US 401 (Raeford Road) from West Hampton Oaks Drive to East of Fairway Drive in Fayetteville

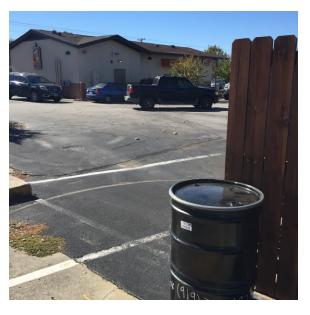
Parcel 328 – Tally Investments, LLC Property 2628 Raeford Road, Fayetteville, North Carolina

State Project No. U-4405

WBS Element: 39049.1.1

December 16, 2016

Terracon Project No. 70167490



Prepared for:

North Carolina Department of Transportation Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc. Raleigh, North Carolina

terracon.com



Environmental Facilities Geotechnical Materials

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Appendix C: Laboratory Analytical Reports and Chain-of-Custody Forms



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

Re: Preliminary Site Assessment (PSA)

US 401 (Raeford Road) from West Hampton Oaks Drive to East of Fairway Drive in

Fayetteville

Parcel 328 – Tally Investments, LLC Property 2628 Raeford Road, Fayetteville, North Carolina

State Project No. U-4405 WBS Element: 39049.1.1

Dear Mr. Fox:

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. P70167490) dated September 27, 2016. 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.

Prepared by:

Ethan H. Smith Field Geologist

Michael T. Jordan, P.G.

Reviewed by:

Environmental Department Manager

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

Environmental 🛑 Facilities 🛑 Geotechnical 🛑 Materials

PRELIMINARY SITE ASSESSMENT

US 401 (RAEFORD ROAD) FROM WEST HAMPTON OAKS DRIVE TO EAST OF FAIRWAY DRIVE IN FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA STATE PROJECT NO. U-4405

WBS ELEMENT: 39049.1.1

PARCEL 328 – TALLY INVESTMENTS, LLC PROPERTY 2628 RAEFORD ROAD, FAYETTEVILLE, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	US 401 (Raeford Road) from West Hampton Oaks Drive to East of Fairway Drive in Fayetteville							
Site Location/Address	2628 Raeford Road, Fayetteville, NC 28303 (Cumberland County Tax PIN: 0427-31-4787)							
General Site Description	The site consists of a one-story commercial building that is currently operated as a Dunkin' Donuts. The site is further improved with a paved access drive and parking areas.							

1.2 Site History

The site is located at 2628 Raeford Road in Fayetteville, Cumberland County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site was operating as a Dunkin' Donuts. This site formerly operated as a BP gas station (NCDOT, 2016). According to the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management Underground Storage Tank (UST) Section Registered Tank Database, the site formerly operated one 1,000-gallon oil UST, one 1,000-gallon heating oil UST, and three 10,000-gallon gasoline USTs that were reportedly installed in May 1972; the site additionally operated one 10,000-gallon diesel UST that was installed in May 1983. The USTs are listed as being removed and were closed in August 2010 except the 1,000-gallon heating oil UST, which is not listed as removed or closed on the NCDEQ database. The facility was assigned Groundwater Incident #5935 on April 9, 1990 and was closed on August 23, 2001 (NCDOT, 2016). Additional details for the USTs and groundwater incident were not provided.

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's proposal for PSA (Proposal No. P70167490) dated September 27, 2016. This PSA is being

Parcel 328 – Tally Investments, LLC Property ■ Fayetteville, North Carolina December 16, 2016 ■ Terracon Project No. 70167490



completed prior to planned median improvements and lane widening along US 401 (Raeford Road) in Fayetteville, North Carolina (site). The scope of work included a geophysical investigation, collection of seven soil 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 right-of-way (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 PSA (Terracon Proposal No. P70167490) dated September 27, 2016 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.

Parcel 328 – Tally Investments, LLC Property • Fayetteville, North Carolina December 16, 2016 • Terracon Project No. 70167490



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 Fayetteville, NC 1997. **Exhibit 2** is a site layout plan that indicates the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

On October 20, October 27, and November 7, 2016, 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. 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 did not reveal possible or probable metallic USTs. However, the two valve covers within the investigative area should be removed and a visual inspection should be made to determine if a remediation holding tank and/or a nonmetallic UST lie below the concrete pad. Buried lines and conduits were detected within the identified investigative area. In addition to metal detection and GPR scans, NC One Call public utility locator identified several underground utility lines. 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 (SB-07 through SB-13) along the southern and western portion of Parcel 328 and within the NCDOT ROW. The borings were completed by a North Carolina Certified Well Contractor (Regional Probing Services) using a truck-mount Geoprobe® 5410 direct-push drill rig.

Soil samples were collected in 4-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 less than 0.1 to 0.4 parts per million (ppm).

Based on the proposed disturbance depths and discussion with the NCDOT, each of the soil borings was advanced to a depth of approximately 15 feet below land surface (bls). Seven soil

Parcel 328 – Tally Investments, LLC Property ■ Fayetteville, North Carolina December 16, 2016 ■ Terracon Project No. 70167490



samples, one from each boring, were collected from depths ranging between 3 to 15 feet bls and placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by UVF. Soil samples were collected in the depth interval that was most likely to be impacted.

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) was containerized in a 55-gallon DOT approved drum. The drum was staged beside the dumpster north of the Dunkin Donuts located at 2628 Raeford Road, Fayetteville, NC 28303 (Dunkin Donuts contact - Matt Ellsworth [910-920-1992] for subsequent disposal by the NCDOT).

Soil generally consisted of clay and sand. Groundwater was not encountered in the seven 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.

3.0 LABORATORY ANALYSES

Soil samples were submitted to QROS for analysis of the following:

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

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

4.0 DATA EVALUATION

4.1 Soil Analytical Results

Laboratory analysis reported the following detections above the laboratory reporting limits in soil borings SB-07 through SB-13:

- TPH-GRO (C₅-C₁₀) was not detected above laboratory reporting limits;
- TPH-DRO (C₁₀-C₃₅) was reported between 0.29 and 3.8 milligrams per kilogram (mg/kg);
- TPH (C₅-C₃₅) was reported between 0.29 and 3.8 mg/kg;

Parcel 328 – Tally Investments, LLC Property ■ Fayetteville, North Carolina December 16, 2016 ■ Terracon Project No. 70167490



- BTEX was not detected above laboratory reporting limits;
- Total aromatics (C₁₀-C₃₅) was reported between 0.51 and 3.1 mg/kg;
- 16 EPA PAHs was reported between 0.03 and 0.33 mg/kg; and
- BaP was reported from less than 0.001 to 0.001 mg/kg.

Laboratory analysis revealed that concentrations were not detected above the NCDEQ Action Levels for TPH in soil borings SB-07 through SB-13.

Table 1 summarizes the results of the analyses of the soil samples. **Exhibit 2** depicts the boring locations and detected compounds.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- The geophysical investigation did not reveal possible or probable metallic USTs. However, the two valve covers within the investigative area should be removed and a visual inspection should be made to determine if a remediation holding tank and/or a nonmetallic UST lie below the concrete pad. Additionally, buried lines and conduits were detected within the identified investigative area.
- Laboratory analysis reported that concentrations were not detected above the NCDEQ Action Levels for TPH in soil borings SB-07 through SB-13.
- Terracon recommends NCDOT provide a copy of the results to the owner and/or operator of the site.
- Terracon does not recommend further assessment of the ROW at this site. However, based on detections of petroleum compounds, construction workers should be alert for potential soil and/or groundwater impacts in other locations at the site.

Parcel 328 – Tally Investments, LLC Property **=** Fayetteville, North Carolina December 16, 2016 **=** Terracon Project No. 70167490



6.0 REFERENCES

NCDOT, 2016. Revised GeoEnvironmental Report for Preliminary Site Assessments. "Hazardous Material Report." August 30, 2016.

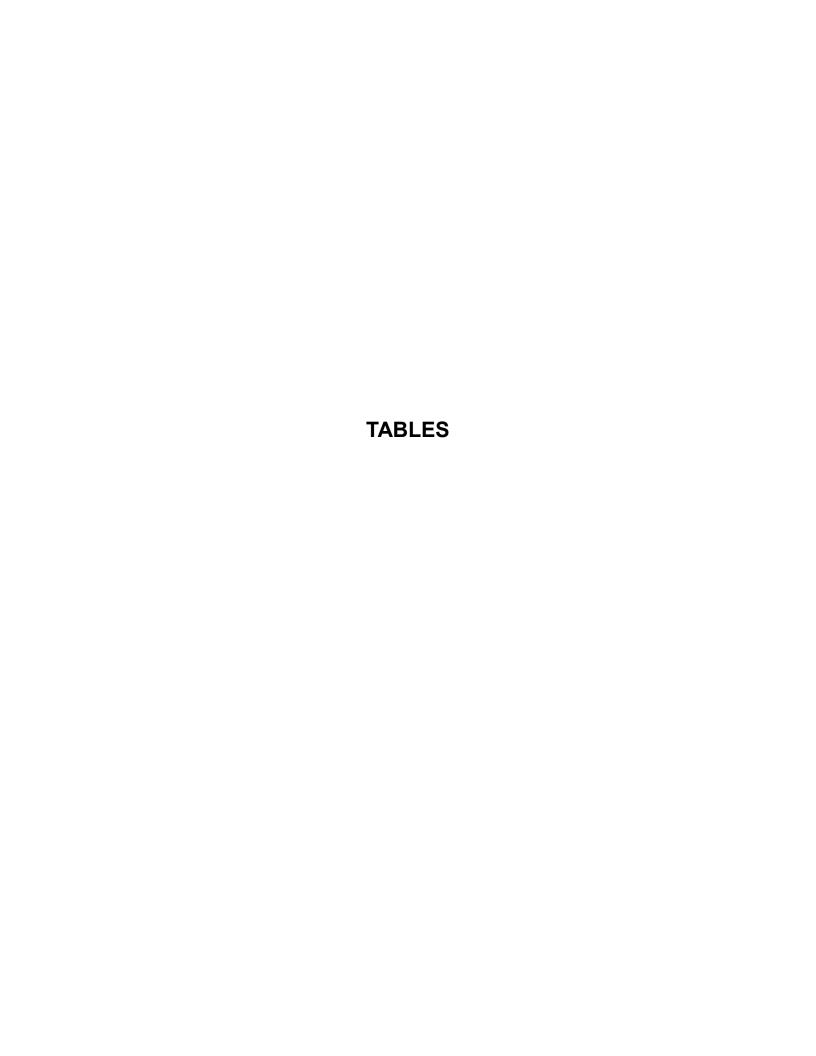


Table 1

Summary of Soil Analytical Results Preliminary Site Assessment

Parcel 328 - Tally Investments, LLC Property

Fayetteville, Cumberland County, North Carolina Terracon Project No. 70167490

Sample ID: Sample Depth (ft bls):		SB-08 5-7	SB-09 3-5	SB-10 5-7	SB-11 13-15	SB-12 9-11	SB-13 7-9	NCDEQ Action Level	MSCC Industrial/ Commercial
GRO (C ₅ -C ₁₀)	<0.2	<0.34	<1.1	<0.3	<0.2	<0.98	<0.29	100	NE
DRO (C ₁₀ -C ₃₅)	<0.2	< 0.34	<1.1	0.57	0.2	3.8	0.29	100	NE
TPH (C ₅ -C ₃₅)	<0.2	< 0.34	<1.1	0.57	0.2	3.8	0.29	NE	NE
BTEX	<0.2	< 0.34	<1.1	<0.3	<0.2	<0.98	<0.29	NE	NE
Total Aromatics (C ₁₀ -C ₃₅)	<0.06	<0.07	<0.21	0.51	<0.08	3.1	<0.11	NE	NE
16 EPA PAHs	<0.007	< 0.01	<0.03	0.03	<0.006	0.33	<0.009	NE	NE
Benzo(a)pyrene	<0.001	<0.001	<0.004	0.001	<0.001	<0.004	<0.001	NE	0.78

Notes:

Soil samples were collected on November 8, 2016.

Detected compounds are shown in the table.

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

ft bls - feet below land surface.

GRO - Gasoline Range Organics.

DRO - Diesel Range Organics.

TPH - Total Petroleuem Hydrocarbons.

BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.

16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, antrancene, benz[a]anthrancene, 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).

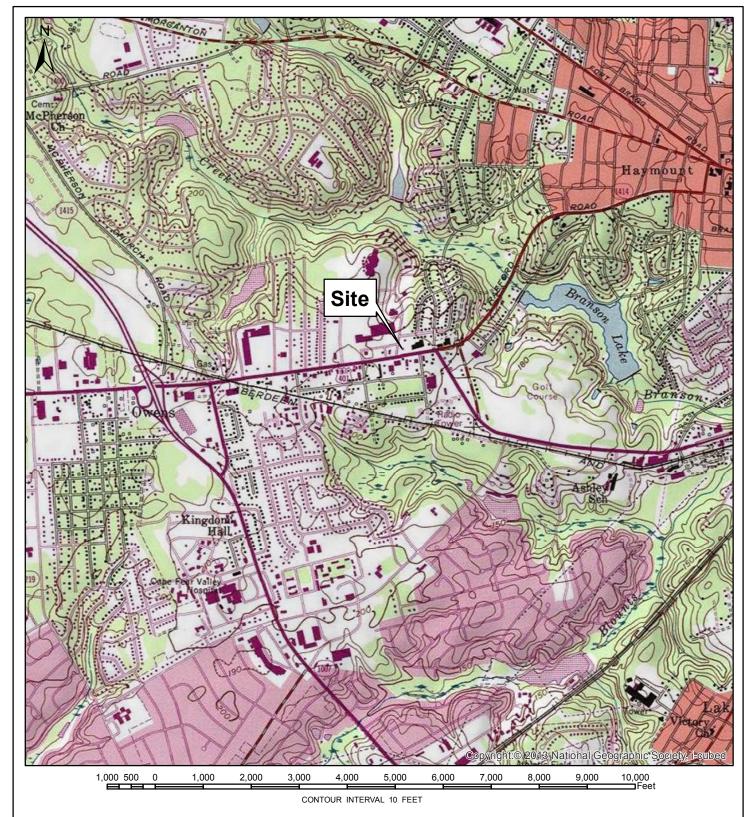
NE - Standard not established.

Detections shaded in gray exceed the North Carolina Department of Environmental Quality (NCDEQ) Action Level.

MSCC Industrial/Commercial - Maximum Soil Contaminant Concentration Levels Industrial/Commercial soil cleanup levels.

Bold: Constituent concentration reported above the method detection limit.





USGS TOPOGRAPHIC MAP FAYETTEVILLE, NC QUADRANGLE 1997

Project Number: 70167490 Scale: 1:24,000 Drawn By: EHS

Checked By: MTJ

Date Drawn: 11/21/16

lerracon

 2401 Brentwood Road, Suite 107
 Raleigh, NC 27604

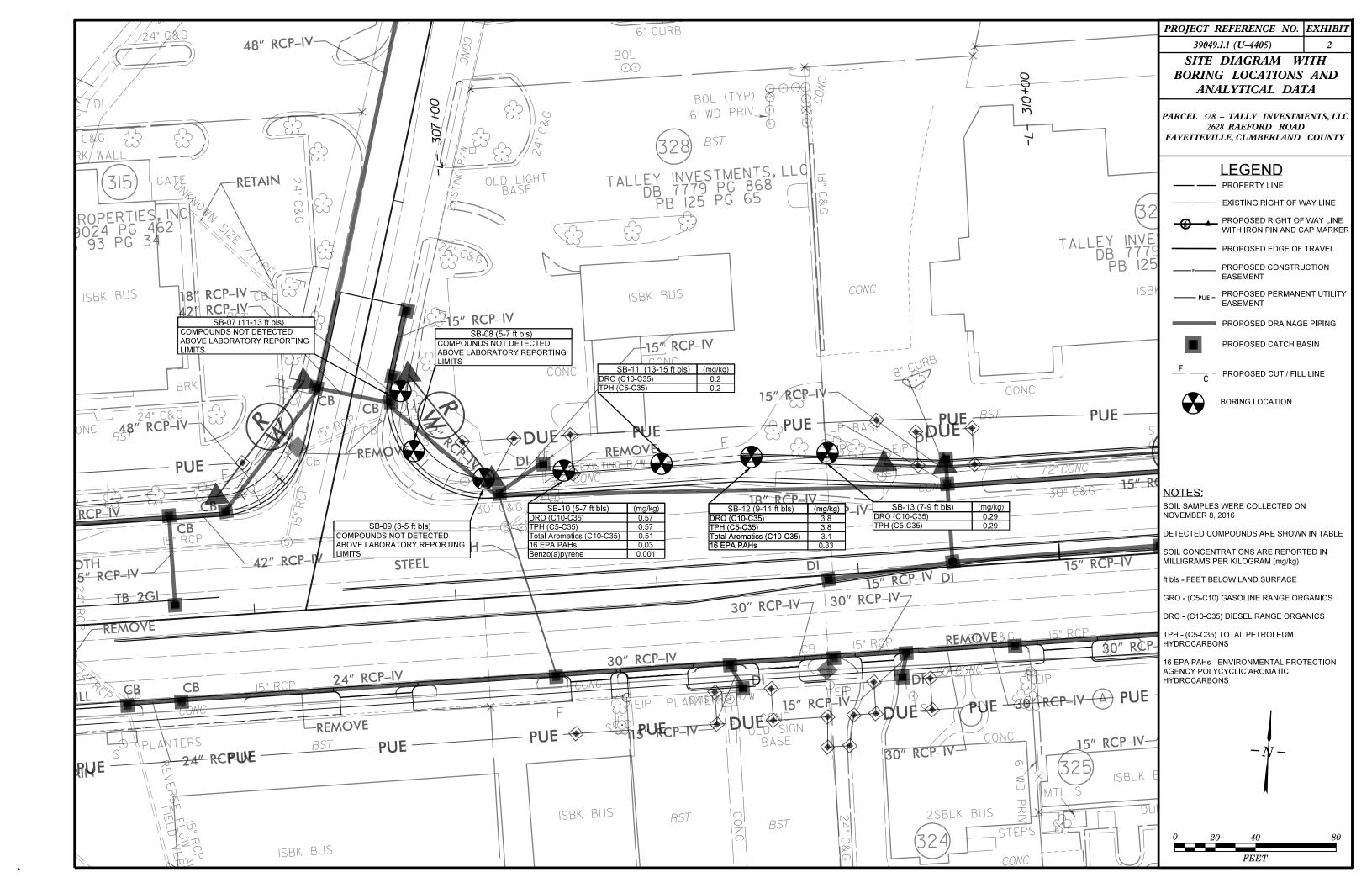
 Phone: (919) 873-2211
 Fax: (919) 873-9555

Topographic Vicinity Map

Fayetteville, Cumberland County, NC

U-4405 Parcel 328 - Tally Investments, LLC Property 2628 Raeford Road EXHIBIT NO.

1



APPENDIX A GEOPHYSICAL SURVEY REPORT

Terracon Consultants, Inc.

GEOPHYSICAL INVESTIGATION TO LOCATE METALLIC USTS

Tally Investments, LLC Property (Parcel 328) 2628 Raeford Road Fayetteville, North Carolina



November 10, 2016 Geophysical Survey Investigations, PLLC Project No. 2016-37



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

Terracon Consultants, Inc. GEOPHYSICAL INVESTIGATION TO LOCATE METALLIC USTS Tally Investments, LLC Property (Parcel 328) 2628 Raeford Road Fayetteville, North Carolina

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		<u>FIGURES</u>
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	Report prepared for:	Stephen J. Kerlin, PG Terracon Consultants, Inc. 2401 Brentwood Road, Suite 107 Raleigh, North Carolina 27604
	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 October 20, October 27 and November 7, 2016 across a portion of the Tally Investments, LLC property (Parcel 328) located at 2628 Raeford Road in Fayetteville, North Carolina. The geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment for State Project U-4405 (WBS Element 39049.1.1) US 401 (Raeford Road) from West of SR-1409 to US 401 Business (Robeson Street).

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 ROW/PUE area is shown as a red polygon in the aerial photograph presented in **Figure 1**. Presently, a Dunkin' Donuts restaurant operates on this property.

Terracon representative Mr. Stephen Kerlin, 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 328 has a maximum length and width of 220 feet and 120 feet, respectively. Please note that the ROW and PUE areas at this site were not marked 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 Trimble AG-114 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 5.0 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 2262274-E 12730142-N, 2262297-E 12730135-N, 2262294-E 12730092-N, 2262324-E 12730077-N, 2262421-E 12730066-N, and 2262447-E 12730081-N are probably in response to buried lines or conduits. GPR data suggest the large EM61 anomalies centered near coordinates 2262333-E 12730047-N and 2262444-E 12730058-N are in response to steel reinforced concrete pavement.

GPR data suggest that the linear EM61 anomaly intersecting coordinates 2262271-E 12730105-N is in response to a portion of a buried utility line or steel reinforced concrete lying above the buried line. Two, 3-foot diameter valve covers are present on the steel reinforced concrete pad centered around coordinates 2262377-E 12730068-N. GPR scans across this pad detected a buried conduit running to another 3-foot diameter valve cover centered at 2262315-E 12730062-N which could be related to a remediation system or a former product line. Although GPR scans did not detect a metallic UST beneath the concrete pad, the valve covers should be removed and a visual inspection should be made to determine if a remediation holding tank and/or a nonmetallic UST lie below the concrete pad.

The remaining EM61 anomalies are probably in response to utility line-related objects, metallic surface objects, buried, miscellaneous objects or portions of conduits. The EM61 and GPR investigation did not detect any metallic USTs within the proposed ROW/PUE area. Please refer to Figures 2 and 3 for additional (detailed) information regarding the geophysical findings at this site.

4.0 SUMMARY & CONCLUSIONS

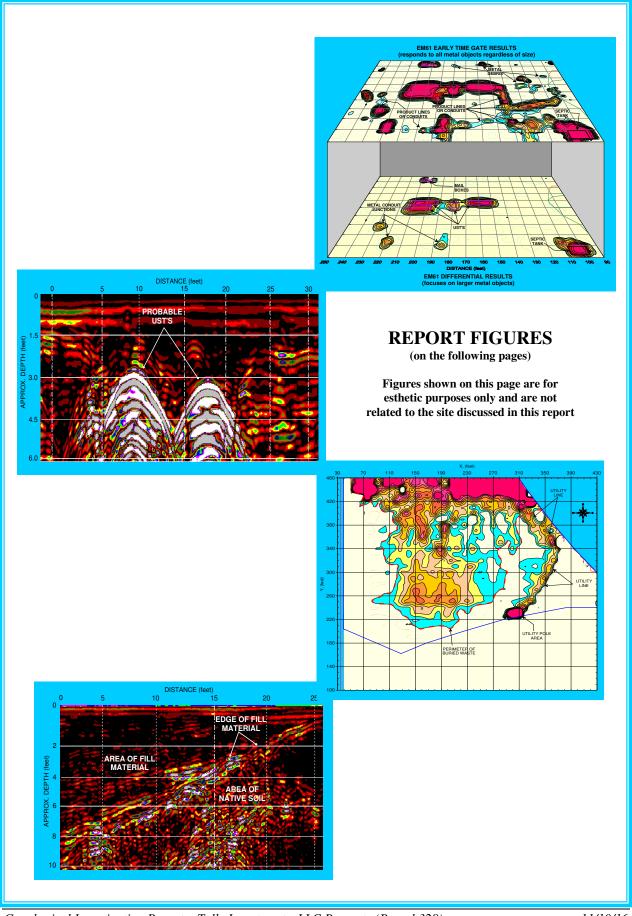
Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the Tally Investments, LLC property (Parcel 328) located at 2628 Raeford Road in Fayetteville, North Carolina provides the following summary and conclusions:

• 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 2262274-E
 12730142-N, 2262297-E 12730135-N, 2262294-E 12730092-N, 2262324-E 12730077-N,
 2262421-E 12730066-N, and 2262447-E 12730081-N are probably in response to buried lines or conduits.
- Although GPR scans did not detect a metallic UST beneath the concrete pad centered at 2262377-E 12730068-N, the two valve covers should be removed and a visual inspection should be made to determine if a remediation holding tank and/or a nonmetallic UST lie below the concrete pad.
- The EM61 and GPR investigation did not detect any metallic USTs within the proposed ROW/PUE area.

5.0 <u>LIMITATIONS</u>

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.









DITCHWITCH UTILITY LOCATOR

EM61 METAL DETECTOR

GROUND PENETRATING RADAR UNIT

The photographs show the DitchWitch 910 utility line locator, the Geonics EM61-MK2A metal detector and the GSSI SIR-3000 ground penetrating radar (GPR) unit that were used to conduct the geophysical investigation across the area of interest at Parcel 328.



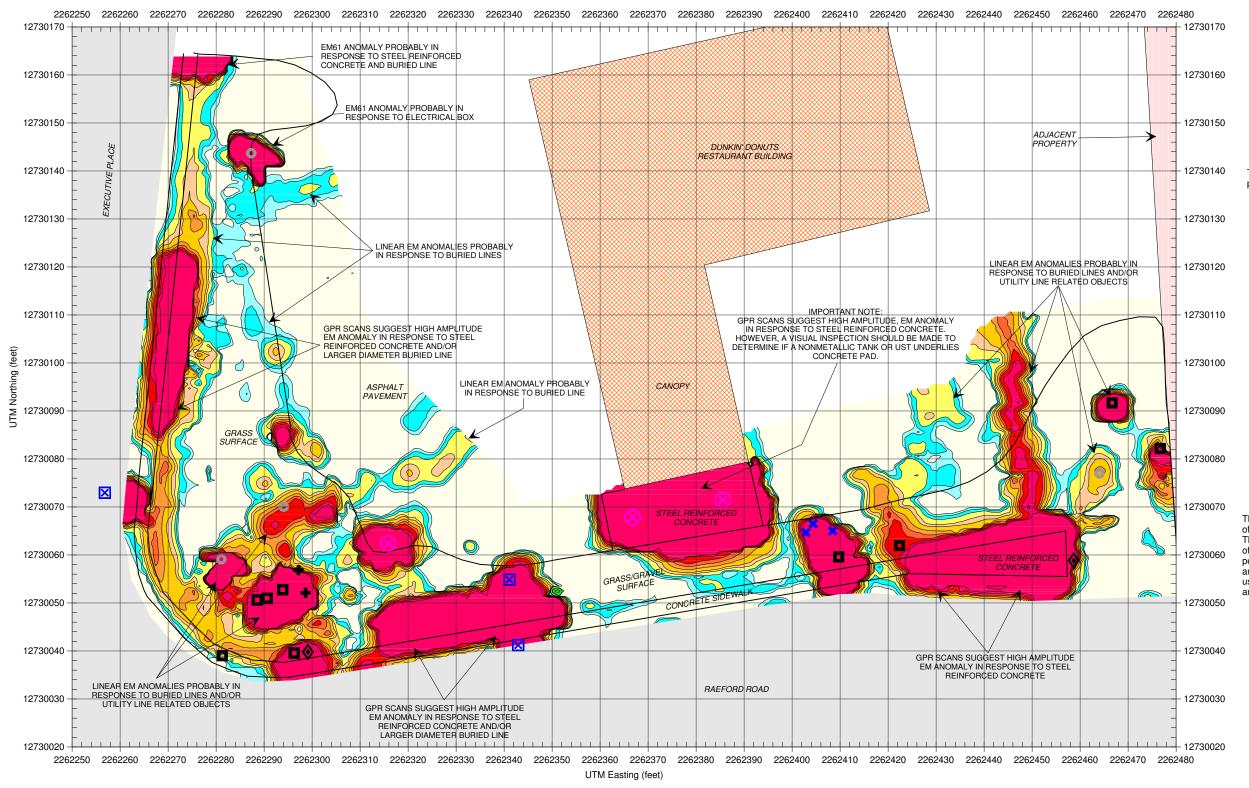
The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at the Tally Investments, LLC property (Parcel 328) located along Raeford Road in Fayetteville, North Carolina.



Terracon Consultants, Inc.
Tally Investments, LLC Property
Parcel 328
Fayetteville, North Carolina

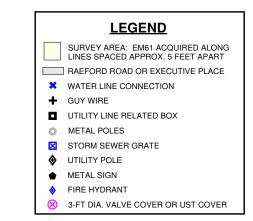
GEOPHYSICAL EQUIPMENT & SITE PHOTOGRAPHS

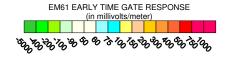
11/11/16 FIGURE 1





The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 328.





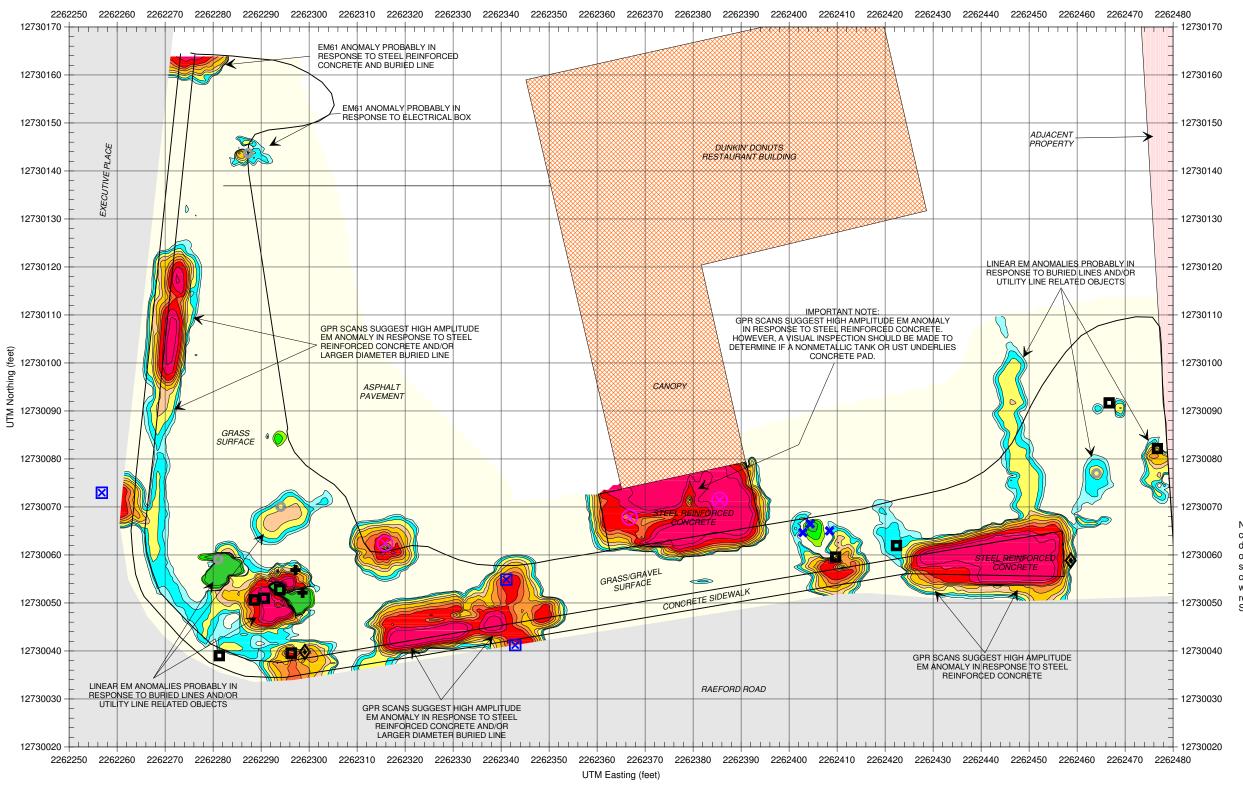
The contour plot shows the early time gate (most sensitive) response of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The early time gate response shows buried, metallic objects regardless of size. The EM61 survey was conducted on October 20, 2016. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete on October 27, 2016 using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna.

EM61-MK2A METAL DETECTION (EARLY TIME GATE RESULTS)

Terracon Consultants, Inc.
Tally Investments, LLC Property
Parcel 328
Fayetteville, North Carolina

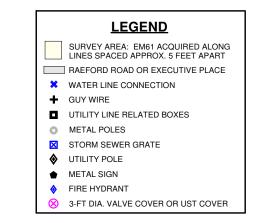








The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 328.





Note: The contour plot shows the differential response between the top coil and the late time gate channel 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, buried, metal debris. The EM61 survey was conducted on October 20, 2016. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete on October 27, 2016 using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna.

EM61-MK2A METAL DETECTION (DIFFERENTIAL RESULTS)

Terracon Consultants, Inc. Tally Investments, LLC Property Parcel 328 Fayetteville, North Carolina



PHYSICAL 11/10/16 336-286-9718

APPENDIX B SOIL BORING LOGS

Terracon Boring ID: 50 07

	t Number:) 01		70167490				Start Date/Time: 1/8/16 1205	Sample Method Hand Auger	X DPT
	Location:				etteville,	NC			End Date/Time: 1/4/16 1235 Boring Diameter:	X Macro-Core	☐ HSA
	Weather:		(O	,sun	INV EHS				Total Depth: /5 FIXS	☐ Split Spoon	☐ Mud Rotary
	ogged By: illing Sub:			Regiona	Probing :	Services		-111	Water Level: NA Well Installed:	☐ Shelby Tube	☐ Air Rotary ☐ Rock Core
	Drill Rig:		-1 nick	Ma	MY (seopi	ibe :	5410		8	
Depth (ft bls)	Recovery (inches)	Blow Counts (n)	Old / mdd	CH,	CO2	°C	H ₂ S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	1/12		<0.5					SM	(1-1) SHND, landry		
1-3	12/24	1	<0.1					SM	(1-3) SAND. bram/ten. moist		2
3-5	17/24	, prog	20.1					SM	(3-5) SAA		
5.7	24/24	1	<0.1					CL	(5-7) CLAY. mostled . son/ed moist		
7-9	24/24	-	<0-1					CL	(7-9) SAA		1
9-11	24/24	-	<0.1					SC	(4-11) SANDY CLIPY. tay/blan		
11-13	24/24	_	0.4					SC	moist (11-13) SANDY CLAY. Gray, red	sample QROS	
13-15	24/24		40,1					SM	(13-15) SAND, Orange / ton Soft Sine, moist	,	
Notes:											

bls = below land surface

NA= Not applicable

ppb: parts per billion

ppm: parts per million

ppm: parts per million

ppb: parts per billion

58-08

Boring ID: **Drilling Method** Sample Method Start Date/Time: //8// 70167490 Project Number: End Date/Time: 11, ☐ Hand Auger X DPT Fayetteville, NC Site Location: ☐ HSA X Macro-Core 100, Sunny **Boring Diameter:** Weather: ☐ Mud Rotary Total Depth: □ Split Spoon Logged By: Water Level: ☐ Shelby Tube □ Air Rotary Regional Probing Services **Drilling Sub:** Grecombe 5410 ☐ Rock Core Well Installed: Drill Rig: THICK MOINT (Depth interval) Color, MAIN COMPONENT, minor qdd / mdd Lab Sample: Drilling method, Depth (ft bls) H₂S component(s), structure, moisture, angularity, odor, CH4 02 0 ID, analysis, time tooling, depth staining (0-1) SAND, fire, ton, dry SM 20.((1-3) CLAY. red. Stiff, micos, CL 20,1 moist (3-5) SAND. ton, medium 40.1 grand moist (5-7) CLAY, mothled, tay/red. CL 1.0> moist Somple CL (0,1 10.1 (11-13) SAA 40.1 (13-15) SAND. In. Fine. 10,1 MUIST. boring luminated at Notes:

bls = below land surface

NA= Not applicable

Boring ID:

Sample Method **Drilling Method** Start Date/Time: / / 70167490 Project Number: Fayetteville, NC End Date/Time: 11 Hand Auger X DPT Site Location: Boring Diameter: X Macro-Core ☐ HSA Weather: 100, Sunny ☐ Split Spoon ☐ Mud Rotary Total Depth: Logged By: ☐ Shelby Tube Regional Probing Services Water Level: ☐ Air Rotary Drilling Sub: Well Installed: ☐ Rock Core 5410 Drill Rig: Gropishe MIK Must Blow Counts (n) qdd / mdd (Depth interval) Color, MAIN COMPONENT, minor (inches) Drilling method, Lab Sample: Depth (ft bls) H₂S G. S 0 component(s), structure, moisture, angularity, odor, ID, analysis, time tooling, depth staining (0-1) SAND, tanifine dry SM 401 (1-3)SAA 401 Somple <0.1 QROS 5-7)CLAY Sow ony Hon. Mottled. Stiff. moist 301 CL 1.0> (9-11) SANDY CLAY. orange/ton. muist 50 1.0> (11-13) SAA 1001 (13-15) SAA 13-15 SC 100 bong termreted Notes: bls = below land surface ppm: parts per million ppb: parts per billion NA=Not applicable

Lithology	Log
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ppm: parts per million

ppb: parts per billion

Terracon

bls = below land surface

NA= Not applicable

Da	ulma IDi	<6	3-10						iigi i atui		
	ring ID: t Number:		<u> </u>		70167490				Start Date/Time: 1/8/16 1330	Sample Method	Drilling Method
	Location:				yetteville,	NC			End Date/Time: 1/8/16 1345	☐ Hand Auger	X DPT
	Weather:			WU,5	unny				Boring Diameter: 217 Total Depth: 15,5165	X Macro-Core Split Spoon	☐ Mud Rotary
	ogged By:				EHS'	Sopiess			Water Level:	☐ Shelby Tube	☐ Air Rotary
Dr	illing Sub:		-1.40		Al Al	POGIO	is 54	10	Well Installed:	The Property of the Property o	☐ Rock Core
	Drill Rig:	-	Truck	· III	<i>N</i> 10 C	recyre	1		(Depth interval) Color, MAIN COMPONENT, minor		D (10)
Depth (ft bls)	Recovery (inches)	Blow Counts (n)	- Old - Ddd / mdd	GH,	CO ₂	ő	H ₂ S	U.S.C.S	component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	1/12		<0.(SM	(0-1) SAND. to bown. dry		
1-3	13/24		(0.1					SC	(1-3) SANDY CLAY. FOW brown. dry		
3-5	12/24	_	10.1					SM	(3-5) SAND. ton. Gine.		
5-7	24/24		40,1			No. 200 - 10		CL	(5-7) CLAY, ten/gray/red, modified. Stiff	Somply QROS	,
7-9	24/24	-	40.1	**************************************				CL	(7-9) SAA		
9-11	24/24		<0.1			:		CL	(9-11) SAA		2 to 1 to
11-13	24/24	-	(0,1					CL	(11-13)SAA		
13-15	24/24	_	<0,1					SM	(13-15)		
Notes:		A									

Boring ID: 58-11

Terracon

	ct Number:			Fa	70167490 yetteville,				End Date/Time: 1/8/10 19/00	☐ Hand Auger	X DPT
511	e Location: Weather:			100	Suni				Boring Diameter: 2"	X Macro-Core	☐ HSA
	Logged By:			,	EHS	1			Total Depth: 15 14615	☐ Split Spoon	☐ Mud Rotary
D	rilling Sub:				l Probing		2 /	FILIA	Water Level: NC	☐ Shelby Tube	☐ Air Rotary ☐ Rock Core
	Drill Rig:	00000		uck	Nent	Gree	pulse	5410	Well Installed:		□ NOCK COTE
Depth (ft bls)	Recovery (inches)	Blow Counts (n)	PID ddd / mdd	. Н	CO ₂	05	H ₂ S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	1/12	•	<0.1					SM	(0-1) SAND. Aine. tan.dry		
1-3	12/24	/	(0.(SM	(1-3) SAA		
3-5	12/24	_	١٥٥/	61				CL	(3-5)CLAY. red. Shiff moist		
5-7	24	-	٥٠١(CL	(5-7)SAA-mottled		
7-9	24/24	-	(0.(CL	(7-9) SAA		and the state of t
9-11	24/24	-	(0.(CL	(9-11) SAA		Approximately ap
-	141	-	<0.1						(11-13) SAA	Talking on the same	and the second s
13-15	24/24		K0.1					SM	fine. soft, moist	Sample QROS	
									bony terrored at 15 Abls		***
									* * * * * * * * * * * * * * * * * * *		
Notes:		1									
ppm: pai	rts per millio	on	ppb: par	ts per billi	on			0	NA= Not applicable bls = belo	ow land surface	

Boring ID: 58-12

Terracon

Projec	t Number:		12		70167490				Start Date/Time: 1/4/16
Site	e Location: Weather:		· · · · · · · · · · · · · · · · · · ·		/etteville, らいりい				Roring Diameter: 2" X Macro-Core HSA
	.ogged By:			,,,	EHS				Total Depth:
Di	rilling Sub: Drill Rig:		TW	CK M	I Probing:	Geog	nice F	410	Water Level: NØ □ Shelby Tube □ Air Rotary Well Installed: □ Rock Core
Depth (ft bls)	Recovery (inches)	Blow Counts (n)	Old ddd / mdd	CH ₄	CO	02	H ₂ S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining Lab Sample: ID, analysis, time Drilling method, tooling, depth
	1/12	_	۷٥.۱					SM	(0-1)SAND, ten. moist
1-3	24/24	~	۱،۵۲					CL	(1-3)CLIAY, red. Stiff. moist
3-5	24/24	-	1.0>	<i>A</i> .				CL	(3-5) SAA
5-7	24/ /24		40.				50	CL	(5-7) SAP+CLAY. red/tan/gray. mottled. moist
7-9	24 /24	-	<0.1					CL	(7-9) SAA
9-11	24/24	.4	<0.1					CL	(9-11) SAA Scmple QROS
11-13	24/24		(0.1					CL.	(11-13) SAA
13-15	21/24	ŧ	(0.1					CL	(13-15) SAND-ton/crange.
							ď		(13-15) SAND-lon/crange. Soft. fine. moist boring terminals at 15 fibls
					12 J			н	
Notes:	ts per millio	n	ppb: par	ts per billi	on			¥	NA= Not applicable bls = below land surface

Litho	logy	Log
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ppm: parts per million

ppb: parts per billion

Terracon

bls = below land surface

NA= Not applicable

D: 58-13			lletacoi		
D: 06-15	70167490		Start Date/Time: /8/16 1445 End Date/Time: /8/16 1455	Sample Method	Drilling Method
on:	Fayetteville, NC			☐ Hand Auger	X DPT HSA
	UO, SUNNY EHS		Boring Diameter: 211 Total Depth: 15 Hbls	X Macro-Core Split Spoon	☐ Mud Rotary
1.			Water Level: Na	☐ Shelby Tube	☐ Air Rotary
ub: R Rig: Sig:	egional Probing Services (K Mault Geogrape	54(0	Well Installed:	CONTRACTOR CONTRACTOR	☐ Rock Core
ilg: 1/10/	The man creching		(Depth interval) Color, MAIN COMPONENT, minor		Drilling method,
Blow Counts (n) PID ppm / ppb	CO C	U.S.C.S	component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	tooling, depth
2 - <0.1		SM	(0-1) SAND. ten. dry		
4 - 20.1		SC	(1-3) SANDY CLAY, red.	,	
4 - (0.1		SC	(3-5)SAA		<u>.</u>
{ - KO.1		SE	(5-7) CLAIX. mothled. gray/ten/red. moist		151
		0:	(7-9) SHA	On a Pa	
4 - <0.1		CL		Simple CLROS	
4 - 20.1	z .	CL	(9-11) SAA		5,10
ny - 20.1		CL	(11-13) SAA		34
4 - <0.1		CI/SM	(13-14) SAAD orange fine. (14-15) SAND orange fine. Muist		

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS







Hydrocarbon Analysis Results

Client: TERRACON

Address: 2401 BRENTWOOOD ROAD

RALEIGH NC

Samples taken Samples extracted Samples analysed Tuesday, November 8, 2016 Tuesday, November 8, 2016

Monday, November 14, 2016

Contact: STEVE KERLIN Operator HENDRIX

Project: 70167490

										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		Ratios		Ratios HC Fi		HC Fingerprint Match
										% light	% mid	% heavy			
S	SB-01	44.8	<1.1	<1.1	1.8	1.8	1.4	0.08	0.007	0	37.1	62.9	Deg.PHC (FCM) (P) 57.8%		
s	SB-02	38.2	< 0.96	< 0.96	0.96	0.96	0.93	< 0.03	< 0.004	0	73.6	26.4	V.Deg.PHC (FCM) (P) (BO) 69.1%		
S	SB-03	14.9	<0.37	<0.37	0.37	0.37	0.24	0.03	0.003	0	40.4	59.6	Pyrogenic HC (FCM) 43.3%		
S	SB-04	39.4	<0.98	<0.98	0.98	0.98	<0.25	<0.03	<0.004	0	35.1	64.9	V.Deg.PHC (FCM) 56.3%		
S	SB-05	43.3	<1.1	<1.1	<1.1	<1.1	<0.48	<0.05	<0.004	0	42.7	57.3	Residual.PHC 40.4%		
S	SB-06	18.5	<0.46	<0.46	0.46	0.46	0.23	0.02	<0.002	0	42.8	57.2	Residual.PHC (FCM) 45.1%		
S	SB-07	8.2	<0.2	<0.2	<0.2	<0.2	<0.06	<0.007	<0.001	0	10.9	89.1	Residual.PHC (P) (BO)		
S	SB-08	13.7	<0.34	<0.34	<0.34	<0.34	<0.07	<0.01	<0.001	0	0	100	Residual.PHC		
S	SB-09	42.6	<1.1	<1.1	<1.1	<1.1	<0.21	<0.03	<0.004	0	12.3	87.7	Residual.PHC (P)		
S	SB-10	12.1	<0.3	<0.3	0.57	0.57	0.51	0.03	0.001	0	58.4	41.6	Deg.PHC (FCM) (P) 63.3%		

Initial Calibrator QC check OK

Final FCM QC Check OK

99.2 %

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

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

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







Hydrocarbon Analysis Results

Client: TERRACON

Address: 2401 BRENTWOOOD ROAD

RALEIGH NC

Samples taken Samples extracted Samples analysed Tuesday, November 8, 2016 Tuesday, November 8, 2016

Monday, November 14, 2016

Contact: STEVE KERLIN Operator **HENDRIX**

Project: #70167490

													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		Ratios		HC Fingerprint Match	
										% light	% mid	% heavy		
S	SB-11	8.0	<0.2	<0.2	0.2	0.2	<0.08	<0.006	<0.001	24.9	26.2	49	Deg.PHC (FCM) (P) 44.6%	
S	SB-12	39.4	<0.98	<0.98	3.8	3.8	3.1	0.33	<0.004	0	76.6	23.4	Deg.PHC (FCM) 74.5%	
S	SB-13	11.4	<0.29	<0.29	0.29	0.29	<0.11	<0.009	<0.001	0	42.8	57.2	V.Deg.PHC (FCM) (P) 57.1%	
S	SB-17	44.8	<1.1	<1.1	32.4	32.4	14.1	0.62	0.008	0	78.1	21.9	V.Deg.PHC (FCM) 75.9%	
S	SB-18	37.1	<0.93	<0.93	0.93	0.93	<0.43	0.05	0.004	0	41.5	58.5	Residual.PHC (FCM) (P) 44.7%	
S	SB-19	38.2	<0.96	<0.96	0.96	0.96	0.68	0.07	0.004	0	40.3	59.7	Residual.PHC (FCM) (P) 39.9%	
S	SB-20	38.8	<0.97	<0.97	0.97	0.97	<0.3	<0.03	<0.004	0	33.8	66.2	V.Deg.PHC (FCM) 49.9%	
S	SB-21	39.4	<0.98	<0.98	0.98	0.98	<0.25	<0.03	<0.004	0	44.9	55.1	V.Deg.PHC (FCM) 63%	
S	SB-22	12.7	<0.32	<0.32	0.32	0.32	<0.13	<0.01	<0.001	0	44.3	55.7	V.Deg.PHC (FCM) 66.6%	
S	SB-23	14.3	<0.36	<0.36	0.36	0.36	0.33	<0.02	<0.001	0	74.5	25.5	V.Deg.PHC (FCM) 72.9%	
	Initial C	alibrator	QC check	OK					Final F	CM QC	Check	OK		91.2 %

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

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

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

Client Name: Email: Address: Collected by: Phone #: Project Ref.: Contact: 2401 Brenthroad Rd sleve Kerling Terricon, cam RAPID ENVIRONMENTAL DIAGNOSTICS **CHAIN OF CUSTODY AND ANALYTICAL**

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O

Bostch 22 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

REQUEST FORM

8		Date/Time	untidamichonin erfedelichten de generaletie	Accepted by	Date/Time		Relinquished by	Relinqu	
1		Date/Time	oberganistakinde millenpillepipkonssaperbiologischen der eine eine eine eine eine eine eine ei	Accepted by	te/Time		Relinquished by	Relinqu	
RED Lab USE ONLY	25							ents:	Comments:
NH4 5.6	50.5		-	28 SB-23	5	<	1255 8251	でお	1/9
44.6 6.3	50.9		`\	Sig - 22	S	1	235	大大	Va
45.2 6.6	51.8					1		20	10
447 6.	51.4		_	SR -26	5			1140	1/9
8.9 474	51.2			SB-19		1		= 5	19
44.6 7.0	51.6		<	58-18	S	\ <u>\</u>		1645	9
44.9 5.	50.7			56-17	S			015	10
45.0 7	52.0		<	56-15	S			1500	18
U4.8 6.6	20.7			56-12		<u> </u>		1440	8
448 5.8	50.6		<	58-11		<u> </u>		G071	18
45.0 6.6	51.6		<	58-10	5	1		1350	8
\vdash	57.		1	onition the application and the state of the	5	1		1520	8
44.9 7.	56.2		A CONTRACTOR OF THE PARTY OF TH			1		1255	8
	50.7		<	58-07	S	<u> </u>		1240	18
45.2 5.4	50.6		<	SB-06	S			1130	8
44.9 6.0	50.9		/	SR-05	<i>S</i> •			1105	8
45.5 6.6	52.)			56-04	S			1045	18/16
	7.10			50-03	S	//		1015	18/16
8.3 744	5).6			SB-0,2	S	<		0955	1/1/8
8.5 01SH	50.8		/	NO-01	S			0925	8/16
i dre wr. Sample wr.	I OLGI AAT.	GC BIEX	CVT	Sample ID	(S/W)	48 Hour	24 Hour	Date/Time	Da
-	- ALBERTA	Mapping of the last	-	, , , ,	-				