



GEOENVIRONMENTAL PHASE II INVESTIGATION REPORT

PARCEL #7, 8603 SAM POTTS HWY, LAKE WACCAMAW, NORTH CAROLINA

June 16, 2021

WBS Number: 47091.1.1

TIP Number: R-5819

County: Columbus

Description: Convert At-Grade Intersection to Grade Separation, Lake Waccamaw, Columbus County, North Carolina

Parcel No (PIN): Parcel #7; PIN #1240.01-38-8270.000

Parcel Address: 8603 Sam Potts Hwy (108 West Old 74-76)
Lake Waccamaw, NC 28450

Parcel Owner: Boys & Girls Home of NC

Submitted to:

North Carolina Department of Transportation

Geotechnical Engineering Unit

1589 Mail Service Center

Raleigh, North Carolina 27699-1589

GEOENVIRONMENTAL PHASE II INVESTIGATION REPORT

PARCEL #7

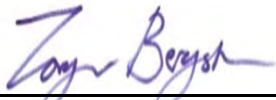
8603 SAM POTTS HWY, LAKE WACCAMAW, NORTH CAROLINA

June 16, 2021

WBS Number: 47091.1.1
TIP Number: R-5819
County: Columbus
Description: Convert At-Grade Intersection to Grade Separation, Lake Waccamaw, Columbus County, North Carolina
Parcel No (PIN): Parcel #7; PIN #1240.01-38-8270.000
Parcel Address: 8603 Sam Potts Hwy (108 West Old 74-76) Lake Waccamaw, NC 28450
Parcel Owner: Boys & Girls Home of NC

This document, entitled *GeoEnvironmental Phase II Investigation Report, Parcel #7, 8603 Sam Potts Hwy, Lake Waccamaw, North Carolina*, has been prepared by GEL Engineering of NC, Inc., for the parcel identified above in accordance with the Notice to Proceed issued by the North Carolina Department of Transportation – Geotechnical Engineering Unit on April 16, 2021. It has been prepared in accordance with accepted quality control practices for the exclusive use of the North Carolina Department of Transportation and has been reviewed by the undersigned.

GEL ENGINEERING OF NC, INC.
an Affiliate of The GEL Group, Inc.

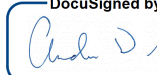


E. Jorgen Bergstrom
Senior Geophysicist



Andrew D. Stahl, L.G.
Senior Project Manager

June 16, 2021
Date

DocuSigned by:

94EA7F0AF919458...

6/23/2021



GEOENVIRONMENTAL PHASE II INVESTIGATION REPORT

PARCEL #7

8603 SAM POTTS HWY, LAKE WACCAMAW, NORTH CAROLINA

Convert At-Grade Intersection to Grade Separation, Lake Waccamaw,

Columbus County, North Carolina

Parcel #7; PIN # 1240.01-38-8270.000

Parcel Owner: Boys & Girls Home of NC

WBS Number: 47091.1.1; TIP Number: R-5819

Columbus County

TABLE OF CONTENTS

Section	Subject	Page
1.0	INTRODUCTION.....	1
2.0	HISTORY.....	2
3.0	SITE OBSERVATIONS	3
4.0	METHODS	4
4.1	Geophysical Survey Methods.....	4
4.1.1	Ground Penetrating Radar Methodology.....	4
4.1.2	Time Domain Electromagnetic Methodology.....	5
4.2	GeoEnvironmental Soil Borings and Soil Sampling	6
4.3	Groundwater Sampling.....	7
5.0	RESULTS.....	9
5.1	Geophysical Survey Results.....	9
5.2	Soil Sample Analytical Results.....	10
5.3	Groundwater Sample Analytical Results	11
6.0	CONCLUSIONS.....	12
7.0	RECOMMENDATIONS.....	13

FIGURES

- 1 Site Location Map
- 2 Investigation Area
- 3 GeoEnvironmental Boring Locations
- 4 Time Domain Electromagnetic Results
- 5 Soil Sample TPH Analytical Results
- 6 NCDOT Conventional Plan Sheet Symbol Legend

TABLE OF CONTENTS (continued)

TABLES

- 1 Soil Sample Field Screening and Laboratory Analytical Results Summary
- 2 Temporary Well Construction Details, Groundwater Sample Field Measurements, and Laboratory Analytical Detections

APPENDICES

- A. Site Photographs
- B. Soil Boring Logs
- C. RED Lab Analytical Report and Chain-of-Custody Record for Soil Samples
- D. Laboratory Analytical Report and Chain-of-Custody Record for Groundwater Sample

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) authorized GEL Engineering of NC, Inc. (GEL), to perform a Phase II GeoEnvironmental Investigation at the subject parcel in Columbus County. The objective of the investigation was to evaluate the presence of potential environmental hazards within the existing and proposed rights-of-way (ROWs) and/or easements, including objects such as underground storage tanks (USTs) and petroleum contaminated soil. The subject parcel location is shown on Figure 1 and listed below.

Parcel #	Owner	Address	Columbus County PIN #
7	Boys & Girls Home of NC	8603 Sam Potts Hwy (108 West Old 74-76) Lake Waccamaw	1240.01-38-8270.000

A portion of the parcel was designated as the investigation area from information included in NCDOT's R-5819 CAD files and input the NCDOT GeoEnvironmental Project Manager provided to GEL. This area is shown on Figure 2 and extends from the edge-of-pavement to the innermost existing or proposed ROW or easement. Geophysical surveys were conducted across the investigation area using ground penetrating radar (GPR) and time-domain electromagnetic (TDEM) technologies. Three geoenvironmental soil borings were installed within the investigation area at the locations shown on Figure 3. The methodologies and results of these investigations are discussed in the following sections.

In addition to the electronic DocuSign copy of this report, GEL is submitting to NCDOT (a) an electronic MicroStation R5819_Geo_env.dgn file that provides the geoenvironmental soil boring locations and the positions of monitoring wells identified within the investigation area, and (b) a Microsoft Excel file of the soil sample ultra-violet fluorescence (UVF) spectrometry analytical results prepared by RED Lab, LLC, of Wilmington, North Carolina (RED Lab).

2.0 HISTORY

The NCDOT Geotechnical Engineering Unit's Revision #2 Phase I GeoEnvironmental Planning Report for the R-5819 project dated August 21, 2019, includes the following description of the Phase I research and field investigation of Parcel #7:

This site is currently a vacant lot. It is the former location of 74 Shell/Waccamaw Service Center. It is located on the north side of Sam Potts Hwy approximately 400 feet west of Chauncey Town Rd. According to the UST Section Registry four (4) tanks were removed in 1993. Incident # 10044 is associated with this facility and was closed out in 2003. One monitoring well was observed during the site investigation near the former UST location. The well could not be accessed and appeared to be abandoned.

GEL searched North Carolina Department of Environmental Quality (NCDEQ) electronic records and contacted the NCDEQ Wilmington Regional Office and NCDEQ Headquarters in Raleigh to obtain pertinent environmental records and regulatory history. Through these efforts, GEL obtained and reviewed 11 documents associated with removal of the four USTs and Incident #10044. A petroleum release was observed in February 1993 upon removal of four gasoline tanks: one 6,000-gallon UST, two 1,500-gallons USTs, and one 1,000-gallon UST. These USTs had been situated just north of the eastern portion of the current investigation area. The North Carolina Department of Environment, Health, and Natural Resources (NCDENR, now NCDEQ) assigned Incident #10044 a priority ranking D, which is the second to lowest priority rankings. A Phase 1/Phase 2 Limited Site Assessment Report dated November 2002, a Soil Assessment Report (SAR) dated March 2003, and an SAR Addendum dated April 2003 that document soil impacts did not require corrective action. Groundwater impacts exceeding North Carolina Groundwater Quality Standards (15A NCAC 2L .0202) were identified, with groundwater flow directions measured generally to the southwest. Due to the groundwater contamination, a Notice of Residual Petroleum was filed with the Columbus County Register of Deeds on May 5, 2003, and NCDENR issued a Notice of No Further Action on May 7, 2003.

3.0 SITE OBSERVATIONS

In advance of the field investigation, the GEL Project Manager provided notice of the planned investigation activities to the property owner listed in Section 1.0 by United States Postal Service mail. Upon commencement of field activities, the GEL Project Manager conducted a site reconnaissance, and no features of potential environmental concern were observed within the investigation area other than the concrete slab associated with the former pump dispenser island. A monitoring well with a tight-fitting cap installed within the concrete slab was observed. According to the documents discussed in Section 2.0, this monitoring well was most recently referred to as "DMW-1" and previously referred to as "MW-6D". GEL measured the depth of this well at 45.4 feet and the depth to groundwater at 8.45 feet. A buried abandoned monitoring well was unearthed about 7 feet east of DMW-1, and the documents discussed in Section 2.0 identify this well as "MW-2". An active BP gas filling station is located east of subject parcel #7 on parcel #8, and the UST tank farm for that facility is situated just across the property line. No significant obstructions to the geophysical survey or soil boring program were present across the investigation area. Representative photographs taken during the site reconnaissance are provided in Appendix A.

4.0 METHODS

This section describes the field methods followed to complete the geophysical surveys and the geoenvironmental soil boring and sampling program.

4.1 Geophysical Survey Methods

The geophysical evaluation included the deployment of GPR and TDEM technologies to the site. These technologies were used in concert with one another to identify the presence of potential USTs or other subsurface features of concern such as buried drums. A brief description of these technologies is presented in the following paragraphs.

The GPR and TDEM surveys were conducted by towing the geophysical equipment along a system of transect lines on an approximately 2.5-foot spaced grid established within the investigation area. In spatially restricted and surface obstructed areas, a modified pattern of transect lines was implemented to maximize data acquisition. Positioning for the investigation was provided using a Trimble real-time kinematic (RTK) global positioning system (GPS).

4.1.1 Ground Penetrating Radar Methodology

An ImpulseRadar Crossover dual-channel digital radar control system configured with a 400- and 800-Megahertz (MHz) antenna array was used in this investigation. GPR is an electromagnetic geophysical method that detects interfaces between subsurface materials with differing dielectric constants. The GPR system consists of an antenna which houses the transmitter and receiver, a digital control unit which both generates and digitally records the GPR data, and a color video monitor to view data as it is collected in the field.

The transmitter radiates repetitive short duration electromagnetic waves (at radar frequencies) into the earth from an antenna moving across the ground surface. These radar waves are reflected back to the receiver from the interface of materials with different dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant between the materials, the conductivity of the material through which the wave is traveling, and the frequency of the signal.

Subsurface features that commonly cause such reflections are: 1) natural geologic conditions, such as changes in sediment composition, bedding, and cementation horizons and voids; or 2) unnatural changes to the subsurface such as disturbed soils, soil backfill, buried debris, tanks,

pipelines, and utilities. The digital control unit processes the signal from the receiver and produces a continuous cross-section of the subsurface interface reflection events.

GPR data profiles were collected along transects covering the entire investigation area. Depth of investigation of the GPR signal is highly site specific and is limited by signal attenuation (absorption) in the subsurface materials. Signal attenuation is dependent upon the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities such as clays, brackish groundwater, or groundwater with a high dissolved solid content from natural or manmade sources. Signal attenuation is lowest in relatively low conductivity materials such as dry sand or rock. Depth of investigation is also dependent on the antenna's transmitting frequency. Depth of investigation generally increases as transmitting frequency decreases; however, the ability to resolve smaller subsurface features is diminished as frequency is decreased. The average depth of penetration at this site was approximately 4 feet below the surface.

The GPR antenna used at this site is internally shielded from aboveground interference sources. Accordingly, the GPR response is not affected by overhead power lines, metallic buildings, or nearby objects.

4.1.2 Time Domain Electromagnetic Methodology

TDEM methods measure the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) a time or frequency-varying magnetic field and measuring (with a receiver) the amplitude and phase shift of an induced secondary magnetic field. The secondary magnetic field is created by subsurface conductive materials behaving as an inductor as the primary magnetic field is passed through them.

The Geonics EM-61 system used in this investigation operates within these principles. However, the EM-61 TDEM system can discriminate between moderately conductive earth materials and very conductive metallic targets. The EM-61 consists of a portable coincident loop time domain transmitter and receiver with a 1.0-meter by 0.5-meter coil system. The EM-61 generates 150 pulses per second and measures the response from the ground after transmission or between pulses. The secondary EM responses from metallic targets are of longer duration than those created by conductive earth materials. By recording the later time EM arrivals, only the response from metallic targets is measured, rather than the field generated by the earth material.

4.2 GeoEnvironmental Soil Borings and Soil Sampling

A direct push technology (DPT) drilling rig provided by our subcontracted driller, Regional Probing Services, Inc., was used to advance soil borings across the investigation area at the locations shown on Figure 3. A utility clearance was performed by North Carolina One-Call across the investigation area. In addition to the GPR and TDEM geophysical investigations described in Section 4.1, GEL specifically cleared each planned drilling location for underground utilities utilizing radio frequency electromagnetics instrumentation.

GEL installed three soil borings to 10 feet below ground surface (bgs). The boring locations were biased toward the position of a planned NCDOT drainage structure, as shown on Figure 3. DPT soil sampling consists of pushing/hammering a stainless-steel, 4-foot long, Macro-Core soil sampler and PVC liner to the desired sampling depth. The liner is removed from the soil sampler and cut to expose a continuous soil core for characterization and sampling. Lithologic descriptions of soil samples were recorded on soil boring logs along with other field observations. The soil boring logs are provided as Appendix B. Downhole DPT equipment was decontaminated before and after each boring was constructed. The location of each boring (Figure 3) was measured using the Trimble RTK/GPS, and the borings were backfilled with bentonite chips following sample collection.

Subsurface soil was screened for organic vapors using a field photoionization detector (PID). These measurements were recorded on the soil boring logs (Appendix B) and are presented in Table 1. The PID measures the concentration of organic compounds in the vapor space above a soil sample resulting from volatilization of organic compounds contained in the soil. To screen the soils, each sample was placed in a clean, resealable polyethylene bag. The bag was sealed, the sample was allowed to equilibrate, the probe of the PID was then inserted into the bag, and the airspace above the soil was screened for organic vapors. After the soil core extracted from each boring was logged, the horizon with the highest field PID reading was selected for laboratory analysis.

To collect the sample, approximately 10 grams of soil from the selected horizon were extracted using a laboratory-provided Terra-Core sampler and transferred into a laboratory-provided VOA vial containing 20 milliliters of methanol preservative and then processed according to RED Lab field sampling protocol. Laboratory-quality nitrile gloves were worn by sampling personnel throughout the sampling process and changed between each sample. Upon collection, sample

bottles were placed on ice in a cooler and transported to the analytical laboratory under proper chain-of-custody procedures. The samples were submitted to RED Lab and analyzed by UVF Spectrometry for the following indicator parameters to evaluate the investigation area for the presence petroleum of contaminated soil:

- Total benzene, toluene, ethylbenzene, and xylenes (BTEX) (C6-C9 fraction)
- Diesel Range Organics (DRO) (C10-C35 fraction)
- Gasoline Range Organics (GRO) (C5-C10 fraction)
- Total Petroleum Hydrocarbons (TPH) (C5-C35 fraction)
- Total Aromatics (C10-C35 fraction)
- 16 EPA Polyaromatic Hydrocarbons (PAHs; total PAH value)
- Benzo(a)Pyrene.

4.3 Groundwater Sampling

As presented in Section 3.0, the depth to groundwater was measured in the existing onsite monitoring well at 8.45 feet, and moist conditions were observed toward the bottom of each of the three 10-foot deep soil borings (see Soil Boring Logs, Appendix B). Therefore, a temporary well was constructed in one boring, SB-02, to collect a groundwater sample. Based on the groundwater flow direction presented in the documents obtained from NCDEQ (see Section 2.0), SB-02 was assessed to be the boring located most directly downgradient of the former USTs. SB-02 was extended to a total depth of 17 feet bgs, and the temporary well, GW-R5819-02, was constructed according to the specifications listed in Table 2. Numerous well casing volumes were evacuated from the temporary well using a peristaltic pump with new disposable tubing prior to sample collection.

A groundwater sample was collected in laboratory-provided sample containers pre-dosed with preservatives required for the analytical parameters specified below. Laboratory-quality nitrile gloves were worn by sampling personnel throughout the sampling process. Upon collection, the sample bottles were placed on ice in a cooler and transported to the analytical laboratory under proper chain-of-custody procedures. The temporary well was then removed, and the borehole was backfilled with bentonite chips. The groundwater sample was submitted to Pace Analytical

Services for analysis of volatile organic compounds (VOCs) by EPA Method 6200B and semi-volatile organic compounds (SVOCs) by EPA Method 625.

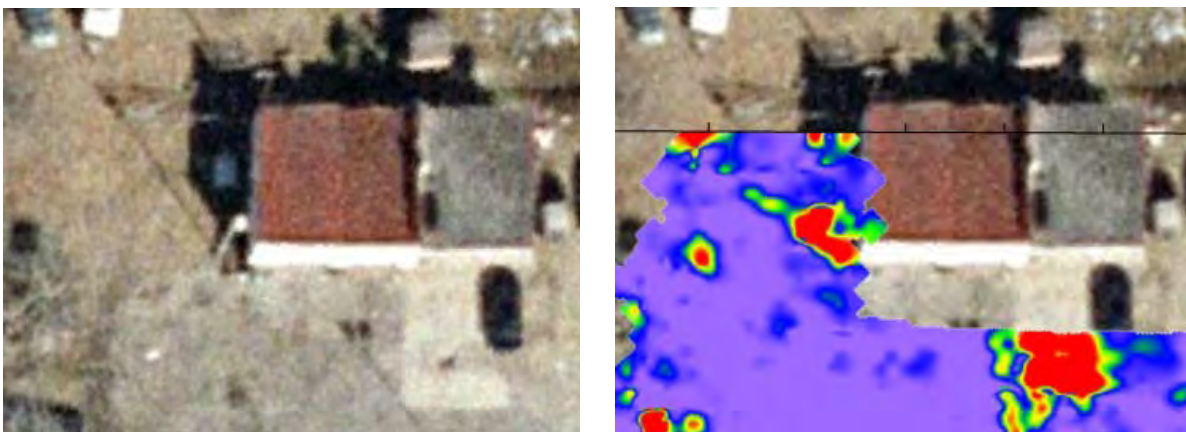
5.0 RESULTS

The results of the geophysical surveys and the geoenvironmental soil boring and soil/groundwater sampling program are presented below.

5.1 Geophysical Survey Results

The geophysical field investigation was successfully performed at the subject parcel. Interpretation of the GPR data was conducted in the field, with subsequent data processing including band pass filtering, background removal, horizontal smoothing, and gain adjustments. TDEM was also used to scan the project site. The TDEM survey results are displayed on Figure 4. No electromagnetic or GPR anomalies were detected that were indicative of buried metallic objects that warranted marking in the field. Several high TDEM responses shown on Figure 4 are correlated to underground utilities, reinforced concrete, or surface metal structures as labeled on the figure and are not considered to be representative of "Potential USTs."

Figure 4 shows two high TDEM responses in the northwestern portion of the investigation area that are not correlated to observed surface structures. Neither of these anomalies was discernable in the field using GPR. The smaller anomaly along the western edge of the investigation area is labeled by GEL as a "no confidence" anomaly inferred as potential buried metallic debris. To the east, a slightly larger anomaly is situated at the corner of the former site building. The side-by-side images pasted below show the former building as presented in a 2004 aerial photograph along with the TDEM response pattern measured for that area. Considering the position of this anomaly in relation to the former building, GEL has labeled this feature a "low confidence anomaly", possibly representing a septic or heating oil tank. However, because there



was no subsurface structure discerned in the field using GPR, this anomaly could also be metallic debris associated with building demolition.

5.2 Soil Sample Analytical Results

The field PID screening measurements are listed in Table 1 along with a listing of the northing and easting coordinates for the boring locations. Only minor organic vapors were detected in the soil borings. The highest PID values measured across these three borings was 2.7 parts per million (ppm) in the soil sample collected from 7 to 8 feet bgs from soil boring SB-01. The soil sample collected from the horizon in each boring with the highest PID measurement were submitted to RED Lab for indicator-parameter UVF Spectrometry analysis to evaluate for the presence petroleum contaminated soil.

The UVF spectrometry analytical results for GRO, DRO, and TPH are presented in Table 1. The soil samples laboratory analytical report provided in Appendix C also presents these analytical results along with hydrocarbon fingerprint graphs prepared by RED Lab and the completed chain-of-custody form.

Consistent with the field PID measurement results, none of the samples contained elevated concentrations of petroleum hydrocarbons. The highest TPH concentration was 38.9 milligrams per kilogram (mg/Kg) reported for the soil sample from boring SB-03, which is the boring located closest to (directly south of) the former USTs. With increasing distance from the former USTs, the TPH concentrations reported for the soil samples collected from soil borings SB-02 and SB-01 are 13.5 and 1.37 mg/Kg, respectively.

The measured fractions for the hydrocarbons that fall within the GRO range of C5 through C10 ranged from 1.1 to 12 mg/Kg for the three soil samples, which are below the NCDEQ screening level for GRO of 50 mg/Kg established in a NCDEQ UST Corrective Action Branch memorandum dated 7/26/16. The measured fractions for the hydrocarbons that fall within the DRO range of C10 through C35 ranged from 0.27 to 26.9 mg/Kg for the three soil samples, which are well below the NCDEQ screening level for DRO of 100 mg/Kg. The RED Lab analytical report (Appendix C) further states that a portion of the hydrocarbons falling within the DRO range of C10 through C35 are aromatic compounds, with the total aromatic concentration reported from 0.26 to 12.5 mg/Kg. RED Lab also reports a total concentration of 0.57 mg/Kg for the boring SB-03 soil sample for the 16 EPA polynuclear aromatic hydrocarbons (PAHs) that were analyzed.

The RED Lab analytical report states that the hydrocarbon fingerprint of the soil sample collected from soil boring SB-01 matches very degraded petroleum hydrocarbon and that the hydrocarbon fingerprint of the soil sample collected from SB-03 matches very degraded diesel. No fingerprint match was identified for the soil sample collected from soil boring SB-02. Considering the Incident #10044 gasoline release occurred at least 28 years ago, a great deal of the lighter hydrocarbons likely has volatilized and degraded thus skewing the hydrocarbon pattern toward the diesel range. Therefore, the fact that Red Lab interpreted the petroleum in sample SB-03 as a very degraded diesel does not necessarily imply that the identified petroleum resulted from a release other than the Incident #10044 gasoline release.

5.3 Groundwater Sample Analytical Results

The laboratory analytical detections for groundwater sample GW-R5819-02 are listed in Table 2. The groundwater sample laboratory analytical report provided in Appendix D also presents these analytical results along with the completed chain-of-custody form. No target-analyte SVOCs were detected in the groundwater sample, but several tentatively identified compounds (TICs) were identified through an EPA Method 625.1 mass spectral library search of the gas chromatography/mass spectrometry results. As shown in Table 2, three VOCs were detected at low concentrations, ranging from 0.96 to 2.5 micrograms per liter ($\mu\text{g/L}$). The reported concentrations for the three detected VOCs are all below North Carolina 2L Groundwater Standards (15A NCAC 02L .0202) and below the NCDEQ Gross Contamination Levels (GCLs) for Groundwater (NCDEQ UST Section guidance, *Assessment and Corrective Action for UST Releases*, Table 2). Only two of the reported TICs (ethylbenzene and o-xylene) have listed 2L Groundwater Standards and GCLs, and the estimated concentrations reported for these two TICs are well below the 2L Groundwater Standards and GCLs.

6.0 CONCLUSIONS

Field and office review of the geophysical field investigation data correlated all but two identified geophysical anomalies to underground utilities, reinforced concrete, or surface metal structures. No potential anomalies were marked in the field, and the geophysical survey results suggest there are no buried metallic objects indicative of “Potential USTs” within the investigation area.

Two high TDEM responses were not discerned in the field using GPR. One feature is labeled by GEL as a “no confidence” anomaly inferred as potential buried metallic debris. The other high TDEM feature is labeled as a “low confidence anomaly,” possibly representing a septic or heating oil tank. However, because no subsurface structure was discerned in the field using GPR, this anomaly could also be metallic debris associated with building demolition.

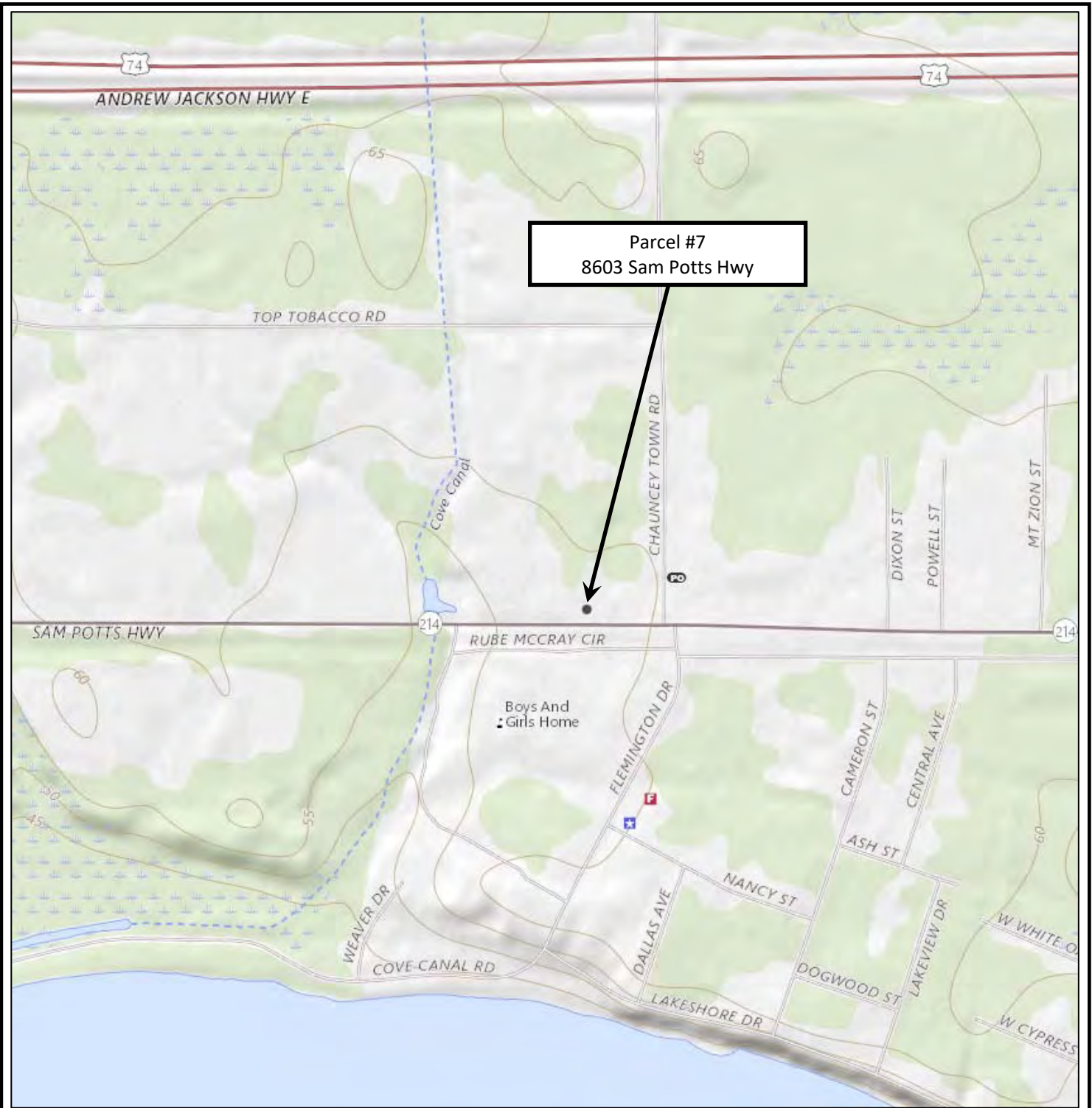
Only minor concentrations of petroleum hydrocarbons were identified in the three soil samples and one groundwater sample. The highest soil TPH concentration of 38.9 mg/Kg and reported TPH component concentrations are below NCDEQ screening levels. All analyte concentrations reported for the groundwater sample were below 2L Groundwater Standards and GCLs.

7.0 RECOMMENDATIONS

Based on the findings of this GeoEnvironmental Phase II Investigation, no additional environmental investigation at the site is recommended at this time. A high TDEM response feature was labeled by GEL as a “low confidence anomaly,” possibly representing a septic or heating oil tank. Prior to any subsurface sitework at the location of this anomaly, it is recommended that the potential presence of a subsurface structure be verified by hand excavation. If a structure is identified, an appropriate removal and handling plan should be established and implemented. Existing monitoring well DMW-1 should be properly abandoned in accordance with 15A NCAC 02C Well Construction Standards, and care should be taken during excavation to not compromise the integrity of the previously installed MW-2 abandonment seal.

Although geophysical methods provide a high level of assurance for the location of subsurface objects, the possibility exists that not all features can or will be identified. Therefore, due caution should be used when performing subsurface excavation across the entire investigation area.

FIGURES



Parcel #7
8603 Sam Potts Hwy

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020. | NCDOT GIS Unit | NCDOT Photogrammetry Unit | NCDOT Photogrammetry



Project Location



GEL Engineering of NC INC 

2700 Sumner Boulevard, Suite 106 Raleigh, NC 27616 P 919.544.1100 F 919.237.9177

PROJECT: ncdt01621
PHASE II GEOENVIRONMENTAL INVESTIGATION REPORT, PARCEL #7 US 74/76 at SR 1740 (Old Lake Rd) Convert At-Grade Intersection to Grade Separation, Lake Waccamaw, Columbus County, NC TIP No. R-5819, WBS No. 47091.1.1

DATE: June 16, 2021

SITE LOCATION MAP

DRAWN BY: ADS

FIGURE 1

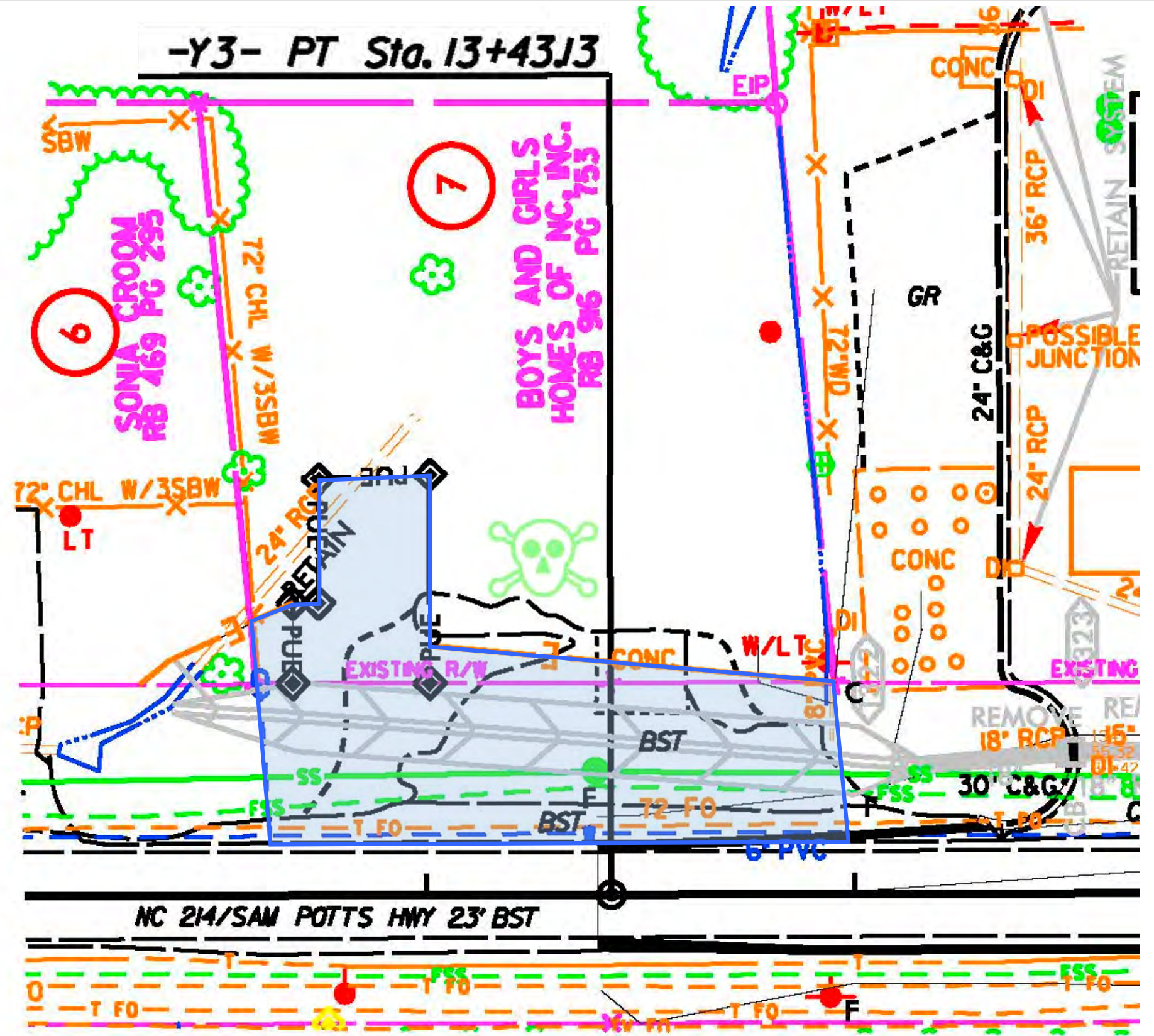
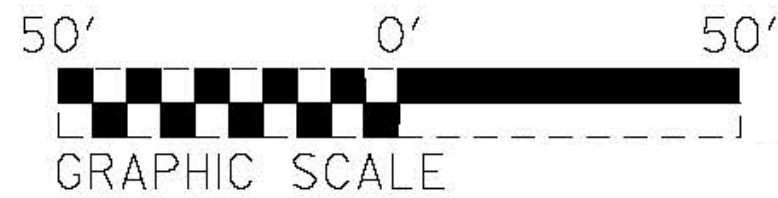


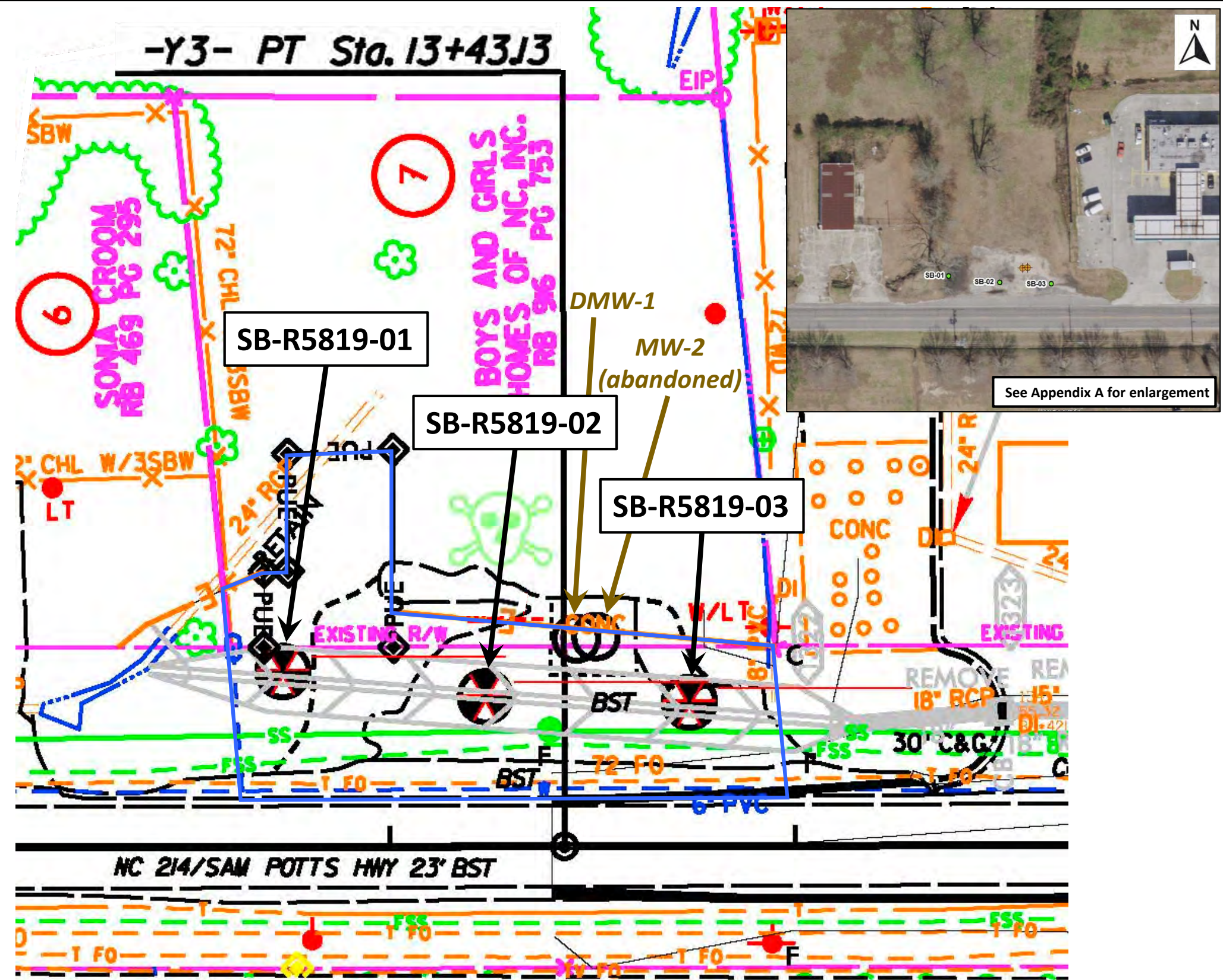
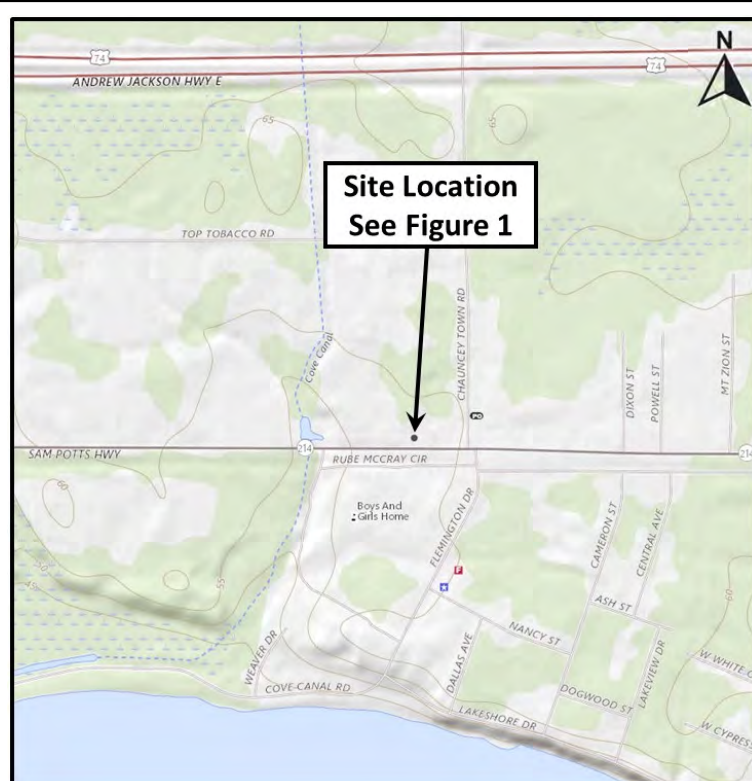
LEGEND

Investigation Area

Also see Figure 6 for NCDOT
Conventional Plan Sheet Symbol Legend

NC GRID
NAD 83 NA 2011



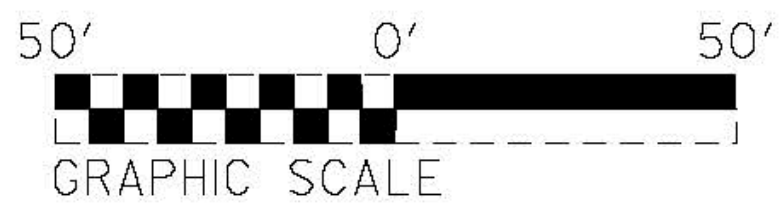


LEGEND

- ⊗ Geoenvironmental Boring
- Monitoring Well
- ▭ Investigation Area

Also see Figure 6 for NCDOT Conventional Plan Sheet Symbol Legend

NC GRID
NAD 83 NA 2011



GEL Engineering of NC INC **40 YEARS**

2700 Sumner Boulevard, Suite 106
Raleigh, NC 27616

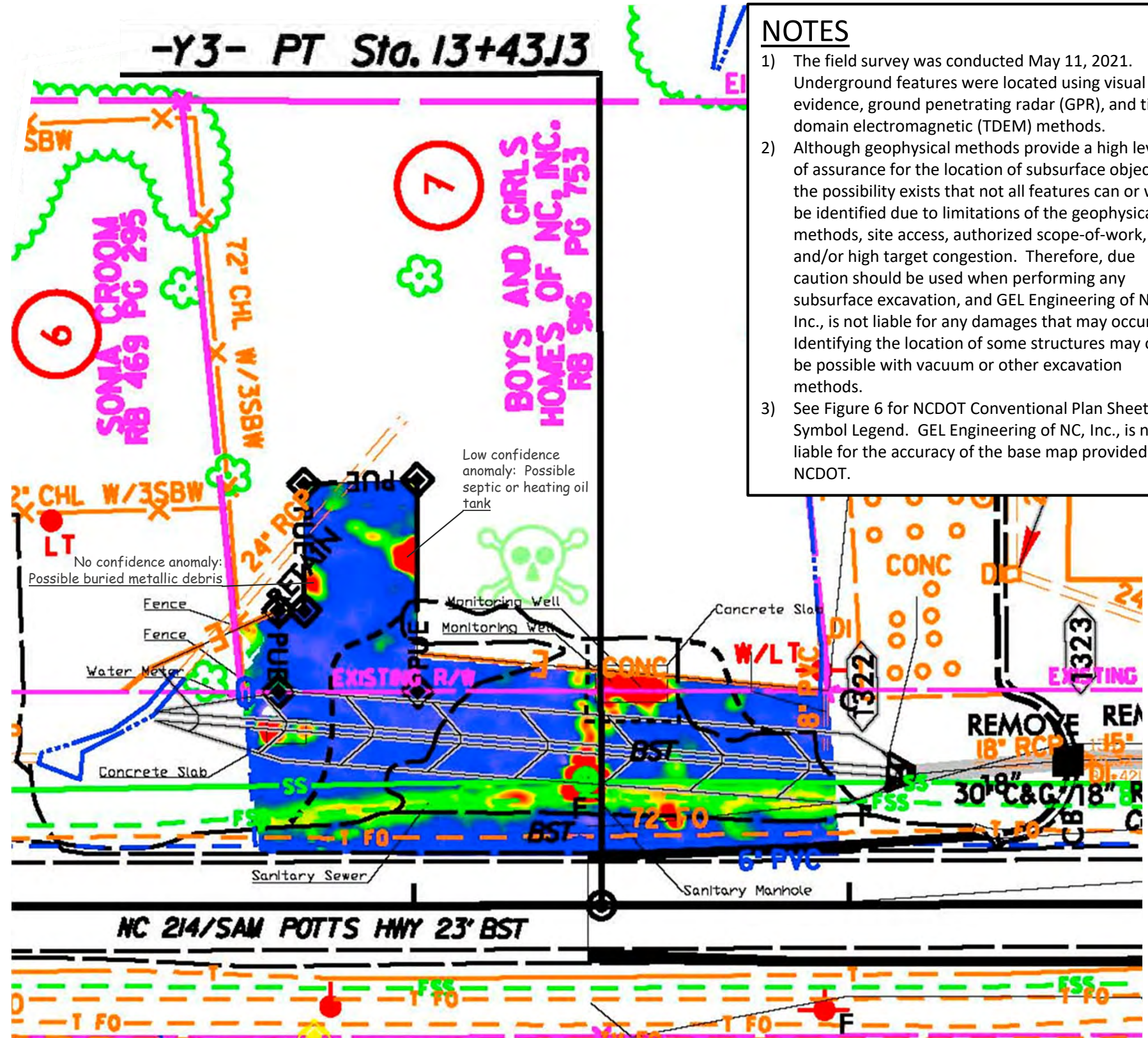
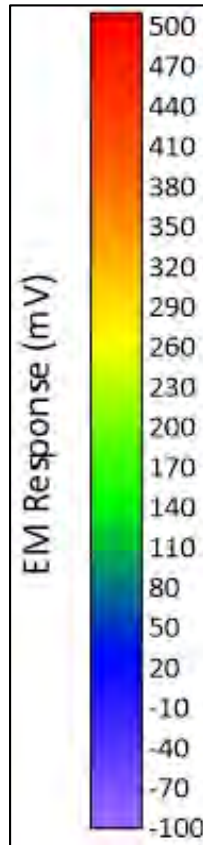
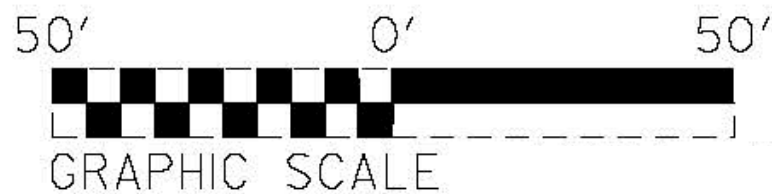
P 919.544.1100
F 919.237.9177

PHASE II GEOENVIRONMENTAL INVESTIGATION REPORT, PARCEL #7
US 74/76 AT SR 1740 (OLD LAKE RD) CONVERT AT-GRADE
INTERSECTION TO GRADE SEPARATION, LAKE WACCAMAW,
COLUMBUS COUNTY, NC; TIP NO. R-5819, WBS NO. 47091.1.1

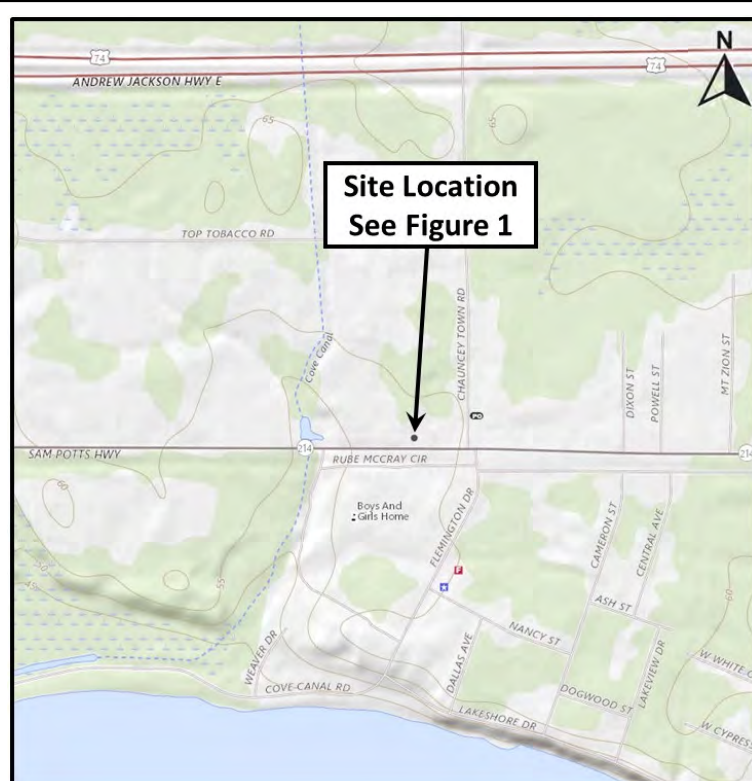
GEOENVIRONMENTAL BORING LOCATIONS		
PROJECT: ncdt01621	DATE: June 16, 2021	FIGURE 3



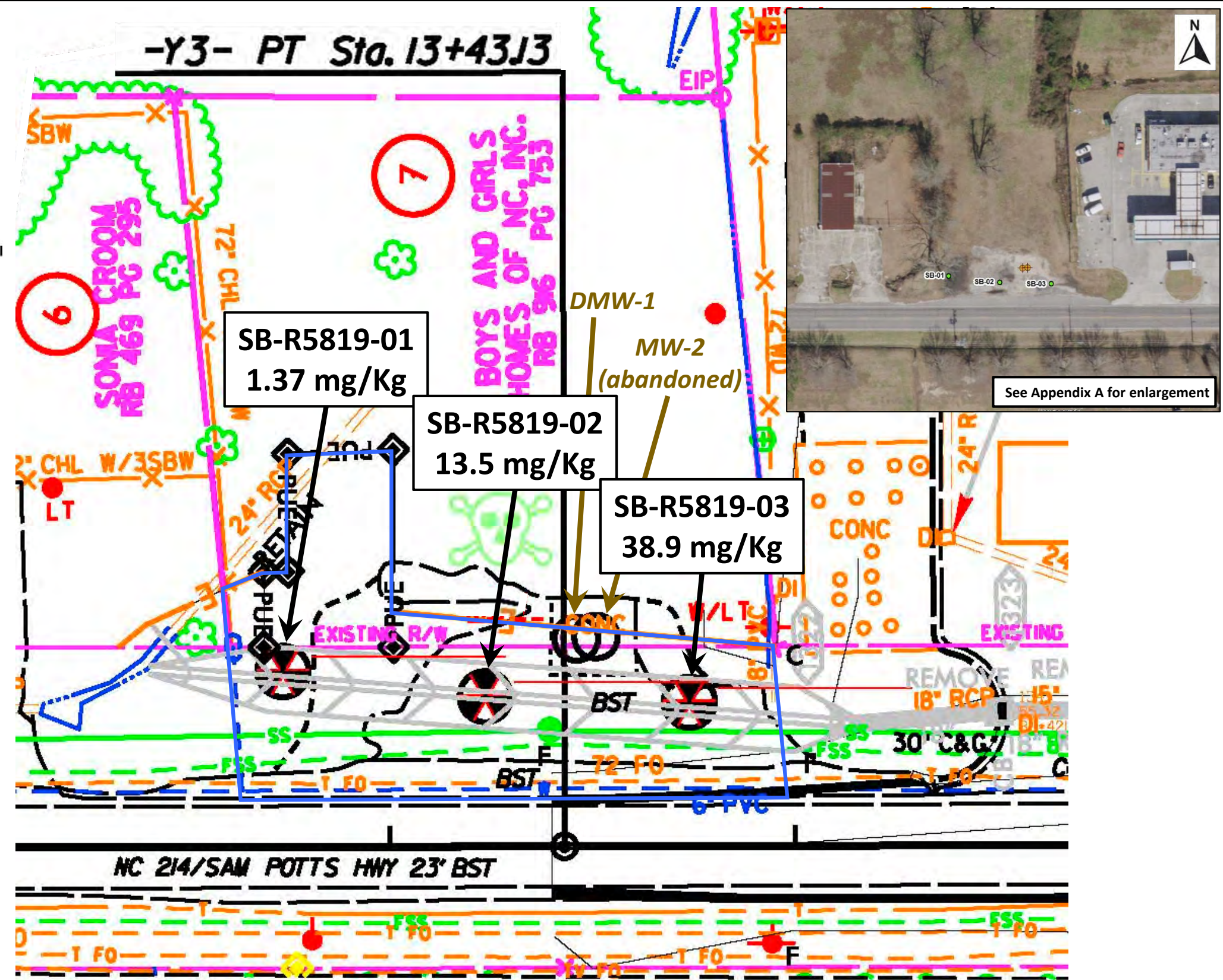
Site Location
See Figure 1



- ### NOTES
- 1) The field survey was conducted May 11, 2021. Underground features were located using visual evidence, ground penetrating radar (GPR), and time domain electromagnetic (TDEM) methods.
 - 2) Although geophysical methods provide a high level of assurance for the location of subsurface objects, the possibility exists that not all features can or will be identified due to limitations of the geophysical methods, site access, authorized scope-of-work, and/or high target congestion. Therefore, due caution should be used when performing any subsurface excavation, and GEL Engineering of NC, Inc., is not liable for any damages that may occur. Identifying the location of some structures may only be possible with vacuum or other excavation methods.
 - 3) See Figure 6 for NCDOT Conventional Plan Sheet Symbol Legend. GEL Engineering of NC, Inc., is not liable for the accuracy of the base map provided by NCDOT.



NC GRID
NAD 83 NA 2011

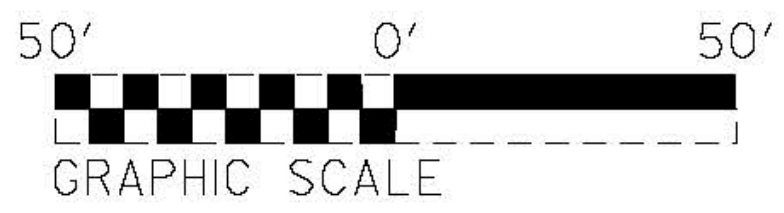


LEGEND

SB-#
#.# mg/Kg
Geoenvironmental Boring with Total Petroleum Hydrocarbon (TPH; C5-C35) Analytical Result, in milligrams per kilogram (mg/Kg)

Investigation Area

Also see Figure 6 for NCDOT Conventional Plan Sheet Symbol Legend



GEL Engineering of NC INC 40 YEARS

2700 Sumner Boulevard, Suite 106
Raleigh, NC 27616

P 919.544.1100
F 919.237.9177

PHASE II GEOENVIRONMENTAL INVESTIGATION REPORT, PARCEL #7
US 74/76 AT SR 1740 (OLD LAKE RD) CONVERT AT-GRADE
INTERSECTION TO GRADE SEPARATION, LAKE WACCAMAW,
COLUMBUS COUNTY, NC; TIP NO. R-5819, WBS NO. 47091.1.1

SOIL SAMPLE TPH ANALYTICAL RESULTS		
PROJECT: ncdt01621	DATE: June 16, 2021	FIGURE 5

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale *S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	-----
Property Corner	-----
Property Monument	-----
Parcel/Sequence Number	-----
Existing Fence Line	-----
Proposed Woven Wire Fence	-----
Proposed Chain Link Fence	-----
Proposed Barbed Wire Fence	-----
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----
Existing Historic Property Boundary	-----
Known Contamination Area: Soil	-----
Potential Contamination Area: Soil	-----
Known Contamination Area: Water	-----
Potential Contamination Area: Water	-----
Contaminated Site: Known or Potential	-----

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	-----
Sign	-----
Well	-----
Small Mine	-----
Foundation	-----
Area Outline	-----
Cemetery	-----
Building	-----
School	-----
Church	-----
Dam	-----

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	-----
Buffer Zone 1	-----
Buffer Zone 2	-----
Flow Arrow	-----
Disappearing Stream	-----
Spring	-----
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	-----
Switch	-----
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	-----
Existing Right of Way Marker	-----
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite RW Marker	-----
Proposed Control of Access Line with Concrete CA Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	-----

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Curb Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	-----
Pavement Removal	-----

VEGETATION:

Single Tree	-----
Single Shrub	-----
Hedge	-----
Woods Line	-----

Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	-----
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	-----
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	-----
Storm Sewer	-----

UTILITIES:

POWER:	-----
Existing Power Pole	-----
Proposed Power Pole	-----
Existing Joint Use Pole	-----
Proposed Joint Use Pole	-----
Power Manhole	-----
Power Line Tower	-----
Power Transformer	-----
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
U/G Power Line LOS B (S.U.E.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	-----
Proposed Telephone Pole	-----
Telephone Manhole	-----
Telephone Pedestal	-----
Telephone Cell Tower	-----
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

WATER:

Water Manhole	-----
Water Meter	-----
Water Valve	-----
Water Hydrant	-----
UG Water Line LOS B (S.U.E.*)	-----
UG Water Line LOS C (S.U.E.*)	-----
UG Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Pedestal	-----
TV Tower	-----
UG TV Cable Hand Hole	-----
UG TV Cable LOS B (S.U.E.*)	-----
UG TV Cable LOS C (S.U.E.*)	-----
UG TV Cable LOS D (S.U.E.*)	-----
UG Fiber Optic Cable LOS B (S.U.E.*)	-----
UG Fiber Optic Cable LOS C (S.U.E.*)	-----
UG Fiber Optic Cable LOS D (S.U.E.*)	-----

GAS:

Gas Valve	-----
Gas Meter	-----
UG Gas Line LOS B (S.U.E.*)	-----
UG Gas Line LOS C (S.U.E.*)	-----
UG Gas Line LOS D (S.U.E.*)	-----
Above Ground Gas Line	-----
SANITARY SEWER:	-----
Sanitary Sewer Manhole	-----
Sanitary Sewer Cleanout	-----
UG Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Forced Main Line LOS B (S.U.E.*)	-----
SS Forced Main Line LOS C (S.U.E.*)	-----
SS Forced Main Line LOS D (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	-----
Utility Pole with Base	-----
Utility Located Object	-----
Utility Traffic Signal Box	-----
Utility Unknown U/G Line LOS B (S.U.E.*)	-----
UG Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	-----
AG Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	-----
UG Test Hole LOS A (S.U.E.*)	-----
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

NOTE:
Legend provided
by NCDOT

TABLES

TABLE 2. TEMPORARY WELL CONSTRUCTION DETAILS, GROUNDWATER SAMPLE FIELD MEASUREMENTS, AND LABORATORY ANALYTICAL DETECTIONS

Temporary Well		
Soil Boring ID: SB-R5819-02		Construction Date: 05/11/2021
Northing/Easting: 208606.124 / 2143865.419		Abandonment Date: 05/11/2021
Temporary Well Component	Depth (ft bgs)	Specifications
Borehole	0 - 17	2.25-inch diameter
Riser pipe	0 - 7	1.0-inch diameter PVC
Well screen	7 - 17	1.0-inch diameter PVC, 0.010-slot
Bentonite seal	0 - 6	Enviroplug 3/8-inch bentonite chips
Sandpack	6 - 17	Southern Silica No.2 well sand
Well abandonment seal	0 - 17	Enviroplug 3/8-inch bentonite chips

Field Measurements; Groundwater Sample GW-R5819-02		
Sample Collection Date: 05/11/2021		Sample Collection Time: 12:40
Field Parameter	Measurement	Units
pH	7.10	standard units
Temperature	20.9	°C
Specific Conductance	615.0	µS/cm

Laboratory Analytical Detections; Groundwater Sample GW-R5819-02			
VOC detected by SM 6200B ¹	Result (µg/L)	North Carolina Groundwater Quality Standards (µg/L) ²	Gross Contamination Levels for Groundwater (µg/L) ³
cis-1,2-Dichloroethene	2.5	70	70,000
Diisopropyl ether	1.1	70	70,000
Methyl-tert-butyl ether	0.96	20	20,000
TIC detected by EPA Method 625.1 ¹	Result (µg/L)	North Carolina Groundwater Quality Standards (µg/L) ²	Gross Contamination Levels for Groundwater (µg/L) ³
Pentane, 2,3,4-trimethyl	12.3J	not listed	not listed
Pentane, 2,3,3-trimethyl	13.4J	not listed	not listed
Heptane, 3-methyl-	7.1J	not listed	not listed
Hexane, 2,2,5-trimethyl-	9.0J	not listed	not listed
Octane	7.3J	not listed	not listed
Ethylbenzene	7.7J	600	84,500
o-Xylene	25.3J	500	85,500
o-Xylene	10.5J	500	85,500
Unknown	6.2J	--	--
Unknown	9.5J	--	--

NOTES

ft bgs = feet below ground surface

µg/L = micrograms per liter

°C = degrees Celsius

µS/cm = microsiemens per centimeter

J = Estimated concentration above the method detection limit and below the reporting limit

TIC = Tentatively Identified Compound

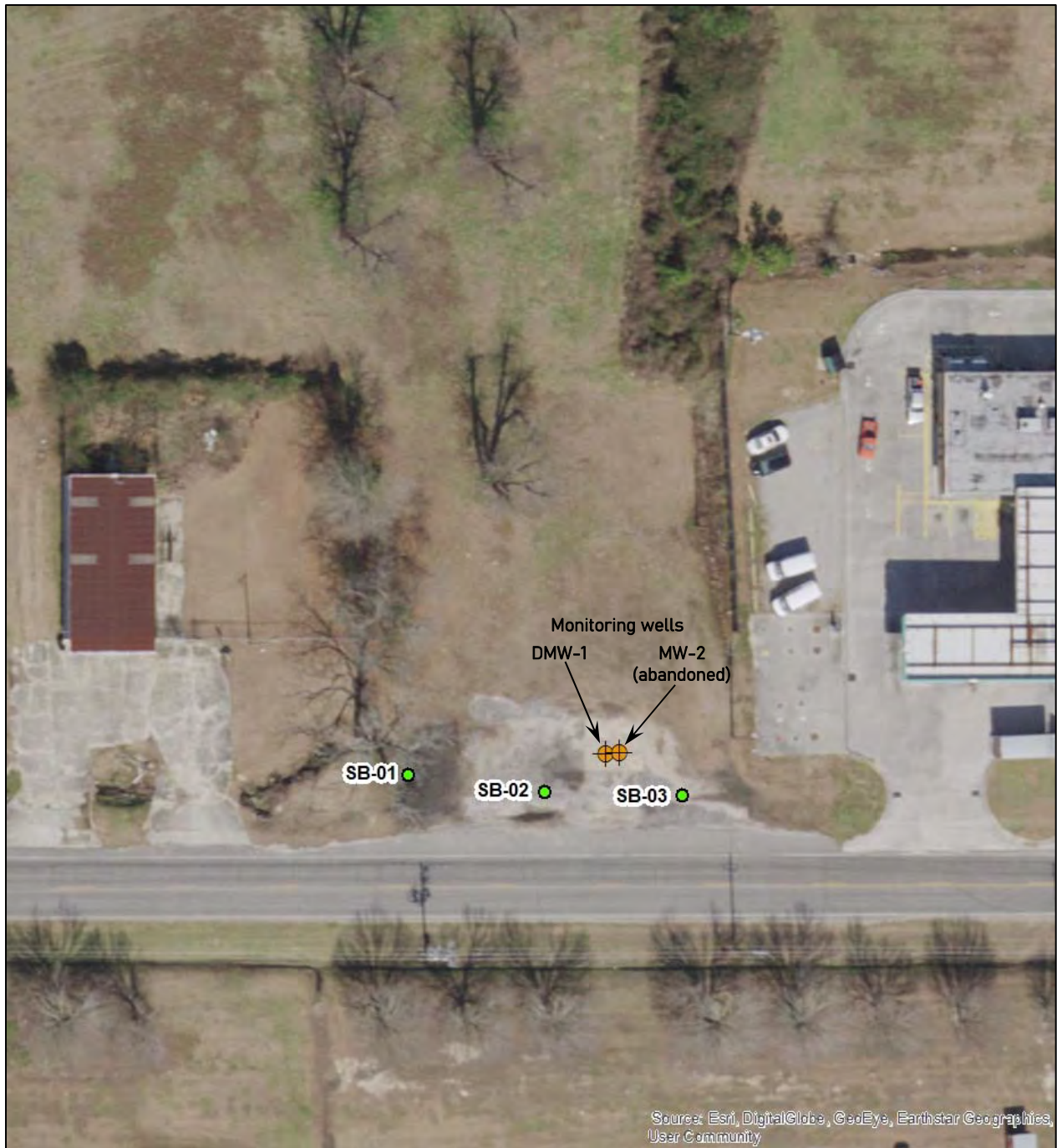
¹ This table lists only those constituents detected in groundwater sample GW-R5819-02. See the laboratory analytical report in Appendix D for the full list of volatile organic compounds (VOCs) analyzed by Analytical Method SM 6200B and semivolatile organic compounds (SVOCs) analyzed by Analytical Method EPA 625.1.

² North Carolina 2L Groundwater Standards (15A NCAC 02L .0202, effective 4/1/13).

³ North Carolina Department of Environmental Quality (NCDEQ) Underground Storage Tank (UST) Section guidance document: *Assessment and Corrective Action for UST Releases*, Table 2.

APPENDIX A

SITE PHOTOGRAPHS



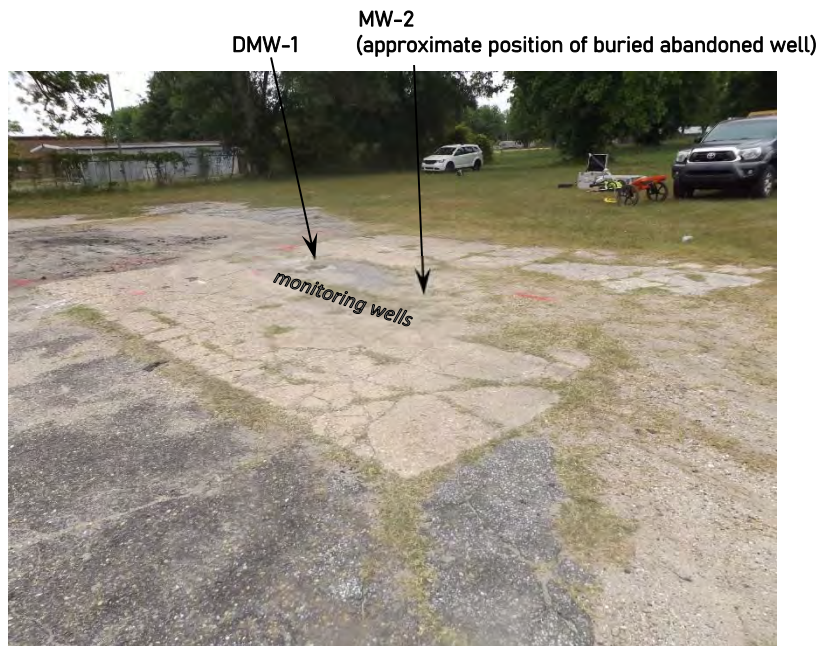
Photograph 1. Aerial photograph showing GeoEnvironmental soil boring locations and locations of two observed monitoring wells.



Photograph 2. View east across the investigation area.



Photograph 3. View west across the investigation area.



Photograph 4. Concrete pad: Pump dispenser island remnant.



Photograph 5. Monitoring well DMW-1. Well depth measured at 45.4 feet.
Depth to groundwater measured at 8.45 feet.



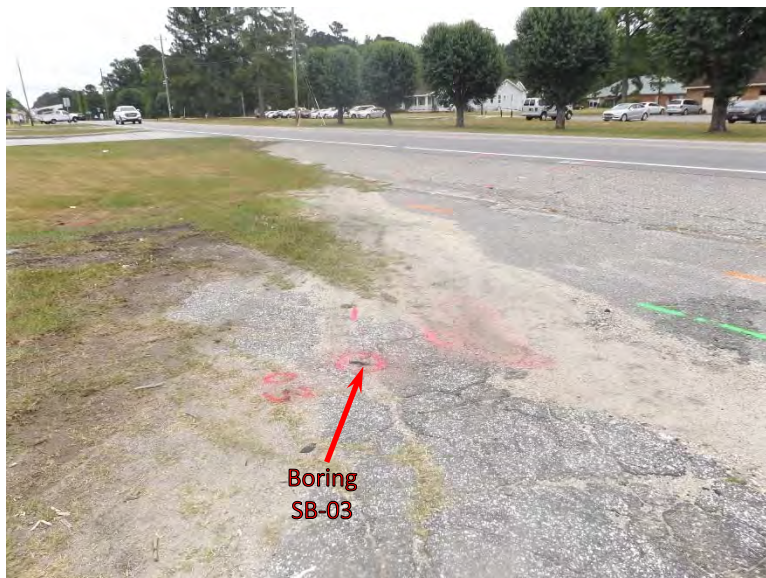
Photograph 6. GeoEnvironmental soil boring location SB-R5819-01.



Photograph 7. GeoEnvironmental soil boring location SB-R5819-02.



Photograph 8. GeoEnvironmental soil boring SB-R5819-02.



Photograph 9. GeoEnvironmental soil boring location SB-R5819-03.



Photograph 10. BP Station USTs on adjacent parcel #8 to the east.



Photograph 11. Construction of temporary well GW-R5819-02 in GeoEnvironmental soil boring SB-R5819-02.



Photograph 12. Purging the temporary well prior to groundwater sample collection.



Photograph 13. Groundwater sample field parameter measurements.

APPENDIX B

SOIL BORING LOGS

SOIL BORING LOGS

GEL Engineering, of NC, Inc., Raleigh, North Carolina

Project Name: NCDOT US 74/76 at SR 1740 (Old Lake Rd) convert at-grade intersection to grade separation, Lake Waccamaw, Columbus County, North Carolina

TIP No. R-5819, WBS No. 47091.1.1 GEL Project Code: NCDT01621

Parcel Address: 8603 Sam Potts Hwy, Lake Waccamaw, Columbus County, NC

Drilling Date: 5/11/2021 Drilling Contractor: Regional Probing Services, Inc.; NC Cert No. 3322A

Drilling Method: Direct Push Technology (DPT) GEL Geologist: Brian P. Bastian

Depth (ft bgs)	PID (ppm)	Soil Description (depths are in feet below ground surface [ft bgs])	Laboratory Analysis
BORING ID: SB-R5819-01			
0-1	1.3	Dark gray silty SAND, dry	
1-2	1.9	Gray silty SAND, damp	
2-3	1.4	Gray silty SAND, moist	
3-4	1.6	Light brown sandy CLAY, moist	
4-5	1.6	Light brown sandy CLAY, moist	
5-6	2.0	Light brown sandy CLAY, moist, gray mottling	
6-7	1.9	Gray clayey SAND, moist, red mottling	
7-8	2.7	Gray clayey SAND, moist, red mottling	●
8-9	1.6	Gray clayey SAND, moist, red mottling	
9-10	1.4	Gray CLAY, moist, red mottling	
BORING ID: SB-R5819-SB-02			
0-1	1.1	Black ASPHALT/GRAVEL, dry	
1-2	1.1	Brown silty SAND, dry	
2-3	1.2	Light brown silty SAND, moist	
3-4	0.9	Light brown sandy CLAY, moist	
4-5	0.7	Light brown sandy CLAY, damp	
5-6	1.2	Gray sandy CLAY, moist, light brown mottling	
6-7	1.4	Gray clayey SAND, moist, light brown mottling	
7-8	1.5	Gray CLAY, moist, light brown mottling	
8-9	1.9	Light brown CLAY, moist, gray mottling, possible staining, no odor	●
9-10		Light brown CLAY, moist, gray mottling	

SOIL BORING LOGS

GEL Engineering, of NC, Inc., Raleigh, North Carolina

Project Name: NCDOT US 74/76 at SR 1740 (Old Lake Rd) convert at-grade intersection to grade separation, Lake Waccamaw, Columbus County, North Carolina

TIP No. R-5819, WBS No. 47091.1.1 GEL Project Code: NCDT01621

Parcel Address: 8603 Sam Potts Hwy, Lake Waccamaw, Columbus County, NC

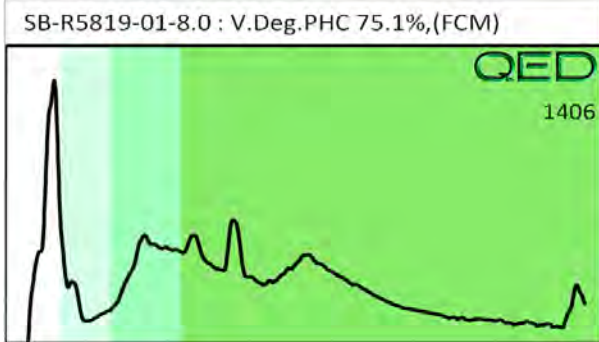
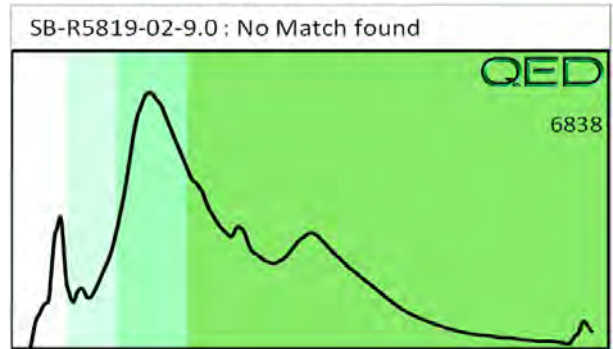
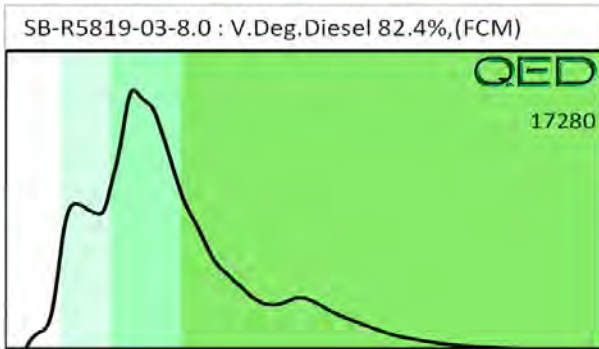
Drilling Date: 5/11/2021 Drilling Contractor: Regional Probing Services, Inc.; NC Cert No. 3322A

Drilling Method: Direct Push Technology (DPT) GEL Geologist: Brian P. Bastian

Depth (ft bgs)	PID (ppm)	Soil Description (depths are in feet below ground surface [ft bgs])	Laboratory Analysis
BORING ID: SB-R5819-SB-03			
0-1	0.7	Black ASPHALT/GRAVEL, dry	
1-2	0.6	Dark gray silty SAND, damp	
2-3	0.9	Gray silty SAND, damp	
3-4	1.0	Gray sandy CLAY, moist	
4-5	1.3	Olive gray sandy CLAY, moist	
5-6	1.4	Olive gray sandy CLAY, moist	
6-7	1.5	Gray sandy CLAY, moist, orange and tan mottling	
7-8	1.8	Gray sandy CLAY, moist, tan mottling, slight petroleum odor	●
8-9	1.1	Gray sandy CLAY, moist	
9-10	1.4	Gray CLAY, moist	

APPENDIX C

LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY RECORD FOR SOIL SAMPLES



APPENDIX D

LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY RECORD FOR GROUNDWATER SAMPLES

May 26, 2021

Andrew Stahl
GEL Engineering of NC, Inc.
2700 Summer Blvd
Suite 106
Raleigh, NC 27616

RE: Project: NCDOT Proposal
Pace Project No.: 92538533

Dear Andrew Stahl:

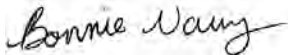
Enclosed are the analytical results for sample(s) received by the laboratory on May 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Charlotte

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

Sincerely,



Bonnie Vang
bonnie.vang@pacelabs.com
(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



CERTIFICATIONS

Project: NCDOT Proposal

Pace Project No.: 92538533

Pace Analytical Services Charlotte

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: NCDOT Proposal
Pace Project No.: 92538533

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92538533001	R-5819-TB	Water	05/11/21 12:30	05/13/21 09:45
92538533002	GW-R5819-02	Water	05/11/21 12:40	05/13/21 09:45

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



SAMPLE ANALYTE COUNT

Project: NCDOT Proposal
Pace Project No.: 92538533

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92538533001	R-5819-TB	SM 6200B	PM1	63	PASI-C
92538533002	GW-R5819-02	EPA 625.1	PKS	68	PASI-C
		SM 6200B	SAS	63	PASI-C

PASI-C = Pace Analytical Services - Charlotte

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: NCDOT Proposal
Pace Project No.: 92538533

Sample: R-5819-TB **Lab ID: 92538533001** Collected: 05/11/21 12:30 Received: 05/13/21 09:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6200B MSV									
Analytical Method: SM 6200B									
Pace Analytical Services - Charlotte									
Benzene	ND	ug/L	0.50	0.34	1		05/17/21 12:07	71-43-2	
Bromobenzene	ND	ug/L	0.50	0.29	1		05/17/21 12:07	108-86-1	
Bromochloromethane	ND	ug/L	0.50	0.47	1		05/17/21 12:07	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	0.31	1		05/17/21 12:07	75-27-4	
Bromoform	ND	ug/L	0.50	0.34	1		05/17/21 12:07	75-25-2	
Bromomethane	ND	ug/L	5.0	1.7	1		05/17/21 12:07	74-83-9	
n-Butylbenzene	ND	ug/L	0.50	0.49	1		05/17/21 12:07	104-51-8	
sec-Butylbenzene	ND	ug/L	0.50	0.40	1		05/17/21 12:07	135-98-8	
tert-Butylbenzene	ND	ug/L	0.50	0.32	1		05/17/21 12:07	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	0.33	1		05/17/21 12:07	56-23-5	
Chlorobenzene	ND	ug/L	0.50	0.28	1		05/17/21 12:07	108-90-7	
Chloroethane	ND	ug/L	1.0	0.65	1		05/17/21 12:07	75-00-3	
Chloroform	ND	ug/L	0.50	0.35	1		05/17/21 12:07	67-66-3	
Chloromethane	ND	ug/L	1.0	0.54	1		05/17/21 12:07	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	0.32	1		05/17/21 12:07	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	0.32	1		05/17/21 12:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.34	1		05/17/21 12:07	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	0.36	1		05/17/21 12:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	0.27	1		05/17/21 12:07	106-93-4	
Dibromomethane	ND	ug/L	0.50	0.39	1		05/17/21 12:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.34	1		05/17/21 12:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.34	1		05/17/21 12:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.33	1		05/17/21 12:07	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	0.35	1		05/17/21 12:07	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	0.37	1		05/17/21 12:07	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	0.32	1		05/17/21 12:07	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	0.35	1		05/17/21 12:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.38	1		05/17/21 12:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.40	1		05/17/21 12:07	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	0.36	1		05/17/21 12:07	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	0.28	1		05/17/21 12:07	142-28-9	
2,2-Dichloropropane	ND	ug/L	0.50	0.39	1		05/17/21 12:07	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	0.43	1		05/17/21 12:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.36	1		05/17/21 12:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.36	1		05/17/21 12:07	10061-02-6	
Diisopropyl ether	ND	ug/L	0.50	0.31	1		05/17/21 12:07	108-20-3	
Ethylbenzene	ND	ug/L	0.50	0.30	1		05/17/21 12:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1.5	1		05/17/21 12:07	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	0.50	0.33	1		05/17/21 12:07	98-82-8	
Methylene Chloride	ND	ug/L	2.0	2.0	1		05/17/21 12:07	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	0.50	0.42	1		05/17/21 12:07	1634-04-4	
Naphthalene	ND	ug/L	2.0	0.64	1		05/17/21 12:07	91-20-3	
n-Propylbenzene	ND	ug/L	0.50	0.34	1		05/17/21 12:07	103-65-1	
Styrene	ND	ug/L	0.50	0.29	1		05/17/21 12:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.31	1		05/17/21 12:07	630-20-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: NCDOT Proposal
Pace Project No.: 92538533

Sample: R-5819-TB **Lab ID: 92538533001** Collected: 05/11/21 12:30 Received: 05/13/21 09:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6200B MSV									
Analytical Method: SM 6200B									
Pace Analytical Services - Charlotte									
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.22	1	05/17/21 12:07	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	0.29	1	05/17/21 12:07	127-18-4		
Toluene	ND	ug/L	0.50	0.48	1	05/17/21 12:07	108-88-3		
1,2,3-Trichlorobenzene	ND	ug/L	2.0	0.81	1	05/17/21 12:07	87-61-6		
1,2,4-Trichlorobenzene	ND	ug/L	2.0	0.64	1	05/17/21 12:07	120-82-1		
1,1,1-Trichloroethane	ND	ug/L	0.50	0.33	1	05/17/21 12:07	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	0.32	1	05/17/21 12:07	79-00-5		
Trichloroethene	ND	ug/L	0.50	0.38	1	05/17/21 12:07	79-01-6		
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1	05/17/21 12:07	75-69-4		
1,2,3-Trichloropropane	ND	ug/L	0.50	0.26	1	05/17/21 12:07	96-18-4		
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.50	1	05/17/21 12:07	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.33	1	05/17/21 12:07	108-67-8		
Vinyl chloride	ND	ug/L	1.0	0.39	1	05/17/21 12:07	75-01-4		
m&p-Xylene	ND	ug/L	1.0	0.71	1	05/17/21 12:07	179601-23-1		
o-Xylene	ND	ug/L	0.50	0.34	1	05/17/21 12:07	95-47-6		
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%	70-130		1	05/17/21 12:07	17060-07-0		
4-Bromofluorobenzene (S)	101	%	70-130		1	05/17/21 12:07	460-00-4		
Toluene-d8 (S)	99	%	70-130		1	05/17/21 12:07	2037-26-5		

Sample: GW-R5819-02 **Lab ID: 92538533002** Collected: 05/11/21 12:40 Received: 05/13/21 09:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
625 RVE									
Analytical Method: EPA 625.1 Preparation Method: EPA 625.1									
Pace Analytical Services - Charlotte									
Acenaphthene	ND	ug/L	5.0	2.0	1	05/17/21 11:50	05/18/21 11:41	83-32-9	
Acenaphthylene	ND	ug/L	5.0	2.0	1	05/17/21 11:50	05/18/21 11:41	208-96-8	
Anthracene	ND	ug/L	5.0	2.3	1	05/17/21 11:50	05/18/21 11:41	120-12-7	
Benzo(a)anthracene	ND	ug/L	5.0	2.7	1	05/17/21 11:50	05/18/21 11:41	56-55-3	
Benzo(a)pyrene	ND	ug/L	5.0	2.8	1	05/17/21 11:50	05/18/21 11:41	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	5.0	2.6	1	05/17/21 11:50	05/18/21 11:41	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	5.0	2.8	1	05/17/21 11:50	05/18/21 11:41	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	5.0	2.7	1	05/17/21 11:50	05/18/21 11:41	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	5.0	1.8	1	05/17/21 11:50	05/18/21 11:41	101-55-3	
Butylbenzylphthalate	ND	ug/L	5.0	3.1	1	05/17/21 11:50	05/18/21 11:41	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	5.0	3.3	1	05/17/21 11:50	05/18/21 11:41	59-50-7	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	1.8	1	05/17/21 11:50	05/18/21 11:41	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	5.0	1.9	1	05/17/21 11:50	05/18/21 11:41	111-44-4	
2-Chloronaphthalene	ND	ug/L	5.0	1.7	1	05/17/21 11:50	05/18/21 11:41	91-58-7	
2-Chlorophenol	ND	ug/L	5.0	1.2	1	05/17/21 11:50	05/18/21 11:41	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	5.0	2.0	1	05/17/21 11:50	05/18/21 11:41	7005-72-3	
Chrysene	ND	ug/L	5.0	2.8	1	05/17/21 11:50	05/18/21 11:41	218-01-9	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: NCDOT Proposal

Pace Project No.: 92538533

Sample: GW-R5819-02 **Lab ID: 92538533002** Collected: 05/11/21 12:40 Received: 05/13/21 09:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<p>625 RVE Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Charlotte</p>									
Dibenz(a,h)anthracene	ND	ug/L	5.0	3.0	1	05/17/21 11:50	05/18/21 11:41	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	10.0	8.1	1	05/17/21 11:50	05/18/21 11:41	91-94-1	
2,4-Dichlorophenol	ND	ug/L	5.0	1.4	1	05/17/21 11:50	05/18/21 11:41	120-83-2	
Diethylphthalate	ND	ug/L	5.0	2.0	1	05/17/21 11:50	05/18/21 11:41	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1.7	1	05/17/21 11:50	05/18/21 11:41	105-67-9	
Dimethylphthalate	ND	ug/L	5.0	2.1	1	05/17/21 11:50	05/18/21 11:41	131-11-3	
Di-n-butylphthalate	ND	ug/L	5.0	2.2	1	05/17/21 11:50	05/18/21 11:41	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0	3.4	1	05/17/21 11:50	05/18/21 11:41	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	26.0	1	05/17/21 11:50	05/18/21 11:41	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	5.0	1.6	1	05/17/21 11:50	05/18/21 11:41	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	5.0	1.7	1	05/17/21 11:50	05/18/21 11:41	606-20-2	
Di-n-octylphthalate	ND	ug/L	5.0	3.9	1	05/17/21 11:50	05/18/21 11:41	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	5.0	3.7	1	05/17/21 11:50	05/18/21 11:41	117-81-7	
Fluoranthene	ND	ug/L	5.0	2.2	1	05/17/21 11:50	05/18/21 11:41	206-44-0	
Fluorene	ND	ug/L	5.0	2.1	1	05/17/21 11:50	05/18/21 11:41	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	1.8	1	05/17/21 11:50	05/18/21 11:41	87-68-3	
Hexachlorobenzene	ND	ug/L	5.0	2.2	1	05/17/21 11:50	05/18/21 11:41	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.0	1.6	1	05/17/21 11:50	05/18/21 11:41	77-47-4	
Hexachloroethane	ND	ug/L	5.0	1.4	1	05/17/21 11:50	05/18/21 11:41	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	5.0	2.9	1	05/17/21 11:50	05/18/21 11:41	193-39-5	
Isophorone	ND	ug/L	10.0	1.7	1	05/17/21 11:50	05/18/21 11:41	78-59-1	
Naphthalene	ND	ug/L	5.0	2.1	1	05/17/21 11:50	05/18/21 11:41	91-20-3	
Nitrobenzene	ND	ug/L	5.0	1.9	1	05/17/21 11:50	05/18/21 11:41	98-95-3	
2-Nitrophenol	ND	ug/L	5.0	1.4	1	05/17/21 11:50	05/18/21 11:41	88-75-5	
4-Nitrophenol	ND	ug/L	10.0	6.6	1	05/17/21 11:50	05/18/21 11:41	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	5.0	1.9	1	05/17/21 11:50	05/18/21 11:41	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	5.0	1.3	1	05/17/21 11:50	05/18/21 11:41	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	3.0	1	05/17/21 11:50	05/18/21 11:41	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	5.0	1.2	1	05/17/21 11:50	05/18/21 11:41	108-60-1	
Pentachlorophenol	ND	ug/L	10.0	3.8	1	05/17/21 11:50	05/18/21 11:41	87-86-5	
Phenanthrene	ND	ug/L	5.0	2.0	1	05/17/21 11:50	05/18/21 11:41	85-01-8	
Phenol	ND	ug/L	5.0	1.4	1	05/17/21 11:50	05/18/21 11:41	108-95-2	
Pyrene	ND	ug/L	5.0	2.2	1	05/17/21 11:50	05/18/21 11:41	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	5.0	1.7	1	05/17/21 11:50	05/18/21 11:41	120-82-1	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1.6	1	05/17/21 11:50	05/18/21 11:41	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	55	%	10-120		1	05/17/21 11:50	05/18/21 11:41	4165-60-0	
2-Fluorobiphenyl (S)	47	%	15-120		1	05/17/21 11:50	05/18/21 11:41	321-60-8	
Terphenyl-d14 (S)	104	%	11-131		1	05/17/21 11:50	05/18/21 11:41	1718-51-0	
Phenol-d6 (S)	31	%	10-120		1	05/17/21 11:50	05/18/21 11:41	13127-88-3	
2-Fluorophenol (S)	36	%	10-120		1	05/17/21 11:50	05/18/21 11:41	367-12-4	
2,4,6-Tribromophenol (S)	98	%	10-137		1	05/17/21 11:50	05/18/21 11:41	118-79-6	
Tentatively Identified Compounds									
Pentane, 2,3,4-trimethyl	12.3J	ug/L			1	05/17/21 11:50	05/18/21 11:41	565-75-3	N
Pentane, 2,3,3-trimethyl	13.4J	ug/L			1	05/17/21 11:50	05/18/21 11:41	560-21-4	N

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: NCDOT Proposal

Pace Project No.: 92538533

Sample: GW-R5819-02 **Lab ID: 92538533002** Collected: 05/11/21 12:40 Received: 05/13/21 09:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
625 RVE									
Analytical Method: EPA 625.1 Preparation Method: EPA 625.1									
Pace Analytical Services - Charlotte									
Tentatively Identified Compounds									
Heptane, 3-methyl-	7.1J	ug/L			1	05/17/21 11:50	05/18/21 11:41	589-81-1	N
Hexane, 2,2,5-trimethyl-	9.0J	ug/L			1	05/17/21 11:50	05/18/21 11:41	3522-94-9	N
Octane	7.3J	ug/L			1	05/17/21 11:50	05/18/21 11:41	111-65-9	N
Ethylbenzene	7.7J	ug/L			1	05/17/21 11:50	05/18/21 11:41	100-41-4	N
o-Xylene	25.3J	ug/L			1	05/17/21 11:50	05/18/21 11:41	95-47-6	N
o-Xylene	10.5J	ug/L			1	05/17/21 11:50	05/18/21 11:41	95-47-6	N
Unknown	6.2J	ug/L			1	05/17/21 11:50	05/18/21 11:41		
Unknown	9.5J	ug/L			1	05/17/21 11:50	05/18/21 11:41		

6200B MSV

Analytical Method: SM 6200B

Pace Analytical Services - Charlotte

Benzene	ND	ug/L	0.50	0.34	1		05/17/21 13:45	71-43-2	
Bromobenzene	ND	ug/L	0.50	0.29	1		05/17/21 13:45	108-86-1	
Bromochloromethane	ND	ug/L	0.50	0.47	1		05/17/21 13:45	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	0.31	1		05/17/21 13:45	75-27-4	
Bromoform	ND	ug/L	0.50	0.34	1		05/17/21 13:45	75-25-2	
Bromomethane	ND	ug/L	5.0	1.7	1		05/17/21 13:45	74-83-9	
n-Butylbenzene	ND	ug/L	0.50	0.49	1		05/17/21 13:45	104-51-8	
sec-Butylbenzene	ND	ug/L	0.50	0.40	1		05/17/21 13:45	135-98-8	
tert-Butylbenzene	ND	ug/L	0.50	0.32	1		05/17/21 13:45	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	0.33	1		05/17/21 13:45	56-23-5	
Chlorobenzene	ND	ug/L	0.50	0.28	1		05/17/21 13:45	108-90-7	
Chloroethane	ND	ug/L	1.0	0.65	1		05/17/21 13:45	75-00-3	
Chloroform	ND	ug/L	0.50	0.35	1		05/17/21 13:45	67-66-3	
Chloromethane	ND	ug/L	1.0	0.54	1		05/17/21 13:45	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	0.32	1		05/17/21 13:45	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	0.32	1		05/17/21 13:45	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.34	1		05/17/21 13:45	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	0.36	1		05/17/21 13:45	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	0.27	1		05/17/21 13:45	106-93-4	
Dibromomethane	ND	ug/L	0.50	0.39	1		05/17/21 13:45	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.34	1		05/17/21 13:45	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.34	1		05/17/21 13:45	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.33	1		05/17/21 13:45	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	0.35	1		05/17/21 13:45	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	0.37	1		05/17/21 13:45	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	0.32	1		05/17/21 13:45	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	0.35	1		05/17/21 13:45	75-35-4	
cis-1,2-Dichloroethene	2.5	ug/L	0.50	0.38	1		05/17/21 13:45	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.40	1		05/17/21 13:45	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	0.36	1		05/17/21 13:45	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	0.28	1		05/17/21 13:45	142-28-9	
2,2-Dichloropropane	ND	ug/L	0.50	0.39	1		05/17/21 13:45	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	0.43	1		05/17/21 13:45	563-58-6	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: NCDOT Proposal
Pace Project No.: 92538533

Sample: GW-R5819-02 **Lab ID: 92538533002** Collected: 05/11/21 12:40 Received: 05/13/21 09:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6200B MSV									
Analytical Method: SM 6200B									
Pace Analytical Services - Charlotte									
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.36	1		05/17/21 13:45	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.36	1		05/17/21 13:45	10061-02-6	
Diisopropyl ether	1.1	ug/L	0.50	0.31	1		05/17/21 13:45	108-20-3	
Ethylbenzene	ND	ug/L	0.50	0.30	1		05/17/21 13:45	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1.5	1		05/17/21 13:45	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	0.50	0.33	1		05/17/21 13:45	98-82-8	
Methylene Chloride	ND	ug/L	2.0	2.0	1		05/17/21 13:45	75-09-2	
Methyl-tert-butyl ether	0.96	ug/L	0.50	0.42	1		05/17/21 13:45	1634-04-4	
Naphthalene	ND	ug/L	2.0	0.64	1		05/17/21 13:45	91-20-3	
n-Propylbenzene	ND	ug/L	0.50	0.34	1		05/17/21 13:45	103-65-1	
Styrene	ND	ug/L	0.50	0.29	1		05/17/21 13:45	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.31	1		05/17/21 13:45	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.22	1		05/17/21 13:45	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	0.29	1		05/17/21 13:45	127-18-4	
Toluene	ND	ug/L	0.50	0.48	1		05/17/21 13:45	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	0.81	1		05/17/21 13:45	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	0.64	1		05/17/21 13:45	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.33	1		05/17/21 13:45	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	0.32	1		05/17/21 13:45	79-00-5	
Trichloroethene	ND	ug/L	0.50	0.38	1		05/17/21 13:45	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.30	1		05/17/21 13:45	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	0.26	1		05/17/21 13:45	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.50	1		05/17/21 13:45	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.33	1		05/17/21 13:45	108-67-8	
Vinyl chloride	ND	ug/L	1.0	0.39	1		05/17/21 13:45	75-01-4	
m&p-Xylene	ND	ug/L	1.0	0.71	1		05/17/21 13:45	179601-23-1	
o-Xylene	ND	ug/L	0.50	0.34	1		05/17/21 13:45	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		05/17/21 13:45	17060-07-0	
4-Bromofluorobenzene (S)	98	%	70-130		1		05/17/21 13:45	460-00-4	
Toluene-d8 (S)	101	%	70-130		1		05/17/21 13:45	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal
Pace Project No.: 92538533

QC Batch: 620664 Analysis Method: SM 6200B
QC Batch Method: SM 6200B Analysis Description: 6200B MSV
Laboratory: Pace Analytical Services - Charlotte

Associated Lab Samples: 92538533001

METHOD BLANK: 3265727 Matrix: Water
Associated Lab Samples: 92538533001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	0.31	05/17/21 11:49	
1,1,1-Trichloroethane	ug/L	ND	0.50	0.33	05/17/21 11:49	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	0.22	05/17/21 11:49	
1,1,2-Trichloroethane	ug/L	ND	0.50	0.32	05/17/21 11:49	
1,1-Dichloroethane	ug/L	ND	0.50	0.37	05/17/21 11:49	
1,1-Dichloroethene	ug/L	ND	0.50	0.35	05/17/21 11:49	
1,1-Dichloropropene	ug/L	ND	0.50	0.43	05/17/21 11:49	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	0.81	05/17/21 11:49	
1,2,3-Trichloropropane	ug/L	ND	0.50	0.26	05/17/21 11:49	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	0.64	05/17/21 11:49	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	0.50	05/17/21 11:49	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	0.34	05/17/21 11:49	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	0.27	05/17/21 11:49	
1,2-Dichlorobenzene	ug/L	ND	0.50	0.34	05/17/21 11:49	
1,2-Dichloroethane	ug/L	ND	0.50	0.32	05/17/21 11:49	
1,2-Dichloropropane	ug/L	ND	0.50	0.36	05/17/21 11:49	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	0.33	05/17/21 11:49	
1,3-Dichlorobenzene	ug/L	ND	0.50	0.34	05/17/21 11:49	
1,3-Dichloropropane	ug/L	ND	0.50	0.28	05/17/21 11:49	
1,4-Dichlorobenzene	ug/L	ND	0.50	0.33	05/17/21 11:49	
2,2-Dichloropropane	ug/L	ND	0.50	0.39	05/17/21 11:49	
2-Chlorotoluene	ug/L	ND	0.50	0.32	05/17/21 11:49	
4-Chlorotoluene	ug/L	ND	0.50	0.32	05/17/21 11:49	
Benzene	ug/L	ND	0.50	0.34	05/17/21 11:49	
Bromobenzene	ug/L	ND	0.50	0.29	05/17/21 11:49	
Bromochloromethane	ug/L	ND	0.50	0.47	05/17/21 11:49	
Bromodichloromethane	ug/L	ND	0.50	0.31	05/17/21 11:49	
Bromoform	ug/L	ND	0.50	0.34	05/17/21 11:49	
Bromomethane	ug/L	ND	5.0	1.7	05/17/21 11:49	
Carbon tetrachloride	ug/L	ND	0.50	0.33	05/17/21 11:49	
Chlorobenzene	ug/L	ND	0.50	0.28	05/17/21 11:49	
Chloroethane	ug/L	ND	1.0	0.65	05/17/21 11:49	
Chloroform	ug/L	ND	0.50	0.35	05/17/21 11:49	
Chloromethane	ug/L	ND	1.0	0.54	05/17/21 11:49	
cis-1,2-Dichloroethene	ug/L	ND	0.50	0.38	05/17/21 11:49	
cis-1,3-Dichloropropene	ug/L	ND	0.50	0.36	05/17/21 11:49	
Dibromochloromethane	ug/L	ND	0.50	0.36	05/17/21 11:49	
Dibromomethane	ug/L	ND	0.50	0.39	05/17/21 11:49	
Dichlorodifluoromethane	ug/L	ND	0.50	0.35	05/17/21 11:49	
Diisopropyl ether	ug/L	ND	0.50	0.31	05/17/21 11:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

METHOD BLANK: 3265727

Matrix: Water

Associated Lab Samples: 92538533001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Ethylbenzene	ug/L	ND	0.50	0.30	05/17/21 11:49	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	1.5	05/17/21 11:49	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	0.33	05/17/21 11:49	
m&p-Xylene	ug/L	ND	1.0	0.71	05/17/21 11:49	
Methyl-tert-butyl ether	ug/L	ND	0.50	0.42	05/17/21 11:49	
Methylene Chloride	ug/L	ND	2.0	2.0	05/17/21 11:49	
n-Butylbenzene	ug/L	ND	0.50	0.49	05/17/21 11:49	
n-Propylbenzene	ug/L	ND	0.50	0.34	05/17/21 11:49	
Naphthalene	ug/L	ND	2.0	0.64	05/17/21 11:49	
o-Xylene	ug/L	ND	0.50	0.34	05/17/21 11:49	
sec-Butylbenzene	ug/L	ND	0.50	0.40	05/17/21 11:49	
Styrene	ug/L	ND	0.50	0.29	05/17/21 11:49	
tert-Butylbenzene	ug/L	ND	0.50	0.32	05/17/21 11:49	
Tetrachloroethene	ug/L	ND	0.50	0.29	05/17/21 11:49	
Toluene	ug/L	ND	0.50	0.48	05/17/21 11:49	
trans-1,2-Dichloroethene	ug/L	ND	0.50	0.40	05/17/21 11:49	
trans-1,3-Dichloropropene	ug/L	ND	0.50	0.36	05/17/21 11:49	
Trichloroethene	ug/L	ND	0.50	0.38	05/17/21 11:49	
Trichlorofluoromethane	ug/L	ND	1.0	0.30	05/17/21 11:49	
Vinyl chloride	ug/L	ND	1.0	0.39	05/17/21 11:49	
1,2-Dichloroethane-d4 (S)	%	99	70-130		05/17/21 11:49	
4-Bromofluorobenzene (S)	%	98	70-130		05/17/21 11:49	
Toluene-d8 (S)	%	97	70-130		05/17/21 11:49	

LABORATORY CONTROL SAMPLE: 3265728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.9	100	60-140	
1,1,1-Trichloroethane	ug/L	50	46.6	93	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	45.1	90	60-140	
1,1,2-Trichloroethane	ug/L	50	47.4	95	60-140	
1,1-Dichloroethane	ug/L	50	44.2	88	60-140	
1,1-Dichloroethene	ug/L	50	46.1	92	60-140	
1,1-Dichloropropene	ug/L	50	47.1	94	60-140	
1,2,3-Trichlorobenzene	ug/L	50	52.2	104	60-140	
1,2,3-Trichloropropane	ug/L	50	46.3	93	60-140	
1,2,4-Trichlorobenzene	ug/L	50	53.7	107	60-140	
1,2,4-Trimethylbenzene	ug/L	50	49.1	98	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	52.0	104	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	49.4	99	60-140	
1,2-Dichlorobenzene	ug/L	50	51.1	102	60-140	
1,2-Dichloroethane	ug/L	50	45.9	92	60-140	
1,2-Dichloropropane	ug/L	50	46.7	93	60-140	
1,3,5-Trimethylbenzene	ug/L	50	51.4	103	60-140	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

LABORATORY CONTROL SAMPLE: 3265728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,3-Dichlorobenzene	ug/L	50	50.8	102	60-140	
1,3-Dichloropropane	ug/L	50	48.2	96	60-140	
1,4-Dichlorobenzene	ug/L	50	51.6	103	60-140	
2,2-Dichloropropane	ug/L	50	43.1	86	60-140	
2-Chlorotoluene	ug/L	50	50.9	102	60-140	
4-Chlorotoluene	ug/L	50	48.2	96	60-140	
Benzene	ug/L	50	45.2	90	60-140	
Bromobenzene	ug/L	50	52.2	104	60-140	
Bromochloromethane	ug/L	50	46.0	92	60-140	
Bromodichloromethane	ug/L	50	45.1	90	60-140	
Bromoform	ug/L	50	51.9	104	60-140	
Bromomethane	ug/L	50	49.7	99	60-140	
Carbon tetrachloride	ug/L	50	49.1	98	60-140	
Chlorobenzene	ug/L	50	48.5	97	60-140	
Chloroethane	ug/L	50	43.7	87	60-140	
Chloroform	ug/L	50	45.1	90	60-140	
Chloromethane	ug/L	50	46.2	92	60-140	
cis-1,2-Dichloroethene	ug/L	50	45.1	90	60-140	
cis-1,3-Dichloropropene	ug/L	50	46.2	92	60-140	
Dibromochloromethane	ug/L	50	50.7	101	60-140	
Dibromomethane	ug/L	50	47.4	95	60-140	
Dichlorodifluoromethane	ug/L	50	49.5	99	60-140	
Diisopropyl ether	ug/L	50	42.5	85	60-140	
Ethylbenzene	ug/L	50	46.9	94	60-140	
Hexachloro-1,3-butadiene	ug/L	50	54.5	109	60-140	
Isopropylbenzene (Cumene)	ug/L	50	48.2	96	60-140	
m&p-Xylene	ug/L	100	94.2	94	60-140	
Methyl-tert-butyl ether	ug/L	50	47.1	94	60-140	
Methylene Chloride	ug/L	50	45.4	91	60-140	
n-Butylbenzene	ug/L	50	49.3	99	60-140	
n-Propylbenzene	ug/L	50	50.5	101	60-140	
Naphthalene	ug/L	50	51.8	104	60-140	
o-Xylene	ug/L	50	47.1	94	60-140	
sec-Butylbenzene	ug/L	50	49.9	100	60-140	
Styrene	ug/L	50	49.0	98	60-140	
tert-Butylbenzene	ug/L	50	43.0	86	60-140	
Tetrachloroethene	ug/L	50	49.9	100	60-140	
Toluene	ug/L	50	44.8	90	60-140	
trans-1,2-Dichloroethene	ug/L	50	45.4	91	60-140	
trans-1,3-Dichloropropene	ug/L	50	44.5	89	60-140	
Trichloroethene	ug/L	50	47.7	95	60-140	
Trichlorofluoromethane	ug/L	50	45.5	91	60-140	
Vinyl chloride	ug/L	50	45.6	91	60-140	
1,2-Dichloroethane-d4 (S)	%			95	70-130	
4-Bromofluorobenzene (S)	%			96	70-130	
Toluene-d8 (S)	%			97	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

Parameter	Units	3265729		3265730		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		92538737001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
1,1,1,2-Tetrachloroethane	ug/L	<12.4	800	800	672	704	84	88	60-140	5	30		
1,1,1-Trichloroethane	ug/L	<13.3	800	800	731	746	91	93	60-140	2	30		
1,1,2,2-Tetrachloroethane	ug/L	<9.0	800	800	655	682	82	85	60-140	4	30		
1,1,2-Trichloroethane	ug/L	<13.0	800	800	669	716	84	89	60-140	7	30		
1,1-Dichloroethane	ug/L	<14.7	800	800	713	753	89	94	60-140	5	30		
1,1-Dichloroethene	ug/L	<13.9	800	800	725	761	91	95	60-140	5	30		
1,1-Dichloropropene	ug/L	<17.1	800	800	712	741	89	93	60-140	4	30		
1,2,3-Trichlorobenzene	ug/L	<32.2	800	800	657	719	82	90	60-140	9	30		
1,2,3-Trichloropropane	ug/L	<10.4	800	800	650	674	81	84	60-140	4	30		
1,2,4-Trichlorobenzene	ug/L	<25.6	800	800	679	726	85	91	60-140	7	30		
1,2,4-Trimethylbenzene	ug/L	1200	800	800	2050	2120	105	114	60-140	3	30		
1,2-Dibromo-3-chloropropane	ug/L	<13.6	800	800	640	695	80	87	60-140	8	30		
1,2-Dibromoethane (EDB)	ug/L	<10.9	800	800	683	694	85	87	60-140	2	30		
1,2-Dichlorobenzene	ug/L	<13.6	800	800	696	727	87	91	60-140	4	30		
1,2-Dichloroethane	ug/L	<12.9	800	800	623	636	78	79	60-140	2	30		
1,2-Dichloropropane	ug/L	<14.2	800	800	681	730	85	91	60-140	7	30		
1,3,5-Trimethylbenzene	ug/L	420	800	800	1220	1260	100	105	60-140	3	30		
1,3-Dichlorobenzene	ug/L	<13.6	800	800	708	734	88	92	60-140	4	30		
1,3-Dichloropropane	ug/L	<11.4	800	800	677	716	85	90	60-140	6	30		
1,4-Dichlorobenzene	ug/L	<13.3	800	800	717	737	90	92	60-140	3	30		
2,2-Dichloropropane	ug/L	<15.5	800	800	656	689	82	86	60-140	5	30		
2-Chlorotoluene	ug/L	<12.8	800	800	763	799	95	100	60-140	5	30		
4-Chlorotoluene	ug/L	<13.0	800	800	697	729	87	91	60-140	5	30		
Benzene	ug/L	459	800	800	1200	1220	93	95	60-140	1	30		
Bromobenzene	ug/L	<11.6	800	800	707	740	88	93	60-140	5	30		
Bromochloromethane	ug/L	<18.7	800	800	706	725	88	91	60-140	3	30		
Bromodichloromethane	ug/L	<12.3	800	800	672	716	84	90	60-140	6	30		
Bromoform	ug/L	<13.6	800	800	623	652	78	81	60-140	5	30		
Bromomethane	ug/L	<66.4	800	800	744	821	93	103	60-140	10	30		
Carbon tetrachloride	ug/L	<13.3	800	800	706	756	88	95	60-140	7	30		
Chlorobenzene	ug/L	<11.4	800	800	700	726	87	91	60-140	4	30		
Chloroethane	ug/L	<26.0	800	800	774	793	97	99	60-140	2	30		
Chloroform	ug/L	<14.1	800	800	700	723	88	90	60-140	3	30		
Chloromethane	ug/L	<21.6	800	800	677	707	85	88	60-140	4	30		
cis-1,2-Dichloroethene	ug/L	<15.4	800	800	725	734	91	92	60-140	1	30		
cis-1,3-Dichloropropene	ug/L	<14.6	800	800	659	689	82	86	60-140	5	30		
Dibromochloromethane	ug/L	<14.4	800	800	690	717	86	90	60-140	4	30		
Dibromomethane	ug/L	<15.8	800	800	665	711	83	89	60-140	7	30		
Dichlorodifluoromethane	ug/L	<13.8	800	800	690	712	86	89	60-140	3	30		
Diisopropyl ether	ug/L	<12.3	800	800	651	675	81	84	60-140	4	30		
Ethylbenzene	ug/L	1180	800	800	1930	1960	93	98	60-140	2	30		
Hexachloro-1,3-butadiene	ug/L	<61.2	800	800	686	706	86	88	60-140	3	30		
Isopropylbenzene (Cumene)	ug/L	83.3	800	800	838	859	94	97	60-140	3	30		
m&p-Xylene	ug/L	4540	1600	1600	5990	6120	91	99	60-140	2	30		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

Parameter	Units	3265729		3265730		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS 92538737001 Result	MS Spike Conc.	MSD Spike Conc.	MSD Result								
Methyl-tert-butyl ether	ug/L	<16.9	800	800	648	680	81	85	60-140	5	30		
Methylene Chloride	ug/L	<78.0	800	800	731	750	91	94	60-140	3	30		
n-Butylbenzene	ug/L	<19.6	800	800	764	784	96	98	60-140	3	30		
n-Propylbenzene	ug/L	<13.6	800	800	834	863	104	108	60-140	3	30		
Naphthalene	ug/L	582	800	800	1620	1400	130	102	60-140	15	30		
o-Xylene	ug/L	2170	800	800	2900	2980	92	102	60-140	3	30		
sec-Butylbenzene	ug/L	<16.0	800	800	751	775	94	97	60-140	3	30		
Styrene	ug/L	<11.7	800	800	727	741	91	93	60-140	2	30		
tert-Butylbenzene	ug/L	<12.9	800	800	637	662	80	83	60-140	4	30		
Tetrachloroethene	ug/L	<11.7	800	800	715	733	89	92	60-140	2	30		
Toluene	ug/L	4930	800	800	5580	5760	81	104	60-140	3	30		
trans-1,2-Dichloroethene	ug/L	<15.8	800	800	736	753	92	94	60-140	2	30		
trans-1,3-Dichloropropene	ug/L	<14.5	800	800	633	685	79	86	60-140	8	30		
Trichloroethene	ug/L	<15.3	800	800	698	730	87	91	60-140	5	30		
Trichlorofluoromethane	ug/L	<11.9	800	800	734	759	92	95	60-140	3	30		
Vinyl chloride	ug/L	<15.4	800	800	703	714	88	89	60-140	2	30		
1,2-Dichloroethane-d4 (S)	%						97	101	70-130				
4-Bromofluorobenzene (S)	%						100	100	70-130				
Toluene-d8 (S)	%						98	100	70-130				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

QC Batch: 620665

Analysis Method: SM 6200B

QC Batch Method: SM 6200B

Analysis Description: 6200B MSV

Laboratory: Pace Analytical Services - Charlotte

Associated Lab Samples: 92538533002

METHOD BLANK: 3265735

Matrix: Water

Associated Lab Samples: 92538533002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	0.31	05/17/21 11:20	
1,1,1-Trichloroethane	ug/L	ND	0.50	0.33	05/17/21 11:20	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	0.22	05/17/21 11:20	
1,1,2-Trichloroethane	ug/L	ND	0.50	0.32	05/17/21 11:20	
1,1-Dichloroethane	ug/L	ND	0.50	0.37	05/17/21 11:20	
1,1-Dichloroethene	ug/L	ND	0.50	0.35	05/17/21 11:20	
1,1-Dichloropropene	ug/L	ND	0.50	0.43	05/17/21 11:20	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	0.81	05/17/21 11:20	
1,2,3-Trichloropropane	ug/L	ND	0.50	0.26	05/17/21 11:20	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	0.64	05/17/21 11:20	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	0.50	05/17/21 11:20	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	0.34	05/17/21 11:20	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	0.27	05/17/21 11:20	
1,2-Dichlorobenzene	ug/L	ND	0.50	0.34	05/17/21 11:20	
1,2-Dichloroethane	ug/L	ND	0.50	0.32	05/17/21 11:20	
1,2-Dichloropropane	ug/L	ND	0.50	0.36	05/17/21 11:20	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	0.33	05/17/21 11:20	
1,3-Dichlorobenzene	ug/L	ND	0.50	0.34	05/17/21 11:20	
1,3-Dichloropropane	ug/L	ND	0.50	0.28	05/17/21 11:20	
1,4-Dichlorobenzene	ug/L	ND	0.50	0.33	05/17/21 11:20	
2,2-Dichloropropane	ug/L	ND	0.50	0.39	05/17/21 11:20	
2-Chlorotoluene	ug/L	ND	0.50	0.32	05/17/21 11:20	
4-Chlorotoluene	ug/L	ND	0.50	0.32	05/17/21 11:20	
Benzene	ug/L	ND	0.50	0.34	05/17/21 11:20	
Bromobenzene	ug/L	ND	0.50	0.29	05/17/21 11:20	
Bromochloromethane	ug/L	ND	0.50	0.47	05/17/21 11:20	
Bromodichloromethane	ug/L	ND	0.50	0.31	05/17/21 11:20	
Bromoform	ug/L	ND	0.50	0.34	05/17/21 11:20	
Bromomethane	ug/L	ND	5.0	1.7	05/17/21 11:20	
Carbon tetrachloride	ug/L	ND	0.50	0.33	05/17/21 11:20	
Chlorobenzene	ug/L	ND	0.50	0.28	05/17/21 11:20	
Chloroethane	ug/L	ND	1.0	0.65	05/17/21 11:20	
Chloroform	ug/L	ND	0.50	0.35	05/17/21 11:20	
Chloromethane	ug/L	ND	1.0	0.54	05/17/21 11:20	
cis-1,2-Dichloroethene	ug/L	ND	0.50	0.38	05/17/21 11:20	
cis-1,3-Dichloropropene	ug/L	ND	0.50	0.36	05/17/21 11:20	
Dibromochloromethane	ug/L	ND	0.50	0.36	05/17/21 11:20	
Dibromomethane	ug/L	ND	0.50	0.39	05/17/21 11:20	
Dichlorodifluoromethane	ug/L	ND	0.50	0.35	05/17/21 11:20	
Diisopropyl ether	ug/L	ND	0.50	0.31	05/17/21 11:20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

METHOD BLANK: 3265735

Matrix: Water

Associated Lab Samples: 92538533002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Ethylbenzene	ug/L	ND	0.50	0.30	05/17/21 11:20	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	1.5	05/17/21 11:20	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	0.33	05/17/21 11:20	
m&p-Xylene	ug/L	ND	1.0	0.71	05/17/21 11:20	
Methyl-tert-butyl ether	ug/L	ND	0.50	0.42	05/17/21 11:20	
Methylene Chloride	ug/L	ND	2.0	2.0	05/17/21 11:20	
n-Butylbenzene	ug/L	ND	0.50	0.49	05/17/21 11:20	
n-Propylbenzene	ug/L	ND	0.50	0.34	05/17/21 11:20	
Naphthalene	ug/L	0.70J	2.0	0.64	05/17/21 11:20	
o-Xylene	ug/L	ND	0.50	0.34	05/17/21 11:20	
sec-Butylbenzene	ug/L	ND	0.50	0.40	05/17/21 11:20	
Styrene	ug/L	ND	0.50	0.29	05/17/21 11:20	
tert-Butylbenzene	ug/L	ND	0.50	0.32	05/17/21 11:20	
Tetrachloroethene	ug/L	ND	0.50	0.29	05/17/21 11:20	
Toluene	ug/L	ND	0.50	0.48	05/17/21 11:20	
trans-1,2-Dichloroethene	ug/L	ND	0.50	0.40	05/17/21 11:20	
trans-1,3-Dichloropropene	ug/L	ND	0.50	0.36	05/17/21 11:20	
Trichloroethene	ug/L	ND	0.50	0.38	05/17/21 11:20	
Trichlorofluoromethane	ug/L	ND	1.0	0.30	05/17/21 11:20	
Vinyl chloride	ug/L	ND	1.0	0.39	05/17/21 11:20	
1,2-Dichloroethane-d4 (S)	%	103	70-130		05/17/21 11:20	
4-Bromofluorobenzene (S)	%	97	70-130		05/17/21 11:20	
Toluene-d8 (S)	%	100	70-130		05/17/21 11:20	

LABORATORY CONTROL SAMPLE: 3265736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.6	99	60-140	
1,1,1-Trichloroethane	ug/L	50	50.1	100	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	48.2	96	60-140	
1,1,2-Trichloroethane	ug/L	50	50.0	100	60-140	
1,1-Dichloroethane	ug/L	50	49.2	98	60-140	
1,1-Dichloroethene	ug/L	50	48.6	97	60-140	
1,1-Dichloropropene	ug/L	50	49.3	99	60-140	
1,2,3-Trichlorobenzene	ug/L	50	52.8	106	60-140	
1,2,3-Trichloropropane	ug/L	50	46.3	93	60-140	
1,2,4-Trichlorobenzene	ug/L	50	52.8	106	60-140	
1,2,4-Trimethylbenzene	ug/L	50	51.9	104	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	53.1	106	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	49.9	100	60-140	
1,2-Dichlorobenzene	ug/L	50	51.2	102	60-140	
1,2-Dichloroethane	ug/L	50	43.4	87	60-140	
1,2-Dichloropropane	ug/L	50	49.1	98	60-140	
1,3,5-Trimethylbenzene	ug/L	50	51.7	103	60-140	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

LABORATORY CONTROL SAMPLE: 3265736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,3-Dichlorobenzene	ug/L	50	51.9	104	60-140	
1,3-Dichloropropane	ug/L	50	48.7	97	60-140	
1,4-Dichlorobenzene	ug/L	50	52.1	104	60-140	
2,2-Dichloropropane	ug/L	50	52.5	105	60-140	
2-Chlorotoluene	ug/L	50	51.7	103	60-140	
4-Chlorotoluene	ug/L	50	50.5	101	60-140	
Benzene	ug/L	50	48.5	97	60-140	
Bromobenzene	ug/L	50	51.3	103	60-140	
Bromochloromethane	ug/L	50	49.6	99	60-140	
Bromodichloromethane	ug/L	50	49.7	99	60-140	
Bromoform	ug/L	50	50.4	101	60-140	
Bromomethane	ug/L	50	52.3	105	60-140	
Carbon tetrachloride	ug/L	50	48.6	97	60-140	
Chlorobenzene	ug/L	50	49.6	99	60-140	
Chloroethane	ug/L	50	45.5	91	60-140	
Chloroform	ug/L	50	48.6	97	60-140	
Chloromethane	ug/L	50	48.0	96	60-140	
cis-1,2-Dichloroethene	ug/L	50	49.4	99	60-140	
cis-1,3-Dichloropropene	ug/L	50	50.7	101	60-140	
Dibromochloromethane	ug/L	50	51.7	103	60-140	
Dibromomethane	ug/L	50	49.7	99	60-140	
Dichlorodifluoromethane	ug/L	50	46.9	94	60-140	
Diisopropyl ether	ug/L	50	46.7	93	60-140	
Ethylbenzene	ug/L	50	49.8	100	60-140	
Hexachloro-1,3-butadiene	ug/L	50	47.8	96	60-140	
Isopropylbenzene (Cumene)	ug/L	50	52.1	104	60-140	
m&p-Xylene	ug/L	100	100	100	60-140	
Methyl-tert-butyl ether	ug/L	50	47.1	94	60-140	
Methylene Chloride	ug/L	50	51.2	102	60-140	
n-Butylbenzene	ug/L	50	51.4	103	60-140	
n-Propylbenzene	ug/L	50	50.7	101	60-140	
Naphthalene	ug/L	50	54.9	110	60-140	
o-Xylene	ug/L	50	50.1	100	60-140	
sec-Butylbenzene	ug/L	50	50.3	101	60-140	
Styrene	ug/L	50	52.3	105	60-140	
tert-Butylbenzene	ug/L	50	43.6	87	60-140	
Tetrachloroethene	ug/L	50	50.8	102	60-140	
Toluene	ug/L	50	48.7	97	60-140	
trans-1,2-Dichloroethene	ug/L	50	51.0	102	60-140	
trans-1,3-Dichloropropene	ug/L	50	50.8	102	60-140	
Trichloroethene	ug/L	50	49.9	100	60-140	
Trichlorofluoromethane	ug/L	50	40.8	82	60-140	
Vinyl chloride	ug/L	50	48.4	97	60-140	
1,2-Dichloroethane-d4 (S)	%			91	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			98	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal
Pace Project No.: 92538533

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3265737 3265738												
Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		92538650005 Result	Spike Conc.	Spike Conc.	MS Result							
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	21.1	21.2	105	106	60-140	1	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	23.3	23.6	116	118	60-140	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	21.3	21.4	106	107	60-140	0	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	21.8	21.5	109	108	60-140	1	30	
1,1-Dichloroethane	ug/L	ND	20	20	22.9	23.3	114	116	60-140	2	30	
1,1-Dichloroethene	ug/L	ND	20	20	23.0	23.2	115	116	60-140	1	30	
1,1-Dichloropropene	ug/L	ND	20	20	22.9	23.0	114	115	60-140	0	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	22.9	21.3	114	107	60-140	7	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	20.6	20.7	103	103	60-140	0	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	22.3	21.3	111	106	60-140	5	30	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	22.1	22.4	111	112	60-140	1	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	22.7	22.1	113	111	60-140	3	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	21.9	21.7	109	108	60-140	1	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	21.4	21.2	107	106	60-140	1	30	
1,2-Dichloroethane	ug/L	ND	20	20	19.9	20.2	100	101	60-140	1	30	
1,2-Dichloropropane	ug/L	ND	20	20	21.8	22.6	109	113	60-140	4	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	22.4	22.6	112	113	60-140	1	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	21.3	21.3	106	106	60-140	0	30	
1,3-Dichloropropane	ug/L	ND	20	20	21.8	21.5	109	108	60-140	1	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	21.5	21.4	107	107	60-140	0	30	
2,2-Dichloropropane	ug/L	ND	20	20	23.6	23.3	118	117	60-140	1	30	
2-Chlorotoluene	ug/L	ND	20	20	22.3	22.3	111	112	60-140	0	30	
4-Chlorotoluene	ug/L	ND	20	20	21.0	21.4	105	107	60-140	1	30	
Benzene	ug/L	ND	20	20	22.1	22.3	111	112	60-140	1	30	
Bromobenzene	ug/L	ND	20	20	21.8	21.8	109	109	60-140	0	30	
Bromochloromethane	ug/L	ND	20	20	22.0	22.2	110	111	60-140	1	30	
Bromodichloromethane	ug/L	ND	20	20	21.8	21.9	109	110	60-140	1	30	
Bromoform	ug/L	ND	20	20	20.5	20.2	102	101	60-140	1	30	
Bromomethane	ug/L	ND	20	20	23.2	23.3	116	117	60-140	1	30	
Carbon tetrachloride	ug/L	ND	20	20	22.5	22.7	112	114	60-140	1	30	
Chlorobenzene	ug/L	ND	20	20	21.6	21.6	108	108	60-140	0	30	
Chloroethane	ug/L	ND	20	20	23.3	23.2	117	116	60-140	0	30	
Chloroform	ug/L	ND	20	20	22.1	22.4	110	112	60-140	1	30	
Chloromethane	ug/L	ND	20	20	20.6	20.6	103	103	60-140	0	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	22.5	23.0	112	115	60-140	2	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	21.7	22.0	108	110	60-140	1	30	
Dibromochloromethane	ug/L	ND	20	20	21.8	22.0	109	110	60-140	1	30	
Dibromomethane	ug/L	ND	20	20	21.7	21.4	108	107	60-140	1	30	
Dichlorodifluoromethane	ug/L	ND	20	20	21.0	21.3	105	106	60-140	1	30	
Diisopropyl ether	ug/L	ND	20	20	21.0	20.9	105	104	60-140	1	30	
Ethylbenzene	ug/L	ND	20	20	22.0	22.0	110	110	60-140	0	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	19.3	18.6	97	93	60-140	4	30	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	22.6	22.8	113	114	60-140	1	30	
m&p-Xylene	ug/L	ND	40	40	44.1	44.2	110	111	60-140	0	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

Parameter	Units	3265737		3265738		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Methyl-tert-butyl ether	ug/L	0.53	20	20	21.3	21.9	104	107	60-140	3	30		
Methylene Chloride	ug/L	ND	20	20	22.4	22.7	112	114	60-140	1	30		
n-Butylbenzene	ug/L	ND	20	20	20.9	21.4	105	107	60-140	2	30		
n-Propylbenzene	ug/L	ND	20	20	22.0	22.3	110	111	60-140	1	30		
Naphthalene	ug/L	ND	20	20	23.2	22.1	108	103	60-140	5	30		
o-Xylene	ug/L	ND	20	20	21.8	21.8	109	109	60-140	0	30		
sec-Butylbenzene	ug/L	ND	20	20	21.3	21.3	106	107	60-140	0	30		
Styrene	ug/L	ND	20	20	21.7	21.8	108	109	60-140	1	30		
tert-Butylbenzene	ug/L	ND	20	20	18.5	18.9	93	95	60-140	2	30		
Tetrachloroethene	ug/L	ND	20	20	21.6	21.4	108	107	60-140	1	30		
Toluene	ug/L	ND	20	20	21.7	21.8	108	109	60-140	1	30		
trans-1,2-Dichloroethene	ug/L	ND	20	20	23.2	23.3	116	116	60-140	0	30		
trans-1,3-Dichloropropene	ug/L	ND	20	20	21.5	22.0	108	110	60-140	2	30		
Trichloroethene	ug/L	ND	20	20	22.0	22.2	110	111	60-140	1	30		
Trichlorofluoromethane	ug/L	ND	20	20	22.2	23.1	111	115	60-140	4	30		
Vinyl chloride	ug/L	ND	20	20	21.6	21.7	108	108	60-140	0	30		
1,2-Dichloroethane-d4 (S)	%						104	104	70-130				
4-Bromofluorobenzene (S)	%						102	102	70-130				
Toluene-d8 (S)	%						100	100	70-130				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

QC Batch: 620829

Analysis Method: EPA 625.1

QC Batch Method: EPA 625.1

Analysis Description: 625 MSS

Laboratory: Pace Analytical Services - Charlotte

Associated Lab Samples: 92538533002

METHOD BLANK: 3266450

Matrix: Water

Associated Lab Samples: 92538533002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	5.0	1.7	05/17/21 14:09	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	5.0	1.2	05/17/21 14:09	
2,4,6-Trichlorophenol	ug/L	ND	10.0	1.6	05/17/21 14:09	
2,4-Dichlorophenol	ug/L	ND	5.0	1.4	05/17/21 14:09	
2,4-Dimethylphenol	ug/L	ND	10.0	1.7	05/17/21 14:09	
2,4-Dinitrophenol	ug/L	ND	50.0	26.0	05/17/21 14:09	
2,4-Dinitrotoluene	ug/L	ND	5.0	1.6	05/17/21 14:09	
2,6-Dinitrotoluene	ug/L	ND	5.0	1.7	05/17/21 14:09	
2-Chloronaphthalene	ug/L	ND	5.0	1.7	05/17/21 14:09	
2-Chlorophenol	ug/L	ND	5.0	1.2	05/17/21 14:09	
2-Nitrophenol	ug/L	ND	5.0	1.4	05/17/21 14:09	
3,3'-Dichlorobenzidine	ug/L	ND	10.0	8.1	05/17/21 14:09	
4,6-Dinitro-2-methylphenol	ug/L	ND	10.0	3.4	05/17/21 14:09	
4-Bromophenylphenyl ether	ug/L	ND	5.0	1.8	05/17/21 14:09	
4-Chloro-3-methylphenol	ug/L	ND	5.0	3.3	05/17/21 14:09	
4-Chlorophenylphenyl ether	ug/L	ND	5.0	2.0	05/17/21 14:09	
4-Nitrophenol	ug/L	ND	10.0	6.6	05/17/21 14:09	
Acenaphthene	ug/L	ND	5.0	2.0	05/17/21 14:09	
Acenaphthylene	ug/L	ND	5.0	2.0	05/17/21 14:09	
Anthracene	ug/L	ND	5.0	2.3	05/17/21 14:09	
Benzo(a)anthracene	ug/L	ND	5.0	2.7	05/17/21 14:09	
Benzo(a)pyrene	ug/L	ND	5.0	2.8	05/17/21 14:09	
Benzo(b)fluoranthene	ug/L	ND	5.0	2.6	05/17/21 14:09	
Benzo(g,h,i)perylene	ug/L	ND	5.0	2.8	05/17/21 14:09	
Benzo(k)fluoranthene	ug/L	ND	5.0	2.7	05/17/21 14:09	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	1.8	05/17/21 14:09	
bis(2-Chloroethyl) ether	ug/L	ND	5.0	1.9	05/17/21 14:09	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	3.7	05/17/21 14:09	
Butylbenzylphthalate	ug/L	ND	5.0	3.1	05/17/21 14:09	
Chrysene	ug/L	ND	5.0	2.8	05/17/21 14:09	
Di-n-butylphthalate	ug/L	ND	5.0	2.2	05/17/21 14:09	
Di-n-octylphthalate	ug/L	ND	5.0	3.9	05/17/21 14:09	
Dibenz(a,h)anthracene	ug/L	ND	5.0	3.0	05/17/21 14:09	
Diethylphthalate	ug/L	ND	5.0	2.0	05/17/21 14:09	
Dimethylphthalate	ug/L	ND	5.0	2.1	05/17/21 14:09	
Fluoranthene	ug/L	ND	5.0	2.2	05/17/21 14:09	
Fluorene	ug/L	ND	5.0	2.1	05/17/21 14:09	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	1.8	05/17/21 14:09	
Hexachlorobenzene	ug/L	ND	5.0	2.2	05/17/21 14:09	
Hexachlorocyclopentadiene	ug/L	ND	10.0	1.6	05/17/21 14:09	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal
Pace Project No.: 92538533

METHOD BLANK: 3266450 Matrix: Water
Associated Lab Samples: 92538533002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Hexachloroethane	ug/L	ND	5.0	1.4	05/17/21 14:09	
Indeno(1,2,3-cd)pyrene	ug/L	ND	5.0	2.9	05/17/21 14:09	
Isophorone	ug/L	ND	10.0	1.7	05/17/21 14:09	
N-Nitroso-di-n-propylamine	ug/L	ND	5.0	1.3	05/17/21 14:09	
N-Nitrosodimethylamine	ug/L	ND	5.0	1.9	05/17/21 14:09	
N-Nitrosodiphenylamine	ug/L	ND	10.0	3.0	05/17/21 14:09	
Naphthalene	ug/L	ND	5.0	2.1	05/17/21 14:09	
Nitrobenzene	ug/L	ND	5.0	1.9	05/17/21 14:09	
Pentachlorophenol	ug/L	ND	10.0	3.8	05/17/21 14:09	
Phenanthrene	ug/L	ND	5.0	2.0	05/17/21 14:09	
Phenol	ug/L	ND	5.0	1.4	05/17/21 14:09	
Pyrene	ug/L	ND	5.0	2.2	05/17/21 14:09	
2,4,6-Tribromophenol (S)	%	34	10-137		05/17/21 14:09	
2-Fluorobiphenyl (S)	%	90	15-120		05/17/21 14:09	
2-Fluorophenol (S)	%	20	10-120		05/17/21 14:09	
Nitrobenzene-d5 (S)	%	103	10-120		05/17/21 14:09	
Phenol-d6 (S)	%	39	10-120		05/17/21 14:09	
Terphenyl-d14 (S)	%	101	11-131		05/17/21 14:09	

LABORATORY CONTROL SAMPLE: 3266451

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	34.1	68	44-142	
2,2'-Oxybis(1-chloropropane)	ug/L	50	47.3	95	36-166	
2,4,6-Trichlorophenol	ug/L	50	52.6	105	37-144	
2,4-Dichlorophenol	ug/L	50	54.5	109	1-191	
2,4-Dimethylphenol	ug/L	50	56.3	113	32-119	
2,4-Dinitrophenol	ug/L	250	325	130	1-181	
2,4-Dinitrotoluene	ug/L	50	49.5	99	39-139	
2,6-Dinitrotoluene	ug/L	50	54.1	108	50-158	
2-Chloronaphthalene	ug/L	50	41.3	83	60-118	
2-Chlorophenol	ug/L	50	47.4	95	23-134	
2-Nitrophenol	ug/L	50	57.1	114	29-182	
3,3'-Dichlorobenzidine	ug/L	100	114	114	1-262	
4,6-Dinitro-2-methylphenol	ug/L	100	128	128	1-181	
4-Bromophenylphenyl ether	ug/L	50	49.6	99	53-127	
4-Chloro-3-methylphenol	ug/L	100	112	112	22-147	
4-Chlorophenylphenyl ether	ug/L	50	46.2	92	25-158	
4-Nitrophenol	ug/L	250	184	74	1-132	
Acenaphthene	ug/L	50	46.6	93	47-145	
Acenaphthylene	ug/L	50	48.3	97	33-145	
Anthracene	ug/L	50	51.9	104	1-166	
Benzo(a)anthracene	ug/L	50	53.4	107	33-143	
Benzo(a)pyrene	ug/L	50	51.8	104	17-163	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

LABORATORY CONTROL SAMPLE: 3266451

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(b)fluoranthene	ug/L	50	51.6	103	24-159	
Benzo(g,h,i)perylene	ug/L	50	57.7	115	1-219	
Benzo(k)fluoranthene	ug/L	50	52.1	104	11-162	
bis(2-Chloroethoxy)methane	ug/L	50	54.3	109	33-184	
bis(2-Chloroethyl) ether	ug/L	50	52.3	105	12-158	
bis(2-Ethylhexyl)phthalate	ug/L	50	65.2	130	8-158	
Butylbenzylphthalate	ug/L	50	58.6	117	1-152	
Chrysene	ug/L	50	52.9	106	17-168	
Di-n-butylphthalate	ug/L	50	56.5	113	1-118	
Di-n-octylphthalate	ug/L	50	63.7	127	4-146	
Dibenz(a,h)anthracene	ug/L	50	58.4	117	1-227	
Diethylphthalate	ug/L	50	51.9	104	1-114	
Dimethylphthalate	ug/L	50	50.1	100	1-112	
Fluoranthene	ug/L	50	52.6	105	26-137	
Fluorene	ug/L	50	50.0	100	59-121	
Hexachloro-1,3-butadiene	ug/L	50	30.0	60	24-116	
Hexachlorobenzene	ug/L	50	47.7	95	1-152	
Hexachlorocyclopentadiene	ug/L	50	32.2	64	25-150	
Hexachloroethane	ug/L	50	30.4	61	40-113	
Indeno(1,2,3-cd)pyrene	ug/L	50	57.5	115	1-171	
Isophorone	ug/L	50	53.5	107	21-196	
N-Nitroso-di-n-propylamine	ug/L	50	51.9	104	1-230	
N-Nitrosodimethylamine	ug/L	50	45.0	90	25-150	
N-Nitrosodiphenylamine	ug/L	50	52.3	105	25-150	
Naphthalene	ug/L	50	41.9	84	21-133	
Nitrobenzene	ug/L	50	50.8	102	35-180	
Pentachlorophenol	ug/L	100	115	115	14-176	
Phenanthrene	ug/L	50	51.3	103	54-120	
Phenol	ug/L	50	31.1	62	5-112	
Pyrene	ug/L	50	52.7	105	52-115	
2,4,6-Tribromophenol (S)	%			113	10-137	
2-Fluorobiphenyl (S)	%			88	15-120	
2-Fluorophenol (S)	%			73	10-120	
Nitrobenzene-d5 (S)	%			104	10-120	
Phenol-d6 (S)	%			60	10-120	
Terphenyl-d14 (S)	%			105	11-131	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3266489 3266490

Parameter	Units	35632532001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec					
1,2,4-Trichlorobenzene	ug/L	8.6U	50	50	44.9	37.6	90	75	44-142	18	30		
2,2'-Oxybis(1-chloropropane)	ug/L	5.8U	50	50	43.9	41.9	88	84	36-166	5	30		
2,4,6-Trichlorophenol	ug/L	7.8U	50	50	54.4	49.7J	109	99	37-144		30		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

Parameter	Units	35632532001		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MS % Rec	MSD % Rec							
2,4-Dichlorophenol	ug/L	7.0U	50	50	50.9	46.8	102	94	1-191	8	30			
2,4-Dimethylphenol	ug/L	8.5U	50	50	54.1	49.9J	108	100	32-119		30			
2,4-Dinitrophenol	ug/L	130U	250	250	ND	205J	25	82	1-181		30			
2,4-Dinitrotoluene	ug/L	8.1U	50	50	48.1	47.1	96	94	39-139	2	30			
2,6-Dinitrotoluene	ug/L	8.6U	50	50	62.0	56.4	124	113	50-158	9	30			
2-Chloronaphthalene	ug/L	8.6U	50	50	48.4	42.9	97	86	60-118	12	30			
2-Chlorophenol	ug/L	6.0U	50	50	43.1	36.4	86	73	23-134	17	30			
2-Nitrophenol	ug/L	7.0U	50	50	49.4	42.6	99	85	29-182	15	30			
3,3'-Dichlorobenzidine	ug/L	40.6U	100	100	103	73.1	103	73	1-262	34	30	R1		
4,6-Dinitro-2-methylphenol	ug/L	17.0U	100	100	89.7	106	90	106	1-181	17	30			
4-Bromophenylphenyl ether	ug/L	8.8U	50	50	66.3	62.1	133	124	53-127	7	30	M1		
4-Chloro-3-methylphenol	ug/L	16.7U	100	100	98.7	97.8	99	98	22-147	1	30			
4-Chlorophenylphenyl ether	ug/L	10.0U	50	50	54.9	51.5	110	103	25-158	6	30			
4-Nitrophenol	ug/L	33.0U	250	250	117	129	47	52	1-132	10	30			
Acenaphthene	ug/L	10.0U	50	50	51.8	46.2	104	92	47-145	11	30			
Acenaphthylene	ug/L	9.8U	50	50	53.1	48.0	106	96	33-145	10	30			
Anthracene	ug/L	11.6U	50	50	53.3	52.8	107	106	1-166	1	30			
Benzo(a)anthracene	ug/L	13.4U	50	50	57.5	57.2	115	114	33-143	1	30			
Benzo(a)pyrene	ug/L	13.9U	50	50	53.5	54.3	107	109	17-163	2	30			
Benzo(b)fluoranthene	ug/L	13.0U	50	50	54.7	54.3	109	109	24-159	1	30			
Benzo(g,h,i)perylene	ug/L	14.2U	50	50	60.3	58.4	121	117	1-219	3	30			
Benzo(k)fluoranthene	ug/L	13.6U	50	50	53.6	54.2	107	108	11-162	1	30			
bis(2-Chloroethoxy)methane	ug/L	9.1U	50	50	49.1J	44.3J	98	89	33-184		30			
bis(2-Chloroethyl) ether	ug/L	9.6U	50	50	52.6	52.1	105	104	12-158	1	30			
bis(2-Ethylhexyl)phthalate	ug/L	18.6U	50	50	61.0	60.6	122	121	8-158	1	30			
Butylbenzylphthalate	ug/L	15.7U	50	50	61.0	60.6	122	121	1-152	1	30			
Chrysene	ug/L	13.8U	50	50	56.2	54.9	112	110	17-168	2	30			
Di-n-butylphthalate	ug/L	11.0U	50	50	54.8	54.9	110	110	1-118	0	30			
Di-n-octylphthalate	ug/L	19.6U	50	50	60.4	57.5	121	115	4-146	5	30			
Dibenz(a,h)anthracene	ug/L	14.8U	50	50	62.8	59.2	126	118	1-227	6	30			
Diethylphthalate	ug/L	10.2U	50	50	52.5	50.4	105	101	1-114	4	30			
Dimethylphthalate	ug/L	10.6U	50	50	55.0	50.5	110	101	1-112	9	30			
Fluoranthene	ug/L	11.0U	50	50	53.7	48.6	107	97	26-137	10	30			
Fluorene	ug/L	10.4U	50	50	53.4	50.6	107	101	59-121	5	30			
Hexachloro-1,3-butadiene	ug/L	8.8U	50	50	46.8	39.9	94	80	24-116	16	30			
Hexachlorobenzene	ug/L	10.8U	50	50	58.0	55.0	116	110	1-152	5	30			
Hexachlorocyclopentadiene	ug/L	8.0U	50	50	38.7J	34.1J	77	68	25-150		30			
Hexachloroethane	ug/L	6.9U	50	50	36.3	34.3	73	69	40-113	6	30			
Indeno(1,2,3-cd)pyrene	ug/L	14.4U	50	50	63.1	59.1	126	118	1-171	7	30			
Isophorone	ug/L	8.3U	50	50	49.8J	44.5J	100	89	21-196		30			
N-Nitroso-di-n-propylamine	ug/L	6.6U	50	50	53.6	50.2	107	100	1-230	6	30			
N-Nitrosodimethylamine	ug/L	9.4U	50	50	37.5	33.1	75	66	25-150	12	30			
N-Nitrosodiphenylamine	ug/L	15.0U	50	50	56.4	54.8	113	110	25-150	3	30			
Naphthalene	ug/L	10.4U	50	50	49.4	40.8	99	82	21-133	19	30			
Nitrobenzene	ug/L	9.4U	50	50	46.4	39.3	93	79	35-180	17	30			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: NCDOT Proposal

Pace Project No.: 92538533

Parameter	Units	3266489		3266490		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		35632532001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Pentachlorophenol	ug/L	18.8U	100	100	79.1	91.7	79	92	14-176	15	30		
Phenanthrene	ug/L	10.0U	50	50	54.8	52.8	110	106	54-120	4	30		
Phenol	ug/L	6.8U	50	50	29.3	30.0	59	60	5-112	2	30		
Pyrene	ug/L	11.0U	50	50	62.0	62.5	124	125	52-115	1	30	M1	
2,4,6-Tribromophenol (S)	%						122	114	10-137				
2-Fluorobiphenyl (S)	%						93	79	15-120				
2-Fluorophenol (S)	%						60	53	10-120				
Nitrobenzene-d5 (S)	%						92	77	10-120			D3	
Phenol-d6 (S)	%						51	52	10-120				
Terphenyl-d14 (S)	%						104	107	11-131				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: NCDOT Proposal

Pace Project No.: 92538533

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.

TNTC - Too Numerous To Count

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

ANALYTE QUALIFIERS

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

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

N The reported TIC has an 85% or higher match on a mass spectral library search.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCDOT Proposal

Pace Project No.: 92538533

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92538533002	GW-R5819-02	EPA 625.1	620829	EPA 625.1	621038
92538533001	R-5819-TB	SM 6200B	620664		
92538533002	GW-R5819-02	SM 6200B	620665		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



Document Name:
Sample Condition Upon Receipt (SCUR)
 Document No.:
F-CAR-CS-033-Rev.07

Document Revised: October 28, 2020
 Page 1 of 2
 Issuing Authority:
 Pace Carolinas Quality Office

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville Atlanta Kernersville

Sample Condition Upon Receipt

Client Name:

General Engineering-NC

Project #: **WO# : 92538533**

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____



Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: *11-5-21*

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen?

Thermometer:

Yes No N/A

IR Gun ID: *22T064*

Wet Blue None

Type of Ice:

Cooler Temp: *2.8* Correction Factor: Add/Subtract (°C) *2.8* 0.0°C

Temp should be above freezing to 6°C

Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): *2.8*

USDA Regulated Soil (N/A, water sample)

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

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

Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <i>11/5</i> <input checked="" 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 checked="" type="checkbox"/> Yes <input 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.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
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: <i>Votes</i>	
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: _____

Date: _____

Project Manager SRF Review: _____

Date: _____



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

Project #

WO# : 92538533

PM: BV

Due Date: 05/20/21

CLIENT: 92-GEL

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

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

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)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 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)	AG0U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1																2													
2																4											2		
3																4											2		
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

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 #

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.



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: General Engineering - NC		Report To: Andrew Stahl		Attention:	
Address: 2700 Summer Blvd		Copy To:		Company Name:	
Raleigh, NC 27616		Purchase Order #:		Address:	
Email: andrew.stahl@gei.com		Project Name: NCDOT Proposal		Pace Quote:	
Phone: 919-907-7538 Fax:		Project #:		Pace Project Manager: bonnie.vang@pacelabs.com,	
Requested Due Date:				Pace Profile #: 1241-17	
				Regulatory Agency:	
				State / Location:	
				NC	

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 /, -) Sample Ids must be unique	MATRIX CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Other OT Tissue TS	COLLECTED START DATE TIME END DATE TIME	PRESERVATIVES Unpreserved H2SO4 HNO3 HCl NaOH Na2S2O3 Methanol Other	ANALYSES TEST 62008 625+TICS	Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)				
1	R-5819-TB		5-11 1230		X	X														
2	G-W-25819-02		5-11 1240		X	X														
3	R-5819-FEB		5-11 1250		X	X														
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

92538533
001
002
* Hold for analysis
contact Andrew Stahl for info

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS				
5-day TAT for items #1 & 2	B. R. / LEL	5-12-21	1500	Pace William J. J. / S	5-13-21	0945	2	8	Y	N	Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	
SIGNATURE of SAMPLER:	DATE Signed: