November 5, 2018

Mr. Cyrus Parker, L.G., P.E.
Geotechnical Engineering Unit
State of N.C. Department of Transportation – Division of Highways
P.O. Box 25201
Raleigh, NC 27611-5201

RE: PRELIMINARY SITE ASSESSMENT OF PARCEL 036 – Revision 1
ESP Project No. CS34.366

WBS: 34839.1.8
TIP: U-2579AB
County: Forsyth
Description: Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421
Parcel No.: 036
Owner: NCDOT
Address: 4255 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

DocuSigned by:
Ed Billington
7402544DC92F4EE...

NORTH CAROLINA LICENSED SEAL 1631 GEOLOGIST EDWARD DAVIS BILLINGTON

not considered Final unless all signatures are completed

Edward D. Billington, PG
Senior Geologist/Geophysicist
DMN/EDB/CJW

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421 (Figure 1). The NCDOT requested that ESP Associates, Inc. (ESP) perform a Preliminary Site Assessment (PSA) of Parcel 036 to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil.

2.0 HISTORY

This parcel has been acquired by the NCDOT and is currently occupied by a vacant furniture store. The facility is not listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry. There are no known groundwater or soil contamination incidents associated with this facility.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was occupied by a vacant furniture store (Figure 2). The ground in the study area was covered by asphalt pavement, concrete, and grass.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 21, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 5, 2018. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet (Figure 5).

4.2 Borings

ESP performed direct-push drilling activities within the easement of Parcel 36 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Five borings were drilled, designated B36-1 through B36-5 (Figure 3). The soil borings were advanced using a GeoProbe 7822DT drill rig. Continuous soil samples were obtained to a depth of approximately ten feet using five-foot long Macro Cores®. Soil cores varied in recovery from four to five feet. The sampling

equipment was decontaminated prior to drilling and between borings by the driller using a Liquinox® detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro-Core tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The soil samples had PID readings of less than 10 parts per million (ppm) (Table 1).

Soil samples selected for laboratory analysis were Sample S-9 (corresponding depth of 9.0-9.5 feet) from each of Borings B36-1, B36-2, B36-3, B36-4 and Sample S-7 (7.0-7.5 feet) from Boring B36-5. For each selected sample, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the five borings drilled on the site.

5.0 RESULTS

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). The EM61 differential results indicated four anomalies (response above background) that did not correspond to known site features.

GPR data were collected over the EM61 anomalies. The GPR data collected indicated the presence of one probable UST within the study area under the concrete slab on the west side of the easternmost building (Figure 5). The probable UST is approximately 4 feet diameter by 7 feet

long and buried about 3 feet below the ground surface. We marked a square outline around the probable UST using pink marking paint (Figure 2.d).

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 6 and 7, respectively.

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX and PAHs were below the detection limits for all samples. GRO was detected in 1 of the 5 soil samples tested but below the NCDEQ action level of 50 ppm. DRO was detected in 3 of the 5 soil samples tested but below the NCDEQ action level of 100 ppm. The highest GRO reading was 1.9 ppm in Sample S-9 (9.0-9.5 feet) from Boring B36-2. The highest DRO reading was 5.2 ppm in Sample S-9 (9.0-9.5 feet) from Boring B36-2.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 036 of NCDOT Project U-2579AB indicate the presence of one abandoned UST. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected within the study area on Parcel 036.

6.2 Geophysics

The geophysical data indicate the location of one probable UST within the parcel. The probable UST is located under the concrete slab west of the existing building and is approximately 600 gallons in size and buried about 3 feet below the ground surface.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the study area on Parcel 036 (Figure 8).

7.0 RECOMMENDATIONS

ESP recommends that the probable UST be closed by removal and that a UST Closure Report be submitted to NCDEQ. Other than the UST closure, no limitations on construction activities or special handling of excavated soil are recommended for Parcel 036.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

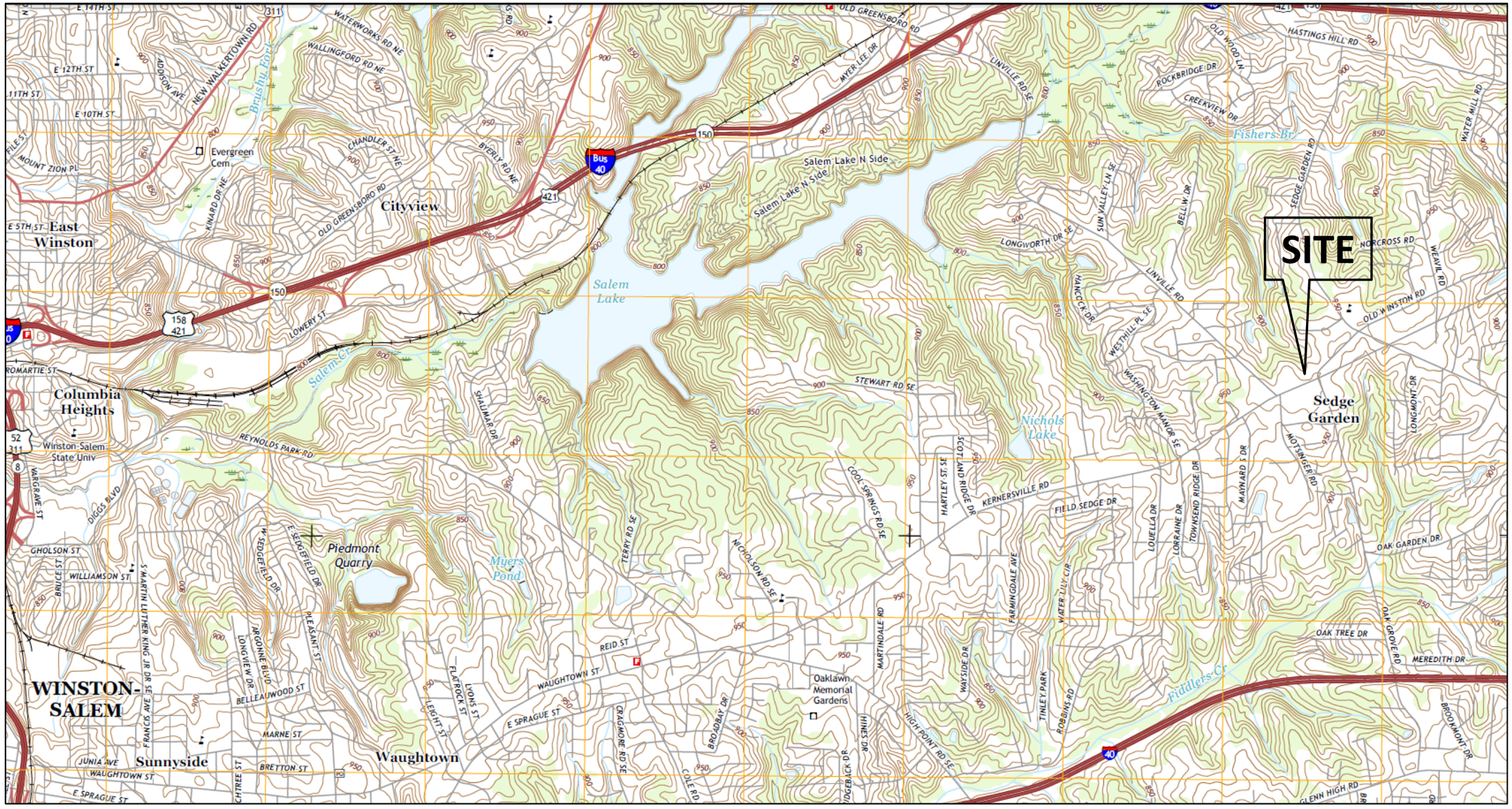
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B36-1	none	2.7 (9.0-9.5)
B36-2	none	4.6 (3.0-3.5)
B36-3	none	4.5 (5.0-5.5)
B36-4	none	4.5 (3.0-3.5)
B36-5	none	3.2 (5.0-5.5)

TABLE 2
SOIL SAMPLE UVF RESULTS SUMMARY

Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B36-1	S-9 (9.0-9.5)	9/10/18	<0.57	<0.57	<0.57	<0.18
B36-2	S-9 (9.0-9.5)	9/10/18	<0.88	1.9	5.2	<0.28
B36-3	S-9 (9.0-9.5)	9/10/18	<1.2	<1.2	2.5	<0.38
B36-4	S-9 (9.0-9.5)	9/10/18	<0.55	<0.55	0.75	<0.18
B36-5	S-7 (7.0-7.5)	9/10/18	<0.56	<0.56	<0.56	<0.18

FIGURES



From: USGS US Topo 7.5 - minute map for WINSTON-SALEM EAST, NC Date: 2016, Scale: 1:24,000

PROJECT NO. CS34.366	***FIGURE 1 – PARCEL 036, NCDOT***
SCALE AS SHOWN	***SITE VICINITY MAP***
DATE 11/6/18	***U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION***
BY DMN	***(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421***
	FORSYTH COUNTY, NORTH CAROLINA

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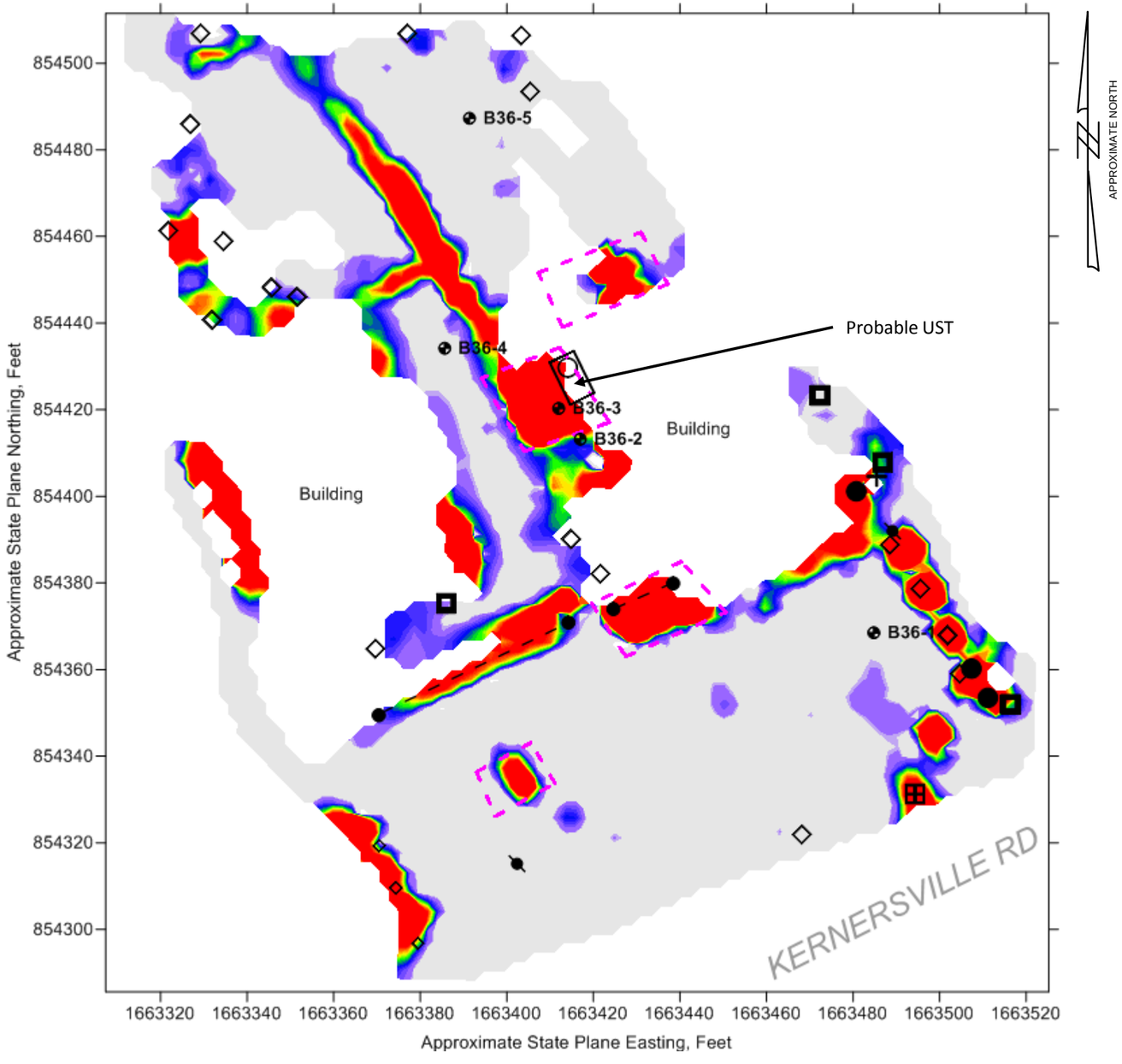
a. Photo from northeast side of site looking southwest.

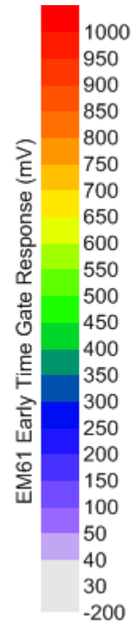
b. Photo from southwest side of site looking northeast.

c. Photo from south central side of site looking north.

d. Photo of marked probable UST.

PROJECT NO. CS34.366 SCALE AS SHOWN DATE 11/6/18 BY DMN	***FIGURE 2 – PARCEL 036, NCDOT SITE PHOTOGRAPHS*** ***U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA***	ESP 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Existing UST fill port
- EM61 Data Collection Areas
- GPR Data Collection Areas
- UST — Approximate location of probable UST
- Approximate soil boring location

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 3 – PARCEL 036, NCDOT
EM61 EARLY TIME GATE RESPONSE

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
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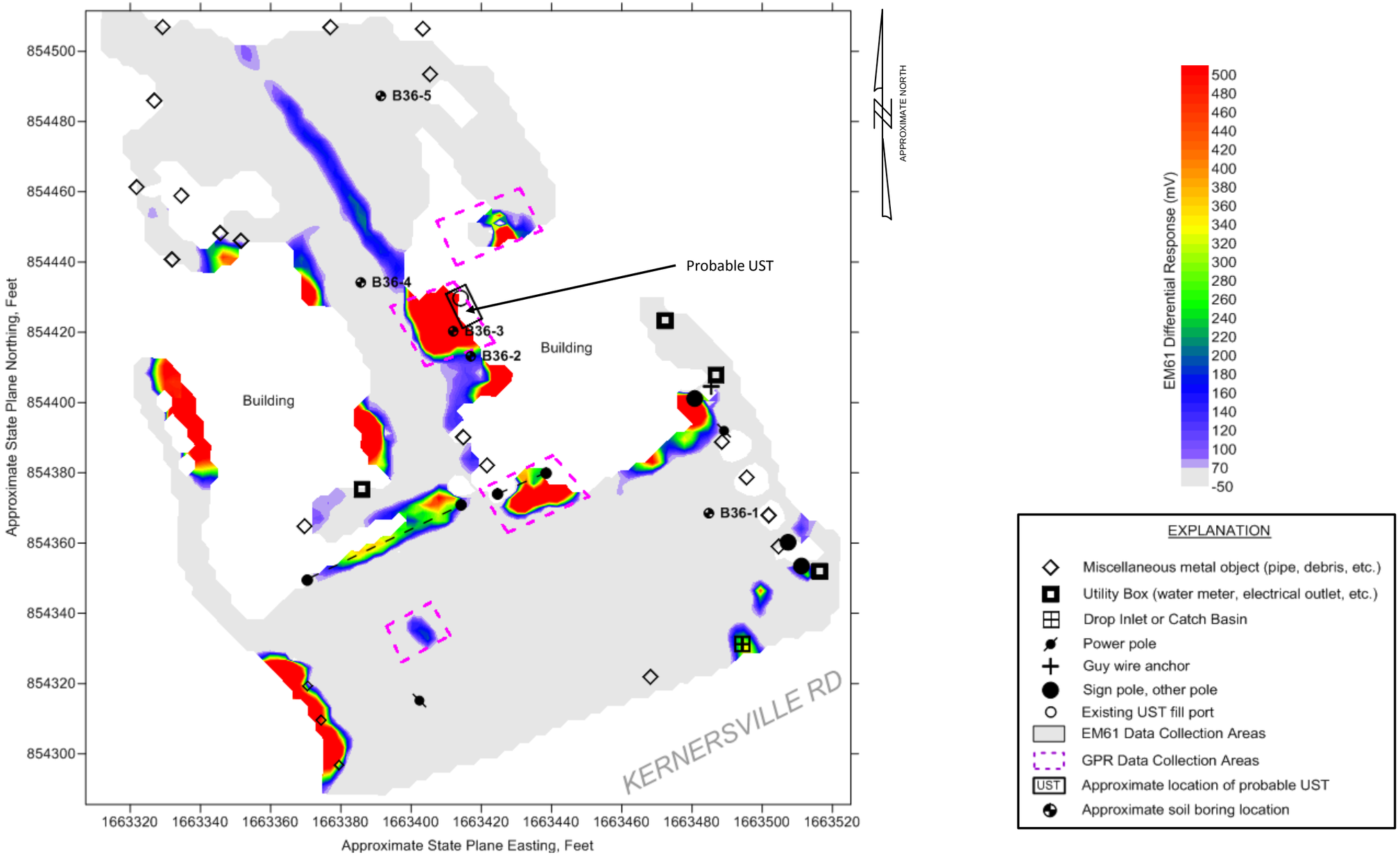

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

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FIGURE 4 – PARCEL 036, NCDOT
EM61 DIFFERENTIAL RESPONSE

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
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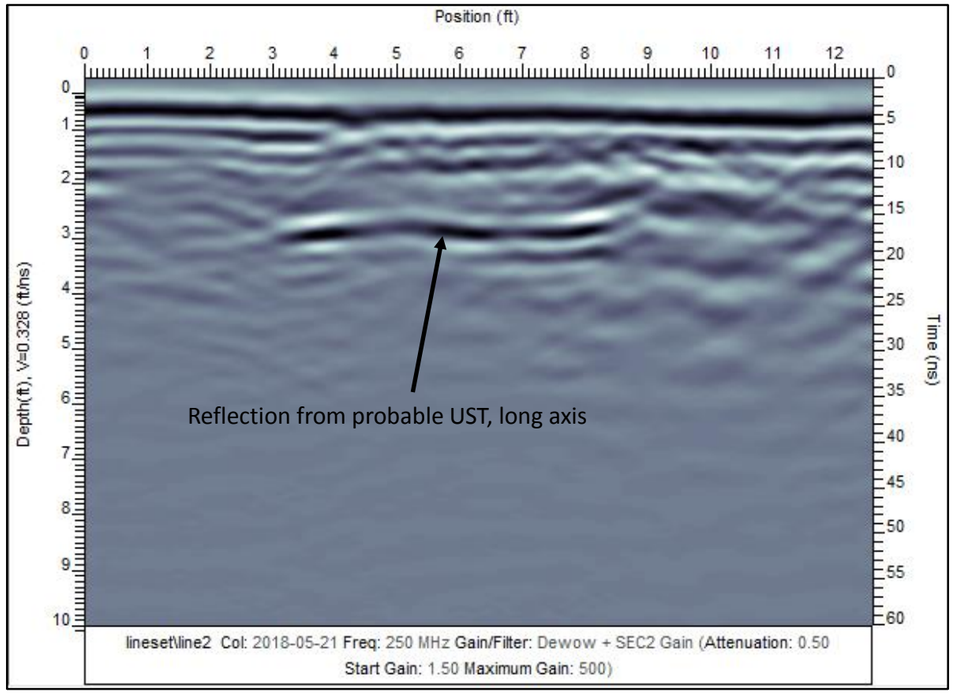
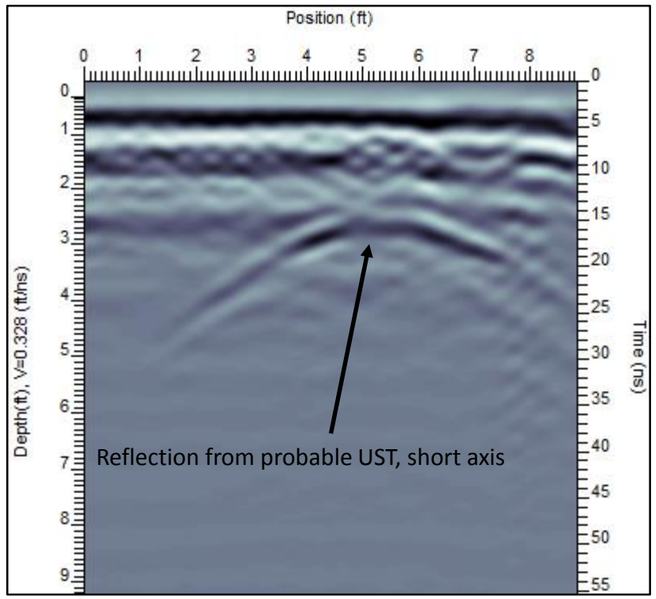
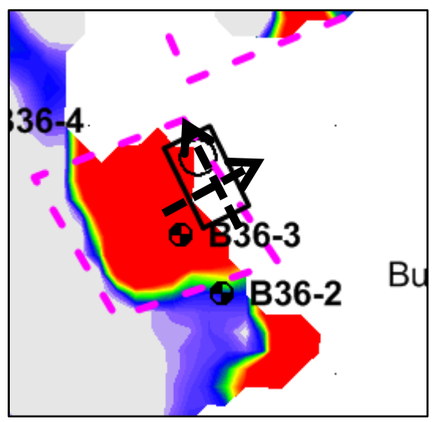
APPROXIMATE NORTHWEST



APPROXIMATE NORTHEAST

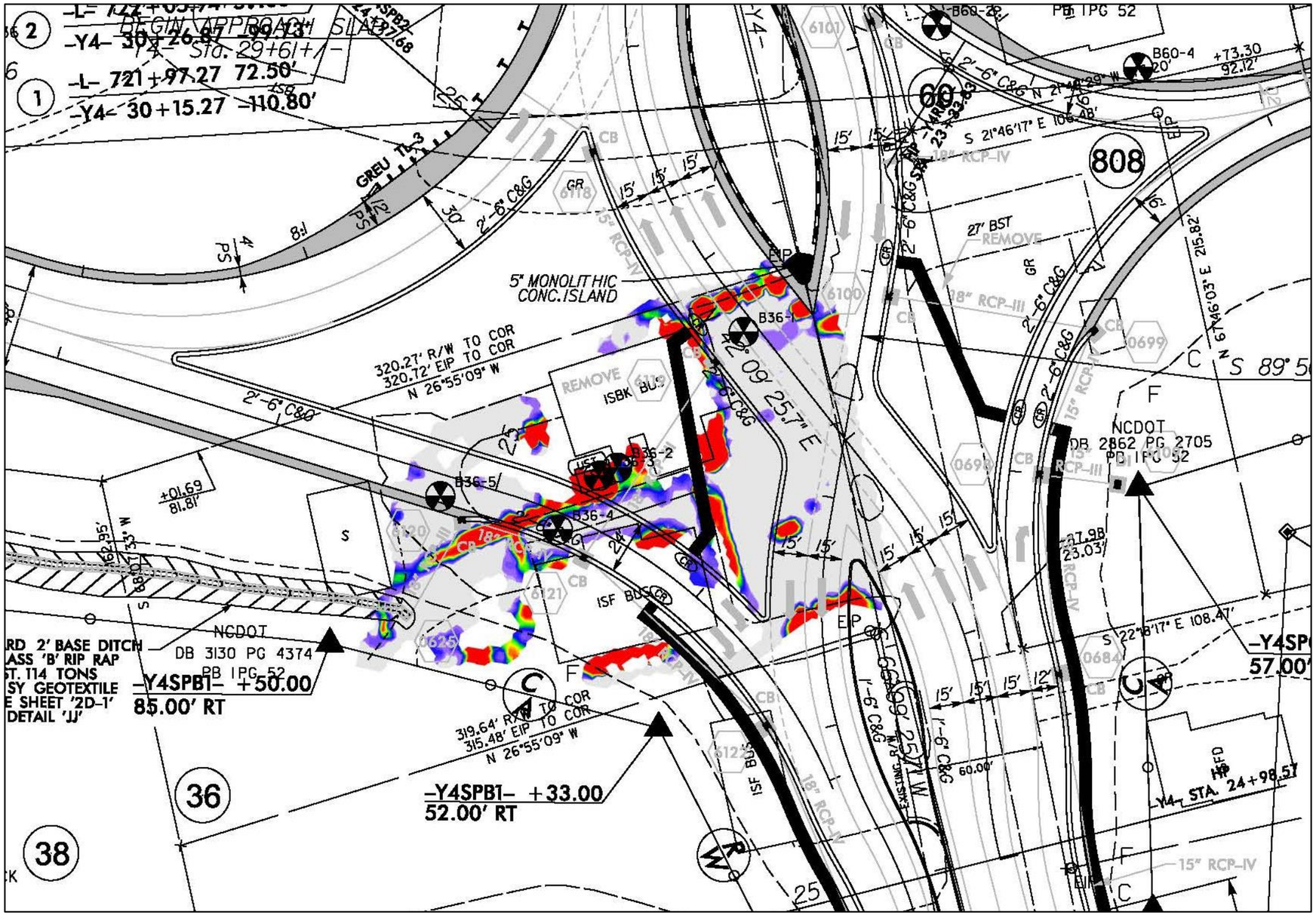


A. GPR images from SE to NW and SW to NE across probable UST.



B. Portion of Figure 3 showing approximate locations of GPR cross-sections (dashed black lines with arrows).

PROJECT NO. CS34.366 SCALE AS SHOWN DATE 11/6/18 BY DMN	***FIGURE 5 – PARCEL 036, NCDOT GPR IMAGES OF PROBABLE UST*** ***U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA***	ESP 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
  - SS, u2579ab_rdy_ss.dgn
  - ROW, u2579ab_rdy_row.dgn
  - ..\..\FinalSurvey\U2579AB_ncdot_fs.dgn
  - U2579AB_hyd_dm.dgn

See Figure 9 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 6 – PARCEL 036, NCDOT
EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
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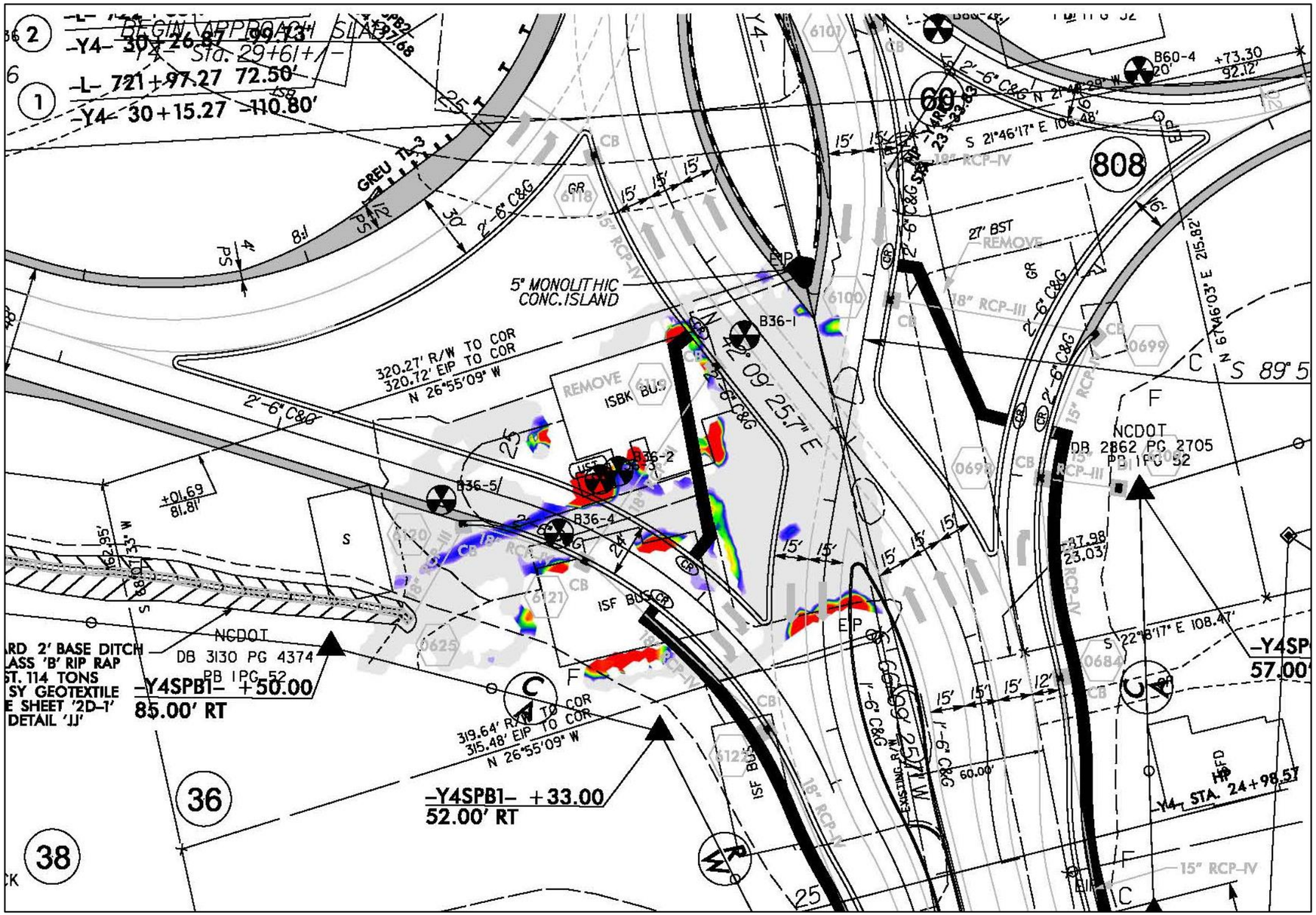

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
  - SS, u2579ab_rdy_ss.dgn
  - ROW, u2579ab_rdy_row.dgn
  - ..\..\FinalSurvey\U2579AB_ncdot_fs.dgn
  - U2579AB_hyd_dm.dgn

See Figure 9 for explanation of symbols and line types

PROJECT NO. CS34.366	***FIGURE 7– PARCEL 036, NCDOT EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET***
SCALE AS SHOWN	
DATE 11/6/18	***U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA***
BY DMN	

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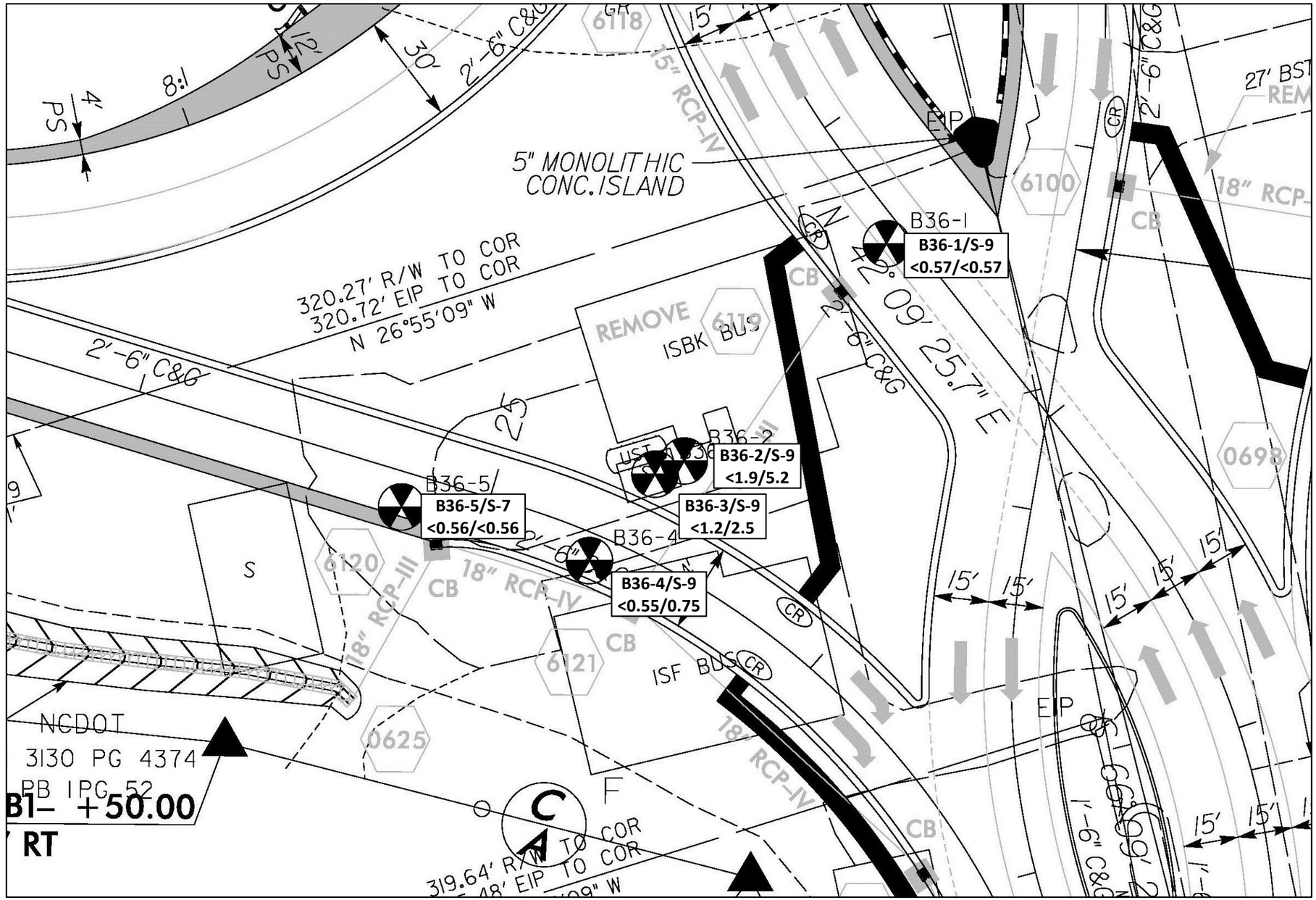

Explanation

Maximum Analytical Results per Boring

B36-1/S-9
<0.57/<0.57

Boring No./Sample No.
GRO/DRO (mg/kg, ppm)

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
  - SS, u2579ab_rdy_ss.dgn
  - ROW, u2579ab_rdy_row.dgn
  - ..\..\FinalSurvey\U2579AB_ncdot_fs.dgn
  - U2579AB_hyd_dm.dgn

See Figure 9 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	1" = 30'
DATE	11/6/18
BY	DMN

FIGURE 7 – PARCEL 036, NCDOT SOIL ANALYTICAL RESULTS ON PLAN SHEET

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

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04/26/15

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

PROJECT REFERENCE NO. | SHEET NO.

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (Lat)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line (E)
- Proposed Temporary Construction Easement (E)
- Proposed Temporary Drainage Easement (TDE)
- Proposed Permanent Drainage Easement (PDE)
- Proposed Permanent Drainage / Utility Easement (DUE)
- Proposed Permanent Utility Easement (PUE)
- Proposed Temporary Utility Easement (TUE)
- Proposed Aerial Utility Easement (AUE)
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*)
- U/G Power Line LOS C (S.U.E.*)
- U/G Power Line LOS D (S.U.E.*)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Cable LOS B (S.U.E.*)
- U/G Telephone Cable LOS C (S.U.E.*)
- U/G Telephone Cable LOS D (S.U.E.*)
- U/G Telephone Conduit LOS B (S.U.E.*)
- U/G Telephone Conduit LOS C (S.U.E.*)
- U/G Telephone Conduit LOS D (S.U.E.*)
- U/G Fiber Optics Cable LOS B (S.U.E.*)
- U/G Fiber Optics Cable LOS C (S.U.E.*)
- U/G Fiber Optics Cable LOS D (S.U.E.*)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (H)
- U/G TV Cable LOS B (S.U.E.*)
- U/G TV Cable LOS C (S.U.E.*)
- U/G TV Cable LOS D (S.U.E.*)
- U/G Fiber Optic Cable LOS B (S.U.E.*)
- U/G Fiber Optic Cable LOS C (S.U.E.*)
- U/G Fiber Optic Cable LOS D (S.U.E.*)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*)
- U/G Gas Line LOS C (S.U.E.*)
- U/G Gas Line LOS D (S.U.E.*)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*)
- SS Forced Main Line LOS C (S.U.E.*)
- SS Forced Main Line LOS D (S.U.E.*)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (Unk)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

PROJECT NO.	CS34.366
SCALE	N/A
DATE	11/6/18
BY	DMN

FIGURE 8
LEGEND FOR PLAN SHEET FIGURES

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
FORSYTH COUNTY, NORTH CAROLINA

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APPENDIX A
SOIL BORING LOGS

FIELD BORING LOG

BORING NO. B36-1

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366
LOCATION: Front parking lot area
TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 10.0 ft
DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft
DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 4.0'/5.0'
				0.5-8.1 Red-brown sandy, silty clay	
1	S-1	1.0-1.5	1.5		
2	S-2	2.0-2.5	2.3		
3	S-3	3.0-3.5	2.1		
4	S-4	No Rec	N/A		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	2.3		
6	S-6	6.0-6.5	2.0		
7	S-7	7.0-7.5	1.7		
8	S-8	8.0-8.5	2.1		
				8.1-10.0 Orange-red clayey silt	
9	S-9	9.0-9.5	2.7		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B36-2

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366
LOCATION: Near UST
TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 10.0 ft
DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft
DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.3 Asphalt	Core 1 Rec 5.0'/5.0'
				0.3-2.0 Brown sandy, clayey, silt	
1	S-1	1.0-1.5	2.3		
2	S-2	2.0-2.5	4.4	2.0-8.8 Orange-red silty clay	
3	S-3	3.0-3.5	4.6		
4	S-4	4.0-4.5	3.7		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	3.5		
6	S-6	6.0-6.5	2.3		
7	S-7	7.0-7.5	4.1		
8	S-8	8.0-8.5	2.6		
				8.8-10.0 Orange-brown sandy, clayey silt	
9	S-9	9.0-9.5	2.5		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B36-3

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366

LOCATION: Near UST

TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Concrete	Core 1 Rec 4.0'/5.0'
				0.5-9.0 Orange-brown sandy, clayey silt	
1	S-1	1.0-1.5	3.1		
2	S-2	2.0-2.5	4.0		
3	S-3	3.0-3.5	2.9		
4	S-4	No Rec	N/A		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	4.5		
6	S-6	6.0-6.5	3.7		
7	S-7	7.0-7.5	3.9		
8	S-8	8.0-8.5	2.8		
9	S-9	9.0-9.5	3.2	9.0-10.0 Orange-brown sandy silt	
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B36-4

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366

LOCATION: Behind building

TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 5.0'/5.0'
				0.5-5.5 Orange-brown to tan clayey, sandy silt	
1	S-1	1.0-1.5	4.1		
2	S-2	2.0-2.5	3.1		
3	S-3	3.0-3.5	4.5		
4	S-4	4.0-4.5	2.2		Core 2 Rec 4.5'/5.0'
5	S-5	5.0-5.5	2.3	5.5-9.0 Orange to tan silty sand	
6	S-6	6.0-6.5	3.6		
7	S-7	7.0-7.5	2.4		
8	S-8	8.0-8.5	3.3		
9	S-9	9.0-9.5	3.6	9.0-9.5 Gray silty sand	
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B36-5

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366
LOCATION: Behind building
TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 8.0 ft
DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft
DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.4 Asphalt	Core 1 Rec 3.5'/5.0'
				0.4-8.0 Orange-tan to white silty sand	
1	S-1	1.0-1.5	2.7		
2	S-2	2.0-2.5	1.6		
3	S-3	3.0-3.5	1.9		
4	S-4	No Rec	N/A		Core 2 Rec 3.0'/5.0'
5	S-5	5.0-5.5	3.2		
6	S-6	6.0-6.5	2.1		
7	S-7	7.0-7.5	1.1		Refusal at 8.0'
8					
9					
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

APPENDIX B

RED LAB LABORATORY TESTING REPORT

QED

AQROS

Hydrocarbon Analysis Results

Client: ESP ASSOCIATES, INC.
Address: 7011 ALBERT PICK ROAD
SUITE E
GREENSBORO NC 27409

Contact: DILLON NANCE

Project: U-2579 AB

Samples taken Monday, September 10, 2018
Samples extracted Monday, September 10, 2018
Samples analysed Wednesday, September 12, 2018

Operator NICK HENDRIX

U00904

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	
s	B54-1 (S-9)	20.3	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected
s	B54-2 (S-8)	18.2	<0.45	<0.45	1.3	1.3	1.2	<0.15	<0.018	0	62.8	37.2	V.Deg.PHC 71.2%,(FCM),(BO)
s	B54-3 (S-9)	32.9	<0.82	<0.82	10	10	5.1	<0.26	<0.033	9.9	71.1	19	Deg.PHC 73.6%,(FCM)
s	B54-4 (S-7)	25.5	<0.64	<0.64	<0.64	<0.64	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	B54-5 (S-9)	11.6	<0.29	<0.29	<0.29	<0.29	<0.06	<0.09	<0.012	0	0	0	,(FCM)
s	B36-5 (S-7)	22.2	<0.56	<0.56	<0.56	<0.56	<0.11	<0.18	<0.022	0	73.3	26.7	Residual HC,(BO),(P)
s	B36-4 (S-9)	21.9	<0.55	<0.55	0.75	0.75	0.72	<0.18	<0.022	0	74.1	25.9	Residual HC,(BO),(P)
s	B36-3 (S-9)	47.2	<1.2	<1.2	2.5	2.5	<0.24	<0.38	<0.047	0	100	0	Deg.Diesel 45.3%,(FCM)
s	B36-2 (S-9)	35.0	<0.88	1.9	5.2	7.1	3	<0.28	<0.035	49.8	43.9	6.2	Deg.Fuel 74.3%,(FCM)
s	B36-1 (S-9)	23.0	<0.57	<0.57	<0.57	<0.57	<0.11	<0.18	<0.023	0	27.9	72.1	Residual HC,(BO)

Initial Calibrator QC check OK Final FCM QC Check OK 101.1 %

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

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

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

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

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name:	ESP Associates, Inc
Address:	7011 Albert Pick Rd. Ste E Greensboro, NC 27409
Contact:	Dillon Nance
Project Ref.:	U-2579AB
Email:	d.nance@espassociates.com
Phone #:	336-404-3117
Collected by:	D. Nance

REDLAB™

RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
9/10/18		✓	S	B36-5 S-7	✓		50.5	44.2	6.3
				B36-4 S-9			50.5	44.1	6.4
				B36-3 S-9			53.0	44.1	8.9
				B36-2 S-9			48.4	44.0	4.4
				B36-1 S-9			50.4	44.3	6.1
				B60-4 S-18			51.2	44.3	6.9
				B60-3 S-7			51.7	44.4	7.3
				B60-2 S-8			49.6	44.3	5.3
				B60-1 S-10			51.2	44.5	6.7
				B50-5 S-8			50.5	44.3	6.2
				B50-4 S-10			49.3	44.0	5.3
				B50-3 S-9			46.6	44.0	2.6
				B50-2 S-9			50.7	44.2	6.5
				B50-1 S-9			49.9	43.9	6.0
				B51-5 S-9			49.5	44.0	5.5
				B51-4 S-9			50.3	44.0	6.3
				B51-3 S-9			47.1	44.3	2.8
				B61-2 S-9			48.2	44.2	4.0
				B51-1 S-9			53.7	44.0	9.7

Comments: *most samples underweight. Soil matrix representation affected - data results largely unaffected. DH 9/12

Relinquished by	Date/Time	Accepted by	Date/Time
D. Nance	9/10/18 16:00	NF	9/11 11:20
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

(1a)

May 28, 2019
June 9, 2019 Revision

Mr. Gordon Box, LG
Geotechnical Engineering Unit
North Carolina Department of Transportation
1020 Birch Ridge Drive
Raleigh, NC 27610

RE: **PHASE II ENVIRONMENTAL ASSESSMENT OF PARCEL 39**
4240 Kernersville Road, Kernersville, NC
Harrell, Paul E; Harrell, Margaret
ESP Project No. GR22.313

TIP No.: U-2579AB
WBS N0.: 34839.1.8
County: Forsyth
Description: Winston-Salem - Northern Beltway Eastern Section (Future I-74) from I-40 to I-40 Business/US 421

Dear Mr. Box:

ESP Associates, Inc. (ESP) is pleased to submit this report on our Phase II Environmental Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 1, 2019 and our Cost Proposal dated April 15, 2019.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

DocuSigned by:
Edward D. Billington
7402544DC02F4EC...

NORTH CAROLINA LICENSED SEAL 1631 GEOLOGIST EDWARD DAVIS BILLINGTON

Edward D. Billington, PG
Senior Geologist/Geophysicist
EDB/NAZ

not considered Final unless all signatures are completed

7011 Albert Pick Road, Suite E, Greensboro, NC 27409
1.800.960.7317 · NC: 336.334.7724
www.espassociates.com

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APPENDICES

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem - Northern Beltway Eastern Section (Future I-74) from I-40 to I-40 Business/US 421 (Figure 1). The NCDOT requested that ESP Associates, Inc. (ESP) perform a Phase II Environmental Assessment of the proposed Right of Way (ROW)/easement of Parcel 39 to locate possible underground storage tanks (USTs), sample soil, and delineate potentially contaminated soil.

2.0 HISTORY

Parcel 39 is owned by Paul E. Harrell and Margaret Harrell and includes a commercial building that reportedly was formerly a gasoline service station and a residential building. Our online search of NCDEQ records did not indicate any registered USTs or groundwater incidents for this site.

3.0 SITE OBSERVATIONS

During our April and May 2019 field work, the site included a commercial building and an occupied residence (Figure 2). The commercial building was divided into three businesses; the center business was operating as a consignment store and the other two businesses were vacant. Mr. Harrell stated that a former grease pit was present in the western business but he filled it in when he purchased the property. He had no knowledge of any USTs related to the business. The ground in the study area was covered by an asphalt parking lot, concrete sidewalks, and grassy areas. A possible vent pipe was observed at the rear of the residence.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on April 17, 18 and 23, 2019. We performed direct-push drilling and sampling of subsurface soils within the proposed ROW/easement on May 2, 2019. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet. Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies and reinforced concrete areas using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet.

4.2 Borings

ESP performed direct-push drilling activities within the proposed ROW/easement of Parcel 39 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Five borings were drilled within

the proposed ROW/easement of the parcel on May 2, 2019 using direct-push drilling and hand-augering (B39-1 through B39-5, Figure 8). The soil borings were advanced using a GeoProbe 54DT direct-push rig. Continuous soil samples were obtained to a depth of approximately ten feet using four-foot long Macro-Core® tubes. Soil cores had a recovery of 2.0 to 4.0 feet. Due to the presence of nearby buried utilities, a hand auger was used for the first 3 to 4 feet of B39-5. The sampling equipment was decontaminated prior to drilling and between borings by the driller using a Liquinox® detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro-Core tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The PID readings were less than 10 parts per million (ppm) for each soil sample.

For samples selected for laboratory analysis, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the 5 borings drilled on the site.

5.0 RESULTS

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). The EM61 early time gate response and differential response are shown on the plan sheet on Figures 6 and 7, respectively.

The EM61 differential results indicated several anomalies (response above background) that did not correspond to known site features. GPR data were collected over selected EM61 anomalies. The GPR data indicated the presence of two probable USTs in the northwest portion of the site, in front of the commercial building, and one probable UST behind the residence (Figure 5).

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which also includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX and GRO were below the detection limits for the 6 samples tested. DRO was detected in 5 of the 6 samples tested but the concentrations were below the NCDEQ action level of 100 ppm. PAHs were detected in 2 of the 6 samples tested with values of 0.75 and 0.44 ppm for Samples B39-1/S4 and B39-4/S4, respectively

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the Phase II investigation of Parcel 39 for NCDOT Project U-2579AB indicates the presence of two probable USTs within the proposed ROW/easement. These two probable USTs appear to be abandoned from the previous gasoline service station operation. The results of the soil sample testing indicate that there is not any petroleum hydrocarbon soil contamination at or above NCDEQ action levels within the proposed ROW/easement.

A third probable UST was found at the rear of the residence, just outside of the proposed easement. This probable UST is likely an abandoned heating oil tank.

6.2 Geophysics

The geophysical data indicate the presence of two abandoned USTs in the northwest portion of the proposed ROW. Each of these probable USTs are approximately 5 feet diameter by 15 feet long and buried about 4.5 feet below ground surface. These dimensions indicate that the abandoned USTs are each approximately 2,000 gallons in size.

The third abandoned UST at the rear of the residence is approximately 5 feet diameter by 10 feet long and buried about 2.5 feet below ground surface. These dimensions indicate that the abandoned UST is approximately 1,500 gallons in size.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the proposed ROW/easement on Parcel 39 (Figure 9).

7.0 RECOMMENDATIONS

Two probable USTs are present within the proposed ROW on Parcel 39 and should be removed prior to construction and in accordance with NCDEQ guidelines for UST closure. A third probable UST is just outside of the proposed construction easement and should be considered for closure prior to project construction. Other than the probable USTs, no limitations on construction activities or special handling of excavated soil are recommended for Parcel 39.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

TABLE 1
SOIL SAMPLE PID READINGS

Boring	Date Collected	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B39-1	5/2/19	none	1.9 (4.0-4.5)
B39-2	5/2/19	none	1.3 (4.0-4.5, 6.0-6.5)
B39-3	5/2/19	none	2.7 (8.0-8.5)
B39-4	5/2/19	none	1.3 (4.0-4.5, 5.0-5.5)
B39-5	5/2/19	none	1.5 (5.0-5.5)

TABLE 2
SOIL SAMPLE UVF RESULTS SUMMARY

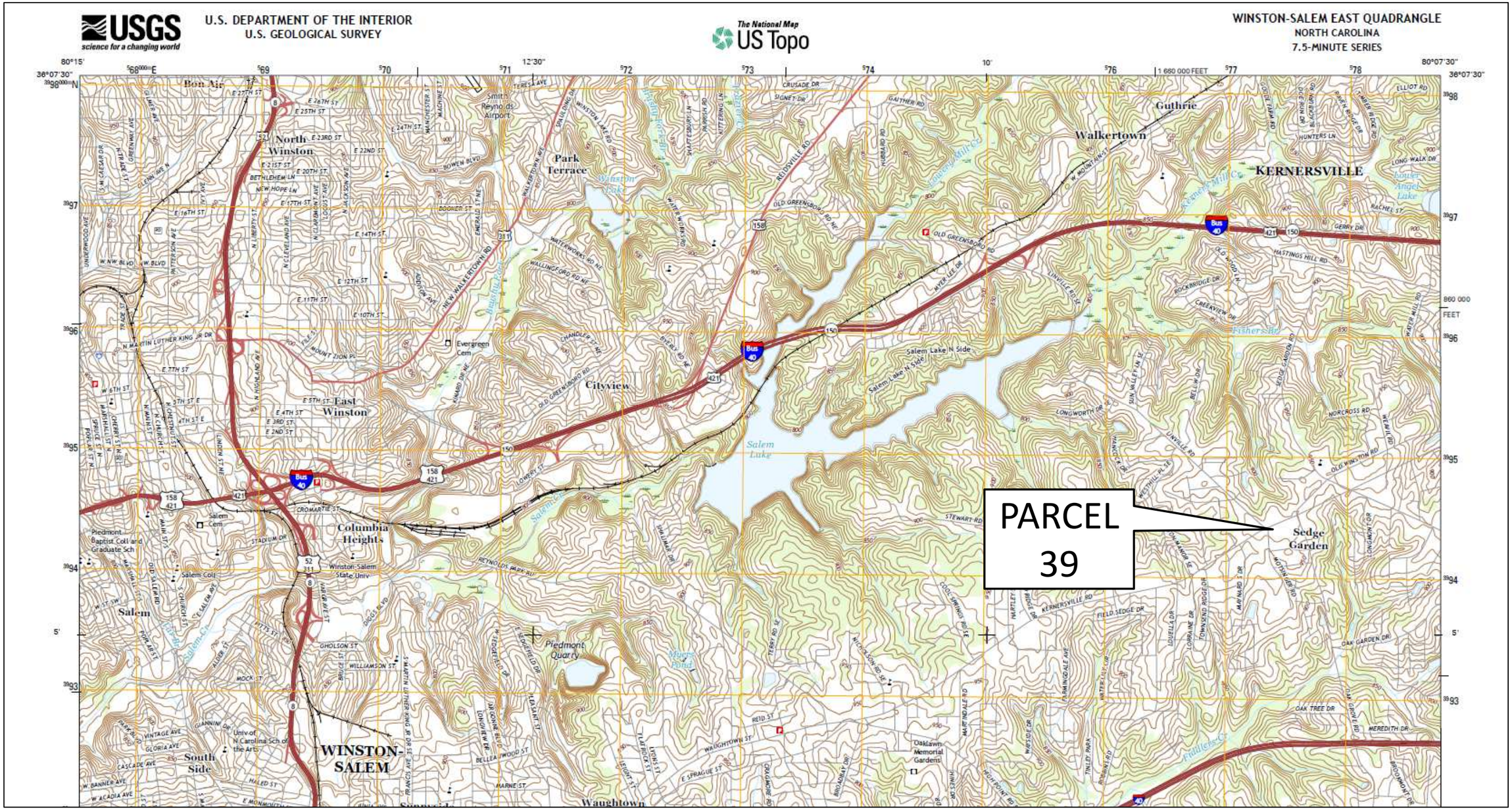
Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B39-1	S4 (4.0-4.5)	5/2/19	<0.59	<0.59	33.5	0.75
B39-2	S9 (9.0-9.5)	5/2/19	<0.55	<0.55	1.5	<0.17
B39-3	S8 (8.0-8.5)	5/2/19	<0.57	<0.57	1.2	<0.18
B39-4	S4 (4.0-4.5)	5/2/19	<0.52	<0.52	16.4	0.44
	S9 (9.0-9.5)	5/2/19	<0.59	<0.59	1.6	<0.19
B39-5	S5 (5.0-5.5)	5/2/19	<0.35	<0.35	<0.35	<0.11

FIGURES

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

WINSTON-SALEM EAST QUADRANGLE
NORTH CAROLINA
7.5-MINUTE SERIES



From USGS US Topo 7.5 – minute map for Winston-Salem East QUADRANGLE, NC, Date: 2016, Original Scale 1:24,000

PROJECT NO. GS22.313	***FIGURE 1 – PARCEL 39, PAUL E. HARRELL SITE VICINITY MAP***
SCALE N/A	***NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA***
DATE 6/9/19	
BY SBM/EDB	

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
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A. Photograph of front of Parcel 39 business and study area, facing southwest.

B. Photograph of rear of the business, facing north.

C. Photograph of marked location of two probable USTs in the northwest part of the site, facing south.

D. Photograph of front of Parcel 39 residence and survey area, facing south.

E. Photograph of rear of Parcel 39 residence, facing northeast. Note heating oil AST.

F. Photograph of rear of residence showing marked location of probable abandoned heating oil UST with apparent vent or fill pipe indicated by white arrow.

PROJECT NO. GS22.313	***FIGURE 2 – PARCEL 39, PAUL E. HARRELL SITE PHOTOGRAPHS***
SCALE N/A	
DATE 6/9/19	***NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA***
BY SBM/EDB	

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
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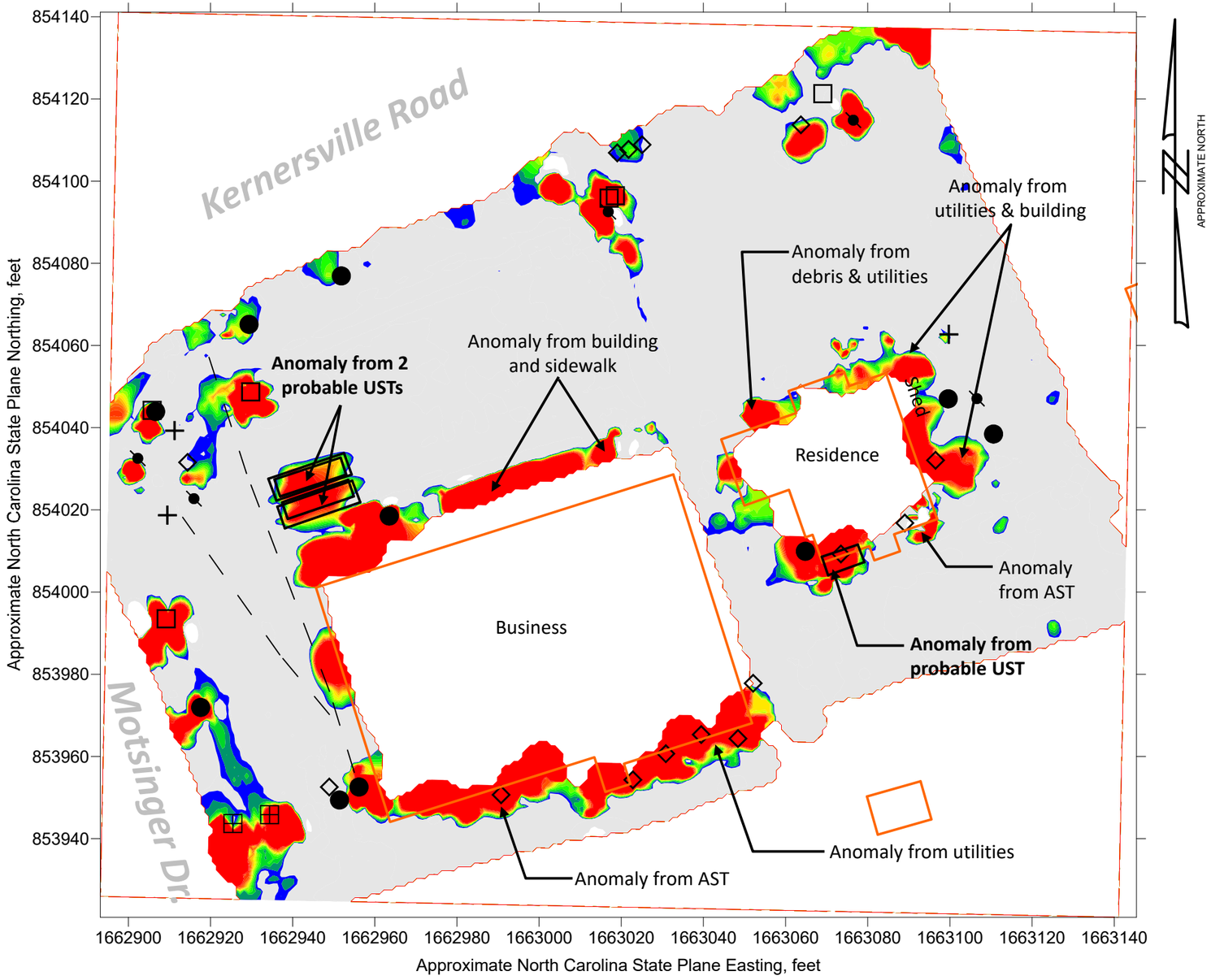
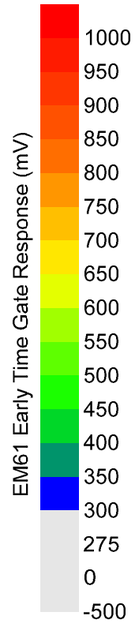
www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Storm drain
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Valve Cover or Fill Port
- Buried utility line (marked by others)
- Existing Building (per NCDOT file)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	GS22.313
SCALE	AS SHOWN
DATE	6/9/19
BY	SBM/EDB

FIGURE 3 – PARCEL 39, PAUL E. HARRELL EM61 EARLY TIME GATE RESPONSE

NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA

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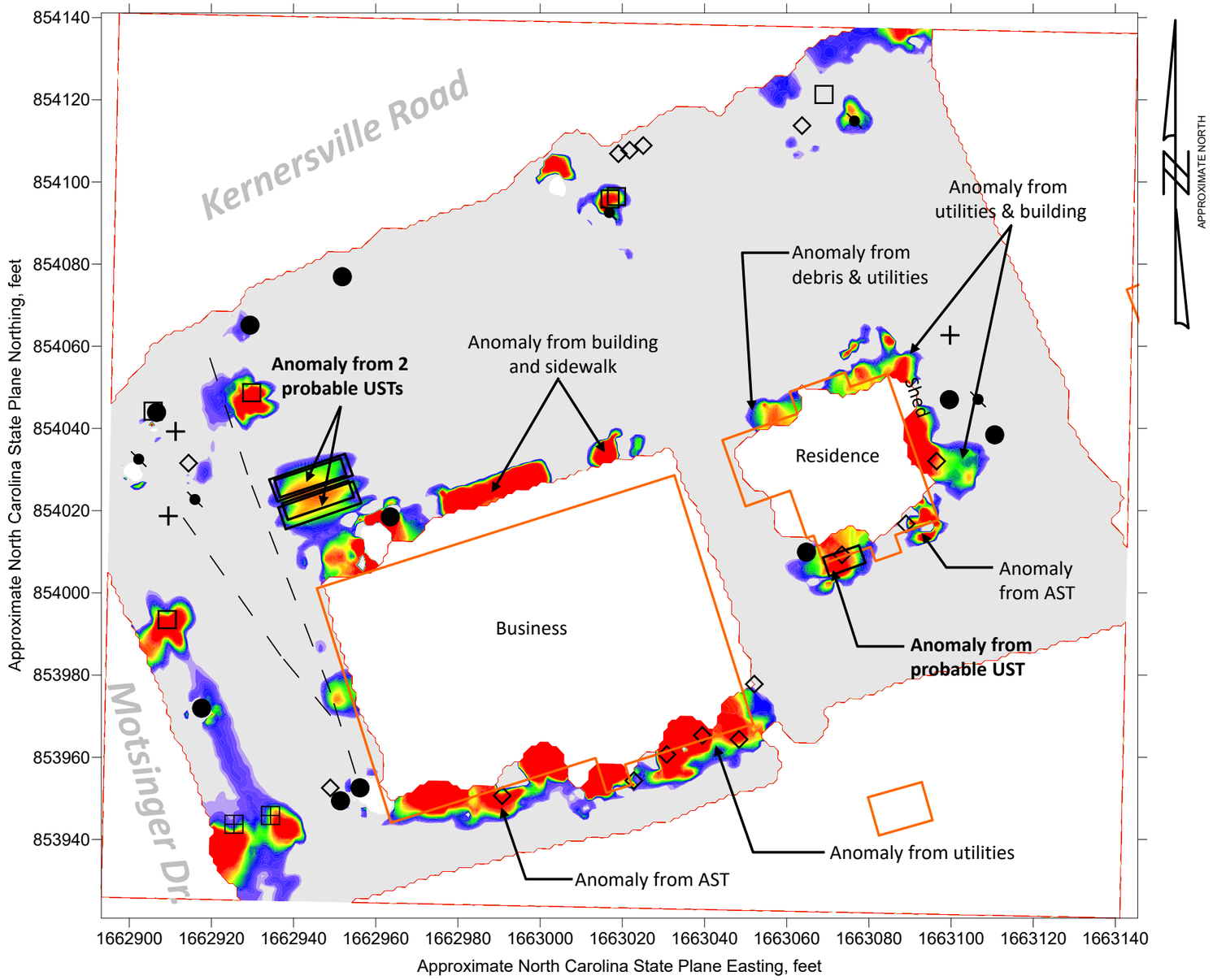
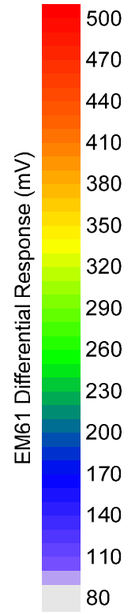
336.334.7724
www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Storm drain
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Valve Cover or Fill Port
- Buried utility line (marked by others)
- Existing Building (per NCDOT file)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	GS22.313
SCALE	AS SHOWN
DATE	6/9/19
BY	SBM/EDB

FIGURE 4 – PARCEL 39, PAUL E. HARRELL EM61 DIFFERENTIAL RESPONSE

NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA

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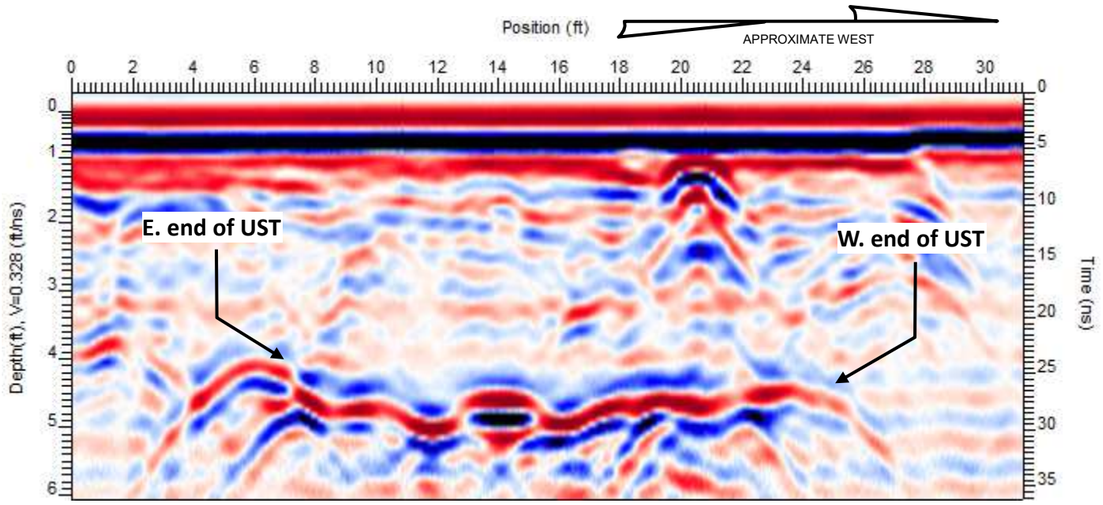
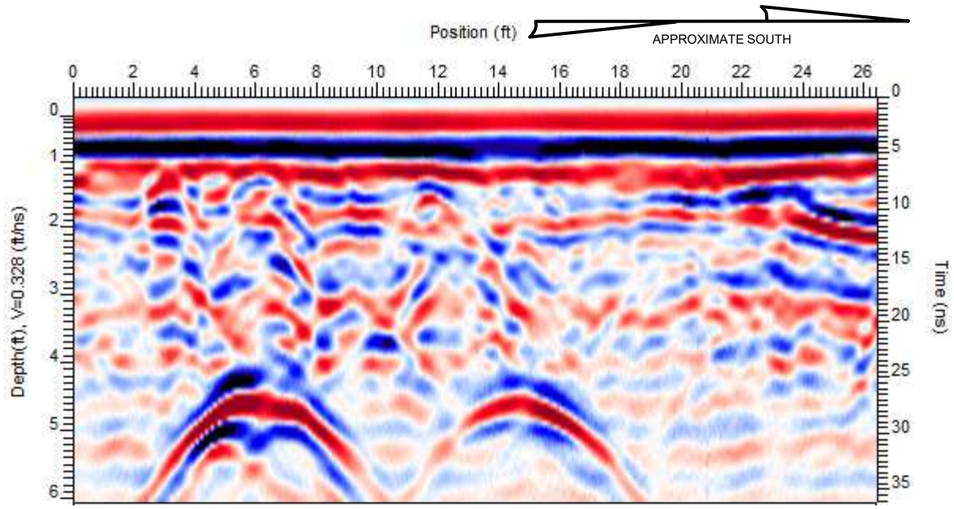
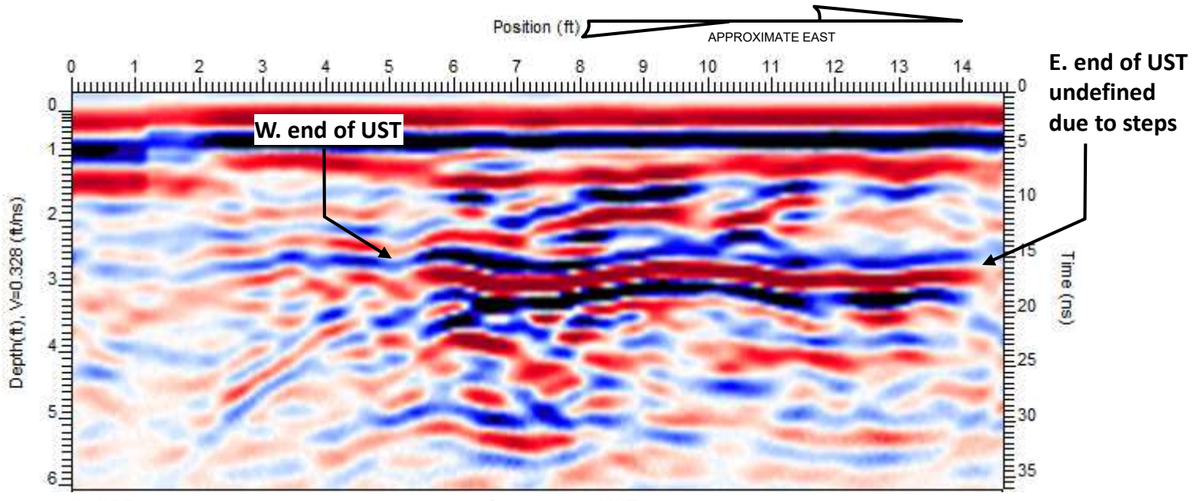


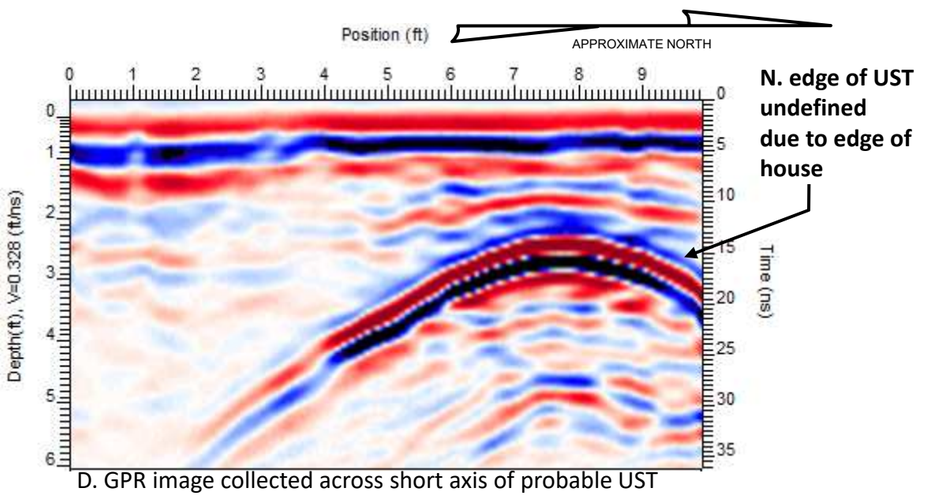
A. GPR image collected across long axis of one of 2 probable USTs marked near west side of business.



B. GPR image collected across short axis of two probable USTs marked near west side of business.



C. GPR image collected across long axis of probable UST marked near southwest corner of the house.



D. GPR image collected across short axis of probable UST marked near southwest corner of the house.

PROJECT NO. GS22.313	***FIGURE 5 – PARCEL 39, PAUL E. HARRELL GPR IMAGES OF PROBABLE USTS***
SCALE AS SHOWN	
DATE 6/9/19	***NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA***
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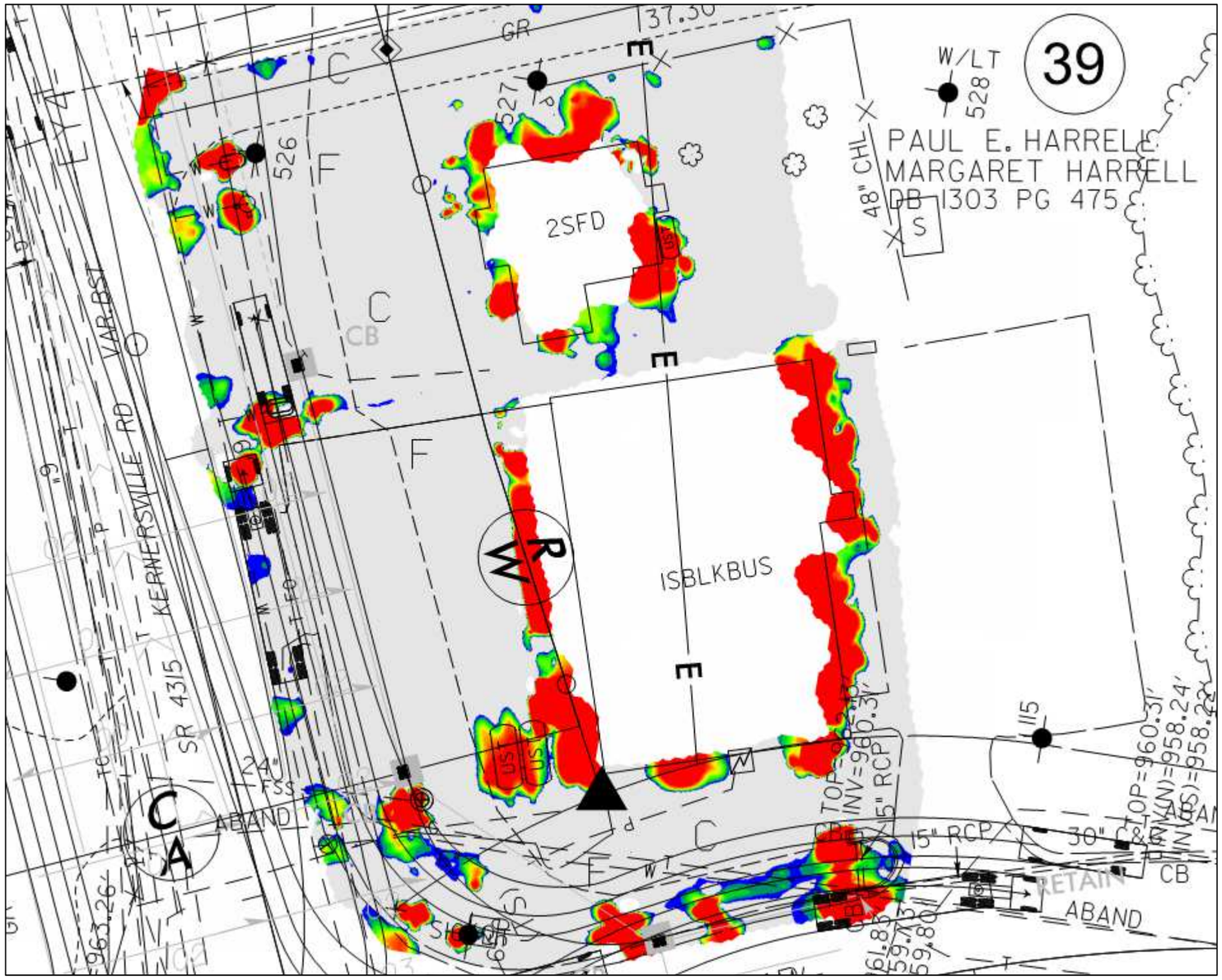

List of NCDOT reference files

- U2579ab_Geo_env_ESP.dgn
  - U2579AB_ncdot_fs.dgn
  - u2579ab_rdy_row.dgn
  - u2579ab_rdy_ss.dgn
  - U2579AB_hyd_dm.dgn
  - u2579ab_rdy_dsn.dgn

See Figure 10 for explanation of symbols and line types

30′ 0′ 30′
GRAPHIC SCALE

PROJECT NO. GS22.313	***FIGURE 6 – PARCEL 39, PAUL E. HARRELL EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET***
SCALE 1” = 30’	
DATE 6/9/19	***NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA***
BY SBM/EDB	

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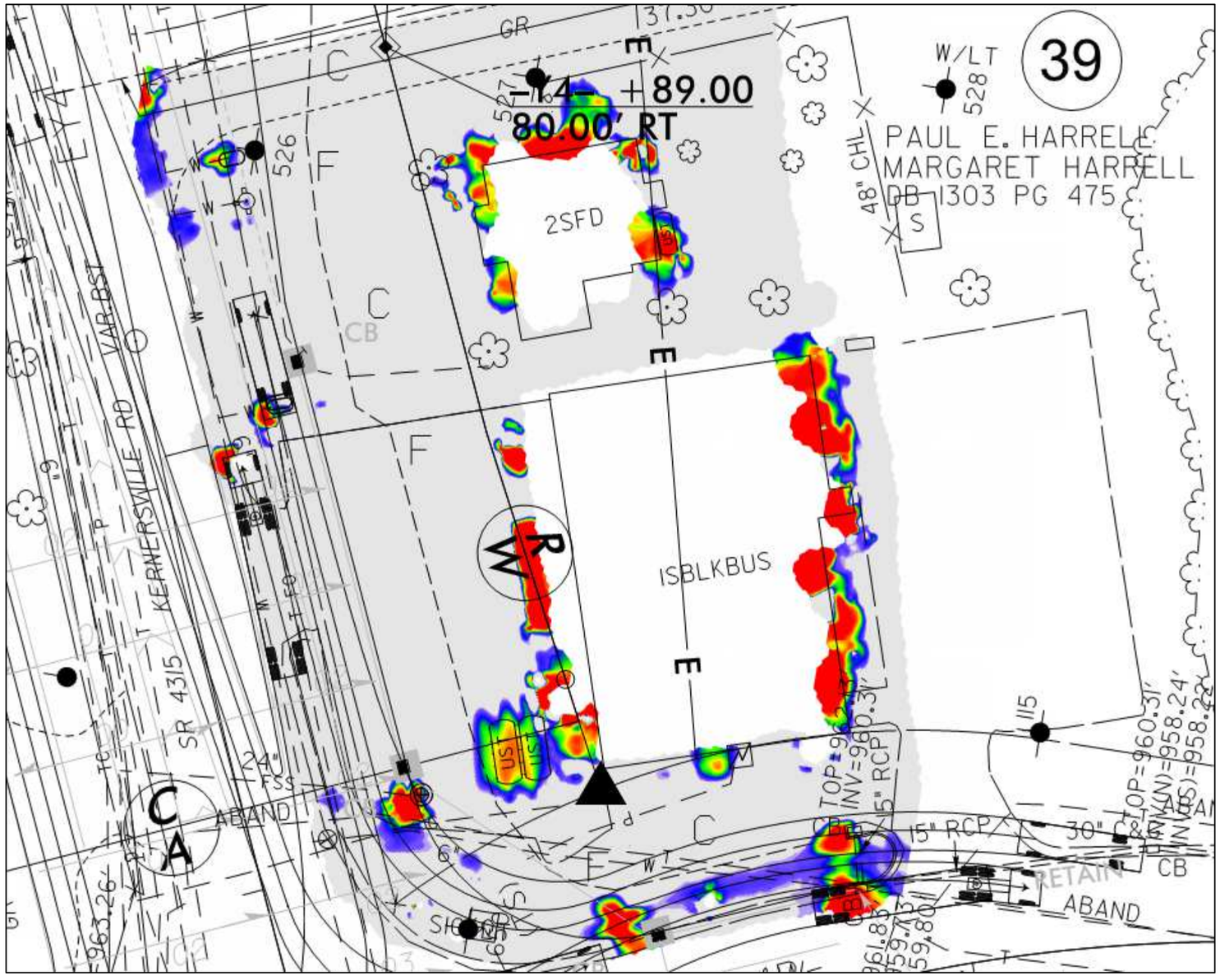

List of NCDOT reference files

- U2579ab_Geo_env_ESP.dgn
  - U2579AB_ncdot_fs.dgn
  - u2579ab_rdy_row.dgn
  - u2579ab_rdy_ss.dgn
  - U2579AB_hyd_dm.dgn
  - u2579ab_rdy_dsn.dgn

See Figure 10 for explanation of symbols and line types

30′ 0′ 30′
GRAPHIC SCALE

PROJECT NO.	GS22.313
SCALE	1" = 30'
DATE	6/9/19
BY	SBM/EDB

FIGURE 7 – PARCEL 39, PAUL E. HARRELL
EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET

NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA

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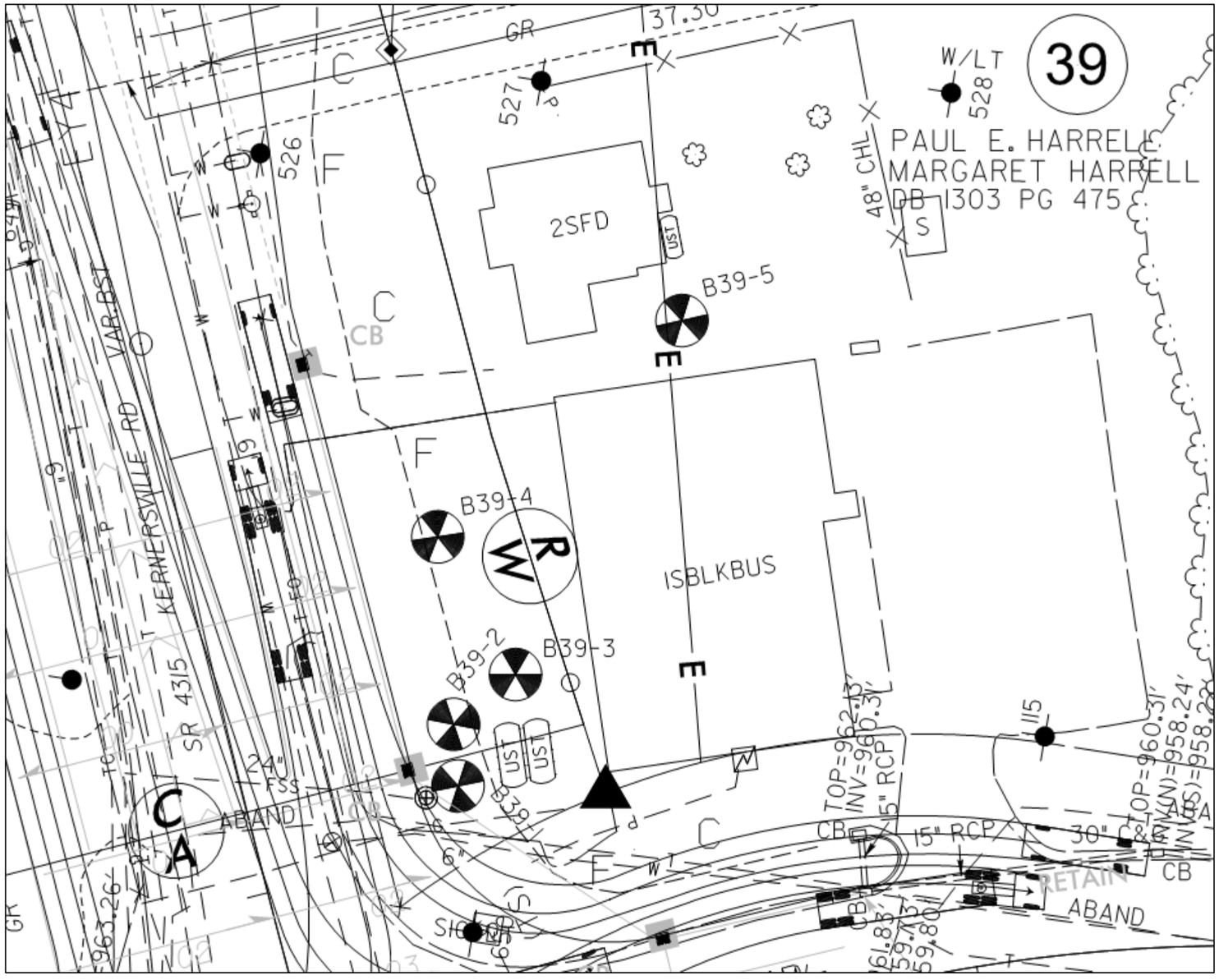

APPROXIMATE NORTH

List of NCDOT reference files

- U2579ab_Geo_env_ESP.dgn
  - U2579AB_ncdot_fs.dgn
  - u2579ab_rdy_row.dgn
  - u2579ab_rdy_ss.dgn
  - U2579AB_hyd_dm.dgn
  - u2579ab_rdy_dsn.dgn

30′ 0′ 30′

GRAPHIC SCALE

See Figure 10 for explanation of symbols and line types

PROJECT NO. GS22.313	***FIGURE 8 – PARCEL 39, PAUL E. HARRELL BORING LOCATIONS ON PLAN SHEET***
SCALE 1" = 30'	***NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA***
DATE 6/9/19	
BY SBM/EDB	

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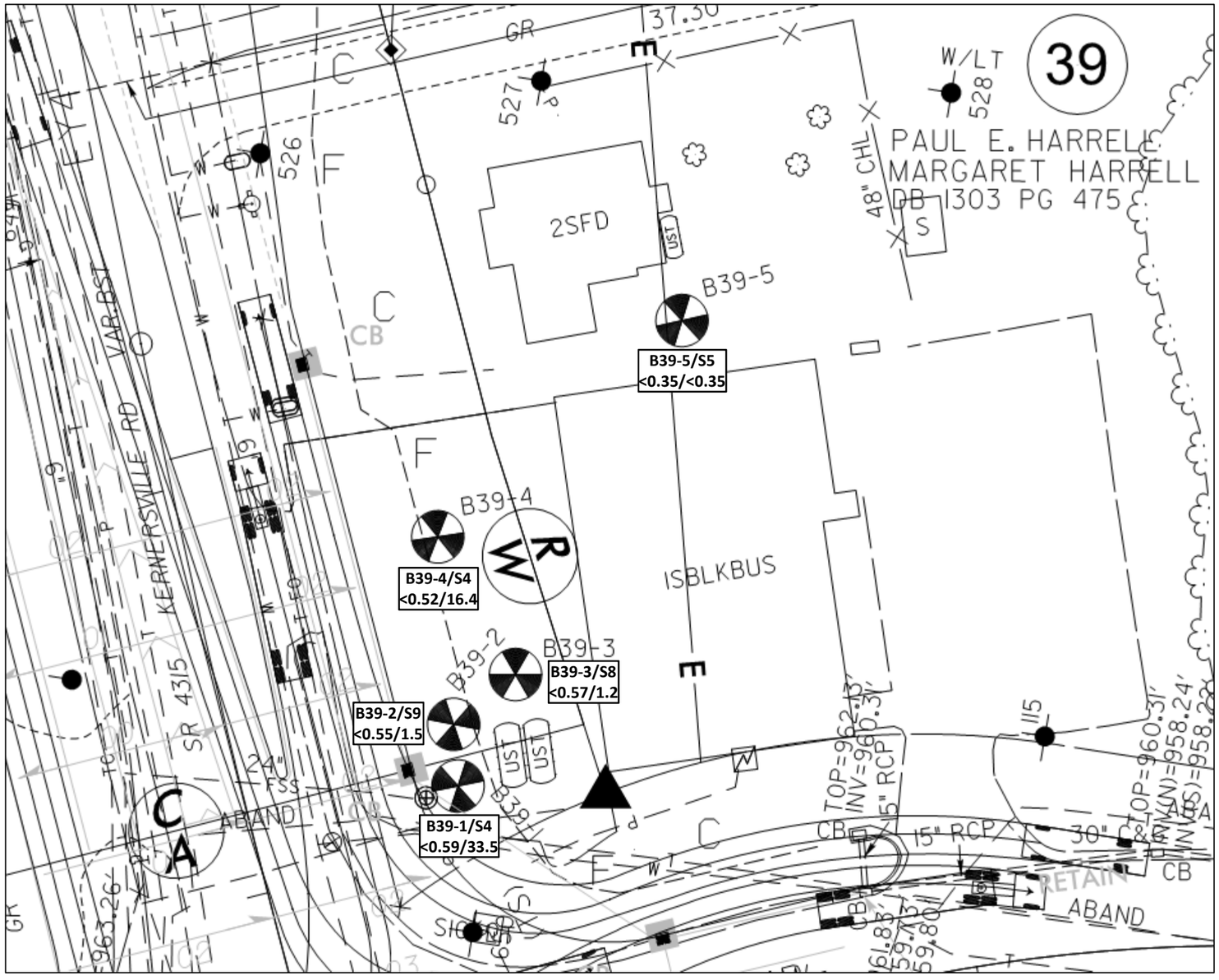

Explanation

Maximum Analytical Results per Boring

B39-1/S4
<0.59/33.5

Boring No./Sample No.
GRO/DRO (mg/kg, ppm)

List of NCDOT reference files

- U2579ab_Geo_env_ESP.dgn
  - U2579AB_ncdot_fs.dgn
  - u2579ab_rdy_row.dgn
  - u2579ab_rdy_ss.dgn
  - U2579AB_hyd_dm.dgn
  - u2579ab_rdy_dsn.dgn

30′ 0′ 30′
GRAPHIC SCALE

See Figure 10 for explanation of symbols and line types

PROJECT NO.	GS22.313
SCALE	1" = 30'
DATE	6/9/19
BY	SBM/EDB

FIGURE 9 – PARCEL 39, PAUL E. HARRELL SOIL ANALYTICAL RESULTS ON PLAN SHEET

NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA

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04/26/15

PROJECT REFERENCE NO. | SHEET NO.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream
- Buffer Zone 1
- Buffer Zone 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line
- Proposed Temporary Construction Easement
- Proposed Temporary Drainage Easement
- Proposed Permanent Drainage Easement
- Proposed Permanent Drainage / Utility Easement
- Proposed Permanent Utility Easement
- Proposed Temporary Utility Easement
- Proposed Aerial Utility Easement
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

MINOR:

- Head and End Wall
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*)
- U/G Power Line LOS C (S.U.E.*)
- U/G Power Line LOS D (S.U.E.*)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Cable LOS B (S.U.E.*)
- U/G Telephone Cable LOS C (S.U.E.*)
- U/G Telephone Cable LOS D (S.U.E.*)
- U/G Telephone Conduit LOS B (S.U.E.*)
- U/G Telephone Conduit LOS C (S.U.E.*)
- U/G Telephone Conduit LOS D (S.U.E.*)
- U/G Fiber Optics Cable LOS B (S.U.E.*)
- U/G Fiber Optics Cable LOS C (S.U.E.*)
- U/G Fiber Optics Cable LOS D (S.U.E.*)

WATER:

- Water Manhole
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line

TV:

- TV Pedestal
- TV Tower
- U/G TV Cable Hand Hole
- U/G TV Cable LOS B (S.U.E.*)
- U/G TV Cable LOS C (S.U.E.*)
- U/G TV Cable LOS D (S.U.E.*)
- U/G Fiber Optic Cable LOS B (S.U.E.*)
- U/G Fiber Optic Cable LOS C (S.U.E.*)
- U/G Fiber Optic Cable LOS D (S.U.E.*)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*)
- U/G Gas Line LOS C (S.U.E.*)
- U/G Gas Line LOS D (S.U.E.*)
- Above Ground Gas Line

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*)
- SS Forced Main Line LOS C (S.U.E.*)
- SS Forced Main Line LOS D (S.U.E.*)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line LOS B (S.U.E.*)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT NO.	GS22.313
SCALE	N/A
DATE	6/9/19
BY	SBM/EDB

FIGURE 10
LEGEND FOR PLAN SHEET FIGURES

NCDOT PROJECT U-2579AB, N. BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US 421 WINSTON-SALEM, NORTH CAROLINA

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APPENDIX A
SOIL BORING LOGS

FIELD BORING LOG

BORING NO. B39-1

PROJECT NAME: NCDOT U-2579AB | PROJ. NO.: GR22.313
LOCATION: Northwest corner of USTs in front of business
TYPE OF BORING: Direct Push | DATE STARTED: 5/2/19 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 5/2/19 | TOTAL DEPTH: 10.0 ft
DRILLER: Stefan Smith | SAMPLE METHOD: 4' Macro Core | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: N. Billington/ S. Montgomery | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.2 Asphalt, gravel base	Core 1 Rec 2.3'/4.0'
				0.2 - 1.0 Medium brown sandy clay, dry	
1	S-1	1.0-1.5	0.6	1.0 - 4.0 Brown silty sand, dry	
2	S-2	2.0-2.5	1.7		
3	S-3	3.0-3.5			
4	S-4	4.0-4.5	1.9		
				4.0 - 10.0 Medium brown sandy clay, dry	Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	0.4		
6	S-6	6.0-6.5	0.1		
7	S-7	7.0-7.5	0.5		
8	S-8	8.0-8.5	1.2		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.8		
10					
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B39-2

PROJECT NAME: NCDOT U-2579AB | PROJ. NO.: GR22.313
LOCATION: Northeast corner of USTs in front of business
TYPE OF BORING: Direct Push | DATE STARTED: 5/2/19 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 5/2/19 | TOTAL DEPTH: 10.0 ft
DRILLER: Stefan Smith | SAMPLE METHOD: 4' Macro Core | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: N. Billington/ S. Montgomery | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.2 Asphalt, gravel base	Core 1 Rec 3.1'/4.0'
				0.2 - 9.0 Brown sandy clay, dry	
1	S-1	1.0-1.5	0.5		
2	S-2	2.0-2.5	0.5		
3	S-3	3.0-3.5			
4	S-4	4.0-4.5	1.3		
				4.0 - Grading to reddish-brown, dry	Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	0.8		
6	S-6	6.0-6.5	1.3		
7	S-7	7.0-7.5	0.8		
8	S-8	8.0-8.5	0.4		Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.0	9.0 - 10.0 Light brown silty sand	
10					
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B39-3

PROJECT NAME: NCDOT U-2579AB | PROJ. NO.: GR22.313
LOCATION: East end of USTs in front of business
TYPE OF BORING: Direct Push | DATE STARTED: 5/2/19 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 5/2/19 | TOTAL DEPTH: 10.0 ft
DRILLER: Stefan Smith | SAMPLE METHOD: 4' Macro Core | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: E. Billington/ S. Montgomery | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.5 Asphalt, gravel base	Core 1 Rec 4.0'/4.0'
				0.5 - 2.3 Dark brown fine sand with small amount of clay, dry	
1	S-1	1.0-1.5	0.8		
2	S-2	2.0-2.5	1.0		
				2.3 - 9.0 Medium brown sandy clay, dry	
3	S-3	3.0-3.5	1.4		
4	S-4	4.0-4.5	1.0	4.0 - Grading to reddish brown	
					Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	1.9		
6	S-6	6.0-6.5	1.6		
7	S-7	7.0-7.5	0.7		
8	S-8	8.0-8.5	2.7		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.9	9.0 - 10.0 Light brown sandy silt, dry	
10					
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B39-4

PROJECT NAME: NCDOT U-2579AB | PROJ. NO.: GR22.313
LOCATION: East end of the parking lot in front of business
TYPE OF BORING: Direct Push | DATE STARTED: 5/2/19 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 5/2/19 | TOTAL DEPTH: 10.0 ft
DRILLER: Stefan Smith | SAMPLE METHOD: 4' Macro Core | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: E. Billington/ S. Montgomery | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.2 Asphalt, gravel base	Core 1 Rec 4.0'/4.0'
				0.2 - 2.0 Light brown sandy silt, dry	
1	S-1	1.0-1.5	1.0		
2	S-2	2.0-2.5	1.1	2.0 - 8.0 Medium red brown sandy clay, dry	
3	S-3	3.0-3.5	0.9		
					Core 2 Rec 4.0'/4.0'
4	S-4	4.0-4.5	1.3		
5	S-5	5.0-5.5	1.3		
6	S-6	6.0-6.5	0.6		
7	S-7	7.0-7.5	0.4		
					Core 3 Rec 2.0'/2.0'
8	S-8	8.0-8.5	0.4	8.0 - 10.0 Medium red-brown sandy silt, dry	
9	S-9	9.0-9.5	1.0		
10					
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B39-5

PROJECT NAME: NCDOT U-2579AB | PROJ. NO.: GR22.313
LOCATION: Near southwest corner of residence
TYPE OF BORING: Direct Push | DATE STARTED: 5/2/19 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 5/2/19 | TOTAL DEPTH: 10.0 ft
DRILLER: Stefan Smith | SAMPLE METHOD: 4' Macro Core | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT, Hand Auger (H.A.) | LOGGED BY: E. Billington/ S. Montgomery | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.1 Grass, root mat	H.A. 0-4.0'
				0.1 - 3.0 Red brown fine sandy clay, dry	
1	S-1 H.A.	1.0-1.5	0.6		
2	S-2 H.A.	2.0-2.5	0.9		
3	S-3 H.A.	3.0-3.5	0.8	3.0 - 4.5 Red brown to light brown clayey sand, dry	
					Core 2 Rec 4.0'/4.0'
4	S-4	4.0-4.5	0.7		
				4.5 - 10.0 Red brown clayey silt, dry	
5	S-5	5.0-5.5	1.5		
6	S-6	6.0-6.5	0.9		
7	S-7	7.0-7.5	0.7		
					Core 3 Rec 2.0'/2.0'
8	S-8	8.0-8.5	1.2		
9	S-9	9.0-9.5	1.2		
10					
11					
12					
13					
14					
15					

APPENDIX B

RED LAB LABORATORY TESTING REPORT

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: ESP ASSOCIATES
Address: GREENSBORO, NC

Samples taken Thursday, May 2, 2019
Samples extracted Thursday, May 2, 2019
Samples analysed Tuesday, May 7, 2019

Contact: NED BILLINGTON

Operator CAROLINE STEVENS

Project: GR22.313 GROUP 1

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	B39-1 S4	23.6	<0.59	<0.59	33.5	33.5	22.2	0.75	<0.024	0	81.7	18.3	Deg Fuel 89.8%,(FCM)
s	B39-2 S9	21.8	<0.55	<0.55	1.5	1.5	1	<0.17	<0.022	0	79.7	20.3	Deg Fuel 77.5%,(FCM)
s	B39-3 S8	22.6	<0.57	<0.57	1.2	1.2	1	<0.18	<0.023	0	52.2	47.8	V.Deg.PHC 71.8%,(FCM)
s	B39-4 S4	21.0	<0.52	<0.52	16.4	16.4	12.7	0.44	<0.021	0	82.3	17.7	Deg Fuel 91.7%,(FCM)
s	B39-4 S9	23.6	<0.59	<0.59	1.6	1.6	1.1	<0.19	<0.024	0	81.1	18.9	Deg Fuel 74.6%,(FCM)
s	B39-5 S5	14.1	<0.35	<0.35	<0.35	<0.35	<0.07	<0.11	<0.014	0	0	0	,(FCM),(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.4 %

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

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name:	ESP Assoc.
Address:	Greensboro
Contact:	Ned Billington
Project Ref.:	GR22.313
Email:	on file
Phone #:	
Collected by:	S. Montgomery

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Initials	Sample ID			Total Wt.	Tare Wt.	Sample Wt.
5/2/19		✓	CJS	B39-1	54	Group 1	55.9	44.9	11
5/2/19		✓	EDS	B39-2	59		57.1	45.2	11.9
5/2/19		✓	EDS	B39-3	58		56.2	44.7	11.5
5/2/19		✓	EDS	B39-4	54		56.9	44.5	12.4
5/2/19		✓	EDS	B39-4	59		55.7	44.7	11
5/2/19		✓	EDS	B39-5	55		54.8	44.9	9.9
5/2/19		✓	EDS	B342-7	54	Group 2	55.5	44.9	10.6
5/2/19		✓	EDS	B342-8	58		54.4	44.8	9.6
5/2/19		✓	EDS	B342-9	55		55.0	44.8	10.2
5/2/19		✓	EDS	B342-10	59		54.3	44.6	9.7

Comments: UVF, pls report each group separately

Relinquished by	Date/Time	Accepted by	Date/Time
Ned Billington	5/6/19		
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

10

B

November 5, 2018

Mr. Cyrus Parker, L.G., P.E.
Geotechnical Engineering Unit
State of N.C. Department of Transportation – Division of Highways
P.O. Box 25201
Raleigh, NC 27611-5201

RE: PRELIMINARY SITE ASSESSMENT OF PARCEL 050 – Revision 1
ESP Project No. CS34.366

WBS: 34839.1.8
TIP: U-2579AB
County: Forsyth
Description: Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421
Parcel No.: 050
Owner: Amy P. Stinnitt
Address: 4308 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

DocuSigned by:
Edward D Billington
7402544DC92E4E0...

NORTH CAROLINA LICENSED SEAL 1631 GEOLOGIST EDWARD DAVIS BILLINGTON

Edward D. Billington, PG
Senior Geologist/Geophysicist
DMN/EDB/CJW

not considered Final unless all signatures are completed

7011 Albert Pick Road, Suite E, Greensboro, NC 27409
1.800.960.7317 · NC: 336.334.7724
www.espassociates.com

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APPENDICES

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421 (Figure 1). The NCDOT requested that ESP Associates, Inc. (ESP) perform a Preliminary Site Assessment (PSA) of Parcel 050 within the proposed Right of Way (ROW) and/or easement to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil.

2.0 HISTORY

This parcel is owned by Amy P. Stinnitt and is currently occupied by a vacant produce store. According to the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry, two USTs were removed from the parcel in 1974 and one in 1985. The site's UST release incidents were reportedly closed out in 2006.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was occupied by a vacant produce store (Figure 2). The ground in the study area was covered by asphalt, concrete, and grass.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 22, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 4 and 5, 2018. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet (Figure 5).

4.2 Borings

ESP performed direct-push drilling activities within the easement of Parcel 050 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Five borings were drilled, designated B50-1 through B50-5 (Figure 3). The soil borings were advanced using a GeoProbe 7822DT drill rig. Continuous soil samples were obtained to a depth of approximately ten feet using five-foot

long Macro Cores®. Soil cores varied in recovery from three to five feet. The sampling equipment was decontaminated prior to drilling and between borings by the driller using a Liquinox® detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro Core tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The soil samples had PID readings of less than 10 parts per million (ppm) (Table 1).

Soil samples selected for laboratory analysis were Sample S-9 (corresponding depth of 9.0-9.5 feet) from each of Borings B50-1, B50-2, B50-3, Sample S-10 (9.0-10.0 feet) from Boring B50-4, and Sample S-8 (7.0-8.0 feet) from Boring B50-5. For each selected sample, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the five borings drilled on the site.

5.0 RESULTS

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). The EM61 differential results indicated one anomaly (response above background) that did not correspond to known site features.

GPR data were collected over the EM61 anomalies. The GPR data collected indicated the presence of one probable UST within the study area under the concrete slab southwest of the existing building (Figure 5). The probable UST is approximately 5 feet diameter by 10 feet long and buried about 2.5 feet below the ground surface. We marked a square outline around the probable UST using pink marking paint (Figure 2.c).

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 6 and 7, respectively.

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX and PAHs were below the detection limits for all samples. GRO was detected in 2 of the 5 soil samples tested but below the NCDEQ action level of 50 ppm. DRO was detected in 1 of the 5 soil samples tested but below the NCDEQ action level of 100 ppm. The highest GRO reading was 0.7 ppm in Sample S-9 (9.0-9.5 feet) from Boring B50-3. The highest DRO reading was 0.48 ppm in Sample S-9 (9.0-9.5 feet) from Boring B50-3.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 050 of NCDOT Project U-2579AB indicate the presence of one abandoned UST. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected within the proposed construction easement on Parcel 050.

6.2 Geophysics

The geophysical data indicate the location of one probable UST within the parcel. The probable UST is located under the concrete slab southwest of the existing building and is approximately 1,500 gallons in size and buried about 2.5 feet below the ground surface.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the proposed construction easement on Parcel 050 (Figure 8).

7.0 RECOMMENDATIONS

ESP recommends that prior to acquisition, the probable UST be closed by removal and that a UST Closure Report be submitted to NCDEQ. Other than the UST closure, no limitations on construction activities or special handling of excavated soil are recommended for Parcel 050.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

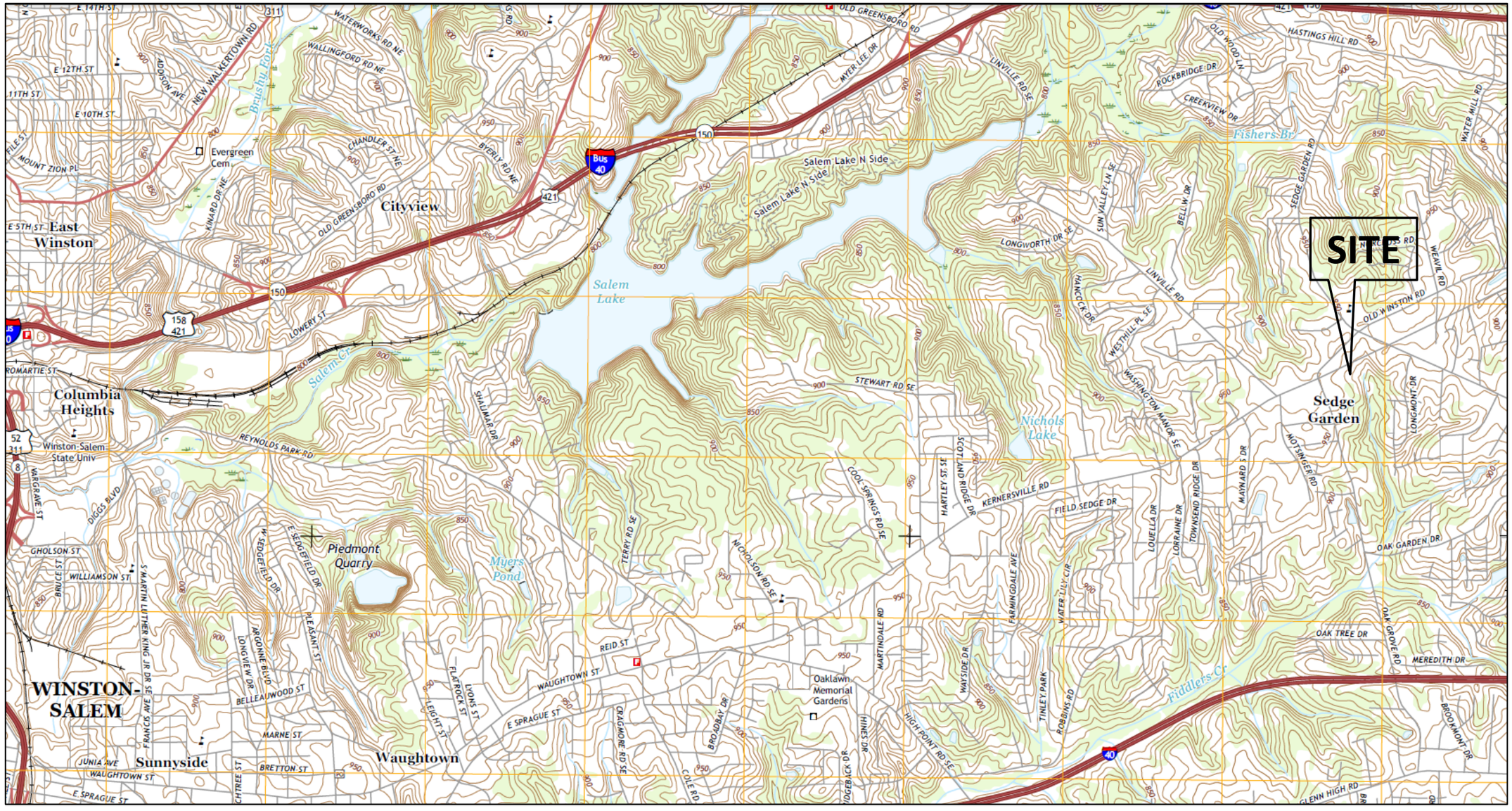
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B50-1	none	1.7 (6.0-6.5)
B50-2	none	1.9 (1.0-1.5)
B50-3	none	1.5 (7.0-7.5)
B50-4	none	0.4 (4.0-5.0)
B50-5	none	0.8 (0.0-1.0)

TABLE 2
SOIL SAMPLE UVF RESULTS SUMMARY

Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B50-1	S-9 (9.0-9.5)	9/10/18	<0.58	<0.58	<0.58	<0.19
B50-2	S-9 (9.0-9.5)	9/10/18	<0.54	<0.54	<0.54	<0.17
B50-3	S-9 (9.0-9.5)	9/10/18	<0.34	0.7	0.48	<0.11
B50-4	S-10 (9.0-10.0)	9/10/18	<0.32	0.58	<0.32	<0.1
B50-5	S-8 (7.0-8.0)	9/10/18	<0.32	<0.32	<0.32	<0.1

FIGURES



From: USGS US Topo 7.5 - minute map for WINSTON-SALEM EAST, NC Date: 2016, Scale: 1:24,000

PROJECT NO. CS34.366	***FIGURE 1 – PARCEL 050, AMY P. STINNITT***
SCALE AS SHOWN	***SITE VICINITY MAP***
DATE 11/6/18	***U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION***
BY DMN	***(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421***
	FORSYTH COUNTY, NORTH CAROLINA

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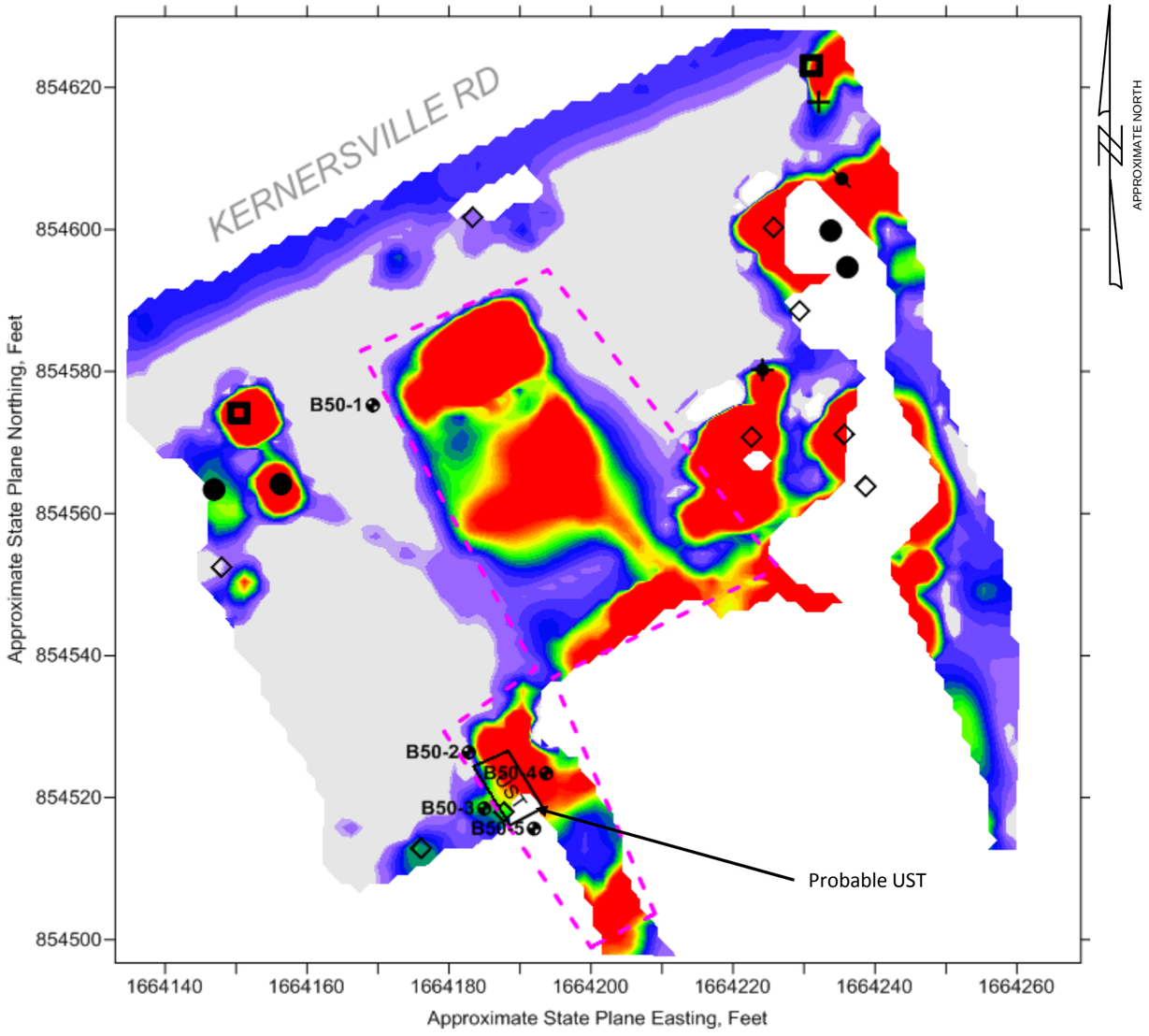
a. Photo from west side of site looking east.

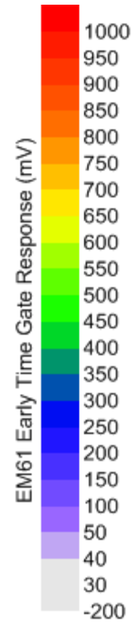
b. Photo from north side of site looking south.

c. Photo of marked probable UST.

d. Photo of marked product line.

PROJECT NO. CS34.366	***FIGURE 2 – PARCEL 050, AMY P. STINNITT SITE PHOTOGRAPHS***	ESP 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE AS SHOWN		
DATE 11/6/18	***U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA***	
BY DMN		





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Existing UST fill port
- EM61 Data Collection Areas
- GPR Data Collection Areas
- UST — Approximate location of probable UST
- Approximate soil boring location

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 3 – PARCEL 050, AMY P. STINNITT
EM61 EARLY TIME GATE RESPONSE

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
FORSYTH COUNTY, NORTH CAROLINA

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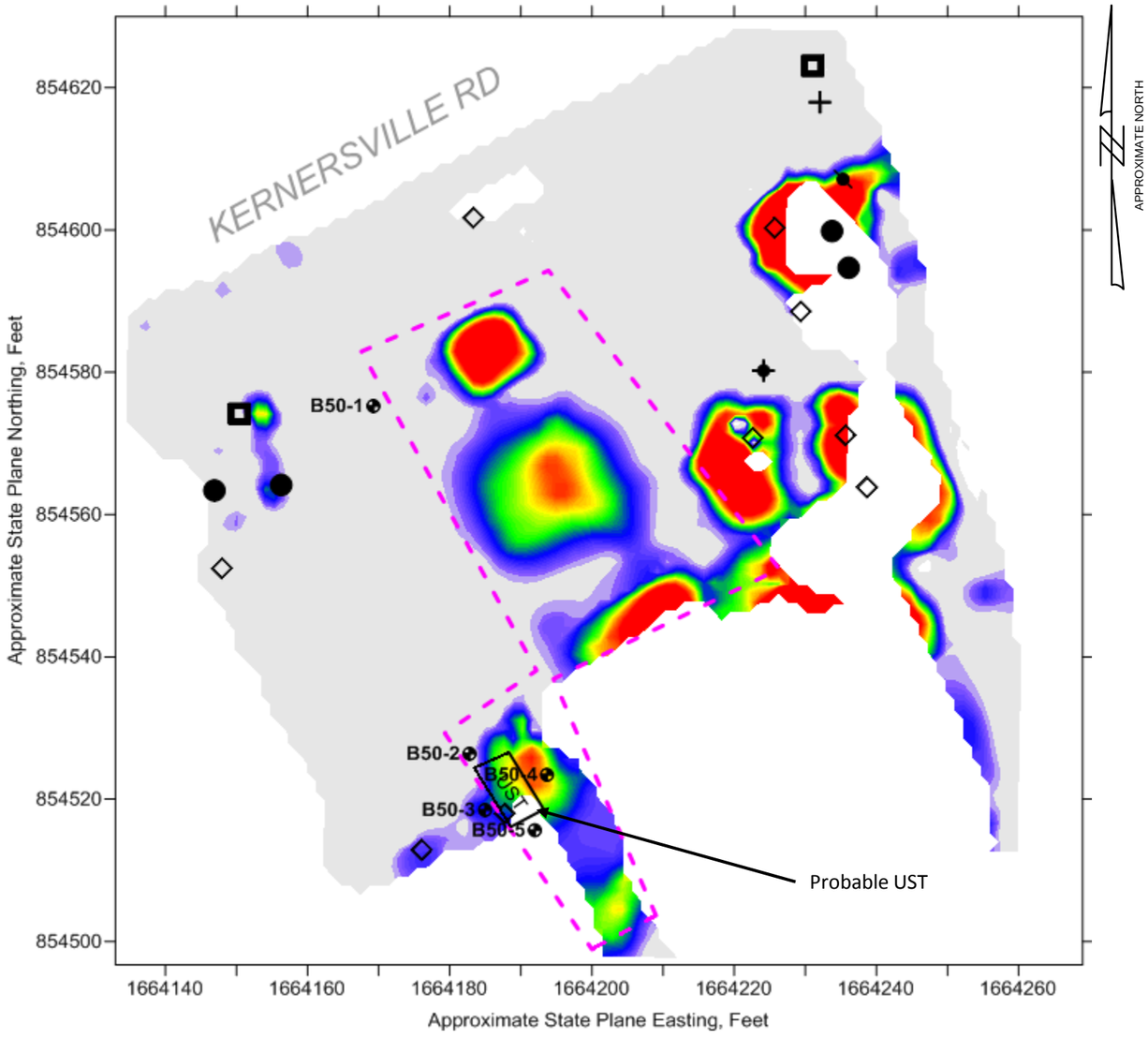

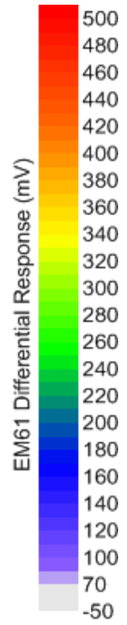

EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Existing UST fill port
- EM61 Data Collection Areas
- GPR Data Collection Areas
- UST — Approximate location of probable UST
- Approximate soil boring location

Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 4– PARCEL 050 , AMY P. STINNITT
EM61 DIFFERENTIAL RESPONSE

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

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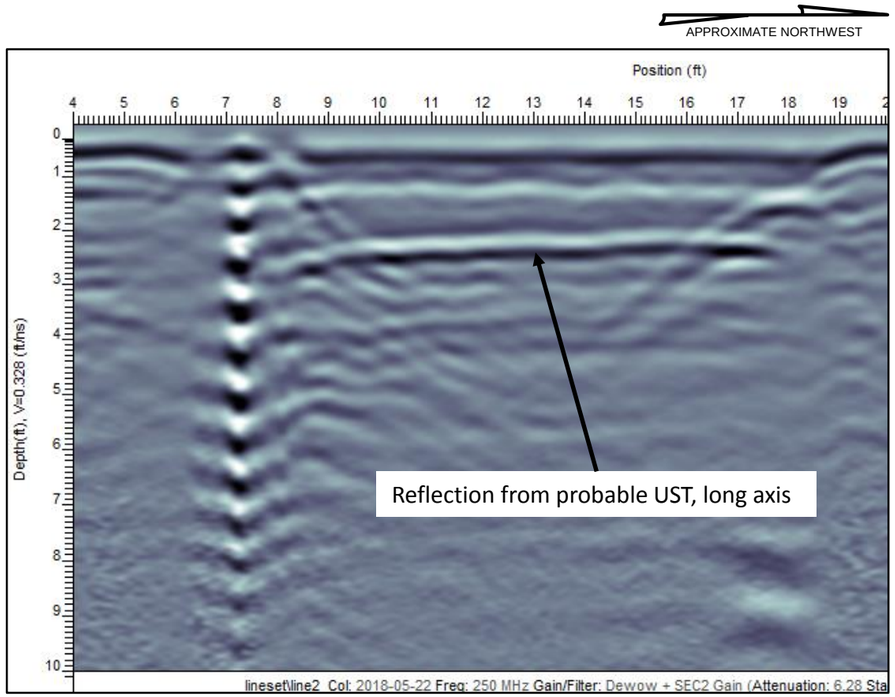
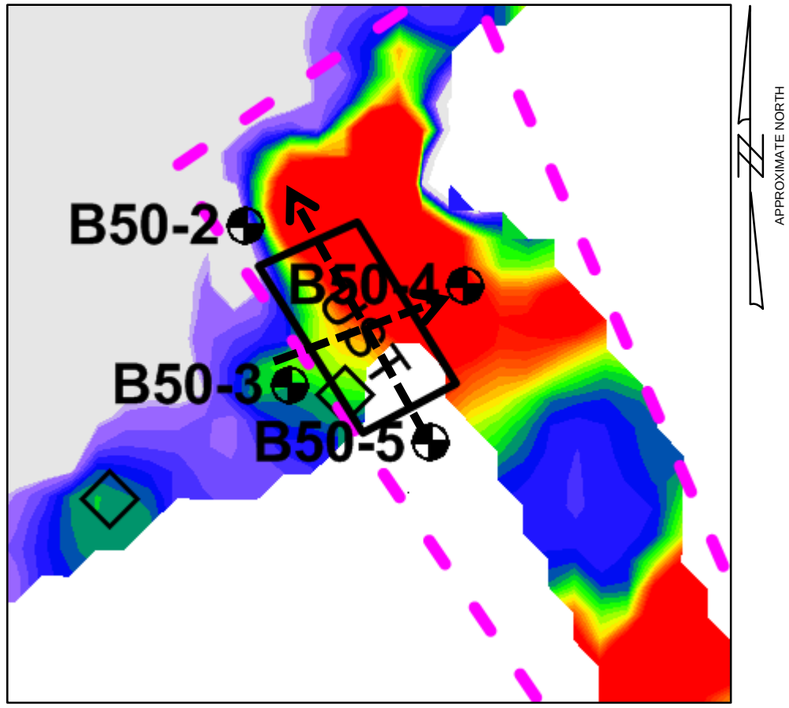


A. GPR images from SE to NW and SW to NE across probable UST.



B. Portion of Figure 3 showing approximate locations of GPR cross-sections (dashed black lines with arrows).

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 5 – PARCEL 050, AMY P. STINNITT GPR IMAGES OF PROBABLE UST

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

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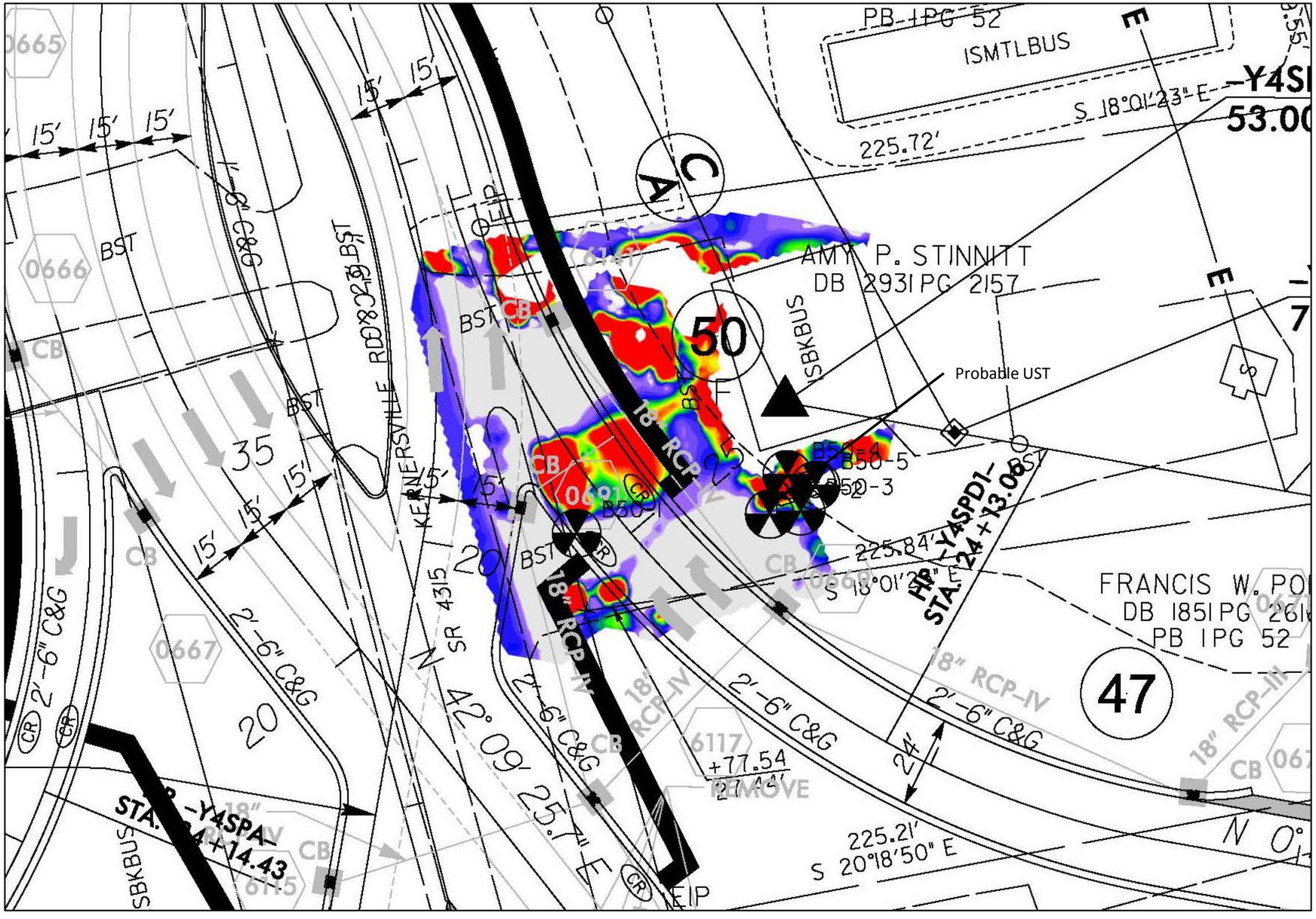

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
  - SS, u2579ab_rdy_ss.dgn
  - ROW, u2579ab_rdy_row.dgn
  - ..\..\FinalSurvey\U2579AB_ncdot_fs.dgn
  - U2579AB_hyd_dm.dgn

See Figure 9 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 6 – PARCEL 050, AMY P. STINNITT
EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

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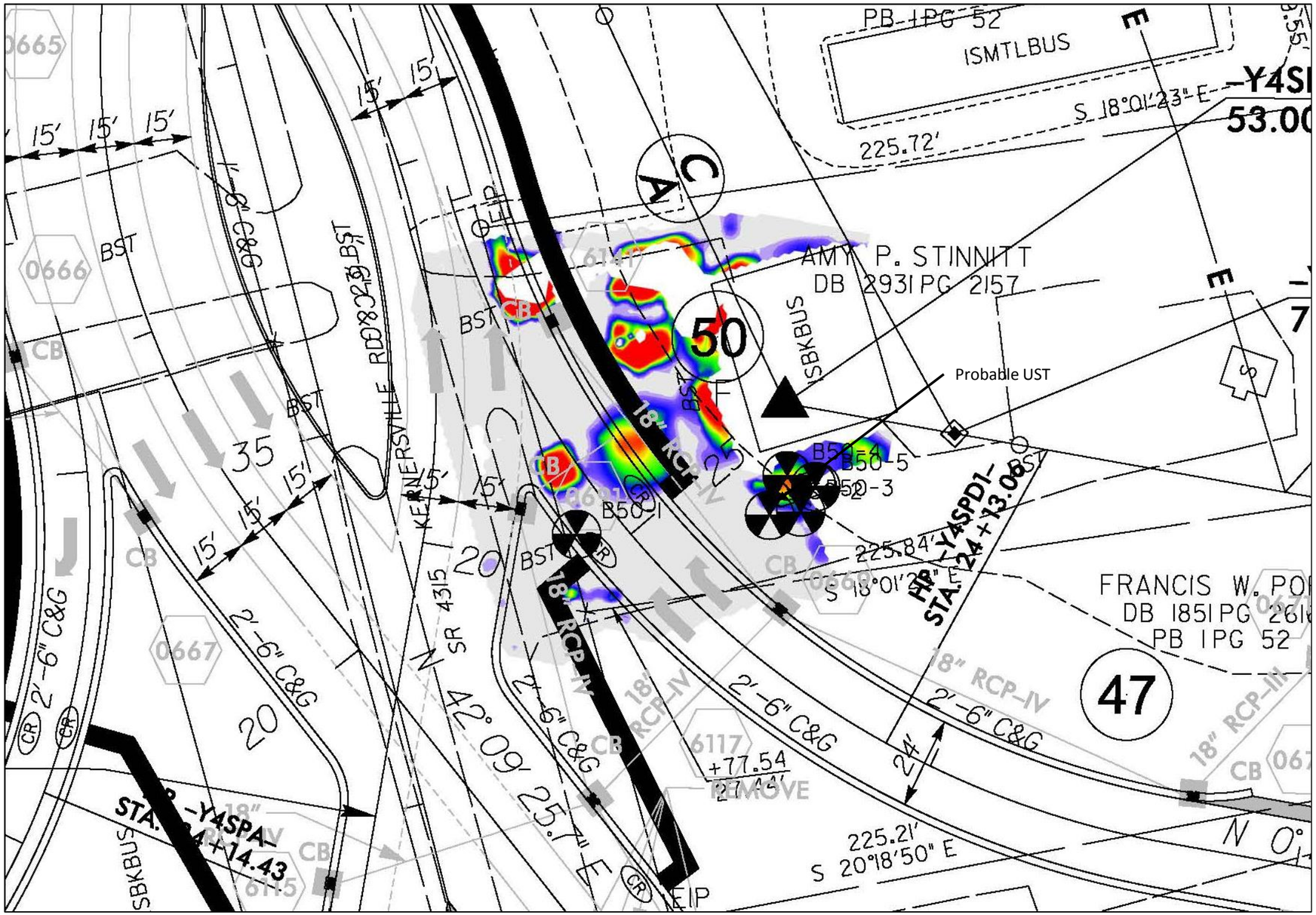

APPROXIMATE NORTH

30′ 0′ 30′

GRAPHIC SCALE

EM61 Differential Response (mV)

500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
70
-50

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
  - SS, u2579ab_rdy_ss.dgn
  - ROW, u2579ab_rdy_row.dgn
  - ..\..\FinalSurvey\U2579AB_ncdot_fs.dgn
  - U2579AB_hyd_dm.dgn

See Figure 9 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 7– PARCEL 050, AMY P. STINNITT
EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

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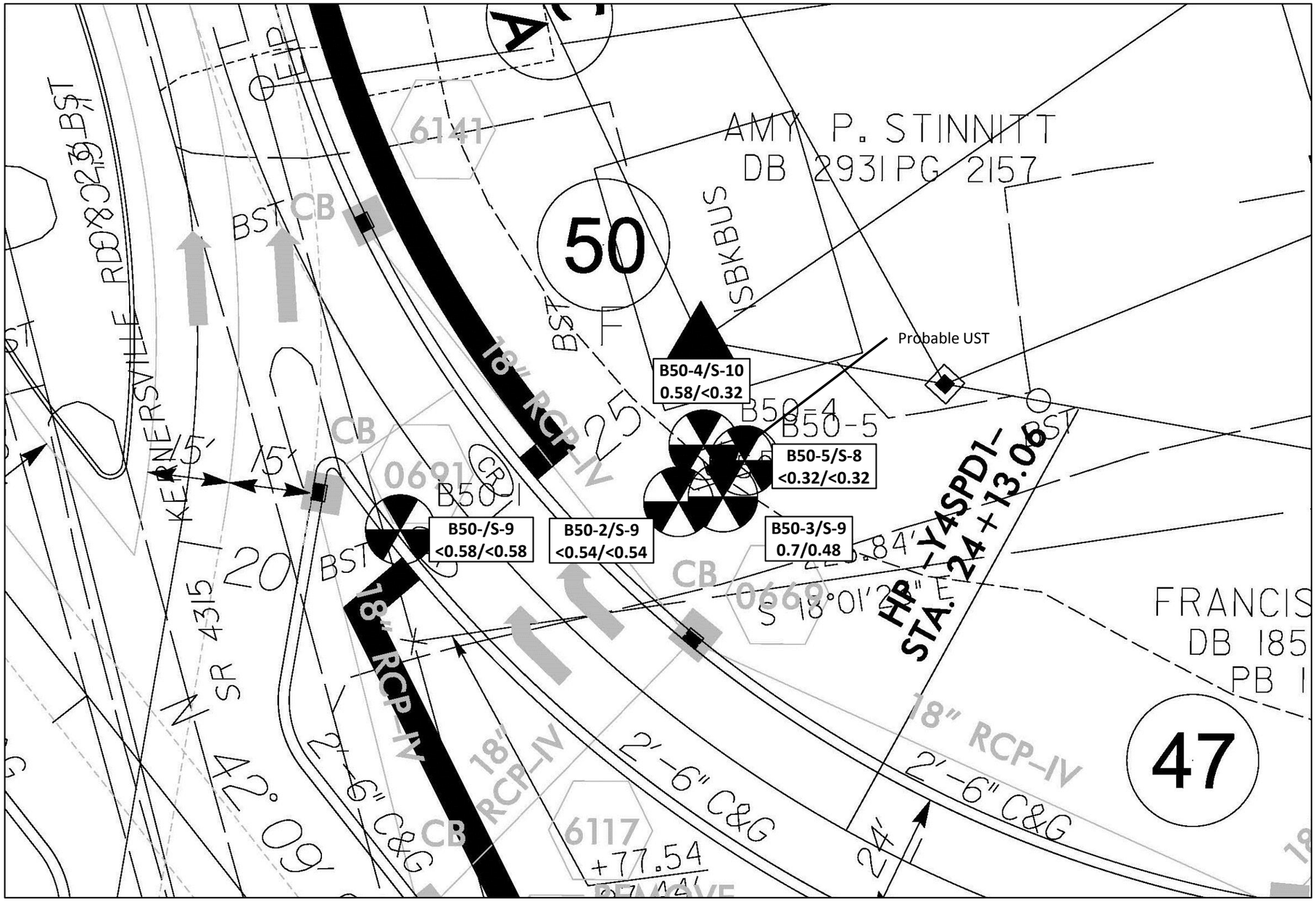

Explanation

B50-1/S-9 <0.58/<0.58 — **Maximum Analytical Results per Boring**
Boring No./Sample No.
GRO/DRO (mg/kg, ppm)

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
  - SS, u2579ab_rdy_ss.dgn
  - ROW, u2579ab_rdy_row.dgn
  - ..\..\FinalSurvey\U2579AB_ncdot_fs.dgn
  - U2579AB_hyd_dm.dgn

See Figure 9 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	1" = 20'
DATE	11/6/18
BY	DMN

FIGURE 8 – PARCEL 050, AMY P. STINNITT SOIL ANALYTICAL RESULTS ON PLAN SHEET

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

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04/26/15

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

PROJECT REFERENCE NO. | SHEET NO.

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line (E)
- Proposed Temporary Construction Easement (E)
- Proposed Temporary Drainage Easement (TDE)
- Proposed Permanent Drainage Easement (PDE)
- Proposed Permanent Drainage / Utility Easement (DUE)
- Proposed Permanent Utility Easement (PUE)
- Proposed Temporary Utility Easement (TUE)
- Proposed Aerial Utility Easement (AUE)
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*)
- U/G Power Line LOS C (S.U.E.*)
- U/G Power Line LOS D (S.U.E.*)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Cable LOS B (S.U.E.*)
- U/G Telephone Cable LOS C (S.U.E.*)
- U/G Telephone Cable LOS D (S.U.E.*)
- U/G Telephone Conduit LOS B (S.U.E.*)
- U/G Telephone Conduit LOS C (S.U.E.*)
- U/G Telephone Conduit LOS D (S.U.E.*)
- U/G Fiber Optics Cable LOS B (S.U.E.*)
- U/G Fiber Optics Cable LOS C (S.U.E.*)
- U/G Fiber Optics Cable LOS D (S.U.E.*)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (TV)
- TV Tower
- U/G TV Cable Hand Hole
- U/G TV Cable LOS B (S.U.E.*)
- U/G TV Cable LOS C (S.U.E.*)
- U/G TV Cable LOS D (S.U.E.*)
- U/G Fiber Optic Cable LOS B (S.U.E.*)
- U/G Fiber Optic Cable LOS C (S.U.E.*)
- U/G Fiber Optic Cable LOS D (S.U.E.*)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*)
- U/G Gas Line LOS C (S.U.E.*)
- U/G Gas Line LOS D (S.U.E.*)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*)
- SS Forced Main Line LOS C (S.U.E.*)
- SS Forced Main Line LOS D (S.U.E.*)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line LOS B (S.U.E.*)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

PROJECT NO.	CS34.366
SCALE	N/A
DATE	11/6/18
BY	DMN

FIGURE 9
LEGEND FOR PLAN SHEET FIGURES

U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
FORSYTH COUNTY, NORTH CAROLINA

ESP
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com

APPENDIX A
SOIL BORING LOGS

FIELD BORING LOG

BORING NO. B50-1

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366
LOCATION: Near Kernersville Rd.
TYPE OF BORING: Direct Push | DATE STARTED: 9/4/18 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/4/18 | TOTAL DEPTH: 10.0 ft
DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft
DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 5.0'/5.0'
				0.5-5.7 Red-brown sandy silt	
1	S-1	1.0-1.5	1.6		
2	S-2	2.0-2.5	1.7		
3	S-3	3.0-3.5	1.2		
4	S-4	4.0-4.5	1.3		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	1.3	5.7-10.0 Orange-brown silty sand	
6	S-6	6.0-6.5	1.7		
7	S-7	7.0-7.5	0.8		
8	S-8	8.0-8.5	1.0		
9	S-9	9.0-9.5	0.9		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B50-2

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366
LOCATION: NW side of UST
TYPE OF BORING: Direct Push | DATE STARTED: 9/4/18 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/4/18 | TOTAL DEPTH: 10.0 ft
DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft
DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 5.0'/5.0'
				0.5-2.2 Gray-brown sandy silt	
1	S-1	1.0-1.5	1.9		
2	S-2	2.0-2.5	1.1	2.2-10.0 Red-brown sandy, silty clay	
3	S-3	3.0-3.5	1.1		
4	S-4	4.0-4.5	1.2		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	1.7		
6	S-6	6.0-6.5	1.0		
7	S-7	7.0-7.5	0.9		
8	S-8	8.0-8.5	1.1		
9	S-9	9.0-9.5	1.0		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B50-3

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366

LOCATION: SW side of UST

TYPE OF BORING: Direct Push | DATE STARTED: 9/4/18 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/4/18 | TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT | LOGGED BY: D. Nance | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 5.0'/5.0'
				0.5-2.0 Gray-brown sandy silt	
1	S-1	1.0-1.5	1.3		
2	S-2	2.0-2.5	1.1	2.0-10.0 Red-brown silty clay	
3	S-3	3.0-3.5	1.2		
4	S-4	4.0-4.5	1.2		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	1.1		
6	S-6	6.0-6.5	1.2		
7	S-7	7.0-7.5	1.5		
8	S-8	8.0-8.5	0.9		
9	S-9	9.0-9.5	1.0		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B50-4

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366

LOCATION: E side of UST

TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT | LOGGED BY: N. Billington | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 5.0'/5.0'
				0.5-3.2 Dark brown clayey sand	
1	S-1	0.0-1.0	0.4		
2	S-2	1.0-2.0	0.4		
3	S-3	2.0-3.0	0.4	3.2-5.5 Orange-brown clay w/ sand	
4	S-4	3.0-4.0	0.4		Core 2 Rec 5.0'/5.0'
5	S-5	4.0-5.0	0.4	5.5-10.0 Orange-brown silt w/sand	
6	S-6	5.0-6.0	0.3		
7	S-7	6.0-7.0	0.3		
8	S-8	7.0-8.0	0.3		
9	S-9	8.0-9.0	0.1		
10	S-10	9.0-10.0	0.2		
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

FIELD BORING LOG

BORING NO. B50-5

PROJECT NAME: NCDOT U-2579AB PSA | PROJ. NO.: CS34.366

LOCATION: S side of UST

TYPE OF BORING: Direct Push | DATE STARTED: 9/5/18 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 9/5/18 | TOTAL DEPTH: 8.0 ft

DRILLER: Brian Ewing | SAMPLE METHOD: 5' Macro Core | DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT | LOGGED BY: N. Billington | COMMENT:

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt	Core 1 Rec 3.1'/5.0'
				0.5-3.0 Dark brown sandy clay	
1	S-1	0.0-1.0	0.8		
2	S-2	1.0-2.0	0.3		
3	S-3	2.0-3.0	0.2	3.0-4.5 Dark brown clayey sand	
4	S-4	3.0-4.0	0.3		Core 2 Rec 5.0'/5.0'
				4.5-8.0 Orange-brown to orange-gray and brown sandy silt	
5	S-5	4.0-5.0	0.1		
6	S-6	5.0-6.0	0.1		
7	S-7	6.0-7.0	0.2		
8	S-8	7.0-8.0	0.1		
9				Sample selected for laboratory analysis	
10					
11					
12					
13					
14					
15					

APPENDIX B

RED LAB LABORATORY TESTING REPORT

QED

AQROS

Hydrocarbon Analysis Results

Client: ESP ASSOCIATES, INC.
Address: 7011 ALBERT PICK ROAD
SUITE E
GREENSBORO NC 27409

Contact: DILLON NANCE

Project: U-2579 AB

Samples taken Monday, September 10, 2018
Samples extracted Monday, September 10, 2018
Samples analysed Wednesday, September 12, 2018

Operator NICK HENDRIX

U00904

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	
s	B60-4 (S-18)	11.6	<0.29	0.55	<0.29	0.55	<0.06	<0.09	<0.012	99.4	0.6	0	,(FCM),(P)
s	B60-3 (S-7)	19.2	<0.48	<0.48	5.3	5.3	3.7	0.2	<0.019	0	82.4	17.6	Deg Fuel 72.5%,(FCM)
s	B60-2 (S-8)	26.4	<0.66	<0.66	4.2	4.2	1.8	<0.21	<0.026	0	74.1	25.9	Deg.Fuel 78.6%,(FCM),(P)
s	B60-1 (S-10)	11.9	<0.3	<0.3	0.76	0.76	0.25	<0.1	<0.012	0	85.6	14.4	V.Deg.Diesel 74.8%,(FCM)
s	B50-5 (S-9)	12.9	<0.32	<0.32	<0.32	<0.32	<0.06	<0.1	<0.013	0	79.3	20.7	,(FCM),(BO)
s	B50-4 (S-10)	12.8	<0.32	0.58	<0.32	0.58	<0.06	<0.1	<0.013	94.3	5.7	0	Deg.PHC 71.8%,(FCM)
s	B50-3 (S-9)	13.8	<0.35	0.7	0.48	1.18	<0.07	<0.11	<0.014	95.9	4.1	0	Deg.Fuel 68.3%,(FCM)
s	B50-2 (S-9)	21.5	<0.54	<0.54	<0.54	<0.54	<0.11	<0.17	<0.022	0	100	0	PHC not detected
s	B50-1 (S-9)	23.3	<0.58	<0.58	<0.58	<0.58	<0.12	<0.19	<0.023	0	0	0	PHC not detected,(BO)

Initial Calibrator QC check OK Final FCM QC Check OK 103.3 %

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) = Modifed Result.

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

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name:	ESP Associates, Inc
Address:	7011 Albert Pick Rd. Ste E Greensboro, NC 27409
Contact:	Dillon Nance
Project Ref.:	U-2579AB
Email:	d.nance@espassociates.com
Phone #:	336-404-3117
Collected by:	D. Nance

REDLAB™

RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
9/10/18		✓	S	B36-5 S-7	✓		50.5	44.2	6.3
				B36-4 S-9			50.5	44.1	6.4
				B36-3 S-9			53.0	44.1	8.9
				B36-2 S-9			48.4	44.0	4.4
				B36-1 S-9			50.4	44.3	6.1
				B60-4 S-18			51.2	44.3	6.9
				B60-3 S-7			51.7	44.4	7.3
				B60-2 S-8			49.6	44.3	5.3
				B60-1 S-10			51.2	44.5	6.7
				B50-5 S-8			50.5	44.3	6.2
				B50-4 S-10			49.3	44.0	5.3
				B50-3 S-9			46.6	44.0	2.6
				B50-2 S-9			50.7	44.2	6.5
				B50-1 S-9			49.9	43.9	6.0
				B51-5 S-9			49.5	44.0	5.5
				B51-4 S-9			50.3	44.0	6.3
				B51-3 S-9			47.1	44.3	2.8
				B61-2 S-9			48.2	44.2	4.0
				B51-1 S-9			53.7	44.0	9.7

Comments: *most samples underweight. Soil matrix representation affected - data results largely unaffected. DH 9/12

Relinquished by	Date/Time	Accepted by	Date/Time
D. Nance	9/10/18 16:00	NF	9/11 11:20
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

(1a)