



September 7, 2018

North Carolina Department of Transportation
GeoEnvironmental Engineering Unit
Century Center Complex
Building B
1020 Birch Ridge Road
Raleigh, North Carolina 27610

Re: Preliminary Site Assessment (PSA)
Norfolk Southern Mainline Grade Crossing Separation at Rogers Road Crossing in
Kannapolis
Parcel 51- Teresa Whittington Property
1311 S. Ridge Avenue, Kannapolis, North Carolina
TIP No. Y-4810K
WBS Element: 40325.1.46

Dear Mr. Haden

Terracon Consultants, Inc. (Terracon) is pleased to submit a Preliminary Site Assessment (PSA) report for the above referenced site. This assessment was performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P70187265) dated May 14, 2018. This report includes the findings of the investigation, and provides our conclusions and recommendations.

Terracon appreciates the opportunity to provide these services to the North Carolina Department of Transportation. If you have any questions concerning this report or need additional information, please contact us at 919-873-2211.

Sincerely,

Terracon Consultants, Inc.

DocuSigned by: 9/19/2018
Prepared by:
BFAD0E85DCED418...

David W. Hawkins, PG
Staff Geologist

9/19/2018
DocuSigned by:
Reviewed by:
8E4FE90F5C944D5...

Michael B. Dail, PG
Senior Geologist



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Terracon Consultants, Inc. 2401 Brentwood Road, Suite 107 Raleigh, NC 27604
P [919] 873 2211 F [919] 873 9555 terracon.com

Preliminary Site Assessment

Norfolk Southern Mainline Grade Crossing Separation at Rogers
Road in Kannapolis

Parcel 51 – Teresa Whittington Property

1311 S. Ridge Avenue, Kannapolis, North Carolina

TIP No. Y-4810K

WBS Element: 40325.1.46

September 7, 2018

Terracon Project No. 70187265



Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

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PRELIMINARY SITE ASSESSMENT

NORFOLK SOUTHERN MAINLINE GRADE CROSSING SEPARATION AT ROGERS ROAD CROSSING IN KANNAPOLIS

TIP NO. Y-4810K

WBS ELEMENT: 40325.1.46

PARCEL 51 – TERESA WHITTINGTON PROPERTY
1311 S. RIDGE AVENUE, KANNAPOLIS, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	Norfolk Southern Mainline Grade Crossing Separation at Rogers Road Crossing in Kannapolis
Site Location/Address	1311 S. Ridge Avenue, Kannapolis, North Carolina 28083 (Cabarrus County Tax PIN: 56136273880000)
General Site Description	The site currently consists of an active pet care/grooming facility (Mutt Hut).

1.2 Site History

The site is located at 1311 S. Ridge Avenue in Kannapolis, Cabarrus County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site consisted of an active pet care and grooming facility, parking lot, and associated landscaping. The site address does not appear on the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management UST Section Registered Tank Database; however, a suspect UST was identified on the western portion of the site approximately 15 feet from S Ridge Avenue (NCDOT, 2013). Terracon confirmed the presence of two (2) probable USTs during this preliminary site assessment.

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's Proposal for PSA (Proposal No. P70187265) dated May 14, 2018. This PSA is being completed prior to planned bridge addition over the Norfolk Southern Railroad in the vicinity of Rogers Lake Road and S. Ridge Avenue in Kannapolis, North Carolina (site). The scope of work included a geophysical investigation, collection of soil and samples, and preparation of a report documenting

our investigation activities. The PSA is not intended to delineate potential impacts. The PSA was performed within the proposed ROW as indicated by NCDOT provided plan sheets.

1.4 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These services were performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P70187265) dated May 14, 2018 and were not conducted in accordance with ASTM E1903-11.

1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, undetectable or not present during these services; thus, we cannot represent that the site is free of hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this PSA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.6 Reliance

This report has been prepared for the exclusive use of the NCDOT. Authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the expressed written authorization of the client and Terracon.

2.0 FIELD ACTIVITIES

The following PSA activities are presented in the order that they were conducted in the field.

Exhibit 1 presents the topography of the site on a portion of the USGS topographic quadrangle map of Concord, NC (1987). **Exhibits 2A and 2B** depict a site layout plan that includes the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

Between June 19 and 21, 2018, Geophysical Survey Investigations, PLLC conducted a geophysical investigation at the site in an effort to determine if unknown, metallic USTs were present beneath the proposed ROW area and provide utility clearance prior to drilling activities. The geophysical investigation included an electromagnetic (EM) induction survey using a Geonics EM61-MK2A metal detection instrument and a ground penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-3000 unit.

The geophysical investigation identified two (2) probable metallic USTs on the parcel. The probable USTs were observed as two differential anomalies oriented northwest-southeast parallel to S Ridge Avenue. “UST-1” was identified as an approximate 7.5-foot by 5-foot geophysical anomaly at a depth of approximately 3 feet below land surface (bls). “UST-2” was identified as an approximate 12-foot by 5-foot geophysical anomaly at a depth of approximately 2.8 feet below land surface (bls). The approximate location of the probable USTs are shown on **Exhibit 2A**.

In addition to metal detection and GPR scans, the NC One Call public utility locator service was used to identify underground utility lines and to clear boring locations. A copy of the geophysical report is included in **Appendix A**.

2.2 Soil Sampling

Based on the findings of the geophysical investigation and Terracon’s site observations, Terracon oversaw the advancement of eight (8) soil borings (B-1 through B-8) throughout the parcel parking area, adjacent to the on-site building, and adjacent to the probable USTs. The borings were completed by a North Carolina Certified Well Contractor (Innovative Environmental Technologies, Inc.) using a track-mounted 9520-VTR PowerProbe™ direct-push drill rig.

Soil samples were collected in 5-foot, disposable, Macro-Core® sampler tubes to document soil lithology, color, moisture content, and sensory evidence of impacts. Each soil sample was screened for organic vapors using an 11.7 eV photoionization detector (PID). The PID data were collected in order to assist in selection of sample intervals for laboratory analysis.

Preliminary Site Assessment – Y-4810K

Parcel 51 – Teresa Whittington Property
1311 S. Ridge Avenue, Kannapolis, NC
September 7, 2018 ■ Terracon Project No. 70187265



Based on the proposed disturbance depths and discussion with the NCDOT, six (6) of the soil borings were advanced to a depth of approximately 10 feet below land surface (bls). Soil boring B-4 was advanced to refusal on shallow rock at 3 feet bls, and soil boring B-8 was advanced to 15 feet bls to assess conditions in the area of the probable USTs. Based on the results of the field screening, one soil sample from each boring, was collected from depths between approximately 2 feet and 15 feet bls. Soil samples were collected in the depth interval that was most likely to be impacted or from variable depths to provide spatial coverage with depth across the site.

The drilling equipment used at the site was decontaminated prior to use and between the advancement of each boring. Non-dedicated sampling equipment was decontaminated using a Liquinox®/water wash followed by a distilled water rinse. Each of the boreholes was backfilled with hydrated bentonite pellets. Investigation derived waste (IDW) from the three (3) parcels associated with TIP No. Y-4810K was containerized in one 55-gallon drum staged on parcel 48 pending disposal.

Soil generally consisted of silty clay to depths of approximately 2 to 5 feet bls underlain by silt and silty sand. Boring B-5 was placed in a location of apparent fill in the south-central portion of the parcel parking area and consisted of gravelly sand with apparent asphalt and rip rap. Saturated soil was encountered at approximately 11 feet bls in boring B-8, where abundant minerals and a granitic texture was observed (i.e. partially weathered rock).

The soil boring logs are included in **Appendix B**. Sample locations were measured using a Trimble Geo7x GPS and are depicted on **Exhibits 2A and 2B**.

3.0 LABORATORY ANALYSES

Soil samples were placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by Ultraviolet Fluorescence (UVF) for the following:

- n TPH-gasoline range organics (C₅-C₁₀) (TPH-GRO);
- n TPH-diesel range organics (C₁₀-C₃₅) (TPH-DRO);
- n Total petroleum hydrocarbons (C₅-C₃₅) (TPH);
- n Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- n Total aromatics (C₁₀-C₃₅);
- n 16 EPA Polycyclic Aromatic Hydrocarbons (16 EPA PAHs); and
- n Benzo(a)pyrene (BaP).

Please refer to **Appendix C** for the laboratory analytical reports.

4.0 DATA EVALUATION

4.1 Soil Analytical Results

Table 1 summarizes the results of the analyses of the soil samples. **Exhibit 2B** depicts the boring locations and analytical data.

Constituents from the UVF analysis were not detected at concentrations above applicable standards in the soil samples.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- n The geophysical investigation identified two (2) probable USTs (“UST-1” and “UST-2”) at a depth of approximately 3 feet bls, located along the western portion on the parcel parallel to S Ridge Avenue (**Exhibit 2A**).
- n Laboratory analysis did not report concentrations above applicable standards in the soil samples.
- n Terracon recommends NCDOT provide a copy of the results to the owner and/or operator of the site.
- n Terracon does not recommend further assessment of the ROW at this site; however, Terracon recommends that the two probable USTs are removed in accordance with applicable state regulatory guidelines. Based on detections of petroleum compounds in soil, construction workers should be alert for potential soil and/or groundwater impacts in other locations at the site.

6.0 REFERENCES

NCDOT, 2013. GeoEnvironmental Report for Planning Y-4810K. “Hazardous Materials Report.”
December 2, 2013

TABLES

Table 1
 Summary of Soil Analytical Results
 Preliminary Site Assessment
 Parcel 51 - Teresa Whittington Property
 Kannapolis, Cabarrus County, North Carolina
 Terracon Project No. 70187265

Sample ID: Sample Depth (ft bls):	B-1 2-4	B-2 4-6	B-3 3-5	B-4 2-4	B-5 3-5	B-7 8-10	B-8 8-10	B-8 13-15	NCDEQ Action Level	MSCC Industrial/ Commercial	PSRG Industrial/ Commercial
BTEX (C6 - C9)	<0.55	<0.65	<0.79	<0.71	<0.63	<0.75	<0.3	<0.26	NE	NE	NE
GRO (C5 - C10)	<0.55	<0.65	<0.79	<0.71	<0.63	<0.75	<0.3	<0.26	50	NE	NE
DRO (C10 - C35)	<0.04	11	<0.06	<0.06	5.4	<0.06	<0.02	0.49	100	NE	NE
TPH (C5 - C35)	<0.55	11	<0.79	<0.71	5.4	<0.75	<0.3	0.49	NE	NE	NE
Total Aromatics (C10-C35)	<0.11	8.3	<0.16	<0.14	5.3	<0.15	<0.06	0.33	NE	NE	NE
16 EPA PAHs	<0.02	0.45	<0.03	<0.03	0.28	<0.03	<0.01	<0.08	NE	NE	NE
BaP	<0.011	<0.013	<0.016	<0.014	<0.013	<0.015	<0.006	<0.01	NE	0.78	2.1

Notes:

Soil samples were collected on July 9, 2018.

Concentrations are reported in milligrams per kilogram (mg/kg).

ft bls - feet below land surface.

BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.

GRO - Gasoline Range Organics.

DRO - Diesel Range Organics.

TPH - Total Petroleum Hydrocarbons.

16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]perylene, benzo[a]pyrene, chrysene, dibenz[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-c,d]pyrene, naphthalene, phenanthrene, pyrene).

NE - Standard not established.

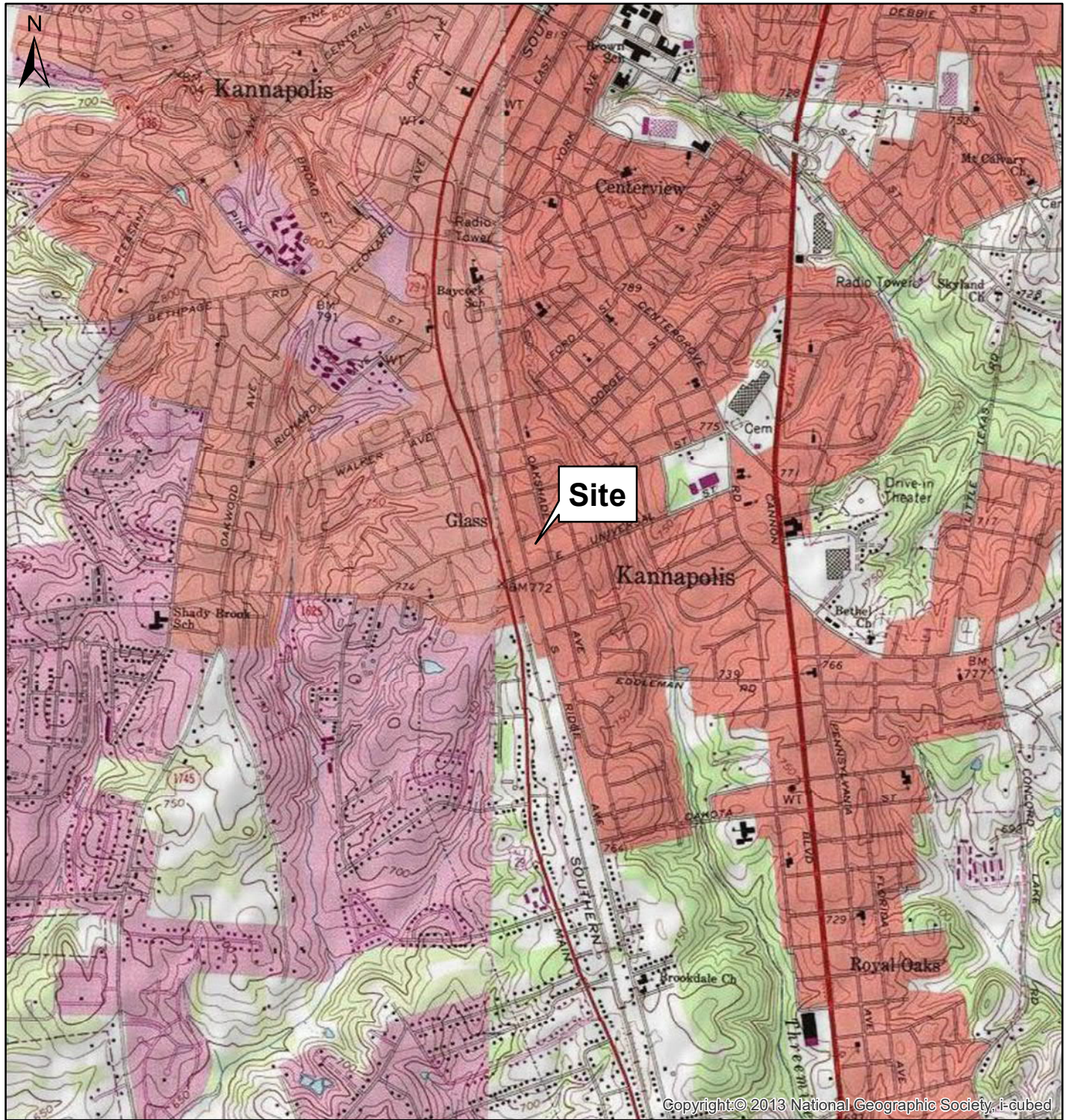
Bold: Constituent concentration reported above the method detection limit.

North Carolina Department of Environmental Quality (NCDEQ) State Action Level for Total Petroleum Hydrocarbons (GRO/DRO) (July 2016).

MSCC Industrial/Commercial - Maximum Soil Contaminant Concentration Levels Industrial/Commercial soil cleanup levels (April 2012).

NCDEQ Industrial/Commercial Preliminary Soil Remediation Goals (PSRGs) (February 2018).

FIGURES



0 1,000 2,000 4,000 6,000 8,000 10,000 Feet

CONTOUR INTERVAL 10 FEET

USGS TOPOGRAPHIC MAP
 SITE: CONCORD, NC QUADRANGLE (1987)
 NORTH: KANNAPOLIS, NC QUADRANGLE (1993)

PM:	SJK	Project No.	70187265
Drawn By:	DWH	Scale:	1:24,000
Checked By:	SJK	File Path:	
Approved By:	MTJ	Date:	8/27/2018

Terracon

2401 Brentwood Drive, Suite 107 Raleigh, NC 27604
 Phone: (919) 873-2211 Fax: (919) 873-9555

Topographic Vicinity Map

Preliminary Site Assessment
 Parcel 51 - Teresa Whittington Property
 Kannapolis, Cabarrus County, North Carolina

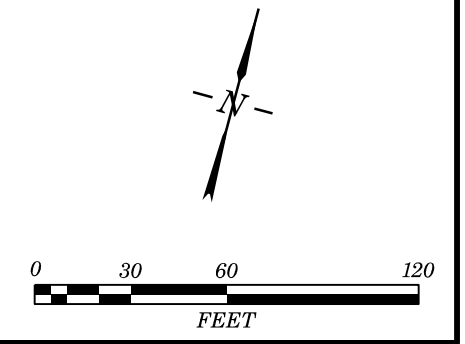
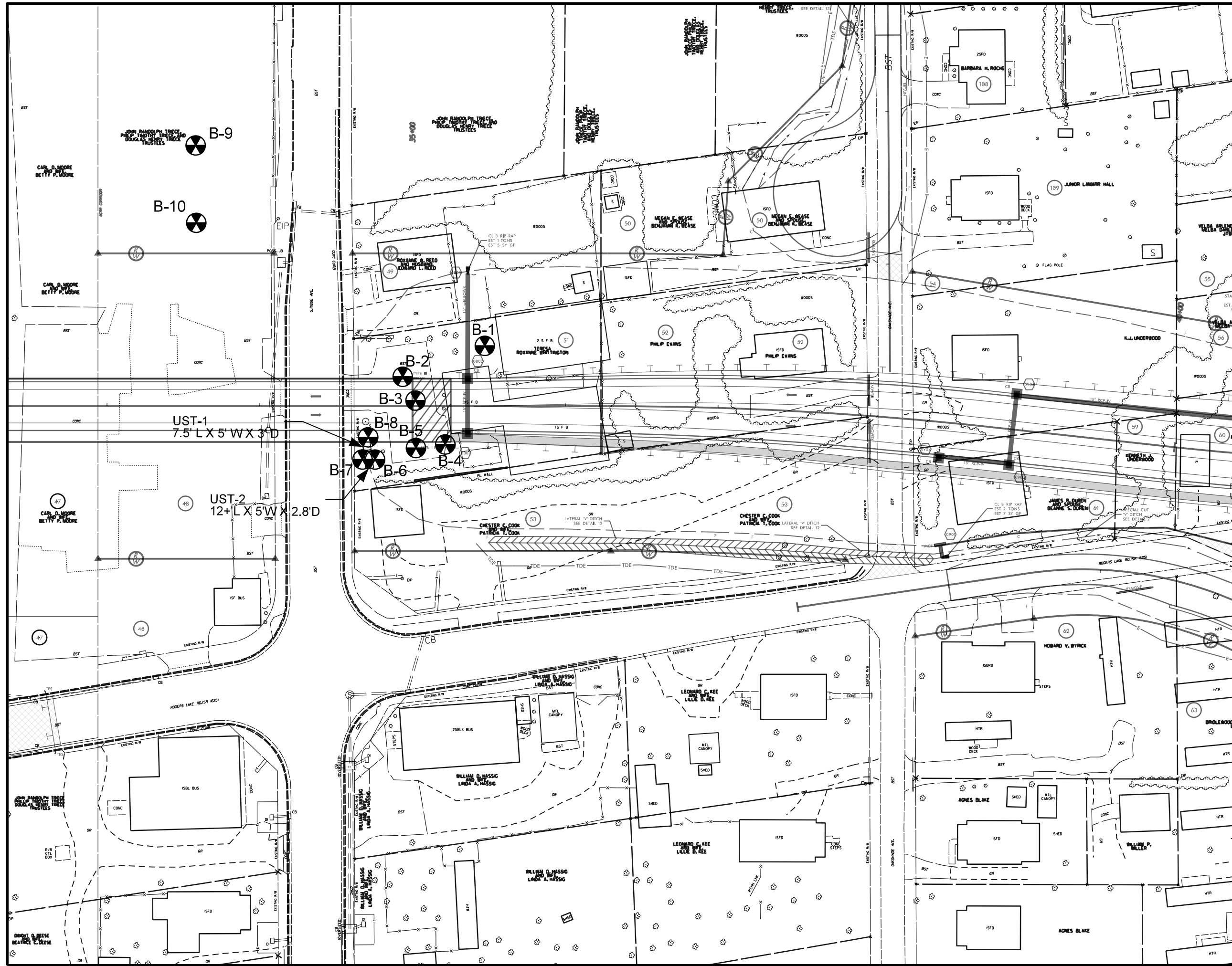
EXHIBIT NO.	1
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SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 51
 TERESA WHITTINGTON PROPERTY
 1311 SOUTH RIDGE AVENUE
 KANNAPOLIS, CABARRUS COUNTY,
 NORTH CAROLINA

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE WITH PIN AND CAP
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- F — PROPOSED CUT / FILL LINE
- C —
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- TDE — NEW TEMPORARY DRAINAGE EASEMENT
- ⊗ BORING LOCATION
- APPROXIMATE UST LOCATION



SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 51
TERESA WHITTINGTON PROPERTY
1311 SOUTH RIDGE AVENUE
KANNAPOLIS, CABARRUS COUNTY,
NORTH CAROLINA

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE WITH PIN AND CAP
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- TDE NEW TEMPORARY DRAINAGE EASEMENT
- ⊗ BORING LOCATION
- APPROXIMATE UST LOCATION

NOTES

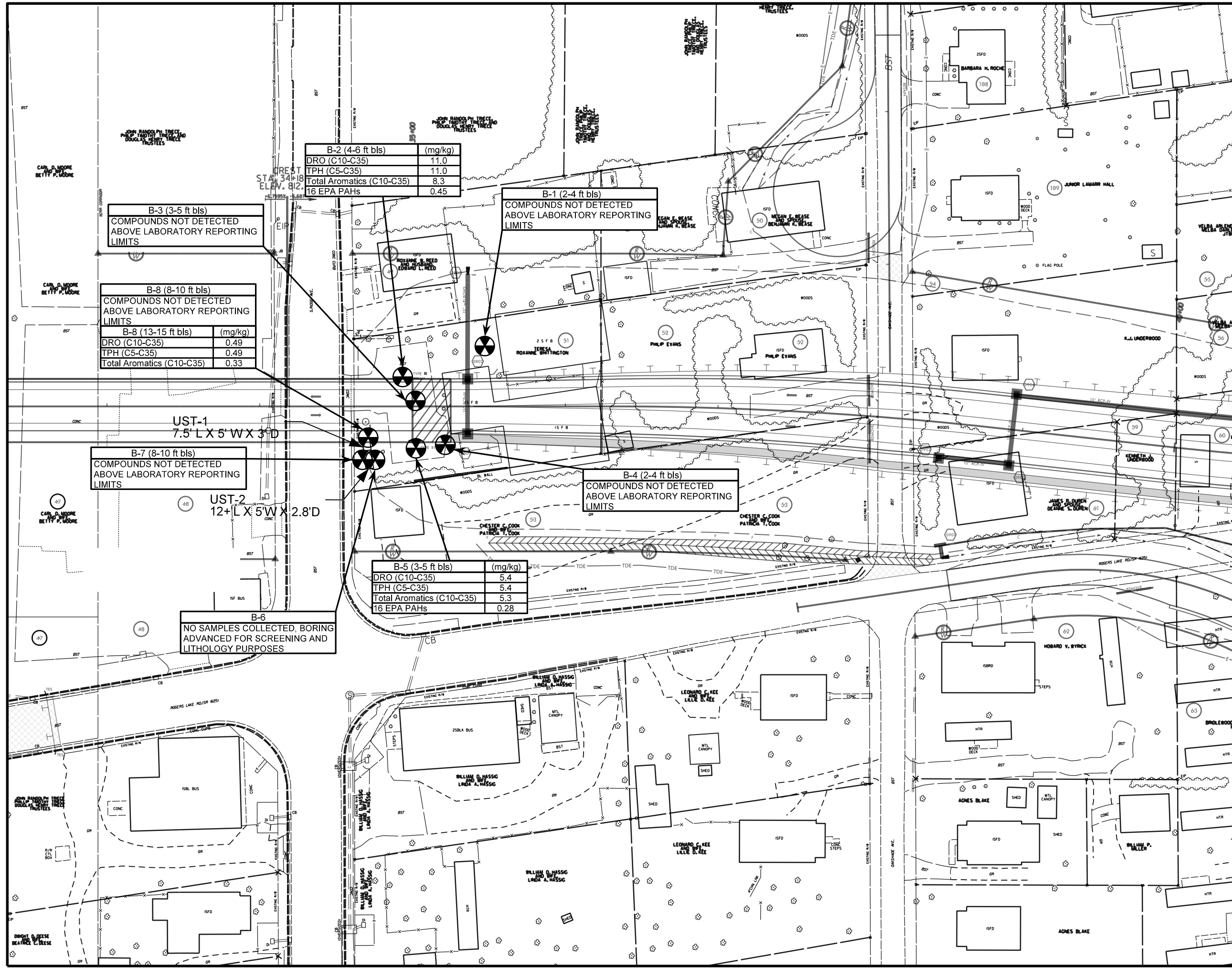
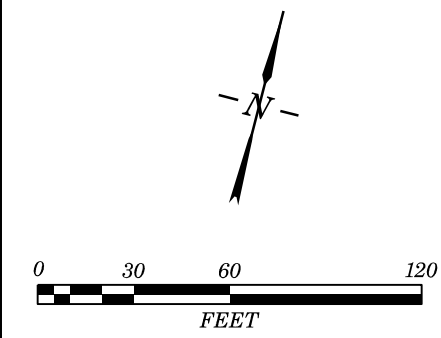
mg/kg - MILLIGRAMS PER KILOGRAM

ft bls - FEET BELOW LAND SURFACE

DRO - DIESEL RANGE ORGANICS

GRO - GASOLINE RANGE ORGANICS

PAH - POLYCYCLIC AROMATIC HYDROCARBON



APPENDIX A

GEOPHYSICAL SURVEY REPORT

TERRACON CONSULTANTS, INC.

**GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTS**

**Teresa Whittington (Parcel 51) Property
1311 South Ridge Avenue
Kannapolis, North Carolina**



July 2, 2018
Geophysical Survey Investigations, PLLC
Project No. 2018-28



4 Willimantic Drive, Greensboro, NC 27455
Office Tel: (336) 286-9718
denilm@bellsouth.net

**TERRACON CONSULTANTS, INC.
GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTS
Teresa Whittington (Parcel 51) Property
1311 South Ridge Avenue
Kannapolis, North Carolina**


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FIGURES

Figure 1	Geophysical Equipment & Site Photographs
Figure 2	EM61-MK2A Metal Detection – Early Time Gate Results
Figure 3	EM61-MK2A Metal Detection – Differential Results
Figure 4	GPR Images & Photograph Across Probable USTS

Prepared by:



Mark J. Denil, P.G.

1.0 INTRODUCTION

Geophysical Survey Investigations, PLLC (GSI) conducted an electromagnetic (EM) metal detection survey, ground penetrating radar (GPR) scanning and buried, utility line clearance search for Terracon Consultants, Inc. on June 19-21, 2018 across the accessible portion of the Teresa Whittington (Parcel 51) property located at 1311 South Ridge Avenue in Kannapolis, North Carolina. The geophysical work was conducted as part of the North Carolina Department of Transportation (NCDOT) site assessment for TIP Project Y-4810K (Norfolk Southern Mainline grade crossing separation at Rogers Road Crossing).

The geophysical investigation was conducted to determine if metallic, underground, storage tanks (USTs) are present on the accessible portion of the Teresa Whittington property. Terracon Consultants representatives Mr. Stephen Kerlin and Mr. David Hawkins, PG provided site information and guidance to Geophysical Survey Investigations, PLLC personnel prior and during data acquisition. The geophysical survey area has a maximum length and width of 100 feet and 90 feet, respectively. The geophysical survey area of the property (westerly portion of the site) consists of open, asphalt and grass-covered terrain. The Mutt Hutt dog kennel facility operates on this property in which the easterly portion of the site consists of buildings and thick wooded terrain. A UST valve cover is located near the southwesterly edge of the survey area adjacent to South Ridge Avenue.

2.0 FIELD METHODOLOGY

The EM investigation was performed across the survey area using a Geonics EM61-MK2A metal detection instrument with a Hemisphere A101 GPS unit. EM61 metal detection data and GPS coordinates were digitally collected in latitude and longitude geodetic format (NAD83) using a Juniper data recorder at approximately 1.0 foot intervals along survey lines spaced approximately five feet apart. The Trackmaker NAV61MK2 software program was used with the data recorder to view the relative positions of the survey lines in real time during data acquisition.

According to the instrument specifications, the EM61-MK2A can detect a metal drum down to a maximum depth of approximately 8 to 10 feet. Objects less than one foot in size can be detected to a maximum depth of 4 or 5 feet. The EM61 and GPS data were downloaded to a computer and processed in the field using the Trackmaker61MK2 and Surfer for Windows software programs. GPS coordinates were converted during data processing to Universal Transverse Mercator (UTM) coordinates (in feet) which are used as location control in this report.

GPR scanning was conducted across selected EM61 differential metal detection anomalies. GPR scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across the selected EM61 differential anomalies using the Geophysical Survey Systems SIR-3000 unit equipped with a 400 MHz antenna. GPR data were viewed in real time in a continuous mode using a vertical scan of 512 samples, at a sampling rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were viewed to a maximum investigating depth of approximately 6.0 feet based on an estimated two-way travel time of 8.0 nanoseconds per foot.

Following the UST investigation, the areas around proposed boring locations were scanned with the GPR unit and a DitchWitch 910 utility locator for buried utility line clearance purposes. Detected buried lines/conduits were marked in the field with orange marking paint and pin flags. Photographs of the geophysical equipment used for the investigation and of the site are presented in **Figure 1**.

3.0 DISCUSSION OF RESULTS

Contour plots of the EM61 early time gate results and the EM61 differential results are presented in **Figures 2 and 3**, respectively. The early time gate results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The early time gate response can be used to delineate metallic conduits or utility lines, small, isolated, metal objects and areas containing insignificant metal debris. The differential results are obtained from the difference between the early time gate channel and late time gate channel of the EM61 instrument. The differential results focus on the larger metal objects such as drums and UST-size objects and ignore the smaller, insignificant, metal objects and debris.

The linear, EM61 early time gate anomalies intersecting UTM coordinates 1752575-E 12880502-N and 1752596-E 12880469-N are probably in response to metal spikes in the landscaping border and to the metal fence line, respectively. GPR scanning suggests the EM61 anomalies centered near UTM coordinates 1752538-E 12880467-N are in response to a mailbox, business sign and a metal fence post. GPR scanning suggests the EM61 anomalies centered near coordinates 1752600-E 12880532-N are in response to the metal shed, fence lines, office building and buried, miscellaneous metal debris. GPR scanning detected a possible area containing shallow fill material centered near coordinates 1752569-E 12880455-N. The EM61 early time gate anomalies recorded within the possible fill material area are probably in response to buried, miscellaneous debris and small objects.

GPR scanning across the EM61 differential anomalies centered near coordinates 1752546-E 12880450-N and 1752549-E 12880444-N suggests the presence of two probable, metallic USTs. Probable “UST-1” is approximately 7.5 feet long, 5.0 feet wide and 3.0 feet below present grade. A valve cover is located in the center of probable UST-1. Probable “UST-2” is at least 12 feet long, 5.0 feet wide and 2.8 below present grade. The southern end of UST-2 extends into the dense foliage which prevented GPR scanning from delineating the end of the tank. Please note that an active natural gas line runs very close to the southerly end of UST-2.

The axes of the probable USTs are oriented in a northwesterly-southeasterly direction and parallel to South Ridge Avenue. GPR images acquired across the probable USTs and a photograph showing the location of the probable, buried tanks are presented in Figure 4. The approximate foot prints of the probable USTs were marked in the field with orange marking paint and pin flags.

As previously mentioned, scanning for utility line clearance purposes was conducted across the proposed boring locations. Detected lines or conduits were marked in the field with orange marking paint and pin flags.

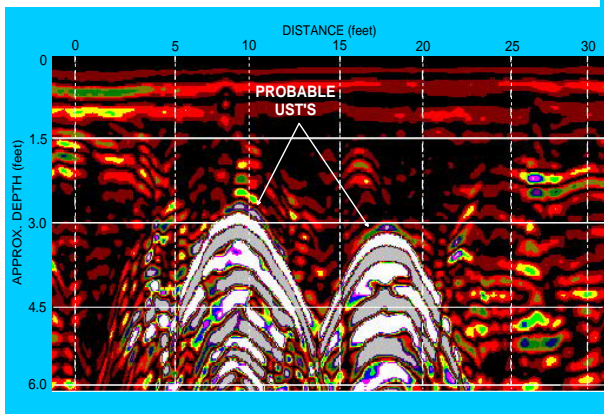
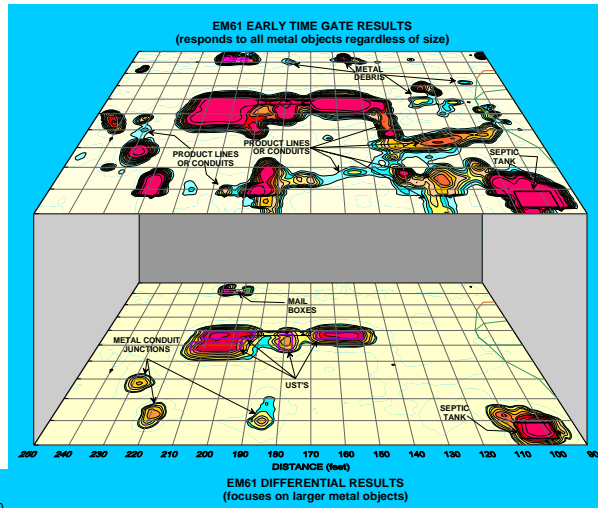
4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the Teresa Whittington (Parcel 51) property located at 1311 South Ridge Avenue in Kannapolis, North Carolina provides the following summary and conclusions:

- The combination of EM61 and GPR surveys provided reliable results for the detection of metallic USTs across the survey area within the depth interval of 0 to 6 feet.
- The linear, EM61 early time gate anomalies intersecting UTM coordinates 1752575-E 12880502-N and 1752596-E 12880469-N are probably in response to metal spikes in the landscaping border and to the metal fence line, respectively.
- GPR scanning suggests the EM61 anomalies centered near UTM coordinates 1752538-E 12880467-N are in response to a mailbox, business sign and a metal fence post.
- GPR scanning across the EM61 differential anomalies centered near coordinates 1752546-E 12880450-N and 1752549-E 12880444-N suggests the presence of two probable, metallic USTs. Probable “UST-1” is approximately 7.5 feet long, 5.0 feet wide and 3.0 feet below present grade. Probable “UST-2” is at least 12 feet long, 5.0 feet wide and 2.8 below present grade.

5.0 LIMITATIONS

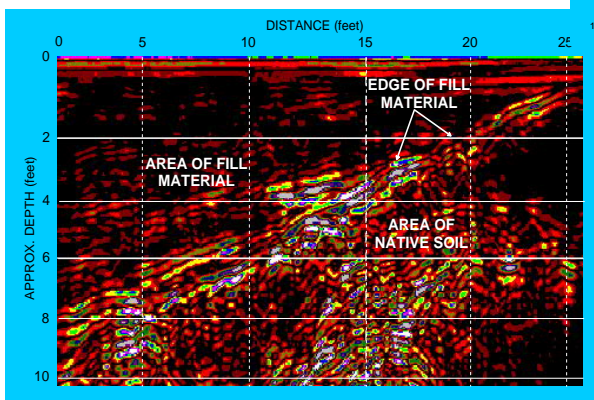
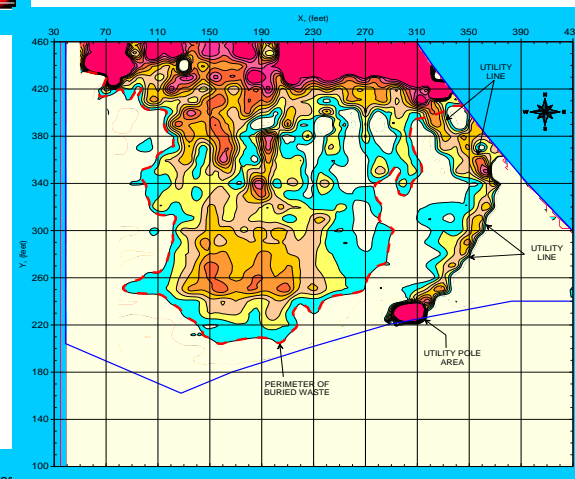
EM61 and GPR surveys have been performed and this report prepared for Terracon Consultants, Inc. in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the geophysical surveys are non-unique and may not represent actual subsurface conditions. Some of the EM61 and GPR anomalies interpreted as possible/probable USTs, utility lines, conduits, steel reinforced concrete, or miscellaneous, metal debris may be attributed to other surface or subsurface features and/or interference from cultural features.

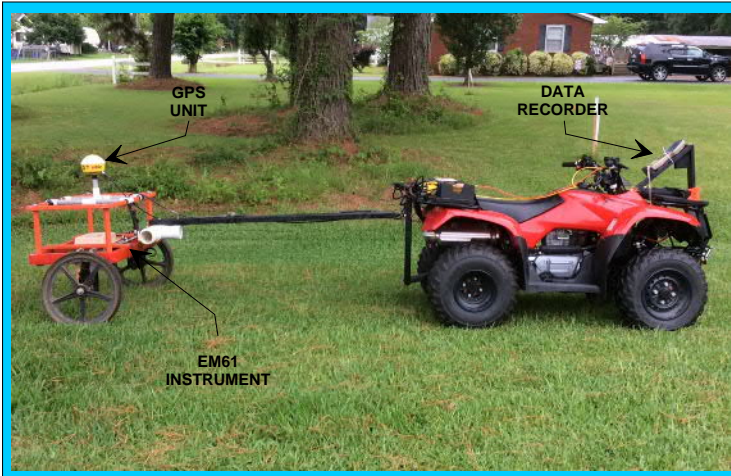


REPORT FIGURES

(on the following pages)

Figures shown on this page are for esthetic purposes only and are not related to the site discussed in this report





EM61 METAL DETECTOR

The photograph shows the Geonics EM61-MK2A metal detector, a Hemisphere A101 GPS unit, a Juniper data recorder, and a Honda Recon ATV which were used to conduct the metal detection survey across the proposed ROW & easement areas of Parcel 51.

GROUND PENETRATING RADAR UNIT

The photograph shows the Geophysical Survey Systems SIR-3000 ground penetrating radar (GPR) unit equipped with a 400 MHz antenna that were used to conduct the GPR scanning across selected areas.



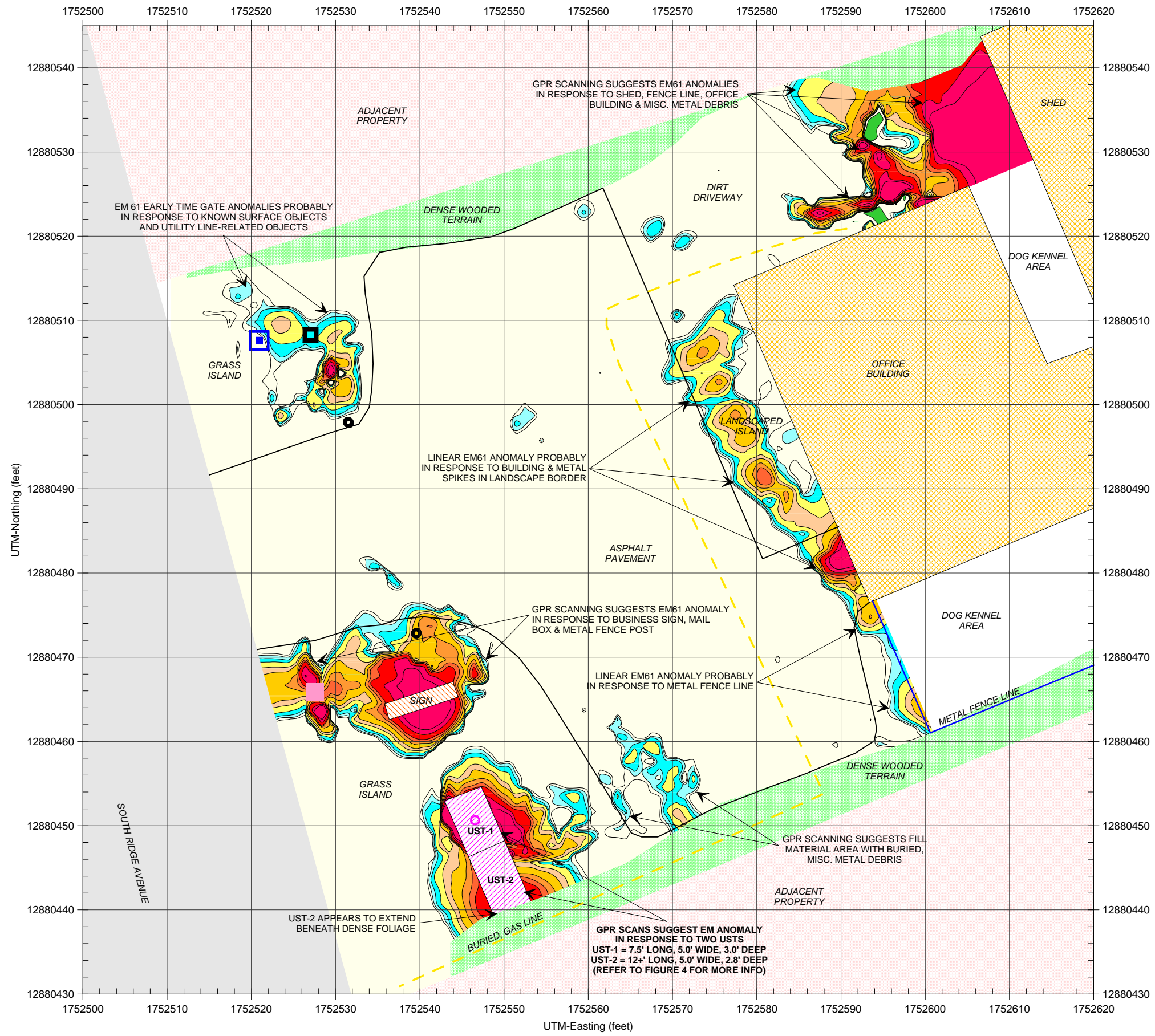
DITCHWITCH UTILITY LOCATOR

The photograph shows the DitchWitch 910 utility locator which was used to detect buried lines across the proposed boring locations.

GEOPHYSICAL SURVEY AREA

The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 51. The geophysical investigation was conducted on June 19-21, 2018.

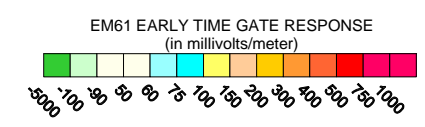




The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 51.

LEGEND

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- MAILBOX
- METAL FENCE POST
- WATER METER COVER
- UTILITY LINE BOX
- PROBABLE UST VALVE COVER
- PROBABLE METALLIC UST, AS SUGGESTED BY GEOPHYSICAL SURVEYS



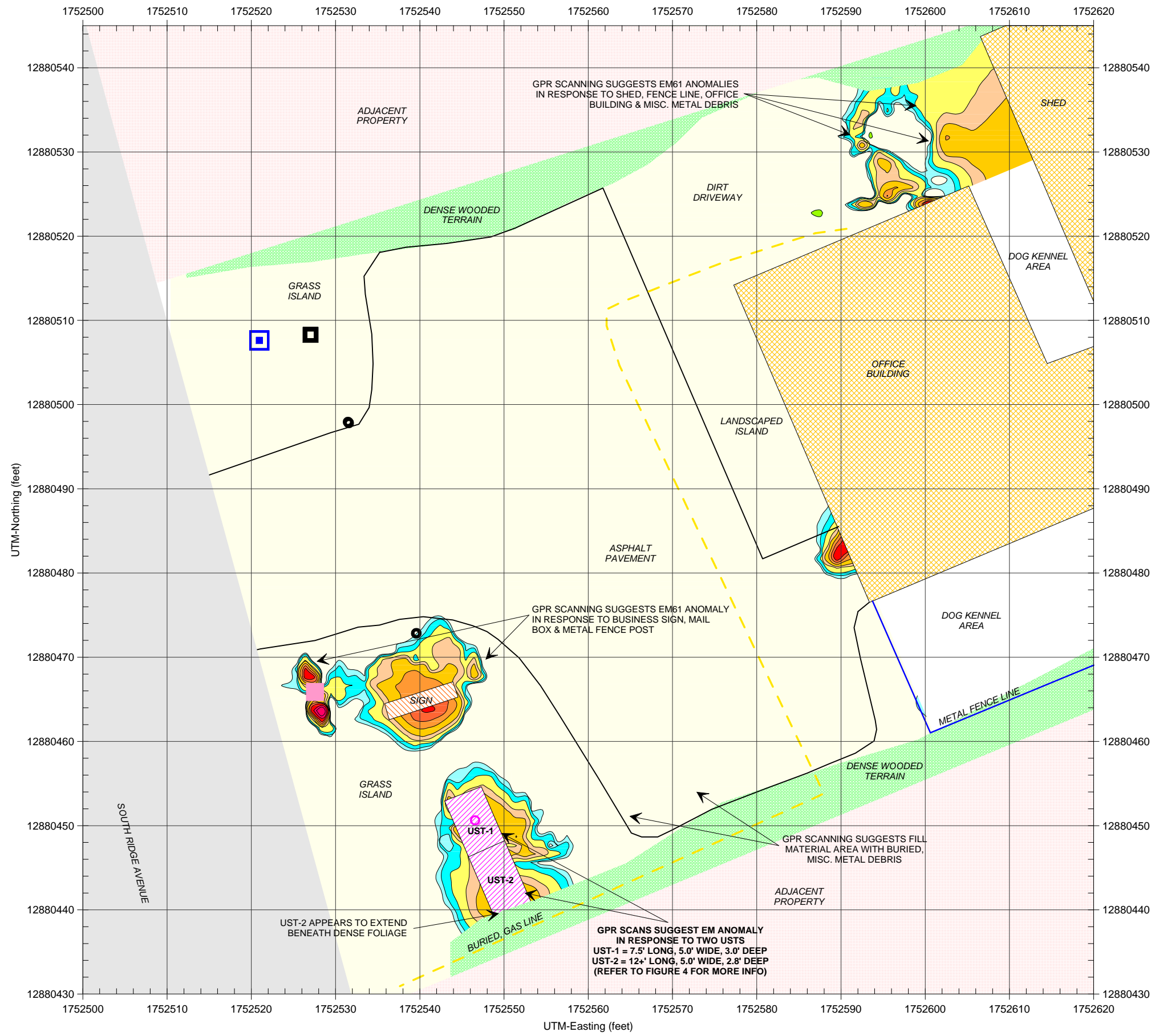
The contour plot shows the early time gate (most sensitive) response of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The early time gate response shows buried, metallic objects, lines and conduits regardless of size. GPR scans were conducted across selected EM61 anomalies and steel reinforced concrete using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna. The geophysical investigation was conducted on June 19-21, 2018.



EM61-MK2A METAL DETECTION (EARLY TIME GATE RESULTS)

Terracon Consultants, Inc.
 Teresa Whittington (Parcel 51) Property
 1311 South Ridge Avenue
 Kannapolis, North Carolina

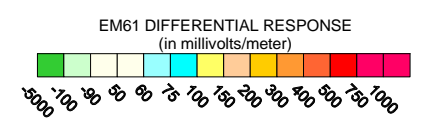




The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 51.

LEGEND

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- MAILBOX
- METAL FENCE POST
- WATER METER COVER
- UTILITY LINE BOX
- PROBABLE UST VALVE COVER
- PROBABLE METALLIC UST, AS SUGGESTED BY GEOPHYSICAL SURVEYS



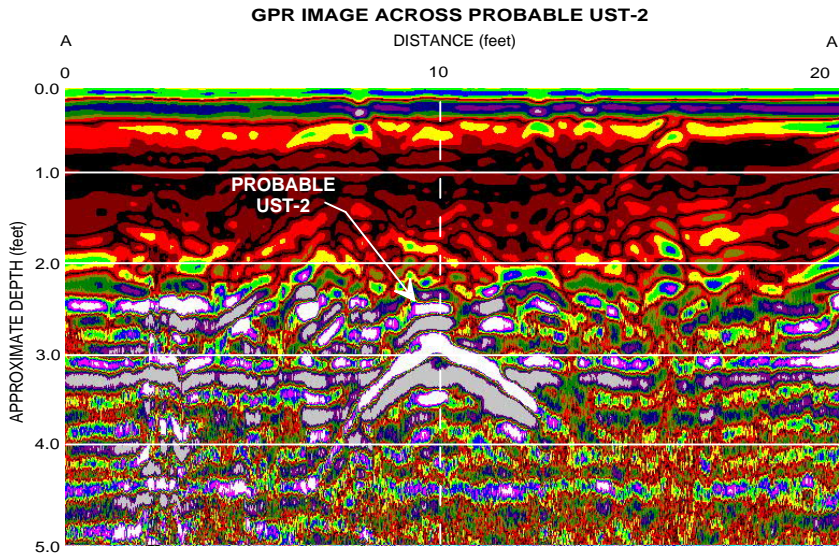
Note: The contour plot shows the differential response between the early time gate and the late time gate channels of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The differential response focuses on larger, buried, metallic objects such as drums and USTs and ignores smaller miscellaneous, metal debris. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna. The geophysical investigation was conducted on June 19-21, 2018.



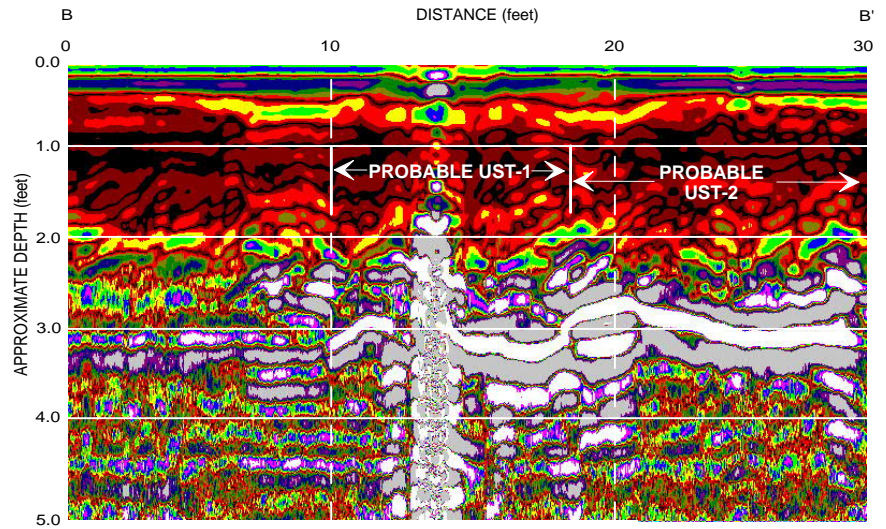
EM61-MK2A METAL DETECTION (DIFFERENTIAL RESULTS)

Terracon Consultants, Inc.
 Teresa Whittington (Parcel 51) Property
 1311 South Ridge Avenue
 Kannapolis, North Carolina



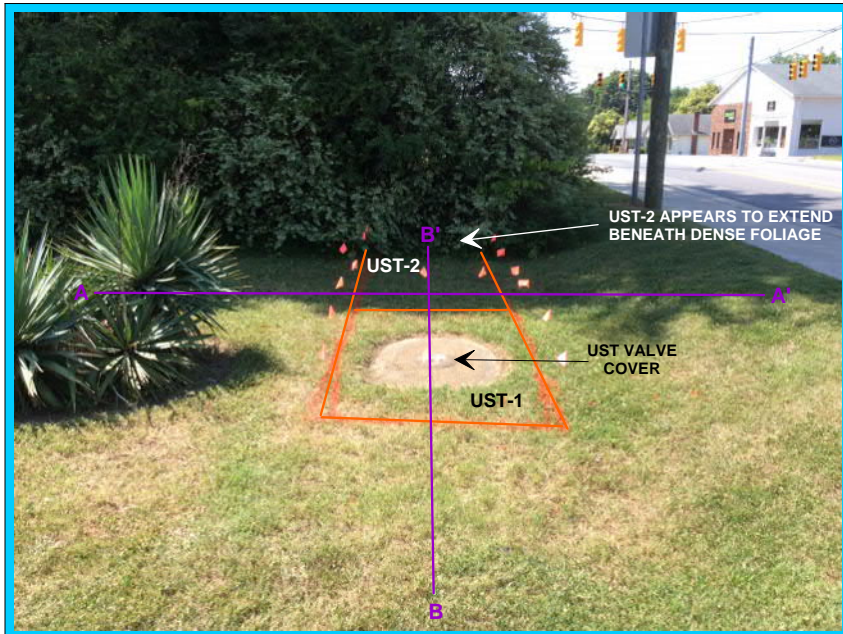


GPR IMAGE ACROSS PROBABLE USTS



GPR scanning across the EM61 differential anomalies centered near UTM coordinates 1752546-E 12880450-N and 1752549-E, 12880444-N yielded high amplitude, hyperbolic reflections in GPR images AA' and BB'. The GPR anomalies are probably in response to metallic UST-1 and UST-2 buried approximately 3.0 and 2.8 feet below present grade, respectively.

The purple lines labeled AA' and BB' in the photograph shown below represent the approximate locations of the two GPR images.



The orange rectangles in the photograph represent the approximate foot prints of two probable USTs that were detected by the geophysical investigation. Based on the GPR data, UST-1 is approximately 7.5 feet long, 5.0 feet wide and buried 3.0 feet below present grade. UST-2 is more than 12.0 feet long, 5.0 feet wide and 2.8 feet deep.

The solid purple lines labeled AA' and BB' in the photograph represent the approximate locations of GPR images AA' and BB' shown above. The photograph is viewed in a southerly direction.

APPENDIX B

SOIL BORING LOGS

Lithology Log



Boring ID: B-1

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0915	Sample Method <input type="checkbox"/> Hand Auger <input checked="" type="checkbox"/> Macro-Core <input type="checkbox"/> Split Spoon <input type="checkbox"/> Shelby Tube	Drilling Method <input checked="" type="checkbox"/> DPT <input type="checkbox"/> HSA <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Air Rotary <input type="checkbox"/> Rock Core
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0920		
Weather:	Sunny 80s	Boring Diameter:	2-inch		
Logged By:	D. Hawkins	Total Depth:	10'		
Drilling Sub:	IET	Water Level:	NA		
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	58	<0.1	ML	0'-5': light brown, clayey, SILT, stiff, dry, odor not observed, micaceous	B-1 (2-4), 0920	NA- Well Not Installed
		<0.1				
5-10	56	<0.1	SM	5'-10': beige, tan, sandy SILT-SILT, dry 5'-9', moist 9'-10', feldspar texture-grains observed, odor not observed		
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

Lithology Log



Boring ID: B-2

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0920	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0930	<input type="checkbox"/> Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	<input type="checkbox"/> HSA
Logged By:	D. Hawkins	Total Depth:	10'	<input type="checkbox"/> Split Spoon	<input type="checkbox"/> Mud Rotary
Drilling Sub:	IET	Water Level:	NA	<input type="checkbox"/> Shelby Tube	<input type="checkbox"/> Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		<input type="checkbox"/> Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	GW	0'-0.5': asphalt, black, dry	B-2 (4-6), 0930	NA- Well Not Installed
			CL	0.5'-4': brown-reddish brown, silty CLAY, dry		
<0.1	ML	4'-6': brown, SILT, dry, micaceous				
		SM	6'-10': beige, tan, sandy SILT, dry, odor not observed throughout			
5-10	29		<0.1			
		<0.1		boring terminated at 10' bls per scope		

Notes:

ppm: parts per million ppb: parts per billion NA: Not applicable bls: below land surface

Lithology Log



Boring ID: B-3

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0935	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0945	<input type="checkbox"/> Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	<input type="checkbox"/> HSA
Logged By:	D. Hawkins	Total Depth:	10'	<input type="checkbox"/> Split Spoon	<input type="checkbox"/> Mud Rotary
Drilling Sub:	IET	Water Level:	NA	<input type="checkbox"/> Shelby Tube	<input type="checkbox"/> Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		<input type="checkbox"/> Rock Core

Depth (ft bls)	Recovery (inches)	PI/D (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	CL	0'-3': brown, silty CLAY, dry	B-3 (3-5), 0940	NA- Well Not Installed
		<0.1		3'-10': beige - light brown, silty SAND, observed weathered minerals (quartz, feldspar, hornblende). Dry, some interlayered silty lenses (micaceous)		
5-10	60	<0.1	SM			
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

Lithology Log



Boring ID: B-4

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0935	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0945	<input type="checkbox"/> Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	<input type="checkbox"/> HSA
Logged By:	D. Hawkins	Total Depth:	3'	<input type="checkbox"/> Split Spoon	<input type="checkbox"/> Mud Rotary
Drilling Sub:	IET	Water Level:	NA	<input type="checkbox"/> Shelby Tube	<input type="checkbox"/> Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		<input type="checkbox"/> Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-3	36	<0.1	SP	0'-2': reddish brown, silty clay, dry 2-3': beige, weathered rock, SAND, evident feldspar and other minerals, dry, odor not observed	B-4 (2-4), 0945	NA- Well Not Installed
				refusal at 3' bls on apparent weathered rock		

Lithology Log



Boring ID: B-5a/B-5

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0950	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1000	<input type="checkbox"/> Hand Auger	<input checked="" type="checkbox"/> DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	<input checked="" type="checkbox"/> Macro-Core	<input type="checkbox"/> HSA
Logged By:	D. Hawkins	Total Depth:	10'	<input type="checkbox"/> Split Spoon	<input type="checkbox"/> Mud Rotary
Drilling Sub:	IET	Water Level:	NA	<input type="checkbox"/> Shelby Tube	<input type="checkbox"/> Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		<input type="checkbox"/> Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	18	<0.1	SW	B-5a 0'-5': first attempt, recover <1', offset 5' to north for B-5 B-5 0'-5': brown, dark grey, gravelly SAND, dry, "fill", odor not observed, asphalt pieces	B-5 (3-5), 1000	NA- Well Not Installed
		<0.1				
5-10				B-5a 5'-10': random fill, asphalt, other lightweight fragments, odor not observed (<0.1 ppm) B-5 5'-10': no recovery, able to get down, had loose fill		
				boring terminated at 10' bls per scope.		

Notes:

ppm: parts per million ppb: parts per billion NA: Not applicable bls: below land surface

Lithology Log



Boring ID: B-6

Project Number:	70187265	Start Date/Time:	7/9/2018 / 1000	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1005	<input type="checkbox"/> Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	<input type="checkbox"/> HSA
Logged By:	D. Hawkins	Total Depth:	10'	<input type="checkbox"/> Split Spoon	<input type="checkbox"/> Mud Rotary
Drilling Sub:	IET	Water Level:	NA	<input type="checkbox"/> Shelby Tube	<input type="checkbox"/> Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		<input type="checkbox"/> Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	30	<0.1	CL	0'-5': brown-light brown, silty CLAY, dry, stiff, firm	no soil sample. Boring for additional lithology	NA- Well Not Installed
		<0.1				
5-10	30	<0.1	SM	5'-10': light brown, dry, sandy SILT, odor not observed		
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

ppm: parts per million ppb: parts per billion NA: Not applicable bls: below land surface

Lithology Log



Boring ID: B-7

Project Number:	70187265	Start Date/Time:	7/9/2018 / 1010	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1015	<input type="checkbox"/> Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	<input type="checkbox"/> HSA
Logged By:	D. Hawkins	Total Depth:	10'	<input type="checkbox"/> Split Spoon	<input type="checkbox"/> Mud Rotary
Drilling Sub:	IET	Water Level:	NA	<input type="checkbox"/> Shelby Tube	<input type="checkbox"/> Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		<input type="checkbox"/> Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	29	<0.1	SW	0'-0.5': organic, grass, gravel	B-7 (8-10), 1005	NA- Well Not Installed
		<0.1		0.5'-4': brown, clayey SILT, dry		
5-10	24	<0.1	ML	4'-10': light brown, sandy SILT, dry, odor not observed		
		<0.1				
				boring terminated at 10' bls per scope		

Notes:

ppm: parts per million ppb: parts per billion NA: Not applicable bls: below land surface

Lithology Log



Boring ID: B-8

Project Number:	70187265	Start Date/Time:	7/9/2018 / 1010	Sample Method	Drilling Method
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1020	<ul style="list-style-type: none"> • Hand Auger X Macro-Core • Split Spoon • Shelby Tube 	<ul style="list-style-type: none"> X DPT • HSA • Mud Rotary • Air Rotary • Rock Core
Weather:	Sunny 80s	Boring Diameter:	2-inch		
Logged By:	D. Hawkins	Total Depth:	10'		
Drilling Sub:	IET	Water Level:	NA		
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	38	<0.1	ML	0'-1': dark grey, organic, SILT, dry	B-8 (8-10), 1025	NA- Well Not Installed
			CL	1'-3': brown, silty CLAY, dry		
		<0.1		3'-9': light brown, silty SAND, dry, odor not observed		
5-10	38	<0.1	SP-SM	9'-15': beige-brown, SAND or silty SAND, heavy abundance of minerals, weathered granitic fabric (partially weathered rock), moist-wet, -11-15', slight petroleum odor in saturated zone		
		<0.1				
10-15	56	<0.1				
		<0.1				
				boring terminated at 15' per scope to evaluate UST area		

Notes:

ppm: parts per million ppb: parts per billion NA: Not applicable bls: below land surface

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS



Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
 SUITE 107
 RALEIGH NC 27604

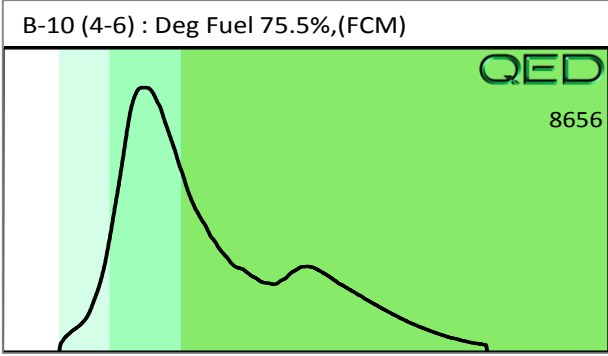
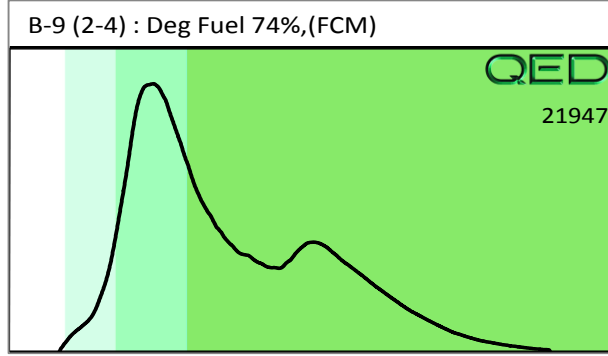
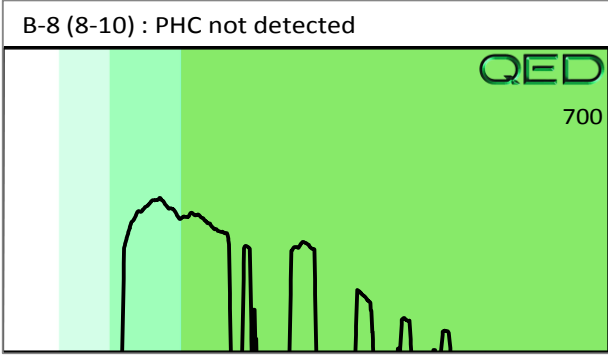
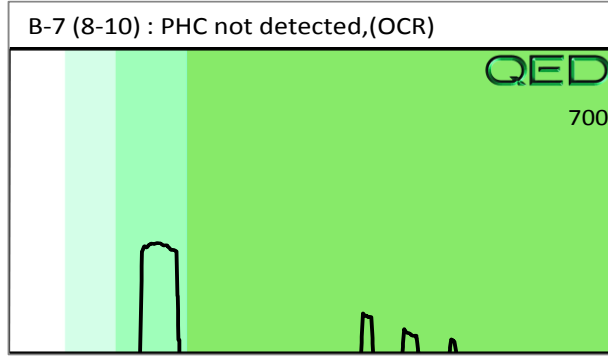
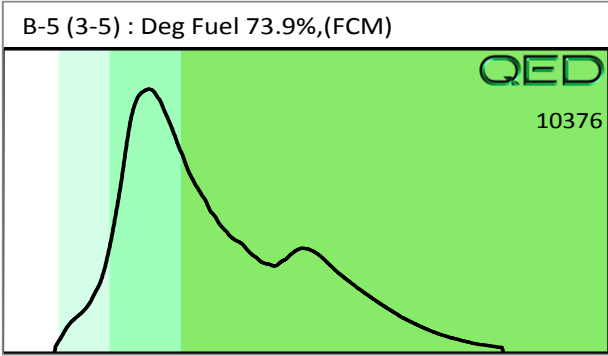
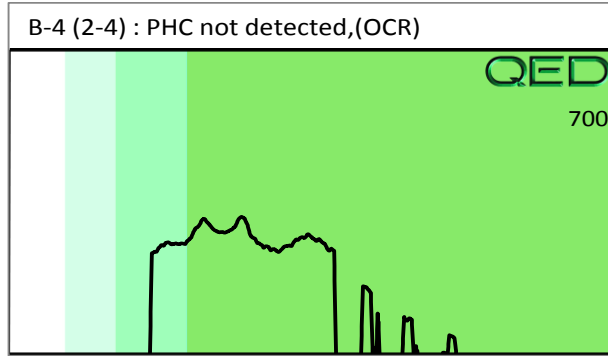
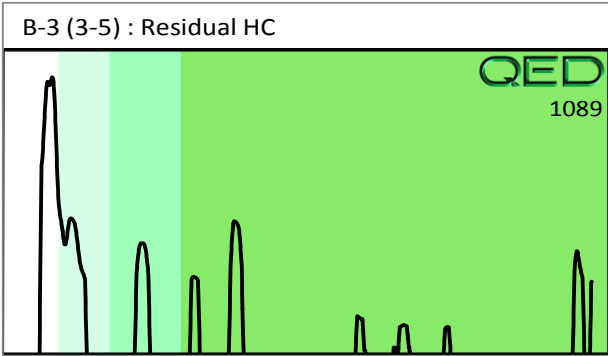
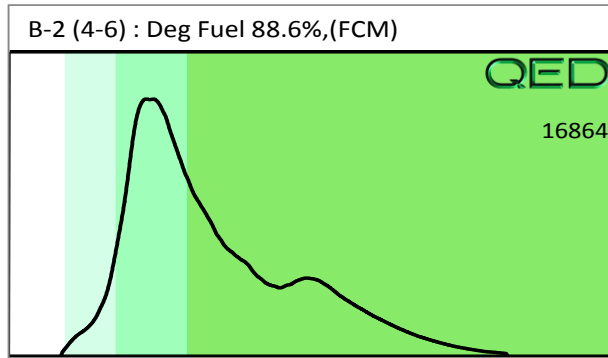
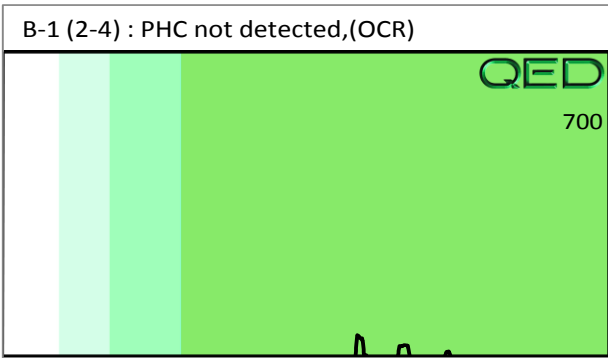
Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Contact: DAVID HAWKINS
 COLLECTED BY DAVID HAWKINS
Project: #70187265

Operator NICK HENDRIX

											F03640						
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match				
										% light	% mid	% heavy					
s	B-1 (2-4)	22.0	<0.55	<0.55	<0.04	<0.55	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(OCR)				
s	B-2 (4-6)	26.0	<0.65	<0.65	11	11	8.3	0.45	<0.013	0	95.4	4.3	Deg Fuel 88.6%,(FCM)				
s	B-3 (3-5)	31.7	<0.79	<0.79	<0.06	<0.79	<0.16	<0.03	<0.016	0	0	0	Residual HC				
s	B-4 (2-4)	28.3	<0.71	<0.71	<0.06	<0.71	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)				
s	B-5 (3-5)	25.2	<0.63	<0.63	5.4	5.4	5.3	0.28	<0.013	0	94.5	5.1	Deg Fuel 73.9%,(FCM)				
s	B-7 (8-10)	29.9	<0.75	<0.75	<0.06	<0.75	<0.15	<0.03	<0.015	0	0	0	PHC not detected,(OCR)				
s	B-8 (8-10)	11.9	<0.3	<0.3	<0.02	<0.3	<0.06	<0.01	<0.006	0	0	0	PHC not detected				
s	B-9 (2-4)	13.3	<0.33	<0.33	8.7	8.7	6	0.32	<0.007	0	95.2	4.5	Deg Fuel 74%,(FCM)				
s	B-10 (4-6)	13.3	<0.33	<0.33	4.1	4.1	2.1	0.12	<0.007	0	95.3	4.4	Deg Fuel 75.5%,(FCM)				
Initial Calibrator QC check											OK		Final FCM QC Check		OK		91

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





Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
 SUITE 107
 RALEIGH NC 27604

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Contact: DAVID HAWKINS
 COLLECTED BY DAVID HAWKINS
Project: #70187265

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-11 (1-3)	27.4	<0.68	<0.68	32.5	32.5	25	1.2	<0.014	0	98	1.9	Deg Fuel 90.6%,(FCM)
s	B-12 (2-4)	23.9	<0.6	<0.6	1.2	1.2	1.2	0.06	<0.012	0	96.3	3.4	V.Deg.PHC 89.4%,(FCM)
s	B-13 (4-6)	23.6	<0.59	<0.59	<0.05	<0.59	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-14 (6-8)	28.5	<0.71	<0.71	<0.06	<0.71	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-15 (2-4)	24.8	<0.62	<0.62	1.2	1.2	0.38	<0.02	<0.012	0	94.4	5.2	Deg Fuel 91.9%,(FCM),(OCR)
s	B-16 (3-5)	27.4	<0.68	<0.68	<0.05	<0.68	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-17 (2-4)	22.6	<0.57	<0.57	0.95	0.95	0.94	0.05	<0.011	0	89.9	9.2	V.Deg.PHC 91.7%,(FCM)
s	B-18 (8-10)	25.2	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-19 (2-4)	26.3	<0.66	<0.66	<0.05	<0.66	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-20 (4-6)	25.5	<0.64	<0.64	<0.05	<0.64	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check **OK**

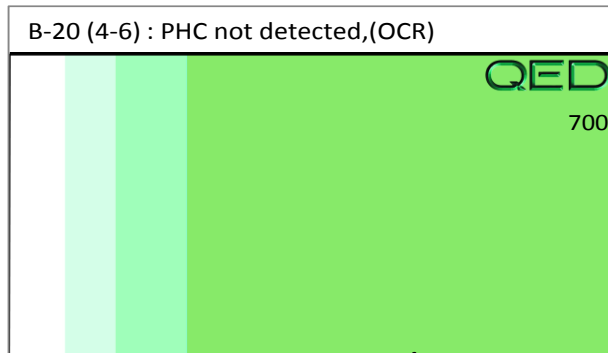
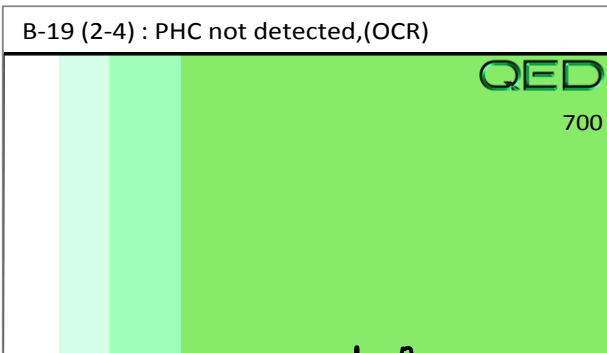
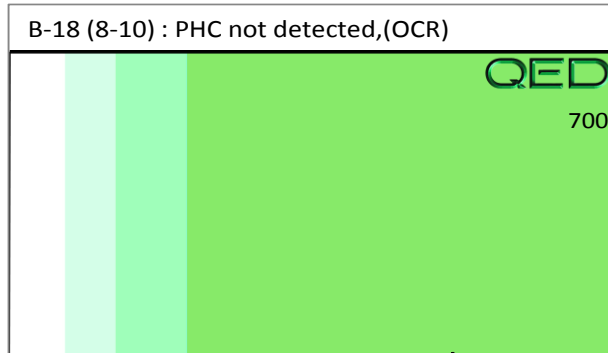
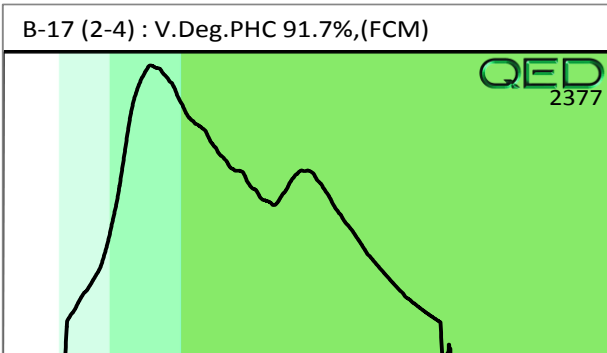
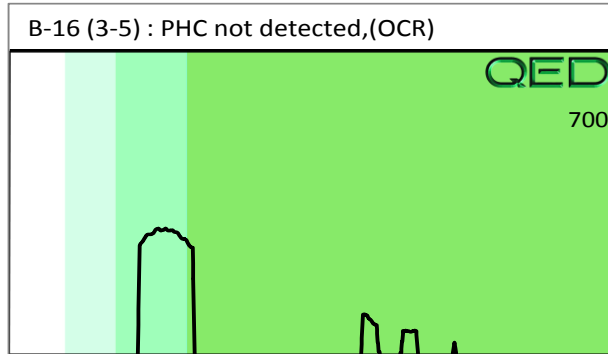
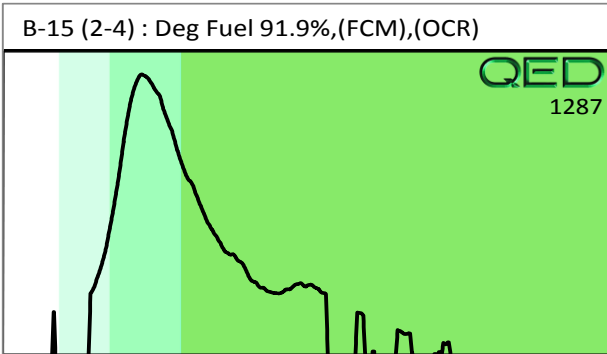
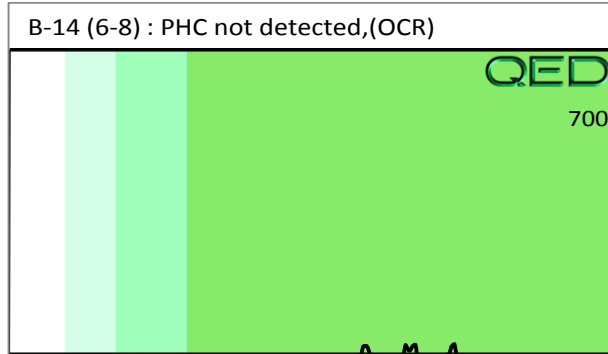
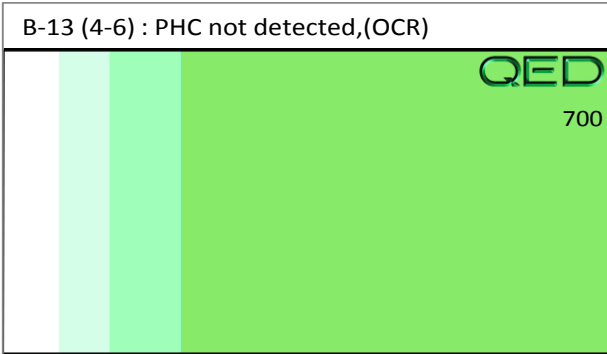
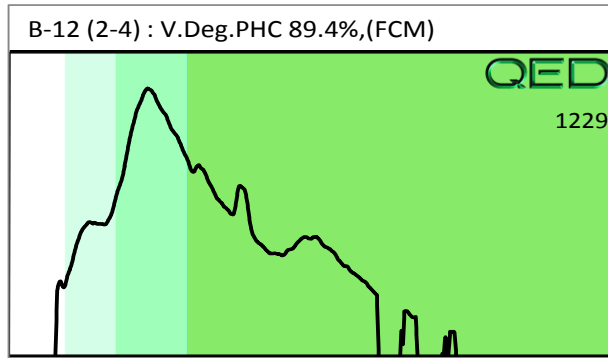
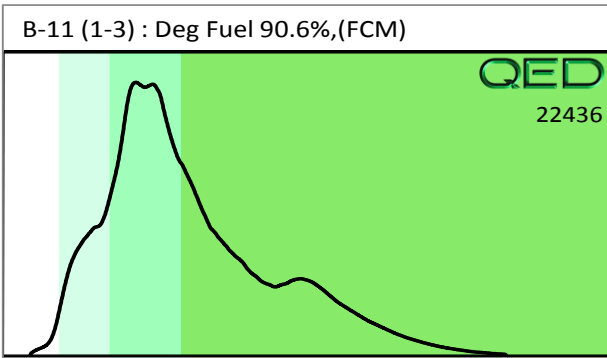
Final FCM QC Check **OK**

105

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





Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
 SUITE 107
 RALEIGH NC 27604

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Contact: DAVID HAWKINS
 COLLECTED BY DAVID HAWKINS
Project: #70187265

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-21 (0-2)	28.0	<0.7	<0.7	0.57	0.57	0.56	<0.03	<0.014	0	88.7	10.4	V.Deg.PHC 90.6%,(FCM)
s	B-22 (3-5)	24.1	<0.6	<0.6	<0.05	<0.6	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-23 (2-4)	25.0	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-24 (6-8)	25.7	<0.64	<0.64	<0.05	<0.64	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-25 (2-4)	16.1	<0.4	<0.4	<0.03	<0.4	<0.08	<0.02	<0.008	0	0	0	PHC not detected,(OCR)
s	B-26 (3-5)	29.2	<0.73	<0.73	<0.06	<0.73	<0.15	<0.03	<0.015	0	0	0	PHC not detected,(OCR)
s	B-27 (4-6)	27.4	<0.68	<0.68	<0.05	<0.68	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-28 (3-5)	24.8	<0.62	<0.62	<0.05	<0.62	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-29 (2-4)	13.6	<0.34	<0.34	<0.03	<0.34	<0.07	<0.01	<0.007	0	0	0	PHC not detected
s	B-30 (3-5)	16.1	<0.4	<0.4	<0.03	<0.4	<0.08	<0.02	<0.008	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check **OK**

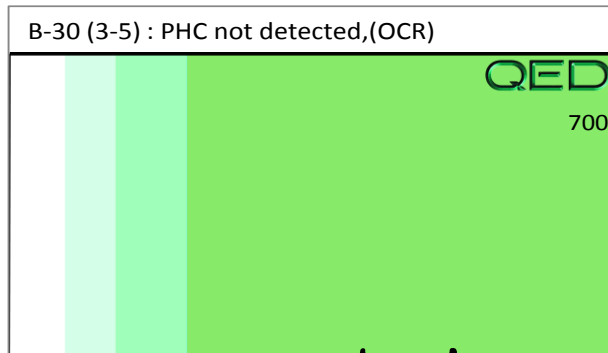
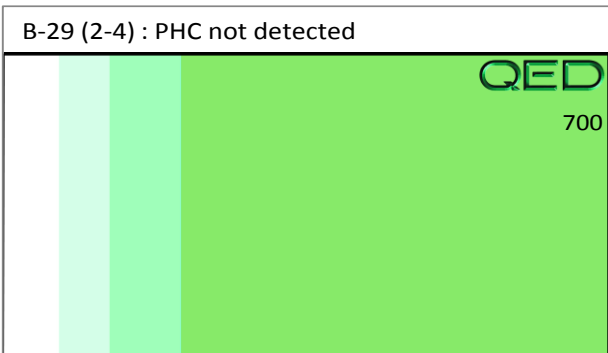
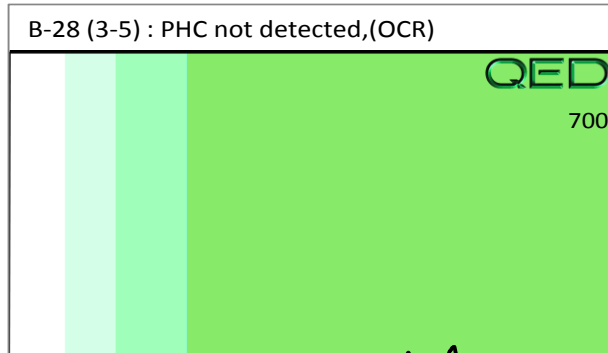
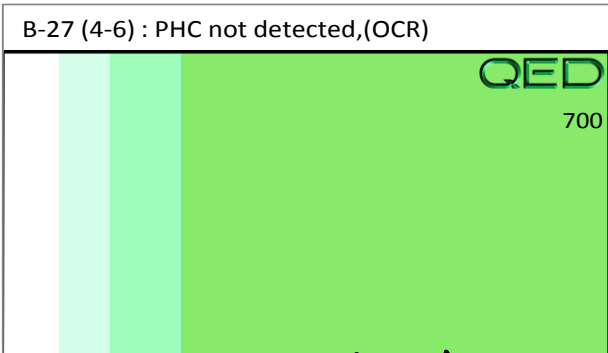
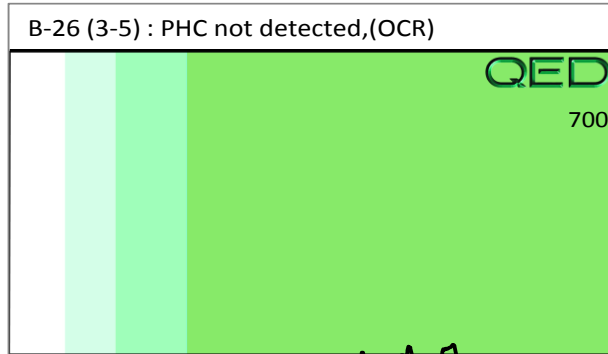
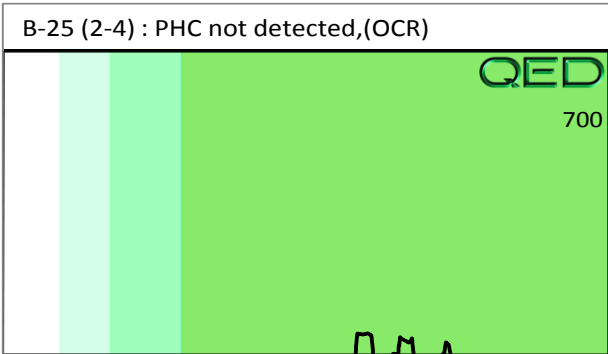
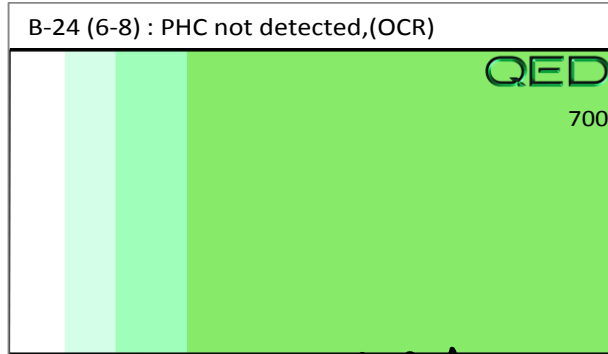
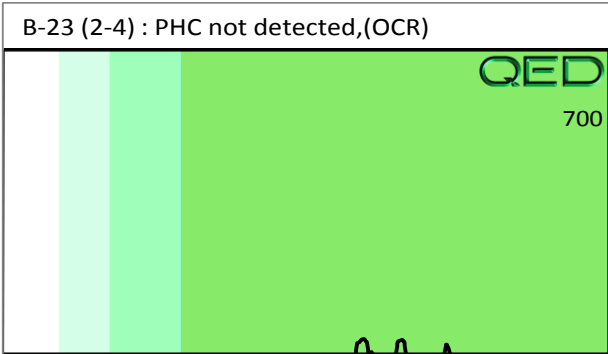
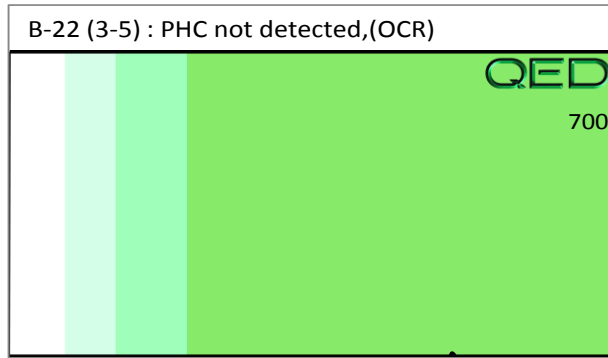
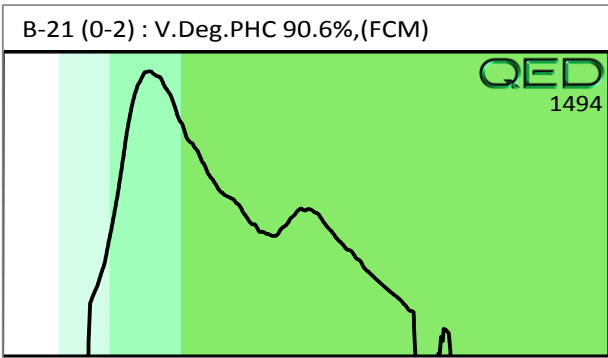
Final FCM QC Check **OK**

108

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





Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
 SUITE 107
 RALEIGH, NC 27604

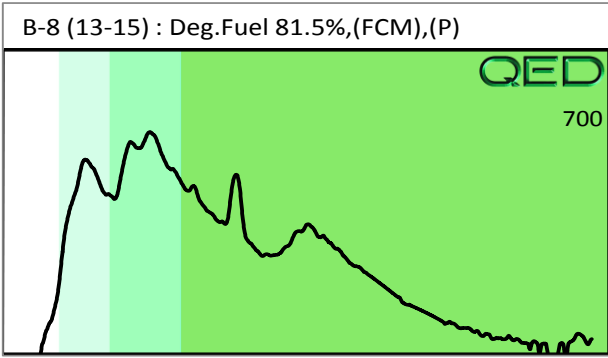
Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Contact: DAVID HAWKINS
 COLLECTED BY DAVID HAWKINS
Project: #70187265

Operator MAX MOYER

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
										s	B-8 (13-15)	10.2	
Initial Calibrator QC check			OK			Final FCM QC Check			OK			99	

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.
 Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected
 B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.
 % Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**



877

Client Name: Ferraron
 Address: 2401 Brentwood Rd. Suite 107, Raleigh NC 27601
 Contact: David Hawkins
 Project Ref.: 7-18-2015
 Email: David.hawkins@ferraron.com
 Phone #: 540-905-2594
 Collected by: David Hawkins

RED LAB

**RAPID ENVIRONMENTAL DIAGNOSTICS
 CHAIN OF CUSTODY AND ANALYTICAL
 REQUEST FORM**

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

Each sample will be analyzed for
 BTEX, GRO, DRO, TPH, PAH total
 aromatics and Bap

Sample Collection Date/Time	TAT Requested		Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour							
7-9-18, 920		X	S	B-1 (2-4)	X		55.5	43.7	11.8
7-9-18, 936		X	S	B-2 (4-6)	X		54.0	44.0	10.0
7-9-18, 940		X	S	B-3 (3-5)	X		52.3	43.9	8.2
7-9-18, 945		X	S	B-4 (2-4)	X		53.3	44.1	9.2
7-9-18, 1000		X	S	B-5 (3-5)	X		54.5	44.2	10.3
7-9-18, 1005		X	S	B-7 (8-10)	X		52.5	43.8	8.7
7-9-18, 1025		X	S	B-8 (8-10)	X		52.5	44.1	8.4
7-9-18, 1030		X	S	B-8 (13-15)	X		53.6	43.8	9.8
7-9-18, 1045		X	S	B-9 (2-4)	X	HOLD	54.4	43.9	10.5
7-9-18, 1055		X	S	B-10 (4-6)	X		54.2	43.8	10.5
7-9-18, 1105		X	S	B-11 (1-3)	X		54.0	44.5	9.5
7-9-18, 1110		X	S	B-12 (2-4)	X		54.5	43.6	10.9
7-9-18, 1115		X	S	B-13 (4-6)	X		55.7	44.7	11.0
7-9-18, 1120		X	S	B-14 (6-8)	X		53.3	44.2	9.1
7-9-18, 1125		X	S	B-15 (2-4)	X		54.2	43.7	10.5
7-9-18, 1140		X	S	B-16 (3-5)	X		54.1	44.6	9.5
7-9-18, 1140		X	S	B-17 (2-4)	X		55.7	44.2	11.5
7-9-18, 1200		X	S	B-18 (8-10)	X		54.5	44.2	10.3
7-9-18, 1305		X	S	B-19 (2-4)	X		54.2	44.3	9.9
7-9-18, 1315		X	S	B-20 (4-6)	X		54.6	44.4	10.2

Comments: place B 8 (13-15) on HOLD, will confirm if want to run.

Relinquished by: [Signature] Date/Time: 7/10/18, 0900
 Relinquished by: [Signature] Date/Time: 7/10/18, 0900
 Accepted by: [Signature] Date/Time: 7/11/18, 11:50
 Accepted by: [Signature] Date/Time: 7/11/18, 11:50

RED Lab USE ONLY

[Signature]

B87

Client Name: Terrazon
 Address: 2401 Brentwood Rd. Suite 107, Raleigh NC 27604
 Contact: David Hawkins
 Project Ref.: 70187205
 Email: David.hawkins@terrason.com
 Phone #: 540-405-2594
 Collected by: David Hawkins

RED LAB

**RAPID ENVIRONMENTAL DIAGNOSTICS
 CHAIN OF CUSTODY AND ANALYTICAL
 REQUEST FORM**

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

Each sample will be analyzed for
 BTEX, GRO, DRO, TPH, PAH total
 aromatics and Bap

Sample Collection Date/Time	TAT Requested		Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	43 Hour							
7-9-18 1320		X		B-21 (0-2)	X		53.4	44.1	9.3
7-9-18 1330		X		B-22 (3-5)	X		54.3	44.5	10.8
7-9-18 1335		X		B-23 (2-4)	X		54.7	44.3	10.4
7-9-18 1340		X		B-24 (6-8)	X		54.1	44.5	10.1
7-9-18 1350		X		B-25 (2-4)	X		52.5	43.9	8.7
7-9-18 1355		X		B-26 (3-5)	X		53.2	44.3	8.9
7-9-18 1400		X		B-27 (4-6)	X		53.1	43.6	9.5
7-9-18 1405		X		B-28 (3-5)	X		54.8	44.3	10.5
7-9-18 1415		X		B-29 (2-4)	X		54.7	44.4	10.3
7-9-18 1420		X		B-30 (3-5)	X		53.3	44.6	8.7

Comments:

Relinquished by: [Signature] Date/Time: 7/19/18 0900

Relinquished by: [Signature] Date/Time: [Signature]

Accepted by: [Signature] Date/Time: 7/11/18 1500

Accepted by: [Signature] Date/Time: [Signature]

10

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