

## STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

May 17, 2018

MEMORANDUM TO: Nathan Adima, PE

Project Manager

Central Project Delivery Team-Division 11-14

-- DocuSigned by:

Craig Haden

Craig Haden

GeoEnvironmental Project Manager

GeoEnvironmental Section Geotechnical Engineering Unit

TIP NO: R-2233BB WBS: 34400.1.S5 COUNTY: Rutherford

DIVISION 13

DESCRIPTION: US 221 South of US 74 Business (Charlotte Rd) to North of SR 1366 (Roper

Loop Rd). Extended Study area to provide access to Rutherford County landfill

via Laurel Hill Dr.

**SUBJECT:** GeoEnvironmental Comments

The GeoEnvironmental Section performed a records search of readily available information for the given project study area to identify known and potential sites of concern. No sites of concern were identified within the project area. If the project limit changes, please let us know, so we can reevaluate the study area.

cc:

FROM:

John Pilipchuk, LG, PE, State Geotechnical Engineer

Stephen R. Morgan, PE, State Hydraulics Engineer

Andrew McDaniel, PE, Stormwater NPDES Permit Program - Engineering Supervisor

Brian Hanks, PE, State Structures Engineer

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Eric Williams, PE, Geotechnical Regional Manager

Jody Kuhne, LG, PE, Regional Geological Engineer

Steve Grimes, ROW Unit, Negotiations, State Negotiator

row-notify@ncdot.gov

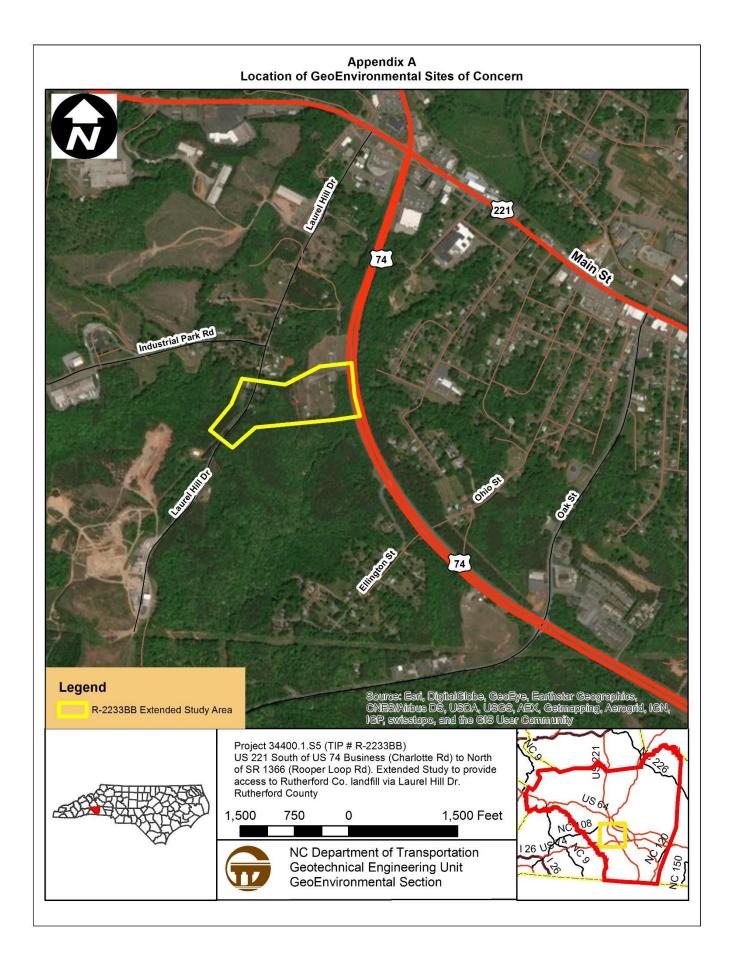
roadwaydesign@ncdot.gov

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Mailing Address: NC DEPARTMENT OF TRANSPORTATION GEOTECHNICAL ENGINEERING UNIT 1589 MAIL SERVICE CENTER RALEIGH NC 27699-1589 Telephone: 919-707-6850 Fax: 919-250-4237 Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location: CENTURY CENTER COMPLEX ENTRANCE B-2 1020 BIRCH RIDGE DRIVE RALEIGH NC



US 221 South of US 74 Business (Charlotte Road) to North of SR 1366 (Roper Loop Road)

Parcel 115 – Darrill Burnett

365 East Mountain Street, 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



Environmental Facilities Geotechnical Materials

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Appendix B: Soil Boring Logs

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North Carolina Department of Transportation Attention: Mr. Craig Haden GeoEnvironmental Engineering Unit Century Center Complex Building B 1020 Birch Ridge Drive 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 115 – Darrill Burnett

365 East Mountain Street, Rutherfordton, North Carolina

S. Alex Chinery

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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

Reviewed by:

Christopher L. Corbitt, P.G.

DocuSigned by:

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Christopher L Corbitt

Senior Geologist

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#### 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 115 – DARRILL BURNETT

#### 365 EAST MOUNTAIN STREET, 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	365 East Mountain Street, Rutherfordton, NC 27834 (Rutherford County Tax PIN: 1606563)				
General Site Description	The site consists of a commercial building that is currently operating as a vehicle maintenance and tire repair shop.				

#### 1.2 Site History

The site is located at 365 East Mountain Street in Rutherfordton, Rutherford County, North Carolina (site). At the time of the PSA, the site was improved with a one-story commercial building identified as Tri City Tire Service. According to the property owner, the facility operates as an automotive maintenance facility and tire repair shop. Northern and western portions of the site are cleared and contain wooden debris piles and stored equipment.

#### 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.

Parcel 115 – Darrill Burnett • 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.

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#### 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 29 and August 3, 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 eight feet below land surface (bls). The metal detection and GPR scans identified several underground utility lines and miscellaneous buried metal debris. 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-115-1 through B-115-7) within Parcel 115. 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 0.9 parts per million (ppm) to 1.8 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

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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 reddish brown silty clay and sandy clay. Groundwater was not encountered in the on-site borings. The soil boring logs are included in **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-115-2, B-115-4, B-115-5 and B-115-6.

Boring B-115-2:

n DRO (0.52 milligrams per kilogram [mg/kg])

Boring B-115-4:

- n DRO (7.6 mg/kg)
- n PAHs (0.41 mg/kg)

Boring B-115-5:

- n DRO (8.1 mg/kg)
- n PAHs (0.43 mg/kg)

Boring B-115-6:

n DRO (1.0 mg/kg)

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.

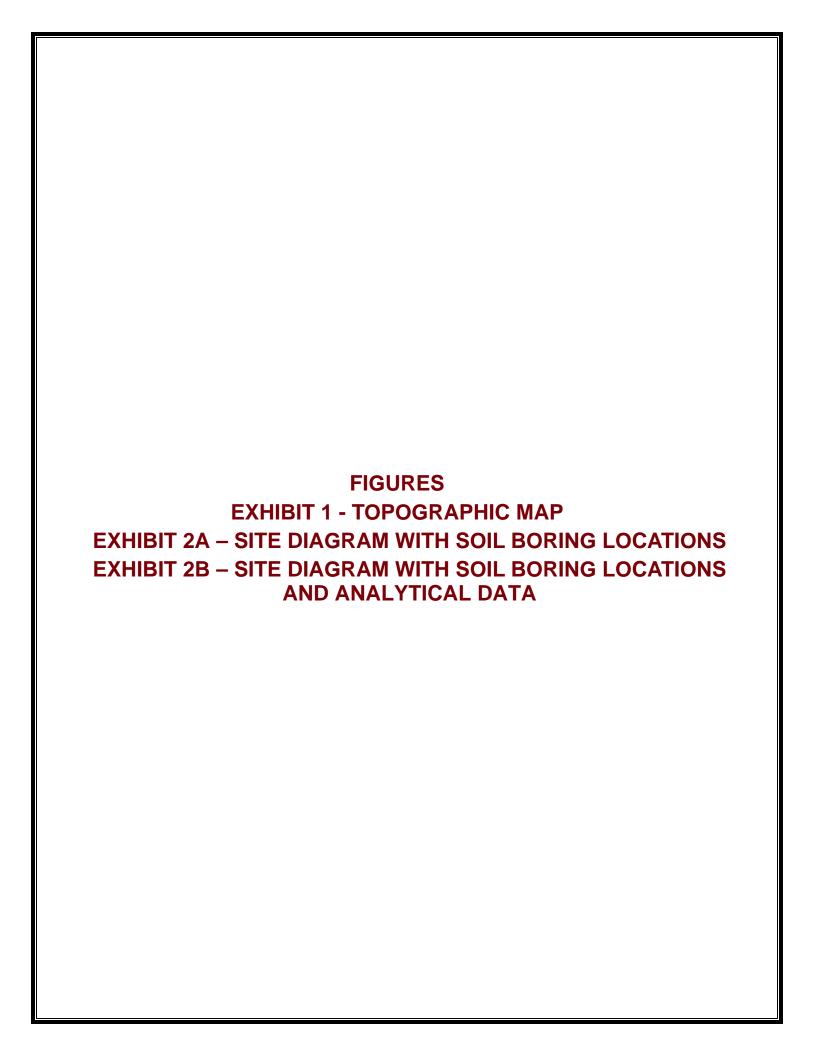
Parcel 115 – Darrill Burnett • Rutherfordton, North Carolina December 1, 2017 • Terracon Project No. 71177323

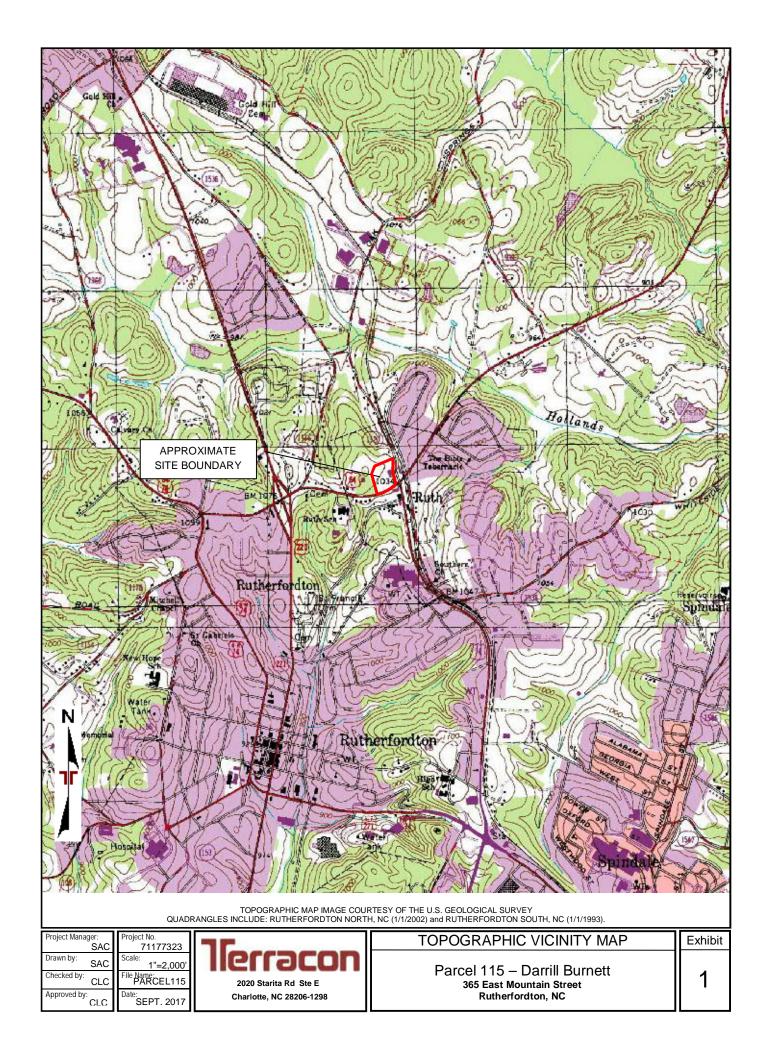


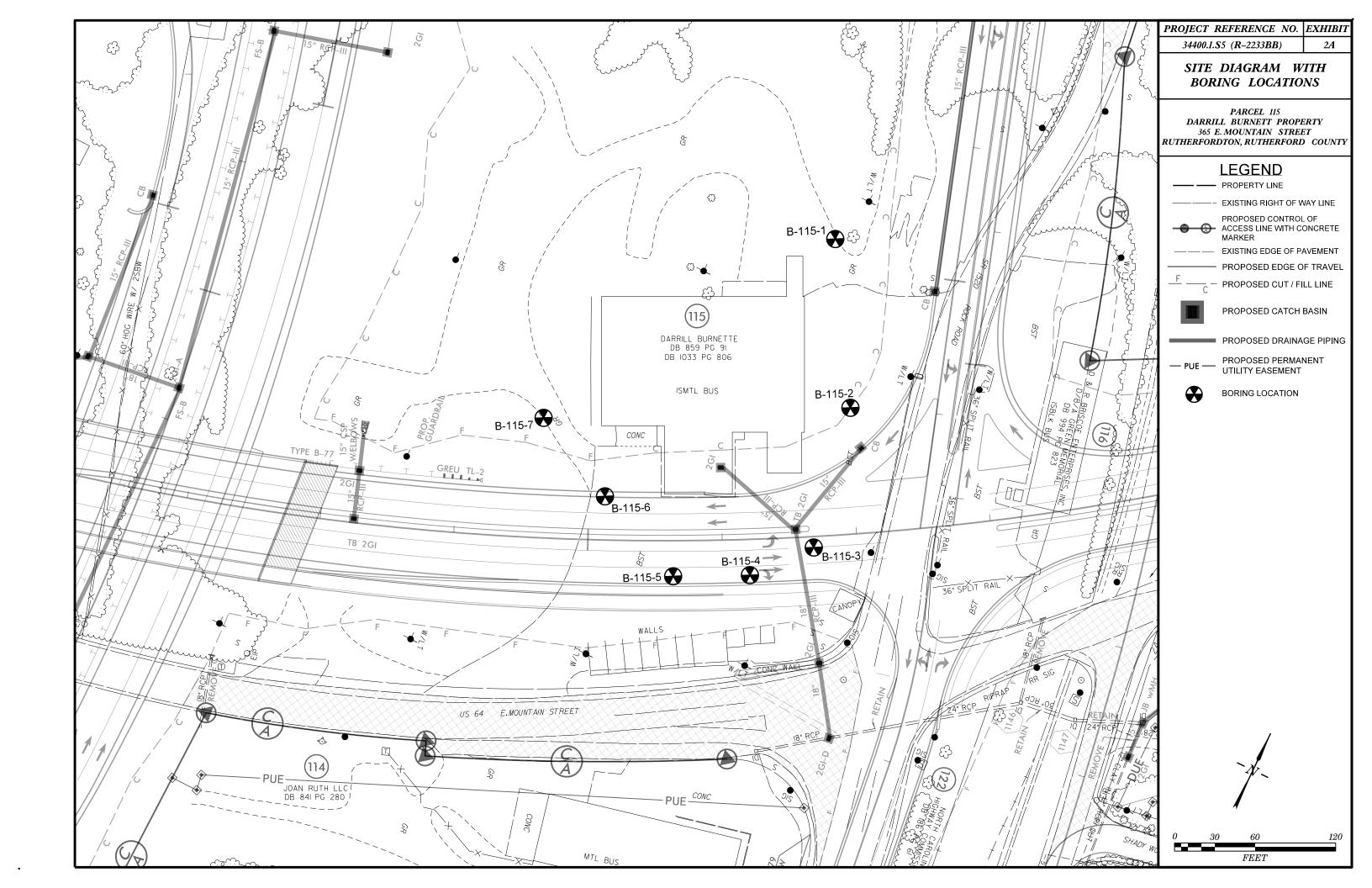
#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

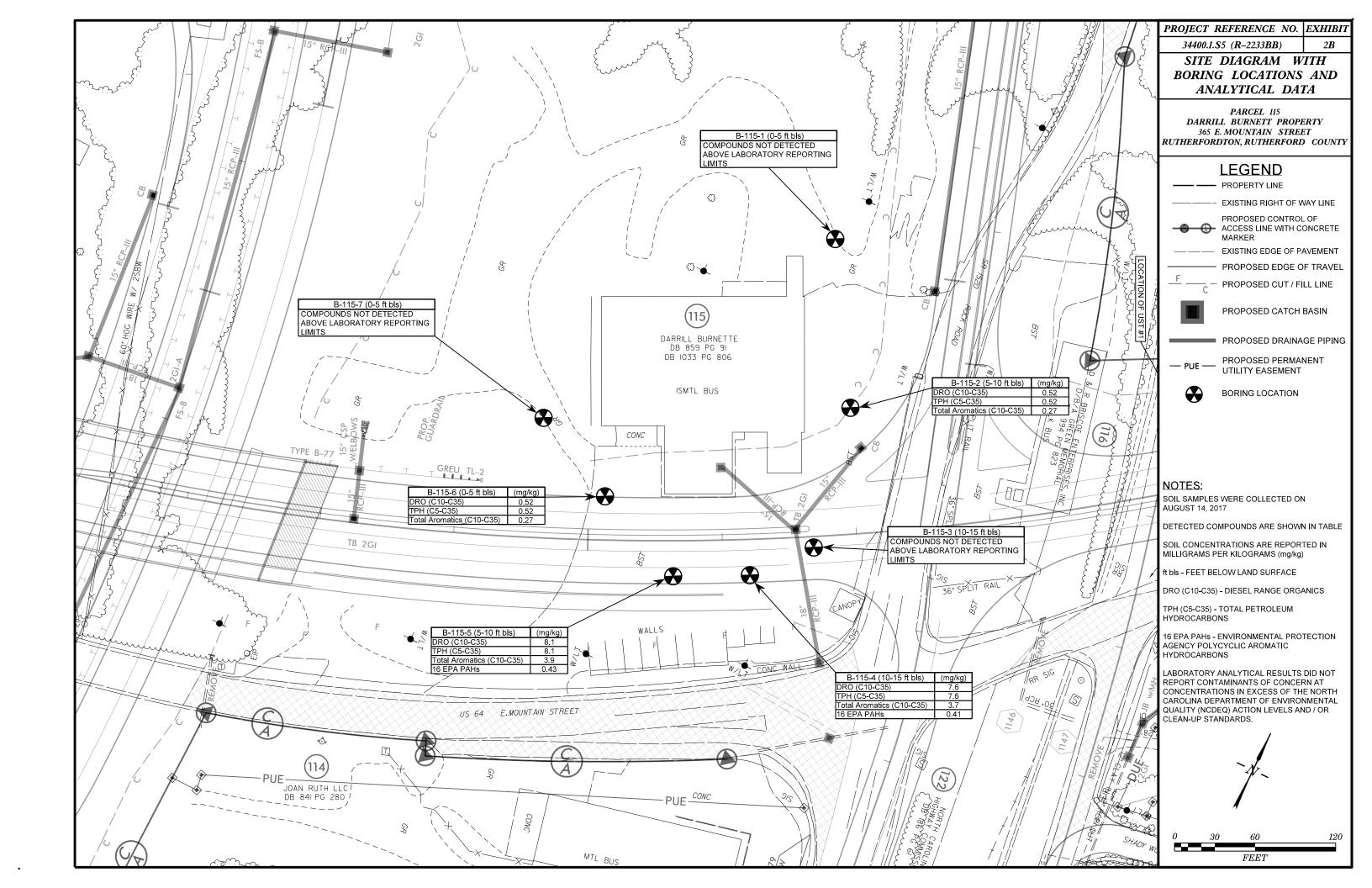
The findings of this investigation are discussed below.

- n The geophysical investigation did not reveal evidence of unknown metallic USTs within the survey area at a depth interval of zero to eight feet bls.
- n Laboratory analyses did not identify petroleum constituents above regulatory action levels in on-site soil borings B-115-1 through B-115-7, however petroleum compounds were detected in boring B-115-2, B-115-4, B-115-5 and B-115-6 above their respective laboratory reporting limits.
- Terracon does not recommend further assessment of this site at this time. The detection of petroleum constituents (below regulatory standards) in one 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.









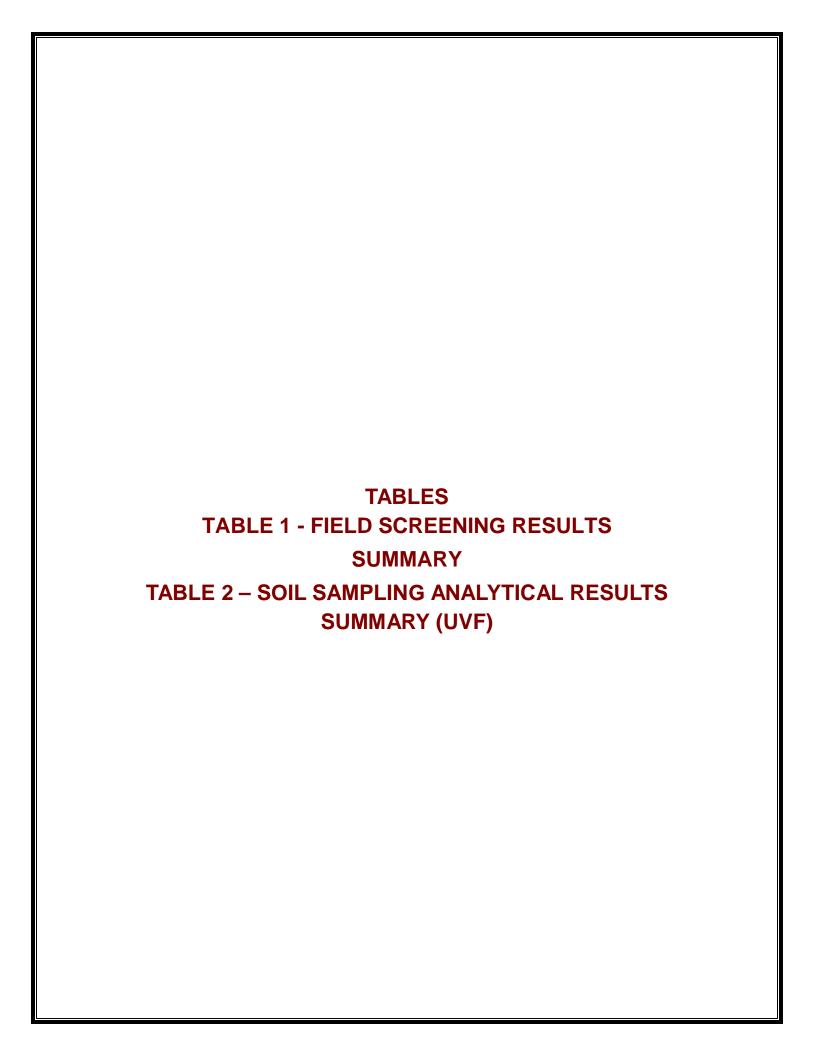


Table 1
Summary of Field Screening Results
Preliminary Site Assessment
Parcel 115 - Darrill Burnett
Rutherfordton, Rutherford County, North Carolina
Terracon Project No. 71177323

Sample ID	Screened Interval	PID Value
	0-5	1.6*
B-115-1	5-10	1.2
	10-15	1.2
	0-5	1.4
B-115-2	5-10	1.5*
	10-15	1.3
	0-5	1.2
B-115-3	5-10	1.4
	10-15	1.6*
	0-5	1.3
B-115-4	5-10	1.3
	10-15	1.4*
	0-5	1.3
B-115-5	5-10	1.5*
	10-15	1.4
	0-5	1.8*
B-115-6	5-10	1.4
	10-15	1.5
	0-5	1.8*
B-115-7	5-10	1.6
	10-15	0.9

#### Notes:

Soil screening was conducted on August 14, 2017.

Concentrations are reported in parts per million (ppm).

<sup>\*</sup>indicates sampled interval.

# Table 2 Summary of Soil Analytical Results Preliminary Site Assessment Parcel 115 - Darrill Burnett Rutherfordton, Rutherford County, North Carolina Terracon Project No. 71177323

Sample ID:	B-115-1	B-115-2	B-115-3	B-115-4	B-115-5	B-115-6	B-115-7	TPH
Sample Depth (ft bls):	0-5	5-10	10-15	10-15	5-10	0-5	0-5	Action Level
UVF Analysis								
BTEX (C6-C9)	<0.63	<0.52	<0.6	<0.57	<0.59	<0.5	<0.6	NE
GRO (C5-C10)	< 0.63	< 0.52	<0.6	<0.57	< 0.59	< 0.5	<0.6	50
DRO (C10-C35)	< 0.63	0.52	<0.6	7.6	8.1	1	<0.6	100
TPH (C5-C35)	< 0.63	0.52	<0.6	7.6	8.1	1	<0.6	NE
Total Aromatics	< 0.13	0.27	<0.12	3.7	3.9	0.55	<0.12	NE
16 EPA PAHs	<0.2	<0.17	< 0.19	0.41	0.43	<0.16	<0.19	NE
BaP	< 0.025	<0.021	< 0.024	<0.023	< 0.023	< 0.02	< 0.024	NE

#### Notes:

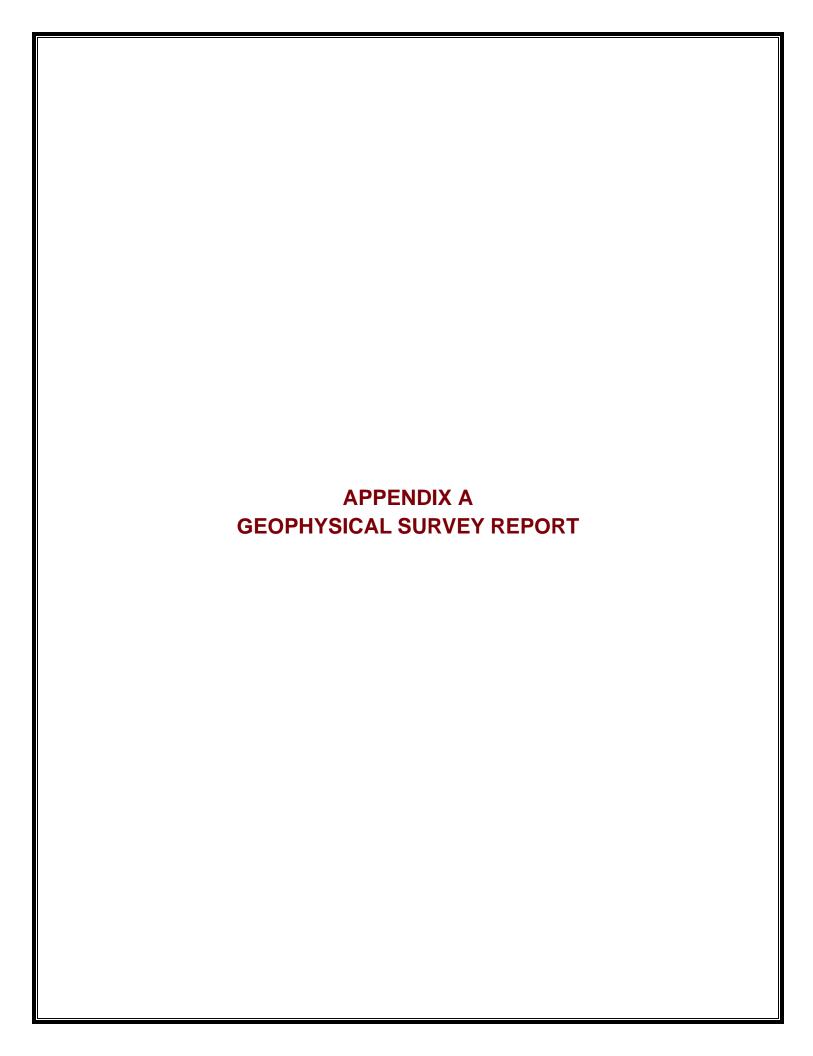
Soil samples were collected on August 14, 2017.

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.



#### **Terracon Consultants, Inc.**

#### GEOPHYSICAL INVESTIGATION TO LOCATE METALLIC USTS

#### Darrill Burnett Property (Parcel 115) 365 East Mountain Street 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

#### **Darrill Burnett Property**

(Parcel 115) 365 East Mountain Street Rutherford County, North Carolina

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	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 29 and August 3, 2017 across the accessible portions of the Darrill Burnett property (Parcel 115) located at 365 East Mountain Street 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, Tri City Tire Service along with several other businesses operate on this property. At the time of data acquisition, the northern, southern and western portions of the property contain numerous vehicles, equipment, tires and wood processing activities which reduced the accessibility of the survey area. The southeastern portion of the site has a brick retaining wall that runs adjacent to East Mountain Street and Rock Road which indicates that fill material, having an approximate thickness of 4 to 8 feet, has been placed on this property prior to the construction of the tire service garage building.

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 115 has a maximum length and width of 400 feet and 350 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 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 scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across selected EM61differential anomalies and areas containing steel reinforced concrete 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 7.0 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 <u>DISCUSSION OF RESULTS</u>

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 1357667-E 12847620-N, 1357726-E 12847744-N and 1357855.894-E 12847864-N are probably in response to buried lines, conduits and/or the brick retaining wall. GPR data suggest the EM61 differential anomalies centered near coordinates 1357765-E 12847991-N, 1357779-E 12847995-N and 1357810-E 12847938-N are in response to buried, miscellaneous, metal debris or small objects. GPR data suggest that the EM61 differential anomalies centered near grid coordinates 1357698-E 12847945-N and 1357605-E 12847898-N are in response to the building, equipment or steel reinforced concrete. Similarly, GPR scans suggest the series of EM differential anomalies intersecting coordinates 1357790-E 12847725-N, 1357829-E 12847753-N and 1357854-E 12847782-N are in response to vehicles and equipment present during data acquisition.

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 (the accessible portions of the proposed ROW/PUE area) does not contain metallic USTs. However, due to the 4 to 8 feet of fill material that is present in the southeastern portion of the site, the geophysical investigation, which had a maximum investigating depth of 8 feet, may not have detected metallic objects that lie below the fill layer. 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**

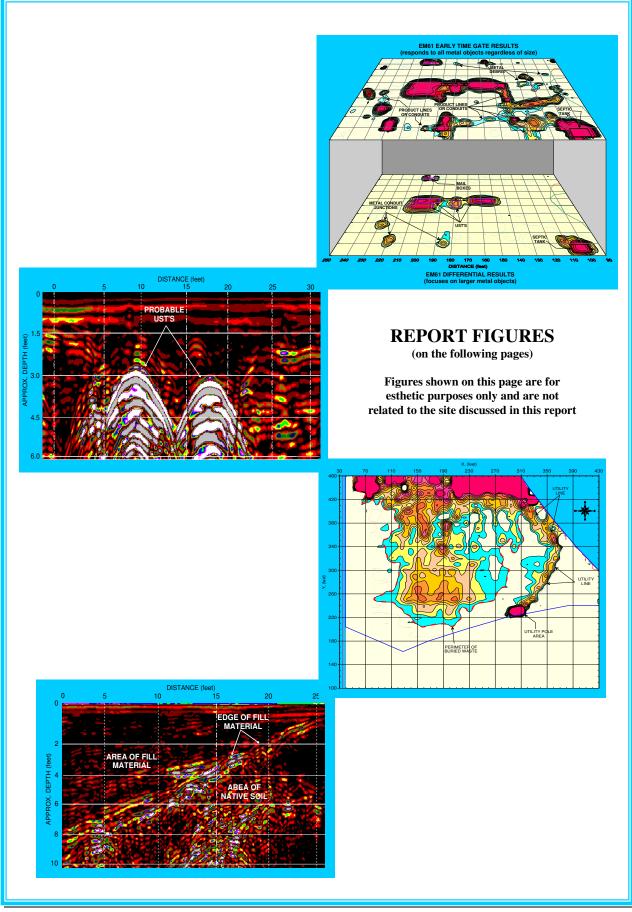
Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the Darrill Burnett property (Parcel 115) located at 365 East Mountain Street in Rutherford County, North Carolina provides the following summary and conclusions:

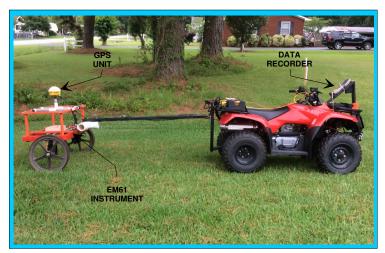
- The combination of EM61 and GPR surveys provided reliable results for the detection of metallic USTs across the survey area within the depth interval of 0 to 8 feet.
- The linear, EM61 early time gate anomalies intersecting UTM coordinates 1357667-E 12847620-N, 1357726-E 12847744-N and 1357855.894-E 12847864-N are probably in response to buried lines, conduits and/or the brick retaining wall.
- GPR data suggest the EM61 differential anomalies centered near coordinates 1357765-E 12847991-N, 1357779-E 12847995-N and 1357810-E 12847938-N are probably in response to buried, miscellaneous metal debris or small objects.
- The remaining EM61 anomalies are probably in response to the buildings, steel reinforced concrete, vehicles, equipment and other known surface objects.
- The EM61 and GPR investigation suggests the accessible portions of the proposed ROW/PUE area does not contain metallic USTs. However, due to the 4 to 8 feet of fill material that is present in the southeastern portion of the site, the geophysical investigation, which had a maximum investigating depth of 8 feet, may not have detected metallic objects that lie below the fill layer.

#### **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

STs, utility lines, conduits, steel reinforced concrete, or miscellaneous, metal debris may tributed to other surface or subsurface features and/or interference from cultural features.	be





#### **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 Burnett property.

#### **GROUND PENETRATING RADAR UNIT**

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



#### 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 the Darrill Burnett property (Parcel 115) located at the intersection of East Mountain Street and Rock Road, near Rutherfordton, North Carolina. The geophysical investigation was conducted on July 29 and August 3, 2017.

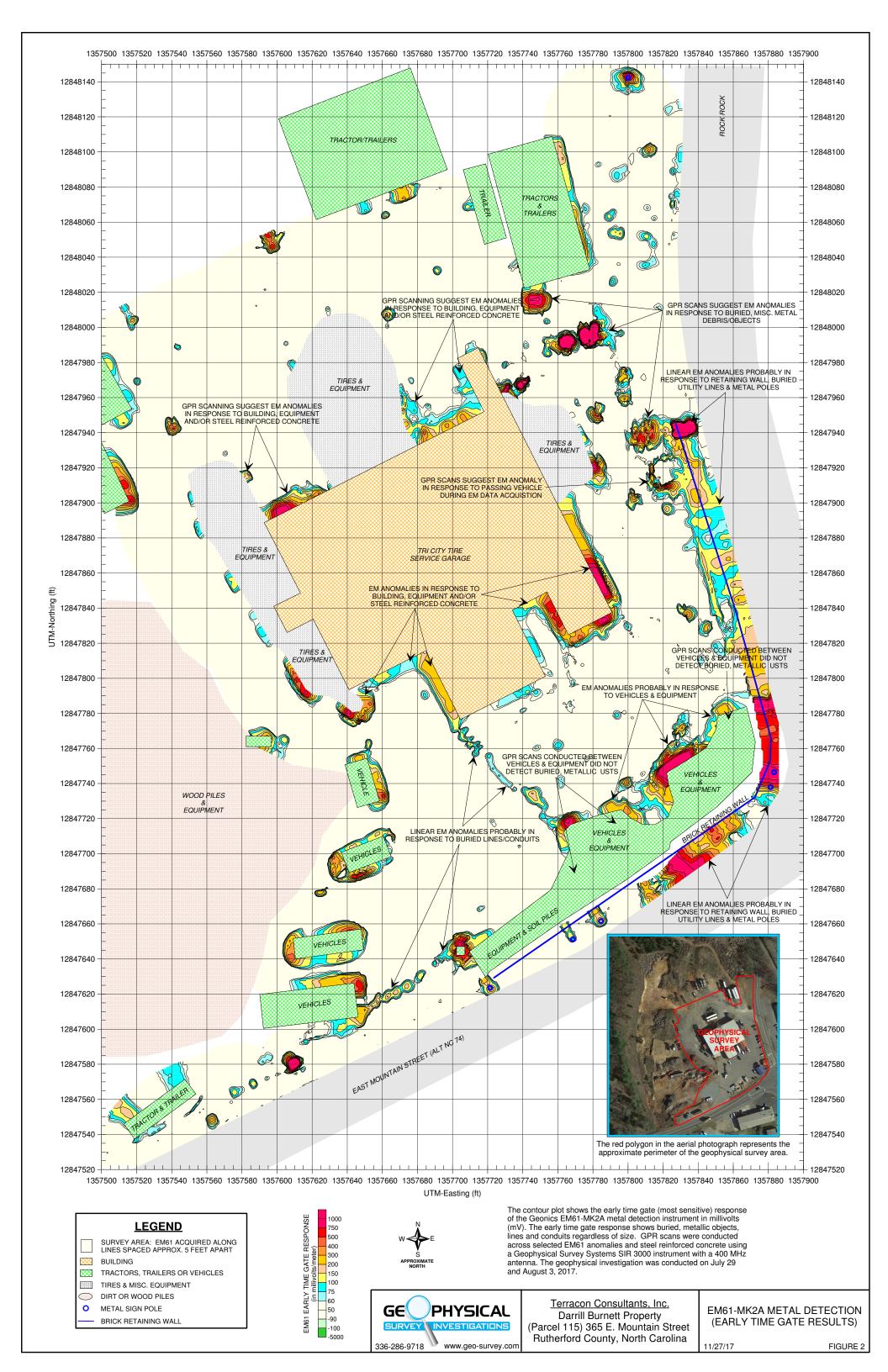


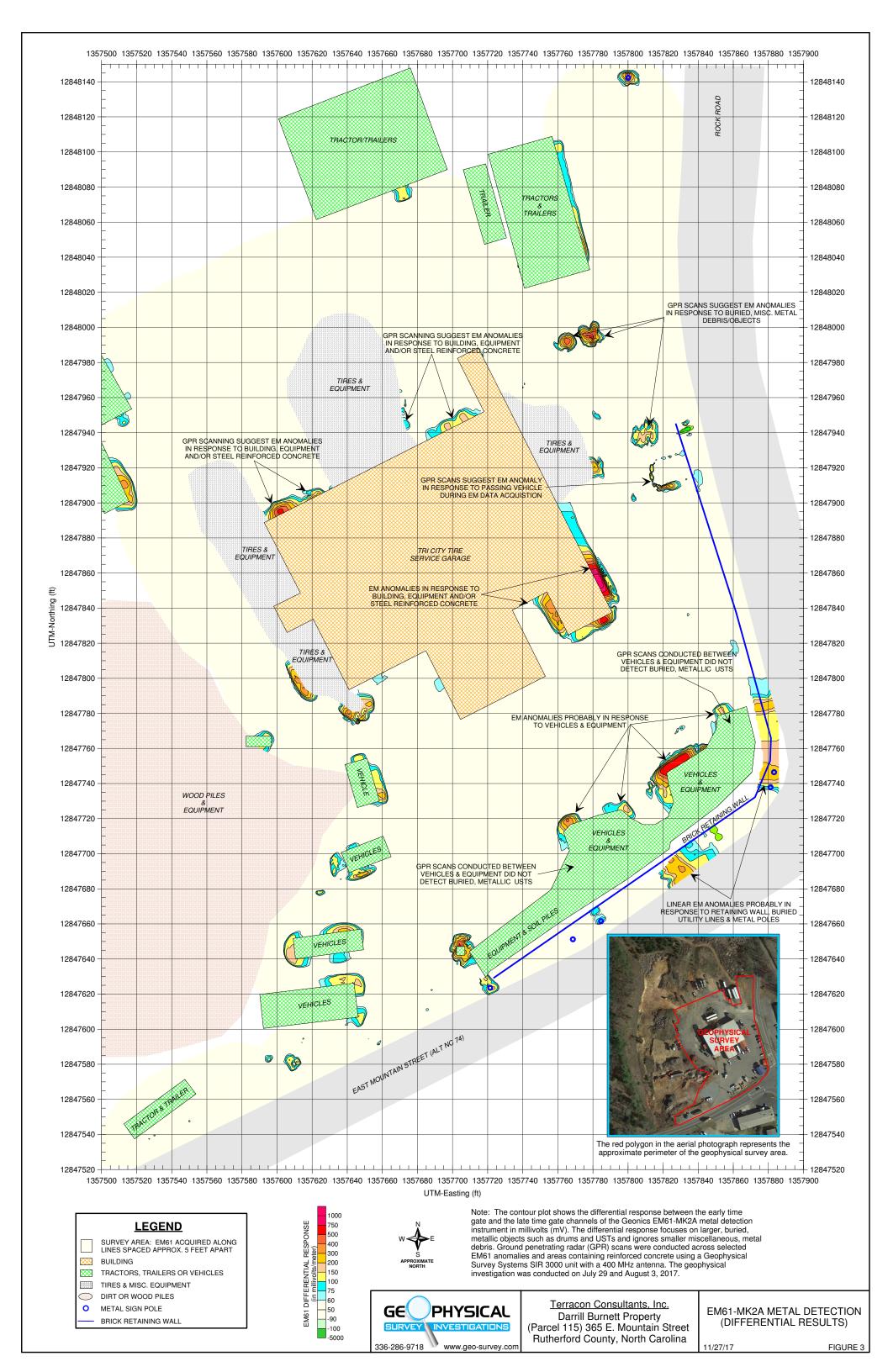
Terracon Consultants, Inc.

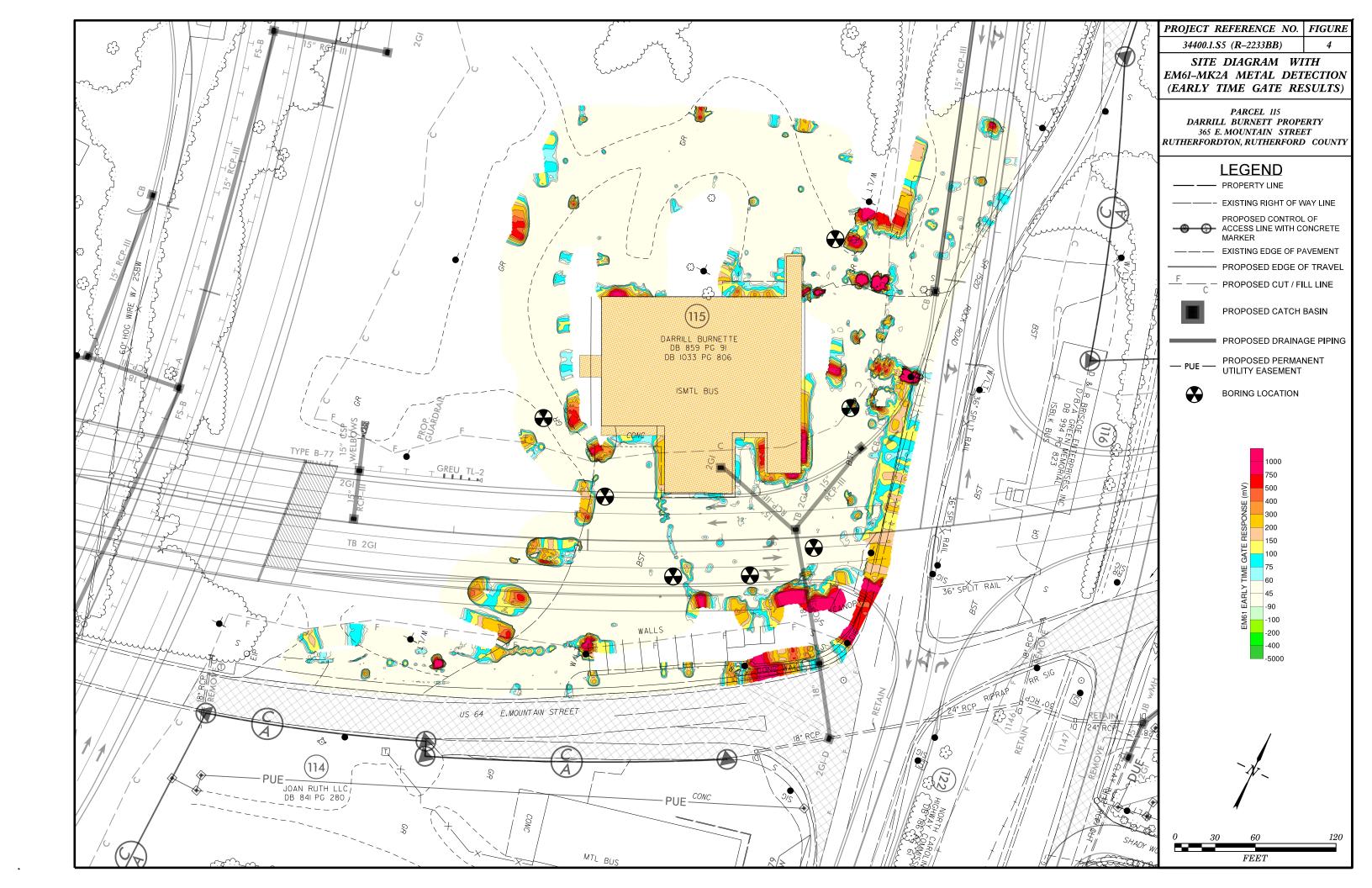
Darrill Burnett Property
(Parcel 115) 365 E. Mountain Street
Rutherford County, North Carolina

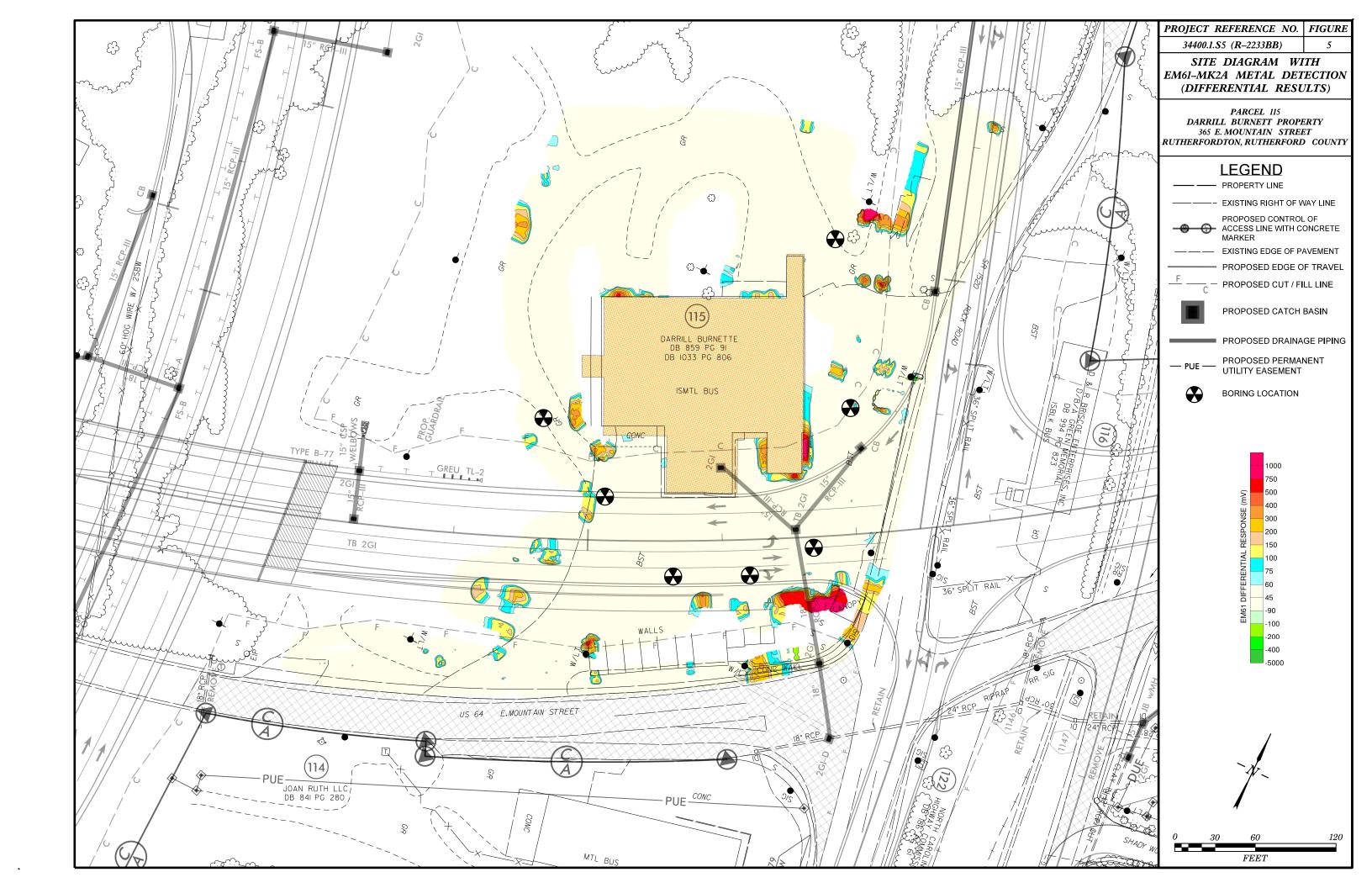
GEOPHYSICAL EQUIPMENT & SITE PHOTOGRAPHS

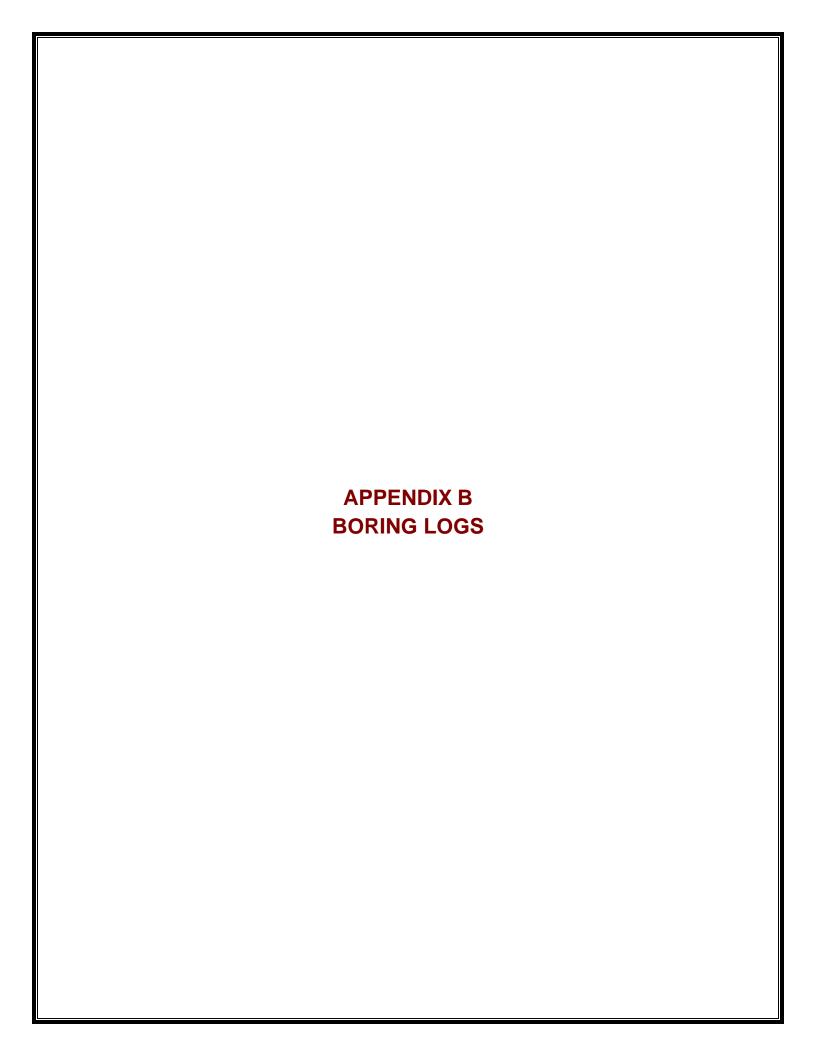
11/27/17 FIGURE 1











				SOII	BORING I	06		
PROJECT NA	AME, Doros	111E Dorril	I Durnott	JUIL	BURING	SOIL BORING I.D. B-115-1		
PROJECT NO			Durnett			DATE(S) DRILLED: August 14, 2017		
T KOOLOT IK	0. 711770					57112(6) 51112225. Nagast 11, 2017		
PROJECT LO	OCATION:	365 East M	ountain Street	DRILLING CONTR: Innovative Environmental Technologies				
		Rutherfordto	on, North Caroli	DRILL METHOD: Direct Push				
				BORING DIAMETER: 2 inches				
CLIENT: Nort	th Carolina	Department	of Transportati	on		SAMPLING METHOD/INTERVAL: GP (5-Foot)		
LOGGED BY:		hinery				REMARKS: BGS = below grade surface		
DESCRIPTIV	E LOG							
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAPHIC				
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLUMN	(FT)	DESCRIPTION OF SOIL		
					0.0			
					0.5 1.0			
					1.5			
					2.0			
					2.5			
					3.0			
					3.5			
					4.0			
					4.5			
0-5.0	ļ	NA	1.6		5.0			
	ļ				5.5			
					6.0	and the server and the slave		
			<del> </del>		6.5	red/brown sandy clay		
					7.0 7.5			
					8.0			
					8.5			
					9.0			
					9.5			
5.0-10.0		NA	1.2		10.0			
					10.5			
					11.0			
					11.5			
					12.0			
					12.5 13.0			
					13.5			
					14.0			
					14.5			
10.0-15.0		NA	1.2		15.0	BORING TERMINATED AT 15 FEET BGS		
					15.5			
	1				16.0			
	1							
<u> </u>	-							
	1							
	<del>                                     </del>				-			
	1							
DDILL ING MET	ODE							
DRILLING METHODS			≣		Terracon			

				SOIL E	BORING L	.0G		
PROJECT NA	AME: Parce	el 115 -Darrill	Burnett			SOIL BORING I.D. B-115-2		
PROJECT NO						DATE(S) DRILLED: August 14, 2017		
PROJECT LO	OCATION:	365 East M	ountain Street			DRILLING CONTR: Innovative Environmental Technologies		
		Rutherfordto	n, North Caroli	DRILL METHOD: Direct Push				
OLIENT N		<u> </u>	<u> </u>	BORING DIAMETER: 2 inches				
LOGGED BY			of Transportati	SAMPLING METHOD/INTERVAL: GP (5-Foot) REMARKS: BGS = below grade surface				
DESCRIPTIV		Tilliery				INCIMANNO. DGG - Delow grade surface		
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAPHIC	DEPTH			
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLUMN	(FT)	DESCRIPTION OF SOIL		
					0.0			
					0.5			
					1.0			
					1.5			
					2.0			
					3.0			
					3.5			
					4.0			
					4.5			
0-5.0		NA	1.4		5.0			
					5.5			
					6.0	dark brown/red silty clay		
					7.0	dark brown/red silty day		
					7.5			
					8.0			
					8.5			
					9.0			
50400		NIA.	4.5		9.5			
5.0-10.0		NA	1.5		10.0			
					11.0			
					11.5			
					12.0			
					12.5			
					13.0			
					13.5			
					14.0			
10.0-15.0		NA	1.3		15.0	BORING TERMINATED AT 15 FEET BGS		
					15.5			
					16.0			
DRILLING METH	ODS							
DRILLING METHODS						Terracon		

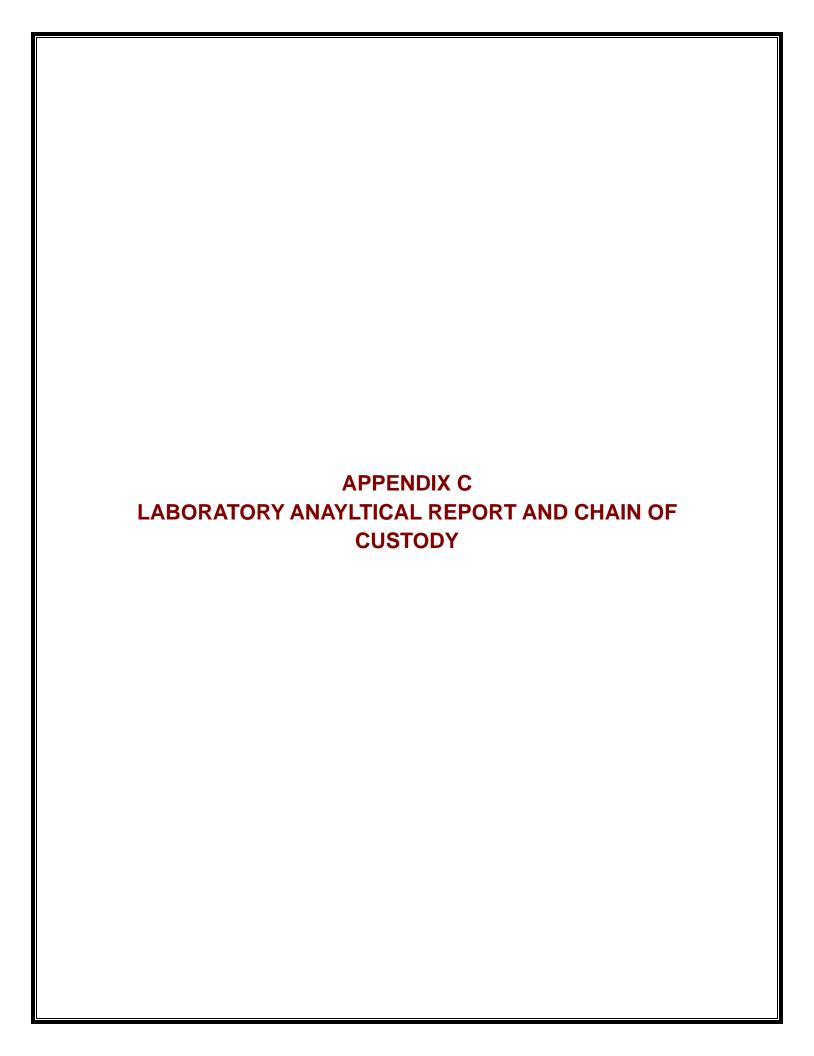
				SOIL	BORING L	OG
PROJECT NA	AMF: Parce	l 115 -Darril	l Burnett	0012	DOM:NO E	SOIL BORING I.D. B-115-3
PROJECT NO			Damott			DATE(S) DRILLED: August 14, 2017
PROJECT LO	CATION: 3	365 East M	ountain Street			DRILLING CONTR: Innovative Environmental Technologies
	1	Rutherfordto	on, North Carol	DRILL METHOD: Direct Push		
				BORING DIAMETER: 2 inches		
CLIENT: Nort	th Carolina I	Department	of Transportat	SAMPLING METHOD/INTERVAL: GP (5-Foot)		
LOGGED BY		ninery				REMARKS: BGS = below grade surface
DESCRIPTIV					•	
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAPHIC		
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLUMN	(FT)	DESCRIPTION OF SOIL
					0.0	
					0.5 1.0	
					1.5	
					2.0	
					2.5	
					3.0	
	1				3.5	
					4.0	dark red/brown silty clay
					4.5	
0-5.0		NA	1.2		5.0	
					5.5	
					6.0	
					6.5	
					7.0	
					7.5	
					8.0	
					8.5 9.0	
					9.5	
5.0-10.0		NA	1.4		10.0	
0.0 .0.0					10.5	
					11.0	
					11.5	
					12.0	
					12.5	red/brown sandy clay
					13.0	
					13.5	
					14.0	
10.0-15.0	1	NA	1.6		14.5 15.0	BORING TERMINATED AT 15 FEET BGS
10.0-10.0	<del>                                     </del>	INA	1.0		15.0	DOMING TENNINATED AT 13 FEET BGS
					16.0	
					10.0	
DRILLING METH	ODS					
DRILLING METHODS				E		Terracon

				SOIL I	BORING L	.0G
PROJECT NA	AME: Parce	el 115 -Darril	Burnett			SOIL BORING I.D. B-115-4
PROJECT NO						DATE(S) DRILLED: August 14, 2017
PROJECT LO	OCATION:	365 East M	ountain Street			DRILLING CONTR: Innovative Environmental Technologies
		Rutherfordto	on, North Caroli	DRILL METHOD: Direct Push		
OLIENT N		<b>.</b>	·= · ·	BORING DIAMETER: 2 inches		
LOGGED BY			of Transportati	on		SAMPLING METHOD/INTERVAL: GP (5-Foot) REMARKS: BGS = below grade surface
DESCRIPTIV		illilely				INCIMANNO. DGO - Delow grade surface
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAPHIC	DEPTH	
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLUMN	(FT)	DESCRIPTION OF SOIL
					0.0	
					0.5	
					1.0	
					1.5	
					2.0	
					3.0	
					3.5	
					4.0	
					4.5	
0-5.0		NA	1.3		5.0	
					5.5	
					6.0	dark red/brown silty clay
					7.0	dark red/brown silty clay
					7.5	
					8.0	
					8.5	
					9.0	
50400		NIA	4.0		9.5	
5.0-10.0		NA	1.3		10.0	
					11.0	
					11.5	
					12.0	
					12.5	
					13.0	
					13.5	
					14.0	
10.0-15.0		NA	1.4		15.0	BORING TERMINATED AT 15 FEET BGS
					15.5	
					16.0	
DRILLING METH	ODS					
DRILLING METHODS				≣		Terracon

				SOIL	BORING L	.OG		
PROJECT NA	AMF: Parce	l 115 -Darril	l Burnett	00.2		SOIL BORING I.D. B-115-5		
PROJECT N				DATE(S) DRILLED: August 14, 2017				
PROJECT LO	OCATION:	365 East M	ountain Street			DRILLING CONTR: Innovative Environmental Technologies		
		Rutherfordto	on, North Caroli	DRILL METHOD: Direct Push				
				BORING DIAMETER: 2 inches				
			of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)				
LOGGED BY		hinery		REMARKS: BGS = below grade surface				
DESCRIPTIV	1				1			
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAPHIC	DEPTH	DESCRIPTION OF SOIL		
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLUMN	(FT)	DESCRIPTION OF SOIL		
					0.0			
					1.0			
					1.5			
			1		2.0			
					2.5			
					3.0			
					3.5			
					4.0			
					4.5			
0-5.0		NA	1.3		5.0			
					5.5			
					6.0			
					6.5	red/brown silty clay		
					7.0			
					7.5			
			-		8.0			
					8.5 9.0			
					9.5			
5.0-10.0		NA	1.5		10.0			
					10.5			
					11.0			
					11.5			
					12.0			
					12.5			
					13.0			
					13.5			
					14.0			
10.0-15.0		NA	1.4		14.5	DODING TEDMINATED AT 45 FFFT DOG		
10.0-15.0		INA	1.4		15.0 15.5	BORING TERMINATED AT 15 FEET BGS		
					16.0			
					10.0			
DRILLING MET	ODS							
DRILLING METHODS						Terracon		

				-	VII - D-C-	- בינור	100	
DDC 1505 :::	NAE 5	1445 5 "	I.D	S	OIL BOF	KING		
PROJECT NO			Burnett				SOIL BORING I.D. B-115-6 DATE(S) DRILLED: August 14, 2017	
I NOULUT INC	J. 111113						DITTE(O) DITTELLO. AUGUST 14, 2017	
PROJECT LO	CATION:	365 East M	ountain Street		DRILLING CONTR: Innovative Environmental Technologies			
			on, North Caro	DRILL METHOD: Direct Push				
				BORING DIAMETER: 2 inches				
			of Transportat	ion			SAMPLING METHOD/INTERVAL: GP (5-Foot)	
LOGGED BY:		hinery					REMARKS: BGS = below grade surface	
DESCRIPTIV			ī	ī				
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAP		DEPTH	DESCRIPTION OF SOIL	
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLU	MN	(FT)	DESCRIPTION OF SOIL	
						0.0		
						1.0		
						1.5		
						2.0		
						2.5		
						3.0		
						3.5		
						4.0		
2.5.0		210	4.0			4.5		
0-5.0		NA	1.8			5.0 5.5		
						6.0		
						6.5	light orange/brown silty clay	
						7.0	iig.iii o a iigo zi o iii o ii, o ia,	
						7.5		
						8.0		
						8.5		
						9.0		
50400		NΙΛ	4.4			9.5		
5.0-10.0		NA	1.4			10.0		
						11.0		
						11.5	red/brown sandy clay	
						12.0		
						12.5		
						13.0		
						13.5		
						14.0		
10.0-15.0		NA	1.5			14.5 15.0	BORING TERMINATED AT 15 FEET BGS	
						15.5	DOING TERMINATED AT TOT LET DOO	
						16.0		
DRILLING METHO AR - AIR ROTARY	Y		SAMPLING METHO					
AR - AIR ROTIARY  CFA - CONTINUOUS FLIGHT AUGER  DC - DRIVEN CASING  HA - HAND AUGER  HA - HAND AUGER  HSA - HOLLOW STEM AUGER  MD - MUD DRILLING  RC - ROCK CORING  WR - WATER ROTARY  SAMI-LING ME HOUS  S - SPLIT SPOON  S - SHELBY TUBE  GP - GEOPROBE  * - Sample collected for analysis  ND = <1 ppm							lerracon	

				SOIL	BORING I	LOG
PROJECT N	AME: Parce	el 115 -Darril	l Burnett			SOIL BORING I.D. B-115-7
PROJECT N						DATE(S) DRILLED: August 14, 2017
PROJECT LO	OCATION:	365 East M	lountain Street			DRILLING CONTR: Innovative Environmental Technologies
		Rutherfordto	on, North Caroli	ina		DRILL METHOD: Direct Push
						BORING DIAMETER: 2 inches
CLIENT: Nor			of Transportati	ion		SAMPLING METHOD/INTERVAL: GP (5-Foot)
DESCRIPTIV		ninery				REMARKS: BGS = below grade surface
SAMPLE	SAMPLE	BLOWS	PID/FID	GRAPHIC	DEPTH	
INTERVAL	REC. (IN.)	PER 6"	(ppm)	COLUMN	(FT)	DESCRIPTION OF SOIL
					0.0	
					0.5	
					1.0	
					1.5	
					2.0	1
			<del>                                     </del>		2.5 3.0	1
					3.5	1
					4.0	1
					4.5	]
0-5.0		NA	1.8		5.0	
					5.5	
					6.0	.,
					6.5 7.0	red/brown sandy clay
					7.0	
					8.0	1
					8.5	1
					9.0	
					9.5	
5.0-10.0		NA	1.6		10.0	
					10.5	1
					11.0 11.5	1
					12.0	1
					12.5	1
					13.0	
					13.5	
					14.0	1
10.0.45.0		N1A	0.0		14.5	DODING TEDMINATED AT 15 SEST DOG
10.0-15.0		NA	0.9		15.0 15.5	BORING TERMINATED AT 15 FEET BGS
			<del>                                     </del>		16.0	1
						1
						1
			<del>                                     </del>			1
-			<del>                                     </del>			1
			<del>                                     </del>			1
						1
						]
DRILLING METH AR - AIR ROTAR CFA - CONTINUO DC - DRIVEN CA HA - HAND AUG HSA - HOLLOW MD - MUD DRILL	Y DUS FLIGHT A ISING ER STEM AUGER ING	UGER :	SAMPLING METHO SS - SPLIT SPOON ST - SHELBY TUBI GP - GEOPROBE * - Sample collected	E		Terracon
RC - ROCK COR WR - WATER RC			ND = <1 ppm			









#### **Hydrocarbon Analysis Results**

Client: TERRACON CONSULTANTS

Address: 2020 E STARITA RD

CHARLOTTE, NC 28206

Samples taken Samples extracted Samples analysed Monday, August 14, 2017 Monday, August 14, 2017 Wednesday, August 16, 2017

Contact: ALEX CHINERY Operator PANTESCO

Project: # 71177323

													H09382
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	ВаР	(	% Ratio	s	HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
S	B-115-1	25.0	< 0.63	< 0.63	< 0.63	< 0.63	<0.13	<0.2	<0.025	0	0	0	PHC not detected
S	B-115-2	21.0	<0.52	<0.52	0.52	0.52	0.27	<0.17	< 0.021	0	78.8	21.2	Deg Fuel 74.3%,(FCM)
S	B-115-3	23.9	<0.6	<0.6	<0.6	<0.6	<0.12	<0.19	<0.024	0	93.3	6.7	Residual HC,(PFM),(OCR)
S	B-115-4	22.8	<0.57	<0.57	7.6	7.6	3.7	0.41	< 0.023	0	81.6	18.4	Road Tar 77.3%,(FCM)
S	B-115-5	23.4	<0.59	<0.59	8.1	8.1	3.9	0.43	<0.023	0	84.8	15.2	Road Tar 94.7%,(FCM)
s	B-115-6	20.2	<0.5	<0.5	1	1	0.55	<0.16	<0.02	0	77.1	22.9	Deg.PHC 75.4%,(FCM),(BO)
S	B-115-7	24.1	<0.6	<0.6	<0.6	<0.6	<0.12	<0.19	<0.024	0	85.9	14.1	Residual HC
s	B-117-1	18.8	<0.47	<0.47	0.93	0.93	0.63	<0.15	<0.019	0	83.1	16.9	Deg Fuel 76.2%,(FCM),(BO)
S	B-117-2	20.3	<0.51	<0.51	0.51	0.51	0.36	<0.16	< 0.02	0	72.4	27.6	V.Deg.PHC 65.8%,(FCM),(BO)
S	B-117-3	20.5	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO),(P)
	Initial (	Calibrator (	QC check	OK					Final FC	CM QC	Check	OK	101.8 %

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

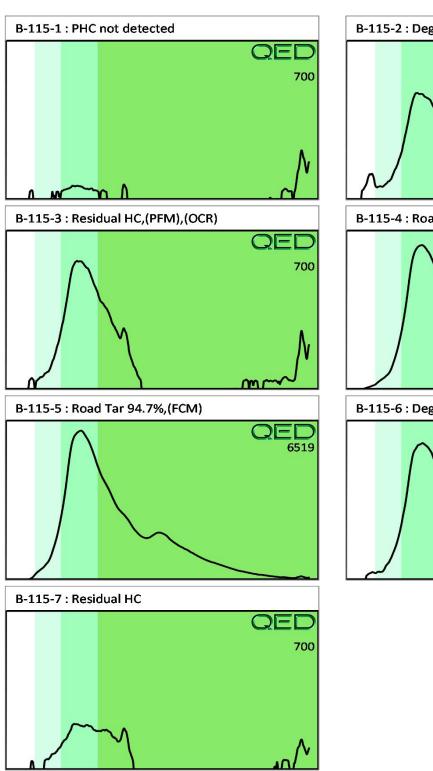
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

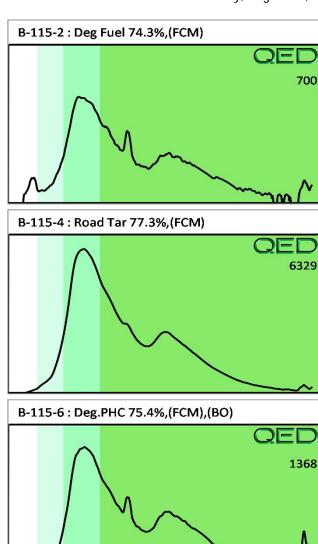
B = Blank Drift: (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result: (BO) = Background Organics detected: (OCR) = Outside cal range: (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions: HC = Hydrocarbon: PHC = Petroleum HC: FP = Fingerprint only.

Data generated by HC-1 Analyser

Project: #71177323





Client Name:	TERRACON CONSULTANTS	
Address:	2020 & STARITA ROAD	
	CHARLOTTE, NC 28206	
Contact:	ALEX CHINERY	
Project Ref.:		
Email:	200	RAPID ENVIRONMENTAL DIAGNOSTICS
Phone #:	1	CHAIN OF CUSTODY AND ANALYTICAL
Collected by:		REQUEST FORM
THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO IN COLUMN TO THE PERSON NAMED IN		THE PERSON NAMED IN COLUMN

REQUEST FORM

PIDEN	N
RAPID ENVIRONMENTAL DIAGNOSTIC	
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AL DI	
AGNO	
S	

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

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

Rean(G) Control of the second	Mary   Sample ID   WF	Mary   Sample ID   WF   GCBTEX   Sample ID   WF   GCBTEX	Mary   Mary   Sample ID   UVF   GCBTEX   Total W   Sample ID   VVF   GCBTEX   Sample ID   VVF   GCBTEX   Sample ID   VVF   GCBTEX   Sample ID   VVF   GCBTEX   Sample ID   VVF   Sample ID   VVF   GCBTEX   Sample ID   VVF   GCBTEX   Sample ID   VVF   GCBTEX   Sample ID   VVF   Sample ID   VVF   GCBTEX   Sample ID   VVF   Sample ID	As Hour   (S/W)   Sample ID   UVF   GC BTEX   To	Relinquished by Relinquished by	Comments:		16:24	21:01	16:10	6:4	6.17	15.06	15:05	15:13	15.10	51:81	13:39	13:19	13:22	18:26	18:09	22	Date/Time 24 Hour
Sample ID    3-115-1     3-115-2     3-115-4     3-115-4     3-115-4     3-115-1     3-115-1     3-118-2     3-118-3     3-118-4     3-118-5     3-118	Sample ID   UVF	Sample ID   UVF   GCBTEX   S-115-1   X   S-115-2   X   S-115-3   X   S-115-3   X   S-115-1   X   S-115-1   X   S-115-2   X   S-115-2   X   S-118-2   X   S	Sample ID   UVF   GCBTEX   Total W   S-115-1   X   S-5.     Sa   115-2   X   S-6.     Sa   115-3   X   S-6.     Sa   115-3   X   S-7.     Sa   117-1   X   S-7.     Sa   118-2   X   S-7.     Sa   118-3   X   S-7.     Sa   118-3   X   S-7.     Sa   118-3   X   S-7.     Sa   118-4   X   S-7.     Sa   118-5   X   S-7.     Sa   118-5   X   S-7.     Sa   118-6   X   S-7.     Sa   118-6   X   S-7.     Sa   118-6   X   S-7.     Sa   118-7   Sa   Sa   Sa   Sa   Sa   Sa   Sa   S	Sample ID   UVF   GCBTEX   Total W   S-115-1   X   S-5.     Sa   115-2   X   S-6.     Sa   115-3   X   S-6.     Sa   115-3   X   S-7.     Sa   117-1   X   S-7.     Sa   118-2   X   S-7.     Sa   118-3   X   S-7.     Sa   118-3   X   S-7.     Sa   118-5   X   S-7.     Sa   118-5   X   S-7.     Sa   118-5   X   S-7.     Sa   118-5   X   S-7.     Sa   118-6   X   S-7.     Sa   118-6   X   S-7.     Sa   118-6   X   S-7.     Sa   118-7   Ime   Sa   Image   Sa   Image	ERRACON			>	0	\$	<b>&gt;</b>	<>	×	×	×	×	×:	X	×	×	×	X	-	-
Sample ID 15-115-1  B-115-2  B-115-3  B-115-4  B-115-1  B-118-2  B-118-2  B-118-3  B-118-4  B-118-5	Sample ID UVF    S-115-1	Sample ID    Sample ID   WF   GCBTEX	Sample ID    Sample ID   UVF   GC BTEX   Total W   Sample ID	Sample ID    Sample ID   WF   GC BTEX   Total W   Salis   -1   -2   -2   -2   -2   -2   -2   -2	Date/ Date/			<														1	^	(s/w)
		GC BTEX  Date/Time  Date/Time	GCBTEX Total W  53. 56. 56. 57. 58. 58. 59. 59. 59. 59. 59. 59. 59. 59. 59. 59	GCBTEX Total W  53. 56. 56. 57. 58. 58. 59. 59. 59. 59. 59. 59. 59. 59. 59. 59	2 Mg			-118-	118-	118-		1	_		5.75	二	1	1 = 1	1 1 1	110	140	1		