PROJECT SPECIAL PROVISIONS
GEOENVIRONMENTAL

CONTAMINATED SOIL (7/19/2022)

The Contractor's attention is directed to the fact that soil contaminated with petroleum hydrocarbon compounds exist may within the project area. The known areas of contamination are indicated on corresponding plans sheets. Information relating to these contaminated areas, sample locations, and investigation reports will be available at the following web address by navigating to the correct letting year and month then selecting, "Plans and Proposals", "U-5536", "Individual Sheets/520 GeoEnvironmental":

http://dotw-xfer01.dot.state.nc.us/dsplan/

Petroleum contaminated soil may be encountered during any earthwork activities on the project. The Contractor shall only excavate those soils that the Engineer designates necessary to complete a particular task. The Engineer shall determine if soil is contaminated based on areas shown on the plans, petroleum odors, and unusual soil staining. Contaminated soil not required to be excavated is to remain in place and undisturbed. Undisturbed soil shall remain in place, whether contaminated or not. The Contractor shall transport all contaminated soil excavated from the project to a facility licensed to accept contaminated soil.

In the event that a stockpile is needed, the stockpile shall be created within the property boundaries of the source material and in accordance with the Diagram for Temporary Containment and Treatment of Petroleum-Contaminated Soil per North Carolina Department of Environmental Quality's (NCDEQ) Division of Waste Management UST Section GUIDELINES FOR EX SITU PETROLEUM CONTAMINATED SOIL REMEDIATION. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDEQ UST Section's Regional Office for off-site temporary storage. The Contractor shall provide copies of disposal manifests completed per the disposal facilities requirements and weigh tickets to the Engineer.

Measurement and Payment:

The quantity of contaminated soil hauled and disposed of shall be the actual number of tons of material, which has been acceptably transported and weighed with certified scales as documented by disposal manifests and weigh tickets. The quantity of contaminated soil, measured as provided above, shall be paid for at the contract unit price per ton for "Hauling and Disposal of Petroleum Contaminated Soil".

The above price and payment shall be full compensation for all work covered by this section, including, but not limited to stockpiling, loading, transportation, weighing, laboratory testing, disposal, equipment, decontamination of equipment, labor, and personal protective equipment.

Payment shall be made under:

Pay Item	**Pay Unit**
Hauling and Disposal of Petroleum Contaminated Soil	Ton

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07/19/2022

NORTH CAROLINA PROFESSIONAL SEAL 036892 ENGINEER Ethan J. Caldwell

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

April 8, 2019

MEMORANDUM TO: Connie K. James, PE
Project Development Engineer
Division 9 Project Development

FROM: Ashley B. Cox, Jr, LG
GeoEnvironmental Project Manager
GeoEnvironmental Section
Geotechnical Engineering Unit

DocuSigned by:
Ashley B. Cox, Jr, LG
9781983D4D7F429...

TIP NO: U-5536
WBS: 44108.1.2
COUNTY: FORSYTH
DIVISION 9
DESCRIPTION: Great Wagon Rd (New Location) from SR 1001 (Shallowford Rd) to SR 1308 (Lewisville-Vienna Rd)

SUBJECT: **GeoEnvironmental Phase I Report**

The GeoEnvironmental Section of the Geotechnical Engineering Unit performed a Phase I field investigation on March 11, 2019 for the above referenced project to identify GeoEnvironmental sites of concern. The purpose of this report is to document sites of concern within the project study area that are or may be contaminated. These sites of concern should be included in the environmental planning document in an effort to assist the project stakeholders in reducing or avoiding impacts to these sites. Sites of concern may include, but are not limited to, underground storage tank (UST) sites, dry cleaning facilities, hazardous waste sites, regulated landfills and unregulated dumpsites.

Findings

Thirteen (13) sites of concern were identified within the proposed study area. We anticipate low monetary and scheduling impacts resulting from these sites. See the following table and figure for details.

Please note that discovery of additional sites not recorded by regulatory agencies and not reasonably discernible during the project reconnaissance may occur. The GeoEnvironmental Section should be notified immediately after discovery of such sites so their potential impact(s) may be assessed.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH, NC 27699-1589

Telephone: (919) 707-6850
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

Sites of concern identified in this report should be reviewed by the GeoEnvironmental Section once the Final Right of Way plans are complete to determine if Phase II Investigations and Right of Way Recommendations are necessary prior to right of way being acquired.

If there are questions regarding the geoenvironmental issues, please contact me, at (919) 707-6872.

cc:
John Pilipchuk, LG, PE, State Geotechnical Engineer
Brian Hanks, PE, State Structures Engineer
Dale Burton, PE, PLS, State Location and Surveys Engineer
Carl Barclay, PE, State Utilities Manager
Wright Archer, III, PE, Division Construction Engineer
Christopher Steele, Division Right of Way Agent
Eric Williams, PE, Geotechnical Regional Manager
Kevin Miller, PG, Regional Geological Engineer
Heather Fulghum, ROW Unit, Negotiations, Assistant State Negotiator
row-notify@ncdot.gov
roadwaydesign@ncdot.gov
hydraulics_notify@ncdot.gov

(01) Property Name:
Craft Cleaners
6814 Shallowford Road
Lewisville, NC 27023

Property Owner:
Kent Corporation
PO Box 26514
Winston-Salem, NC 27114

Incident Type/Number: 14139
UST Number: 0

Anticipated Impacts: Low

The site currently operates as a Dry Cleaning drop off location in Oaks Shopping Center. No actual dry cleaning takes place at this location. No documented incidents are associated with the business. Formerly operated as the Old Town Drapery Shop. There is an incident (#14139) associated with the overall parcel however no evidence of MWs were observed while on site.

(02) Property Name:
Shallowford Square
6525 Shallowford Road
Lewisville, NC 27023

Property Owner:
Town of Lewisville
PO Box 547
Lewisville, NC 27023

Incident Type/Number: 17589
UST Number: 0

Anticipated Impacts: Low

This site is currently a Town Park hosting special community events from concerts and movie viewings to 4th of July celebrations and Halloween Festivals. The construction of the park was assisted by the NCDENR Parks and Recreation Trust Fund. The incident associated with this property was closed out in October 1997.

(03) Property Name:
Still Life Interiors
6477 Shallowford Road
Lewisville, NC 27023

Facility ID: 0-016446
Incident Type/Number: 13096
UST Number: 0

Property Owner:
Lanier Williams Real Estate LLC
6495 Shallowford Road, Unit 200
Lewisville, NC 27023

UST Owner:
Crown Central Petroleum Corp.
One N. Charles St
Baltimore, MD 21203

Anticipated Impacts: Low

Today, this former gas station houses an interior decorating business. Incident 13096 is associated with the parcel, the regulatory database says the incident was closed out January 15, 1999. In the parking lot, four (4) monitoring wells, with 12" manhole covers were observed.

(04) Property Name:
E-Stop Convenience Store
130 Lewisville Clemmons Road
Lewisville, NC 27023

Facility ID: 00-0-031665
Incident Type/Number: 11308
UST Number: 02

Property Owner:
CNPL LLC
130 Lewisville Clemmons Road
Lewisville, NC 27023

UST Owner:
G&B Oil Co.
410 E. 2nd Street
Winston-Salem, NC 27101

Anticipated Impacts: Low

The site is an active gas station with two (2) underground storage tanks. The parcel does have an associated incident number, 11308 that was closed out in May 1995. No monitoring wells were observed during the site visit.

(05) Property Name:
Lewisville Country Market / Motorcycle Shop
6373 Shallowford Road
Lewisville, NC 27023

Property Owner:
D.D. Stimson, Jr.
6381 Shallowford Road
Lewisville, NC 27023

UST Number: 0

Anticipated Impacts: Low

This parcel has an old country market selling fresh produce, baked goods, etc. From the architecture, it may have at one time been a gas station. Behind the market, the owner operates what appears to be a motorcycle repair shop, DSR Custom Cycles. No monitoring wells were observed while visiting the site.

The exterior of what is believed to be DSR Custom Cycles, there were no readily observable signs posted. It is anticipated that this building will fall within the construction limits of the project.

(06) Property Name:
4 Brothers Food Stores
6351 Shallowford Road
Lewisville, NC 27023

Property Owner:
Beroth Oil Co.
P.O. Box 4089
Winston-Salem, NC 27105

Facility ID: 00-0-031173
Incident Type/Number: 19245
UST Number: 03

UST Owner:
Beroth Oil Co.
PO Box 4089
Winston-Salem, NC 27105

Anticipated Impacts: Low

An active gas station is at this location, with three (3) registered underground storage tanks. Incident 19245 is associated with this parcel, back when the gas station operated as Friendly Food Mart #3. Four (4) monitoring wells were observed while conducting the site visit.

(07) Property Name:
Colt's Cooling
6321 Shallowford Road
Lewisville, NC 27023

Property Owner:
Richard D Stimson, Carolyn Shore Trust
7580 Grapevine Road
Lewisville, NC 27023

UST Number: 0

Anticipated Impacts: Low

Currently a heating and cooling business operates out of this building. From the architecture, circle drive and drive-up window, the building may have once operated as a dry-cleaning facility. No monitoring wells were observed during the site visit.

(08) Property Name:
Lewisville Automotive Services
6311 Shallowford Road
Lewisville, NC 27023

Property Owner:
Reich W S Inc T/A Lew Auto Services
P.O. Box 6
Lewisville, NC 27023

UST Number: 0

Anticipated Impacts: Low

Lewisville Automotive Services has been operating at this location for over five (5) decades. There is currently at least one (1) in ground lift and signs of surficial spills. There are no underground storage tanks registered at this property, nor any documented incidents.

(09) Property Name:
Masonic Lodge / FARRAG0
(Lewisville Volunteer Fire Department)
6301 Shallowford Road
Lewisville, NC 27023

Facility ID: 00-0-032484
Incident Type/Number: 14432
UST Number: 0

Property Owner:
West Bend Masonic Lodge 434
P.O. Box 292
Lewisville, NC 27023

UST Owner:
Lewisville Fire Department
P.O. Box 73
Lewisville, NC 27023

Anticipated Impacts: Low

The building on site has operated as an old hardware store, a bank, and an antique shop. The Lewisville Volunteer Fire Department was located on the same Parcel as the Masonic Lodge. Today where the Fire Station once stood is a parking lot. Incident 14432 is associated with the parcel and several monitoring wells were observed. Today it houses the local masonic lodge and a hair salon named FARRAGO.

This historical aerial image from 1986 shows the location of the Lewisville Volunteer Fire Department.

(10) Property Name:
Lewisville Shell
6295 Shallowford Road
Lewisville, NC 27023

Property Owner:
West Bend Masonic Lodge 434 Trust
4206 Sylvia Street
Winston-Salem, NC 27104

Facility ID: 00-0-020023
Incident Type/Number: 30127
UST Number: 0

UST Owner:
Quality Oil Company, LLC
P.O. Box 2736
Winston-Salem, NC 27127

Anticipated Impacts: Low

This former gas station is currently a vacant lot with a remediation system that is no longer operating. Incident 30127 is associated with the parcel and according to the regulatory database has not been officially closed out. Several monitoring wells were located while on site.

(11) Property Name:
Collins Petroleum & Electrical Inc.
116 Lewisville-Vienna Road
Lewisville, NC 27023

Property Owner:
Michael and Julie Collins
308 Heatherford Drive
Lewisville, NC 27023

UST Number: 0

Anticipated Impacts: Low

This business has scrapped fuel dispensers outside of the building, and monitoring wells on the property possibly associated with the Lewisville Volunteer Fire Department Incident. No registered tanks were identified in the regulatory database, nor are any documented incidents associated with the address or owners.

(12) Property Name:
Lewisville Mill
6275 Shallowford Road
Lewisville, NC 27023

Property Owner:
Thomas H Fowler Family LLC
P.O. Box 301
Lewisville, NC 27023

UST Number: 0

Anticipated Impacts: Low

The former mill operated from approximately 1910 to 1984, grinding grains into flour, cornmeal, and feed for livestock. Currently Lewisville Hardware among other businesses occupy the building. There are no documented incidents associated with the parcel and no monitoring wells were identified while on site.

(13) Property Name:
Denver White Oil Company
118 Esso Lane
Lewisville, NC 27023

Facility ID: 00-0-015245
UST Number: 02

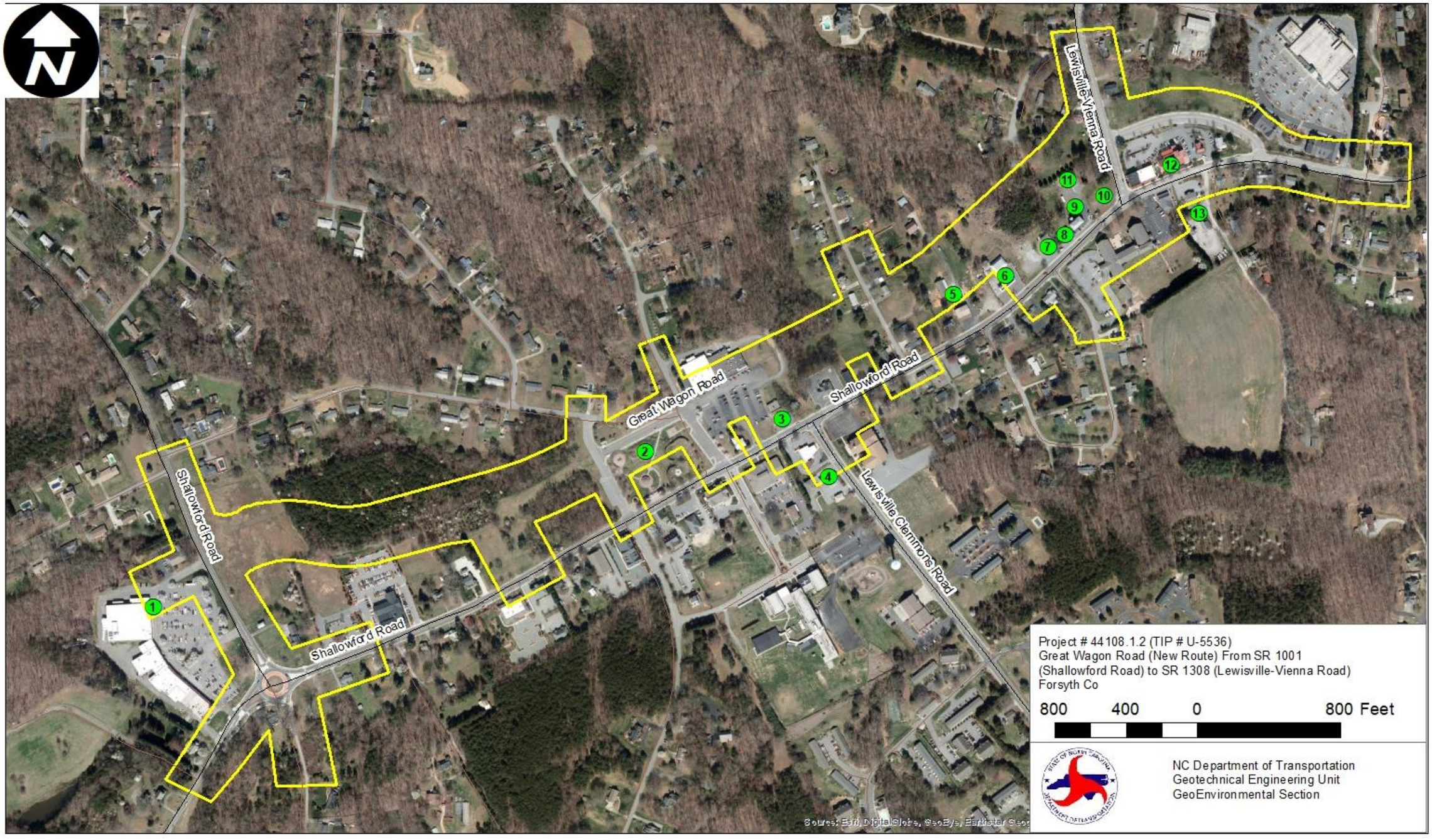
Property Owner:
Denver White Oil Co.
4542 S. Main Street
Winston-Salem, NC 27107

UST Owner:
Denver White Oil Co.
4542 S. Main Street
Winston-Salem, NC 27107

Anticipated Impacts: Low

Denver White Oil Company operates a distribution center from this location. Several large capacity above ground tanks were observed as well as dispensers on the yard and documentation of underground tanks on site. The existing study area clips the parcel, but the proposed construction limits are not anticipated to impact the site.

Figure
Location of GeoEnvironmental Sites of Concern



ENGINEERS PLANNERS SURVEYORS SCIENTISTS

CHARLOTTE, NC

COLUMBIA, SC

www.ces-group.net

July 1, 2022

TRANSMITTED VIA EMAIL

Craig Haden
GeoEnvironmental Project Engineer
Geotechnical Engineering Unit
North Carolina Department of Transportation
1020 Birch Ridge Drive
Raleigh, NC 27610

RE: Phase II Investigation
Lanier Williams Real Estate, LLC Property – Parcel # 17
6477 Shallowford Road, Lewisville, Forsyth County, NC
NCDOT TIP Number: U-5536
NCDOT WBS Number: 44108.1.2
CES Project Number: 7893.0422E

Dear Mr. Haden:

Please find attached an electronic copy of the Phase II Investigation Report for the Lanier Williams Real Estate, LLC Property, identified as Parcel # 17, located at 6477 Lewisville Road, Lewisville, Forsyth County, North Carolina. This Phase II Investigation was performed in accordance with our Technical and Cost Proposal, dated April 7, 2022, and was initiated by a Notice to Proceed (NTP), issued by NCDOT on April 12, 2022, under our GeoEnvironmental Contract, No.: 7000020453, dated April 20, 2020.

Upon your review, please return via DocuSign for final signatures.

Should you have any questions in regards to this Phase II Investigation, please do not hesitate to contact me at (704) 325-5408.

Regards,

CES Group Engineers, LLP.

Greg Hans, PMP
Environmental Project Manager/
Environmental Division Manager

Charles Heleine, PE, REPA
Senior Environmental Engineer

Enclosures: Phase II Investigation Report

ENGINEERS PLANNERS SURVEYORS SCIENTISTS

PHASE II INVESTIGATION

NCDOT TIP Number: U-5536
NCDOT WBS Number: 44108.1.2
Lanier Williams Real Estate, LLC Property: Parcel # 17
6477 Shallowford Road
Lewisville, Forsyth County, North Carolina

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, North Carolina 27610

Prepared by:

CES Group Engineers, LLP
3525 Whitehall Park Drive, Suite 150
Charlotte, North Carolina 28273

CES Project No.: 7893.0422E

July 1, 2022

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APPENDIX A	PYRAMID ENVIRONMENTAL & ENGINEERING, P.C. GEOPHYSICAL SURVEY REPORT
APPENDIX B	SOIL BORING LOGS
APPENDIX C	LABORATORY ANALYTICAL REPORT
APPENDIX D	PHOTOGRAPHIC LOG

1.0 INTRODUCTION

CES Group Engineers, LLP (CES) has prepared this Phase II Investigation Report documenting the performance of field assessment activities on the south-southeastern portions of the Lanier Williams Real Estate, LLC property, further identified as North Carolina Department of Transportation (NCDOT) Parcel 17, which is located at 6477 Shallowford Road, Lewisville, Forsyth County, North Carolina (the subject site). This Phase II Investigation was performed in accordance with our Technical Cost Proposal dated April 7, 2022, and was initiated by a Notice to Proceed (NTP), issued by NCDOT on April 12, 2022, under our GeoEnvironmental Contract No 7000020453, dated April 20, 2020.

The scope of work performed by CES for this Phase II Investigation included a geophysical survey to locate all known, possible and probable underground storage tanks (USTs), followed by a subsurface soil investigation that included the installation of five soil borings to evaluate the potential for contamination to exist within the right-of-way (ROW) and construction and/or utility easements located at 6477 Shallowford Road.

A Site Location Map is included as Figure 1.

1.1 Site History and Description

The subject site is located at 6477 Shallowford Road, Lewisville, Forsyth County, North Carolina. The property primarily consists of one single story building with a front asphalt-paved parking lot. The gradient of the subject site slopes north towards the primary structure. The subject site is currently utilized for commercial purposes. The subject site was previously occupied by Crown Central NC-592, and utilized as a gasoline service~~s~~ station until August 1994, when three 6,000-gallon gasoline underground storage tanks (USTs) were reported removed from the subsurface. According to aerial images observed utilizing Historic Aerials and Google Earth, a canopy structure and a pump island were observed to be present at the subject site until the approximate year 1994. Since approximately 1994, the existing building was observed to be the only structure onsite. Nearby and surrounding properties were observed to be utilized for commercial, municipal, institutional and residential purposes.

A review of the North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management GIS Site Locator Tool resulted in finding that the subject site was a former gasoline service station, identified as Facility ID No.: 00-0-0000016446, and consisted of one pump island area on the south-central portion, and an UST field on the western portion of the site. During the removal of the three USTs in August of 1994, NCDEQ was notified of elevated petroleum constituent concentrations in sampled soil, and subsequently issued Incident No.: 13096 for the apparent release condition. According to the GIS Site Locator Tool, Incident No.: 13096 was closed on January 15, 1999.

2.0 PHASE II FIELD ACTIVITIES

2.1 Geophysical Survey

On May 10 and May 11, 2022, Pyramid Environmental & Engineering, PC (Pyramid) of Greensboro, North Carolina, conducted a geophysical survey to locate all known, possible or probable USTs within the subject site by performing electromagnetic (EM) and ground penetrating radar (GPR) surveys. The EM survey data was collected using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The GPR survey data was collected using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 control unit coupled to a 350 MHz HS antenna.

The results of the collected geophysical (EM and GPR) data recorded no evidence of metallic USTs at Parcel 17. During the geophysical survey, five metallic anomalies were identified by the EM survey and were attributed to a sign, a monitoring well, suspected former pump island or UST lines, guy wires and utilities. The anomaly (EM anomaly 3) identified as a suspected former pump island or UST lines, was further investigated with GPR, which did not record a significant structure, such as an UST.

Pyramid's geophysical survey report, including site map(s) depicting the survey area and results, is attached as Appendix A.

2.2 Soil Boring Investigation

On May 16, 2022, Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina, under the direction of an onsite CES Environmental Scientist, installed five soil borings P17-SB1 through P17-SB5 to a maximum depth of ten feet below surface grade (bsg), utilizing a track mounted geoprobe rig, Model 6712DT, to evaluate the potential for contamination to exist within the right-of-way and construction and/or utility easements located at 6477 Shallowford Road. Prior to the installation of the three soil borings, on May 2, 2022, CES utilized a Trimble R8s GNSS/GPS unit to pre-mark each boring in exact locations proposed on NCDOT provided plan sheets (PSH 6), and then collected GPS coordinates. In addition, underground utilities were cleared through the NC 811 public locating service, and by Pyramid during the GPR portion of the geophysical survey. Due to the presence of marked underground utilities within and near the sidewalk, and on the southern portion of the site, as located by NC 811 and Pyramid, soil boring P17-SB1 was moved approximately 12-feet to the north, soil boring P17-SB2 was moved approximately 9-feet to the north, and soil boring P17-SB3 was moved approximately 10-feet to the southwest on May 16, 2022.

During the advancement of the five soil borings, the CES Environmental Scientist field screened encountered soils with a MiniRAE 3000 Photoionization Detector (PID), calibrated by Eastern Solutions LLC on May 10, 2022**,** for the presence of volatile organic compounds (VOCs), to facilitate the selection of one soil sample from each boring for subsequent laboratory analysis. PID measurements below the detection limit of 5 ppmv were identified as non-detect (ND). Groundwater was not encountered during the installation of the five soil borings. A total of four groundwater monitoring wells were observed onsite, with two of the monitoring wells located within the proposed right-of-way and construction and/or utility easement on the south and south-central portion of the site.

Based on field screening data collected, the PID measurements from soil borings P17-SB1 through P17-SB5 were reported as ND. No petroleum odors or stained soils were observed in

any of the soil samples collected from the three soil borings.

Upon completion of the five soil borings, each boring location was backfilled to grade with generated drill cuttings and an Asphalt Hole Plug, by CSI.

Figure 2 depicts the locations of soil borings P17-SB1 through P17-SB5. GPS coordinates and PID measurements for each soil boring are included on Table 1 and Table 2, respectively. Soil boring logs are provided in Appendix B.

2.3 Soil Sampling and Laboratory Analytical Results

Upon completion of each boring, the soil sample exhibiting the highest PID measurement, or a selected soil sample from zero to 5-feet bsg or five to 10-feet bsg if the PID measurements were reported as ND, was collected in laboratory provided vials containing 20 mL of methanol and stored on ice. The samples were shipped at the close of soil sampling activities on Thursday May 19, 2022, under chain-of-custody (COC) procedures to Red Lab, LLC of Wilmington, North Carolina, for laboratory analysis of petroleum hydrocarbons via the QED Ultraviolet Fluorescence (UVF) methodology, which includes BTEX, GRO, DRO, TPH, Total Aromatics, 16 EPA PAHs, BaP, and identification of specific hydrocarbons (HC).

Laboratory analytical results indicated that concentrations of DRO and/or GRO were reported above laboratory detection limits, but below NCDEQ Action Levels, in soil borings P17-SB1, P17-SB2, P17-SB3, P17-SB4 and P17-SB5. The maximum reported DRO and GRO concentrations were reported as follows:

- DRO at 18.1 mg/kg from a soil sample collected from soil boring P17-SB1, at a depth of approximately 10-feet bsg; and
- GRO at 2.4 mg/kg from a soil sample collected from soil boring P17-SB5, at a depth of approximately 2-feet bsg.

Figure 2 depicts the location of soil borings P17-SB1 through P17-SB5, with soil analytical results and depth of collected samples depicted on Figure 3. Table 2 summarizes soil laboratory analytical results, including the depth of each collected soil sample with corresponding PID measurements. The Red Lab, LLC soil laboratory analytical reports are included in Appendix C. A photographic log depicting site and soil boring locations is included in Appendix D.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The results of the collected geophysical (EM and GPR) data recorded no evidence of metallic USTs at Parcel 17.

Laboratory analytical results indicated that concentrations of DRO and/or GRO were reported above laboratory detection limits, but below NCDEQ Action Levels, in soil borings P17-SB1, P17-SB2, P17-SB3, P17-SB4 and P17-SB5. The maximum reported DRO and GRO concentrations were reported as follows:

- DRO at 18.1 mg/kg from a soil sample collected from soil boring P17-SB1, at a depth of approximately 10-feet bsg; and
- GRO at 2.4 mg/kg from a soil sample collected from soil boring P17-SB5, at a depth of approximately 2-feet bsg.

This Phase II Investigation concluded that soils impacted with petroleum constituents are present on Parcel 17 at levels below NCDEQ Action Levels. This conclusion was based on laboratory analytical results reporting concentrations of DRO and GRO above the laboratory detection limits (but below NCDEQ Action Levels) in soil borings P17-SB1, P17-SB2, P17-SB3, P17-SB4 and P17-SB5.

3.2 Recommendations

During planning of construction activities in work areas generally located near soil borings P17-SB1 through P17-SB5, and potentially in other unexplored areas of Parcel 17, as depicted on the provided NCDOT preliminary plan sheets, it is recommended that encountered soils impacted with petroleum constituents be properly handled and managed in the field, and disposed of by contractors in accordance with applicable state regulations.

4.0 SIGNATURE PAGES

This Phase II Investigation Report was prepared by:

DocuSigned by:
BE8ABC48C6D1471...

07/12/2022

Dawn F. Crowell, MELP, CMCSI
Environmental Scientist/Project Manager
CES Group Engineers, LLP

This Phase II Investigation Report was reviewed by:

DocuSigned by:
Greg Hans
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07/12/2022

Greg Hans, PMP
Environmental Division Manager
CES Group Engineers, LLP

This Phase II Investigation Report was reviewed and approved by:

DocuSigned by:
Charles Heleine
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07/13/2022

Charles Heleine, PE, REPA
Senior Environmental Engineer
CES Group Engineers, LLP

Electronic Seal/Signature

TABLES

Table 1
Soil Boring GPS Coordinate Data
NCDOT TIP Number: U-5536
NCDOT WBS Numberl 44108.1.2
Lanier Williams Real Estate, LLC Property: Parcel # 17
6477 Shallowford Road
Lewisville, Forsyth County, North Carolina

Sample ID	Date Collected (m/dd/yy)	Latitude	Longitude
P17-SB1 *	5/16/2022	36.0971	-80.41991
P17-SB2 *	5/16/2022	36.09718	-80.41973
P17-SB3 *	5/16/2022	36.09722	-80.41968
P17-SB4	5/16/2022	36.0972051	-80.419820
P17-SB5	5/16/2022	36.0973032	-80.4197909

* Approximate GPS coordinates as boring moved in field due to U/G conflicts

Table 2
Summary of Soil Analytical Results
NCDOT TIP Number: U-5536
NCDOT WBS Numberl 44108.1.2
Lanier Williams Real Estate, LLC: Parcel # 17
6477 Shallowford Road
Lewisville, Forsyth County, North Carolina

				Analytical Method	**UVF**	**UVF**	**UVF**
				COC	**TPH-DRO**	**TPH-GRO**	**HC Fingerprints**
Sample ID	**Date Collected (m/dd/yy)**	**Sample Area**	**Sample Depth**	**PID (ppmv)**	**mg/kg**	**mg/kg**	
P17-SB1	5/16/2022	On Sidewalk off ROW	10	0.4 at 4-ft / 0.6 at 10-ft	18.1	1	Deg Fuel 75.8%
P17-SB2	5/16/2022	Sidewalk off ROW	3	0.8 at 5-ft / 0.6 at 5-ft	0.25	<0.25	No Match Found
P17-SB3	5/16/2022	Along property line in the grass	7.5	0.2 at 3.5-ft / 0.8 at 7-ft	0.26	0.87	No Match Found
P17-SB4	5/16/2022	Paved surface	1.5	0.6 t 1.5-ft / 0.0 at 5-ft	2.3	<0.43	Deg.Fuel 72.4%
P17-SB5	5/16/2022	Along tree line	2	0.0 at 1.5-ft / 0.0 at 5-ft	2.8	2.4	Deg.PHC 90.5%
				Initial NCDEQ Action Levels for Contamination (mg/kg)	100	50	N/A

P#-SB# = Parcel Number - Soil Boring Number
mg/kg = miligrams per kilogram
PID = photoionization detector
ppmv = parts per million per volume
N/A = not applicable
Soil anlaysis performed by Red Lab, LLC of Wilmington, NC with results generated by a QED HC-1 analyzer

FIGURES

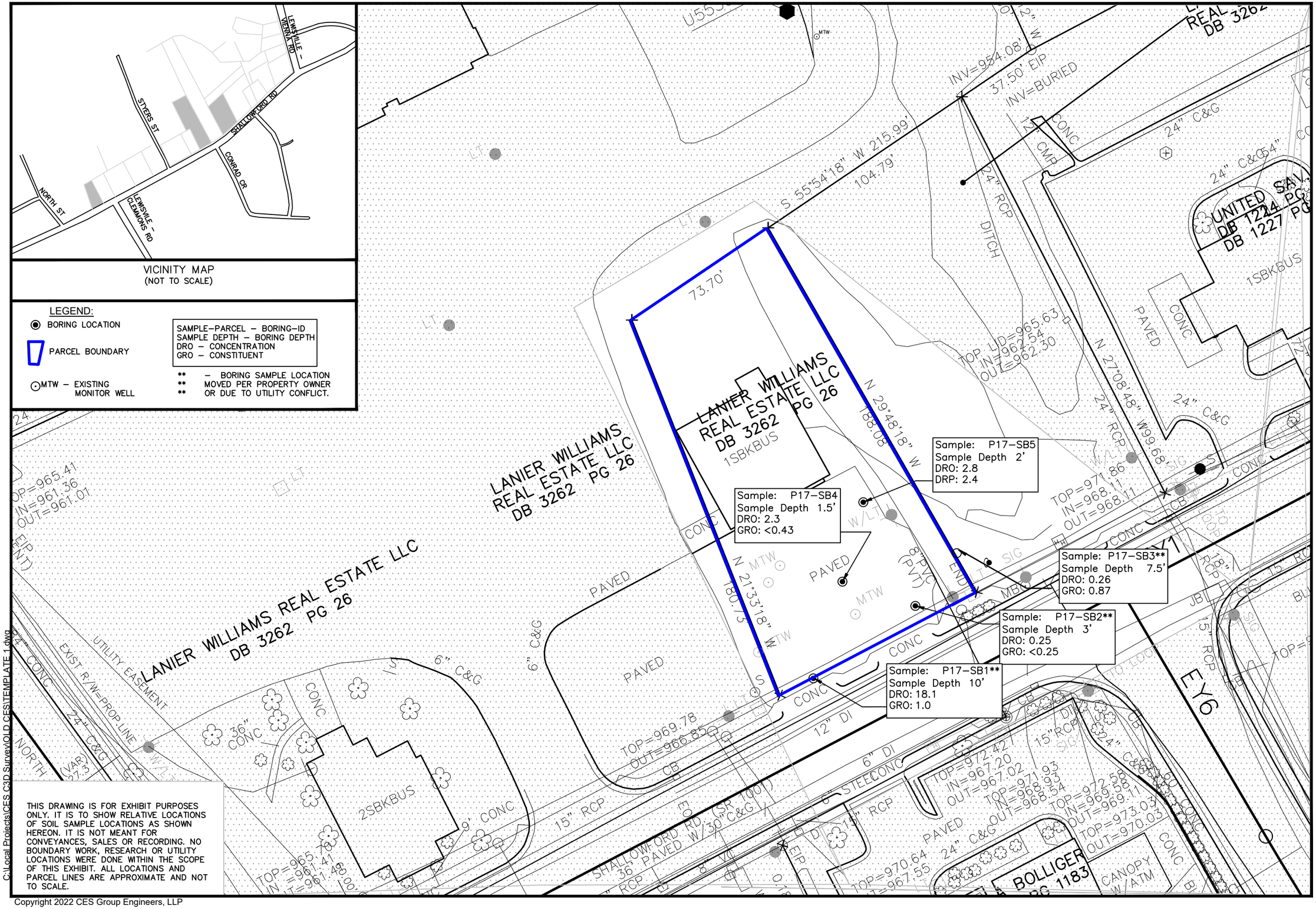
VICINITY MAP
(NOT TO SCALE)

LEGEND:

- BORING LOCATION
- PARCEL BOUNDARY
- ⊙MTW – EXISTING MONITOR WELL

SAMPLE–PARCEL – BORING–ID
SAMPLE DEPTH – BORING DEPTH
DRO – CONCENTRATION
GRO – CONSTITUENT

** – BORING SAMPLE LOCATION
** MOVED PER PROPERTY OWNER
** OR DUE TO UTILITY CONFLICT.



THIS DRAWING IS FOR EXHIBIT PURPOSES ONLY. IT IS TO SHOW RELATIVE LOCATIONS OF SOIL SAMPLE LOCATIONS AS SHOWN HEREON. IT IS NOT MEANT FOR CONVEYANCES, SALES OR RECORDING. NO BOUNDARY WORK, RESEARCH OR UTILITY LOCATIONS WERE DONE WITHIN THE SCOPE OF THIS EXHIBIT. ALL LOCATIONS AND PARCEL LINES ARE APPROXIMATE AND NOT TO SCALE.

C:\Local Projects\CES C3D Survey\OLD CES\TEMPLATE 1.dwg

OWNER/PREPARED FOR:

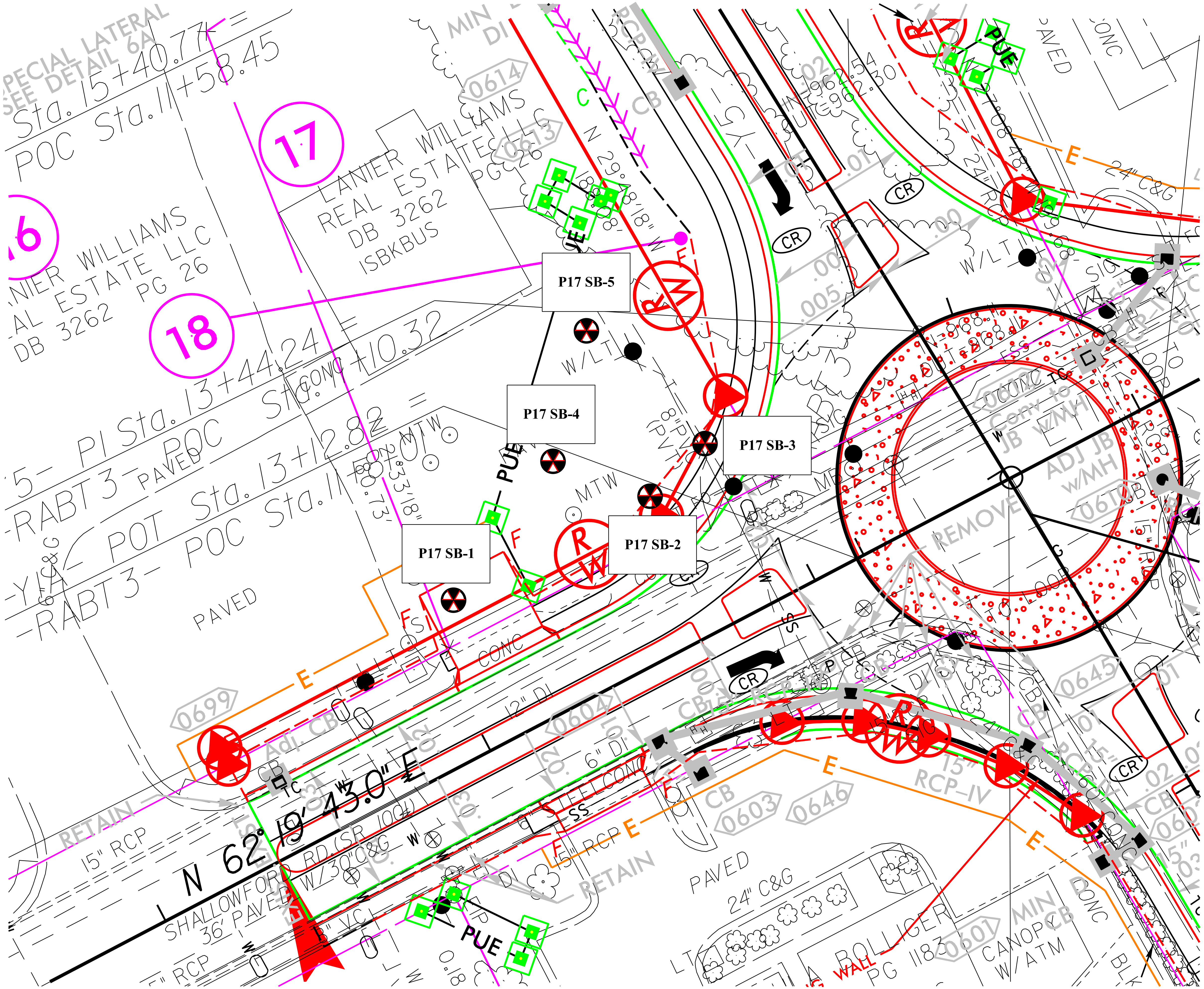
NCDOT

CES GROUP
ENGINEERS, LLP
NC FIRM LICENSE# F-1240
3525 WHITEHALL PARK DRIVE,
SUITE 150
CHARLOTTE, NC 28273
T 704.489.1500
www.ces-group.net

EXHIBIT SURVEY
PARCEL NO. 17
ENVIRONMENTAL
SAMPLE LOCATIONS
U-5536

DRAWN BY:	JES
CHECKED BY:	JES
PROJECT NUMBER:	7893
SCALE:	1" = 40'
DATE:	5/31/2022
TAX PARCEL:	5885-07-5304.00
DRAWING:	7893-EXHIBITS.dwg

SHEET: 1



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED PERMANENT UTILITY
- SOIL BORING LOCATION

0 15 30
FEET

N

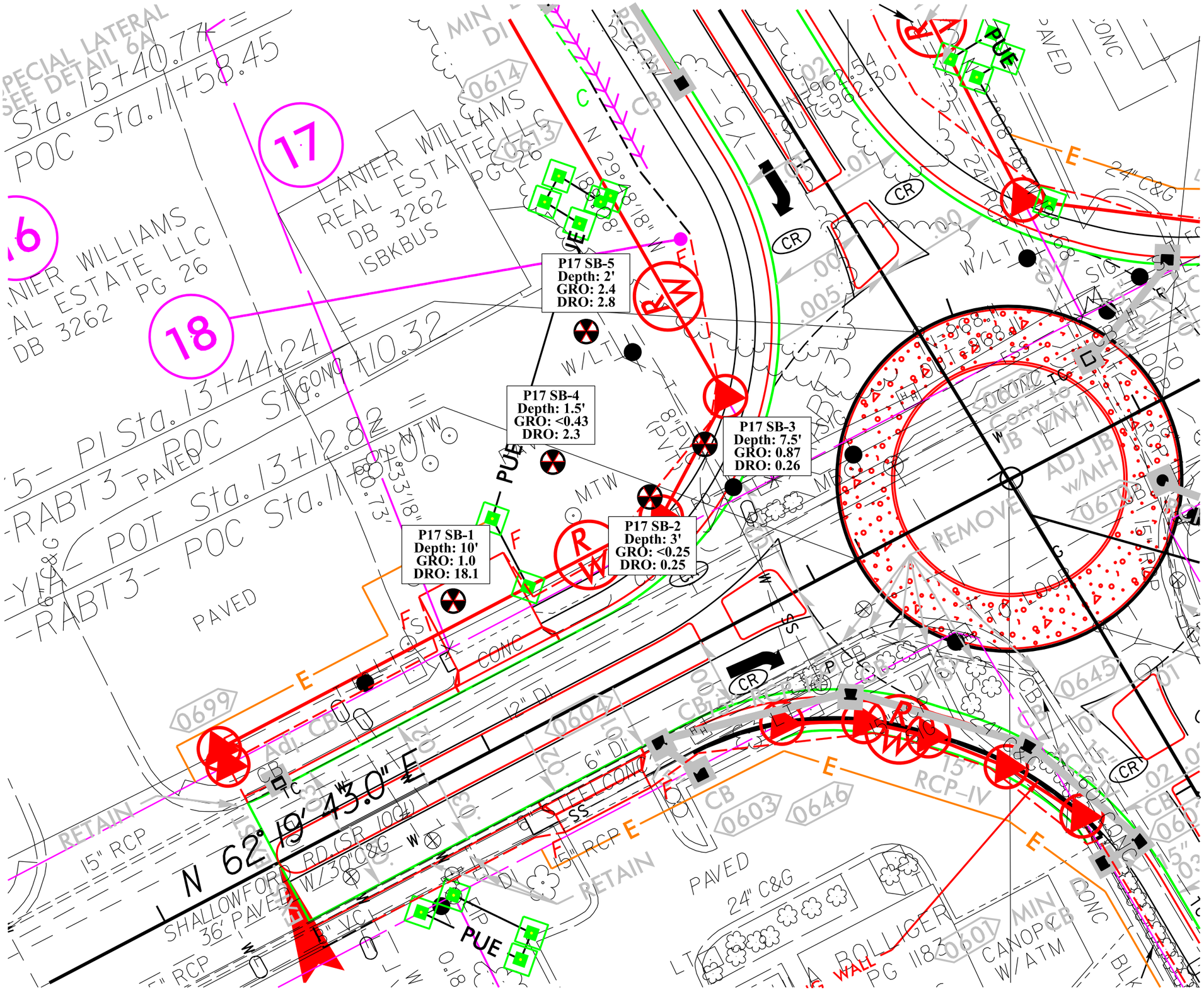
TITLE
SITE MAP

PROJECT
PARCEL 17
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

PYRAMID GEOPHYSICS

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

DATE: 6-22-2022	REVISION NO. 0
	FIGURE NO. 2



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- E — TEMPORARY CONSTRUCTION EASEMENT
- PUE — PROPOSED PERMANENT UTILITY
- SOIL BORING LOCATION

PX(Y) PARCEL#(BORING#)
DRO DIESEL RANGE ORGANICS*
GRO GASOLINE RANGE ORGANICS*
*ALL CONCENTRATIONS PRESENTED IN mg/kg

N

TITLE

SOIL ANALYTICAL MAP

PROJECT

PARCEL 17
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

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

DATE: 6-22-2022

REVISION NO. 0

FIGURE NO. 3

APPENDIX A

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

GEOPHYSICAL SURVEY REPORT

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2022-108)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 17
NCDOT PROJECT U-5536 (44108.1.2)

6477 SHALLOWFORD ROAD, LEWISVILLE, NC

May 17, 2022

Report prepared for: **Greg Hans, PMP**
CES Group Engineers, LLP
274 North Highway 16 Business, Suite 300
Denver, NC 28037

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 17 – 6477 Shallowford Road
Lewisville, Forsyth County, North Carolina

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Discussion of EM Results 3
Discussion of GPR Results 4
Summary & Conclusions 4
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Figure 2 – Parcel 17 - EM61 Metal Detection Contour Map
Figure 3 – Parcel 17 - GPR Transect Location and Image
Figure 4 – Overlay of Metal Detection Results on NCDOT Engineering Plans

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 Geophysical Services (Pyramid), a department within Pyramid Environmental & Engineering, P.C., conducted a geophysical investigation for CES Group Engineers, LLP (CES) at Parcel 17, located at 6477 Shallowford Road, in Lewisville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5536). The survey was designed to extend across all accessible portions of the parcel indicated to Pyramid by CES. Conducted from May 10-11, 2022, 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 five EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. The geophysical survey identified evidence of utilities and/or buried debris. Collectively, the geophysical data recorded no evidence of metallic USTs at Parcel 17.

INTRODUCTION

Pyramid Geophysical Services (Pyramid), a department within Pyramid Environmental & Engineering, P.C., conducted a geophysical investigation for CES at Parcel 17, located at 6477 Shallowford Road, in Lewisville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5536). The survey was designed to extend across all accessible portions of the parcel indicated to Pyramid by CES. Conducted from May 10-11, 2022, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site consisted of one building surrounded by grass, asphalt, and concrete surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs is 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 May 11, 2022, using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 control unit coupled to a 350 MHz HS 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 SIR 4000 unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the SIR 4000 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	Sign	
2	Monitoring Well	
3	Suspected Former Pump Island or UST Lines	✓
4	Guy Wires	
5	Utilities/Light/Mailbox	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including a sign, a monitoring well, guy wires, utilities, a mailbox, and a light. EM Anomaly 3 was investigated with GPR to examine whether the anomaly was the result of a more significant structure such as a UST.

Discussion of GPR Results

Figure 3 presents the location of the formal GPR transect performed at the property as well as the transect image. One formal GPR transect was performed at the site.

GPR Transect 1 was performed across EM Anomaly 3. This transect showed multiple small hyperbolic reflectors consistent with buried conduit. Based on evidence at the site, these appear to be associated with a former pump island or UST lines.

Collectively, the geophysical data recorded no evidence of metallic USTs at Parcel 17. **Figure 4** provides an overlay of the metal detection results onto the NCDOT Engineering plans.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 17 in Lewisville, 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.
- The geophysical survey identified evidence of utilities and/or buried debris.
- Collectively, the geophysical data recorded no evidence of metallic USTs at Parcel 17.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for CES Group Engineers, LLP 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 East)

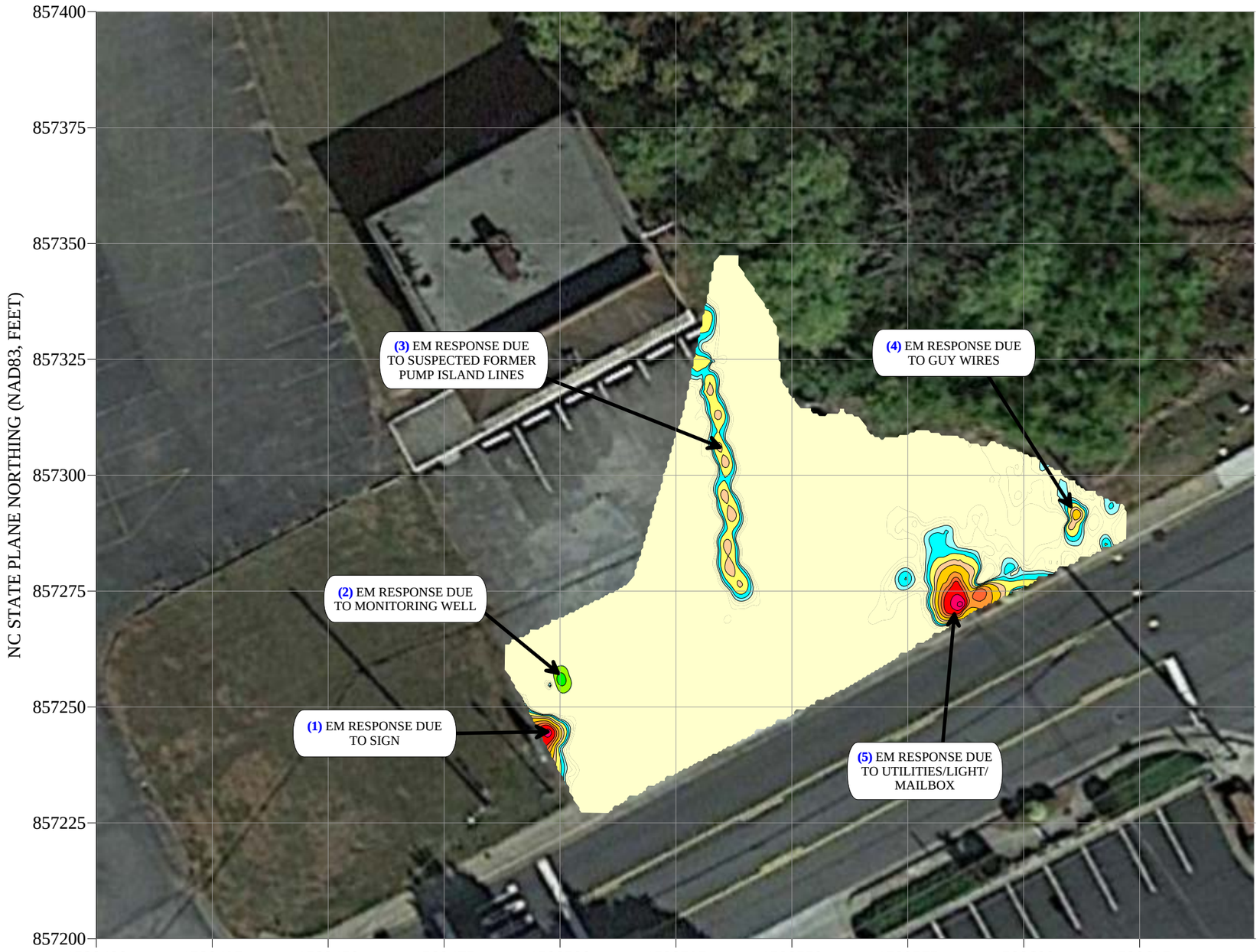
View of Survey Area (Facing Approximately South)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 17 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536
TITLE	PARCEL 17 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	5/11/2022
PYRAMID PROJECT #:	2022-108
CLIENT	CES GROUP ENGINEERS
	FIGURE 1

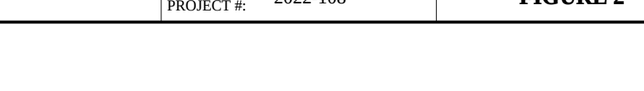
EM61 METAL DETECTION RESULTS



NO EVIDENCE OF METALLIC USTs WAS 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 May 10, 2022, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI SIR 4000 instrument with a 350 MHz HS antenna on May 11, 2022.

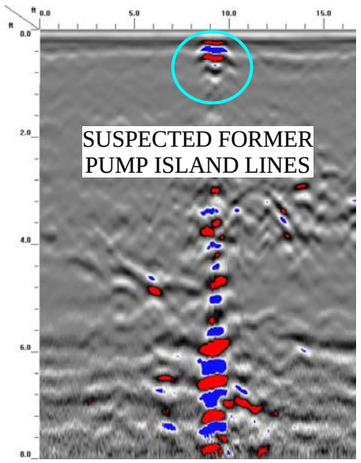
EM61 Metal Detection Response (millivolts)



N

PYRAMID GEOPHYSICS 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT PARCEL 17 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536	TITLE PARCEL 17 - EM61 METAL DETECTION CONTOUR MAP	DATE 5/11/2022 PYRAMID PROJECT #: 2022-108	CLIENT CES GROUP ENGINEERS **FIGURE 2**

GPR TRANSECT LOCATION



GPR TRANSECT 1 (T1)

N

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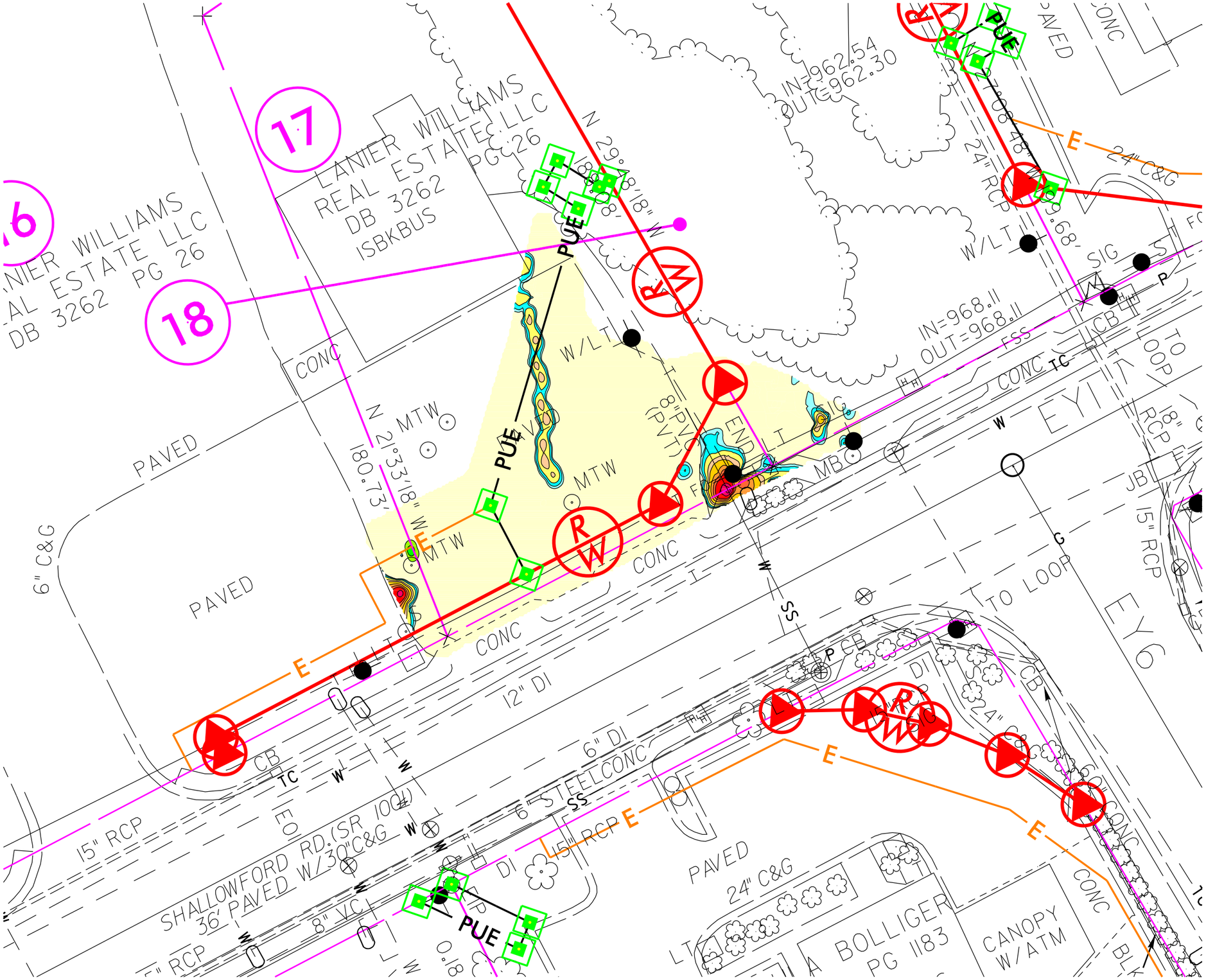
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 17 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536
TITLE	PARCEL 17 - GPR TRANSECT LOCATION AND IMAGE
DATE	5/11/2022
PYRAMID PROJECT #:	2022-108
CLIENT	CES GROUP ENGINEERS
	FIGURE 3



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE

EM61 Metal Detection Response (millivolts)

1000 750 500 400 300 200 150 100 75 60 50 40 30 -90 -100 -200 -400 -5000

0 15 30
FEET

N

TITLE
OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS

PROJECT
PARCEL 17
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

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

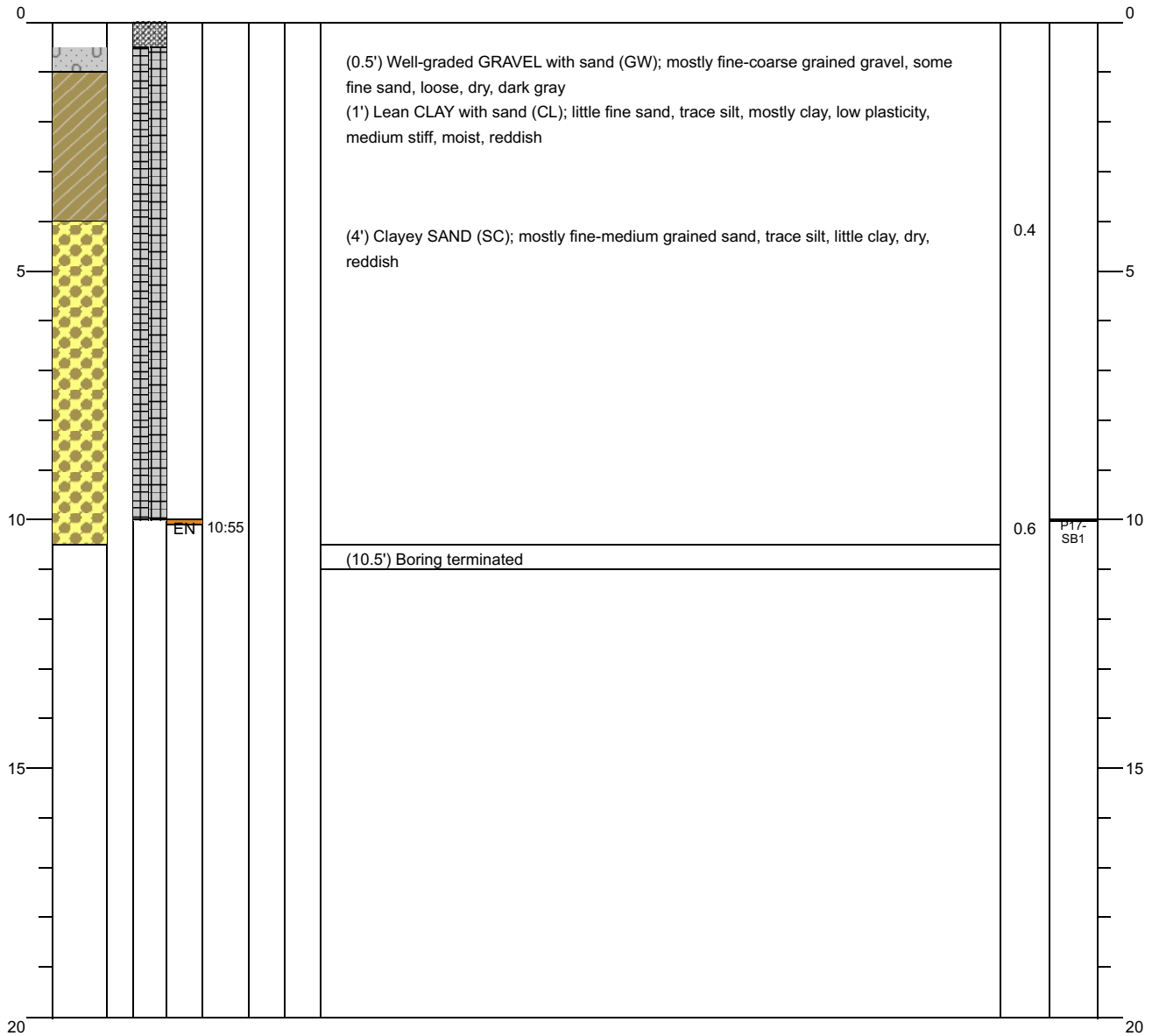
DATE: 5-16-2022	REVISION NO. 0
PYRAMID PROJECT NO. 2022-108	FIGURE NO. 4

APPENDIX B

SOIL BORING LOGS

	Client: NC DOT	**BORING LOG**
	Project: Parcel 17- Lewisville, NC	**Boring No.** P17-SB1
	Address: 6477 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10.5**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soils Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 17- Lewisville, NC	**Boring No.** P17-SB2
	Address: 6477 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

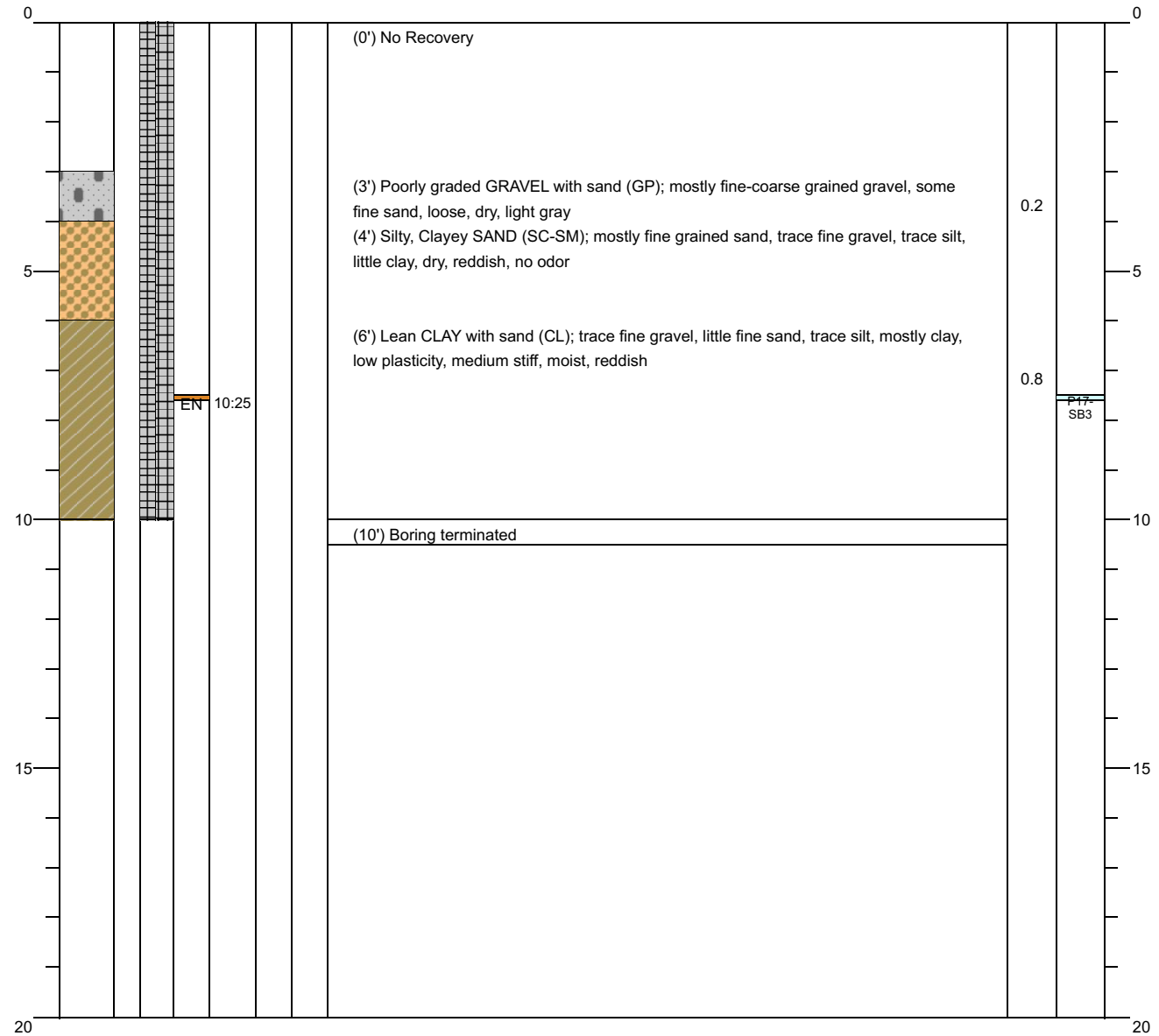
Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soils Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0								(0') Asphalt			0
								(1') Poorly graded SAND with clay (SP-SC); mostly fine-medium grained sand, few fine gravel, little clay, loose, dry, dark gray			
								(2') Clayey SAND (SC); mostly fine grained sand, some clay, loose, dry, dark reddish, no odor, no water			
				EN	10:36				0.8	P17-SB2	
5									0.6		5
10								(10') Boring terminated			10
15											15
20											20

NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 17- Lewisville, NC	**Boring No.** P17-SB3
	Address: 6477 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soils Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 17- Lewisville, NC	**Boring No.** P17-SB4
	Address: 6477 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soils Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0								(0') Asphalt (0.5') Poorly graded GRAVEL with sand (GP); mostly coarse grained gravel, some fine sand, very loose, dry, dark gray (1') Clayey SAND with gravel (SC); mostly fine grained sand, little fine-coarse gravel, some clay, dry, reddish	0.6		0
				EN	10:00					P17-SB4	
5									0		5
10								(10') Boring terminated			10
15											15
20											20

NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 17- Lewisville, NC	**Boring No.** P17-SB5
	Address: 6477 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soils Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0								(0') Asphalt	0		0
								(1') Poorly graded SAND with gravel (SP); mostly fine-medium grained sand, some coarse gravel, trace clay, loose, dry, dark gray			
				EN	09:51					P17-SB5	
5								(5') Silty, Clayey SAND (SC-SM); mostly fine grained sand, trace fine gravel, few silt, some clay, loose, dry, dark reddish	0		5
10								(10') Boring terminated			10
15											15
20											20

NOTES:

APPENDIX C

RED LAB, LLC

LABORATORY ANALYTICAL REPORT

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: CES
Address: 3525 WHITEHALL PARK DR.
CHARLOTTE, NC

Samples taken Monday, May 16, 2022
Samples extracted Monday, May 16, 2022
Samples analysed Friday, May 20, 2022

Contact: GREG HANS

Operator TORI KELLY

Project: 6477 SHALLOW FORD RD

U04049

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	P17-SB5	23.2	<0.58	2.4	2.8	5.2	1.3	<0.19	<0.023	70.6	21.7	7.7	Deg.PHC 90.5%,(FCM),(P)
s	P17-SB4	17.3	<0.43	<0.43	2.3	2.3	1.3	<0.14	<0.017	0	87.2	12.8	Deg.Fuel 72.4%,(FCM)
s	P17-SB3	10.4	<0.26	0.87	0.26	1.13	0.22	<0.08	<0.01	91.7	6.3	2	No Match found
s	P17-SB2	10.0	<0.25	<0.25	0.25	0.25	0.21	<0.08	<0.01	0	67	33	No Match found
s	P17-SB1	17.0	<0.42	1	18.1	19.1	9.7	0.52	<0.017	10.1	83.5	6.3	Deg Fuel 75.8%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 91.2 %

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

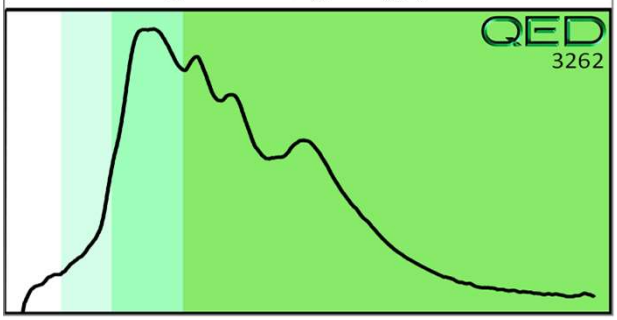
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

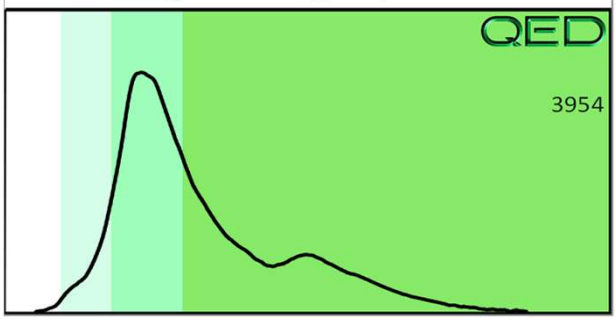
Project: 6477 SHALLOW FORB RD

Friday, May 20, 2022

P17-SB5 : Deg.PHC 90.5%,(FCM),(P)



P17-SB4 : Deg.Fuel 72.4%,(FCM)



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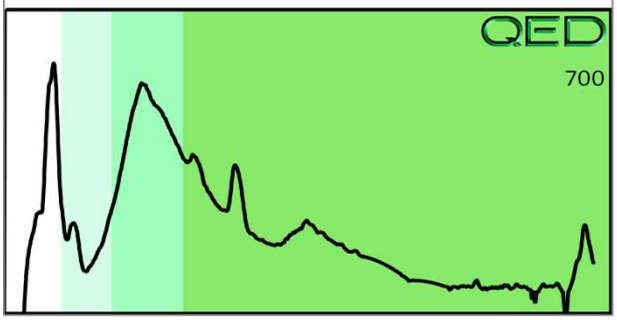

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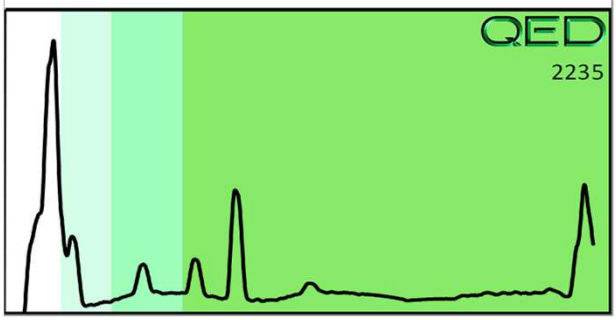
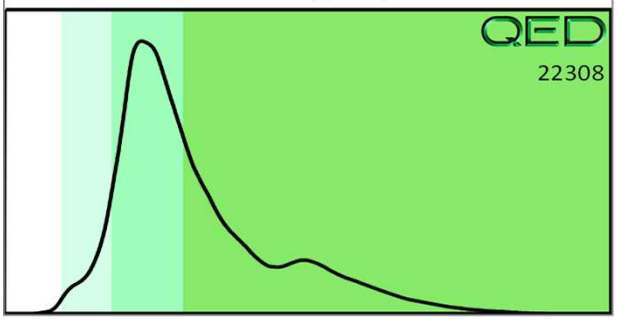


P17-SB1 : Deg Fuel 75.8%,(FCM)



Client Name:	NCDOT / CES
Address:	3525 Whitehall Park Dr. Charlotte, NC
Contact:	Greg Hans
Project Ref.:	6477 Shallow Ford RD
Email:	ghans@ces-group.net
Phone #:	
Collected by:	Dawn Crowell

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
Date/Time	24 Hour	48 Hour	UVF	GC					
5-16-22/0950		✓	✓		DFC	P17-SB5	54.7	43.5	11.2
5-16-22/1000		✓	✓		DFC	P17-SB4	58.8	43.8	15
5-16-22/1025		✓	✓		DFC	P17-SB3	57.2	43.7	13.5
5-16-22/1036		✓	✓		DFC	P17-SB2	57.7	43.7	14
5-16-22/1058		✓	✓		DFC	P17-SB1	58.7	43.4	15.3

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
	5/19/22		
Relinquished by		Accepted by	Date/Time
		VK	5/20 12pm

RED Lab USE ONLY

(5)

Ref. No 5-2022-3

APPENDIX D

PHOTOGRAPHIC LOG

Figure 1 Parcel 17, center of the property at the former UST area. View along the eastern portion of the property along Shallowford Road.

Figure 2 Parcel 17, center of the property at the former UST area. View along the western portion of the property along Shallowford Road.

Figure 3 Parcel 17 SB-2 and SB-1 NC811 and Pyramid utility mark outs, within the right-of-way along Shallowford Road.

Figure 4 Parcel 17 SB-4 NC 811 and Pyramid utility mark outs, within the center of the property.

Figure 5 Parcel 17 SB-5 NC 811 and Pyramid utility mark outs, within the eastern portion of the property along the tree line.

ENGINEERS PLANNERS SURVEYORS SCIENTISTS

CHARLOTTE, NC

COLUMBIA, SC

www.ces-group.net

July 1, 2022

TRANSMITTED VIA EMAIL

Craig Haden
GeoEnvironmental Project Engineer
Geotechnical Engineering Unit
North Carolina Department of Transportation
1020 Birch Ridge Drive
Raleigh, NC 27610

RE: Phase II Investigation
D. D. Stimson, Jr Property – Parcel # 31
6373 Shallowford Road, Lewisville, Forsyth County, NC
NCDOT TIP Number: U-5536
NCDOT WBS Number: 44108.1.2
CES Project Number: 7893.0422E

Dear Mr. Haden:

Please find attached an electronic copy of the Phase II Investigation Report for the D. D. Stimson, Jr Property, identified as Parcel # 31, located at 6373 Lewisville Road, Lewisville, Forsyth County, North Carolina. This Phase II Investigation was performed in accordance with our Technical and Cost Proposal, dated April 7, 2022, and was initiated by a Notice to Proceed (NTP), issued by NCDOT on April 12, 2022, under our GeoEnvironmental Contract, No.: 7000020453, dated April 20, 2020.

Upon your review, please return via DocuSign for final signatures.

Should you have any questions in regards to this Phase II Investigation, please do not hesitate to contact me at (704) 325-5408.

Regards,

CES Group Engineers, LLP.

Greg Hans, PMP
Environmental Project Manager/
Environmental Division Manager

Charles Heleine, PE, REPA
Senior Environmental Engineer

Enclosures: Phase II Investigation Report

ENGINEERS PLANNERS SURVEYORS SCIENTISTS

PHASE II INVESTIGATION

NCDOT TIP Number: U-5536
NCDOT WBS Number: 44108.1.2
D.D. Stimson Jr. Property: Parcel # 31
6373 Shallowford Road
Lewisville, Forsyth County, North Carolina

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, North Carolina 27610

Prepared by:

CES Group Engineers, LLP
3525 Whitehall Park Drive, Suite 150
Charlotte, North Carolina 28273

CES Project No.: 7893.0422E

July 1, 2022

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FIGURE 2	SITE MAP
FIGURE 3	SOIL ANALYTICAL MAP

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APPENDIX B	SOIL BORING LOGS
APPENDIX C	LABORATORY ANALYTICAL REPORT
APPENDIX D	PHOTOGRAPHIC LOG

1.0 INTRODUCTION

CES Group Engineers, LLP (CES) has prepared this Phase II Investigation Report documenting the performance of field assessment activities on the central portion of the D.D. Stimson, Jr property, further identified as North Carolina Department of Transportation (NCDOT) Parcel 31, which is located at 6373 Shallowford Road, Lewisville, Forsyth County, North Carolina (the subject site). This Phase II Investigation was performed in accordance with our Technical Cost Proposal dated April 7, 2022, and was initiated by a Notice to Proceed (NTP), issued by NCDOT on April 12, 2022, under our GeoEnvironmental Contract No. 7000020453, dated April 20 2020.

The scope of work performed by CES for this Phase II Investigation included a geophysical survey to locate all known, possible and probable underground storage tanks (USTs), followed by a subsurface soil investigation that include the installation of six soil borings to evaluate the potential for contamination to exist within the construction limits located at 6373 Shallowford Road.

A Site Location Map is included as Figure 1.

1.1 Site History and Description

The subject site is a secondary property located on the central portion of 6373 Shallowford Road, Lewisville, Forsyth County, North Carolina. The front portion of the property located along Shallowford Road is utilized for commercial retail purposes as a market, with the central portion of the property presumably used as an automotive or motorcycle workshop and/or repair facility and the rear portion of the property is utilized for residential purposes. The subject site primarily consists of one single story building with a concrete pad, canopy (awning), asphalt-paved areas in disrepair and grass and landscaped areas. The gradient of the subject site slopes to the north. According to aerial images provided by Historic Aerials and Google Earth, structures, including on the central portion, were observed to be present at the subject site from the years 1982 to present day. Nearby and surrounding properties were observed to be utilized for commercial, residential, municipal and institutional purposes.

A review of the North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management GIS Site Locator Tool resulted in finding the subject site was not listed in the online databases associated with debris, USTs, dry cleaning solvents, hazardous waste, inactive hazardous wastes, landfills or brownfields.

2.0 PHASE II FIELD ACTIVITIES

2.1 Geophysical Survey

On May 10 and May 11, 2022, Pyramid Environmental & Engineering, PC (Pyramid) of Greensboro, North Carolina, conducted a geophysical survey to locate all known, possible or probable USTs within the subject site by performing electromagnetic (EM) and ground penetrating radar (GPR) surveys. The EM survey data was collected using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The GPR survey data was collected using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 control unit coupled to a 350 MHz HS antenna.

The results of the collected geophysical (EM and GPR) recorded evidence of one no confidence anomaly at Parcel 31, with no evidence of unknown metallic USTs observed. During the geophysical survey, four metallic anomalies were identified by the EM survey and were attributed to visible cultural features at the ground surface. The no confidence anomaly (#1) may be attributed to a buried septic tank located beneath a metal hatch, and was further investigated with GPR, which did not record a significant structure such as an UST.

Pyramid's geophysical survey report, including site map(s) depicting the survey area and results, is attached as Appendix A.

2.2 Soil Boring Investigation

On May 16, 2022, Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina, under the direction of an onsite CES Environmental Scientist, installed six soil borings P31-SB6 through P31-SB11 to a maximum depth of ten feet below surface grade (bsg), utilizing a track mounted geoprobe rig, Model 6712DT**,** to evaluate the potential for contamination to exist within the anticipated construction limits on the central portion of 6373 Shallowford Road. Prior to the installation of the three soil borings, on May 2, 2022, CES utilized a Trimble R8s GNSS/GPS unit to pre-mark each boring in exact locations proposed on NCDOT provided plan sheets (PSH 6), and then collected GPS coordinates. In addition, underground utilities were cleared through the NC 811 public locating service, and by Pyramid during the GPR portion of the geophysical survey.

During the advancement of the six soil borings, the CES Environmental Scientist field screened encountered soils with a MiniRAE 3000 Photoionization Detector (PID), calibrated by Eastern Solutions LLC on May 10, 2022, for the presence of volatile organic compounds (VOCs), to facilitate the selection of one soil sample from each boring for subsequent laboratory analysis. PID measurements below the detection limit of 5 ppmv were identified as non-detect (ND). Groundwater was not encountered during the installation of the six soil borings. No existing groundwater monitoring wells were observed on the central portion of 6373 Shallowford Road.

Based on the field screening data collected, the PID measurements from soil borings P31-SB6 through P17-SB11, were reported as ND. No petroleum odors or stained soils were observed in any of the soil samples collected from the three soil borings.

Upon completion of the six soil borings, each boring location was backfilled to grade with generated drill cuttings and a sand and/or Asphalt Hole Plug, by CSI.

Prior to the installation of the six soil borings, on May 2, 2022, CES utilized a Trimble R8s GNSS/GPS unit to pre-mark each boring in exact locations proposed on NCDOT provided plan

sheets (PSH 6), and then collected GPS coordinates. However, due to a request from the property owner, soil boring P31-SB7 was moved approximately four (4) feet to the east, off of the concrete pad, and was installed within the broken-up asphalt-pavement.

Figure 2 depicts the locations of soil borings P31-SB6 through P31-SB11. GPS coordinates and PID measurements for each soil boring are included on Table 1 and Table 2, respectively. Soil boring logs are provided in Appendix B.

2.3 Soil Sampling and Laboratory Analytical Results

Upon completion of each boring, the soil sample exhibiting the highest PID measurement, or the soil sample from zero to 5-feet bsg or five to 10-feet bsg if the PID measurements were reported as ND, was collected in laboratory provided vials containing 20 mL of methanol and stored on ice. The samples were shipped at the close of sampling activities on Thursday May 19, 2022 under chain-of-custody (COC) procedures to Red Lab, LLC of Wilmington, North Carolina, for laboratory analysis for petroleum hydrocarbons via the QED Ultraviolet Florescence (UVF) methodology, which includes BTEX, GRO, DRO, TPH, Total Aromatics, 16 EPA PAHs, BaP and identification of specific hydrocarbons (HC).

Laboratory analytical results indicated that concentrations of DRO and/or GRO were reported above laboratory detection limits, but below NCDEQ Action Levels, in soil borings P31-SB6 through P31-SB10. The maximum reported DRO and GRO concentrations were reported as follows:

- DRO at 46.1 mg/kg from a soil sample collected from soil boring P31-SB8, at a depth of approximately 4-feet bsg; and
- GRO at 0.55 mg/kg from a soil sample collected from soil boring P31-SB8, at a depth of approximately 4-feet bsg.

Figure 2 depicts the location of soil borings P31-SB6 through P31-SB11, with soil analytical results and depth of collected samples depicted on Figure 3. Table 2 summarizes soil laboratory analytical results, including the depth of each collected soil sample with corresponding PID measurements. The Red Lab, LLC soil laboratory analytical reports are included in Appendix C. A photographic log depicting site and soil boring locations is included in Appendix D.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The results of the collected geophysical (EM and GPR) data recorded evidence of one no confidence anomaly at Parcel 31, which may be attributed to a septic tank located underneath a metal hatch, and with no evidence of unknown metallic USTs observed.

Laboratory analytical results indicated that concentrations of DRO and/or GRO were reported above laboratory detection limits, but below NCDEQ Action Levels, in soil borings P31-SB6 through P31-SB10. The maximum reported DRO and GRO concentrations were reported as follows:

- DRO at 46.1 mg/kg from a soil sample collected from soil boring P31-SB8, at a depth of approximately 4-feet bsg; and
- GRO at 0.55 mg/kg from a soil sample collected from soil boring P31-SB8, at a depth of approximately 4-feet bsg.

This Phase II Investigation concluded that soils impacted with petroleum constituents are present at Parcel 31 at levels below NCDEQ Action Levels. This conclusion was based on laboratory analytical results reporting concentrations of DRO and GRO above the laboratory detection limits (but below NCDEQ Action Levels) in soil borings P31-SB6 through P31-SB10.

3.2 Recommendations

During planning of construction activities in work areas generally located near P31-SB6 through P31-SB10, and potentially in other unexplored areas of Parcel 31, as depicted on the provided NCDOT preliminary plan sheets, it is recommended that encountered soils impacted with petroleum constituents be properly handled and managed in the field, and disposed of by contractors in accordance with applicable state regulations.

4.0 SIGNATURE PAGES

This Phase II Investigation Report was prepared by:

DocuSigned by:
BE8ABC48C6D1471...

07/12/2022

Dawn F. Crowell, MELP, CMCSI
Environmental Scientist/Project Manager
CES Group Engineers, LLP

This Phase II Investigation Report was reviewed by:

DocuSigned by:
Greg Hans
17CA85CB2CDF4C7...

07/12/2022

Greg Hans, PMP
Environmental Division Manager
CES Group Engineers, LLP

This Phase II Investigation Report was reviewed and approved by:

DocuSigned by:
Charles Heleine
0E4F07A7BE324CD...

07/13/2022

Charles Heleine, PE, REPA
Senior Environmental Engineer
CES Group Engineers, LLP.

Electronic Seal/Signature

TABLES

Table 1
Soil Boring GPS Coordinate Data
NCDOT TIP Number: U-5536
NCDOT WBS Numberl 44108.1.2
D.D. Stimson Jr. Property: Parcel # 31
6373 Shallowford Road
Lewisville, Forsyth County, North Carolina

Sample ID	Date Collected (m/dd/yy)	Latitude	Longitude
P31-SB6	5/16/2022	36.0987264	-80.4174714
P31-SB7 *	5/16/2022	36.09879	-80.41727
P31-SB8	5/16/2022	36.0988366	-80.4171788
P31-SB9	5/16/2022	36.0988921	-80.4173200
P31-SB10	5/16/2022	36.0989562	-80.4173616
P31-SB11	5/16/2022	36.0989712	-80.4172769

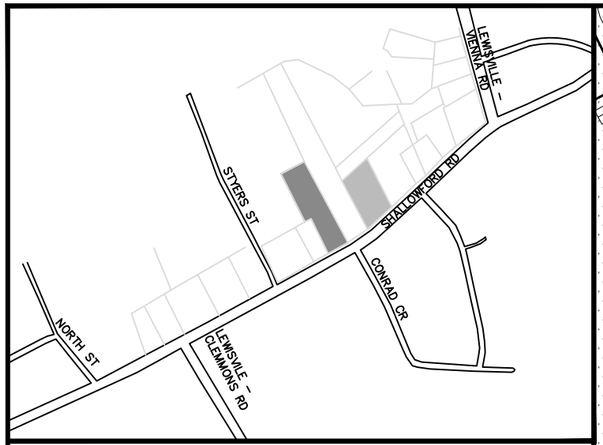
* Approximate GPS coordinates as boring moved in field due to property owner request

Table 2
Summary of Soil Analytical Results
NCDOT TIP Number: U-5536
NCDOT WBS Numberl 44108.1.2
D.D. Stimson, Jr. Property: Parcel # 31
6373 Shallowford Road
Lewisville, Forsyth County, North Carolina

					Analytical Method	UVF	UVF	UVF
					COC	TPH-DRO	TPH-GRO	HC Fingerprints
Sample ID	Date Collected (m/dd/yy)	Sample Area	Sample Depth	PID (ppmv)		mg/kg	mg/kg	
P31-SB6	5/16/2022	Front of property entrance	9.8	0.8 at 1.5-ft / 1.1 at 10-ft		0.26	<0.26	No Match found
P31-SB7	5/16/2022	Adjacent to concrete pad	8.5	1.2 at 5 -ft / 1.6 at 8.5-ft		0.61	<0.38	Deg.PHC 74%
P31-SB8	5/16/2022	Paved roadway	4	0.0 at 3-ft / 0.0 at 6-ft		46.1	0.55	V.Deg.PHC 84%
P31-SB9	5/16/2022	Adjacent to canopy	2	1.7 at 2-ft / 0.7 at 7.5-ft		0.35	<0.35	Deg.PHC 61.2%
P31-SB10	5/16/2022	Grass area near canopy	4.7	1.5 at 4-ft / 1.4 at 9-ft		0.7	<0.48	V.Deg.PHC 89.7%
P31-SB11	5/16/2022	Grass area near roadway	6	0.8 at 3-ft / 0.8 at 8-ft		<0.18	<0.18	No Match found
					Initial NCDEQ Action Levels for Contamination (mg/kg)	100	50	N/A

P#-SB# = Parcel Number - Soil Boring Number
mg/kg = miligrams per kilogram
PID = photoionization detector
ppmv = parts per million per volume
N/A = not applicable
Soil anlaysis performed by Red Lab, LLC of Wilmington, NC with results generated by a QED HC-1 analyzer

FIGURES



VICINITY MAP
(NOT TO SCALE)

LEGEND:

- BORING LOCATION
- PARCEL BOUNDARY
- MTW – EXISTING MONITOR WELL

SAMPLE–PARCEL – BORING–ID
SAMPLE DEPTH – BORING DEPTH
DRO – CONCENTRATION
GRO – CONSTITUENT

** – BORING SAMPLE LOCATION MOVED PER PROPERTY OWNER OR DUE TO UTILITY CONFLICT.

DORSEY D STIMSON TESTAMENTARY TRUST & DORSEY D STIMSON DB 2014E PG 1005

DORIS B STIMSON DB 2100 PG 1422

DORSEY D STIMSON BACK REF: DB 170 PG 25 PB 2 PG31

TOWN OF LEWISVILLE DB 1918 PG 1321

CAROLYN S SHORE DB 2014E PG 1005

DORSEY D STIMSON DB 1821 PG 1182

D D STIMSON & CAROLYN S SHORE DB 2423 PG 1371

Sample: P31–SB11
Sample Depth 6'
DRO: <0.18
DRP: <0.18

Sample: P31–SB10
Sample Depth 4.7'
DRO: 0.7
DRP: <0.48

Sample: P31–SB9
Sample Depth 2'
DRO: 0.35
DRP: <0.35

Sample: P31–SB6
Sample Depth 9.8'
DRO: 0.26
DRP: <0.26

Sample: P31–SB7**
Sample Depth 8.5'
DRO: 0.61
DRP: <0.38

Sample: P31–SB8
Sample Depth 4'
DRO: 46.1
DRP: 0.55

Sample: P34–SB13
Sample Depth 6'
DRO: <0.2
DRP: 0.74

Sample: P34–SB12
Sample Depth 2'
DRO: 0.62
DRP: <0.36

THIS DRAWING IS FOR EXHIBIT PURPOSES ONLY. IT IS TO SHOW RELATIVE LOCATIONS OF SOIL SAMPLE LOCATIONS AS SHOWN HEREON. IT IS NOT MEANT FOR CONVEYANCES, SALES OR RECORDING. NO BOUNDARY WORK, RESEARCH OR UTILITY LOCATIONS WERE DONE WITHIN THE SCOPE OF THIS EXHIBIT. ALL LOCATIONS AND PARCEL LINES ARE APPROXIMATE AND NOT TO SCALE.

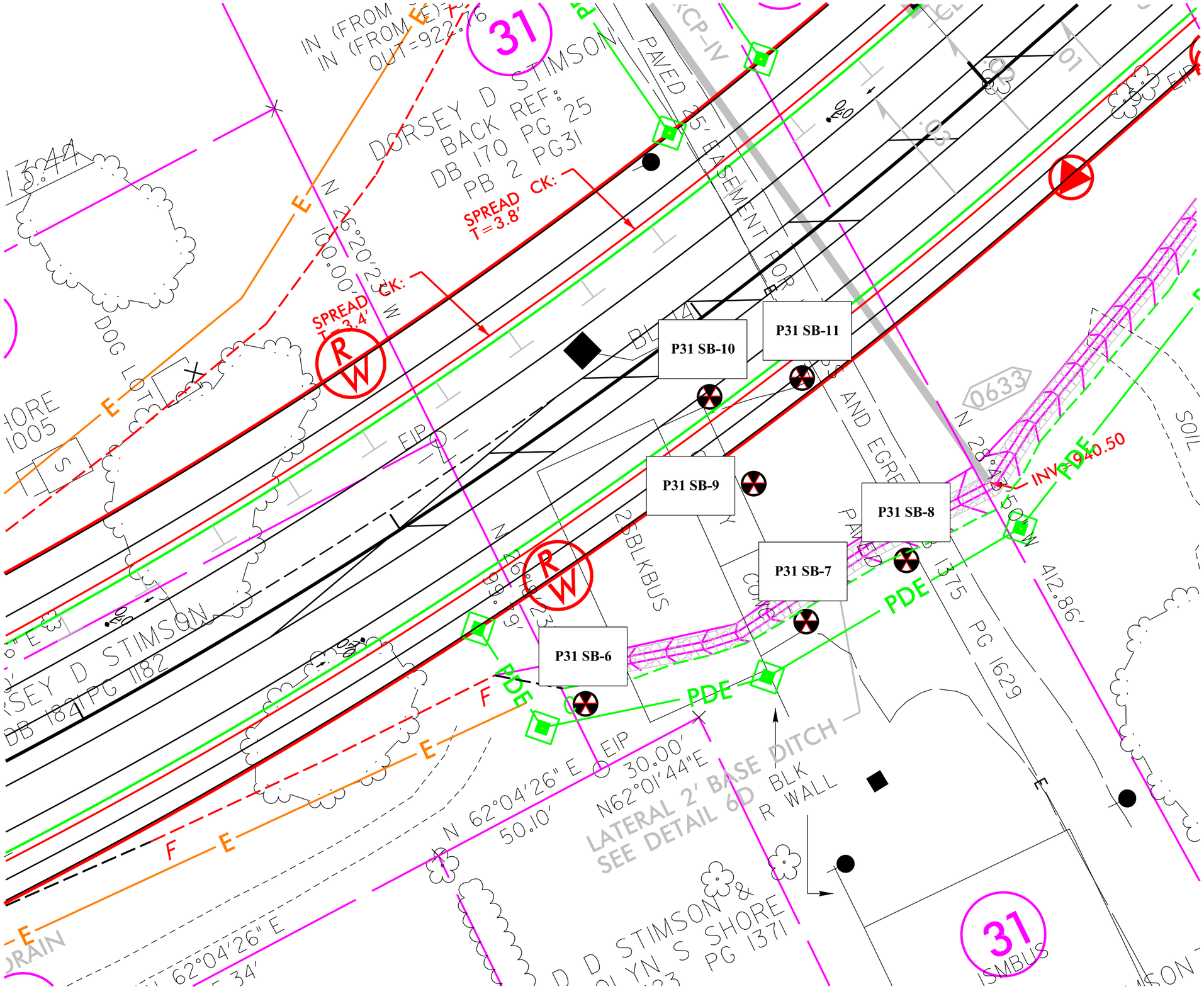
OWNER/PREPARED FOR:
NCDOT

CES GROUP
ENGINEERS, LLP
NC FIRM LICENSE# F-1240
3525 WHITEHALL PARK DRIVE, SUITE 150
CHARLOTTE, NC 28273
T 704.489.1500
www.ces-group.net

EXHIBIT SURVEY
PARCEL NO. 31
ENVIRONMENTAL
SAMPLE LOCATIONS
U-5536

DRAWN BY:	JES
CHECKED BY:	JES
PROJECT NUMBER:	7893
SCALE:	1" = 40'
DATE:	5/31/2022
TAX PARCEL:	5885-17-2960.00
DRAWING:	7893-EXHIBITS.dwg

SHEET: 1



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED DRAINAGE EASEMENT
- SOIL BORING LOCATION

0 15 30
FEET

N

TITLE
SITE MAP

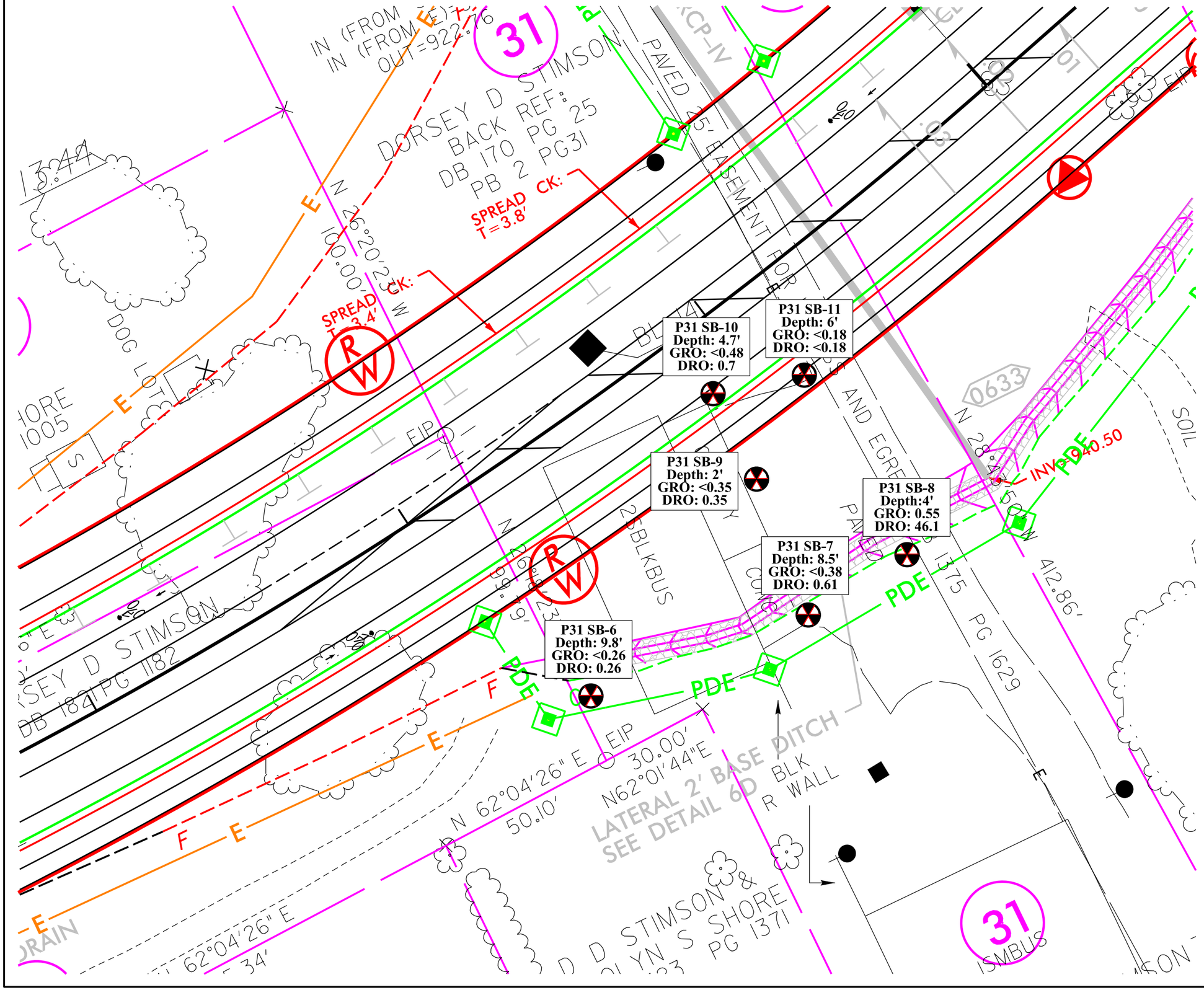
PROJECT
PARCEL 31
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

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

DATE: 6-22-2022

REVISION NO. 0

FIGURE NO. 2



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED DRAINAGE EASEMENT
- SOIL BORING LOCATION

PX(Y)	PARCEL#(BORING#)
DRO	DIESEL RANGE ORGANICS*
GRO	GASOLINE RANGE ORGANICS*

*ALL CONCENTRATIONS PRESENTED IN mg/kg

0 15 30
FEET

N

TITLE
SOIL ANALYTICAL MAP

PROJECT
PARCEL 31
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

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

DATE: 6-22-2022
REVISION NO. 0
FIGURE NO. 3

APPENDIX A

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

GEOPHYSICAL SURVEY REPORT

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2022-108)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 31
NCDOT PROJECT U-5536 (44108.1.2)

6373 SHALLOWFORD ROAD, LEWISVILLE, NC

May 17, 2022

Report prepared for: **Greg Hans, PMP**
CES Group Engineers, LLP
274 North Highway 16 Business, Suite 300
Denver, NC 28037

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 31 – 6373 Shallowford Road
Lewisville, Forsyth County, North Carolina

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Discussion of EM Results 3
Discussion of GPR Results 4
Summary & Conclusions 4
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Figure 1 – Parcel 31 - Geophysical Survey Boundaries and Site Photographs
Figure 2 – Parcel 31 - EM61 Metal Detection Contour Map
Figure 3 – Parcel 31 - GPR Transect Locations and Select Images
Figure 4 – Parcel 31 - Location and Size of One No Confidence Anomaly
Figure 5 – Overlay of Metal Detection Results and One No Confidence Anomaly on NCDOT Engineering Plans

Appendices

Appendix A – GPR Transect Images

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 Geophysical Services (Pyramid), a department within Pyramid Environmental & Engineering, P.C., conducted a geophysical investigation for CES Group Engineers, LLP (CES) at Parcel 31, located at 6373 Shallowford Road, in Lewisville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5536). The survey was designed to extend across all accessible portions of the parcel indicated to Pyramid by CES. Conducted on from May 10-11, 2022, 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 four EM anomalies were identified. All of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR was performed around all sources of significant metallic interference to confirm that the interference did not obscure any significant structures such as USTs. The geophysical survey identified evidence of utilities and/or buried debris.

One no confidence anomaly was located underneath the awning on the east side of the building beneath a metal hatch. No Confidence Anomaly #1 is approximately 10 feet long by 4.5 feet wide. This anomaly may be associated with a buried septic tank. Collectively, the geophysical data recorded evidence of one no confidence anomaly at Parcel 31. No evidence of unknown metallic USTs was observed.

INTRODUCTION

Pyramid Geophysical Services (Pyramid), a department within Pyramid Environmental & Engineering, P.C., conducted a geophysical investigation for CES at Parcel 31, located at 6373 Shallowford Road, in Lewisville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5536). The survey was designed to extend across all accessible portions of the parcel indicated to Pyramid by CES. Conducted on from May 10-11, 2022, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site consisted of one building surrounded by grass and asphalt surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs is 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 May 11, 2022, using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 control unit coupled to a 350 MHz HS 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 SIR 4000 unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the SIR 4000 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	Barrel	
2	Building/Metal Objects on Ground	✓
3	Barrel	
4	Vehicle	

All of the EM anomalies were directly attributed to visible cultural features at the ground surface, including barrels, the building, metal objects on the ground, and a vehicle. GPR was performed around areas of significant metallic interference to confirm that the metallic interference did not obscure any significant 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 select transect images. All of the transect images are included in **Appendix A**. A total of eight formal GPR transects were performed at the site.

GPR Transects 1-8 were performed across areas of significant metallic interference. These transects showed evidence of possible buried debris and/or utilities. GPR Transects 3 and 5 showed evidence of flat, horizontal reflectors more consistent with a septic tank than a UST. Given the inconclusive radar data and the metal on the ground (a metal hatch) interfering with any possible metallic response from this feature, this feature has been classified as a no confidence anomaly. No Confidence Anomaly #1 is approximately 10 feet long by 4.5 feet wide. **Figure 4** provides the location and size of one no confidence anomaly overlain on an aerial, along with a ground-level photograph.

Collectively, the geophysical data recorded evidence of one no confidence anomaly at Parcel 31. **Figure 5** provides an overlay of the metal detection results and one no confidence anomaly onto the NCDOT Engineering plans.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 31 in Lewisville, 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.
- All of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- GPR was performed around all sources of significant metallic interference to confirm that the interference did not obscure any significant structures such as USTs.
- The geophysical survey identified evidence of utilities and/or buried debris.
- One no confidence anomaly was located underneath the awning on the east side of the building beneath a metal hatch. No Confidence Anomaly #1 is approximately 10 feet long by 4.5 feet wide.
- Collectively, the geophysical data recorded evidence of one no confidence anomaly at Parcel 31. No evidence of unknown metallic USTs was observed.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for CES Group Engineers, LLP 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)

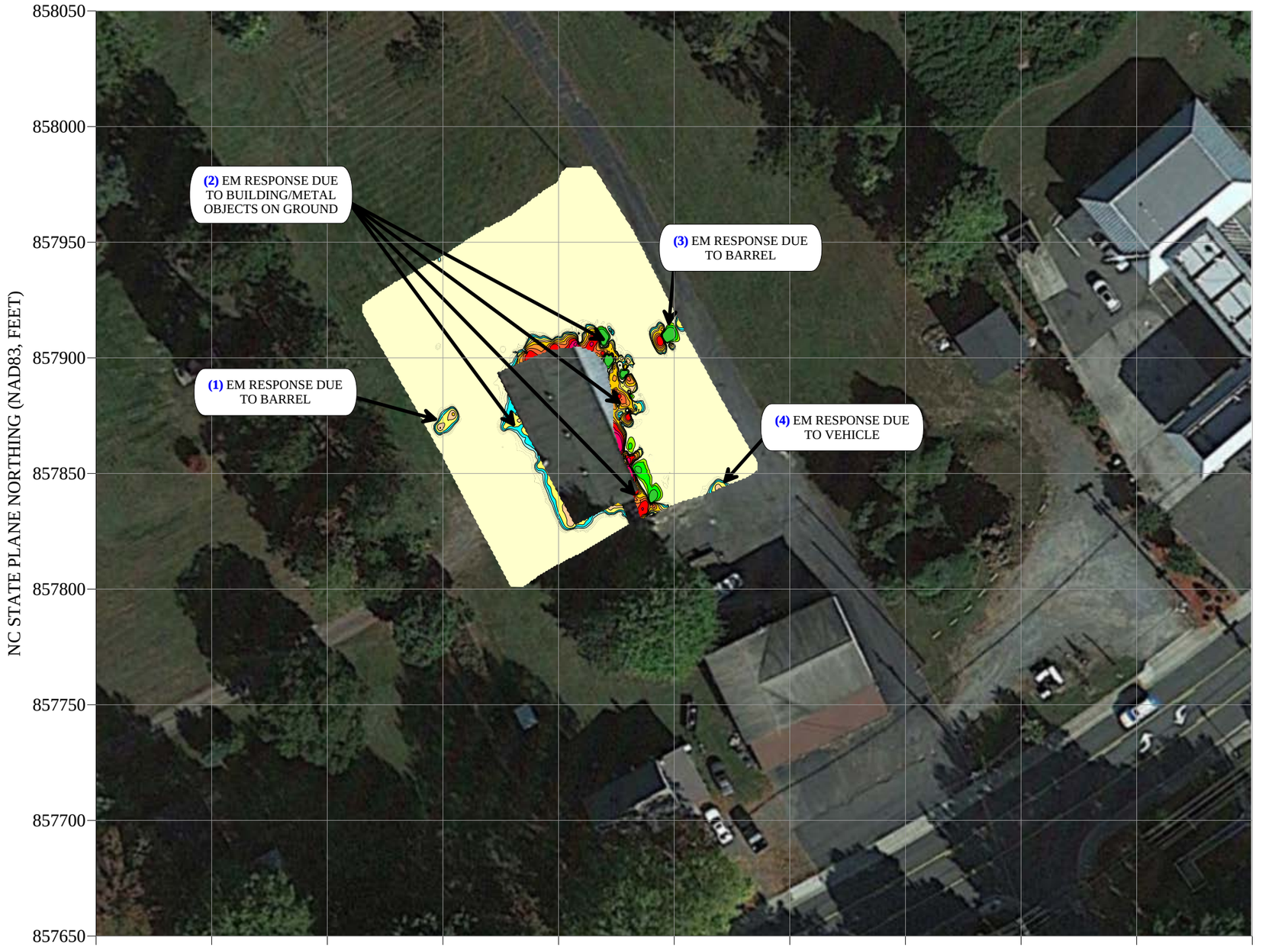
View of Survey Area (Facing Approximately West)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 31 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536
TITLE	PARCEL 31 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	5/11/2022
CLIENT	CES GROUP ENGINEERS
PYRAMID PROJECT #:	2022-108
	FIGURE 1

EM61 METAL DETECTION RESULTS



EVIDENCE OF ONE NO CONFIDENCE ANOMALY WAS 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 May 10, 2022, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI SIR 4000 instrument with a 350 MHz HS antenna on May 11, 2022.

EM61 Metal Detection Response (millivolts)

N

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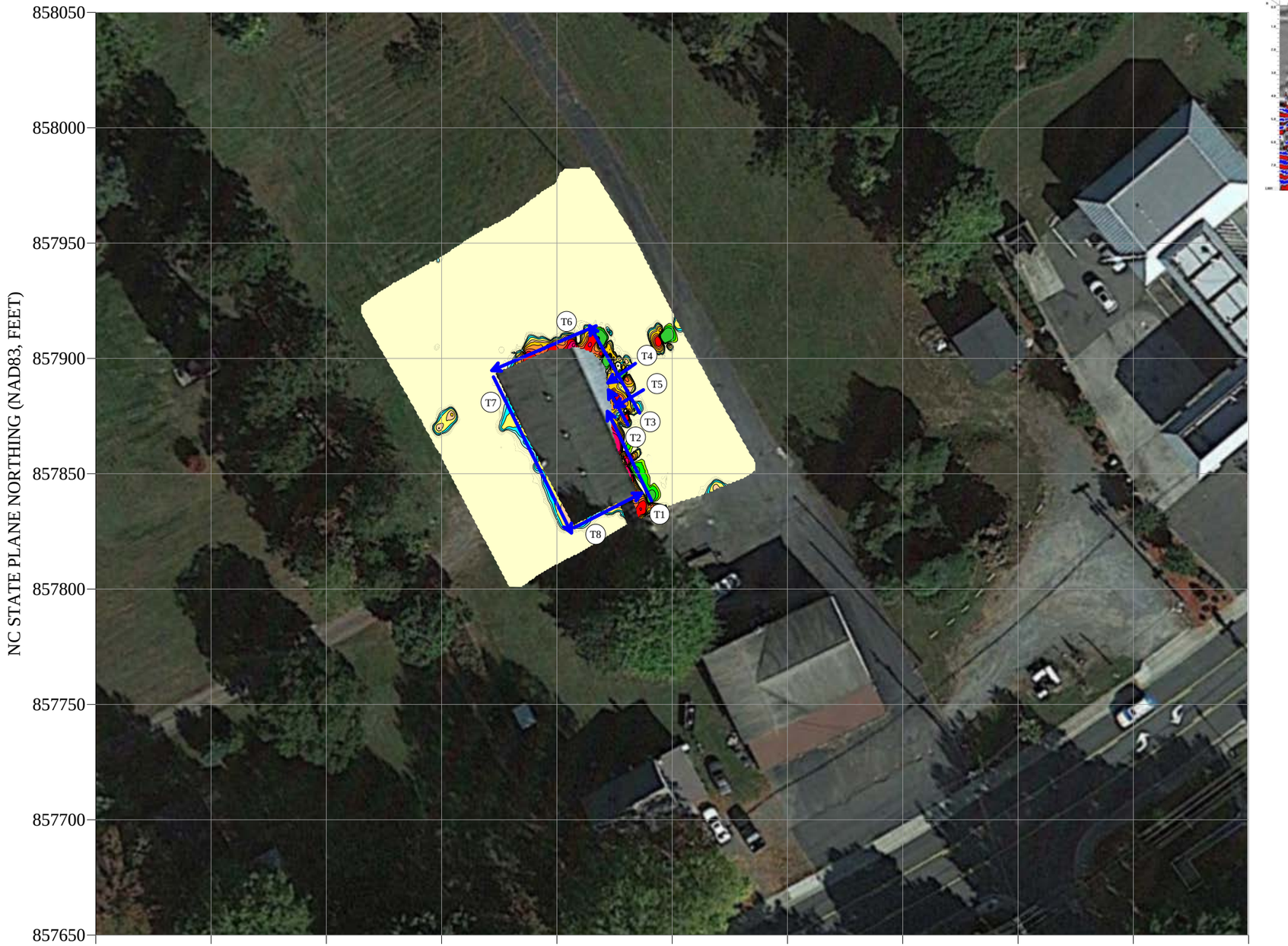
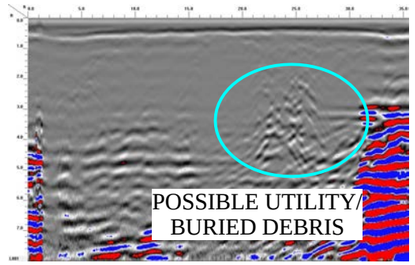
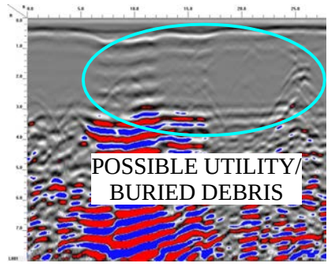
PROJECT	PARCEL 31 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536
TITLE	PARCEL 31 - EM61 METAL DETECTION CONTOUR MAP
DATE	5/11/2022
PYRAMID PROJECT #:	2022-108
CLIENT	CES GROUP ENGINEERS
	FIGURE 2

GPR TRANSECT LOCATIONS

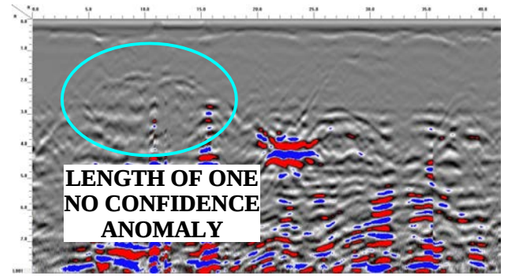




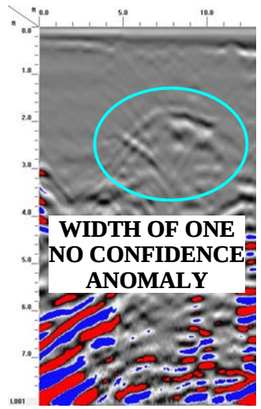
GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 5 (T5)

N

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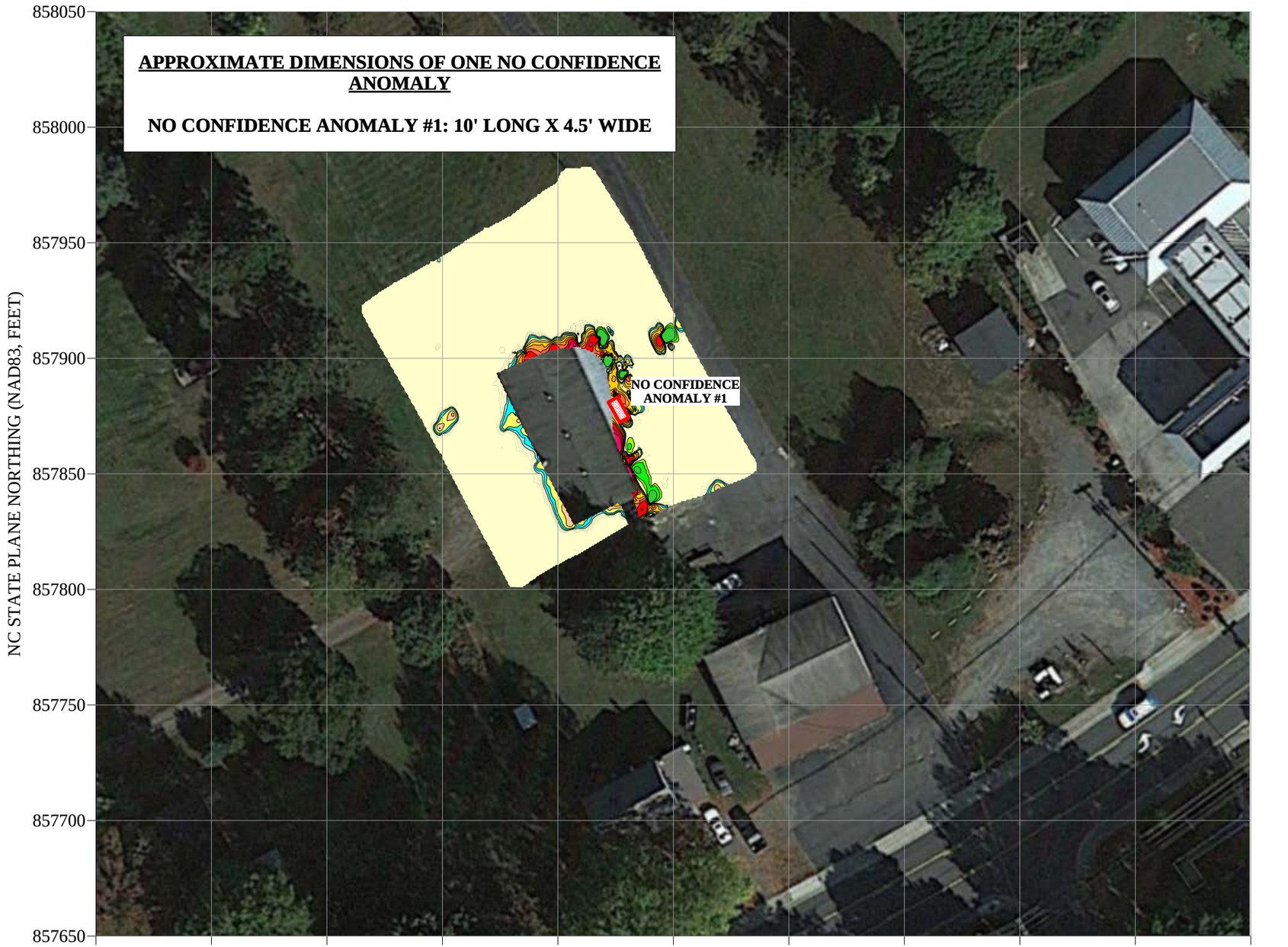
PROJECT	PARCEL 31 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536	TITLE	PARCEL 31 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	DATE 5/11/2022 PYRAMID PROJECT #: 2022-108
CLIENT	CES GROUP ENGINEERS			**FIGURE 3**

LOCATION OF ONE NO CONFIDENCE ANOMALY



View of No Confidence Anomaly
(Facing Approximately North)

N

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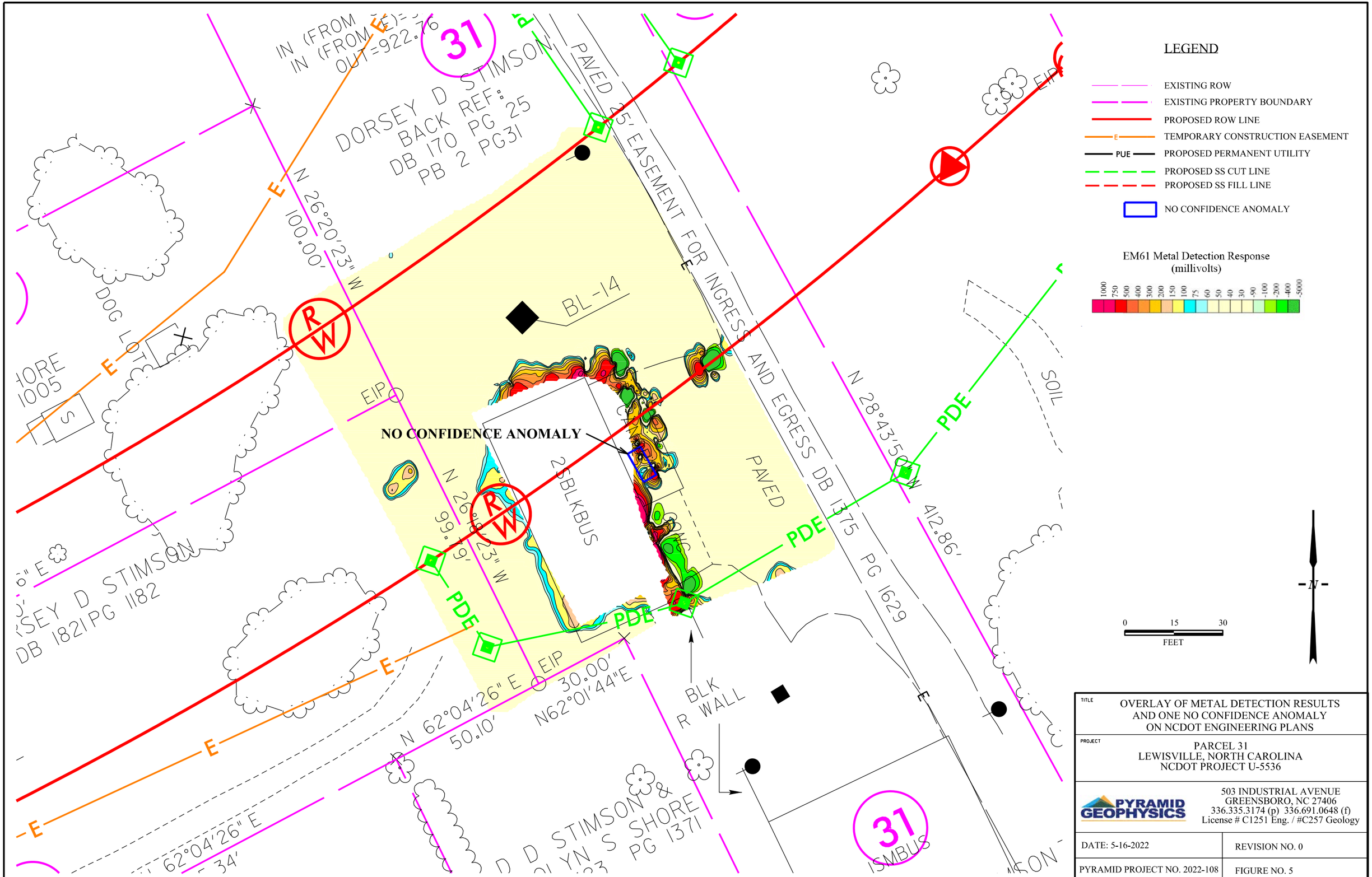
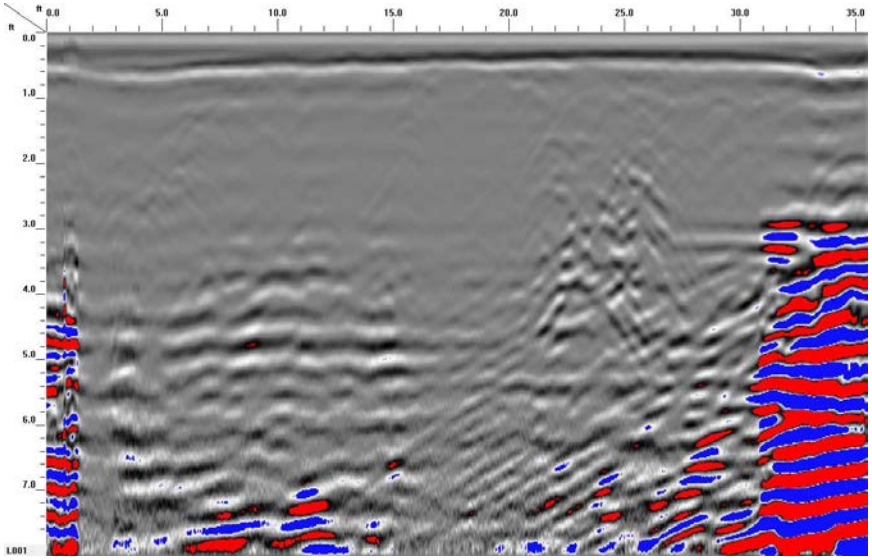
PROJECT	PARCEL 31 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536	TITLE	PARCEL 31 LOCATION AND SIZE OF NO CONFIDENCE ANOMALY	DATE	5/11/2022
				PYRAMID PROJECT #:	2022-108
CLIENT	CES GROUP ENGINEERS				

FIGURE 4

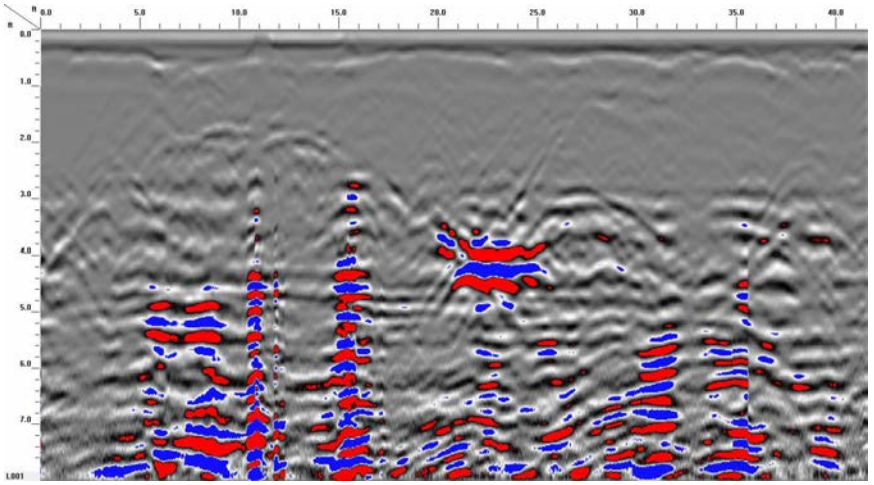


TITLE	OVERLAY OF METAL DETECTION RESULTS AND ONE NO CONFIDENCE ANOMALY ON NCDOT ENGINEERING PLANS
PROJECT	PARCEL 31 LEWISVILLE, NORTH CAROLINA NCDOT PROJECT U-5536
PYRAMID GEOPHYSICS	503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology
DATE: 5-16-2022	REVISION NO. 0
PYRAMID PROJECT NO. 2022-108	FIGURE NO. 5

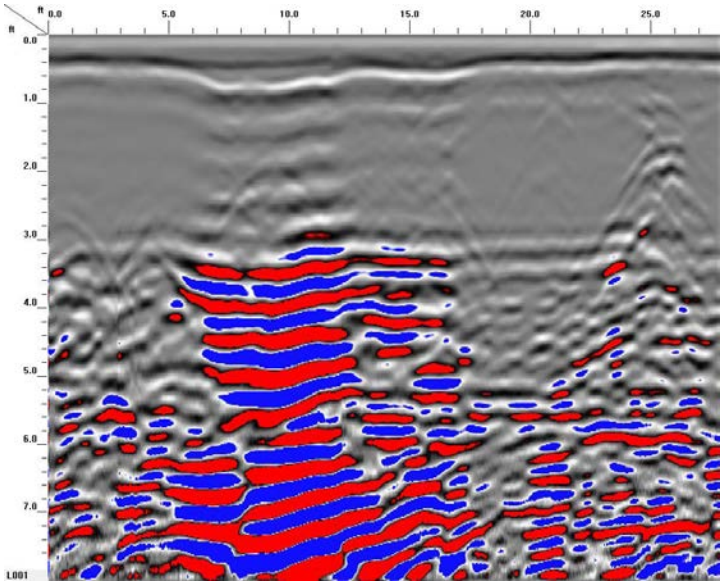
Appendix A – GPR Transect Images



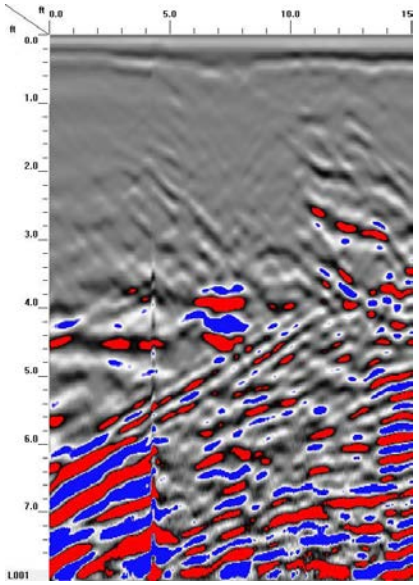
GPR TRANSECT 1



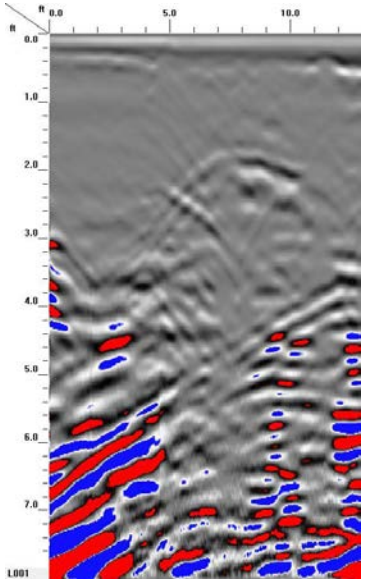
GPR TRANSECT 3



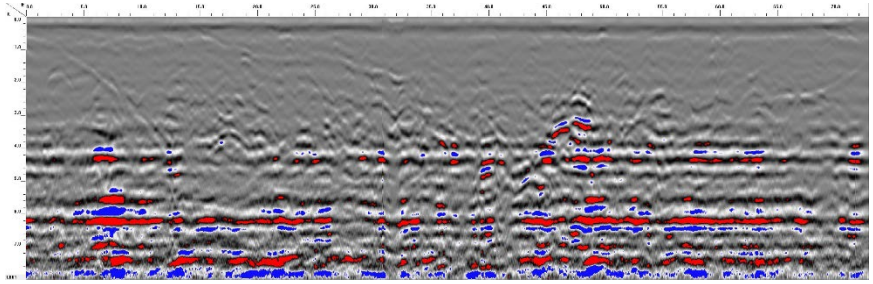
GPR TRANSECT 2



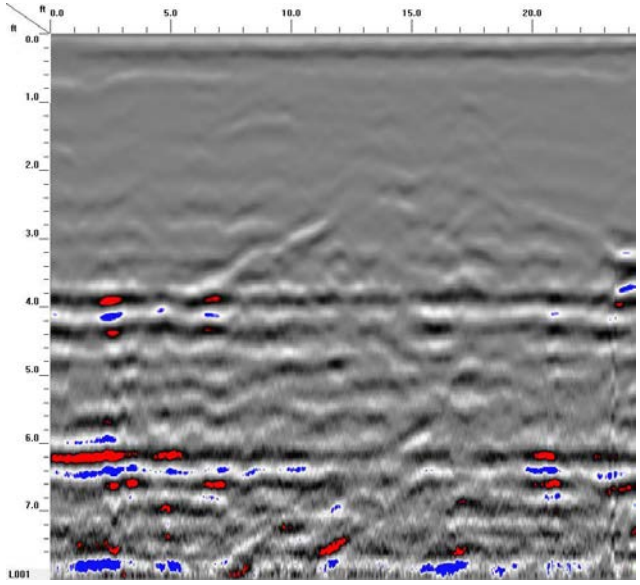
GPR TRANSECT 4



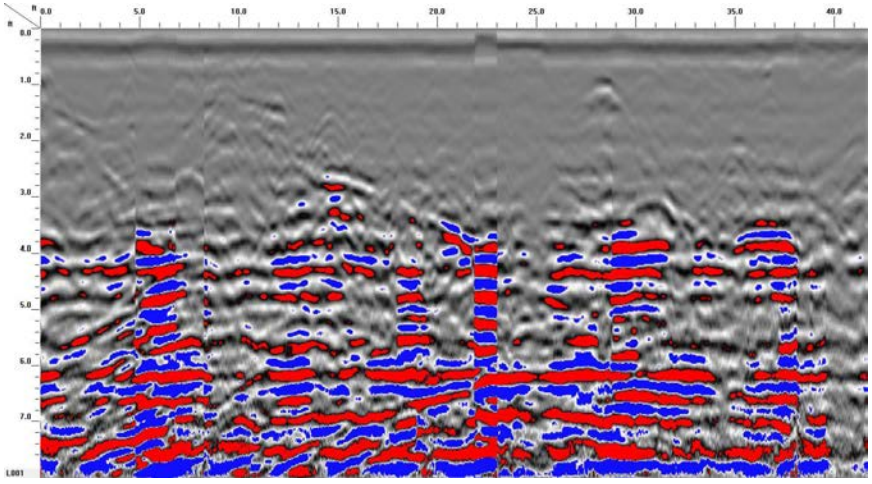
GPR TRANSECT 5



GPR TRANSECT 7



GPR TRANSECT 8



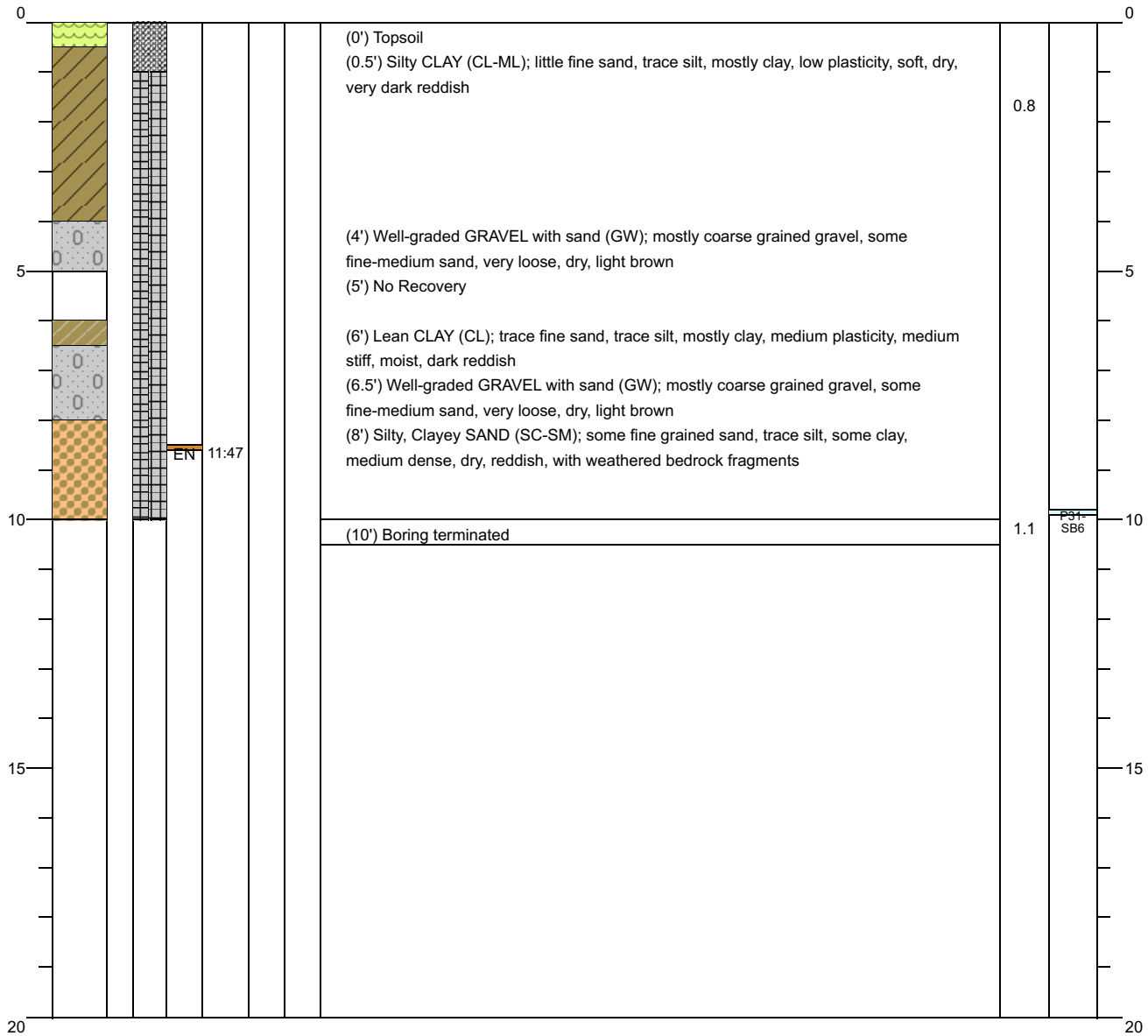
GPR TRANSECT 6

APPENDIX B

SOIL BORING LOGS

	Client: NC DOT	**BORING LOG**
	Project: Parcel 31 - Lewisville, NC	**Boring No.** P31-SB6
	Address: 6373 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

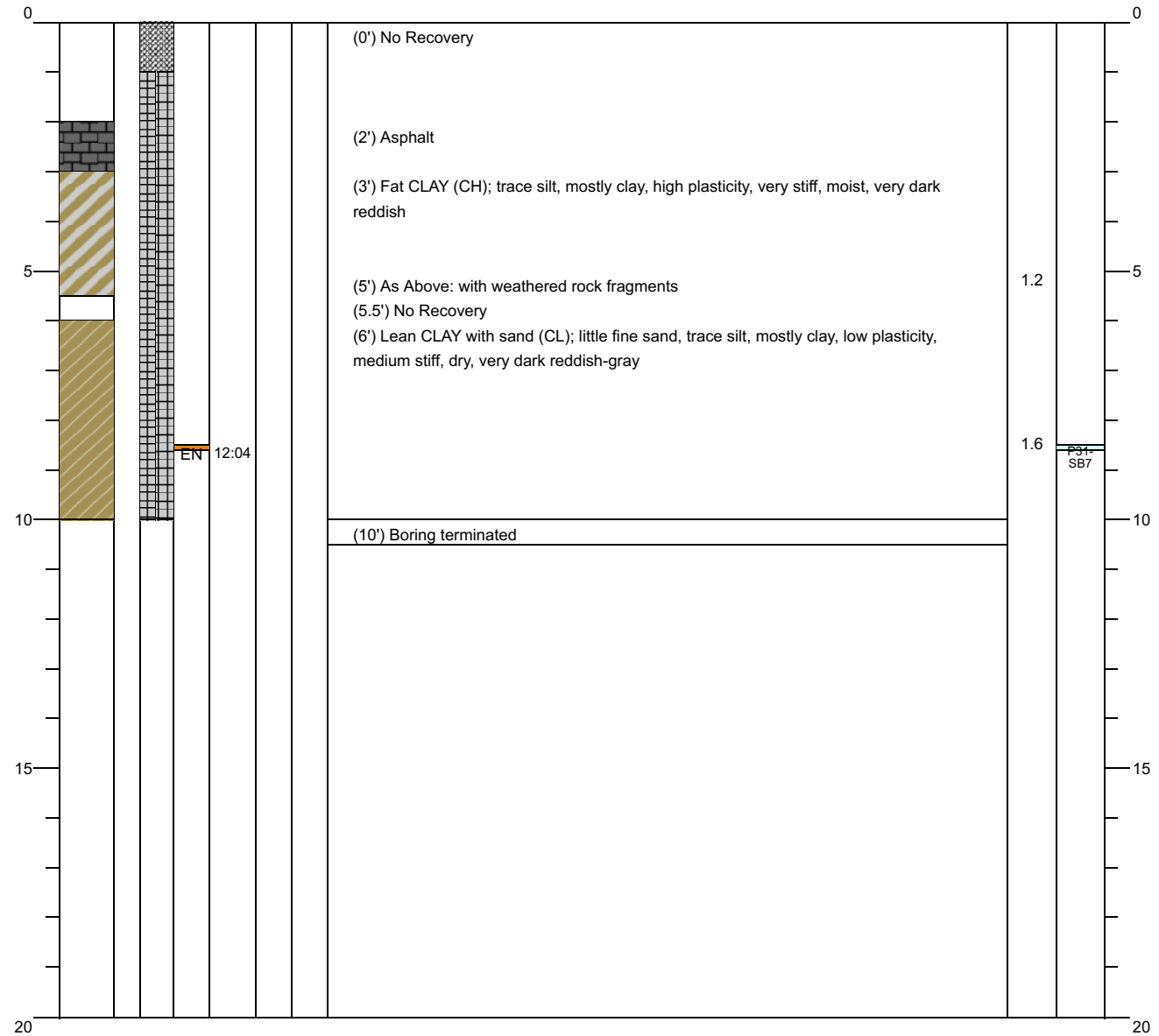
Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Lewisville, NC	**Boring No.** P31-SB7
	Address: 6477 Shallowford Roade, Lewisville, NC	**Page:** 1 of 1

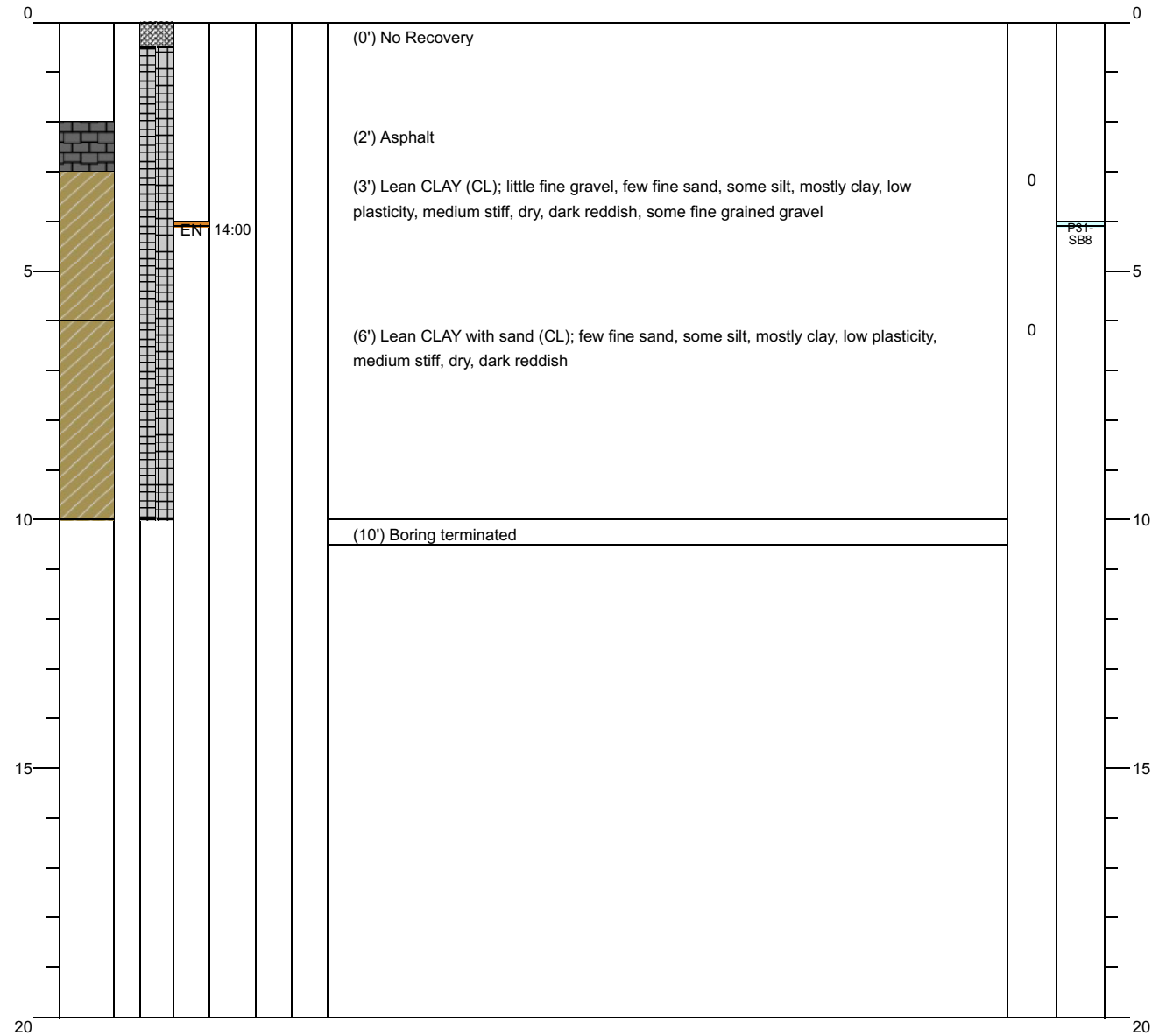
Drilling Start Date:	**05/16/2022 11:30**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022 11:40**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 31 - Lewisville, NC	**Boring No.** P31-SB8
	Address: 6373 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Lewisville, NC	**Boring No.** P31-SB9
	Address: 6373 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

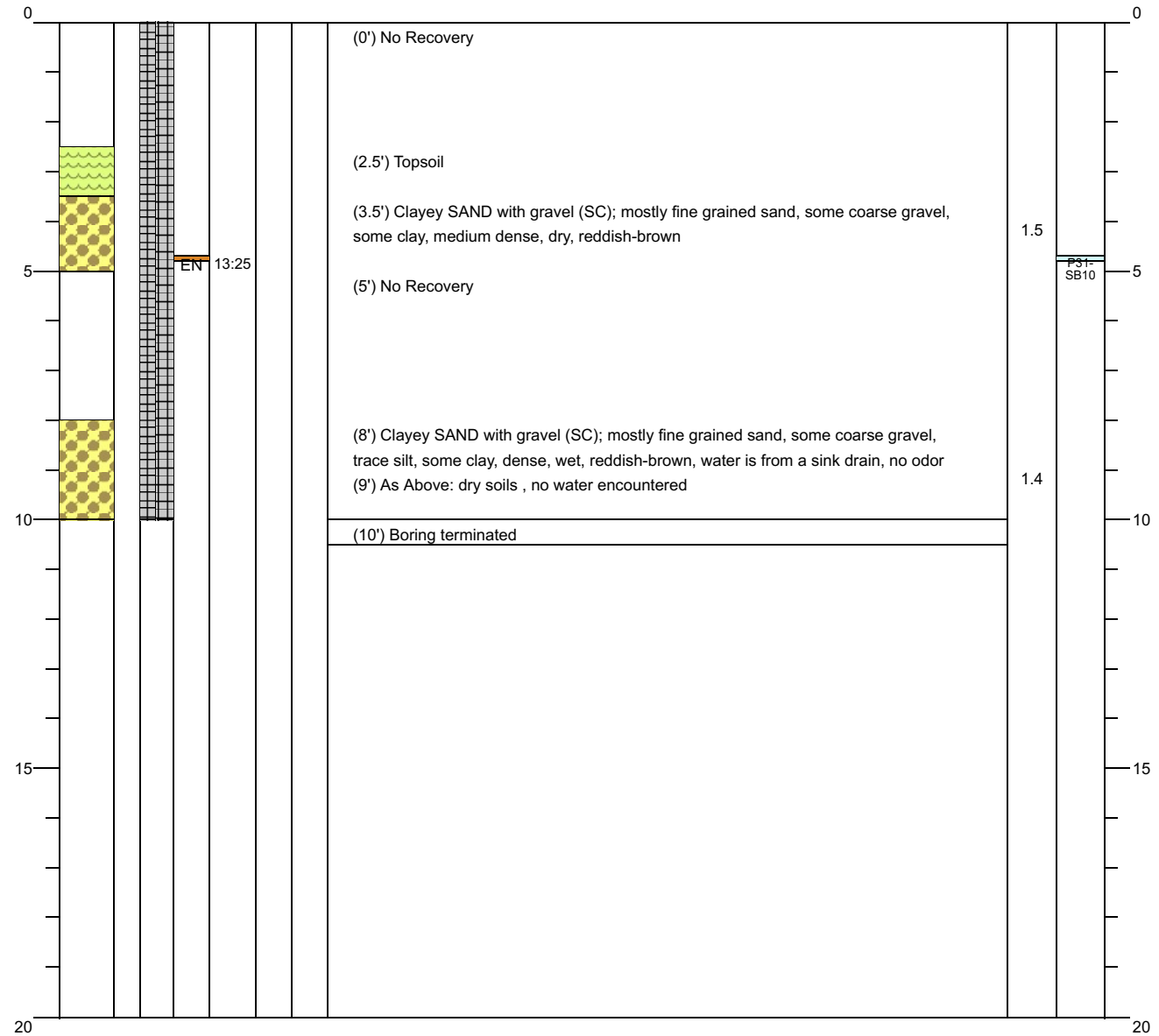
Drilling Start Date:	**05/16/2022 11:15**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022 11:25**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0								(0') No Recovery			0
								(1') Asphalt (1.5') Fat CLAY (CH); few fine sand, trace silt, mostly clay, high plasticity, very stiff, dry, very dark reddish	1.7	P31-SB9	
				EN	13:04			(3') Poorly graded SAND (SP); mostly fine-medium grained sand, trace silt, very loose, dry, no odor			
5								(5') No Recovery			5
								(6.5') Poorly graded SAND (SP); mostly fine-medium grained sand, trace silt, very loose, dry, reddish, no odor	0.7		
								(6.7') BEDROCK: Weathered Bedrock fragments (8') Poorly graded SAND (SP); mostly fine-medium grained sand, trace silt, very loose, dry, light brown			
10								(9.5') BEDROCK: weathered bedrock fragments (10') Boring terminated			10
15											15
20											20

NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 31 - Lewisville, NC	**Boring No.** P31-SB10
	Address: 6373 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

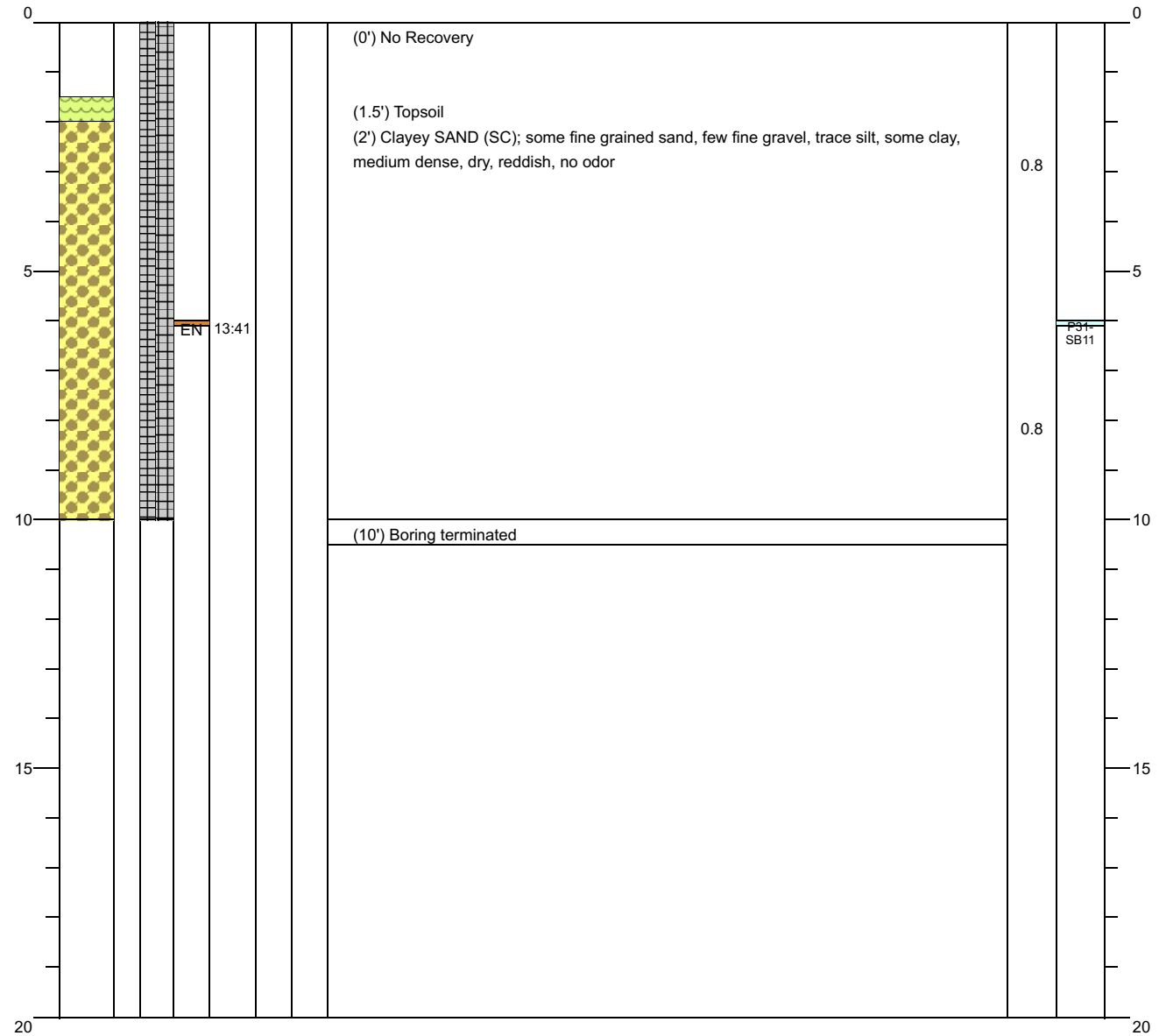
Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 31 - Lewisville, NC	**Boring No.** P31-SB11
	Address: 6373 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/16/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/16/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

APPENDIX C

RED LAB, LLC

LABORATORY ANALYTICAL REPORT

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: NCDOT/CES
Address: 3525 WHITEHALL PARK DR
CHARLOTTE, NC

Samples taken Monday, May 16, 2022
Samples extracted Monday, May 16, 2022
Samples analysed Friday, May 20, 2022

Contact: GREG HANS

Operator CLAIRE NAKAMURA

Project: 6373 SHALLOWFORD RD.

U00904

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P31 - SB6	10.4	<0.26	<0.26	0.26	0.26	0.27	<0.08	<0.01	0	46.1	53.9	No Match found
s	P31 - SB7	15.1	<0.38	<0.38	0.61	0.61	0.35	<0.12	<0.015	0	77.1	22.9	Deg.PHC 74%,(FCM),(BO),(P)
s	P31 - SB8	13.9	<0.35	0.55	46.1	46.7	21.7	1	<0.018	2.4	84.8	12.9	V.Deg.PHC 84%,(FCM)
s	P31 - SB9	13.8	<0.35	<0.35	0.35	0.35	0.29	<0.11	<0.014	0	90.3	9.7	Deg.PHC 61.2%,(FCM),(BO),(P)
s	P31 - SB10	19.1	<0.48	<0.48	0.7	0.7	0.35	<0.15	<0.019	97.1	2	0.8	V.Deg.PHC 89.7%,(FCM),(BO),(P)
s	P31 - SB11	7.1	<0.18	<0.18	<0.18	<0.18	<0.04	<0.06	<0.007	0	100	0	No Match found

Initial Calibrator QC check OK

Final FCM QC Check OK 101 %

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

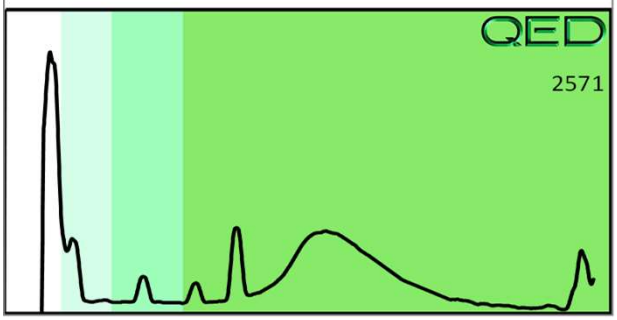
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

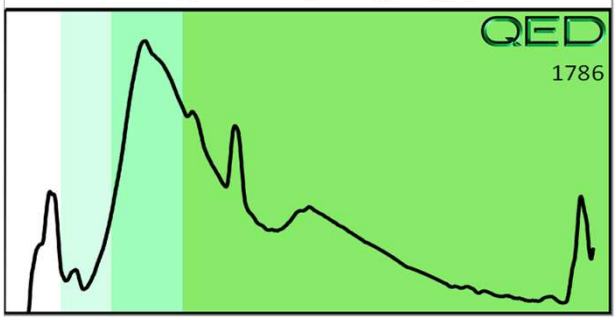
QED Hydrocarbon Fingerprints

Project: 6373 SHALLOWFORD RD. Friday, May 20, 2022

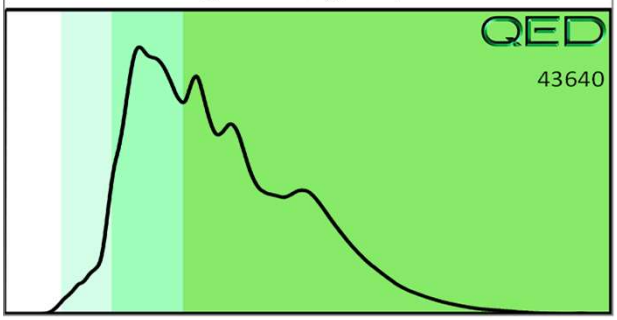
P31 - SB6 : No Match found



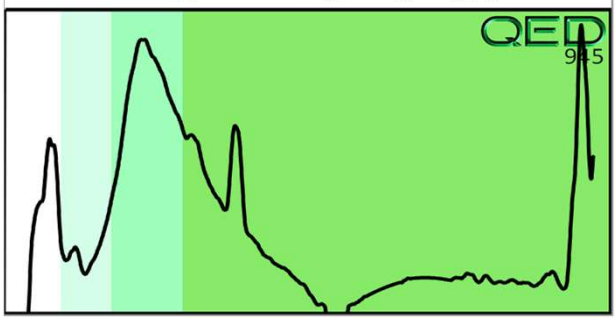
P31 - SB7 : Deg.PHC 74%,(FCM),(BO),(P)



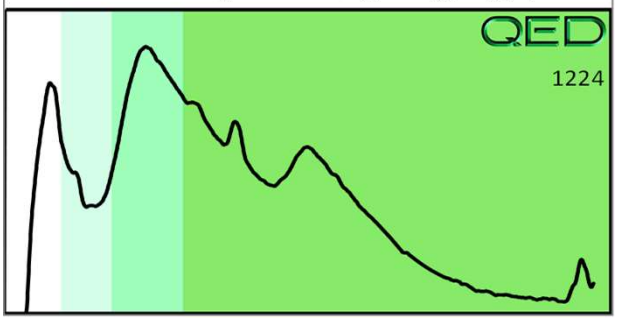
P31 - SB8 : V.Deg.PHC 84%,(FCM)



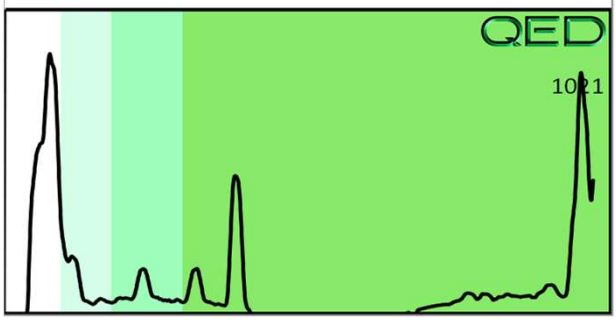
P31 - SB9 : Deg.PHC 61.2%,(FCM),(BO),(P)



P31 - SB10 : V.Deg.PHC 89.7%,(FCM),(BO),(P)



P31 - SB11 : No Match found



Client Name:	NCDOT/CES
Address:	3525 Whitehall Park Dr. Charlotte, NC
Contact:	Greg Haws
Project Ref.:	6373 Shallowford Rd
Email:	ghaws@ces-group.net
Phone #:	
Collected by:	Dawn Crowell

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

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

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

Sample Collection	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
Date/Time	24 Hour	48 Hour	UVF	GC					
5-16-22/1147		✓	✓		DFC	P31-SB6	56.9	43.5	13.4
5-16-22/1204		✓	✓		DFC	P31-SB7	56.5	39.3	17.2
5-16-22/1400		✓	✓		DFC	P31-SB8	62.9	44.2	18.7
5-16-22/1304		✓	✓		DFC	P31-SB9	63.0	44.2	18.8
5-16-22/1325		✓	✓		DFC	P31-SB10	57.8	44.2	13.6
5-16-22/1341		✓	✓		DFC	P31-SB11	64.0	44.4	19.6

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
	5/19/22		
Relinquished by		Accepted by	Date/Time
		ECN 5/20/2022 11:55	

RED Lab USE ONLY

(6)

Ref. No S-2022-4

APPENDIX D

PHOTOGRAPHIC LOG

Figure 1 Parcel 31, southern view along the residential portion of the property.

Figure 2 Parcel 31, northern view along the former motorcycle and auto repair portion of the property.

Figure 3 Parcel 31 SB9 with step-off location, and NC 811 and Pyramid utility mark outs adjacent to concrete pad.

Figure 4 Parcel 31 Pyramid septic tank mark out.

Figure 5 Parcel 31 SB8 Pyramid utility mark out with step-off location.

Figure 6 Parcel 31 SB7 with step-off location off the concrete pad.

ENGINEERS PLANNERS SURVEYORS SCIENTISTS

CHARLOTTE, NC

COLUMBIA, SC

www.ces-group.net

July 1, 2022

TRANSMITTED VIA EMAIL

Craig Haden
GeoEnvironmental Project Engineer
Geotechnical Engineering Unit
North Carolina Department of Transportation
1020 Birch Ridge Drive
Raleigh, NC 27610

RE: Phase II Investigation
Quality Oil Co (Formerly Beroth Oil Co) Property – Parcel # 34
6351 Shallowford Road, Lewisville, Forsyth County, NC
NCDOT TIP Number: U-5536
NCDOT WBS Number: 44108.1.2
CES Project Number: 7893.0422E

Dear Mr. Haden:

Please find attached an electronic copy of the Phase II Investigation Report for the Quality Oil Co (Formerly Beroth Oil Co) Property, identified as Parcel # 34, located at 6351 Lewisville Road, Lewisville, Forsyth County, North Carolina. This Phase II Investigation was performed in accordance with our Technical and Cost Proposal, dated April 7, 2022, and was initiated by a Notice to Proceed (NTP), issued by NCDOT on April 12, 2022, under our GeoEnvironmental Contract, No.: 7000020453, dated April 20, 2020.

Upon your review, please return via DocuSign for final signatures.

Should you have any questions in regards to this Phase II Investigation, please do not hesitate to contact me at (704) 325-5408.

Regards,

CES Group Engineers, LLP.

Greg Hans, PMP
Environmental Project Manager/
Environmental Division Manager

Charles Heleine, PE, REPA
Senior Environmental Engineer

Enclosures: Phase II Investigation Report

ENGINEERS PLANNERS SURVEYORS SCIENTISTS

PHASE II INVESTIGATION

NCDOT TIP Number: U-5536
NCDOT WBS Number: 44108.1.2
Quality Oil Co (Formerly Beroth Oil Co) Property: Parcel # 34
6351 Shallowford Road
Lewisville, Forsyth County, North Carolina

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, North Carolina 27610

Prepared by:

CES Group Engineers, LLP
3525 Whitehall Park Drive, Suite 150
Charlotte, North Carolina 28273

CES Project No.: 7893.0422E

July 1, 2022

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APPENDIX A	PYRAMID ENVIRONMENTAL & ENGINEERING, P.C. - GPR INFORMATIONAL EMAIL
APPENDIX B	SOIL BORING LOGS
APPENDIX C	LABORATORY ANALYTICAL REPORT
APPENDIX D	PHOTOGRAPHIC LOG

1.0 INTRODUCTION

CES Group Engineers, LLP (CES) has prepared this Phase II Investigation Report documenting the performance of field assessment activities on the northern portion of the Quality Oil Co (Formerly Beroth Oil Co) property, further identified as North Carolina Department of Transportation (NCDOT) Parcel 34, which is located at 6351 Shallowford Road, Lewisville, Forsyth County, North Carolina (the subject site). This Phase II Investigation was performed in accordance with our Technical Cost Proposal dated April 7, 2022, and was initiated by a Notice to Proceed (NTP), issued by NCDOT on April 12, 2022, under our GeoEnvironmental Contract No. 7000020453, dated April 20, 2020.

The scope of work performed by CES for this Phase II Investigation included pre-clearing activities via Ground Penetrating Radar (GPR), followed by a subsurface soil investigation that included the installation of two soil borings to evaluate the potential for contamination to exist within a proposed drainage ditch on the rear of the property located at 6351 Shallowford Road.

A Site Location Map is included as Figure 1.

1.1 Site History and Description

The subject site is located at 6351 Shallowford Road, Lewisville, Forsyth County, North Carolina. The majority of the property is utilized for commercial purposes, and is currently branded as a BP – Quality Mart gasoline service station, and includes one single story building structure, two pump islands and paved parking areas. The gradient of the subject site slopes gently to the north, with the assessed area under this Phase II Investigation located north of the onsite structure in an area of overgrown vegetation. According to the aerial images observed utilizing Historic Aerials and Google Earth, structures were observed to be present at the site from the approximate year 1986 to present day. Nearby and surrounding properties were observed to be utilized for commercial, residential and institutional purposes.

A review of the North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management GIS Site Locator Tool resulted in finding that the existing gasoline service station, while operating as the former Friendly Food Mart #3, identified as Facility ID No.: 00-0-0000031173, was reported in the state database under Incident No.: 19245, for reported soil contamination encountered during UST tank closure on September 17, 1998. On January 11, 2005, NCDEQ issued a Notice of No Further Action for the reported release from 1998. Additionally, in April 2022, groundwater sampling was conducted at the site under Incident No.: 48447, with NCDEQ closing this incident on May 20, 2022.

It should be noted that assessment, monitoring and/or remediation work for the above referenced incident numbers are located outside the proposed drainage ditch, and are not expected to impact future construction related activities.

2.0 PHASE II FIELD ACTIVITIES

2.1 Ground Penetrating Radar Survey

Due to the location of the proposed drainage ditch, located in a native and overgrown vegetative area to the north of the existing onsite structure, a geophysical survey to locate known, possible or probable USTs was not conducted.

However, on May 11, 2022, Pyramid Environmental & Engineering, PC (Pyramid) of Greensboro, North Carolina, conducted a ground penetrating radar (GPR) survey to locate potential underground utility or structural conflicts in the area of the proposed borings. The GPR survey data was collected using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 control unit coupled to a 350 MHz HS antenna.

The results of the collected GPR survey recorded an apparent septic line and drain field lines near the borings, but they do not appear to be in conflict. An email summary of the GPR findings from Pyramid is attached as Appendix A.

2.2 Soil Boring Investigation

On May 17, 2022, Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina, under direction of an onsite CES Environmental Scientist, installed two soil borings P34-SB12 and P34-SB13 to a maximum depth of ten feet below surface grade (bsg), utilizing a track mounted geoprobe rig, Model 6712DT, to evaluate the potential for contamination to exist within the proposed drainage ditch at the rear of the property of 6351 Shallowford Road. Prior to the installation of the two soil borings, on May 2, 2022, CES utilized a Trimble R8s GNSS/GPS unit to pre-mark each boring in exact locations proposed on NCDOT provided plan sheets (PSH 6), and then collected GPS coordinates. In addition, underground utilities were cleared through the NC 811 public locating service, and by Pyramid during the GPR portion of the geophysical survey.

During the advancement of the two soil borings, the CES Environmental Scientist field screened encountered soils with a MiniRAE 3000 Photoionization Detector (PID), calibrated by Eastern Solutions LLC on May 10, 2022**,** for the presence of volatile organic compounds (VOCs), to facilitate the selection of one soil sample from each boring for subsequent laboratory analysis. PID measurements below the detection limit of 5 ppmv were identified as non-detect (ND). Groundwater was not encountered during the installation of the two soil borings. Two monitoring wells were observed adjacent to the northwest and northeast corners of the onsite building, approximately 50 to 60 feet from the proposed drainage ditch. A review of available information available to CES from the NCDEQ GIS Site Locator Tool indicated that depth to groundwater from onsite monitoring wells was reported at approximately 25 feet bsg.

Based on field screening data collected PID measurements from soil borings P34-SB12 and P34-SB13 were reported as ND. No petroleum odors or stained soils were observed in any of the soil samples collected from the two soil borings.

Upon completion of the two soil borings, each boring location was backfilled to grade with generated drill cuttings and a sand Hole Plug, by CSI.

Figure 2 depicts the locations of soil borings P34-SB12 and P34-SB13. GPS coordinates and PID measurements for each soil boring are included on Table 1 and Table 2, respectively. Soil boring logs are provided in Appendix B.

2.3 Soil Sampling and Laboratory Analytical Results

Upon completion of each boring, the soil sample exhibiting the highest PID measurement, or the soil sample from zero to five feet bsg or five to ten feet bsg if the PID measurements were reported as ND, was collected in laboratory provided vials containing 20 mL methanol and stored on ice. The samples were shipped at the close of soil sampling activities on Thursday May 19, 2022 under chain-of-custody (COC) procedures to Red Lab, LLC of Wilmington, North Carolina, for laboratory analysis of petroleum hydrocarbons via the QED Ultraviolet Fluorescence (UVF) methodology, which includes BTEX, GRO, DRO, TPH, Total Aromatics, 16 EPA PAHs, BaP, and identification of specific hydrocarbons (HC).

Laboratory analytical results indicated that concentrations of DRO and/or GRO were reported above laboratory detection limits, but below NCDEQ Action Levels, in soil borings P34-SB12 and P34-SB13. The maximum reported DRO and GRO concentrations were reported as follows:

- DRO at 0.62 mg/kg from a soil sample collected from soil boring P34-SB12, at a depth of approximately 2 feet bsg; and
- GRO at 0.74 mg/kg from a soil sample collected from soil boring P34-SB13, at a depth of approximately 6 feet bsg.

Figure 2 depicts the location of soil borings P34-SB12 and P34-SB13, with soil analytical results and depth of collected samples depicted on Figure 3. Table 2 summarizes soil laboratory analytical results, including the depth of each collected soil sample with corresponding PID measurements. The Red Lab, LLC soil laboratory analytical reports are included in Appendix C. A photographic log depicting site and soil boring locations is included in Appendix D.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The results of the collected GPR survey recorded an apparent septic line and drain field lines near the borings, but they do not appear to be in conflict.

Laboratory analytical results indicated that concentrations of DRO and/or GRO were reported above laboratory detection limits, but below NCDEQ Action Levels, in soil borings P34-SB12 and P34-SB13. The maximum reported DRO and GRO concentrations were reported as follows:

- DRO at 0.62 mg/kg from a soil sample collected from soil boring P34-SB12, at a depth of approximately 2 feet bsg; and
- GRO at 0.74 mg/kg from a soil sample collected from soil boring P34-SB13, at a depth of approximately 6 feet bsg.

This Phase II Investigation concluded that minor petroleum related impacts to soils are present on Parcel 34 at levels well below NCDEQ Action Levels. This conclusion was based on laboratory analytical results reporting concentrations of DRO and GRO above the laboratory detection limits (but below NCDEQ Action Levels) in soil borings P34-SB12 and P34-SB13.

3.2 Recommendations

During planning of construction activities in work areas generally located near soil borings P34-SB12 and P34-SB13, and potentially in other unexplored areas of Parcel 34, as depicted on the provided NCDOT preliminary plan sheets, it is recommended that encountered soil impacted with petroleum constituents be properly handled and managed in the field, and disposed of by contractors in accordance with applicable state regulations.

4.0 SIGNATURE PAGES

This Phase II Investigation Report was prepared by:

DocuSigned by:
BE8ABC48C6D1471...

07/12/2022

Dawn F. Crowell, MELP, CMCSI
Environmental Scientist/Project Manager
CES Group Engineers, LLP

This Phase II Investigation Report was reviewed by:

DocuSigned by:
Greg Hans
17CA85CB2CDF4C7...

07/12/2022

Greg Hans, PMP
Environmental Division Manager
CES Group Engineers, LLP

This Phase II Investigation Report was reviewed and approved by:

DocuSigned by:
Charles Heleine
0E4F07A7BE324CD...

07/13/2022

Charles Heleine, PE, REPA
Senior Environmental Engineer
CES Group Engineers, LLP.

Electronic Seal/Signature

TABLES

Table 1
Soil Boring GPS Coordinate Data
NCDOT TIP Number: U-5536
NCDOT WBS Numberl 44108.1.2
Quality Oil Co (Formerly Beroth Oil Co) Property: Parcel # 34
6351 Shallowford Road
Lewisville, Forsyth County, North Carolina

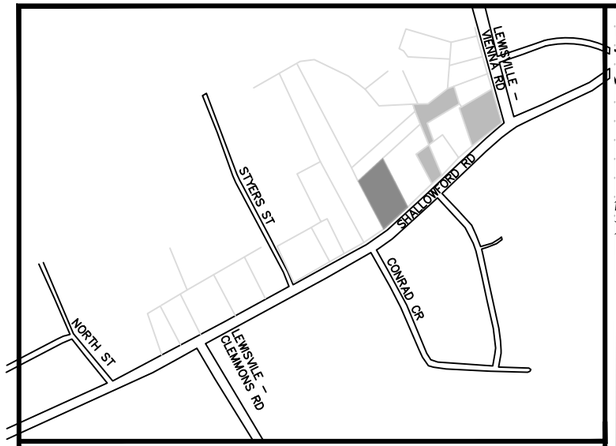
Sample ID	Date Collected (m/dd/yy)	Latitude	Longitude
P34-SB12	5/17/2022	36.0991491	-80.4168471
P34-SB13	5/17/2022	36.0992585	-80.4167381

Table 2
Summary of Soil Analytical Results
NCDOT TIP Number: U-5536
NCDOT WBS Numberl 44108.1.2
Quality Oil Co (Formerly Beroth Oil Co)**: Parcel # 34**
6351 Shallowford Road
Lewisville, Forsyth County, North Carolina

				Analytical Method	**UVF**	**UVF**	**UVF**
				COC	**TPH-DRO**	**TPH-GRO**	**HC Fingerprints**
Sample ID	**Date Collected (m/dd/yy)**	**Sample Area**	**Sample Depth**	**PID (ppmv)**	**mg/kg**	**mg/kg**	
P34-SB12	5/17/2022	Grass area at rear of property	2	0.9 at 2-ft / 0.0 at 9-ft	0.62	<0.36	Deg.PHC 51.8%
P34-SB13	5/17/2022	Grass area at rear of property	6	0.3 at 3-ft / 0.2 at 7-ft	<0.2	0.74	60%,
				Initial NCDEQ Action Levels for Contamination (mg/kg)	100	50	N/A

P#-SB# = Parcel Number - Soil Boring Number
mg/kg = miligrams per kilogram
PID = photoionization detector
ppmv = parts per million per volume
N/A = not applicable
Soil anlaysis performed by Red Lab, LLC of Wilmington, NC with results generated by a QED HC-1 analyzer

FIGURES



VICINITY MAP
(NOT TO SCALE)

LEGEND:

- BORING LOCATION
- PARCEL BOUNDARY
- MTW – EXISTING MONITOR WELL

SAMPLE–PARCEL – BORING–ID
SAMPLE DEPTH – BORING DEPTH
DRO – CONCENTRATION
GRO – CONSTITUENT

** – BORING SAMPLE LOCATION
** MOVED PER PROPERTY OWNER
** OR DUE TO UTILITY CONFLICT.

Sample: P34–SB13
Sample Depth 6'
DRO: <0.2
DRP: 0.74

Sample: P34–SB12
Sample Depth 2'
DRO: 0.62
DRP: <0.36

Sample: P36–SB16A
Sample Depth 3'
DRO: 3.5
DRP: 1.5

Sample: P36–SB15A
Sample Depth 8'
DRO: 3.3
DRP: 0.81

Sample: P36–SB14
Sample Depth 10'
DRO: 0.77
DRP: <0.42

Sample: P31–SB10
Sample Depth 4.7'
DRO: <0.18
DRP: <0.18

Sample: P31–SB9
Sample Depth 2'
DRO: 0.35
DRP: <0.35

Sample: P31–SB8
Sample Depth 4'
DRO: 46.1
DRP: 0.55

Sample: P31–SB6
Sample Depth 9.8'
DRO: 0.26
DRP: <0.26

Sample: P31–SB7**
Sample Depth 8.5'
DRO: 0.61
DRP: <0.38

TOWN OF LEWISVILLE
DB 1918 PG 1321

BEROTH OIL COMPANY
DB 2064 PG 2488

DORIS B STIMSON
DB 2100 PG 1422

RICHARD STEY
DB 3079 PG 4429

ANDREW P BOBOTSARES
DB 2795 PG 3348

THIS DRAWING IS FOR EXHIBIT PURPOSES ONLY. IT IS TO SHOW RELATIVE LOCATIONS OF SOIL SAMPLE LOCATIONS AS SHOWN HEREON. IT IS NOT MEANT FOR CONVEYANCES, SALES OR RECORDING. NO BOUNDARY WORK, RESEARCH OR UTILITY LOCATIONS WERE DONE WITHIN THE SCOPE OF THIS EXHIBIT. ALL LOCATIONS AND PARCEL LINES ARE APPROXIMATE AND NOT TO SCALE.

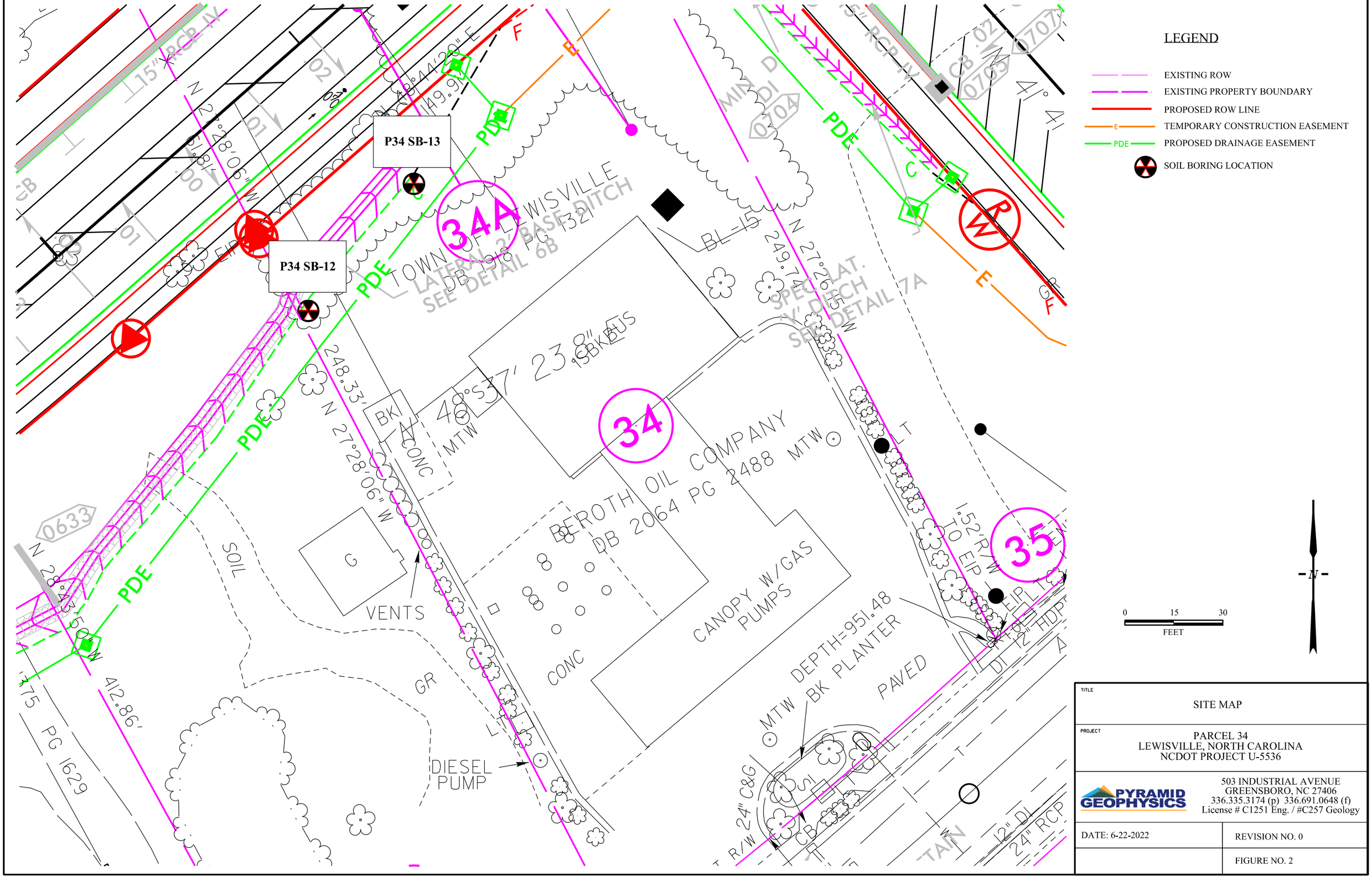
OWNER/PREPARED FOR:
NCDOT

CES GROUP
ENGINEERS, LLP
NC FIRM LICENSE# F-1240
3525 WHITEHALL PARK DRIVE,
SUITE 150
CHARLOTTE, NC 28273
T 704.489.1500
www.ces-group.net

EXHIBIT SURVEY
PARCEL NO. 34
ENVIRONMENTAL
SAMPLE LOCATIONS
U-5536

DRAWN BY:	JES
CHECKED BY:	JES
PROJECT NUMBER:	7893
SCALE:	1" = 40'
DATE:	5/31/2022
TAX PARCEL:	5885-17-5915.00
DRAWING:	7893-EXHIBITS.dwg

SHEET: 1



TITLE

SITE MAP

PROJECT

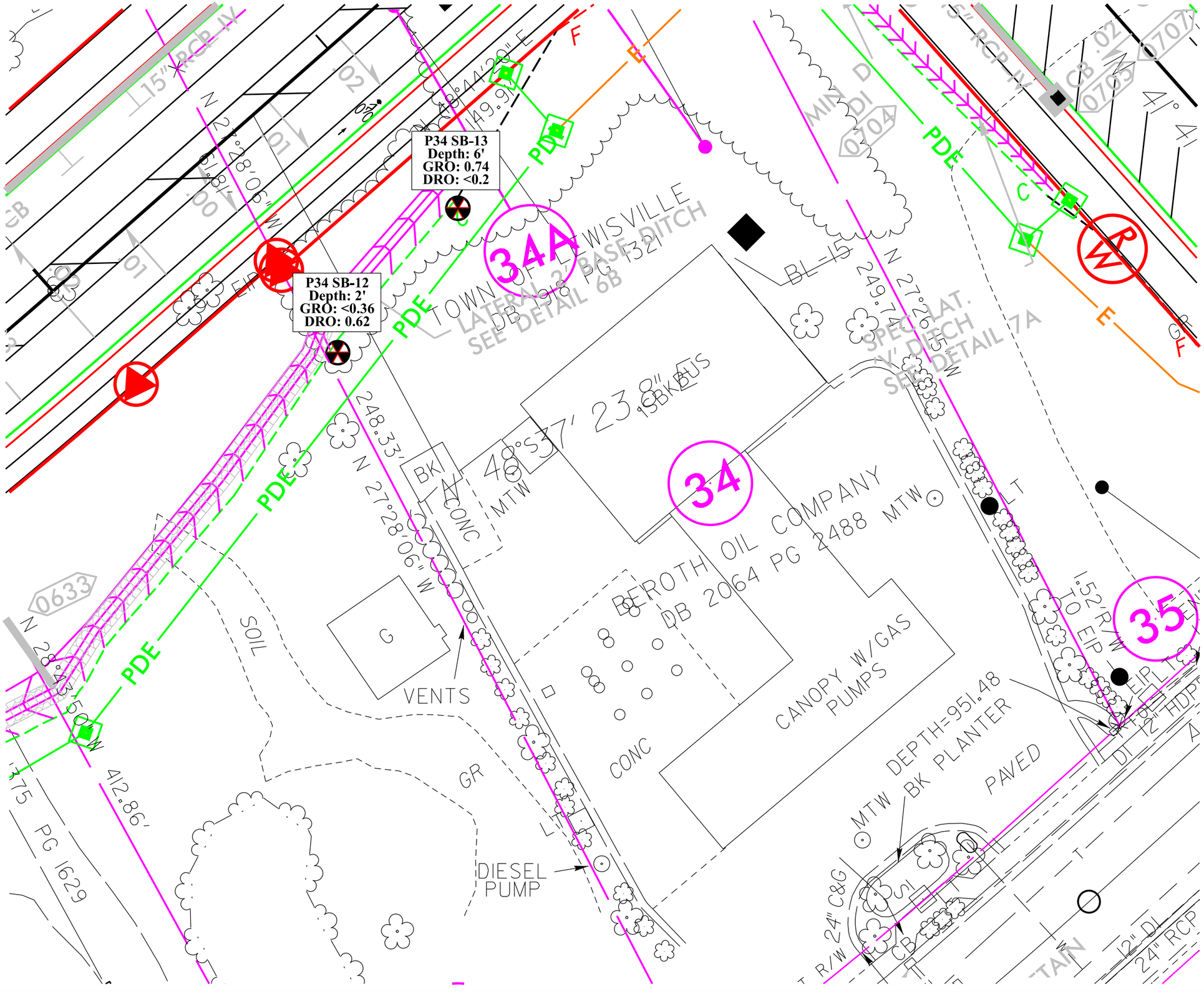
PARCEL 34
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

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

DATE: 6-22-2022

REVISION NO. 0

FIGURE NO. 2



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- E — TEMPORARY CONSTRUCTION EASEMENT
- PDE — PROPOSED DRAINAGE EASEMENT
- SOIL BORING LOCATION

PX(Y)	PARCEL#(BORING#)
DRO	DIESEL RANGE ORGANICS*
GRO	GASOLINE RANGE ORGANICS*

*ALL CONCENTRATIONS PRESENTED IN mg/kg

0 15 30
FEET

N

TITLE
SOIL ANALYTICAL MAP

PROJECT
PARCEL 34
LEWISVILLE, NORTH CAROLINA
NCDOT PROJECT U-5536

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

DATE: 6-22-2022
REVISION NO. 0
FIGURE NO. 3

APPENDIX A

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

GEOPHYSICAL SURVEY REPORT

From:	Eric Cross
To:	Greg Hans; Dawn Crowell
Cc:	Jeff Heenan; Tim Leatherman
Subject:	U-5536 Summary
Date:	Thursday, May 12, 2022 1:46:38 PM
Attachments:	image001.png image002.png image003.png
Importance:	High

Greg, the UST surveys and locating is complete at the sites in Lewisville. Regarding metallic USTs, we did not find any evidence of metallic USTs within the survey areas at any of the parcels. We did find evidence of two septic tanks (see summary below), we will include their locations on our maps and mention them in the reports. In my experience, the NCDOT doesn't typically care if there is a septic tank, but they don't mind knowing about it. I will also be sending you site photos using DropBox, you will receive a separate email.

Summary:

Parcel 17: No evidence of USTs. Some boring locations were in conflict with marked utilities, I believe my colleague Tim discussed these with Dawn. We marked water, sewer, some private power and some unknown lines and GPR anomalies (note that any unknown buried lines at these parcels will be marked with pink paint). 811 marked their public utilities, which included comm lines and main power.

Parcel 31: No evidence of metallic petroleum USTs. Evidence of one suspected septic tank (will be classified in our report as a No Confidence Anomaly, Suspected Septic Tank) underneath the carport covering (see photos). Several unknown lines were marked in pink in the vicinity of the suspected septic tank. Some of your boring locations were moved to alternate locations based on these unknown lines. There was no visible water meter at this parcel to identify the water line, I believe Tim also discussed this parcel with Dawn.

Parcel 34: Soil sampling only, we cleared your two boring locations. There is an apparent septic line and drain field lines near your borings, but they do not appear to be in conflict.

Parcel 36: No evidence of USTs. We marked water and sewer and verified gas line location. Two of your borings look like they were moved to alternate locations to move away from the gas line.

Parcel 37: No evidence of metallic petroleum USTs. Evidence of a septic tank was observed in the grass field area (see photos). We delineated the leach field lines for this septic system due to the proximity of some of your borings and marked the leach field lines with green paint. Your borings do not appear to be in conflict. We also marked water and sewer leading from the building to the septic tank.

Parcel 39: No evidence of USTs. Evidence of some buried metal in the open grassy areas appears to be associated with buried former infrastructure associated with whatever building used to be on this site. Unknown buried lines within the vicinity of your borings were marked with pink paint. Water was marked from the meter into the property in the vicinity of a proposed boring. I should note that

although there were some comm lines marked at this property, the marks appeared to be old, it did not seem like 811 had marked this particular parcel. You may want to verify that this property is being marked and cleared by them, there may be additional comm/fiberoptic lines that are not currently marked. We investigated and marked all lines that we were able to identify. There is also a gas valve in the ground in the NE edge of the property with no marks, we were not able to find a place to connect to it for locating. It is likely just an access point, there is no indication that a gas line extends into this parcel, but you will want to verify with 811.

Thank you, please let me know if you have any questions or comments, we will be working on the geophysical reports.

Eric Cross, M.S., P.G.
Senior Geophysicist

Pyramid Geophysics
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Greensboro, NC 27406
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Eric@pyramidenvironmental.com
336-335-3174 ext. 137

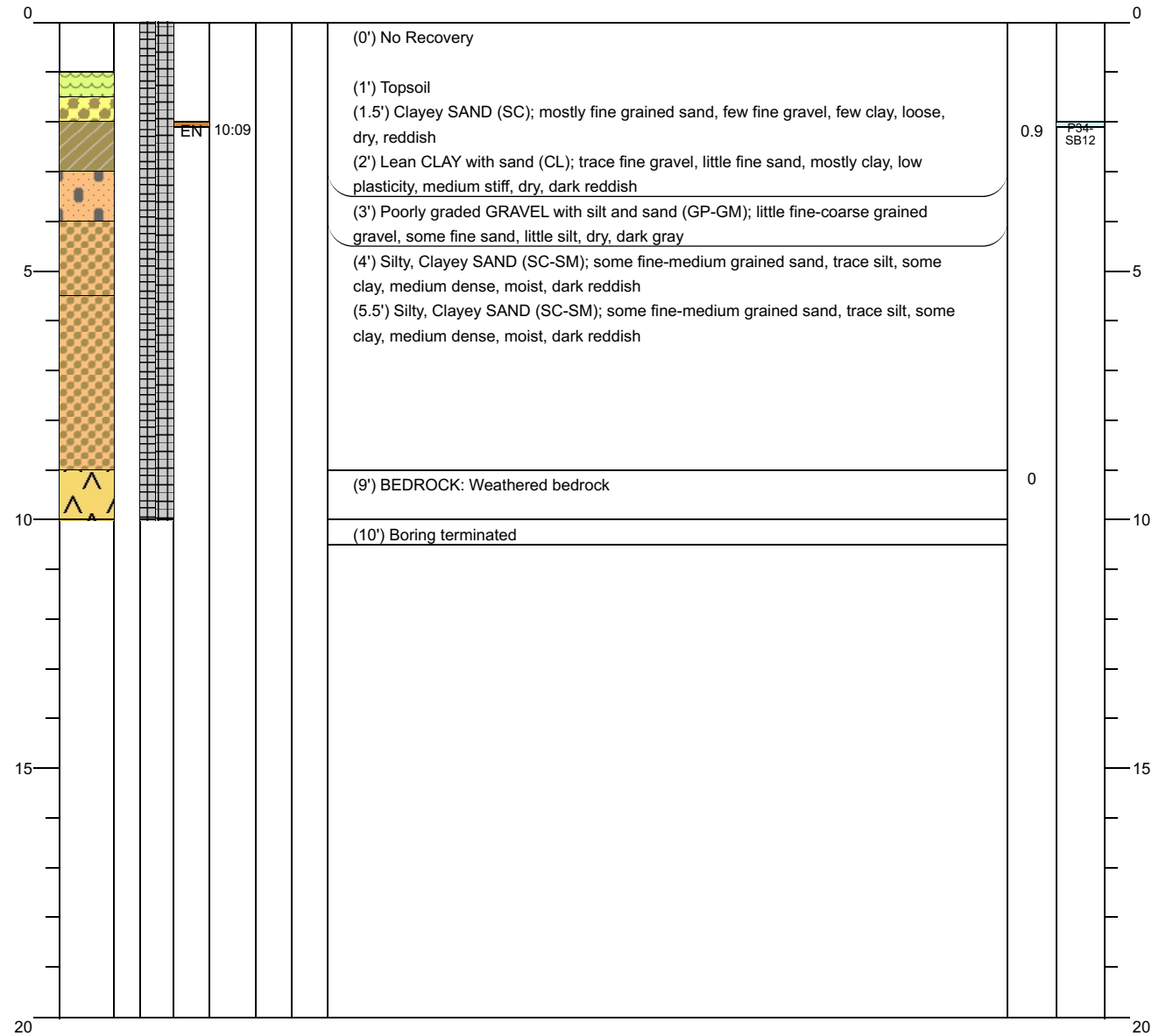
GSA Contract #: GS-10F-0403N

APPENDIX B

SOIL BORING LOGS

	Client: NC DOT	**BORING LOG**
	Project: Parcel 34- Lewisville, NC	**Boring No.** P34-SB12
	Address: 6351 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/17/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/17/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**



NOTES:

	Client: NC DOT	**BORING LOG**
	Project: Parcel 34- Lewisville, NC	**Boring No.** P34-SB13
	Address: 6351 Shallowford Road, Lewisville, NC	**Page:** 1 of 1

Drilling Start Date:	**05/17/2022**	Boring Depth (ft):	**10**
Drilling End Date:	**05/17/2022**	Boring Diameter (in):	**2.00**
Drilling Company:	**Carolina Soil Investigations, LLC**	Sampling Method(s):	**Encore**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Geoprobe**	DTW After Drilling (ft):	**N/A**
Driller:	**Danny Summers**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Dawn Crowell**	Location (Lat, Long):	**N/A**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0								(0') No Recovery			0
								(1.5') Topsoil (2') Silty CLAY (CL-ML); few fine sand, some silt, mostly clay, medium plasticity, medium stiff, dry, reddish	0.3		
5				EN	10:17			(5') Silty SAND (SM); mostly fine-medium grained sand, some silt, few clay, dry, light brown		P34-SB13	5
								(7') As Above	0.2		
10								(10') Boring terminated			10
15											15
20											20

NOTES:

APPENDIX C

RED LAB, LLC

LABORATORY ANALYTICAL REPORT

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: CES
Address: 3525 WHITEHALL PARK DR.
CHARLOTTE, NC

Samples taken Tuesday, May 17, 2022
Samples extracted Tuesday, May 17, 2022
Samples analysed Friday, May 20, 2022

Contact: GREG HANS

Operator TORI KELLY

Project: 6351 SHALLOW FORD RD

U04049

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	P34-SB 12	14.3	<0.36	<0.36	0.62	0.62	0.34	<0.11	<0.014	0	40.2	59.8	Deg.PHC 51.8%,(FCM),(BO),(P)
s	P34-SB 13	7.9	<0.2	0.74	<0.2	0.74	0.15	<0.06	<0.008	95.8	4.2	0	60%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 111.3 %

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

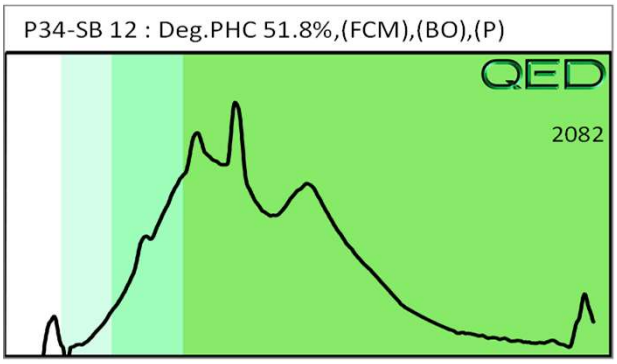
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

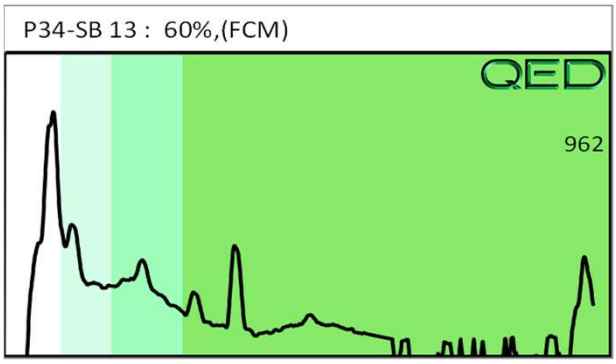
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

Project: 6351 SHALLOW FORB RD

Friday, May 20, 2022





Client Name:	NCDOT / CES
Address:	3525 Whitehall Park Dr. Charlotte, NC
Contact:	Greg Hans
Project Ref.:	6351 Shallowford Rd.
Email:	ghans@ces-group.net
Phone #:	
Collected by:	Dawn Connell

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
Date/Time	24 Hour	48 Hour	UVF	GC					
5-17-22/1009		✓	✓		DFC	P34-SB12	61.7	43.5	18.2
5-17-22/1017		✓	✓		DFC	P34-SB13	61.7	44.0	17.7

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
	5/19/22		
Relinquished by		Accepted by	Date/Time
		ECN 5/20/2022 11:47AM	

RED Lab USE ONLY

Ref. No (2) 5-2022-3

APPENDIX D

PHOTOGRAPHIC LOG

Figure 1 Parcel 34, NC 811 utility mark outs, at SB13, northern view.

Figure 2 Parcel 34, NC 811 utility mark outs, southern view.

Figure 3 Parcel 34 SB12 northwestern view at rear of main property.

Figure 4 Parcel 34 SB13 northern view at rear of main property.