

Preliminary Site Assessment

US 221 South of US 74 Business (Charlotte Road) to North of
SR 1366 (Roper Loop Road)
Parcel 116 – D&R Briscoe Enterprises Inc.
124 Rock Road, Rutherfordton, North Carolina

State Project No. R-2233BB

WBS Element: 34400.1.S5

December 1, 2017

Terracon Project No. 71177323



Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Charlotte, North Carolina

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

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December 1, 2017

North Carolina Department of Transportation
Attention: Mr. Craig Haden
GeoEnvironmental Engineering Unit
Century Center Complex
Building B
1020 Birch Ridge Road
Raleigh, North Carolina 27610

Re: Preliminary Site Assessment (PSA)
US 221 South of US 74 Business (Charlotte Road) to North SR 1366 (Roper Loop Road)
Parcel 116 – D&R Briscoe Enterprises Inc.
124 Rock Road, Rutherfordton, North Carolina
State Project No. R-2233BB
WBS Element: 34400.1.S5

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. P71177323) dated June 2, 2017. 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 (NCDOT). If you have any questions concerning this report or need additional information, please contact us at 919-873-2211.

Sincerely,

Terracon Consultants, Inc.

Prepared by:



S. Alex Chinery, E.I.
Senior Staff Environmental Engineer

DocuSigned by:
S. Alex Chinery
F3F142104F4941D...

Reviewed by:



Christopher L. Corbitt, P.G.
Senior Geologist

DocuSigned by:
Christopher L. Corbitt
D334903BD0324DE...

PRELIMINARY SITE ASSESSMENT

US 221 SOUTH OF US 74 BUSINESS (CHARLOTTE ROAD) TO NORTH SR 1366 (ROPER LOOP ROAD)

RUTHERFORDTON, RUTHERFORD COUNTY, NORTH CAROLINA

STATE PROJECT NO. R-2233BB

WBS ELEMENT: 34400.1.S5

PARCEL 116 – D&R BRISCOE ENTERPRISES

124 ROCK ROAD, RUTHERFORDTON, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	US 221 South of US 74 Business (Charlotte Road) to North SR 1366 (Roper Loop Road) in Rutherfordton
Site Location/Address	124 Rock Road, Rutherfordton, NC 27834 (Rutherford County Tax PIN: 1210374)
General Site Description	The site consists of a commercial building that currently operates as a sales office for headstone (cemetery) monuments.

1.2 Site History

The site is located at 124 Rock Road in Rutherfordton, Rutherford County, North Carolina (site). At the time of the PSA, the site was improved with a one-story commercial building currently operating as a sales office for headstone (cemetery) monuments. According to available regulatory information, the site does not appear in the UST registry and there are no known release incidents associated with the site; however, the design of the building suggests that it may have been an automotive repair shop or service station in the past.

1.3 Scope of Work

Terracon conducted the following Preliminary Site Assessment (PSA) scope of work in accordance with Terracon's Proposal No. P71177323 dated June 2, 2017. This PSA is being completed prior to planned roadway improvements along US Highway 221 in Rutherfordton, North Carolina. The scope of work included a geophysical investigation, collection of seven soil samples and preparation of a report documenting the investigation activities. The PSA is not intended to delineate potential impacts. The PSA was performed within the proposed right-of-way (ROW) as indicated by North Carolina Department of Transportation (NCDOT) provided plan sheets.

Preliminary Site Assessment

Parcel 116 – D&R Briscoe Enterprises, Inc. ■ Rutherfordton, North Carolina
December 1, 2017 ■ Terracon Project No. 71177323



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 Terracon Proposal No. P71177323 dated June 2, 2017 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 Rutherfordton North, NC 2002. **Exhibit 2** is a site layout plan that depicts the approximate locations of the site features and soil boring locations.

2.1 Geophysical Survey

On July 28 and August 2, 2017, Geophysical Survey Investigations, conducted a geophysical investigation at the site in an effort to evaluate and detect potentially unknown, metallic underground storage tanks and buried utilities beneath the proposed ROW area. The geophysical investigation included an electromagnetic (EM) induction survey using a Geonics EM61-MK2A metal detection instrument with a Hemisphere A101 GPS unit and a ground penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-3000 unit equipped with a 400 MHz antenna.

The geophysical investigation did not detect evidence of unknown metallic USTs across the survey area within the depth interval of zero to six feet below land surface (bls). The metal detection and GPR scans identified underground utility lines and miscellaneous buried metal debris (reinforced concrete and buried railroad tracks). 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 provided oversight for the advancement of seven soil borings (B-116-1 through B-116-7) within Parcel 116 along the NCDOT ROW. The borings were completed by Innovative Environmental Technologies, a North Carolina Certified Well Contractor using a track-mounted AMS 9500-VTR[®] 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 corroborate laboratory data and assist in selection of sample intervals for laboratory analysis. PID readings from the borings ranged from 0.6 parts per million (ppm) to 2.2 ppm.

Based on the proposed disturbance depths and discussions with the NCDOT, each of the soil borings was advanced to a depth of approximately 15 feet bls. Seven soil samples, one from each boring, were collected from depths ranging between 5 to 15 feet bls, placed in laboratory provided sample containers and sent to RED Lab, LLC (RED) for UVF analysis of gasoline range organics (GRO) and diesel range organics (DRO). Soil samples were collected in the depth interval that was most likely to be impacted based on PID readings and field observations.

Soils generally consisted of orange brown to brown and orange gray silty clay and sandy clay. Groundwater was not encountered in the on-site borings. The soil boring logs are included in

Preliminary Site Assessment

Parcel 116 – D&R Briscoe Enterprises, Inc. ■ Rutherfordton, North Carolina
December 1, 2017 ■ Terracon Project No. 71177323



Appendix B. Sample locations were measured relative to site features and the locations depicted on **Exhibit 2** are approximate.

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 and investigation derived waste (IDW).

3.0 DATA EVALUATION

3.1 Soil Analytical Results

Laboratory analyses reported the following constituent detections in soil borings B-116-1, B-116-2, B-116-3, B-116-4, B-116-6 and B-116-7.

Boring B-116-1:

- n GRO (1.1 milligrams per kilogram [mg/kg])
- n DRO (2.6 mg/kg)
- n total aromatics (1.3 mg/kg)

Boring B-116-2:

- n DRO (0.58 mg/kg)
- n total aromatics (0.33 mg/kg)

Boring B-116-3:

- n DRO (60.2 mg/kg)
- n total aromatics (29.6 mg/kg)
- n PAHs (3.2 mg/kg)

Boring B-116-4:

- n DRO (0.51 mg/kg)
- n total aromatics (0.41 mg/kg)

Boring B-116-6:

- n DRO (1.6 mg/kg)
- n total aromatics (0.8 mg/kg)

Boring B-116-7:

- n GRO (1.0 mg/kg)
- n total aromatics (0.14 mg/kg)

Preliminary Site Assessment

Parcel 116 – D&R Briscoe Enterprises, Inc. ■ Rutherfordton, North Carolina
December 1, 2017 ■ Terracon Project No. 71177323



The identified constituents were detected at concentrations below their respective NCDEQ regulatory action levels (50 mg/kg for GRO and 100 mg/kg for DRO). **Table 1** summarizes the results of the UVF analyses of the soil samples.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- n The geophysical investigation did not reveal evidence of unknown metallic USTs within the survey area at a depth interval of zero to six feet bls. Underground utility lines, steel reinforced concrete, and railroad tracks were detected in the survey area.
- n Laboratory analyses did not identify petroleum constituents above regulatory action levels in on-site soil borings B-116-1 through B-116-7; however, petroleum compounds were detected in six of the seven borings.
- n Based on the analytical results, Terracon does not recommend additional assessment of the ROW at Parcel 116 at this time. The detection of petroleum constituents (below regulatory standards) in most of the borings is an indication that future roadway construction activities at the site could encounter petroleum impacted soils within other areas of the ROW.

FIGURES

EXHIBIT 1 - TOPOGRAPHIC MAP

EXHIBIT 2A – SITE DIAGRAM WITH SOIL BORING LOCATIONS

**EXHIBIT 2B – SITE DIAGRAM WITH SOIL BORING LOCATIONS
AND ANALYTICAL DATA**



APPROXIMATE
SITE BOUNDARY

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
 QUADRANGLES INCLUDE: RUTHERFORDTON NORTH, NC (1/1/2002) and RUTHERFORDTON SOUTH, NC (1/1/1993).

Project Manager:	SAC
Drawn by:	SAC
Checked by:	CLC
Approved by:	CLC
Project No.	71177323
Scale:	1"=2,000'
File Name:	PARCEL116
Date:	SEPT. 2017

Terracon
 2020 Starita Rd Ste E
 Charlotte, NC 28206-1298

TOPOGRAPHIC VICINITY MAP













Parcel 116 – D&R Briscoe
 124 Rock Road
 Rutherfordton, NC

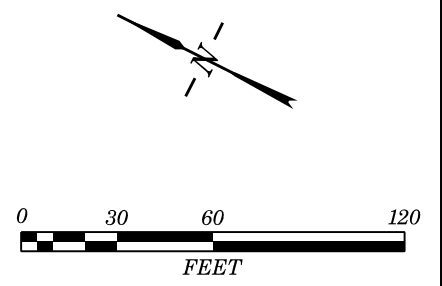
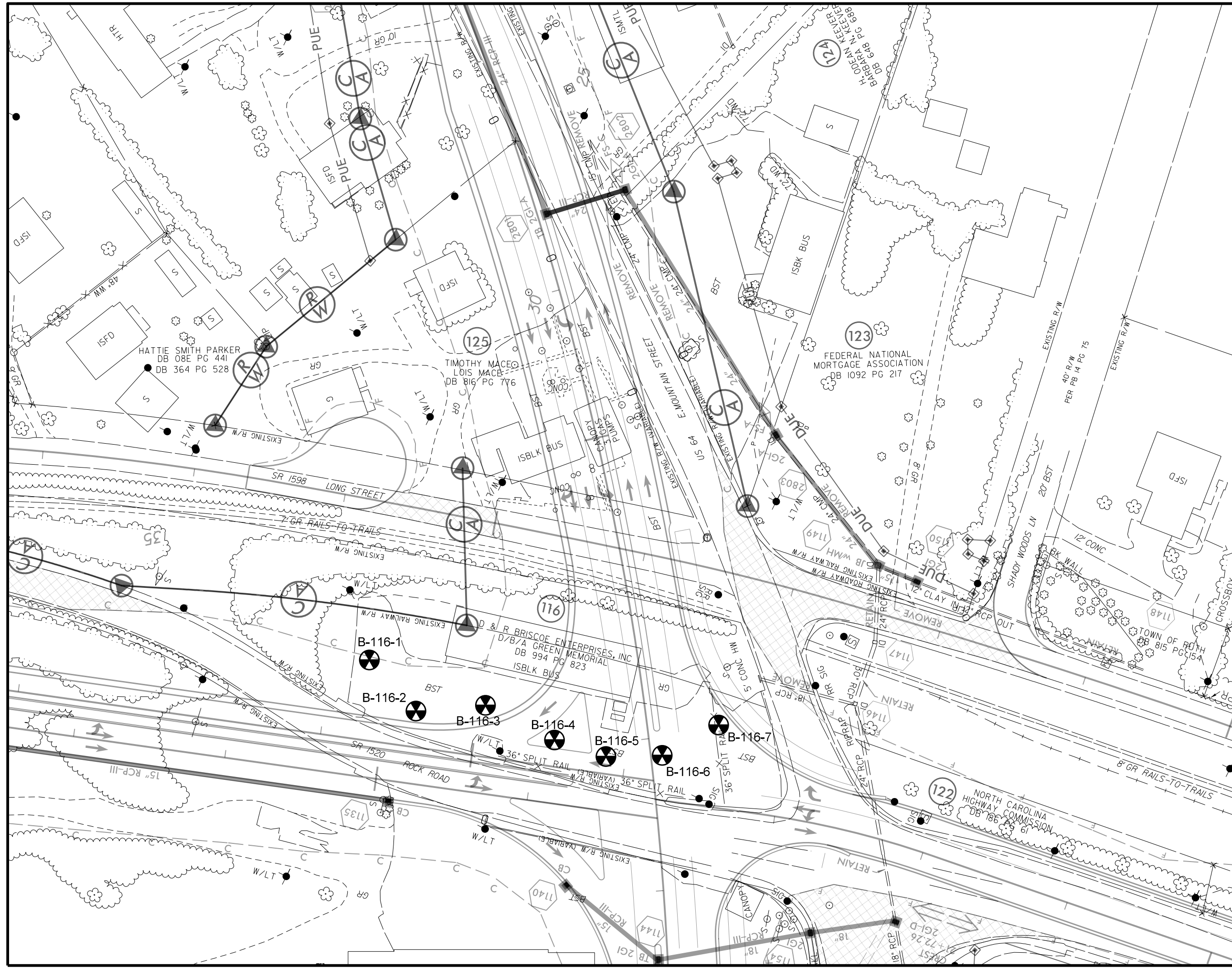
Exhibit	1
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SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 116 - D & R BRISCOE ENTERPRISES, INC. PROPERTY
124 ROCK ROAD
RUTHERFORDTON, RUTHERFORD COUNTY

LEGEND

-  PROPERTY LINE
-  EXISTING RIGHT OF WAY LINE
-  PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
-  PROPOSED RIGHT OF WAY WITH MARKER
-  EXISTING EDGE OF PAVEMENT
-  PROPOSED EDGE OF TRAVEL
-  PROPOSED CUT / FILL LINE
-  PROPOSED CATCH BASIN
-  PROPOSED DRAINAGE PIPING
-  PROPOSED PERMANENT UTILITY EASEMENT
-  PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
-  BORING LOCATION



SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 116 - D & R BRISCOE ENTERPRISES, INC. PROPERTY
124 ROCK ROAD
RUTHERFORDTON, RUTHERFORD COUNTY

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- ⊙ PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
- ⊙ PROPOSED RIGHT OF WAY WITH MARKER
- - - EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- F C PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- PUE PROPOSED PERMANENT UTILITY EASEMENT
- DUE PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
- ⊙ BORING LOCATION

NOTES:
SOIL SAMPLES WERE COLLECTED ON AUGUST 15, 2017

DETECTED COMPOUNDS ARE SHOWN IN TABLE

SOIL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER KILOGRAMS (mg/kg)

ft bls - FEET BELOW LAND SURFACE

GRO (C5-C10) - GASOLINE RANGE ORGANICS

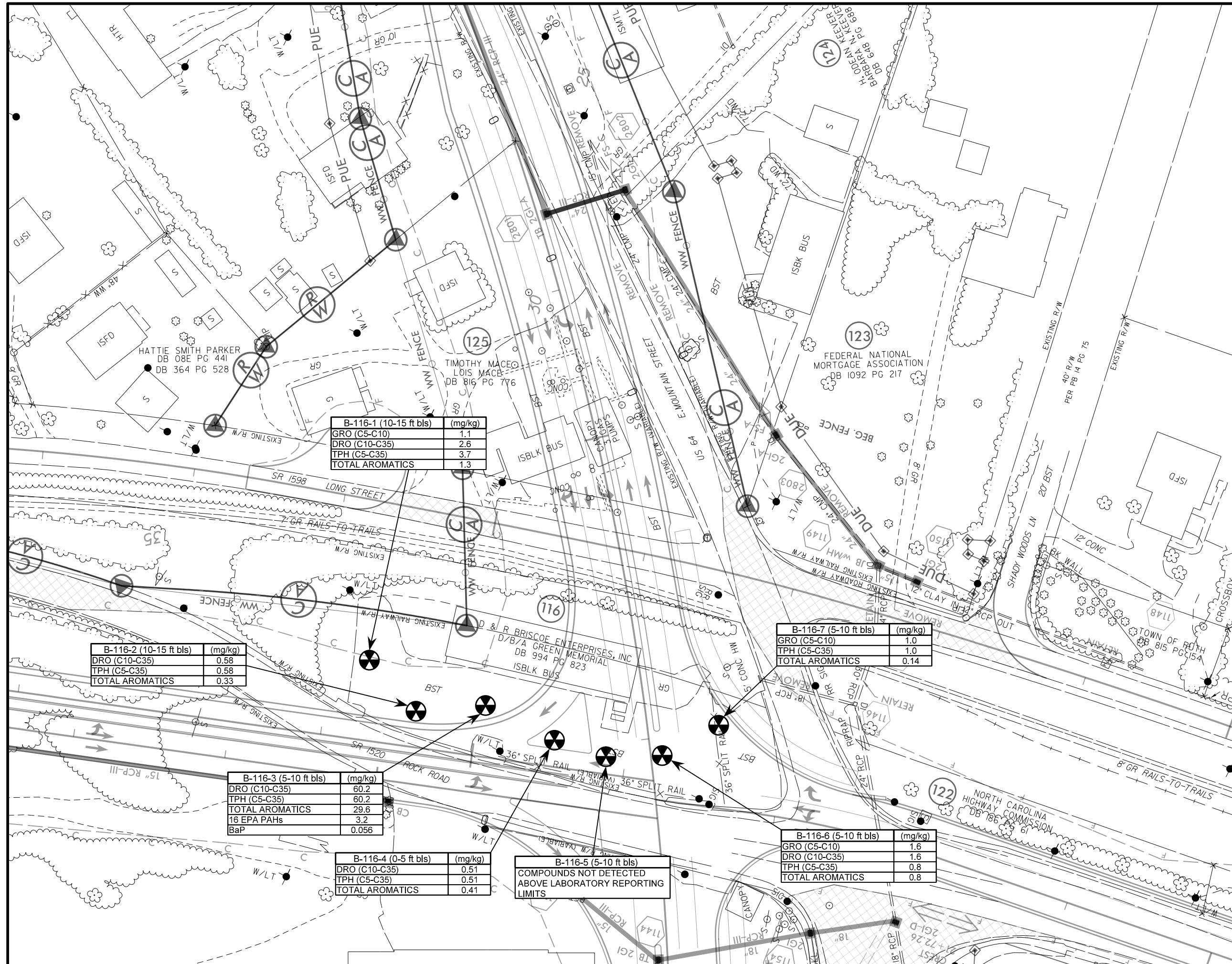
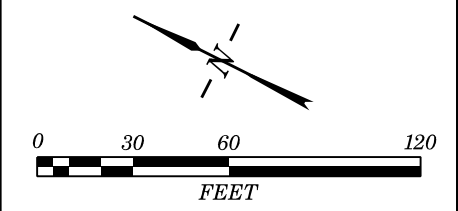
DRO (C10-C35) - DIESEL RANGE ORGANICS

TPH (C5-C35) - TOTAL PETROLEUM HYDROCARBONS

16 EPA PAHs - ENVIRONMENTAL PROTECTION AGENCY POLYCYCLIC AROMATIC HYDROCARBONS

BaP - BENZO(A)PYRENE

LABORATORY ANALYTICAL RESULTS DID NOT REPORT CONTAMINANTS OF CONCERN AT CONCENTRATIONS IN EXCESS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) ACTION LEVELS AND / OR CLEAN-UP STANDARDS.



B-116-1 (10-15 ft bls)		(mg/kg)
GRO (C5-C10)		1.1
DRO (C10-C35)		2.6
TPH (C5-C35)		3.7
TOTAL AROMATICS		1.3

B-116-2 (10-15 ft bls)		(mg/kg)
DRO (C10-C35)		0.58
TPH (C5-C35)		0.58
TOTAL AROMATICS		0.33

B-116-3 (5-10 ft bls)		(mg/kg)
DRO (C10-C35)		60.2
TPH (C5-C35)		60.2
TOTAL AROMATICS		29.6
16 EPA PAHs		3.2
BaP		0.056

B-116-4 (0-5 ft bls)		(mg/kg)
DRO (C10-C35)		0.51
TPH (C5-C35)		0.51
TOTAL AROMATICS		0.41

B-116-5 (5-10 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

B-116-7 (5-10 ft bls)		(mg/kg)
GRO (C5-C10)		1.0
TPH (C5-C35)		1.0
TOTAL AROMATICS		0.14

B-116-6 (5-10 ft bls)		(mg/kg)
GRO (C5-C10)		1.6
DRO (C10-C35)		1.6
TPH (C5-C35)		0.8
TOTAL AROMATICS		0.8

TABLES

TABLE 1 - FIELD SCREENING RESULTS

SUMMARY

TABLE 2 – SOIL SAMPLING ANALYTICAL RESULTS

SUMMARY (UVF)

Table 1
 Summary of Field Screening Results
 Preliminary Site Assessment
 Parcel 116 - D&R Briscoe
 Rutherfordton, Rutherford County, North Carolina
 Terracon Project No. 71177323

Sample ID	Sampled Interval	PID Value
B-116-1	0-5	0.6
	5-10	1.0
	10-15	1.2*
B-116-2	0-5	1.4
	5-10	1.4
	10-15	1.4*
B-116-3	0-5	1.6
	5-10	2.2*
	10-15	1.4
B-116-4	0-5	1.2*
	5-10	1.0
	10-15	1.0
B-116-5	0-5	0.7
	5-10	1.1
	10-15	1.2*
B-116-6	0-5	1.1
	5-10	1.3*
	10-15	1.2
B-116-7	0-5	1.1
	5-10	1.2*
	10-15	0.6

Notes:

Soil screening was conducted on August 15, 2017.

*indicates sampled interval.

Concentrations are reported in parts per million (ppm).

Table 2
 Summary of Soil Analytical Results
 Preliminary Site Assessment
 Parcel 116 - D&R Briscoe
 Rutherfordton, Rutherford County, North Carolina
 Terracon Project No. 71177323

Sample ID:	B-116-1	B-116-2	B-116-3	B-116-4	B-116-5	B-116-6	B-116-7	TPH Action Level
Sample Depth (ft bls):	10-15	10-15	5-10	0-5	10-15	5-10	5-10	
UVF Analysis								
BTEX (C6-C9)	<0.61	<0.58	<0.49	<0.51	<0.51	<0.48	<0.55	NE
GRO (C5-C10)	1.1	<0.58	<0.49	<0.51	<0.51	1.6	1	50
DRO (C10-C35)	2.6	0.58	60.2	0.51	<0.51	1.6	<0.28	100
TPH (C5-C35)	3.7	0.58	60.2	0.51	<0.51	0.8	1	NE
Total Aromatics	1.3	0.33	29.6	0.41	<0.1	0.8	0.14	NE
16 EPA PAHs	<0.2	<0.19	3.2	<0.16	<0.16	<0.15	<0.09	NE
BaP	<0.025	<0.023	0.056	<0.02	<0.02	<0.019	<0.011	NE

Notes:

Soil samples were collected on August 15, 2017.

Detected compounds are shown in the table.

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

ft bls - feet below land surface.

Bold: Constituent concentration reported above the method detection limit.

APPENDIX A
GEOPHYSICAL SURVEY REPORT

Terracon Consultants, Inc.

**GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTS**

**D&R Briscoe Enterprise Property
(Parcel 116) 124 Rock Road
Rutherford County, North Carolina**



November 27, 2017

Geophysical Survey Investigations, PLLC Project No. 2017-22



4 Willimantic Drive, Greensboro, NC 27455

Office Tel: (336) 286-9718

denilm@bellsouth.net

Terracon Consultants, Inc.
GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTs
D&R Briscoe Enterprise Property
(Parcel 116) 124 Rock Road
Rutherford County, North Carolina

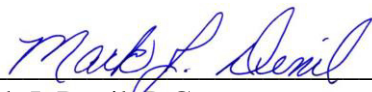
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FIGURES

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	NCDOT Map – EM61 Early Time Gate Results
Figure 5	NCDOT Map – EM61 Differential Results

Report prepared for: Christopher L. Corbitt, PG
Terracon Consultants, Inc.
2020 Starita Road, Suite E
Charlotte, North Carolina 28206

Prepared by: 
Mark J. Denil, P.G.
Geophysical Survey Investigations, PLLC

1.0 INTRODUCTION

Geophysical Survey Investigations, PLLC (GSI) conducted an electromagnetic (EM) metal detection survey, ground penetrating radar (GPR) scanning and utility line clearance search for Terracon Consultants, Inc. on July 28 and August 2, 2017 across the accessible portions of the D&R Briscoe Enterprise property (Parcel 116) located at 124 Rock Road in Rutherford County, North Carolina. The geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment for State Project R-2233BB (WBS Element 34400.1.S1) US 221 south of US 74 Business (Charlotte Rd) to north of SR 1366.

The geophysical investigation was conducted to determine if buried, metallic, underground, storage tanks (USTs) are present beneath the proposed Right-of-Way (ROW) and PUE areas of the site. The perimeter of the geophysical survey area (approximate ROW & PUE areas) is shown as a red polygon in the aerial photograph presented in **Figure 1**. Presently, a monument-related business and a storage/vehicle repair garage operate on this property.

Terracon representative Mr. Christopher L. Corbitt, PG provided guidance and site maps to Geophysical Survey Investigations, PLLC personnel prior to conducting the geophysical field work. The geophysical survey area at Parcel 116 has a maximum length and width of 440 feet and 110 feet, respectively. Please note that the ROW and PUE areas at this site were not marked in the field or the survey markers were not visible at the time the geophysical investigation was conducted.

2.0 FIELD METHODOLOGY

The EM investigation was performed across the geophysical survey area (proposed ROW and PUE areas) 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 Trackmaker61 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 scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across selected EM61 differential anomalies and in between the areas containing monuments 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, areas around the proposed Terracon soil borings were scanned with the GPR unit and a DitchWitch 910 utility locator for buried utility line clearance and no further discussion regarding the utility clearance work will be made in this report. 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 or debris.

The linear, EM61 early time gate anomalies intersecting UTM coordinates 1357916-E 12847837-N, 1357917-E 12847826-N and 1357970-E 12847809-N are probably in response to buried lines or conduits. The EM61 anomalies centered near UTM coordinates 1357886-E 12847919-N, 1357961-E 12847839-N, 1357994-E 12847850-N, and 1358002-E 12847840-N are in response to two metal gates and two sign poles, respectively. The isolated, randomly-scattered early time gate anomalies located adjacent to Rock Road are probably in response to buried, miscellaneous, metal debris.

GPR data suggest the EM61 differential anomalies centered near coordinates 1357928-E 12847966-N and 1358008-E 12847856-N are in response to steel reinforced concrete, the building and buried railroad tracks debris, respectively.

The remaining EM61 anomalies are probably in response to the buildings, vehicles, equipment and other known surface objects. The EM61 and GPR investigation suggests the geophysical survey area (proposed ROW/PUE area) does not contain metallic USTs. Please refer to Figures 2 and 3 for additional (detailed) information regarding the geophysical findings at this site. The EM61 results are also shown on NCDOT base maps in **Figures 4 and 5**.

4.0 SUMMARY & CONCLUSIONS

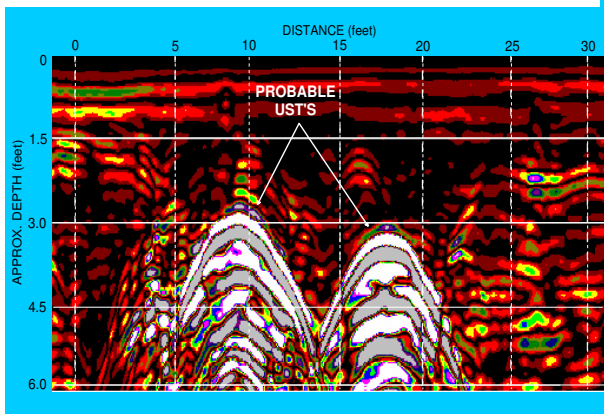
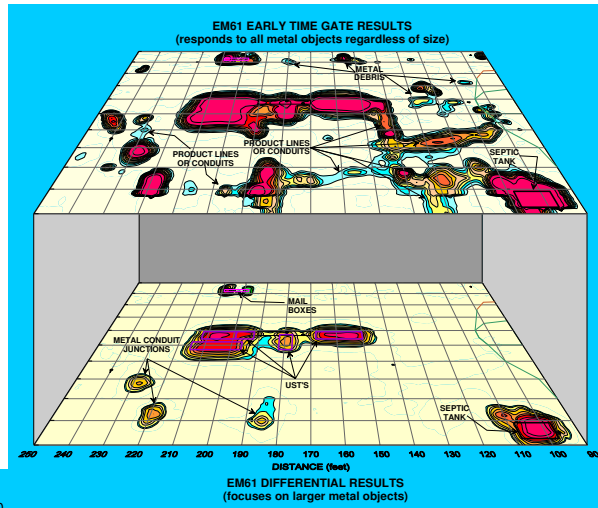
Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the D&R Briscoe Enterprise property (Parcel 116) located at 124 Rock Road in Rutherford County, North Carolina provides the following summary and conclusions:

- 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 1357916-E 12847837-N, 1357917-E 12847826-N and 1357970-E 12847809-N are probably in response to buried lines or conduits.

- GPR data suggest the EM61 differential anomalies centered near coordinates 1357928-E 12847966-N and 1358008-E 12847856-N are in response to steel reinforced concrete, the building and buried railroad tracks debris, respectively.
- The EM61 and GPR investigation suggests the geophysical survey area (proposed ROW/PUE area) does not contain metallic USTs.

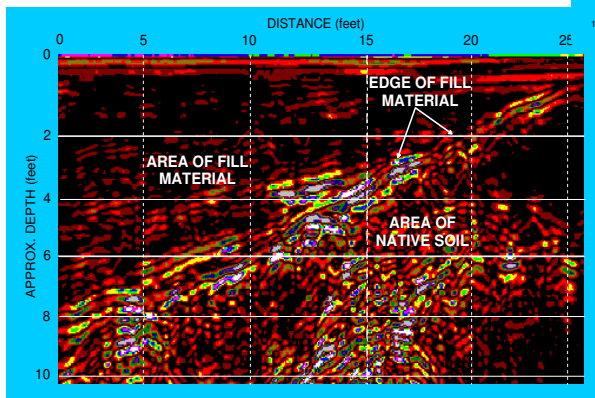
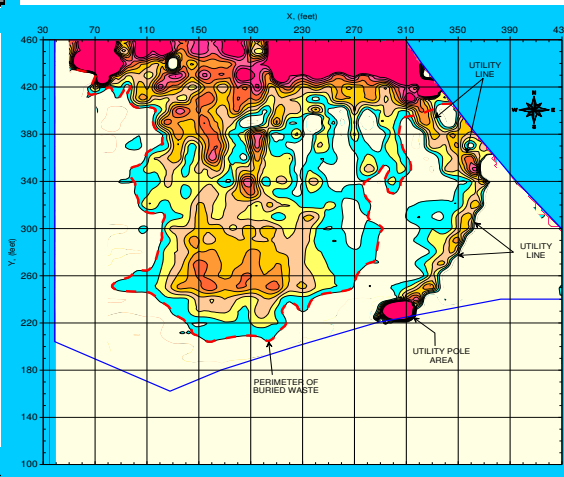
5.0 LIMITATIONS

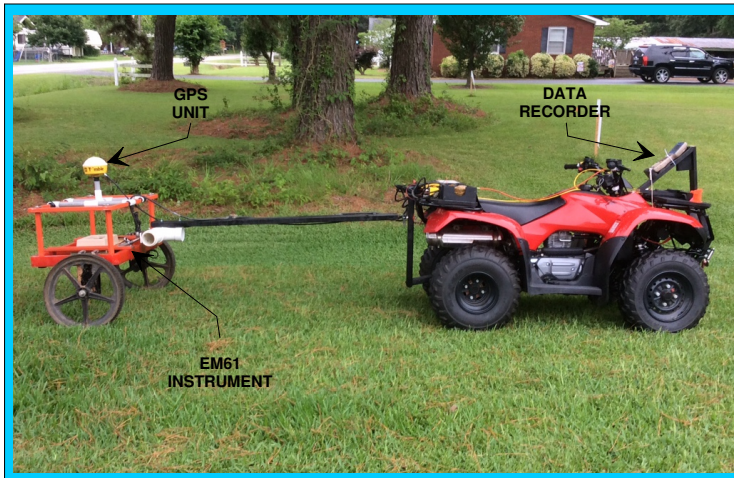
EM61 and GPR surveys have been performed and this report prepared for Terracon Consultants, Inc. in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the geophysical surveys are non-unique and may not represent actual subsurface conditions. 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 Briscoe Enterprise property.

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 was used to conduct the GPR scanning across selected portions of the site.

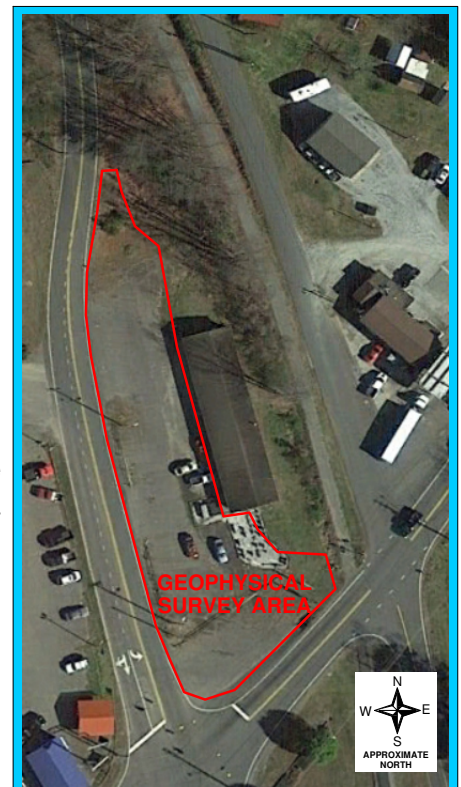


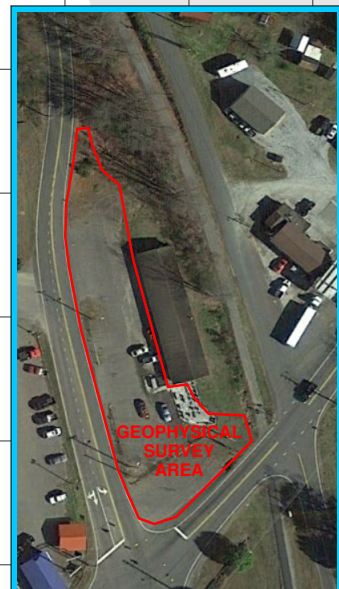
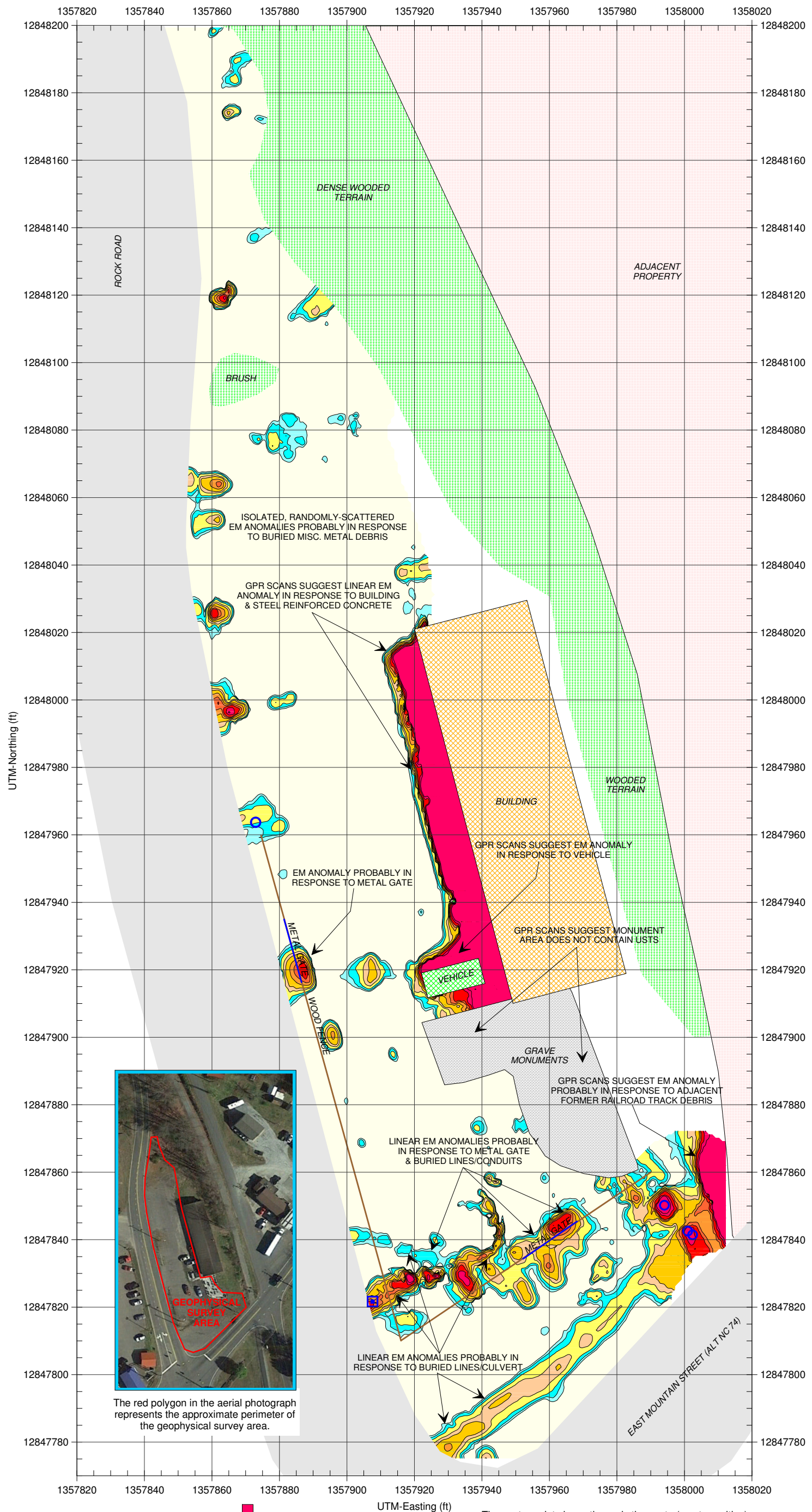
DITCHWITCH UTILITY LOCATOR

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

GEOPHYSICAL SURVEY AREA

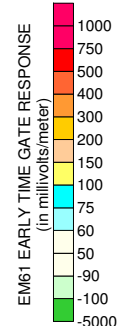
The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at the D&R Briscoe Enterprise property (Parcel 116) located at the intersection of East Mountain Street and Rock Road, near Rutherfordton, North Carolina. The geophysical investigation was conducted on July 28 and August 2, 2017.





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

LEGEND	
	SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
	BUILDING
	VEHICLE
	GRAVE MONUMENTS
	WATER METER COVER
	METAL SIGN POLE
	METAL GATE
	WOOD FENCE LINE

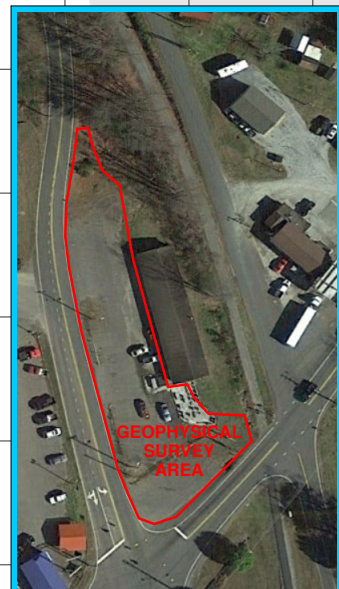
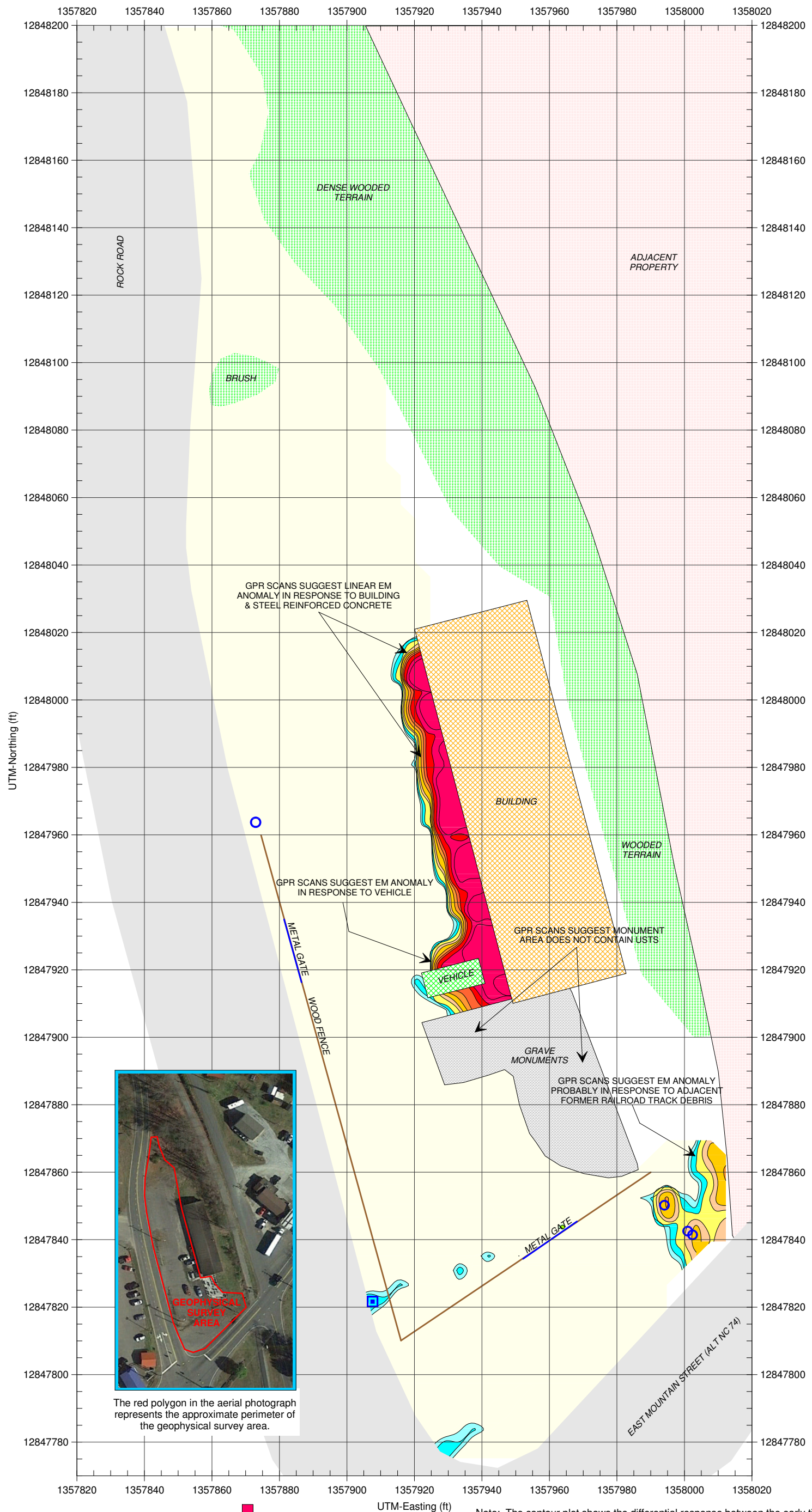


The contour plot shows the early time gate (most sensitive) response of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The early time gate response shows buried, metallic objects, lines and conduits regardless of size. GPR scans were conducted across selected EM61 anomalies and steel reinforced concrete using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna. The geophysical investigation was conducted on July 28 and August 2, 2017.

GEOPHYSICAL SURVEY INVESTIGATIONS
 336-286-9718 www.geo-survey.com

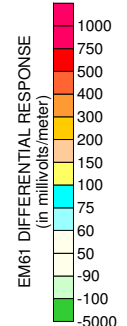
Terracon Consultants, Inc.
 D&R Briscoe Enterprise Property
 (Parcel 116) 124 Rock Road
 Rutherford County, North Carolina

EM61-MK2A METAL DETECTION (EARLY TIME GATE RESULTS)
 11/27/17 FIGURE 2



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

LEGEND	
	SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
	BUILDING
	VEHICLE
	GRAVE MONUMENTS
	WATER METER COVER
	METAL SIGN POLE
	METAL GATE
	WOOD FENCE LINE



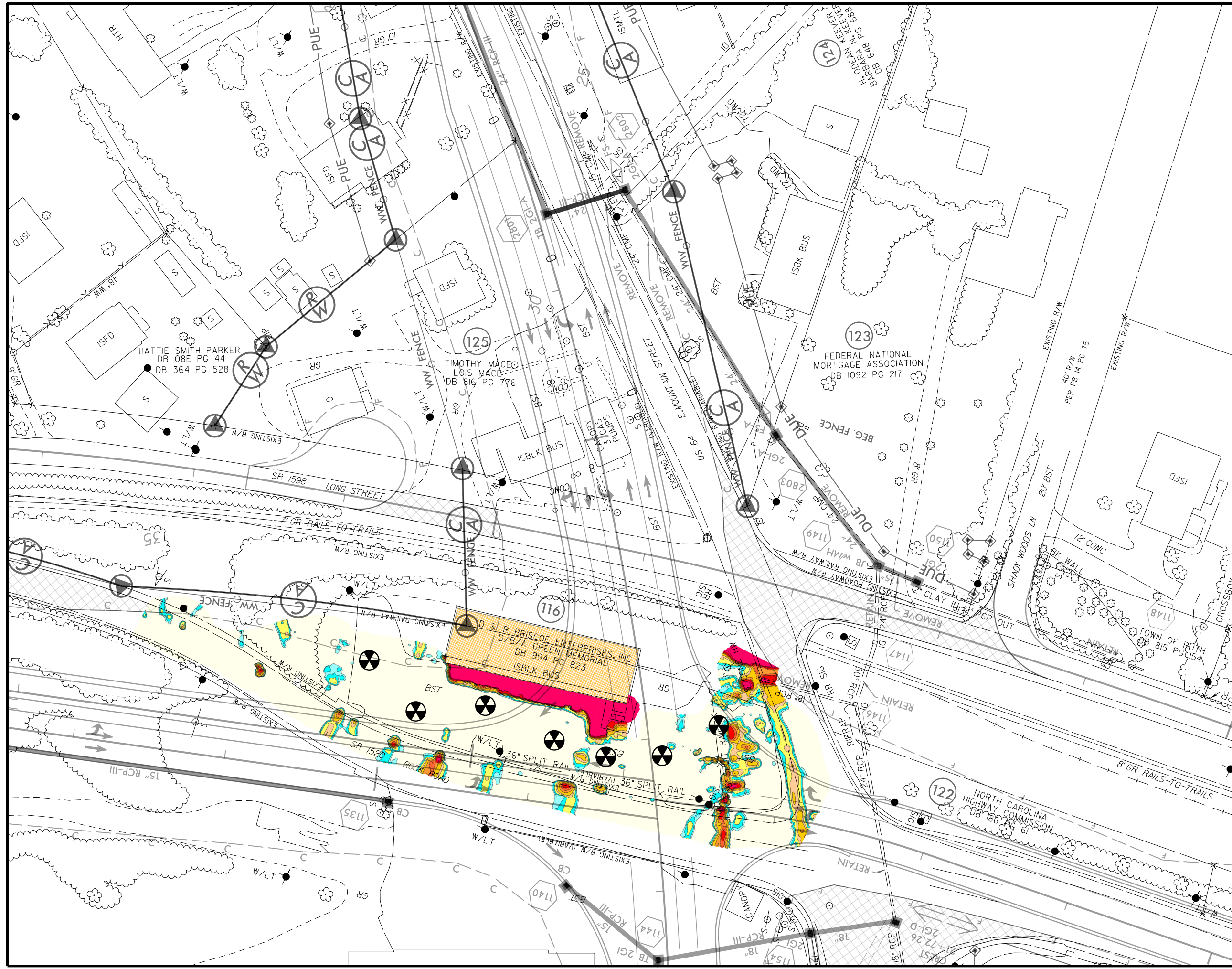
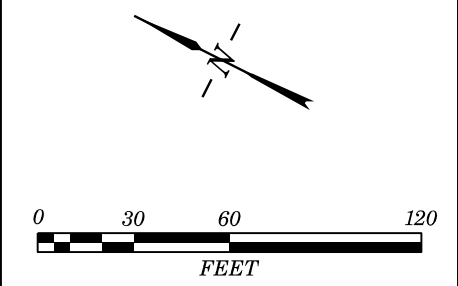
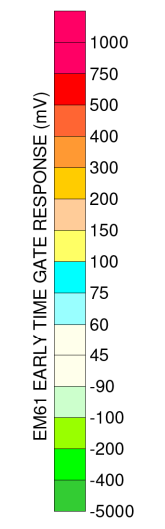
Note: The contour plot shows the differential response between the early time gate and the late time gate channels of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The differential response focuses on larger, buried, metallic objects such as drums and USTs and ignores smaller miscellaneous, metal debris. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna. The geophysical investigation was conducted on July 28 and August 2, 2017.

GEOPHYSICAL
SURVEY INVESTIGATIONS
336-286-9718 www.geo-survey.com

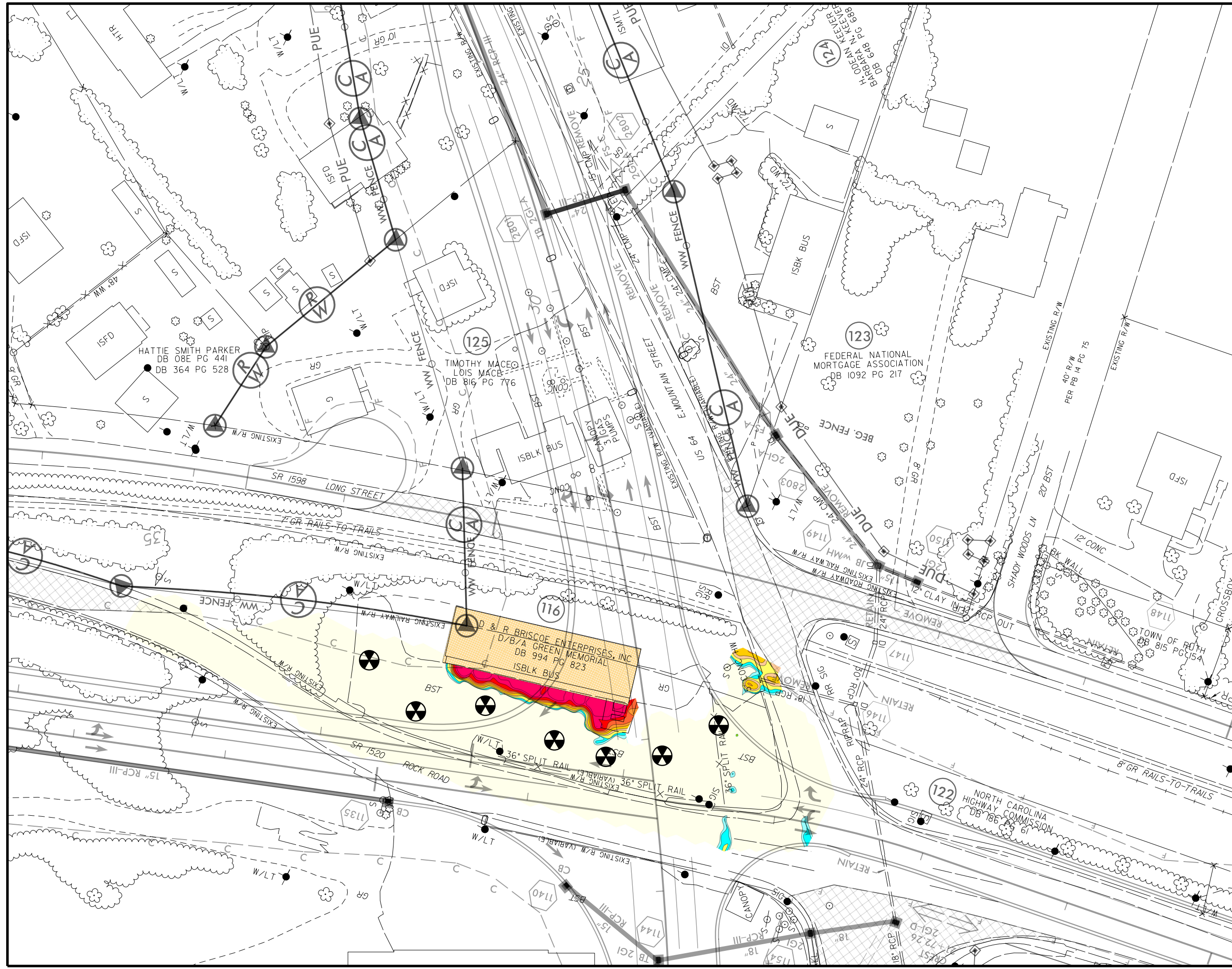
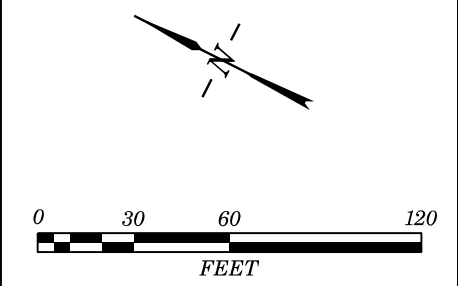
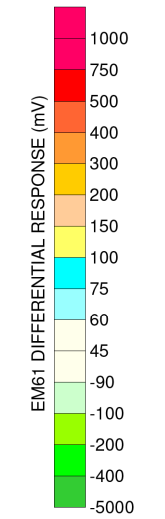
Terracon Consultants, Inc.
D&R Briscoe Enterprise Property
(Parcel 116) 124 Rock Road
Rutherford County, North Carolina

EM61-MK2A METAL DETECTION
(DIFFERENTIAL RESULTS)
11/27/17

- LEGEND**
- PROPERTY LINE
 - EXISTING RIGHT OF WAY LINE
 - ⊕ ⊖ PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
 - ⊕ ⊖ PROPOSED RIGHT OF WAY WITH MARKER
 - EXISTING EDGE OF PAVEMENT
 - PROPOSED EDGE OF TRAVEL
 - F C PROPOSED CUT / FILL LINE
 - PROPOSED CATCH BASIN
 - PROPOSED DRAINAGE PIPING
 - PUE — PROPOSED PERMANENT UTILITY EASEMENT
 - DUE — PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
 - ⊗ BORING LOCATION



- LEGEND**
- PROPERTY LINE
 - EXISTING RIGHT OF WAY LINE
 - ⊙ ⊙ PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
 - ⊙ ⊙ PROPOSED RIGHT OF WAY WITH MARKER
 - - - EXISTING EDGE OF PAVEMENT
 - PROPOSED EDGE OF TRAVEL
 - F — C PROPOSED CUT / FILL LINE
 - PROPOSED CATCH BASIN
 - PROPOSED DRAINAGE PIPING
 - PUE PROPOSED PERMANENT UTILITY EASEMENT
 - DUE PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
 - ⊗ BORING LOCATION



**APPENDIX B
BORING LOGS**

APPENDIX C
LABORATORY ANALYTICAL REPORT AND CHAIN OF
CUSTODY



Hydrocarbon Analysis Results

Client: TERRACON
Address: 2020-E STARITA ROAD
 CHARLOTTE NC

Samples taken Tuesday, August 15, 2017
Samples extracted Tuesday, August 15, 2017
Samples analysed Thursday, August 17, 2017

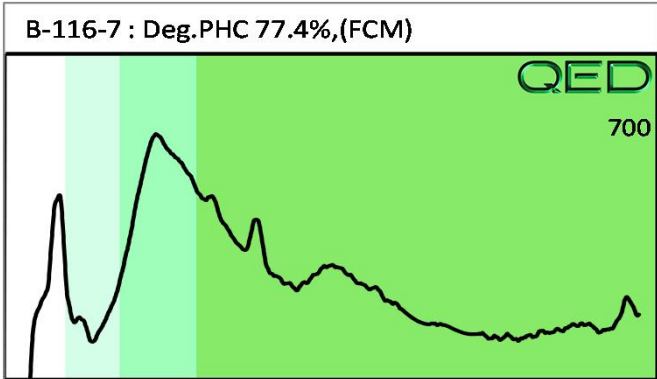
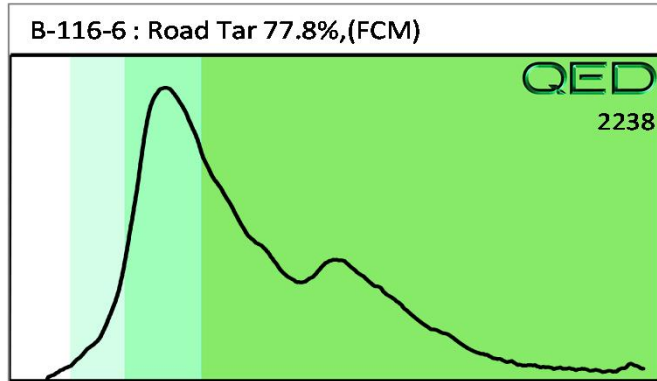
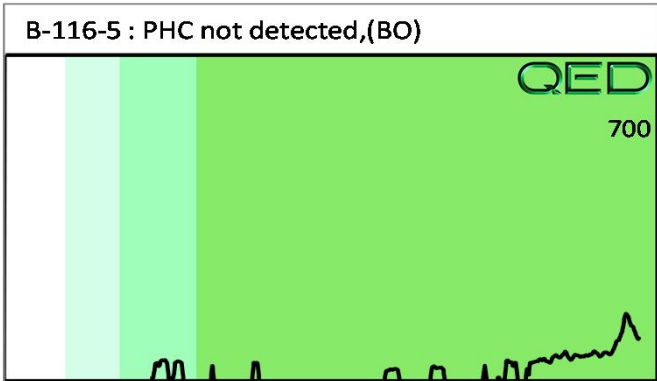
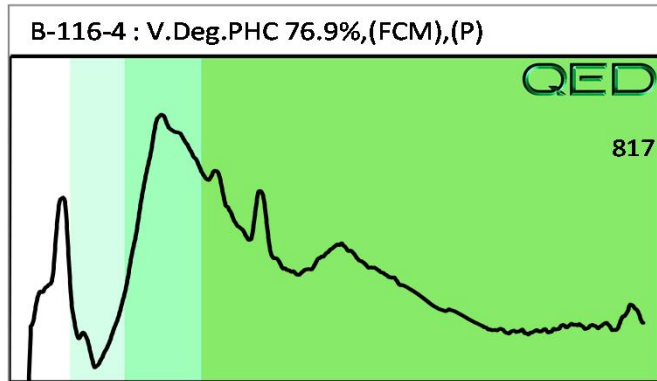
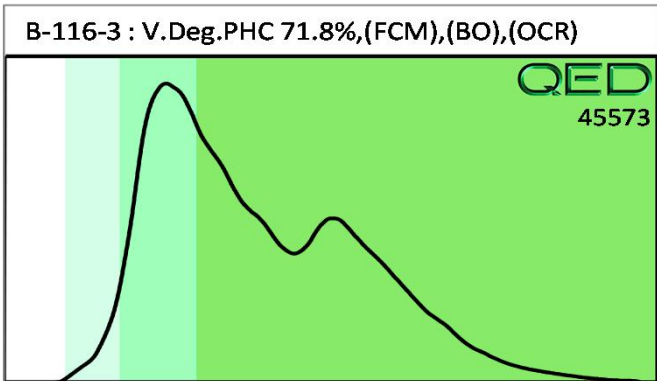
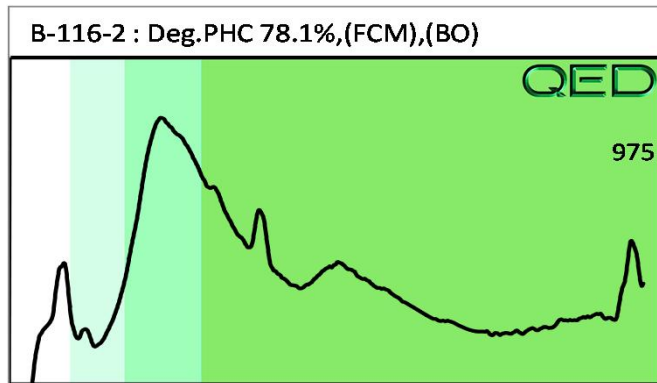
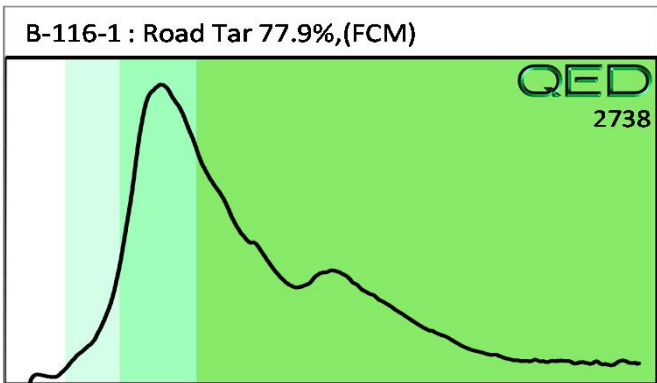
Contact: ALEX CHINERY

Operator NICK HENDRIX

Project: #71177323

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-116-1	24.5	<0.61	1.1	2.6	3.7	1.3	<0.2	<0.025	51.8	39.7	8.6	Road Tar 77.9%,(FCM)
S	B-116-2	23.2	<0.58	<0.58	0.58	0.58	0.33	<0.19	<0.023	0	80.2	19.8	Deg.PHC 78.1%,(FCM),(BO)
S	B-116-3	19.7	<0.49	<0.49	60.2	60.2	29.6	3.2	0.056	0	82.2	17.8	V.Deg.PHC 71.8%,(FCM),(BO),(OCR)
S	B-116-4	20.5	<0.51	<0.51	0.51	0.51	0.41	<0.16	<0.02	91.1	6.8	2	V.Deg.PHC 76.9%,(FCM),(P)
S	B-116-5	20.5	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)
S	B-116-6	19.3	<0.48	<0.48	1.6	1.6	0.8	<0.15	<0.019	0	81.8	18.2	Road Tar 77.8%,(FCM)
S	B-116-7	11.0	<0.55	1	<0.28	1	0.14	<0.09	<0.011	92.1	6.3	1.6	Deg.PHC 77.4%,(FCM)
S	B-244-1	20.6	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected,(BO),(P)
S	B-244-2	36.8	<0.92	<0.92	<0.92	<0.92	<0.18	<0.29	<0.037	0	0	0	PHC not detected,(P)
S	B-243-1	19.4	<0.49	<0.49	24.4	24.4	11.7	1.3	0.031	0	86.3	13.7	Road Tar 91.8%,(FCM),(BO)
Initial Calibrator QC check										OK			
Final FCM QC Check										OK			98.7 %

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**



Batch 52

Client Name: TERRACON CONSULTANTS
 2020-E STRETTA ROAD
 CHARLOTTE, NC 28206
 Contact: ALEX CHINERY
 Project Ref.: 71177323
 Email: alex.chinery@terracon.com
 Phone #: 704-509-1777
 Collected by: ALEX CHINERY

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							
8/15/17 10:15		X	S	B-116-1	X		55.3	44.7	10.6
10:13		X	S	B-116-2	X		55.8	44.6	11.2
10:10		X	S	B-116-3	X		57.9	44.7	13.2
10:03		X	S	B-116-4	X		57.3	44.6	12.7
10:55		X	S	B-116-5	X		58.2	45.5	12.7
10:58		X	S	B-116-6	X		58.4	44.9	13.5
11:02		X	S	B-116-7	X		56.9	44.2	12.7
12:35		X	S	B-244-1	X		57.0	44.4	12.6
12:38		X	S	B-244-2	X		48.3	44.5	3.8
12:42		X	S	B-243-1	X		57.8	44.4	13.4
12:55		X	S	B-243-2	X		56.4	44.1	12.3
15:30		X	S	B-212-1	X		56.3	44.5	11.8
15:33		X	S	B-212-2	X		56.4	44.7	11.5
15:56		X	S	B-155-1	X		57.0	44.9	12.1
15:59		X	S	B-155-2	X		54.8	44.7	9.9

Comments:

Relinquished by: SAC [Signature] TERRACON Date/Time: 8/17 11:30

Relinquished by: [Signature] Accepted by: [Signature] Date/Time: 8/17 11:30

RED Lab USE ONLY (15)