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Our People. Your Success.

## **GEOENVIRONMENTAL PHASE II INVESTIGATION**

### **TIP NUMBER B-5985**

Parcel #005 – Charles & Billy Strickland  
203 West 2<sup>nd</sup> Street  
PIN 939165786200  
Lumberton, Robeson County, North Carolina  
WR Project No. 02191306.11

#### **NCDEQ UST Section Information**

Facility ID: N/A  
Facility Name: N/A  
Facility Owner: N/A

#### **Prepared for:**

North Carolina Department of Transportation  
Geotechnical Engineering Unit  
1589 Mail Service Center  
Raleigh, NC 27699-1589

#### **Report Prepared By:**

WithersRavenel, Inc.  
115 MacKenan Drive  
Cary, North Carolina 27511  
(919) 469-3340  
North Carolina Firm License No. C-0832

**December 6, 2021**

December 6, 2021

Craig E. Haden  
NC Department of Transportation  
1589 Mail Service Center  
Raleigh, NC 27699-1589

**Reference: GeoEnvironmental Phase II Investigation**  
**TIP Number B-5985**  
**WBS Number 47749.1.1**  
**Parcel #005, Charles & Billy Strickland**  
**203 West 2<sup>nd</sup> Street**  
**Lumberton, Robeson County, North Carolina**  
**WR Project No. 02191306.11**


Dear Mr. Haden:

WithersRavenel, Inc. (WR) is pleased to submit this report describing limited GeoEnvironmental Phase II Investigation activities for the above referenced property. The enclosed report summarizes the results of subsurface geophysical and soil sampling assessment activities completed in November of 2021 with the purpose of assessing the above referenced property by the North Carolina Department of Transportation Geotechnical Engineering Unit (NCDOT GEU).

The investigation was conducted in accordance with NCDOT's Request for Technical and Cost Proposal dated October 6, 2021; WR's Proposal dated October 18, 2021; and Limited Services Contract #7000020477 between the NCDOT and WithersRavenel, dated April 15, 2020.

Please do not hesitate to contact us with any questions or comments regarding this report.

Sincerely,  
WithersRavenel

DocuSigned by:  
  
146C3C179A8A468...

Dec 7, 2021

Benjamin Whitley, PE  
Senior Project Manager, Environmental



R.S. (Butch) Lawter, Jr., PE  
Vice President - Environmental Services

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## 1. INTRODUCTION

WithersRavenel, Inc. (WR) is pleased to submit this investigation report describing GeoEnvironmental Phase II Investigation activities completed at the Charles and Billy Strickland property (Parcel #005) located at 203 West 2<sup>nd</sup> Street, Lumberton, NC (the Site). **Sheet 1** depicts the site location on a USGS topographic map. These assessment activities were completed at the request of NCDOT in support of replacing Bridge #770125 over the Lumber River on NC 41/72 and Bridge #770175 over the Lumber River on SR 1600.

The Site is an automotive repair and inspection facility with no registered underground storage tanks (USTs). One surficial release was reportedly remediated in 2008 following the spill of waste oil on the southern (rear) portion of the site. The proposed NCDOT right-of-way expansion will be on the northern portion of the site, which is the highest topographic point of the property and is generally improved upon with asphalt paved parking and driveway areas.

### 1.1. Scope of Services

WR conducted a geophysical survey in an effort to locate possible UST system components and other subsurface features within the proposed NCDOT right-of-way. WR subcontracted Geo Solutions Limited, Inc. (Geo Solutions), who utilized multi-frequency electromagnetic (EM) and ground penetrating radar (GPR) methods to perform the geophysical survey. The results of the geophysical survey are discussed further in Section 2.1 of this report.

Subsequent to the geophysical survey, WR subcontracted a GeoProbe direct push drill rig and advanced four shallow soil borings at various locations at the subject site. Soil samples were collected and screened for volatile organic vapors using a field-calibrated Photoionization Detector (PID). WR collected one soil sample from the interval in each boring that exhibited the highest PID reading, or from the interval at the bottom of the boring. Soil samples were collected and transported to RedLab, a North Carolina certified laboratory, for analysis of Total Petroleum Hydrocarbons by ultraviolet fluorescence (UVF) methods. The findings of the soil investigation are discussed further in Section 2.2 of this report.

## 2. ASSESSMENT ACTIVITIES

### 2.1. Geophysical Survey

On November 3, 2021, WR visited the site to conduct a geophysical survey in an effort to locate possible UST system components and other subsurface features. WR subcontracted Geo Solutions, who utilized multi-frequency electromagnetic and ground penetrating radar methods to perform the geophysical survey. The electromagnetic (EM) evaluation was performed using a Geophex Model GEM-2 profiler. The EM data was collected with a hand-held logger and location information was recorded using a sub-meter global positioning system (GPS) unit. Geo Solutions also completed a GPR evaluation using a GSSI SIT 4000 connected to a 400 MHz antenna. The spacing of survey transects were three feet or less across the site during both methods.

Geo Solutions reported an elevated EM response adjacent to the building on the eastern portion of the site. Geo Solutions indicated the response was typical of reinforced concrete. GPR methods were limited in this area due to this reinforced concrete. During the GPR survey, an anomalous area was detected on the western portion of the site adjacent to West 2<sup>nd</sup> Street; however, the GPR response was not characteristic of a UST. As there was no EM response, Geo Solutions attributed this anomaly to conductive soil or fill, which was later confirmed by drilling and soil sample collection.

Geo Solutions' findings are presented in their *Technical Report - Geophysical Evaluation*, included in **Appendix A**.

### 2.2. Soil Investigation

WR returned to the site on November 16, 2021 with subcontract driller Carolina Probing Services (dba Regional Probing Services) to conduct the proposed soil investigation at the Site. Regional Probing utilized a direct-push drill rig (GeoProbe) to advance four soil borings within the proposed NCDOT right-of-way at various locations at the Site, including the following areas:

- Three borings (B-1 through B-3) adjacent to the northern, eastern and western sides of the concrete slab on the eastern portion of the site. Due to the proximity of the building to this slab, a boring was unable to be advanced on the southern side of the slab; and,
- One boring (B-4) within the anomaly identified on the western portion of the site.

The proposed termination depth of each boring was 10 feet below ground surface (bgs). The proposed termination depth was achieved at each boring location. No obstructions or drill refusal was encountered.

Soils were generally observed to consist of moist, tan-gray-brown silty fine-to-medium sands and sandy clays from ground surface to boring termination. In addition, brick and stone was observed in Boring B-4 from ground surface to approximately two feet bgs. The presence of brick and stone is likely the cause of the anomaly identified during the GPR survey. Silty sands that appeared to be native in consistency were observed beneath this layer of brick and stone. Additional details for each boring can be found in Boring Logs located in **Appendix B** of this report.

Soil samples were collected at approximate two-foot intervals and screened for volatile organic vapors using a field-calibrated Photoionization Detector (PID). PID readings ranged from 0.4 ppm

(in Boring B-3) to 1.4 ppm (in Boring B-2). WR collected one soil sample from the interval in each boring that exhibited the highest PID reading. WR notes that a soil sample was not collected from B-4 since this area did not appear to be the location of a former UST and elevated PID readings were not recorded.

The selected soil samples were collected in laboratory-provided containers, placed on ice, and transported under proper chain-of-custody procedures to RedLab, a North Carolina certified laboratory, for analysis of Total Petroleum Hydrocarbons (TPH) by ultraviolet fluorescence (UVF) methods. A summary of the PID readings and the corresponding TPH laboratory results can be found in the attached **Table 1**.

Saturated soils were encountered in Borings B-1, B-3, and B-4 between nine and 10 feet bgs, suggesting this depth was near the groundwater table.

Following completion of sampling, each boring was properly backfilled by filling the bore hole with cuttings and/or chip bentonite. Each boring was then finished at ground surface with grout.

### **3. LABORATORY ANALYTICAL RESULTS**

#### **3.1. Analytical Results**

Laboratory analytical results for the soil samples collected on November 16, 2021, indicated the presence of TPH above laboratory method detection limits for the three samples submitted for analysis. The NCDEQ UST Section Action Limits [50 mg/kg for Gasoline Range Organics (GRO) and 100 mg/kg for Diesel Range Organics (DRO)] were not exceeded in these soil samples. UVF fingerprinting generally identified these detections as road tar, degraded petroleum hydrocarbons and degraded fuel. Table 1 provides a summary of PID results with UVF TPH laboratory concentrations for comparisons. The full laboratory results and chain of custody are also attached in **Appendix C** of this report.

#### **3.2. Contaminated Soil Quantity Estimation**

Since no TPH Action Limits were exceeded in the soil samples submitted for analysis, no soils appear to be present at the locations sampled that would require special handling or disposal.

### **4. CONCLUSIONS**

WR has completed a GeoEnvironmental Phase II Investigation at the B-5985 Parcel #005 Charles & Billy Strickland site. The findings of this investigation indicate the presence of a reinforced concrete slab beneath the asphalt pavement on the eastern portion of the proposed right-of-way. In addition, a small area of urban fill was detected (approximately 10 feet x 10 feet) on the western portion of the site. Soil samples submitted for analysis indicated concentrations of TPH GRO and DRO above laboratory MDL, but below NCDEQ UST Section Action Limits.

According to NCDOT's slope stake plans, grading for the proposed project will include minor amounts of fill soils to establish the proposed grade. No below grade features appear to be proposed (such as stormwater drainage devices). Therefore, it is not likely that contaminated soil will be encountered during site grading activities. However, if contaminated soils are encountered,

WR recommends managing and disposing of these soils in accordance with federal, state, and local guidelines.

Please contact us if you have any questions or comments regarding this report.

Sincerely,  
WithersRavenel



Benjamin Whitley, PE  
Senior Project Manager, Environmental

R.S. (Butch) Lawter, Jr., PE  
Vice President - Environmental Services

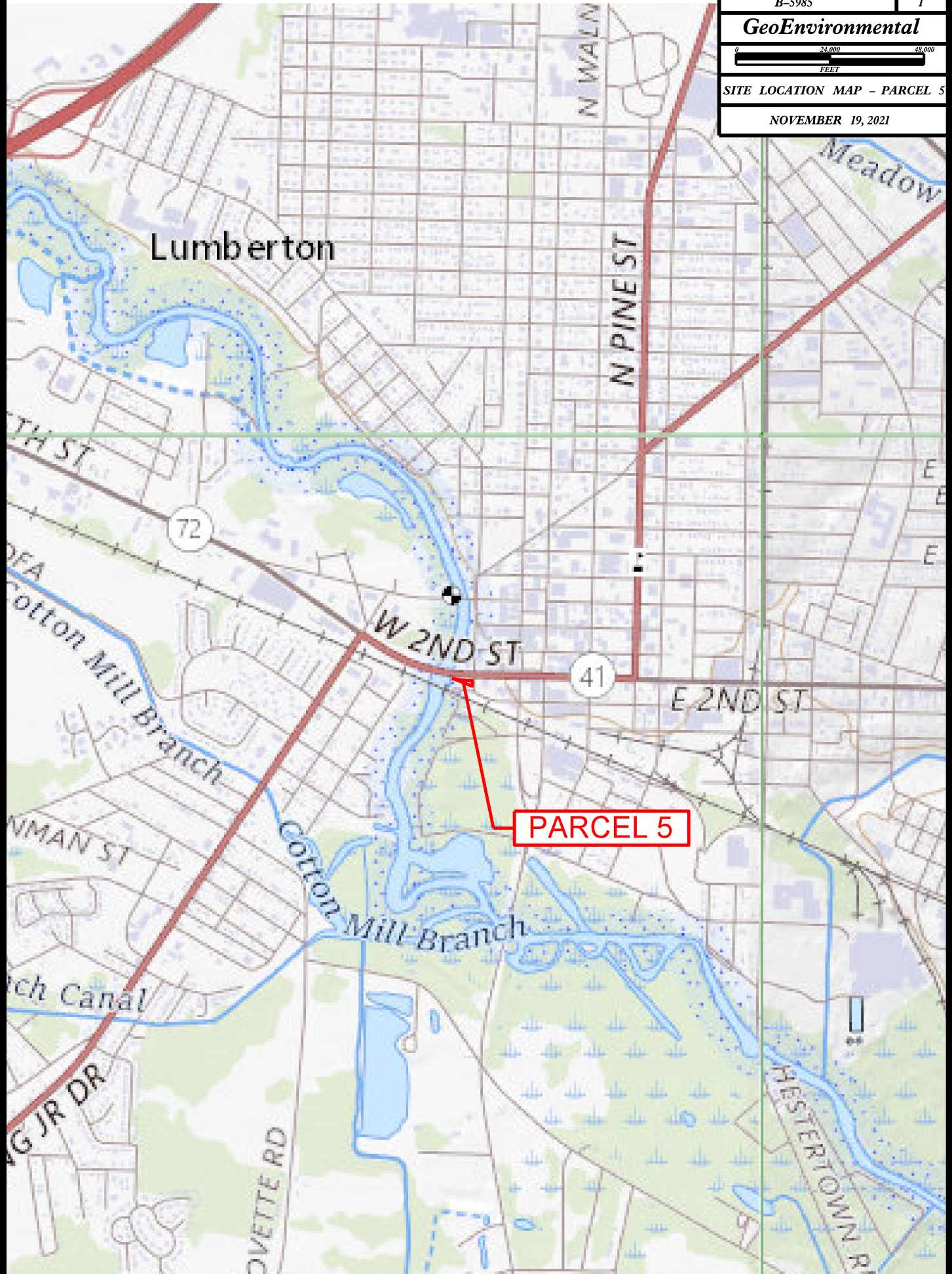
## FIGURES



**GeoEnvironmental**



NOVEMBER 19, 2021



Lumberton

N WALN

N PINE ST

Meadow

72

41

**PARCEL 5**

W 2ND ST

E 2ND ST

Cotton Mill Branch

Cotton Mill Branch

HESTERTOWN R

TH ST

DEA

NMAN ST

ch Canal

G JR DR

IVETTE RD



## **TABLES**

**TABLE 1  
PID RESULTS AND SAMPLE SUMMARY TABLE**

NCDOT B-5985  
PARCEL #005 - Charles & Billy Strickland  
LUMBERTON, NC  
WR PROJECT NO. 02191306.11

BORING	B-1			B-2			B-3			B-4		
	DEPTH (feet)	PID	GRO	DRO	PID	GRO	DRO	PID	GRO	DRO	PID	GRO
0-2	0.5	-	-	0.8	-	-	0.4	-	-	0.6	-	-
2-4	0.9 *	4.7	39.4	1.0	-	-	1.0	-	-	0.5	-	-
4-6	0.8	-	-	1.4 *	2.6	0.58	1.1 *	3.1	16.9	0.5	-	-
6-8	0.8	-	-	1.1	-	-	0.9	-	-	0.6	-	-
8-10	0.7	-	-	0.8	-	-	0.6	-	-	0.5	-	-

NCDEQ UST Section Action Limits: 50 mg/kg GRO  
100 mg/kg DRO

PID - Photoionization Detector Reading (in ppm)

GRO / DRO - Gasoline and Diesel Range Organics (in mg/kg)

NR - Not Recorded

'-' - Not Analyzed

\*\*\* - Interval Selected for Laboratory Analysis

Detections in **BOLD** indicate exceedance of NCDEQ UST Section Action Limit

## **APPENDIX A**

### **TECHNICAL REPORT - GEOPHYSICAL EVALUATION**

# **Technical Report**

## **Geophysical Evaluation**

**NCDOT U-5985 – Lumberton, NC**



**Prepared For:**

**WithersRavenel**

**Prepared By:**

**Geo Solutions Limited, Inc.**

**November 22, 2021**



P.O. Box 293  
Conway, NC 27820  
(252) 578-3233

November 22, 2021

Benjamin Whitley, PE  
WithersRavenel  
115 MacKenan Drive  
Cary, NC 27511

**Re: Geophysical Evaluation – NCDOT U-5985 – Lumberton, NC**

File: Report

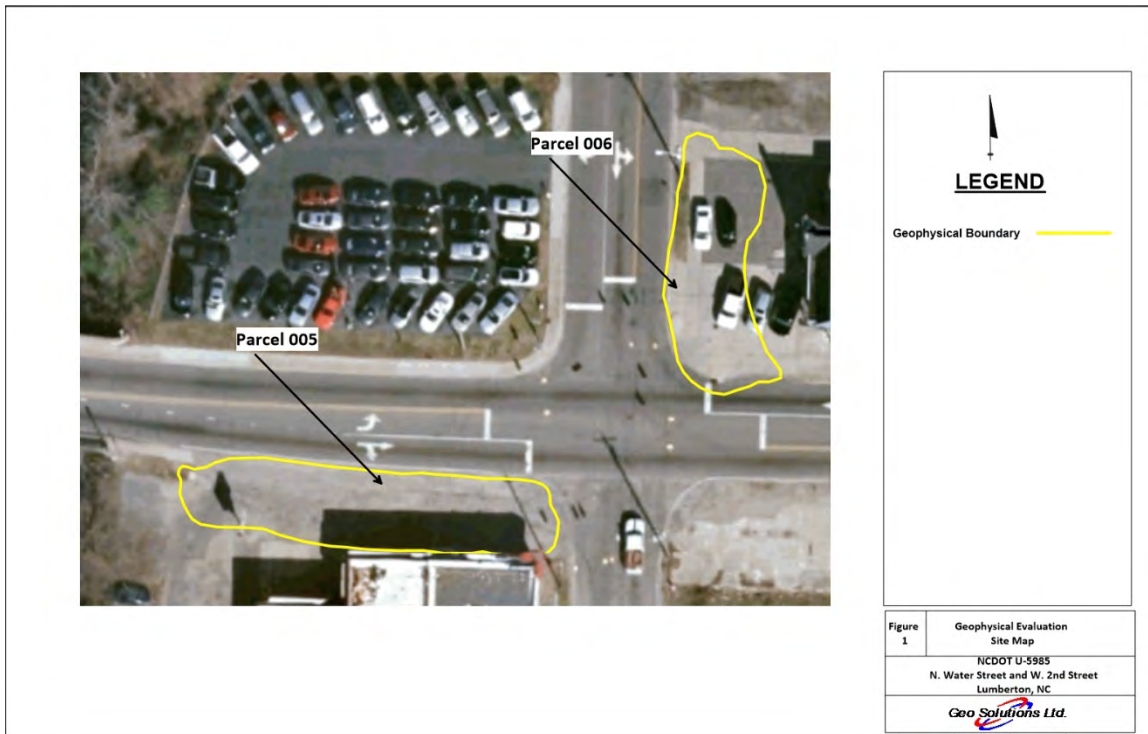
Dear Mr. Whitley:

Geo Solutions Limited, Inc. (Geo Solutions) is pleased to submit this report to WithersRavenel of a geophysical evaluation in support of an environmental site assessment of a North Carolina Department of Transportation (NCDOT) right of way (ROW) located at the intersection of N. Water Street and W. 2<sup>nd</sup> Street in Lumberton, North Carolina.

### **Background**

WithersRavenel is completing an environmental site assessment of the NCDOT ROW at the intersection of N. Water Street and W. 2<sup>nd</sup> Street in Lumberton, North Carolina. The NCDOT is planning to widen the roadway at the intersection of N. Water Street and W. 2<sup>nd</sup> Street in Lumberton. Two of the adjacent properties were formally occupied by fuel service stations and are currently occupied by auto repair shops. WithersRavenel identified these two adjacent properties as possible sites of former underground storage tanks (USTs). As such, WithersRavenel contracted Geo Solutions to complete a geophysical evaluation of these adjacent properties within the proposed ROW. The objective of the geophysical evaluation was to detect and map any UST or other buried structure that may impact the NCDOT widening project. Figure 1 below is a site map with the geophysical evaluation

boundaries delineated. The southern area along W. 2<sup>nd</sup> Street is referred to as Parcel 005 and the northern area along N. Water Street as Parcel 006.



**Figure 1. Site map of the area of NCDOT intersection widening project with the geophysical evaluation boundaries delineated in yellow.**

## **Technical Approach**

Geo Solutions completed the evaluation utilizing two geophysical methods to investigate the two adjacent properties along N. Water Street and W. 2<sup>nd</sup> Street in Lumberton, North Carolina. The field work for this project was completed on November 03<sup>rd</sup>, 2021.

### *Multifrequency Electromagnetic (EM) Evaluation*

A high resolution electromagnetic (EM) evaluation was completed using a Geophex Model GEM-2 multifrequency electromagnetic profiler which collects at a rate of 30 times per second. The EM data was collected on a hand-held data logger that communicated with the GEM-2 unit via Bluetooth. The GEM-2 was connected to a Hemisphere Model A-325 GPS



unit which is augmented by the Wide Area Augmentation System (WAAS) and is capable of submeter accuracy. The EM profile spacing was approximately 3 feet or less. The EM method is useful at evaluating the shallow subsurface for both metallic and non-metallic conductive materials such as USTs and variations in soil conductivity which may be related to former land use.

### *Ground-penetrating Radar (GPR) Evaluation*

Geo Solutions completed a ground penetrating radar (GPR) evaluation over the two sites. Here, a GSSI SIR 4000 connected to a 400 MHz antenna mounted on a three-wheel cart was utilized. Parallel profiles spaced 3 feet or less were collected. The GPR records were post processed with GSSI Radan 7 software.

## **Results**

### *Multifrequency Electromagnetic Evaluation*

Geo Solutions completed an EM evaluation of the site with parallel profiles spaced approximately 3 feet apart over both sites (Figure 2). Once adequate survey coverage was achieved, the EM field data were post-processed to produce a comma separated variable (CSV) file that was then transferred to a laptop computer. These data were then processed using software developed by Geophex to calculate the apparent conductivity and in-phase values for each EM frequency collected (1470Hz, 4110 Hz, 9810 Hz, 32,190 Hz, 60000 Hz, and 90030 Hz). Typically, the in-phase data (sometimes referred to as the metal detection mode) is more representative of buried metallic materials whereas the apparent conductivity is more representative of non-metallic conductive buried materials. The apparent conductivity response can also be elevated in the presence of large metal features. By evaluating both the in-phase and apparent conductivity responses, the horizontal extents of conductive and metallic materials can be characterized. All the frequencies were evaluated and the 9,810 Hz data was chosen to create figures for this report as it provided the best contrast to background site conditions. Shown on Figure 3 and Figure 4 are the

EM in-phase and apparent conductivity maps respectively with explanations for the anomalous conditions observed in the EM data. Here, anomalous conditions are shown as orange to red and blue hues where the background site conditions are shown as light yellow and green hues. At the location of Parcel 005 along W. 2<sup>nd</sup> Street there was an elevated EM response in both in-phase and apparent conductivity near the center of the area of evaluation. The high variability from positive to negative responses shown as red and blue hues are typical for reinforced concrete. The in-phase and apparent conductivity response across the remainder of the site was very weak with no detections of large metal structures such as USTs. At the location of Parcel 006 along N. Water Street there was a very strong elevated in-phase and apparent conductivity response shown as red hues on Figures 3 and 4. This is consistent with the EM response to a large buried metallic structure such as a UST. There was an elevated EM response at the northern end of Parcel 006. This EM response is consistent with a small area of reinforced concrete. The southern half of Parcel 006 had an elevated in-phase and apparent conductivity response as well. The high variability from positive to negative responses shown as red and blue hues are typical for reinforced concrete. There was also a storm drain and sanitary sewer manhole in this area.

#### *Ground-penetrating Radar (GPR) Evaluation*

Figure 5 is a map documenting the results of the GPR evaluation. At Parcel 005 along W. 2<sup>nd</sup> Street, a suspected reinforced concrete slab was detected below the asphalt surface. GPR penetration was limited in this area due to the suspected metallic wire mesh. This was in the same area as the suspected reinforced concrete detected during the EM evaluation. There was an anomaly detected at the west end of the area of evaluation. Figure 6 is a cross section of this subsurface feature. This is not likely a metallic structure due to the lack of EM response in this area. This GPR anomaly is not characteristic of a metallic UST. The anomaly is likely related to conductive soil or fill in this area. These subsurface detections were identified in the field with pink ground marking paint (Appendix A. Photographic log).

At Parcel 006 along N. Water Street, four (4) probable USTs were detected with GPR in the area of the strong EM response. These probable USTs are shown on Figure 5 as yellow

rectangles. Most of these probable USTs appear to be outside the planned NCDOT ROW. The approximate sizes of each probable UST identified can be found in Table 1 below.

<b>Tank ID</b>	<b>Length (ft)</b>	<b>Width (ft)</b>
<b>Probable UST 1</b>	<b>24</b>	<b>5</b>
<b>Probable UST 2</b>	<b>24</b>	<b>5</b>
<b>Probable UST 3</b>	<b>24</b>	<b>5</b>
<b>Probable UST 4</b>	<b>12</b>	<b>5</b>

**Table 1. Approximate dimensions of the four probable USTs detected based on the GPR evaluation.**

Each of the probable USTs were identified in the field with yellow ground parking paint (Appendix A, Photographic Log). Figure 7 displays cross sectional images of the probable USTs. The depth to the top of the probable USTs is approximately 3 feet below land surface (bls). The fill port is visible at the land surface on probable UST 4.

## **Conclusions**

- Geo Solutions completed a detailed EM and GPR evaluation over two areas near the intersection of W. 2<sup>nd</sup> Street and N. Water Street in Lumberton, North Carolina where the NCDOT plans to widen the roadway.
- A suspected reinforced concrete slab and a suspected non-metallic GPR anomaly were detected at Parcel 005 along W. 2<sup>nd</sup> Street.
- Four (4) probable USTs were detected at Parcel 006. One of the probable USTs has a fill port visible at the surface. Most of these probable USTs appear to be outside the NCDOT ROW.
- Two areas of suspected reinforced concrete slabs are present at Parcel 006 along with subsurface stormwater and sanitary sewer piping.

## **Limitations**

The detection of subsurface objects is dependent upon parameters that include size, physical composition, and depth of burial. The combination of these parameters may produce a response that is below the detection threshold for a given geophysical method. The presence of reinforced concrete limits GPR and EM detections of subsurface structures below the slabs.

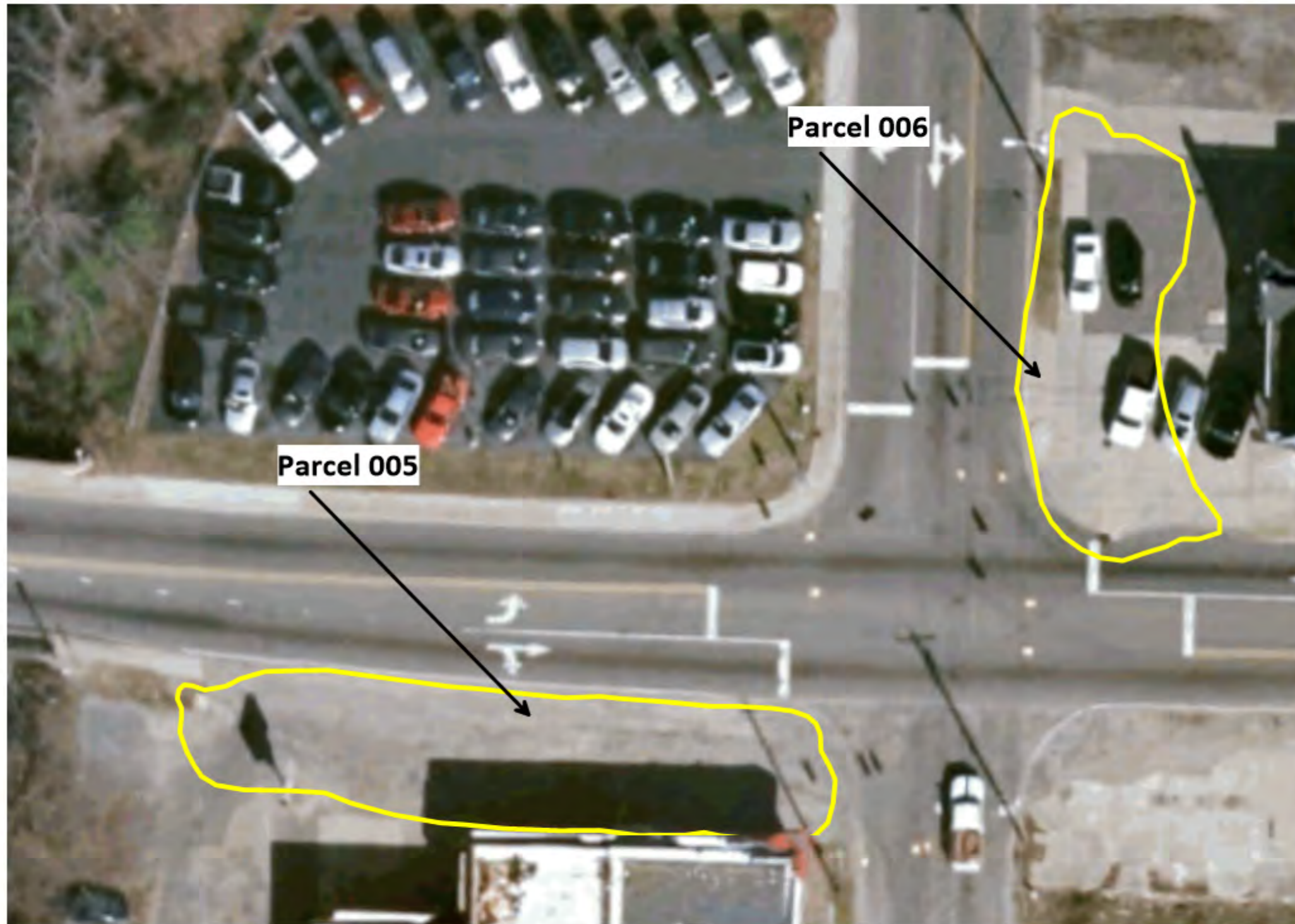
Please don't hesitate to call if you have any questions concerning this report. We appreciate the opportunity to have worked with you on this project.

Very truly yours,


**GEO SOLUTIONS LIMITED, INC.**

A handwritten signature in black ink that reads "John DeLoatch". The signature is written in a cursive, flowing style.

John DeLoatch, PG  
Project Manager



## LEGEND

Geophysical Boundary 

Map Scale (ft)

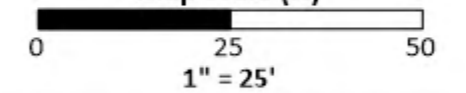
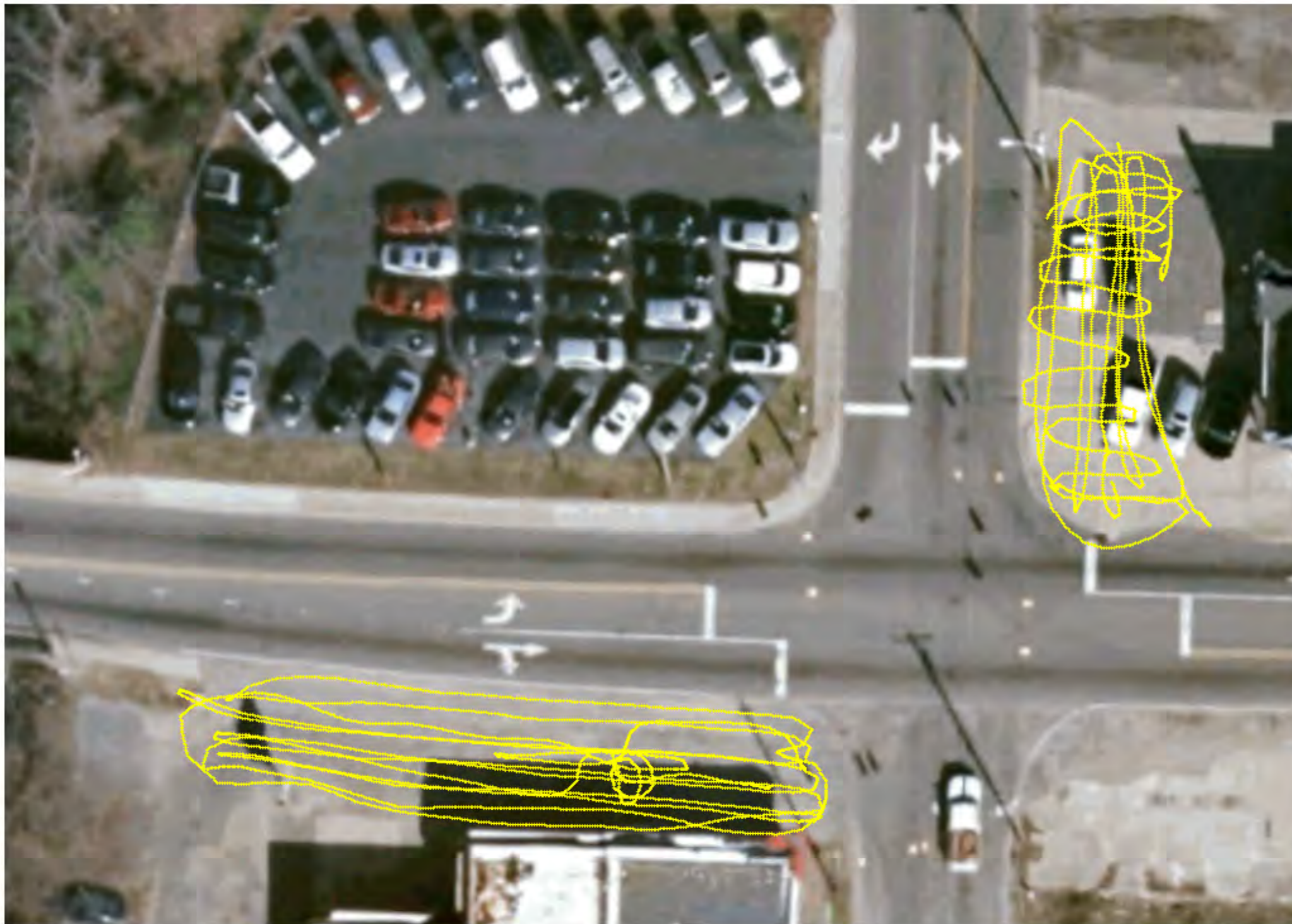


Figure  
1

Geophysical Evaluation  
Site Map

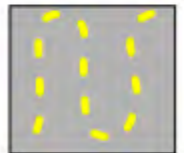
NCDOT U-5985  
N. Water Street and W. 2nd Street  
Lumberton, NC

  
*Geo Solutions Ltd.*



## **LEGEND**

Indicates Location of  
EM Data Point



Map Scale (ft)

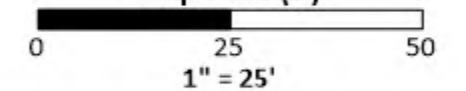


Figure  
2

Geophysical Evaluation  
EM Profile Location Map

NCDOT U-5985  
N. Water Street and W. 2nd Street  
Lumberton, NC

**Geo Solutions Ltd.**

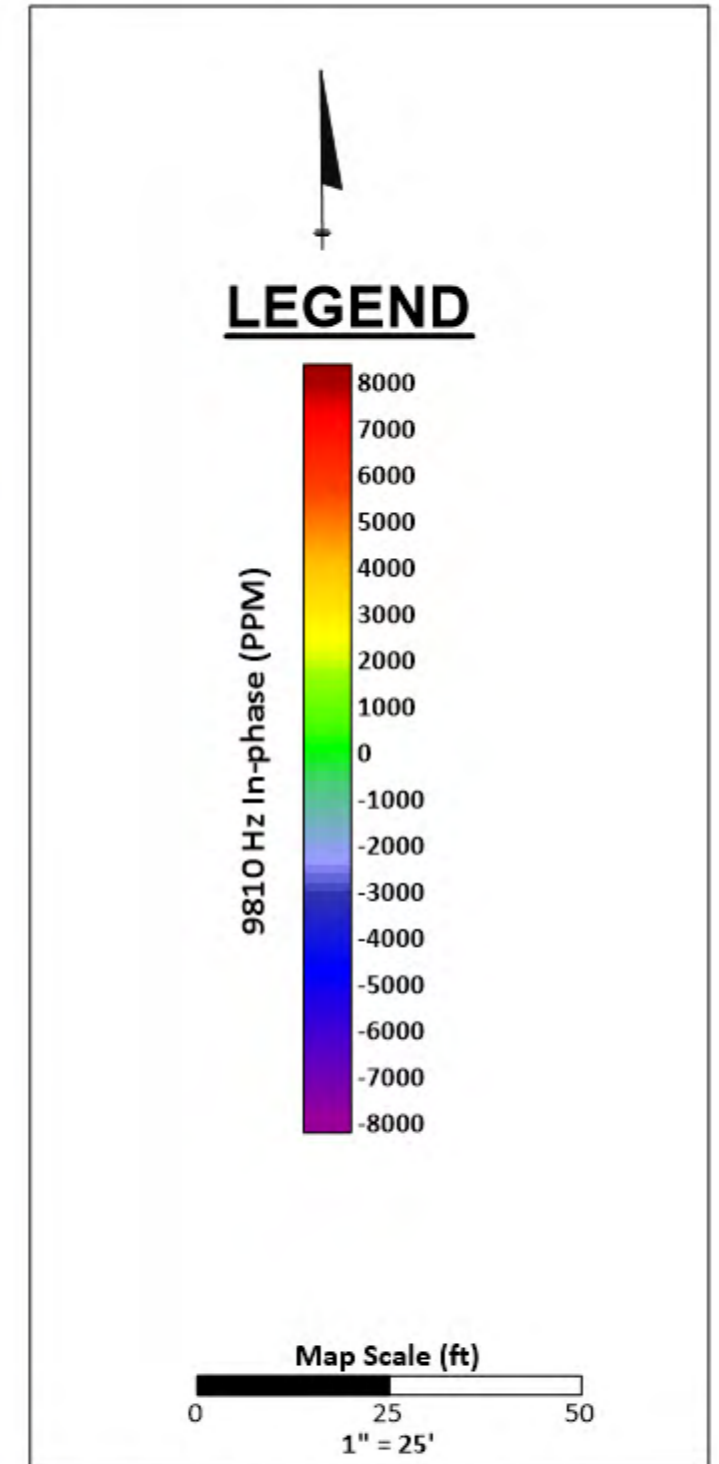
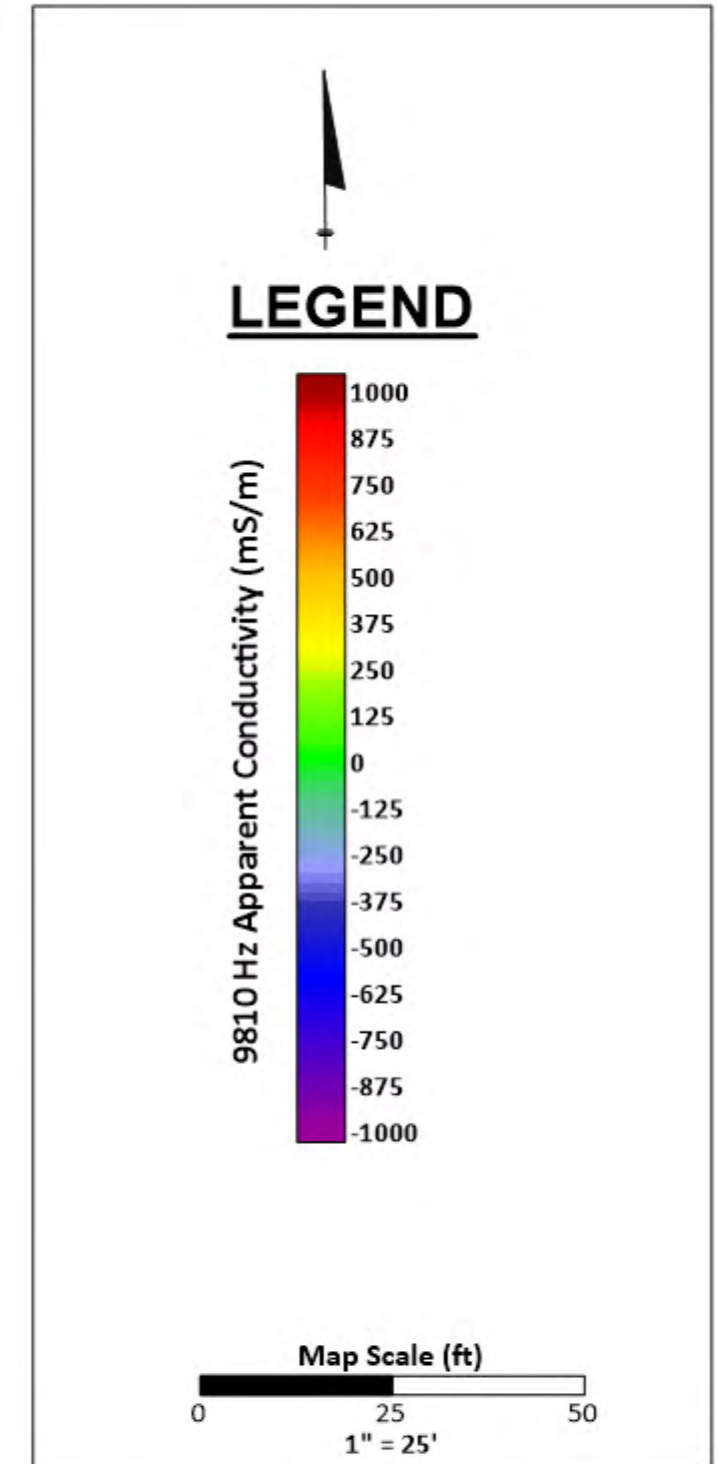


Figure 3	Geophysical Evaluation EM In-phase (Metal Detection) Results Map
	NCDOT U-5985 N. Water Street and W. 2nd Street Lumberton, NC
<i>Geo Solutions Ltd.</i>	



**Figure 4**

**Geophysical Evaluation  
EM Apparent Conductivity  
Results Map**

NCDOT U-5985  
N. Water Street and W. 2nd Street  
Lumberton, NC

*Geo Solutions Ltd.*



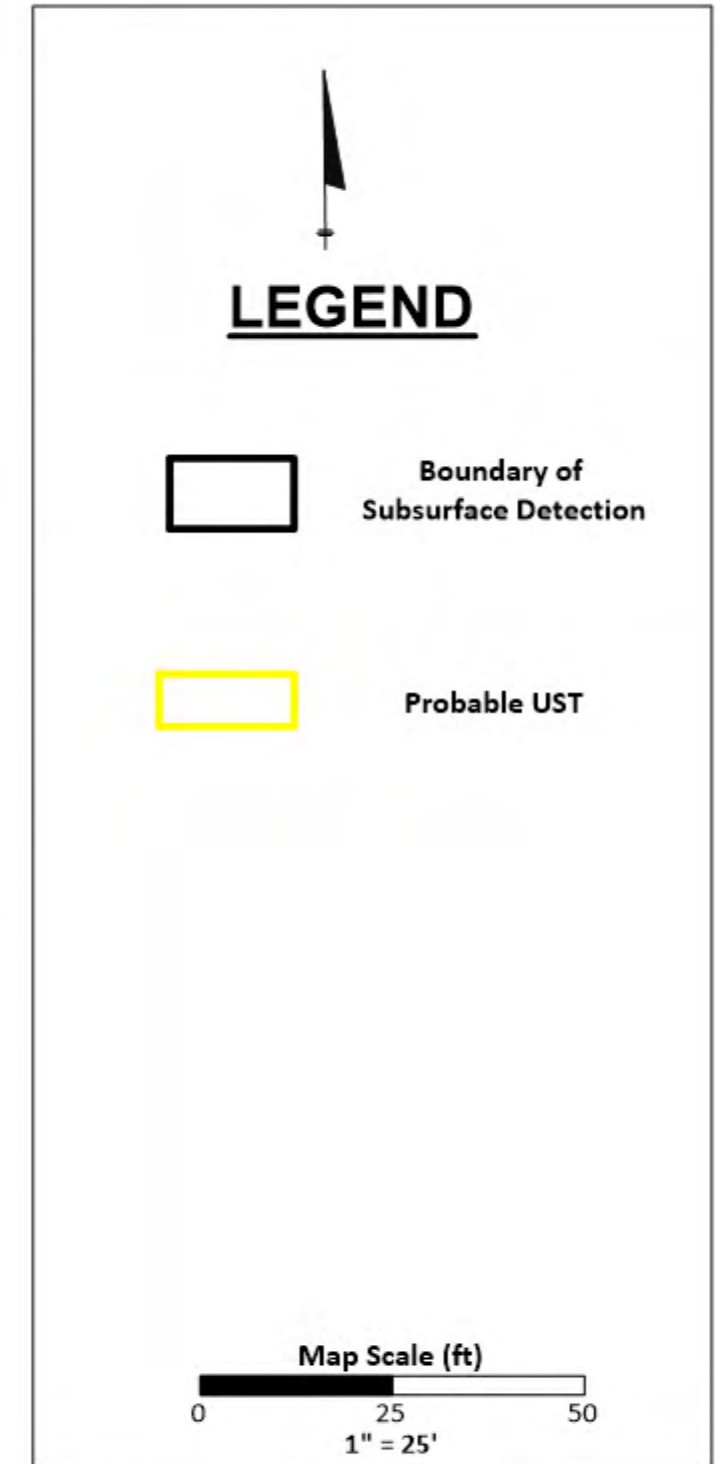
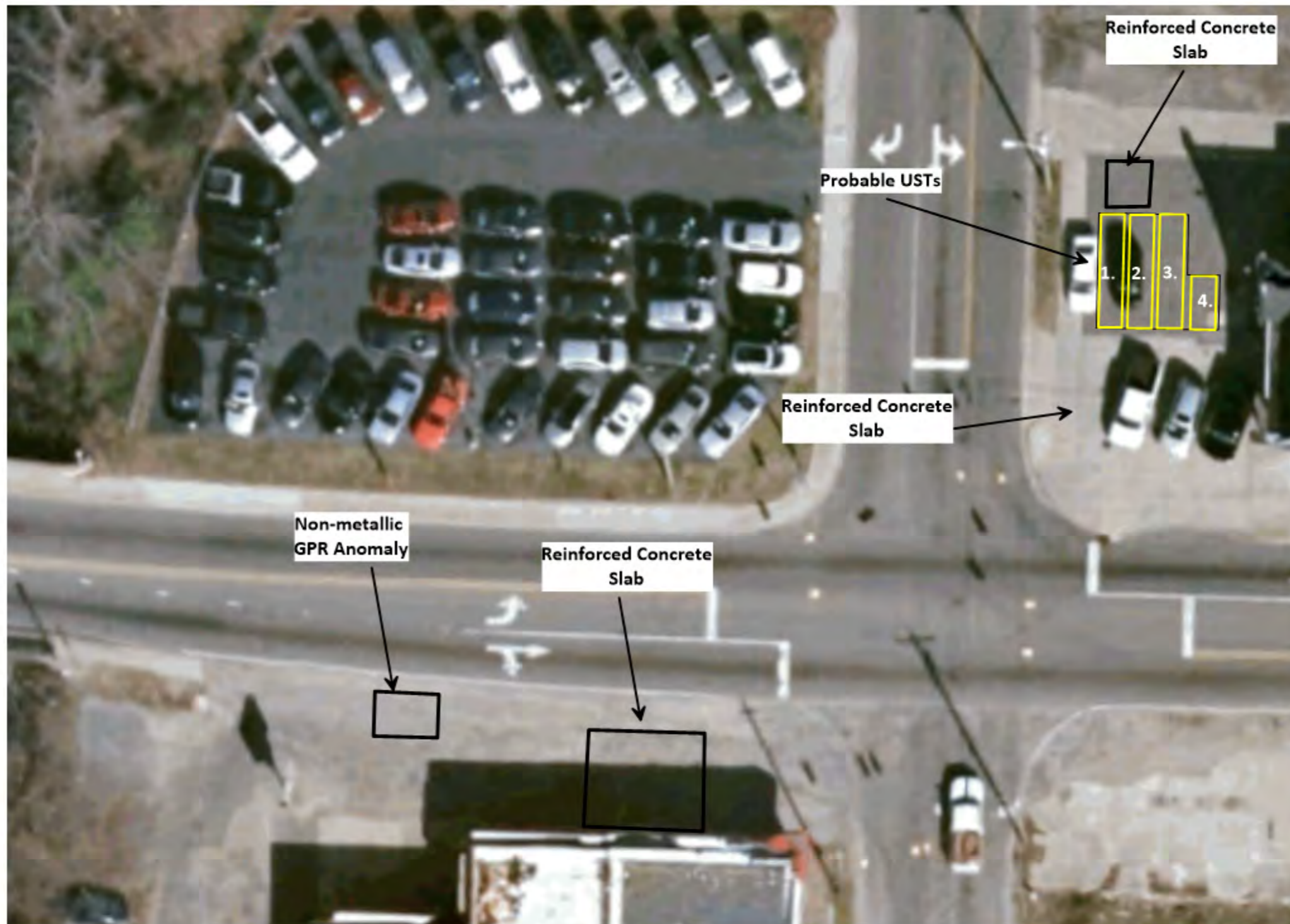
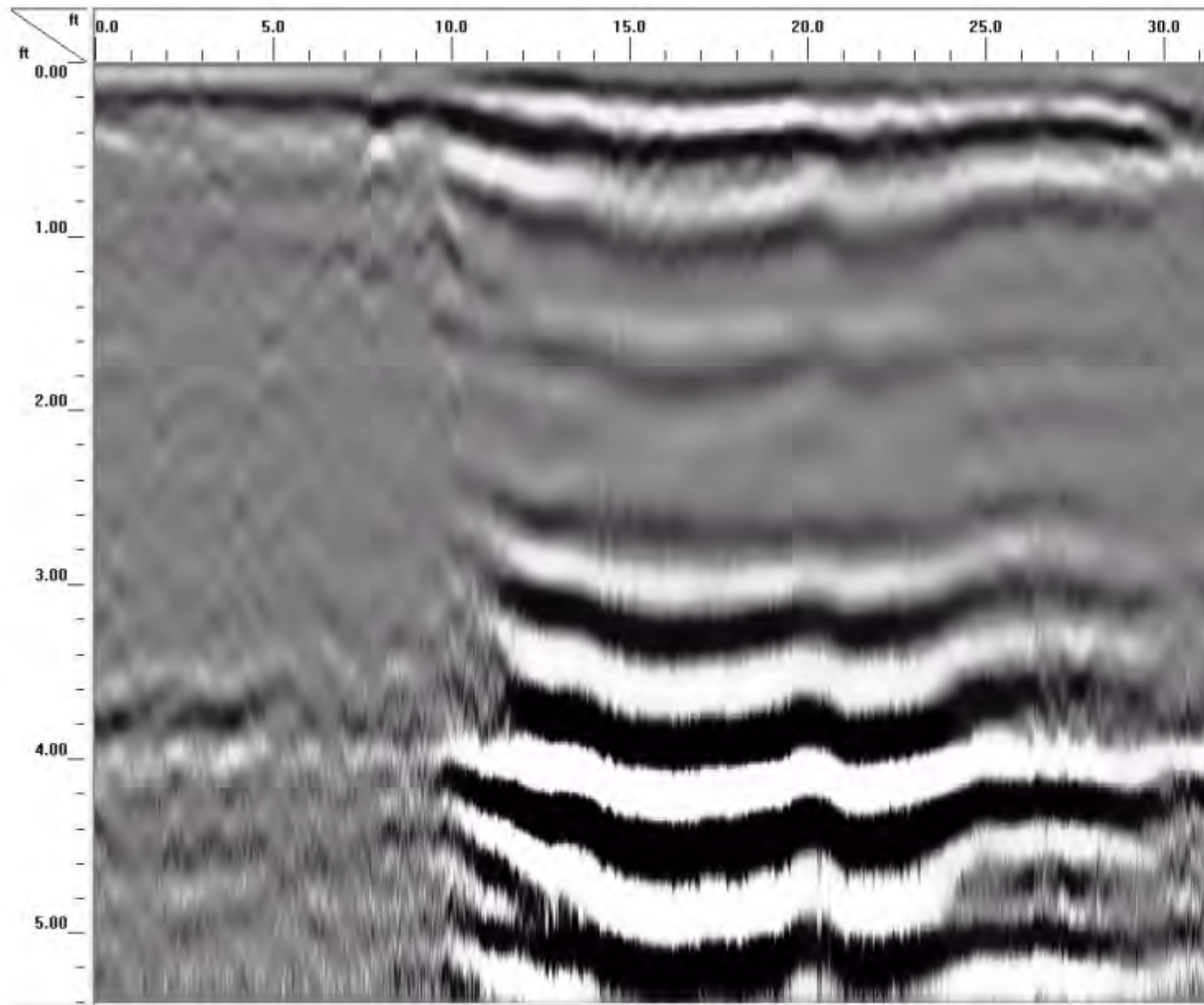



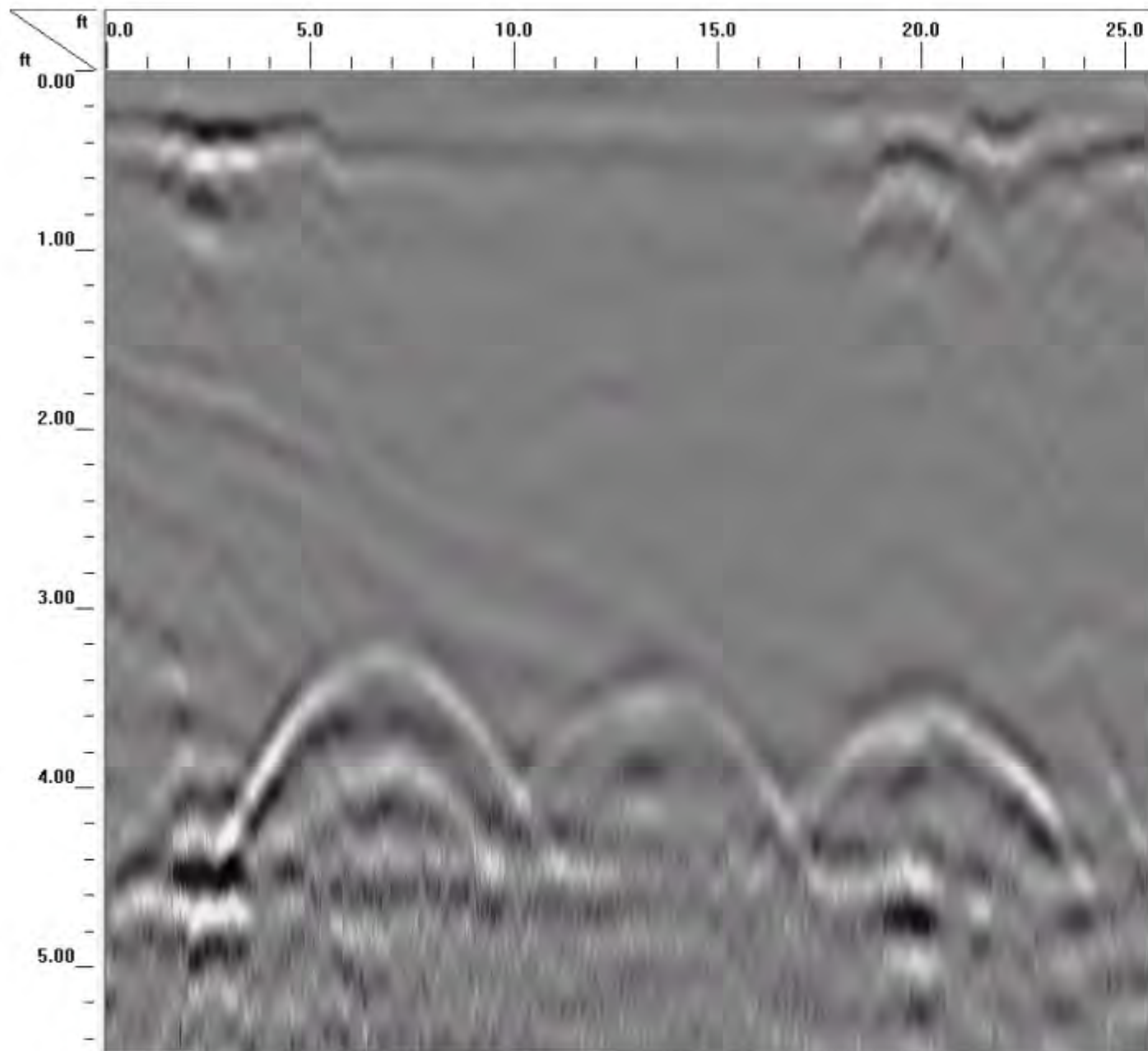
Figure 5 Geophysical Evaluation Ground-penetrating Radar Results Map NCDOT U-5985 N. Water Street and W. 2nd Street Lumberton, NC

*Geo Solutions Ltd.*

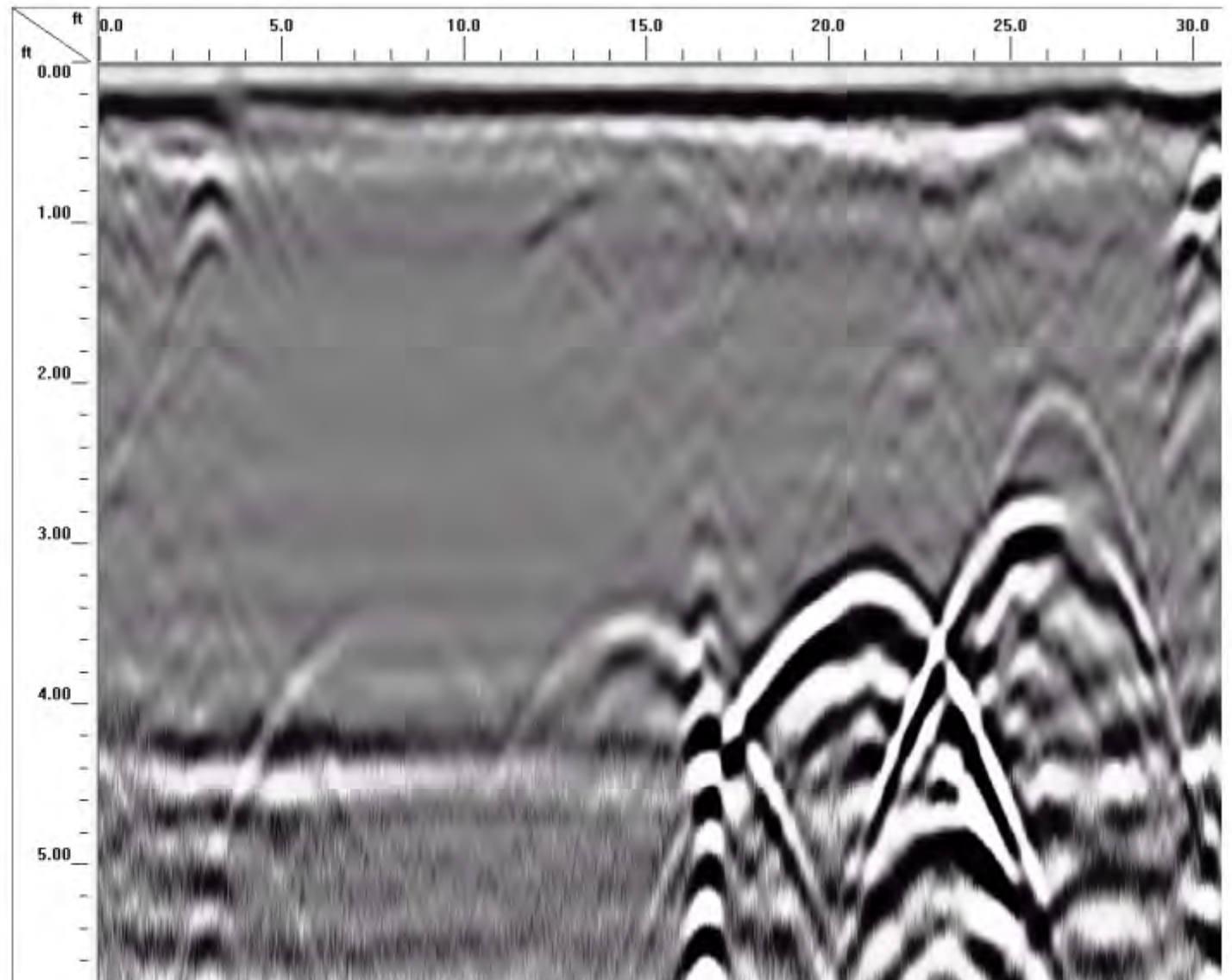


Profile 1. Transect collected across non-metallic conductive anomaly.


Figure 6	Ground-penetrating Radar Evaluation Cross Section of anomaly.
NCDOT U-5985 N. Water Street and W. 2nd Street Lumberton, NC	
	



Profile 1. Transect collected across the north end of the probable USTs 1-3.



Profile 2. Transect collected across the south end of the probable USTs 1-4.

Figure 7	Ground-penetrating Radar Evaluation Cross Sections of Probable USTs.
	NCDOT U-5985 N. Water Street and W. 2nd Street Lumberton, NC
	

**Appendix A. Photograph Log – NCDOT U-5985 – Lumberton, NC**



Photograph 1. Parcel 005 non-metallic GPR anomaly.



Photograph 2. Parcel 005 area of suspected reinforced concrete slab.



Photograph 3. Parcel 006 four (4) probable USTs.



Photograph 4. Parcel 006 fill port on probable UST 4.



Photograph 5. Parcel 006 area of reinforced concrete, subsurface piping, storm drain, and manhole.

**APPENDIX B**  
**BORING LOGS**



**SOIL BORING LOG**

**Boring #**         B-1              **Job Name**         NCDOT B-5985, Parcel 005              **Project #**         2191306.11          
**Date**         11/16/2021              **Site Loc.**         Lumberton, NC              **Gnd EL**         NA          
**WR Rep**         B. Whitley              **Driller**         Regional Probing (GeoProbe)              **GW EL**         NA        

Depth in Feet		Soil Description	Total VOCs (in ppm)	
From	To		Sample Interval	PID/FID
0.0	0.17	Asphalt (1")	NR	
0.17	1.0	Moist, tan-brown, sandy CLAY	0-2	0.5
1.0	6.0	Moist, tan-brown, silty fine-to-medium SAND	2-4	0.9 *
			4-6	0.8
			6-8	0.8
6.0	7.0	Moist, tan-orange-gray, sandy CLAY	8-10	0.7
7.0	9.0	Moist, tan, fine-to-medium SAND		
9.0	10.0	Wet, dark gray-brown, silty fine-to-medium SAND		
		Boring terminated at 10' bgs		*submitted for analysis

NR=No reading      ppm=parts per million  
NA=Not Applicable      GW=Ground Water  
BGS=Below ground surface      USCS=Unified Soil Classification System  
TOC=Top of Casing      GW=Ground Water  
EI=Elevation





**SOIL BORING LOG**

**Boring #**           B-2                **Job Name**           NCDOT B-5985, Parcel 005                **Project #**           2191306.11            
**Date**           11/16/2021                **Site Loc.**           Lumberton, NC                **Gnd EL**           NA            
**WR Rep**           B. Whitley                **Driller**           Regional Probing (GeoProbe)                **GW EL**           NA          

Depth in Feet		Soil Description	Total VOCs (in ppm)	
From	To		Sample Interval	PID/FID
0.0	0.17	Asphalt	NR	
0.17	4.0	Moist, tan-gray, silty fine-to-medium SAND	0-2	0.8
			2-4	1.0
4.0	9.0	Moist, tan-white, silty fine-to-medium SAND	4-6	1.4 *
			6-8	1.1
			8-10	0.8
9.0	10.0	Moist, dark gray, silty fine-to-medium SAND		
		Boring terminated at 10' bgs		*submitted for analysis

NR=No reading      ppm=parts per million  
NA=Not Applicable      GW=Ground Water  
BGS=Below ground surface      USCS=Unified Soil Classification System  
TOC=Top of Casing      GW=Ground Water  
EI=Elevation



**SOIL BORING LOG**

**Boring #**           B-3                **Job Name**           NCDOT B-5985, Parcel 005                **Project #**           2191306.11            
**Date**           11/16/2021                **Site Loc.**           Lumberton, NC                **Gnd EL**           NA            
**WR Rep**           B. Whitley                **Driller**           Regional Probing (GeoProbe)                **GW EL**           NA          

Depth in Feet		Soil Description	Total VOCs (in ppm)	
From	To		Sample Interval	PID/FID
0.0	0.17	Asphalt (1")	NR	
0.17	9.0	Moist, gray-brown, silty fine-to-medium SAND	0-2	0.4
			2-4	1.0
			4-6	1.1 *
			6-8	0.9
			8-10	0.6
9.0	10.0	Moist-wet, dark brown, sandy CLAY		
		Boring terminated at 10' bgs		*submitted for analysis

NR=No reading      ppm=parts per million  
NA=Not Applicable      GW=Ground Water  
BGS=Below ground surface      USCS=Unified Soil Classification System  
TOC=Top of Casing      GW=Ground Water  
EI=Elevation



**SOIL BORING LOG**

**Boring #**           B-4                **Job Name**           NCDOT B-5985, Parcel 005                **Project #**           2191306.11            
**Date**           11/16/2021                **Site Loc.**           Lumberton, NC                **Gnd EL**           NA            
**WR Rep**           B. Whitley                **Driller**           Regional Probing (GeoProbe)                **GW EL**           NA          

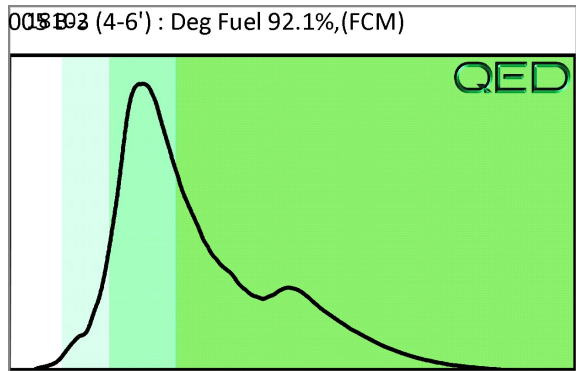
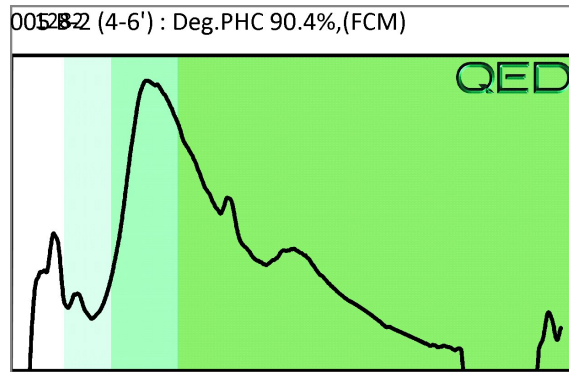
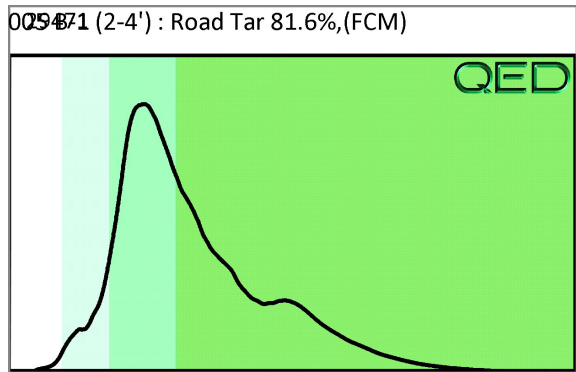
Depth in Feet		Soil Description	Total VOCs (in ppm)	
From	To		Sample Interval	PID/FID
0.0	0.17	Asphalt (1")	NR	
0.17	2.0	Urban fill - Moist silty sand with bricks, stone	0-2	0.6
2.0	9.0	Moist, tan-gray-white, fine-to-medium SAND	2-4	0.5
			4-6	0.5
			6-8	0.6
			8-10	0.5
9.0	10.0	Moist-wet, gray-black, fine-to-medium SAND		
		Boring terminated at 10' bgs No sample submitted for laboratory analysis		

NR=No reading      ppm=parts per million  
NA=Not Applicable      GW=Ground Water  
BGS=Below ground surface      USCS=Unified Soil Classification System  
TOC=Top of Casing      GW=Ground Water  
EI=Elevation

## **APPENDIX C**

### **REDLAB ANALYTICAL REPORTS AND CHAIN OF CUSTODY**







**APPENDIX D**  
**PHOTOGRAPHIC LOG**



Photo No. 1



View of Borings B-1 through B-3 surrounding the concrete slab, facing east

(taken 11-16-2021)

Photo No. 2



View of Borings B-1 through B-3 surrounding the concrete slab, facing west

(taken 11-3-2021)

Photo No. 3

B-4



View of Boring B-4 advanced within the GPR anomaly on the western portion of the site, facing west

(taken 11-16-2021)

Photo No. 4

B-4



View of Boring B-4 advanced within the GPR anomaly on the western portion of the site, facing west

(taken 11-3-2021)