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
<b>County:</b>	Forsyth
<b>Description:</b>	Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40
	Business/US 421
Parcel No.:	050
<b>Owner:</b>	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.

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



not considered Final unless all signatures are completed

#### TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	HISTORY	1
3.0	SITE OBSERVATIONS	1
4.0	METHODS	1
4.1	Geophysics	1
4.2	Borings	1
4.3	Soil Sample Protocol	2
4.4	Groundwater	2
5.0	RESULTS	2
5.1	Geophysics	2
5.2	Sample Data	3
5.3	Sample Observations	3
6.0	CONCLUSIONS	3
6.1	Interpretation of Results	3
6.2	Geophysics	3
6.3	Soil	4
7.0	RECOMMENDATIONS	4
8.0	LIMITATIONS	4

#### TABLES

Table 1	Soil Sample PID Readings
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Table 2Soil Sample UVF Results Summary

#### FIGURES

Figure 1	Parcel 050,	Site	Vicinity	Map
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- Figure 2 Parcel 050, Site Photographs
- Figure 3 Parcel 050, EM61 Early Time Gate Response
- Figure 4 Parcel 050, EM61 Differential Response
- Figure 5 Parcel 050, GPR Images of Probable UST
- Figure 6 Parcel 050, EM61 Early Time Gate Response on Plan Sheet
- Figure 7 Parcel 050, EM61 Differential Response on Plan Sheet
- Figure 8 Parcel 050, Soil Analytical Results on Plan Sheet
- Figure 9 Legend for Plan Sheet Figures

#### TABLE OF CONTENTS (continued)

#### **APPENDICES**

Appendix A Soil Boring Logs

- Appendix B RED Lab Laboratory Testing Report
- Appendix C Chain-of-Custody Form

#### 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<sup>®</sup>. 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<sup>®</sup> 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

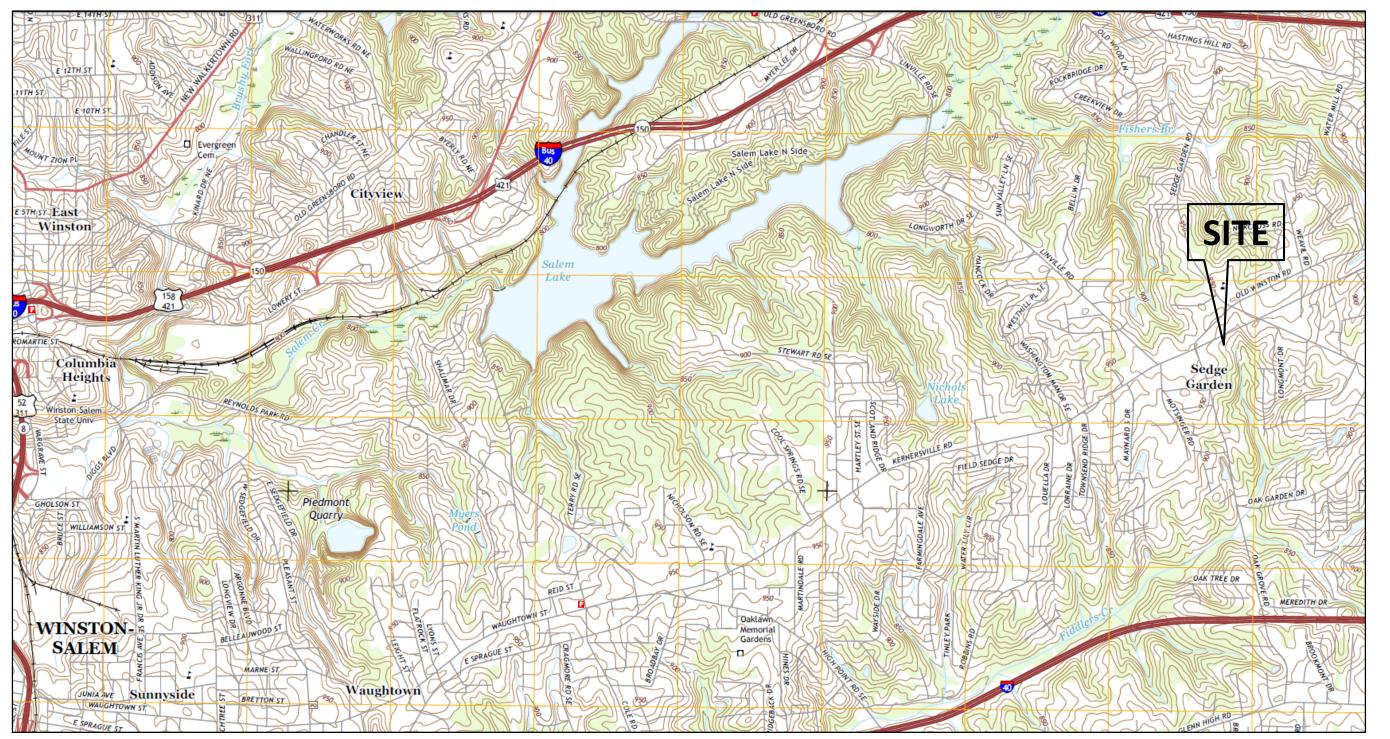
# TABLE 1SOIL SAMPLE PID READINGS

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)

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

TABLE 2SOIL SAMPLE UVF RESULTS SUMMARY

## FIGURES



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

PROJECT NO. CS34.366 SCALE AS SHOWN	FIGURE 1 – PARCEL 050, A SITE VICINITY
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTH
DMN	(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NOR1

AMY P. STINNITT Y MAP

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409



a. Photo from west side of site looking east.



c. Photo of marked probable UST.



b. Photo from north side of site looking south.



d. Photo of marked product line.

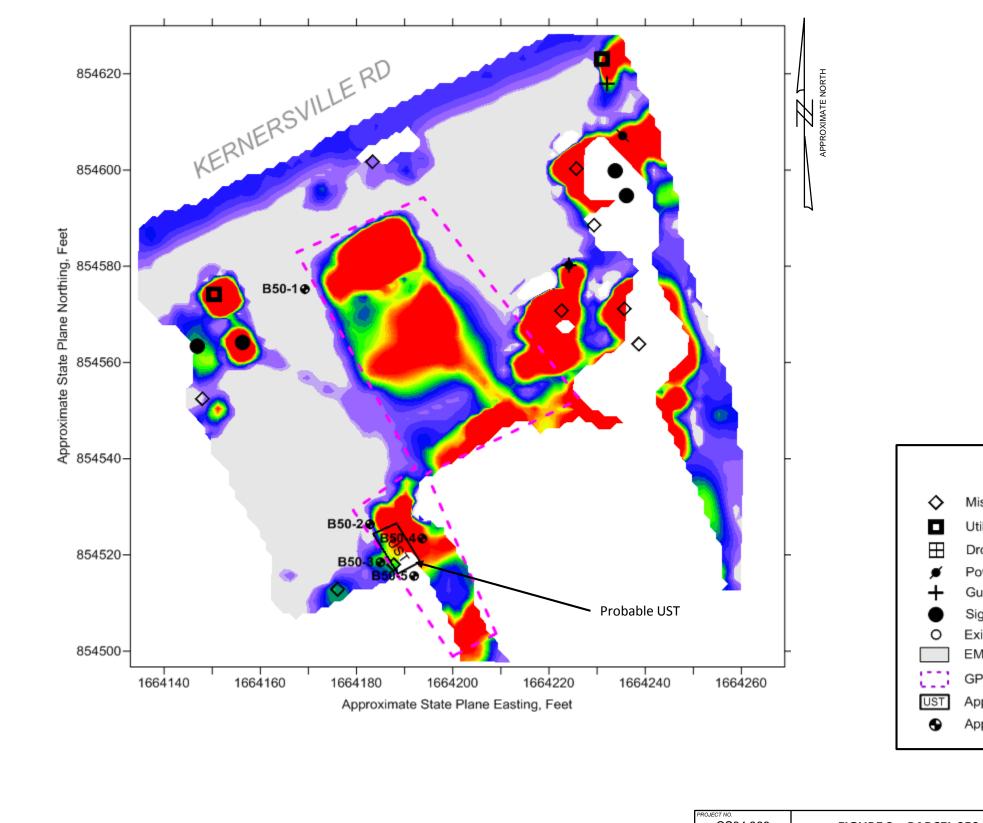
PROJECT NO. CS34.366	FIGURE 2 – PARCEL 050,	
SCALE AS SHOWN	SITE PHOTOGI	
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTH	
DMN	(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NOR	

, AMY P. STINNITT GRAPHS

ERN BELTWAY EASTERN SECTION I-40 BUSINESS/US421 IRTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409



	A3 300W
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees a	s to the accuracy 11/6/18
of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.	

PROJECT NO. CS34.366	FIGURE 3 – PARCEL 050, A
AS SHOWN	EM61 EARLY TIME G
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHERN
BY DMN	(FUTURE I-74) FROM I-40 TO I-40 FORSYTH COUNTY, NORTH

	1000
	950
	900
	850
~	800
Ê	750
ě	700
Suc	650
spc	600
Re	550
Gate	500
G	450
ne	400
Ē	350
÷	300
Ба	250
M61	200
ŝ	150
-	100
	50
	40
	30
	-200

#### **EXPLANATION**

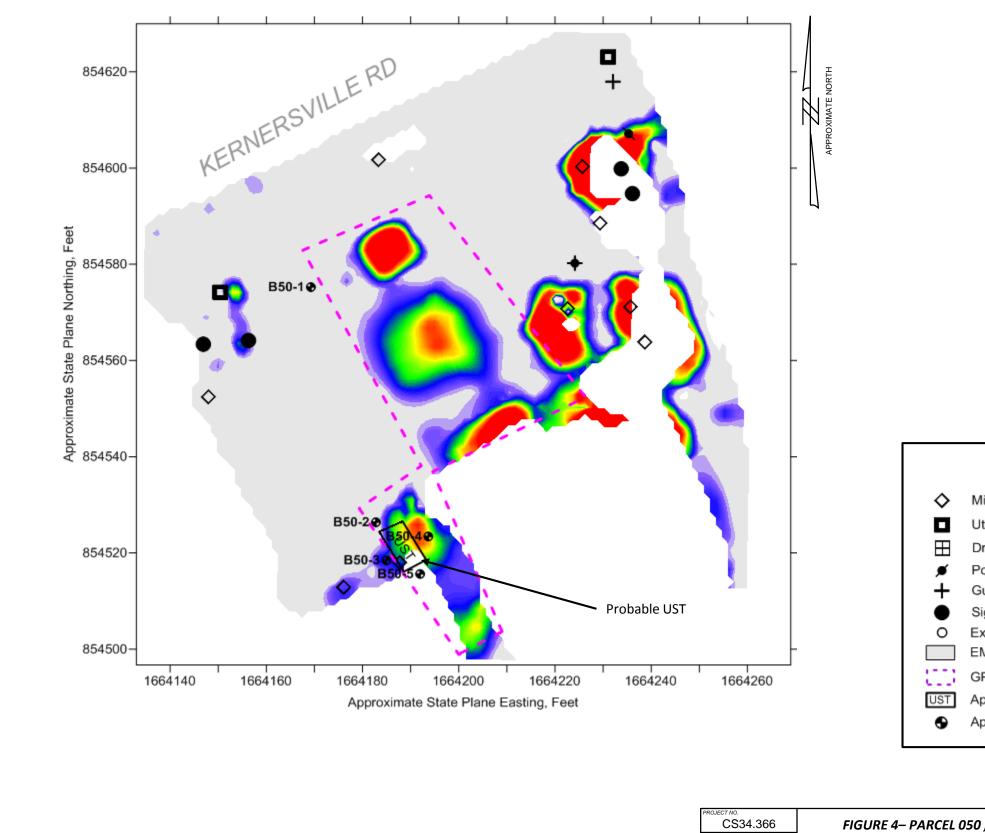
- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Existing UST fill port
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Approximate location of probable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

#### AMY P. STINNITT ATE RESPONSE





7011 Albert Pick Rd., Suite E Greensboro, NC 27409



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.

FIGURE 4– PARCEL 050 , A	PROJECT NO. CS34.366
EM61 DIFFERENTIAL	AS SHOWN
U-2579AB, WINSTON SALEM – NORTHERN	<sup>DATE</sup> 11/6/18
(FUTURE I-74) FROM I-40 TO I-40 FORSYTH COUNTY, NORTH	DMN

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	460
	440
	420
_	400
Š	380
E C	360
ns(	340
ğ	320
ĕ	300
a	280
ž	260
ē	240
	220
5	200
ž	180
ш	160
	140
	120
	100
	70
	-50

#### **EXPLANATION**

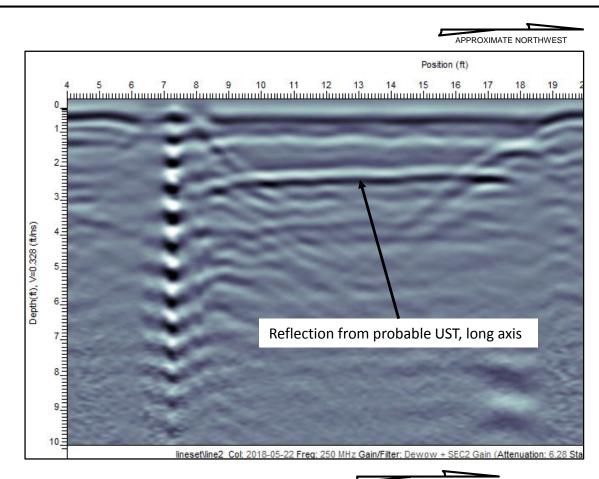
- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Existing UST fill port
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Approximate location of probable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

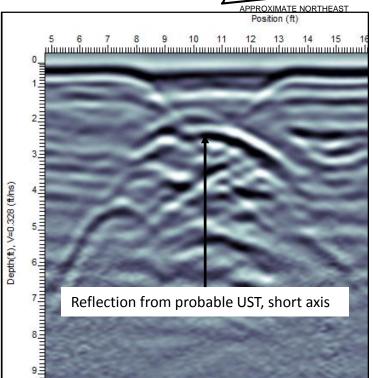
# AMY P. STINNITT





7011 Albert Pick Rd., Suite E Greensboro, NC 27409





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

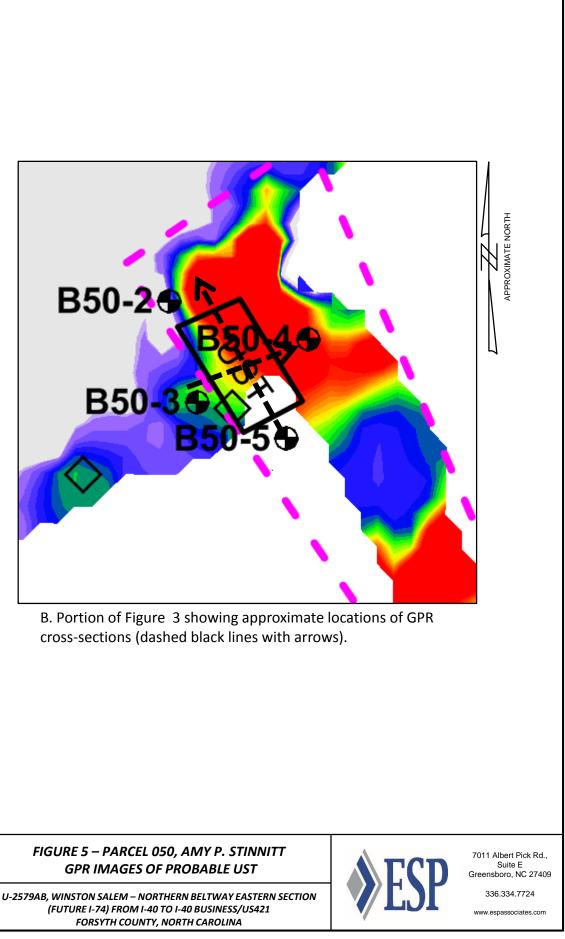
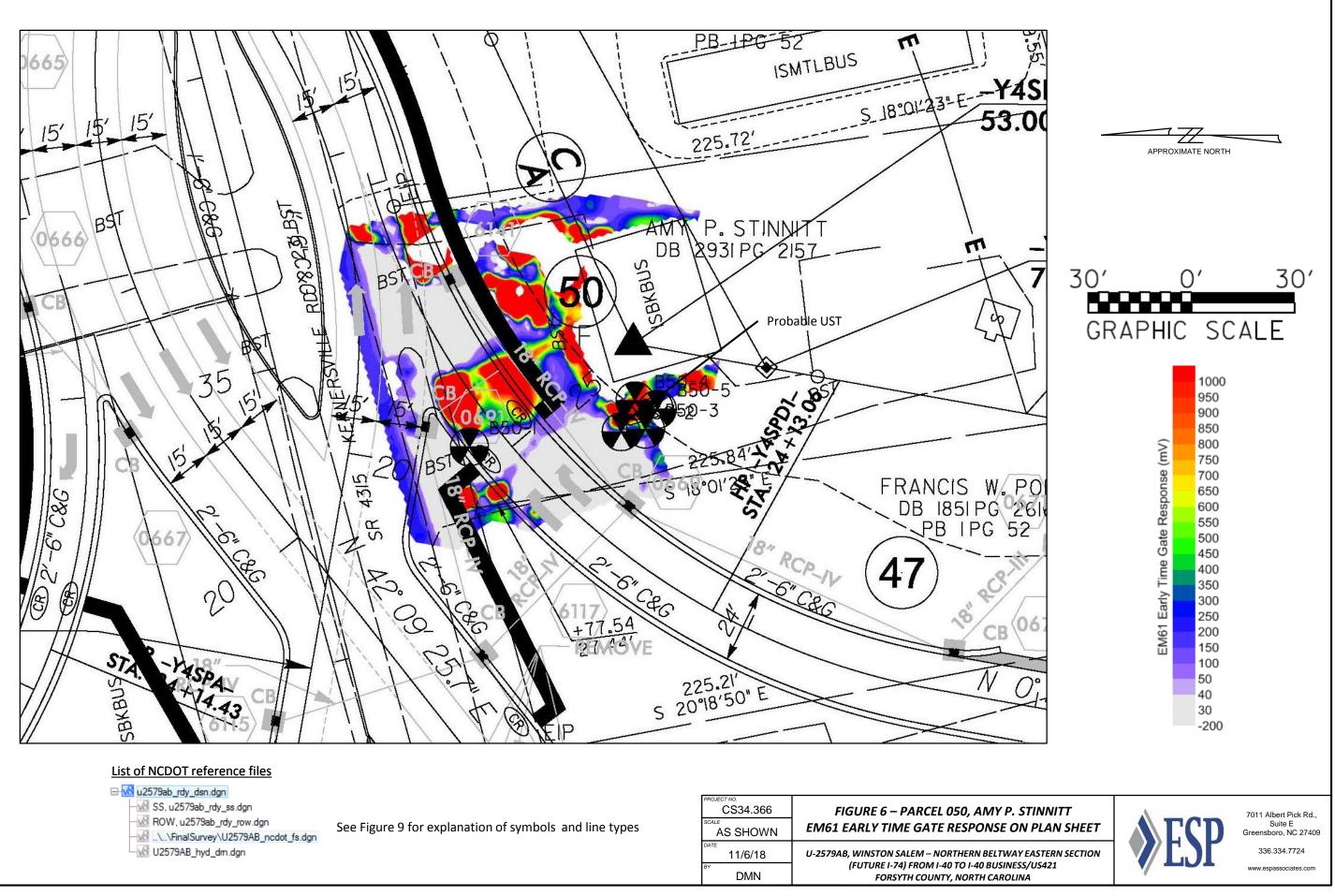
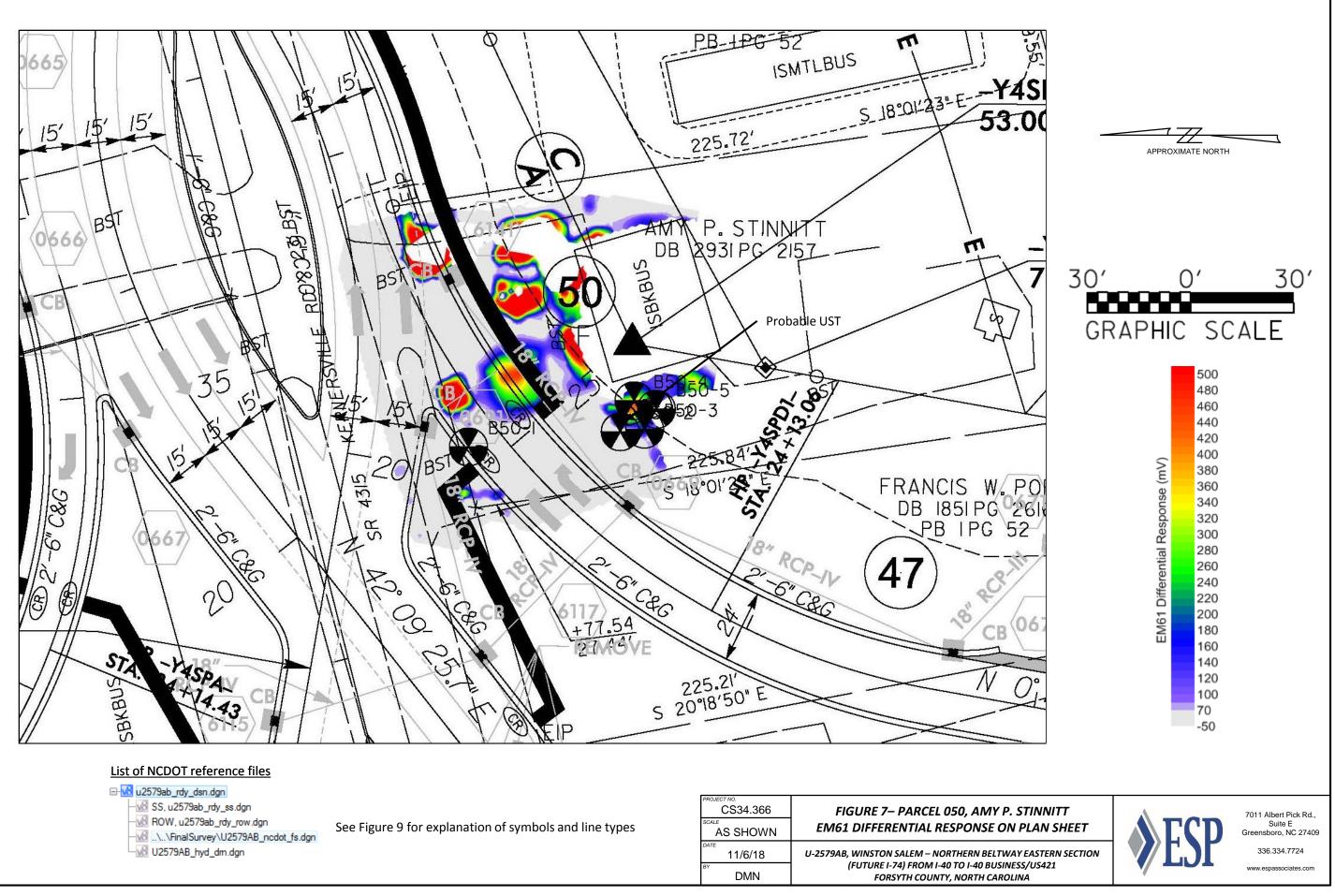


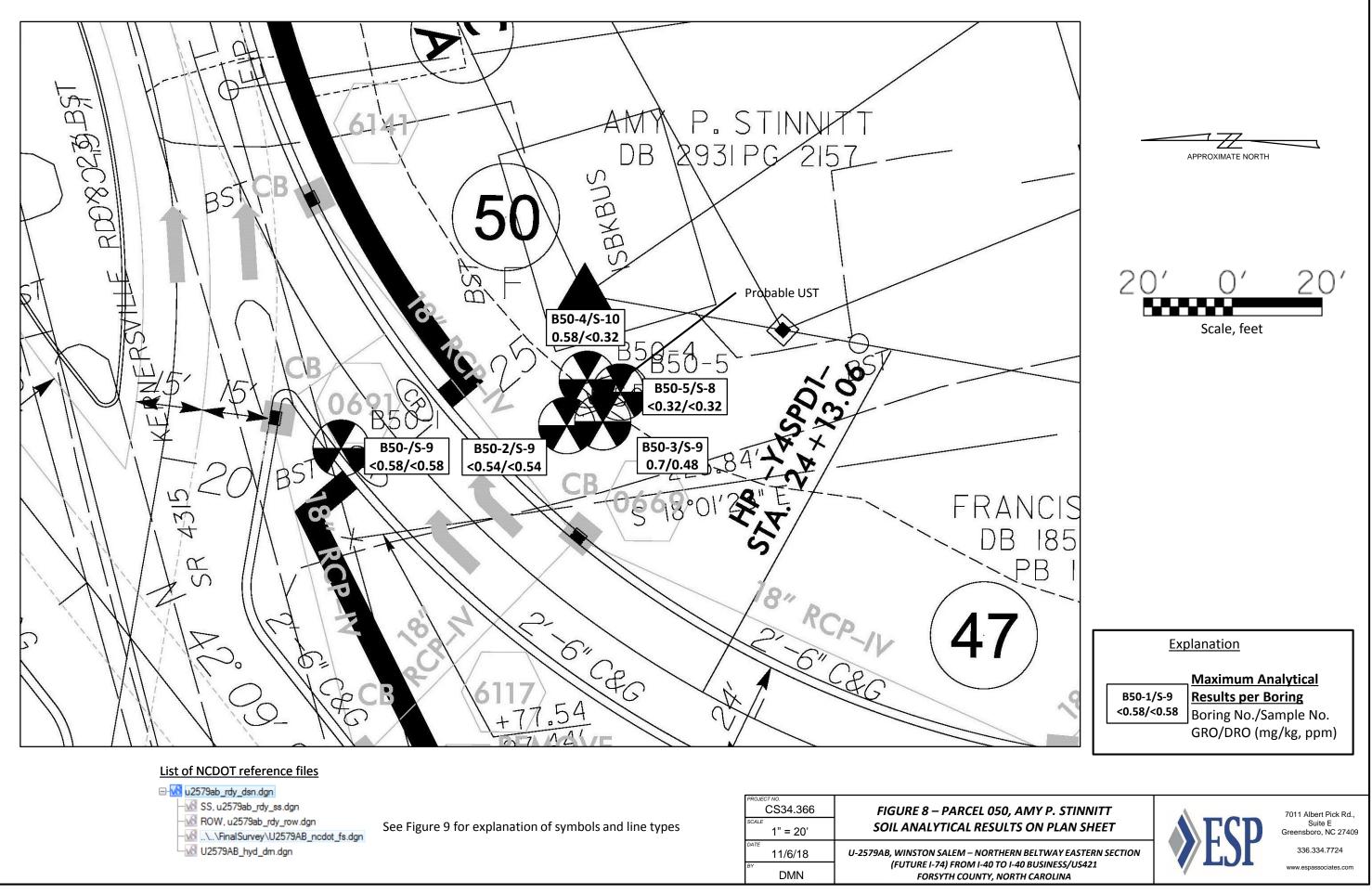
FIGURE 5 – PARCEL 050, A GPR IMAGES OF PRO
U-2579AB, WINSTON SALEM – NORTHERN
(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NORT

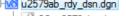


PROJECT NO. CS34.366	FIGURE 6 – PARCEL 050, J
AS SHOWN	EM61 EARLY TIME GATE RESP
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHER
DMN	(FUTURE I-74) FROM I-40 TO I- FORSYTH COUNTY, NOR



CS34.366	FIGURE 7– PARCEL 050, J
AS SHOWN	EM61 DIFFERENTIAL RESPO
<sup>DATE</sup> 11/6/18	U-2579AB, WINSTON SALEM – NORTHER
DMN	(FUTURE I-74) FROM I-40 TO I- FORSYTH COUNTY, NOR





ргојест но. CS34.366	FIGURE 8 – PARCEL 050, J
<sup>SCALE</sup> 1" = 20'	SOIL ANALYTICAL RESULT.
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHERI
DMN	(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NOR

Existing Historic Property Boundary       Proposed Control of Access       Proposed Control of Access       Proposed Property Boundary       GAS:         Known Contamination Area: Solil       Rever Proposed Temporary Construction Easement - true       Proposed Temporary Construction Easement - true       Proposed Prover Pole       Gas Valve       Gas Valve         Proposed Temporary Construction Easement - true       Proposed Permanent Drainage Formanent Drainage Formanent Drainage Formanent Drainage / Lillity Easement - true       Proposed Permanent Drainage Formanent Drainage / Lillity Easement - true       Proposed Permanent Drainage Formanent Drainage Formanent Drainage Formanent Drainage / Lillity Easement - true       Proposed Permanent Drainage Formanent Drainage Formanent Drainage Formanent Drainage / Lillity Easement - true       Proposed Permanent Drainage Formanent Drainage Formanent Proposed Permanent Drainage Formanent Dra		STATE OF NORTH	CAROLII	NA, DIVISION OF HIGHWA	AYS	
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Parcal Segurines Number <ul> <li>Bailing Right of Way, Nutre</li> <li>Bailing Camenon Diange Right of Way, Nutre</li> <li>Bailing Right of Way, Nutre</li> <li>Bailing Right of Way, Nutre</li> <li>Bailing Camenon Diange Right of Way, Nutre</li> <li>Bailing Camenon Diange Right of Way, Nutre</li> <li>Proposed Right of Way, Nutre</li> <li>Bropposed Right of Way, Nutre<td></td><td></td><td></td><td>Bridge Wing Wall, Head Wall and End Wall-</td><td>- ) conc ++ (</td><td>Above Groond w</td></li></ul>				Bridge Wing Wall, Head Wall and End Wall-	- ) conc ++ (	Above Groond w
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Potential Contomination Area: Soil       -32       -32       -32       Proposed Temporary Construction Easement-       -12       Proposed Temporary Construction Easement-       Proposed		Proposed Control of Access	<b></b>		T	GAS:
Known Contamination Area: Water       38       -38		Existing Easement Line	——E——			Gas Valve
Patential Contamination Area: Water		Proposed Temporary Construction Easement -	E			Gas Meter
Contaminated Site: Known or Potential       Indiade Handlend Durling's Lossment       Out       Power Manhole       0       UG Gas Line LO         BUILDINGS AND OTHER CULTURE:       Proposed Fermanent Unitigs Lossment       Proposed Fermanent Unitigs Lossment       Prover Transformer       Id       Above Ground G         Sing       Proposed Fermanent Unitigs Lossment       Proposed Fermanent Unitigs Lossment       Prover Transformer       Id       Above Ground G         Small Mine       Proposed Fermanent Easement with       VIII       Proposed Fermanent Easement with       VIII       Sanitary Sever Al         Small Mine       Proposed Fermanent Easement with       VIII       Proposed Fermanent Easement with       VIIII Proposed Fermanent Easement with       VIIIII Proposed Fermanent Easement with       VIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Proposed Temporary Drainage Easement	TDE			U/G Gas Line LO
BUILDINGS AND OTHER CULTURE:       Proposed Permanent Uniting Soment		Proposed Permanent Drainage Easement —	PDE			U/G Gas Line LO
Gas Pump Vent or UG Tank Cap       O       Proposed Fermanent Onling Easement       Tute       Power Transformer       E       SANITARY SEWER:         Sign       Proposed Aerial Utility Easement       Tute       UG Power Cable Hand Hole       SANITARY SEWER:         Well       Proposed Permanent Easement with Inon Pin and Cap Marker       WG Power Line LOS B (S.U.E.*)       UG Power Line LOS D (S.U.E.*)       UG Sonitary Sever Above Ground Sc         Cametery       Existing Edge of Povement       Existing Edge of Povement       SS Forced Main I         Building       Proposed Stope Stakes Cut       Proposed Telephone Pole       O         Proposed Guardrail       Proposed Guardrail       SS Forced Main I         Proposed Guardrail       Proposed Cuble Guiderail       III       IIII Pole         Proposed Cuble Guiderail       III       IIII Pole       IIII Pole       IIII Pole         Proposed Cable Guiderail       III       IIII Pole       IIII Pole       IIIII Pole       IIIII Pole         Proposed Lateral, Tail, Head Ditch       Single Struck       Single Struck       Single Struck       IIII Pole       IIIIII Pole       IIIIIII Pole       IIIIIIIIII Pole       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Proposed Permanent Drainage / Utility Easement	DUE			U/G Gas Line LO
Sign		Proposed Permanent Utility Easement	PUE			Above Ground G
Well       Proposed Annu Omity Edsement       Aut       H_Frame Pole       Sanitary Sever Mills         Small Mine       Proposed Permanent Easement with for Pin and Cap Marker       W       UG Power Line LOS B (S.U.E.*)       Sanitary Sever Mills         Foundation       Proposed Permanent Easement with for Pin and Cap Marker       WG Power Line LOS D (S.U.E.*)       UG Sonitary Sever Mills         Cemetery       Existing Edge of Povement       FELEPHONE:       SS Forced Main I         Building       Proposed Slope Stakes Cut       FELEPHONE:       SS Forced Main I         School       Proposed Curb Ramp       GB       Felephone Pole       C         Dam       Existing Telephone Pole       C       MILL       MISCELLANEOUS:         Dam       Existing Cable Guiderail       Froposed Guardrail       Existing Cable Guiderail       MILL       MILL       MILL       MILL         Proposed Curb Ramp       GB       Froposed Curb Ramp       GB       Telephone Pole       C       MILL       SS Forced Main I		Proposed Temporary Utility Easement ———	TUE			CANITARY COMED.
Small Mine       *       Proposed Permanent Ecsement with       *       WG Power Line LOS B (S.U.E.*)       Sanitary Sewer CI         Foundation       *       ROADS AND RELATED FEATURES:       UG Power Line LOS D (S.U.E.*)       UG Sanitary Sewer CI         Cemetery       *       *       WG Power Line LOS D (S.U.E.*)       UG Power Line LOS D (S.U.E.*)       UG Sanitary Sewer CI         School       *       *       *       WG Power Line LOS D (S.U.E.*)       SS Forced Main I         Church       *       *       *       *       SS Forced Main I         Church       *       *       *       *       SS Forced Main I         Church       *       *       *       *       *       SS Forced Main I         Church       *       *       *       *       *       *       SS Forced Main I         Church       *       *       *       *       *       *       *       *       SS Forced Main I         Dam       *       *       *       *       *       *       *       *       SS Forced Main I         Mitry Color Reservoir       *       *       *       *       *       *       *        SS Forced Main I       *       <		Proposed Aerial Utility Easement	AUE			
Small Aine       *       iron Pin and Cap Marker       *       UG Power Line LOS B (S.U.E.*)       UG Sanitary Sew         Foundation       *       ROADS AND RELATED FEATURES:       UG Power Line LOS B (S.U.E.*)       UG Sanitary Sew         Cemetery       *       *       *       WG Power Line LOS B (S.U.E.*)       WG Sanitary Sew         Building       *       *       *       *       WG Power Line LOS B (S.U.E.*)       WG Sanitary Sew         School       *       *       *       *       *       *       Above Ground Sc         Church       *       *       *       *       *       *       *       SS Forced Main I         Church       *       *       *       *       *       *       *       *       SS Forced Main I         Church       *       *       *       *       *       *       *       *       SS Forced Main I         Dam       *       *       *       *       *       *       *       *       SS Forced Main I         HYDROLOGY:       *       *       *       *       *       *       *       *       *       *       *       *       *        *       *		Proposed Permanent Easement with				,
Area Outline       Existing Edge of Pavement       UG Power Line LOS D (S.U.E.*)       Above Ground Sc         Cemetery       Existing Edge of Pavement       SS Forced Main I       SS Forced Main I         Building       Froposed Slope Stakes Fill       Froposed Slope Stakes Fill       SS Forced Main I         Church       Proposed Slope Stakes Fill       Froposed Guardrail       Existing Edgehone Pole       O         HYDROLOGY:       Proposed Guardrail       Froposed Guardrail       IIIIII Pole with E         Stream or Body of Water       Existing Cable Guiderail       IIIIII Pole with E         Hydro, Pool or Reservoir       Froposed Caube Guiderail       IIIIIII Pole with E         Building       Froposed Cable Guiderail       IIIIIIII Pole with E         Building       Froposed Cable Guiderail       IIIIIIIII Pole with E         Proposed Cable Guiderail       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII			<b>&gt;</b>			
Cemetery       SS Forced Main I         Building       Fraposed Slope Stakes Cut       SS Forced Main I         School       Fraposed Slope Stakes Cut       SS Forced Main I         Church       Proposed Slope Stakes Cut       SS Forced Main I         Proposed Slope Stakes Fill       Proposed Curb Ramp       Existing Telephone Pole       O         MINDROLOGY:       Stream or Body of Water       Proposed Guardrail       Telephone Cable Note       MISCELLANEOUS:         Stream or Body of Water       Existing Cable Guiderail       Telephone Cable LOS B (S.U.E.*)       Utility Located OF         Jurisdictional Stream       ISE I       Proposed Cable Guiderail       Utility Traffic Sign         Buffer Zone 1       Existing Cable Guiderail       Force       Utility Traffic Sign         Buffer Zone 2       Existing Tree       Single Tree       Utility Traffic Sign         Spring       VEGETATION:       Single Shrub       G       G Telephone Conduit LOS D (S.U.E.*)       Utility Conduct Actor         Wetland       *       Woods Line       *       G       Genenvironmenter       AG Tank; Water,         Buffer Optics Cable LOS C (S.U.E.*)       *       *       AG Tank; Water,       Genenvironmenter       Genenvironmenter       Genenvironmenter         Buffer Zone 1						
Camery       Existing Curb       Fisting Curb       SS Forced Main I         Building       Proposed Slope Stakes Cut       Image: State S		Existing Edge of Pavement		U/G Power Line LOS D (S.U.E.*)	·•	
Building       Proposed Slope Stokes Cut       Fishing Telephone Pole       SS Forced Main I         School       Proposed Slope Stokes Fill       Proposed Slope Stokes Fill       Proposed Telephone Pole       MISCELLANEOUS:         HYDROLOGY:       Proposed Guiderail       Proposed Guiderail       II       Utility Pole       II         Hydro, Pool or Reservoir       Proposed Cub B Guiderail       Froposed Cub B Guiderail       II       Utility Coated Oc         Jurisdictional Stream       II       Proposed Cub B Guiderail       III       Utility Coated Oc         Buffer Zone 1       Froposed Cub B Guiderail       III       Utility Unknown U       UG Telephone Cable LOS B (S.U.E.*)       Utility Unknown U         Buffer Zone 2       Fiz 2       VEGETATION:       Single Tree       III       Ud Telephone Codult LOS B (S.U.E.*)       Ud G Telephone Codult LOS B (S.U.E.*)       Ud G Telephone Codult LOS D (S.U.E.*)       III du data Guadraid         Wetland       Hedge       Woods Line       III       Woods Line       IIII du data Guadraid       IIII du data Guadraid       IIII du data Guadraid       IIIIIIII du data Guadraid       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Entering Cone		TELEPHONE:		
School       Proposed Slope Stakes Fill       Proposed Slope Stakes Fill       Proposed Telephone Pole       O         Church       Proposed Curb Ramp       III       Proposed Curb Ramp       III       Utility Pole         Dam       HYDROLOGY:       Proposed Guardrail       III       Utility Pole       III         Stream or Body of Water       Proposed Guardrail       IIII       Utility Pole       IIII       Utility Pole         Jurisdictional Stream       Jurisdictional Stream       Jurisdictional Stream       Jurisdictional Stream       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Proposed Slope Stakes Cut	£	Existing Telephone Pole	. <b></b>	
Church       Proposed Curb Ramp       Image: Construction of the construction		Proposed Slope Stakes Fill	Ľ			55 Forcea Main I
Dam       Existing Metal Guardrail       Image: Construction of Body of Water       Image: Construction of Body of Body of Water       Image: Construction of Body of B	Church	Proposed Curb Ramp	CR		. n	MISCELLANEOUS:
AmpRoducts:       Proposed Guardrail       Image: Construction of the serve in the ser		Existing Metal Guardrail	<u> </u>		. m	Utility Pole —
Sheath of Body of Water       Existing Cable Guiderail       Image: Cable Guiderail <t< td=""><td></td><td>Proposed Guardrail</td><td></td><td></td><td></td><td>Utility Pole with B</td></t<>		Proposed Guardrail				Utility Pole with B
Hydro, Pool or Keservoir       Proposed Cable Guiderail       Image: Cable Guiderail       <	-	Existing Cable Guiderail	<u> </u>			Utility Located Ob
Jurisdictional Stream       _js       Equality Symbol       Image: Construction of the		Proposed Cable Guiderail				Utility Traffic Sian
Buffer Zone 1       Buffer Zone 2       Pavement Removal       Pavem		Equality Symbol	•			
Flow Arrow       VEGETATION:       U/G Telephone Conduit LOS B (S.U.E.*)       U/G Telephone Conduit LOS B (S.U.E.*)         Disappearing Stream       Single Tree       I/G Telephone Conduit LOS C (S.U.E.*)       A/G Tank; Water,         Spring       I/G Telephone Conduit LOS D (S.U.E.*)       I/G Te		Pavement Removal				
Flow Arrow       Single Tree       Single Tree       UG Telephone Conduit LOS D (S.U.E.*)       AG Tank; Water,         Disappearing Stream       Single Shrub       o       UG Telephone Conduit LOS D (S.U.E.*)       AG Tank; Water,         Vetland       Hedge       Woods Line       Woods Line       UG Fiber Optics Cable LOS D (S.U.E.*)       Image: Conduit LOS D (S.U.E.*)		VEGETATION:				Underground Stor
Spring       Single Shrub       Image: Single Shrub       Image		Single Tree	÷			5
Wetland       +         Proposed Lateral, Tail, Head Ditch       Woods Line         Woods Line       -         W						
Proposed Lateral, Tail, Head Ditch       Woods Line       Image: Contraction of the contrest of the contraction of the contraction of the contraction of t						
Proposed Lateral, Tail, Head Ditch Fiber Optics Cable LOS C (S.U.E.*) Fider of Information		-	- <u></u>			
	raise sump —					

PROJECT NO. CS34.366	FIGURE 9
scale N/A	LEGEND FOR PLAN SHE
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHERN B
DMN	(FUTURE I-74) FROM I-40 TO I-40 E FORSYTH COUNTY, NORTH

PROJECT	REFERENCE NO. SHEET NO.
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own U/G Line LOS B (S.U.E.*)	
Vater, Gas, Oil	
d Storage Tank, Approx. Loc. —	
Vater, Gas, Oil	
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le LOS A (S.U.E.*)	
According to Utility Records —	
mation ————	E.O.I.

#### 9 HEET FIGURES

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409

336.334.7724

www.espassociates.com

# APPENDIX A SOIL BORING LOGS

Ň	FSP			FIF	LD BORING LOG		BORING NO.
	ECT NAME:	NCE Near Kerne	OT U-2579/		PROJ. NO.: <u>CS34.366</u>		B50-1
TYPE DRILI DRILI	OF BORING LING FIRM:		Direct Pus SAEDACC Brian Ewin eoprobe 782	O	DATE STARTED: 9/4/18 DATE FINISHED: 9/4/18 SAMPLE METHOD: 5' Macro Core LOGGED BY: D. Nance	SHEET: TOTAL DEPTH: DEPTH TO GW: COMMENT:	10.0         ft           Dry         ft
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION		REMARKS
	\$	S E	RE	0.0-0.5 0.5-5.7	Asphalt Red-brown sandy silt		Core 1 Rec 5.0'/5.0'
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				
<u>10</u>		Samı	le selected	for laborato	pry analysis		
11							
12							
13							
14							
15							

	FSP			FIEI	DB	ORINO	g log		BORING NO.
	ECT NAME:	NCE NW side of	OT U-2579/ UST				PROJ. NO.: <u>CS</u>		B50-2
DRILI DRILI	OF BORING LING FIRM: LER: LRIG:		Direct Pus SAEDACC Brian Ewin eoprobe 782	:O ng	DATE SAMPLE	STARTED: 9 FINISHED: 9 METHOD: 6 DGGED BY:	9/4/18 5' Macro Core	SHEET TOTAL DEPTH DEPTH TO GW COMMENT	l: 10.0 ft /: Dry ft
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		_	FIELD CLAS	SIFICATION A		REMARKS
				0.0-0.5 0.5-2.2	Asphalt Gray-br	own sandy s	silt		Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	1.9						
2	S-2	2.0-2.5	1.1	2.2-10.0	Red-bro	wn sandy, s	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		Samp	le selected	for laboratory	y analysis				
 11									
12									
13									
14									
15									

	FSP			FIELD BORING LOG	BORING NO.
	ECT NAME:	NCE SW side of	DOT U-2579/ UST		B50-3
TYPE DRILI DRILI	OF BORING LING FIRM:		Direct Pus SAEDACC Brian Ewin eoprobe 782	O         DATE FINISHED:         9/4/18         TOTAL DEPTH:           g         SAMPLE METHOD:         5' Macro Core         DEPTH TO GW:	10.0         ft           Dry         ft
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
			<u>د</u>	0.0-0.5 Asphalt 0.5-2.0 Gray-brown sandy silt	Core 1 Rec 5.0'/5.0'
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		Samp	le selected	or laboratory analysis	
<u>11</u>					
12					
 13					
14					
15					

	FSP			FIF			<u>.</u>		BORING NO.
PRO.	IECT NAME:	NCI	DOT U-2579			PROJ. NO.:			B50-4
	TION:	E side of U							
	OF BORING	i:	Direct Pus SAEDACC			STARTED: <u>9/5/18</u> FINISHED: <u>9/5/18</u>		SHEET: TOTAL DEPTH:	
DRILI			Brian Ewir			METHOD: 5' Macro Cor	e		
	_ RIG:	G	eoprobe 782	-		GGED BY: N. Billington	0	COMMENT:	
ft)	ш	ш£	U					-	
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		F	FIELD CLASSIFICATION PHYSICAL DESCRIPT			REMARKS
				0.0-0.5 0.5-3.2	Asphalt	wn clayey sand			Core 1 Rec 5.0'/5.0'
				0.5-5.2	Dark bio	wir clayey sand			
1	S-1	0.0-1.0	0.4						-
2	S-2	1.0-2.0	0.4						
	02	1.0-2.0	0.4						
3	S-3	2.0-3.0	0.4	3.2-5.5	Orange-b	prown 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-h	prown silt w/sand			
		4.0-0.0	-		Orange	Jown Silt W/Sana			
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						
		0.0 10.0							
									<u> </u>
11		Sarr	ple selected	for laborat	ory analysis				·
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<b>SESP</b>				BORING NO.						
	ECT NAME:	NCE S side of US	OOT U-2579/				PROJ. NO.: <u>C</u>			B50-5
TYPE	OF BORING		Direct Pus		-	E STARTED: 9			SHEET	
DRILL DRILL	LING FIRM:		SAEDACC Brian Ewin			E FINISHED: 9 E METHOD: 5			TOTAL DEPTH DEPTH TO GW	
DRILL		G	eoprobe 782			OGGED BY: N			COMMENT	
(ft)	щ	Е. (ft)	Ű		-					
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)				SIFICATION / DESCRIPTIC			REMARKS
				0.0-0.5 0.5-3.0	Asphal Dark b	t rown sandy c	lav			Core 1 Rec 3.1'/5.0'
1	S-1	0.0-1.0	0.8			,	,			
-	5-1	0.0-1.0	0.0							
2	S-2	1.0-2.0	0.3							
•										·
3	S-3	2.0-3.0	0.2	3.0-4.5	Dark b	rown clayey s	and			
_3	00	2.0-3.0	0.2	0.0 4.0	Danto	lown oldyby c				
4	S-4	3.0-4.0	0.3							Core 2 Rec 5.0'/5.0'
a				4.5-8.0	Orange	e-brown to ora	ange-gray ar	nd brown sai	ndy silt	·
5	S-5	4.0-5.0	0.1							
-										
	S-6	5000	0.1							
6	3-0	5.0-6.0	0.1							
•										
7	S-7	6.0-7.0	0.2							
8 (	S-8	7.0-8.0	0.1							
•										
		- Isami	he selected	for laboratory	analycic	1				
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## **APPENDIX B**

## **RED LAB LABORATORY TESTING REPORT**

$\mathbf{Q}$	ED											J	<u>QROS</u>
				Hydroca	arbon An	alysis Ro	esults						
Client: Address:	ESP ASSOCIATES, INC. 7011 ALBERT PICK ROAD SUITE E GREENSBORO NC 27409								San Sample Sampl		acted		Monday, September 10, 2018 Monday, September 10, 2018 Wednesday, September 12, 201
Contact:	DILLON NANCE									Ор	erator		NICK HENDRIX
Project:	U-2579 AB												
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	9	% Ratios		U0090 HC Fingerprint Match
							(010-035)			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		0.58	<0.32	0.58	<0.06	<0.1	<0.013		5.7	0	Deg.PHC 71.8%,(FCM)
S	B50-3 (S-9)	13.8		0.7	0.48	1.18	<0.07	<0.11	<0.014	95.9	4.1		Deg.Fuel 68.3%,(FCM)
S	B50-2 (S-9)	21.5		<0.54	<0.54	<0.54	<0.11	<0.17	<0.022	0	100	-	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)
	Initia	l Calibrator	QC check	OK					Final FC	CM QC	Check	OK	103.3
	on values in mg/kg for soil samples and m ns :- FCM = Results calculated using Fun brift : (SBS)/(LBS) = Site Specific or Librar	damental Calib	ration Mode	: % = confide	nce of hydroc	arbon identific	cation : (PFM) =	Poor Fing	erprint Match	n : (T) = T	urbid : (	P) = Par	ticulate detected

# APPENDIX C CHAIN-OF-CUSTODY FORM

Client Name:	ESP Associates, FAC
Address:	7011 Albert Pick Rd. Ste E Greenslere, NC 27409
Contact:	Dillon Nonce
Project Ref.:	11-2579AB
Email:	d.nance@espassociates.com
Phone #:	336-404-3117
Collected by:	D. Nance



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

ample Collection	TAT Requested24 Hour48 Hour		n TAT Requested		T Requested Matrix Sample ID UVF GC		GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
Date/Time			(S/W)		Sample iD					
9/10/18		V	5	B36-5 5.	-7	V		50.5	44.2	6.3
1		)	1	B36-4 5-	-9	1		50.5	44.1	6.4
				B36-3 5-				530	44.1	8.9
				B36-2 5-				48.4	44.0	4.4
				B36-1 5-				50,4	44.3	61
				B60-4 5-				51.2	44.3	6.9
				B60-3 5-				51.7	44.4	7.3
				B60-2 5-				49.6	44.3	5.3
				B60-1 5-				51.2	44.5	6.7
				B50-5 S-	8			50,5	44.3	6.2
				B50-4 5-1				49.3	44.0	5.3
				B50-3 6-				46.0	44.0	2.6
				850-2 5-	and a second s			50.7	44.2	2.6
				B50-1 5-				49.9	43.9	6.0
				B51-5 5-0				49.5	44.0	5.5
				B51-4 5-0				50.3	44.0	6.3
				B51-3 5-0				47.1	44.3	2.8
				B61-2 5-0				48.2	44.2	40
V		V		BET-1 5-0		V		53.7	44.0	97
omments:	ost sa	mples u	nderwa	largely shaft		escatati (12)	2)	R	ED Lab USE	ONLY
Relinquished by				e/Time	Accepted by		Date/Time	1	5	
DiNance			9/10/	<i>i</i>	N	4 9/1	Date/Time	1	$(1 \alpha)$	
	Relinquished by			e/Time	Accepted by		Date/Time	1	(17)	
								1		