Prepared for:

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

Preliminary Site Assessment Report

Sibbett Properties, Inc. Property
Parcel # 20
307 West Lewis Street
Whiteville, Columbus County, North Carolina
US 701 Bypass (Madison St-Powell Blvd) from SR 1437 (Virgil Ave) to US 74/76
TIP Number: R-5020B
WBS Element: 41499.1.3

Apex Companies, LLC
(dba Apex Engineering, PC)
10610 Metromont Parkway, Suite 206
Charlotte, North Carolina 28269

Prepared by:

DocuSigned by:
Troy Holzschuh
2D73445FBBB9455...
Troy L. Holzschuh
Assistant Project Manager

Reviewed by:

DocuSigned by:
3CB3ABA2358C407...
Eric Wysong, L.G.
Project Manager
NC Geologist License No. 2581

NORTH CAROLINA LICENSED SEAL 2581 GEOLOGIST ERIC J. WYSONG

November 21, 2018

not considered final unless all signatures are completed

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1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) Parcel 20 performed by Apex Companies, LLC (Apex) (dba Apex Engineering, PC) on behalf of the NCDOT. The subject site of this PSA report will be affected by the widening of J.K. Powell Blvd. (US 701 Bypass) from Virgil Ave. to US 74/76. The Site is comprised of one parcel and is located at 307 West Lewis Street and is identified as Parcel 20, Sibbett Properties, Inc. Property, within the NCDOT R-5020B design project. The property is located on the southwestern corner of the intersection of South J.K. Powell Boulevard and West Lewis Street in Whiteville, Columbus County, North Carolina, as shown in the attached Site Location Map (**Figure 1**). The site investigation was conducted in accordance with Apex Company's Technical and Cost proposal dated May 15, 2018.

NCDOT contracted Apex to perform the PSA within the proposed right-of-way (ROW) and/or easement of the Parcel 20 Property due to the potential presence of contamination at the site and the fact that excavation and grading may occur within the area. The PSA was performed to evaluate if soils have been impacted as a result of past and present uses of the property within the proposed investigation area, if buried underground storage tanks (USTs) are present in the area of investigation, and if groundwater is impacted.

The following report presents the results of an electromagnetic (EM) and ground penetrating radar (GPR) evaluation to identify USTs in the investigation area and describes the subsurface field investigation conducted. The report includes the evaluation of field screening, as well as field analyses with regards to the presence or absence of soil and groundwater contamination within the area of investigation across Parcel 20. **Appendix A** includes a Photograph log for the site.

1.1 Site History

Parcel 20 has been identified with the address of 307 West Lewis Street. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, no registered tanks were identified for the 307 West Lewis Street site. Additionally, the geophysical survey did not identify evidence of USTs on site. Apex personnel also reviewed the NCDEQ Incident Management Database and no groundwater incident number is associated with this parcel. However incident number 94050 is associated with Parcel 19, the neighboring property to the south with the address of 106 South J.K. Powell Boulevard. Parcel 19 and Parcel 20 are both owned by Sibbett Properties Inc. Sibbett Auto Sales operates on Parcel 19 and stores additional cars on Parcel 20. Additionally, Apex personnel verified in the field the presence of a remediation system and monitoring wells on this parcel. The remediation system trailer was

located on Parcel 19. The remediation system trailer was interconnected with PVC pipe and a series of vaults that were on parcel 19 and the adjacent parcel to the north, Parcel 20.

Parcel 19 currently operates as Sibbett Auto sales, however the site formerly operated as a petroleum retail facility and convenience store. According to available information, a former above ground storage tank (AST) system owned by Whiteville Oil Company, Inc. (Whiteville Oil) consisted of two 6,000-gallon capacity gasoline ASTs and one 280-gallon capacity kerosene AST. The tank system was taken out-of-service in July 2000 and were subsequently removed by Whiteville Oil. An air sparging (AS) system consisting of 30 AS wells, a soil vapor extraction (SVE) system consisting of 12 SVE wells and associated equipment began operating on November 29, 2004. Geological Resources, Inc. (GRI) performed a receptor survey on July 20, 2016 and reported that no water supply wells are located within 1,500 feet of the site. In a report prepared for Whiteville Oil by GRI dated August 11, 2016, GRI states that benzene, toluene, xylenes, MTBE and/or naphthalene exceeded the North Carolina 2L Groundwater Quality Standards (2L Standards) in groundwater samples collected from monitoring wells located on Parcel 19 and neighboring parcels. However, none of the contamination concentrations exceeded the gross contamination levels. Additionally, GRI states that in accordance with House Bill 765, the site is now classified as a low risk incident. GRI recommends that the incident be closed. On September 13, 2016 NCDEQ responded to Whiteville Oil acknowledging that the site can be closed. However, property owners where contamination has migrated will be required to agree to land restrictions before the incident can be closed and a No Further Action letter issued. According to the Mike Haseltine of NCDEQ the incident has not yet been closed. Historical records can be found in **Appendix B**.

1.2 Site Description

The site is located in a mixed commercial and residential area of Columbus County, Whiteville, North Carolina. The property currently houses one brick building and a groundwater remediation system which consists of a series of vaults interconnected by PVC piping. The remediation trailer is located on the neighboring parcel to the south, Parcel 19. The site also contains monitoring wells. The rest of the parcel is covered with grass. South J.K. Powell borders the site to the east followed by Dale's Seafood. The western property line is bordered by a residence and to the north by West Lewis Street followed by a residence. The southern property line is bordered by Sibbett Auto Sales. The geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) did not identify GPR anomalies characteristic of USTs in the investigation area.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 20, Sibbett Properties, Inc. Property, is located within the Coastal Plain Physiographic Province. The Coastal Plain is the largest physiographic province in the state, covering about 45% of the land area. According to the US Geological Survey Hydrogeological framework of the North Carolina coastal plain, the geology consists of eastward-dipping and eastward-thickening series of sedimentary strata which range in age from Holocene to Cretaceous. The most common type of sediment types are sand and clay, although a significant amount of limestone occurs in the southern part of the coastal plain. The Site overlies surficial sediments (to approximately 30 to 40 feet bls), the PeeDee Confining unit (approximately 10 feet thick in this area), and the Late Cretaceous age Peedee Formation. The Peedee Formation is named for exposures along the great Peedee River, it preserves belemnites and foraminifera fossils dating from the Late Cretaceous. It generally consists of marine sand, clayey sand and clay (M.D. Winner Jr. and R.W. Coble, 1996, *Hydrogeologic Framework of the North Carolina Coastal Plain, Regional Aquifer-System Analysis – Northern Atlantic Coastal Plain*, USGS Professional Paper 1404-I).

2.2 Site Geology

Site geology was observed through the drilling and sampling of four direct push technology (DPT) soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of five and a half feet below ground surface (bgs) because the design plan indicates fill be added and drainage features are not proposed. Soil consisting predominantly of tan sand to tan clayey silt was observed across the parcel. Borings on the site intercepted water at approximately three to four feet bgs. According to the topographical maps found on the Columbus County Geographic Information System (GIS) site, the parcel slopes from east to west. Although groundwater does not always follow topographic changes, the topography suggests that the direction of groundwater flow generally flows to the west towards Mollie Branch. Boring logs are presented in **Appendix C**.

3.0 FIELD ACTIVITIES

3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. A Health and Safety Plan (HASP) was prepared to include the site-specific health and safety information necessary for the field activities. North Carolina-One Call was contacted on May 25, 2018 to report the proposed drilling activities and

notify affected utilities. Apex subcontracted Pyramid to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina was retained by Apex to perform the direct push sampling for soil borings. REDLAB, LLC (REDLAB) provided an ultraviolet fluorescence (UVF) Hydrocarbon Analyzer and Eastern Solutions provided a calibrated Flame Ionization/Photoionization Detector (FID/PID). Boring locations were strategically placed in a pattern within the area of investigation to maximize the opportunity to encounter potentially contaminated soil.

3.2 Site Reconnaissance

Apex personnel performed a site reconnaissance on June 6, 2018. During the site reconnaissance, the area was visually examined for the presence of potential USTs or areas/obstructions that could potentially affect the subsurface investigation. The proposed boring locations were marked based on the site inspection and geophysical survey results. Apex personnel also used the site visit as an opportunity to contact the property manager/owner to inform them of upcoming field activities.

3.3 Geophysics Survey Results

The geophysical survey of the site was conducted from May 30, 2018 to June 6, 2018. Pyramid performed an EM induction metal survey followed by a GPR survey. A copy of the Geophysical Report is presented in **Appendix D**. A total of two EM anomalies were identified. These areas were associated with visible cultural features at the ground surface which included parked cars, well covers and utilities associated with a remediation system. The anomies were investigated further with the GPR method. Pyramid concluded no evidence of larger substructures such as USTs were observed. Geophysical data did not indicate evidence of metallic USTs on Parcel 20.

3.4 Well Survey

According to a receptor survey completed on July 20, 2016, no water supply wells are located within a 1,500-foot radius of the site. One active monitoring well was observed within the investigation area of Parcel 19, and as discussed in Section 1.1, Site History of the parcel has a historic groundwater remediation system.

3.5 Soil Sampling

Apex conducted drilling activities at the site on June 6, 2018. The purpose of soil sampling was to determine if a petroleum release had occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities. Apex drilling subcontractor, CSI, advanced four direct push soil borings within the proposed investigation area. The four boring locations were placed in locations to maximize the

likelihood of identifying potential soil contamination. **Figure 2** presents the Site Map with boring locations and site structures.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening of volatile organic vapors with the FID/PID unit and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. One to two intervals of the soil boring, exhibiting the most elevated FID/PID readings, were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) in soil using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Mr. Thomas Fisher, a certified REDLAB UVF technician with Apex. The UVF results were generated concurrent with soil boring activities so that rapid assessment could be utilized for strategic boring placement.

3.6 Groundwater Sampling

Groundwater was encountered on site at a depth ranging from three to four feet bgs. However, soil contamination was not evident in the water table smear zone based on FID/PID field screening or UVF hydrocarbon analysis. There is no evidence of significant petroleum hydrocarbon contamination of groundwater onsite, within the area of investigation. Historical reports indicate that benzene, toluene, ethylbenzene, xylenes, MTBE and naphthalene are present in MW-7, MW-8, and MW-9 located on the southern, northeastern, and northwestern portion of the site.

4.0 SAMPLING RESULTS

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the June 2018 soil sampling there is little evidence of significant petroleum hydrocarbon contamination onsite, within the area of investigation.

Elevated PID readings were not observed above ten parts per million (ppm). PID reading ranged from non-detectable to 5.1 ppm. Elevated FID readings, above ten parts per million (ppm), were observed in boring SB-1. In this boring, the FID readings were 27.1 ppm in soils above the smear zone. Below the water table, the FID readings ranged from 25.6 to 74.6 ppm. The FID/PID field screening results are provided on the boring logs-in **Appendix C**.

Soil concentrations of TPH gasoline range organics (GRO) and diesel range organics (DRO) measured using the onsite UVF unit are presented in **Table 1**, with instrument generated tables and chromatographs in **Appendix E**. **Figure 3** presents the TPH-GRO and TPH-DRO results at each boring.

Based on the UVF analyses, TPH-GRO was not identified on Parcel 20. However, TPH-DRO was identified in soils on Parcel 20 at levels near detection limits. TPH-GRO concentrations

were below detectable levels. TPH-DRO concentrations ranged from below detectable levels to 0.2 mg/kg (P-20-SB-1) for soils sampled above the smear zone. TPH-DRO concentrations were below detectable levels for soils sampled below the smear zone. TPH-GRO concentrations did not exceed the regulatory action level of 50 mg/kg and the TPH-DRO concentrations did not exceed the regulatory action level of 100 mg/kg.

In a report dated August 11, 2016 MW-7 and MW-9 located within the investigation area on the northern portion of the parcel did contain benzene, toluene, ethylbenzene xylenes, MTBE and naphthalene. Elevated concentrations were noted for benzene in MW-9 and for benzene and naphthalene in MW-7. These are the only two monitoring wells within the investigation area to indicate elevated concentrations. Groundwater flows northwest. **Appendix B** provides historical groundwater data and **Figure 4** provides potential area of groundwater contamination. The estimated area of groundwater impact within proposed ROW of Parcel 20 is approximately 8,749 square feet in size.

5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, petroleum-impacted soil contamination was not identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO and was not identified above the NCDEQ Action level of 100 mg/kg for TPH-DRO.

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on June 6, 2018.

- Results of the geophysical survey did not produce evidence of anomalies characteristic of USTs.
- Four soil borings were advanced onsite. Soil samples collected from each boring were analyzed in the field using a REDLAB UVF Hydrocarbon Analyzer.
- Soil samples analyzed using the UVF did not contain TPH-GRO concentrations above their respective NCDEQ Action levels of 50 mg/kg.
- Soil samples analyzed using the UVF did not contain TPH-DRO concentrations above their respective NCDEQ Action levels of 100 mg/kg.
- Groundwater was encountered on site at three to four feet bgs. Groundwater contamination was not evident based on FID/PID field screening or UVF hydrocarbon analysis.

- A former AST system owned by Whiteville Oil consisted of two 6,000-gallon capacity gasoline ASTs and one 280-gallon capacity kerosene ASTs were taken out-of-service in July 2000 and have since been removed by Whiteville Oil. To address both parcels 19 and 20, an AS system consisting of 30 AS wells, an SVE system consisting of 12 SVE wells, and associated equipment began operating on November 29, 2004.

- Historically, benzene, MTBE and/or naphthalene were found in groundwater at concentrations exceeding their respective 2L Standards. There is an open groundwater incident for the site. Based on the low risk ranking, the site will be closed once land use restrictions for all impacted properties are approved. No evidence of groundwater contamination was observed during this preliminary site assessment.

6.0 RECOMMENDATIONS

Based on these PSA results, Apex does not recommend further assessment or soil sampling in the area of investigation. A remediation system composed of AS and SVE wells and vaults, as well as the associated PVC system piping is located on site. This treatment system and associated monitoring wells will need to be abandoned prior to construction activities. Groundwater impacted with low levels of petroleum fuel related compounds may be encountered and generated during construction activities. This groundwater will need to be managed in accordance with applicable requirements.

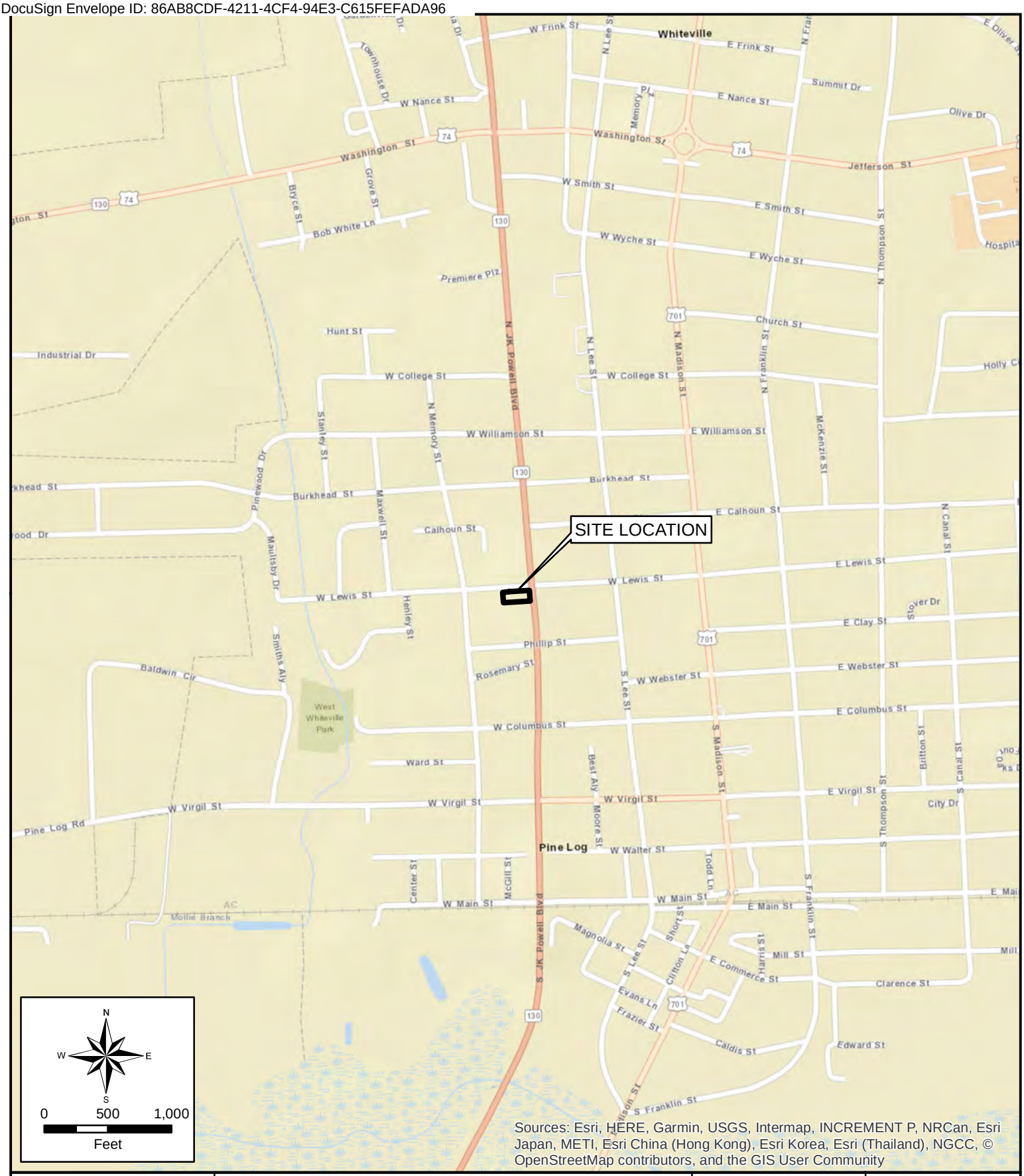
TABLES

Table 1
UVF Onsite Hydrocarbon Analytical Soil Data from June 2018
R-5020B, Parcel 20, Sibbett Properties, inc. Property
Whiteville, Columbus County, North Carolina

Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
SOIL				
NCDEQ Action Level in mg/kg			**50**	**100**
P-20-SB-1	6/6/2018	1 - 2	<0.2	0.2
P-20-SB-1	6/6/2018	5 - 5.5	<0.19	<0.19
P-20-SB-2	6/6/2018	2 - 3	<0.64	<0.64
P-20-SB-2	6/6/2018	5 - 5.5	<0.24	<0.24
P-20-SB-3	6/6/2018	2 - 3	<0.65	<0.65
P-20-SB-3	6/6/2018	5 - 5.5	<0.6	<0.6
P-20-SB-4*	6/6/2018	2 - 3	<0.23	<0.23
P-20-SB-4	6/6/2018	5 - 5.5	<0.21	<0.21
P-20-DUP	6/6/2018	---	<0.23	<0.23

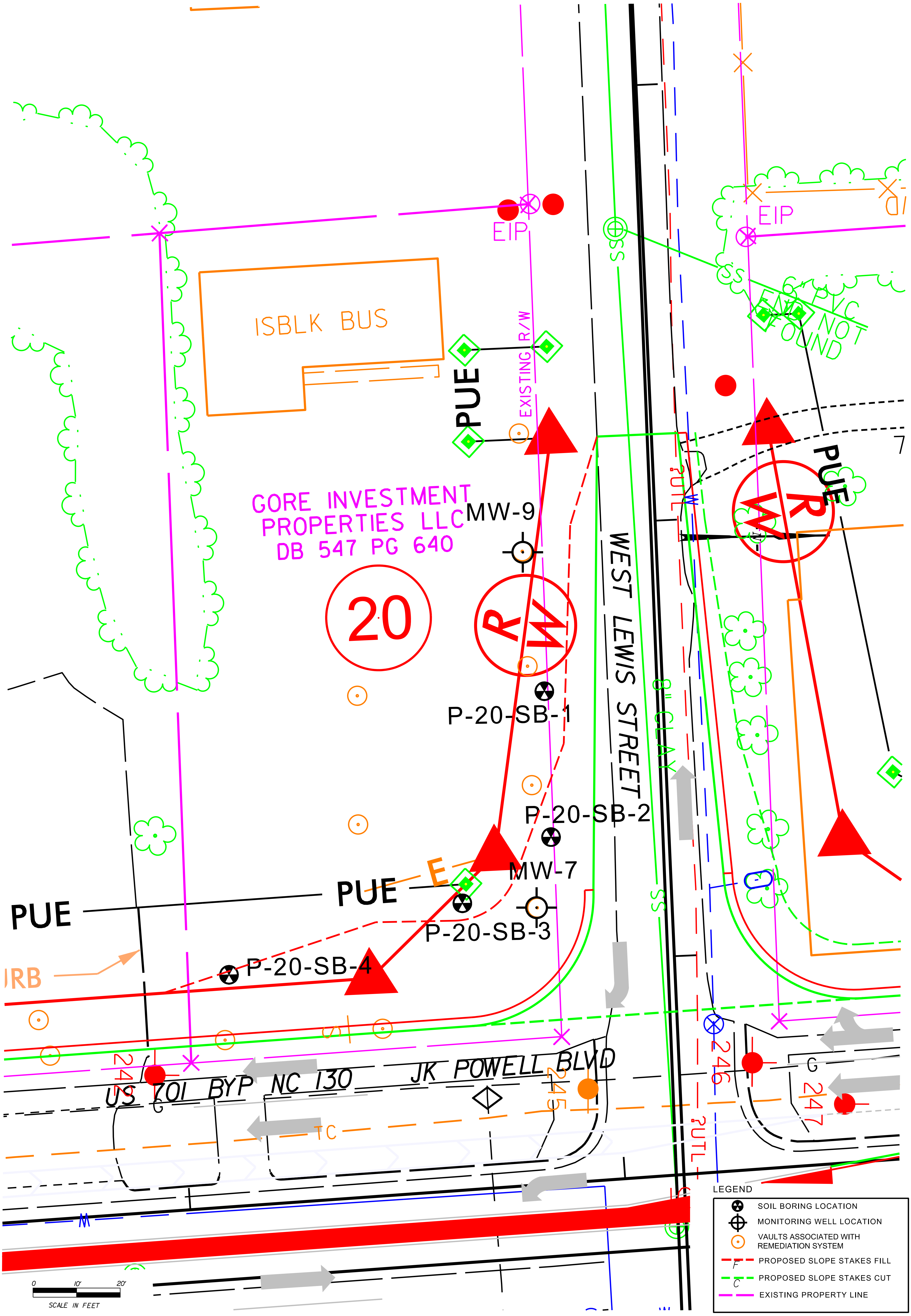
NOTES:
(mg/kg) = Milligrams per kilogram
* = Duplicate Sample was collected
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
ft bgs = feet below ground surface
TPH - GRO values in exceedance of NCDEQ Action Level of 50 mg/kg are shown in Bold
TPH - DRO values in exceedance of NCDEQ Action Level of 100 mg/kg are shown in Bold

FIGURES



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

CHECK BY: TH	SITE LOCATION MAP	APEX	FIGURE
DRAWN BY: SP			
DATE: 7/6/2018	PARCEL #20		1
SCALE: AS SHOWN	307 W. LEWIS STREET		
CAD NO:. NCDOT-001	WHITEVILLE, NORTH CAROLINA		
PRJ NO.: NCDOT-001			



APEX
APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 2
PARCEL 020
307 W. LEWIS STREET
SITE MAP WITH BORING
LOCATIONS

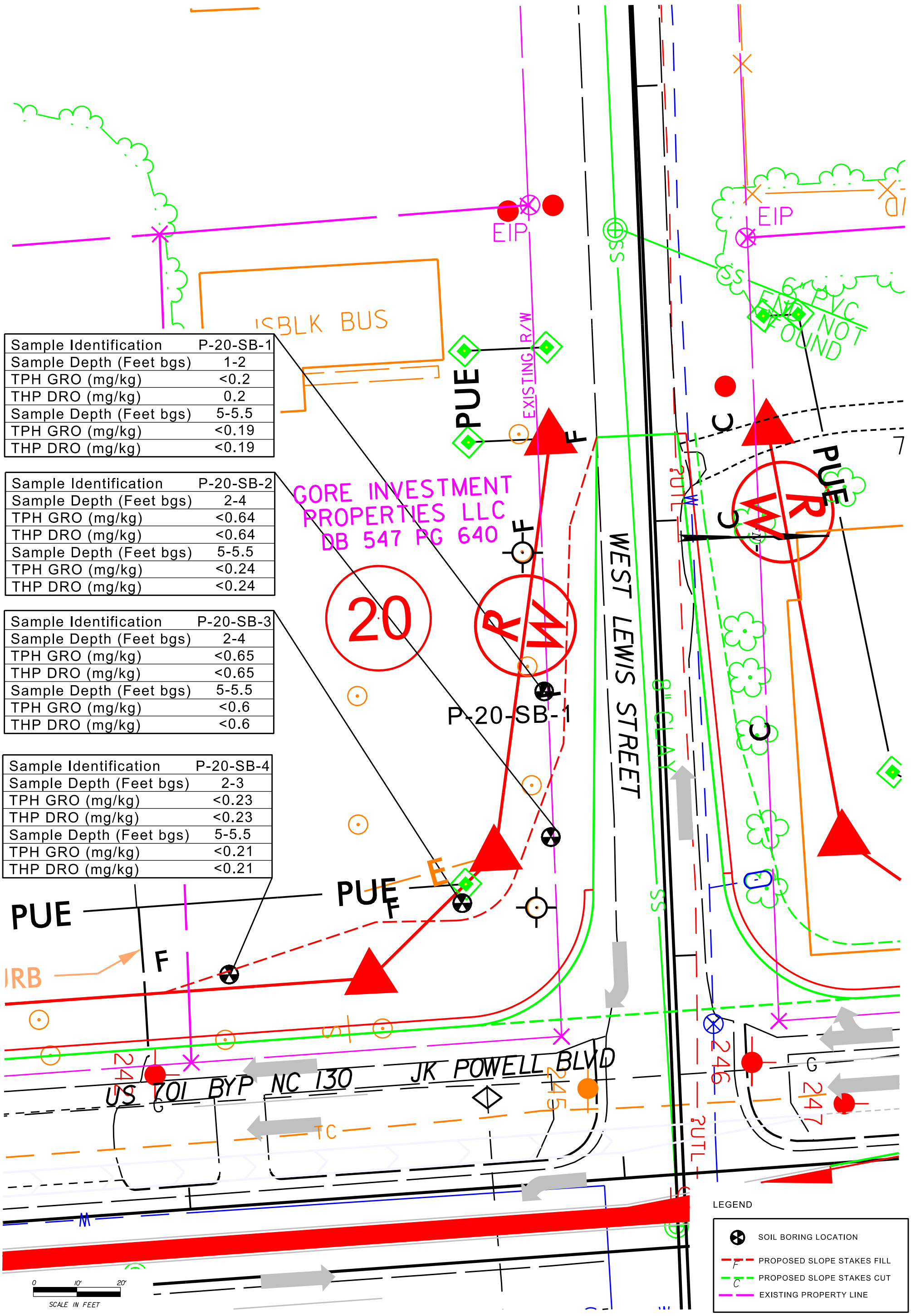
Date: 7/3/18	Project Title: R-5020B US 701 BYPASS COLUMBUS COUNTY
Proj. #: NCDOT-001	
CAD File: pc__020__fig 2.dgn	
Approx. Scale: 1" = 20'	Drawn by: MJO / Client: NC DOT

Sample Identification	P-20-SB-1
Sample Depth (Feet bgs)	1-2
TPH GRO (mg/kg)	<0.2
THP DRO (mg/kg)	0.2
Sample Depth (Feet bgs)	5-5.5
TPH GRO (mg/kg)	<0.19
THP DRO (mg/kg)	<0.19

Sample Identification	P-20-SB-2
Sample Depth (Feet bgs)	2-4
TPH GRO (mg/kg)	<0.64
THP DRO (mg/kg)	<0.64
Sample Depth (Feet bgs)	5-5.5
TPH GRO (mg/kg)	<0.24
THP DRO (mg/kg)	<0.24

Sample Identification	P-20-SB-3
Sample Depth (Feet bgs)	2-4
TPH GRO (mg/kg)	<0.65
THP DRO (mg/kg)	<0.65
Sample Depth (Feet bgs)	5-5.5
TPH GRO (mg/kg)	<0.6
THP DRO (mg/kg)	<0.6

Sample Identification	P-20-SB-4
Sample Depth (Feet bgs)	2-3
TPH GRO (mg/kg)	<0.23
THP DRO (mg/kg)	<0.23
Sample Depth (Feet bgs)	5-5.5
TPH GRO (mg/kg)	<0.21
THP DRO (mg/kg)	<0.21



APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 3
PARCEL 020
307 W. LEWIS STREET
ONSITE UVF HYDROCARBON ANALYSIS RESULTS - SOIL
6/6/18

Date:	7/3/18
Proj. #	NCDOT-001
CAD File:	pc__020__fig 3.dgn
Approx. Scale:	1" = 20'
Drawn by:	MJO
Client:	NC DOT
Project Title:	R-5020B US 701 BYPASS COLUMBUS COUNTY

ISBLK BUS

EIP

EXISTING R/W

EIP

EMT PVC FOUND

GORE INVESTMENT PROPERTIES LLC
DB 547 PG 640

MW-9

20

P-20-SB-1

WEST LEWIS STREET

P-20-SB-2

MW-7

P-20-SB-3

P-20-SB-4

PUE

PUE

PUE

PUE

PUE

EXISTING R/W

US 701 BYP NC 130 JK POWELL BLVD

LEGEND

- SOIL BORING LOCATION
- MONITORING WELL LOCATION
- VAULTS ASSOCIATED WITH REMEDIATION SYSTEM
- PROPOSED SLOPE STAKES FILL
- PROPOSED SLOPE STAKES CUT
- EXISTING PROPERTY LINE
- ESTIMATED AREA OF POSSIBLE GROUNDWATER CONTAMINATION

0 10' 20'
SCALE IN FEET

APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 4
PARCEL 020
307 W. LEWIS STREET
SITE MAP WITH ESTIMATED AREA OF GROUNDWATER CONTAMINATION

Date:	8/31/18
Proj. #	NCDOT-001
CAD File:	pc__020__fig 4.dgn
Approx. Scale:	1" = 20'
Drawn by:	MJO
Client:	NC DOT
Project Title:	R-5020B US 701 BYPASS COLUMBUS COUNTY

APPENDIX A

PHOTOGRAPH LOG

Photo 1

View of the site from the southeast corner of the site as seen from JK Powell Blvd.

Photo 2

View west towards a residential area and onsite remediation wells and monitoring wells.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269

APEX

WBS	41499.1.3
PROCESSED	TLH
DATE	June 2018

PHOTOGRAPHIC LOG
PSA Field Activities
Parcel 20
Sibbett Properties, Inc. Property
Whiteville, NC

Photo 1

View of CSI clearing for utilities prior to direct push drilling.

Photo 2

View of onsite remediation vault and monitoring well.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269

APEX

WBS	41499.1.3
PROCESSED	TLH
DATE	June 2018

PHOTOGRAPHIC LOG
PSA Field Activities
Parcel 20
Sibbett Properties, Inc. Property
Whiteville, NC

APPENDIX B
HISTORICAL REPORTS

Geological Resources, Inc.

August 11, 2016

Ms. Debbie Mayo
NCDEQ – DWM, UST Section
Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405

Re: Ground Water Monitoring Report
July 2016
701 Service Station
106 JK Powell Blvd
Whiteville, Columbus County, North Carolina
Incident Number: 94050
Risk Classification/Ranking: Pending
GRI Project No: 2598

Dear Ms. Mayo,

Please find enclosed the referenced report for the above mentioned site. If you have any questions, please do not hesitate to contact Justin Radford, P.G. at 704-845-4010.

Sincerely,
Geological Resources, Inc.

Jackie Donnelly
Project Coordinator

Enclosure

Cc: Mr. Sammy Black, Whiteville Oil Company
file

3502 Hayes Road • Monroe, North Carolina 28110
113 West Firetower Road, Suite G • Winterville, North Carolina 28590
Phone (704) 845-4010 • (888) 870-4133 • Fax (704) 845-4012

GROUND WATER MONITORING REPORT
JULY 2016
701 SERVICE STATION
106 JK POWELL BOULEVARD
WHITEVILLE, COLUMBUS COUNTY
INCIDENT NO. 94050
RISK CLASSIFICATION/RANKING: PENDING
GRI PROJECT NO. 2598

Prepared for:

Whiteville Oil Company
Post Office Box 689
Whiteville, North Carolina 28472

Prepared by:

Geological Resources, Inc.
3502 Hayes Road
Monroe, North Carolina 28110
(704) 845-4010

August 11, 2016

J. Reed Williamson (For)
Lisa Weathersby

SITE IDENTIFICATION

• **Facility Name:**	701 Service Station
• **Location:**	106 JK Powell Boulevard Whiteville, Columbus County
• **Ground Water Incident No.:**	94050
• **Facility ID No:**	N/A
• **Risk Classification:**	Pending
• **Land Use Classification:**	Commercial
• **Property Owner:**	Sibbett Properties, Inc. 2402 Canal Cove Road Lake Waccamaw, North Carolina 28450
• **AST Owner/Operator:**	Whiteville Oil Company, Inc. Post Office Box 689 Whiteville, North Carolina 28472
• **Consultant:**	Geological Resources, Inc. 3502 Hayes Road Monroe, North Carolina 28110 (704) 845-4010
• **Laboratory:**	Accutest Laboratories 4405 Vineland Road, Suite C-15 Orlando, Florida 32811 (407) 425-6700 State Certification Number: 573
• **Release Information**	
• **Date Discovered:**	June 30, 2000
• **Estimated Quantity of Release:**	Approximately 400 gallons of gasoline
• **Cause of Release:**	Leaking AST System
• **Source of Release:**	AST System
• **UST System Size/Contents:**	(2) 6,000-gallon gasoline and (1) 280-gallon kerosene ASTs.
• **Latitude/Longitude:**	34.328556° North / 78.708778° West

Certification

I, William L. Regenthal, a Licensed Geologist for Geological Resources, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

NORTH CAROLINA LICENSED SEAL 2317 GEOLOGIST WILLIAM L. REGENTHAL

Geological Resources, Inc. is licensed to practice geology and engineering in North Carolina. The certification numbers of the company are C-127 and C-2727, respectively.

EXECUTIVE SUMMARY

The 701 Service Station site is located at 106 JK Powell Boulevard in Whiteville, Columbus County, North Carolina. The adjoining properties are commercial and residential. The release was discovered in June 2000 from an above ground storage tank (AST) system. Municipal water is available to the site and surrounding properties.

A Receptor Survey was completed on July 20, 2016. No water supply wells were identified within a 1,500-foot radius of the site. No surface water bodies were identified within a 500-foot radius of the site. The site does not lie within a designated wellhead protection area.

On July 20, 2016, eight Type II monitoring wells were gauged, purged and sampled. Concentrations of requested method constituents that exceeded the Maximum Allowable Concentrations (MACs) specified in T15A NCAC 2L.0202 were reported in the ground water samples collected from MW-2, MW-7 through MW-10 and MW-13. None of the reported contaminant concentrations exceeded the gross contamination levels (GCLs). Oxygen releasing compound (ORC) treated socks were reinstalled in MW-7, MW-8 and MW-9 at the conclusion of the sampling event.

In accordance with House Bill 765, risked based assessments were approved to be implemented on above ground storage tank petroleum incidents. Based on the current site information, the incident is located in a low risk area and would be classified as a Low Risk incident. Therefore, upon NCDEQ implementing the risk based assessments, the incident should be closed upon completion of a Land Use Restriction.

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APPENDIX

1.0 SITE HISTORY AND CHARACTERIZATION

The 701 Service Station site is a former petroleum retail facility and convenience store located at 106 JK Powell Boulevard in Whiteville, Columbus County, North Carolina (**Figure 1**). According to available information, a former AST system owned by Whiteville Oil Company, Inc. (Whiteville Oil) consisting of two 6,000-gallon gasoline ASTs and one 280-gallon kerosene AST were taken out-of-service in July 2000 and have since been removed by Whiteville Oil. An air sparging (AS) system consisting of 30 AS wells, a soil vapor extraction (SVE) system consisting of 12 SVE wells, and associated equipment began operation on November 29, 2004. Previous assessment and remediation activities were conducted by CBM Environmental Services, Inc. (CBM). Whiteville Oil c/o BB&T Wealth Management contracted Geological Resources, Inc. (GRI) in September 2007 to take over as the environmental consultant for the site.

Please note that certain information contained in this report was obtained under the supervision of previous consultants. Although GRI cannot verify the accuracy of this information, for the purposes of this report it is assumed to be correct.

2.0 CURRENT SITE ASSESSMENT

The purpose of this report is to present the results of receptor survey and ground water sampling activities conducted on July 20, 2016, at the former 701 Service Station site. The activities were conducted in accordance with GRI proposal number 16-087 which was submitted to Whiteville Oil Company and approved on July 7, 2016. The purpose of the activities was to obtain current receptor and ground water quality information for the site.

3.0 RECEPTOR SURVEY

A receptor survey was completed on July 20, 2016. No water supply wells were identified within a 1,500 foot radius of the site. Municipal water is available to the site and the surrounding properties. No surface water bodies were identified within a 500-foot radius of the site. The site does not lie within a designated wellhead protection area.

4.0 GROUND WATER QUALITY

Eight Type II monitoring wells (MW-2, MW-7 through MW-10, MW-13, MW-14 and MW 15) were gauged, purged and sampled on July 20, 2016. The depths to ground water in the Type II monitoring wells during the July 2016 sampling event ranged from 1.73 to 6.12 feet below the tops of well casings. Ground water elevations in the Type II monitoring wells relative to a temporary benchmark of 100.00 feet established previously by CBM ranged from 82.56 to 93.88 feet. Based on this information, ground water flow was generally toward the northwest. The average horizontal hydraulic gradient across the site during the July 2016 sampling event was

approximately 0.04 feet per foot. A Site Map showing the locations of monitoring wells and structures onsite has been included as **Figure 2**. A Water Table Surface Map based on the July 2016 gauging event is included as **Figure 3**. A summary of ground water elevation data is presented in **Table 1**.

Laboratory analyses were performed on the ground water samples collected from the monitoring wells during the July 2016 sampling event for volatile organic compounds by EPA Method 602. Concentrations of benzene, toluene, xylenes, MTBE and/or naphthalene that exceeded the Maximum Allowable Concentrations (MACs) specified in T15A NCAC 2L.0202 were reported in the ground water samples collected from MW-2, MW-7 through MW-10 and MW-13. None of the reported contaminant concentrations exceeded the Gross Contamination Levels (GCLs). A Ground Water Quality Map based on data from the July 2016 sampling event has been included as **Figure 4**. A summary of ground water sample analytical results is presented in **Table 2**. A complete copy of the laboratory report has been included in **Appendix A**.

Oxygen releasing compound (ORC) treated socks were reinstalled in MW-7, MW-8 and MW-9 at the conclusion of the sampling event.

5.0 CONCLUSIONS AND RECOMMENDATIONS

- The average depth to water during the July 2016 sampling event was approximately 3.95 feet below the tops of well casings. The ground water flow direction in July 2016 was generally toward the northwest with an average horizontal hydraulic gradient of approximately 0.04 feet per foot.
- Concentrations of benzene, toluene, xylenes, MTBE and/or naphthalene that exceeded the MACs were reported in the ground water samples collected from MW-2, MW-7 through MW-10, and MW-13. None of the reported contaminant concentrations exceeded the GCLs.
- In accordance with House Bill 765, risked based assessments were approved to be implemented on above ground storage tank petroleum incidents. Based on the current site information, the incident is located in a low risk area and would be classified as a Low Risk incident. Therefore, upon NCDEQ implementing the risk based assessments, the incident should be closed upon completion of a Land Use Restriction.

6.0 LIMITATIONS

This report has been prepared for the exclusive use of Whiteville Oil Company for specific application to the referenced site in Columbus County, North Carolina. The assessment was conducted based on the scope of work and level of effort specified by NCDEQ and with resources adequate only for that scope of work. Our findings have been developed in accordance with generally accepted standards of geology and hydrogeology practices in the State of North Carolina, available information, and our professional judgment. No other warranty is expressed

or implied.

The data that are presented in this report are indicative of conditions that existed at the precise locations sampled and at the time the samples were collected. In addition, the data obtained from samples would be interpreted as being meaningful with respect to parameters indicated in the laboratory report. No additional information can logically be inferred from these data. Please note that certain information contained in this report was not obtained under the direct supervision of GRI personnel. Therefore, GRI cannot verify the accuracy of this information. However, for the purpose of this report, GRI assumes the information is correct.

FIGURES

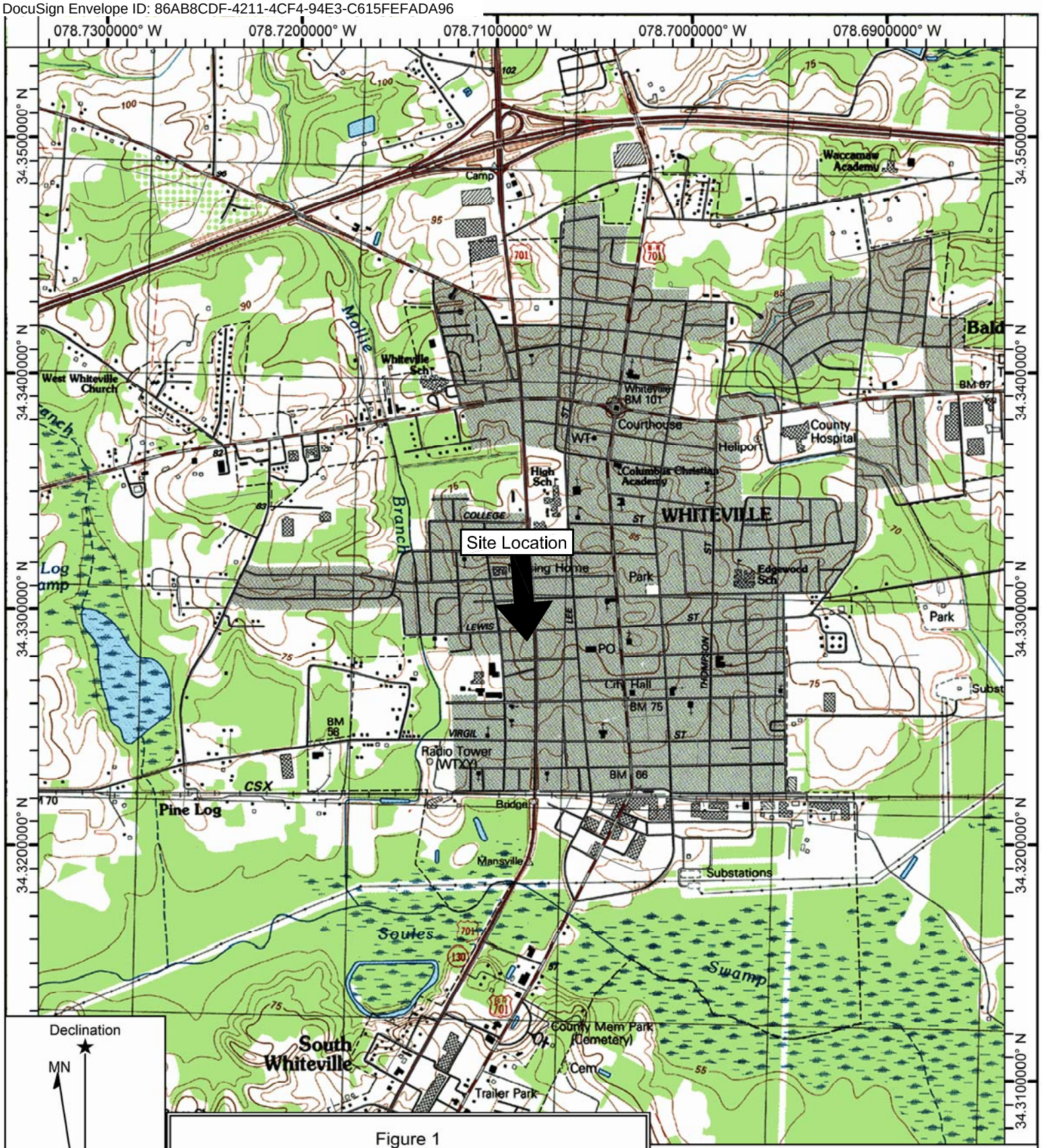


Figure 1
701 Service Station
106 JK Powell Boulevard
Whiteville, North Carolina
Incident No. 94050
GRI Project No. 2598

SCALE 1:24000

0 1000 2000 3000 4000 5000
FEET

Name: Site Location Map
Date: 08/04/16
Scale: 1 inch = 2,000 ft.

Map Center Location: 034.3285560° N 078.7087780° W

Generated by Geological Resources, Inc.

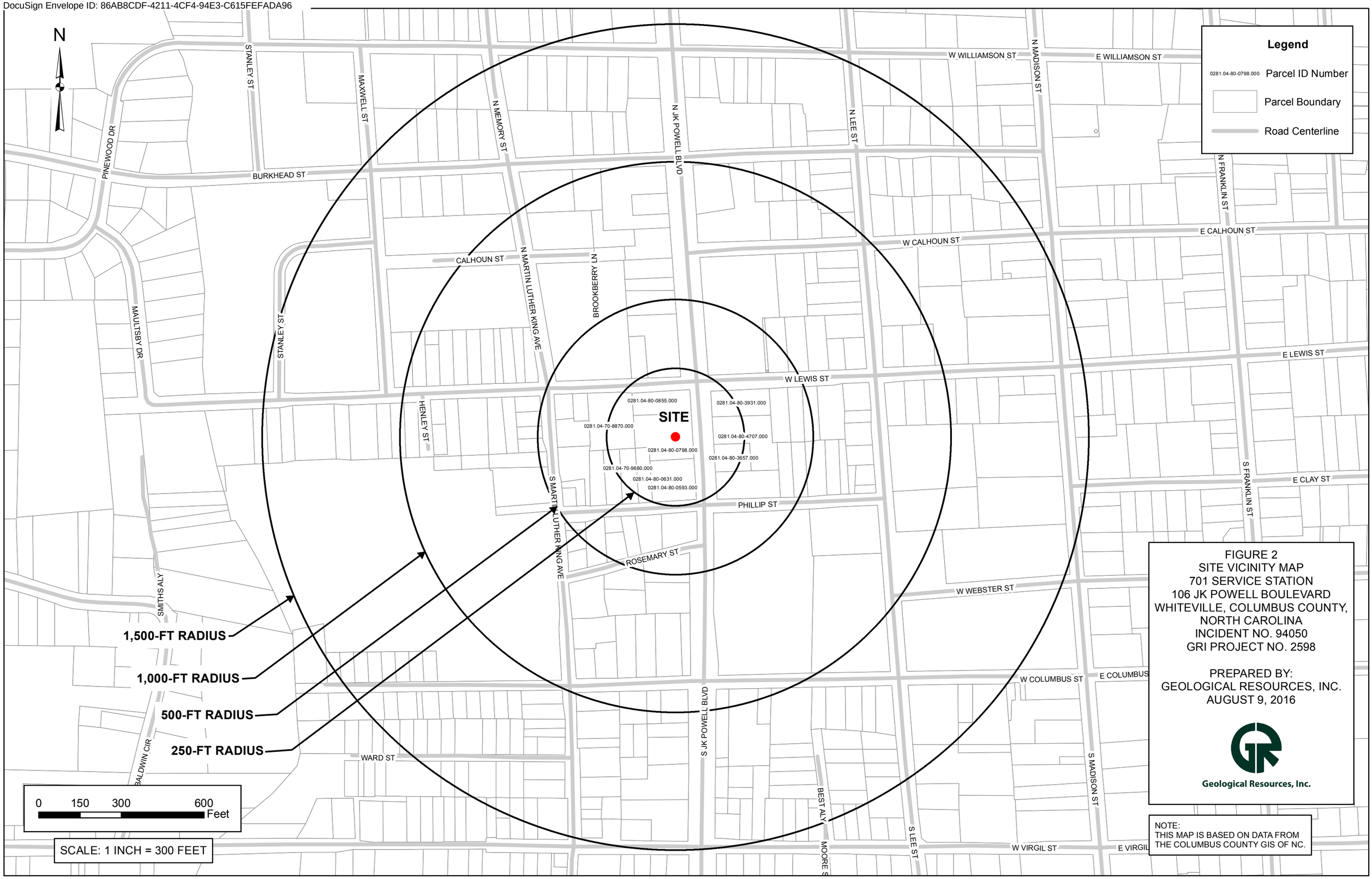


FIGURE 2
SITE VICINITY MAP
701 SERVICE STATION
106 JK POWELL BOULEVARD
WHITEVILLE, COLUMBUS COUNTY,
NORTH CAROLINA
INCIDENT NO. 94050
GRI PROJECT NO. 2598

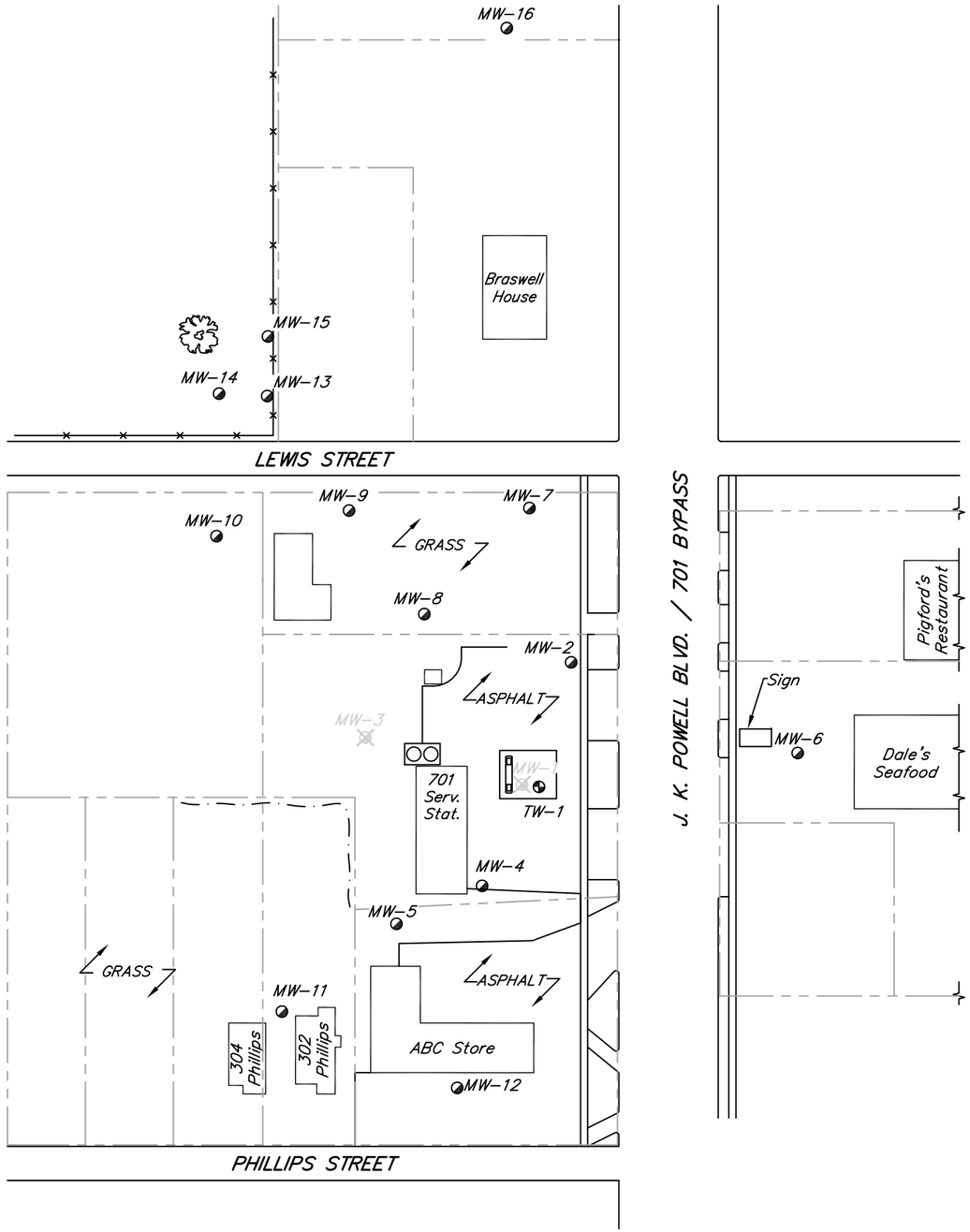
PREPARED BY:
GEOLOGICAL RESOURCES, INC.
AUGUST 9, 2016

Geological Resources, Inc.

NOTE:
THIS MAP IS BASED ON DATA FROM
THE COLUMBUS COUNTY GIS OF NC.

LEGEND

- TYPE II MONITORING WELL
- TYPE II MONITORING WELL (DESTROYED)
- TYPE III MONITORING WELL
- DITCH
- FENCE
- PROPERTY BOUNDARY
- TREE



Geological Resources, Inc.

0 50 100 200

(IN FEET)
1 inch = 100 ft

SITE MAP

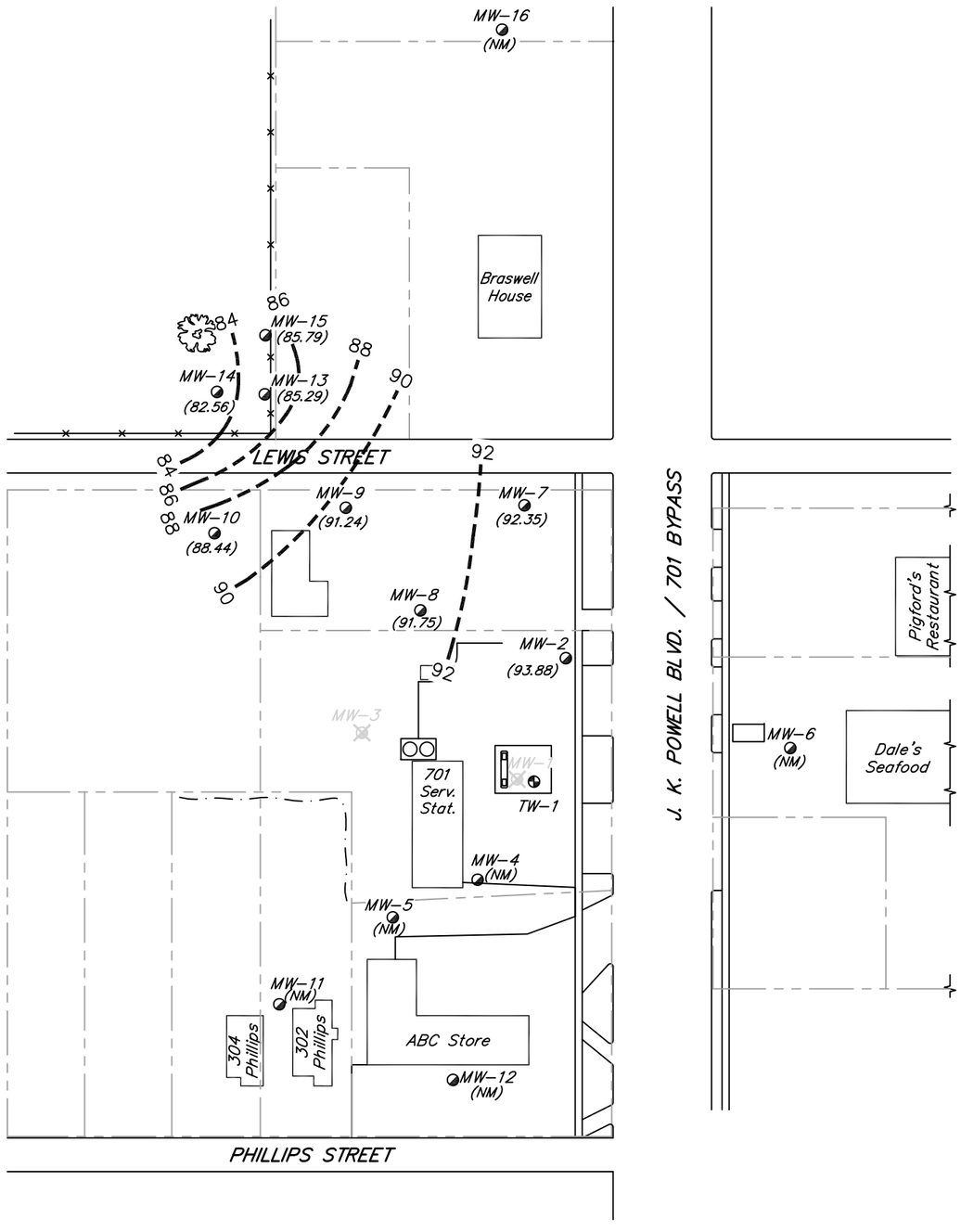
701 Service Station
Incident No. 94050
GRI Project No. 2598

106 JK Powell Boulevard
Whiteville, Columbus County, NC

Date:	08/04/16	Drawn by:	ECH	Figure:	3

LEGEND

- TYPE II MONITORING WELL
- TYPE II MONITORING WELL (DESTROYED)
- TYPE III MONITORING WELL
- DITCH
- FENCE
- PROPERTY BOUNDARY
- TREE
- 93 — WATER TABLE SURFACE CONTOUR
- (93.88) — GROUND WATER ELEVATION (FT.)
- (NM) — NOT MEASURED



Geological Resources, Inc.

0 50 100 200

(IN FEET)
1 inch = 100 ft

WATER TABLE SURFACE MAP (07/20/16)

701 Service Station Incident No. 94050 GRI Project No. 2598	106 JK Powell Boulevard Whiteville, Columbus County, NC

Date:	08/04/16	Drawn by:	ECH	Figure:	4

LEGEND

- TYPE II MONITORING WELL
- TYPE II MONITORING WELL (DESTROYED)
- TYPE III MONITORING WELL
- DITCH
- FENCE
- PROPERTY BOUNDARY
- TREE

21.5	BENZENE
0.24 J	TOLUENE
65.7	ETHYLBENZENE
0.52 J	XYLENES
30.2	MTBE
98.5	NAPHTHALENE

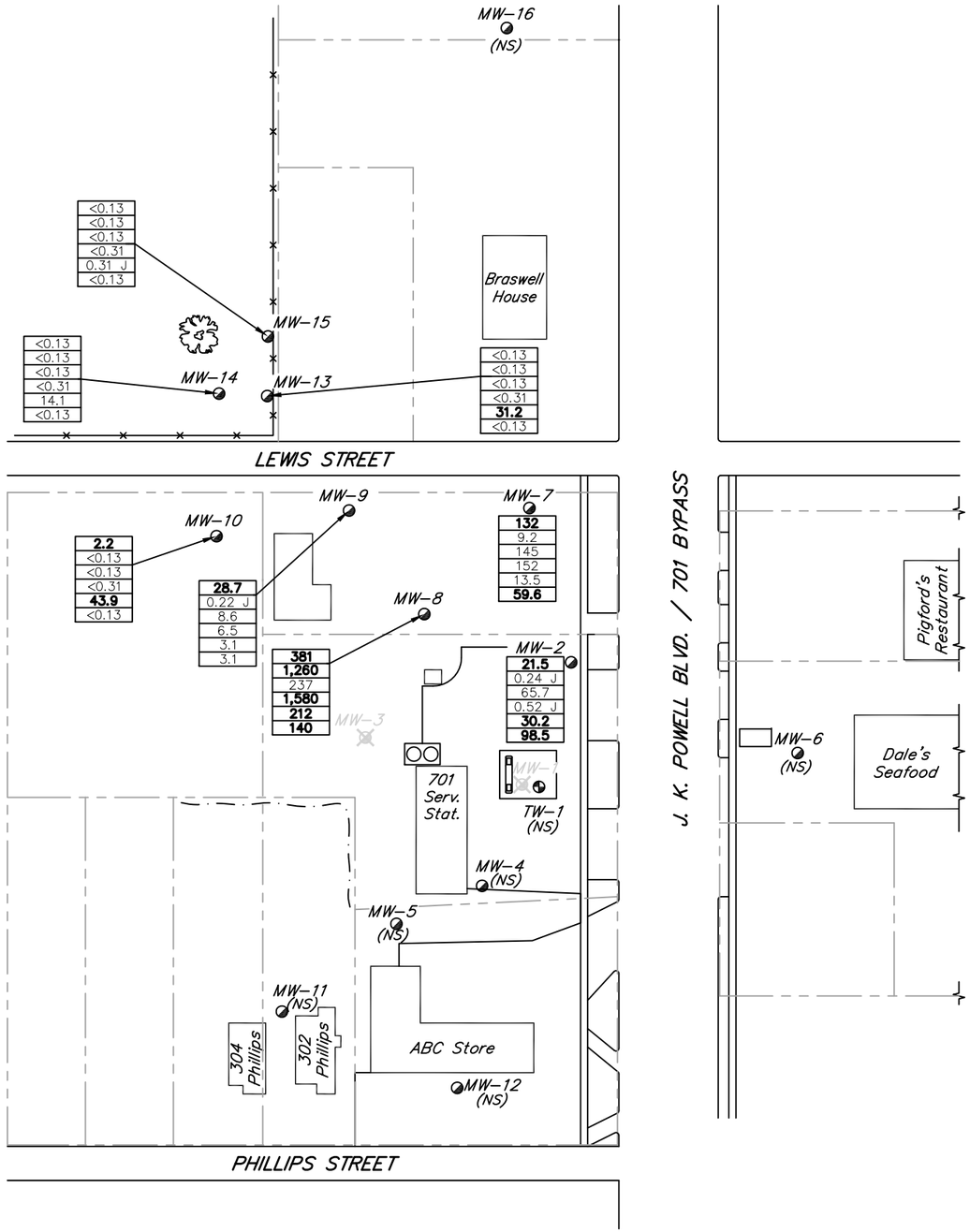
CONCENTRATIONS IN µg/L

<0.13 LESS THAN THE METHOD DETECTION LIMIT SPECIFIED IN THE LABORATORY REPORT

"J" ESTIMATED VALUE

CONCENTRATIONS IN ITALICS EXCEEDED THE GCLS

(NS) NOT SAMPLED



Geological Resources, Inc.

0 50 100 200

(IN FEET)
1 inch = 100 ft

GROUND WATER QUALITY MAP (07/20/16)

701 Service Station
Incident No. 94050
GRI Project No. 2598

106 JK Powell Boulevard
Whiteville, Columbus County, NC

Date:	08/04/16	Drawn by:	ECH	Figure:	5

TABLES

TABLE 1
ADJACENT PROPERTY OWNER INFORMATION
701 SERVICE STATION (INCIDENT NO. 94050)

Date: 08/01/16 **Facility ID #:** NA

Parcel ID No.	Property Owner Name	Mailing Address
0281.04-80-0798.000 (Site)	Sibbett Properties, Inc.	2402 Canal Cove Road Lake Waccamaw, North Carolina 28450
0281.04-80-0855.000		
0281.04-70-8870.000	Wilbur G. Best, Jr.	311 W Lewis Street Whiteville, North Carolina 28472
0281.04-80-3931.000	John E. and Sara B. Thompson	115 W Main Street Whiteville, North Carolina 28472
0281.04-80-4707.000	Gerald & Gerald, Inc.	107 S Powell Boulevard Post Office Box 184 Whiteville, North Carolina 28472
0281.04-80-3657.000		
0281.04-80-0593.000	Whiteville ABC Store	112 S JK Powell Boulevard Whiteville, North Carolina 28472
0281.04-80-0631.000	Juanita G. Troy	30 Scranton Court Cameron, North Carolina 28326
0281.04-70-9680.000	James O. & Edith G. Price	304 W Phillip Street Whiteville, North Carolina 28472

- This information is based on the Columbus County GIS website.
- Properties are keyed to **Figure 2**.

TABLE 2
SUMMARY OF GROUND WATER ELEVATION DATA
701 SERVICE STATION (INCIDENT NO. 94050)

Date: 07/29/16 **Facility ID # :** N/A

Well No.	Date Water Level Measured (mm/dd/yy)	Top of Casing Elevation	Depth to Product	Depth to Ground Water	Ground Water Elevation
MW-1	11/20/07	99.34	NA	NF	NF
MW-2	11/20/07	100.00	NA	9.55	90.45
	12/19/07			10.00	90.00
	11/25/08			6.29	93.71
	06/02/09			7.21	92.79
	11/17/09			6.23	93.77
	05/05/10			6.20	93.80
	11/16/10			6.38	93.62
	09/16/11			6.31	93.69
	07/19/12			6.54	93.46
	12/12/12			6.78	93.22
	09/22/14			6.08	93.92
	03/03/15			6.03	93.97
	09/04/15			6.61	93.39
	07/20/16			6.12	93.88
MW-3	11/20/07	99.00	NA	NF	NF
MW-4	11/20/07	99.43	NA	NM	NM
	12/19/07			6.62	92.81
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM
MW-5	11/20/07	96.98	NA	NM	NM
	12/19/07			5.70	91.28
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM
MW-6	11/20/07	100.62	NA	NM	NM
	12/19/07			10.85	89.77
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM
MW-7	11/20/07	97.81	NA	9.18	88.63
	12/19/07			9.65	88.16
	11/25/08			6.10	91.71
	06/02/09			4.70	93.11
	11/17/09			3.76	94.05
	05/05/10			6.14	91.67
	11/16/10			6.33	91.48
	09/16/11			5.33	92.48
	07/19/12			6.82	90.99
	12/12/12			6.93	90.88
	09/22/14			4.10	93.71
	03/03/15			3.70	94.11
	09/04/15			7.87	89.94
	07/20/16			5.46	92.35
MW-8	11/20/07	95.11	NA	8.30	86.81
	12/19/07			14.45	80.66
	11/25/08			2.87	92.24
	06/02/09			1.95	93.16
	11/17/09			2.15	92.96
	05/05/10			3.32	91.79
	11/16/10			3.60	91.51
	09/16/11			3.20	91.91
	07/19/12			4.55	90.56
	12/12/12			3.71	91.40
	09/22/14			2.22	92.89
	03/03/15			0.43	94.68
	09/04/15			6.29	88.82
	07/20/16			3.36	91.75

TABLE 2
SUMMARY OF GROUND WATER ELEVATION DATA
701 SERVICE STATION (INCIDENT NO. 94050)

Date: 07/29/16 **Facility ID # :** N/A

Well No.	Date Water Level Measured (mm/dd/yy)	Top of Casing Elevation	Depth to Product	Depth to Ground Water	Ground Water Elevation
MW-9	11/20/07	92.97	NA	8.25	84.72
	12/19/07			10.55	82.42
	11/25/08			2.38	90.59
	06/02/09			1.31	91.66
	11/17/09			0.00	92.97
	05/05/10			2.60	90.37
	11/16/10			2.50	90.47
	09/16/11			2.17	90.80
	07/19/12			3.15	89.82
	12/12/12			3.05	89.92
	09/22/14			1.05	91.92
	03/03/15			TOC	NM
	09/04/15			5.19	87.78
	07/20/16			1.73	91.24
MW-10	11/20/07	91.13	NA	9.40	81.73
	12/19/07			11.50	79.63
	11/25/08			2.91	88.22
	06/02/09			2.28	88.85
	11/17/09			1.15	89.98
	05/05/10			4.12	87.01
	11/16/10			3.34	87.79
	09/16/11			1.24	89.89
	07/19/12			4.66	86.47
	12/12/12			4.01	87.12
	09/22/14			3.05	88.08
	03/03/15			1.89	89.24
	09/04/15			5.09	86.04
	07/20/16			2.69	88.44
MW-11	11/20/07	93.77	NA	NM	NM
	12/19/07			14.75	79.02
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM
MW-12	11/20/07	95.06	NA	NM	NM
	12/19/07			6.80	88.26
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM
MW-13	11/20/07	89.39	NA	7.25	82.14
	12/19/07			8.30	81.09
	11/25/08			2.80	86.59
	06/02/09			0.42	88.97
	11/17/09			4.25	85.14
	05/05/10			3.32	86.07
	11/16/10			5.60	83.79
	09/16/11			5.21	84.18
	07/19/12			5.25	84.44
	12/12/12			2.56	86.83
	09/22/14			1.44	87.95
	03/03/15			TOC	NM
	09/04/15			6.03	83.36
	07/20/16			4.10	85.29
MW-14	11/20/07	88.29	NA	NM	NM
	12/19/07			11.65	76.64
	11/25/08			8.08	80.21
	06/02/09			2.82	85.47
	11/17/09			5.01	83.28
	05/05/10			5.01	83.28
	11/16/10			8.24	80.05
	09/16/11			4.87	83.42
	07/19/12			7.66	80.63
	12/12/12			8.27	80.02
	09/22/14			3.42	84.87
	03/03/15			2.07	86.22
	09/04/15			8.41	79.88
	07/20/16			5.73	82.56

TABLE 2
SUMMARY OF GROUND WATER ELEVATION DATA
701 SERVICE STATION (INCIDENT NO. 94050)

Date: 07/29/16 **Facility ID # :** N/A

Well No.	Date Water Level Measured (mm/dd/yy)	Top of Casing Elevation	Depth to Product	Depth to Ground Water	Ground Water Elevation
MW-15	11/20/07	88.20	NA	NM	NM
	12/19/07			9.20	79.00
	11/25/08			2.95	85.25
	06/02/09			0.00	88.20
	11/17/09			6.75	81.45
	05/05/10			2.51	85.69
	11/16/10			7.79	80.41
	09/16/11			8.11	80.09
	07/19/12			7.59	80.61
	12/12/12			1.67	86.53
	09/22/14			1.31	86.89
	03/03/15			TOC	NM
	09/04/15			6.46	81.74
	07/20/16			2.41	85.79
MW-16	11/20/07	93.99	NA	NM	NM
	12/19/07			10.45	83.54
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM
TW-1	11/20/07	99.59	NA	NM	NM
	12/19/07			21.55	78.04
	11/25/08			NM	NM
	06/02/09			NM	NM
	11/17/09			NM	NM
	05/05/10			NM	NM
	11/16/10			NM	NM
	09/16/11			NM	NM
	07/19/12			NM	NM
	12/12/12			NM	NM

Notes:
- Elevations relative to a temporary benchmark with an assumed datum of 100.00 feet; data reported in feet.
- NF = Not found; well assumed to be destroyed.
- NM = Not measured.
- TW-1 is a Type III monitoring well.
- TOC = Ground Water observed above top of well casing.

APPENDIX

APPENDIX A

Laboratory Report - Ground Water Samples

e-Hardcopy 2.0
Automated Report

Technical Report for

GRI (Geological Resources Inc.)

701 Service Station; 106 JK Powell Blvd, Whiteville, NC

94050/2598

SGS Accutest Job Number: FA35610

Sampling Date: 07/20/16

Report to:

GRI
3502 Hayes Rd
Monroe, NC 28110
jjr@geologicalresourcesinc.com; carriekennedy@geologicalresourcesinc.com; jjr@geologicalresourcesinc.com
ATTN: Justin Radford

Total number of pages in report: 25

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Muna Mohammed 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001) DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177), AK, AR, GA, KY, MA, NV, OK, UT, WA

Sections: 1 2 3 4 5

Table of Contents

SGS Accutest

Sample Summary

GRI (Geological Resources Inc.)

Job No: FA35610

701 Service Station; 106 JK Powell Blvd, Whiteville, NC
Project No: 94050/2598

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA35610-1	07/20/16	11:33	ZC	07/22/16	AQ	Ground Water	MW-2
FA35610-2	07/20/16	11:20	ZC	07/22/16	AQ	Ground Water	MW-7
FA35610-3	07/20/16	11:24	ZC	07/22/16	AQ	Ground Water	MW-8
FA35610-4	07/20/16	11:10	ZC	07/22/16	AQ	Ground Water	MW-9
FA35610-5	07/20/16	11:07	ZC	07/22/16	AQ	Ground Water	MW-10
FA35610-6	07/20/16	12:04	ZC	07/22/16	AQ	Ground Water	MW-13
FA35610-7	07/20/16	11:55	ZC	07/22/16	AQ	Ground Water	MW-14
FA35610-8	07/20/16	12:10	ZC	07/22/16	AQ	Ground Water	MW-15

Summary of Hits

Job Number: FA35610
Account: GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC
Collected: 07/20/16

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA35610-1	**MW-2**					
Benzene		21.5	0.50	0.13	ug/l	SM 6200B
Di-Isopropyl Ether		0.55	0.50	0.13	ug/l	SM 6200B
Ethylbenzene		65.7	2.5	0.63	ug/l	SM 6200B
Methyl Tert Butyl Ether		30.2	0.50	0.13	ug/l	SM 6200B
Naphthalene		98.5	2.5	0.63	ug/l	SM 6200B
Toluene		0.24 J	0.50	0.13	ug/l	SM 6200B
Xylene (total)		0.52 J	1.5	0.31	ug/l	SM 6200B
FA35610-2	**MW-7**					
Benzene		132	2.5	0.63	ug/l	SM 6200B
Di-Isopropyl Ether		3.9	0.50	0.13	ug/l	SM 6200B
Ethylbenzene		145	2.5	0.63	ug/l	SM 6200B
Methyl Tert Butyl Ether		13.5	0.50	0.13	ug/l	SM 6200B
Naphthalene		59.6	2.5	0.63	ug/l	SM 6200B
Toluene		9.2	0.50	0.13	ug/l	SM 6200B
Xylene (total)		152	7.5	1.5	ug/l	SM 6200B
FA35610-3	**MW-8**					
Benzene		381	25	6.3	ug/l	SM 6200B
Di-Isopropyl Ether		8.9 J	25	6.3	ug/l	SM 6200B
Ethylbenzene		237	25	6.3	ug/l	SM 6200B
Methyl Tert Butyl Ether		212	25	6.3	ug/l	SM 6200B
Naphthalene		140	25	6.3	ug/l	SM 6200B
Toluene		1260	25	6.3	ug/l	SM 6200B
Xylene (total)		1580	75	15	ug/l	SM 6200B
FA35610-4	**MW-9**					
Benzene [a]		28.7	0.50	0.13	ug/l	SM 6200B
Di-Isopropyl Ether [a]		0.20 J	0.50	0.13	ug/l	SM 6200B
Ethylbenzene [a]		8.6	0.50	0.13	ug/l	SM 6200B
Methyl Tert Butyl Ether [a]		3.1	0.50	0.13	ug/l	SM 6200B
Naphthalene [a]		3.1	0.50	0.13	ug/l	SM 6200B
Toluene [a]		0.22 J	0.50	0.13	ug/l	SM 6200B
Xylene (total) [a]		6.5	1.5	0.31	ug/l	SM 6200B
FA35610-5	**MW-10**					
Benzene		2.2	0.50	0.13	ug/l	SM 6200B
Di-Isopropyl Ether		11.6	0.50	0.13	ug/l	SM 6200B
Methyl Tert Butyl Ether		43.9	0.50	0.13	ug/l	SM 6200B

Summary of Hits

Job Number: FA35610
Account: GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC
Collected: 07/20/16

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
FA35610-6	**MW-13**					
Di-Isopropyl Ether		0.57	0.50	0.13	ug/l	SM 6200B
Methyl Tert Butyl Ether		31.2	0.50	0.13	ug/l	SM 6200B
FA35610-7	**MW-14**					
Di-Isopropyl Ether		1.5	0.50	0.13	ug/l	SM 6200B
Methyl Tert Butyl Ether		14.1	0.50	0.13	ug/l	SM 6200B
FA35610-8	**MW-15**					
Methyl Tert Butyl Ether		0.31 J	0.50	0.13	ug/l	SM 6200B

(a) Sample was not preserved to a pH < 2.

Sample Results

Report of Analysis

SGS Accutest

Report of Analysis

Client Sample ID:	MW-2		
Lab Sample ID:	FA35610-1	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047257.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2	E047278.D	5	07/26/16	TD	n/a	n/a	VE1566

	Purge Volume
Run #1	10.0 ml
Run #2	10.0 ml

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	21.5	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	0.55	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	65.7 [a]	2.5	0.63	ug/l	
1634-04-4	Methyl Tert Butyl Ether	30.2	0.50	0.13	ug/l	
91-20-3	Naphthalene	98.5 [a]	2.5	0.63	ug/l	
108-88-3	Toluene	0.24	0.50	0.13	ug/l	J
1330-20-7	Xylene (total)	0.52	1.5	0.31	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%	106%	70-130%
17060-07-0	1,2-Dichloroethane-D4	106%	109%	70-130%
2037-26-5	Toluene-D8	97%	99%	70-130%
460-00-4	4-Bromofluorobenzene	104%	102%	70-130%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-7		
Lab Sample ID:	FA35610-2	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047258.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2	E047288.D	5	07/26/16	TD	n/a	n/a	VE1566

	Purge Volume
Run #1	10.0 ml
Run #2	10.0 ml

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	132 [a]	2.5	0.63	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	3.9	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	145 [a]	2.5	0.63	ug/l	
1634-04-4	Methyl Tert Butyl Ether	13.5	0.50	0.13	ug/l	
91-20-3	Naphthalene	59.6 [a]	2.5	0.63	ug/l	
108-88-3	Toluene	9.2	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	152 [a]	7.5	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	70-130%
2037-26-5	Toluene-D8	97%	101%	70-130%
460-00-4	4-Bromofluorobenzene	102%	103%	70-130%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-8		
Lab Sample ID:	FA35610-3	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047259.D	50	07/25/16	TD	n/a	n/a	VE1565
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	381	25	6.3	ug/l	
108-90-7	Chlorobenzene	ND	25	6.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	25	6.3	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	25	6.3	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	25	6.3	ug/l	
108-20-3	Di-Isopropyl Ether	8.9	25	6.3	ug/l	J
100-41-4	Ethylbenzene	237	25	6.3	ug/l	
1634-04-4	Methyl Tert Butyl Ether	212	25	6.3	ug/l	
91-20-3	Naphthalene	140	25	6.3	ug/l	
108-88-3	Toluene	1260	25	6.3	ug/l	
1330-20-7	Xylene (total)	1580	75	15	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
17060-07-0	1,2-Dichloroethane-D4	100%		70-130%
2037-26-5	Toluene-D8	102%		70-130%
460-00-4	4-Bromofluorobenzene	103%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-9		
Lab Sample ID:	FA35610-4	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E047260.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	28.7	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	0.20	0.50	0.13	ug/l	J
100-41-4	Ethylbenzene	8.6	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	3.1	0.50	0.13	ug/l	
91-20-3	Naphthalene	3.1	0.50	0.13	ug/l	
108-88-3	Toluene	0.22	0.50	0.13	ug/l	J
1330-20-7	Xylene (total)	6.5	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		70-130%
17060-07-0	1,2-Dichloroethane-D4	104%		70-130%
2037-26-5	Toluene-D8	101%		70-130%
460-00-4	4-Bromofluorobenzene	101%		70-130%

(a) Sample was not preserved to a pH < 2.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-10		
Lab Sample ID:	FA35610-5	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047261.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2.2	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	11.6	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	43.9	0.50	0.13	ug/l	
91-20-3	Naphthalene	ND	0.50	0.13	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
17060-07-0	1,2-Dichloroethane-D4	104%		70-130%
2037-26-5	Toluene-D8	101%		70-130%
460-00-4	4-Bromofluorobenzene	103%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-13		
Lab Sample ID:	FA35610-6	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047262.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	0.57	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	31.2	0.50	0.13	ug/l	
91-20-3	Naphthalene	ND	0.50	0.13	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
17060-07-0	1,2-Dichloroethane-D4	101%		70-130%
2037-26-5	Toluene-D8	102%		70-130%
460-00-4	4-Bromofluorobenzene	103%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-14		
Lab Sample ID:	FA35610-7	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047263.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	1.5	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	14.1	0.50	0.13	ug/l	
91-20-3	Naphthalene	ND	0.50	0.13	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
17060-07-0	1,2-Dichloroethane-D4	104%		70-130%
2037-26-5	Toluene-D8	100%		70-130%
460-00-4	4-Bromofluorobenzene	102%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	MW-15		
Lab Sample ID:	FA35610-8	**Date Sampled:**	07/20/16
Matrix:	AQ - Ground Water	**Date Received:**	07/22/16
Method:	SM 6200B	**Percent Solids:**	n/a
Project:	701 Service Station; 106 JK Powell Blvd, Whiteville, NC		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E047264.D	1	07/25/16	TD	n/a	n/a	VE1565
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	ND	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.31	0.50	0.13	ug/l	J
91-20-3	Naphthalene	ND	0.50	0.13	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
17060-07-0	1,2-Dichloroethane-D4	102%		70-130%
2037-26-5	Toluene-D8	101%		70-130%
460-00-4	4-Bromofluorobenzene	102%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Southeast

ACCUTEST LABORATORIES

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # FA35610 PAGE 1 OF 1

Accutest Quote # | SKIFF#

Client / Reporting Information

Company Name: Geological Resources Inc
Address:
City: ~~Lock~~ Monroe State: NC Zip: 28110
Project Contact: Justin E-mail:
Phone#:
Sampler(s) Name(s) (Printed): ~~Ho~~ Zac

Project Information

Project Name: 701 Service Station
Street: 106 JR Powell Blvd
City: Whiteville State: NC
Project #: 2598
Fax #:
Client Purchase Order #:

Analytical Information

602 ✓

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

Accutest Sample #	Field ID / Point of Collection	COLLECTION DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION: OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH	LAB USE ONLY
1	MW-2	7/20	1133	ZC	GW	3			1						✓	
2	MW-7		1120													
3	MW-8		1124													
4	MW-9		1110													
5	MW-10		1107													
6	MW-13		1204													
7	MW-14		1155													
8	MW-15	✓	1210	✓	✓	✓			✓						✓	

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

2828-C QUEEN CT DR CLT NC 28209

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished by:	Date Time:	Received By:
1		7/21	2 FX	3 FX		4 7/22/16 915
5	Relinquished by:	Date Time:	6 Received By:	7 Relinquished by:	Date Time:	8 Received By:

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: 1 Cooler Temperature (s) Celsius: 3.0

4.1 4

FA35610: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA35610 CLIENT: GRI PROJECT: 2598

DATE/TIME RECEIVED: 7/22/16 915 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: (FEDEX) UPS ACCUTEST COURIER DELIVERY OTHER:

AIRBILL NUMBERS: 8087 5428 7786

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM_____ 5-GRAM_____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

TEMPERATURE INFORMATION

- [ ] IR THERM ID 1 CORR. FACTOR +0.0
- [ ] OBSERVED TEMPS: 3.0
- [ ] CORRECTED TEMPS: 3.0 (USED FOR LIMS)

SAMPLE INFORMATION

- [ ] INCORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- [ ] ID'S ON COC DO NOT MATCH LABEL
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- [ ] BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] RESIDUAL CHLORINE PRESENT LOT#_____

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

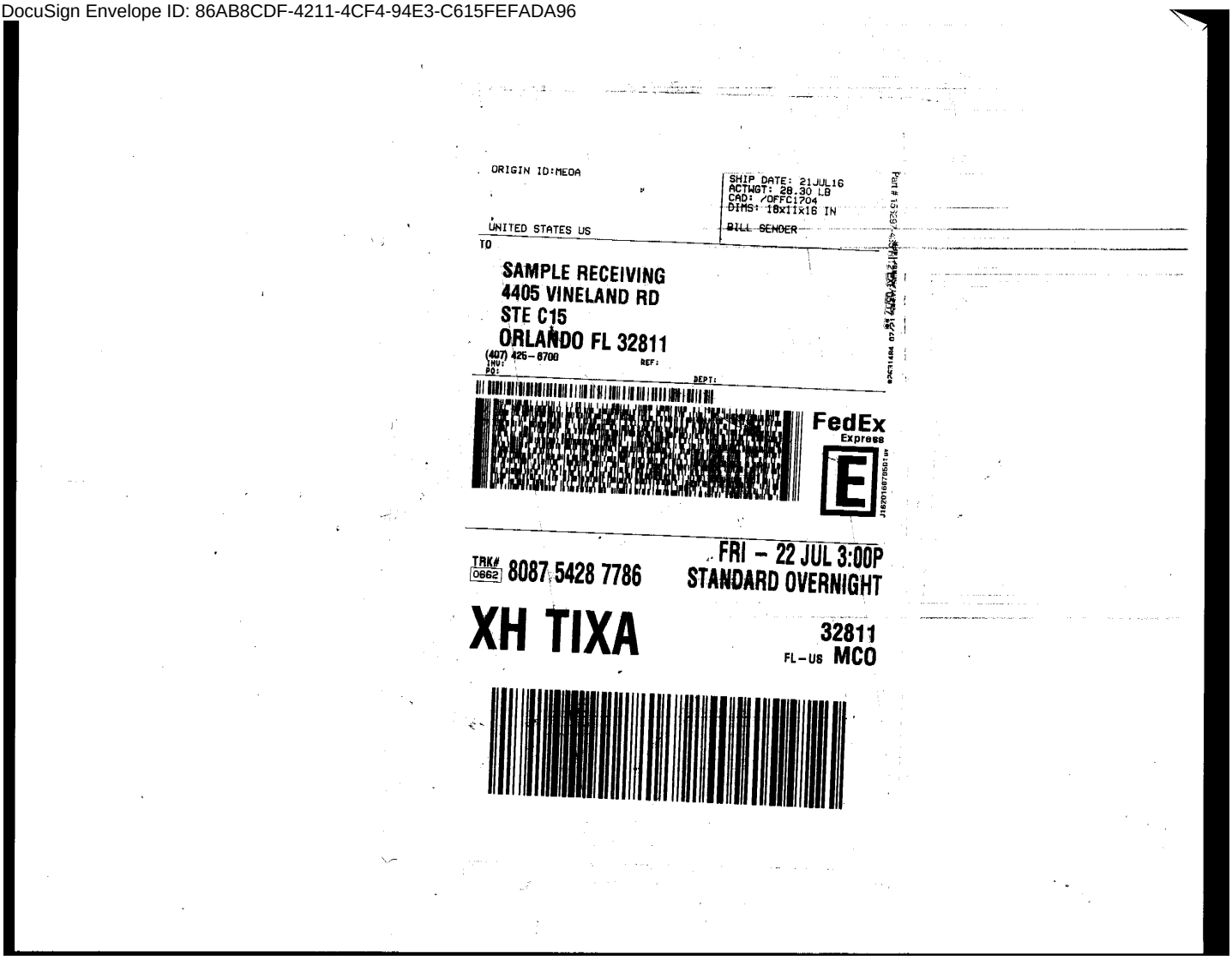
TEST STRIP LOT#s pH 0-3 230315 pH 10-12 219813A OTHER (specify) _____

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE 7/22/16 REVIEWER SIGNATURE/DATE 7-22-16

NF 11/15 RECEIPTLOG040416.xls

4.1 4



ORIGIN ID:MEOA

SHIP DATE: 21JUL16
ACTWGT: 28.30 LB
CAD: /OFFC1704
DIMS: 18x11x16 IN

BILL SENDER

UNITED STATES US

TO

SAMPLE RECEIVING
4405 VINELAND RD
STE C15
ORLANDO FL 32811
(407) 425-6700

INV:
PO:
REF:
DEPT:

FedEx
Express

TRK# 0662 8087 5428 7786

FRI - 22 JUL 3:00P
STANDARD OVERNIGHT

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GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: FA35610
Account: GRINCC GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1565-MB	E047239.D	1	07/25/16	TD	n/a	n/a	VE1565

The QC reported here applies to the following samples: **Method:** SM 6200B

FA35610-1, FA35610-2, FA35610-3, FA35610-4, FA35610-5, FA35610-6, FA35610-7, FA35610-8

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.13	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	0.50	0.13	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	0.50	0.13	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	0.50	0.13	ug/l	
108-20-3	Di-Isopropyl Ether	ND	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.13	ug/l	
91-20-3	Naphthalene	ND	0.50	0.13	ug/l	
108-88-3	Toluene	ND	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	70-130%
2037-26-5	Toluene-D8	101%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

Method Blank Summary

Job Number: FA35610
Account: GRINCC GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1566-MB	E047274.D	1	07/26/16	TD	n/a	n/a	VE1566

The QC reported here applies to the following samples: **Method:** SM 6200B

FA35610-1, FA35610-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.13	ug/l	
91-20-3	Naphthalene	ND	0.50	0.13	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.31	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
17060-07-0	1,2-Dichloroethane-D4	102%	70-130%
2037-26-5	Toluene-D8	102%	70-130%
460-00-4	4-Bromofluorobenzene	104%	70-130%

Blank Spike Summary

Job Number: FA35610
Account: GRINCC GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1565-BS [a]	E047238.D	1	07/25/16	TD	n/a	n/a	VE1565

The QC reported here applies to the following samples: **Method:** SM 6200B

FA35610-1, FA35610-2, FA35610-3, FA35610-4, FA35610-5, FA35610-6, FA35610-7, FA35610-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	10	10.5	105	70-130
108-90-7	Chlorobenzene	10	10.5	105	70-130
95-50-1	1,2-Dichlorobenzene	10	10.7	107	70-130
541-73-1	1,3-Dichlorobenzene	10	11.0	110	70-130
106-46-7	1,4-Dichlorobenzene	10	10.5	105	70-130
108-20-3	Di-Isopropyl Ether	10	9.6	96	70-130
100-41-4	Ethylbenzene	10	10.7	107	70-130
1634-04-4	Methyl Tert Butyl Ether	10	9.3	93	70-130
91-20-3	Naphthalene	10	11.4	114	70-130
108-88-3	Toluene	10	10.5	105	70-130
1330-20-7	Xylene (total)	30	33.4	111	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	102%	70-130%

(a) No MSD available for this run.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA35610
Account: GRINCC GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE1566-BS	E047273.D	1	07/26/16	TD	n/a	n/a	VE1566

The QC reported here applies to the following samples: **Method:** SM 6200B

FA35610-1, FA35610-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	10	10.1	101	70-130
100-41-4	Ethylbenzene	10	10.3	103	70-130
91-20-3	Naphthalene	10	10.5	105	70-130
1330-20-7	Xylene (total)	30	31.8	106	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	103%	70-130%
2037-26-5	Toluene-D8	100%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA35610
Account: GRINCC GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA35519-2MS	E047265.D	1	07/25/16	TD	n/a	n/a	VE1565
FA35519-2	E047245.D	1	07/25/16	TD	n/a	n/a	VE1565

The QC reported here applies to the following samples: **Method:** SM 6200B

FA35610-1, FA35610-2, FA35610-3, FA35610-4, FA35610-5, FA35610-6, FA35610-7, FA35610-8

CAS No.	Compound	FA35519-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
71-43-2	Benzene	ND		10	8.1	81	70-130
108-90-7	Chlorobenzene	ND		10	8.0	80	70-130
95-50-1	1,2-Dichlorobenzene	ND		10	7.8	78	70-130
541-73-1	1,3-Dichlorobenzene	ND		10	8.0	80	70-130
106-46-7	1,4-Dichlorobenzene	ND		10	7.9	79	70-130
108-20-3	Di-Isopropyl Ether	ND		10	7.4	74	70-130
100-41-4	Ethylbenzene	ND		10	8.1	81	70-130
1634-04-4	Methyl Tert Butyl Ether	ND		10	7.3	73	70-130
91-20-3	Naphthalene	ND		10	7.6	76	70-130
108-88-3	Toluene	ND		10	7.9	79	70-130
1330-20-7	Xylene (total)	ND		30	24.9	83	70-130

CAS No.	Surrogate Recoveries	MS	FA35519-2	Limits
1868-53-7	Dibromofluoromethane	103%	98%	70-130%
17060-07-0	1,2-Dichloroethane-D4	106%	98%	70-130%
2037-26-5	Toluene-D8	99%	101%	70-130%
460-00-4	4-Bromofluorobenzene	100%	102%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA35610
Account: GRINCC GRI (Geological Resources Inc.)
Project: 701 Service Station; 106 JK Powell Blvd, Whiteville, NC

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA35611-2MS	E047297.D	100	07/26/16	TD	n/a	n/a	VE1566
FA35611-2MSD	E047298.D	100	07/26/16	TD	n/a	n/a	VE1566
FA35611-2	E047282.D	100	07/26/16	TD	n/a	n/a	VE1566

The QC reported here applies to the following samples: **Method:** SM 6200B

FA35610-1, FA35610-2

CAS No.	Compound	FA35611-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	200		1000	1180	98	1000	1140	94	3	70-130/20
100-41-4	Ethylbenzene	3410		1000	4350	94	1000	4160	75	4	70-130/20
91-20-3	Naphthalene	913		1000	2000	109	1000	2050	114	2	70-130/20
1330-20-7	Xylene (total)	6040		3000	8940	97	3000	8590	85	4	70-130/20

CAS No.	Surrogate Recoveries	MS	MSD	FA35611-2	Limits
1868-53-7	Dibromofluoromethane	102%	102%	99%	70-130%
17060-07-0	1,2-Dichloroethane-D4	107%	108%	100%	70-130%
2037-26-5	Toluene-D8	99%	99%	101%	70-130%
460-00-4	4-Bromofluorobenzene	101%	102%	102%	70-130%

* = Outside of Control Limits.

Sent 9/14/16

Waste Management
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

MICHAEL SCOTT
Director

September 13, 2016

Whiteville Oil Company
Mr. Sammy Black
PO Box 689
Whiteville, NC 28472

Re: Acknowledgement of Report Receipt
701 Service Station
106 JK Powell Blvd, Whiteville
Columbus County
Incident Number: 94050

Dear Mr. Black:

The UST Section, Division of Waste Management (DWM), is in receipt of the report dated August 11, 2016. The report will be reviewed and maintained in the Wilmington Regional Office. The DWM is in agreement with the recommendations proposed. Please note, property owners where contamination has migrated, may be required to be in agreement before a no further action is issued for this site. Once the DWM has finalized how to implement risk based closure of Non-UST sites with offsite contamination, you will be directed to proceed accordingly. If you have questions, please contact me at the address or telephone number listed below.

Sincerely,

Liz Price
Hydrogeologist
Wilmington Regional Office
UST Section, Division of Waste Management, NCDEQ

cc: WiRO/UST

Justin Radford, Geological Resources, Inc.

State of North Carolina | Environmental Quality | Waste Management
Wilmington Regional Office | 127 Cardinal Drive Extension | Wilmington, NC 28405 | (910) 796-7215

APPENDIX C

BORING LOGS

Apex Companies, LLC

Boring Log

Boring/Well No.: P20-SB1	**Site Name: Parcel 20**
Date: 6/6/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	27.1	2.1		0-4' Grass Bown sandy **SILT,** saturated at 3'.
1				
2				
	25.6	1.9		
3				
4				
	74.6	1.6		4'-5' Yellow clayey **SILT**.
5				
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P20-SB2	**Site Name: Parcel 20**
Date: 6/6/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	--	--		0.1' Grass-Orange fine **SAND**.
2	<0.1	0.3		
3	2.3	5.1		
4				
5	2.8	4.9		4'-5' Yellow clayey **SILT**.
6				Boring terminated at 5 feet.
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter: 1"	Outer Casing Interval: NA
Total Depth: 15	Outer Casing Diameter: NA
Screen Interval: 5'-10'	Bentonite Interval: NA
Sand Interval: NA	Slot Size: 0.010" slot
Grout Interval: NA	Static Water Level: 5'

Apex Companies, LLC

Boring Log

Boring/Well No.: P20-SB3	**Site Name: Parcel 20**
Date: 6/6/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	--	--		0-2' Grass-Tan fine **SAND**.
2	<0.1	2.4		
3	<0.1	1.2		2'-5' Yellow clayey sandy **SILT** saturated at 4'.
4				
5	0.5	1.7		
6				Boring terminated at 5 feet
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P209-SB4	**Site Name: Parcel 20**
Date: 6/6/2018	**Location: Whiteville, Columbus County, NC**
Job No.: NCDOT-001	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	--	--		0-2' Tan **SAND**.
2	<0.1	0.3		
3	2	1.3		2'-4' Tan clayey **SILT.**
4				
5	1.3	3.2		4'-5.5' Orange and white marbled clayey **SILT** saturated at 4'.
6				Boring terminated at 5.5 feet.
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

APPENDIX D
GEOPHYSICAL REPORTS

PYRAMID GEOPHYSICS

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2018-139)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 20
NCDOT PROJECT R-5020B (41499.1.3)

307 W. LEWIS ST., WHITEVILLE, NC

JUNE 20, 2018

Report prepared for: **Katie Lippard**
Apex Companies, LLC
1071 Pemberton Hill Rd., Suite 203
Apex, NC 27502

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 20 – 307 W. Lewis St.
Whiteville, Columbus County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

CADD .....Computer Assisted Drafting and Design
DF .....Dual Frequency
EM.....Electromagnetic
GPR.....Ground Penetrating Radar
GPS .....Global Positioning System
NCDOT.....North Carolina Department of Transportation
ROW .....Right-of-Way
UST .....Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Apex Companies, LLC at Parcel 20, located at 307 W. Lewis St., in Whiteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-5020B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from May 30 – June 4, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Parcel 20 consists of a grass lot used for vehicle storage, which is associated with the business on the adjacent parcel to the south (Parcel 19). Parcel 19 includes a groundwater remediation system, which is composed of a series of interconnected wells joined by PVC pipes that extend into and throughout Parcel 20. The trailer housing the primary remediation system components is located outside of the survey area on Parcel 19.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Several EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Some EM anomalies were caused by interference from vehicles parked on the southern portion of the site. These areas were investigated further with GPR to verify that no larger substructures were obscured by the interference. Additionally, the series of well covers suggested that a potential groundwater remediation system was in operation at the property. GPR verified the presence of the remediation system and/or utilities underneath the vehicles parked on the site. No evidence of larger substructures, such as USTs, was observed. Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 20.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Apex Companies, LLC at Parcel 20, located at 307 W. Lewis St., in Whiteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-5020B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from May 30 – June 4, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Parcel 20 consists of a grass lot used for vehicle storage, which is associated with the business on the adjacent parcel to the south (Parcel 20), and portions of a sidewalk. Parcel 20 consists of a grass lot used for vehicle storage, which is associated with the business on the adjacent parcel to the south (Parcel 19). Parcel 19 includes a groundwater remediation system, which is composed of a series of interconnected wells joined by PVC pipes that extend into and throughout Parcel 20. The trailer housing the primary remediation system components is located outside of the survey area on Parcel 19. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending, generally parallel survey lines, spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on June 4, 2018, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Well Covers	
2	Well Covers/Vehicles/Utilities	☑

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, which included well covers and vehicles. EM Anomaly 2 was caused by interference from vehicles parked on the southern portion of the site, well covers, and potential utilities. The areas surrounding EM Anomaly 2 were investigated further with GPR to verify that no larger substructures were obscured by the interference. Additionally, the series of well covers suggested that a potential groundwater remediation system was in operation at the property, and GPR was used to verify its presence.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property, as well as the transect images. A total of five GPR transects were performed at the site. GPR Transects 1-5 were performed across EM Anomaly 2. These transects recorded evidence of isolated hyperbolic reflectors associated with the remediation system and/or utilities. No evidence of larger structures such as USTs was observed.

Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 20. **Figure 4** provides an overlay of the geophysical survey onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 20 in Whiteville, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- Some EM anomalies were caused by interference from vehicles parked on the southern portion of the site. These areas were investigated further with GPR to verify that no larger substructures were obscured by the interference.
- Additionally, the series of well covers suggested that a potential groundwater remediation system was in operation at the property.
- GPR verified the presence of the remediation system and/or utilities underneath the vehicles parked on the site. No evidence of larger substructures, such as USTs, was observed.
- Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 20.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Apex Companies, LLC in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately West)

View of Survey Area
(Facing Approximately North)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
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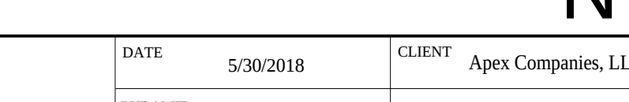
PROJECT	PARCEL 20 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT R-5020B
TITLE	PARCEL 20 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	5/30/2018
PYRAMID PROJECT #:	2018-139
CLIENT	Apex Companies, LLC
	FIGURE 1

EM61 METAL DETECTION RESULTS

NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on May 30, 2018, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on June 4, 2018.

EM61 Metal Detection Response (millivolts)



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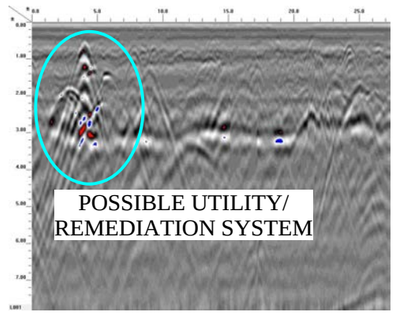
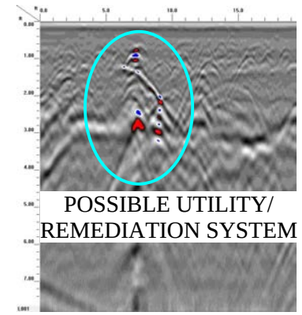
PROJECT	PARCEL 20 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT R-5020B
TITLE	PARCEL 20 - EM61 METAL DETECTION CONTOUR MAP
DATE	5/30/2018
PYRAMID PROJECT #:	2018-139
CLIENT	Apex Companies, LLC
	FIGURE 2

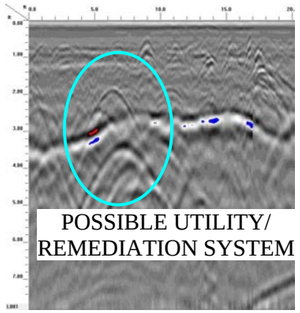
LOCATIONS OF GPR TRANSECTS



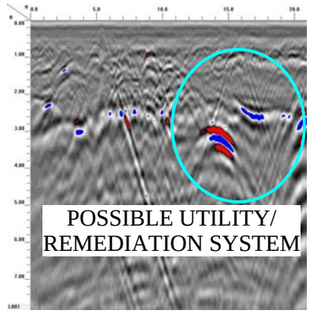
GPR TRANSECT 1 (T1)



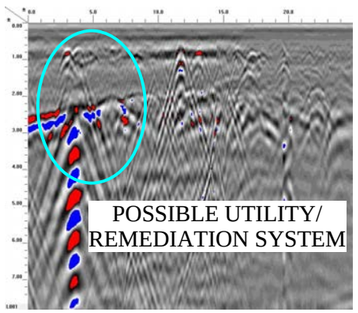
GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)



GPR TRANSECT 5 (T5)

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PYRAMID GEOPHYSICS

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PROJECT: PARCEL 20
WHITEVILLE, NORTH CAROLINA
NCDOT PROJECT R-5020B

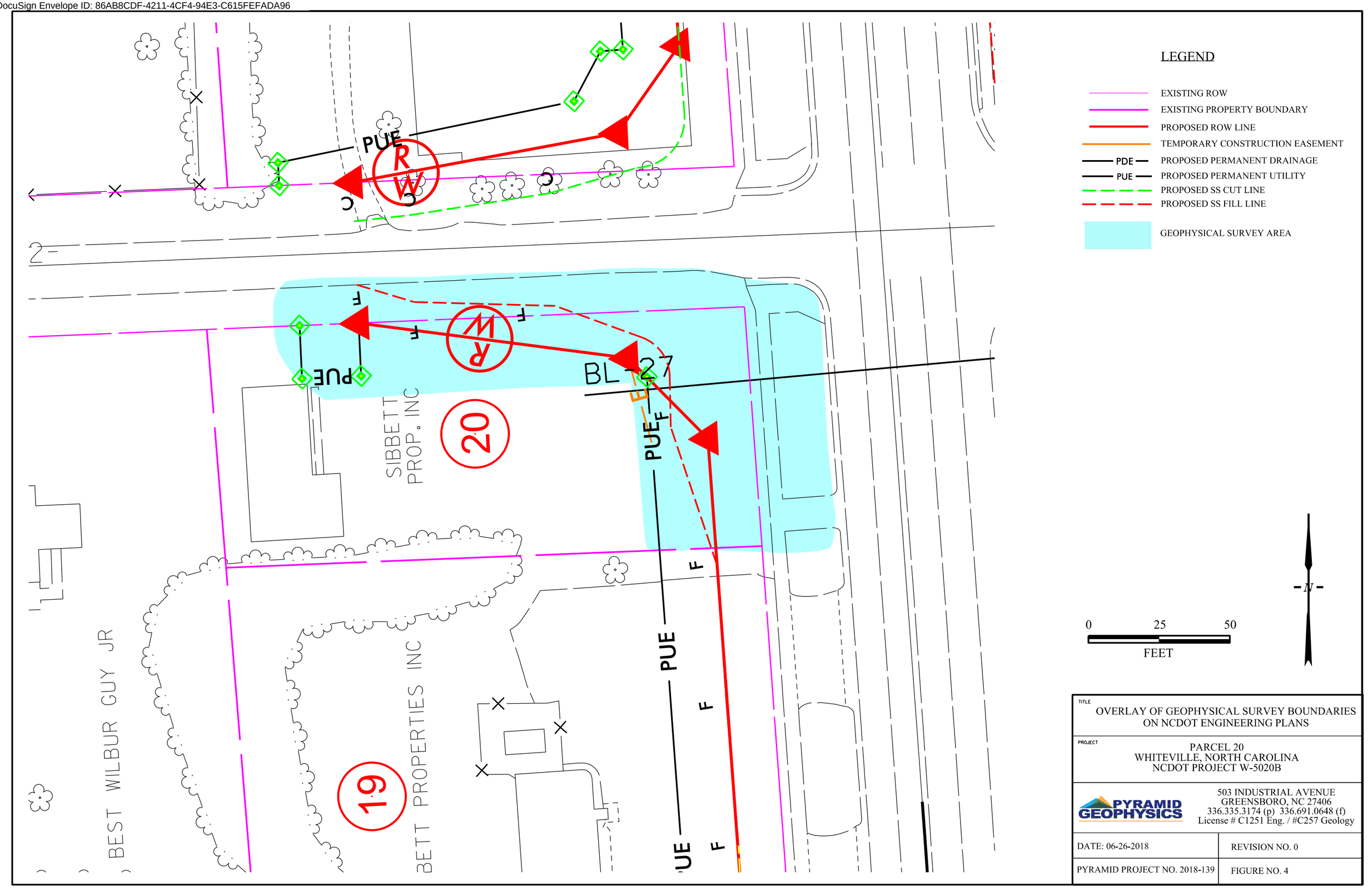
TITLE: PARCEL 20 - GPR TRANSECT LOCATIONS AND IMAGES

DATE: 6/4/2018

PYRAMID PROJECT #: 2018-139

CLIENT: Apex Companies, LLC

FIGURE 3



TITLE
OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES
ON NCDOT ENGINEERING PLANS

PROJECT
PARCEL 20
WHITEVILLE, NORTH CAROLINA
NCDOT PROJECT W-5020B

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology

DATE: 06-26-2018	REVISION NO. 0
PYRAMID PROJECT NO. 2018-139	FIGURE NO. 4

APPENDIX E
UVF HYDROCARBON ANALYSIS RESULTS

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 20

Samples taken Wednesday, June 6, 2018
Samples extracted Wednesday, June 6, 2018
Samples analysed Wednesday, June 6, 2018

Contact: Craig Haden

Operator Tommy Fisher

Project: R-5020B Whiteville

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	P-20-SB-1 (1-2)	8.1	<0.2	<0.2	0.2	0.2	0.16	<0.06	<0.008	0	82.3	17.7	,(FCM),(P)
s	P-20-SB-1 (5-5.5)	7.4	<0.19	<0.19	<0.19	<0.19	<0.04	<0.06	<0.007	0	74.9	25.1	,(FCM),(P)
s	P-20-SB-2 (2-3)	25.5	<0.64	<0.64	<0.64	<0.64	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	P-20-SB-2 (5-5.5)	9.4	<0.24	<0.24	<0.24	<0.24	<0.05	<0.08	<0.009	0	0	0	,(FCM)
s	P-20-SB-3 (2-3)	26.0	<0.65	<0.65	<0.65	<0.65	<0.13	<0.21	<0.026	0	0	0	PHC not detected
s	P-20-SB-3 (5-5.5)	23.9	<0.6	<0.6	<0.6	<0.6	<0.12	<0.19	<0.024	0	0	0	#DIV/0!
s	P-20-SB-4 (2-3)	9.2	<0.23	<0.23	<0.23	<0.23	<0.05	<0.07	<0.009	0	0	0	,(FCM)
s	P-20-DUP	9.2	<0.23	<0.23	<0.23	<0.23	<0.05	<0.07	<0.009	0	0	0	,(FCM)
s	P-20-SB-4 (5-5.5)	8.4	<0.21	<0.21	<0.21	<0.21	<0.04	<0.07	<0.008	0	0	0	#DIV/0!

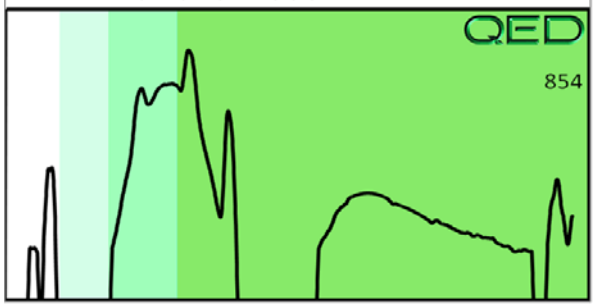
Initial Calibrator QC check OK Final FCM QC Check OK 94.3 %

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

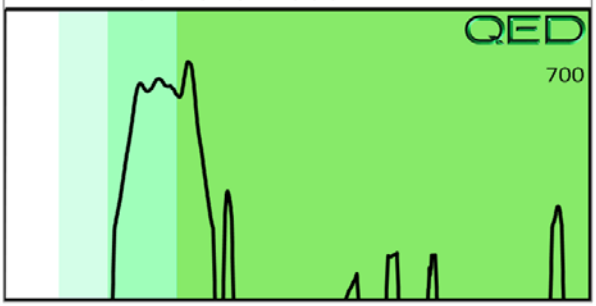
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

P-20-SB-1 (1-2) : ,(FCM),(P)

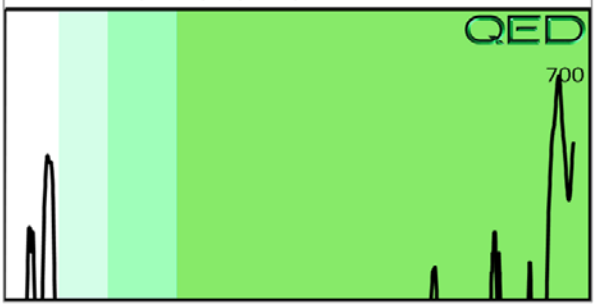


P-20-SB-1 (5-5.5) : ,(FCM),(P)



P-20-SB-2 (2-4) : PHC not detected

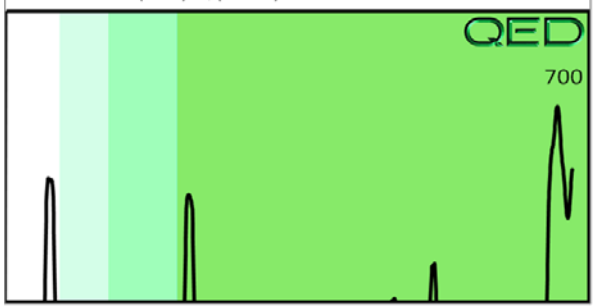
P-20-SB-2 (5-5.5) : ,(FCM)



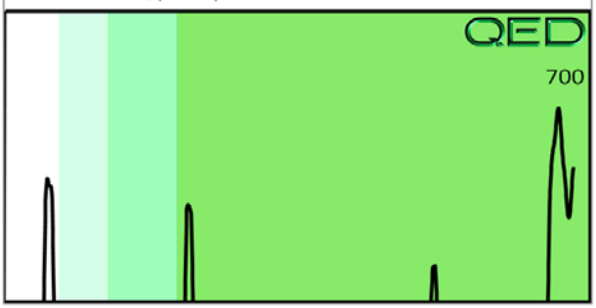
P-20-SB-3 (2-4) : PHC not detected

#DIV/0!

P-20-SB-4 (2-3) : ,(FCM)



P-20-DUP : ,(FCM)



#DIV/0!