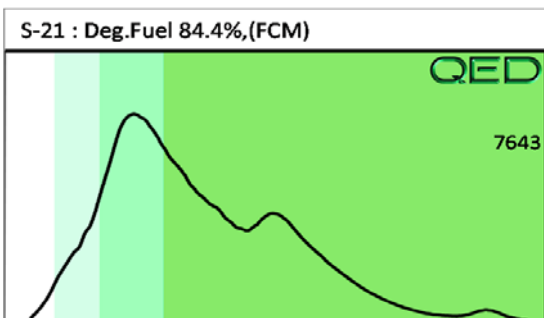
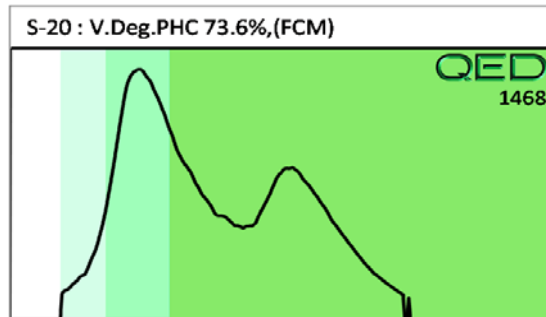
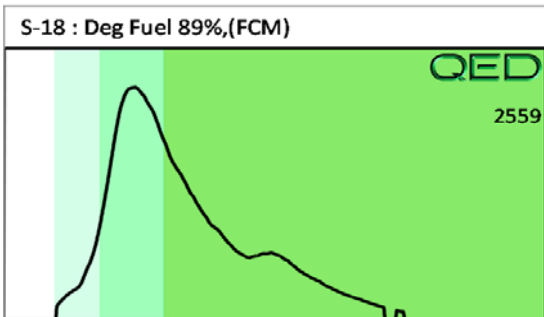
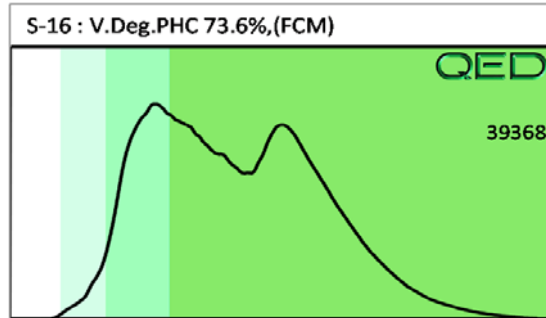
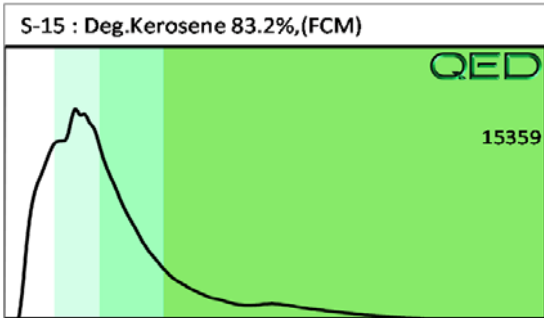
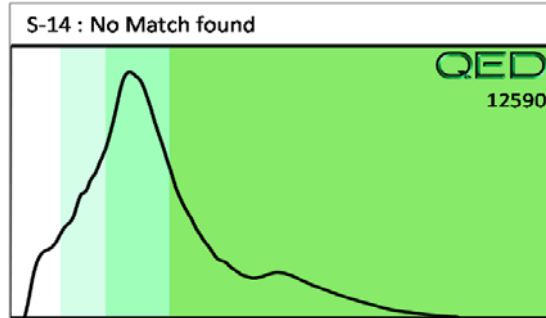
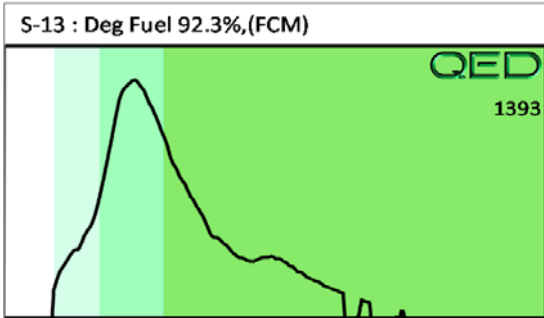
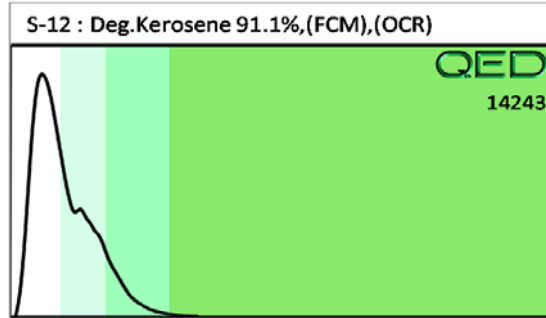
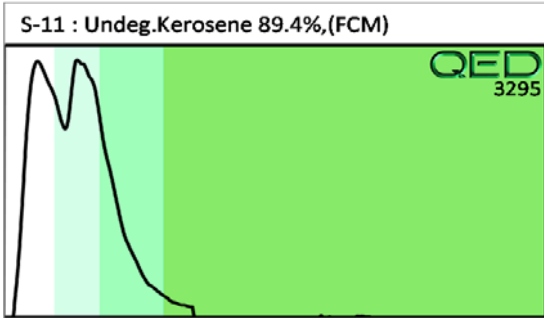
Thursday, October 10, 2019

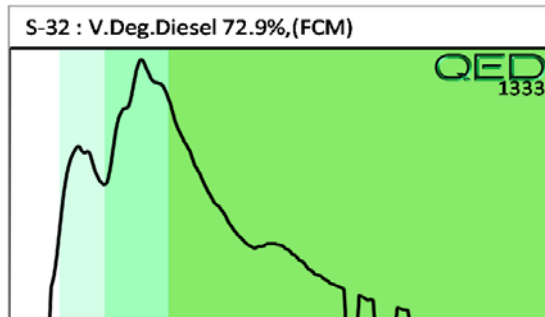
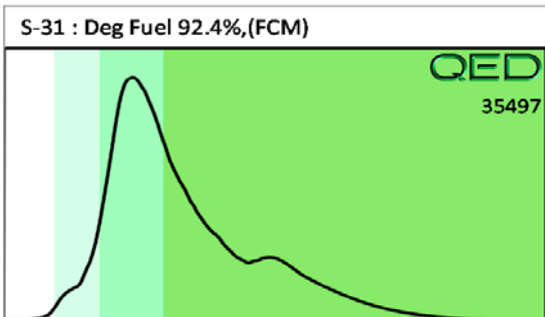
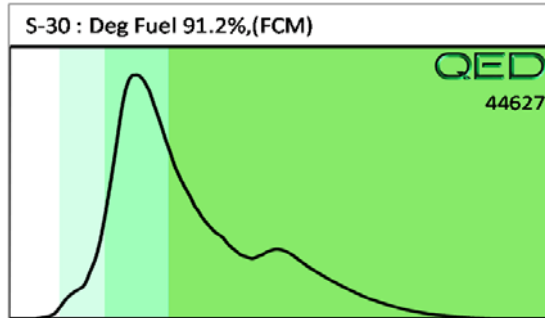
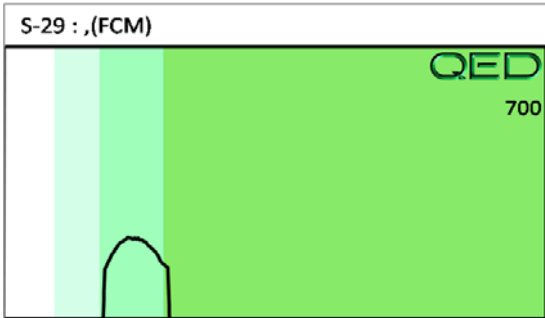
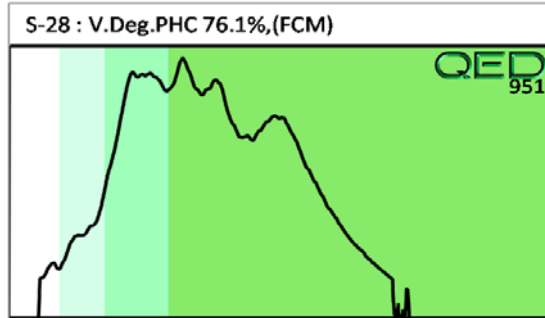
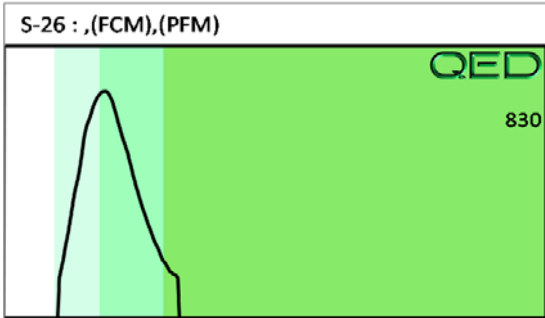
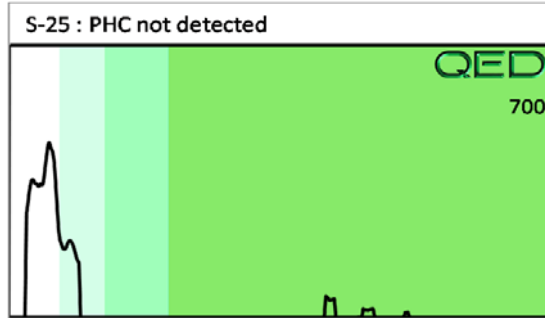
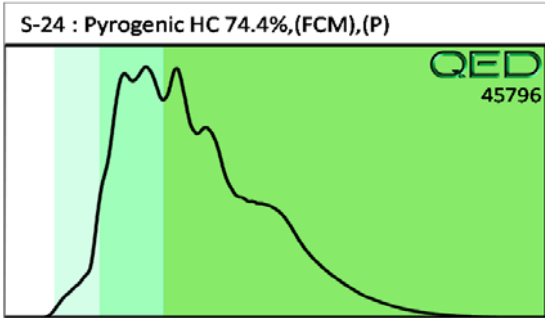


QED Hydrocarbon Fingerprints

Project: NCDOT B-5825

Thursday, October 10, 2019





Client Name: **SAPC**
 Address: **165 Knoll Dr.
Boone, NC 28607**
 Contact: **Keith Scramur**
 Project Ref.: **NC DOT B-5825**
 Email: **scramur@icloud.com**
 Phone #: **(828) 264-0289**
 Collected by: **Joey Anderson +
Keith Scramur**



RED Lab, LLC
 5598 Marvin K Moss Lane
 MARBIONC Bldg, Suite 2003
 Wilmington, NC 28409

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

Sample Collection Date/Time	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour	UVF	GC					
10/8/19 9:40		X	X		JBA	S-1	52.6	44.5	8.1
10/8/19 9:42		X	X		JBA	S-2	54.5	44.4	10.1
10/8/19 9:45		X	X		JBA	S-3	54.2	44.5	9.7
10/8/19 9:47		X	X		JBA	S-4	55.0	44.4	10.6
10/8/19 9:53		X	X		JBA	S-5	54.0	45.0	9.0
10/8/19 9:54		X	X		JBA	S-6	55.2	44.7	10.5
10/8/19 9:59		X	X		JBA	S-7	54.7	44.8	9.9
10/8/19 10:00		X	X		JBA	S-8	55.3	44.6	10.7
10/8/19 10:03		X	X		JBA	S-9	55.1	44.3	10.8
10/8/19 10:05		X	X		JBA	S-10	55.3	44.4	10.9
10/8/19 10:12		X	X		JBA	S-11	54.6	44.4	10.2
10/8/19 10:14		X	X		JBA	S-12	54.8	44.2	10.6
10/8/19 10:22		X	X		JBA	S-13	53.8	44.2	9.6
10/8/19 10:25		X	X		JBA	S-14	52.6	44.1	8.5
10/8/19 10:27		X	X		JBA	S-15	54.2	44.5	9.7
10/8/19 10:36		X	X		JBA	S-16	53.6	44.2	9.4
10/8/19 11:08		X	X		JBA	S-18	54.9	44.5	10.4
10/8/19 11:14		X	X		JBA	S-20	54.8	44.3	10.5
10/8/19 11:20		X	X		JBA	S-21	53.2	44.7	8.5
10/8/19 11:25		X	X		JBA	S-23	53.5	44.3	9.2

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by	10/9/19	Accepted by	Date/Time	RED Lab USE ONLY
	PC	MM 10/10/19	1422	
Relinquished by		Accepted by	Date/Time	
				Ref. No

Client Name: SAAC
 Address: 165 Knoll Dr.
 Boone, NC 28607
 Contact: Keith Seaman
 Project Ref.: NCDOT B-5825
 Email: seaman@icland.com
 Phone #: (828) 264-0289
 Collected by: Joey Anderson
 & Keith Seaman



RED Lab, LLC
 5598 Marvin K Moss Lane
 MARBIONC Bldg, Suite 2003
 Wilmington, NC 28409

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

Sample Collection Date/Time	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour	UVF	GC					
10/8/19 11:29		X	X		JBA	S-24	53.1	44.2	8.9
10/8/19 11:34		X	X		JBA	S-25	53.5	44.6	8.9
10/8/19 11:35		X	X		JBA	S-26	53.0	44.7	8.3
10/8/19 11:41		X	X		JBA	S-28	53.6	44.4	9.2
10/8/19 11:46		X	X		JBA	S-29	54.3	44.1	10.2
10/8/19 11:52		X	X		JBA	S-30	53.7	44.3	9.4
10/8/19 11:53		X	X		JBA	S-31	53.1	44.5	8.6
10/8/19 11:56		X	X		JBA	S-32	55.5	44.3	11.2

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by	10/19/19	Accepted by	Date/Time	RED Lab USE ONLY <u>28</u>
	12:30	MM 10/10/19	1422	
Relinquished by		Accepted by	Date/Time	
				Ref. No