

Prepared for:

**North Carolina Department of Transportation**  
**Geotechnical Engineering Unit**  
**GeoEnvironmental Section**  
**1589 Mail Service Center**  
**Raleigh, North Carolina, 27699-1589**

## Preliminary Site Assessment Report

Steve Allen and Davis Roderick Property  
Parcel # 13  
1706 N. William Street  
Goldsboro, Wayne County, North Carolina  
US 117 Alternate from US 70 Bypass to Belfast  
TIP Number: U-2714  
WBS Element: 38979.1.2



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*not considered final unless all signatures are completed*

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## 1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) Parcel 13 performed by Apex Companies, LLC (Apex) on behalf of the NCDOT. The subject site of this PSA report will be affected by the widening of the US Highway 117 from US Highway 70 to Belfast Road. The Site is comprised of three parcels and is located at 1706 North William Street and is identified as Parcel 13, Steve Allen and Davis Roderick Property, within the NCDOT U-2714 design project. The property is located at the southeast corner of the intersection of North William Street and Woodrow Street in Goldsboro, Wayne County, North Carolina, as shown in the attached Site Location Map (**Figure 1**). The site investigation was conducted in accordance with Apex Company's Technical and Cost proposal dated June 7, 2017.

NCDOT contracted Apex to perform the PSA over the entire Parcel 13 Property due to the potential presence of contamination at the site and the fact that excavation and grading may occur within the area. The PSA was performed to evaluate if soils have been impacted as a result of past and present uses of the property within the proposed investigation area, if buried underground storage tanks (USTs) are present in the area of investigation, and if groundwater is impacted.

The following report presents the results of a ground penetrating radar (GPR) evaluation to identify underground storage tanks (USTs) in the investigation area, and describes the subsurface field investigation at the site. The report includes the evaluation of field screening, as well as field and laboratory analyses with regards to the presence or absence of soil and groundwater contamination within the area of investigation across Parcel 13. **Appendix A** includes a Photograph log for the site.

### 1.1 Site History

Parcel 13 has been identified with the address of 1706 N William Street. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, Bob's Kwik Mart previously occupied the site. They operated two 8,000-gallon capacity gasoline/gasoline mixture USTs (installed September 5, 1969) and one 500-gallon capacity kerosene UST (installed May 5, 1984). The three tanks identified with Facility ID number 0-006962 were last used on May 31, 1986. The three USTs are listed as "temporarily closed" in the current UST database, suggesting the tanks could still be on site. No visual evidence of USTs were noted during field activities, however, the geophysical survey did identify three possible and two probable USTs on site. Currently the site is vacant and no above ground structures are present.

Apex personnel also reviewed the NCDEQ Incident Management Database and no groundwater incidents are associated with this parcel.

## 1.2 Site Description

The site is located in a mixed commercial and residential area of Goldsboro in Wayne County. The property is divided into three parcels, all of which are vacant. The two most northern parcels contain no impervious surfaces, while the southern parcel is partially paved with concrete. The site is bordered to the north by Woodrow Street, followed by Flower Creations. The Mission of Love Church borders the site to the east. The site is bordered to the south by Wilson Street, followed by U-Haul Neighborhood Dealer/Top Motor Sales. North William Street, followed by JPJ Truck Brokers border the site to the west. The NCDEQ UST database registry did indicate that three “temporarily closed” USTs are associated with the site. Additionally, the geophysical surveyor, Pyramid Environmental & Engineering, PC, did identify five GPR anomalies characteristic of USTs in the investigation area.

## 2.0 GEOLOGY

### 2.1 Regional Geology

Parcel 13 is located within the Coastal Plain Physiographic Province. The Coastal Plain is the largest physiographic province in the state, covering about 45 percent of the land area. According to the US Geological Survey Professional Paper 1404-I entitled “Hydrogeologic Framework of the North Carolina Coastal Plain” (Winner and Coble, 1996), the geology consists of eastward-dipping and eastward-thickening series of sedimentary rocks which range in age from Holocene to Cretaceous. The most common type of sediment types are sand and clay, although a significant amount of limestone occurs in the southern part of the coastal plain. The site overlies the Black Creek Formation. The Black Creek Formation is Late Cretaceous in age and was deposited in a lagoonal to marine environment. It generally consists of thinly laminated gray to black clay with interbedded gray to tan sands. The most notable characteristic of the formation is the high concentration of wood and organic material. Shells and glauconite are also common.

### 2.2 Site Geology

Site geology was observed through the drilling and sampling of 25 direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of ten feet below ground surface (bgs) since that depth was the maximum excavation depth for proposed drainage features. Soil consisting predominantly of yellow to brown silty sand and tan sandy silt was observed across the parcel. The soils were unconsolidated and as a result the borings often collapsed. There is little topographic relief to the site and there are streams located to the west and south so groundwater flow can vary. Borings on the

northeastern quadrant of the property (believed to be the upgradient location) intercepted water at approximately six feet bgs while those borings on the south and western sides of the property (likely down-gradient location) intercepted water at approximately five feet bgs. Boring logs are presented in **Appendix B**.

## **3.0 FIELD ACTIVITIES**

### **3.1 Preliminary Activities**

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. A Health and Safety Plan (HASP) was prepared to include the site-specific health and safety information necessary for the field activities. North Carolina-One Call was contacted on May 31, 2017 to report the proposed drilling activities and notify affected utilities. Apex subcontracted Pyramid Environmental & Engineering, PC (Pyramid) to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina was retained by Apex to perform the direct push sampling for soil borings. REDLAB, LLC (REDLAB) provided an ultraviolet fluorescence (UVF) Hydrocarbon Analyzer and Eastern Solutions provided a calibrated Flame Ionization/Photoionization Detector (FID/PID). Boring locations were strategically placed in a pattern within the area of investigation to maximize the opportunity to encounter potentially contaminated soil.

### **3.2 Site Reconnaissance**

Apex personnel performed a site reconnaissance on June 6, 2017. During the site reconnaissance, the area was visually examined for the presence of USTs or areas/obstructions that could potentially affect the subsurface investigation. The proposed boring locations were marked based on the site inspection and geophysical survey results. Apex personnel also used the site visit as an opportunity to contact the property manager/owner to inform them of upcoming field activities.

### **3.3 Geophysics Survey Results**

The geophysical survey of the site was conducted on June 6 and 7, 2017. Pyramid performed an electromagnetic (EM) induction metal survey followed by a GPR survey. A copy of the Geophysical Report is presented in **Appendix C**. Five areas contained EM anomalies that were associated with unknown features and were investigated further with the GPR method. Results of GPR scans indicated evidence of two probable USTs and three possible USTs. One possible UST is located in the southwest portion of the survey area and is approximately eight feet long and seven feet wide. One possible UST and one probable UST are located in the northwest portion of the parcel and are both approximately 11 feet long and six feet wide. An additional probable UST is located at the northwest boundary of the survey area and is nine feet

long and six feet wide. A possible UST with the dimensions of eight feet long and five feet wide is located at the northeast portion of the survey area. The anomaly locations are depicted on **Figure 2**.

### **3.4 Well Survey**

No water supply or groundwater monitoring wells were observed on Parcel 13.

### **3.5 Soil Sampling**

Apex conducted drilling activities at the site on June 7, 2017. Apex drilling subcontractor, CSI, advanced 25 direct push soil borings within the proposed investigation area. These 25 boring locations were placed by the possible/probable UST systems or in a pattern to maximize the likelihood of intercepting potential soil contamination. **Figure 2** presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if a petroleum release has occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening with the FID/PID unit and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. One to two intervals of the soil boring, exhibiting the most elevated FID/PID readings, were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH) in soil using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Kristen Hartsen, a certified REDLAB UVF technician with Apex. The UVF results were generated concurrent with soil boring activities so that rapid assessment could be utilized for strategic boring placement.

### **3.6 Groundwater Sampling**

Apex personnel mobilized to the Site on June 7<sup>th</sup>, 2017 to obtain groundwater grab samples. Groundwater grab sample locations were chosen based on data generated from the UVF analyzer and on site conditions such as the likely groundwater gradient and UST locations. The soils encountered were very sandy and unconsolidated, and as a result the borings would not stand open. Apex instructed CSI personnel to temporarily install a one inch diameter 10-slot screen into each of the four soil borings for the purposes of collecting a groundwater grab sample. Apex personnel collected groundwater grab samples from borings P13-SB4, P13-SB9, P13-SB16 and P13-SB20 for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Kristen Hartsen, a certified REDLAB UVF technician with Apex.

## 4.0 SAMPLING RESULTS

### 4.1 Soil Sampling Results

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the June 2017 soil sampling there is no evidence of petroleum hydrocarbon contamination onsite, within the area of investigation.

#### Onsite Soil Screening and UVF Analysis

Elevated FID/PID readings, above ten parts per million (ppm), were not observed in the borings conducted at the site above the smear zone. The FID readings ranged from non-detectable to 3.4 ppm and the PID readings ranged from non-detectable to 3.5 ppm. The FID/PID field screening results are provided on the boring logs in **Appendix B**.

Soil concentrations of TPH gasoline range organics (GRO) and diesel range organics (DRO) measured using the onsite UVF unit are presented in **Table 1**, with instrument generated tables and chromatographs in **Appendix D**. **Figure 3** presents the GRO and DRO results at each boring.

Based on the UVF analyses, TPH-GRO and TPH-DRO was identified in soils on Parcel 13. TPH-GRO concentrations ranged from below detectable levels to 5.7 milligram per kilogram (mg/kg) (P13-SB20). TPH-DRO concentrations ranged from below detectable levels to 25.4 mg/kg (P13-SB4). TPH-GRO concentrations did not exceed the regulatory action level of 50 mg/kg and the TPH-DRO concentrations did not exceed the regulatory action level of 100 mg/kg.

### 4.2 Groundwater Sampling Results

Apex personnel collected groundwater grab samples from four soil borings (P13-SB4, P13-SB9, P13-SB16 and P13-SB20) for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. Based on the real time UVF analysis of the four groundwater grab samples, groundwater impact is likely present on Parcel 13. P13-SB4 indicated TPH-GRO concentrations of 0.28 mg/L and TPH-DRO concentrations of 0.30 mg/L and P13-SB9 indicated TPH-GRO concentrations 0.62 mg/L and TPH-DRO concentrations of 4.4 mg/L. P13-SB16 and P13-SB20 did not contain detectable concentrations of TPH-GRO. However, TPH-DRO is present at concentrations of 8.0 mg/L and 0.3 mg/L, respectively.

Apex personnel notified NCDOT personnel of the result and they instructed Apex to collect one sample for laboratory analysis to determine the chemical specific concentrations present. The sample was collected from boring P13-SB9 and analyzed for the presence of volatile organic compounds (VOCs) in accordance with Method 8260, semi-volatile organic compounds

(SVOCs) in accordance with Method 8270, and extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH) in accordance with the Massachusetts Department of Environmental Protection (MADEP) Method.

Apex personnel collected the sample for laboratory analysis from P13-SB9 because it contained both TPH-GRO (0.62 mg/L) and TPH-DRO (4.4 mg/L) at the highest concentration. The sample contained VOCs including ethylbenzene (2,450 micrograms per liter ( $\mu\text{g/L}$ )), isopropylbenzene (286  $\mu\text{g/L}$ ), naphthalene (1,240  $\mu\text{g/L}$ ), n-propylbenzene (806  $\mu\text{g/L}$ ), 1,2,3-trichloropropane (1,290  $\mu\text{g/L}$ ), 1,2,4-trimethylbenzene (4,700  $\mu\text{g/L}$ ) and m&p-xylenes (4,660  $\mu\text{g/L}$ ) at concentrations exceeding their respective established 15A NCAC 0.2L .0202 Groundwater Quality Standard (2L Standard). Detections reported for SVOCs included 4-chloroaniline, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene. Concentrations of 2-methylnaphthalene (1,890  $\mu\text{g/L}$ ), and naphthalene (2,310  $\mu\text{g/L}$ ) exceed their established 2L Standard. Additional exceedances were noted in MADEP EPH for aliphatics (C09-C18) and aromatics (C11-C22) and MADEP VPH aliphatics (C05-C08) and (C09-C12) and aromatics (C09-C10).

The estimated area of groundwater impact in the northwest corner of Parcel 13 is approximately 2515 square feet in size. The estimated area of impact is presented in **Figure 5**. The groundwater UVF results are tabulated in **Table 1**, the chemical specific analytical data is tabulated in **Table 2**. The instrument generated tables and chromatographs as well as the Laboratory analytical data report is included in **Appendix D** and summarized on **Figure 4**.

## 5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, no petroleum-impacted soil contamination was identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO or above the NCDEQ Action level of 100 mg/kg for TPH-DRO. Groundwater was identified above the 2L Standards in sample P13-SB9 with several constituents of concern exceeding their respective 2L Standards including several VOCs, SVOCs, and EPH and VPH aliphatic and aromatic carbon fraction classes. The estimated area of groundwater impact in the northwest corner of Parcel 13 is approximately 2515 square feet in size. The estimated area of impact is presented in **Figure 5**.

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on June 7, 2017.

- Results of the geophysical survey produced evidence of five anomalies characteristic of USTs. The location of the anomalies are depicted on **Figure 2**.



- Review of the NCDEQ UST database registry reveals that the Bob's Kwik Mart previously occupied the site at 1706 N William St., and during its operation, two 8,000-gallon capacity gasoline/gasoline mixture USTs and one 500-gallon capacity kerosene UST were reportedly installed in 1969. The three tanks identified with Facility ID number 0-006962 were last used on May 31, 1986 and the three USTs are listed as "temporarily closed", suggesting the tanks could still be on site.
- Twenty-five soil borings were advanced onsite. Soil samples collected from each boring were analyzed in the field using a REDLAB UVF Hydrocarbon Analyzer.
- Soil samples analyzed using the UVF did not contain either TPH-DRO or TPH-GRO concentrations above their respective NCDEQ Action levels of 100 mg/kg and 50 mg/kg.
- Four groundwater grab samples were collected and analyzed for TPH-DRO and TPH-GRO with the REDLAB UVF Hydrocarbon Analyzer.
- One groundwater sample was analyzed by the laboratory for the presence of VOCs, SVOCs, and VPH and EPH using the MADEP Method. VOCs, SVOCs, EPHs and VPHs were detected above the 2L Standard indicating groundwater impacts in the northwestern corner of the parcel.

## 6.0 RECOMMENDATIONS

Based on these PSA results, NCDOT will need to manage any groundwater encountered during excavation activities to assure that the impacted water does not migrate from the site and to prevent exposure to workers. The parcel is designed as a fill area but if limited areas require excavation, groundwater could be encountered as shallow as five feet bgs. NCDOT should be prepared to dewater and containerize contaminated groundwater if encountered during construction activities.

## TABLES

**Table 1**  
**UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data from June 2017**  
**U-2714, Parcel 13, Steve Allen and Davis Roderick ETAL Property**  
**Goldsboro, North Carolina**

Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
<b>SOIL</b>				
NCDEQ Action Level in mg/kg			<b>50</b>	<b>100</b>
P13-SB1	6/7/2017	3	<0.48	1.3
P13-SB2	6/7/2017	2.5	0.84	1.3
P13-SB3	6/7/2017	2.5	<0.51	0.51
P13-SB4	6/7/2017	3	<0.49	25.4
P13-SB5	6/7/2017	2.5	<0.47	2
P13-SB6	6/7/2017	2.5	<0.46	6.2
P13-SB7	6/7/2017	2.5	<0.45	1.4
P13-SB8	6/7/2017	2.5	<0.19	<0.19
P13-SB9	6/7/2017	2.5	<0.45	<0.45
P13-SB10	6/7/2017	2.5	<0.47	<0.47
P13-SB11	6/7/2017	2.5	<0.53	<0.53
P13-SB12	6/7/2017	2.5	<0.45	19.4
P13-SB13	6/7/2017	2.5	<0.47	0.47
P13-SB14	6/7/2017	2.5	<0.25	<0.25
P13-SB15	6/7/2017	2.5	<0.48	<0.48
P13-SB16	6/7/2017	2.5	<0.46	<0.46
P13-SB17	6/7/2017	2.5	4.6	<0.49
P13-SB18	6/7/2017	3	4.8	14.3
P13-SB19	6/7/2017	2.5	<0.47	3.5
P13-SB20	6/7/2017	2.5	5.7	8.2
P13-SB21	6/7/2017	2.5	0.68	<0.52
P13-SB22	6/7/2017	2.5	<0.51	0.51
P13-SB23	6/7/2017	2.5	<0.52	0.52
P13-SB24	6/7/2017	2.5	<0.5	<0.5
P13-SB25	6/7/2017	2.5	<0.54	0.54

**Table 1**  
**UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data from June 2017**  
**U-2714, Parcel 13, Steve Allen and Davis Roderick ETAL Property**  
**Goldsboro, North Carolina**

Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
<b>GROUNDWATER (mg/L)</b>				
P13-SB4 (water)	6/7/2017	5	0.28	0.03
P13-SB9 (water)	6/7/2017	10	0.62	4.4
P13-SB16 (water)	6/7/2017	5	<0.025	8
P13-SB20 (water)	6/7/2017	10	<0.025	0.03
<p><b>NOTES:</b>  (mg/kg) = Milligrams per kilogram  (mg/L) = Milligrams per Liter  GRO = Gasoline Range Organics  DRO = Diesel Range Organics  ft bgs = feet below ground surface  TPH - GRO values in exceedance of NCDEQ Action Level of 50 mg/kg are shown in Bold  TPH - DRO values in exceedance of NCDEQ Action Level of 100 mg/kg are shown in Bold</p>				

**Table 2**  
 Groundwater Analytical Results - Detected Analytes  
 U-2714, Parcel 13, Steve Allen and Davis Roderick ETAL Property  
 Goldsboro, North Carolina

Analytical Method		MADEP EPH			MADEP VPH			VOCs by 8260							SVOCs by 8270				
Sample ID	Constituent of Concern	Aliphatic (C09-C18)	Aliphatic (C19-C36)	Aromatic (C11-C22)	Aliphatic (C05-C08)	Aliphatic (C09-C12)	Aromatic (C09-C10)	Ethylbenzene	Isopropylbenzene (Cumene)	Naphthalene	n-Propylbenzene	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	m&p-Xylene	4-Chloroaniline	bis(2-Ethylhexyl)phthalate	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene
	Date Collected	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>P13-SB9</b>	6/7/2017	<b>3,800</b>	<500	<b>1,340</b>	<b>7,060</b>	<b>16,300</b>	<b>22,300</b>	<b>2,450</b>	<b>286</b>	<b>1,240</b>	<b>806</b>	<b>1,290</b>	<b>4,700</b>	<b>4,660</b>	677	<b>169</b>	986	<b>1,890</b>	<b>2,310</b>
15A NCAC 02L .0202 Groundwater Standards		700	10,000	200	400	700	200	600	70	6	70	0.005	400	500	NE	3	NE	30	6

**NOTES:**

< # = Constituent below laboratory detection limits

NE = Standard Not Established

MADEP EPH = Massachusetts Department of Environmental Protection Extractable Petroleum Hydrocarbon

MADEP VPH = Massachusetts Department of Environmental Protection Volatile Petroleum Hydrocarbon

VOC = Volatile Organic Compounds

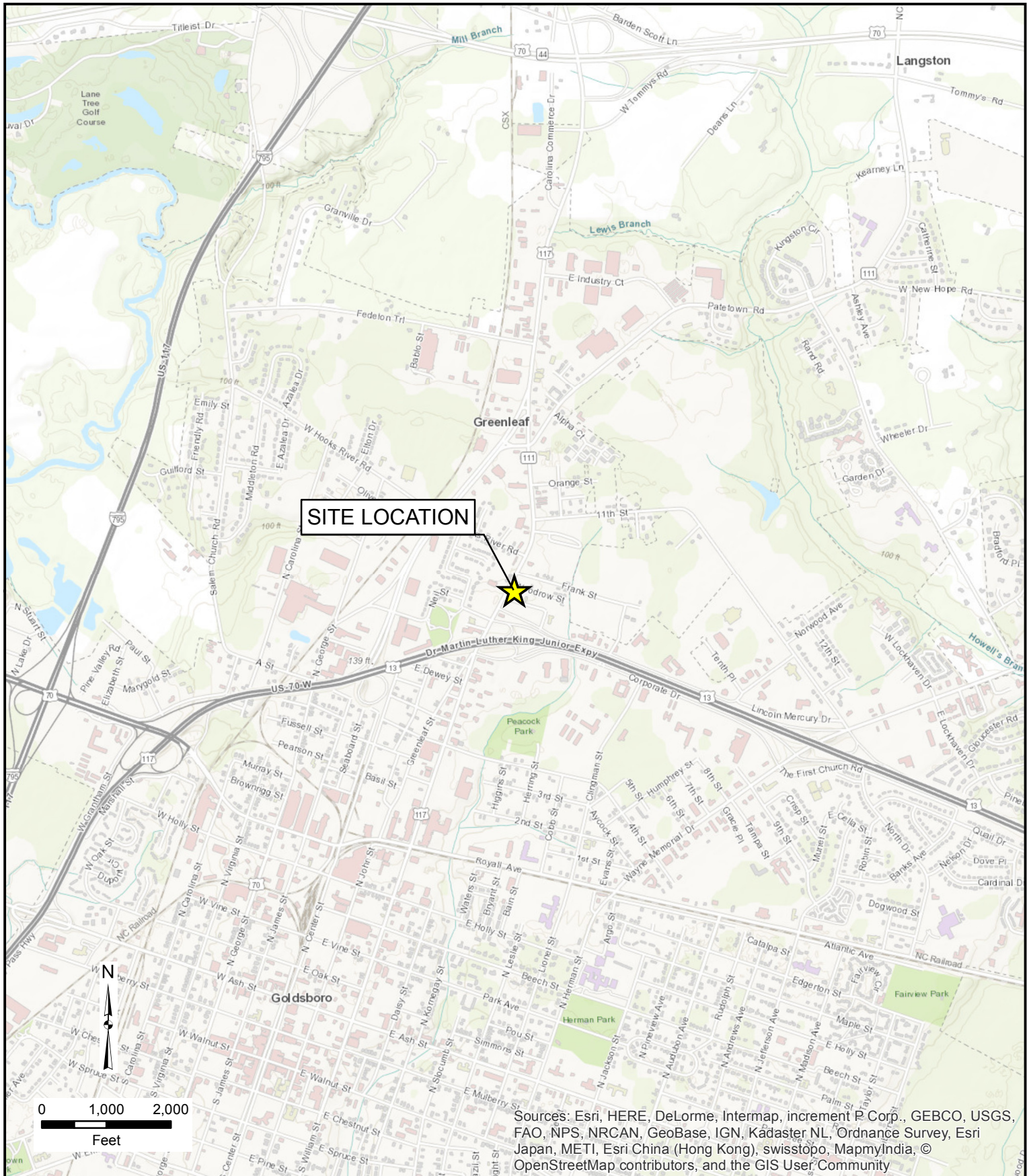
SVOC = Semi Volatile Organic Compounds

ug/L = micrograms per liter

NCAC = North Carolina Administrative Code

**Bold data above NCAC 02L Standards**

## FIGURES



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

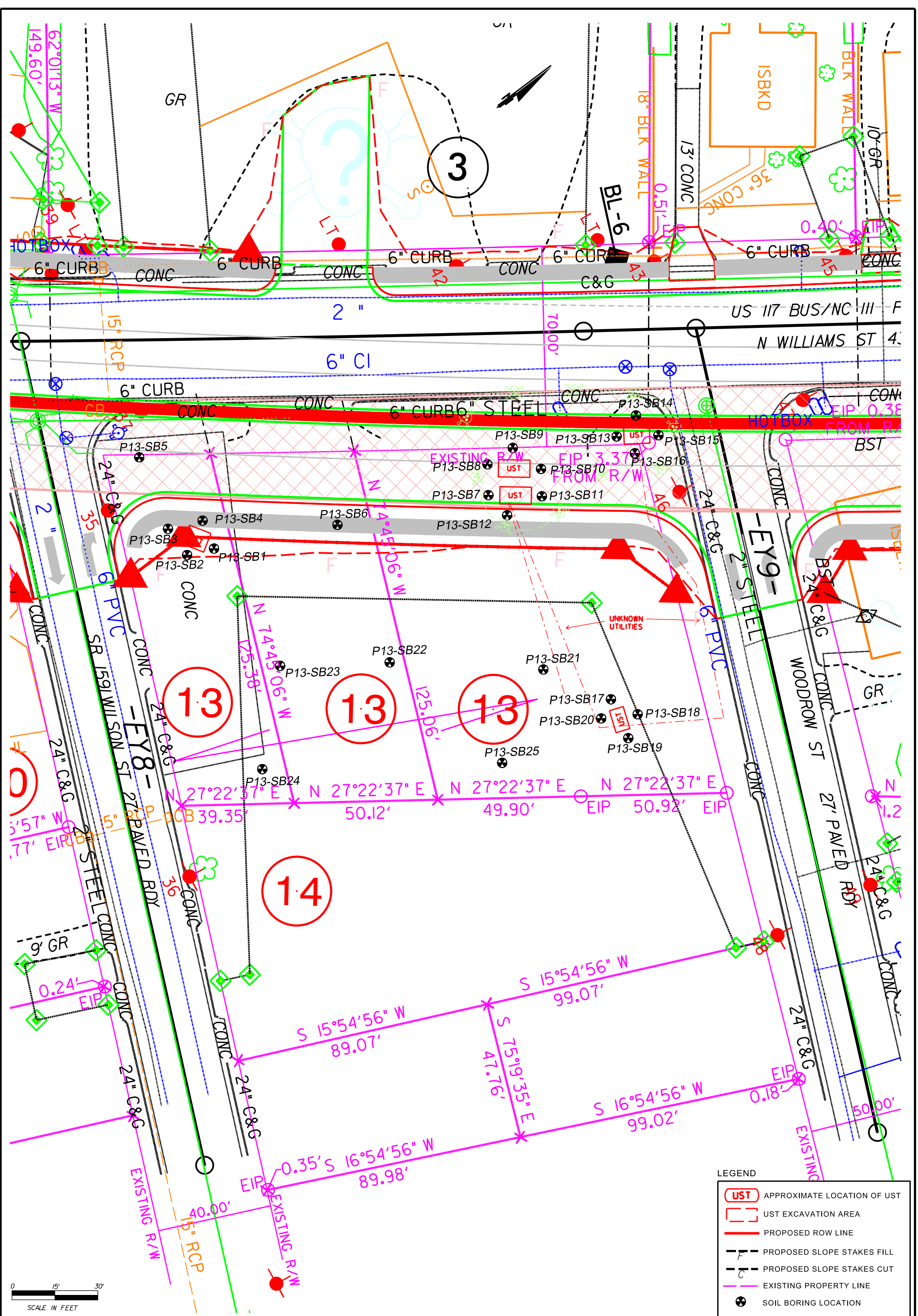
CHECK BY: TH
DRAWN BY: SP
DATE: 7/17/17
SCALE: AS SHOWN
CAD NO.: 510497-003
PRJ NO.: 510497-003

**SITE LOCATION MAP**  
**PARCEL #13**  
**1706 N. WILLIAM STREET**  
**GOLDSBORO, NORTH CAROLINA**



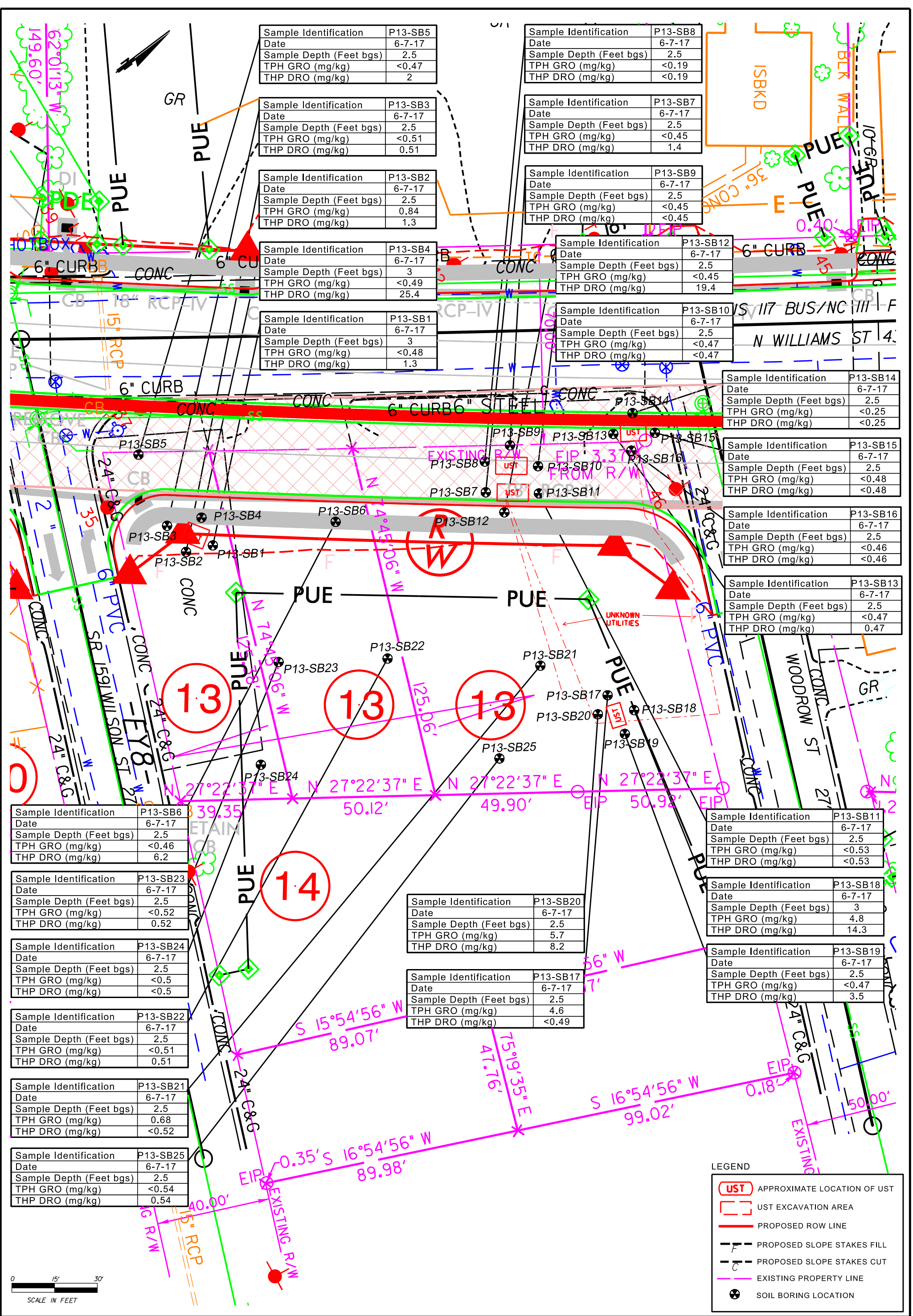
FIGURE

1



**FIGURE 2  
PARCEL 13  
SITE MAP WITH SOIL BORING  
LOCATIONS**





Sample Identification	P13-SB5
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.47
THP DRO (mg/kg)	2

Sample Identification	P13-SB3
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.51
THP DRO (mg/kg)	0.51

Sample Identification	P13-SB2
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	0.84
THP DRO (mg/kg)	1.3

Sample Identification	P13-SB4
Date	6-7-17
Sample Depth (Feet bgs)	3
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	25.4

Sample Identification	P13-SB1
Date	6-7-17
Sample Depth (Feet bgs)	3
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	1.3

Sample Identification	P13-SB8
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.19
THP DRO (mg/kg)	<0.19

Sample Identification	P13-SB7
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.45
THP DRO (mg/kg)	1.4

Sample Identification	P13-SB9
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.45
THP DRO (mg/kg)	<0.45

Sample Identification	P13-SB12
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.45
THP DRO (mg/kg)	19.4

Sample Identification	P13-SB10
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.47
THP DRO (mg/kg)	<0.47

Sample Identification	P13-SB14
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.25
THP DRO (mg/kg)	<0.25

Sample Identification	P13-SB15
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	<0.48

Sample Identification	P13-SB16
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.46
THP DRO (mg/kg)	<0.46

Sample Identification	P13-SB13
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.47
THP DRO (mg/kg)	0.47

Sample Identification	P13-SB6
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.46
THP DRO (mg/kg)	6.2

Sample Identification	P13-SB23
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.52
THP DRO (mg/kg)	0.52

Sample Identification	P13-SB24
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	<0.5

Sample Identification	P13-SB22
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.51
THP DRO (mg/kg)	0.51

Sample Identification	P13-SB21
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	0.68
THP DRO (mg/kg)	<0.52

Sample Identification	P13-SB25
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.54
THP DRO (mg/kg)	0.54

Sample Identification	P13-SB20
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	5.7
THP DRO (mg/kg)	8.2

Sample Identification	P13-SB17
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	4.6
THP DRO (mg/kg)	<0.49

Sample Identification	P13-SB11
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.53
THP DRO (mg/kg)	<0.53

Sample Identification	P13-SB18
Date	6-7-17
Sample Depth (Feet bgs)	3
TPH GRO (mg/kg)	4.8
THP DRO (mg/kg)	14.3

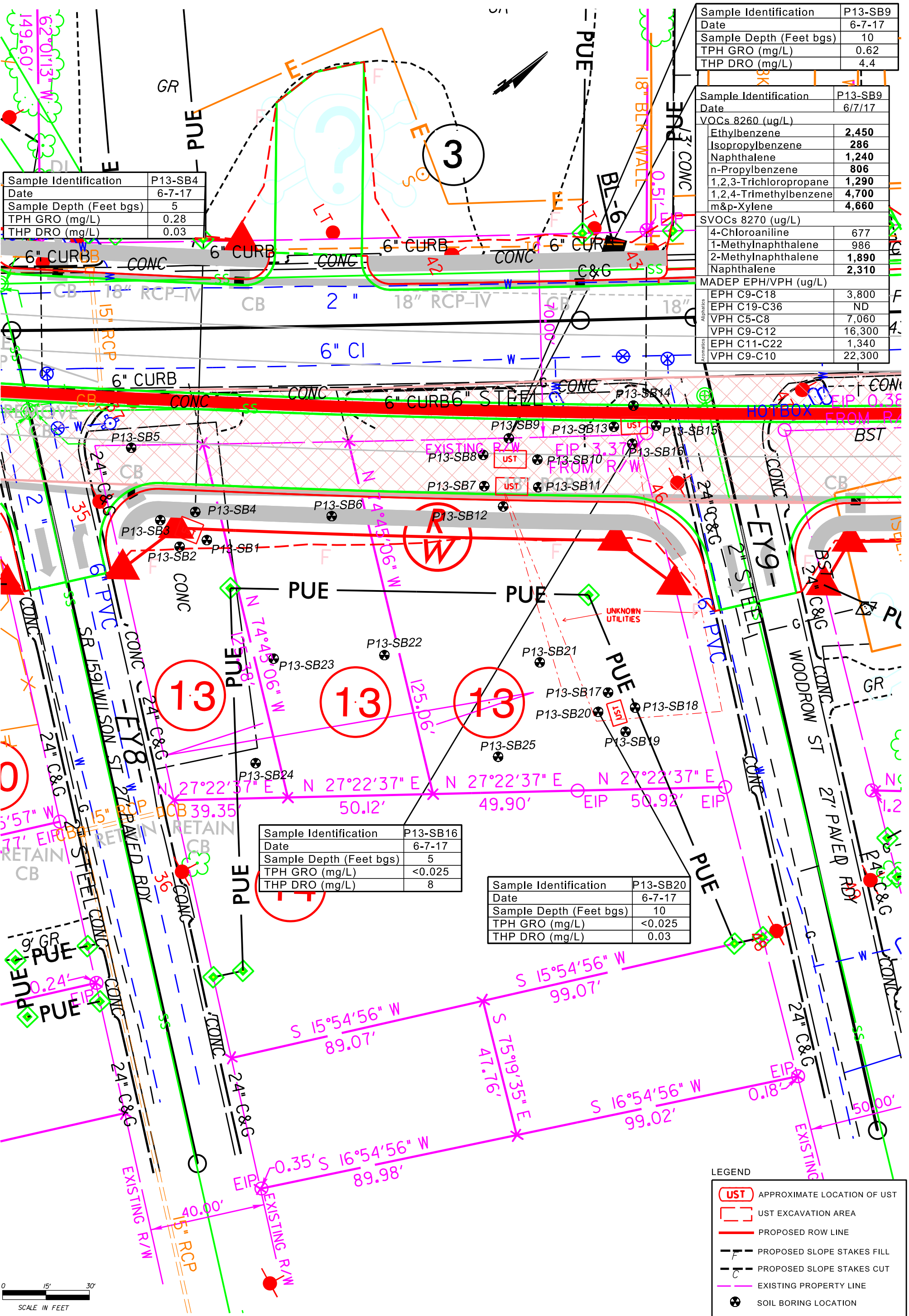
Sample Identification	P13-SB19
Date	6-7-17
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.47
THP DRO (mg/kg)	3.5

LEGEND	
	APPROXIMATE LOCATION OF UST
	UST EXCAVATION AREA
	PROPOSED ROW LINE
	PROPOSED SLOPE STAKES FILL
	PROPOSED SLOPE STAKES CUT
	EXISTING PROPERTY LINE
	SOIL BORING LOCATION



FIGURE 3  
PARCEL 13  
ONSITE UVF HYDROCARBON  
ANALYSIS RESULTS - SOIL

Date:	7/15/17	GOLDSBORO U-2714		
Proj. #	510497-003			
pc_13_fig 3.dgn		Project Title:		
CAD File:		1" = 30'	MJO	NC DOT
Approx. Scale:		Drawn by:		Client:



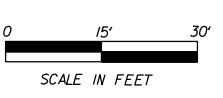
Sample Identification	P13-SB4
Date	6-7-17
Sample Depth (Feet bgs)	5
TPH GRO (mg/L)	0.28
THP DRO (mg/L)	0.03

Sample Identification	P13-SB9
Date	6-7-17
Sample Depth (Feet bgs)	10
TPH GRO (mg/L)	0.62
THP DRO (mg/L)	4.4

Sample Identification	P13-SB9
Date	6/7/17
VOCs 8260 (ug/L)	
Ethylbenzene	2,450
Isopropylbenzene	286
Naphthalene	1,240
n-Propylbenzene	806
1,2,3-Trichloropropane	1,290
1,2,4-Trimethylbenzene	4,700
m&p-Xylene	4,660
SVOCs 8270 (ug/L)	
4-Chloroaniline	677
1-Methylnaphthalene	986
2-Methylnaphthalene	1,890
Naphthalene	2,310
MADEP EPH/VPH (ug/L)	
EPH C9-C18	3,800
EPH C19-C36	ND
VPH C5-C8	7,060
VPH C9-C12	16,300
EPH C11-C22	1,340
VPH C9-C10	22,300

Sample Identification	P13-SB16
Date	6-7-17
Sample Depth (Feet bgs)	5
TPH GRO (mg/L)	<0.025
THP DRO (mg/L)	8

Sample Identification	P13-SB20
Date	6-7-17
Sample Depth (Feet bgs)	10
TPH GRO (mg/L)	<0.025
THP DRO (mg/L)	0.03



LEGEND	
	APPROXIMATE LOCATION OF UST
	UST EXCAVATION AREA
	PROPOSED ROW LINE
	PROPOSED SLOPE STAKES FILL
	PROPOSED SLOPE STAKES CUT
	EXISTING PROPERTY LINE
	SOIL BORING LOCATION

**FIGURE 4**  
**PARCEL 13**  
**SITE MAP WITH GROUNDWATER**  
**ANALYTICAL DATA**

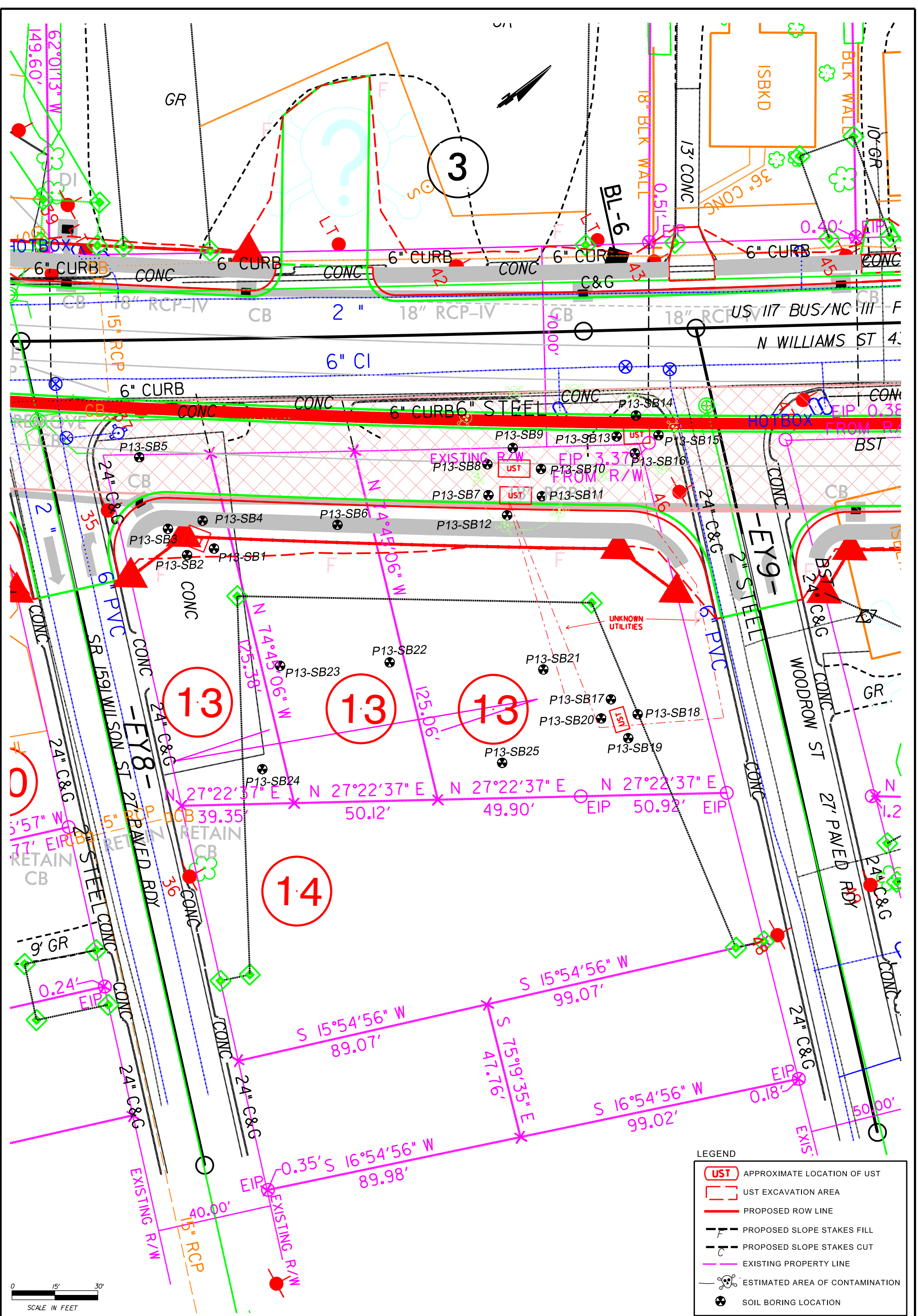


FIGURE 5  
 PARCEL 13  
 SITE MAP WITH ESTIMATED AREA  
 OF CONTAMINATION

**APPENDIX A**  
**PHOTOGRAPH LOG**



**Photo 1**

View of site prior to preliminary site assessment activities.



**Photo 2**

View of probable UST in the foreground and Pyramid Environmental performing the geophysical survey in the background.



**Photo 3**

View of possible UST.



**Photo 4**

View of CSI hand clearing boring location with a hand auger.

**APPENDIX B**  
**BORING LOGS**



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB1	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Concrete and Rock Base
1	0	0		Brown, Silty Sand, Medium, Moist
2	0	0		
3	0	.75	Sample at 3'	
4	0	15.1		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:





# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB2	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Concrete and Rock Base
1					Brown, Silty Sand, Medium, Moist
2		0	1.1	Sample at 2.5'	
3					
4		1.1	10.6		Smear Zone
5					Water
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB3	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Concrete, Rock Base
1				Brown, Silty Sand, Medium, Moist
2				
	1.2	3.5	Sample at 2.5'	Yellow Sand, Medium, Moist
3				
4				Smear Zone
	1.5	2.7		
5				Water
6				
7				
8				Yellow Sand, Medium, Wet
9				
10				
Boring terminated at 10 feet				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB4	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Concrete and Rock Base
2				Brown, Silty Sand, Medium
	2.2	2.5		
3			Sample at 3'	Brown, Silty Sand, Trace Asphalt
4	1.1	1.8		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB5	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Concrete and Rock Base
1					Brown, Silty Sand, Medium
2		1.8	1.9	Sample at 2.5'	Orange, Clayey Silt, Moist
3					
4		1.5	3.4		Smear Zone
5					Water
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB6	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Grass
2				Black, Silty Sand, Fine, Moist
	0	0	Sample at 2.5'	
3				Yellow, Silty Sand, Fine, Moist
4	0	0		Smear Zone
5				
				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB7	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Grass
2				White and Black Marbled, Silty Sand, Fine, Moist
	0	0	Sample at 2.5'	
3				Yellow, Silty Sand, Fine, Moist
4	0	0		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB8	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Grass
2				White and Black Marbled, Sand, Fine, Moist
3	1.2	0.75	Sample at 2.5'	
4				Yellow, Silty, Clayey Sand, Moist
5	2.2	1.5		Smear Zone
6				Water
7				Boring terminated at 5 feet
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB9	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				White Sand, Medium, Dry
2				Brown, Silty Sand, Fine, Moist
	2.3	0.5	Sample at 2.5'	
3				Yellow, Clayey Silt, Moist
4	2	0.32		Smear Zone
5				Water
6				Gray, Clayey, Silty Sand, Wet
7	3.4	1.8		
8				
9	4.2	2.2		
10				
				Boring terminated at 10 feet
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:





# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB10	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan Sand, Medium, Moist
2				
	2.2	0.78	Sample at 2.5'	Tan, Clayey, Silty Sand
3				
4	2	0.5		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB11	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan Sand, Medium, Moist
2				Tan, Clayey, Silty, Sand, Moist
3	2.4	1.62	Sample at 2.5'	Smear Zone
4	1.5	1.4		
5				
				Water
				Boring terminated at 5'
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB12	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan Sand
2				
	2.3	0.2	Sample at 2.5'	Tan, Clayey Sand
3				
4	2.8	2.4		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB13	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan Sand, Medium
2				
3	0.8	0.24	Sample at 2.5'	Tan, Clayey, Sandy Silt, Moist
4	0.5	0		Smear Zone
5				Water
6				
7				
8				
9				
10				
Boring terminated at 10 feet				
11				
12				
13				
14				

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB14	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				White Sand
2				Tan, Sandy Silt
3	0	0	Sample at 2.5'	Tan, Sandy, Clayey Silt
4	0	0		
5				
				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB15	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				White Sand, Medium
2	2.4	0.1	Sample at 2.5'	Tan, Sandy, Clayey Silt, Moist
3				
4	1.8	0		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB16	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				White Sand
2	1.6	0	Sample at 2.5'	Tan, Sandy, Clayey Silt, Moist
3				
4	1.67	0		Smear Zone
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB17	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan, Sandy Silt
2				
	0.2	0.15	Sample at 2.5'	Tan, Clayey, Sandy Silt
3				
4	0	0		
5				Smear Zone
6				Water
				Boring terminated at 6 feet
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:





# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB18	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan Silt
2				
3	1.7	1.6	Sample at 3'	Orange, Clayey Silt
4	0	0		
5				Smear Zone
6				Water
				Boring terminated at 6 feet
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB19	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Tan Silt
2				
	0	0	Sample at 2.5'	Orange, Sandy, Clayey Silt, Moist
3				
4	0	0		Smear Zone
5				
6				Water
				Boring terminated at 6 feet
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB20	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Grass
2	2.6	1.5	Sample at 2.5'	Tan and Brown Marbled, Sandy, Clayey Silt
3				
4	1.1	0.3		Smear Zone
5				
6				Water
7				Orange and White Marbled, Clayey Silt
8	8.6	2.7		
9				
10				Boring terminated at 10 feet
11				
12				
13				
14				

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB21	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Brown Silt
2				Brownish Orange, Clayey, Sandy Silt, Moist
	1.2	0.7	Sample at 2.5'	
3				
4	0	0		Smear Zone
5				
6				Water
				Boring terminated at 6 feet
7				
8				
9				
10				
11				
12				
13				
14				

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB22	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Grass
2	2.1	0	Sample at 2.5'	Orange, Clayey Sand, Moist
3				
4	1.6	0		
5				Water
6				Boring terminated at 5 feet
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB23	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Grass
2	0	0	Sample at 2.5'	Orange, Clayey Sand, Moist
3				
4	0	0		Smear Zone
5				Water
Boring terminated at 5 feet				
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB24	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

**Remarks:**

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Grass
1					Black, Sandy Silt
					Tan, Sandy Silt
2					
		0	0	Sample at 2.5'	Yellow-Orange, Clayey, Sandy Silt
3					
		0	0		Smear Zone
4					
5					Water
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

**WELL CONSTRUCTION DETAILS (If Applicable)**

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P13-SB25	<b>Site Name:</b> Parcel 13-Steve Allen & Davis Roderick Property
<b>Date:</b> 06/07/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers/2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Black Silt
				Tan, Sandy Silt, Dry
2				
	0	0	Sample at 2.5'	Yellow-Orange, Clayey, Sandy Silt, Moist
3				
	0	0		Smear Zone
4				
5				Water
				Boring terminated at 5 feet
6				
7				
8				
9				
10				
11				
12				
13				
14				

### WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:



**APPENDIX C**  
**GEOPHYSICAL REPORT**



PYRAMID GEOPHYSICAL SERVICES  
(PROJECT 2017-156)

# GEOPHYSICAL SURVEY

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## METALLIC UST INVESTIGATION: PARCEL 013 NCDOT PROJECT U-2714

1706 N. WILLIAM STREET, GOLDSBORO, NC

JULY 6, 2017

Report prepared for:

Troy Holzschuh  
Apex Companies  
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Charlotte, North Carolina 28269

Prepared by: \_\_\_\_\_

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P: 336.335.3174 F: 336.691.0648

C257: GEOLOGY C1251: ENGINEERING

**GEOPHYSICAL INVESTIGATION REPORT**  
**Parcel 013 – 1706 N. William Street**  
**Goldsboro, Wayne County, North Carolina**

## **Table of Contents**

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Discussion of Results.....	4
Summary and Conclusions .....	6
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## **Figures**

- Figure 1 – Parcel 013 Geophysical Survey Boundaries and Site Photographs
- Figure 2 – Parcel 013 EM61 Results Contour Map
- Figure 3 – Parcel 013 GPR Transect Locations & Select Images
- Figure 4 – Parcel 013 Locations and sizes of Possible and Probable Metallic USTs
- Figure 5 – Parcel 013 Overlay of EM Survey Boundaries on NCDOT Engineering Plans

## LIST OF ACRONYMS

CADD .....	Computer Assisted Drafting and Design
DF .....	Dual Frequency
EM.....	Electromagnetic
GPR.....	Ground Penetrating Radar
GPS .....	Global Positioning System
NCDOT.....	North Carolina Department of Transportation
ROW .....	Right-of-Way
UST .....	Underground Storage Tank

## EXECUTIVE SUMMARY

---

**Project Description:** Pyramid Environmental conducted a geophysical investigation for Apex Companies (Apex) at Parcel 013, located at 1706 N. William Street, Goldsboro, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-2714). Apex directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to cover all accessible portions of the parcel due to its designation by the NCDOT as a total take. Conducted from June 6-7, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

**Geophysical Results:** Several of the EM anomalies were directly attributed to visible cultural features at the ground surface. Five areas contained EM anomalies that were associated with unknown buried metal, and were investigated further by GPR. A total of 11 GPR Transects identified the following:

- One possible UST at the southwest portion of the survey area, approximately 8 feet long and 7 feet wide.
- One probable and one possible UST in the northwest portion of the parcel, both approximately 11 feet long and 6 feet wide.
- One probable UST at the northwest boundary of the survey area, approximately 9 feet long and 6 feet wide.
- One possible UST at the northeast portion of the survey area, approximately 8 feet long and 5 feet wide.

Collectively, the geophysical recorded evidence of two probable and three possible metallic USTs at Parcel 013.

## INTRODUCTION

---

Pyramid Environmental conducted a geophysical investigation for Apex at Parcel 013, located at 1706 N. William Street, Goldsboro, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-2714). Apex directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to cover all accessible portions of the parcel due to its designation by the NCDOT as a total take. Conducted from June 6-7, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site was composed of a vacant lot including a grass field and a bare concrete slab. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

## FIELD METHODOLOGY

---

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending,

generally parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 14.0 software programs.

GPR data were acquired across select EM anomalies from June 6-7, 2017, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid’s classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks on NCDOT Projects			
High Confidence	Intermediate Confidence	Low Confidence	No Confidence
<b>Known UST</b> Active tank - spatial location, orientation, and approximate depth determined by geophysics.	<b>Probable UST</b> Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	<b>Possible UST</b> Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist’s discretion.

## DISCUSSION OF RESULTS

---

### *Discussion of EM Results*

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

#### **LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY**

<b>Metallic Anomaly #</b>	<b>Cause of Anomaly</b>	<b>Investigated with GPR</b>
1	One possible UST	☑
2	Hydrant/signs	
3	Post/sign	
4	One probable & one possible UST	☑
5	Water meter	
6	One probable UST	☑
7	Suspected utility/conduit	
8	One possible UST	☑
9	Suspected debris and/or utilities	☑

Several of the EM anomalies (Anomalies 2, 3, 5 and 7) were directly attributed to known cultural features such as a hydrant, signs, posts, a water meter, and a suspected utility. However, Anomalies 1, 4, 6 and 8 were high-amplitude features that were associated with unknown buried metal; their size and amplitude were suggestive of large structures such as USTs. Anomaly 9 was also associated with unknown buried metal; its amplitude was more consistent with suspected debris or a utility. All of these features were investigated further by GPR.

### *Discussion of GPR Results*

**Figure 3** presents the locations of the formal GPR transects performed at the property, as well as select transect images. A total of eleven GPR transects were performed at the site.



GPR Transects 1 and 2 were performed across EM Anomaly 1, located under the concrete slab at the southwest portion of the property. These two transects recorded a relatively distinct hyperbolic reflector and a discreet lateral reflector that were consistent with a possible UST. Due to the lack of a clear hyperbolic reflector across the suspected width of the UST, Pyramid is classifying this feature as one possible UST. The possible UST was approximately 8 feet long and 7 feet wide.

GPR Transects 3-5 were performed across Anomaly 4 in the northwest portion of the parcel. Transect 4 showed evidence of one clear hyperbolic reflector and one slightly disrupted hyperbolic reflector, suggesting this transect crossed the width of two USTs. Transects 3 and 5 showed evidence of discreet lateral reflectors that were consistent with the length of two USTs. Pyramid has classified these features as one probable and one possible metallic UST. The probable and possible tanks were approximately 11 feet long and 6 feet wide.

GPR Transects 6 and 7 were performed across Anomaly 6 at the northwest boundary of the survey area. These transects recorded a distinct hyperbolic reflector and discreet lateral reflector, resulting in Pyramid's classification of this feature as a probable metallic UST. This probable UST was approximately 9 feet long and 6 feet wide.

GPR Transects 8 and 9 were performed across the intermittent minor EM features in the center of the survey area (Anomaly 9). These transects showed evidence of a linear feature consistent with a possible utility conduit as well as scattered disrupted reflectors consistent with possible buried metallic debris. No evidence was recorded in this area that was suggestive of a possible or probable UST.

GPR Transects 10 and 11 were performed across Anomaly 8 at the northeast portion of the survey area. These transects recorded a relatively distinct hyperbolic reflector and discreet lateral reflector, resulting in Pyramid's classification of this feature as a possible metallic UST. This possible UST was approximately 8 feet long and 5 feet wide.

Collectively, the geophysical data recorded evidence of two probable and three possible metallic USTs at Parcel 013. **Figure 4** provides the locations and sizes of all possible and

probable USTs identified by the survey. **Figure 5** provides an overlay of the geophysical survey area onto the NCDOT MicroStation engineering plans (proposed ROW and easements) for reference.

## SUMMARY & CONCLUSIONS

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Pyramid's evaluation of the EM61 and GPR data collected at Parcel 013 in Goldsboro, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- Several of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- Five areas contained EM anomalies that were associated with unknown buried metal, and were investigated by GPR.
- A total of 11 GPR Transects identified the following:
  - One possible UST at the southwest portion of the survey area, approximately 8 feet long and 7 feet wide.
  - One probable and one possible UST in the northwest portion of the parcel, both approximately 11 feet long and 6 feet wide.
  - One probable UST at the northwest boundary of the survey area, approximately 9 feet long and 6 feet wide.
  - One possible UST at the northeast portion of the survey area, approximately 8 feet long and 5 feet wide.
- Collectively, the geophysical recorded evidence of two probable and three possible metallic USTs at Parcel 013.

## LIMITATIONS

---

Geophysical surveys have been performed and this report was prepared for Apex in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

N ↑


APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area  
(Facing Approximately North)

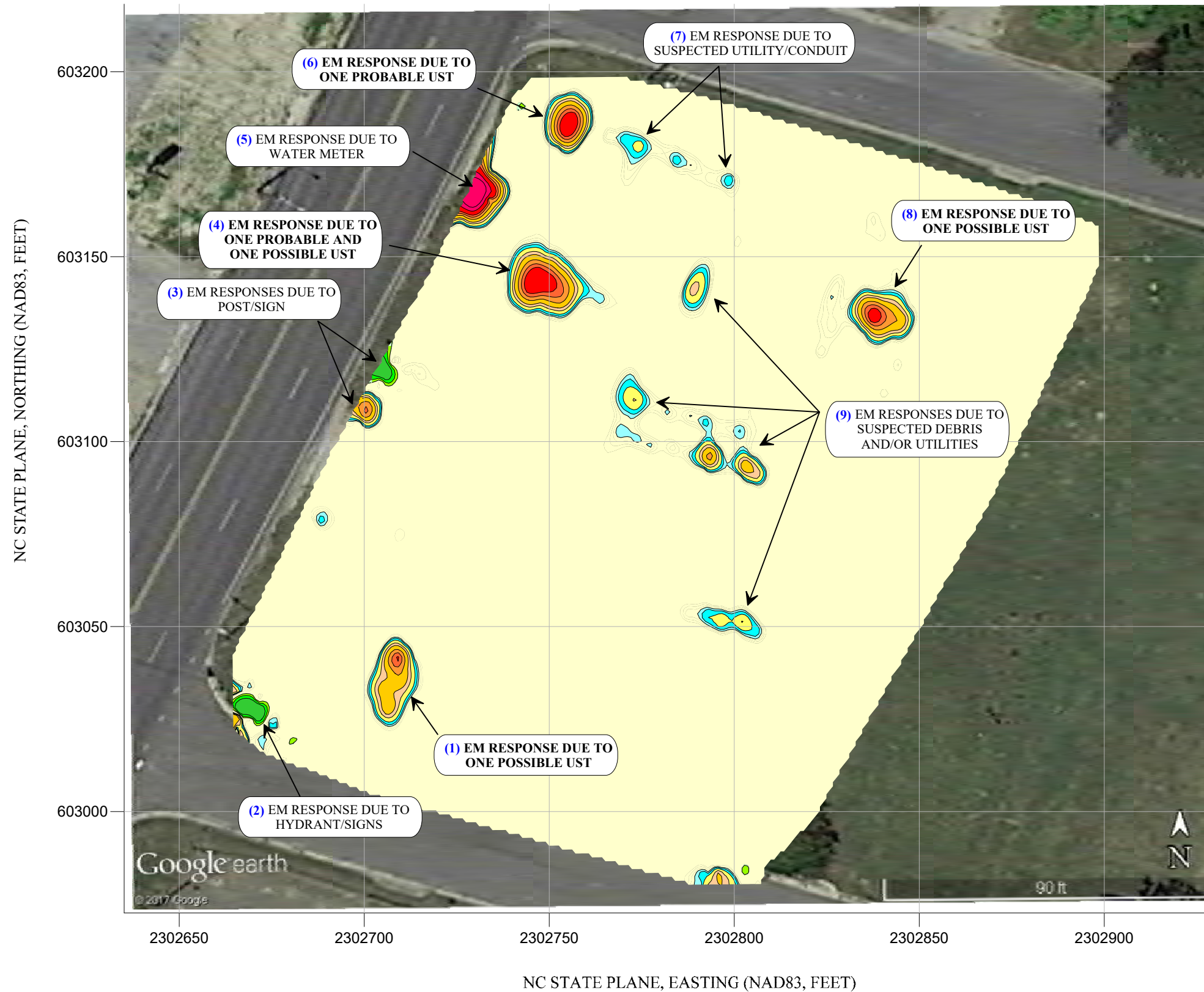


View of Survey Area  
(Facing Approximately West)

TITLE		PARCEL 013 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	
PROJECT		PARCEL 013 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT	APEX COS.
PYRAMID PROJECT #:	2017-156	<b>FIGURE 1</b>	



### EM61 METAL DETECTION RESULTS




### EVIDENCE OF TWO PROBABLE AND THREE POSSIBLE METALLIC USTs OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on June 6, 2017, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on June 6, 2017.

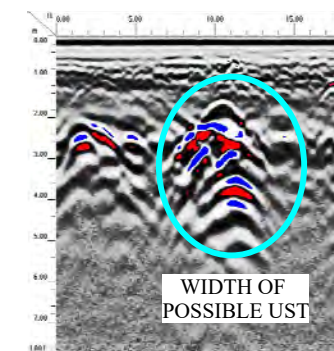
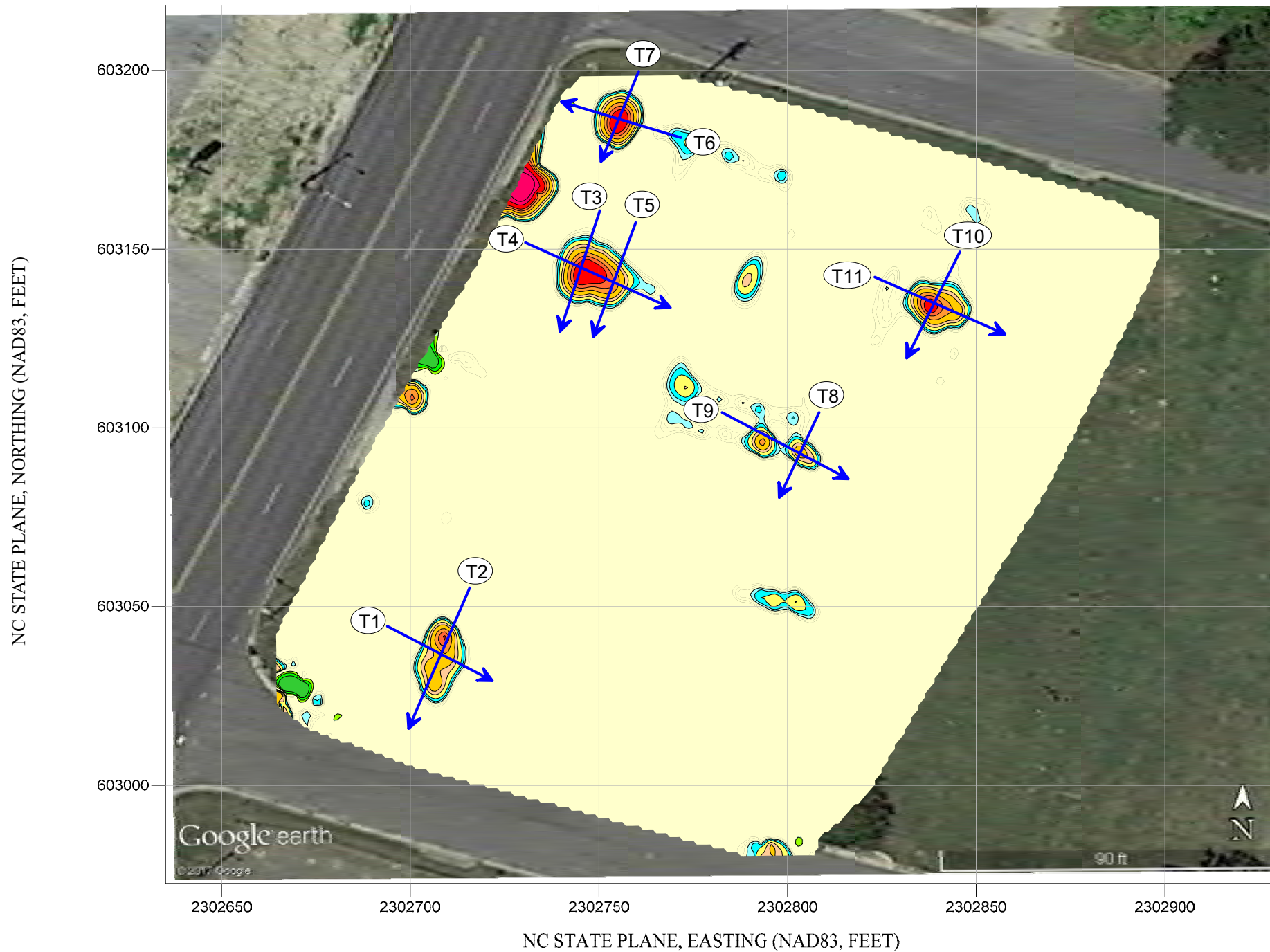
#### EM61 Metal Detection Response (millivolts)



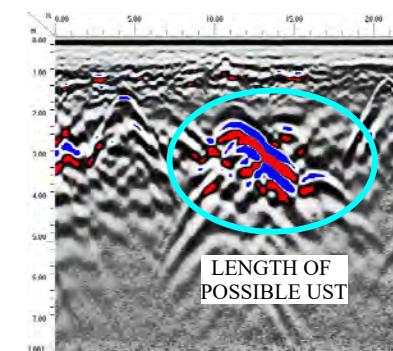
TITLE		PARCEL 013 - EM61 RESULTS CONTOUR MAP	
PROJECT		PARCEL 013 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT	APEX COS.
PYRAMID PROJECT #:	2017-156	<b>FIGURE 2</b>	

NUMBERS IN BLUE (x) CORRESPOND TO EM ANOMALY TABLE IN REPORT

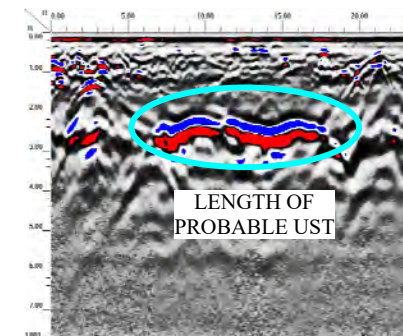
LOCATIONS OF GPR TRANSECTS



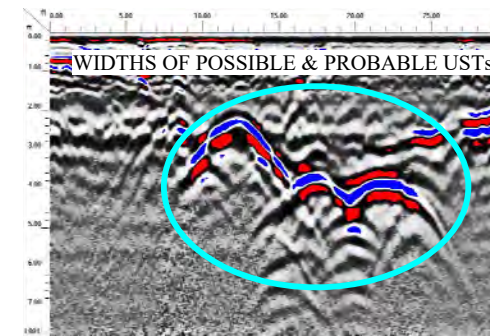
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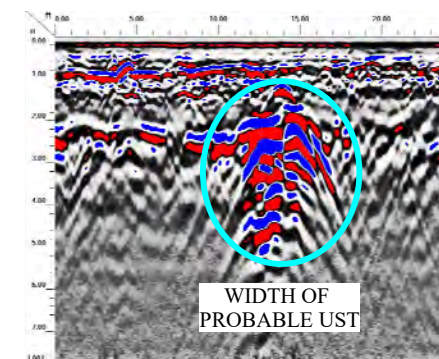
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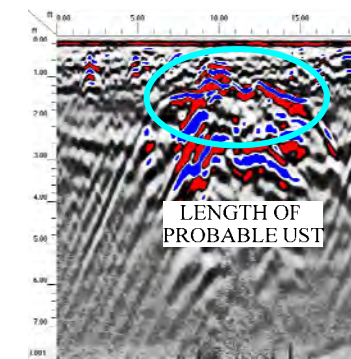
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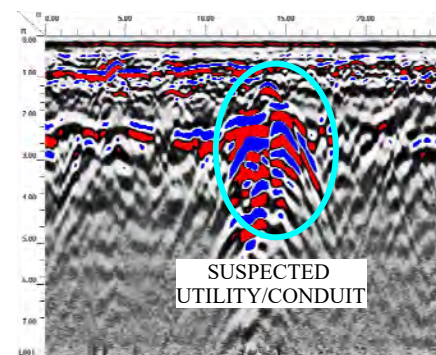
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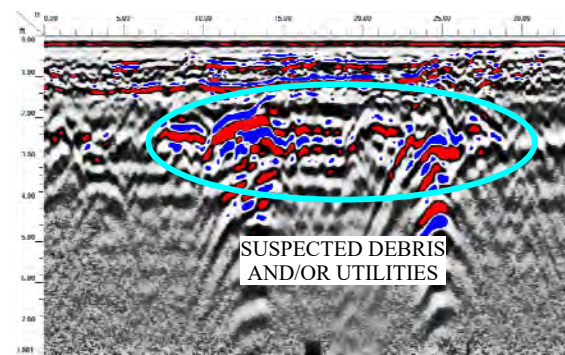
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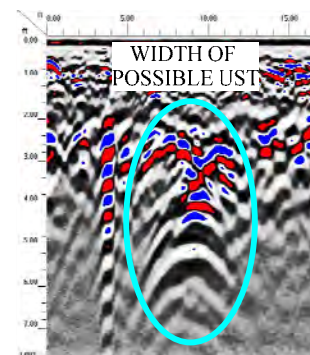
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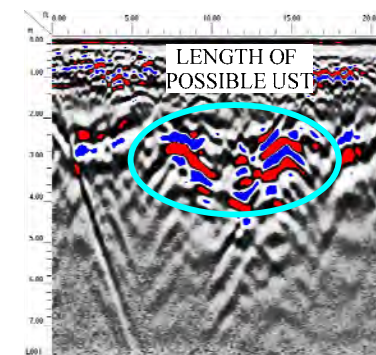
GPR TRANSECT 8 (T8)




GPR TRANSECT 9 (T9)



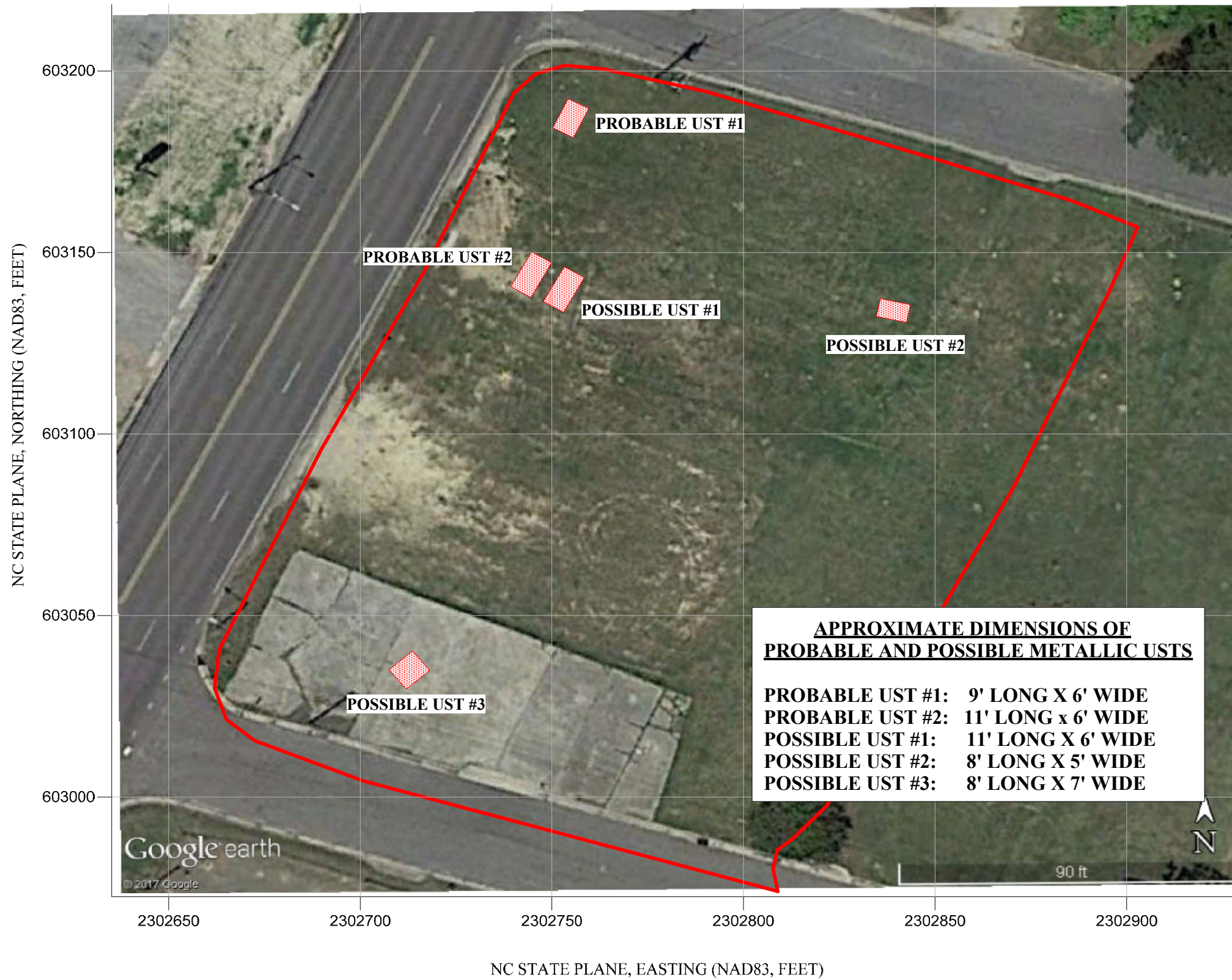
GPR TRANSECT 10 (T10)



GPR TRANSECT 11 (T11)

TITLE	PARCEL 013 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	
PROJECT	PARCEL 013 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
	 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT APEX COS.
PYRAMID PROJECT #:	2017-156	<b>FIGURE 3</b>

**LOCATIONS OF POSSIBLE AND PROBABLE METALLIC USTs**



LOCATION OF PROBABLE UST#1 AT NORTHWEST CORNER OF PARCEL



LOCATIONS OF PROBABLE UST#2 AND POSSIBLE UST#1 IN NW PORTION OF PARCEL




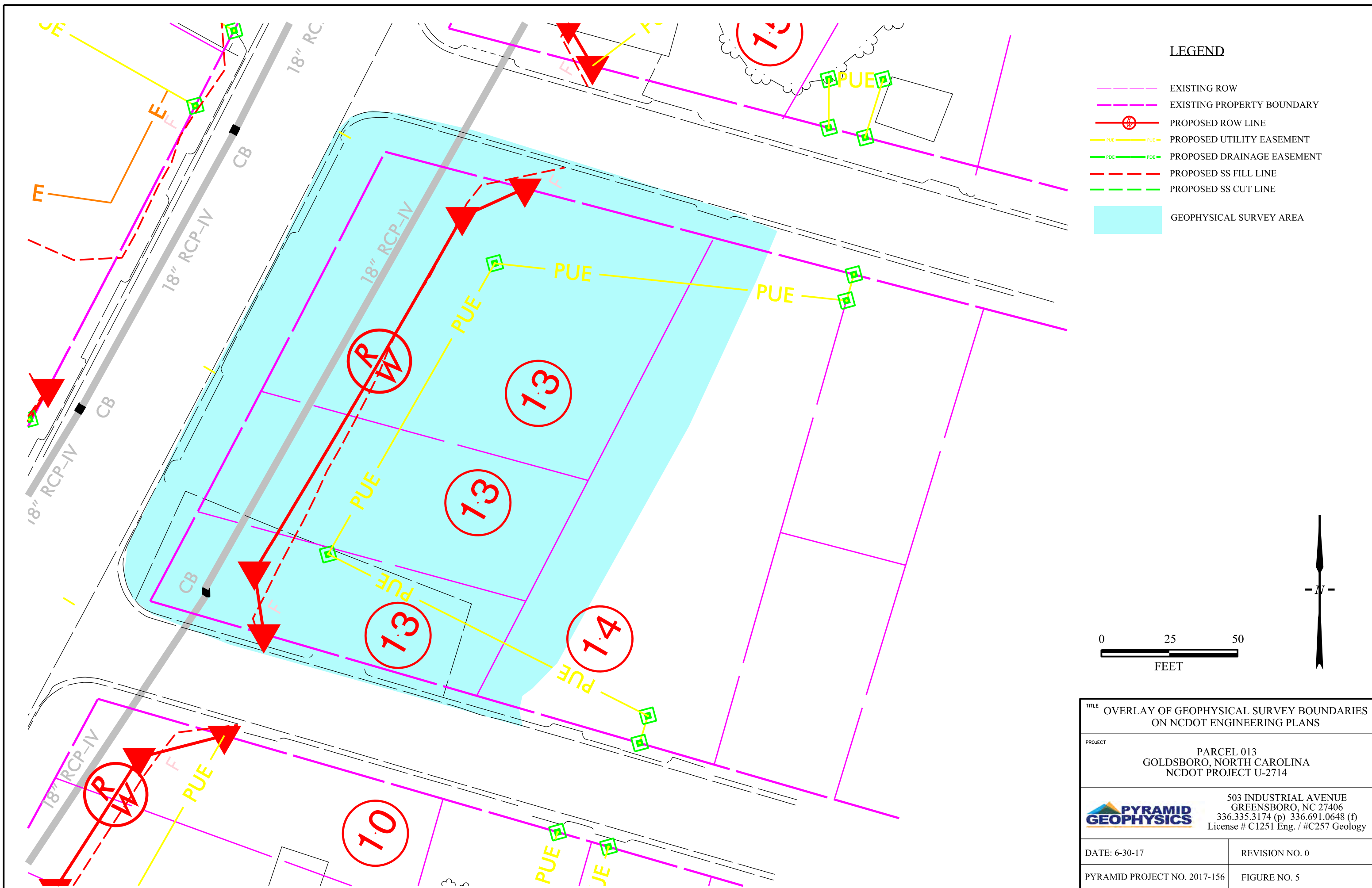
LOCATION OF POSSIBLE UST#2 AT NORTHEAST PORTION OF PARCEL



LOCATION OF POSSIBLE UST#3 AT SOUTHWEST PORTION OF PARCEL

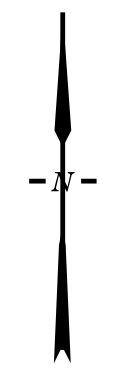
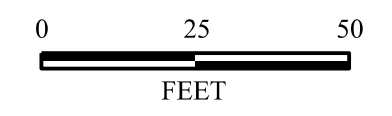


TITLE	PARCEL 013 - LOCATIONS AND SIZES OF POSSIBLE/PROBABLE USTs	
PROJECT	PARCEL 013 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
	 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT APEX COS.
PYRAMID PROJECT #:	2017-156	<b>FIGURE 4</b>



**LEGEND**

- EXISTING ROW
- - - EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- PUE --- PUE PROPOSED UTILITY EASEMENT
- PDE --- PDE PROPOSED DRAINAGE EASEMENT
- - - PROPOSED SS FILL LINE
- - - PROPOSED SS CUT LINE
- GEOPHYSICAL SURVEY AREA



TITLE OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS	
PROJECT PARCEL 013 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
<div style="display: flex; justify-content: space-between; align-items: center;"> <p style="font-size: 8px; margin: 0;">503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology</p> </div>	
DATE: 6-30-17	REVISION NO. 0
PYRAMID PROJECT NO. 2017-156	FIGURE NO. 5



**APPENDIX D**  
**HYDROCARBON ANALYSIS RESULTS AND PACE ANALYTICAL**  
**LABORATORY REPORT**



### Hydrocarbon Analysis Results

**Client:** NCDOT  
**Address:** PARCEL 13  
 1706 N William St  
 Goldsboro, NC

**Samples taken** Wednesday, June 07, 2017  
**Samples extracted** Wednesday, June 07, 2017  
**Samples analysed** Wednesday, June 07, 2017

**Contact:** Dennis Li

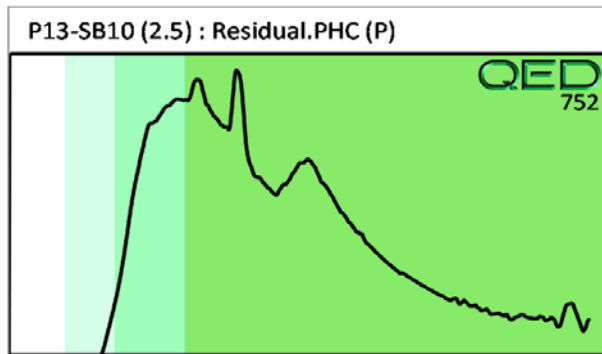
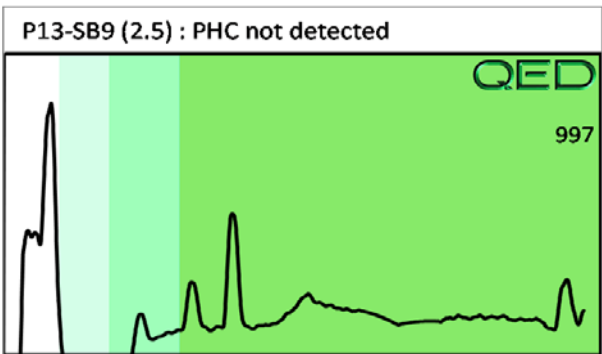
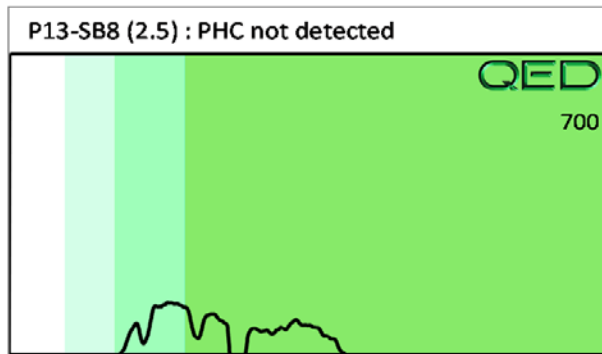
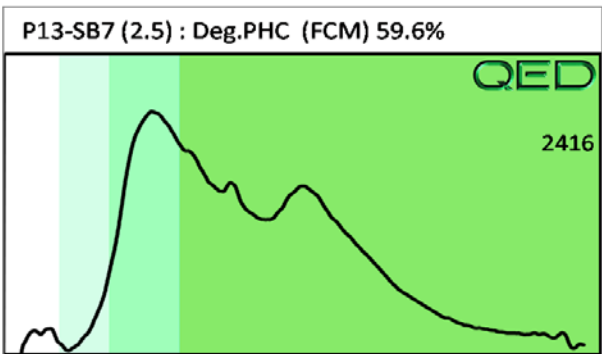
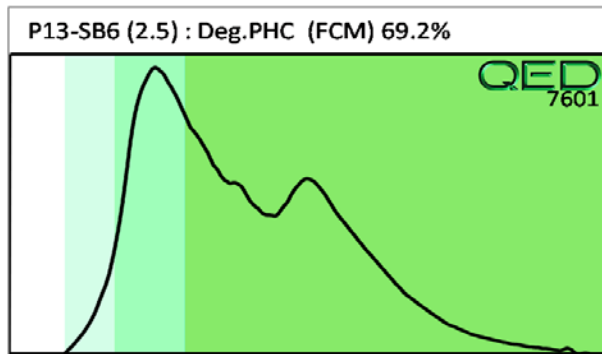
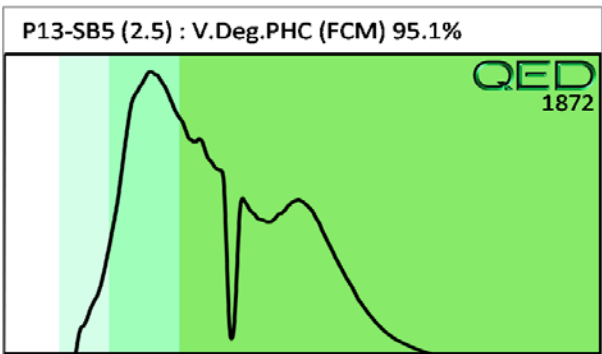
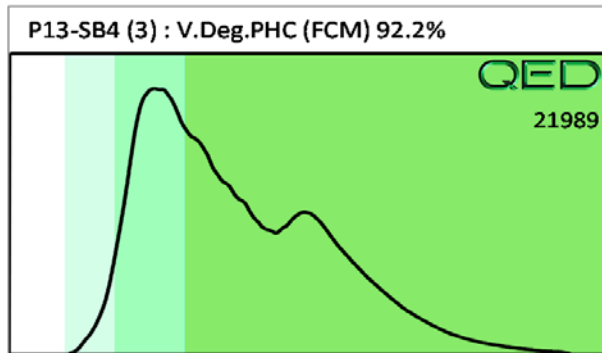
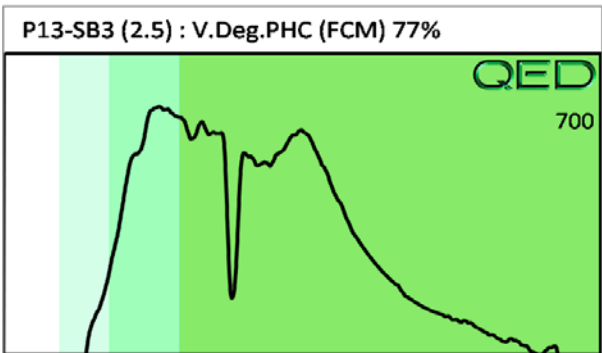
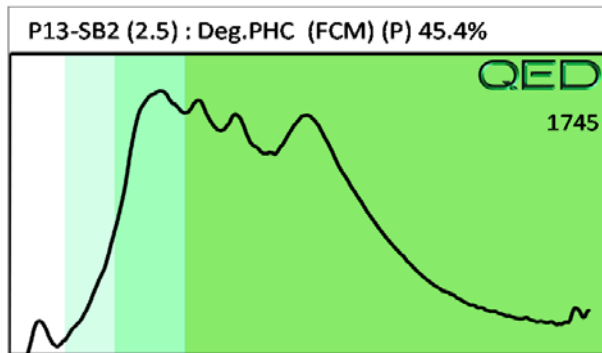
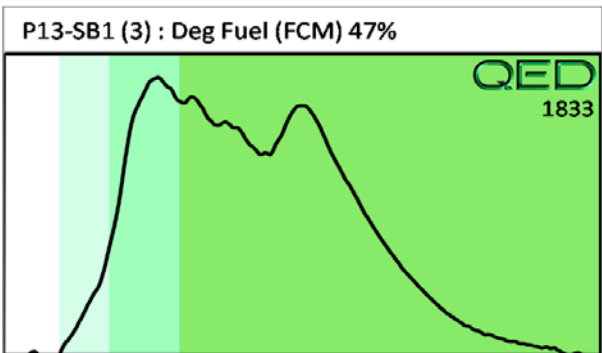
**Operator** KH

**Project:** 510497-003

										F03640			
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P13-SB1 (3)	19.1	<0.48	<0.48	1.3	1.3	1.3	0.07	<0.002	0	77.4	22.6	Deg.Fuel (FCM) 47%
s	P13-SB2 (2.5)	19.3	<0.96	0.84	1.3	2.1	1.3	0.07	<0.002	41.7	46.3	11.9	Deg.PHC (FCM) (P) 45.4%
s	P13-SB3 (2.5)	20.5	<0.51	<0.51	0.51	0.51	<0.19	<0.02	<0.002	0	60.3	39.7	V.Deg.PHC (FCM) 77%
s	P13-SB4 (3)	19.4	<0.49	<0.49	25.4	25.4	15.2	0.71	0.009	0	79.5	20.5	V.Deg.PHC (FCM) 92.2%
s	P13-SB5 (2.5)	18.8	<0.47	<0.47	2	2	0.89	0.05	<0.002	0	81.6	18.4	V.Deg.PHC (FCM) 95.1%
s	P13-SB6 (2.5)	18.4	<0.46	<0.46	6.2	6.2	5.1	0.53	0.007	0	80.2	19.8	Deg.PHC (FCM) 69.2%
s	P13-SB7 (2.5)	18.1	<0.45	<0.45	1.4	1.4	1.1	0.12	<0.002	0	72.9	27.1	Deg.PHC (FCM) 59.6%
s	P13-SB8 (2.5)	7.7	<0.19	<0.19	<0.19	<0.19	<0.04	<0.006	<0.001	0	0	0	PHC not detected
s	P13-SB9 (2.5)	17.8	<0.45	<0.45	<0.45	<0.45	<0.09	<0.01	<0.002	0	0	100	PHC not detected
s	P13-SB10 (2.5)	19.0	<0.47	<0.47	<0.47	<0.47	<0.18	<0.02	<0.002	0	54.7	45.3	Residual.PHC (P)
Initial Calibrator QC check			OK			Final FCM QC Check			OK			86.4 %	

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

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 Goldsboro, NC

**Samples taken** Wednesday, June 07, 2017  
**Samples extracted** Wednesday, June 07, 2017  
**Samples analysed** Wednesday, June 07, 2017

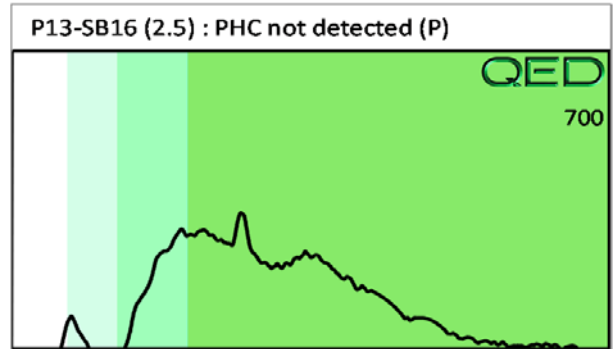
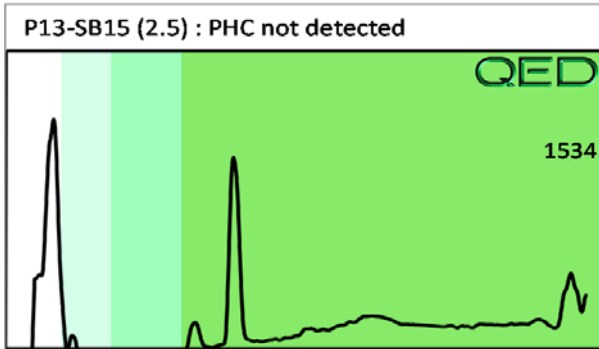
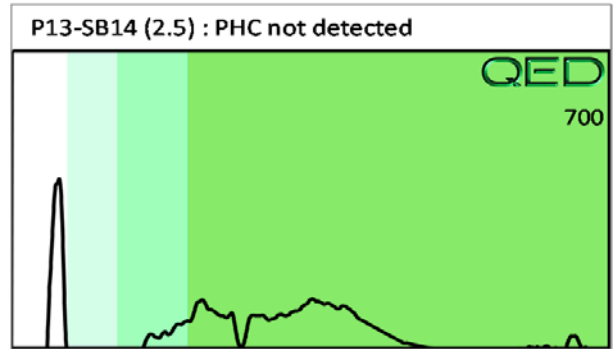
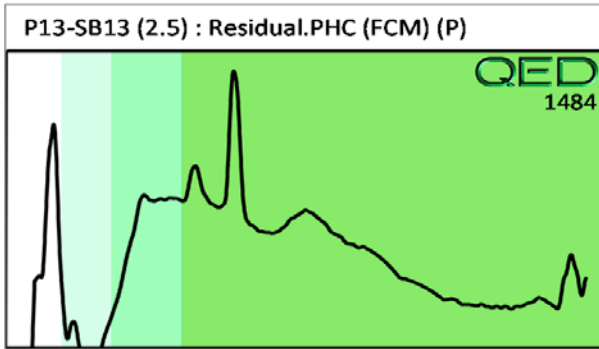
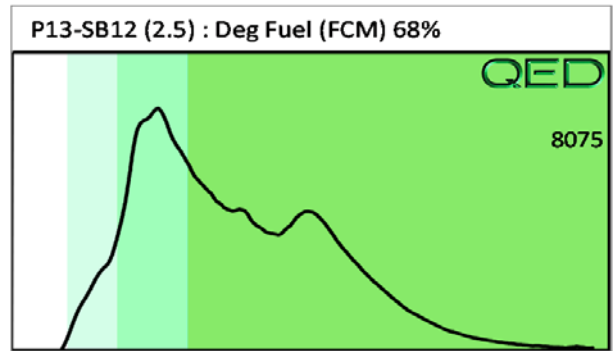
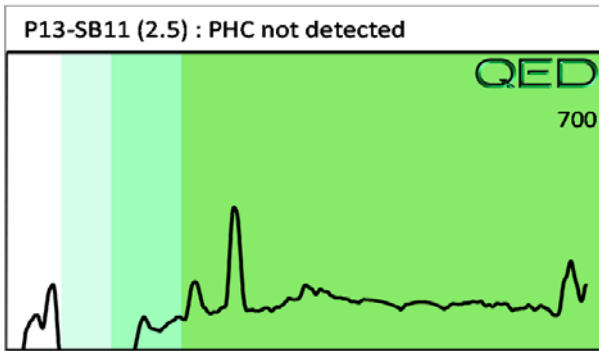
**Contact:** Dennis Li

**Operator** KH

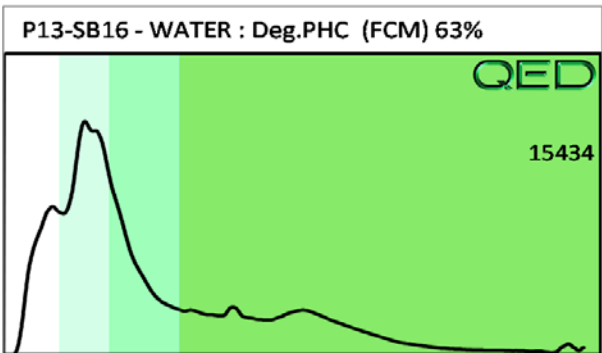
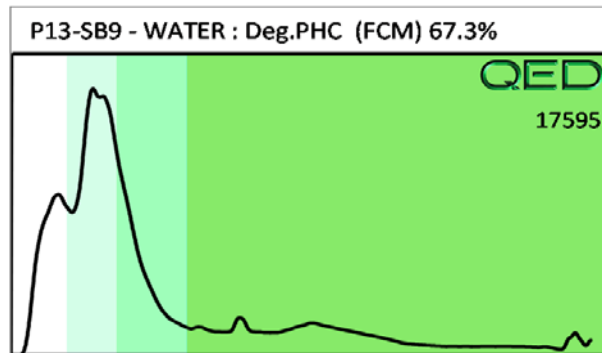
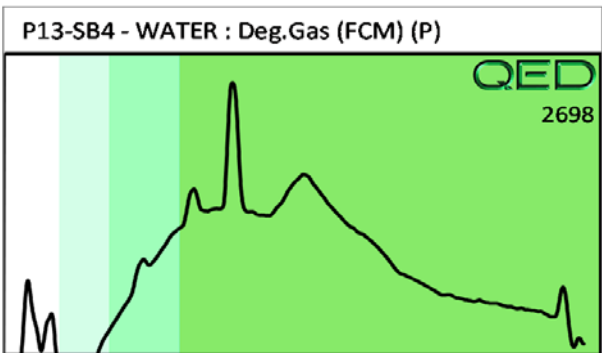
**Project:** 510497-003

											F03640					
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match			
										% light	% mid	% heavy				
s	P13-SB11 (2.5)	21.1	<0.53	<0.53	<0.53	<0.53	<0.11	<0.02	<0.002	0	0	100	PHC not detected			
s	P13-SB12 (2.5)	17.9	<0.45	<0.45	19.4	19.4	7.8	0.39	0.003	0	87.7	12.3	Deg Fuel (FCM) 68%			
s	P13-SB13 (2.5)	18.8	<0.47	<0.47	0.47	0.47	0.27	<0.02	0.002	0	45.2	54.8	Residual.PHC (FCM) (P)			
s	P13-SB14 (2.5)	10.1	<0.25	<0.25	<0.25	<0.25	<0.05	<0.008	<0.001	0	0	0	PHC not detected			
s	P13-SB15 (2.5)	19.3	<0.48	<0.48	<0.48	<0.48	<0.1	<0.02	<0.002	0	0	0	PHC not detected			
s	P13-SB16 (2.5)	18.6	<0.46	<0.46	<0.46	<0.46	<0.09	<0.01	<0.002	0	26.5	73.5	PHC not detected (P)			
Initial Calibrator QC check											OK		Final FCM QC Check		OK	96.9 %

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:** NCDOT  
**Address:** PARCEL 13  
 1706 N William St  
 Goldsboro, NC

**Samples taken** Wednesday, June 07, 2017  
**Samples extracted** Wednesday, June 07, 2017  
**Samples analysed** Wednesday, June 07, 2017

**Contact:** Dennis Li

**Operator** KH

**Project:** 510497-003

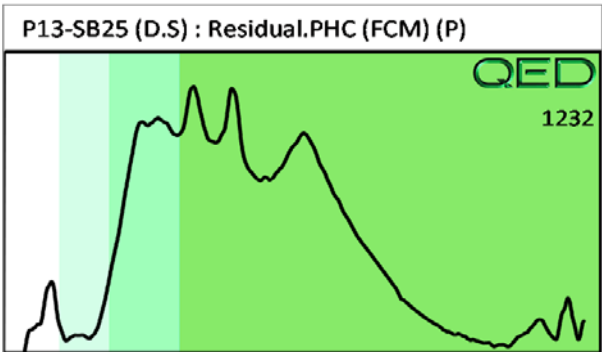
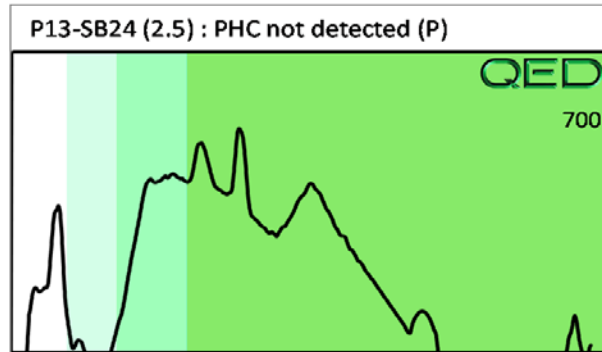
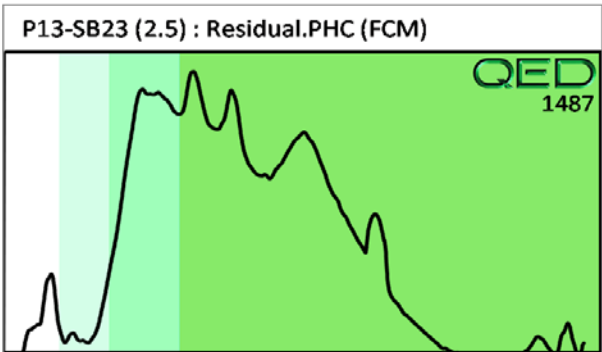
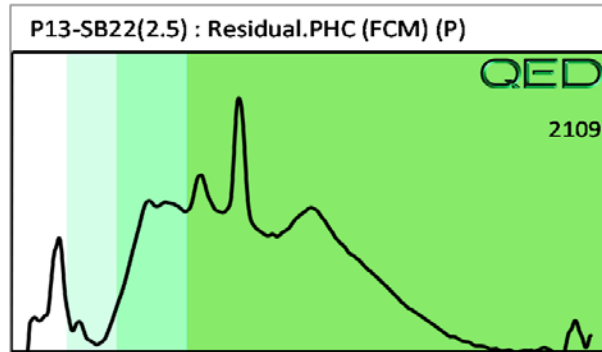
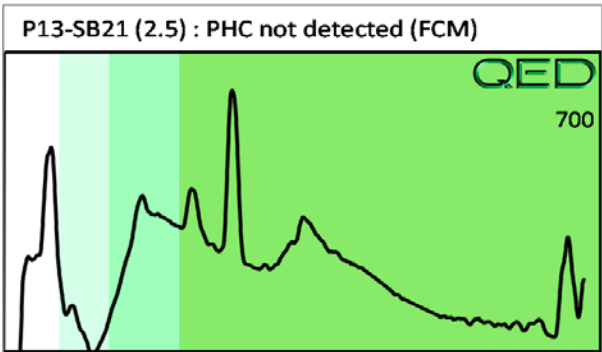
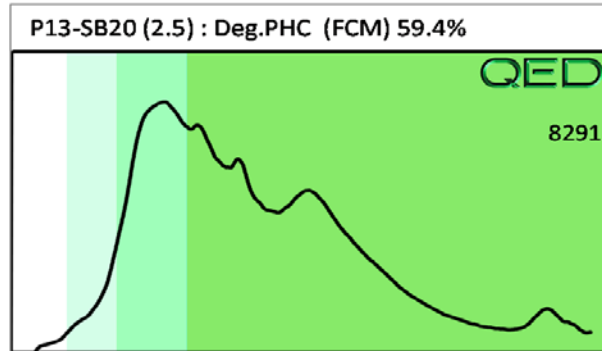
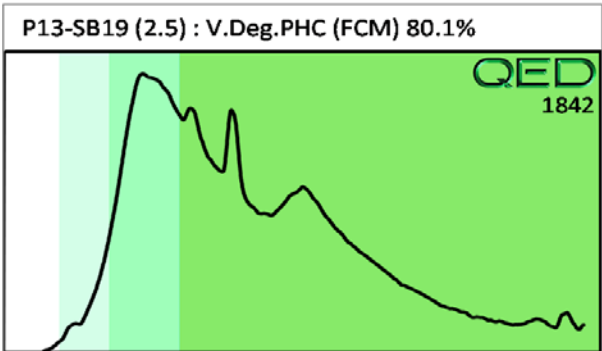
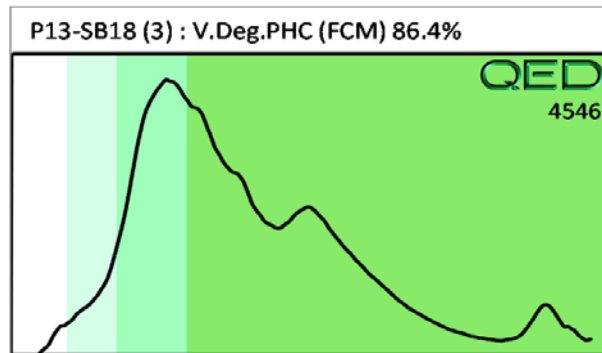
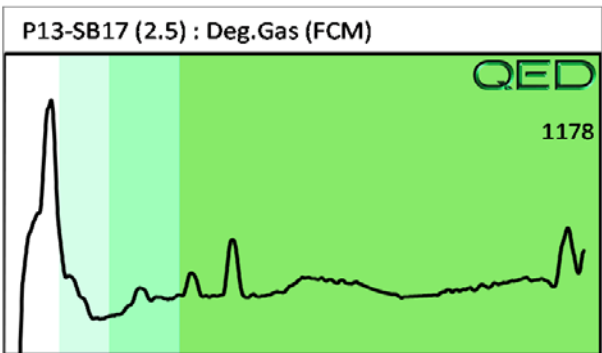
											F03640															
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match													
										% light	% mid	% heavy														
s	P13-SB17 (2.5)	19.5	<0.49	4.6	<0.49	4.6	<0.22	0.03	<0.002	96.1	3	0.9	Deg.Gas (FCM)													
s	P13-SB18 (3)	20.5	<0.51	4.8	14.3	19.1	3.7	0.18	0.002	58.2	34.4	7.5	V.Deg.PHC (FCM) 86.4%													
s	P13-SB19 (2.5)	19.0	<0.47	<0.47	3.5	3.5	1.2	0.06	0.002	0	80.5	19.5	V.Deg.PHC (FCM) 80.1%													
s	P13-SB20 (2.5)	18.8	<0.47	5.7	8.2	13.9	6.9	0.69	0.015	47.4	42.6	10	Deg.PHC (FCM) 59.4%													
s	P13-SB21 (2.5)	20.8	<0.52	0.68	<0.52	0.68	<0.1	<0.02	<0.002	86.5	6.8	6.7	PHC not detected (FCM)													
s	P13-SB22(2.5)	20.3	<0.51	<0.51	0.51	0.51	0.53	0.07	0.011	0	49.8	50.2	Residual.PHC (FCM) (P)													
s	P13-SB23 (2.5)	20.6	<0.52	<0.52	0.52	0.52	0.55	0.07	0.008	0	53.4	46.6	Residual.PHC (FCM)													
s	P13-SB24 (2.5)	20.2	<0.5	<0.5	<0.5	<0.5	<0.14	<0.02	<0.002	0	41.2	58.8	PHC not detected (P)													
s	P13-SB25 (2.5)	21.7	<0.54	<0.54	0.54	0.54	0.45	0.06	0.008	0	50.6	49.4	Residual.PHC (FCM) (P)													
Initial Calibrator QC check											OK		Final FCM QC Check											OK		102.1 %

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:** NCDOT  
**Address:** PARCEL 13  
 1706 N William St  
 Goldsboro, NC

**Samples taken** Wednesday, June 07, 2017  
**Samples extracted** Wednesday, June 07, 2017  
**Samples analysed** Wednesday, June 07, 2017

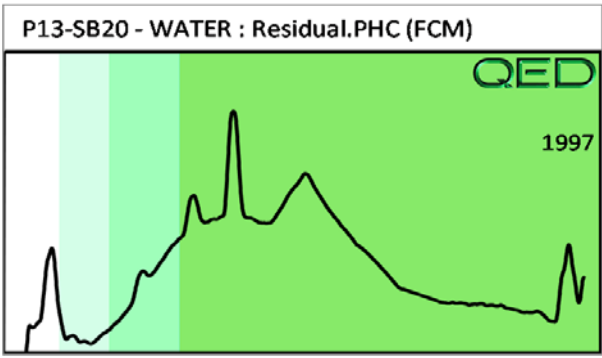
**Contact:** Dennis Li

**Operator** KH

**Project:** 510497-003

										F03640					
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match		
										% light	% mid	% heavy			
W	P13-SB20 - WATER	1.0	<0.025	<0.025	0.03	0.03	0.01	0.001	<0	0	23.2	76.8	Residual.PHC (FCM)		
Initial Calibrator QC check										OK		Final FCM QC Check		OK	86.2 %

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  
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June 23, 2017

NCDOT\_Apex  
Apex  
10610 Metromont Pkwy  
Charlotte, NC 28208

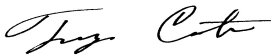
RE: Project: NCDOT 3897912 510497003  
Pace Project No.: 92344692

Dear NCDOT\_Apex:

Enclosed are the analytical results for sample(s) received by the laboratory on June 19, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Trey Carter  
treycarter@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Chemical Testing Engineer, NCDOT



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

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### Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078  
North Carolina Drinking Water Certification #: 37706  
North Carolina Field Services Certification #: 5342  
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001  
Florida/NELAP Certification #: E87627  
Kentucky UST Certification #: 84  
Virginia/VELAP Certification #: 460221

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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: NCDOT 3897912 510497003  
Pace Project No.: 92344692

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92344692001	P13-SB9	MADEP EPH	PKS	7	PASI-C
		MADEP VPH	WDV	5	PASI-C
		EPA 8270	BPJ	74	PASI-C
		EPA 8260	GAW	71	PASI-C

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

Sample: P13-SB9		Lab ID: 92344692001	Collected: 06/07/17 16:30	Received: 06/19/17 09:41	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>MADEP EPH NC Water</b>		Analytical Method: MADEP EPH Preparation Method: MADEP EPH						
Aliphatic (C09-C18)	<b>3800</b>	ug/L	500	5	06/20/17 08:00	06/21/17 18:19		N2
Aliphatic (C19-C36)	ND	ug/L	500	5	06/20/17 08:00	06/21/17 18:19		N2
Aromatic (C11-C22)	<b>1340</b>	ug/L	100	1	06/20/17 08:00	06/20/17 18:25		N2
<b>Surrogates</b>								
Nonatriacontane (S)	89	%	40-140	5	06/20/17 08:00	06/21/17 18:19	7194-86-7	
<b>Surrogates</b>								
o-Terphenyl (S)	85	%	40-140	1	06/20/17 08:00	06/20/17 18:25	84-15-1	
2-Fluorobiphenyl (S)	98	%	40-140	1	06/20/17 08:00	06/20/17 18:25	321-60-8	
2-Bromonaphthalene (S)	87	%	40-140	1	06/20/17 08:00	06/20/17 18:25	580-13-2	
<b>VPH NC Water</b>		Analytical Method: MADEP VPH						
Aliphatic (C05-C08)	<b>7060</b>	ug/L	1000	20		06/20/17 16:28		N2
Aliphatic (C09-C12)	<b>16300</b>	ug/L	1000	20		06/20/17 16:28		N2
Aromatic (C09-C10)	<b>22300</b>	ug/L	1000	20		06/20/17 16:28		N2
<b>Surrogates</b>								
4-Bromofluorobenzene (FID) (S)	113	%	70-130	20		06/20/17 16:28	460-00-4	
4-Bromofluorobenzene (PID) (S)	110	%	70-130	20		06/20/17 16:28	460-00-4	
<b>8270 MSSV Semivolatile Organic</b>		Analytical Method: EPA 8270 Preparation Method: EPA 3510						
Acenaphthene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	83-32-9	H3
Acenaphthylene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	208-96-8	H3
Aniline	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	62-53-3	H3
Anthracene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	120-12-7	H3
Benzo(a)anthracene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	56-55-3	H3
Benzo(a)pyrene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	50-32-8	H3
Benzo(b)fluoranthene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	205-99-2	H3
Benzo(g,h,i)perylene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	191-24-2	H3
Benzo(k)fluoranthene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	207-08-9	H3
Benzoic Acid	ND	ug/L	500	10	06/20/17 16:00	06/22/17 15:21	65-85-0	H3,L2
Benzyl alcohol	ND	ug/L	200	10	06/20/17 16:00	06/22/17 15:21	100-51-6	H3
4-Bromophenylphenyl ether	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	101-55-3	H3
Butylbenzylphthalate	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	85-68-7	H3
4-Chloro-3-methylphenol	ND	ug/L	200	10	06/20/17 16:00	06/22/17 15:21	59-50-7	H3
4-Chloroaniline	<b>677</b>	ug/L	200	10	06/20/17 16:00	06/22/17 15:21	106-47-8	H3
bis(2-Chloroethoxy)methane	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	111-91-1	H3
bis(2-Chloroethyl) ether	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	111-44-4	H3
2-Chloronaphthalene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	91-58-7	H3
2-Chlorophenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	95-57-8	H3
4-Chlorophenylphenyl ether	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	7005-72-3	H3
Chrysene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	218-01-9	H3
Dibenz(a,h)anthracene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	53-70-3	H3
Dibenzofuran	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	132-64-9	H3
1,2-Dichlorobenzene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	95-50-1	H3
1,3-Dichlorobenzene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	541-73-1	H3
1,4-Dichlorobenzene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	106-46-7	H3
3,3'-Dichlorobenzidine	ND	ug/L	200	10	06/20/17 16:00	06/22/17 15:21	91-94-1	H3
2,4-Dichlorophenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	120-83-2	H3

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

Sample: P13-SB9	Lab ID: 92344692001	Collected: 06/07/17 16:30	Received: 06/19/17 09:41	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270 MSSV Semivolatile Organic</b> Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Diethylphthalate	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	84-66-2	H3
2,4-Dimethylphenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	105-67-9	H3
Dimethylphthalate	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	131-11-3	H3
Di-n-butylphthalate	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	84-74-2	H3
4,6-Dinitro-2-methylphenol	ND	ug/L	200	10	06/20/17 16:00	06/22/17 15:21	534-52-1	H3,L2
2,4-Dinitrophenol	ND	ug/L	500	10	06/20/17 16:00	06/22/17 15:21	51-28-5	H3
2,4-Dinitrotoluene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	121-14-2	H3
2,6-Dinitrotoluene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	606-20-2	H3
Di-n-octylphthalate	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	117-84-0	H3
bis(2-Ethylhexyl)phthalate	169	ug/L	60.0	10	06/20/17 16:00	06/22/17 15:21	117-81-7	H3
Fluoranthene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	206-44-0	H3
Fluorene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	86-73-7	H3
Hexachloro-1,3-butadiene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	87-68-3	H3
Hexachlorobenzene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	118-74-1	H3
Hexachlorocyclopentadiene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	77-47-4	H3
Hexachloroethane	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	67-72-1	H3
Indeno(1,2,3-cd)pyrene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	193-39-5	H3
Isophorone	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	78-59-1	H3
1-Methylnaphthalene	986	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	90-12-0	H3
2-Methylnaphthalene	1890	ug/L	500	50	06/20/17 16:00	06/23/17 12:46	91-57-6	H3
2-Methylphenol(o-Cresol)	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	95-48-7	H3
3&4-Methylphenol(m&p Cresol)	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	15831-10-4	H3
Naphthalene	2310	ug/L	500	50	06/20/17 16:00	06/23/17 12:46	91-20-3	H3
2-Nitroaniline	ND	ug/L	500	10	06/20/17 16:00	06/22/17 15:21	88-74-4	H3
3-Nitroaniline	ND	ug/L	500	10	06/20/17 16:00	06/22/17 15:21	99-09-2	H3
4-Nitroaniline	ND	ug/L	200	10	06/20/17 16:00	06/22/17 15:21	100-01-6	H3
Nitrobenzene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	98-95-3	H3
2-Nitrophenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	88-75-5	H3
4-Nitrophenol	ND	ug/L	500	10	06/20/17 16:00	06/22/17 15:21	100-02-7	H3
N-Nitrosodimethylamine	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	62-75-9	H3
N-Nitroso-di-n-propylamine	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	621-64-7	H3
N-Nitrosodiphenylamine	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	86-30-6	H3
2,2'-Oxybis(1-chloropropane)	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	108-60-1	H3
Pentachlorophenol	ND	ug/L	250	10	06/20/17 16:00	06/22/17 15:21	87-86-5	H3
Phenanthrene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	85-01-8	H3
Phenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	108-95-2	H3
Pyrene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	129-00-0	H3
1,2,4-Trichlorobenzene	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	120-82-1	H3
2,4,5-Trichlorophenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	95-95-4	H3
2,4,6-Trichlorophenol	ND	ug/L	100	10	06/20/17 16:00	06/22/17 15:21	88-06-2	H3
<b>Surrogates</b>								
Nitrobenzene-d5 (S)	0	%	21-110	10	06/20/17 16:00	06/22/17 15:21	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	27-110	10	06/20/17 16:00	06/22/17 15:21	321-60-8	S4
Terphenyl-d14 (S)	0	%	31-107	10	06/20/17 16:00	06/22/17 15:21	1718-51-0	S4
Phenol-d6 (S)	0	%	10-110	10	06/20/17 16:00	06/22/17 15:21	13127-88-3	S4
2-Fluorophenol (S)	0	%	12-110	10	06/20/17 16:00	06/22/17 15:21	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%	27-110	10	06/20/17 16:00	06/22/17 15:21	118-79-6	S4

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

Sample: P13-SB9	Lab ID: 92344692001	Collected: 06/07/17 16:30	Received: 06/19/17 09:41	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260						
Acetone	ND	ug/L	625	25		06/21/17 22:03	67-64-1	
Benzene	ND	ug/L	125	25		06/21/17 22:03	71-43-2	
Bromobenzene	ND	ug/L	125	25		06/21/17 22:03	108-86-1	
Bromochloromethane	ND	ug/L	125	25		06/21/17 22:03	74-97-5	
Bromodichloromethane	ND	ug/L	125	25		06/21/17 22:03	75-27-4	
Bromoform	ND	ug/L	125	25		06/21/17 22:03	75-25-2	
Bromomethane	ND	ug/L	250	25		06/21/17 22:03	74-83-9	
2-Butanone (MEK)	ND	ug/L	250	25		06/21/17 22:03	78-93-3	
tert-Butyl Alcohol	ND	ug/L	2500	25		06/21/17 22:03	75-65-0	
n-Butylbenzene	ND	ug/L	125	25		06/21/17 22:03	104-51-8	M1
sec-Butylbenzene	ND	ug/L	125	25		06/21/17 22:03	135-98-8	
tert-Butylbenzene	ND	ug/L	125	25		06/21/17 22:03	98-06-6	
Carbon tetrachloride	ND	ug/L	125	25		06/21/17 22:03	56-23-5	
Chlorobenzene	ND	ug/L	125	25		06/21/17 22:03	108-90-7	
Chloroethane	ND	ug/L	250	25		06/21/17 22:03	75-00-3	
Chloroform	ND	ug/L	125	25		06/21/17 22:03	67-66-3	
Chloromethane	ND	ug/L	125	25		06/21/17 22:03	74-87-3	
2-Chlorotoluene	ND	ug/L	125	25		06/21/17 22:03	95-49-8	
4-Chlorotoluene	ND	ug/L	125	25		06/21/17 22:03	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	50.0	25		06/21/17 22:03	96-12-8	
Dibromochloromethane	ND	ug/L	125	25		06/21/17 22:03	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	125	25		06/21/17 22:03	106-93-4	
Dibromomethane	ND	ug/L	125	25		06/21/17 22:03	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	125	25		06/21/17 22:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	125	25		06/21/17 22:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	125	25		06/21/17 22:03	106-46-7	
Dichlorodifluoromethane	ND	ug/L	125	25		06/21/17 22:03	75-71-8	
1,1-Dichloroethane	ND	ug/L	125	25		06/21/17 22:03	75-34-3	
1,2-Dichloroethane	ND	ug/L	125	25		06/21/17 22:03	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/L	125	25		06/21/17 22:03	540-59-0	
1,1-Dichloroethene	ND	ug/L	125	25		06/21/17 22:03	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	125	25		06/21/17 22:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	125	25		06/21/17 22:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	125	25		06/21/17 22:03	78-87-5	
1,3-Dichloropropane	ND	ug/L	125	25		06/21/17 22:03	142-28-9	
2,2-Dichloropropane	ND	ug/L	125	25		06/21/17 22:03	594-20-7	
1,1-Dichloropropene	ND	ug/L	125	25		06/21/17 22:03	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	125	25		06/21/17 22:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	125	25		06/21/17 22:03	10061-02-6	
Diisopropyl ether	ND	ug/L	125	25		06/21/17 22:03	108-20-3	
Ethylbenzene	2450	ug/L	125	25		06/21/17 22:03	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	125	25		06/21/17 22:03	87-68-3	
2-Hexanone	ND	ug/L	250	25		06/21/17 22:03	591-78-6	
Isopropylbenzene (Cumene)	286	ug/L	125	25		06/21/17 22:03	98-82-8	
p-Isopropyltoluene	ND	ug/L	125	25		06/21/17 22:03	99-87-6	M1
Methylene Chloride	ND	ug/L	125	25		06/21/17 22:03	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	250	25		06/21/17 22:03	108-10-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

<b>Sample: P13-SB9</b>		<b>Lab ID: 92344692001</b>	Collected: 06/07/17 16:30	Received: 06/19/17 09:41	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV</b>		Analytical Method: EPA 8260						
Methyl-tert-butyl ether	ND	ug/L	125	25		06/21/17 22:03	1634-04-4	
Naphthalene	<b>1240</b>	ug/L	125	25		06/21/17 22:03	91-20-3	
n-Propylbenzene	<b>806</b>	ug/L	125	25		06/21/17 22:03	103-65-1	
Styrene	ND	ug/L	125	25		06/21/17 22:03	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	125	25		06/21/17 22:03	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	125	25		06/21/17 22:03	79-34-5	
Tetrachloroethene	ND	ug/L	125	25		06/21/17 22:03	127-18-4	
Toluene	ND	ug/L	125	25		06/21/17 22:03	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	125	25		06/21/17 22:03	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	125	25		06/21/17 22:03	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	125	25		06/21/17 22:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	125	25		06/21/17 22:03	79-00-5	
Trichloroethene	ND	ug/L	125	25		06/21/17 22:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	250	25		06/21/17 22:03	75-69-4	
1,2,3-Trichloropropane	<b>1290</b>	ug/L	125	25		06/21/17 22:03	96-18-4	M1
1,2,4-Trimethylbenzene	<b>4700</b>	ug/L	125	25		06/21/17 22:03	95-63-6	M1
1,3,5-Trimethylbenzene	ND	ug/L	125	25		06/21/17 22:03	108-67-8	M1
Vinyl acetate	ND	ug/L	250	25		06/21/17 22:03	108-05-4	
Vinyl chloride	ND	ug/L	125	25		06/21/17 22:03	75-01-4	
m&p-Xylene	<b>4660</b>	ug/L	250	25		06/21/17 22:03	179601-23-1	
o-Xylene	ND	ug/L	125	25		06/21/17 22:03	95-47-6	
<b>Surrogates</b>								
4-Bromofluorobenzene (S)	96	%	70-130	25		06/21/17 22:03	460-00-4	
1,2-Dichloroethane-d4 (S)	86	%	70-130	25		06/21/17 22:03	17060-07-0	
Toluene-d8 (S)	99	%	70-130	25		06/21/17 22:03	2037-26-5	

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

QC Batch:	365595	Analysis Method:	MADEP VPH
QC Batch Method:	MADEP VPH	Analysis Description:	VPH NC Water
Associated Lab Samples:	92344692001		

METHOD BLANK: 2026786 Matrix: Water

Associated Lab Samples: 92344692001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aliphatic (C05-C08)	ug/L	ND	50.0	06/20/17 14:37	N2
Aliphatic (C09-C12)	ug/L	ND	50.0	06/20/17 14:37	N2
Aromatic (C09-C10)	ug/L	ND	50.0	06/20/17 14:37	N2
4-Bromofluorobenzene (FID) (S)	%	108	70-130	06/20/17 14:37	
4-Bromofluorobenzene (PID) (S)	%	106	70-130	06/20/17 14:37	

LABORATORY CONTROL SAMPLE & LCSD: 2026787

2026788

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Aliphatic (C05-C08)	ug/L	300	316	314	105	105	70-130	1	25	N2
Aliphatic (C09-C12)	ug/L	300	305	308	102	103	30-130	1	25	N2
Aromatic (C09-C10)	ug/L	100	85.5	93.8	86	94	70-130	9	25	N2
4-Bromofluorobenzene (FID) (S)	%				109	112	70-130			
4-Bromofluorobenzene (PID) (S)	%				109	111	70-130			

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

QC Batch: 365930

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV

Associated Lab Samples: 92344692001

METHOD BLANK: 2028656

Matrix: Water

Associated Lab Samples: 92344692001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	5.0	06/21/17 15:16	
1,1,1-Trichloroethane	ug/L	ND	5.0	06/21/17 15:16	
1,1,2,2-Tetrachloroethane	ug/L	ND	5.0	06/21/17 15:16	
1,1,2-Trichloroethane	ug/L	ND	5.0	06/21/17 15:16	
1,1-Dichloroethane	ug/L	ND	5.0	06/21/17 15:16	
1,1-Dichloroethene	ug/L	ND	5.0	06/21/17 15:16	
1,1-Dichloropropene	ug/L	ND	5.0	06/21/17 15:16	
1,2,3-Trichlorobenzene	ug/L	ND	5.0	06/21/17 15:16	
1,2,3-Trichloropropane	ug/L	ND	5.0	06/21/17 15:16	
1,2,4-Trichlorobenzene	ug/L	ND	5.0	06/21/17 15:16	
1,2,4-Trimethylbenzene	ug/L	ND	5.0	06/21/17 15:16	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/21/17 15:16	
1,2-Dibromoethane (EDB)	ug/L	ND	5.0	06/21/17 15:16	
1,2-Dichlorobenzene	ug/L	ND	5.0	06/21/17 15:16	
1,2-Dichloroethane	ug/L	ND	5.0	06/21/17 15:16	
1,2-Dichloroethene (Total)	ug/L	ND	5.0	06/21/17 15:16	
1,2-Dichloropropane	ug/L	ND	5.0	06/21/17 15:16	
1,3,5-Trimethylbenzene	ug/L	ND	5.0	06/21/17 15:16	
1,3-Dichlorobenzene	ug/L	ND	5.0	06/21/17 15:16	
1,3-Dichloropropane	ug/L	ND	5.0	06/21/17 15:16	
1,4-Dichlorobenzene	ug/L	ND	5.0	06/21/17 15:16	
2,2-Dichloropropane	ug/L	ND	5.0	06/21/17 15:16	
2-Butanone (MEK)	ug/L	ND	10.0	06/21/17 15:16	
2-Chlorotoluene	ug/L	ND	5.0	06/21/17 15:16	
2-Hexanone	ug/L	ND	10.0	06/21/17 15:16	
4-Chlorotoluene	ug/L	ND	5.0	06/21/17 15:16	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	10.0	06/21/17 15:16	
Acetone	ug/L	ND	25.0	06/21/17 15:16	
Benzene	ug/L	ND	5.0	06/21/17 15:16	
Bromobenzene	ug/L	ND	5.0	06/21/17 15:16	
Bromochloromethane	ug/L	ND	5.0	06/21/17 15:16	
Bromodichloromethane	ug/L	ND	5.0	06/21/17 15:16	
Bromoform	ug/L	ND	5.0	06/21/17 15:16	
Bromomethane	ug/L	ND	10.0	06/21/17 15:16	
Carbon tetrachloride	ug/L	ND	5.0	06/21/17 15:16	
Chlorobenzene	ug/L	ND	5.0	06/21/17 15:16	
Chloroethane	ug/L	ND	10.0	06/21/17 15:16	
Chloroform	ug/L	ND	5.0	06/21/17 15:16	
Chloromethane	ug/L	ND	5.0	06/21/17 15:16	
cis-1,2-Dichloroethene	ug/L	ND	5.0	06/21/17 15:16	
cis-1,3-Dichloropropene	ug/L	ND	5.0	06/21/17 15:16	

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

METHOD BLANK: 2028656

Matrix: Water

Associated Lab Samples: 92344692001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	5.0	06/21/17 15:16	
Dibromomethane	ug/L	ND	5.0	06/21/17 15:16	
Dichlorodifluoromethane	ug/L	ND	5.0	06/21/17 15:16	
Diisopropyl ether	ug/L	ND	5.0	06/21/17 15:16	
Ethylbenzene	ug/L	ND	5.0	06/21/17 15:16	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	06/21/17 15:16	
Isopropylbenzene (Cumene)	ug/L	ND	5.0	06/21/17 15:16	
m&p-Xylene	ug/L	ND	10.0	06/21/17 15:16	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/21/17 15:16	
Methylene Chloride	ug/L	ND	5.0	06/21/17 15:16	
n-Butylbenzene	ug/L	ND	5.0	06/21/17 15:16	
n-Propylbenzene	ug/L	ND	5.0	06/21/17 15:16	
Naphthalene	ug/L	ND	5.0	06/21/17 15:16	
o-Xylene	ug/L	ND	5.0	06/21/17 15:16	
p-Isopropyltoluene	ug/L	ND	5.0	06/21/17 15:16	
sec-Butylbenzene	ug/L	ND	5.0	06/21/17 15:16	
Styrene	ug/L	ND	5.0	06/21/17 15:16	
tert-Butyl Alcohol	ug/L	ND	100	06/21/17 15:16	
tert-Butylbenzene	ug/L	ND	5.0	06/21/17 15:16	
Tetrachloroethene	ug/L	ND	5.0	06/21/17 15:16	
Toluene	ug/L	ND	5.0	06/21/17 15:16	
trans-1,2-Dichloroethene	ug/L	ND	5.0	06/21/17 15:16	
trans-1,3-Dichloropropene	ug/L	ND	5.0	06/21/17 15:16	
Trichloroethene	ug/L	ND	5.0	06/21/17 15:16	
Trichlorofluoromethane	ug/L	ND	10.0	06/21/17 15:16	
Vinyl acetate	ug/L	ND	10.0	06/21/17 15:16	
Vinyl chloride	ug/L	ND	5.0	06/21/17 15:16	
1,2-Dichloroethane-d4 (S)	%	86	70-130	06/21/17 15:16	
4-Bromofluorobenzene (S)	%	100	70-130	06/21/17 15:16	
Toluene-d8 (S)	%	102	70-130	06/21/17 15:16	

LABORATORY CONTROL SAMPLE: 2028657

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	51.2	102	80-125	
1,1,1-Trichloroethane	ug/L	50	50.3	101	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	51.2	102	79-124	
1,1,2-Trichloroethane	ug/L	50	49.7	99	85-125	
1,1-Dichloroethane	ug/L	50	48.0	96	73-126	
1,1-Dichloroethene	ug/L	50	49.3	99	66-135	
1,1-Dichloropropene	ug/L	50	51.8	104	74-135	
1,2,3-Trichlorobenzene	ug/L	50	48.5	97	73-135	
1,2,3-Trichloropropane	ug/L	50	45.6	91	75-130	
1,2,4-Trichlorobenzene	ug/L	50	50.0	100	75-134	

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

LABORATORY CONTROL SAMPLE: 2028657

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	50	47.6	95	79-125	
1,2-Dibromo-3-chloropropane	ug/L	50	47.9	96	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	49.5	99	83-124	
1,2-Dichlorobenzene	ug/L	50	51.3	103	80-133	
1,2-Dichloroethane	ug/L	50	48.6	97	67-128	
1,2-Dichloroethene (Total)	ug/L	100	98.7	99	73-128	
1,2-Dichloropropane	ug/L	50	50.4	101	75-132	
1,3,5-Trimethylbenzene	ug/L	50	47.0	94	79-123	
1,3-Dichlorobenzene	ug/L	50	48.6	97	77-130	
1,3-Dichloropropane	ug/L	50	50.1	100	76-131	
1,4-Dichlorobenzene	ug/L	50	50.4	101	78-130	
2,2-Dichloropropane	ug/L	50	46.7	93	40-160	
2-Butanone (MEK)	ug/L	100	99.1	99	61-144	
2-Chlorotoluene	ug/L	50	47.9	96	74-132	
2-Hexanone	ug/L	100	86.2	86	68-143	
4-Chlorotoluene	ug/L	50	46.6	93	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.3	91	72-135	
Acetone	ug/L	100	83.8	84	48-146	
Benzene	ug/L	50	51.9	104	80-125	
Bromobenzene	ug/L	50	51.0	102	75-125	
Bromochloromethane	ug/L	50	50.1	100	71-125	
Bromodichloromethane	ug/L	50	48.3	97	78-124	
Bromoform	ug/L	50	40.1	80	71-128	
Bromomethane	ug/L	50	50.2	100	40-160	
Carbon tetrachloride	ug/L	50	45.6	91	69-131	
Chlorobenzene	ug/L	50	48.4	97	81-122	
Chloroethane	ug/L	50	42.7	85	39-148	
Chloroform	ug/L	50	50.6	101	73-127	
Chloromethane	ug/L	50	43.1	86	44-146	
cis-1,2-Dichloroethene	ug/L	50	49.1	98	74-124	
cis-1,3-Dichloropropene	ug/L	50	50.2	100	72-132	
Dibromochloromethane	ug/L	50	43.4	87	78-125	
Dibromomethane	ug/L	50	47.4	95	82-120	
Dichlorodifluoromethane	ug/L	50	33.4	67	34-157	
Diisopropyl ether	ug/L	50	51.6	103	69-135	
Ethylbenzene	ug/L	50	47.1	94	79-121	
Hexachloro-1,3-butadiene	ug/L	50	44.0	88	72-131	
Isopropylbenzene (Cumene)	ug/L	50	45.8	92	81-132	
m&p-Xylene	ug/L	100	93.6	94	81-124	
Methyl-tert-butyl ether	ug/L	50	53.0	106	74-131	
Methylene Chloride	ug/L	50	49.3	99	64-133	
n-Butylbenzene	ug/L	50	47.9	96	78-127	
n-Propylbenzene	ug/L	50	48.5	97	78-130	
Naphthalene	ug/L	50	48.2	96	73-133	
o-Xylene	ug/L	50	48.2	96	79-131	
p-Isopropyltoluene	ug/L	50	49.9	100	80-131	
sec-Butylbenzene	ug/L	50	47.8	96	80-133	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

LABORATORY CONTROL SAMPLE: 2028657

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Styrene	ug/L	50	47.6	95	84-126	
tert-Butyl Alcohol	ug/L	500	416	83	36-136	
tert-Butylbenzene	ug/L	50	41.7	83	77-133	
Tetrachloroethene	ug/L	50	47.2	94	78-122	
Toluene	ug/L	50	47.9	96	80-121	
trans-1,2-Dichloroethene	ug/L	50	49.6	99	71-127	
trans-1,3-Dichloropropene	ug/L	50	47.0	94	69-141	
Trichloroethene	ug/L	50	51.0	102	78-122	
Trichlorofluoromethane	ug/L	50	44.2	88	53-137	
Vinyl acetate	ug/L	100	95.7	96	40-160	
Vinyl chloride	ug/L	50	42.7	85	58-137	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			95	70-130	
Toluene-d8 (S)	%			94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2028658 2028659

Parameter	Units	2028658		2028659		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
1,1,1,2-Tetrachloroethane	ug/L	ND	1000	1000	1030	1100	103	110	70-130	7	
1,1,1-Trichloroethane	ug/L	ND	1000	1000	1130	1090	113	109	70-130	4	
1,1,2,2-Tetrachloroethane	ug/L	ND	1000	1000	1060	1130	106	113	70-130	6	
1,1,2-Trichloroethane	ug/L	ND	1000	1000	1080	1030	108	103	70-130	4	
1,1-Dichloroethane	ug/L	ND	1000	1000	1140	1120	114	112	70-130	2	
1,1-Dichloroethene	ug/L	ND	1000	1000	1150	1140	115	114	65-160	1	
1,1-Dichloropropene	ug/L	ND	1000	1000	1180	1170	118	117	70-130	1	
1,2,3-Trichlorobenzene	ug/L	ND	1000	1000	1060	1070	106	107	70-130	1	
1,2,3-Trichloropropane	ug/L	1290	1000	1000	2650	2640	136	135	70-130	0	M1
1,2,4-Trichlorobenzene	ug/L	ND	1000	1000	1100	1130	110	113	70-130	3	
1,2,4-Trimethylbenzene	ug/L	4700	1000	1000	6440	6270	175	158	70-130	3	M1
1,2-Dibromo-3-chloropropane	ug/L	ND	1000	1000	924	991	92	99	70-130	7	
1,2-Dibromoethane (EDB)	ug/L	ND	1000	1000	1070	1120	107	112	60-139	5	
1,2-Dichlorobenzene	ug/L	ND	1000	1000	1060	1150	106	115	70-130	8	
1,2-Dichloroethane	ug/L	ND	1000	1000	1010	995	101	99	70-130	2	
1,2-Dichloropropane	ug/L	ND	1000	1000	1160	1150	116	115	70-130	1	
1,3,5-Trimethylbenzene	ug/L	ND	1000	1000	2570	2530	257	253	70-130	2	M1
1,3-Dichlorobenzene	ug/L	ND	1000	1000	1030	1140	103	114	70-130	10	
1,3-Dichloropropane	ug/L	ND	1000	1000	1070	1070	107	107	70-130	0	
1,4-Dichlorobenzene	ug/L	ND	1000	1000	1040	1140	104	114	70-130	9	
2,2-Dichloropropane	ug/L	ND	1000	1000	1000	1090	100	109	70-130	9	
2-Butanone (MEK)	ug/L	ND	2000	2000	1650	1900	82	95	70-130	14	
2-Chlorotoluene	ug/L	ND	1000	1000	1200	1210	120	121	70-130	1	
2-Hexanone	ug/L	ND	2000	2000	1790	1920	90	96	70-130	7	
4-Chlorotoluene	ug/L	ND	1000	1000	1010	1050	101	105	70-130	3	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	2000	2000	1940	2100	92	100	70-130	8	

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**QUALITY CONTROL DATA**

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

Parameter	92344692001		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec						
Acetone	ug/L	ND	2000	2000	1510	1590	76	80	70-130	5				
Benzene	ug/L	ND	1000	1000	1240	1270	117	120	58-162	2				
Bromobenzene	ug/L	ND	1000	1000	1080	1060	108	106	70-130	2				
Bromochloromethane	ug/L	ND	1000	1000	1080	1110	108	111	70-130	3				
Bromodichloromethane	ug/L	ND	1000	1000	1020	1050	102	105	70-130	2				
Bromoform	ug/L	ND	1000	1000	836	896	84	90	70-130	7				
Bromomethane	ug/L	ND	1000	1000	1140	1180	114	118	70-130	4				
Carbon tetrachloride	ug/L	ND	1000	1000	1100	1120	110	112	70-130	2				
Chlorobenzene	ug/L	ND	1000	1000	1140	1120	114	112	70-138	1				
Chloroethane	ug/L	ND	1000	1000	1000	1030	100	103	70-130	3				
Chloroform	ug/L	ND	1000	1000	1120	1130	112	113	70-130	2				
Chloromethane	ug/L	ND	1000	1000	1060	1060	106	106	70-130	0				
cis-1,2-Dichloroethene	ug/L	ND	1000	1000	1080	1090	108	109	70-130	1				
cis-1,3-Dichloropropene	ug/L	ND	1000	1000	1030	1120	103	112	70-130	8				
Dibromochloromethane	ug/L	ND	1000	1000	915	938	92	94	70-130	2				
Dibromomethane	ug/L	ND	1000	1000	1020	1030	102	103	70-130	1				
Dichlorodifluoromethane	ug/L	ND	1000	1000	830	778	83	78	70-130	6				
Diisopropyl ether	ug/L	ND	1000	1000	1050	1030	104	102	70-130	2				
Ethylbenzene	ug/L	2450	1000	1000	3660	3580	121	113	22-189	2				
Hexachloro-1,3-butadiene	ug/L	ND	1000	1000	1070	1060	105	104	70-130	1				
Isopropylbenzene (Cumene)	ug/L	286	1000	1000	1420	1440	113	115	70-130	1				
m&p-Xylene	ug/L	4660	2000	2000	7060	7080	120	121	32-193	0				
Methyl-tert-butyl ether	ug/L	ND	1000	1000	1090	1100	109	110	37-169	1				
Methylene Chloride	ug/L	ND	1000	1000	1140	1120	114	112	70-130	1				
n-Butylbenzene	ug/L	ND	1000	1000	1490	1600	149	160	70-130	8 M1				
n-Propylbenzene	ug/L	806	1000	1000	2060	2060	125	126	70-130	0				
Naphthalene	ug/L	1240	1000	1000	2380	2490	114	125	19-212	5				
o-Xylene	ug/L	ND	1000	1000	1170	1150	116	115	70-135	1				
p-Isopropyltoluene	ug/L	ND	1000	1000	1380	1420	138	142	70-130	3 M1				
sec-Butylbenzene	ug/L	ND	1000	1000	1190	1220	119	122	70-130	3				
Styrene	ug/L	ND	1000	1000	1110	1150	111	115	70-130	3				
tert-Butyl Alcohol	ug/L	ND	10000	10000	6960	9080	70	91	70-130	26				
tert-Butylbenzene	ug/L	ND	1000	1000	900	960	90	96	70-130	6				
Tetrachloroethene	ug/L	ND	1000	1000	1070	1120	107	112	70-130	4				
Toluene	ug/L	ND	1000	1000	1100	1130	109	111	65-152	2				
trans-1,2-Dichloroethene	ug/L	ND	1000	1000	1140	1110	114	111	70-130	2				
trans-1,3-Dichloropropene	ug/L	ND	1000	1000	1030	1040	103	104	70-130	1				
Trichloroethene	ug/L	ND	1000	1000	1090	1200	109	120	70-142	10				
Trichlorofluoromethane	ug/L	ND	1000	1000	1140	1010	114	101	70-130	12				
Vinyl acetate	ug/L	ND	2000	2000	1930	2000	97	100	70-130	3				
Vinyl chloride	ug/L	ND	1000	1000	1060	1000	106	100	70-130	6				
1,2-Dichloroethane-d4 (S)	%						94	97	70-130					
4-Bromofluorobenzene (S)	%						103	98	70-130					
Toluene-d8 (S)	%						94	93	70-130					

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

QC Batch: 365629

Analysis Method: EPA 8270

QC Batch Method: EPA 3510

Analysis Description: 8270 Water MSSV

Associated Lab Samples: 92344692001

METHOD BLANK: 2027043

Matrix: Water

Associated Lab Samples: 92344692001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	06/21/17 12:08	
1,2-Dichlorobenzene	ug/L	ND	10.0	06/21/17 12:08	
1,3-Dichlorobenzene	ug/L	ND	10.0	06/21/17 12:08	
1,4-Dichlorobenzene	ug/L	ND	10.0	06/21/17 12:08	
1-Methylnaphthalene	ug/L	ND	10.0	06/21/17 12:08	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	10.0	06/21/17 12:08	
2,4,5-Trichlorophenol	ug/L	ND	10.0	06/21/17 12:08	
2,4,6-Trichlorophenol	ug/L	ND	10.0	06/21/17 12:08	
2,4-Dichlorophenol	ug/L	ND	10.0	06/21/17 12:08	
2,4-Dimethylphenol	ug/L	ND	10.0	06/21/17 12:08	
2,4-Dinitrophenol	ug/L	ND	50.0	06/21/17 12:08	
2,4-Dinitrotoluene	ug/L	ND	10.0	06/21/17 12:08	
2,6-Dinitrotoluene	ug/L	ND	10.0	06/21/17 12:08	
2-Chloronaphthalene	ug/L	ND	10.0	06/21/17 12:08	
2-Chlorophenol	ug/L	ND	10.0	06/21/17 12:08	
2-Methylnaphthalene	ug/L	ND	10.0	06/21/17 12:08	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	06/21/17 12:08	
2-Nitroaniline	ug/L	ND	50.0	06/21/17 12:08	
2-Nitrophenol	ug/L	ND	10.0	06/21/17 12:08	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	06/21/17 12:08	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	06/21/17 12:08	
3-Nitroaniline	ug/L	ND	50.0	06/21/17 12:08	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	06/21/17 12:08	
4-Bromophenylphenyl ether	ug/L	ND	10.0	06/21/17 12:08	
4-Chloro-3-methylphenol	ug/L	ND	20.0	06/21/17 12:08	
4-Chloroaniline	ug/L	ND	20.0	06/21/17 12:08	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	06/21/17 12:08	
4-Nitroaniline	ug/L	ND	20.0	06/21/17 12:08	
4-Nitrophenol	ug/L	ND	50.0	06/21/17 12:08	
Acenaphthene	ug/L	ND	10.0	06/21/17 12:08	
Acenaphthylene	ug/L	ND	10.0	06/21/17 12:08	
Aniline	ug/L	ND	10.0	06/21/17 12:08	
Anthracene	ug/L	ND	10.0	06/21/17 12:08	
Benzo(a)anthracene	ug/L	ND	10.0	06/21/17 12:08	
Benzo(a)pyrene	ug/L	ND	10.0	06/21/17 12:08	
Benzo(b)fluoranthene	ug/L	ND	10.0	06/21/17 12:08	
Benzo(g,h,i)perylene	ug/L	ND	10.0	06/21/17 12:08	
Benzo(k)fluoranthene	ug/L	ND	10.0	06/21/17 12:08	
Benzoic Acid	ug/L	ND	50.0	06/21/17 12:08	
Benzyl alcohol	ug/L	ND	20.0	06/21/17 12:08	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	06/21/17 12:08	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

METHOD BLANK: 2027043

Matrix: Water

Associated Lab Samples: 92344692001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	ug/L	ND	10.0	06/21/17 12:08	
bis(2-Ethylhexyl)phthalate	ug/L	ND	6.0	06/21/17 12:08	
Butylbenzylphthalate	ug/L	ND	10.0	06/21/17 12:08	
Chrysene	ug/L	ND	10.0	06/21/17 12:08	
Di-n-butylphthalate	ug/L	ND	10.0	06/21/17 12:08	
Di-n-octylphthalate	ug/L	ND	10.0	06/21/17 12:08	
Dibenz(a,h)anthracene	ug/L	ND	10.0	06/21/17 12:08	
Dibenzofuran	ug/L	ND	10.0	06/21/17 12:08	
Diethylphthalate	ug/L	ND	10.0	06/21/17 12:08	
Dimethylphthalate	ug/L	ND	10.0	06/21/17 12:08	
Fluoranthene	ug/L	ND	10.0	06/21/17 12:08	
Fluorene	ug/L	ND	10.0	06/21/17 12:08	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	06/21/17 12:08	
Hexachlorobenzene	ug/L	ND	10.0	06/21/17 12:08	
Hexachlorocyclopentadiene	ug/L	ND	10.0	06/21/17 12:08	
Hexachloroethane	ug/L	ND	10.0	06/21/17 12:08	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	06/21/17 12:08	
Isophorone	ug/L	ND	10.0	06/21/17 12:08	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	06/21/17 12:08	
N-Nitrosodimethylamine	ug/L	ND	10.0	06/21/17 12:08	
N-Nitrosodiphenylamine	ug/L	ND	10.0	06/21/17 12:08	
Naphthalene	ug/L	ND	10.0	06/21/17 12:08	
Nitrobenzene	ug/L	ND	10.0	06/21/17 12:08	
Pentachlorophenol	ug/L	ND	25.0	06/21/17 12:08	
Phenanthrene	ug/L	ND	10.0	06/21/17 12:08	
Phenol	ug/L	ND	10.0	06/21/17 12:08	
Pyrene	ug/L	ND	10.0	06/21/17 12:08	
2,4,6-Tribromophenol (S)	%	106	27-110	06/21/17 12:08	
2-Fluorobiphenyl (S)	%	93	27-110	06/21/17 12:08	
2-Fluorophenol (S)	%	45	12-110	06/21/17 12:08	
Nitrobenzene-d5 (S)	%	93	21-110	06/21/17 12:08	
Phenol-d6 (S)	%	31	10-110	06/21/17 12:08	
Terphenyl-d14 (S)	%	100	31-107	06/21/17 12:08	

LABORATORY CONTROL SAMPLE & LCSD: 2027044

2027045

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	28.7	31.2	57	62	31-120	8	30	
1,2-Dichlorobenzene	ug/L	50	29.0	30.4	58	61	38-120	5	30	
1,3-Dichlorobenzene	ug/L	50	27.4	28.1	55	56	30-122	2	30	
1,4-Dichlorobenzene	ug/L	50	28.2	28.7	56	57	37-120	2	30	
1-Methylnaphthalene	ug/L	50	35.0	38.0	70	76	34-113	8	30	
2,2'-Oxybis(1-chloropropane)	ug/L	50	29.8	31.3	60	63	18-120	5	30	
2,4,5-Trichlorophenol	ug/L	50	42.6	42.7	85	85	43-113	0	30	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

LABORATORY CONTROL SAMPLE & LCSD: 2027044		2027045								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	46.8	40.9	94	82	42-120	14	30	
2,4-Dichlorophenol	ug/L	50	39.8	42.1	80	84	30-120	6	30	
2,4-Dimethylphenol	ug/L	50	37.1	39.6	74	79	29-111	7	30	
2,4-Dinitrophenol	ug/L	250	217	68.3	87	27	19-132	104	30	R1
2,4-Dinitrotoluene	ug/L	50	41.4	45.2	83	90	58-128	9	30	
2,6-Dinitrotoluene	ug/L	50	44.7	48.9	89	98	54-129	9	30	
2-Chloronaphthalene	ug/L	50	37.0	40.5	74	81	43-117	9	30	
2-Chlorophenol	ug/L	50	36.3	39.0	73	78	37-120	7	30	
2-Methylnaphthalene	ug/L	50	33.9	36.4	68	73	33-120	7	30	
2-Methylphenol(o-Cresol)	ug/L	50	30.2	31.3	60	63	31-120	3	30	
2-Nitroaniline	ug/L	100	84.3	92.2	84	92	48-121	9	30	
2-Nitrophenol	ug/L	50	41.6	44.6	83	89	25-116	7	30	
3&4-Methylphenol(m&p Cresol)	ug/L	50	27.5	27.5	55	55	23-120	0	30	
3,3'-Dichlorobenzidine	ug/L	100	81.4	88.4	81	88	10-154	8	30	
3-Nitroaniline	ug/L	100	82.4	89.9	82	90	43-115	9	30	
4,6-Dinitro-2-methylphenol	ug/L	100	88.6	32.3	89	32	44-124	93	30	L2,R1
4-Bromophenylphenyl ether	ug/L	50	33.6	35.5	67	71	34-113	5	30	
4-Chloro-3-methylphenol	ug/L	100	71.7	76.6	72	77	31-110	7	30	
4-Chloroaniline	ug/L	100	71.2	81.6	71	82	20-120	14	30	
4-Chlorophenylphenyl ether	ug/L	50	39.0	41.8	78	84	34-116	7	30	
4-Nitroaniline	ug/L	100	82.1	91.8	82	92	46-128	11	30	
4-Nitrophenol	ug/L	250	83.8	52.6	34	21	11-120	46	30	R1
Acenaphthene	ug/L	50	41.3	44.1	83	88	48-114	6	30	
Acenaphthylene	ug/L	50	40.1	42.6	80	85	48-112	6	30	
Aniline	ug/L	50	27.3	30.8	55	62	26-120	12	30	
Anthracene	ug/L	50	38.4	40.5	77	81	57-118	5	30	
Benzo(a)anthracene	ug/L	50	38.3	38.9	77	78	56-121	2	30	
Benzo(a)pyrene	ug/L	50	39.1	39.4	78	79	55-127	1	30	
Benzo(b)fluoranthene	ug/L	50	38.1	39.3	76	79	53-128	3	30	
Benzo(g,h,i)perylene	ug/L	50	38.1	37.6	76	75	54-125	1	30	
Benzo(k)fluoranthene	ug/L	50	37.9	39.3	76	79	51-123	4	30	
Benzoic Acid	ug/L	250	89.3	8.2J	36	3	10-120		30	L2
Benzyl alcohol	ug/L	100	67.6	68.1	68	68	27-120	1	30	
bis(2-Chloroethoxy)methane	ug/L	50	30.5	32.5	61	65	32-120	6	30	
bis(2-Chloroethyl) ether	ug/L	50	32.4	33.0	65	66	33-111	2	30	
bis(2-Ethylhexyl)phthalate	ug/L	50	42.4	43.8	85	88	50-145	3	30	
Butylbenzylphthalate	ug/L	50	41.4	42.8	83	86	54-138	3	30	
Chrysene	ug/L	50	38.3	38.8	77	78	58-127	1	30	
Di-n-butylphthalate	ug/L	50	39.3	42.6	79	85	56-125	8	30	
Di-n-octylphthalate	ug/L	50	45.9	47.4	92	95	50-134	3	30	
Dibenz(a,h)anthracene	ug/L	50	41.8	40.5	84	81	53-129	3	30	
Dibenzofuran	ug/L	50	42.3	44.5	85	89	45-120	5	30	
Diethylphthalate	ug/L	50	41.1	45.9	82	92	53-120	11	30	
Dimethylphthalate	ug/L	50	43.5	47.5	87	95	55-116	9	30	
Fluoranthene	ug/L	50	37.8	40.5	76	81	57-125	7	30	
Fluorene	ug/L	50	41.9	45.1	84	90	53-118	7	30	
Hexachloro-1,3-butadiene	ug/L	50	25.0	27.1	50	54	23-120	8	30	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

Parameter	Units	2027044		2027045			% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCS Result	LCS % Rec	LCS % Rec				
Hexachlorobenzene	ug/L	50	40.6	42.5	81	85	49-116	5	30	
Hexachlorocyclopentadiene	ug/L	50	32.3	36.3	65	73	26-158	12	30	
Hexachloroethane	ug/L	50	24.8	25.6	50	51	30-114	3	30	
Indeno(1,2,3-cd)pyrene	ug/L	50	40.9	40.6	82	81	55-128	1	30	
Isophorone	ug/L	50	36.7	40.5	73	81	31-118	10	30	
N-Nitroso-di-n-propylamine	ug/L	50	41.4	41.6	83	83	32-119	1	30	
N-Nitrosodimethylamine	ug/L	50	24.7	25.8	49	52	13-120	4	30	
N-Nitrosodiphenylamine	ug/L	50	39.9	43.2	80	86	43-120	8	30	
Naphthalene	ug/L	50	34.2	36.5	68	73	32-120	6	30	
Nitrobenzene	ug/L	50	33.4	38.4	67	77	33-110	14	30	
Pentachlorophenol	ug/L	100	86.6	32.4	87	32	10-137	91	30	R1
Phenanthrene	ug/L	50	37.7	39.5	75	79	57-117	5	30	
Phenol	ug/L	50	15.1	15.9	30	32	10-120	6	30	
Pyrene	ug/L	50	40.2	40.5	80	81	55-122	1	30	
2,4,6-Tribromophenol (S)	%				96	91	27-110			
2-Fluorobiphenyl (S)	%				82	91	27-110			
2-Fluorophenol (S)	%				42	44	12-110			
Nitrobenzene-d5 (S)	%				74	82	21-110			
Phenol-d6 (S)	%				31	32	10-110			
Terphenyl-d14 (S)	%				96	97	31-107			

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### QUALITY CONTROL DATA

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

QC Batch: 365571	Analysis Method: MADEP EPH
QC Batch Method: MADEP EPH	Analysis Description: MADEP EPH NC Water
Associated Lab Samples: 92344692001	

METHOD BLANK: 2026622 Matrix: Water

Associated Lab Samples: 92344692001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aliphatic (C09-C18)	ug/L	ND	100	06/20/17 12:56	N2
Aliphatic (C19-C36)	ug/L	ND	100	06/20/17 12:56	N2
Aromatic (C11-C22)	ug/L	ND	100	06/20/17 12:56	N2
2-Bromonaphthalene (S)	%	93	40-140	06/20/17 12:56	
2-Fluorobiphenyl (S)	%	115	40-140	06/20/17 12:56	
Nonatriacontane (S)	%	58	40-140	06/20/17 12:56	
o-Terphenyl (S)	%	92	40-140	06/20/17 12:56	

LABORATORY CONTROL SAMPLE & LCSD: 2026623

2026624

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Aliphatic (C09-C18)	ug/L	300	264	229	88	76	40-140	14	50	N2
Aliphatic (C19-C36)	ug/L	400	294	271	74	68	40-140	8	50	N2
Aromatic (C11-C22)	ug/L	850	798	780	94	92	40-140	2	50	N2
2-Bromonaphthalene (S)	%				95	98	40-140			
2-Fluorobiphenyl (S)	%				107	101	40-140			
Nonatriacontane (S)	%				58	53	40-140			
o-Terphenyl (S)	%				101	98	40-140			

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## QUALIFIERS

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-C Pace Analytical Services - Charlotte

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H3 Sample was received or analysis requested beyond the recognized method holding time.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

N2 The lab does not hold NELAC/TNI accreditation for this parameter.

R1 RPD value was outside control limits.

S4 Surrogate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCDOT 3897912 510497003

Pace Project No.: 92344692

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92344692001	P13-SB9	MADEP EPH	365571	MADEP EPH	365678
92344692001	P13-SB9	MADEP VPH	365595		
92344692001	P13-SB9	EPA 3510	365629	EPA 8270	365790
92344692001	P13-SB9	EPA 8260	365930		

### REPORT OF LABORATORY ANALYSIS

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**Laboratory receiving samples:**

Asheville     Eden     Greenwood     Huntersville     Raleigh     Mechanicsville

**Sample Condition Upon Receipt**

Client Name: Apex NC

Project #:

**WO#: 92344692**



92344692

Courier:  Fed Ex     UPS     USPS     Client  
 Commercial     Pace     Other: \_\_\_\_\_

Custody Seal Present?  Yes     No    Seals Intact?  Yes     No

Packing Material:  Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_

Thermometer:  IR Gun ID: T1603    Type of Ice:  Wet     Blue     None     Samples on ice, cooling process has begun

Date/Initials Person Examining Contents: 6-19-17<sup>SN</sup>

Correction Factor: Cooler Temp Corrected (°C): 3.6    Biological Tissue Frozen?  Yes     No     N/A

Temp should be above freezing to 6°C

USDA Regulated Soil (  N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Yes     No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes     No

	Comments/Discrepancy:
Chain of Custody Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Samples Field Filtered? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>NY</u>	
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

**CLIENT NOTIFICATION/RESOLUTION**

Field Data Required?  Yes     No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/Sample Discrepancy: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Project Manager SCURF Review: TC

Date: 6/19/17

Project Manager SRF Review: TC

Date: 6/19/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)





Document Name:  
Sample Condition Upon Receipt(SCUR)

Document Revised: Sept. 21, 2016  
Page 2 of 2

Document No.:  
F-CAR-CS-033-Rev.01

Issuing Authority:  
Pace Quality Office

\*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project #

**WO# : 92344692**

PM: RWC

Due Date: 07/03/17

\*\*Bottom half of box is to list number of bottles

CLIENT: 92-NCDOTNE

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP35-250 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3Z-250 mL Plastic ZN Acetate & NaOH (>9)	BP3C-250 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN	
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2																												
3																												
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**pH Adjustment Log for Preserved Samples**

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

