



May 31, 2018

Kleinfelder File No. 20183507.001A

Mr. Gordon Box, LG
North Carolina Department of Transportation
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

**Subject: Preliminary Site Assessment Report
Parcel 024, Richard W. Noel and wife Edie N. Noel
WBS Element No. 38887.1.1, TIP No. R-3830
NC 42 from US 421 to SR 1579 (Main Street) in Sanford and
along SR 1579 from NC 42 to SR 1538 (Buckhorn Avenue) in Broadway
Lee County, North Carolina**

Dear Mr. Box:

Kleinfelder is pleased to provide its report detailing the activities conducted as part of the preliminary site assessment for the subject project.

Kleinfelder appreciates the opportunity to be of service to you. Should you have questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,
KLEINFELDER, INC.

Joseph C. Hollinger
Staff Professional II

Michael J Burns, LG
Program Manager

JCH/MJB:cas



**PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 024, RICHARD W. NOEL & WIFE EDIE N. NOEL
PIN 9652-82-5869
816 EAST MAIN STREET
BROADWAY, LEE COUNTY, NORTH CAROLINA**

**NCDOT WBS ELEMENT 38887.1.1
STATE PROJECT R-3830
NC42 FROM US 421 TO SR 1579 (MAIN STREET) IN
SANFORD AND ALONG SR 1579 FROM NC 42 TO SR 1538
(BUCKHORN AVENUE) IN BROADWAY**

KLEINFELDER PROJECT NO. 20183507.001A

MAY 31, 2018

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A Report Prepared for:

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NC 42 FROM US 421 TO SR 1579 (MAIN STREET) IN SANFORD AND ALONG SR 1579
FROM NC 42 TO SR 1538 (BUCKHORN AVENUE) IN BROADWAY**

Prepared by:



Joseph C. Hollinger
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May 31, 2018

Kleinfelder Project No. 20183507.001A

PRELIMINARY SITE ASSESSMENT REPORT

Site Name and Location: Parcel 024
816 East Main Street
Sanford, Lee County, North Carolina

Latitude and Longitude: 35.461453°N, -79.139214°W

County PIN 9652-82-5869

Facility ID Number: 0-013332

LUST ID Number: 20007

State Project No.: R-3830

NCDOT Project No.: NCDOT WBS Element 38887.1.1

Description: NC 42 from US 421 to SR 1579 (Main Street) in Sanford and along SR 1579 from NC 42 to SR 1538 (Buckhorn Avenue) in Broadway

Date of Report: May 31, 2018

Consultant: Kleinfelder, Inc.
3200 Gateway Center Boulevard | Suite 100
Morrisville, North Carolina 27560
Corporate Geology License No. C-521
Corporate Licensure for Engineering F-1312

SEAL AND SIGNATURE OF CERTIFYING LICENSED GEOLOGIST

I, Michael J Burns, a Licensed Geologist for Kleinfelder, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

Michael J Burns, LG
NC License No. 1645

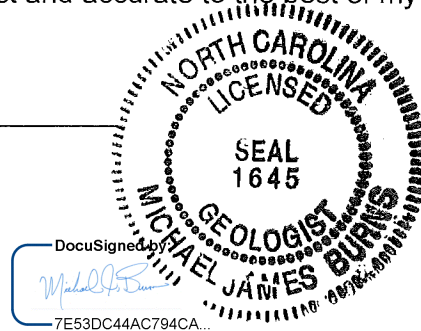


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- C Geophysical Survey Report
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1 INTRODUCTION

Kleinfelder, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report to document assessment activities performed within the proposed/existing right of way (ROW) and/or temporary construction easement on Parcel 024 (the assessment area is hereafter referred to as the "Project Study Area"). Parcel 024 is currently occupied by Travelers Auto on the south side of East Main Street, approximately 170 feet to the west of the intersection of East Main Street and Rosser Road, in Sanford, Lee County, North Carolina (Figure 1).

Based on information provided in Kleinfelder's September 2014 Hazardous Material Investigation Report and information provided by the North Carolina Department of Transportation (NCDOT), the parcel is the site of a former gasoline service station (The Pantry #115) with a former underground storage tank (UST) registration (Facility ID# 0-013332). The parcel is also the location of a leaking underground storage tank (LUST) incident with ID #20007. As such, the purpose of the PSA was to evaluate whether USTs or contaminated soil/groundwater are present in the Project Study Area that may result in increased project costs and future liability if acquired by the NCDOT.

1.1 SITE DESCRIPTION

Parcel 024 is owned by Richard and Edie Noel and has a street address of 816 East Main Street. Parcel 024 is bounded by East Main Street to the north, beyond which is a large parking lot, a strip mall to the east, and a railroad, beyond which is Tyson Foods to the west and south. The parcel is currently the location of a used car dealership. A piped stream appears to be present on the parcel to the west of the onsite structure, flowing north to south. Photographs of the Project Study Area are provided in Appendix A.

1.2 SCOPE OF WORK

Kleinfelder conducted this PSA in accordance with the NCDOT's January 12, 2018, Request for Technical and Cost Proposal (RFP) and Kleinfelder's January 24, 2018, Technical and Cost Proposal. The NCDOT granted Notice to Proceed for the project on February 1, 2018.

2 HISTORY

2.1 PARCEL USAGE

The September 2014 Hazardous Materials Report included information about environmental databases searched and historical review information for Parcel 024. The parcel was indicated to be the location of a former gasoline service station (The Pantry #115) which previously maintained two 10,000-gallon gasoline USTs, and the location of leaking UST (LUST) incident #20007. There were no other environmental database listings identified for Parcel 024 that would suggest the presence of contaminated soil or groundwater.

Kleinfelder conducted historical research to determine whether additional environmental listings were identified since 2014 for Parcel 024. The following are the results of the additional research:

- Kleinfelder searched the registered UST database, maintained by the North Carolina Department of Environmental Quality (NCDEQ). The parcel was identified as the former Pantry #115, with facility ID #0-013332.
- Kleinfelder searched the LUST database, maintained by the NCDEQ. The parcel is identified in the LUST database as the location of incident ID #20007. Kleinfelder obtained the UST Closure Report for the incident from the NCDEQ.
- Based on a review of aerial photographs and site observations, there does not appear to have been a significant change in the use of the parcel since the hazardous materials assessment conducted in 2014.

2.2 FACILITY ID NUMBERS

Kleinfelder reviewed the NCDEQ UST database for Parcel 024. The parcel previously maintained two, 10,000-gallon gasoline USTs of single-walled steel construction, which were installed in 1972 and closed by removal in 1999. No active USTs appear to be listed for the Parcel.

2.3 GROUNDWATER INCIDENT NUMBERS

Parcel 024 was listed as the location of a LUST incident with ID# 20007. According to the database soil contamination was identified in 1999 when two 10,000-gallon gasoline USTs were removed from the parcel. The UST closure report states that 194 tons of contaminated soils were excavated. The final excavation measured 12 feet deep and groundwater was not encountered. Confirmation soil samples indicated that soil contaminated with gasoline range organics remained

present in the area between the UST basin and dispensers, and around the dispensers. The UST Closure Report is included in Appendix B.

A Phase I Limited Site Assessment (LSA) was completed in 1999. A monitoring well was installed in the source area and benzene was detected at 750 parts per billion (ppb). The incident was ranked low risk and closed out in 1999 with land use restrictions for soil and groundwater. The monitoring well was abandoned in 2000.

There were no other LUST or Inactive Hazardous Sites Branch (IHSB) database listings identified for Parcel 024 that indicated known soil or groundwater incidents.

3 OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

No groundwater monitoring wells were observed within the Project Study Area during the multiple site visits conducted as part of the PSA. A potential abandoned monitoring well was identified to the south of the Project Study Area.

3.2 ACTIVE USTS

No active USTs were observed within the Project Study Area during the multiple site visits conducted as part of the PSA.

3.3 OTHER FEATURES APPARENT BEYOND PROJECT STUDY AREA

No features were observed beyond the Project Study Area that indicated evidence of potential contamination on Parcel 024.

4 METHODS

4.1 PROPERTY OWNER CONTACTS

As part of Kleinfelder's scope of work, the listed property owner was contacted about the work schedule for the field work and the type of work being performed. The owner requested that the work be performed on a Thursday. The owner did not express any other concerns or special conditions associated with the work being performed.

4.2 HEALTH AND SAFETY

Prior to commencing the field work, Kleinfelder personnel developed a Site-Specific Health and Safety Plan (HASP) covering activities to be performed. The site specific HASP was discussed with all Kleinfelder personnel involved with the project and at a daily onsite "tail gate" safety meetings with subcontractors and sub consultants. In addition to the HASP, Kleinfelder utilized its comprehensive Corporate Health and Safety Program, targeted to address those specific and critical tasks that involve Kleinfelder personnel and subcontractors. The Loss Prevention System (LPS™), a behavior-based program, is Kleinfelder's company-wide safety system implemented and embraced by all levels of the company.

4.3 GEOPHYSICAL INVESTIGATION

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation in the Project Study Area between February 12 and 21, 2018. Pyramid utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to locate potential geophysical anomalies and potential USTs within the Project Study Area.

A copy of the Pyramid Geophysical Investigation Report, detailing the field methodology, is included in Appendix B. The EM and GPR surveys did not detect USTs or unknown geophysical anomalies within the Project Study Area.

4.4 SOIL ASSESSMENT

The scope of work for the soil assessment was to evaluate the presence of soil contamination within the Project Study Area. The soil borings were planned to be advanced to maximum depths of 10 feet below the ground surface unless groundwater was encountered. Field screening using a Flame ionization detector (FID) was to be conducted at 1 foot intervals beginning at 0 foot to 1

foot. The soil sample with the highest FID reading above background or the sample from the deepest proposed cut would be selected for on-site laboratory analyses.

Prior to the drilling activities, public utilities were marked by NC One Call and private utilities were marked by Pyramid.

Kleinfelder subcontracted Quantex, Inc. (Quantex) to perform the drilling onsite on March 15, 2018. Prior to the initial boring and after each subsequent boring, the sampling equipment was decontaminated. Quantex advanced a total of 10 soil borings (SS1 through SS10) by hand auger to 3 feet below the ground surface (bgs) and by direct-push technology from 3 feet to boring termination (10 feet bgs) at locations specified by Kleinfelder. The soil boring locations were identified in the field using a GPS. The soil boring locations are shown on Figure 2. The borings were located within the right of way and public utility easement along North Main Street. The initial borings were located in areas of drainage feature installation and maximum cut. Due to the detection of petroleum contamination additional boring were added for delineation. Soil samples were collected by hand auger and driving Macro Core™ samplers in 5 foot intervals. Each soil core was cut open and the soil samples were classified and the soil divided into 1-foot sections. Each 1-foot section was screened in the field using a FID. The FID readings are summarized in Table 1. Copies of the boring logs are included in Appendix C.

Soils were not consistent across the Parcel Study Area. On the eastern portion of the parcel, in the vicinity of the former fueling equipment, soils were noted to be primarily red silt in the top 4 feet, underlain by clayey sand. Some areas of sand and gravel with perched water was encountered. Areas on the western portion of the Project Study Area were determined to be primarily coarse grained sand in the top one to 3 feet with an underlying clayey sand. Groundwater was not encountered in any of the borings at the termination depth of 10 feet bgs.

4.5 SOIL ANALYSIS

The FID readings from soil borings SS1, SS2, SS3, SS4, and SS9 were noted to be elevated. Olfactory evidence of petroleum contamination was noted in each of these borings. Based on the FID data, samples were collected at the depth of the highest FID readings and at various intervals to confirm the presence and attempt to delineate the vertical extent of contamination. FID data and samples selected for analysis are detailed in Table 1.

The FID reading from soil boring SS5 was noted to be elevated, however a large amount of organic matter was observed in the boring. Additionally petroleum odors were not noted. The organic material observed may be related to a piped stream which appears to be present in the vicinity of soil boring SS5. Based on FID data, the samples with the highest FID reading and at the depth of maximum cut were submitted for analysis.

The FID readings from soil borings SS7, and SS-8 were noted to be low. No obvious visual or olfactory contamination was noted. Based on the FID data samples were collected from the depth of maximum cut and the highest FID reading.

The FID readings from soil boring SS6 was noted to be low. SS6 was terminated at approximately 3.5 feet due to an obstruction (determined to be river rock). Based on FID data a sample was collected at 3 feet (termination depth).

Soil Boring SS10 appears to have been located within the former UST basin. Minimal recovery was obtained and appeared to be ABC stone. Water was identified at 5 feet bgs in soil boring SS10. It appears likely that this is perched water and not groundwater.

The samples were analyzed by Kleinfelder utilizing ultraviolet fluorescence (UVF) methodology to provide real-time analytical results of Total Petroleum Hydrocarbons (TPH), Gasoline Range Organics (GRO), Diesel Range Organics (DRO), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). The UVF method was selected because of the use of petroleum products on Parcel 024 in the past. The UVF analysis also provided data regarding Environmental Protection Agency 16 total Polycyclic Aromatic Hydrocarbons (PAHs), and Benzo(a)pyrene (BaP).

Based on the results of onsite laboratory analysis the samples from SS1-1 and SS7-1 were also selected for laboratory analysis by EPA Method 8270 for Polycyclic Aromatic Hydrocarbons (PAHs).

4.6 GROUNDWATER ANALYSIS

Groundwater was not encountered in the soil borings. However perched water was identified in soil boring SS3 at 8 feet, located north of the former dispenser island, SS4 at 7 feet located to the west of the former Dispenser Island, and SS10 at 4 feet, which was located in the former UST basin. Since NCDOT or their contractors may come into contact with the perched water located

in the UST basin due to its shallow depth, a temporary monitoring well (TMW-1) was installed in the location (SS10) to assess the water for petroleum contamination.

TMW-1 was installed in the location of soil boring SS10 to a depth of 10 feet, with 10 feet of screen. Three well volumes were removed with a 1-inch disposable polyethylene bailer and a water was collected in laboratory prepared bottles and shipped to Pace Analytical Laboratory in Huntersville, NC for analysis by EPA Methods 6200B for volatile organic compounds (VOCs) and EPA Method 625 for semi-volatile organic compounds (SVOCs).

Kleinfelder also attempted to install a temporary monitoring well in soil boring SS4, to the west of the former dispenser island. TMW-2 was installed to a depth of 10 feet with 10 feet of screen. However, after the removal of the initial water in the temporary monitoring well the well did not recharge. The well was not advanced to a greater depth so as to not provide a preferential pathway to groundwater for potentially contaminated water. No perched water sample was able to be collected from TMW-2.

Temporary monitoring well construction data is included in Table 3.

5 RESULTS

5.1 GEOPHYSICAL INVESTIGATION

Pyramid concluded that the EM and GPR investigation did not identify any evidence of unknown metallic UST(s) or unknown geophysical anomalies within the Project Study Area.

5.2 SOIL SAMPLING DATA

UVF analysis of soil samples indicated levels of TPH DRO in soil samples below the state action limit of 100 mg/kg in soil samples SS1-3 [4.7 milligrams per kilogram (mg/kg)], SS2-2 (0.34 mg/kg), SS2-4 (7.3 mg/kg), SS2-6 (0.08 mg/kg), SS3-3 (16.4 mg/kg), SS3-4 (25.1 mg/kg), SS3-7 (20.8 mg/kg), SS4-4 (3.1 mg/kg), SS4-6 (9.4 mg/kg), SS5-1 (13.3 mg/kg), SS5-2 (0.47 mg/kg), SS5-4-5 (14 mg/kg), SS7-1 (20.3 mg/kg), SS8-2 (22.7 mg/kg), SS8-4 (0.59 mg/kg), SS9-4 (3.6 mg/kg), and SS9-5 (0.26 mg/kg). UVF analysis indicated levels of TPH DRO in soil samples in excess of the NCDEQ action limit of 100 mg/kg in SS1-1 (169.6 mg/kg) and SS9-1 (275.9 mg/kg).

UVF analysis of soil samples indicated levels of TPH GRO in soil samples below the state action limit of 50 mg/kg in soil samples SS2-2 (4 mg/kg), SS2-4 (4.1 mg/kg), SS3-3 (10.7 mg/kg), and SS4-6 (27.2 mg/kg). UVF analysis indicated levels of TPH GRO in soil samples in excess of the NCDEQ action limit of 100 mg/kg in SS3-4 (95.4 mg/kg) and SS3-7 (64.4 mg/kg).

UVF analysis of the soil samples indicated total BTEX in soil samples SS3-4 (12.1 mg/kg), P024-SS3-7 (64.4 mg/kg), and SS4-6 (5.4 mg/kg).

UVF analysis of the soil samples indicated levels of total PAHs in soil sample SS1-1 (9.3 mg/kg), SS1-3 (0.2 mg/kg), SS2-4 (0.38 mg/kg), SS3-3 (0.16 mg/kg), SS3-4 (1.2 mg/kg), SS3-7 (0.05 mg/kg), SS4-4 (0.11 mg/kg), SS4-6 (0.11 mg/kg), SS5-1 (0.58 mg/kg), SS5-4-5 (0.6 mg/kg), P024-SS7-1 (1.1 mg/kg), P024-SS8-2 (0.54 mg/kg), P024-SS9-1 (5.3 mg/kg), and P024-SS9-4 (0.08 mg/kg).

UVF analysis of the soil samples indicated levels of BaP in soil samples SS7-1 (0.034 mg/kg), SS8-2 (0.034 mg/kg), and SS9-1 (0.25 mg/kg).

Soil samples analyzed by EPA Method 8270 for PAHs identified contaminant concentrations in excess of Soil-to-Water MSCC and Residential Soil Cleanup levels in SS1-1 (1-methynaphthalene at 0.118 mg/kg) and SS7-1 (Benzo(a)pyrene at 0.197 mg/kg).

The Benzo(a)pyrene result detected by traditional laboratory analysis in soil sample SS7-1 was noted to be significantly higher than the result obtained by the UVF methodology. There is no known source of benzo(a)pyrene on the parcel. Small pieces of asphalt were noted in the soil beneath the asphalt surface, these were attempted to be removed prior to collecting the sample. However, based on no other known sources, it appears that this detection may be due to asphalt pieces in the sample.

Based on analytical results and FID readings, petroleum and PAH impacted soils were identified on the parcel. A summary of the analytical results are provided on Table 2 and on Figure 3. The laboratory report and graphs are included in Appendix E.

5.3 SAMPLE OBSERVATIONS

Soils were observed for any obvious evidence of contamination. Olfactory evidence of contamination was noted in soil borings SS1, SS2, SS3, SS4, and SS9. No obvious evidence of contamination was noted in other borings on the parcel.

5.4 QUANTITY CALCULATIONS

Petroleum impacted soils that may require additional assessment or remediation were detected within the Project Study Area along the north parcel boundary at depths of 1 to 2 feet bgs between SS1 and SS9 where DRO was detected. In the vicinity of SS3 between 4 and 7 feet bgs where GRO was detected above state action limits.

The area of DRO contamination is approximately 35 feet long, by 15 feet wide. Using a uniform depth of 2 feet (0.5 to 2.5 feet) the volume of DRO contaminated soil that may be encountered between SS1 and SS9 is approximately 39 cubic yards.

The area of GRO contamination is approximately 31 feet long, by 22 feet wide. Using a uniform depth of 3 feet (4 to 7 feet) the volume of contaminated soil in the former dispenser island area (between SS2, SS3, and SS4) is approximately 76 cubic yards.

5.5 GROUNDWATER ANALYTICAL RESULTS

Analytical results from TMW-1 identified petroleum contamination above the laboratory reporting limit, but below the NC 2L Standards. Analytical results are included in Table 4.

6 CONCLUSIONS

Based on results of the EM/GPR survey, soil assessment and field observations, Kleinfelder has reached the following conclusions:

- The GPR and EM investigation did not identify any features determined to be potential USTs or unknown geophysical anomalies within the Project Study Area.
- Historical research indicated Parcel 024 was listed as the location of a LUST incident with ID# 20007. According to the database soil contamination was identified in 1999 when two 10,000-gallon gasoline USTs were removed from the parcel. 194 tons of contaminated soils were excavated. Confirmation soil samples indicated that soil contaminated with gasoline range organics remained present in the area between the UST basin and dispensers, and around the dispensers.
- Field observations of Parcel 024 identified features associated with the former use of the parcel as a gasoline service station, including a former dispenser island.
- Based on field observations, laboratory analytical results, and FID readings, petroleum impacted soils that would require additional assessment or remediation, were detected within the Project Study Area.
- Groundwater was not encountered in the soil borings at a depth of 10 feet bgs. However perched water is present in the former UST basin between 4 and 5 feet, and in the vicinity of the former dispenser island between seven and 8 feet.
- Petroleum contamination in the perched water above the NC 2L Standard was not identified.

7 RECOMMENDATIONS

Based on results of this Preliminary Site Assessment, Kleinfelder recommends that construction contractors be made aware of the location of petroleum impacted soils and that perched groundwater with petroleum constituents exists on the parcel. Should these soils be encountered during construction of the TIP, Kleinfelder recommends that they be handled in accordance with state guidelines.

8 LIMITATIONS

Kleinfelder's work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of its profession practicing in the same locality, under similar conditions and at the date the services are provided. Kleinfelder's conclusions, opinions and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more-detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, Kleinfelder's clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that NCDOT has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may have been discovered. Kleinfelder assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, or generator, or person who arranges for disposal, transport, storage or treatment of hazardous materials within the meaning of any governmental statute, regulation or order. NCDOT is solely responsible for directing notification of all governmental agencies, and the public at large, of the existence, release, treatment or disposal of any hazardous materials observed at the project site, either before or during performance of Kleinfelder's services. NCDOT is responsible for directing all arrangements to lawfully store, treat,

recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

TABLES

Table 1: Soil Sample Screening Results

Date	Sample ID	Depth (ft)	FID Reading	Notes
3/15/2018	R-3830-P024-SS1	1	46.87	Analyzed by UVF
		2	10.89	
		3	9.03	Analyzed by UVF
		4	7.13	
		5	0.55	
		6	2.71	Analyzed by UVF
		7	2.16	
		8	1.03	
		9	1.43	
		10	1.12	
3/15/2018	R-3830-P024-SS2	1	1.50	
		2	186	Analyzed by UVF
		3	48.83	
		4	516	Analyzed by UVF
		5	516	
		6	138	Analyzed by UVF
		7	6.20	
		8	4.35	
		9	2.38	
		10	0.95	
3/15/2018	R-3830-P024-SS3	1	2.80	
		2	5.61	
		3	583	Analyzed by UVF
		4	2900	Analyzed by UVF
		5	434	
		6	828	
		7	536	Analyzed by UVF
		8	NA	
		9	140	
		10	77.70	
3/15/2018	R-3830-P024-SS4	1	10.94	
		2	12.44	
		3	30.85	
		4	46.13	Analyzed by UVF
		5	130	
		6	426	Analyzed by UVF
		7	NA	No Recovery
		8	NA	
		9	NA	
		10	NA	
3/15/2018	R-3830-P024-SS5	1	11.75	Analyzed by UVF
		2	23.28	Analyzed by UVF
		3	20.81	
		4	15.94	Analyzed by UVF
		5		
		6	32.98	
		7	32.98	
		8	32.98	
		9	11.48	
		10	11.48	

Notes:

- 1) FID = Flame Ionization Detector
- 2) FID readings in parts per million (ppm)

Table 1 (continued): Soil Sample Screening Results

Date	Sample ID	Depth (ft)	FID Reading	Notes
3/15/2018	R-3830-P024-SS6	1	1.12	
		2	0.56	
		3	1.22	Analyzed by UVF
		4	NA	Refusal/Obstruction
		5	NA	
		6	NA	
		7	NA	
		8	NA	
		9	NA	
		10	NA	
3/15/2018	R-3830-P024-SS7	1	0.64	Analyzed by UVF
		2	0.49	
		3	0.29	
		4	0.67	
		5	1.00	
		6	0.85	
		7	0.82	
		8	1.27	Analyzed by UVF
		9	0.99	
		10	0.72	
3/15/2018	R-3830-P024-SS8	1	0.44	
		2	0.36	Analyzed by UVF
		3	0.58	
		4	0.88	Analyzed by UVF
		5	0.98	
		6	1.62	
		7	1.62	
		8	1.10	
		9	0.48	
		10	1.50	
3/15/2018	R-3830-P024-SS9	1	4.60	Analyzed by UVF
		2	5.71	
		3	14.34	
		4	75.62	Analyzed by UVF
		5	182	Analyzed by UVF
		6	110	
		7	9.48	
		8	9.48	
		9	0.32	
		10	1.74	
3/15/2018	R-3830-P024-SS10	1-10	NA	No Recovery

Notes:

- 1) FID = Flame Ionization Detector
- 2) FID readings in parts per million (ppm)

TABLE 2: Soil Sample Analytical Summary

Parameter	Analytical Results																					Comparison Criteria				
	Soil Sample Results																									
Sample ID	SS1	SS1	SS1	SS2	SS2	SS2	SS3	SS3	SS3	SS4	SS4	SS5	SS5	SS5	SS6	SS7	SS7	SS8	SS8	SS9	SS9	SS9	State Action Limit	Soil to Water MSCC	Residential Soil Cleanup	
FID Reading (ppm)	46.87	9.03	2.71	186	516	138	583	2,900	536	46.13	426.00	11.75	23.28	15.94	1.22	0.64	1.27	0.36	0.88	4.60	75.62	182.00				
Collection Depth (ft bgs)	1	3	6	2	4-5	6	3	4	7	4	6	1	2	4-5	3	1	8	2	4	1	4	5				
Collection Date	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18	3/15/18				
UVF Method																										
Total Petroleum Hydrocarbons	169.6	4.7	<0.56	4.34	11.4	0.08	27.1	120.5	85.2	3.1	36.6	13.3	0.47	14	<0.67	20.3	<0.56	22.7	0.59	275.9	3.6	0.26	--	--	--	
Diesel Range Organics	169.6	4.7	<0.04	0.34	7.3	0.08	16.4	25.1	20.8	3.1	9.4	13.3	0.47	14	<0.05	20.3	<0.04	22.7	0.59	275.9	3.6	0.26	100	--	--	
Gasoline Range Organics	<4.1	<0.48	<0.56	4	4.1	<0.41	10.7	95.4	64.4	<0.67	27.2	<0.64	<0.49	<0.75	<0.67	<0.69	<0.56	<0.46	<0.71	<10.3	<0.43	<0.6	50	--	--	
BaP	<0.081	<0.01	<0.011	<0.015	<0.015	<0.008	<0.012	<0.011	<0.01	<0.013	<0.012	<0.013	<0.01	<0.015	<0.013	0.034	<0.011	0.034	<0.014	0.25	<0.009	<0.012	--	0.096	0.088	
16 EPA PAHs	9.3	0.2	<0.02	<0.03	0.38	<0.02	0.16	1.2	0.05	0.11	0.11	0.58	<0.02	0.6	<0.03	1.1	<0.02	0.54	<0.03	5.3	0.08	<0.02	--	--	--	
Total Aromatics (C10-C35)	161.3	3.3	<0.11	0.34	7.2	0.08	4.5	24.6	1.2	1.9	1.9	9.9	0.3	11.1	<0.13	20.1	<0.11	11	0.31	107.5	1.5	0.26	--	--	--	
Total BTEX	<4.1	<0.48	<0.56	<0.74	<1.5	<0.41	<1.2	12.1	64.4	<0.67	5.4	<0.64	<0.49	<0.75	<0.67	<0.69	<0.56	<0.46	<0.71	<10.3	<0.43	<0.6	--	--	--	
PAHS																										
Acenaphthylene	<0.0883	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	11	469
Anthracene	<0.0765	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	940	4600
Benzo(a)anthracene	0.0702 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	0.35	0.88
Benzo(a)pyrene	0.0777 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	0.096	0.088
Benzo(b)flouranthene	0.131 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	1.2	0.88
Benzo(g,h,i)perylene	<0.153	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	6400	469
Benzo(k)flouranthene	<0.0883	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	12	9
Chrysene	0.215 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	39	88
Dibenz(a,h)anthracene	<0.106	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	0.17	0.088
Flouranthene	0.215 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	290	620
1-Methylnaphthalene	0.118 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	0.004	20
2-Methylnaphthalene	0.169 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	3.6	63
Phenanthrene	0.207 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	56	469
Pyrene	0.206 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	270	469

Notes:

- 1) Results displayed in milligram per kilogram (mg/kg)
- 2) ft bgs = Feet below ground surface
- 3) Bold = Above Laboratory Detection Limit
- 4) Bold and highlighted = Above State Action Limits
- 5) Bold, highlighted and Italicised = Above Soil to Grounwater MSCC and/or Residential Soil Cleanup Levels
- 6) UVF = Ultraviolet Flouresence
- 7) BaP = Benzo(a)pyrene
- 8) EPA = Environmental Protection Agency
- 9) PAHs = Polycyclic Aromatic Hydrocarbons
- 10) BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
- 11) J= Estimated concentration between laboratory reporting limit and method detection limit
- 12) FID = Flame Ionization Detector

Table 3: Temporary Monitoring Well Constuction Information

Well No.	Date Installed	Total Depth	Diameter (inches)	Screen Interval Depth	Groundwater Elevation (feet)	Date Abandoned
TMW-1	3/15/2018	10	1	0-10	4	3/15/2018
TMW-2*	3/15/2018	10	1	0-10	7	3/15/2018

Notes:

- 1) Temporary Monitoring Wells were abandoned with bentonite chips
- 2) bgs = below ground surface
- 3) * = Well did not produce water

Table 4: Groundwater Analytical Results

Sample ID	TMW-1	TMW-2	NC 2L
Collection Date	3/15/18	3/15/18	Standard
6200B			
Benzene	0.75	NS	1
n-Butylbenzene	0.35 J	NS	70
Ethylbenzene	3.2	NS	600
Isopropylbenzene	0.39 J	NS	70
Naphthalene	1.1 J	NS	6
n-Propylbenzene	1.1	NS	70
Toluene	0.46 J	NS	600
1,2,4-Trimethylbenzene	0.78	NS	400
Xylenes	1.49 J	NS	500
625			
Naphthalene	3.2	NS	6

Notes:

- 1) Results in parts per billion (ppb)
- 2) J = Estimated concentration between laboratory reporting limit and method detection limit
- 3) NS = Not Sampled (well did not recharge)
- 4) NC 2L = 15 NCAC 02L Groundwater Standard

FIGURES

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

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	
Single Shrub	
Hedge	
Woods Line	

Orchard	
Vineyard	

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

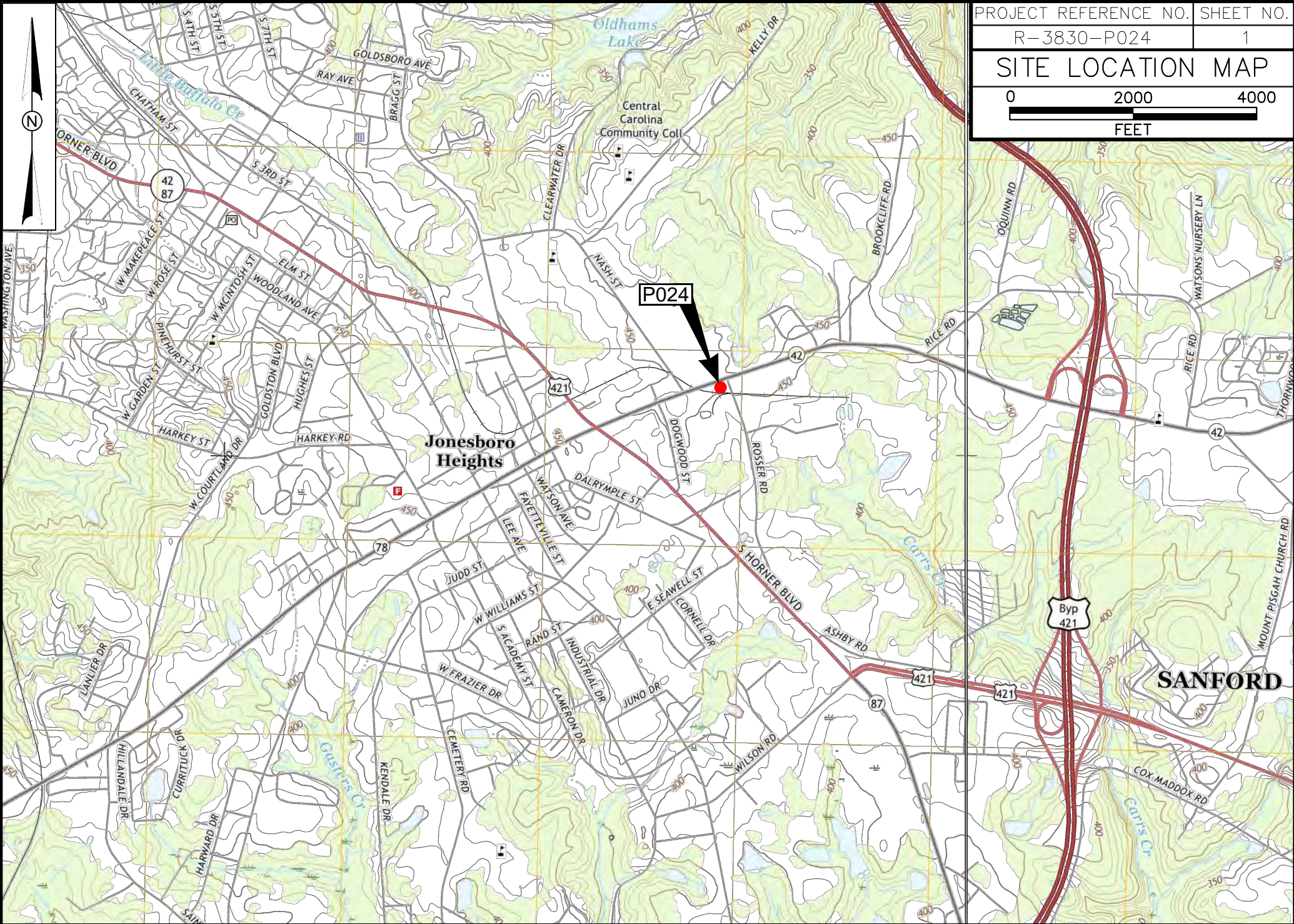
SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

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

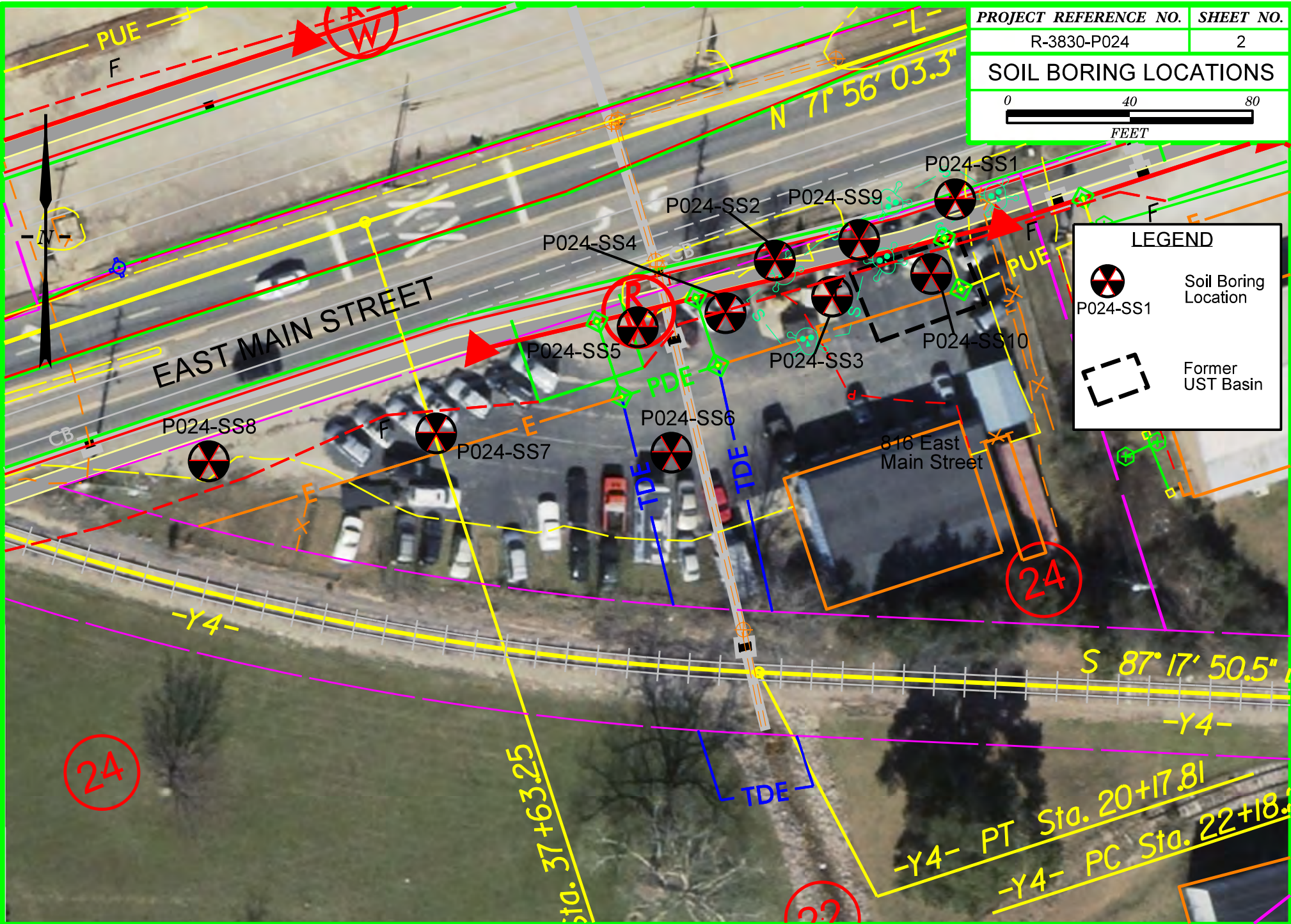
PROJECT REFERENCE NO.	SHEET NO.
R-3830-P024	1
SITE LOCATION MAP	
FEET	



PROJECT REFERENCE NO.	SHEET NO.
R-3830-P024	2
SOIL BORING LOCATIONS	

LEGEND

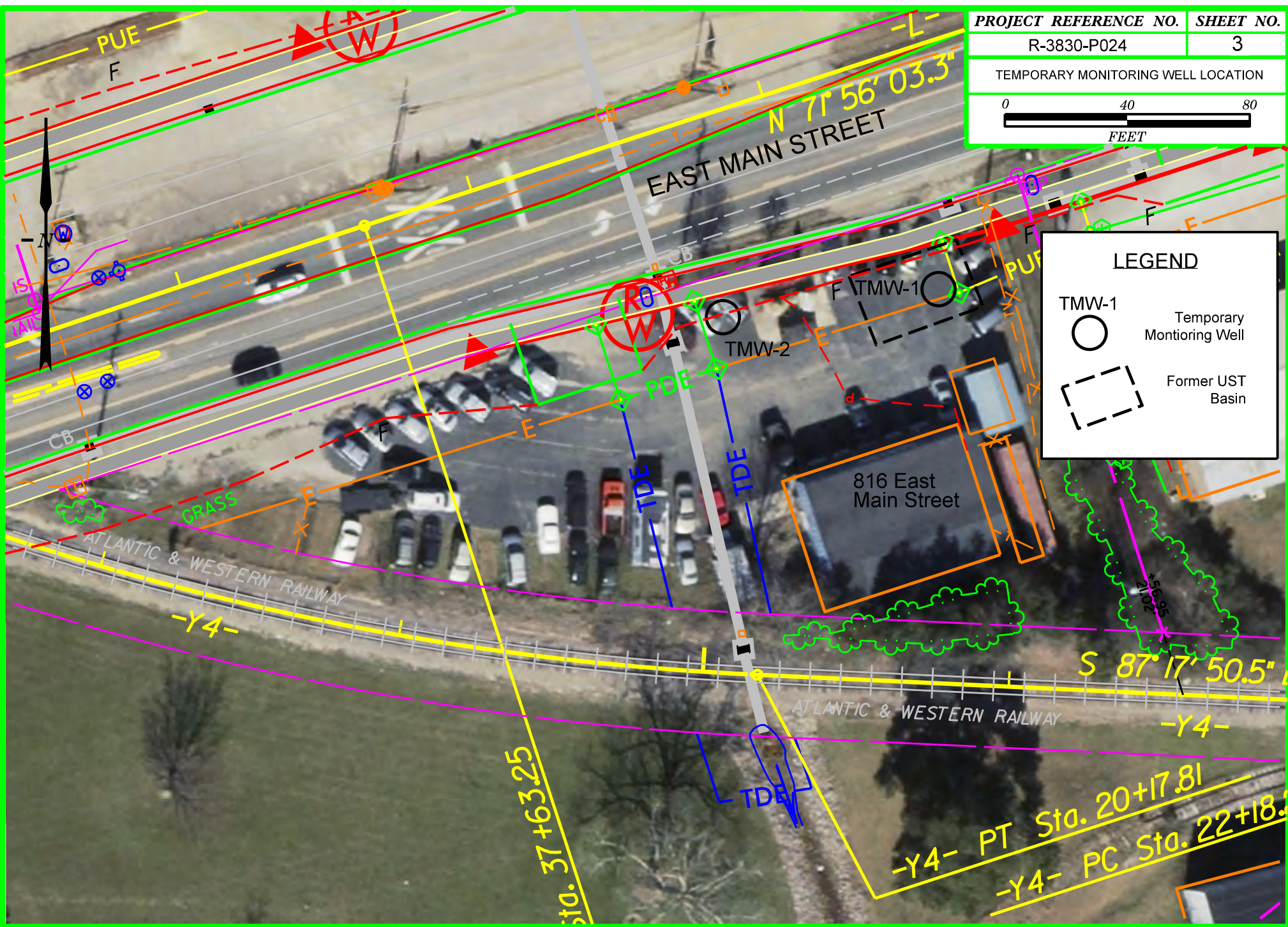
- Soil Boring Location
- Former UST Basin



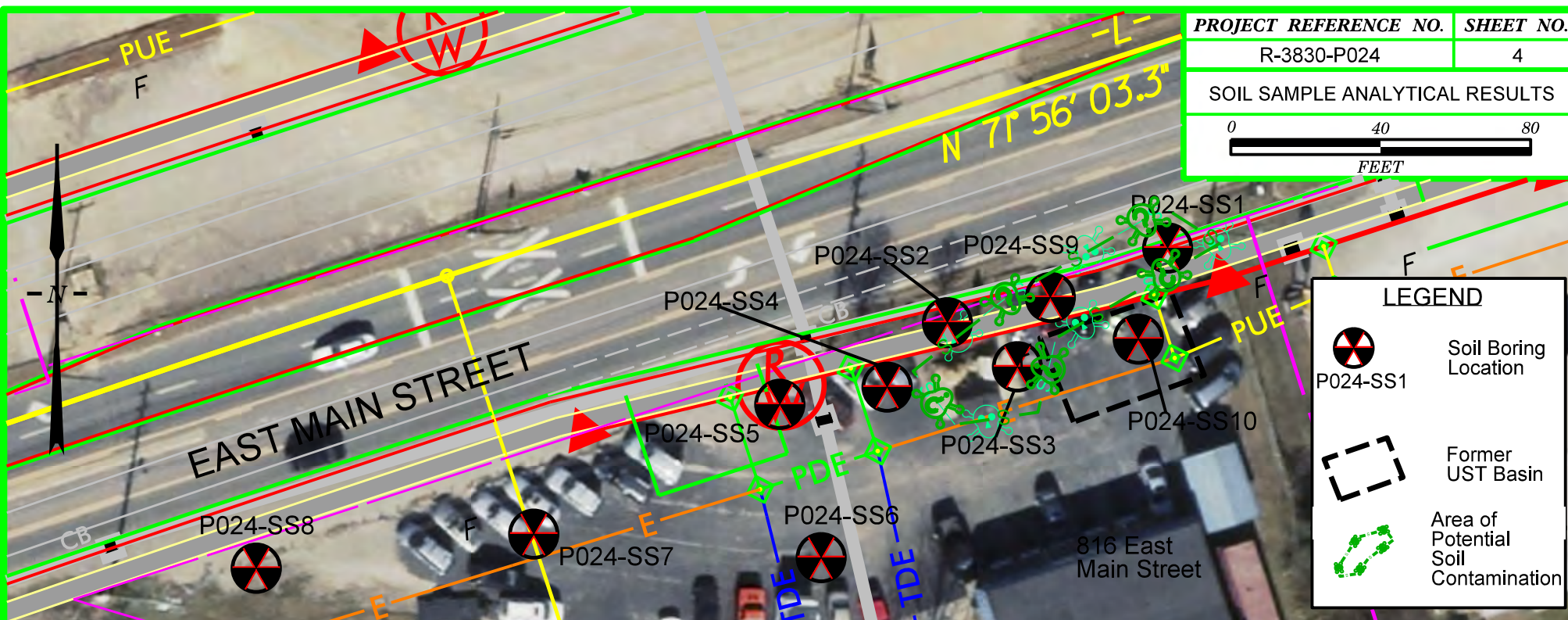
PROJECT REFERENCE NO.	SHEET NO.
R-3830-P024	3
TEMPORARY MONITORING WELL LOCATION	

LEGEND

- TMW-1 Temporary Monitoring Well
- Former UST Basin



PROJECT REFERENCE NO.	SHEET NO.
R-3830-P024	4
SOIL SAMPLE ANALYTICAL RESULTS	



LEGEND

- Soil Boring Location
- Former UST Basin
- Area of Potential Soil Contamination

SOIL SAMPLE ANALYTICAL RESULTS		
	DRO	GRO
SS1-1	<i>169.6</i>	<4.1
SS1-3	4.7	<0.48
SS2-2	0.34	4.0
SS2-4	7.3	4.1
SS2-6	0.08	<0.41
SS3-3	16.4	10.7
SS3-4	25.1	<i>95.4</i>
SS3-7	20.8	<i>64.4</i>

	DRO	GRO
SS4-4	3.1	<0.67
SS4-6	9.4	27.2
SS5-1	13.3	<0.64
SS5-2	0.47	<0.49
SS5-4-5	14.0	<0.75
SS7-1	20.3	<0.69
SS8-2	22.7	<0.46
SS8-4	0.59	<0.71

	DRO	GRO
SS9-1	<i>275.9</i>	<10.3
SS9-4	3.6	<0.43
SS9-5	0.26	<0.60
PAHS by 8270		
SS1-1		
1-Methylnaphthalene		<i>0.118</i>
SS7-1		
Benzo(a)pyrene		<i>0.197*</i>

Notes:

- 1) All results in mg/kg
- 2) *Italicised results for DRO and GRO exceed State Action Limits*
- 3) *Italicised and underlined results exceed the Soil-to-Water MSCC and Residential Soil Cleanup*
- 4) Soil samples with no detections are not included
- 5) Only PAHs in excess of regulatory limits are shown
- 6) * = Evidence of asphalt pieces in soil sample SS7-1

GROUNDWATER ANALYTICAL RESULT



Groundwater Sample Results	
TMW-1	
Benzene	0.75
n-Butlybenzene	0.35 J
Ethylbenzene	3.2
Isopropylbenzene	0.39 J
Naphthalene	3.2
n-Propoylbenzene	1.1
Toluene	0.46 J
1,2,4-Trimethylbenzene	0.78
Xylenes	1.49 J
TMW-2	
Not Sampled - Well did not recharge	
Notes:	
1) All results in ppb	
2) No results exceeded the NC 2L Standard	

LEGEND

TMW-1
 Temporary Monitoring Well

Former UST Basin



APPENDIX A
SITE PHOTOGRAPHS



View of Project Study Area.



View of GPR activities around the former dispense island.

Original in Color



PROJECT NO.: 201835071
 DRAWN: April 2018
 DRAWN BY: JCH
 CHECKED BY: MB
 FILE NAME:

SITE PHOTOGRAPHS

R-3830-P024
 816 East Main Street
 Sanford
 Lee County, NC

Photo
 Page



View of EM activities on Parcel 24.



View of drilling activities on Parcel 024.

Original in Color



PROJECT NO.: 201835071
 DRAWN: April 2018
 DRAWN BY: JCH
 CHECKED BY: MB
 FILE NAME:

SITE PHOTOGRAPHS

R-3830-P024
 816 East Main Street
 Sanford
 Lee County, NC

Photo
 Page

2



View of former UST Basin.



View of drilling activities on Parcel 024.

Original in Color



PROJECT NO.: 201835071
 DRAWN: April 2018
 DRAWN BY: JCH
 CHECKED BY: MB
 FILE NAME:

SITE PHOTOGRAPHS

R-3830-P024
 816 East Main Street
 Sanford
 Lee County, NC

Photo
 Page

3

APPENDIX B
NCDEQ REPORTS

RECEIVED
JAN 14 1999
NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
WATER POLLUTION CONTROL DIVISION

UNDERGROUND STORAGE TANK CLOSURE REPORT

The closure report should contain, at a minimum, the following information. Any other information that is pertinent to the site should be included.

I. General Information

A. Ownership of UST(s)

1. Name of UST owner:

The Pantry, Inc.

2. Owner address and telephone number:

1801 Douglas Drive
Sanford, NC 27330
(919) 774-6700

B. Facility Information

1. Facility name:

Pantry #115

2. Facility ID #:

0-013332

3. Facility address, telephone number and county:

816 East Main Street
Sanford, NC 27330
(919) 774-6700
Lee County



Environmental, Inc.

C. Contacts

- 1. Name, address, telephone number and job title of primary contact person:**

Ms. Reneé Thomas
Director of Gasoline Administration
The Pantry, Inc.
1801 Douglas Drive
Sanford, North Carolina 27330
(919) 774-6700

- 2. Name, address and telephone number of closure contractor:**

Kevin M. Crocker
SEI Environmental, Inc.
130 Penmarc Drive, Suite 108
Raleigh, North Carolina 27603
(919) 832-2535

- 3. Name, address and telephone number of primary consultant:**

Michael D. Shaw, L.G.
SPATCO Environmental, L.L.P.
5100 N. I-85 Service Road, Suite 7
Charlotte, North Carolina 28206
(704) 596-8624

- 4. Name, address, telephone number, and State certification number of laboratory:**

Environmental Conservation Laboratories
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
(904) 296-3007
Certification Number: 442

GeoChem, Incorporated
2500 Gate Way Centre Boulevard, Suite 300
Morrisville, NC 27560
(919) 460-8093
Certification Number: 37745, 336, 461



D. UST Information

Tank no.	Installation Dates	Size in Gallons	Tank Dimensions	Last Contents	Previous Contents (if any)
1	August 20, 1974	10,000	8' x 26' 8"	Gasoline	None Known
2	August 20, 1974	10,000	8' x 26' 8"	Gasoline	None Known

E. Site Characteristics

1. Describe any past releases at this site:

No known release has occurred at this site.

2. Is the facility active or inactive at this time? If the facility is inactive note the last time the USTs were in operation:

The facility was inactive at the time of the tank removal. According to a sign posted on the store's window, the facility closed on December 16, 1998.

3. Describe surrounding property use (for example, residential, commercial, farming, etc.)

The site is located within the Sanford City Limits in a commercially developed area. The City of Sanford supplies water to the subject site and the surrounding area. No public or private water supply wells or surface water bodies were noted in the immediate area.

4. Describe site geology/hydrogeology:

According to the 1985 Geologic Map of North Carolina, the site lies within the Triassic Basin Sanford Formation of sedimentary rocks. This region is characterized by conglomerate, fanglomerate, sandstone, and mudstone. Soil encountered during the UST removal operations was a red and white, fine to coarse sand.

II. Closure Procedures

A. Describe preparations for closure including the steps taken to notify authorities, permits obtained and the steps taken to clean and purge the tanks.

Prior to the removal of the USTs, a Notification for Permanent Closure (GW/UST-3) was filed with the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Waste Management (DWM), Raleigh Regional Office by SEI (Appendix A). Verbal 24 hour notification was also provided to the DWM by SEI. The local fire Marshall was also notified and all proper fire permits were obtained. The USTs were emptied and purged with dry ice prior to removal procedures.

The USTs were purged of residual fumes and oxygen with dry ice. Once an oxygen level lower than 5% was obtained in a tank, the UST was removed. Oxygen levels inside each UST were measured with a Neotronics Exotox 40 Portable Gas Monitor.

B. Note the amount of residual material pumped from the tank(s):

No residual material was pumped from the tanks.

C. Describe the storage, sampling and disposal of the residual material:

No residual material was pumped from the tanks.

D. Excavation

Note: Refer to the "Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater" on limiting excavations. The Trust Fund will not pay for excessive excavation unless it is justified and verified by laboratory results.

1. Describe excavation procedures noting the condition of the soils the dimensions of the excavation in relation to the tanks, piping and/or pumps:

On January 5 and 6, 1999, a trackhoe was used to remove the fill material over and around the UST bed. The soils surrounding the USTs generally had a strong petroleum odor. The dimensions of the UST excavation were approximately 26' x 30' and 12' deep.

2. Note the depth of tank burial(s) (from land surface to top of tank):

The USTs were buried approximately four feet below land surface (bls).



Environmental, Inc.

3. Quantity of soil removed:

Approximately 194 tons of contaminated soil was stockpiled on and covered with plastic while on site prior to disposal.

4. Describe soil type(s):

Soil encountered during the UST removal operations was a red and white, fine clay and a red and brown fine sand. Several pockets of pea gravel were also encountered.

5. Type and source of backfill used:

Approximately 440 tons of ABC stone was used to bring the excavation to surrounding grade.

E. Contaminated Soil

Note: Suspected contaminated soil should be segregated from soil that appears to be uncontaminated and should be treated as contaminated until proven otherwise. It should not be used as backfill.

1. Describe how it was determined to what extent to excavate the soil:

Soil samples were collected, placed in a polyethylene bag for a minimum of 5 minutes to allow any petroleum hydrocarbons to volatilize, and screened with the organic vapor analyzer (OVA). Petroleum odors and staining were also used to determine if contaminated soil was present.

2. Describe method of temporary storage, sampling and treatment/disposal of soil:

On January 6, 1999, approximately 194 tons of contaminated soil was stockpiled on and covered with 10 mil plastic. On January 20, 1999, the stockpiled soil was removed by Soil Reclaiming, Inc. of Sanford, NC for disposal. The disposal manifest for the soil is provided in Appendix D. A total of three soil samples were collected from the stockpiled soil and submitted for laboratory analysis by Method 5030 (low-boiling point total petroleum hydrocarbons).

III. Site investigation

A. Provide information on field screening and observations, include methods used to calibrate field screening instrument(s):

Soil samples were collected and divided into two representative portions. The first portion of each sample was placed in a polyethylene bag for a minimum of five minutes to allow any petroleum hydrocarbons to volatilize. An OVA was used to screen the headspace of the bagged sample for volatile hydrocarbons. The OVA is serviced and calibrated semi annually by Pine Environmental in Lilburn, Georgia. OVA readings and depths of soil samples collected are presented in Table 1. The second portion of each sample was used to submit to the laboratory for analysis.

B. Describe soil sampling points and sampling procedures used, including:

Note: Refer to the "Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater" for information about sampling requirements.

On January 6 and 13, 1999, a total of twenty soil samples surrounding the UST system were collected, screened with an OVA, and submitted for laboratory analysis. Eleven grab soil samples were collected with a trackhoe bucket. Nine grab samples were collected with a hand auger. Samples D-1 through D-4 were collected approximately two feet below each dispenser with a hand auger. Sample PL-1 was collected with a hand auger approximately 4 feet bls for the product line sample. Samples S-1 through S-12 were collected approximately 12 feet bls along the wall of the UST pit with a trackhoe bucket with the exception of S-11 which was collected with a hand auger. Samples SP-1 through SP-3 were collected from the stockpile using a hand auger. Figure 3 shows the analytical results of these soil samples.

All soil samples collected from the gasoline UST system were submitted for laboratory analysis by Method 5030 (low boiling-point total petroleum hydrocarbons).



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C. Describe groundwater or surface water sampling procedures used, including:

Note: Refer to the "Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater" for information about sampling requirements.

Groundwater was not encountered during excavation activities. However, water was encountered that had been trapped inside of the pea gravel pockets that had been released during the excavation.

D. Quality control measures

Samples were immediately placed in laboratory supplied glass containers, sealed with Teflon lined caps, and placed in an iced cooler. Samples were maintained at 4°C and submitted under chain-of-custody procedures to Environmental Conservation Laboratories for laboratory analysis. Nineteen soil samples were collected on January 6, 1999 and submitted for laboratory analysis on January 7, 1999. One soil sample taken from the stockpile was collected and submitted for laboratory analysis to GeoChem, Incorporated on January 13, 1999.

E. Investigation results

Analytical results indicate that low boiling point-total petroleum hydrocarbons were detected above North Carolina Division of Waste Management's Maximum Reportable Concentration in three of the soil samples collected. Samples S-9 (10 mg/kg), D-3 (140 mg/kg), and PL-1 (410 mg/kg) had concentrations of low boiling point total petroleum hydrocarbons greater than the Maximum Reportable Concentrations. The source of the contamination is suspected to have come from the UST system. The maximum concentration detected in the stockpile samples is 85.5 mg/kg. Figure 3 shows the sample analytical results. Analytical results are presented in Table 1. A copy of all laboratory analytical records and chain-of-custody forms is included in Appendix E. The site should be eligible for Trust Fund.



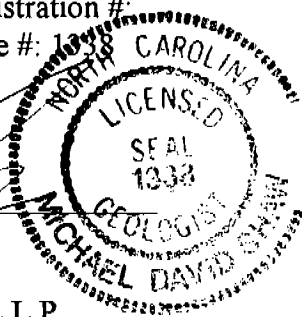
Environmental, Inc.

IV. Conclusions and Recommendations

Analytical results indicate that low boiling-point total petroleum hydrocarbons are present above the North Carolina Division of Waste Management's Maximum Reportable Concentrations at the Pantry #115 facility in Sanford, North Carolina. According to NCDENR Guidelines, a Limited Site Assessment should be completed for the site to determine depth to groundwater and whether groundwater has been impacted by the release.

V. Signature of Professional Engineer or Licensed Geologist

Professional Engineer Registration #
Licensed Geologist License #: 1338



1-20-99

Michael D. Shaw, L.G.
SPATCO Environmental L.L.P.
5100 N. I-85 Service Road, Suite 7
Charlotte, NC 28206

Date

VI. Enclosures**A. Figures**

1. Area Map(s) (can be USGS Topographic Quadrangle) showing:
 - Adjacent streets, roads, highways with names and numbers
 - Buildings
 - Known distance to public water supply well(s)
 - Distance to known private water supply well(s)
 - Surface water bodies
 - Groundwater flow direction (if available)
 - Scale
 - North arrow

2. Site map of UST excavation drawn to scale, showing:
 - Buildings
 - Underground utilities such as sewer lines and other conduits
 - Orientation of UST(s), pumps, and product lines
 - Length, diameter and volume of USTs
 - Type of material(s) stored in USTs (currently and previously)
 - Sample locations (identified by letter or number)
 - Final limits of excavation
 - North arrow
 - Scale

3. Maps depicting analytical results, to include:
 - Orientation of UST(s), pumps, and product lines
 - Sample locations, depths, and identifications
 - Analytical results
 - Final limits of excavation(s)

B. Tables

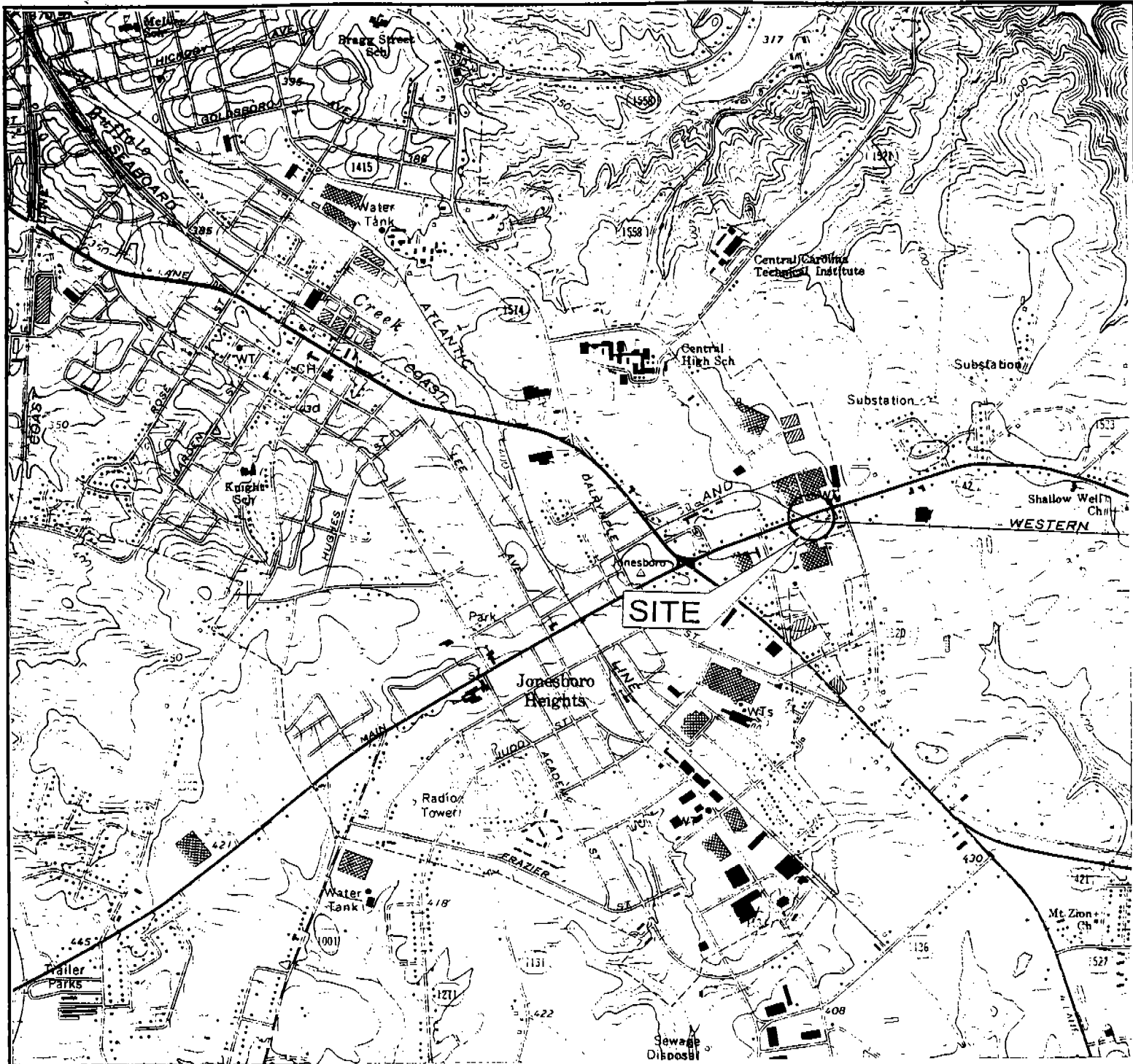
1. Field screening results
2. Sample identifications with depths and analyses (Included in Table 1)
3. Sample identifications with results and dates that samples were taken (Included in Table 1)



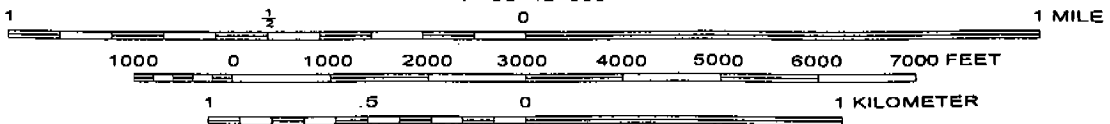
Environmental, Inc.

C. Appendices

- Appendix A: Notice of Intent: UST Permanent Closure or Change in Service (GW/UST-3)
- Appendix B: Site Investigation Report for Permanent Closure or Change-in-Service of UST (GW/UST-2)
- Appendix C: Certificate of Tank Disposal
- Appendix D: Soil Disposal Manifest
- Appendix E: Copy of Laboratory Analytical Records and Chain-of-Custody Forms



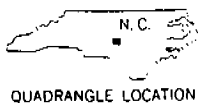
SCALE 1:24000



SANFORD, N. C.
N3522.5—W7907.5/7.5

1974
PHOTOREVISED 1981
DMA 5154 I NW-SERIES V842

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



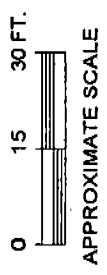
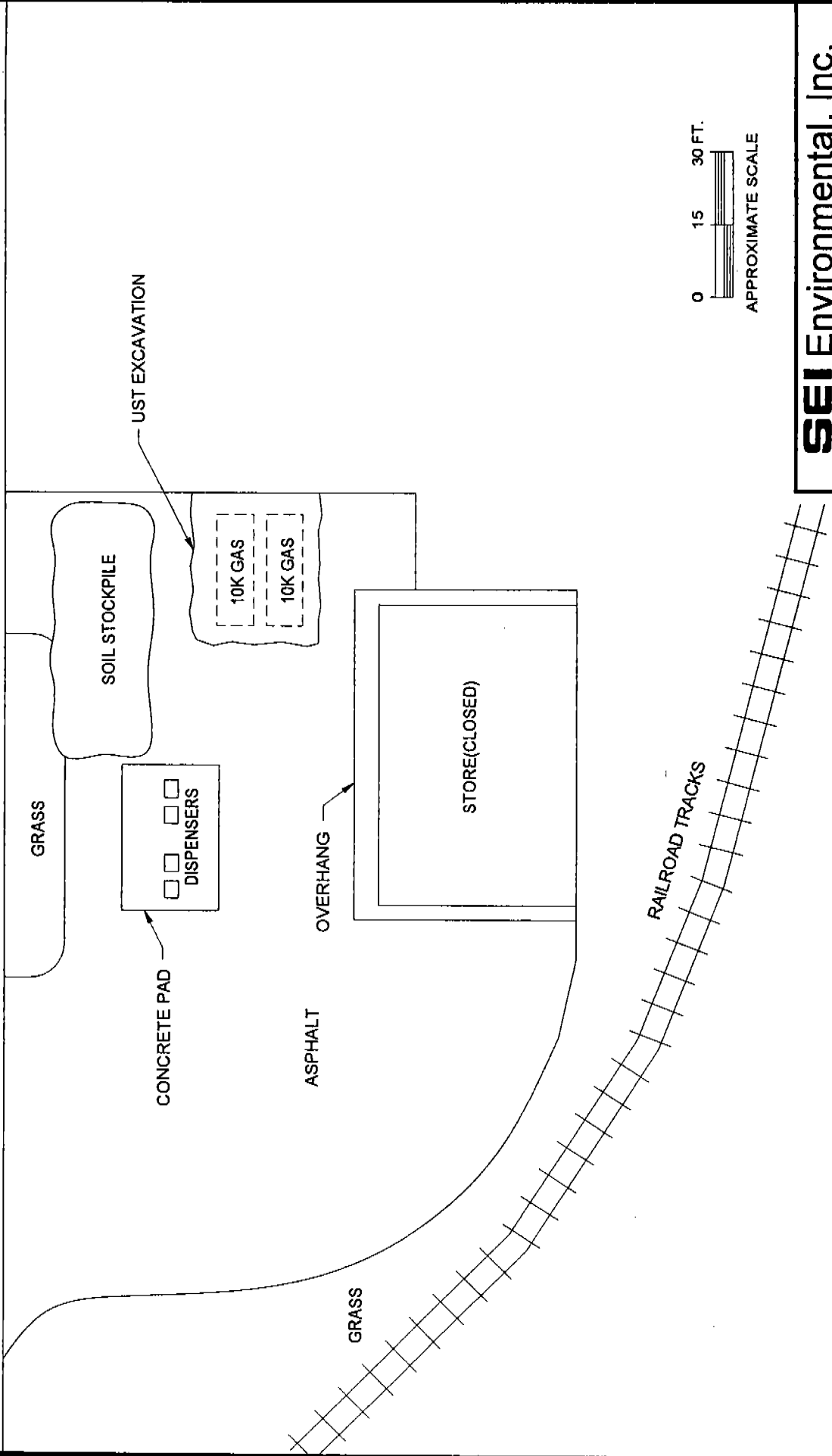
QUADRANGLE LOCATION

SEI Environmental, Inc.

FIGURE 1: USGS QUADRANGLE MAP
PANTRY #115
816 EAST MAIN STREET
SANFORD, NORTH CAROLINA



EAST MAIN STREET



SEI Environmental, Inc.

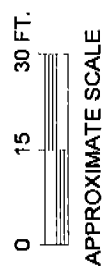
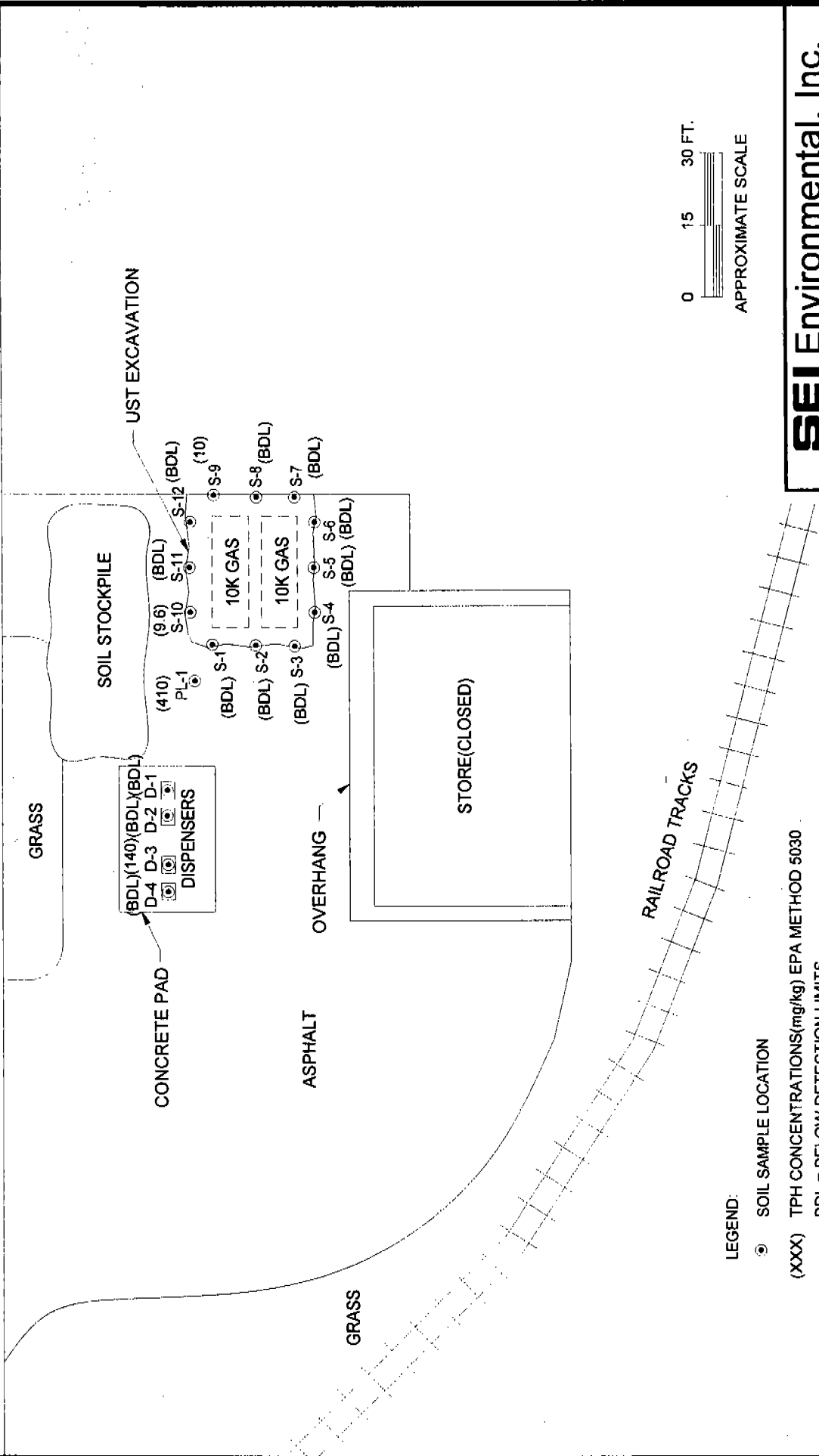
FIGURE 2: SITE MAP
THE PANTRY #115
816 EAST MAIN ST.
SANFORD, NC

DATE: 1/15/99
DRAWN BY: JCJ

W.O. #: 598-170
DWG #: PA0170F2



EAST MAIN STREET



LEGEND:
 ● SOIL SAMPLE LOCATION
 (XXX) TPH CONCENTRATIONS(mg/kg) EPA METHOD 5030
 BDL = BELOW DETECTION LIMITS

SEI Environmental, Inc.
 FIGURE 3: SOIL SAMPLE ANALYTICAL RESULTS
 THE PANTRY #115
 816 EAST MAIN ST.
 SANFORD, NC
 W.O. #: 598-170
 DWG #: PA0170F4
 DATE: 1/15/99
 DRAWN BY: JCJ

TABLE 1

Soil Sample Field Screening and Analytical Results			
Pantry #115 816 East Main Street Sanford, North Carolina SEI Project Number 598170			
Samples Collected on January 6, 1999			
Sample Location	Sample Depth (feet)	OVA Reading (ppm)	Method 5030 (mg/kg)
S-1	12	>1000	BDL
S-2	12	260	BDL
S-3	12	60	BDL
S-4	12	160	BDL
S-5	12	60	BDL
S-6	12	8	BDL
S-7	12	28	BDL
S-8	12	55	BDL
S-9	12	22	10
S-10	12	>1000	9.6
S-11	12	>1000	BDL
S-12	12	80	BDL
D-1	2	>1000	BDL
D-2	2	140	BDL
D-3	2	480	140
D-4	2	18	BDL
PL-1	4	>1000	410
SP-1	NA	>1000	BDL
SP-2	NA	>1000	4.2
SP-3*	NA	>1000	85.5
NCDWM Reportable Concentrations			10

ppm - parts per million

mg/kg - milligrams per kilogram

Bold denotes concentrations above the Reportable Concentrations

BDL - Below Detection Limit

NA - Not Applicable

* Sample collected on January 13, 1999



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APPENDIX A

FOR
TANKS
IN
NC

Return Completed Form To:
The appropriate DEM Regional Office according to the county of the facility's location. (SEE REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS).

State Use Only
I. D. Number _____
Date Received _____

INSTRUCTIONS

Complete and return thirty (30) days prior to closure or change-in-service.

I. OWNERSHIP OF TANK(S)

II. LOCATION OF TANK(S)

Tank Owner Name: The Pantry, Inc.
(Corporation, Individual, Public Agency, or Other Entity)
Street Address: 1801 Douglas Drive
County: Lee
City: Sanford State: NC Zip Code: 27330
Tele. No. (Area Code): (919) 774-6700

Facility Name or Company Pantry #115
Facility ID # (if available) 0-01332
Street Address or State Road: 816 East Main Street
County: Lee City: Sanford Zip Code: NC
Tele. No. (Area Code): (919) 774-6700

III. CONTACT PERSON

Name: Renee Thomas Job Title: Gasoline/Admin. Telephone Number: (919) 774-6700

IV. TANK REMOVAL CLOSURE IN PLACE, CHANGE-IN-SERVICE

- Contact Local Fire Marshall.
- Plan the entire closure event.
- Conduct Site Soil Assessments.
- If Removing Tanks or Closing in Place refer to API Publications. 2015 "Cleaning Petroleum Storage Tanks" & 1604 "Removal & Disposal of Used Underground Petroleum Storage Tanks".
- Provide a sketch locating piping, tanks and soil sampling locations.
- Fill out form GW/UST-2 "Site Investigation Report for Permanent Closure" and return within 30 days following the site investigation.
- Keep records for 3 years.

V. WORK TO BE PERFORMED BY:

(Contractor) Name: SEI Environmental
Address: 130 Penmarc Drive, Raleigh State: NC Zip Code: 27603
Contact: Thad W. Valentine Phone: (919) 8322535

VI. TANK(S) SCHEDULED FOR CLOSURE OR CHANGE-IN-SERVICE

TANK ID#	TANK CAPACITY	LAST CONTENTS	PROPOSED ACTIVITY		
			CLOSURE		CHANGE-IN-SERVICE
			Removal	Abandonment in Place	New Contents Stored
<u>1</u>	<u>10,000</u>	<u>Gasoline</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>1</u>	<u>10,000</u>	<u>Gasoline</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	

VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Print name and official title
Thad w. Valentine Construction Services Manager Scheduled Removal Date: 12-21-98
Signature: Thad W. Valentine Date Submitted: 12/14/98

*If scheduled work date changes, notify your appropriate DEM Regional Office 48 hours prior to originally scheduled date.



Environmental, Inc.

APPENDIX B

(GW/UST-2) Site Investigation Report For Permanent Closure or Change-in-Service of UST

FOR TANKS IN NC	Return Completed Form To: The appropriate DEM Regional Office according to the county of the facility's location. (SEE MAP ON REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS).	State Use Only I.D. Number _____ Date Received _____
------------------------------------	--	--

INSTRUCTIONS

Complete and return within (30) days following completion of site investigation

I. Ownership of Tanks(s)

II. Location of Tank(s)

Owner Name: <u>The Pantry, Inc.</u> <small>(Corporation, Individual, Public Agency, or Other Entity)</small> Street Address: <u>1801 Douglas Drive</u> County: <u>Lee</u> City: <u>Sanford</u> State: <u>N.C.</u> Zip Code: <u>27330</u> Telephone Number: (<u>919</u>) <u>774-6700</u> <small>(Area Code)</small>	Facility Name: <u>Pantry #115</u> <small>(or Company)</small> Facility ID # (if available): <u>0-013332</u> Street Address: <u>816 East Main Street</u> <small>(or State Road)</small> County: <u>Lee</u> City: <u>Sanford</u> Zip Code: <u>27330</u> Telephone Number: (<u>919</u>) <u>774-6700</u> <small>(Area Code)</small>
--	--

III. Contact Person

Name: <u>Ms. Renee' Thomas</u>	Job Title: <u>Director of Gasoline Administration</u>	Tel. No.: <u>(919) 774-6700</u>
Closure Contractor: <u>SEI Environmental, Inc.</u>	Address: <u>130 Penmarc Dr., Ste. 108, Raleigh, NC 27603</u>	Tel. No.: <u>(919) 832-2535</u>
Primary Contractor: <u>SEI Environmental, Inc.</u>	Address: <u>130 Penmarc Dr., Ste. 108, Raleigh, NC 27603</u>	Tel. No.: <u>(919) 832-2535</u>
Lab: <u>ENCO Laboratories</u>	Address: <u>4810 Executive Park, Court., Jacksonville, FL</u>	Tel. No.: <u>(904) 296-3007</u>

IV. U.S.T. Information

V. Excavation Condition

VI. Additional Information Required

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water in Excavation		Free Product		Notable Odor or Visible Soil Contamination		See reverse side of pink copy (owner's copy) for additional information required by N.C. - DWQ in the written report and sketch. NOTE: If a release from the tanks(s) has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. of L.G., with all closure site site assessment reports bearing the signature and seal of the P.E. or L.G.
				Yes	No	Yes	No	Yes	No	
1	10,000	8' x 26' 8"	Gasoline	X			X	X		
2	10,000	8' x 26' 8"	Gasoline	X			X	X		

VII. Check List (Check the activities completed)

<p>PERMANENT CLOSURE (For Removing or Abandoning-in-place)</p> <p><input checked="" type="checkbox"/> Contact local fire marshal.</p> <p><input checked="" type="checkbox"/> Notify DWQ Regional Office before abandonment.</p> <p><input checked="" type="checkbox"/> Drain & Flush piping into tank.</p> <p><input checked="" type="checkbox"/> Remove all product and residuals from tank.</p> <p><input checked="" type="checkbox"/> Excavate down to tank.</p> <p><input checked="" type="checkbox"/> Clean and inspect tank.</p> <p><input checked="" type="checkbox"/> Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.</p> <p><input checked="" type="checkbox"/> Cap or plug all lines except the vent and fill lines.</p> <p><input checked="" type="checkbox"/> Purge tank of all product & flammable vapors.</p> <p><input type="checkbox"/> Cut one or more large holes in the tanks.</p> <p><input checked="" type="checkbox"/> Backfill the area.</p> <p>Date Tank(s) Permanently Closed: <u>January 6, 1999</u></p> <p>Date of Change-in-Service: _____</p>	<p>ABANDONMENT IN PLACE</p> <p><input type="checkbox"/> Fill tank until material overflows tank opening;</p> <p><input type="checkbox"/> Plug or cap all opening;</p> <p><input type="checkbox"/> Disconnect and cap or remove vent line</p> <p><input type="checkbox"/> Solid inert material used - specify: _____</p> <p>_____</p> <p>REMOVAL</p> <p><input type="checkbox"/> Create vent hole</p> <p><input checked="" type="checkbox"/> Label tank</p> <p><input checked="" type="checkbox"/> Dispose of tank in approved manner</p> <p>Final tank destination: <u>Southern Tank & Environmental, Inc.</u> <u>Charlotte, N.C.</u></p>
--	---

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative Kevin M. Crocker, Staff Scientist SEI Environmental, Inc.	Signature 	Date Signed 1-18-99
---	---------------	------------------------



Environmental, Inc.

APPENDIX C

SOUTHERN TANK & ENVIRONMENTAL, INC.

CERTIFICATE OF DISPOSAL

FEDERAL/CERTIFICATE # 56-1669418/11207 DATE 1/4/99

CONTRACTOR

SPATCO Environmental, Inc

130 Penmarc Dr Suite 112

Raleigh, N.C. 27603

LOCATION

Pantry #115

Sanford, N.C.

TYPE OF TANK	SIZE	CONTENT IN GAL.	TANK ID#
<u>UST 10,000 gallon</u>	<u>8' x 26'8"</u>	<u>Less than 1%</u>	<u>STDS-6522</u>
<u>UST 10,000 gallon</u>	<u>8' x 26'8"</u>	<u>Less than 1%</u>	<u>STDS-6523</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

Southern Tank & Environmental, Inc. certifies that the above mentioned tanks have been properly disposed of at 2018 Lawyers Rd., Indian Trail, NC, and the contents and sludges processed in full compliance with Local, State and Federal regulations.

Southern Tank & Environmental, Inc.



Randy L. Williams



Environmental, Inc.

APPENDIX D



FRANK G. PERRY, SR.
President

J.R. HOLTON
Secretary/Treasurer

Grid of empty boxes for address or contact information.

P.O. Box 1027 • Sanford, North Carolina 27331-1027 • Telephone: (919) 774-4800
TOLL FREE (NC, SC, VA) 1-800-672-7559 • Facsimile: 919-774-7557

Lee Brick and Tile Co., Inc., operating under the State of North Carolina Air Quality Permit # 3464R13 and the Soil containment / Storage and Treatment Permit # SR 0500041, hereby acknowledges the acceptance of 194.180 tonnage of soil contaminated with fuel hydrocarbons and will handle the disposal of this soil in the prescribed manner as set forth by the Division of Environmental Management of the Department of Environmental Health and Natural Resources, State of North Carolina, Raleigh, North Carolina.

CONTRACTOR SEI Environmental, Inc.
(Name)
130 Penmarc Drive, Suite 108
(Street Address)
Raleigh, North Carolina 27603-2470
(City, State & Zip Code)

GENERATOR The Pantry #115
(Name)
816 E. Main Street
(Street Address)
Sanford, North Carolina 27330
(City, State & Zip Code)

TRANSPORTER N.P. Sloan, Inc.
(Name)
816 Duke Drive
(Street Address)
Sanford, North Carolina 27330
(City, State & Zip Code)

Date Received: Wednesday, January 20, 1999

LEE BRICK AND TILE CO., INC.
BY: Frank G. Perry
Frank G. Perry, President
(Position with Lee Brick and Tile Co., Inc.)

LEE BRICK AND TILE CO., INC., APPRECIATES THE OPPORTUNITY TO SERVE YOU.



Environmental, Inc.

APPENDIX E

GeoChem, Incorporated

Environmental Laboratories

Certified Analytical Laboratory

NC # 37745, NC # 336, NC # 461, EPA ID # 155

Client Project Manager

Michelle McGinnis

Site Name:

Pantry # 115

598170

SEI Environmental

130 Penmarc Dr., Ste. 108

Raleigh NC

27603

Report Date

Thursday, January 14, 1999

PO #

Date Received in lab:

Thursday, January 14, 1999

GCI Project #: 9901-025

Summary of requested analytical work

Sample type code #s :

1 = solid samples;

2 = liquid samples;

3 = Air samples;

4 = sludges/unknowns

Field Number: SP-3

Lab ID 121

Sample Type: 1

Date Analyzed: 1/14/99

for 5030 soil

Date Sampled 1/13/99

Proper Preservation

Yes

I



Here by certify that I have Reviewed and approve this data set

GeoChem Incorporated Certified Analytical Laboratory

NC # 37745, NC # 336, NC # 461, EPA ID # 155

Thursday, January 14, 1999

GCI Project 9901-025

Site Name:

Pantry # 115

Conc. in mg/kg

PQL in mg/kg

Dilution Factor

Field ID SP-3

Lab ID 121

Date Analyzed: 1/14/99

Dry Wt %: 0.83

Analysis: 5030 soil

Gas range 85.5

6.041

1.0

GeoChem Incorporated Quality Control Results

NC # 37745 , NC # 336, NC # 461, EPA ID # 155

Thursday, January 14, 1999

GCI Project # 9901-025

<i>Date Analyzed:</i>	<i>Dry Wt %:</i>	<i>Percent Recovery</i>	<i>Lab Blank</i>	<i>MDL in mg/kg</i>
1/14/99	0.83	89.8	0	1.88
	Gas range			

Environmental Conservation Laboratories
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com



DHRS Certification No. E82277

CLIENT : SEI Environmental, Inc.
ADDRESS: 130 Penmarc Drive
Suite 108
Raleigh, NC 27603

REPORT # : JR4892
DATE SUBMITTED: January 8, 1999
DATE REPORTED : January 15, 1999

PAGE 1 OF 12

ATTENTION: Ms. Michelle McGinnis

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

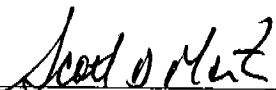
PROJECT #: 598170

Pantry #115

01/06/99

#1	- S-1 (12')	@ 15:58
#2	- S-2 (12')	@ 16:00
#3	- S-3 (12')	@ 16:01
#4	- S-4 (12')	@ 16:03
#5	- S-5 (12')	@ 16:10
#6	- S-6 (12')	@ 16:11
#7	- S-7 (12')	@ 16:13
#8	- S-8 (12')	@ 16:14
#9	- S-9 (12')	@ 16:16
#10	- S-10 (12')	@ 16:20
#11	- S-11 (12')	@ 16:25
#12	- S-12 (12')	@ 16:35
#13	- D-1 (2')	@ 17:10
#14	- D-2 (2')	@ 17:20
#15	- D-3 (2')	@ 17:25
#16	- D-4 (2')	@ 17:35
#17	- PL-1 (4')	@ 17:30

PROJECT MANAGER


Scott D. Martin

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

PAGE 2 OF 12

RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
 GASOLINE RANGE ORGANICS

	<u>S-1 (12')</u>	<u>S-2 (12')</u>	<u>Units</u>
GRO (C6-C10)	2.9 U D1	3.0 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	94	87	59-168
Date Analyzed	01/11/99	01/11/99	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>S-1 (12')</u>	<u>S-2 (12')</u>	<u>Units</u>
Percent Solids	SM2540G	85	84	%
Date Analyzed		01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

PAGE 3 OF 12

RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>S-3 (12')</u>	<u>S-4 (12')</u>	<u>Units</u>
GRO (C6-C10)	3.2 U D1	2.9 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	84	85	59-168
Date Analyzed	01/11/99	01/11/99	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>S-3 (12')</u>	<u>S-4 (12')</u>	<u>Units</u>
Percent Solids	SM2540G	78	85	%
Date Analyzed		01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4892
DATE REPORTED: January 15, 1999
REFERENCE : 598170
PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>S-5 (12')</u>	<u>S-6 (12')</u>	<u>Units</u>
GRO (C6-C10)	2.9 U D1	2.9 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	91	100	59-168
Date Analyzed	01/11/99	01/11/99	

MISCELLANEOUS

	<u>METHOD</u>	<u>S-5 (12')</u>	<u>S-6 (12')</u>	<u>Units</u>
Percent Solids	SM2540G	85	86	%
Date Analyzed		01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
DW = Analysis is reported on a "dry weight" basis.
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>S-7 (12')</u>	<u>S-8 (12')</u>	<u>Units</u>
GRO (C6-C10)	3.0 U D1	3.0 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	88	93	59-168
Date Analyzed	01/12/99	01/12/99	

MISCELLANEOUS

	<u>METHOD</u>	<u>S-7 (12')</u>	<u>S-8 (12')</u>	<u>Units</u>
Percent Solids	SM2540G	83	82	%
Date Analyzed		01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
 GASOLINE RANGE ORGANICS

	<u>S-9 (12')</u>	<u>S-10 (12')</u>	<u>Units</u>
GRO (C6-C10)	10 D1	9.6 D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	*	100	59-168
Date Analyzed	01/13/99	01/12/99	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>S-9 (12')</u>	<u>S-10 (12')</u>	<u>Units</u>
Percent Solids	SM2540G	84	86	%
Date Analyzed		01/08/99	01/08/99	

* = Surrogate recovery unavailable due to matrix interference.
 U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>S-11 (12')</u>	<u>S-12 (12')</u>	<u>Units</u>
GRO (C6-C10)	2.9 U D1	3.2 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	96	82	59-168
Date Analyzed	01/12/99	01/12/99	

MISCELLANEOUS

	<u>METHOD</u>	<u>S-11 (12')</u>	<u>S-12 (12')</u>	<u>Units</u>
Percent Solids	SM2540G	86	79	%
Date Analyzed		01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>D-1 (2')</u>	<u>D-2 (2')</u>	<u>Units</u>
GRO (C6-C10)	2.9 U D1	22 U D2	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	83	100	59-168
Date Analyzed	01/14/99	01/13/99	

MISCELLANEOUS

METHOD

	<u>D-1 (2')</u>	<u>D-2 (2')</u>	<u>Units</u>
Percent Solids	86	75	%
Date Analyzed	01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.
 D2 = Analyte value determined from a 1:100 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>D-3 (2')</u>		<u>D-4 (2')</u>	<u>Units</u>
GRO (C6-C10)	140	D2	2.8 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>		<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	93		77	59-168
Date Analyzed	01/14/99		01/13/99	

MISCELLANEOUS

METHOD

	<u>D-3 (2')</u>		<u>D-4 (2')</u>	<u>Units</u>
Percent Solids	79		88	%
Date Analyzed	01/08/99		01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.
 D2 = Analyte value determined from a 1:100 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
 GASOLINE RANGE ORGANICS

	<u>PL-1 (4')</u>	<u>LAB BLANK</u>	<u>Units</u>
GRO (C6-C10)	410 D2	2.5 U D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	60	98	59-168
Date Analyzed	01/13/99	01/11/99	

MISCELLANEOUS

	<u>METHOD</u>	<u>PL-1 (4')</u>	<u>LAB BLANK</u>	<u>Units</u>
Percent Solids	SM2540G	75	NR	%
Date Analyzed		01/08/99		

U = Compound was analyzed for but not detected to the level shown.
 NR = Analysis not requested for this sample.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.
 D2 = Analyte value determined from a 1:100 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
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 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>LAB BLANK</u>	<u>LAB BLANK</u>	<u>Units</u>
GRO (C6-C10)	2.5 U D1	50 U D2	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	118	96	59-168
Date Analyzed	01/12/99	01/13/99	

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>LAB BLANK</u>	<u>LAB BLANK</u>	<u>Units</u>
GRO (C6-C10)	2.5 U D1	50 U D2	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	102	82	59-168
Date Analyzed	01/14/99	01/14/99	

U = Compound was analyzed for but not detected to the level shown.
 D1 = Analyte value determined from a 1:5 dilution.
 D2 = Analyte value determined from a 1:100 dilution.

ENCO LABORATORIES

REPORT # : JR4892
 DATE REPORTED: January 15, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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QUALITY CONTROL DATA

<u>Parameter</u>	<u>% RECOVERY MS/MSD/LCS</u>	<u>ACCEPT LIMITS</u>	<u>% RPD MS/MSD</u>	<u>ACCEPT LIMITS</u>
<u>EPA Method GRO (D-2 (2'), PL-1 (4'))</u> GRO (C6-C10)	128/127/ 65	45-162	<1	24
<u>EPA Method GRO (D-3 (2'))</u> GRO (C6-C10)	128/127/ 62	45-162	<1	24
<u>EPA Method GRO (S-1 (12'), S-2 (12'), S-3 (12'), S-4 (12'), S-5 (12'), S-6 (12'), S-7 (12'), S-8 (12'))</u> GRO (C6-C10)	111/136/ 66	45-162	20	24
<u>EPA Method GRO (S-9 (12'), S-10 (12'), S-11 (12'), S-12 (12'), D-4 (2'))</u> GRO (C6-C10)	111/136/ 63	45-162	20	24
<u>EPA Method GRO (D-1 (2'))</u> GRO (C6-C10)	74/ 80/ 68	45-162	8	24

Environmental Conservation Laboratories Comprehensive QA Plan #960038

- < = Less Than
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- LCS = Laboratory Control Standard
- RPD = Relative Percent Difference

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 Ph. (904) 296-3007 • Fax (904) 296-6210 Ph. (407) 826-5314 • Fax (407) 850-6945

QSARF # _____

CHAIN OF CUSTODY RECORD

ENCO CompQAP No.: 960038G/O

PROJECT REFERENCE		PROJECT NO.		P.O. NUMBER		REQUIRED ANALYSIS		PAGE 2 OF 3												
Pantry #115		598170		3910																
PROJECT LOC. (State)		SAMPLER(S) NAME		PHONE		FAX		STANDARD REPORT DELIVERY												
NC		Kevin Crocker		14-833-2535		919-832-5914		<input checked="" type="checkbox"/> STANDARD REPORT DELIVERY <input type="checkbox"/> EXPEDITED REPORT DELIVERY (surcharge)												
CLIENT NAME		CLIENT PROJECT MANAGER		DATE DUE		REMARKS														
SEI Environmental, Inc.		Michelle McGinnis		5 Day		PREPARE														
CLIENT ADDRESS (CITY, STATE, ZIP)		SAMPLE IDENTIFICATION		NUMBER OF CONTAINERS SUBMITTED																
130 Penmore Drive Suite 108 Raleigh, NC 27603				1																
STATION	DATE	TIME	GRAB	COMP	MATRIX TYPE															
					SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	NONAQUEOUS LIQUID (oil solvent, etc.)	AIR	SLUDGE	OTHER	NUMBER OF CONTAINERS SUBMITTED							
1	1-6-99	5:10pm	X		D-1 (2')															
2	1-6-99	5:20pm	X		D-2 (2')															
3	1-6-99	5:35pm	X		D-3 (2')															
4	1-6-99	5:35pm	X		D-4 (2')															
5	1-6-99	5:30pm	X		PL-1 (4')															
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				

SAMPLE KIT PREPARED BY:	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
JACKSONVILLE								
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
<i>Kevin Crocker</i>	1-7-99	9:13am						
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
<i>Michelle McGinnis</i>	1/8/99	10:30	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	JR2992	
JACKSONVILLE					

Environmental Conservation Laboratories
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com



DHRS Certification No. E82277

CLIENT : SEI Environmental, Inc.
ADDRESS: 130 Penmarc Drive
Suite 108
Raleigh, NC 27603

REPORT # : JR4891
DATE SUBMITTED: January 8, 1999
DATE REPORTED : January 12, 1999

PAGE 1 OF 4

ATTENTION: Ms. Michelle McGinnis

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

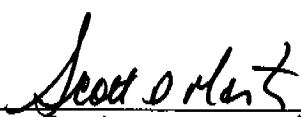
PROJECT #: 598170

Pantry #115

01/06/99

#1 - SP-1 @ 10:55
#2 - SP-2 @ 10:56

PROJECT MANAGER


Scott D. Martin

ENCO LABORATORIES

REPORT # : JR4891
 DATE REPORTED: January 12, 1999
 REFERENCE : 598170
 PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

	<u>SP-1</u>	<u>SP-2</u>	<u>Units</u>
GRO (C6-C10)	2.9 U D1	4.2 D1	mg/Kg
<u>Surrogate:</u>	<u>% RECOV</u>	<u>% RECOV</u>	<u>LIMITS</u>
p-Cymene	87	71	59-168
Date Analyzed	01/10/99	01/10/99	

<u>MISCELLANEOUS</u>	<u>METHOD</u>	<u>SP-1</u>	<u>SP-2</u>	<u>Units</u>
Percent Solids	SM2540G	85	85	%
Date Analyzed		01/08/99	01/08/99	

U = Compound was analyzed for but not detected to the level shown.
 DW = Analysis is reported on a "dry weight" basis.
 D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4891
DATE REPORTED: January 12, 1999
REFERENCE : 598170
PROJECT NAME : Pantry #115

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RESULTS OF ANALYSIS

EPA METHOD 8015 MODIFIED -
GASOLINE RANGE ORGANICS

GRO (C6-C10)

LAB BLANK

2.5 U D1

Units

mg/Kg

Surrogate:

p-Cymene
Date Analyzed

% RECOV

76
01/09/99

LIMITS

59-168

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:5 dilution.

ENCO LABORATORIES

REPORT # : JR4891
DATE REPORTED: January 12, 1999
REFERENCE : 598170
PROJECT NAME : Pantry #115

PAGE 4 OF 4

QUALITY CONTROL DATA

<u>Parameter</u>	<u>% RECOVERY MS/MSD/LCS</u>	<u>ACCEPT LIMITS</u>	<u>% RPD MS/MSD</u>	<u>ACCEPT LIMITS</u>
<u>EPA Method GRO</u> GRO (C6-C10)	64/.62/ 60	45-162	3	24

Environmental Conservation Laboratories Comprehensive QA Plan #960038

< = Less Than
MS = Matrix Spike
MSD = Matrix Spike Duplicate
LCS = Laboratory Control Standard
RPD = Relative Percent Difference

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QSARF # 0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE Pantry #115		PROJECT NO. 598170	P.O. NUMBER 3915	PAGE 1 OF 1
PROJECT LOC. (State) NC		PHONE 919-832-2535 FAX 919-832-5914		<input type="checkbox"/> STANDARD REPORT DELIVERY <input checked="" type="checkbox"/> EXPEDITED REPORT DELIVERY (surcharge) Date Due: TAT-ASAP
CLIENT NAME SEI Environmental		CLIENT PROJECT MANAGER Michelle McGinnis		
CLIENT ADDRESS (CITY, STATE, ZIP) 130 Penmarc Drive Suite 108 Raleigh, NC 27608		REQUIRED ANALYSIS		
MATRIX TYPE		PRESERVATIVE		
SURFACE WATER		NONAQUEOUS LIQUID (oil solvent, etc.)		
GROUND WATER		SLUDGE		
WASTEWATER		AIR		
DRINKING WATER		OTHER		
SOLID/SEDIMENT		NUMBER OF CONTAINERS SUBMITTED		
SOLVENTS		5030		
1		1		
2		1		
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
REMARKS		Make Dilutions Make Dilutions		

SAMPLE KIT PREPARED BY: D JACKSONVILLE	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE) <i>Kim M. Crow</i>	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
	1-7-99	10:16am						
RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
	1/8/99	1030	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	JR4891	

APPENDIX C
GEOPHYSICAL SURVEY REPORT



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2018-041)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION: PARCEL 24 NCDOT PROJECT R-3830 (38887.1.1)

816 E. MAIN ST., SANFORD, NC

MARCH 30, 2018

Report prepared for: Michael Burns, P.G.
Kleinfelder
3200 Gateway Centre Blvd., Suite 100
Morrisville, NC 27560

Prepared by: _____

Eric C. Cross, P.G.
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C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 24 – 816 E. Main St.
Sanford, Lee County, North Carolina

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- Figure 2 – Parcel 24 EM61 Results Contour Map
- Figure 3 – Parcel 24 Transect Locations and Select Images
- Figure 4 – Overlay of Geophysical Survey Boundaries on NCDOT Engineering Plans

Appendices

- Appendix A – GPR Transect Images

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 Kleinfelder at Parcel 24, located at 816 E. Main St., in Sanford, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project R-3830). 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 February 14-21, 2018, 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 ten EM anomalies were identified. Several of the EM anomalies were directly attributed to visible cultural features. GPR was performed around areas containing vehicles that resulted in metallic interference, as well as across areas of suspected metal-reinforced concrete and buried utilities. GPR transects around the vehicles did not record any evidence of potential metallic USTs. GPR verified the presence of metal reinforcement within the portions of the concrete slab. No evidence of larger structures such as USTs was observed beneath the reinforcement. GPR also verified the presence of buried utilities. Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 24.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder at Parcel 24, located at 816 E. Main St., in Sanford, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project R-3830). 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 February 14-21, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a commercial building surrounded by asphalt and grass surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

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

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

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on February 21, 2018, 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	Possible Utility	✓
2	Vehicles	✓
3	Utility Box	
4	Vehicles	✓
5	Vehicles/Reinforced Concrete	✓
6	Reinforced Concrete	✓
7	Metal Debris/Reinforced Concrete	✓
8	Vehicle	✓
9	Vehicles	✓
10	Vehicles	✓

Several of the EM anomalies were directly attributed to visible cultural features at the ground surface, including utilities, reinforced concrete, and vehicles. GPR was performed across Anomalies 6 and 7 to verify the presence of metal reinforcement within the concrete and examine beneath the suspected reinforcement. GPR was performed across Anomaly 1 to confirm that the EM anomaly resulted from the presence of a utility. GPR was performed around the vehicles (Anomalies 2, 4, 5, and 8-10) due to the metallic interference observed in the EM results.

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 GPR Transect images are included in **Appendix A**. A total of 23 GPR transects were performed at the parcel. GPR Transects 1-16 were performed between the parked vehicles (Anomalies 2, 4, 5 and 8-10), and did not record evidence of large metallic structures such as USTs within the area of vehicle interference. GPR Transect 17 verified the presence of a buried utility at EM Anomaly 1. GPR Transects 18-23 were performed across EM Anomalies 5-7 and verified the presence of metal reinforcement within the concrete. No evidence of larger structures such as USTs was observed beneath the reinforcement.

Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 24. **Figure 4** provides an overlay of the geophysical survey area onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 24 in Sanford, 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.
- GPR was performed around areas containing vehicles that resulted in metallic interference, as well as across areas of suspected metal-reinforced concrete and buried utilities.
- GPR transects around the vehicles did not record any evidence of potential metallic USTs.
- GPR verified the presence of metal reinforcement within the portions of the concrete slab. No evidence of larger structures such as USTs was observed beneath the reinforcement.
- GPR also verified the presence of buried utilities.
- Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 24.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Kleinfelder 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 Parcel 24 – 816 E. Main St. (NCDOT Project R-3830) Sanford, North Carolina

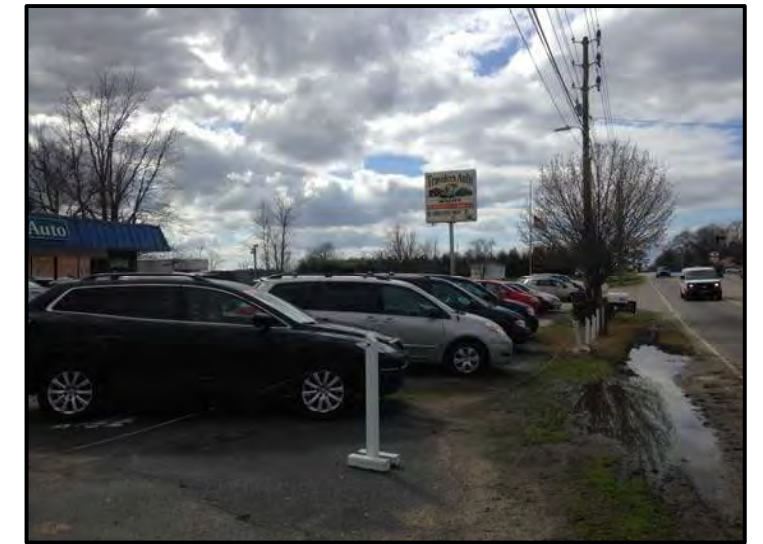
have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

N ↑


APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately East)



View of Survey Area
(Facing Approximately East)

TITLE		PARCEL 24 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	
PROJECT		PARCEL 24 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	2/22/2018	CLIENT	KLEINFELDER
PYRAMID PROJECT #:	2018-041	FIGURE 1	



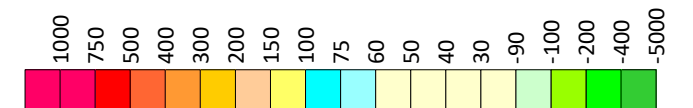
EM61 METAL DETECTION RESULTS




NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED.

The contour plot shows the bottom coil data results of the EM61 instrument in millivolts (mV), which provide a stronger metallic response of the instrument and do not incorporate the top coil. Differential data (difference between top and bottom coils) were not used for this parcel due to interference from overhead power lines. The EM61 data were collected on February 14, 2018, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on February 21, 2018.

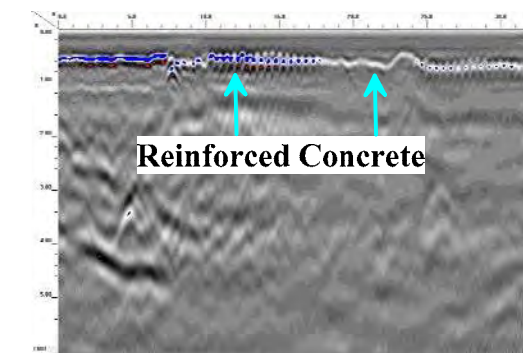
EM61 Metal Detection Response (millivolts)



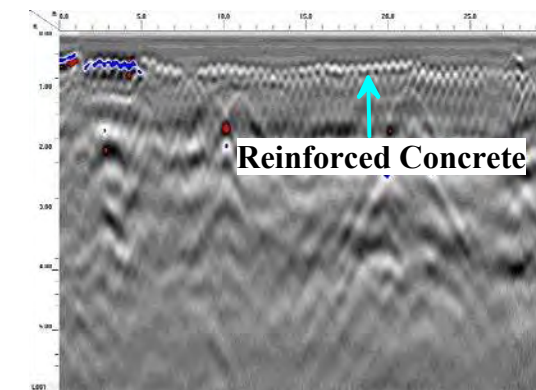
TITLE PARCEL 24 - EM61 METAL DETECTION CONTOUR MAP	
PROJECT PARCEL 24 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE 2/22/2018	CLIENT KLEINFELDER
PYRAMID PROJECT #: 2018-041	FIGURE 2

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

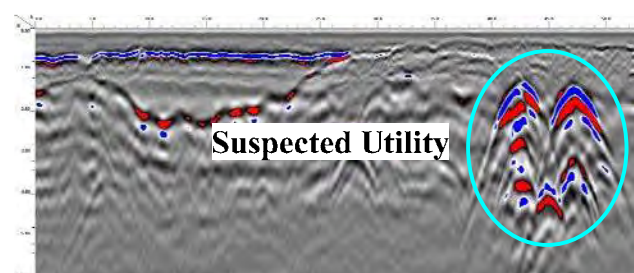
LOCATIONS OF GPR TRANSECTS



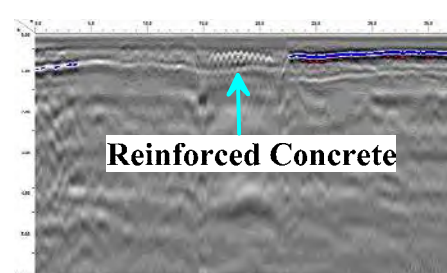
GPR TRANSECT 20 (T20)




GPR TRANSECT 23 (T23)

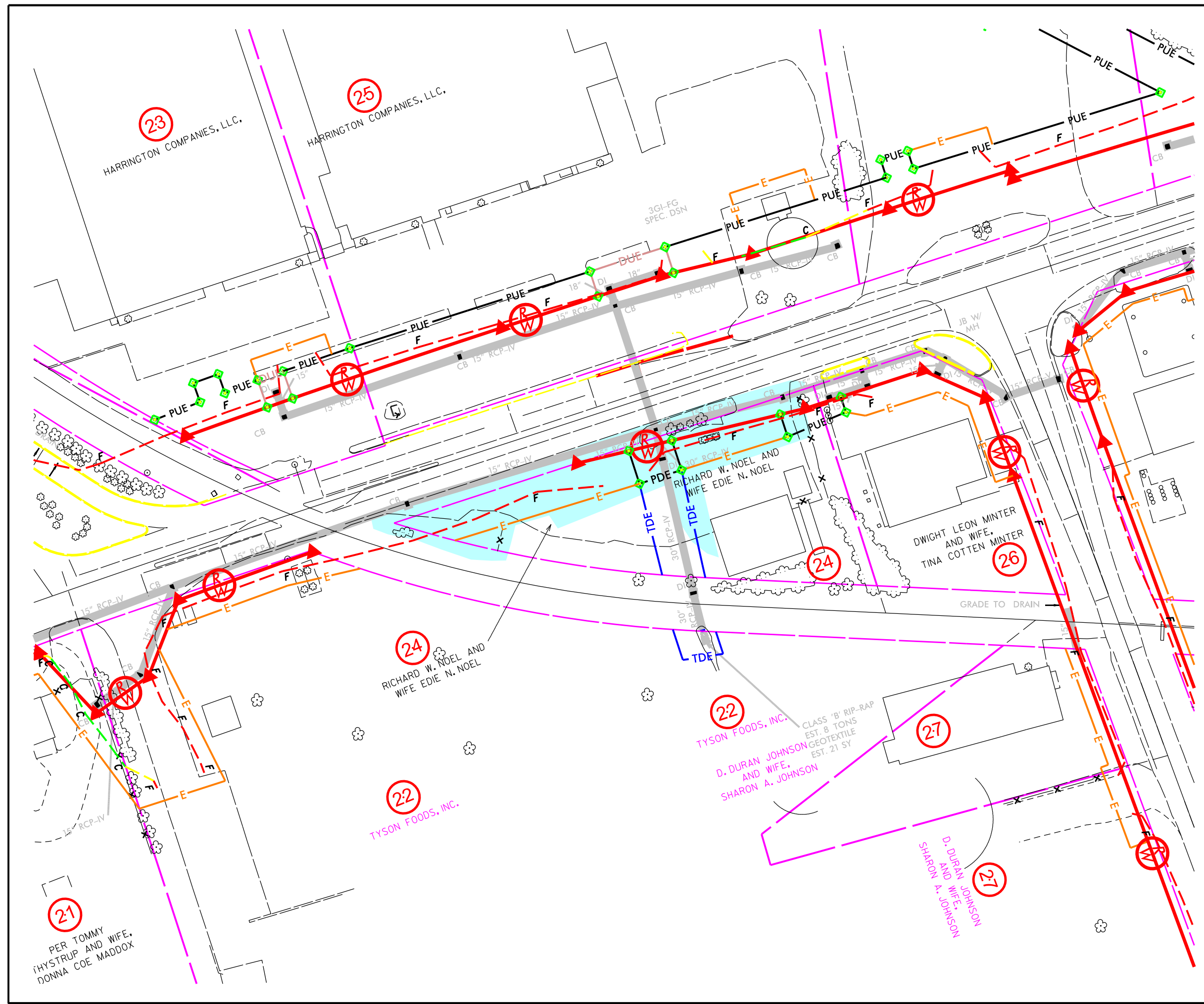


GPR TRANSECT 17 (T17)



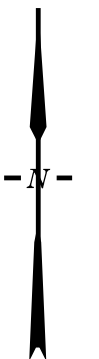
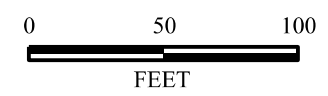
GPR TRANSECT 19 (T19)

TITLE		PARCEL 24 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	
PROJECT		PARCEL 24 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	3/7/2018	CLIENT	KLEINFELDER
PYRAMID PROJECT #:	2018-041	FIGURE 3	



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED PERMANENT DRAINAGE
- PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- GEOPHYSICAL SURVEY AREA



TITLE OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS	
PROJECT PARCEL 24 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div> 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology </div> </div>	
DATE: 03-13-2018	REVISION NO. 0
PYRAMID PROJECT NO. 2018-041	FIGURE NO. 4

21
 PER TOMMY
 (HYSTRUP AND WIFE,
 DONNA COE MADDOX

23
 HARRINGTON COMPANIES, LLC.

25
 HARRINGTON COMPANIES, LLC.

24
 RICHARD W. NOEL AND
 WIFE EDIE N. NOEL

22
 TYSON FOODS, INC.

22
 TYSON FOODS, INC.
 CLASS 'B' RIP-RAP
 EST. 8 TONS
 GEOTEXTILE
 EST. 21 SY

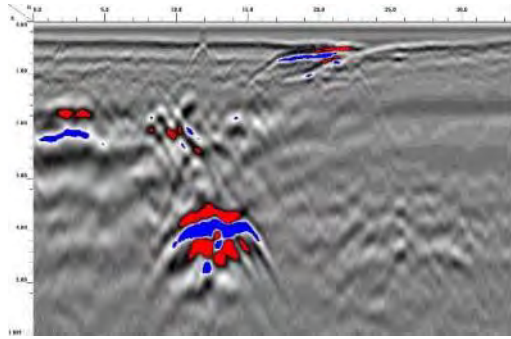
27
 D. DURAN JOHNSON
 AND WIFE,
 SHARON A. JOHNSON

27
 D. DURAN JOHNSON
 AND WIFE,
 SHARON A. JOHNSON

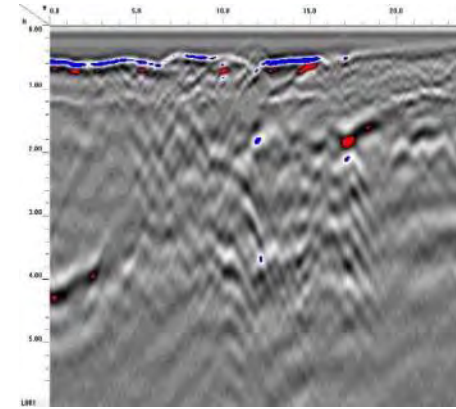
26
 DWIGHT LEON MINTER
 AND WIFE,
 TINA COTTEN MINTER

24
 RICHARD W. NOEL AND
 WIFE EDIE N. NOEL

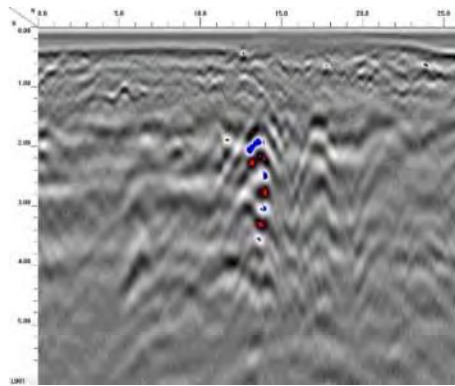
Appendix A – GPR Transect Images



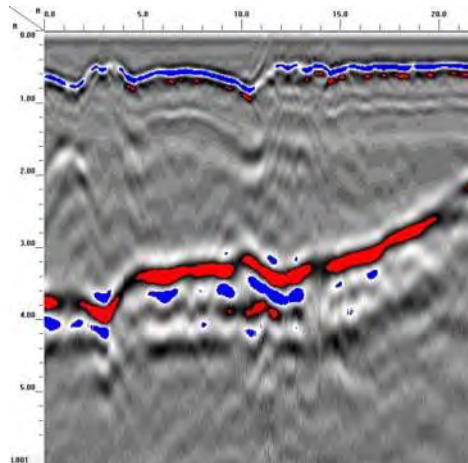
GPR TRANSECT 1



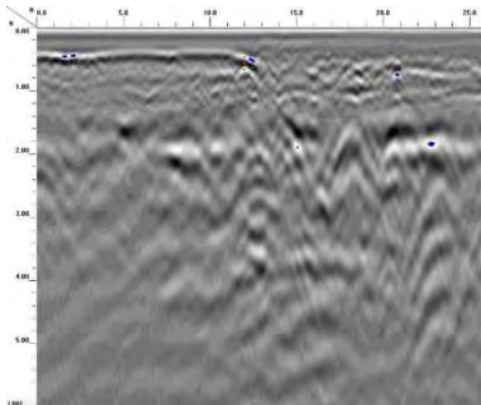
GPR TRANSECT 4



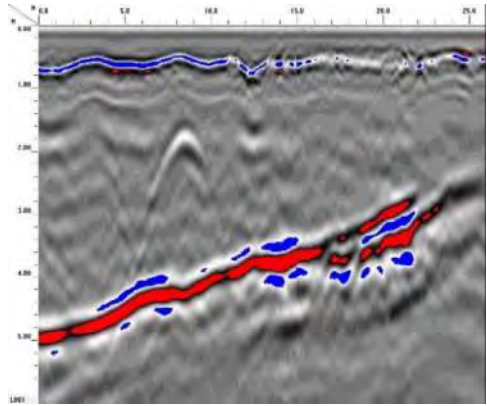
GPR TRANSECT 2



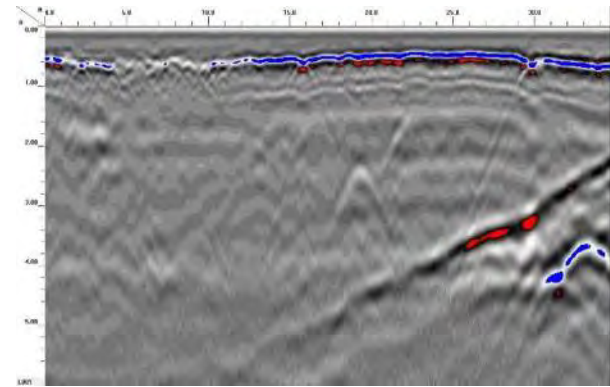
GPR TRANSECT 5



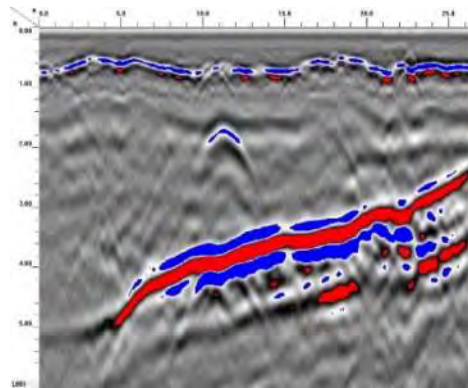
GPR TRANSECT 3



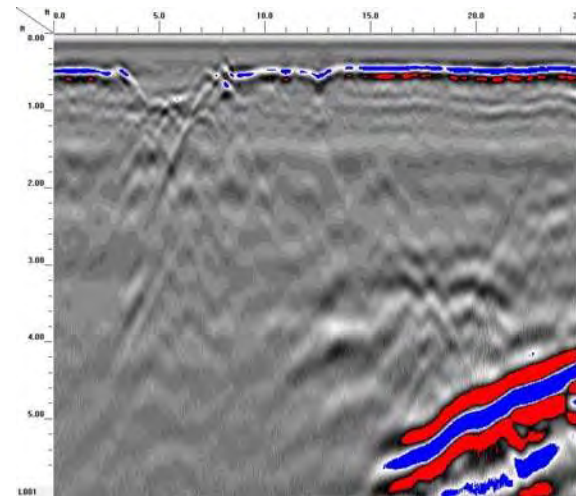
GPR TRANSECT 6



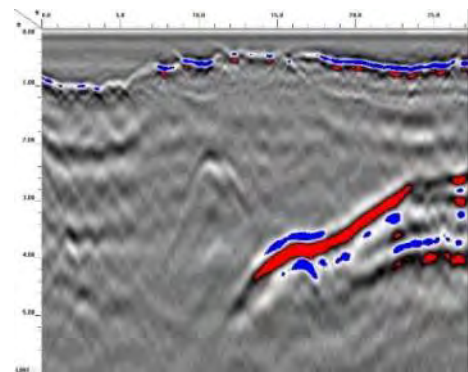
GPR TRANSECT 9



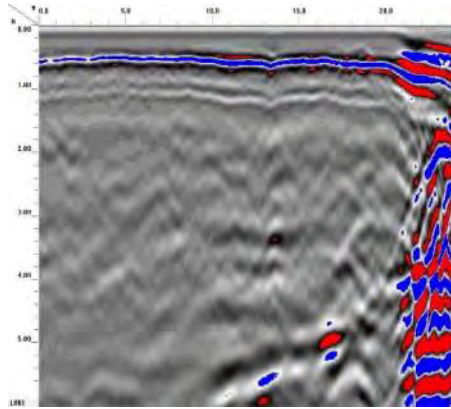
GPR TRANSECT 7



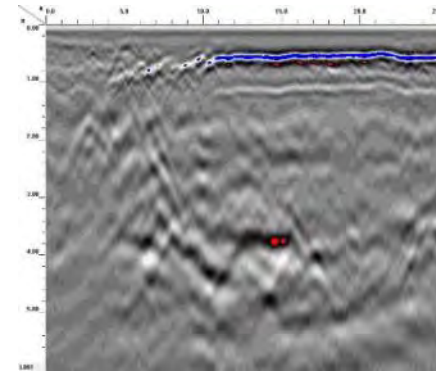
GPR TRANSECT 10



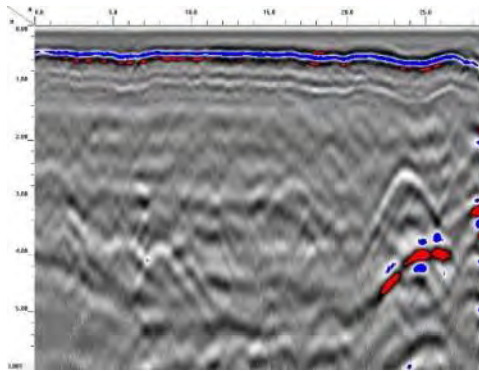
GPR TRANSECT 8



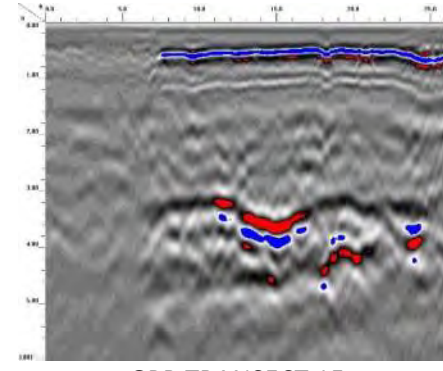
GPR TRANSECT 11



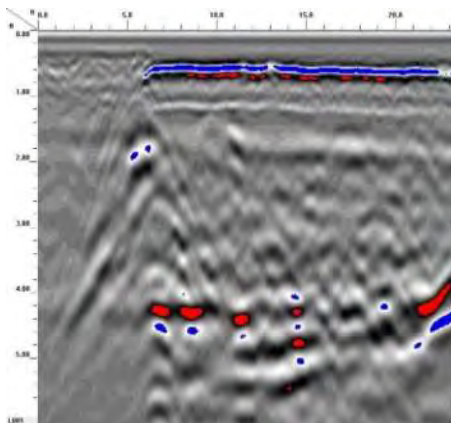
GPR TRANSECT 14



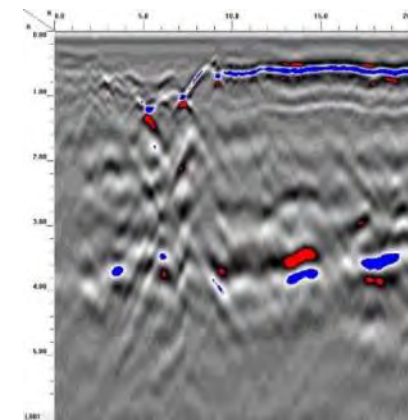
GPR TRANSECT 12



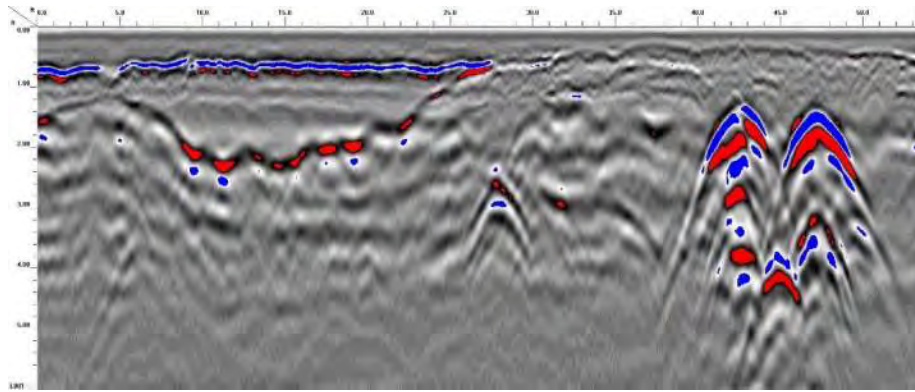
GPR TRANSECT 15



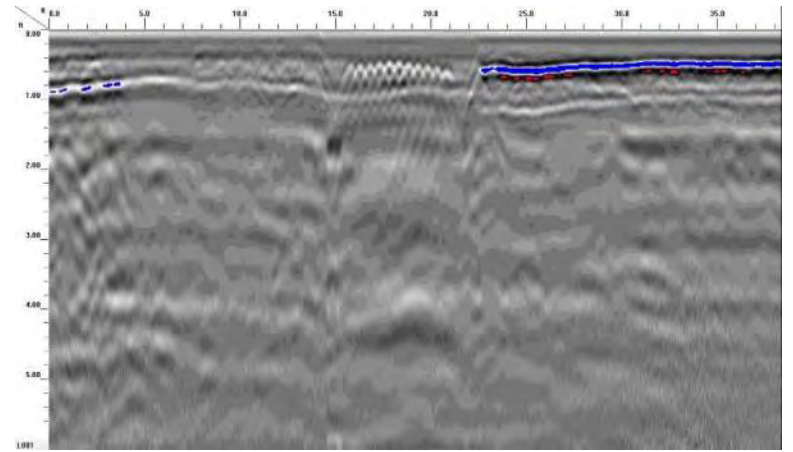
GPR TRANSECT 13



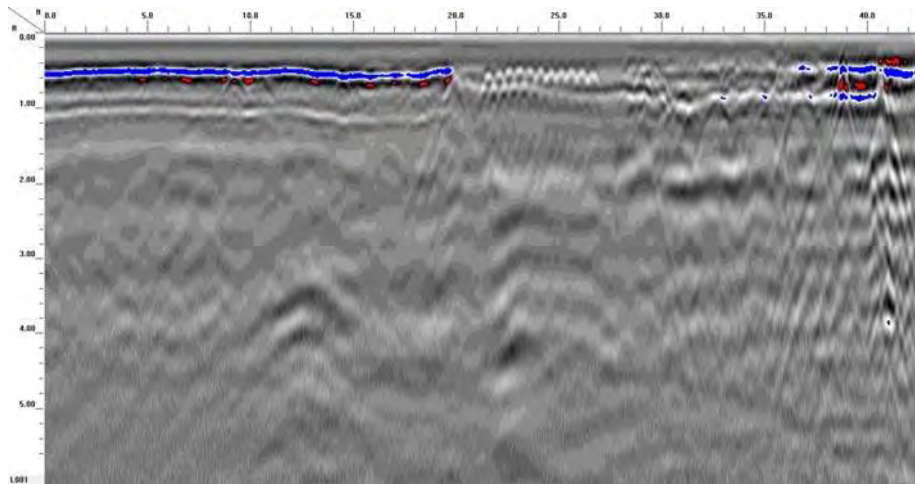
GPR TRANSECT 16



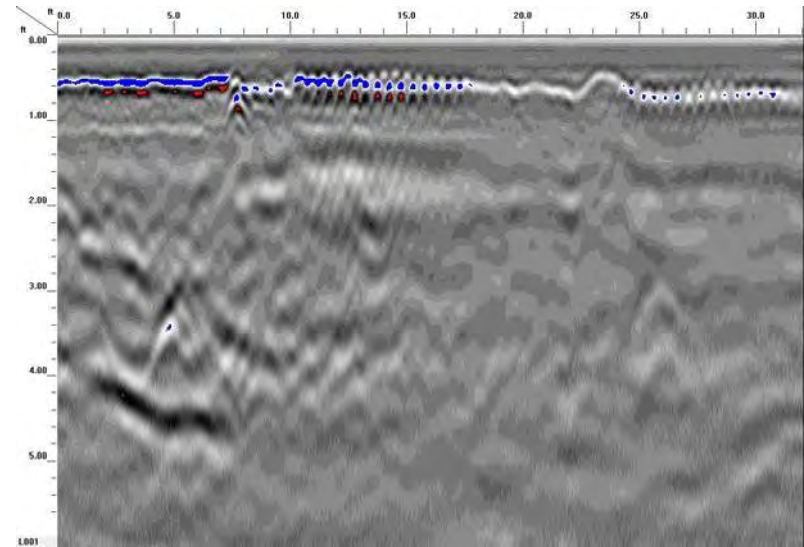
GPR TRANSECT 17



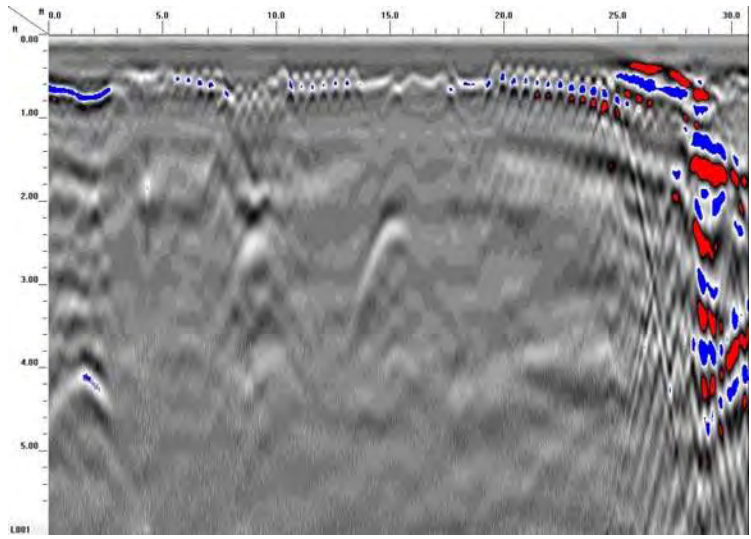
GPR TRANSECT 19



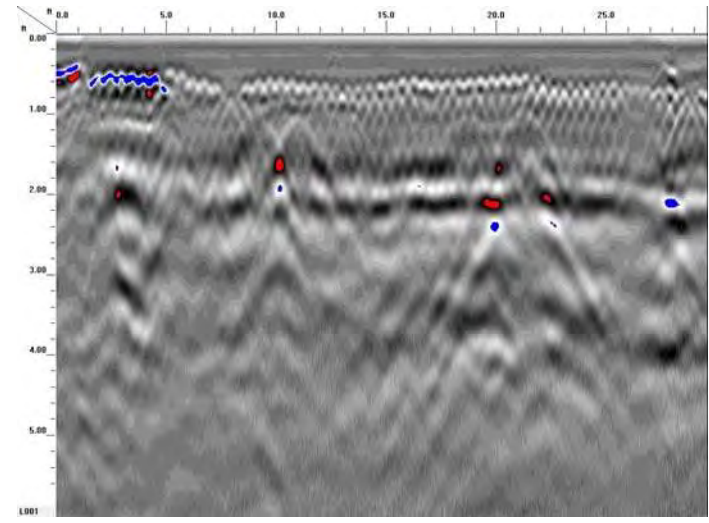
GPR TRANSECT 18



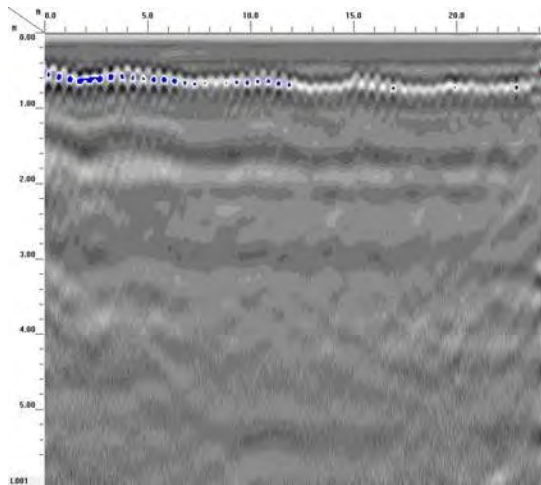
GPR TRANSECT 20



GPR TRANSECT 21



GPR TRANSECT 23



GPR TRANSECT 22

APPENDIX D
BORING LOGS

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny

Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

BORING LOG P024-SS1

FIELD EXPLORATION

Northing: 622977.6020
 Easting: 1958621.9160
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
							ASPHALT
			1 (UVF, PAHs)	100%	46.87		SILT AND GRAVEL: red, Potential fill material
			2	100%	10.89		Clayey SILT with Gravel: red, Potential fill material
			3 (UVF)	100%	9.03		SAND: coarse-grained, tan and brown
			4	100%	7.13		Sandy CLAY: brown, moist
5			5	100%	0.55		Clayey SAND: reddish brown
			6 (UVF)	100%	2.71		
			7	100%	2.16		
			8	100%	1.03		
			9	100%	1.43		
10			10	100%	1.12		Sandy CLAY: gray

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS1

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny
Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

FIELD EXPLORATION

Northing: 622957.6660
 Easting: 1958563.1600
 Surface Condition: Concrete

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
			1	100%	1.50	
			2 (UVF)	100%	186.00	
			3	100%	48.83	
			4-5 (UVF)	30%	516.00	
5			6 (UVF)	100%	138.00	
			7	100%	6.20	
			8	100%	4.35	
			9	100%	2.38	
10			10	100%	0.95	

CONCRETE

SILT AND GRAVEL: red, Potential fill material

SILT with Clay: red, Potential fill material

SAND: coarse-grained, odor

Sandy CLAY: brown, moist

Clayey SAND: light brown

Clayey SAND: gray, moist

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS2

R-3830
 WBS 38887.1.1
 Sanford, NC

PLOTTED: 04/23/2018 07:57 AM BY: CHollinger

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny

Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

BORING LOG P024-SS3

FIELD EXPLORATION

Northing: 622945.9120
 Easting: 1958581.8370
 Surface Condition: Asphalt

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
							CONCRETE
			1	100%	2.80		SILT: red, Potential fill material
			2	100%	5.61		
			3 (UVF)	100%	583.00		SILT with Clay: red, Potential fill material
			4 (UVF)	100%	2900.00		
			5	100%	434.00		CLAY: brown, moist
			6	100%	828.00		CLAY: reddish brown, Hydrocarbon staining
			7 (UVF)	100%	536.00		
			8	100%	NA		
			9	100%	140.00		
			10	100%	77.70		Sandy CLAY: gray, dense

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 ∇ Groundwater was observed at approximately 8 ft. below ground surface during drilling.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.

OFFICE FILTER: RALEIGH

PROJECT NUMBER: 20183507.001A
 GINT TEMPLATE: E:KLF_STANDARD_GINT_LIBRARY_2017.GLB [KLF_ENVIRONMENTAL LOG]




PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS3

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018	Drilling Company: Quantex	BORING LOG P024-SS4
Logged By: J. Hollinger	Drill Crew: JD Barker	
Hor.-Vert. Datum: Not Available	Drilling Equipment: 6620DT GeoProbe	
Plunge: -90 degrees	Drilling Method: See Drilling Method Column	
Weather: Sunny	Bore Diameter: 2 in. O.D.	

FIELD EXPLORATION						
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
						Northing: 622940.5010 Easting: 1958547.0890 Surface Condition: Concrete
						Lithologic Description
			1	100%	10.94	ASPHALT
			2	100%	12.44	SILT with Gravel: red
			3	100%	30.85	Clayey SILT: red
			4 (UVF)	100%	46.13	
			5	100%	130	
			6 (UVF)	100%	426	
			7	100%	NA	SAND and Gravel: dark brown, wet
			8	100%	NA	Clayey SAND: grey
			9	100%	122	
			10	100%	36.8	
The borehole was terminated at approximately 10 ft. below ground surface.						
GROUNDWATER LEVEL INFORMATION: Perched groundwater was observed at approximately 7 ft. below ground surface during drilling.						
GENERAL NOTES: The boring was backfilled with excavated material on March 15, 2018.						

	PROJECT NO.: 20183507	BORING LOG P024-SS4
	DRAWN BY: JCH	
	CHECKED BY: MJB	
	DATE: 4/17/2018	
	REVISED: -	R-3830 WBS 38887.1.1 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny
Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

FIELD EXPLORATION

Northing: 622935.8910
 Easting: 1958518.4640
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
							ASPHALT
			1 (UVF)	100%	11.75		SILT with Gravel: red
			2 (UVF)	100%	23.28		
			3	100%	20.81		Clayey SILT: red
			4-5 (UVF)	100%	15.94		
5			6-8	100%	32.98		
			9-10	100%	11.48		SAND: coarse-grained, black to dark brown, wet
10							Sandy CLAY: gray, moist
							<p>The borehole was terminated at approximately 10 ft. below ground surface.</p> <p><u>GROUNDWATER LEVEL INFORMATION:</u> Groundwater was not observed during drilling or after completion.</p> <p><u>GENERAL NOTES:</u> The boring was backfilled with excavated material on March 15, 2018.</p>



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS5

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny
Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

FIELD EXPLORATION

Northing: 622895.0310
 Easting: 1958529.4900
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
			1	100%	1.12	
			2	100%	0.56	
			3 (UVF)	100%	1.22	
			4	0%	NA	
5			5	0%	NA	
			6	0%	NA	
			7	0%	NA	
			8	0%	NA	
			9	0%	NA	
10			10	0%	NA	

ASPHALT
 Clayey SILT: red

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS6

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny




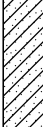
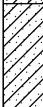
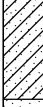




Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

BORING LOG P024-SS7

FIELD EXPLORATION

Northing: 622901.3060
 Easting: 1958452.8220
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
			1 (UVF, PAHs)	100%	0.64		ASPHALT
			2	100%	0.49		SAND: coarse-grained, tan
			3	100%	0.29		
			4	100%	0.67		Sandy CLAY: red and orange
5			5	100%	1.00		
			6	100%	0.85		Sandy CLAY: red and brown
			7	100%	0.82		
			8 (UVF)	100%	1.27		SAND: coarse-grained, red and brown
			9	100%	0.99		
10			10	100%	0.72		Sandy CLAY: red/brown and gray

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS7

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny

Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

FIELD EXPLORATION

Northing: 622892.2100
 Easting: 1958378.7790
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
			1	100%	0.44	ASPHALT
			2 (UVF)	100%	0.36	SAND: tan
			3	100%	0.58	
			4 (UVF)	100%	0.88	
5			5	100%	0.98	Clayey SAND: red/brown
			6	100%	1.62	
			7	100%	1.62	
			8	100%	1.10	
			9	100%	0.48	SAND: orange
10			10	100%	1.50	CLAY: gray, dense

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS8

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny
Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

FIELD EXPLORATION

Northing: 622964.4010
 Easting: 1958590.6310
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
							ASPHALT
			1	100%	4.60		SILT: red
			2	100%	5.71		
			3	100%	14.34		
			4	100%	75.62		
5			5	100%	182.00		CLAY: brown, moist
			6	100%	110.00		
			7-8	100%	9.48		
			9	100%	0.32		SAND: coarse-grained, red/orange
10			10	100%	1.74		SAND: coarse-grained, gray

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
 Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
 The boring was backfilled with excavated material on March 15, 2018.



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS9

R-3830
 WBS 38887.1.1
 Sanford, NC

Date Begin - End: 3/15/2018
Logged By: J. Hollinger
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: Sunny

Drilling Company: Quantex
Drill Crew: JD Barker
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter: 2 in. O.D.

BORING LOG P024-SS10

FIELD EXPLORATION

Northing: 622953.2820
 Easting: 1958614.0929
 Surface Condition: Asphalt

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
							ASPHALT
			1	100%	NA		SAND and GRAVEL: Potential fill material
			2	100%	NA		
			3	100%	NA		
			4	100%	NA		
5			5	100%	NA		
			6	100%	NA		
			7	100%	NA		
			8	100%	NA		
			9	100%	NA		
10			10	100%	NA		CLAY: gray, wet
<p>The borehole was terminated at approximately 10 ft. below ground surface.</p>							<p><u>GROUNDWATER LEVEL INFORMATION:</u> ∇ Groundwater was observed at approximately 4 ft. below ground surface during drilling. <u>GENERAL NOTES:</u> The boring was backfilled with excavated material on March 15, 2018.</p>



PROJECT NO.: 20183507
 DRAWN BY: JCH
 CHECKED BY: MJB
 DATE: 4/17/2018
 REVISED: -

BORING LOG P024-SS10

R-3830
 WBS 38887.1.1
 Sanford, NC

APPENDIX E
ANALYTICAL REPORT AND GRAPHS



Hydrocarbon Analysis Results

Client: Kleinfelder
Address: 3200 Gateway Centre Blvd
 Morrisville, NC

Samples taken Thursday, March 15, 2018
Samples extracted Thursday, March 15, 2018
Samples analysed Thursday, March 15, 2018

Contact: Michael Burns

Operator J. Joseph Hodge

Project: R3830

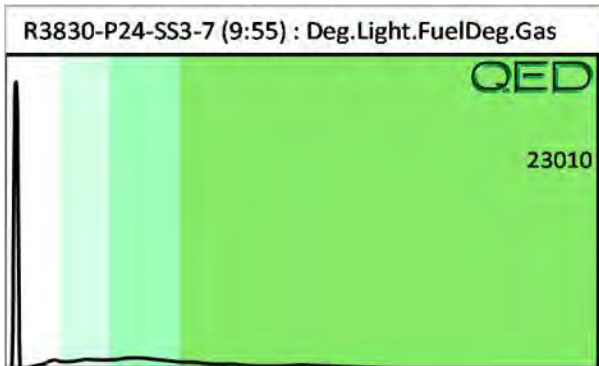
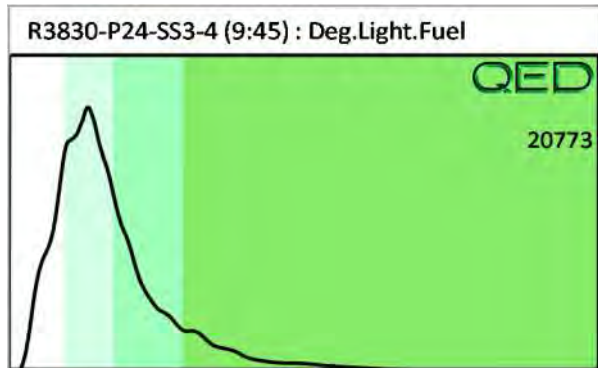
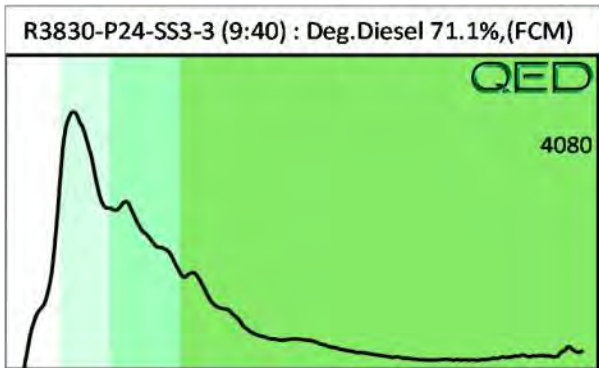
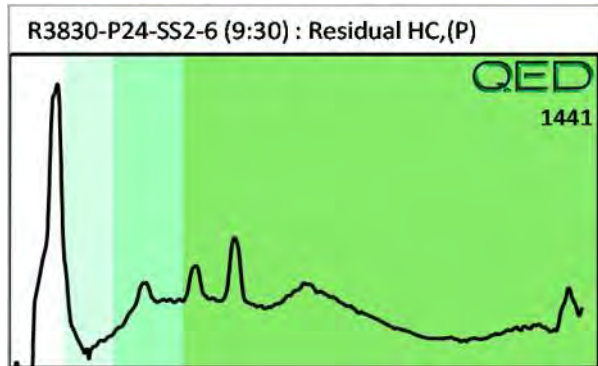
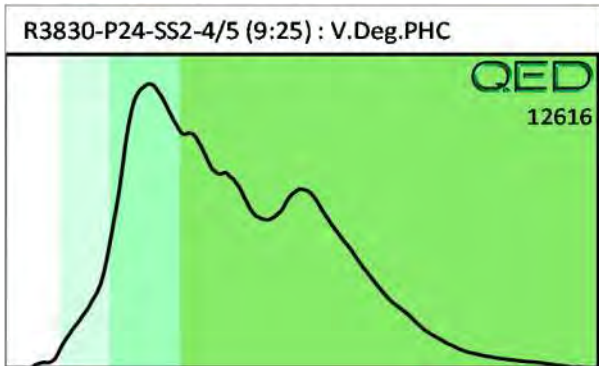
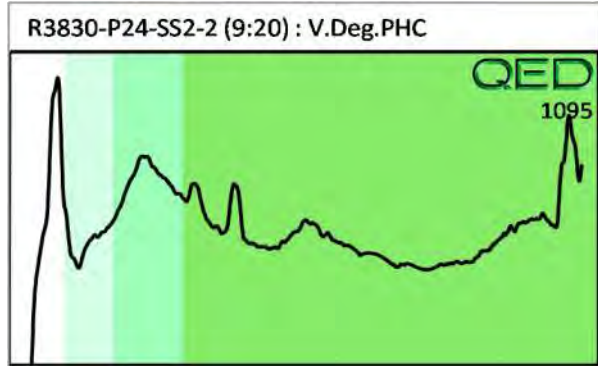
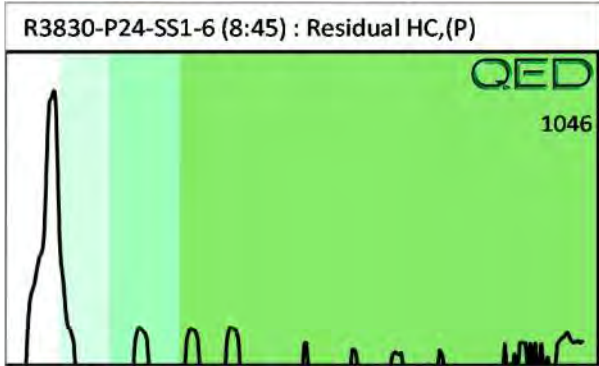
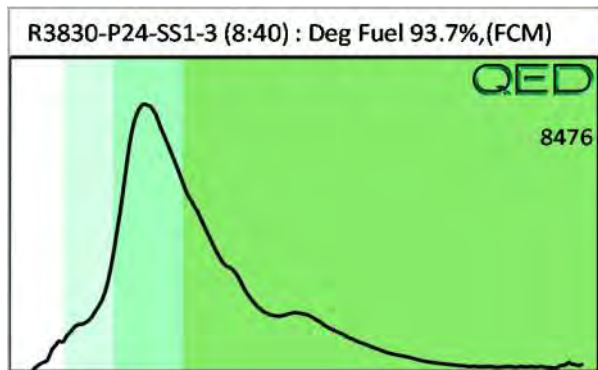
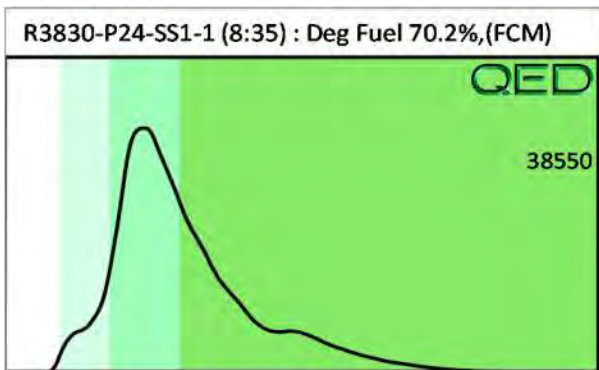
U00902

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	R3830-P24-SS1-1 (8:35)	163.0	<4.1	<4.1	169.6	169.6	161.3	9.3	<0.081	0	97.9	2	Deg Fuel 70.2%,(FCM)
s	R3830-P24-SS1-3 (8:40)	19.3	<0.48	<0.48	4.7	4.7	3.3	0.2	<0.01	0	97	2.8	Deg Fuel 93.7%,(FCM)
s	R3830-P24-SS1-6 (8:45)	22.2	<0.56	<0.56	<0.04	<0.56	<0.11	<0.02	<0.011	0	100	0	Residual HC,(P)
s	R3830-P24-SS2-2 (9:20)	29.5	<0.74	4	0.34	4.34	0.34	<0.03	<0.015	93.4	6.1	0.5	V.Deg.PHC 75.6%,(FCM),(BO)
s	R3830-P24-SS2-4/5 (9:25)	30.2	<1.5	4.1	7.3	11.4	7.2	0.38	<0.015	40.7	54.1	4.8	V.Deg.PHC 91.5%,(FCM)
s	R3830-P24-SS2-6 (9:30)	16.4	<0.41	<0.41	0.08	0.08	0.08	<0.02	<0.008	0	89.8	9	Residual HC,(P)
s	R3830-P24-SS3-3 (9:40)	24.8	<1.2	10.7	16.4	27.1	4.5	0.16	<0.012	74.1	25.8	0.1	Deg.Diesel 71.1%,(FCM)
s	R3830-P24-SS3-4 (9:45)	22.6	12.1	95.4	25.1	120.5	24.6	1.2	<0.011	82.3	17.6	0	Deg.Light.Fuel 30.6%,(FCM),(PFM)
s	R3830-P24-SS3-7 (9:55)	20.3	64.4	64.4	20.8	85.2	1.2	0.05	<0.01	98.5	1.5	0	Deg.Light.FuelDeg.Gas 76.2%,(FCM)

Initial Calibrator QC check **OK**

Final FCM QC Check **OK** 101.4 %

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





Hydrocarbon Analysis Results

Client: Kleinfelder
Address: 3200 Gateway Centre Blvd
 Morrisville, NC

Samples taken Thursday, March 15, 2018
Samples extracted Thursday, March 15, 2018
Samples analysed Thursday, March 15, 2018

Contact: Michael Burns

Operator J. Joseph Hodge

Project: R3830

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	R3830-P24-SS4-4 (10:00)	26.8	<0.67	<0.67	3.1	3.1	1.9	0.11	<0.013	0	96	3.7	Deg Fuel 75.2%,(FCM)
s	R3830-P24-SS4-6 (10:10)	23.9	5.4	27.2	9.4	36.6	1.9	0.11	<0.012	94.5	5.3	0.2	V.Deg.Diesel 69.8%,(FCM)
s	R3830-P24-SS5-1 (10:30)	25.5	<0.64	<0.64	13.3	13.3	9.9	0.58	<0.013	0	96.6	3.1	Deg Fuel 91.7%,(FCM)
s	R3830-P24-SS5-2 (10:40)	19.7	<0.49	<0.49	0.47	0.47	0.3	<0.02	<0.01	0	98.9	1	Deg Fuel 89%,(FCM),(OCR)
s	R3830-P24-SS5-4/5 (10:50)	29.9	<0.75	<0.75	14	14	11.1	0.6	<0.015	0	96.5	3.3	Deg Fuel 77.2%,(FCM)
s	R3830-P24-SS6-3 (11:00)	26.8	<0.67	<0.67	<0.05	<0.67	<0.13	<0.03	<0.013	0	0	0	Residual HC
s	R3830-P24-SS7-1 (11:30)	27.7	<0.69	<0.69	20.3	20.3	20.1	1.1	0.034	0	89.6	9.6	V.Deg.PHC 75.9%,(FCM),(BO)
s	R3830-P24-SS7-8 (11:40)	22.4	<0.56	<0.56	<0.04	<0.56	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(OCR)
s	R3830-P24-SS8-2 (11:50)	18.3	<0.46	<0.46	22.7	22.7	11	0.54	0.034	0	93.9	5.7	Road Tar 91.2%,(FCM),(BO)
s	R3830-P24-SS8-4 (11:55)	28.3	<0.71	<0.71	0.59	0.59	0.31	<0.03	<0.014	0	96.4	3.2	V.Deg.PHC 66.4%,(FCM),(BO),(P)

Initial Calibrator QC check **OK**

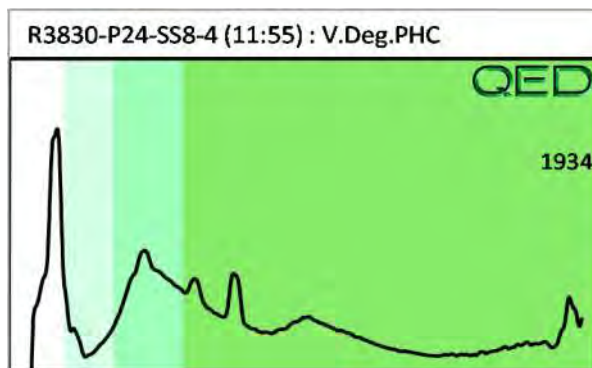
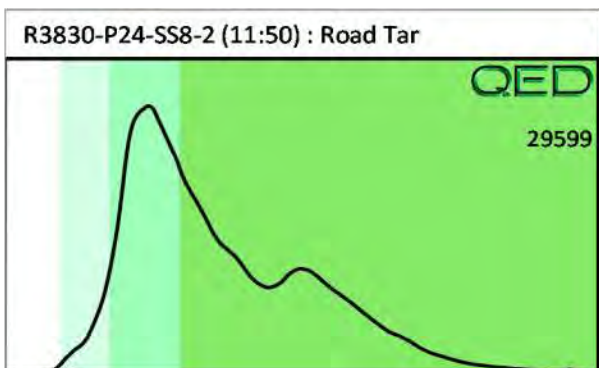
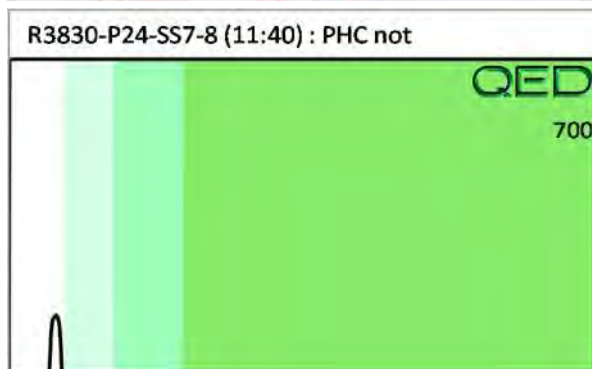
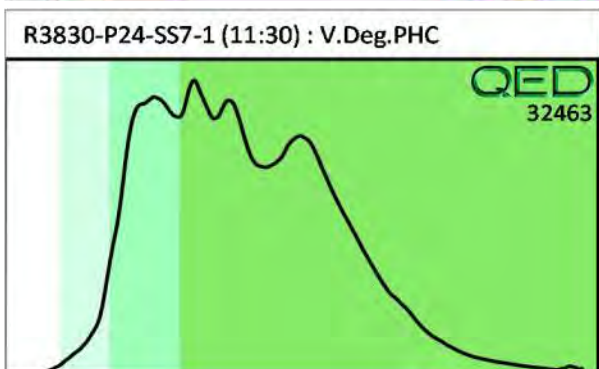
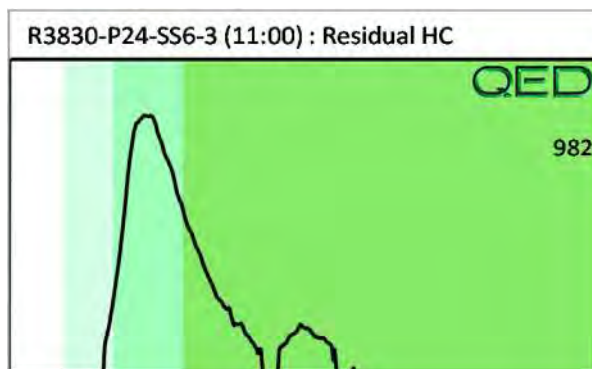
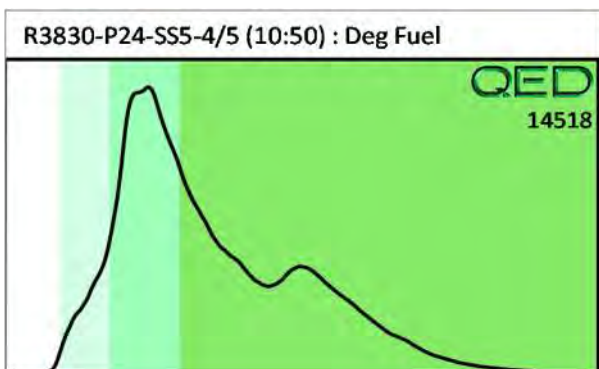
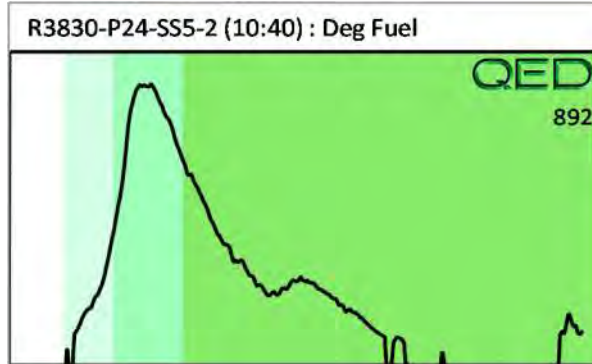
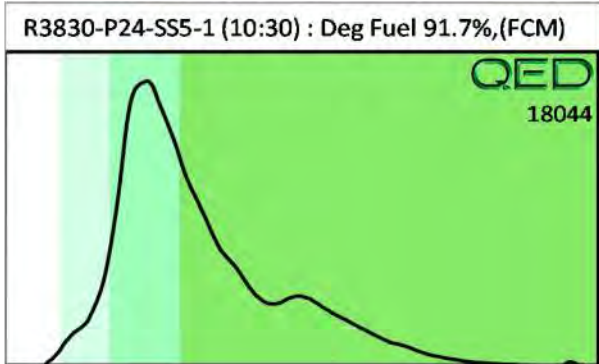
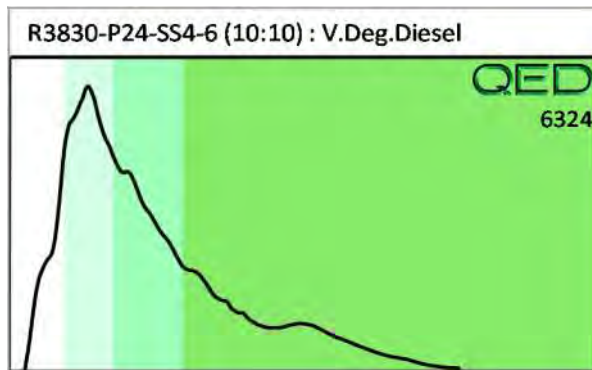
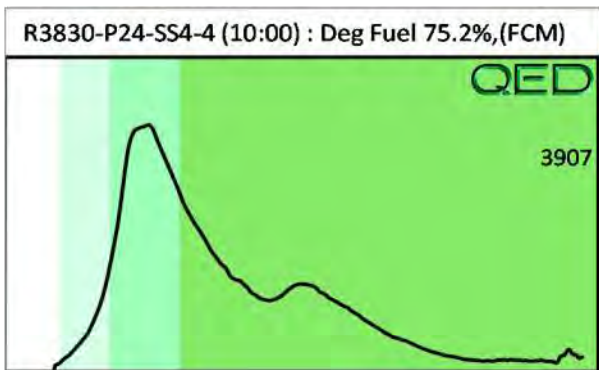
Final FCM QC Check **OK** 110.6 %

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) = Modified Result.

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





Hydrocarbon Analysis Results

Client: Kleinfelder
Address: 3200 Gateway Centre Blvd
 Morrisville, NC

Samples taken Thursday, March 15, 2018
Samples extracted Thursday, March 15, 2018
Samples analysed Thursday, March 15, 2018

Contact: Michael Burns

Operator J. Joseph Hodge

Project: R3830

U00902

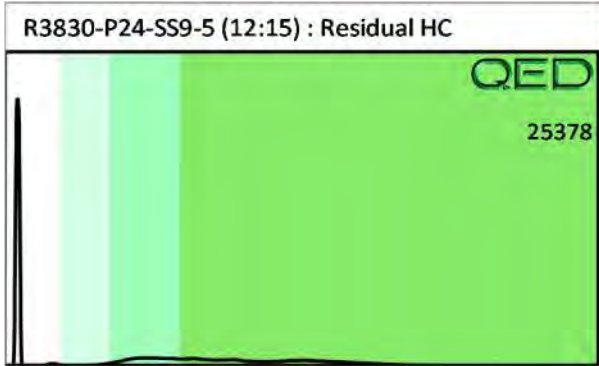
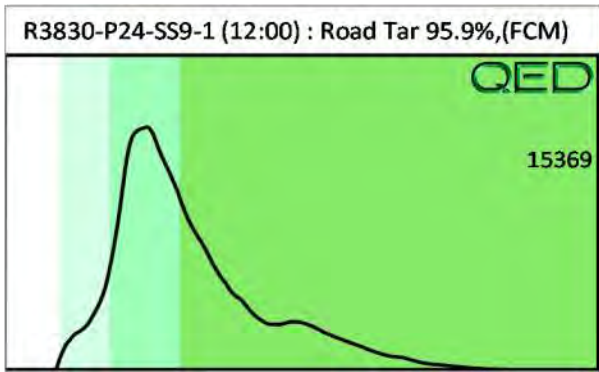
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	R3830-P24-SS9-1 (12:00)	412.0	<10.3	<10.3	275.9	275.9	107.5	5.3	0.25	0	96.4	3.4	Road Tar 95.9%,(FCM)
s	R3830-P24-SS9-4 (12:10)	17.3	<0.43	<0.43	3.6	3.6	1.5	0.08	<0.009	0	96.4	3.4	Road Tar 94.8%,(FCM)
s	R3830-P24-SS9-5 (12:15)	24.1	<0.6	<0.6	0.26	0.26	0.26	<0.02	<0.012	0	93.5	5.9	Residual HC

Initial Calibrator QC check **OK**

Dilution not within recommended range **OK**

101.9 %

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



April 03, 2018

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: R3830 WBS 38887.1.1-Revised Report
Pace Project No.: 92377415

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2018. 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.

Report revised 4/3/18 to change units at client request.

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

Sincerely,



Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Michael Burns, Kleinfelder
Chris Hollinger, Kleinfelder



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: R3830 WBS 38887.1.1- Revised Report

Pace Project No.: 92377415

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

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SAMPLE SUMMARY

Project: R3830 WBS 38887.1.1- Revised Report

Pace Project No.: 92377415

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92377415001	R3830-P24-SS1-1	Solid	03/15/18 08:35	03/19/18 13:25
92377415002	R3830-P24-SS7-2	Solid	03/15/18 11:30	03/19/18 13:25
92377415004	R3830-P24-TMW-1	Water	03/15/18 13:00	03/19/18 13:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92377415001	R3830-P24-SS1-1	EPA 8270 by SIM	PKS	21	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92377415002	R3830-P24-SS7-2	EPA 8270 by SIM	PKS	21	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92377415004	R3830-P24-TMW-1	EPA 625	BPJ	58	PASI-C
		SM 6200B	SWB	63	PASI-C

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1- Revised Report

Pace Project No.: 92377415

Method: EPA 625

Description: 625 MSSV

Client: NCDOT East Central

Date: April 03, 2018

General Information:

1 sample was analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 402788

R1: RPD value was outside control limits.

- LCSD (Lab ID: 2234357)
- 2,4-Dinitrophenol

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Method: EPA 8270 by SIM

Description: 8270 MSSV MW PAH by SIM

Client: NCDOT East Central

Date: April 03, 2018

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

QC Batch: 402704

P3: Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.

- R3830-P24-SS1-1 (Lab ID: 92377415001)

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 402704

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

- DUP (Lab ID: 2233503)
 - 2-Fluorobiphenyl (S)
 - Nitrobenzene-d5 (S)
 - Terphenyl-d14 (S)
- R3830-P24-SS1-1 (Lab ID: 92377415001)
 - 2-Fluorobiphenyl (S)
 - Nitrobenzene-d5 (S)
 - Terphenyl-d14 (S)
- R3830-P24-SS7-2 (Lab ID: 92377415002)
 - 2-Fluorobiphenyl (S)
 - Nitrobenzene-d5 (S)
 - Terphenyl-d14 (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

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PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1- Revised Report

Pace Project No.: 92377415

Method: EPA 8270 by SIM

Description: 8270 MSSV MW PAH by SIM

Client: NCDOT East Central

Date: April 03, 2018

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 402704

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 2233503)
 - Benzo(a)anthracene
 - Benzo(a)pyrene
 - Benzo(b)fluoranthene
 - Chrysene
 - Fluoranthene
 - Pyrene

Additional Comments:

Analyte Comments:

QC Batch: 402704

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

- DUP (Lab ID: 2233503)
 - Nitrobenzene-d5 (S)
- R3830-P24-SS1-1 (Lab ID: 92377415001)
 - Nitrobenzene-d5 (S)
- R3830-P24-SS7-2 (Lab ID: 92377415002)
 - Nitrobenzene-d5 (S)

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PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1- Revised Report
Pace Project No.: 92377415

Method: SM 6200B
Description: 6200B MSV
Client: NCDOT East Central
Date: April 03, 2018

General Information:

1 sample was analyzed for SM 6200B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 402983

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92377676004

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

- MS (Lab ID: 2235410)
 - 1,3,5-Trimethylbenzene
 - Bromomethane
- MSD (Lab ID: 2235411)
 - 1,3,5-Trimethylbenzene
 - Bromomethane

Additional Comments:

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PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1- Revised Report

Pace Project No.: 92377415

Method: SM 6200B

Description: 6200B MSV

Client: NCDOT East Central

Date: April 03, 2018

Analyte Comments:

QC Batch: 402983

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2235410)
 - Toluene
- MSD (Lab ID: 2235411)
 - Toluene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Sample: R3830-P24-SS1-1 **Lab ID: 92377415001** Collected: 03/15/18 08:35 Received: 03/19/18 13:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546							
Acenaphthene	ND	mg/kg	0.59	0.088	10	03/20/18 10:04	03/21/18 11:34	83-32-9	
Acenaphthylene	ND	mg/kg	0.59	0.076	10	03/20/18 10:04	03/21/18 11:34	208-96-8	
Anthracene	ND	mg/kg	0.59	0.082	10	03/20/18 10:04	03/21/18 11:34	120-12-7	
Benzo(a)anthracene	0.070J	mg/kg	0.59	0.042	10	03/20/18 10:04	03/21/18 11:34	56-55-3	
Benzo(a)pyrene	0.078J	mg/kg	0.59	0.065	10	03/20/18 10:04	03/21/18 11:34	50-32-8	
Benzo(b)fluoranthene	0.13J	mg/kg	0.59	0.039	10	03/20/18 10:04	03/21/18 11:34	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.59	0.15	10	03/20/18 10:04	03/21/18 11:34	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.59	0.088	10	03/20/18 10:04	03/21/18 11:34	207-08-9	
Chrysene	0.22J	mg/kg	0.59	0.11	10	03/20/18 10:04	03/21/18 11:34	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.59	0.11	10	03/20/18 10:04	03/21/18 11:34	53-70-3	
Fluoranthene	0.21J	mg/kg	0.59	0.049	10	03/20/18 10:04	03/21/18 11:34	206-44-0	
Fluorene	ND	mg/kg	0.59	0.094	10	03/20/18 10:04	03/21/18 11:34	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.59	0.16	10	03/20/18 10:04	03/21/18 11:34	193-39-5	
1-Methylnaphthalene	0.12J	mg/kg	0.59	0.071	10	03/20/18 10:04	03/21/18 11:34	90-12-0	
2-Methylnaphthalene	0.17J	mg/kg	0.59	0.065	10	03/20/18 10:04	03/21/18 11:34	91-57-6	
Naphthalene	ND	mg/kg	0.59	0.14	10	03/20/18 10:04	03/21/18 11:34	91-20-3	
Phenanthrene	0.21J	mg/kg	0.59	0.088	10	03/20/18 10:04	03/21/18 11:34	85-01-8	
Pyrene	0.21J	mg/kg	0.59	0.11	10	03/20/18 10:04	03/21/18 11:34	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		10	03/20/18 10:04	03/21/18 11:34	4165-60-0	D3,P3, S4
2-Fluorobiphenyl (S)	0	%	10-110		10	03/20/18 10:04	03/21/18 11:34	321-60-8	S4
Terphenyl-d14 (S)	0	%	39-119		10	03/20/18 10:04	03/21/18 11:34	1718-51-0	S4
Percent Moisture		Analytical Method: ASTM D2974-87							
Percent Moisture	14.7	%	0.10	0.10	1		03/20/18 10:53		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1- Revised Report
Pace Project No.: 92377415

Sample: R3830-P24-SS7-2 Lab ID: 92377415002 Collected: 03/15/18 11:30 Received: 03/19/18 13:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM									
Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	ND	mg/kg	0.11	0.016	10	03/20/18 10:04	03/21/18 11:55	83-32-9	
Acenaphthylene	0.051J	mg/kg	0.11	0.014	10	03/20/18 10:04	03/21/18 11:55	208-96-8	
Anthracene	0.032J	mg/kg	0.11	0.015	10	03/20/18 10:04	03/21/18 11:55	120-12-7	
Benzo(a)anthracene	0.18	mg/kg	0.11	0.0076	10	03/20/18 10:04	03/21/18 11:55	56-55-3	D6
Benzo(a)pyrene	0.20	mg/kg	0.11	0.012	10	03/20/18 10:04	03/21/18 11:55	50-32-8	D6
Benzo(b)fluoranthene	0.38	mg/kg	0.11	0.0072	10	03/20/18 10:04	03/21/18 11:55	205-99-2	D6
Benzo(g,h,i)perylene	0.12	mg/kg	0.11	0.028	10	03/20/18 10:04	03/21/18 11:55	191-24-2	
Benzo(k)fluoranthene	0.11	mg/kg	0.11	0.016	10	03/20/18 10:04	03/21/18 11:55	207-08-9	
Chrysene	0.24	mg/kg	0.11	0.019	10	03/20/18 10:04	03/21/18 11:55	218-01-9	D6
Dibenz(a,h)anthracene	0.039J	mg/kg	0.11	0.019	10	03/20/18 10:04	03/21/18 11:55	53-70-3	
Fluoranthene	0.51	mg/kg	0.11	0.0089	10	03/20/18 10:04	03/21/18 11:55	206-44-0	D6
Fluorene	ND	mg/kg	0.11	0.017	10	03/20/18 10:04	03/21/18 11:55	86-73-7	
Indeno(1,2,3-cd)pyrene	0.12	mg/kg	0.11	0.030	10	03/20/18 10:04	03/21/18 11:55	193-39-5	
1-Methylnaphthalene	ND	mg/kg	0.11	0.013	10	03/20/18 10:04	03/21/18 11:55	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.11	0.012	10	03/20/18 10:04	03/21/18 11:55	91-57-6	
Naphthalene	ND	mg/kg	0.11	0.025	10	03/20/18 10:04	03/21/18 11:55	91-20-3	
Phenanthrene	0.12	mg/kg	0.11	0.016	10	03/20/18 10:04	03/21/18 11:55	85-01-8	
Pyrene	0.37	mg/kg	0.11	0.019	10	03/20/18 10:04	03/21/18 11:55	129-00-0	D6
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		10	03/20/18 10:04	03/21/18 11:55	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	10-110		10	03/20/18 10:04	03/21/18 11:55	321-60-8	S4
Terphenyl-d14 (S)	0	%	39-119		10	03/20/18 10:04	03/21/18 11:55	1718-51-0	S4
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	7.8	%	0.10	0.10	1		03/20/18 10:53		

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ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Sample: R3830-P24-TMW-1 Lab ID: 92377415004 Collected: 03/15/18 13:00 Received: 03/19/18 13:25 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
625 MSSV Analytical Method: EPA 625 Preparation Method: EPA 625									
Acenaphthene	ND	ug/L	4.9	0.25	1	03/20/18 17:36	03/22/18 02:02	83-32-9	
Acenaphthylene	ND	ug/L	4.9	0.21	1	03/20/18 17:36	03/22/18 02:02	208-96-8	
Anthracene	ND	ug/L	4.9	0.14	1	03/20/18 17:36	03/22/18 02:02	120-12-7	
Benzo(a)anthracene	ND	ug/L	4.9	0.32	1	03/20/18 17:36	03/22/18 02:02	56-55-3	
Benzo(a)pyrene	ND	ug/L	4.9	0.29	1	03/20/18 17:36	03/22/18 02:02	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	4.9	0.27	1	03/20/18 17:36	03/22/18 02:02	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	4.9	0.37	1	03/20/18 17:36	03/22/18 02:02	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	4.9	0.42	1	03/20/18 17:36	03/22/18 02:02	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	4.9	0.80	1	03/20/18 17:36	03/22/18 02:02	101-55-3	
Butylbenzylphthalate	ND	ug/L	4.9	0.77	1	03/20/18 17:36	03/22/18 02:02	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	4.9	3.6	1	03/20/18 17:36	03/22/18 02:02	59-50-7	
bis(2-Chloroethoxy)methane	ND	ug/L	9.8	0.90	1	03/20/18 17:36	03/22/18 02:02	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	4.9	0.98	1	03/20/18 17:36	03/22/18 02:02	111-44-4	
2-Chloronaphthalene	ND	ug/L	4.9	0.96	1	03/20/18 17:36	03/22/18 02:02	91-58-7	
2-Chlorophenol	ND	ug/L	4.9	1.3	1	03/20/18 17:36	03/22/18 02:02	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	4.9	0.85	1	03/20/18 17:36	03/22/18 02:02	7005-72-3	
Chrysene	ND	ug/L	4.9	0.21	1	03/20/18 17:36	03/22/18 02:02	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	4.9	0.54	1	03/20/18 17:36	03/22/18 02:02	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	24.5	2.1	1	03/20/18 17:36	03/22/18 02:02	91-94-1	
2,4-Dichlorophenol	ND	ug/L	4.9	1.7	1	03/20/18 17:36	03/22/18 02:02	120-83-2	
Diethylphthalate	ND	ug/L	4.9	0.57	1	03/20/18 17:36	03/22/18 02:02	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1.2	1	03/20/18 17:36	03/22/18 02:02	105-67-9	
Dimethylphthalate	ND	ug/L	4.9	0.75	1	03/20/18 17:36	03/22/18 02:02	131-11-3	
Di-n-butylphthalate	ND	ug/L	4.9	0.74	1	03/20/18 17:36	03/22/18 02:02	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	19.6	2.5	1	03/20/18 17:36	03/22/18 02:02	534-52-1	
2,4-Dinitrophenol	ND	ug/L	49.0	8.8	1	03/20/18 17:36	03/22/18 02:02	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	4.9	0.88	1	03/20/18 17:36	03/22/18 02:02	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	4.9	0.96	1	03/20/18 17:36	03/22/18 02:02	606-20-2	
Di-n-octylphthalate	ND	ug/L	4.9	0.65	1	03/20/18 17:36	03/22/18 02:02	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	4.9	0.77	1	03/20/18 17:36	03/22/18 02:02	117-81-7	
Fluoranthene	ND	ug/L	4.9	0.21	1	03/20/18 17:36	03/22/18 02:02	206-44-0	
Fluorene	ND	ug/L	4.9	0.21	1	03/20/18 17:36	03/22/18 02:02	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	4.9	0.92	1	03/20/18 17:36	03/22/18 02:02	87-68-3	
Hexachlorobenzene	ND	ug/L	4.9	0.71	1	03/20/18 17:36	03/22/18 02:02	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	9.8	0.86	1	03/20/18 17:36	03/22/18 02:02	77-47-4	
Hexachloroethane	ND	ug/L	4.9	1.1	1	03/20/18 17:36	03/22/18 02:02	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	4.9	0.28	1	03/20/18 17:36	03/22/18 02:02	193-39-5	
Isophorone	ND	ug/L	9.8	0.87	1	03/20/18 17:36	03/22/18 02:02	78-59-1	
Naphthalene	3.2J	ug/L	4.9	0.33	1	03/20/18 17:36	03/22/18 02:02	91-20-3	
Nitrobenzene	ND	ug/L	4.9	1.1	1	03/20/18 17:36	03/22/18 02:02	98-95-3	
2-Nitrophenol	ND	ug/L	4.9	0.89	1	03/20/18 17:36	03/22/18 02:02	88-75-5	
4-Nitrophenol	ND	ug/L	49.0	4.0	1	03/20/18 17:36	03/22/18 02:02	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	4.9	0.89	1	03/20/18 17:36	03/22/18 02:02	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	4.9	0.97	1	03/20/18 17:36	03/22/18 02:02	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	9.8	0.98	1	03/20/18 17:36	03/22/18 02:02	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	4.9	0.93	1	03/20/18 17:36	03/22/18 02:02	108-60-1	

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ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Sample: R3830-P24-TMW-1 **Lab ID: 92377415004** Collected: 03/15/18 13:00 Received: 03/19/18 13:25 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
625 MSSV									
Analytical Method: EPA 625 Preparation Method: EPA 625									
Pentachlorophenol	ND	ug/L	9.8	4.5	1	03/20/18 17:36	03/22/18 02:02	87-86-5	
Phenanthrene	ND	ug/L	4.9	0.22	1	03/20/18 17:36	03/22/18 02:02	85-01-8	
Phenol	ND	ug/L	4.9	1.9	1	03/20/18 17:36	03/22/18 02:02	108-95-2	
Pyrene	ND	ug/L	4.9	0.19	1	03/20/18 17:36	03/22/18 02:02	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	4.9	0.96	1	03/20/18 17:36	03/22/18 02:02	120-82-1	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1.3	1	03/20/18 17:36	03/22/18 02:02	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	88	%	10-120		1	03/20/18 17:36	03/22/18 02:02	4165-60-0	
2-Fluorobiphenyl (S)	83	%	15-120		1	03/20/18 17:36	03/22/18 02:02	321-60-8	
Terphenyl-d14 (S)	68	%	11-131		1	03/20/18 17:36	03/22/18 02:02	1718-51-0	
Phenol-d6 (S)	32	%	10-120		1	03/20/18 17:36	03/22/18 02:02	13127-88-3	
2-Fluorophenol (S)	47	%	10-120		1	03/20/18 17:36	03/22/18 02:02	367-12-4	
2,4,6-Tribromophenol (S)	102	%	10-137		1	03/20/18 17:36	03/22/18 02:02	118-79-6	
6200B MSV									
Analytical Method: SM 6200B									
Benzene	0.75	ug/L	0.50	0.25	1		03/24/18 00:55	71-43-2	
Bromobenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	108-86-1	
Bromochloromethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	75-27-4	
Bromoform	ND	ug/L	0.50	0.25	1		03/24/18 00:55	75-25-2	
Bromomethane	ND	ug/L	5.0	2.5	1		03/24/18 00:55	74-83-9	
n-Butylbenzene	0.35J	ug/L	0.50	0.25	1		03/24/18 00:55	104-51-8	
sec-Butylbenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	135-98-8	
tert-Butylbenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	0.25	1		03/24/18 00:55	56-23-5	
Chlorobenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	108-90-7	
Chloroethane	ND	ug/L	1.0	0.50	1		03/24/18 00:55	75-00-3	
Chloroform	ND	ug/L	0.50	0.25	1		03/24/18 00:55	67-66-3	
Chloromethane	ND	ug/L	1.0	0.50	1		03/24/18 00:55	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.50	1		03/24/18 00:55	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	0.25	1		03/24/18 00:55	106-93-4	
Dibromomethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	142-28-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Sample: R3830-P24-TMW-1 **Lab ID: 92377415004** Collected: 03/15/18 13:00 Received: 03/19/18 13:25 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6200B MSV									
Analytical Method: SM 6200B									
2,2-Dichloropropane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	10061-02-6	
Diisopropyl ether	ND	ug/L	0.50	0.25	1		03/24/18 00:55	108-20-3	
Ethylbenzene	3.2	ug/L	0.50	0.25	1		03/24/18 00:55	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1.0	1		03/24/18 00:55	87-68-3	
Isopropylbenzene (Cumene)	0.39J	ug/L	0.50	0.25	1		03/24/18 00:55	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1.0	1		03/24/18 00:55	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	0.50	0.25	1		03/24/18 00:55	1634-04-4	
Naphthalene	1.1J	ug/L	2.0	1.0	1		03/24/18 00:55	91-20-3	
n-Propylbenzene	1.1	ug/L	0.50	0.25	1		03/24/18 00:55	103-65-1	
Styrene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	127-18-4	
Toluene	0.46J	ug/L	0.50	0.25	1		03/24/18 00:55	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1.0	1		03/24/18 00:55	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1.0	1		03/24/18 00:55	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	79-00-5	
Trichloroethene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.50	1		03/24/18 00:55	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	0.25	1		03/24/18 00:55	96-18-4	
1,2,4-Trimethylbenzene	0.78	ug/L	0.50	0.25	1		03/24/18 00:55	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.25	1		03/24/18 00:55	108-67-8	
Vinyl chloride	ND	ug/L	1.0	0.50	1		03/24/18 00:55	75-01-4	
m&p-Xylene	1.2	ug/L	1.0	0.50	1		03/24/18 00:55	179601-23-1	
o-Xylene	0.29J	ug/L	0.50	0.25	1		03/24/18 00:55	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		03/24/18 00:55	17060-07-0	
4-Bromofluorobenzene (S)	97	%	70-130		1		03/24/18 00:55	460-00-4	
Toluene-d8 (S)	100	%	70-130		1		03/24/18 00:55	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

QC Batch: 402983

Analysis Method: SM 6200B

QC Batch Method: SM 6200B

Analysis Description: 6200B MSV

Associated Lab Samples: 92377415004

METHOD BLANK: 2235408

Matrix: Water

Associated Lab Samples: 92377415004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,1,1-Trichloroethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,1,2-Trichloroethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,1-Dichloroethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,1-Dichloroethene	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,1-Dichloropropene	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	1.0	03/23/18 23:50	
1,2,3-Trichloropropane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	1.0	03/23/18 23:50	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	0.50	03/23/18 23:50	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,2-Dichlorobenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,2-Dichloroethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,2-Dichloropropane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,3-Dichlorobenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,3-Dichloropropane	ug/L	ND	0.50	0.25	03/23/18 23:50	
1,4-Dichlorobenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
2,2-Dichloropropane	ug/L	ND	0.50	0.25	03/23/18 23:50	
2-Chlorotoluene	ug/L	ND	0.50	0.25	03/23/18 23:50	
4-Chlorotoluene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Benzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Bromobenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Bromochloromethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
Bromodichloromethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
Bromoform	ug/L	ND	0.50	0.25	03/23/18 23:50	
Bromomethane	ug/L	ND	5.0	2.5	03/23/18 23:50	
Carbon tetrachloride	ug/L	ND	0.50	0.25	03/23/18 23:50	
Chlorobenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Chloroethane	ug/L	ND	1.0	0.50	03/23/18 23:50	
Chloroform	ug/L	ND	0.50	0.25	03/23/18 23:50	
Chloromethane	ug/L	ND	1.0	0.50	03/23/18 23:50	
cis-1,2-Dichloroethene	ug/L	ND	0.50	0.25	03/23/18 23:50	
cis-1,3-Dichloropropene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Dibromochloromethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
Dibromomethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
Dichlorodifluoromethane	ug/L	ND	0.50	0.25	03/23/18 23:50	
Diisopropyl ether	ug/L	ND	0.50	0.25	03/23/18 23:50	
Ethylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report
Pace Project No.: 92377415

METHOD BLANK: 2235408 Matrix: Water
Associated Lab Samples: 92377415004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	2.0	1.0	03/23/18 23:50	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	0.25	03/23/18 23:50	
m&p-Xylene	ug/L	ND	1.0	0.50	03/23/18 23:50	
Methyl-tert-butyl ether	ug/L	ND	0.50	0.25	03/23/18 23:50	
Methylene Chloride	ug/L	ND	2.0	1.0	03/23/18 23:50	
n-Butylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
n-Propylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Naphthalene	ug/L	ND	2.0	1.0	03/23/18 23:50	
o-Xylene	ug/L	ND	0.50	0.25	03/23/18 23:50	
sec-Butylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Styrene	ug/L	ND	0.50	0.25	03/23/18 23:50	
tert-Butylbenzene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Tetrachloroethene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Toluene	ug/L	ND	0.50	0.25	03/23/18 23:50	
trans-1,2-Dichloroethene	ug/L	ND	0.50	0.25	03/23/18 23:50	
trans-1,3-Dichloropropene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Trichloroethene	ug/L	ND	0.50	0.25	03/23/18 23:50	
Trichlorofluoromethane	ug/L	ND	1.0	0.50	03/23/18 23:50	
Vinyl chloride	ug/L	ND	1.0	0.50	03/23/18 23:50	
1,2-Dichloroethane-d4 (S)	%	100	70-130		03/23/18 23:50	
4-Bromofluorobenzene (S)	%	99	70-130		03/23/18 23:50	
Toluene-d8 (S)	%	100	70-130		03/23/18 23:50	

LABORATORY CONTROL SAMPLE: 2235409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	50.6	101	60-140	
1,1,1-Trichloroethane	ug/L	50	47.9	96	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	47.8	96	60-140	
1,1,2-Trichloroethane	ug/L	50	48.2	96	60-140	
1,1-Dichloroethane	ug/L	50	45.7	91	60-140	
1,1-Dichloroethene	ug/L	50	48.4	97	60-140	
1,1-Dichloropropene	ug/L	50	49.3	99	60-140	
1,2,3-Trichlorobenzene	ug/L	50	49.7	99	60-140	
1,2,3-Trichloropropane	ug/L	50	49.6	99	60-140	
1,2,4-Trichlorobenzene	ug/L	50	50.1	100	60-140	
1,2,4-Trimethylbenzene	ug/L	50	49.7	99	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	49.2	98	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	49.9	100	60-140	
1,2-Dichlorobenzene	ug/L	50	50.5	101	60-140	
1,2-Dichloroethane	ug/L	50	44.7	89	60-140	
1,2-Dichloropropane	ug/L	50	51.5	103	60-140	
1,3,5-Trimethylbenzene	ug/L	50	47.7	95	60-140	
1,3-Dichlorobenzene	ug/L	50	50.1	100	60-140	

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

LABORATORY CONTROL SAMPLE: 2235409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,3-Dichloropropane	ug/L	50	51.1	102	60-140	
1,4-Dichlorobenzene	ug/L	50	49.1	98	60-140	
2,2-Dichloropropane	ug/L	50	43.9	88	60-140	
2-Chlorotoluene	ug/L	50	48.3	97	60-140	
4-Chlorotoluene	ug/L	50	49.1	98	60-140	
Benzene	ug/L	50	46.2	92	60-140	
Bromobenzene	ug/L	50	50.7	101	60-140	
Bromochloromethane	ug/L	50	51.1	102	60-140	
Bromodichloromethane	ug/L	50	47.1	94	60-140	
Bromoform	ug/L	50	50.7	101	60-140	
Bromomethane	ug/L	50	33.0	66	60-140	
Carbon tetrachloride	ug/L	50	50.9	102	60-140	
Chlorobenzene	ug/L	50	49.9	100	60-140	
Chloroethane	ug/L	50	33.4	67	60-140	
Chloroform	ug/L	50	49.1	98	60-140	
Chloromethane	ug/L	50	37.1	74	60-140	
cis-1,2-Dichloroethene	ug/L	50	49.5	99	60-140	
cis-1,3-Dichloropropene	ug/L	50	50.3	101	60-140	
Dibromochloromethane	ug/L	50	51.2	102	60-140	
Dibromomethane	ug/L	50	51.9	104	60-140	
Dichlorodifluoromethane	ug/L	50	35.8	72	60-140	
Diisopropyl ether	ug/L	50	47.1	94	60-140	
Ethylbenzene	ug/L	50	48.4	97	60-140	
Hexachloro-1,3-butadiene	ug/L	50	49.2	98	60-140	
Isopropylbenzene (Cumene)	ug/L	50	49.7	99	60-140	
m&p-Xylene	ug/L	100	98.2	98	60-140	
Methyl-tert-butyl ether	ug/L	50	45.6	91	60-140	
Methylene Chloride	ug/L	50	49.0	98	60-140	
n-Butylbenzene	ug/L	50	49.1	98	60-140	
n-Propylbenzene	ug/L	50	49.7	99	60-140	
Naphthalene	ug/L	50	49.9	100	60-140	
o-Xylene	ug/L	50	49.5	99	60-140	
sec-Butylbenzene	ug/L	50	48.8	98	60-140	
Styrene	ug/L	50	49.4	99	60-140	
tert-Butylbenzene	ug/L	50	42.6	85	60-140	
Tetrachloroethene	ug/L	50	44.7	89	60-140	
Toluene	ug/L	50	52.1	104	60-140	
trans-1,2-Dichloroethene	ug/L	50	49.3	99	60-140	
trans-1,3-Dichloropropene	ug/L	50	49.9	100	60-140	
Trichloroethene	ug/L	50	49.0	98	60-140	
Trichlorofluoromethane	ug/L	50	39.3	79	60-140	
Vinyl chloride	ug/L	50	42.8	86	60-140	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Parameter	Units	92377676004		MS		MSD		MS		MSD		% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec							
1,1,1,2-Tetrachloroethane	ug/L	ND	400	400	400	400	434	441	109	110	60-140	2	30			
1,1,1-Trichloroethane	ug/L	ND	400	400	400	400	428	433	107	108	60-140	1	30			
1,1,2,2-Tetrachloroethane	ug/L	ND	400	400	400	400	420	418	105	105	60-140	1	30			
1,1,2-Trichloroethane	ug/L	ND	400	400	400	400	423	419	106	105	60-140	1	30			
1,1-Dichloroethane	ug/L	ND	400	400	400	400	408	405	102	101	60-140	1	30			
1,1-Dichloroethene	ug/L	ND	400	400	400	400	452	459	113	115	60-140	1	30			
1,1-Dichloropropene	ug/L	ND	400	400	400	400	441	440	110	110	60-140	0	30			
1,2,3-Trichlorobenzene	ug/L	ND	400	400	400	400	408	435	102	109	60-140	6	30			
1,2,3-Trichloropropane	ug/L	ND	400	400	400	400	427	446	107	111	60-140	4	30			
1,2,4-Trichlorobenzene	ug/L	ND	400	400	400	400	422	442	105	110	60-140	5	30			
1,2,4-Trimethylbenzene	ug/L	836	400	400	400	400	1230	1240	98	101	60-140	1	30			
1,2-Dibromo-3-chloropropane	ug/L	ND	400	400	400	400	404	415	101	104	60-140	3	30			
1,2-Dibromoethane (EDB)	ug/L	ND	400	400	400	400	431	438	108	110	60-140	2	30			
1,2-Dichlorobenzene	ug/L	ND	400	400	400	400	422	442	105	111	60-140	5	30			
1,2-Dichloroethane	ug/L	6.0J	400	400	400	400	388	400	96	99	60-140	3	30			
1,2-Dichloropropane	ug/L	ND	400	400	400	400	440	442	110	111	60-140	1	30			
1,3,5-Trimethylbenzene	ug/L	ND	400	400	400	400	601	620	150	155	60-140	3	30	M1		
1,3-Dichlorobenzene	ug/L	ND	400	400	400	400	428	454	107	113	60-140	6	30			
1,3-Dichloropropane	ug/L	ND	400	400	400	400	452	458	113	114	60-140	1	30			
1,4-Dichlorobenzene	ug/L	ND	400	400	400	400	417	434	104	108	60-140	4	30			
2,2-Dichloropropane	ug/L	ND	400	400	400	400	347	355	87	89	60-140	2	30			
2-Chlorotoluene	ug/L	ND	400	400	400	400	378	444	95	111	60-140	16	30			
4-Chlorotoluene	ug/L	ND	400	400	400	400	415	439	104	110	60-140	5	30			
Benzene	ug/L	3330	400	400	400	400	3660	3580	83	62	60-140	2	30			
Bromobenzene	ug/L	ND	400	400	400	400	439	451	110	113	60-140	3	30			
Bromochloromethane	ug/L	ND	400	400	400	400	449	446	112	111	60-140	1	30			
Bromodichloromethane	ug/L	ND	400	400	400	400	399	408	100	102	60-140	2	30			
Bromoform	ug/L	ND	400	400	400	400	404	416	101	104	60-140	3	30			
Bromomethane	ug/L	ND	400	400	400	400	190	227	48	57	60-140	18	30	M1		
Carbon tetrachloride	ug/L	ND	400	400	400	400	447	459	112	115	60-140	3	30			
Chlorobenzene	ug/L	ND	400	400	400	400	443	448	111	112	60-140	1	30			
Chloroethane	ug/L	ND	400	400	400	400	432	462	108	115	60-140	7	30			
Chloroform	ug/L	ND	400	400	400	400	432	437	108	109	60-140	1	30			
Chloromethane	ug/L	ND	400	400	400	400	357	406	89	101	60-140	13	30			
cis-1,2-Dichloroethene	ug/L	ND	400	400	400	400	438	444	109	111	60-140	1	30			
cis-1,3-Dichloropropene	ug/L	ND	400	400	400	400	410	425	102	106	60-140	4	30			
Dibromochloromethane	ug/L	ND	400	400	400	400	432	444	108	111	60-140	3	30			
Dibromomethane	ug/L	ND	400	400	400	400	434	450	109	113	60-140	4	30			
Dichlorodifluoromethane	ug/L	ND	400	400	400	400	312	314	78	79	60-140	1	30			
Diisopropyl ether	ug/L	ND	400	400	400	400	408	413	102	103	60-140	1	30			
Ethylbenzene	ug/L	1150	400	400	400	400	1590	1560	108	101	60-140	2	30			
Hexachloro-1,3-butadiene	ug/L	ND	400	400	400	400	409	426	102	106	60-140	4	30			
Isopropylbenzene (Cumene)	ug/L	39.7	400	400	400	400	486	487	112	112	60-140	0	30			
m&p-Xylene	ug/L	1980	800	800	800	800	2840	2790	107	101	60-140	2	30			
Methyl-tert-butyl ether	ug/L	ND	400	400	400	400	382	378	96	94	60-140	1	30			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report
Pace Project No.: 92377415

Parameter	Units	2235410		2235411		MS % Rec	MSD % Rec	% Rec	Limits	RPD	Max RPD	Qual
		92377676004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Methylene Chloride	ug/L	ND	400	400	439	447	110	112	60-140	2	30	
n-Butylbenzene	ug/L	ND	400	400	423	437	106	109	60-140	3	30	
n-Propylbenzene	ug/L	ND	400	400	534	546	134	136	60-140	2	30	
Naphthalene	ug/L	307	400	400	715	749	102	110	60-140	5	30	
o-Xylene	ug/L	1850	400	400	2300	2270	111	105	60-140	1	30	
sec-Butylbenzene	ug/L	ND	400	400	425	441	106	110	60-140	4	30	
Styrene	ug/L	24.9	400	400	461	464	109	110	60-140	1	30	
tert-Butylbenzene	ug/L	ND	400	400	368	388	92	97	60-140	5	30	
Tetrachloroethene	ug/L	ND	400	400	389	392	97	98	60-140	1	30	
Toluene	ug/L	3950	400	400	4320	4260	94	78	60-140	1	30	E
trans-1,2-Dichloroethene	ug/L	ND	400	400	431	443	108	111	60-140	3	30	
trans-1,3-Dichloropropene	ug/L	ND	400	400	413	398	103	100	60-140	4	30	
Trichloroethene	ug/L	ND	400	400	421	431	105	108	60-140	2	30	
Trichlorofluoromethane	ug/L	ND	400	400	391	390	98	98	60-140	0	30	
Vinyl chloride	ug/L	ND	400	400	421	418	105	104	60-140	1	30	
1,2-Dichloroethane-d4 (S)	%						97	95	70-130			
4-Bromofluorobenzene (S)	%						102	100	70-130			
Toluene-d8 (S)	%						98	98	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

QC Batch: 402788

Analysis Method: EPA 625

QC Batch Method: EPA 625

Analysis Description: 625 MSS

Associated Lab Samples: 92377415004

METHOD BLANK: 2234355

Matrix: Water

Associated Lab Samples: 92377415004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	5.0	0.98	03/21/18 21:51	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	5.0	0.95	03/21/18 21:51	
2,4,6-Trichlorophenol	ug/L	ND	10.0	1.3	03/21/18 21:51	
2,4-Dichlorophenol	ug/L	ND	5.0	1.7	03/21/18 21:51	
2,4-Dimethylphenol	ug/L	ND	10.0	1.2	03/21/18 21:51	
2,4-Dinitrophenol	ug/L	ND	50.0	9.0	03/21/18 21:51	
2,4-Dinitrotoluene	ug/L	ND	5.0	0.90	03/21/18 21:51	
2,6-Dinitrotoluene	ug/L	ND	5.0	0.98	03/21/18 21:51	
2-Chloronaphthalene	ug/L	ND	5.0	0.98	03/21/18 21:51	
2-Chlorophenol	ug/L	ND	5.0	1.3	03/21/18 21:51	
2-Nitrophenol	ug/L	ND	5.0	0.91	03/21/18 21:51	
3,3'-Dichlorobenzidine	ug/L	ND	25.0	2.1	03/21/18 21:51	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	2.6	03/21/18 21:51	
4-Bromophenylphenyl ether	ug/L	ND	5.0	0.82	03/21/18 21:51	
4-Chloro-3-methylphenol	ug/L	ND	5.0	3.7	03/21/18 21:51	
4-Chlorophenylphenyl ether	ug/L	ND	5.0	0.87	03/21/18 21:51	
4-Nitrophenol	ug/L	ND	50.0	4.1	03/21/18 21:51	
Acenaphthene	ug/L	ND	5.0	0.25	03/21/18 21:51	
Acenaphthylene	ug/L	ND	5.0	0.21	03/21/18 21:51	
Anthracene	ug/L	ND	5.0	0.14	03/21/18 21:51	
Benzo(a)anthracene	ug/L	ND	5.0	0.33	03/21/18 21:51	
Benzo(a)pyrene	ug/L	ND	5.0	0.30	03/21/18 21:51	
Benzo(b)fluoranthene	ug/L	ND	5.0	0.28	03/21/18 21:51	
Benzo(g,h,i)perylene	ug/L	ND	5.0	0.38	03/21/18 21:51	
Benzo(k)fluoranthene	ug/L	ND	5.0	0.43	03/21/18 21:51	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	0.92	03/21/18 21:51	
bis(2-Chloroethyl) ether	ug/L	ND	5.0	1.0	03/21/18 21:51	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	0.79	03/21/18 21:51	
Butylbenzylphthalate	ug/L	ND	5.0	0.79	03/21/18 21:51	
Chrysene	ug/L	ND	5.0	0.21	03/21/18 21:51	
Di-n-butylphthalate	ug/L	ND	5.0	0.75	03/21/18 21:51	
Di-n-octylphthalate	ug/L	ND	5.0	0.66	03/21/18 21:51	
Dibenz(a,h)anthracene	ug/L	ND	5.0	0.55	03/21/18 21:51	
Diethylphthalate	ug/L	ND	5.0	0.58	03/21/18 21:51	
Dimethylphthalate	ug/L	ND	5.0	0.76	03/21/18 21:51	
Fluoranthene	ug/L	ND	5.0	0.21	03/21/18 21:51	
Fluorene	ug/L	ND	5.0	0.21	03/21/18 21:51	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	0.94	03/21/18 21:51	
Hexachlorobenzene	ug/L	ND	5.0	0.72	03/21/18 21:51	
Hexachlorocyclopentadiene	ug/L	ND	10.0	0.88	03/21/18 21:51	
Hexachloroethane	ug/L	ND	5.0	1.1	03/21/18 21:51	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report
Pace Project No.: 92377415

METHOD BLANK: 2234355 Matrix: Water
Associated Lab Samples: 92377415004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Indeno(1,2,3-cd)pyrene	ug/L	ND	5.0	0.29	03/21/18 21:51	
Isophorone	ug/L	ND	10.0	0.89	03/21/18 21:51	
N-Nitroso-di-n-propylamine	ug/L	ND	5.0	0.99	03/21/18 21:51	
N-Nitrosodimethylamine	ug/L	ND	5.0	0.91	03/21/18 21:51	
N-Nitrosodiphenylamine	ug/L	ND	10.0	1.0	03/21/18 21:51	
Naphthalene	ug/L	ND	5.0	0.34	03/21/18 21:51	
Nitrobenzene	ug/L	ND	5.0	1.1	03/21/18 21:51	
Pentachlorophenol	ug/L	ND	10.0	4.6	03/21/18 21:51	
Phenanthrene	ug/L	ND	5.0	0.22	03/21/18 21:51	
Phenol	ug/L	ND	5.0	1.9	03/21/18 21:51	
Pyrene	ug/L	ND	5.0	0.19	03/21/18 21:51	
2,4,6-Tribromophenol (S)	%	86	10-137		03/21/18 21:51	
2-Fluorobiphenyl (S)	%	80	15-120		03/21/18 21:51	
2-Fluorophenol (S)	%	42	10-120		03/21/18 21:51	
Nitrobenzene-d5 (S)	%	87	10-120		03/21/18 21:51	
Phenol-d6 (S)	%	27	10-120		03/21/18 21:51	
Terphenyl-d14 (S)	%	86	11-131		03/21/18 21:51	

LABORATORY CONTROL SAMPLE & LCSD: 2234356

Parameter	Units	2234357		LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
		Spike Conc.	LCS Result							
1,2,4-Trichlorobenzene	ug/L	50	33.0	66	67	44-142	2	30		
2,2'-Oxybis(1-chloropropane)	ug/L	50	39.1	78	77	36-166	2	30		
2,4,6-Trichlorophenol	ug/L	50	50.1	100	102	37-144	2	30		
2,4-Dichlorophenol	ug/L	50	46.5	93	103	1-191	10	30		
2,4-Dimethylphenol	ug/L	50	44.8	90	91	32-119	2	30		
2,4-Dinitrophenol	ug/L	250	98.5	39	54	1-181	32	30	R1	
2,4-Dinitrotoluene	ug/L	50	46.5	93	94	39-139	1	30		
2,6-Dinitrotoluene	ug/L	50	50.7	101	104	50-158	3	30		
2-Chloronaphthalene	ug/L	50	41.1	82	82	60-118	0	30		
2-Chlorophenol	ug/L	50	40.2	80	79	23-134	2	30		
2-Nitrophenol	ug/L	50	51.6	103	109	29-182	6	30		
3,3'-Dichlorobenzidine	ug/L	100	85.3	85	96	1-262	11	30		
4,6-Dinitro-2-methylphenol	ug/L	100	54.1	71.6	54	72	1-181	28	30	
4-Bromophenylphenyl ether	ug/L	50	43.0	86	91	53-127	6	30		
4-Chloro-3-methylphenol	ug/L	100	93.3	103	93	103	22-147	10	30	
4-Chlorophenylphenyl ether	ug/L	50	43.7	43.0	87	86	25-158	2	30	
4-Nitrophenol	ug/L	250	89.0	94.5	36	38	1-132	6	30	
Acenaphthene	ug/L	50	44.0	44.4	88	89	47-145	1	30	
Acenaphthylene	ug/L	50	46.8	46.6	94	93	33-145	1	30	
Anthracene	ug/L	50	46.5	47.7	93	95	1-166	2	30	
Benzo(a)anthracene	ug/L	50	39.4	44.1	79	88	33-143	11	30	
Benzo(a)pyrene	ug/L	50	39.3	41.8	79	84	17-163	6	30	
Benzo(b)fluoranthene	ug/L	50	37.2	40.4	74	81	24-159	8	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

LABORATORY CONTROL SAMPLE & LCSD: 2234356			2234357								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
Benzo(g,h,i)perylene	ug/L	50	36.4	39.2	73	78	1-219	8	30		
Benzo(k)fluoranthene	ug/L	50	36.3	38.2	73	76	11-162	5	30		
bis(2-Chloroethoxy)methane	ug/L	50	43.4	44.8	87	90	33-184	3	30		
bis(2-Chloroethyl) ether	ug/L	50	38.4	38.2	77	76	12-158	1	30		
bis(2-Ethylhexyl)phthalate	ug/L	50	46.9	48.9	94	98	8-158	4	30		
Butylbenzylphthalate	ug/L	50	50.1	53.1	100	106	1-152	6	30		
Chrysene	ug/L	50	38.5	42.5	77	85	17-168	10	30		
Di-n-butylphthalate	ug/L	50	52.0	52.1	104	104	1-118	0	30		
Di-n-octylphthalate	ug/L	50	62.0	65.4	124	131	4-146	5	30		
Dibenz(a,h)anthracene	ug/L	50	37.5	40.7	75	81	1-227	8	30		
Diethylphthalate	ug/L	50	48.9	48.6	98	97	1-114	1	30		
Dimethylphthalate	ug/L	50	46.4	47.8	93	96	1-112	3	30		
Fluoranthene	ug/L	50	45.0	48.8	90	98	26-137	8	30		
Fluorene	ug/L	50	47.5	47.3	95	95	59-121	0	30		
Hexachloro-1,3-butadiene	ug/L	50	29.8	30.2	60	60	24-116	1	30		
Hexachlorobenzene	ug/L	50	40.0	42.5	80	85	1-152	6	30		
Hexachlorocyclopentadiene	ug/L	50	18.1	18.1	36	36	25-150	0	30		
Hexachloroethane	ug/L	50	29.1	30.0	58	60	40-113	3	30		
Indeno(1,2,3-cd)pyrene	ug/L	50	38.1	41.3	76	83	1-171	8	30		
Isophorone	ug/L	50	40.7	42.0	81	84	21-196	3	30		
N-Nitroso-di-n-propylamine	ug/L	50	40.6	39.4	81	79	1-230	3	30		
N-Nitrosodimethylamine	ug/L	50	26.5	26.6	53	53	25-150	0	30		
N-Nitrosodiphenylamine	ug/L	50	47.9	49.6	96	99	25-150	4	30		
Naphthalene	ug/L	50	37.9	38.7	76	77	21-133	2	30		
Nitrobenzene	ug/L	50	43.2	43.5	86	87	35-180	1	30		
Pentachlorophenol	ug/L	100	52.3	62.7	52	63	14-176	18	30		
Phenanthrene	ug/L	50	44.4	45.4	89	91	54-120	2	30		
Phenol	ug/L	50	16.0	16.2	32	32	5-112	1	30		
Pyrene	ug/L	50	39.9	43.0	80	86	52-115	7	30		
2,4,6-Tribromophenol (S)	%				96	99	10-137				
2-Fluorobiphenyl (S)	%				86	85	15-120				
2-Fluorophenol (S)	%				47	45	10-120				
Nitrobenzene-d5 (S)	%				93	92	10-120				
Phenol-d6 (S)	%				33	33	10-120				
Terphenyl-d14 (S)	%				77	78	11-131				

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

QC Batch: 402704 Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3546 Analysis Description: 8270 MSSV PAH by SIM
Associated Lab Samples: 92377415001, 92377415002

METHOD BLANK: 2233500 Matrix: Solid

Associated Lab Samples: 92377415001, 92377415002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.0098	0.0012	03/21/18 10:53	
2-Methylnaphthalene	mg/kg	ND	0.0098	0.0011	03/21/18 10:53	
Acenaphthene	mg/kg	ND	0.0098	0.0015	03/21/18 10:53	
Acenaphthylene	mg/kg	ND	0.0098	0.0013	03/21/18 10:53	
Anthracene	mg/kg	ND	0.0098	0.0014	03/21/18 10:53	
Benzo(a)anthracene	mg/kg	ND	0.0098	0.00070	03/21/18 10:53	
Benzo(a)pyrene	mg/kg	ND	0.0098	0.0011	03/21/18 10:53	
Benzo(b)fluoranthene	mg/kg	ND	0.0098	0.00066	03/21/18 10:53	
Benzo(g,h,i)perylene	mg/kg	ND	0.0098	0.0026	03/21/18 10:53	
Benzo(k)fluoranthene	mg/kg	ND	0.0098	0.0015	03/21/18 10:53	
Chrysene	mg/kg	ND	0.0098	0.0018	03/21/18 10:53	
Dibenz(a,h)anthracene	mg/kg	ND	0.0098	0.0018	03/21/18 10:53	
Fluoranthene	mg/kg	ND	0.0098	0.00082	03/21/18 10:53	
Fluorene	mg/kg	ND	0.0098	0.0016	03/21/18 10:53	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0098	0.0028	03/21/18 10:53	
Naphthalene	mg/kg	ND	0.0098	0.0023	03/21/18 10:53	
Phenanthrene	mg/kg	ND	0.0098	0.0015	03/21/18 10:53	
Pyrene	mg/kg	ND	0.0098	0.0018	03/21/18 10:53	
2-Fluorobiphenyl (S)	%	72	10-110		03/21/18 10:53	
Nitrobenzene-d5 (S)	%	82	10-128		03/21/18 10:53	
Terphenyl-d14 (S)	%	87	39-119		03/21/18 10:53	

LABORATORY CONTROL SAMPLE: 2233501

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	.034	0.030	89	44-130	
2-Methylnaphthalene	mg/kg	.034	0.031	91	41-134	
Acenaphthene	mg/kg	.034	0.030	87	52-123	
Acenaphthylene	mg/kg	.034	0.028	82	49-116	
Anthracene	mg/kg	.034	0.029	84	41-133	
Benzo(a)anthracene	mg/kg	.034	0.028	82	56-130	
Benzo(a)pyrene	mg/kg	.034	0.028	83	51-136	
Benzo(b)fluoranthene	mg/kg	.034	0.029	85	37-149	
Benzo(g,h,i)perylene	mg/kg	.034	0.027	79	39-127	
Benzo(k)fluoranthene	mg/kg	.034	0.028	83	45-139	
Chrysene	mg/kg	.034	0.028	82	59-127	
Dibenz(a,h)anthracene	mg/kg	.034	0.031	91	37-139	
Fluoranthene	mg/kg	.034	0.029	86	53-132	
Fluorene	mg/kg	.034	0.030	90	45-127	
Indeno(1,2,3-cd)pyrene	mg/kg	.034	0.031	92	35-145	

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QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1- Revised Report

Pace Project No.: 92377415

LABORATORY CONTROL SAMPLE: 2233501

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	mg/kg	.034	0.029	85	45-123	
Phenanthrene	mg/kg	.034	0.028	83	50-125	
Pyrene	mg/kg	.034	0.029	85	52-132	
2-Fluorobiphenyl (S)	%			78	10-110	
Nitrobenzene-d5 (S)	%			88	10-128	
Terphenyl-d14 (S)	%			86	39-119	

SAMPLE DUPLICATE: 2233503

Parameter	Units	92377415002 Result	Dup Result	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	mg/kg	ND	ND			30
2-Methylnaphthalene	mg/kg	ND	ND			30
Acenaphthene	mg/kg	ND	ND			30
Acenaphthylene	mg/kg	0.051J	0.036J			30
Anthracene	mg/kg	0.032J	0.026J			30
Benzo(a)anthracene	mg/kg	0.18	0.12	44		30 D6
Benzo(a)pyrene	mg/kg	0.20	0.13	38		30 D6
Benzo(b)fluoranthene	mg/kg	0.38	0.22	51		30 D6
Benzo(g,h,i)perylene	mg/kg	0.12	0.078J			30
Benzo(k)fluoranthene	mg/kg	0.11	0.081J			30
Chrysene	mg/kg	0.24	0.15	43		30 D6
Dibenz(a,h)anthracene	mg/kg	0.039J	0.022J			30
Fluoranthene	mg/kg	0.51	0.31	49		30 D6
Fluorene	mg/kg	ND	ND			30
Indeno(1,2,3-cd)pyrene	mg/kg	0.12	0.082J			30
Naphthalene	mg/kg	ND	ND			30
Phenanthrene	mg/kg	0.12	0.095J			30
Pyrene	mg/kg	0.37	0.23	47		30 D6
2-Fluorobiphenyl (S)	%	0	0			S4
Nitrobenzene-d5 (S)	%	0	0			D3,S4
Terphenyl-d14 (S)	%	0	0			S4

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

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.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

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

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

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

P3 Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.

R1 RPD value was outside control limits.

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R3830 WBS 38887.1.1-Revised Report

Pace Project No.: 92377415

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92377415004	R3830-P24-TMW-1	EPA 625	402788	EPA 625	402969
92377415001	R3830-P24-SS1-1	EPA 3546	402704	EPA 8270 by SIM	402889
92377415002	R3830-P24-SS7-2	EPA 3546	402704	EPA 8270 by SIM	402889
92377415004	R3830-P24-TMW-1	SM 6200B	402983		
92377415001	R3830-P24-SS1-1	ASTM D2974-87	402592		
92377415002	R3830-P24-SS7-2	ASTM D2974-87	402592		

REPORT OF LABORATORY ANALYSIS

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Laboratory receiving samples:
 Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Klenfelder

Project #: **WO# : 92377415**



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

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: 3-19-18 SA

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T036 Type of Ice: Wet Blue None

Cooler Temp (°C): 3.3 Correction Factor: Add/Subtract (°C) +0.1

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

Cooler Temp Corrected (°C): 3.4

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

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

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>SL/WT</u>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10. <u>3-19-18 SA</u>
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY _____ Field Data Required? Yes No

Lot ID of split containers: _____

CLIENT NOTIFICATION/RESOLUTION _____

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: (Signature) Date: 3/20
 Project Manager SRF Review: (Signature) Date: 3/20



Document Name:
Sample Condition Upon Receipt(SCUR)
 Document No.:
F-CAR-CS-033-Rev.06

Document Revised: February 7, 2018
 Page 1 of 2
 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.

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

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

Project # **W0# : 92377415**
 PM: PTE Due Date: 03/26/18
 CLIENT: 92-NCD0TEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2SO3 (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)	SPST-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									2						3														
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

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

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



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information: Company: <u>Kleinfelder</u> Address: <u>3200 Gateway Centre Blvd</u> <u>Suite 100, Morrisville NC</u> Email To: <u>mburns@k.f.kleinfelder.com</u> Phone: _____ Fax: _____ Requested Due Date/TAT: _____		Section B Required Project Information: Report To: <u>Mike Borm</u> Copy To: <u>Chris Hollinger</u> Purchase Order No.: _____ Project Name: <u>R3830 W0538887.1.1</u> Project Number: <u>R3830 P24</u>		Section C Invoice Information: Attention: _____ Company Name: _____ Address: _____ Pico Quota Reference: _____ Pico Project Manager: _____ Pico Profile #: _____		REGULATORY AGENCY <input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER _____ Site Location STATE: <u>NC</u>	
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ITEM #	Section D Required Client Information Matrix Code Matrix L Code Drinking Water: DW Water: WT Waste Water: WW Product: P Soil/Sediment: SL Oil: OL Wipe: WP Air: AR Tissue: TS Other: OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analysis Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./Lab I.D.
				COMPOSITE START	COMPOSITE END/DIR			DATE	TIME	DATE	TIME	UNPRESERVED	H ₂ SO ₄	HNO ₃				
1		SL G	G				1											
2		SL G	G				1											
3		W G	G				3											
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

ADDITIONAL COMMENTS Relinquished by / Affiliation: <u>Joseph C Hollinger</u> DATE: <u>3/16</u> TIME: <u>10:50</u> Accepted by / Affiliation: <u>Chris Hollinger</u> DATE: <u>3/16/18</u> TIME: <u>16:30</u> Relinquished by / Affiliation: <u>Joseph C Hollinger</u> DATE: <u>3/15/19</u> TIME: <u>13:25</u> Accepted by / Affiliation: <u>Joseph C Hollinger</u> DATE: <u>3/15/19</u> TIME: <u>16:30</u>		SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: <u>Joseph C Hollinger</u> SIGNATURE of SAMPLER: <u>Joseph C Hollinger</u> DATE Signed (MM/DD/YY): <u>3/15/19</u>		SAMPLE CONDITIONS Temp in °C: _____ Received on Ice (Y/N): <u>Y</u> Custody Sealed Cooler (Y/N): <u>N</u> Samples Intact (Y/N): <u>Y</u>	
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*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to rate changes of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020/rev.07, 15-May-2007