

Phase II Site Assessment Report

August 15, 2021

WBS Element: 44691.1.1

State Project: R-5759

Wilkes County

At

Parcel #: 027

Robert E. & Janice G. Ashley Property

2609 Statesville Road; North Wilkesboro, NC, 28659

PIN #: 3877-86-9815

Facility ID No.: N/A

Groundwater Incident #: N/A

Prepared For:

Mr. Gordon Box

NCDOT, Geotechnical Engineering Unit

GeoEnvironmental Section

1589 Mail Service Center

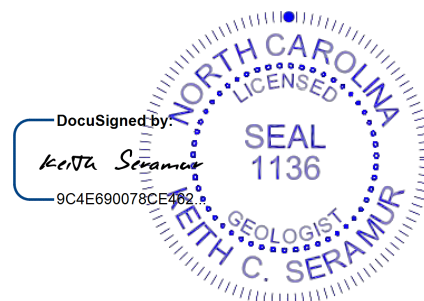
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1.0 Introduction

1.1 General Site Background Information

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

Robert E. & Janice G. Ashley Property
Parcel #: 027
2609 Statesville Road; North Wilkesboro, NC, 28659
PIN #: 3877-86-9815
Facility ID No.: N/A
Groundwater Incident #: N/A

Parcel #027 is located along the eastern side of Statesville Road approximately 600 feet south of the intersection with Speedway Road. The property is located at the top of the southwestern slope of the Fishing Creek stream valley approximately 300 feet west of the stream. Bedrock in the area is mapped as Henderson Gneiss, a biotitic augen gneiss (Rankin, D.W., Espenshade, G.H., Shaw, K.W., and Neumann, R.B.. Geologic map of the west half of the Winston-Salem quadrangle, North Carolina-Virginia, U.S. Geologic Survey Misc. Inv. Series Map I-709-B, 1975).

A Notice to Proceed was obtained on June 25, 2021. Our area of investigation included the proposed Permanent Utility Easement (PUE) and proposed and existing Right-of-Way (R/W) along the eastern side of Statesville Road (Figure 2). The Phase II Site Assessment scope of work included completing a geophysical survey, soil sample collection and laboratory analysis. Geophysical investigations evaluate the potential for underground storage tanks and remnant UST system infrastructure. The purpose of laboratory analysis is to assess soil quality across the easement (Figures 3 and 4). Background research for this project included reviewing historic aerial photographs and NCDEQ databases.

2.0 Scope of Work

2.1 Background Research

According to the Wilkes County Tax Administration records, the property owner is listed as Redmond Real Estate, LLC. Available historic aerial photographs from the USGS EarthExplorer website and Google Earth Pro were reviewed.

The following NCDEQ databases were queried for incidents at Parcel #027:

- Dry Cleaners
- Active USTs
- UST Incident Map
- UST Database
- Hazardous Waste Sites

2.2 Geophysical Surveys

Seramur & Associates used the Pythagorean Theorem to establish one grid within the proposed Right-of-Way (R/W) and Permanent Utility Easement (PUE) along Statesville Road (Figure 5). Geophysical grid data was collected along transects at a two-foot spacing. Many transects ran beyond the established rectangular grid corners in both the GPR and Magnetometer surveys.

The magnetometer data was collected with a GEM Systems GSM-19W Walking Overhauser magnetometer. The data was compiled in Excel spreadsheets and a grayscale contour map of the magnetic data was drafted using Golden Software's Surfer® modeling program. The lighter shades are lower magnetic readings and the darker colors are higher magnetic readings (Figure 6). Ferrous objects in the subsurface have a magnetic field distinct from the surrounding soil and produce magnetic anomalies on the contour maps.

A Ground Penetrating Radar (GPR) survey was completed across the grid and transects 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 and transect 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 and transect data were produced with GPR Slice® software. Three time slices (or depth slices) were imaged in each 3D model at depths of 0.0 to 0.3 feet, 1.4 to 1.7 feet and 2.7 to 3.0 feet (Figures 7 through 9). Each depth slice is a horizontal slice or plan view of the reflections across a 0.3-foot thickness of the subsurface. For example, the deep GPR depth slices show reflections in the radar data between depths of 2.7 and 3.0 feet.

2.3 Soil Sampling and Analyses

On July 15, 2021 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 ~9.0 feet is to test for petroleum releases related to underground storage tanks. Soil borings were drilled within the proposed R/W and PUE along Statesville Road.

A track-mounted Geoprobe rig was used to drill six soil borings. Eleven soil samples in total were collected and six of these samples were analyzed. The texture and type of soil material in the Geoprobe cores was described and recorded. 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 PhoCheck Tiger 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). Table 1 lists the boring data including sample number, depth, PID reading, lithology, and type of soil material.

REDLab, LLC provided onsite laboratory analyses for six of the eleven soil samples collected from the Geoprobe cores. 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 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. The hydrocarbon fingerprint is interpreted by REDLab 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 #027



Photo 1. View of Parcel #027 looking north.



Photo 2. Remains of a post for possible sign or some sort of canopy on the south side of the property.



Photo 3. Possible location of former UST System on the south side of the property.



Photo 4. Vent pipes attached to the Pool & Spa building.

3.0 Results of Investigation

Parcel #027 currently operates as a hair salon. An additional commercial building previously operated as a swimming pool and spa supply store. A 1963 aerial photograph shows that limited development along Statesville Road had occurred and Parcel #027 was an undeveloped lot. The NCDEQ UST Registered Tanks and Underground Storage Tank Incidents databases do not list any records of USTs or previous release incidents at this property.

SAPC personnel made a pedestrian reconnaissance of the property during the initial site visit on June 29, 2021. No evidence of an active UST system was observed on the property. However, three vent pipes attached to the abandoned Pool and Spa building is evidence that there previously was a UST system in the southern portion of the property. A concrete slab appears to lead from the dispenser island on Parcel #026 to a depression in the southeast corner of the R/W and PUE. It appears that this concrete pad extends over product lines leading from a former UST system to Parcel #026.

A review of the Wilkes County Register of Deeds records found that Parcels #026 and #027 were once a single parcel. This parcel was divided in 1984. The NCDEQ Registered Tanks Database indicates that a former UST system at the fuel station at Parcel #026 was installed in 1973 and removed in 1989. This would indicate that the UST system that appears to have been on Parcel #027 would have at least been on the same property as the gas station when it was installed.

3.1 Geophysical Surveys

The contour map of the magnetometer survey data (Figure 6) shows a linear set of negative magnetometer readings near the eastern edge of the grid. These negative magnetometer readings appear to be related to metal bolts in the foundation of the former post. This could have been a sign post or a canopy support.

The shallow GPR depth slice (0.0-0.3 feet) for Grid 1 shows a linear reflection free area along the western edge of the grid. This is an excavation for the sewer line (Figure 7). A curved, linear, reflection-free anomaly originates at the telephone pole of the west side of the property and extends to the east side of the grid. This is most likely the excavation for an electric line. A quasi-rectangular area of low amplitude reflections and an oval-shaped reflection-free area in the southeast corner of the grid could outline the former UST excavation. The former product lines from Parcel #026 extend over to this area of Parcel #027. This is interpreted as the location of the former UST system.

Medium to high amplitude reflections are present in a few areas of the sewer trench along Statesville Road on the intermediate GPR depth slice (1.4-1.7 feet) (Figure 8). Most of the south side of the grid is reflection-free while the north side of the grid shows patterned medium amplitude reflections. This is attributed to different substrate on the north and south sides of the grid.

The deep GPR depth slice (2.7 to 3.0 feet) is very similar to the intermediate depth slice (Figure 9). The south side of the grid is mostly reflection free with medium to high amplitude reflections in the northern portion of the grid. There are two linear low amplitude patterns on this depth slice that are interpreted as utility trenches.

3.2 Soil Borings, Sampling and Laboratory Analysis

The soil at Parcel #027 consists of fill material over residuum (saprolite) (Table 1). The fill material and the residuum are primarily sandy silt and silt loam. Groundwater was not encountered at this site. A soil sample was collected from the shallow and deep portions of the Geoprobe cores at each boring except for boring B-3. There was no recovery in the shallow core at boring B-3. The Geoprobe operator reported that the soil in the upper part of the boring was very soft.

Six borings were drilled and eleven soil samples were collected. The deep soil sample from each boring was analyzed for TPH-GRO and DRO (Table B-3).

Soil borings B-1, B-2, and B-3 were drilled within the proposed R/W on the southwest side of the property. Boring B-5 was drilled in the northern portion of the R/W. Boring B-4 was drilled within the PUE closer to the buildings. Parked cars prevented drilling soil borings adjacent to the existing buildings. Boring B-6 was drilled inside the outline of what appears to be the former UST excavation (Figure 3). Petroleum constituents were not detected above NCDEQ UST Action Levels in any of the soil samples collected at Parcel #027 (Table B-3 and Figure 4).

3.3 Conclusions

Parcel #027 currently operates as a hair salon. The geophysical surveys did not image a UST system but do show reflection patterns indicative of an excavation for a former UST system. A set of vent pipes on the southern building and what appears to be a set of product lines heading towards the dispensers on Parcel #026 indicate a high probability that a UST system was once located in the southeast corner of the PUE. Petroleum constituents were not detected above the UST Action Levels in any soil samples collected at Parcel #027.

4.0 Recommendations

Seramur & Associates does not recommend any further assessment work for Parcel #027. If soil disturbance near the southeast edge of the PUE is required, the old set of product lines may be encountered.

Appendix A

Tables and Figures

Table 1. Soil Boring Data - Parcel #027						
Boring No.	Depth (ft)	Lithology	Soil type	Soil Sample	PID ppm	Comments
B-1	0.0 to 1.0	Sandy silt	Fill	N/A	N/A	
B-1	1.0 to 5.0	Silt loam	Residuum	S-1	0.0	Sample at 3.0 feet.
B-1	5.0 to 10.0	Silt loam	Residuum	S-2	0.0	Sample at 9.0 feet.
B-2	0.0 to 2.5	Sandy silt	Fill	N/A	N/A	
B-2	2.5 to 5.0	Silt loam	Residuum	S-3	0.0	Sample at 3.0 feet.
B-2	5.0 to 10.0	Silt loam	Residuum	S-4	0.0	Sample at 9.0 feet.
B-3	0.0 to 5.0	N/A	N/A	N/A	N/A	No recovery.
B-3	5.0 to 10.0	Silt loam	Residuum	S-5	0.0	Sample at 8.0 feet.
B-4	0.0 to 5.0	Sandy silt	Fill	S-6	0.0	Sample at 3.0 feet.
B-4	5.0 to 10.0	Silt loam	Fill	S-7	0.0	Sample at 8.0 feet.
B-5	0.0 to 5.0	Sandy silt	Fill	S-8	0.0	Sample at 3.0 feet.
B-5	5.0 to 10.0	Sandy silt	Fill	S-9	0.0	Sample at 8.0 feet.
B-6	0.0 to 5.0	Sandy silt	Fill	S-10	0.0	Sample at 3.0 feet.
B-6	5.0 to 10.0	Silt loam	Fill	S-11	0.0	Sample at 8.0 feet. Unconsolidated residuum. Appears to be backfill.

Table B-3: Summary of Soil Sampling Results

Revision Date: 07/15/21

Incident Name: Parcel #027

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/yyyy)	Source Area	Sample Depth (ft BGS)	Incident Phase		
S-2	07/14/21	B-1	9.0	Phase II	<0.5	0.4
S-4	07/14/21	B-2	9.0	Phase II	<0.22	<0.09
S-5	07/14/21	B-3	8.0	Phase II	<0.5	1.0
S-7	07/14/21	B-4	8.0	Phase II	<0.5	1.0
S-9	07/14/21	B-5	8.0	Phase II	<0.5	<0.23
S-11	07/14/21	B-6	8.0	Phase II	<0.5	0.3
NC DEQ Action Level (mg/kg)					50	100

ft. BGS = feet below ground surface
mg/kg = milligrams per kilogram

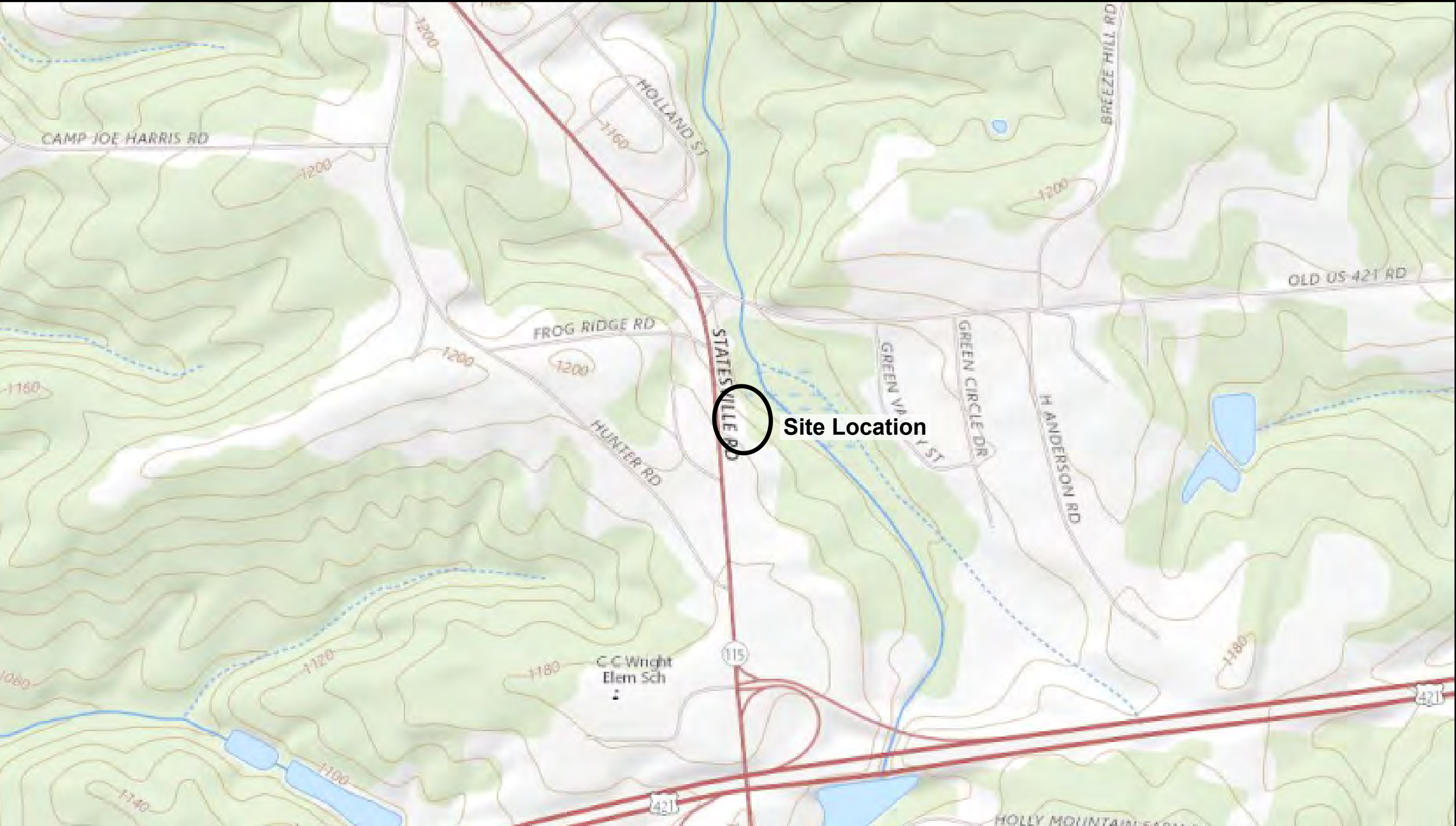
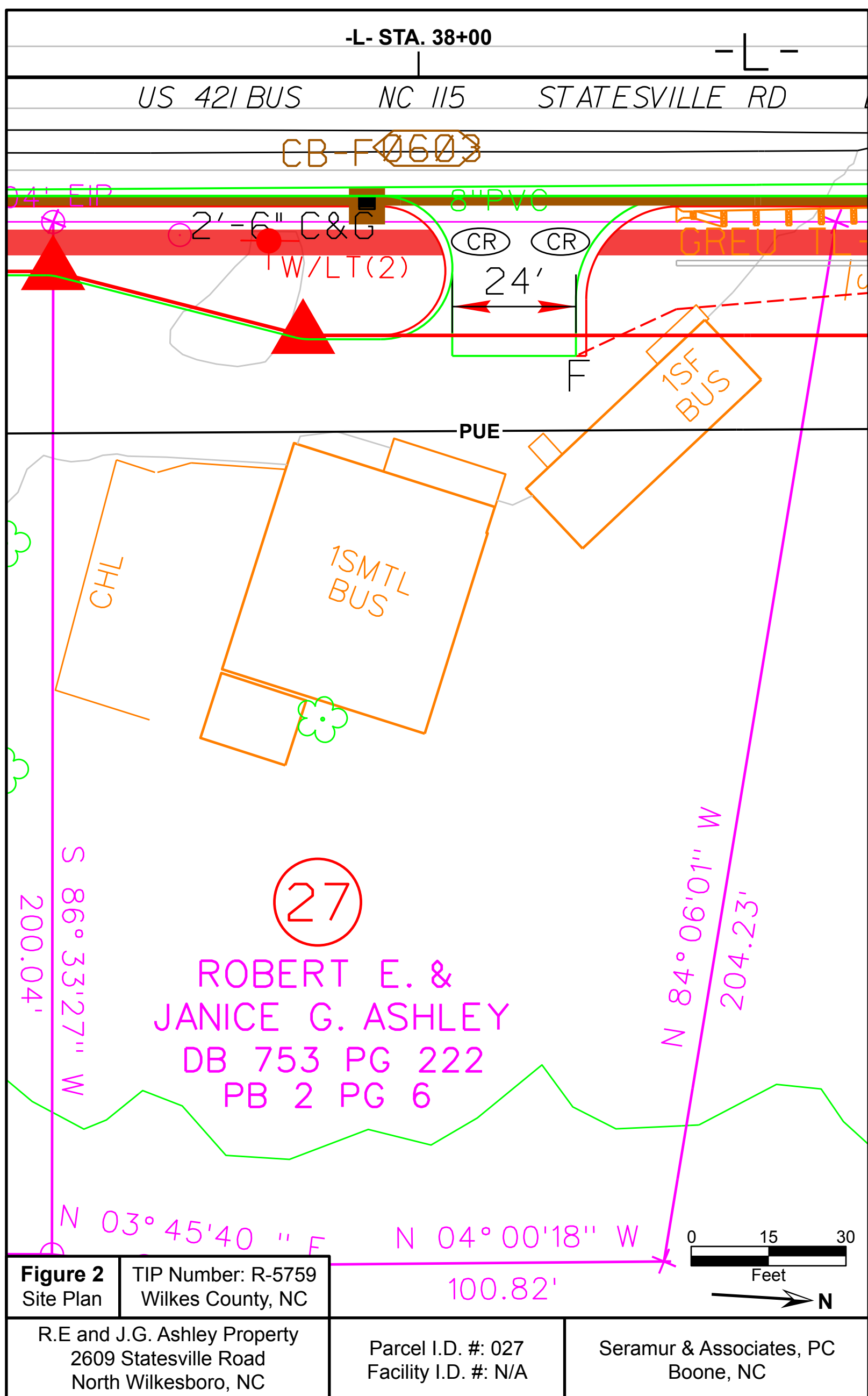


Figure 1 Site Location Map Source: U.S.G.S. The National Map	TIP Number: R-5759 Wilkes County, NC	R.E and J.G. Ashley Property 2609 Statesville Road North Wilkesboro, NC	Parcel I.D. #: 027 Facility I.D. #: N/A	Seramur & Associates, PC Boone, NC	0 400 800 Feet N
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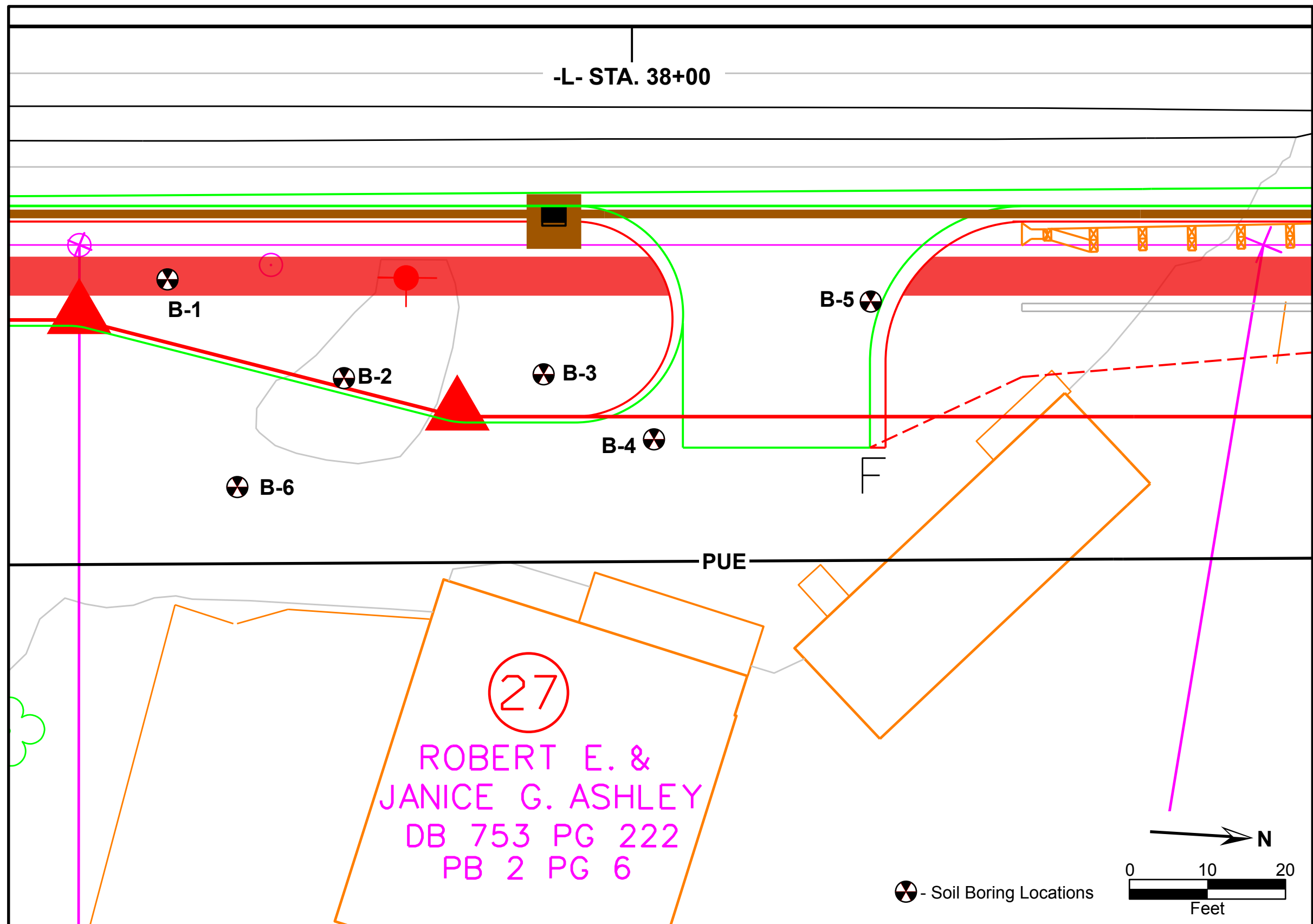
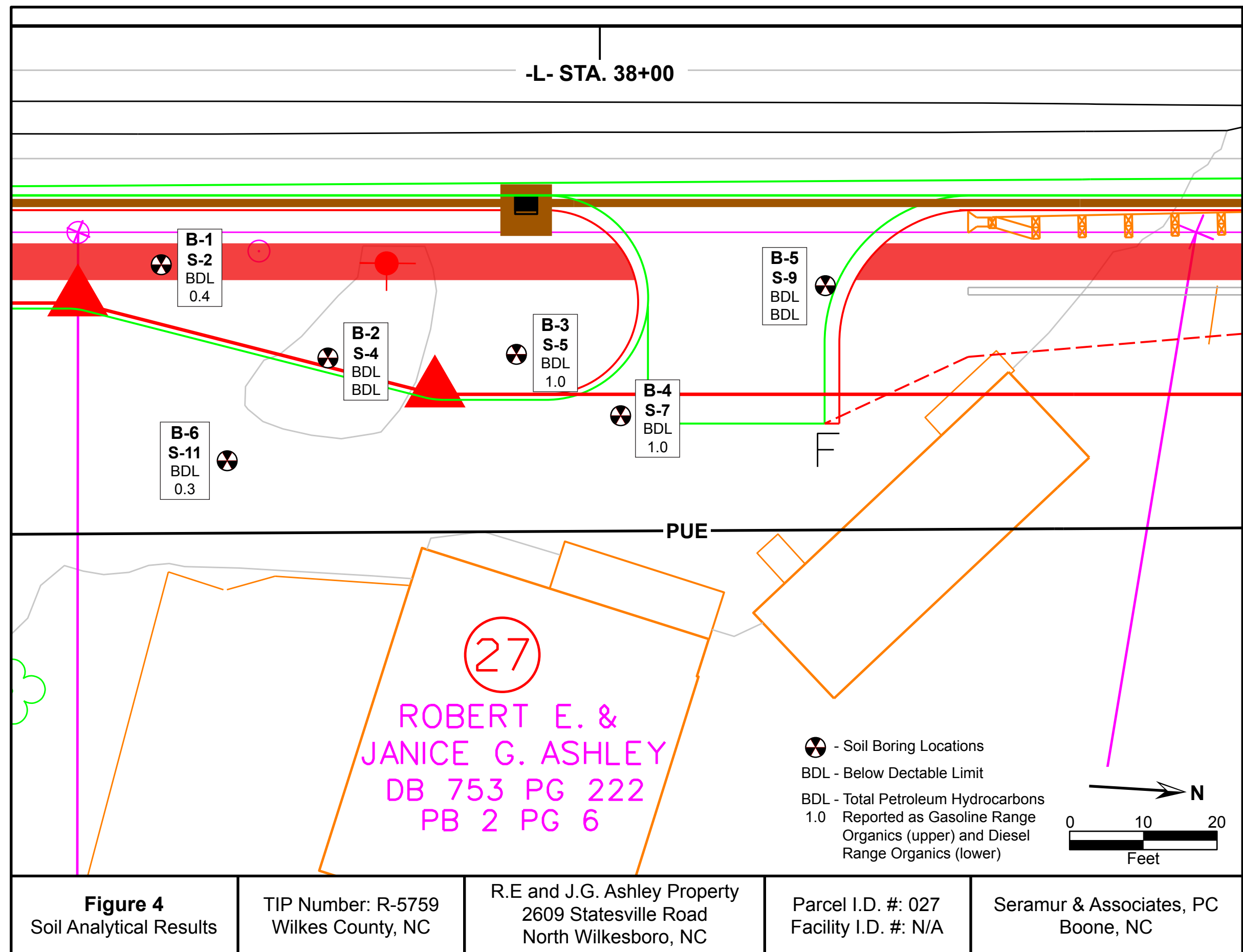
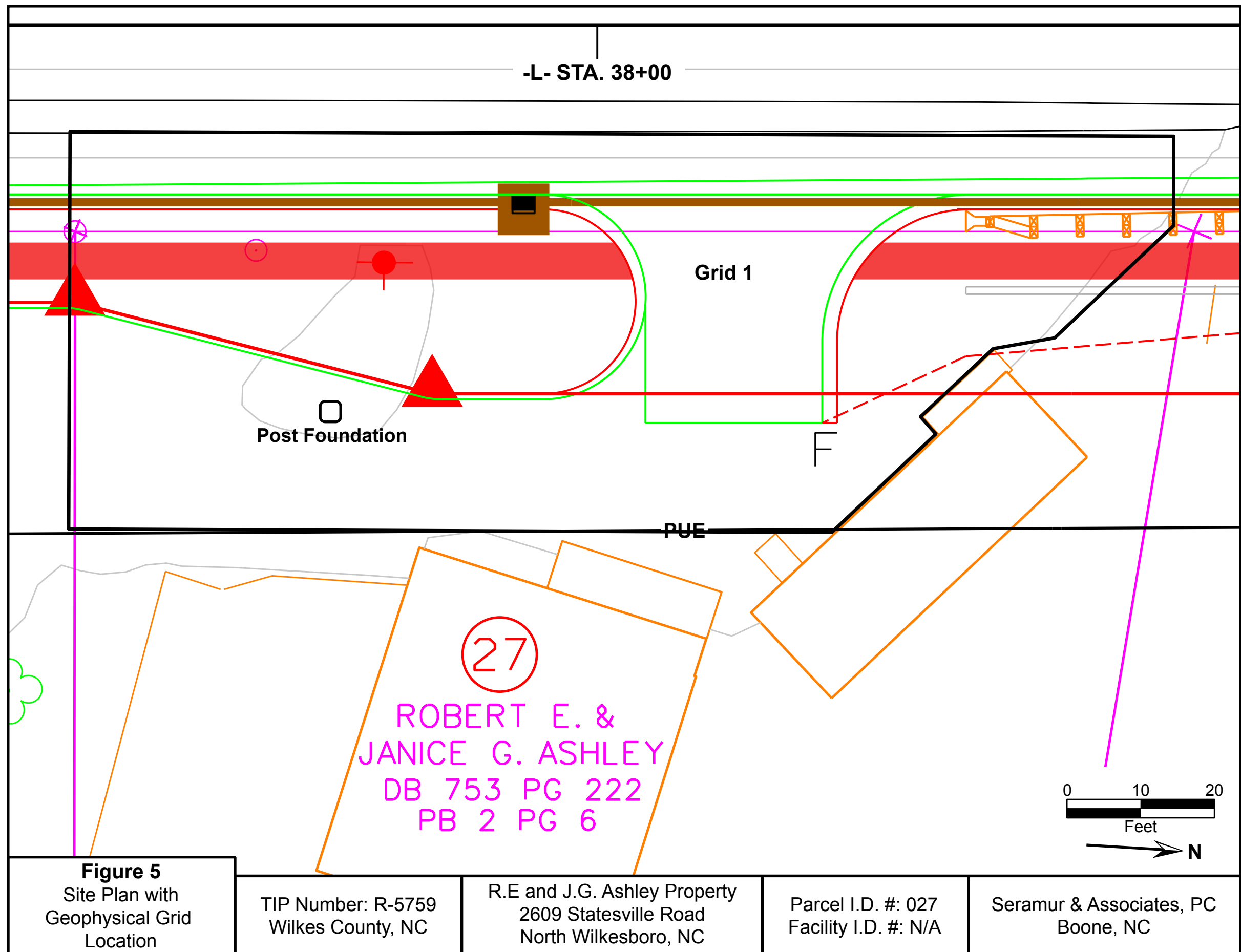
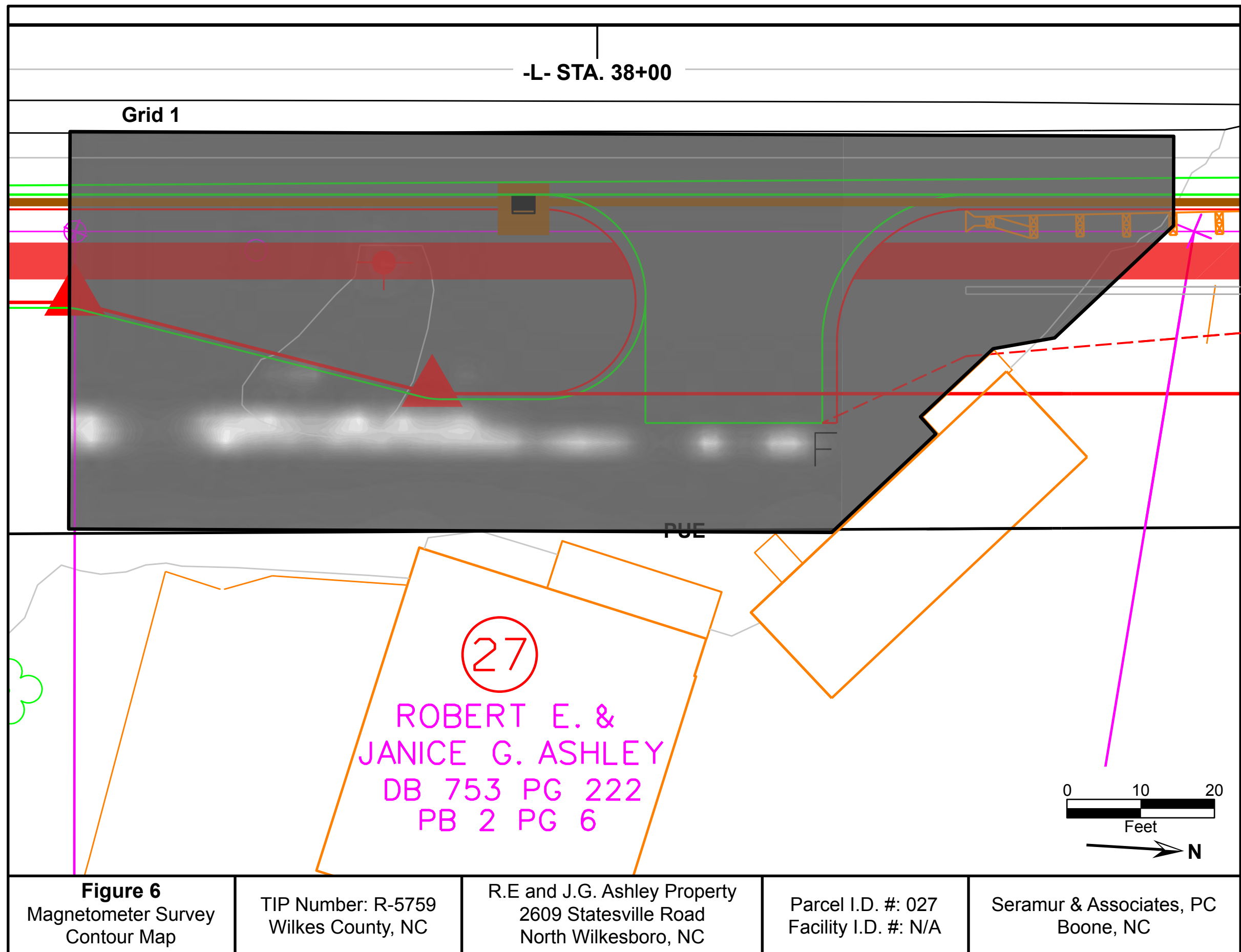
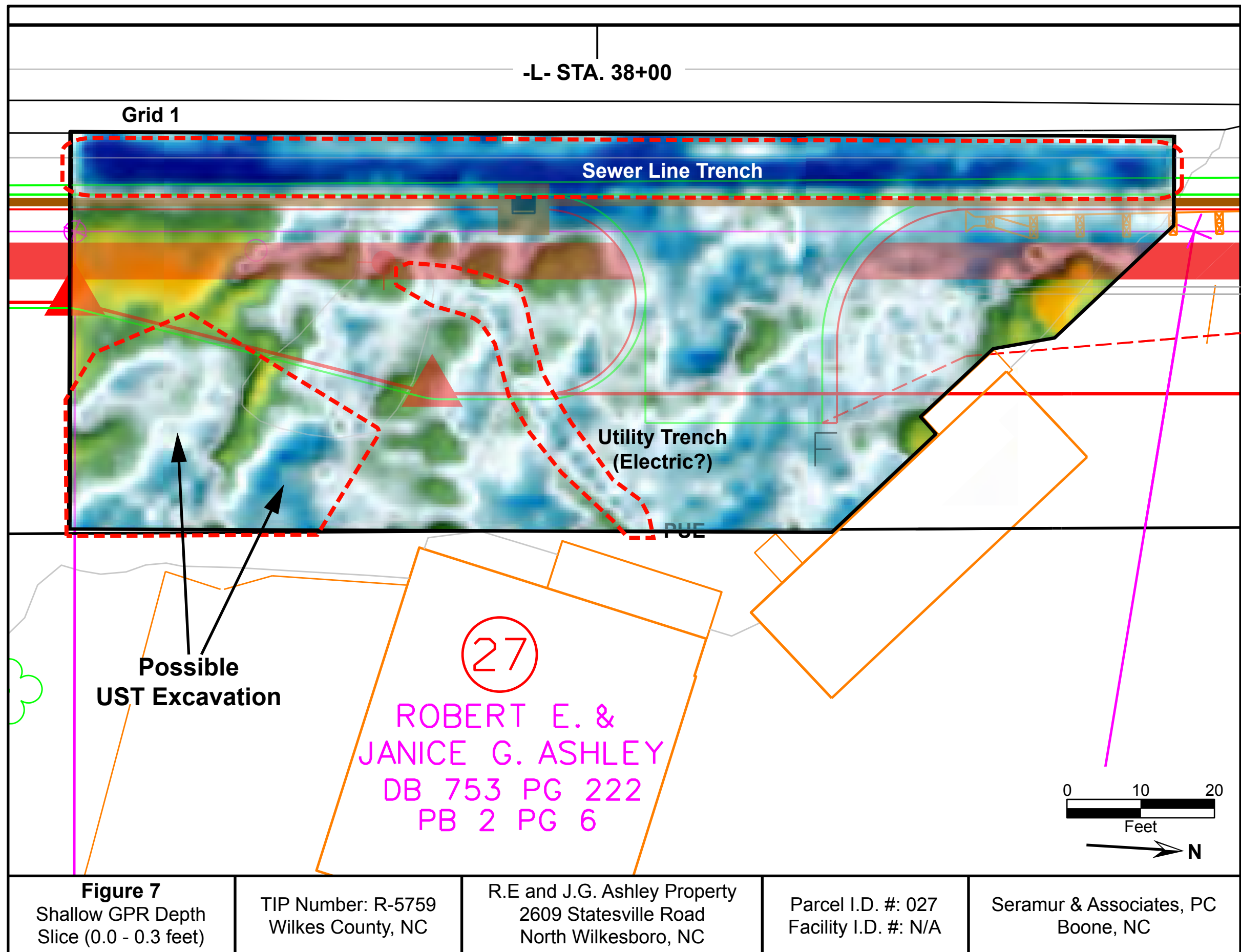


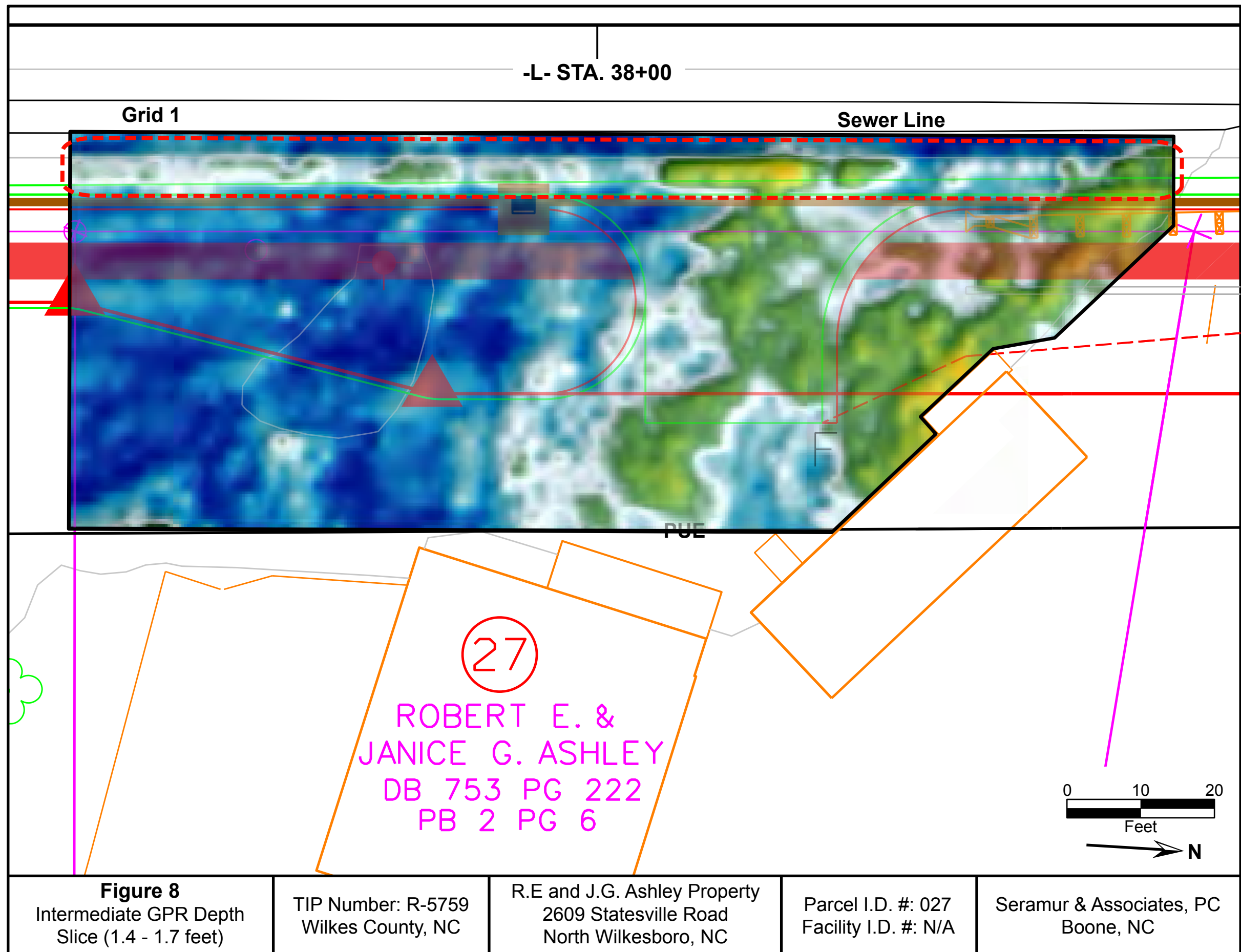
Figure 3 Site Plan with Soil Boring Locations	TIP Number: R-5759 Wilkes County, NC	R.E and J.G. Ashley Property 2609 Statesville Road North Wilkesboro, NC	Parcel I.D. #: 027 Facility I.D. #: N/A	Seramur & Associates, PC Boone, NC
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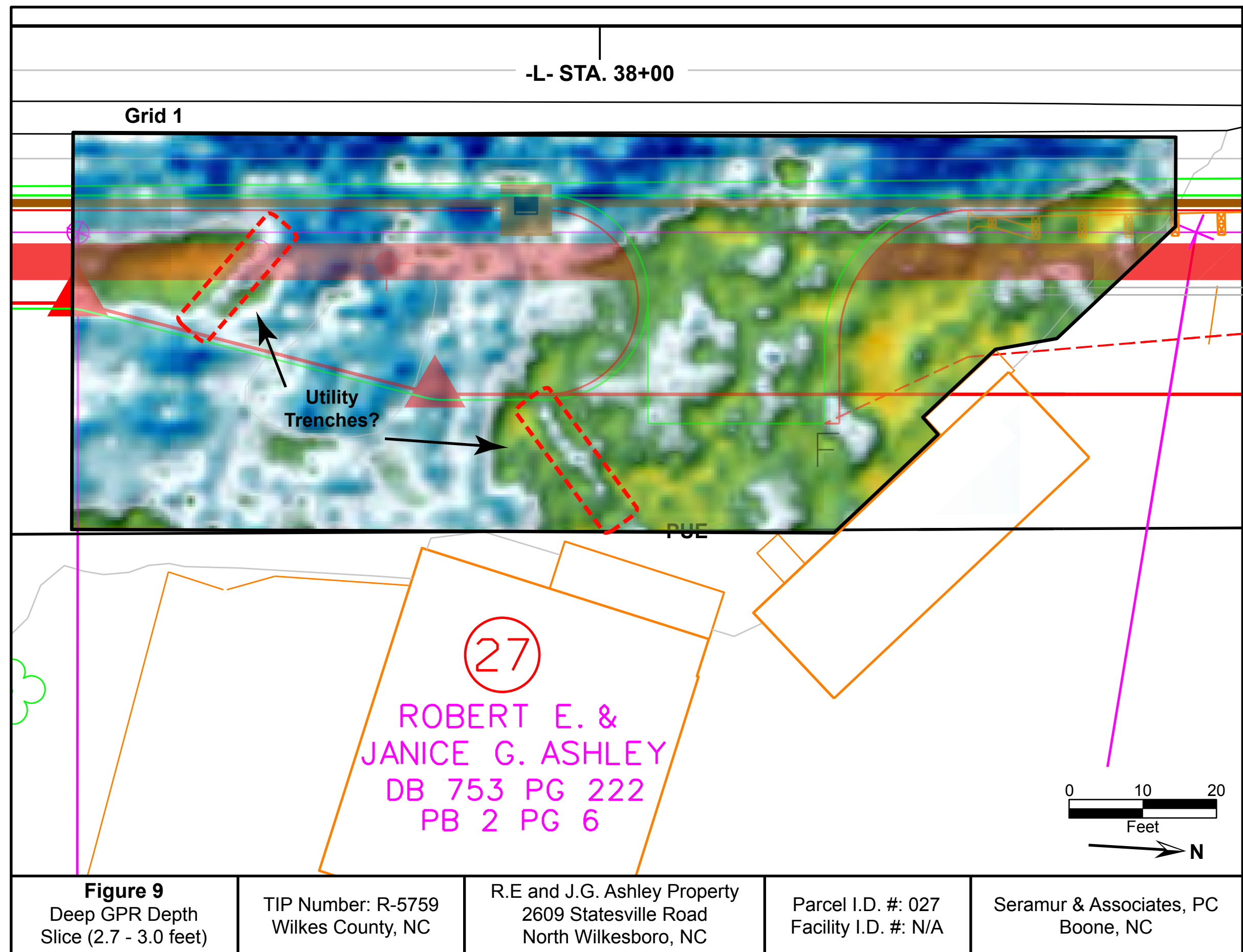












Phase II Site Assessment Report

*Parcel #027, Robert E. & Janice G. Ashley Property, State Project: R-5759
2609 Statesville Road, North Wilkesboro, NC 28659*

August 15, 2021

Appendix B

Laboratory Reports

Hydrocarbon Analysis Results



Client: SERAMUR & ASSOCIATES

Address:



Samples taken

Samples extracted

Samples analysed



Thursday, July 15, 2021

Thursday, July 15, 2021

Thursday, July 15, 2021

Contact: KEITH SERAMUR

Operator

MAX MOYER

Project: NCDOT R-5759 ; PARCEL 27

													T03308
Matrix	Sample ID	Dilution used	BTEX	GRO	DRO	TPH	Total Aromatics	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
			C6-C9	C5-C10	C10-C35	C5-C35	C10-C35			C5:10	C10:C18	C18+	
Soil	S-2	21.0	<0.5	<0.5	0.4	0.4	0.3	0.04	<0.006	0	94.4	5.6	Residual PHC
Soil	S-4	9.0	<0.22	<0.22	<0.09	<0.22	<0.005	<0.005	<0.003	0	100	0	PHC ND,(FCM)
Soil	S-5	23.0	<0.5	<0.5	1	1	0.15	0.011	<0.007	0	92.1	7.9	Deg Fuel 88.1%,(FCM)
Soil	S-7	22.0	<0.5	<0.5	1	1	0.31	0.014	<0.001	0	91.9	8.1	Deg Fuel 89.8%,(FCM)
Soil	S-9	23.0	<0.5	<0.5	<0.23	0.03	0.03	0.002	<0.007	0	100	0	Residual HC
Soil	S-11	20.0	<0.5	<0.5	0.3	0.3	0.3	0.04	<0.006	0	95.4	4.6	Residual PHC
Initial Calibrator QC check			OK			Final FCM QC Check			OK			106.3%	

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

QED Hydrocarbon Fingerprints

Project: NCDOT R-5759 ; PARCEL 27

Thursday, July 15, 2021

