PRELIMINARY SITE ASSESSMENT

SR 1997 (FAYETTEVILLE ROAD) WIDENING
TIP NO. U-5797, WBS NO. 44367.1.1

NCDOT PARCEL NO. 03
OWNER: JONES
402 24TH STREET
LUMBERTON, ROBESON COUNTY, NORTH CAROLINA

PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
C/O STV ENGINEERS, INC.
1600 PERIMETER PARK DRIVE, SUITE 225
MORRISVILLE, NC 2756002

PREPARED BY:
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PROJECT NUMBER: G19011.00
JUNE 9, 2020

June 9, 2020

Mr. Patrick Livingston, PE
STV Engineers, Inc.
900 W. Trade St, Suite 715
Charlotte, NC 28202

Re: **Preliminary Site Assessment**
SR 1997 (Fayetteville Road) Widening
TIP No. U-5797, WBS No. 44367.1.1
Parcel No. 03
Owner: Jones
402 24TH Street
Lumberton, Robeson County, NC

Dear: Mr. Livingston:

Falcon is pleased to present the following Preliminary Site Assessment in support of the above-mentioned Project. Specifically, Falcon sampled soil in proximity to the project limits on this parcel in general accordance with the approved scope of work. Contaminants above the State Action Level for GRO and DRO were identified; however, additional assessment is not warranted at this time as the soil can be removed and properly disposed of during construction. Ten constituents were also identified in the groundwater above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels.

Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

Please review this report and advise us if you have any questions or concerns. We appreciate this opportunity to provide services to you and look forward to partnering with you on future projects. If you have any questions, please give Falcon a call at (919) 871-0800.

Sincerely,
FALCON ENGINEERING, INC.

Christopher J. Burkhardt
Environmental Services Manager

Jeremy R. Hamm, PE
Geotechnical Services Manager

TABLE OF CONTENTS

LIST OF FIGURES AND ATTACHMENTS

SECTION 1: INTRODUCTION

1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 03. Parcel No. 03 is addressed as 402 24TH Street in Lumberton Robeson County, North Carolina. NCDOT is proposing to widen Fayetteville Road (SR 1997) from Farringdom Street to 22nd Street. The limits of the assessment are between the existing edge of NCDOT maintained pavement (within the existing NCDOT ROW) where accessible, and the proposed NCDOT ROW and/or easement (whichever boundary represents the largest area). Boring locations were placed in the vicinity of proposed excavations for drainage features, utilities, and roadway/ditch cuts to determine if soils requiring remediation or special handling are present where excavation is planned to take place.

1.2 SCOPE OF WORK

Falcon's scope of work included coordination of; public and private utility location near the proposed borings, geophysical surveys, collecting soil samples using direct push technology, and laboratory analysis. Soil samples were analyzed for petroleum hydrocarbons by Red Lab LLC, via UVF technology. Groundwater samples were analyzed for Volatile Organic Compounds (VOCs) and Semi-volatile Organic Compounds (SVOCs) using traditional laboratory methods.

SECTION 2: HISTORY

2.1 PARCEL USAGE

Falcon performed a Phase I Environmental Site Assessment (ESA) for this parcel under Falcon Project No. G17057 dated April 2018. The ESA identified this parcel as a Recognized Environmental Condition (REC) based on it's use as a gas station. Jones Meadowbrook Exxon is listed in the UST database as having 5 registered USTs. Four USTs are listed as temporarily closed and one is listed as removed. Two dispenser islands under metal canopies and two UST pits were observed. The dispensers are in the northeast portion of the property. One UST pit was observed south of the dispenser islands on the east side of the property. Additional UST fill ports were observed between the current store building and a second vacant commercial building in the southwest portion of the parcel. Tank capacity, product, installation dates and current status were reported as:

- One 2,000-gallon Gasoline 1992 Temporarily Closed
- One 2,000-gallon Diesel 1980 Temporarily Closed
- Two 4,000-gallon Gasoline 1980 Temporarily Closed
- One 2,000-gallon Gasoline 1976 Removed

2.2 FACILITY IDENTIFICATION NUMBER

Facility Identification Number 00-0-0000018567 was identified for this parcel.

2.3 GROUNDWATER INCIDENT NUMBER

A Groundwater Incident Number was not identified for this parcel.

SECTION 3: SITE OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

Groundwater monitoring wells (MWs) were not observed on this parcel.

3.2 ACTIVE USTS

Two dispenser islands under metal canopy and a common UST pit were observed. The USTs are listed as temporarily closed in the UST database.

3.3 FEATURES APPARENT BEYOND ROW/EASEMENT

Two dispenser islands under metal canopies and two UST pits were observed. The dispensers are in the northeast portion of the property. One UST pit was observed south of the dispenser islands on the east side of the property. Additional UST fill ports were observed between the current store building and a second vacant commercial building in the southwest portion of the parcel. Monitoring wells, remediation systems, or hydraulic lifts were not observed within the project limits.

SECTION 4: METHODOLOGY

4.1 GEOPHYSICS

Pyramid Geophysical Services (Pyramid) was subcontracted to perform a geophysical survey of the assessment area. The assessment area is between the existing edge of NCDOT maintained pavement (within the existing NCDOT ROW) where accessible, and the proposed NCDOT ROW and/or easement (whichever boundary represents the largest area). The survey was used to locate private utility lines, as well as possible indications of USTs, and/or their pits.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is georeferenced and can be overlain on aerial photographs and CADD drawings.

GPR data was acquired across select EM anomalies (where identified), using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Pyramid marked their findings on the surface with paint. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and to obtain adequate coverage. A copy of the full Geophysical Report is included in the Attachments.

4.2 BORINGS

Regional Probing was subcontracted to advance soil borings using direct push technology. Regional Probing used a truck mounted Geoprobe® 5410 unit mounted on an off-road modified Ford F350 Diesel 4x4. The unit has auger-capabilities and is equipped with a GH-42 soil-probing hammer, with 21,700 pounds of down force and 28,900 pounds of retraction force. The unit has an on-board tank for decontaminating the geoprobe rods before advancing the probe at each sample location.

4.3 SAMPLE PROTOCOL

Prior to initiating sample collection Falcon contacted NC One Call and requested public utility locations be marked around the proposed sample locations. Sampling was in general accordance with the NC Department of Environmental Quality (DEQ) Division of Waste Management's (DWM) "Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement for UST Releases" (March 1, 2007 Version Change 9 – February 1, 2019) guidance document. Sampling strategy was derived based upon the project scope and objectives as outlined above. Red Lab, LLC was selected to perform the UVF laboratory analytical analysis of the soil. Pace Analytical (North Carolina Field Services Certification #: 5342) was selected to provide traditional lab testing

of groundwater. Appropriate sterile containers were received by Falcon from each laboratory prior to beginning the fieldwork. The containers were labeled appropriately.

A Minirae 3000 photoionization detector (PID) was used to field screen samples for volatile organics to determine if a release had occurred. The instrument was calibrated per manufacturer instructions prior to use. Falcon staff bagged composite soil samples from each boring in approximately two-and-a-half-foot sections. Representative samples were placed in a sealed plastic bag for approximately 10 minutes to allow soil hydrocarbons to reach equilibrium within the headspace prior to scanning with the PID. One sample per boring was collected from the depth of the proposed cut or from the section above the depth of cut with the highest PID reading.

To avoid cross contamination, a new unused pair of non-powdered nitrile gloves was worn while extracting each sample. Samples were placed in the appropriate laboratory provided containers. The labels on each container were then completed so that each provided the date and time of sampling, method of analysis, sample collector, preservative used, and sampling location identification. Samples were placed in an ice filled cooler and transported to the lab. Appropriate chain-of-custody procedures, including the completion of necessary forms, were followed.

SECTION 5: RESULTS

5.1 GEOPHYSICS

The geophysical investigation was performed between March 19 and March 25, 2019 to investigate for the presence of metallic underground storage tanks (USTs) beneath the survey area. According to the attached Geophysical Report; "*A total of seven EM anomalies were identified. Several of the EM anomalies were directly attributed to visible cultural features at the ground surface. Several other EM anomalies were associated with reinforced concrete, a pipe, and a manhole and were investigated further with GPR to verify that no subsurface structures such as USTs were obscured by the interference. No evidence of any subsurface structures was observed at these locations.*

GPR verified the sizes and orientations of four known USTs located within the geophysical survey area. The known USTs were located on the southern portion of the property. The eastern UST (UST #1) was approximately 27 feet long by 7.5 feet wide. The east-central UST (UST#2) was approximately 27 feet long by 7 feet wide. The west-central UST (UST#3) was approximately 16 feet long by 5 feet wide. The western-most UST (UST #4) was approximately 16 feet long by 5.5 feet wide. No unknown buried structures were identified. Collectively, the geophysical data recorded evidence of four known USTs within the geophysical survey area at Parcel 3."

5.2 SAMPLE DATA

Falcon and our subcontractor advanced three borings (B-3, B-3.1, B-3.2) to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed or 10' below ground surface (BGS)adjacent to the USTs. Saturated soil was observed at 4' below ground surface (BGS) in B-3. Based on the elevated PID readings and presence of groundwater B-3 was advanced to 10' BGS in order to obtain a groundwater sample. Borings 3.1 and 3.2 were added to assess the extent of the suspected area of contamination. Please see the Boring Location Plan in the attachments for a visual depiction of the sample locations. The coordinates (latitude and longitude) that correspond to the sample locations are shown below in Table No. 1 Boring Coordinates.

TABLE NO. 1 BORING COORDINATES

Boring	Latitude	Longitude
B-3	34.6339758	-79.0034697
B-3.1	34.6339507	-79.0034301
B-3.2	34.6339883	-79.0035168

Borings were field screened with a PID for evidence of volatile organics in sections as indicated in Table No. 2 PID Readings. Falcon selected soil samples based on the field screening results and the needs of the project. Red Lab analyzed the selected soil samples for petroleum hydrocarbons via UVF technology. Groundwater samples were analyzed for Volatile Organic Compounds (VOCs) and Semi-volatile Organic Compounds (SVOCs) by Pace Analytical using traditional laboratory methods.

Gasoline Range Organics (GRO) above the State Action Level of 50 mg/kg were detected in B-3 at 206mg/kg. Diesel Range Organics (DRO) above the State Action Level of 100 mg/kg were detected in B-3 at 311.9 mg/kg and B-3.2 at 307.1 mg/kg. Eleven constituents were identified in the groundwater. Ten of the constituents were above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels for Groundwater. The eleventh constituent was below the North Carolina Groundwater Quality Standards.

Full laboratory reports from Redlabs and Pace are attached. The results of the UVF laboratory analysis are shown in Table No. 3 Summary of UVF Soil Sampling Results. The results of the traditional laboratory analysis are shown in Table No. 4 Summary of Water Sampling Results.

TABLE NO. 2 PID READINGS

Boring	Depth BGS*	PID**
B-3	0-2.5	81.9
	2.5-5.0	760.4
	5.0-7.5	**1248.0**
	7.5-10.0	645.4
B-3.1	0-2.5	23.7
	2.5-5.0	70.4
	5.0-7.5	**864.8**
	7.5-10.0	157.0
B-3.2	0-2.5	61.1
	2.5-5.0	70.4
	5.0-7.5	1226.0
	7.5-10.0	**1268.0**

*BGS = Depth below ground surface in feet
**PID readings are in parts per million
Samples shown in **bold** were selected for analysis

TABLE NO. 3 SUMMARY OF UVF SOIL SAMPLING RESULTS

Sample ID	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
								% light	% mid	% heavy	
B-3	86.8	**206**	**311.9**	517.9	84.3	3.2	<0.24	95.6	3.9	0.5	Deg.Diesel 74.9%,(FCM)
B-3.1	<0.52	28.8	52.9	81.7	26.9	1.5	<0.021	60.2	34.4	5.5	Deg.Fuel 78.9%,(FCM),(BO)
B-3.2	<0.55	36.2	**307.1**	343.3	33.2	1.2	<0.022	93.5	6.2	0.3	Undeg.Diesel 80.3%,(FCM)

Results reported in mg/kg (milligrams per kilogram)

TABLE NO. 4 SUMMARY OF WATER SAMPLING RESULTS

Sample ID	Method	Constituent	Result	GWQS	GCL
B-3	8270E	1-Methylnaphthalene	43.5	1	1000
B-3	8270E	2-Methylnaphthalene	90.7	30	12500
B-3	8270E	Naphthalene	408	6	6000
B-3	8260D	Benzene	315	1	5000
B-3	8260D	Ethylbenzene	1060	600	84500
B-3	8260D	p-isopropyltoluene	33.8	25	11700
B-3	8260D	Naphthalene	904	6	6000
B-3	8260D	Toluene	39.9	600	260000
B-3	8260D	Xylene (Total)	1060	500	85500
B-3	8260D	m&p-Xylene	1020	500	85500
B-3	8260D	o-Xylene	37.3	500	85500

GWQS = North Carolina Groundwater Quality Standards
GCL = Gross Contamination Levels for Groundwater
Results = micrograms per liter (ug/L)

5.3 SAMPLE OBSERVATIONS

The deeper borings emitted olfactory evidence of a release. Obvious visual indications of a release (stained soils or oily sheen) were not observed. Table No. 5 Soil Observations lists visual soil observations of color and texture.

TABLE NO. 5 SOIL OBSERVATIONS

Boring	Depth	Color	Soil Type
B-3	0-2.5	Gray	Silty Sand (A-2-4)
	2.5-5.0	Gray Brown	Silty Sandy Clay (A-6)
	5.0-7.5	Gray Brown	Silty Sandy Clay (A-6)
	7.5-10.0	Gray Brown	Sandy Clay (A-6)
B-3.1	0-2.5	Gray Orange	Silty Clayey Sand (A-2-6)
	2.5-5.0	Gray	Sandy Clay (A-6)
	5.0-7.5	Gray Brown Red	Sandy Clay (A-6)
	7.5-10.0	Gray	Sandy Clay (A-6)
B-3.2	0-2.5	Gray	Slightly Clayey Silty Sand (A-2-4)
	2.5-5.0	Brown Gray	Sandy Clay (A-6)
	5.0-7.5	Gray Brown	Sandy Clay (A-6)
	7.5-10.0	Gray	Sandy Clay (A-6)

Depth is in feet below ground surface

5.4 QUANTITIES CALCULATIONS

Soils requiring quantity calculations were identified at Parcel 03. The depth of the boring was 10 feet BGS. The area of contaminated soils is assumed as an ellipse, approximately 50 feet long and 40 feet wide. Falcon used the following formula to calculate an estimated volume of contaminated soil:

$$\pi * R^1 * R^2 * D$$

Where R^1 & R^2 = the radii of ellipse and D = the depth of the boring. An assumed density of 120 lbs per cubic foot was used to calculate the soil quantity in tons.

SECTION 6: CONCLUSIONS

6.1 INTERPRETATION OF RESULTS

This Preliminary Site Assessment was performed to evaluate the soils in proximity to the project limits on this parcel for the presence of petroleum hydrocarbons. The findings are as follows:

- Soil sampling completed on the parcel identified GRO and DRO in the soils above state action levels.
- Groundwater sampling at the site identified ten constituents above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels for Groundwater.

6.2 GEOPHYSICS

The geophysical data recorded evidence of four known USTs within the geophysical survey area.

6.3 SAMPLING

Sampling results identified GRO above the State Action Level of 50 mg/kg in B-3 at 206mg/kg. DRO above the State Action Level of 100 mg/kg was detected in B-3 at 311.9mg/kg and B-3.2 at 307.1 mg/kg. Ten constituents were identified in the groundwater above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels.

6.4 QUANTITIES

Soils requiring quantities calculations were identified at sample location B-3 and B-3.2. The estimate quantity of contaminated soil is 950 tons. However, this is only an estimate. The contamination plume was not delineated and therefore, the volume of contaminated soil required to be excavated will vary based on the actual plume dimensions and limits of excavation.

SECTION 7: RECOMMENDATIONS

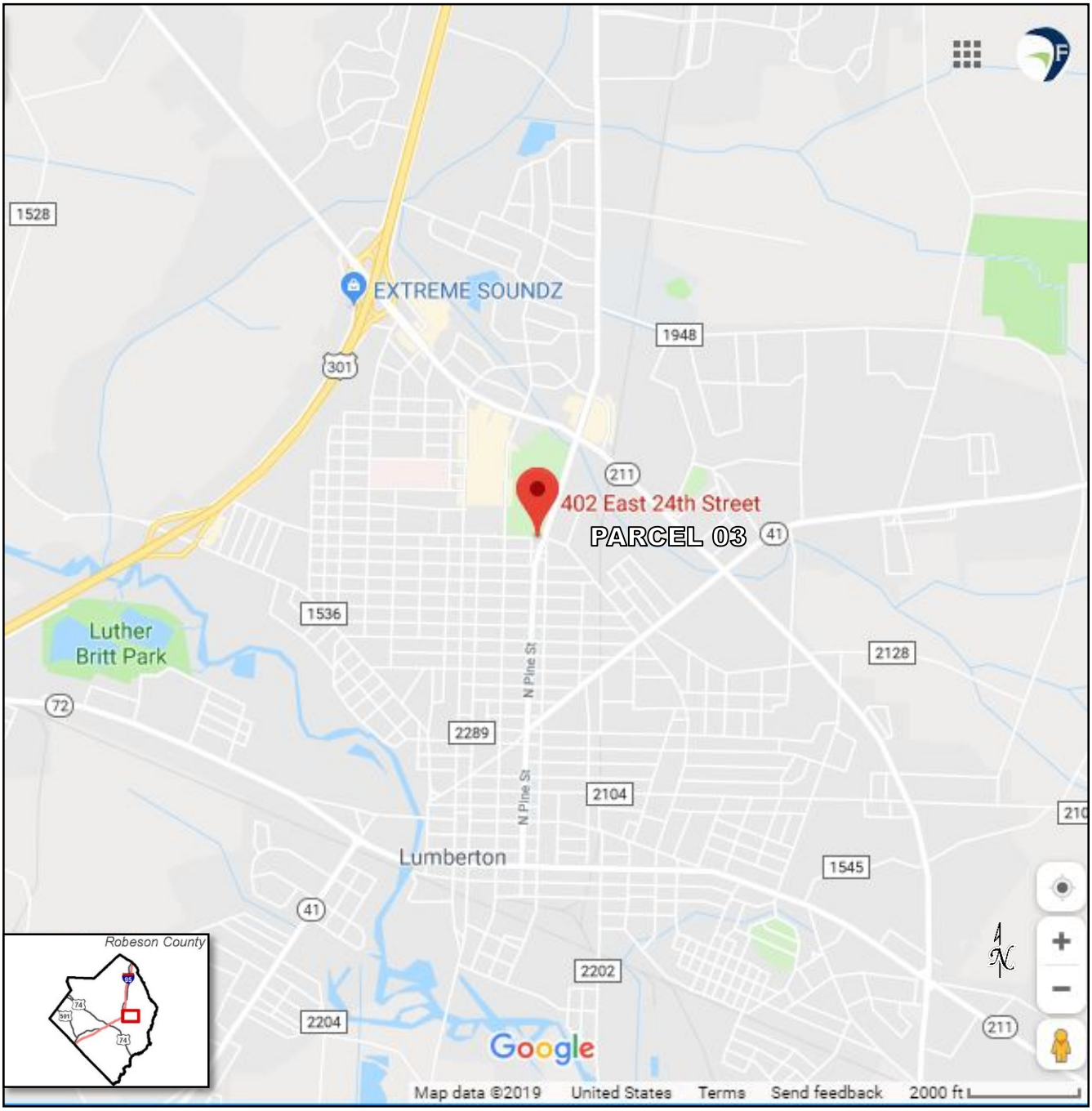
7.1 ADDITIONAL SAMPLING

Contaminants above the State Action Level for GRO and DRO were identified; however, additional assessment is not warranted at this time as the soil can be removed and properly disposed of during construction. Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

7.2 SPECIAL HANDLING OF IMPACTED SOIL

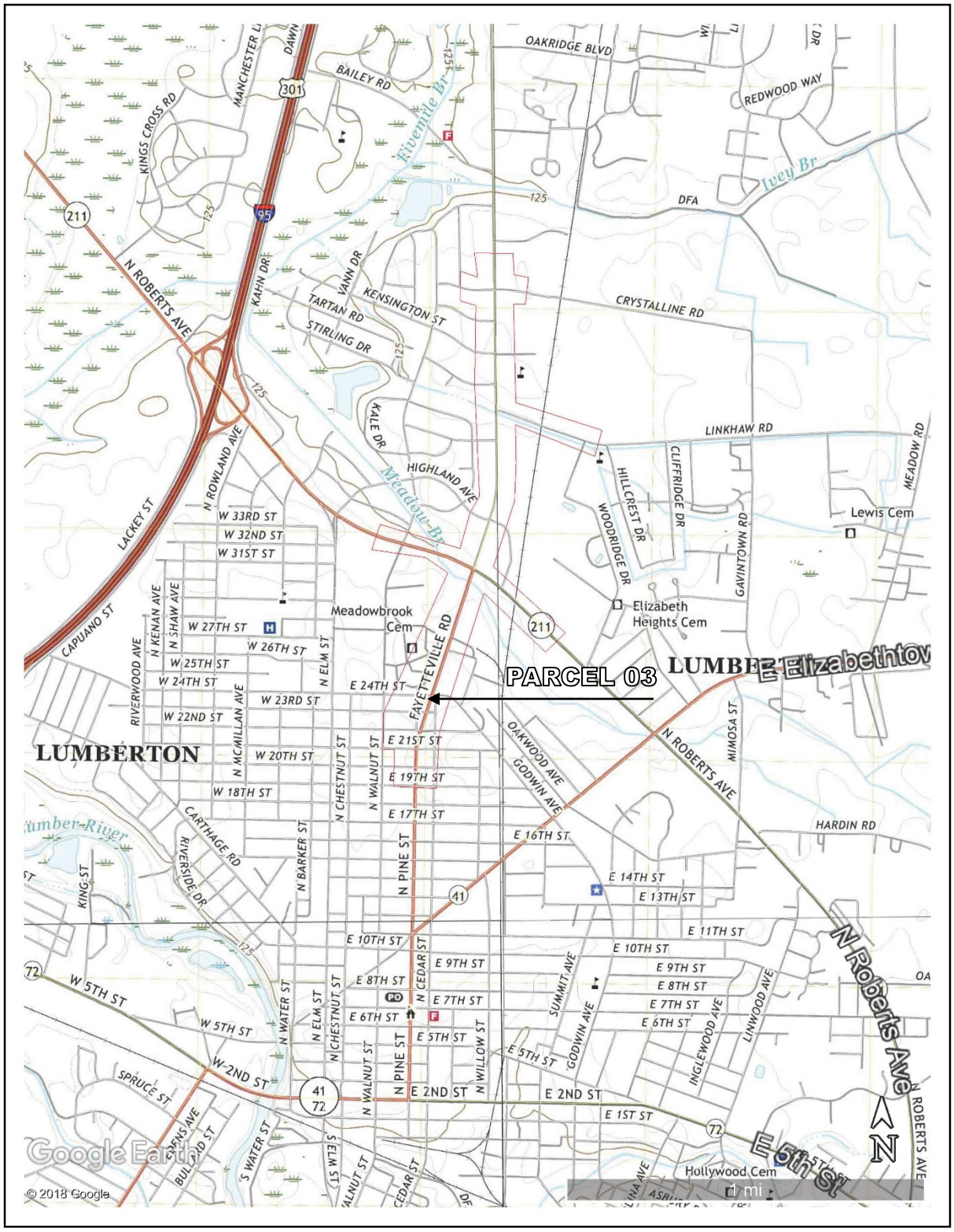
Soil requiring special handling was identified at B-3 and B-3.2. Impacted soil encountered during construction should be removed and properly disposed of.

NCDOT U-5797 Parcel 03
Preliminary Site Assessment
Vicinity Map



Project No.: G19011.00
Date: September 2019
Source: Google Maps

NCDOT U-5797 Parcel 03
Preliminary Site Assessment
USGS Topographic Maps



Project No.: G19011.00
Date: September 2019
Source: "NW, NE, SW, and SE Lumberton, NC" 2019

NCDOT U-5797 Parcel 03
Preliminary Site Assessment
Parcel Location Map

September 3, 2019

1:2,128

0 0.0175 0.035 0.07 mi

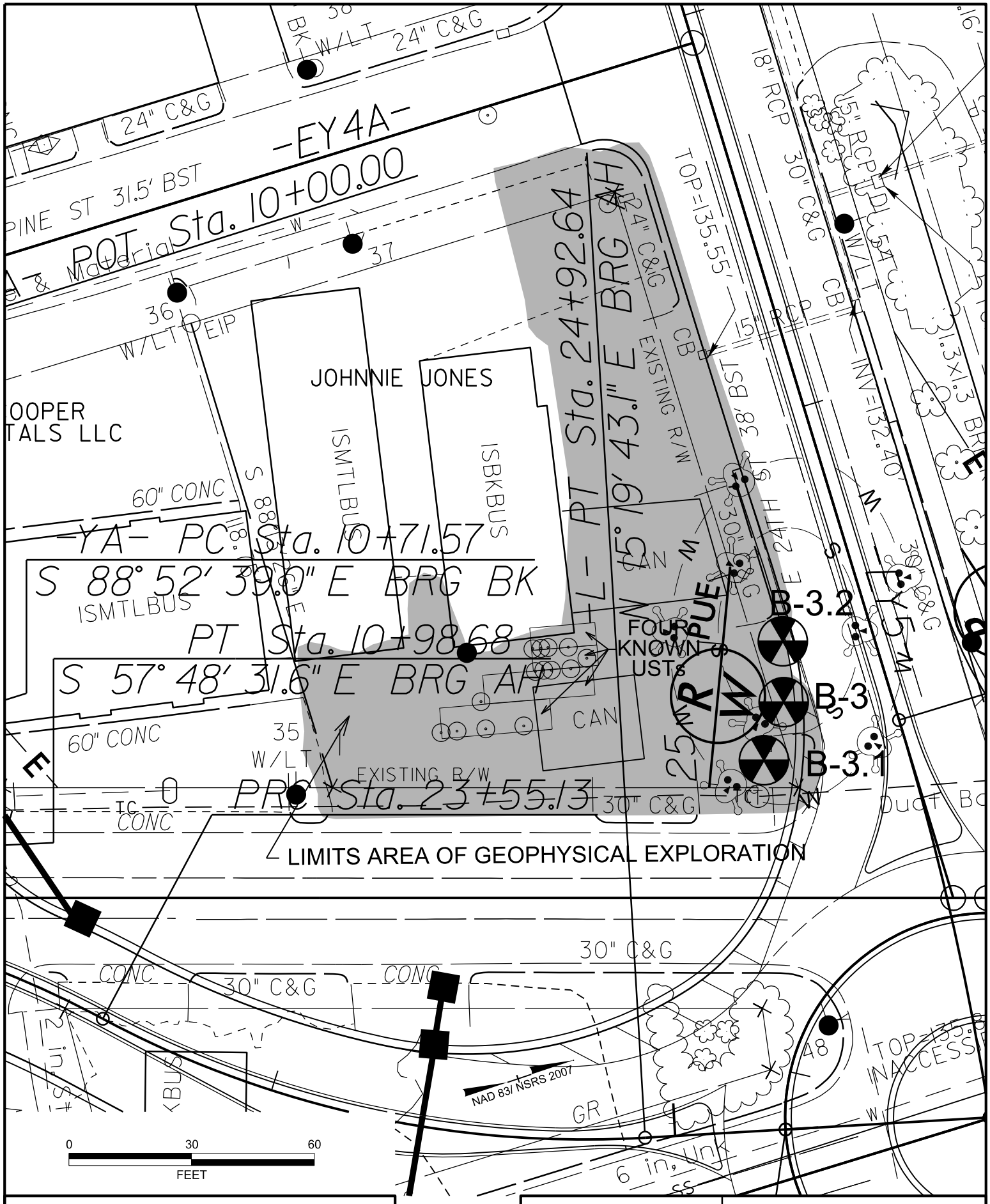
0 0.0275 0.055 0.11 km

- County Line
- City Limits
- Streets
- Parcels

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2019

Project No.: G19011.00
Date: September 2019
Source: Robeson County GIS



NOTES:

- BGS = BELOW GROUND SURFACE
- BORINGS B-3, B-3.1 & B-3.2 WERE DRILLED TO 10.0 BGS

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

BORING LOCATION PLAN

NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 3 - JONES
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

UVF Soil Analysis Results

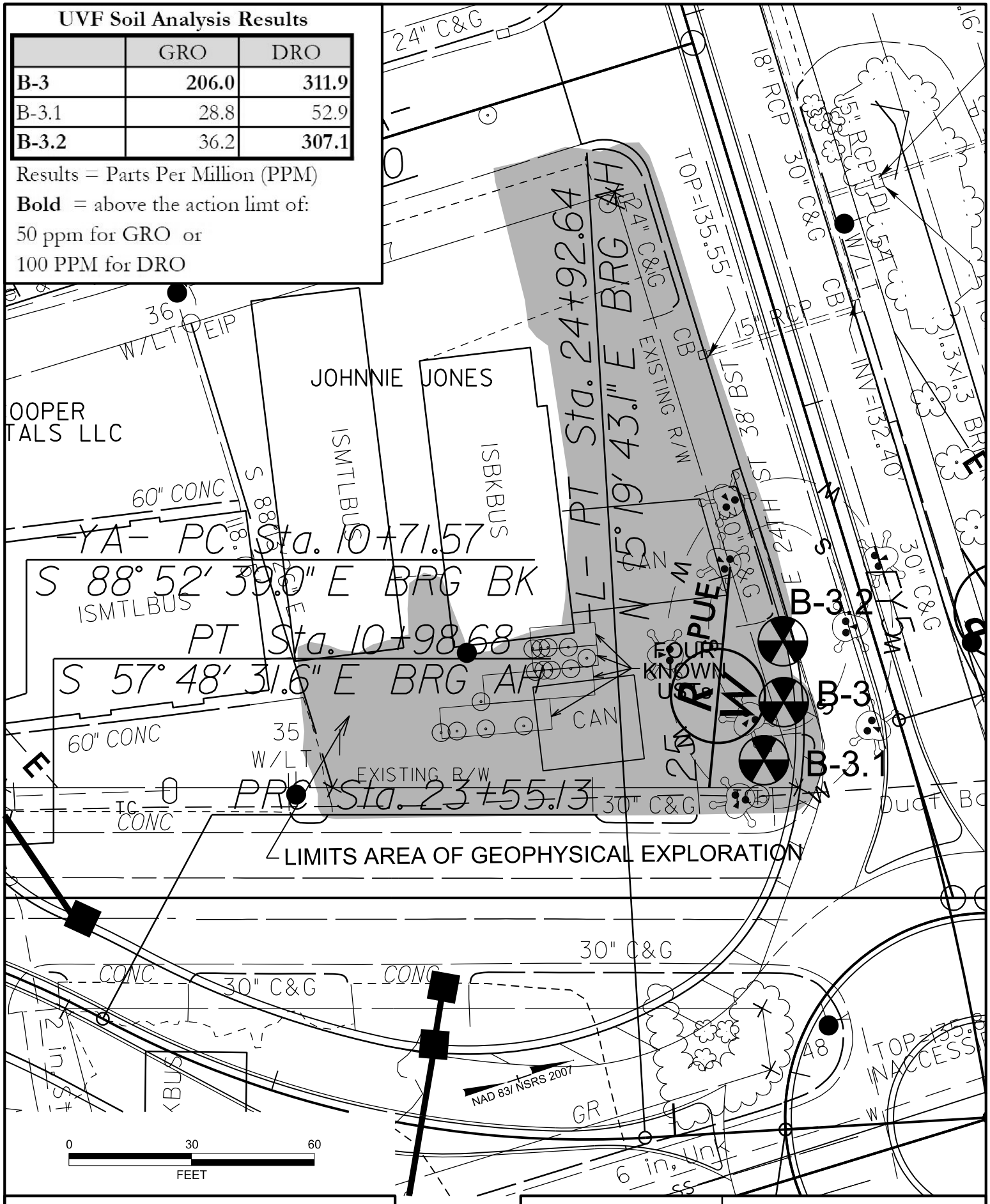
	GRO	DRO
B-3	**206.0**	**311.9**
B-3.1	28.8	52.9
B-3.2	36.2	**307.1**

Results = Parts Per Million (PPM)

Bold = above the action limt of:

50 ppm for GRO or

100 PPM for DRO



NOTES:

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
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SOIL UVF LAB RESULTS

NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 3 - JONES
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

B-3 8260D Analysis of Groundwater

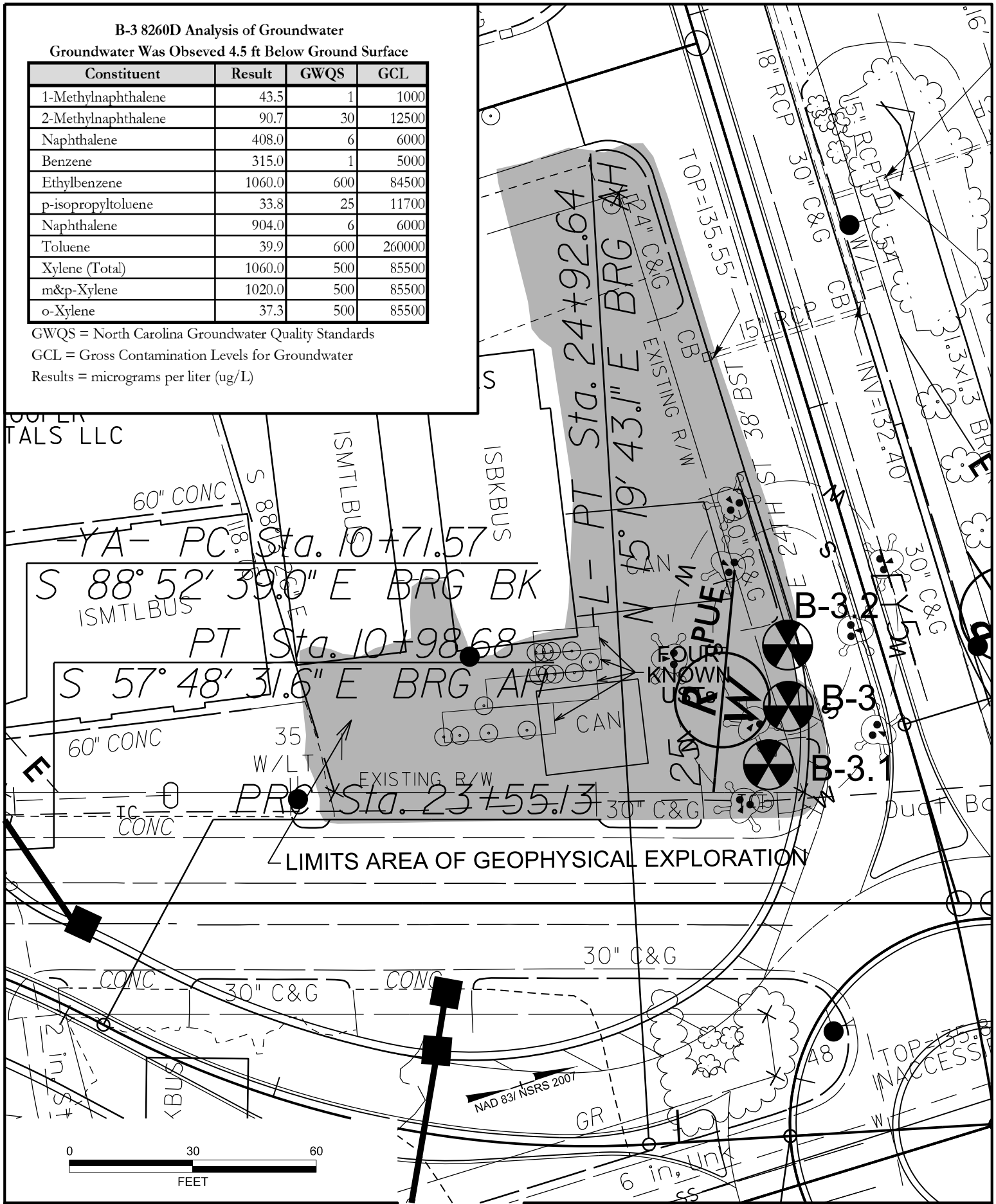
Groundwater Was Obseved 4.5 ft Below Ground Surface

Constituent	Result	GWQS	GCL
1-Methylnaphthalene	43.5	1	1000
2-Methylnaphthalene	90.7	30	12500
Naphthalene	408.0	6	6000
Benzene	315.0	1	5000
Ethylbenzene	1060.0	600	84500
p-isopropyltoluene	33.8	25	11700
Naphthalene	904.0	6	6000
Toluene	39.9	600	260000
Xylene (Total)	1060.0	500	85500
m&p-Xylene	1020.0	500	85500
o-Xylene	37.3	500	85500

GWQS = North Carolina Groundwater Quality Standards

GCL = Gross Contamination Levels for Groundwater

Results = micrograms per liter (ug/L)



NOTES:

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FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

GROUNDWATER 8260D
LAB RESULTS

NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 3 - JONES
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

NCDOT U-5797 Parcel 03
Preliminary Site Assessment
Site Photographs

Photograph No. 1: General view of Parcel 03 and one of the UST Pits.

Photograph No. 2: General view of Boring 3.

NCDOT U-5797 Parcel 03
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of Boring 3.1.

Photograph No. 4: General view of Boring 3.2.

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

AQROS

Hydrocarbon Analysis Results

Client: FALCON
Address: 1210 TRINITY ROAD SUITE 116
CARY NC 28513

Contact: CHRISTOPHER BURKHARDY

Project: G19011 U5797

Samples taken Tuesday, April 9, 2019
Samples extracted Tuesday, April 9, 2019
Samples analysed Tuesday, April 16, 2019

Operator DAVIS MARTINEC

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B3	243.0	86.8	206	311.9	517.9	84.3	3.2	<0.24	95.6	3.9	0.5	Deg.Diesel 74.9%,(FCM)
s	B3.1	20.6	<0.52	28.8	52.9	81.7	26.9	1.5	<0.021	60.2	34.4	5.5	Deg.Fuel 78.9%,(FCM),(BO)
s	B3.2	22.0	<0.55	36.2	307.1	343.3	33.2	1.2	<0.022	93.5	6.2	0.3	Undeg.Diesel 80.3%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 97.1 %

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

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

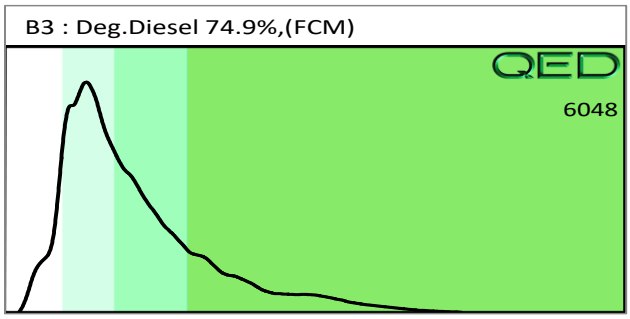
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

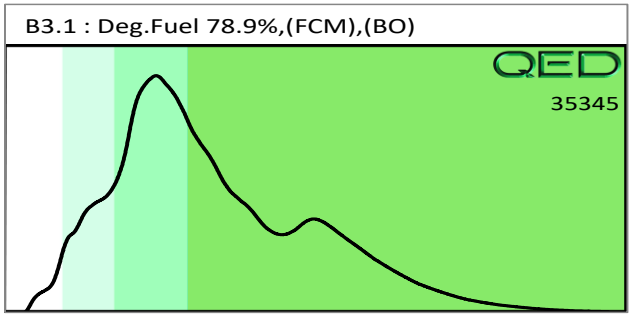
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

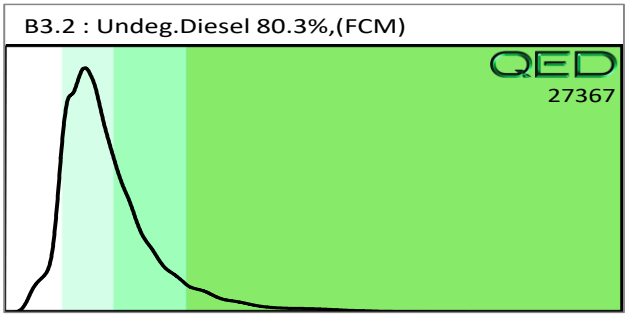
QED Hydrocarbon Fingerprints

Project: G19011 U5797

Tuesday, April 16, 2019







Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 25, 2019

Christopher Burkhardt
Falcon Engineering
1210 Trinity Road
Suite 110
Cary, NC 27513

RE: Project: U5797
Pace Project No.: 92425908

Dear Christopher Burkhardt:
Enclosed are the analytical results for sample(s) received by the laboratory on April 12, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Tyriek Hooks

Tyriek Hooks
tyriek.hooks@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Christopher Burkhardt, Falcon Engineering

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: U5797
Pace Project No.: 92425908

Charlotte Certification IDs

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

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: U5797
Pace Project No.: 92425908

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92425908001	**B3**	EPA 8270E	PKS	74	PASI-C
		EPA 8260D	DLK	63	PASI-C
92425908002	**B5.1**	EPA 8270E	PKS	74	PASI-C
		EPA 8260D	DLK	63	PASI-C
92425908003	**B18**	EPA 8260D	CL	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92425908004	**B19**	EPA 8260D	CL	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: U5797
Pace Project No.: 92425908

Sample: B3 **Lab ID: 92425908001** Collected: 04/10/19 08:30 Received: 04/12/19 14:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270E RVE	Analytical Method: EPA 8270E Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	83-32-9	H2
Acenaphthylene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	208-96-8	H2
Aniline	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	62-53-3	H2
Anthracene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	207-08-9	H2
Benzoic Acid	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:28	65-85-0	H2,L2
Benzyl alcohol	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:28	100-51-6	H2
4-Bromophenylphenyl ether	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	101-55-3	H2
Butylbenzylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	85-68-7	H2
4-Chloro-3-methylphenol	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:28	59-50-7	H2
4-Chloroaniline	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:28	106-47-8	H2
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	111-91-1	H2
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	111-44-4	H2
2-Chloronaphthalene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	91-58-7	H2
2-Chlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	95-57-8	H2
4-Chlorophenylphenyl ether	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	7005-72-3	H2
Chrysene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	53-70-3	H2
Dibenzofuran	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	132-64-9	H2
1,2-Dichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	95-50-1	H2
1,3-Dichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	541-73-1	H2
1,4-Dichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	106-46-7	H2
3,3'-Dichlorobenzidine	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:28	91-94-1	H2
2,4-Dichlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	120-83-2	H2
Diethylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	84-66-2	H2
2,4-Dimethylphenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	105-67-9	H2
Dimethylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	131-11-3	H2
Di-n-butylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	84-74-2	H2
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:28	534-52-1	H2
2,4-Dinitrophenol	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:28	51-28-5	H2,L2
2,4-Dinitrotoluene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	121-14-2	H2
2,6-Dinitrotoluene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	606-20-2	H2
Di-n-octylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	117-84-0	H2
bis(2-Ethylhexyl)phthalate	ND	ug/L	6.0	1	04/18/19 17:38	04/19/19 19:28	117-81-7	H2
Fluoranthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	206-44-0	H2
Fluorene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	86-73-7	H2
Hexachloro-1,3-butadiene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	87-68-3	H2
Hexachlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	118-74-1	H2
Hexachlorocyclopentadiene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	77-47-4	H2
Hexachloroethane	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	67-72-1	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	193-39-5	H2
Isophorone	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	78-59-1	H2
1-Methylnaphthalene	**43.5**	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	90-12-0	H2

REPORT OF LABORATORY ANALYSIS

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(704)875-9092

ANALYTICAL RESULTS

Project: U5797
Pace Project No.: 92425908

Sample: B3 **Lab ID: 92425908001** Collected: 04/10/19 08:30 Received: 04/12/19 14:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270E RVE	Analytical Method: EPA 8270E Preparation Method: EPA 3510C							
2-Methylnaphthalene	**90.7**	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	91-57-6	H2
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	95-48-7	H2
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	15831-10-4	H2
Naphthalene	**408**	ug/L	40.0	4	04/18/19 17:38	04/22/19 12:39	91-20-3	H2
2-Nitroaniline	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:28	88-74-4	H2
3-Nitroaniline	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:28	99-09-2	H2
4-Nitroaniline	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:28	100-01-6	H2
Nitrobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	98-95-3	H2
2-Nitrophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	88-75-5	H2
4-Nitrophenol	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:28	100-02-7	H2
N-Nitrosodimethylamine	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	62-75-9	H2
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	621-64-7	H2
N-Nitrosodiphenylamine	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	86-30-6	H2
2,2'-Oxybis(1-chloropropane)	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	108-60-1	H2
Pentachlorophenol	ND	ug/L	25.0	1	04/18/19 17:38	04/19/19 19:28	87-86-5	H2
Phenanthrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	85-01-8	H2
Phenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	108-95-2	H2
Pyrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	129-00-0	H2
1,2,4-Trichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	120-82-1	H2
2,4,5-Trichlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	95-95-4	H2
2,4,6-Trichlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:28	88-06-2	H2
Surrogates								
Nitrobenzene-d5 (S)	115	%	13-130	1	04/18/19 17:38	04/19/19 19:28	4165-60-0	
2-Fluorobiphenyl (S)	106	%	13-130	1	04/18/19 17:38	04/19/19 19:28	321-60-8	
Terphenyl-d14 (S)	152	%	25-130	1	04/18/19 17:38	04/19/19 19:28	1718-51-0	S0
Phenol-d6 (S)	74	%	10-130	1	04/18/19 17:38	04/19/19 19:28	13127-88-3	
2-Fluorophenol (S)	92	%	10-130	1	04/18/19 17:38	04/19/19 19:28	367-12-4	
2,4,6-Tribromophenol (S)	167	%	10-137	1	04/18/19 17:38	04/19/19 19:28	118-79-6	S0
8260D MSV Low Level	Analytical Method: EPA 8260D							
Acetone	ND	ug/L	125	5		04/23/19 08:43	67-64-1	
Benzene	**315**	ug/L	5.0	5		04/23/19 08:43	71-43-2	
Bromobenzene	ND	ug/L	5.0	5		04/23/19 08:43	108-86-1	
Bromochloromethane	ND	ug/L	5.0	5		04/23/19 08:43	74-97-5	IK
Bromodichloromethane	ND	ug/L	5.0	5		04/23/19 08:43	75-27-4	
Bromoform	ND	ug/L	5.0	5		04/23/19 08:43	75-25-2	IK
Bromomethane	ND	ug/L	10.0	5		04/23/19 08:43	74-83-9	IK
2-Butanone (MEK)	ND	ug/L	25.0	5		04/23/19 08:43	78-93-3	
Carbon tetrachloride	ND	ug/L	5.0	5		04/23/19 08:43	56-23-5	
Chlorobenzene	ND	ug/L	5.0	5		04/23/19 08:43	108-90-7	
Chloroethane	ND	ug/L	5.0	5		04/23/19 08:43	75-00-3	IK
Chloroform	ND	ug/L	25.0	5		04/23/19 08:43	67-66-3	
Chloromethane	ND	ug/L	5.0	5		04/23/19 08:43	74-87-3	
2-Chlorotoluene	ND	ug/L	5.0	5		04/23/19 08:43	95-49-8	
4-Chlorotoluene	ND	ug/L	5.0	5		04/23/19 08:43	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	25.0	5		04/23/19 08:43	96-12-8	
Dibromochloromethane	ND	ug/L	5.0	5		04/23/19 08:43	124-48-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: U5797
Pace Project No.: 92425908

Sample: B3 **Lab ID: 92425908001** Collected: 04/10/19 08:30 Received: 04/12/19 14:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical Method: EPA 8260D							
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	5		04/23/19 08:43	106-93-4	
Dibromomethane	ND	ug/L	5.0	5		04/23/19 08:43	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	5.0	5		04/23/19 08:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	5		04/23/19 08:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	5		04/23/19 08:43	106-46-7	
Dichlorodifluoromethane	ND	ug/L	5.0	5		04/23/19 08:43	75-71-8	
1,1-Dichloroethane	ND	ug/L	5.0	5		04/23/19 08:43	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	5		04/23/19 08:43	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	5		04/23/19 08:43	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	5.0	5		04/23/19 08:43	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	5		04/23/19 08:43	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	5		04/23/19 08:43	78-87-5	
1,3-Dichloropropane	ND	ug/L	5.0	5		04/23/19 08:43	142-28-9	
2,2-Dichloropropane	ND	ug/L	5.0	5		04/23/19 08:43	594-20-7	
1,1-Dichloropropene	ND	ug/L	5.0	5		04/23/19 08:43	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	5.0	5		04/23/19 08:43	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	5		04/23/19 08:43	10061-02-6	
Diisopropyl ether	ND	ug/L	5.0	5		04/23/19 08:43	108-20-3	
Ethylbenzene	**1060**	ug/L	10.0	10		04/24/19 09:32	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	5		04/23/19 08:43	87-68-3	
2-Hexanone	ND	ug/L	25.0	5		04/23/19 08:43	591-78-6	
p-Isopropyltoluene	**33.8**	ug/L	5.0	5		04/23/19 08:43	99-87-6	
Methylene Chloride	ND	ug/L	25.0	5		04/23/19 08:43	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	25.0	5		04/23/19 08:43	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	5.0	5		04/23/19 08:43	1634-04-4	
Naphthalene	**904**	ug/L	5.0	5		04/23/19 08:43	91-20-3	
Styrene	ND	ug/L	5.0	5		04/23/19 08:43	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	5		04/23/19 08:43	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	5		04/23/19 08:43	79-34-5	
Tetrachloroethene	ND	ug/L	5.0	5		04/23/19 08:43	127-18-4	
Toluene	**39.9**	ug/L	5.0	5		04/23/19 08:43	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	5.0	5		04/23/19 08:43	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	5.0	5		04/23/19 08:43	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	5.0	5		04/23/19 08:43	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	5		04/23/19 08:43	79-00-5	
Trichloroethene	ND	ug/L	5.0	5		04/23/19 08:43	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	5		04/23/19 08:43	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	5.0	5		04/23/19 08:43	96-18-4	
Vinyl acetate	ND	ug/L	10.0	5		04/23/19 08:43	108-05-4	
Vinyl chloride	ND	ug/L	5.0	5		04/23/19 08:43	75-01-4	
Xylene (Total)	**1060**	ug/L	5.0	5		04/23/19 08:43	1330-20-7	
m&p-Xylene	**1020**	ug/L	10.0	5		04/23/19 08:43	179601-23-1	
o-Xylene	**37.3**	ug/L	5.0	5		04/23/19 08:43	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	103	%	70-130	5		04/23/19 08:43	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130	5		04/23/19 08:43	17060-07-0	
Toluene-d8 (S)	109	%	70-130	5		04/23/19 08:43	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470498 Analysis Method: EPA 8260D
QC Batch Method: EPA 5035A Analysis Description: 8260D MSV 5035A Volatile Organics
Associated Lab Samples: 92425908003, 92425908004

METHOD BLANK: 2554406 Matrix: Solid
Associated Lab Samples: 92425908003, 92425908004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1,1-Trichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1,2-Trichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1-Dichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1-Dichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
1,1-Dichloropropene	ug/kg	ND	5.0	04/19/19 20:05	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2,3-Trichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,3-Dichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,3-Dichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,4-Dichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
2,2-Dichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
2-Butanone (MEK)	ug/kg	ND	100	04/19/19 20:05	
2-Chlorotoluene	ug/kg	ND	5.0	04/19/19 20:05	
2-Hexanone	ug/kg	ND	50.0	04/19/19 20:05	
4-Chlorotoluene	ug/kg	ND	5.0	04/19/19 20:05	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	50.0	04/19/19 20:05	
Acetone	ug/kg	ND	100	04/19/19 20:05	
Benzene	ug/kg	ND	5.0	04/19/19 20:05	
Bromobenzene	ug/kg	ND	5.0	04/19/19 20:05	
Bromochloromethane	ug/kg	ND	5.0	04/19/19 20:05	
Bromodichloromethane	ug/kg	ND	5.0	04/19/19 20:05	
Bromoform	ug/kg	ND	5.0	04/19/19 20:05	
Bromomethane	ug/kg	ND	10.0	04/19/19 20:05	
Carbon tetrachloride	ug/kg	ND	5.0	04/19/19 20:05	
Chlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
Chloroethane	ug/kg	ND	10.0	04/19/19 20:05	
Chloroform	ug/kg	ND	5.0	04/19/19 20:05	
Chloromethane	ug/kg	ND	10.0	04/19/19 20:05	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	04/19/19 20:05	
Dibromochloromethane	ug/kg	ND	5.0	04/19/19 20:05	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

METHOD BLANK: 2554406 Matrix: Solid
Associated Lab Samples: 92425908003, 92425908004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/kg	ND	5.0	04/19/19 20:05	
Dichlorodifluoromethane	ug/kg	ND	10.0	04/19/19 20:05	
Diisopropyl ether	ug/kg	ND	5.0	04/19/19 20:05	
Ethylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	04/19/19 20:05	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	04/19/19 20:05	
m&p-Xylene	ug/kg	ND	10.0	04/19/19 20:05	
Methyl-tert-butyl ether	ug/kg	ND	5.0	04/19/19 20:05	
Methylene Chloride	ug/kg	ND	20.0	04/19/19 20:05	
n-Butylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
n-Propylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Naphthalene	ug/kg	ND	5.0	04/19/19 20:05	
o-Xylene	ug/kg	ND	5.0	04/19/19 20:05	
p-Isopropyltoluene	ug/kg	ND	5.0	04/19/19 20:05	
sec-Butylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Styrene	ug/kg	ND	5.0	04/19/19 20:05	
tert-Butylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Tetrachloroethene	ug/kg	ND	5.0	04/19/19 20:05	
Toluene	ug/kg	ND	5.0	04/19/19 20:05	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	04/19/19 20:05	
Trichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
Trichlorofluoromethane	ug/kg	ND	5.0	04/19/19 20:05	
Vinyl acetate	ug/kg	ND	50.0	04/19/19 20:05	
Vinyl chloride	ug/kg	ND	10.0	04/19/19 20:05	
Xylene (Total)	ug/kg	ND	10.0	04/19/19 20:05	
1,2-Dichloroethane-d4 (S)	%	103	70-132	04/19/19 20:05	
4-Bromofluorobenzene (S)	%	99	70-130	04/19/19 20:05	
Toluene-d8 (S)	%	99	70-130	04/19/19 20:05	

LABORATORY CONTROL SAMPLE: 2554407

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	49.9	100	70-130	
1,1,1-Trichloroethane	ug/kg	50	43.2	86	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	50	48.2	96	55-130	
1,1,2-Trichloroethane	ug/kg	50	47.0	94	70-130	
1,1-Dichloroethane	ug/kg	50	42.4	85	68-130	
1,1-Dichloroethene	ug/kg	50	43.0	86	70-130	
1,1-Dichloropropene	ug/kg	50	42.8	86	70-130	
1,2,3-Trichlorobenzene	ug/kg	50	47.5	95	70-130	
1,2,3-Trichloropropane	ug/kg	50	51.4	103	70-130	
1,2,4-Trichlorobenzene	ug/kg	50	46.7	93	70-130	
1,2,4-Trimethylbenzene	ug/kg	50	44.0	88	69-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2554407

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/kg	50	45.1	90	57-141	
1,2-Dibromoethane (EDB)	ug/kg	50	47.7	95	70-130	
1,2-Dichlorobenzene	ug/kg	50	44.9	90	70-130	
1,2-Dichloroethane	ug/kg	50	44.6	89	70-130	
1,2-Dichloropropane	ug/kg	50	46.5	93	70-130	
1,3,5-Trimethylbenzene	ug/kg	50	44.8	90	70-130	
1,3-Dichlorobenzene	ug/kg	50	44.2	88	70-130	
1,3-Dichloropropane	ug/kg	50	47.0	94	70-130	
1,4-Dichlorobenzene	ug/kg	50	44.2	88	70-130	
2,2-Dichloropropane	ug/kg	50	44.8	90	70-130	
2-Butanone (MEK)	ug/kg	100	101	101	60-130	
2-Chlorotoluene	ug/kg	50	44.8	90	70-130	
2-Hexanone	ug/kg	100	93.1	93	70-132	
4-Chlorotoluene	ug/kg	50	44.7	89	70-130	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	93.1	93	69-130	
Acetone	ug/kg	100	102	102	49-148	
Benzene	ug/kg	50	45.6	91	70-130	
Bromobenzene	ug/kg	50	45.6	91	70-130	
Bromochloromethane	ug/kg	50	45.7	91	70-130	
Bromodichloromethane	ug/kg	50	46.8	94	70-130	
Bromoform	ug/kg	50	42.0	84	68-136	
Bromomethane	ug/kg	50	43.0	86	60-140	
Carbon tetrachloride	ug/kg	50	44.0	88	70-130	
Chlorobenzene	ug/kg	50	43.3	87	70-130	
Chloroethane	ug/kg	50	49.2	98	51-147	
Chloroform	ug/kg	50	43.8	88	70-130	
Chloromethane	ug/kg	50	42.4	85	48-130	
cis-1,2-Dichloroethene	ug/kg	50	43.8	88	70-130	
cis-1,3-Dichloropropene	ug/kg	50	47.8	96	70-130	
Dibromochloromethane	ug/kg	50	47.3	95	70-130	
Dibromomethane	ug/kg	50	47.3	95	70-130	
Dichlorodifluoromethane	ug/kg	50	43.1	86	49-130	
Diisopropyl ether	ug/kg	50	48.7	97	66-130	
Ethylbenzene	ug/kg	50	45.1	90	70-130	
Hexachloro-1,3-butadiene	ug/kg	50	45.1	90	70-130	
Isopropylbenzene (Cumene)	ug/kg	50	44.6	89	70-130	
m&p-Xylene	ug/kg	100	89.9	90	70-130	
Methyl-tert-butyl ether	ug/kg	50	48.2	96	70-130	
Methylene Chloride	ug/kg	50	38.3	77	50-137	
n-Butylbenzene	ug/kg	50	45.0	90	70-130	
n-Propylbenzene	ug/kg	50	45.0	90	70-130	
Naphthalene	ug/kg	50	47.1	94	70-131	
o-Xylene	ug/kg	50	44.2	88	70-130	
p-Isopropyltoluene	ug/kg	50	45.2	90	70-130	
sec-Butylbenzene	ug/kg	50	45.8	92	70-130	
Styrene	ug/kg	50	44.3	89	70-130	
tert-Butylbenzene	ug/kg	50	40.1	80	69-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2554407

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/kg	50	44.7	89	56-130	
Toluene	ug/kg	50	44.4	89	70-130	
trans-1,2-Dichloroethene	ug/kg	50	43.1	86	70-130	
trans-1,3-Dichloropropene	ug/kg	50	49.0	98	70-130	
Trichloroethene	ug/kg	50	43.9	88	70-141	
Trichlorofluoromethane	ug/kg	50	43.5	87	67-130	
Vinyl acetate	ug/kg	100	92.7	93	10-136	
Vinyl chloride	ug/kg	50	43.2	86	67-130	
Xylene (Total)	ug/kg	150	134	89	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-132	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2555712

Parameter	Units	92425764001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	437	469	107	52-133	
1,1,1-Trichloroethane	ug/kg	ND	437	426	98	49-137	
1,1,2,2-Tetrachloroethane	ug/kg	ND	437	320	73	39-150	
1,1,2-Trichloroethane	ug/kg	ND	437	377	86	48-140	
1,1-Dichloroethane	ug/kg	ND	437	424	97	46-135	
1,1-Dichloroethene	ug/kg	ND	437	530	121	38-149	
1,1-Dichloropropene	ug/kg	ND	437	420	96	41-140	
1,2,3-Trichlorobenzene	ug/kg	ND	437	427	98	10-158	
1,2,3-Trichloropropane	ug/kg	ND	437	322	74	33-157	
1,2,4-Trichlorobenzene	ug/kg	ND	437	451	103	10-155	
1,2,4-Trimethylbenzene	ug/kg	ND	437	499	114	24-154	
1,2-Dibromo-3-chloropropane	ug/kg	ND	437	237	54	33-158	
1,2-Dibromoethane (EDB)	ug/kg	ND	437	330	76	40-136	
1,2-Dichlorobenzene	ug/kg	ND	437	440	101	27-146	
1,2-Dichloroethane	ug/kg	ND	437	335	77	49-140	
1,2-Dichloropropane	ug/kg	ND	437	411	94	44-143	
1,3,5-Trimethylbenzene	ug/kg	ND	437	456	104	40-144	
1,3-Dichlorobenzene	ug/kg	ND	437	443	102	33-140	
1,3-Dichloropropane	ug/kg	ND	437	408	93	47-147	
1,4-Dichlorobenzene	ug/kg	ND	437	447	102	35-139	
2,2-Dichloropropane	ug/kg	ND	437	446	102	41-140	
2-Butanone (MEK)	ug/kg	ND	873	397J	45	10-181	
2-Chlorotoluene	ug/kg	ND	437	457	105	38-147	
2-Hexanone	ug/kg	ND	873	468J	54	18-169	
4-Chlorotoluene	ug/kg	ND	437	462	106	36-145	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	873	509J	58	16-175	
Acetone	ug/kg	ND	873	ND	22	10-200	
Benzene	ug/kg	ND	437	435	100	46-136	
Bromobenzene	ug/kg	ND	437	464	106	38-149	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2555712

Parameter	Units	92425764001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromochloromethane	ug/kg	ND	437	335	77	44-142	
Bromodichloromethane	ug/kg	ND	437	369	85	41-140	
Bromoform	ug/kg	ND	437	331	76	34-145	
Bromomethane	ug/kg	ND	437	385	88	14-162	
Carbon tetrachloride	ug/kg	ND	437	442	101	44-141	
Chlorobenzene	ug/kg	ND	437	446	102	39-141	
Chloroethane	ug/kg	ND	437	215	49	10-182	
Chloroform	ug/kg	ND	437	387	89	45-140	
Chloromethane	ug/kg	ND	437	517	119	19-149	
cis-1,2-Dichloroethene	ug/kg	ND	437	401	92	38-150	
cis-1,3-Dichloropropene	ug/kg	ND	437	459	105	30-144	
Dibromochloromethane	ug/kg	ND	437	405	93	36-145	
Dibromomethane	ug/kg	ND	437	291	67	41-145	
Dichlorodifluoromethane	ug/kg	ND	437	241	55	16-146	
Diisopropyl ether	ug/kg	ND	437	445	102	41-143	
Ethylbenzene	ug/kg	ND	437	473	108	35-144	
Hexachloro-1,3-butadiene	ug/kg	ND	437	411	94	10-160	
Isopropylbenzene (Cumene)	ug/kg	ND	437	440	101	30-152	
m&p-Xylene	ug/kg	ND	873	1020	116	33-145	
Methyl-tert-butyl ether	ug/kg	ND	437	361	83	49-140	
Methylene Chloride	ug/kg	ND	437	489	112	10-174	
n-Butylbenzene	ug/kg	ND	437	428	98	10-160	
n-Propylbenzene	ug/kg	ND	437	468	107	24-159	
Naphthalene	ug/kg	ND	437	336	77	10-171	
o-Xylene	ug/kg	ND	437	507	116	31-150	
p-Isopropyltoluene	ug/kg	ND	437	445	102	21-154	
sec-Butylbenzene	ug/kg	ND	437	452	104	19-159	
Styrene	ug/kg	ND	437	442	101	15-152	
tert-Butylbenzene	ug/kg	ND	437	395	91	31-141	
Tetrachloroethene	ug/kg	ND	437	432	99	19-141	
Toluene	ug/kg	ND	437	517	118	31-146	
trans-1,2-Dichloroethene	ug/kg	ND	437	425	97	28-157	
trans-1,3-Dichloropropene	ug/kg	ND	437	376	86	25-146	
Trichloroethene	ug/kg	ND	437	442	101	34-149	
Trichlorofluoromethane	ug/kg	ND	437	427	98	10-167	
Vinyl acetate	ug/kg	ND	873	807J	92	10-200	
Vinyl chloride	ug/kg	ND	437	248	57	36-155	
Xylene (Total)	ug/kg	ND	1310	1520	116	29-148	
1,2-Dichloroethane-d4 (S)	%				72	70-132	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				102	70-130	P2

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2555711

Parameter	Units	92425574001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	146	240	49	D6
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2555711

Parameter	Units	92425574001 Result	Dup Result	RPD	Qualifiers
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	ND		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	100	92		
4-Bromofluorobenzene (S)	%	97	98		
Toluene-d8 (S)	%	99	102		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470847 Analysis Method: EPA 8260D
QC Batch Method: EPA 8260D Analysis Description: 8260D MSV Low Level
Associated Lab Samples: 92425908001, 92425908002

METHOD BLANK: 2555743 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1,1-Trichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1,2-Trichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1-Dichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1-Dichloroethene	ug/L	ND	1.0	04/22/19 23:47	
1,1-Dichloropropene	ug/L	ND	1.0	04/22/19 23:47	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,2,3-Trichloropropane	ug/L	ND	1.0	04/22/19 23:47	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dibromo-3-chloropropane	ug/L	ND	5.0	04/22/19 23:47	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichloropropane	ug/L	ND	1.0	04/22/19 23:47	
1,3-Dichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,3-Dichloropropane	ug/L	ND	1.0	04/22/19 23:47	
1,4-Dichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
2,2-Dichloropropane	ug/L	ND	1.0	04/22/19 23:47	
2-Butanone (MEK)	ug/L	ND	5.0	04/22/19 23:47	
2-Chlorotoluene	ug/L	ND	1.0	04/22/19 23:47	
2-Hexanone	ug/L	ND	5.0	04/22/19 23:47	
4-Chlorotoluene	ug/L	ND	1.0	04/22/19 23:47	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	04/22/19 23:47	
Acetone	ug/L	ND	25.0	04/22/19 23:47	
Benzene	ug/L	ND	1.0	04/22/19 23:47	
Bromobenzene	ug/L	ND	1.0	04/22/19 23:47	
Bromochloromethane	ug/L	ND	1.0	04/22/19 23:47	IK
Bromodichloromethane	ug/L	ND	1.0	04/22/19 23:47	
Bromoform	ug/L	ND	1.0	04/22/19 23:47	IK
Bromomethane	ug/L	ND	2.0	04/22/19 23:47	IK
Carbon tetrachloride	ug/L	ND	1.0	04/22/19 23:47	
Chlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
Chloroethane	ug/L	ND	1.0	04/22/19 23:47	IK
Chloroform	ug/L	ND	5.0	04/22/19 23:47	
Chloromethane	ug/L	ND	1.0	04/22/19 23:47	
cis-1,2-Dichloroethene	ug/L	ND	1.0	04/22/19 23:47	
cis-1,3-Dichloropropene	ug/L	ND	1.0	04/22/19 23:47	
Dibromochloromethane	ug/L	ND	1.0	04/22/19 23:47	
Dibromomethane	ug/L	ND	1.0	04/22/19 23:47	
Dichlorodifluoromethane	ug/L	ND	1.0	04/22/19 23:47	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

METHOD BLANK: 2555743 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	04/22/19 23:47	
Ethylbenzene	ug/L	ND	1.0	04/22/19 23:47	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	04/22/19 23:47	
m&p-Xylene	ug/L	ND	2.0	04/22/19 23:47	
Methyl-tert-butyl ether	ug/L	ND	1.0	04/22/19 23:47	
Methylene Chloride	ug/L	ND	5.0	04/22/19 23:47	
Naphthalene	ug/L	ND	1.0	04/22/19 23:47	
o-Xylene	ug/L	ND	1.0	04/22/19 23:47	
p-Isopropyltoluene	ug/L	ND	1.0	04/22/19 23:47	
Styrene	ug/L	ND	1.0	04/22/19 23:47	
Tetrachloroethene	ug/L	ND	1.0	04/22/19 23:47	
Toluene	ug/L	ND	1.0	04/22/19 23:47	
trans-1,2-Dichloroethene	ug/L	ND	1.0	04/22/19 23:47	
trans-1,3-Dichloropropene	ug/L	ND	1.0	04/22/19 23:47	
Trichloroethene	ug/L	ND	1.0	04/22/19 23:47	
Trichlorofluoromethane	ug/L	ND	1.0	04/22/19 23:47	
Vinyl acetate	ug/L	ND	2.0	04/22/19 23:47	
Vinyl chloride	ug/L	ND	1.0	04/22/19 23:47	
Xylene (Total)	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichloroethane-d4 (S)	%	103	70-130	04/22/19 23:47	
4-Bromofluorobenzene (S)	%	101	70-130	04/22/19 23:47	
Toluene-d8 (S)	%	109	70-130	04/22/19 23:47	

LABORATORY CONTROL SAMPLE: 2555744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	56.0	112	70-130	
1,1,1-Trichloroethane	ug/L	50	53.0	106	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	52.5	105	70-130	
1,1,2-Trichloroethane	ug/L	50	54.9	110	70-130	
1,1-Dichloroethane	ug/L	50	51.7	103	70-130	
1,1-Dichloroethene	ug/L	50	51.0	102	70-130	
1,1-Dichloropropene	ug/L	50	51.3	103	70-130	
1,2,3-Trichlorobenzene	ug/L	50	53.3	107	70-130	
1,2,3-Trichloropropane	ug/L	50	55.1	110	70-130	
1,2,4-Trichlorobenzene	ug/L	50	53.4	107	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	53.3	107	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	54.5	109	70-130	
1,2-Dichlorobenzene	ug/L	50	51.0	102	70-130	
1,2-Dichloroethane	ug/L	50	48.8	98	70-130	
1,2-Dichloropropane	ug/L	50	52.8	106	70-130	
1,3-Dichlorobenzene	ug/L	50	50.4	101	70-130	
1,3-Dichloropropane	ug/L	50	53.2	106	70-131	
1,4-Dichlorobenzene	ug/L	50	51.1	102	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2555744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	54.4	109	69-130	
2-Butanone (MEK)	ug/L	100	113	113	64-135	
2-Chlorotoluene	ug/L	50	49.9	100	70-130	
2-Hexanone	ug/L	100	107	107	66-135	
4-Chlorotoluene	ug/L	50	49.6	99	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	104	104	70-130	
Acetone	ug/L	100	104	104	61-157	
Benzene	ug/L	50	51.8	104	70-130	
Bromobenzene	ug/L	50	51.9	104	70-130	
Bromochloromethane	ug/L	50	49.4	99	70-130	IK
Bromodichloromethane	ug/L	50	52.3	105	70-130	
Bromoform	ug/L	50	48.6	97	70-130	IK
Bromomethane	ug/L	50	50.9	102	38-130	IK
Carbon tetrachloride	ug/L	50	47.2	94	70-130	
Chlorobenzene	ug/L	50	49.8	100	70-130	
Chloroethane	ug/L	50	41.4	83	37-142	IK
Chloroform	ug/L	50	49.5	99	70-130	
Chloromethane	ug/L	50	50.1	100	48-130	
cis-1,2-Dichloroethene	ug/L	50	51.6	103	70-130	
cis-1,3-Dichloropropene	ug/L	50	57.6	115	70-130	
Dibromochloromethane	ug/L	50	54.9	110	70-130	
Dibromomethane	ug/L	50	51.4	103	70-130	
Dichlorodifluoromethane	ug/L	50	40.6	81	53-134	
Diisopropyl ether	ug/L	50	55.3	111	70-135	
Ethylbenzene	ug/L	50	50.2	100	70-130	
Hexachloro-1,3-butadiene	ug/L	50	50.6	101	68-132	
m&p-Xylene	ug/L	100	102	102	70-130	
Methyl-tert-butyl ether	ug/L	50	58.8	118	70-130	
Methylene Chloride	ug/L	50	47.3	95	67-132	
Naphthalene	ug/L	50	56.7	113	70-130	
o-Xylene	ug/L	50	51.8	104	70-131	
p-Isopropyltoluene	ug/L	50	53.6	107	70-130	
Styrene	ug/L	50	52.1	104	70-130	
Tetrachloroethene	ug/L	50	50.4	101	69-130	
Toluene	ug/L	50	49.4	99	70-130	
trans-1,2-Dichloroethene	ug/L	50	52.1	104	70-130	
trans-1,3-Dichloropropene	ug/L	50	51.2	102	70-130	
Trichloroethene	ug/L	50	51.6	103	70-130	
Trichlorofluoromethane	ug/L	50	44.0	88	63-130	
Vinyl acetate	ug/L	100	112	112	55-143	
Vinyl chloride	ug/L	50	52.1	104	70-131	
Xylene (Total)	ug/L	150	153	102	70-130	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			96	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2555746

Parameter	Units	92425875006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	22.8	114	73-134	
1,1,1-Trichloroethane	ug/L	ND	20	25.0	125	82-143	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.2	106	70-136	
1,1,2-Trichloroethane	ug/L	ND	20	23.1	115	70-135	
1,1-Dichloroethane	ug/L	0.43J	20	24.2	119	70-139	
1,1-Dichloroethene	ug/L	ND	20	23.9	120	70-154	
1,1-Dichloropropene	ug/L	ND	20	23.8	119	70-149	
1,2,3-Trichlorobenzene	ug/L	ND	20	22.2	111	70-135	
1,2,3-Trichloropropane	ug/L	ND	20	22.7	113	71-137	
1,2,4-Trichlorobenzene	ug/L	ND	20	21.8	109	73-140	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	19.7	98	65-134	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.6	108	70-137	
1,2-Dichlorobenzene	ug/L	ND	20	21.2	106	70-133	
1,2-Dichloroethane	ug/L	ND	20	22.4	112	70-137	
1,2-Dichloropropane	ug/L	ND	20	23.8	119	70-140	
1,3-Dichlorobenzene	ug/L	ND	20	21.0	105	70-135	
1,3-Dichloropropane	ug/L	ND	20	21.8	109	70-143	
1,4-Dichlorobenzene	ug/L	ND	20	21.1	105	70-133	
2,2-Dichloropropane	ug/L	ND	20	19.4	97	61-148	
2-Butanone (MEK)	ug/L	ND	40	49.5	124	60-139	
2-Chlorotoluene	ug/L	ND	20	21.0	105	70-144	
2-Hexanone	ug/L	ND	40	42.4	106	65-138	
4-Chlorotoluene	ug/L	ND	20	21.3	106	70-137	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	42.5	106	65-135	
Acetone	ug/L	ND	40	55.4	139	60-148	
Benzene	ug/L	ND	20	23.6	118	70-151	
Bromobenzene	ug/L	ND	20	21.7	109	70-136	
Bromochloromethane	ug/L	ND	20	25.3	127	70-141	IK
Bromodichloromethane	ug/L	ND	20	22.8	114	70-138	
Bromoform	ug/L	ND	20	19.5	97	63-130	IK
Bromomethane	ug/L	ND	20	19.9	100	15-152	IK
Carbon tetrachloride	ug/L	ND	20	22.6	113	70-143	
Chlorobenzene	ug/L	ND	20	21.6	108	70-138	
Chloroethane	ug/L	ND	20	22.6	113	52-163	IK
Chloroform	ug/L	ND	20	23.7	116	70-139	
Chloromethane	ug/L	ND	20	19.9	99	41-139	
cis-1,2-Dichloroethene	ug/L	ND	20	23.9	119	70-141	
cis-1,3-Dichloropropene	ug/L	ND	20	22.1	110	70-137	
Dibromochloromethane	ug/L	ND	20	21.5	107	70-134	
Dibromomethane	ug/L	ND	20	22.9	114	70-138	
Dichlorodifluoromethane	ug/L	ND	20	19.2	96	47-155	
Diisopropyl ether	ug/L	ND	20	23.4	117	63-144	
Ethylbenzene	ug/L	ND	20	22.9	115	66-153	
Hexachloro-1,3-butadiene	ug/L	ND	20	20.2	101	65-149	
m&p-Xylene	ug/L	ND	40	46.2	116	69-152	
Methyl-tert-butyl ether	ug/L	ND	20	24.2	121	54-156	
Methylene Chloride	ug/L	ND	20	23.3	111	42-159	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2555746

Parameter	Units	92425875006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	23.2	116	61-148	
o-Xylene	ug/L	ND	20	23.1	116	70-148	
p-Isopropyltoluene	ug/L	ND	20	22.5	113	70-146	
Styrene	ug/L	ND	20	21.4	107	70-135	
Tetrachloroethene	ug/L	ND	20	22.0	110	59-143	
Toluene	ug/L	ND	20	22.8	114	59-148	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-146	
trans-1,3-Dichloropropene	ug/L	ND	20	20.2	101	70-135	
Trichloroethene	ug/L	ND	20	23.8	119	70-147	
Trichlorofluoromethane	ug/L	ND	20	24.5	122	70-148	
Vinyl acetate	ug/L	ND	40	35.2	88	49-151	
Vinyl chloride	ug/L	ND	20	23.4	117	70-156	
Xylene (Total)	ug/L	ND	60	69.3	116	63-158	
1,2-Dichloroethane-d4 (S)	%				104	70-130	
4-Bromofluorobenzene (S)	%				103	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2555745

Parameter	Units	92425875005 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	27.6	22.1J		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2555745

Parameter	Units	92425875005 Result	Dup Result	RPD	Qualifiers
Benzene	ug/L	ND	ND		
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		IK
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		IK
Bromomethane	ug/L	ND	ND		IK
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		IK
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	103	100		
4-Bromofluorobenzene (S)	%	102	100		
Toluene-d8 (S)	%	111	108		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470256 Analysis Method: EPA 8270E
QC Batch Method: EPA 3510C Analysis Description: 8270E Water MSSV RVE
Associated Lab Samples: 92425908001, 92425908002

METHOD BLANK: 2553172 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1,2-Dichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1,3-Dichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1,4-Dichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1-Methylnaphthalene	ug/L	ND	10.0	04/19/19 16:02	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	10.0	04/19/19 16:02	
2,4,5-Trichlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2,4-Dichlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2,4-Dimethylphenol	ug/L	ND	10.0	04/19/19 16:02	
2,4-Dinitrophenol	ug/L	ND	50.0	04/19/19 16:02	
2,4-Dinitrotoluene	ug/L	ND	10.0	04/19/19 16:02	
2,6-Dinitrotoluene	ug/L	ND	10.0	04/19/19 16:02	
2-Chloronaphthalene	ug/L	ND	10.0	04/19/19 16:02	
2-Chlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2-Methylnaphthalene	ug/L	ND	10.0	04/19/19 16:02	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/19/19 16:02	
2-Nitroaniline	ug/L	ND	50.0	04/19/19 16:02	
2-Nitrophenol	ug/L	ND	10.0	04/19/19 16:02	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	04/19/19 16:02	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	04/19/19 16:02	
3-Nitroaniline	ug/L	ND	50.0	04/19/19 16:02	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	04/19/19 16:02	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/19/19 16:02	
4-Chloro-3-methylphenol	ug/L	ND	20.0	04/19/19 16:02	
4-Chloroaniline	ug/L	ND	20.0	04/19/19 16:02	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	04/19/19 16:02	
4-Nitroaniline	ug/L	ND	20.0	04/19/19 16:02	
4-Nitrophenol	ug/L	ND	50.0	04/19/19 16:02	
Acenaphthene	ug/L	ND	10.0	04/19/19 16:02	
Acenaphthylene	ug/L	ND	10.0	04/19/19 16:02	
Aniline	ug/L	ND	10.0	04/19/19 16:02	
Anthracene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(a)anthracene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(a)pyrene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(b)fluoranthene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(g,h,i)perylene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(k)fluoranthene	ug/L	ND	10.0	04/19/19 16:02	
Benzoic Acid	ug/L	ND	50.0	04/19/19 16:02	
Benzyl alcohol	ug/L	ND	20.0	04/19/19 16:02	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	04/19/19 16:02	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

METHOD BLANK: 2553172 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/19/19 16:02	
bis(2-Ethylhexyl)phthalate	ug/L	ND	6.0	04/19/19 16:02	
Butylbenzylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Chrysene	ug/L	ND	10.0	04/19/19 16:02	
Di-n-butylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Di-n-octylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Dibenz(a,h)anthracene	ug/L	ND	10.0	04/19/19 16:02	
Dibenzofuran	ug/L	ND	10.0	04/19/19 16:02	
Diethylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Dimethylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Fluoranthene	ug/L	ND	10.0	04/19/19 16:02	
Fluorene	ug/L	ND	10.0	04/19/19 16:02	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	04/19/19 16:02	
Hexachlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
Hexachlorocyclopentadiene	ug/L	ND	10.0	04/19/19 16:02	
Hexachloroethane	ug/L	ND	10.0	04/19/19 16:02	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	04/19/19 16:02	
Isophorone	ug/L	ND	10.0	04/19/19 16:02	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	04/19/19 16:02	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/19/19 16:02	
N-Nitrosodiphenylamine	ug/L	ND	10.0	04/19/19 16:02	
Naphthalene	ug/L	ND	10.0	04/19/19 16:02	
Nitrobenzene	ug/L	ND	10.0	04/19/19 16:02	
Pentachlorophenol	ug/L	ND	25.0	04/19/19 16:02	
Phenanthrene	ug/L	ND	10.0	04/19/19 16:02	
Phenol	ug/L	ND	10.0	04/19/19 16:02	
Pyrene	ug/L	ND	10.0	04/19/19 16:02	
2,4,6-Tribromophenol (S)	%	70	10-137	04/19/19 16:02	
2-Fluorobiphenyl (S)	%	54	13-130	04/19/19 16:02	
2-Fluorophenol (S)	%	45	10-130	04/19/19 16:02	
Nitrobenzene-d5 (S)	%	56	13-130	04/19/19 16:02	
Phenol-d6 (S)	%	33	10-130	04/19/19 16:02	
Terphenyl-d14 (S)	%	93	25-130	04/19/19 16:02	

LABORATORY CONTROL SAMPLE: 2553173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	27.1	54	30-130	
1,2-Dichlorobenzene	ug/L	50	29.3	59	30-130	
1,3-Dichlorobenzene	ug/L	50	28.2	56	20-130	
1,4-Dichlorobenzene	ug/L	50	29.6	59	30-130	
1-Methylnaphthalene	ug/L	50	35.7	71	30-130	
2,2'-Oxybis(1-chloropropane)	ug/L	50	32.7	65	20-130	
2,4,5-Trichlorophenol	ug/L	50	35.4	71	40-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2553173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	34.4	69	40-130	
2,4-Dichlorophenol	ug/L	50	35.3	71	31-130	
2,4-Dimethylphenol	ug/L	50	37.4	75	30-130	
2,4-Dinitrophenol	ug/L	250	ND	5	30-130	L2
2,4-Dinitrotoluene	ug/L	50	41.3	83	49-130	
2,6-Dinitrotoluene	ug/L	50	38.1	76	50-130	
2-Chloronaphthalene	ug/L	50	30.1	60	30-130	
2-Chlorophenol	ug/L	50	36.5	73	30-130	
2-Methylnaphthalene	ug/L	50	34.4	69	30-130	
2-Methylphenol(o-Cresol)	ug/L	50	37.0	74	30-130	
2-Nitroaniline	ug/L	100	76.3	76	40-130	
2-Nitrophenol	ug/L	50	34.6	69	20-130	
3&4-Methylphenol(m&p Cresol)	ug/L	50	33.5	67	20-130	
3,3'-Dichlorobenzidine	ug/L	100	77.8	78	10-150	
3-Nitroaniline	ug/L	100	84.0	84	40-130	
4,6-Dinitro-2-methylphenol	ug/L	100	46.1	46	40-130	
4-Bromophenylphenyl ether	ug/L	50	35.3	71	30-130	
4-Chloro-3-methylphenol	ug/L	100	72.7	73	30-130	
4-Chloroaniline	ug/L	100	74.5	75	20-130	
4-Chlorophenylphenyl ether	ug/L	50	34.5	69	20-130	
4-Nitroaniline	ug/L	100	91.7	92	40-130	
4-Nitrophenol	ug/L	250	48.6J	19	10-130	
Acenaphthene	ug/L	50	37.0	74	30-130	
Acenaphthylene	ug/L	50	39.1	78	30-130	
Aniline	ug/L	50	34.1	68	20-130	
Anthracene	ug/L	50	43.9	88	50-130	
Benzo(a)anthracene	ug/L	50	45.3	91	50-130	
Benzo(a)pyrene	ug/L	50	45.2	90	50-130	
Benzo(b)fluoranthene	ug/L	50	45.4	91	50-130	
Benzo(g,h,i)perylene	ug/L	50	47.8	96	50-130	
Benzo(k)fluoranthene	ug/L	50	47.3	95	50-130	
Benzoic Acid	ug/L	250	ND	0	10-130	L2
Benzyl alcohol	ug/L	100	71.0	71	20-130	
bis(2-Chloroethoxy)methane	ug/L	50	35.9	72	30-130	
bis(2-Chloroethyl) ether	ug/L	50	36.8	74	30-130	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.8	84	50-130	
Butylbenzylphthalate	ug/L	50	38.8	78	50-150	
Chrysene	ug/L	50	45.2	90	50-130	
Di-n-butylphthalate	ug/L	50	42.4	85	50-130	
Di-n-octylphthalate	ug/L	50	40.9	82	50-130	
Dibenz(a,h)anthracene	ug/L	50	49.4	99	40-130	
Dibenzofuran	ug/L	50	34.6	69	40-130	
Diethylphthalate	ug/L	50	41.7	83	40-130	
Dimethylphthalate	ug/L	50	39.7	79	40-130	
Fluoranthene	ug/L	50	47.6	95	30-130	
Fluorene	ug/L	50	39.4	79	20-130	
Hexachloro-1,3-butadiene	ug/L	50	25.8	52	10-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2553173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hexachlorobenzene	ug/L	50	37.4	75	30-130	
Hexachlorocyclopentadiene	ug/L	50	23.9	48	10-150	
Hexachloroethane	ug/L	50	27.0	54	10-130	
Indeno(1,2,3-cd)pyrene	ug/L	50	48.1	96	40-130	
Isophorone	ug/L	50	34.6	69	30-130	
N-Nitroso-di-n-propylamine	ug/L	50	35.7	71	30-130	
N-Nitrosodimethylamine	ug/L	50	31.8	64	10-130	
N-Nitrosodiphenylamine	ug/L	50	38.4	77	30-130	
Naphthalene	ug/L	50	35.1	70	20-130	
Nitrobenzene	ug/L	50	33.7	67	20-130	
Pentachlorophenol	ug/L	100	64.9	65	10-140	
Phenanthrene	ug/L	50	44.0	88	50-130	
Phenol	ug/L	50	22.6	45	10-130	
Pyrene	ug/L	50	42.4	85	50-130	
2,4,6-Tribromophenol (S)	%			89	10-137	
2-Fluorobiphenyl (S)	%			71	13-130	
2-Fluorophenol (S)	%			61	10-130	
Nitrobenzene-d5 (S)	%			76	13-130	
Phenol-d6 (S)	%			48	10-130	
Terphenyl-d14 (S)	%			83	25-130	

MATRIX SPIKE SAMPLE: 2553236

Parameter	Units	92425875001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	50	12.3	25	30-130	M1
1,2-Dichlorobenzene	ug/L	ND	50	13.9	28	30-130	M1
1,3-Dichlorobenzene	ug/L	ND	50	13.2	26	20-130	
1,4-Dichlorobenzene	ug/L	ND	50	14.4	27	30-130	M1
1-Methylnaphthalene	ug/L	ND	50	16.8	34	30-130	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	50	13.8	28	20-130	
2,4,5-Trichlorophenol	ug/L	ND	50	18.3	37	40-130	M1
2,4,6-Trichlorophenol	ug/L	ND	50	16.6	33	40-130	M1
2,4-Dichlorophenol	ug/L	ND	50	15.2	30	31-130	M1
2,4-Dimethylphenol	ug/L	ND	50	14.3	29	30-130	M1
2,4-Dinitrophenol	ug/L	ND	250	162	65	30-130	
2,4-Dinitrotoluene	ug/L	ND	50	30.4	61	49-130	
2,6-Dinitrotoluene	ug/L	ND	50	22.5	45	50-130	M1
2-Chloronaphthalene	ug/L	ND	50	13.9	28	30-130	M1
2-Chlorophenol	ug/L	ND	50	15.7	31	30-130	
2-Methylnaphthalene	ug/L	ND	50	16.3	33	30-130	
2-Methylphenol(o-Cresol)	ug/L	ND	50	16.0	32	30-130	
2-Nitroaniline	ug/L	ND	100	44.6J	45	40-130	
2-Nitrophenol	ug/L	ND	50	15.4	31	20-130	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	50	14.2	28	20-130	
3,3'-Dichlorobenzidine	ug/L	ND	100	24.4	24	10-150	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2553236

Parameter	Units	92425875001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
3-Nitroaniline	ug/L	ND	100	53.9	54	40-130	
4,6-Dinitro-2-methylphenol	ug/L	ND	100	71.8	72	40-130	
4-Bromophenylphenyl ether	ug/L	ND	50	22.5	45	30-130	
4-Chloro-3-methylphenol	ug/L	ND	100	37.2	37	30-130	
4-Chloroaniline	ug/L	ND	100	25.0	25	20-130	
4-Chlorophenylphenyl ether	ug/L	ND	50	18.7	37	20-130	
4-Nitroaniline	ug/L	ND	100	66.6	67	40-130	
4-Nitrophenol	ug/L	ND	250	121	48	10-130	
Acenaphthene	ug/L	ND	50	19.0	38	30-130	
Acenaphthylene	ug/L	ND	50	19.4	39	30-130	
Aniline	ug/L	ND	50	3.2J	6	20-130	M1
Anthracene	ug/L	ND	50	32.7	65	50-130	
Benzo(a)anthracene	ug/L	ND	50	36.1	72	50-130	
Benzo(a)pyrene	ug/L	ND	50	35.6	71	50-130	
Benzo(b)fluoranthene	ug/L	ND	50	36.1	72	50-130	
Benzo(g,h,i)perylene	ug/L	ND	50	36.4	73	50-130	
Benzo(k)fluoranthene	ug/L	ND	50	37.2	74	50-130	
Benzoic Acid	ug/L	ND	250	60.2	24	10-130	
Benzyl alcohol	ug/L	ND	100	30.0	30	20-130	
bis(2-Chloroethoxy)methane	ug/L	ND	50	15.2	30	30-130	
bis(2-Chloroethyl) ether	ug/L	ND	50	15.6	31	30-130	
bis(2-Ethylhexyl)phthalate	ug/L	ND	50	33.1	66	50-130	
Butylbenzylphthalate	ug/L	ND	50	32.1	64	50-150	
Chrysene	ug/L	ND	50	36.3	73	50-130	
Di-n-butylphthalate	ug/L	ND	50	35.2	70	50-130	
Di-n-octylphthalate	ug/L	ND	50	33.3	67	50-130	
Dibenz(a,h)anthracene	ug/L	ND	50	37.2	74	40-130	
Dibenzofuran	ug/L	ND	50	17.9	36	40-130	M1
Diethylphthalate	ug/L	ND	50	30.3	61	40-130	
Dimethylphthalate	ug/L	ND	50	24.8	50	40-130	
Fluoranthene	ug/L	ND	50	39.9	80	30-130	
Fluorene	ug/L	ND	50	23.0	46	20-130	
Hexachloro-1,3-butadiene	ug/L	ND	50	11.1	22	10-130	
Hexachlorobenzene	ug/L	ND	50	22.3	45	30-130	
Hexachlorocyclopentadiene	ug/L	ND	50	10.7	21	10-150	
Hexachloroethane	ug/L	ND	50	12.3	25	10-130	
Indeno(1,2,3-cd)pyrene	ug/L	ND	50	36.6	73	40-130	
Isophorone	ug/L	ND	50	16.4	33	30-130	
N-Nitroso-di-n-propylamine	ug/L	ND	50	16.4	33	30-130	
N-Nitrosodimethylamine	ug/L	ND	50	14.4	29	10-130	
N-Nitrosodiphenylamine	ug/L	ND	50	8.5J	17	30-130	M1
Naphthalene	ug/L	ND	50	17.4	35	20-130	
Nitrobenzene	ug/L	ND	50	15.2	30	20-130	
Pentachlorophenol	ug/L	ND	100	63.7	64	10-140	
Phenanthrene	ug/L	ND	50	33.9	68	50-130	
Phenol	ug/L	ND	50	10.5	21	10-130	
Pyrene	ug/L	ND	50	34.8	70	50-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2553236

Parameter	Units	92425875001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2,4,6-Tribromophenol (S)	%				58	10-137	
2-Fluorobiphenyl (S)	%				30	13-130	
2-Fluorophenol (S)	%				26	10-130	
Nitrobenzene-d5 (S)	%				33	13-130	
Phenol-d6 (S)	%				20	10-130	
Terphenyl-d14 (S)	%				61	25-130	

SAMPLE DUPLICATE: 2553237

Parameter	Units	92425875002 Result	Dup Result	RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
1-Methylnaphthalene	ug/L	ND	2.1J		
2,2'-Oxybis(1-chloropropane)	ug/L	ND	ND		
2,4,5-Trichlorophenol	ug/L	ND	ND		
2,4,6-Trichlorophenol	ug/L	ND	ND		
2,4-Dichlorophenol	ug/L	ND	ND		
2,4-Dimethylphenol	ug/L	ND	ND		
2,4-Dinitrophenol	ug/L	ND	ND		
2,4-Dinitrotoluene	ug/L	ND	ND		
2,6-Dinitrotoluene	ug/L	ND	ND		
2-Chloronaphthalene	ug/L	ND	ND		
2-Chlorophenol	ug/L	ND	ND		
2-Methylnaphthalene	ug/L	3.1J	5.5J		
2-Methylphenol(o-Cresol)	ug/L	ND	ND		
2-Nitroaniline	ug/L	ND	ND		
2-Nitrophenol	ug/L	ND	ND		
3&4-Methylphenol(m&p Cresol)	ug/L	ND	ND		
3,3'-Dichlorobenzidine	ug/L	ND	ND		
3-Nitroaniline	ug/L	ND	ND		
4,6-Dinitro-2-methylphenol	ug/L	ND	ND		
4-Bromophenylphenyl ether	ug/L	ND	ND		
4-Chloro-3-methylphenol	ug/L	ND	ND		
4-Chloroaniline	ug/L	ND	ND		
4-Chlorophenylphenyl ether	ug/L	ND	ND		
4-Nitroaniline	ug/L	ND	ND		
4-Nitrophenol	ug/L	ND	ND		
Acenaphthene	ug/L	ND	ND		
Acenaphthylene	ug/L	ND	ND		
Aniline	ug/L	ND	ND		
Anthracene	ug/L	ND	ND		
Benzo(a)anthracene	ug/L	ND	ND		
Benzo(a)pyrene	ug/L	ND	ND		

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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2553237

Parameter	Units	92425875002 Result	Dup Result	RPD	Qualifiers
Benzo(b)fluoranthene	ug/L	ND	ND		
Benzo(g,h,i)perylene	ug/L	ND	ND		
Benzo(k)fluoranthene	ug/L	ND	ND		
Benzoic Acid	ug/L	ND	ND		
Benzyl alcohol	ug/L	ND	ND		
bis(2-Chloroethoxy)methane	ug/L	ND	ND		
bis(2-Chloroethyl) ether	ug/L	ND	ND		
bis(2-Ethylhexyl)phthalate	ug/L	ND	ND		
Butylbenzylphthalate	ug/L	ND	ND		
Chrysene	ug/L	ND	ND		
Di-n-butylphthalate	ug/L	ND	ND		
Di-n-octylphthalate	ug/L	ND	ND		
Dibenz(a,h)anthracene	ug/L	ND	ND		
Dibenzofuran	ug/L	ND	ND		
Diethylphthalate	ug/L	ND	ND		
Dimethylphthalate	ug/L	ND	ND		
Fluoranthene	ug/L	ND	ND		
Fluorene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
Hexachlorobenzene	ug/L	ND	ND		
Hexachlorocyclopentadiene	ug/L	ND	ND		
Hexachloroethane	ug/L	ND	ND		
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND		
Isophorone	ug/L	ND	ND		
N-Nitroso-di-n-propylamine	ug/L	ND	ND		
N-Nitrosodimethylamine	ug/L	ND	ND		
N-Nitrosodiphenylamine	ug/L	ND	ND		
Naphthalene	ug/L	7.8J	13.6		
Nitrobenzene	ug/L	ND	ND		
Pentachlorophenol	ug/L	ND	ND		
Phenanthrene	ug/L	ND	ND		
Phenol	ug/L	ND	2.7J		
Pyrene	ug/L	ND	ND		
2,4,6-Tribromophenol (S)	%	59	69		
2-Fluorobiphenyl (S)	%	51	57		
2-Fluorophenol (S)	%	46	48		
Nitrobenzene-d5 (S)	%	55	60		
Phenol-d6 (S)	%	36	37		
Terphenyl-d14 (S)	%	72	73		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470258
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92425908003, 92425908004

SAMPLE DUPLICATE: 2553186

Parameter	Units	92425748006 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	18.6	16.4	13	

SAMPLE DUPLICATE: 2553187

Parameter	Units	92425874002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	4.5	5.2	14	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: U5797
Pace Project No.: 92425908

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.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H2	Extraction or preparation conducted outside EPA method holding time.
IK	The recalculated concentration of the calibration standard(s) did not meet method acceptance criteria; this result should be considered an estimated value.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P2	Re-extraction or re-analysis could not be performed due to insufficient sample amount.
S0	Surrogate recovery outside laboratory control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: U5797
Pace Project No.: 92425908

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92425908001	**B3**	EPA 3510C	470256	EPA 8270E	470471
92425908002	**B5.1**	EPA 3510C	470256	EPA 8270E	470471
92425908003	**B18**	EPA 5035A	470498	EPA 8260D	470560
92425908004	**B19**	EPA 5035A	470498	EPA 8260D	470560
92425908001	**B3**	EPA 8260D	470847		
92425908002	**B5.1**	EPA 8260D	470847		
92425908003	**B18**	ASTM D2974-87	470258		
92425908004	**B19**	ASTM D2974-87	470258		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 1
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☑ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Falcon Engineering Project

WO# : 92425908

92425908

Courier: ☐ Commercial ☐ Fed Ex ☐ Pace ☐ UPS ☐ USPS ☐ Other: ☑ Client

Custody Seal Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Date/Initials Person Examining Contents: WBT 4/12/19

Thermometer: ☐ IR Gun ID: 9ITC005

Type of Ice: ☑ Wet ☐ Blue ☐ None

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Cooler Temp (°C): 10.1 Correction Factor: Add/Subtract (°C) -0.1

Cooler Temp Corrected (°C): 10.0

Temp should be above freezing to 6°C
☑ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

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

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT SL				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field data required? ☐ Yes ☐ No

CLIENT NOTIFICATION/RESOLUTION

Lot ID of split containers:

Person contacted: Date/Time:

Project Manager SCURF Review: Date: 4/18/19

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

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

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

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

Project: **WO#: 92425908**

PM: TIH **Due Date: 04/26/19**

CLIENT: 92-FALCON

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)	AGBU-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)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																1											
2																1											
3																									1		
4																				1							
5																				1							
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.

Pace Analytical

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:

Company:	Falcon Engineering
Address:	1210 Trinity Road
Suite 110, Raleigh, NC 27513	
Email:	
Phone:	919 730 0064 / Fax:
Requested Due Date:	

Section B
Required Project Information:

Report To:	Christopher Burkhardt
Copy To:	
Purchase Order #:	G19011
Project Name:	[redacted] U5797
Project #:	G19011

Section C
Invoice Information:

Attention:	SAME
Company Name:	
Address:	
Pace Quote:	G19011 U5797
Pace Project Manager:	tyriek.hooks@pacelabs.com,
Pace Profile #:	2766

Page: 1 Of 1

Regulatory Agency: NC DOT

State / Location: NC

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

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	8260	8270	Residual Chlorine (Y/N)	
1	B3	WT	G	4/10	830	→	→			X			X						X	X		92425908
2	B5.1	WT		4/10	1230	→	→												X	X		UST(Petro) 001
3	B18	SL		4/10	1441	→	→												X			UST(Petro) 002
4	B19	SL		4/10	1510	→	→												X			Cleaners 003
5																						Cleaners 004
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	CHRISTOPHER BURKHARDT	4/12	15:45	D Samuel	4/18/19	~~13:45~~	4/13/19

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: CHRISTOPHER BURKHARDT

SIGNATURE of SAMPLER: [signature] DATE Signed: 4/11/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-091)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 3
NCDOT PROJECT U-5797

402 E. 24TH STREET, LUMBERTON, NC

APRIL 22, 2019

Report prepared for: Christopher J. Burkhardt, PWS
Falcon Engineers
1210 Trinity Rd. #110
Raleigh, NC 27607

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 3 - 402 E. 24th Street
Lumberton, Robeson County, North Carolina

Table of Contents

Figures

Appendices

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 3, located at 402 E. 24th Street in Lumberton, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5797). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from March 19-25, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of seven EM anomalies were identified. Several of the EM anomalies were directly attributed to visible cultural features at the ground surface. Several other EM anomalies were associated with reinforced concrete, a pipe, and a manhole and were investigated further with GPR to verify that no subsurface structures such as USTs were obscured by the interference. No evidence of any subsurface structures was observed at these locations.

GPR verified the sizes and orientations of four known USTs located within the geophysical survey area. The known USTs were located on the southern portion of the property. The eastern UST (UST #1) was approximately 27 feet long by 7.5 feet wide. The east-central UST (UST#2) was approximately 27 feet long by 7 feet wide. The west-central UST (UST#3) was approximately 16 feet long by 5 feet wide. The western-most UST (UST #4) was approximately 16 feet long by 5.5 feet wide. No unknown buried structures were identified. Collectively, the geophysical data recorded evidence of four known USTs within the geophysical survey area at Parcel 3.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 3, located at 402 E. 24th Street in Lumberton, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5797). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from March 19-25, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an active gas station and commercial buildings surrounded by concrete and asphalt surfaces. Four known USTs were observed within the geophysical survey area during the investigation. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

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

generally parallel survey lines, spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on March 25, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

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

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The

following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Utility	☑
2	Drop Inlet	
3	Reinforced Concrete	☑
4	Manhole	☑
5	Reinforced Concrete/**Four Known USTs**	☑
6	Building	
7	Signs	

Several of the EM anomalies were directly attributed to visible cultural features at the ground surface, including a drop inlet, a manhole, the building, and signs. EM Anomaly 1 was associated with a utility and was further investigated with GPR.

EM Anomalies 3-5 were located in an area of suspected reinforced concrete and were further investigated with GPR to verify the presence of the reinforcement and that no other structures were obscured by the interference.

Four known USTs were located within the survey area (EM Anomaly 5). GPR was performed across the known USTs to verify their sizes and orientations.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property as well as select transect images. All of the transect images are included in **Appendix A**. A total of 14 formal GPR transects were performed at the site.

GPR Transects 1-10 were performed in a grid-like fashion across EM Anomalies 4 and 5. These transects verified reinforcement in the concrete and verified the sizes and orientations of the four known USTs at the site. The known USTs were located on the southern portion of the property. The eastern UST (UST #1) was approximately 27 feet

long by 7.5 feet wide. The east-central UST (UST#2) was approximately 27 feet long by 7 feet wide. The west-central UST (UST#3) was approximately 16 feet long by 5 feet wide. The western-most UST (UST #4) was approximately 16 feet long by 5.5 feet wide. No unknown buried structures were identified. **Figure 4** provides the locations and sizes of the four known USTs overlain on an aerial, along with ground-level photographs.

GPR Transects 11-13 were performed across EM Anomaly 3 and verified the presence of reinforced concrete. No other structures such as USTs were observed beneath the reinforcement.

GPR Transect 14 was performed across a suspected utility (EM Anomaly 1) and recorded a discreet hyperbolic reflector typical of a buried utility.

Collectively, the geophysical data recorded evidence of four known USTs within the geophysical survey area at Parcel 3. **Figure 5** provides an overlay of the EM61 metal detection contour map, along with the locations of the four known USTs, onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 3 in Lumberton, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- Several of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- Several other EM anomalies were associated with reinforced concrete, a pipe, and a manhole and were investigated further with GPR to verify that no subsurface structures such as USTs were obscured by the interference. No evidence of any subsurface structures was observed at these locations.
- GPR verified the sizes and orientations of four known USTs located within the

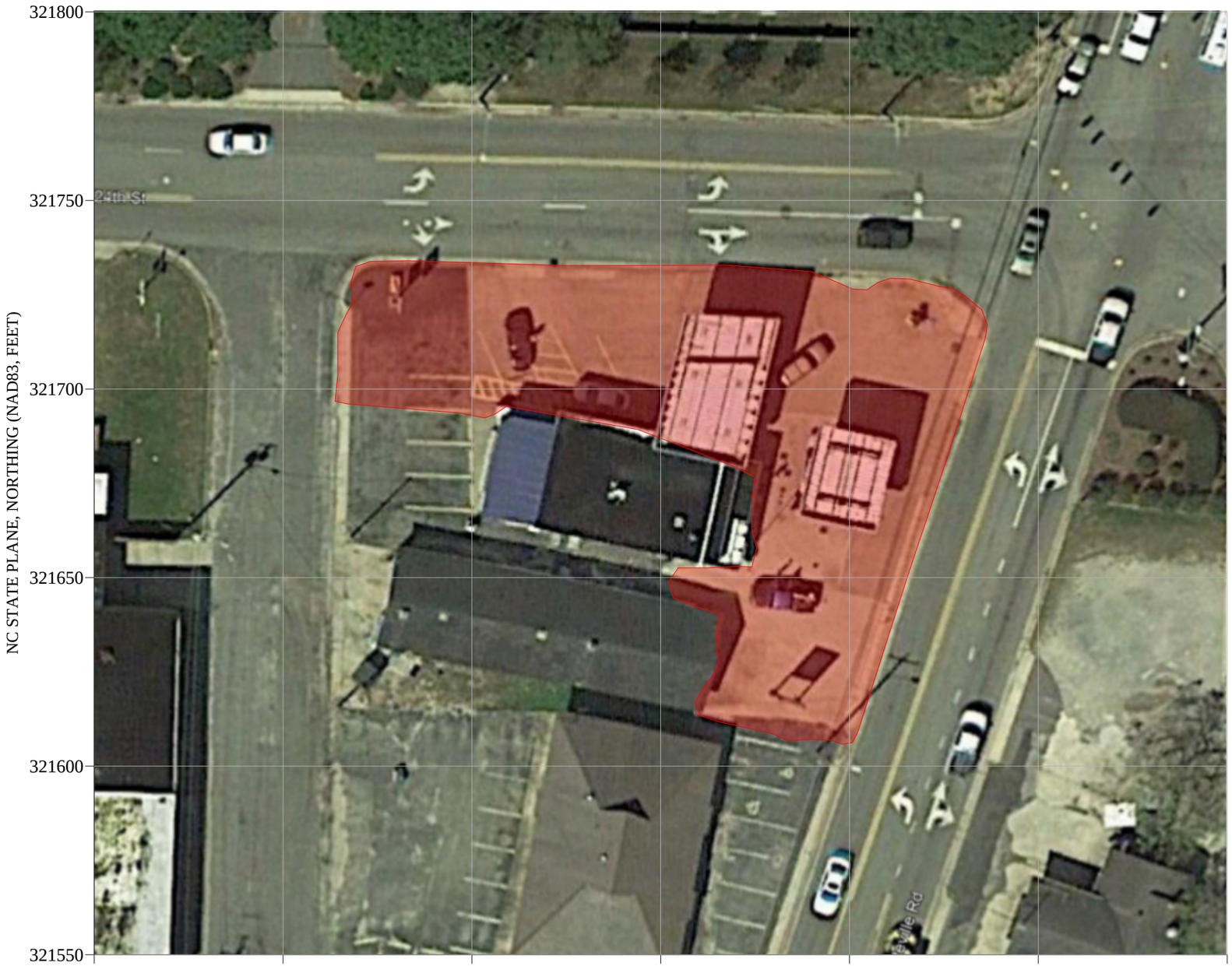
geophysical survey area. The known USTs were located on the southern portion of the property. The eastern UST (UST #1) was approximately 27 feet long by 7.5 feet wide. The east-central UST (UST#2) was approximately 27 feet long by 7 feet wide. The west-central UST (UST#3) was approximately 16 feet long by 5 feet wide. The western-most UST (UST #4) was approximately 16 feet long by 5.5 feet wide. No unknown buried structures were identified.

- Collectively, the geophysical data recorded evidence of four known USTs within the geophysical survey area at Parcel 3.

LIMITATIONS

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

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately East)

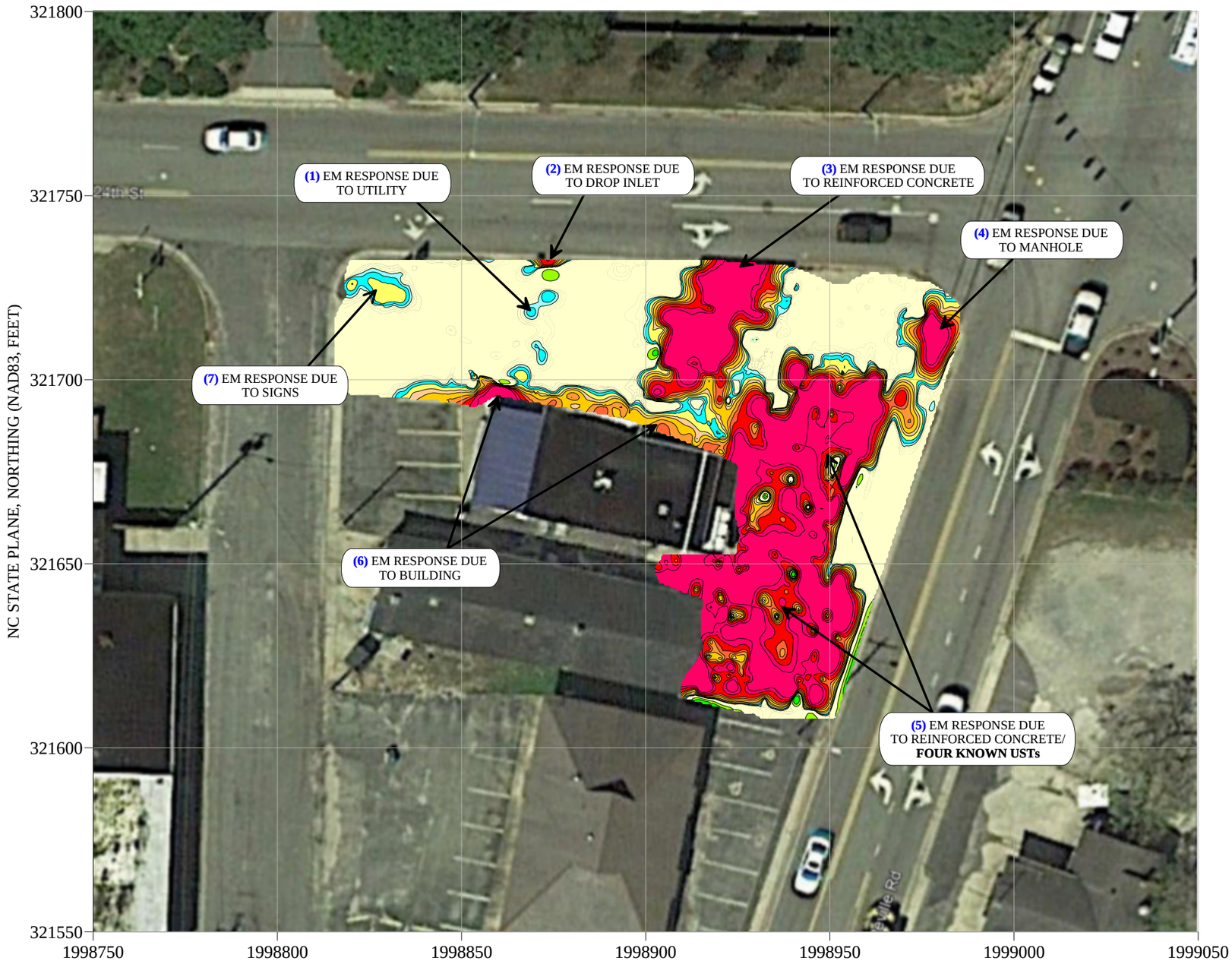
View of Survey Area
(Facing Approximately South)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 3 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797
TITLE	PARCEL 3 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	3/25/2019
PYRAMID PROJECT #:	2019-091
CLIENT	FALCON ENGINEERS
	FIGURE 1

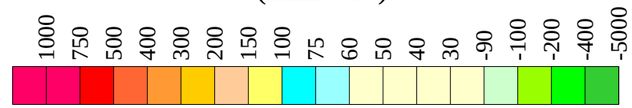
EM61 METAL DETECTION RESULTS



EVIDENCE OF FOUR KNOWN USTs OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM data were collected on March 19, 2019, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on March 25, 2019.

EM61 Metal Detection Response (millivolts)



N

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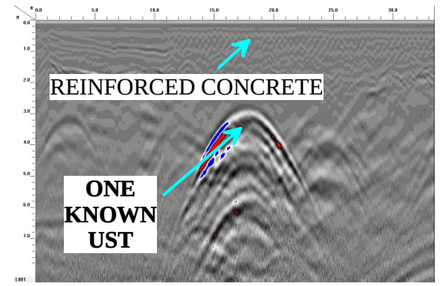
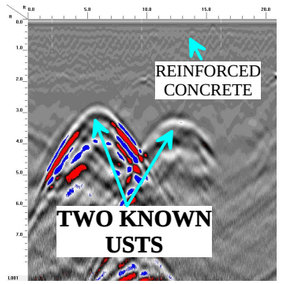
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT: PARCEL 3, LUMBERTON, NORTH CAROLINA, NCDOT PROJECT U-5797	TITLE: PARCEL 3 - EM61 METAL DETECTION CONTOUR MAP	DATE: 3/25/2019	CLIENT: FALCON ENGINEERS
		PYRAMID PROJECT #: 2019-091	**FIGURE 2**

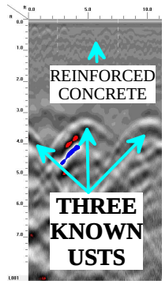
LOCATIONS OF GPR TRANSECTS



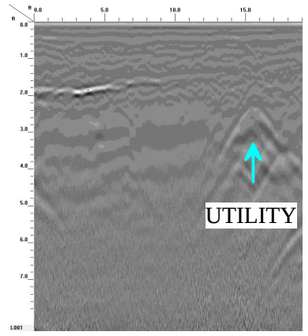
GPR TRANSECT 7 (T7)



GPR TRANSECT 9 (T9)



GPR TRANSECT 10 (T10)



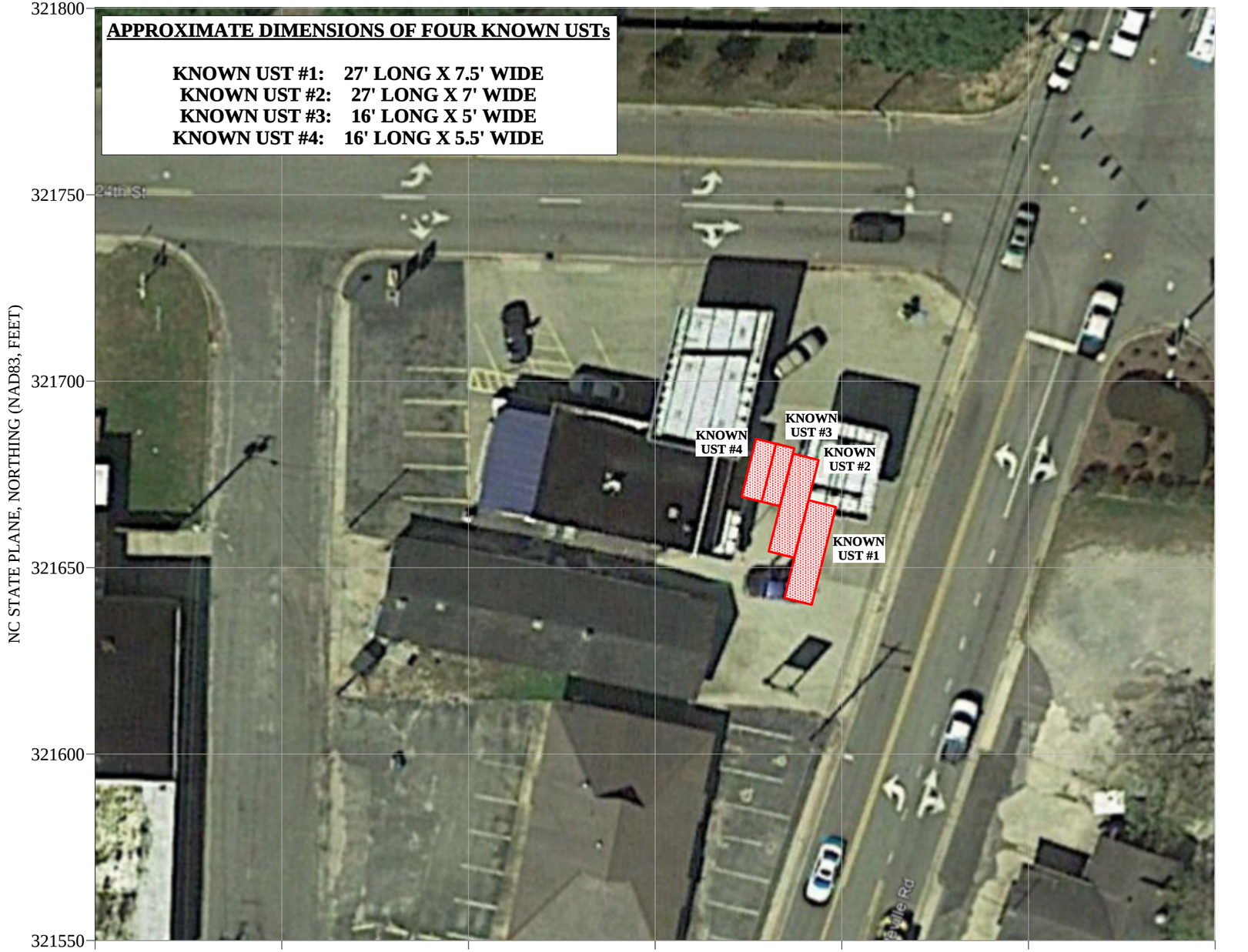
GPR TRANSECT 14 (T14)

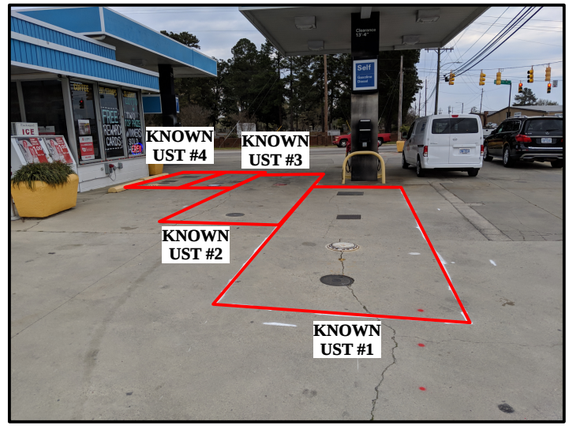
N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

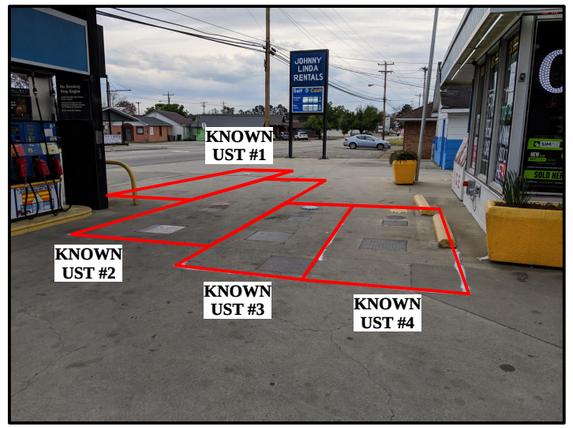
PROJECT: PARCEL 3 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 3 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	DATE: 3/25/2019	CLIENT: FALCON ENGINEERS
		PYRAMID PROJECT #: 2019-091	**FIGURE 3**

LOCATIONS OF FOUR KNOWN USTs





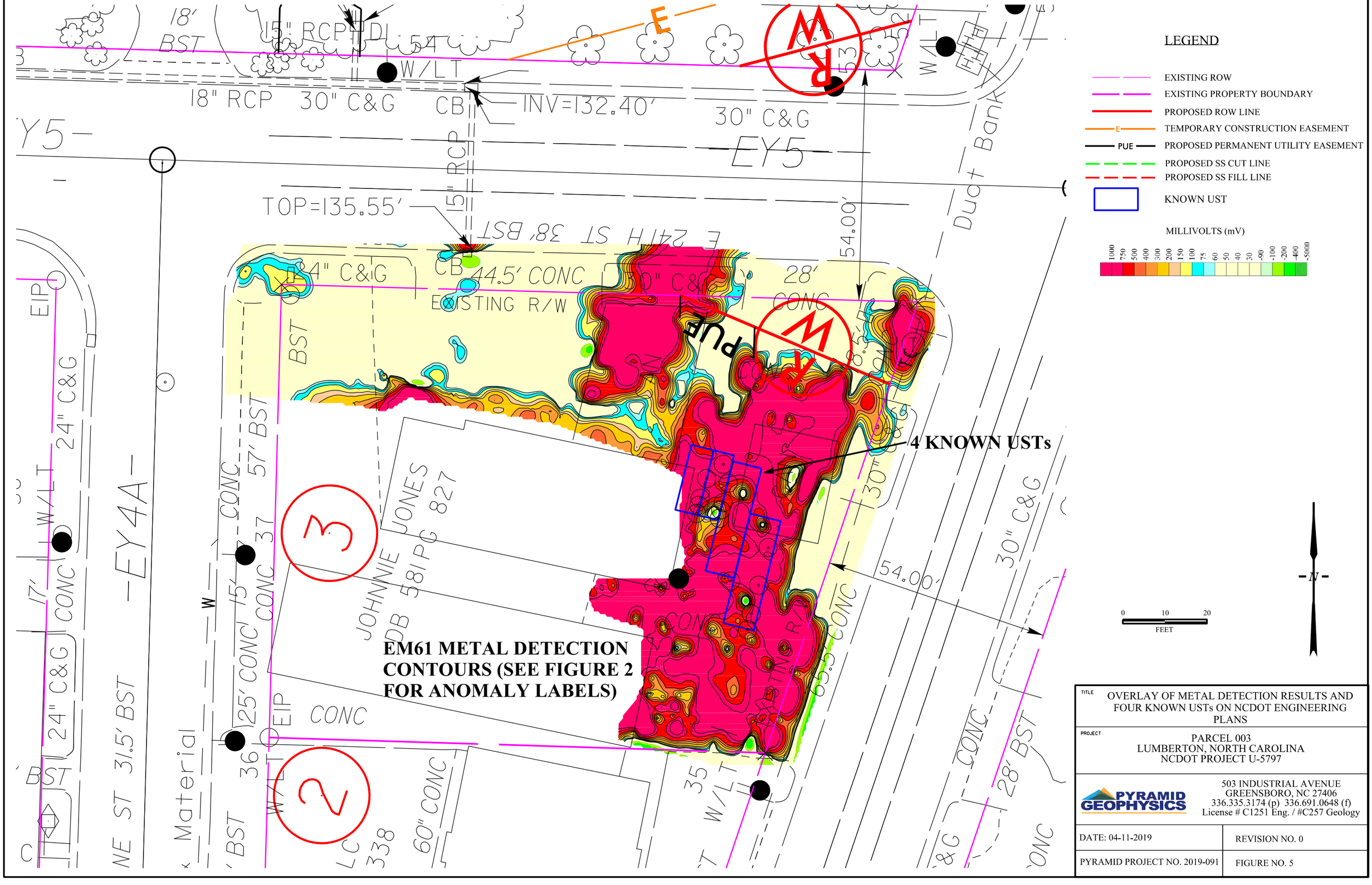
View of Four Known USTs Facing Approximately North



View of Four Known USTs Facing Approximately South

N

PYRAMID GEOPHYSICS 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT PARCEL 3 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE PARCEL 3 - LOCATIONS AND SIZES OF FOUR KNOWN USTs	DATE 3/25/2019 PYRAMID PROJECT #: 2019-091	CLIENT FALCON ENGINEERS **FIGURE 4**



TITLE: OVERLAY OF METAL DETECTION RESULTS AND FOUR KNOWN USTs ON NCDOT ENGINEERING PLANS

PROJECT: PARCEL 003
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

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GREENSBORO, NC 27406
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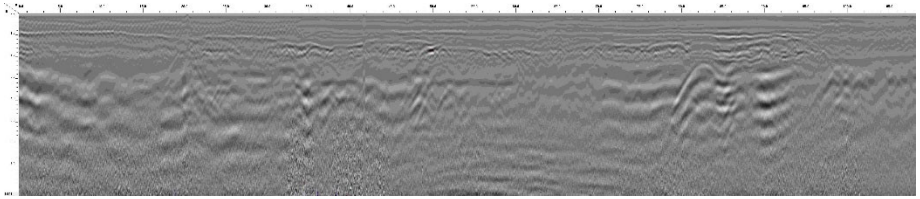
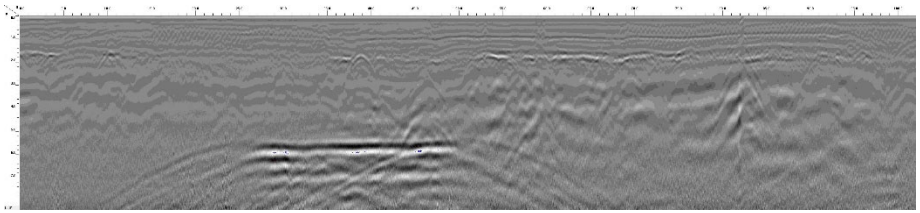
DATE: 04-11-2019	REVISION NO. 0
PYRAMID PROJECT NO. 2019-091	FIGURE NO. 5

Appendix A – GPR Transect Images



GPR TRANSECT 1



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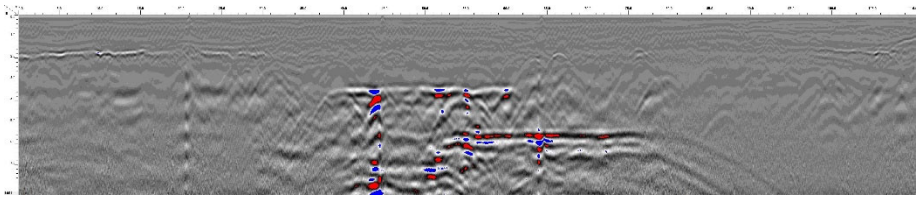

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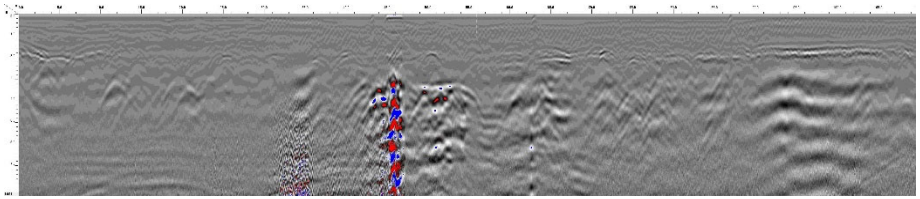

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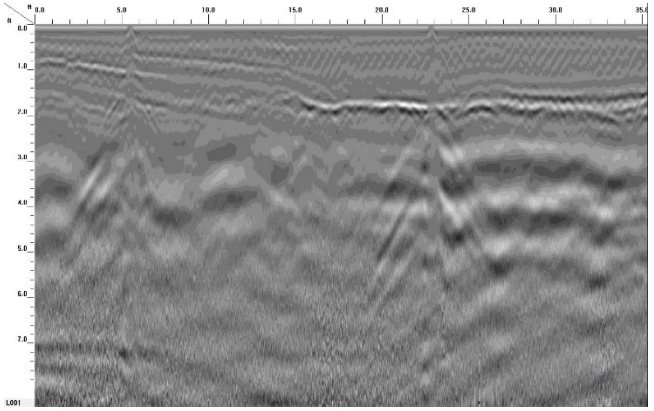

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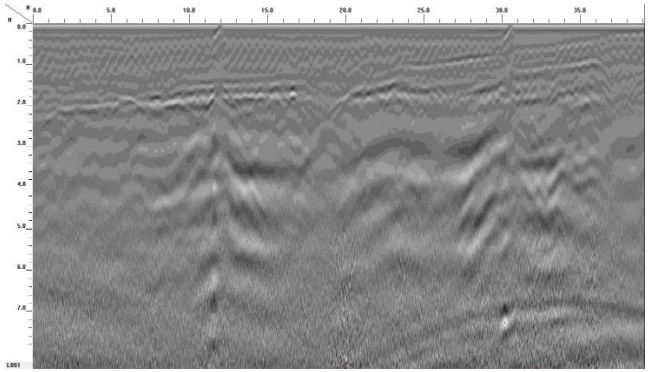

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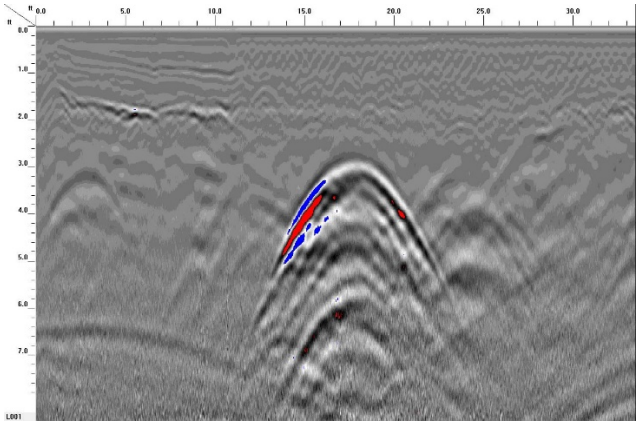

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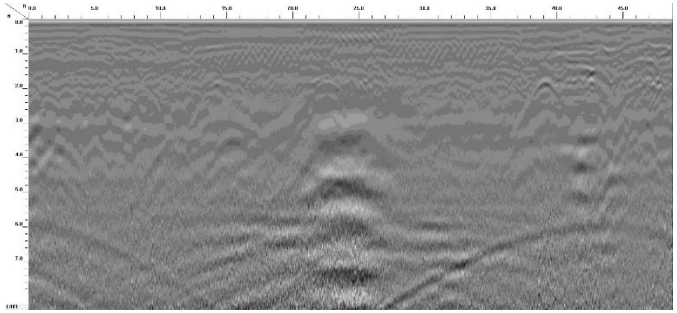

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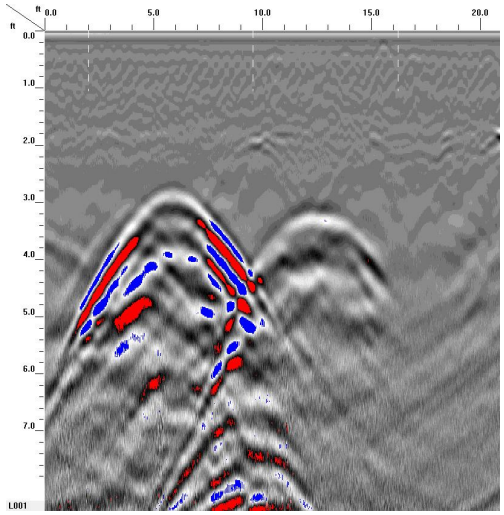

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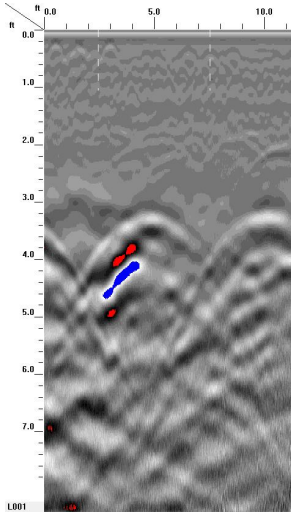

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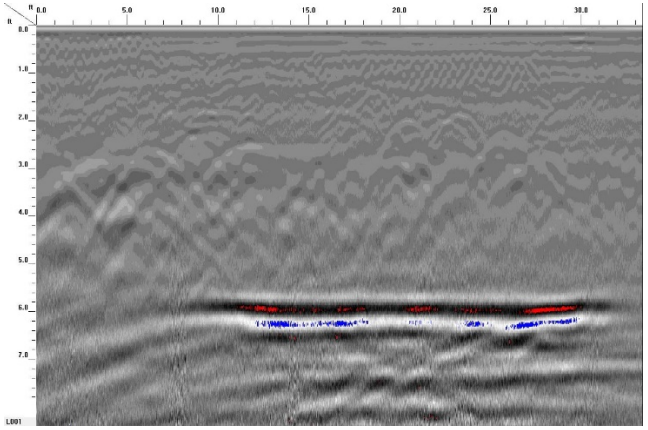

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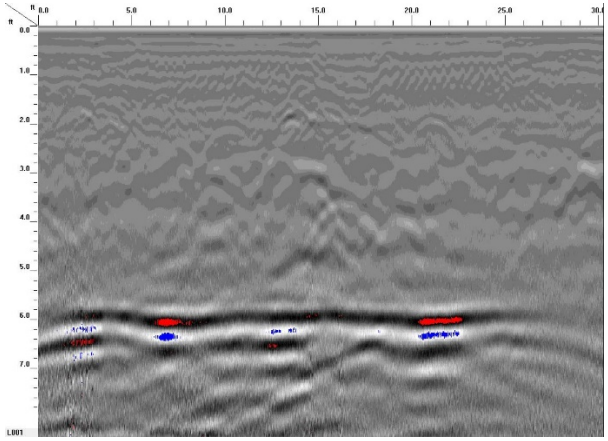

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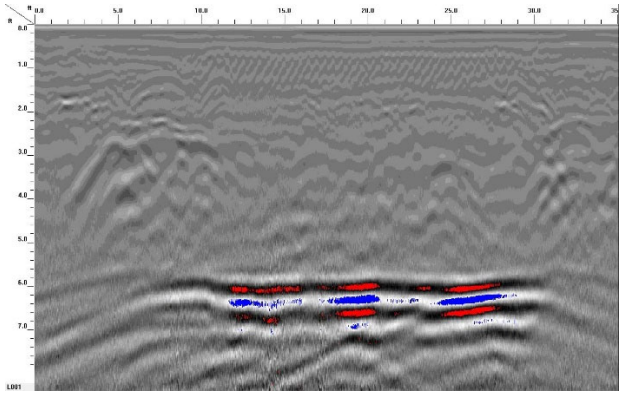

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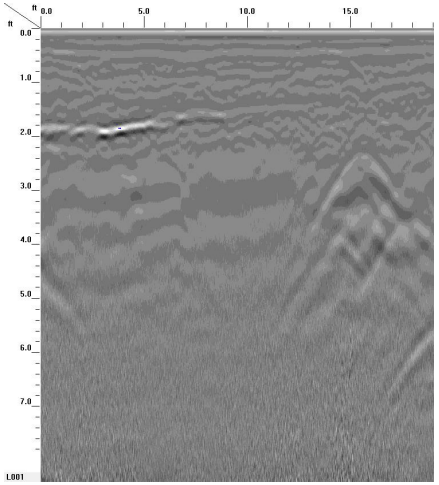

GPR TRANSECT 14