PRELIMINARY SITE ASSESSMENT

SR 1997 (FAYETTEVILLE ROAD) WIDENING
TIP NO. U-5797, WBS NO. 44367.1.1

NCDOT PARCEL NO. 13
OWNER: HARRINGTON OIL CO INC
2420 FAYETTEVILLE ROAD
LUMBERTON, ROBESON COUNTY, NORTH CAROLINA

PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
C/O STV ENGINEERS, INC.
1600 PERIMETER PARK DRIVE, SUITE 225
MORRISVILLE, NC 2756002

PREPARED BY:
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PROJECT NUMBER: G19011.00
JUNE 9, 2020

FALCON ENGINEERING

June 9, 2020

Mr. Patrick Livingston, PE
STV Engineers, Inc.
900 W. Trade St, Suite 715
Charlotte, NC 28202

Re: **Preliminary Site Assessment**
SR 1997 (Fayetteville Road) Widening
TIP No. U-5797, WBS No. 44367.1.1
Parcel No. 13
Owner: Harrington Oil Co Inc
2420 Fayetteville Road
Lumberton, Robeson County, North Carolina

Dear: Mr. Livingston:

Falcon is pleased to present the following Preliminary Site Assessment in support of the above-mentioned Project. Specifically, Falcon sampled soil in proximity to the project limits on this parcel in general accordance with the approved scope of work. Soils requiring remediation or special handling during construction were not identified.

Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

Please review this report and advise us if you have any questions or concerns. We appreciate this opportunity to provide services to you and look forward to partnering with you on future projects. If you have any questions, please give Falcon a call at (919) 871-0800.

Sincerely,
FALCON ENGINEERING, INC.

Christopher J. Burkhardt
Environmental Services Manager

Jeremy R. Hamm, PE
Geotechnical Services Manager

TABLE OF CONTENTS

LIST OF FIGURES AND ATTACHMENTS

SECTION 1: INTRODUCTION

1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 13. Parcel No. 13 is addressed as 2420 Fayetteville Road, Lumberton Robeson County, North Carolina. NCDOT is proposing to widen Fayetteville Road (SR 1997) from Farringdom Street to 22nd Street. The limits of the assessment are between the existing edge of NCDOT maintained pavement (within the existing NCDOT ROW) where accessible, and the proposed NCDOT ROW and/or easement (whichever boundary represents the largest area). Boring locations were placed in the vicinity of proposed excavations for drainage features, utilities, and roadway/ditch cuts to determine if soils requiring remediation or special handling were present where excavation was planned to take place.

1.2 SCOPE OF WORK

Falcon's scope of work included coordination of; public and private utility location near the proposed borings, geophysical surveys, collecting soil samples using direct push methods, and laboratory analysis. Samples were analyzed for petroleum hydrocarbons via UVF technology.

SECTION 2: HISTORY

2.1 PARCEL USAGE

Falcon performed a Phase I Environmental Site Assessment (ESA) for U-5797 under Project No. G17057 dated April 2018. The ESA identified this parcel as a Recognized Environmental Condition (REC) based on the parcel's Use as a bulk oil storage facility and history of USTs and ASTs being used and stored on-site. Falcon contacted Mr. Joe Oliver the County Fire Marshal during the ESA to inquire about known USTs along Fayetteville Road in the general area of Parcel No. 13. Mr. Oliver sent documents pertaining to USTs that had been installed and/or removed from Parcel No. 13. According to paperwork one 10,000-gallon varsol AST was installed in 1984, one 2,000-gallon UST was closed in place in 1997. Falcon also reviewed the state file for a LUST incident associated with Parcel No. 13. The file contained a UST closure report prepared by GMA Consulting Scientists and Engineers (GMA). The closure was associated with a 2,000-gallon varsol UST in April of 1998. The file also contained a letter from the State dated April 1998. The letter acknowledged receipt of the UST Closure Report and stated*; "A review of the closure report for the UST system by the Groundwater staff indicates that no additional excavation, site investigation, nor monitoring is required.*" The file did not contain UST locations or soil sampling reports.

2.2 FACILITY IDENTIFICATION NUMBER

A Facility Identification Number was not identified for this parcel.

2.3 GROUNDWATER INCIDENT NUMBER

A Groundwater Incident Number was not identified for this parcel.

SECTION 3: SITE OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

Groundwater monitoring wells (MWs) were not observed on this parcel.

3.2 ACTIVE USTS

Active USTs were not observed within the project limits or registered at this parcel.

3.3 FEATURES APPARENT BEYOND ROW/EASEMENT

Numerous ASTs (some at least 10,000 gallons in capacity) and several 55-gallon drums were observed on this parcel. One AST adjoins the row in the front of the building. USTs were reported during the Phase I ESA. Monitoring wells, remediation systems, or hydraulic lifts were not observed.

SECTION 4: METHODOLOGY

4.1 GEOPHYSICS

Pyramid Geophysical Services (Pyramid) was subcontracted to perform a geophysical survey of the assessment area. The assessment area is between the existing edge of NCDOT maintained pavement (within the existing NCDOT ROW) where accessible, and the proposed NCDOT ROW and/or easement (whichever boundary represents the largest area). The survey was used to locate private utility lines, as well as possible indications of USTs, and/or their pits.

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-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. 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 georeferenced and can be overlain on aerial photographs and CADD drawings.

GPR data was acquired across select EM anomalies (where identified), using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Pyramid marked their findings on the surface with paint. 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 to obtain adequate coverage. A copy of the full Geophysical Report is included in the Attachments.

4.2 BORINGS

Regional Probing was subcontracted to advance soil borings using direct push technology. Regional Probing used a truck-mounted Geoprobe® 5410 unit mounted on an off-road modified Ford F350 Diesel 4x4. The unit has auger-capabilities and is equipped with a GH-42 soil-probing hammer, with 21,700 pounds of down force and 28,900 pounds of retraction force. The unit has an on-board tank for decontaminating the geoprobe rods before advancing the probe at each sample location.

4.3 SAMPLE PROTOCOL

Prior to initiating sample collection Falcon contacted NC One Call and requested public utility locations be marked around the proposed sample locations. Sampling was in general accordance with the NC Department of Environmental Quality (DEQ) Division of Waste Management's (DWM) "Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement for UST Releases" (March 1, 2007 Version Change 9 – February 1, 2019) guidance document. Sampling strategy was derived based upon the project scope and objectives as outlined above. Red Lab, LLC was selected to perform the UVF laboratory analytical analysis. Appropriate sterile containers were received by Falcon from Red Lab prior to beginning the fieldwork. The containers were labeled appropriately.

A Minirae 3000 photoionization detector (PID) was used to field screen samples for volatile organics to determine if a release had occurred. The instrument was calibrated per manufacturer instructions prior to use. Falcon staff bagged composite soil samples of each boring in approximately two-foot sections. Representative samples were placed in a sealed plastic bag for approximately 10 minutes to allow soil hydrocarbons to reach equilibrium within the headspace prior to scanning with the PID. One sample per boring was collected from the depth of the proposed cut or from the section above the depth of cut with the highest PID reading.

To avoid cross contamination, a new unused pair of non-powdered nitrile gloves was worn while extracting each sample. Samples were placed in the appropriate laboratory provided containers. The labels on each container were then completed so that each provided the date and time of sampling, method of analysis, sample collector, preservative used and sampling location identification. Samples were placed in an ice filled cooler and transported to the lab. Appropriate chain-of-custody procedures, including the completion of necessary forms, were followed.

SECTION 5: RESULTS

5.1 GEOPHYSICS

The geophysical investigation was performed on March 18 through March 27, 2019 to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area. A total of six EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR was performed across EM anomalies associated with suspected metallic debris, reinforced concrete, and interference from a fence and metal poles.

GPR recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of larger structures such as USTs was observed.

5.2 SAMPLE DATA

Falcon and our subcontractor advanced two borings (B-12 and B-13) to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed. Groundwater was not observed. Please see the Boring Location Map in the attachments for a visual depiction of the sample locations. The coordinates (latitude and longitude) that correspond to the sample locations are shown below in Table No. 1 Boring Coordinates.

TABLE NO. 1 BORING COORDINATES

Boring	Latitude	Longitude
B-12	34.6360318	-79.0023867
B-13	34.6363111	-79.0022709

Borings were field screened with a PID in sections for evidence of volatile organics. The PID screening results are presented in Table No. 2 PID Readings. Falcon selected soil samples based on the field screening results and the needs of the project. Red Lab analyzed the selected samples and their full analytical report is attached. The results of the laboratory analysis are shown in Table No. 3 Summary of UVF Soil Sampling Results.

Petroleum hydrocarbons above State Action Levels were not detected in the samples.

TABLE NO. 2 PID READINGS

Boring	Depth BGS*	PID**
B-12	0-2.0	**2.9**
	2.0-4.0	2.0
B-13	0-2.0	**2.6**
	2.0-4.0	2.0

*BGS = Depth below ground surface in feet
**PID readings are in parts per million
Samples shown in **bold** were selected for analysis

TABLE NO. 3 SUMMARY OF UVF SOIL SAMPLING RESULTS

Sample ID	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	
B-12	<0.3	<0.3	16	16	7.7	0.85	0.02	0	88.5	11.5	Road Tar 96%,(FCM)
B-13	<0.26	<0.26	42.5	42.5	20.9	2.3	0.041	0	92.5	7.5	Road Tar 92.5%,(FCM),(BO)

Results reported in mg/kg (milligrams per kilogram)

5.3 SAMPLE OBSERVATIONS

Visual indications of a release (stained soils, odors, or oily sheen) were not observed. Table No. 4 Soil Observations lists visual soil observations of color and texture.

TABLE NO. 4 SOIL OBSERVATIONS

Sample ID	Depth	Color	Soil Type
B-12	0-2.0	Tan	Silty Sand (A-2-4)
	2.0-4.0	Tan	Silty Sand (A-2-4)
B-13	0-2.0	Brown Orange (mottled)	Sandy Clay (A-6)
	2.0-4.0	Brown Orange (mottled)	Sandy Clay (A-6)

Depth is in feet below ground surface

5.4 QUANTITIES CALCULATIONS

Soils requiring quantity calculations were not identified.

SECTION 6: CONCLUSIONS

6.1 INTERPRETATION OF RESULTS

This Preliminary Site Assessment was performed to evaluate the soils in proximity to the project limits on this parcel for the presence of petroleum hydrocarbons. The findings are as follows:

- Soil sampling completed on the parcel did not identify contaminants in the soil at levels requiring remediation.

6.2 GEOPHYSICS

The geophysical data did not record evidence of unknown metallic USTs within the geophysical survey area at Parcel 13. Falcon does not anticipate USTs will be encountered within the project limits on this parcel during construction.

6.3 SAMPLING

Sampling results did not identify contaminates in the soil which require remediation in the areas sampled. Based on past project experience, Falcon does not anticipate soil remediation or special handling and disposal will be required during construction on this parcel.

6.4 QUANTITIES

Soils requiring quantities calculations were not identified.

SECTION 7: RECOMMENDATIONS

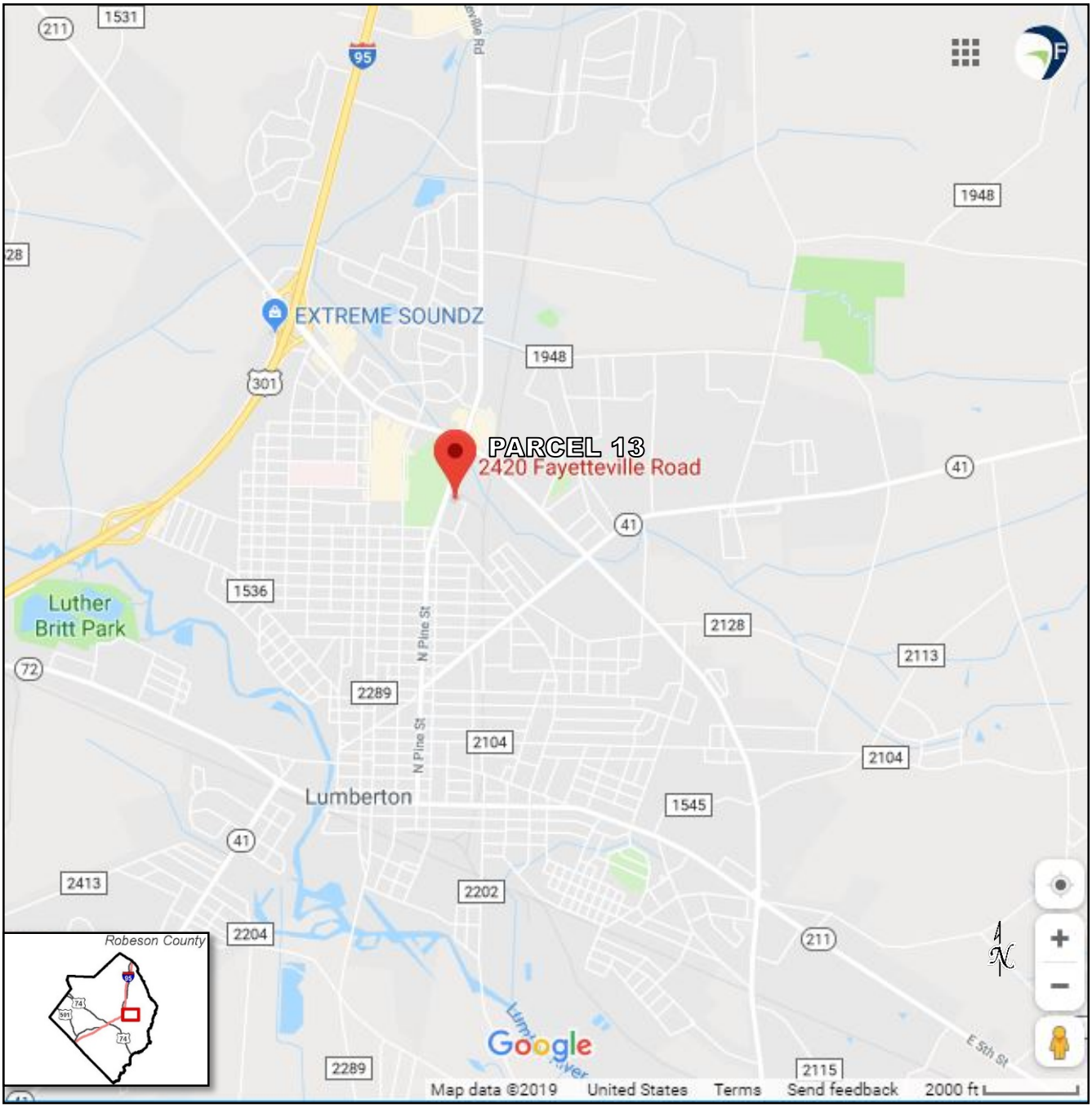
7.1 ADDITIONAL SAMPLING

Contaminants above the Industrial / Commercial Soil Cleanup Levels were not identified; therefore, additional assessment is not warranted at this time. Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

7.2 SPECIAL HANDLING OF IMPACTED SOIL

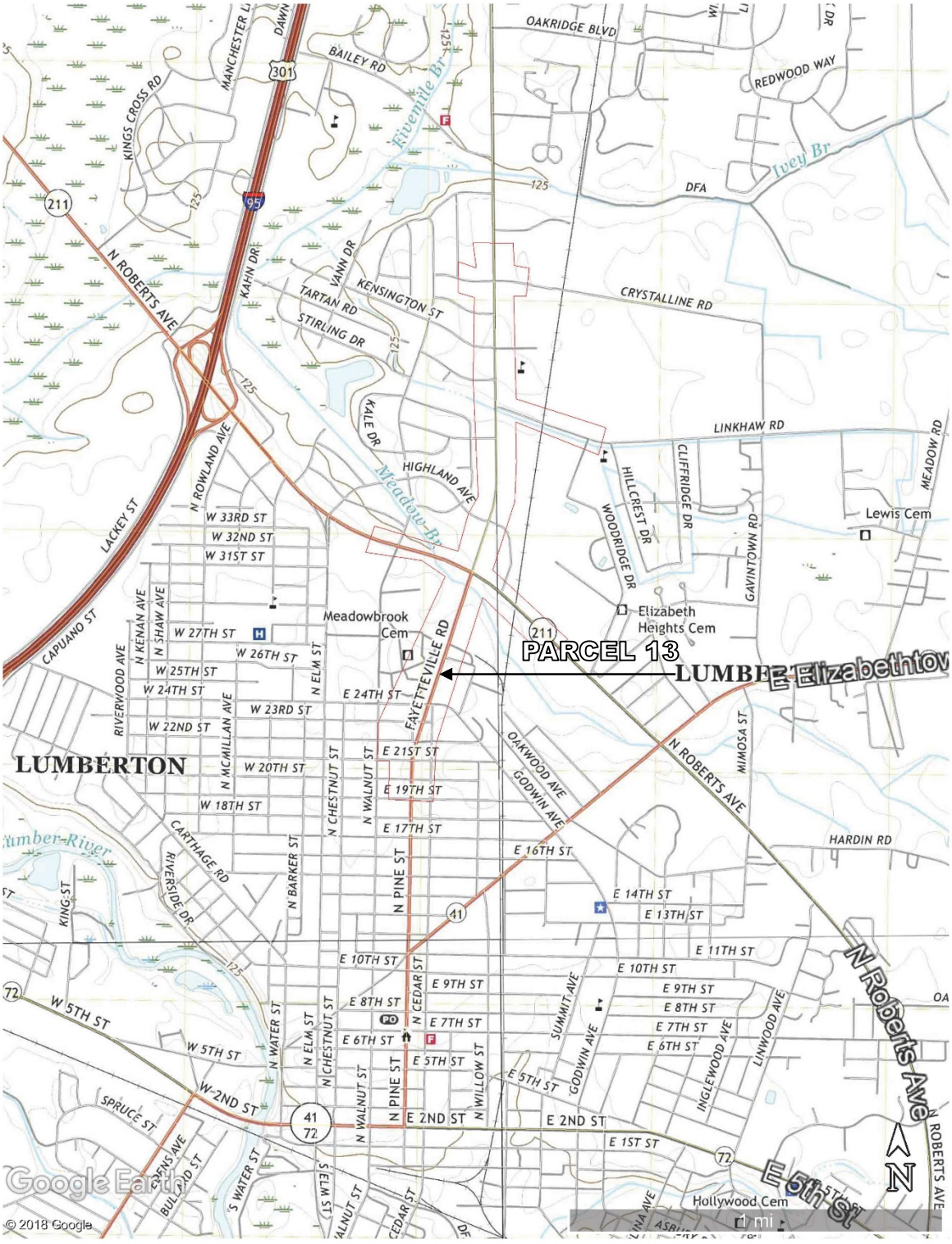
Soils requiring special handling were not identified. If suspect contaminated soils are encountered during construction Falcon and the NCDOT GeoEnvironmental Group should be contacted for proper handling instructions.

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Vicinity Map



Project No.: G19011.00
Date: September 2019
Source: Google Maps

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
USGS Topographic Maps



Project No.: G19011.00
Date: September 2019
Source: "NW, NE, SW, and SE Lumberton, NC" 2019

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Parcel Location Map

September 5, 2019

- County Line
- City Limits
- Streets
- Parcels

1:1,064

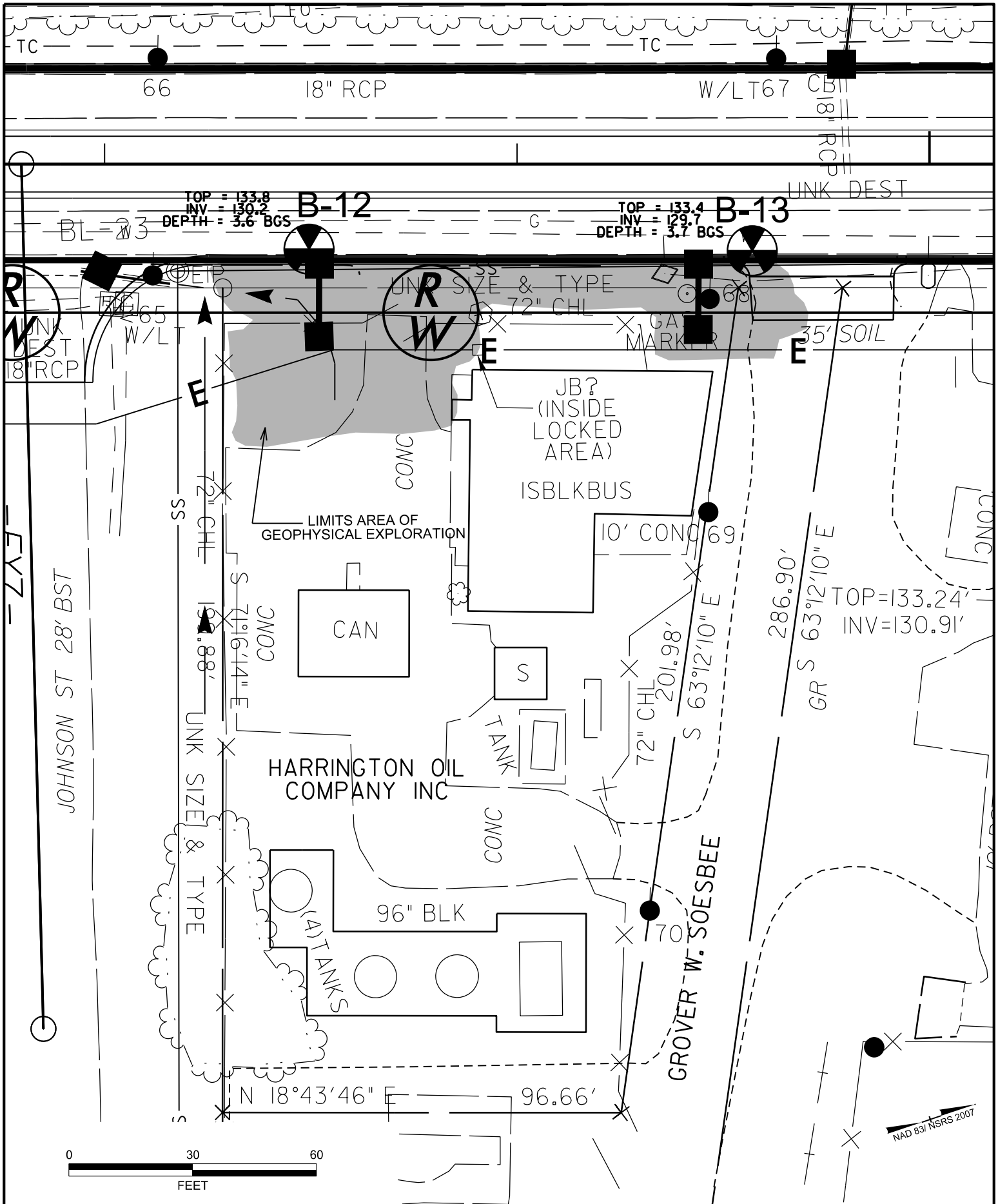
0 0.0075 0.015 0.03 mi

0 0.0125 0.025 0.05 km

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2019

Project No.: G19011.00
Date: September 2019
Source: Robeson County GIS



NOTES:

- BGS = BELOW GROUND SURFACE

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

BORING LOCATION PLAN

NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 13 - HARRINGTON OIL COMPANY
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Site Photographs

Photograph No. 1: General view of Boring B-12.

Photograph No. 2: General view of Boring B-13.

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of the AST that adjoins the ROW.

Photograph No. 4: Additional view of the AST that adjoins the ROW.

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of several ASTs behind the building.

Photograph No. 4: General view of several 55-gallon drums.

0-019556

FA-2288

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
FAYETTEVILLE REGIONAL OFFICE

NCDENR

JAMES B. HUNT JR.,
GOVERNOR

WAYNE MCDEVITT
SECRETARY

DIVISION OF WATER QUALITY
GROUNDWATER SECTION

April 24, 1998

Mr. Jimmy Harrington
Harrington Oil Company
2420 Fayetteville Road
Lumberton, North Carolina 28358

SUBJECT: UST Closure Report for Harrington Oil Company
Lumberton, North Carolina 28358

Dear Mr. Harrington:

This is to acknowledge receipt of the above mentioned Underground Storage Tank Closure Report dated April 9, 1998, and received in the Fayetteville Regional Office on April 14, 1998.

A review of the closure report for the UST system by the Groundwater staff indicates that no additional excavation, site investigation, nor monitoring is required. Should new information become available concerning this matter, we reserve the right to reopen the investigation.

If you have any questions or need additional information, please contact me or any member of the Groundwater staff at this office at (910) 486-1541.

Sincerely,

Jennifer M. Phillips
Hydrogeological Technician

225 GREEN STREET, SUITE 714, FAYETTEVILLE, NORTH CAROLINA 28301-5043
PHONE 910-486-1541 FAX 910-486-0707

Fire Prevention Form 1.

APPLICATION TO USE, INSTALL, CONDUCT PROCESSES OR CARRY ON OPERATIONS INVOLVING OR CREATING CONDITIONS DEEMED HAZARDOUS TO LIFE OR PROPERTY

11-21-97
Date

To Chief of Fire Department, City of Lumberton, N. C.

Application is hereby made by the undersigned for a Permit to { Use / Install / Operate / Conduct ✓ }

in or on the premises known as HARRINGTON OIL COMPANY / 2420 FAYETTEVILLE ROAD ~~Street or Avenue~~

the following materials, processes or operations.

(Describe briefly what is to be done and state what hazardous materials are to be used.)

TO ABANDONE IN PLACE ONE 2,000 GALLON UNDERGROUND STORAGE TANK BY FILLING WITH SLURRY.

#29-97

Conditions, surroundings and arrangements to be in accordance with the Fire Prevention Ordinance.

This application is / is not approved insofar as Zoning and Building Ordinances are concerned.

Inspector of Buildings

J. J. Hamilton Jr.
Name of Applicant

2420 Fayetteville Rd.
Address of Applicant

Complete plans and construction details must be filed on all major projects and when requested by the chief of the fire department.

FREEMAN PRINTING CO., LUMBERTON, N. C., 300-8/66

Fire Prevention Form 3

FIRE DEPARTMENT

CITY OF LUMBERTON, N.C.

PERMIT

No. 29-97

November 21, 1997
(Date)

TO WHOM IT MAY CONCERN:

By virtue of the provisions of the Fire Prevention Ordinance of the City of Lumberton, N.C. Harrington Oil Company
(Name of Concern)

No. 2420 Street Fayetteville Road conducting a Harrington Oil Company
(Business)

having made application in due form, and as the conditions, surrounding and arrangements are, in my opinion, such that the intent of the Ordinance can be observed, authority is hereby given and this PERMIT is GRANTED for To abandon in place one 2,000 gallon underground storage tank by filling with slurry.

This PERMIT is issued and accepted on condition that all Ordinance provisions now adopted, or that may hereafter be adopted, shall be complied with.

THIS PERMIT IS VALID FOR Indefinitely

This permit does not take the place of any License required by law and is not transferable. Any change in the use or occupancy of premises shall require a new permit.

Kenneth Rhodes
Fire Official

THIS PERMIT MUST BE POSTED ON THE PREMISES MENTIONED ABOVE AT ALL TIMES

GMA
CONSULTING SCIENTISTS AND ENGINEERS

101-E Woodwinds Industrial Court
Cary, North Carolina 27511
Telephone: 919.481.2631
Fax: 919.481.3219

222-C Cotanche Street
Greenville, North Carolina 27858
Telephone: 919.758.3310
Fax: 919.758.8835

All engineering is performed through the Cary office.

Clear ltr. 4/23/98

RECEIVED
APR 14 1998

April 9, 1998

Mr. Keith Puckett
Hydrogeological Technician
NCDENR/DWQ
225 Green Street, Suite 714
Fayetteville, North Carolina 28358

Re: Underground Storage Tank Closure Report
Harrington Oil Company, Inc.
2420 Fayetteville Road
Lumberton, Robeson County

Dear Mr. Puckett:

Enclosed is a closure report for the 2,000 gallon underground varsol tank at the Harrington Oil Company facility. A copy of the GW/UST-2 Form has been sent to the Underground Storage Tank Office. Please call me with questions or comments.

Sincerely yours,
GMA

Chad Leinbach, P.G.
Hydrogeologist

cc: Mr. Jimmy Harrington

GW/UST-2 Site Investigation Report For Permanent Closure or Change-in-Service of U.S.T.

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DWQ Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number ______
Date Received ______

INSTRUCTIONS

Complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)

Owner Name: Harrington Oil Company
Corporation, Individual, Public Agency, or Other Entity)
Street Address: 2420 Fayetteville Road
County: Robeson
City: Lumberton State: NC Zip Code: 28358
Telephone Number: (910) 739-3000
(Area Code)

II. Location of Tank(s)

Facility Name: Harrington Oil Company
(or Company)
Facility ID # (if available): 0-019556
Street Address 2420 Fayetteville Road
(or State Road)
County: Robeson City: Lumberton Zip Code: 28358
Telephone Number: (910) 739-3000
(Area Code)

III. Contact Person

Name: Jimmy Harrington Job Title: owner Tel. No.: 910-739-3000
Closure Contractor: Jimmy Harrington Address: 2420 Fayetteville Rd. Lumberton, NC Tel. No.: 910-739-3000
Primary Consultant: GMA Address: 101-E Woodwinds Ind. Ct., Cary, NC Tel. No.: 919-481-2631
Lab: Chemical & Env. Technology, Inc. Address: 102-A Woodwinds Ind. Ct., Cary, NC Tel. No.: 919-467-3090

IV. U.S.T. Information / V. Excavation Condition

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water in Excavation Yes	Water in Excavation No	Free Product Yes	Free Product No	Notable Odor or Visible Soil Contamination Yes	Notable Odor or Visible Soil Contamination No
7	2000	5.33' x 12'	varsol		X		X		X

VI. Additional Information Required

See reverse side of pink copy (owner's copy) for additional information required by N.C. - DWQ in the written report and sketch.

NOTE: If a release from the tank(s) has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing the signature and seal of the P.E. or L.G.

VII. Check List (Check the activities completed)

PERMANENT CLOSURE (For Removing or Abandoning-in-place)

- [x] Contact local fire marshal.
- [x] Notify DWQ Regional Office before abandonment.
- [x] Drain & flush piping into tank.
- [x] Remove all product and residuals from tank.
- [x] Excavate down to tank.
- [x] Clean and inspect tank.
- [ ] Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- [x] Cap or plug all lines except the vent and fill lines.
- [ ] Purge tank of all product & flammable vapors.
- [ ] Cut one or more large holes in the tanks.
- [ ] Backfill the area.

Date Tank(s) Permanently closed: 3/25/98
Date of Change-in-Service: ______

ABANDONMENT IN PLACE

- [x] Fill tank until material overflows tank opening.
- [x] Plug or cap all openings.
- [x] Disconnect and cap or remove vent line.
- [x] Solid inert material used - specify: sand

REMOVAL

- [ ] Create vent hole.
- [ ] Label tank.
- [ ] Dispose of tank in approved manner.

Final tank destination: ______

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative	Signature	Date Signed
Chad Leibach GMA	[signature]	4/9/98

GW/UST-3 | Notice of Intent: UST Permanent Closure or Change-In-Service

FOR TANKS IN NC

Return Completed Form To:
The appropriate DWQ Regional Office according to the county of the facility's location. [SEE REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I. D. Number _____
Date Received _____

INSTRUCTIONS

Complete and return at least five (5) working days prior to closure or change-in-service if a Professional Engineer (P.E.) or a Licensed Geologist (L.G.) provides supervision for closure or change-in-service site assessment activities and signs and seals all closure reports. Otherwise, thirty (30) days notice is required.

I. OWNERSHIP OF TANK(S)

Tank Owner Name: Harrington Oil Company, Inc.
(Corporation, Individual, Public Agency, or Other Entity)
Street Address: 2420 Fayetteville Rd.
County: Robeson
City: Lumberton State: NC Zip Code: 28358
Tele. No. (Area Code):

II. LOCATION OF TANK(S)

Facility Name or Company: Harrington Oil Co., Inc.
Facility ID # (if available): 0-019566
Street Address or State Road: 2420 Fayetteville Rd.
County: Robeson City: Lumberton Zip Code: 28358
Tele. No. (Area Code):

III. CONTACT PERSON

Name: Chad Leinbach Job Title: Project Manager Telephone Number: (919) 481-2631

IV. TANK REMOVAL, CLOSURE IN PLACE, CHANGE-IN-SERVICE

1. Contact Local Fire Marshall.
2. Plan the entire closure event.
3. Conduct Site Soil Assessments.
4. If Removing Tanks or Closing in Place refer to API Publications 2015 "Cleaning Petroleum Storage Tanks" & 1604 "Removal & Disposal of Used Underground Petroleum Storage Tanks".
5. Provide a sketch locating piping, tanks and soil sampling locations.
6. Submit a closure report in the format of GW/UST-12 and include the form GW/UST-2 within 30 days following the site investigation.
7. If a release from the tank(s) has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing signature and seal of the P.E. or L.G. If a release has not occurred, the supervision, signature, or seal of a P.E. or L.G. is not required.
8. Keep closure records for 3 years.

V. WORK TO BE PERFORMED BY

(Contractor) Name: To be determined
Address: State: Zip Code:
Contact: Phone:
Primary Consultant: GMA Phone: (919) 481-2631

VI. TANK(S) SCHEDULED FOR CLOSURE OR CHANGE-IN-SERVICE

TANK ID#	TANK CAPACITY	LAST CONTENTS	PROPOSED ACTIVITY: CLOSURE – Removal	CLOSURE – Abandonment In Place	CHANGE-IN-SERVICE – New Contents Stored
1	2000	varsol	☐	xxxx	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Print name and official title
Chad Leinbach, R.G., Project Manager *Scheduled Removal Date: 3-11-98
Signature: Chad Leinbach Date Submitted: 1-22-98

*If scheduled work date changes, notify your appropriate DWQ Regional Office 48 hours prior to originally scheduled date.

GW/UST-3 (Rev. 10/96) White Copy - Regional Office Yellow Copy - Central Office Pink Copy - Owner

Fire Prevention Form 1.

APPLICATION TO USE, INSTALL, CONDUCT PROCESSES OR CARRY ON OPERATIONS INVOLVING OR CREATING CONDITIONS DEEMED HAZARDOUS TO LIFE OR PROPERTY

8-14-84
Date

To Chief of Fire Department, City of Lumberton, N. C.

Application is hereby made by the undersigned for a Permit to { Use / Install / Operate / Conduct }

in or on the premises known as HARRINGTON OIL COMPANY / 2420 FAYETTEVILLE ROAD Street or Avenue

the following materials, processes or operations.

(Describe briefly what is to be done and state what hazardous materials are to be used.)

TO INSTALL ONE 10,000 GALLON ABOVE GROUND STORAGE TANK FOR VARSOL.

(STORAGE TANK SHALL BE DIKED)

#4-84

Conditions, surroundings and arrangements to be in accordance with the Fire Prevention Ordinance.

This application (is) / is not approved insofar as Zoning and Building Ordinances are concerned.

H. W. Townsend
Inspector of Buildings

J. D. Harrington III
Name of Applicant

Address of Applicant

Complete plans and construction details must be filed on all major projects and when requested by the chief of the fire department.

FREEMAN PRINTING CO., LUMBERTON, N. C., 500-2/68

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: FALCON
Address: 1210 TRINITY ROAD SUITE 116
CARY NC 28513

Contact: CHRISTOPHER BURKHARDY

Project: G19011 U5797

Samples taken Tuesday, April 9, 2019
Samples extracted Tuesday, April 9, 2019
Samples analysed Tuesday, April 16, 2019

Operator DAVIS MARTINEC

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B12	12.1	<0.3	<0.3	16	16	7.7	0.85	0.02	0	88.5	11.5	Road Tar 96%,(FCM)
s	B13	10.3	<0.26	<0.26	42.5	42.5	20.9	2.3	0.041	0	92.5	7.5	Road Tar 92.5%,(FCM),(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 101.5 %

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

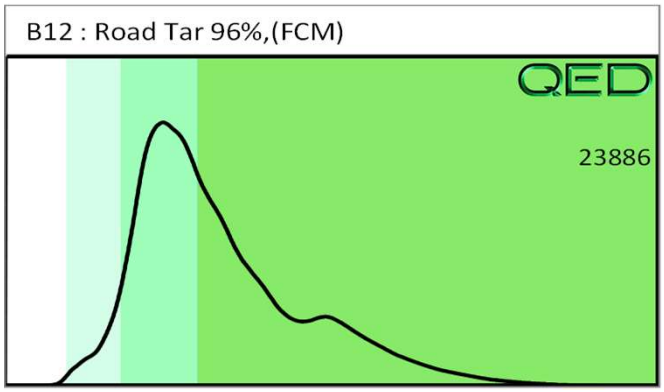
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

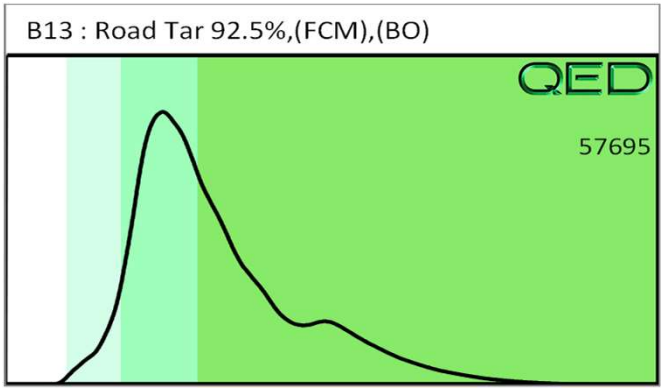
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

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

QED Hydrocarbon Fingerprints

Project: G19011 U5797 Tuesday, April 16, 2019





PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-091)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 13
NCDOT PROJECT U-5797

2420 FAYETTEVILLE RD., LUMBERTON, NC

APRIL 22, 2019

Report prepared for: **Christopher J. Burkhardt, PWS**
Falcon Engineers
1210 Trinity Rd. #110
Raleigh, NC 27607

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

Reviewed by: _____
Douglas A. Canavello, P.G.
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C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 13 - 2420 Fayetteville Rd.
Lumberton, Robeson 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 Falcon Engineers at Parcel 13, located at 2420 Fayetteville Rd. in Lumberton, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5797). 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 March 18-27, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of six EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR was performed across EM anomalies associated with suspected metallic debris, reinforced concrete, and interference from a fence and metal poles.

GPR recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of larger structures such as USTs was observed. Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 13.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 13, located at 2420 Fayetteville Rd. in Lumberton, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5797). 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 March 18-27, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a commercial building surrounded by concrete, gravel, and grass surfaces. 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-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. 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 March 27, 2019, 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	Utilities	
2	Fence	
3	Suspected Metallic Debris	☑
4	Gate	
5	Reinforced Concrete	☑
6	Fence/Metal Poles	☑

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including utilities, a fence, a gate, and metal poles. EM Anomaly 4 was associated with suspected metallic debris and was further investigated with GPR. EM Anomaly 5 was associated with suspected reinforced concrete and was further investigated with GPR. EM Anomaly 6 was associated with interference from the fence and metal poles and was investigated with GPR to verify that the interference did not obscure buried structures such as USTs.

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 four formal GPR transects were performed at the site. GPR Transect 1 was performed across EM Anomaly 6 and recorded minor reflectors that were suggestive of possible buried metallic debris. No evidence of any larger structures such as USTs was observed.

GPR Transect 2 was performed across EM Anomaly 3 and recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete. No evidence of any larger structures such as USTs was observed.

GPR Transects 3-4 were performed across EM Anomaly 5 and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of any larger structures such as USTs was observed.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 13. **Figure 4** provides an overlay of the EM61 metal detection contour map onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 13 in Lumberton, 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.
- GPR was performed across EM anomalies associated with suspected metallic debris, reinforced concrete, and interference from a fence and metal poles.
- GPR recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of larger structures such as USTs was observed.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 13.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Falcon Engineers 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 North)

View of Survey Area
(Facing Approximately South)

N

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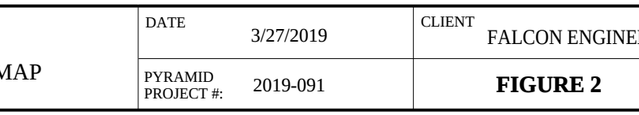
PROJECT: PARCEL 13 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 13 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE: 3/27/2019 PYRAMID PROJECT #: 2019-091	CLIENT: FALCON ENGINEERS **FIGURE 1**

EM61 METAL DETECTION RESULTS

NO EVIDENCE OF 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 EM data were collected on March 18-21, 2019, using a Geonics EM61-MK2 instrument.Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on March 27, 2019.

EM61 Metal Detection Response (millivolts)



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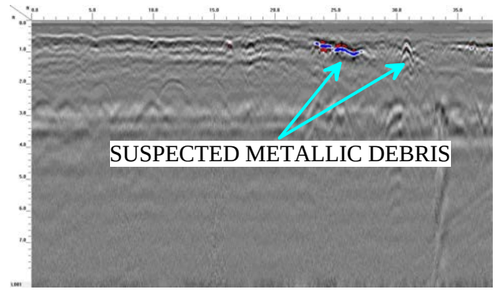
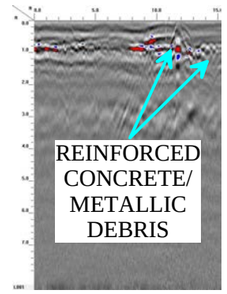
PROJECT	PARCEL 13 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE	PARCEL 13 - EM61 METAL DETECTION CONTOUR MAP	DATE 3/27/2019 PYRAMID PROJECT #: 2019-091
CLIENT	FALCON ENGINEERS			**FIGURE 2**

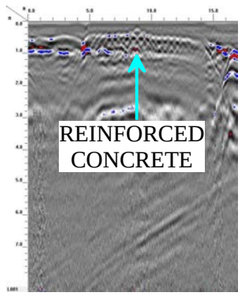
LOCATIONS OF GPR TRANSECTS



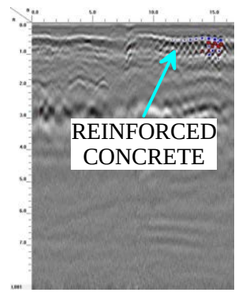
GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)

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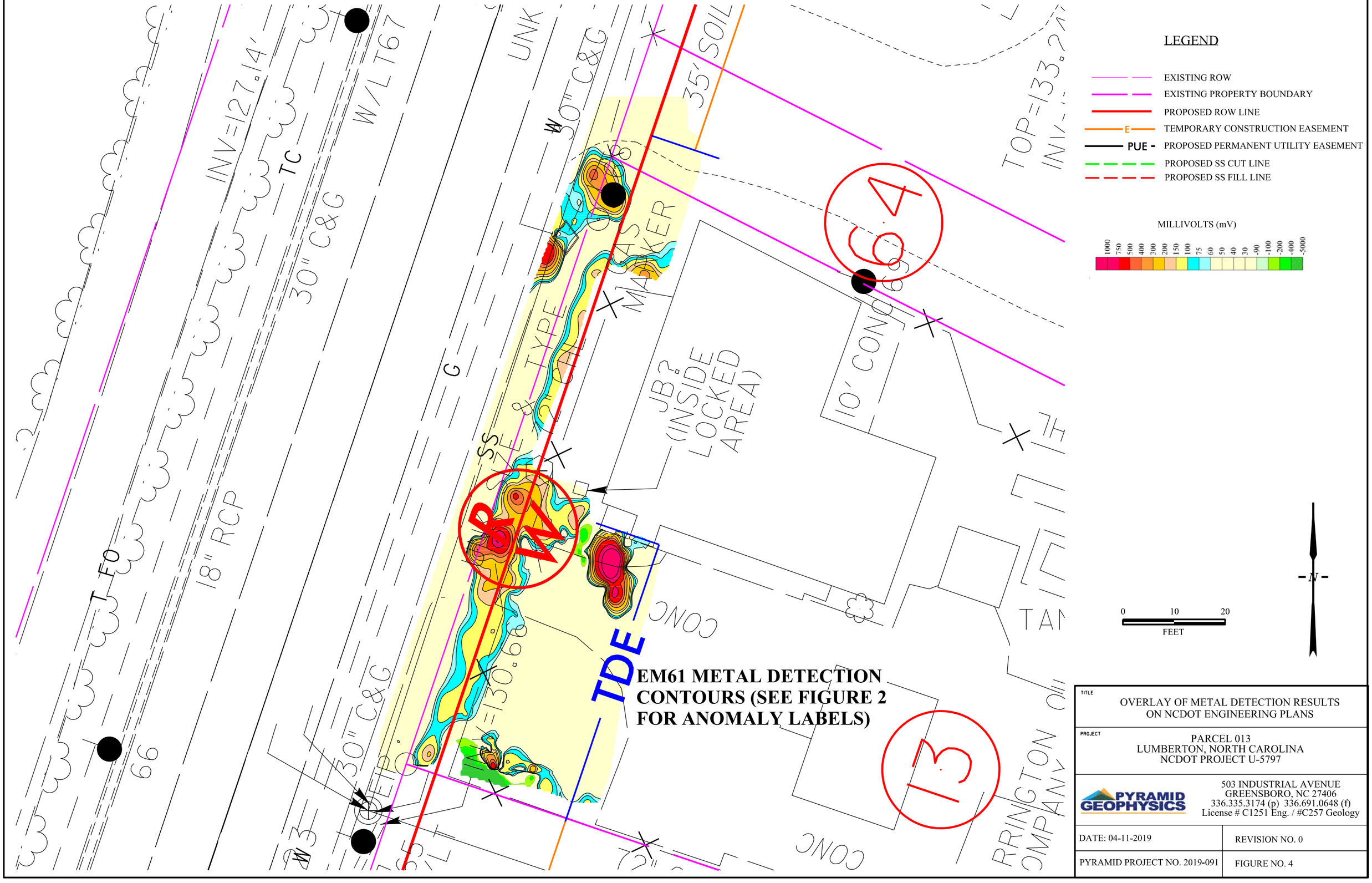
PROJECT: PARCEL 13 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 13 - GPR TRANSECT LOCATIONS AND IMAGES	DATE: 3/27/2019	CLIENT: FALCON ENGINEERS
		PYRAMID PROJECT #: 2019-091	**FIGURE 3**



TITLE

OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS

PROJECT

PARCEL 013
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

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DATE: 04-11-2019	REVISION NO. 0
PYRAMID PROJECT NO. 2019-091	FIGURE NO. 4