



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 077/078/079, Lois B. Campbell Properties  
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**

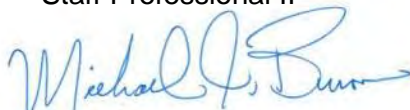
Dear Mr. Box:

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 077/078/079 LOIS B. CAMPBELL PROPERTIES  
PIN(S) 9662-33-1175, 9662-33-4037, AND 9662-32-5939  
1225 AND 1235 BROADWAY ROAD  
SANFORD, 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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PROJECT FOR WHICH THIS REPORT WAS PREPARED.**

A Report Prepared for:

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

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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:



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Joseph C. Hollinger  
Environmental Scientist

Reviewed by:



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Michael J. Burns, PG  
Environmental Program Manager

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May 31, 2018

Kleinfelder Project No. 20183507.001A

## PRELIMINARY SITE ASSESSMENT

**Site Name and Location:** Parcel 077/078/079  
1225 and 1235 Broadway Road  
Sanford, Lee County, North Carolina

**Latitude and Longitude:** 35.46188°N, -79.123175°W

**County PIN(s)** 9662-33-1175, 9662-33-4037, and 9662-32-5939

**Facility ID Number:** NA

**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

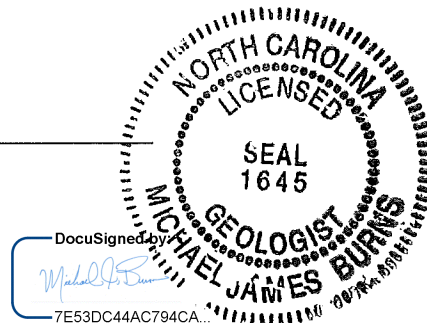
**Date of Report:** May 31, 2018

**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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**PRELIMINARY SITE ASSESSMENT REPORT  
PARCEL 077/078/079, LOIS B. CAMPBELL PROPERTIES  
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**1 INTRODUCTION**

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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 077/078/079 (the assessment area is hereafter referred to as the “Project Study Area”). Parcel 077/078/079 is currently occupied by a residence. The parcel is located north of Broadway Road, approximately 800 feet east of the intersection of Broadway Road and Rice 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), no evidence of Underground Storage Tanks (USTs) or UST removal was noted at the parcel. According to the report, soil contamination of 180 milligrams per kilogram (mg/kg) of Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) was identified by NCDOT during a previous PSA. 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 077/078/079 is owned by Lois B. Campbell and has street addresses of 1225 and 1235 Broadway Road. Parcel 077/078/079 is bounded by a wooded property and residential property to the north, fields to the east, a graveyard to the west, and a church property and residential property to the south beyond Broadway Road. The parcel is currently the location of a residence. 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

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### 2.1 PARCEL USAGE

The September 2014 Hazardous Materials Report included information about environmental databases searched and historical review information for Parcel 077/078/079. The parcel was indicated to be developed with a residence. According to the report, soil contamination of 180 mg/kg of TPH GRO was identified by NCDOT during a previous PSA. There were no other environmental database listings identified for Parcel 077/078/079 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 077/078/079. 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 not identified with any listing.
- Kleinfelder searched the leaking UST (LUST) and Inactive Hazardous Sites Branch (IHSB) databases, to verify that no listings have been added since the Hazardous Materials Assessment was completed in 2014. A listing for 1235 Broadway Road with Incident ID #24435 was identified in the LUST database. According to the listing, the incident was identified in March 2002.
- 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 077/078/079. The parcel is not identified with any listing in the registered UST database.

### 2.3 GROUNDWATER INCIDENT NUMBERS

The parcel is the location of LUST incident #24435. According to reports obtained from the NCDEQ, a gasoline service station was formerly present on the eastern portion of the Site (Parcel 079). The station reportedly operated from the 1920s through 1977 and was then converted into a residence. In 2002, a PSA for a road widening project identified 3 USTs estimated to be between

500 and 1,000-gallons. The USTs and approximately 200 cubic yards of contaminated soils were removed in 2002.

In 2010, a Phase I Limited Site Assessment was conducted on the Site which involved the installation of two Monitoring Wells (MW-1 and MW-2) to 25 feet. Soil samples were also collected from other areas where contamination had previously been identified. Soil samples submitted contained contaminant concentration in excess of the laboratory reporting limit, but not in excess of the soil-to-water maximum contaminant concentrations (MSCCs). Benzene and naphthalene were identified in groundwater samples collected from MW-1 and MW-2 in excess of the 15 NCAC 2L Standards (NC 2L Standards).

The monitoring wells associated with the incident were last samples in May 2015. At that time benzene, naphthalene, and 1,2-Dichloroethene were identified in MW-1 in excess of the NC 2L Standards, and benzene was identified in MW-2 in excess of the NC 2L Standard. Based on the reviewed maps, monitoring well MW-1 is located within the Project Study Area. Monitoring well MW-2 is not located within the Project Study Area. The LUST incident is currently open and is being managed by the State Lead Program.

Kleinfelder reviewed the LUST and IHSB databases, both maintained by the NCDEQ, to ensure that there are no listings for the parcel. There were no database listings identified for Parcel 077/078/079 that indicated known groundwater incidents.

### 3 OBSERVATIONS

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#### 3.1 GROUNDWATER MONITORING WELLS

One groundwater monitoring well was observed within the Project Study Area. This well was identified as MW-1 from NCDEQ LUST incident #24435. A second monitoring well, identified as MW-2 from NCDEQ LUST incident #24435 was observed beyond the Project Study Area.

#### 3.2 ACTIVE USTS

No evidence of an active UST was observed within the Project Study Area during multiple site visits conducted as part of the PSA.

#### 3.3 OTHER FEATURES APPARENT BEYOND PROJECT STUDY AREA

Kleinfelder spoke with the property owner, Ms. Lois B. Campbell, and inquired as to whether her residence at 1220 Broadway Road was ever a petroleum products service station. She responded that it was not.

No additional features were apparent beyond the Project Study Area that would indicate a past release.

## 4 METHODS

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### 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 did not express any concern 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 14 through 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 any metallic USTs. The EM survey detected one unknown geophysical anomaly within the Project Study Area. The GPR survey identified the anomaly as a utility.

### 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 14, 2018. Prior to the initial boring and after each subsequent boring, the sampling equipment was decontaminated. Quantex advanced nine soil borings (SS1 to SS9) 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 Broadway Road. Soil borings were located in the vicinity of proposed drainage features and within the proposed right of way expansion. 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 D.

Based on analytical results received, Kleinfelder returned to the parcel on April 20, 2018, and advanced an additional 3 borings by hand auger to 10 feet, to delineate petroleum contamination identified in soil boring SS8.

Soils were determined to be primarily sand and sandy clay underlain by clay in the upper 10 feet bgs. Groundwater not encountered in any of the soil borings.

#### 4.5 SOIL ANALYSIS

The FID readings from soil borings SS1, SS2, SS4, SS5, SS6, SS7, and SS9 were noted to be low. Samples from the depth of maximum cut, and the samples with the highest FID readings were selected for analysis.

The FID readings from soil boring SS3 were noted to be slightly elevated between 3 and 5 feet. The highest FID reading (17.63 ppm) was noted to be between 4 and 5 feet. Based on FID results samples from 3 and 4 to 5 feet were selected for onsite analysis.

The FID readings from soil boring SS8 were noted to be high from 8 to 10 feet bgs with the highest reading being 1,744 ppm at 10 feet bgs. Based on the FID data and a review of the inverts, the sample from each boring at the depth of maximum cut and the highest FID reading were selected for onsite laboratory analysis.

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 possible use of petroleum products on Parcel 077/078/079 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 the UVF analysis, which indicated low concentrations of petroleum hydrocarbons, despite elevated FID readings in two borings, Kleinfelder collected soil samples from 9 feet and 10 feet bgs in soil boring SS8 and submitted the samples to Pace Analytical Services in Huntersville, North Carolina for analysis by EPA Methods 8260 (SS3-4-5, SS8-9 and SS8-10) and 8270 (SS8-10).

Based on the results of the 8260 analysis, which identified petroleum contamination above state standards in soil boring SS8 at 10 feet, Kleinfelder returned to the site on April 20 to advance three additional soil borings (SS10, SS11, and SS12) to 10 feet. Elevated FID readings were encountered in all three borings from 7 to 10 feet. Kleinfelder collected samples based on PID readings and submitted the samples to Pace Analytical Services in Huntersville, North Carolina for analysis by EPA Methods 8260.

#### 4.6 GROUNDWATER ANALYSIS

Groundwater was not identified in any of the borings advanced. One monitoring well was identified within the Project Study Area. This well was determined to be MW-1 for LUST incident ID #24435. The well was indicated to be 25 feet deep with a screen from 10 to 25 feet. Kleinfelder sampled this monitoring well on April 28, 2018. Depth to water in this well was measured at 5.81 feet below top of casing. The well was purged of three well volumes using a new, disposable polyethylene bailer. Samples were collected into laboratory prepared containers and submitted under proper chain of custody procedures to Pace Analytical Laboratory in Huntersville, North Carolina, for

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

## 5 RESULTS

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### 5.1 GEOPHYSICAL INVESTIGATION

Pyramid concluded that the EM and GPR investigation did not identify any evidence of unknown metallic UST(s). The EM and GPR surveys did not detect any metallic USTs. The EM survey detected 1 unknown geophysical anomaly within the Project Study Area. The GPR survey identified the anomaly as a utility.

### 5.2 SOIL SAMPLING DATA

UVF analysis of soil samples indicated low levels of TPH DRO in soil samples P077/078/079-SS1-1 [1.5 milligrams per kilogram (mg/kg)], P077/078/079-SS3-4-5 (0.74 mg/kg), P077/078/079-SS4-3 (0.24 mg/kg), P077/078/079-SS5-2 (0.38 mg/kg), P077/078/079-SS8-9 (0.05 mg/kg), P077/078/079-SS9-3 (0.26 mg/kg), and P077/078/079-SS9-4-5 (0.11 mg/kg). The TPH DRO results did not exceed the NCDEQ action limit of 100 mg/kg.

UVF analysis of the soil samples indicated low levels of total PAHs in soil sample P77/78/79-SS1-1 (0.05 mg/kg).

UVF analysis of soil samples did not detect TPH GRO, BaP, or BTEX concentrations above the method detection limit.

Analysis of sample SS8-10 by EPA Method 8270 did not contain contaminant concentrations in excess of laboratory detection limits.

Analysis of samples by EPA Method 8260 identified soil contamination above the soil-to-water MSCC in SS8-10 (benzene at 0.015 mg/kg and naphthalene at 0.20 mg/kg), and in SS11-9 (p-Isopropoyltoluene at 0.202 mg/kg and naphthalene at 0.204 mg/kg). Petroleum constituents were also detected in samples SS3-4-5, SS8-9, SS11-10, and SS12-8, at concentrations below the soil-to-water MSCCs.

Based on analytical results and FID readings, petroleum impacted soils were identified. A summary of the analytical results are provided on Table 2 and on Figure 4. The laboratory report and graphs are included in Appendix E.



### 5.3 GROUNDWATER SAMPLING DATA

Laboratory analysis of the groundwater sample collected from monitoring well MW-1 indicated benzene [43.1 parts per billion (ppb)], Naphthalene (11.7 ppb), and 1,2-Dichloroethane (2.0 ppb) contamination above the NC 2L Standard. Additional petroleum constituents were detected at concentrations below the NC 2L Standards.

### 5.4 SAMPLE OBSERVATIONS

Soils were observed for any obvious evidence of contamination. Obvious olfactory evidence of contamination was noted in borings SS8, SS10, SS11, and SS12, primarily between 7 and 10 feet bgs. No visual or olfactory evidence of contamination was noted in any of the other borings.

Groundwater collected from monitoring well MW-1 was noted to have a slight petroleum odor.

### 5.5 QUANTITY CALCULATIONS

Petroleum impacted soils that may require additional assessment or remediation were detected within the Project Study Area along the eastern parcel boundary at depths of 9 to 10 feet bgs between SS8 and SS10.

The area of petroleum contamination within the Project Study Area is approximately 30 feet long, by 28 feet wide. Using a uniform depth of 1 foot (9 to 10 feet) the volume of contaminated soil that may be encountered at depth of about 31 cubic yards in the area of SS8 and SS10.

## 6 CONCLUSIONS

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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. The EM survey detected 1 unknown geophysical anomaly within the Project Study Area. The GPR survey identified the anomaly as a utility.
- A review of current state environmental databases did not identify the parcel to be associated with any UST facility listings.
- A review of current state environmental databases identified a LUST listing for 1235 Broadway Road with Incident ID #24435. According to reports obtained from the NCDEQ a gasoline service station was formerly present on the eastern portion of the Site (Parcel 079). The station reportedly operated from the 1920s through 1977 and was then converted into a residence. In 2002, a PSA for a road widening project identified three USTs estimated to be between 500 and 1,000-gallons. The USTs were closed by removal in 2002.
- Soil samples were previously collected from within the Project Study Area during a 2010 Phase I LSA. The Phase I LSA did not identify soil contamination above the soil-to-water MSCC.
- One monitoring well was identified within the project study area and sampled. Laboratory analytical results indicated benzene, naphthalene and 1,2-Dichloroethane above the NC 2L Standards.
- 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 on the eastern boundary, in the vicinity of the former gasoline service station. It is estimated that about 31 cubic yards of contaminated soils are present between 9 and 10 feet in the area of SS8 and SS10.
- Groundwater was not encountered in any of the soil borings to a termination depth of 10 feet.

## 7 RECOMMENDATIONS

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

## 8 LIMITATIONS

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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

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**Table 1: Soil Sample Screening Results**

Date	Sample ID	Depth (ft)	FID Reading	Notes
3/26/2018	R-3830-P077/078/079-SS1	1	3.07	Analyzed by UVF
		2	0.53	
		3	1.21	Analyzed by UVF
		4	0.86	
		5	1.51	
		6	0.50	
		7	0.98	
		8	0.67	
		9	0.63	
		10	0.57	
3/26/2018	R-3830-P077/078/079-SS2	1	NA	
		2	1.20	
		3	2.84	Analyzed by UVF
		4	0.17	
		5	0.20	
		6	0.19	
		7	0.17	
		8	0.09	
		9	0.42	
		10	0.53	Analyzed by UVF
3/26/2018	R-3830-P077/078/079-SS3	1	1.27	
		2	0.62	
		3	6.73	Analyzed by UVF
		4	17.63	Analyzed by UVF, 8260
		5		
		6	2.08	
		7	1.12	
		8	1.37	
		9	1.15	
		10	1.34	
3/26/2018	R-3830-P077/078/079-SS4	1	0.57	
		2	0.76	
		3	2.04	Analyzed by UVF
		4	1.00	
		5	1.00	
		6	0.92	
		7	1.90	
		8	1.12	
		9	2.16	
		10	2.44	Analyzed by UVF
3/26/2018	R-3830-P077/078/079-SS5	1	1.03	
		2	1.61	Analyzed by UVF
		3	1.97	
		4	1.46	
		5	1.99	
		6	2.01	Analyzed by UVF
		7	1.43	
		8	1.12	
		9	1.38	
		10	1.47	
3/26/2018	R-3830-P077/078/079-SS6	1	3.53	
		2	2.72	Analyzed by UVF
		3	2.15	
		4	1.69	
		5	1.62	
		6	2.41	
		7	2.86	Analyzed by UVF
		8	1.69	
		9	1.42	
		10	2.32	

Notes:

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

**Table 1: Soil Sample Screening Results**

Date	Sample ID	Depth (ft)	FID Reading	Notes
3/26/2018	R-3830-P077/078/079-SS7	1	2.62	
		2	1.30	
		3	1.40	Analyzed by UVF
		4	1.54	
		5	1.39	
		6	1.31	
		7	1.24	
		8	1.43	Analyzed by UVF
		9	1.38	
		10	1.64	
3/26/2018	R-3830-P077/078/079-SS8	1	4.05	
		2	3.86	
		3	3.70	Analyzed by UVF
		4	4.88	
		5	5.40	
		6	8.68	
		7	27.56	
		8	526.00	
		9	1007	Analyzed by UVF, 8260
		10	1744	Analyzed by UVF, 8260, 8270
3/26/2018	R-3830-P077/078/079-SS9	1	2.62	
		2	4.43	
		3	6.98	Analyzed by UVF
		4	12.20	Analyzed by UVF
		5		
		6-7	4.63	
		8-9	12.63	
10	5.10			
4/20/2018	R-3830-P077/078/079-SS10	1	0.9	
		2	0.9	
		3	0.5	
		4	0.3	
		5	3.6	
		6	7.2	
		7	14.5	
		8	161	8260
		9	1273	8260
		10	968	
4/20/2018	R-3830-P077/078/079-SS11	1	0.7	
		2	0.9	
		3	0.2	
		4	0.7	
		5	0.9	
		6	0.9	
		7	2.2	
		8	13.8	
		9	146	
		10	313	8260
4/20/2018	R-3830-P077/078/079-SS12	1	0.2	
		2	0.4	
		3	0.1	
		4	0.8	
		5	1.7	
		6	32.2	
		7	128	
		8	793	8260
		9	358	
		10	242	

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	SS2	SS2	SS3	SS3	SS4	SS4	SS5	SS5	SS6	SS6	SS7	SS7	SS8	SS8	SS8	SS9	SS9	SS10	SS10	SS11	SS12	State Action Limit	Soil-to-Water MSCC	Residential Soil Cleanup Levels		
FID Reading (ppm)	3.07	1.21	2.84	0.53	6.73	17.63	2.04	2.44	1.61	2.01	2.72	2.86	1.40	1.43	3.70	1,007	1,744	6.98	12.20	162	1,273	313	793						
Collection Depth (ft bgs)	1	3	3	10	3	4-5	3	10	2	6	2	7	3	8	3	9	10	3	4-5	8	9	10	8						
Collection Date	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	3/26/18	4/20/18	4/20/18	4/20/18	4/20/18						
<b>UVF Method</b>																													
Total Petroleum Hydrocarbons	<b>1.5</b>	<0.49	<0.57	<0.57	<0.51	<b>0.74</b>	<b>0.24</b>	<0.59	<b>0.38</b>	<0.5	<0.58	<0.49	<0.46	<0.5	<0.63	<b>0.05</b>	<0.63	<b>0.26</b>	<b>0.11</b>	NA	NA	NA	NA	--	--	--			
Diesel Range Organics	<b>1.5</b>	<0.04	<0.05	<0.05	<0.04	<b>0.74</b>	<b>0.24</b>	<0.05	<b>0.38</b>	<0.04	<0.05	<0.04	<0.04	<0.04	<0.05	<b>0.05</b>	<0.05	<b>0.26</b>	<b>0.11</b>	NA	NA	NA	NA	100	--	--			
Gasoline Range Organics	<0.62	<0.49	<0.57	<0.57	<0.51	<0.58	<0.47	<0.59	<0.74	<0.5	<0.58	<0.49	<0.46	<0.5	<0.63	<0.61	<0.63	<0.52	<0.53	NA	NA	NA	NA	50	--	--			
BaP	<0.012	<0.01	<0.011	<0.011	<0.01	<0.012	<0.009	<0.012	<0.015	<0.01	<0.012	<0.01	<0.009	<0.01	<0.013	<0.012	<0.013	<0.01	<0.011	NA	NA	NA	NA	--	--	--			
16 EPA PAHs	<b>0.05</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	NA	NA	NA	NA	--	--	--			
Total Aromatics (C10-C35)	<b>1.2</b>	<0.1	<0.11	<0.11	<0.1	<b>0.38</b>	<b>0.24</b>	<0.12	<b>0.38</b>	<0.1	<0.12	<0.1	<0.09	<0.1	<0.13	<0.12	<0.13	<b>0.26</b>	<b>0.11</b>	NA	NA	NA	NA	--	--	--			
Total BTEX	<0.62	<0.49	<0.57	<0.57	<0.51	<0.58	<0.47	<0.59	<0.74	<0.5	<0.58	<0.49	<0.46	<0.5	<0.63	<0.61	<0.63	<0.52	<0.53	NA	NA	NA	NA	--	--	--			
<b>EPA Method 8260</b>																													
Acetone	NA	NA	NA	NA	NA	<b>0.046 J</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.47	<0.0084	NA	NA	<0.51	<0.87	<0.0089	<0.21	--	24	14000			
Benzene	NA	NA	NA	NA	NA	<0.0016	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.075	<b>0.015</b>	NA	NA	<0.082	<0.139	<0.0014	<0.034	--	0.0056	18			
n-butylbenzene	NA	NA	NA	NA	NA	<0.0018	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.084	<0.073	NA	NA	<0.092	<b>0.22 J</b>	<0.0016	<0.038	--	4.3	626			
sec-Butylbenzene	NA	NA	NA	NA	NA	<0.0016	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.076	<b>0.066</b>	NA	NA	<0.082	<0.14	<0.0014	<0.034	--	3.3	626			
tert-Butylbenzene	NA	NA	NA	NA	NA	<0.0020	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.094	<b>0.007</b>	NA	NA	<0.10	<0.17	<0.0018	<0.042	--	3.4	626			
Ethylbenzene	NA	NA	NA	NA	NA	<0.0018	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.11 J</b>	<b>0.24</b>	NA	NA	<0.092	<b>0.35 J</b>	<b>0.0027 J</b>	<b>0.056 J</b>	--	4.9	1560			
p-Isopropyltoluene	NA	NA	NA	NA	NA	<b>0.0068</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.080	<0.069	NA	NA	<0.087	<b>0.20 J</b>	<b>0.0033 J</b>	<0.036	--	0.12	100			
Methylene Chloride	NA	NA	NA	NA	NA	<b>0.0054 J</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.14	<0.0025	NA	NA	<0.15	<0.26	<0.0027	<0.064	--	0.02	85			
Naphtalene	NA	NA	NA	NA	NA	<b>0.0061</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.063 J</b>	<b>0.20 J</b>	NA	NA	<0.061	<b>0.20 J</b>	<b>0.0027 J</b>	<0.025	--	0.16	313			
n-Propylbenzene	NA	NA	NA	NA	NA	<0.0017	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.080	<b>0.11 J</b>	NA	NA	<0.087	<b>0.31 J</b>	<b>0.0025 J</b>	<0.036	--	1.7	626			
Toluene	NA	NA	NA	NA	NA	<0.0018	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.084	<b>0.16</b>	NA	NA	<0.092	<0.16	<b>0.0019 J</b>	<0.038	--	4.3	1200			
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	<0.0020	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.52</b>	<b>0.89</b>	NA	NA	<0.10	<b>2.3</b>	<b>0.046</b>	<b>0.24</b>	--	8.5	782			
1,3,5-Trimethylbenzene	NA	NA	NA	NA	NA	<0.0018	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.25</b>	<b>0.39</b>	NA	NA	<0.092	<b>1.2</b>	<b>0.028</b>	<b>0.12</b>	--	8.3	782			
Xylene (Total)	NA	NA	NA	NA	NA	<0.0036	NA	NA	NA	NA	NA	NA	NA	NA	NA	<b>0.44 J</b>	<b>1.23</b>	NA	NA	<0.18	<b>1.5</b>	<b>0.026</b>	<b>0.53</b>	--	4.6	3129			
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	<0.0037	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.17	<0.0031	NA	NA	<0.19	<0.321	<b>0.0052 J</b>	<0.0784	--	0.4	1200			
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	<0.0016	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.075	<0.0013	NA	NA	<0.082	<0.139	<b>0.0021 J</b>	<0.0339	--	NE	NE			
<b>EPA Method 8270</b>																													
<b>No Detections in Submitted Samples</b>																													
																									--	--	--		

- Notes:
- 1) Results displayed in milligram per kilogram (mg/kg)
  - 2) ft bgs = Feet below ground surface
  - 3) Bold = Above Laboratory Detection Limit
  - 4) UVF = Ultraviolet Fluorescence
  - 5) BaP = Benzo(a)pyrene
  - 6) EPA = Environmental Protection Agency
  - 7) PAHs = Polycyclic Aromatic Hydrocarbons
  - 8) BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
  - 9) FID = Flame Ionization Detector
  - 10) J = Estimated concentration above method detection limit but below laboratory reporting limit
  - 11) NA = Not Analyzed
  - 12) MSCC = Maximum Soil Contaminant Concentration
  - 13) Shaded values exceed the soil-to-water MSCC
  - 14) NE = Standard not established

**Table 3: Monitoring Well Constuction Information**

Well No.	Date Installed	Total Depth Drilled (feet,bgs)*	Diameter (inches)	Screen Interval	Date gauged	Depth to water (feet, toc)
MW-1	11/10/2010	25	2	5-25	4/28/2018	5.81

Notes:

- 1) bgs = below ground surface
- 2) toc = top of casing

**Table 4: Groundwater Analytical Results**

Sample ID	MW-1	NC 2L Standard
Collection Date	4/28/18	
<b>6200B</b>		
Benzene	<b>43.1</b>	1
n-Butylbenzene	<b>0.37 J</b>	70
sec-Butylbenzene	<b>0.34 J</b>	70
1,2-Dichloroethane	<b>2.0</b>	0.4
Ethylbenzene	<b>10.9</b>	600
Isopropylbenzene	<b>1.8</b>	70
Naphthalene	<b>11.7</b>	6
n-Propylbenzene	<b>1.6</b>	70
Toluene	<b>1.0</b>	600
1,2,4-Trimethylbenzene	<b>0.29 J</b>	400
Xylenes	<b>1.22</b>	500
<b>625</b>		
Naphthalene	<b>8.6</b>	6

## Notes:

- 1) Results in parts per billion (ppb)
- 2) J = Estimated concentration between laboratory reporting limit and method detection limit
- 3) Bolded values above laboratory detection limit
- 3) Bolded and shaded values in excess of the NC 2L Standard
- 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	

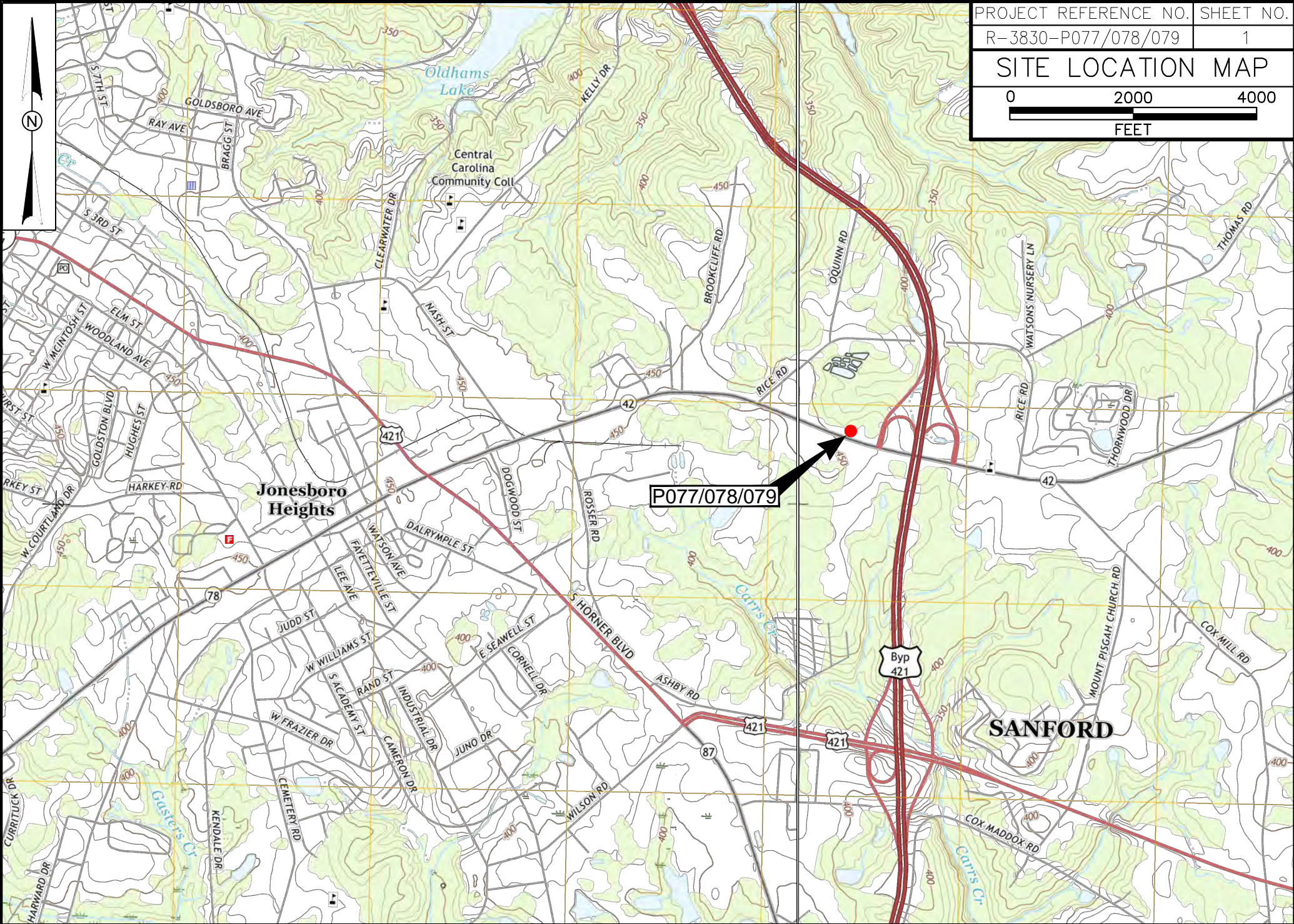
### SANITARY SEWER:

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-P077/078/079	1
<b>SITE LOCATION MAP</b>	
FEET	

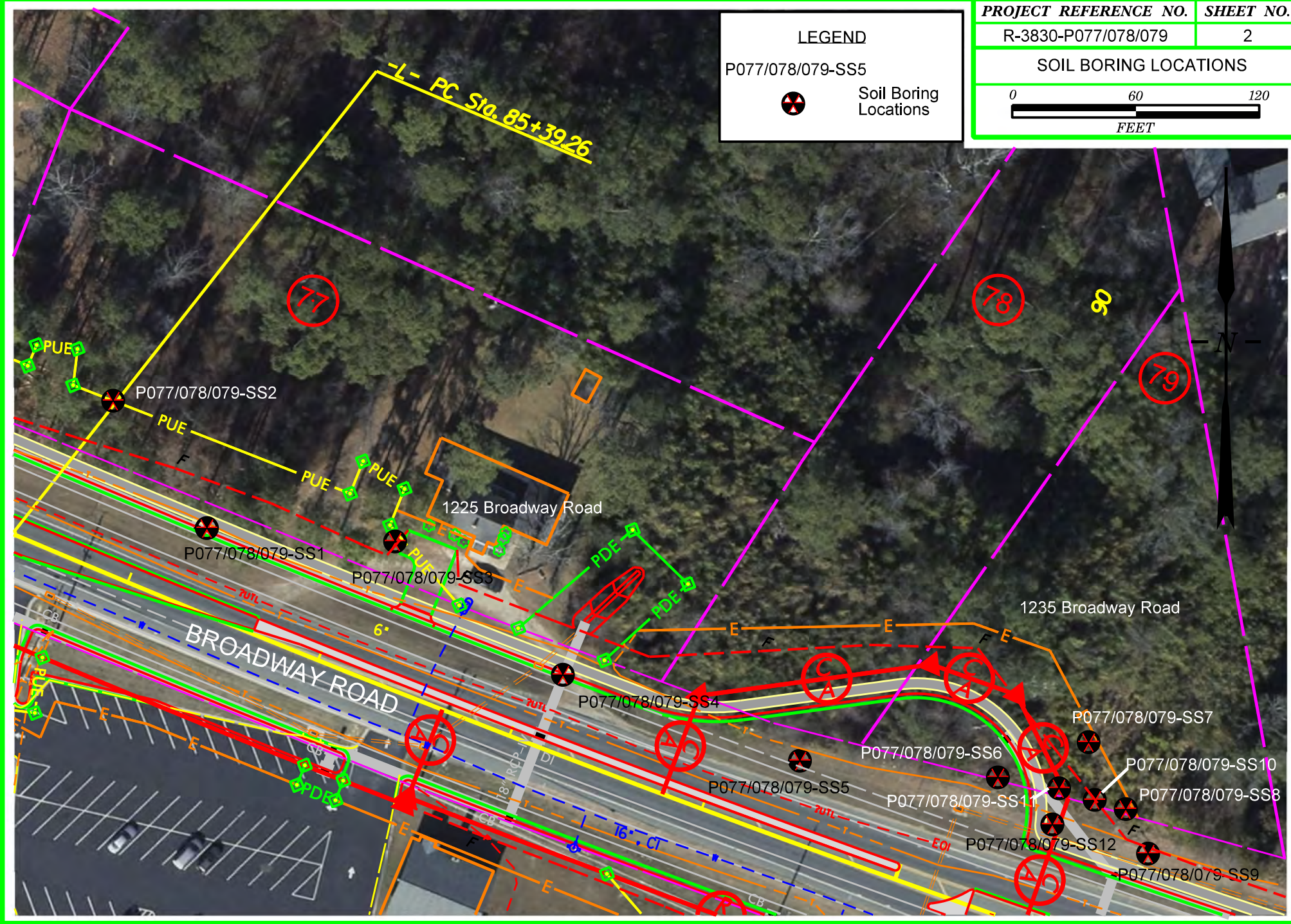


PROJECT REFERENCE NO.	SHEET NO.
R-3830-P077/078/079	2
SOIL BORING LOCATIONS	

**LEGEND**

P077/078/079-SS5

Soil Boring Locations







**UVF Analytical Results**

	DRO	GRO
SS1-1	1.5	<0.62
SS3-4-5	0.74	<0.58
SS4-3	0.24	<0.47
SS5-2	0.38	<0.74
SS8-9	0.05	<0.61
SS9-3	0.26	<0.52
SS9-4-5	0.11	<0.53

**Notes:**  
 1) All results in mg/kg  
 2) Samples collected on March 26, 2018  
 3) Samples with no detections by UVF analysis are not shown

**LEGEND**

P077/078/079-SS5

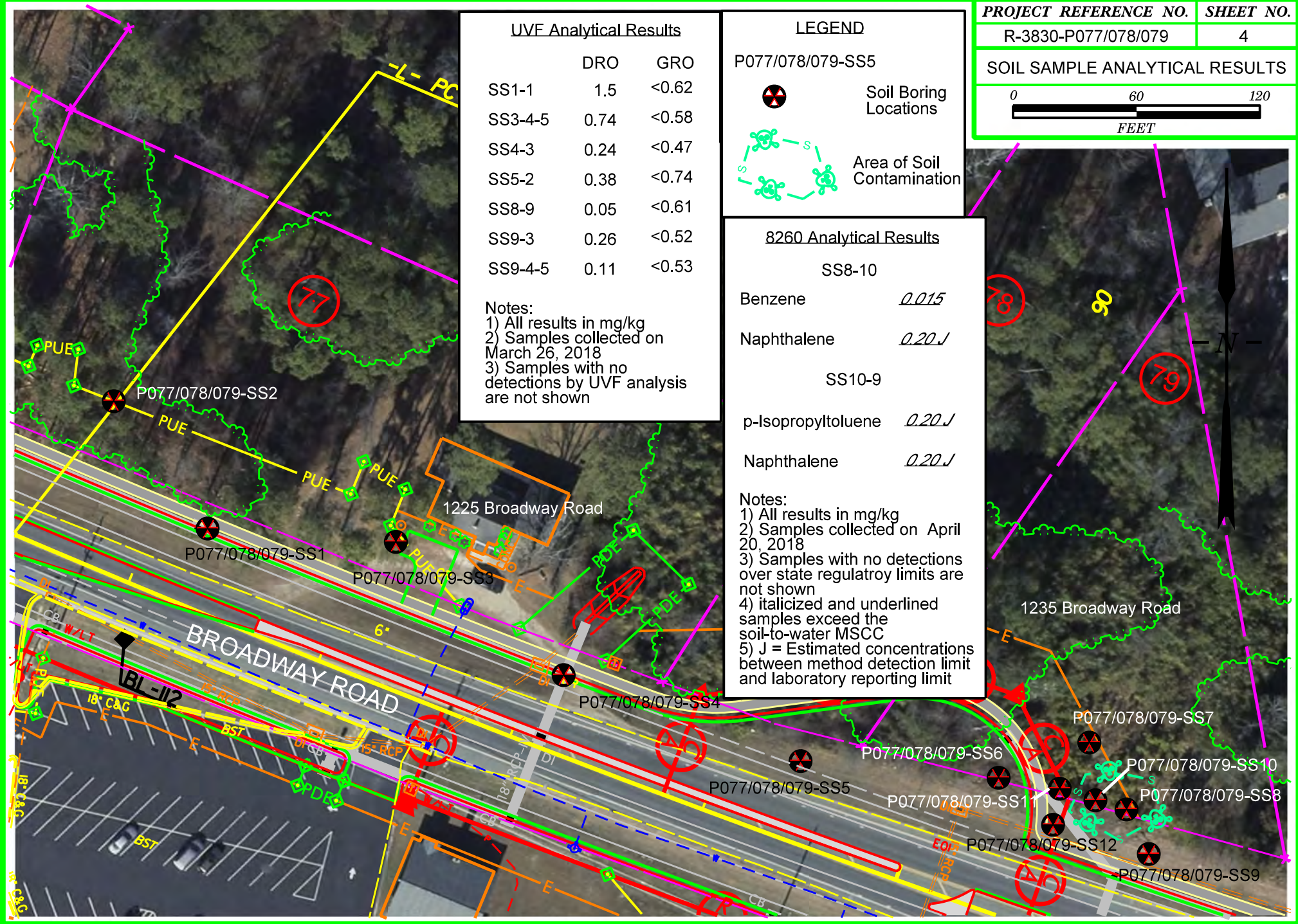
Soil Boring Locations

Area of Soil Contamination

**8260 Analytical Results**

SS8-10	
Benzene	<u>0.015</u>
Naphthalene	<u>0.20 J</u>
SS10-9	
p-Isopropyltoluene	<u>0.20 J</u>
Naphthalene	<u>0.20 J</u>

**Notes:**  
 1) All results in mg/kg  
 2) Samples collected on April 20, 2018  
 3) Samples with no detections over state regulatory limits are not shown  
 4) italicized and underlined samples exceed the soil-to-water MSCC  
 5) J = Estimated concentrations between method detection limit and laboratory reporting limit



PROJECT REFERENCE NO.	SHEET NO.
R-3830-P077/078/079	5
GROUNDWATER ANALYTICAL RESULTS	

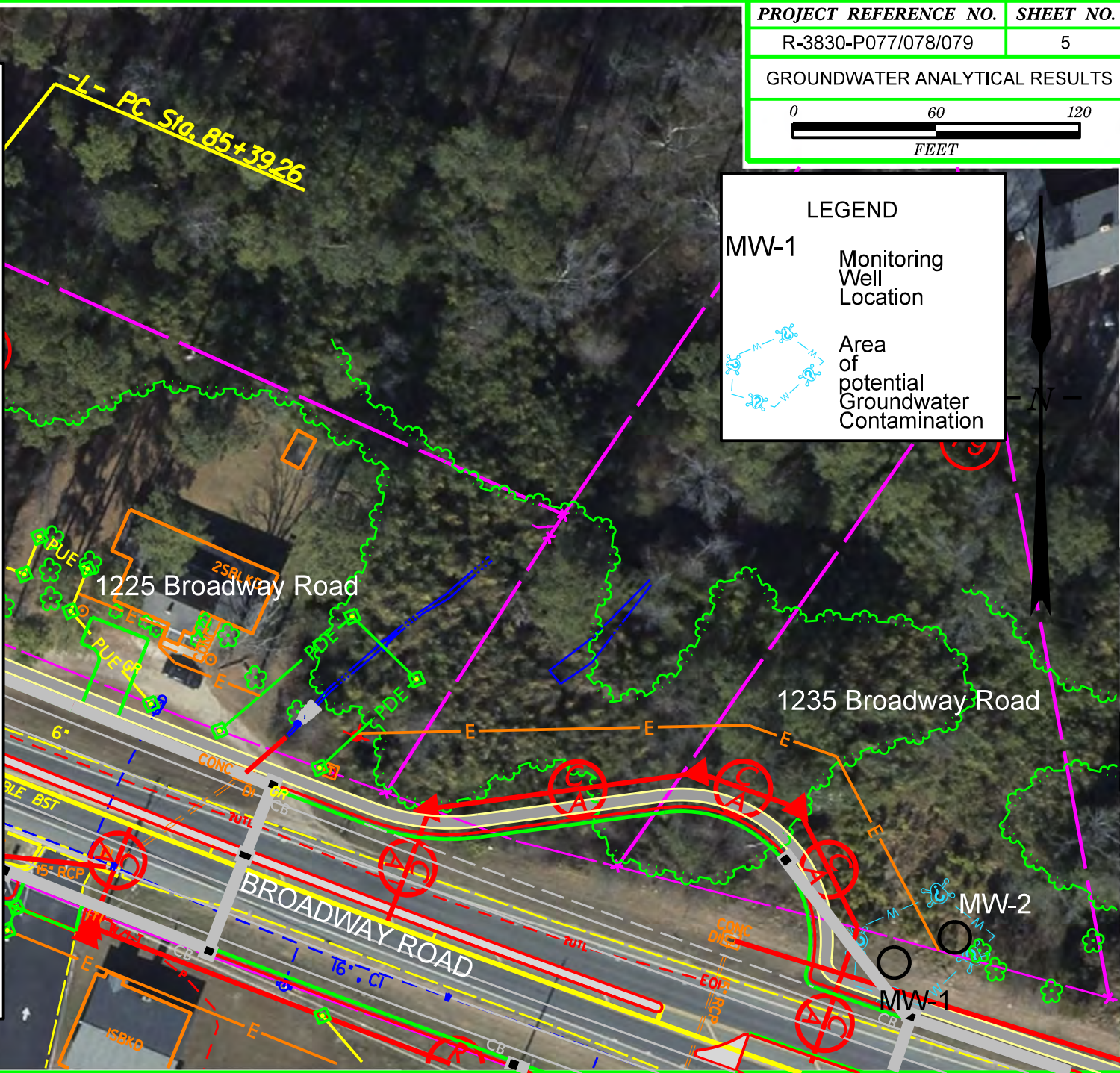
MW-1	
6200B	
Benzene	<u><i>43.1</i></u>
n-Butylbenzene	0.37 J
sec-Butylbenzene	0.34 J
1,2-Dichloroethane	<u><i>2.0</i></u>
Ethylbenzene	10.9
Isopropylbenzene	1.8
Naphthalene	<u><i>11.7</i></u>
n-Propylbenzene	1.6
Toluene	1.0
1,2,4-Trimethylbenzene	0.29 J
Xylenes	1.22
625	
Naphthalene	<u><i>8.6</i></u>

Notes:  
1) Results in ppb  
2) Samples collected April 28, 2018  
3) underlined and italicized values exceed NC 2L Standard  
4) MW-2 was not sampled as it is located outside of the project study area

**LEGEND**

MW-1 Monitoring Well Location

Area of potential Groundwater Contamination



**APPENDIX A**  
**SITE PHOTOGRAPHS**

---



View of electromagnetic survey of Parcel 77/78/79.



View of drilling on Parcel 77/78/79.

*Original in Color*



PROJECT NO.:	20183507
DRAWN:	April 2018
DRAWN BY:	JCH
CHECKED BY:	MB
FILE NAME:	

**SITE PHOTOGRAPHS**

R-3830-P077/078/079  
 1225 and 1235 Broadway Road  
 Sanford  
 Lee County, NC

Photo  
 Page

**1**

**APPENDIX B**  
**NCDEQ REPORTS**

---

# Agra Environmental, Inc.

## Limited Site Assessment Report Phase I

### Jack Campbell Property

1235 Broadway Road  
Sanford, Lee County, NC

Risk Classification: Recommended High  
UST Incident Number: 24435  
Facility I.D.: Unknown

### **Date of Report:**

December 16, 2010

### **Former UST Owner:**

Mr. Jack Campbell, Jr. (Deceased)

### **Current Property Owner:**

Ms. Beryl Campbell  
1225 Broadway Rd  
Sanford, NC 27730

### **Source of Release:**

Three (3) USTs of unknown volume and contents

### Latitude and Longitude

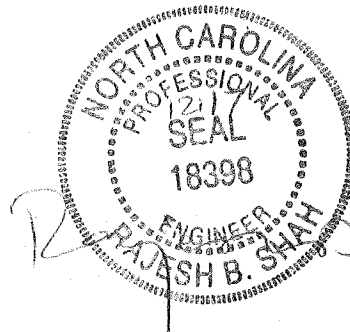
N 35.461605  
W -79.122505

### **Prepared By:**

Agra Environmental, Inc  
P. O. Box 5611  
Cary, NC 27512  
Phone: (919) 858-5350

### Report Certification:

Raj B. Shah, P.E.



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### **A. Site History:**

The subject site is located at 1235 Broadway Road, in Sanford, Lee County, North Carolina (Figure 1 and Figure 2). The subject site was previously operated as a commercial gasoline retail facility. The former store operated three (3) underground storage tanks (USTs) from the 1920s to 1977, when the store was closed. The USTs were estimated to be between approximately 500-gallons and 1,000-gallons in volume. One (1) UST previously contained kerosene, while the 2 remaining USTs contained different grades of gasoline. Available UST information and UST ownership information is included in Table 1 and Table 2, respectively. The store was converted into a residential property in 1980 after its pump island and driveway were removed.

Schnabel Engineering and Associates conducted a geophysical survey of the property on April 29 and May 2, 2002. The survey was conducted for the North Carolina Department of Transportation (NC DOT) as part of their road widening activities. Three (3) USTs were identified on the property.

Solutions Industrial & Environmental Services, Inc. (IES) conducted a Preliminary Site Assessment at the site on May 9 and May 10, 2002. IES installed seventeen (17) soil borings around the former store building and in proximity to the UST locations. Sixteen (16) soil borings were each advanced to a depth of 12 feet (ft) below ground level (BGL). One (1) soil boring was advanced to a depth of 16 ft BGL. No groundwater was encountered during the assessment activities. The soil samples collected from the borings were analyzed for total petroleum hydrocarbon (TPH) gasoline (GRO) and diesel (DRO) range organics. Laboratory analysis revealed TPH GRO & DRO contamination in five (5) of the soil borings, each in proximity to the UST locations.

The three (3) on-site USTs were removed from the site by the NC DOT in 2002.

### **Site Investigation Activities:**

Agra Environmental, Inc. (Agra) performed a Limited Site Assessment (LSA) Phase I at the site on November 10 and November 11, 2010. The former store has been removed and the property is currently a vacant wooded lot (Figure 2). No USTs, ASTs, or former structures were identified on the site. Site photographs are included in the Appendix.

The surrounding area is a mixture of private residential properties, church property, and undeveloped land. Drainage ditches, which did not contain standing water during the site visits, are located along Highway 42. The closest surface water body is a small pond, located approximately 900 ft to the north of the site (Figure 2). The DOT is in the process of constructing a highway by-pass and highway by-pass onramp approximately 600 ft to the east of the site (Table 3 and Figure 3).

The Town of Sanford currently supplies drinking water to the surrounding area. The Town of Sanford obtains their drinking water from the Cape Fear River and does not operate any public



water supply wells. No Public water supply wells are located within 1,000 ft of the site. Public water contact information is included in Table 4.

Agra personnel conducted a door-to-door survey of the surrounding area to attempt to locate any private water supply wells within 1,000 ft of the site. One (1) active private water supply well (WSW-1) was identified approximately 300 ft from the source of the release. An interview with Mr. Jack Campbell III, owner of WSW-1, confirmed that WSW-1 is used as a primary drinking water source. Furthermore, the residence associated with WSW-1 is not currently connected to the public water supply. One (1) inactive water supply well (WSW-2), formerly used for irrigations purposes was identified approximately 550 ft south of the site (Table 3 and Figure 3). No other private water supply wells were identified within the specified distance.

On November 10, 2010, Agra personnel supervised the installation of two (2) type II monitoring wells (MW-1 and MW-2) at the site in proximity to the former UST basins (Figure 2). The monitoring wells were installed by Environmental Drilling and Probing Services of Charlotte, NC. MW-1 and MW-2 were each installed to a depth of 25 ft BGL and screened between 10 and 25 ft BGL (Table 5). Additionally, five (5) soil borings, each 10 ft deep, were advanced at the site in the locations previously found to contain petroleum contamination during the Initial Assessment activities conducted in 2002.

Soil samples were collected from each boring (SB-1 through SB-5) and during the installation of monitoring wells MW-1 and MW-2 (SS-1 through SS-4). The soil samples were then placed on ice and submitted, under chain-of-custody, to Shealy Environmental Services for analysis.

Agra personnel collected groundwater samples from MW-1 and MW-2 on November 11, 2010. Depth to groundwater, from the top of each well casing, and field parameter readings were measured and recorded prior to purging (Table 5 and Table 6, respectively). Each monitoring well was then purged of groundwater, three (3) times its well volume, prior to the collection of groundwater samples using disposable gloves and disposable polyethylene bailers. The groundwater samples were then placed on ice and shipped under chain-of-custody to Shealy Environmental Services for analysis.

Laboratory analysis of the soil samples revealed petroleum contamination in all of the soil samples exceeding the method detection limits, but were below their respective soil-to-groundwater maximum soil contaminant concentrations (MSCC) (Table 7).

Laboratory analysis of the groundwater samples revealed benzene contamination in MW-1 (14 parts per billion-ppb) and MW-2 (9.5 ppb) exceeding the 15A NCAC 2L groundwater standard of 1 ppb. Additionally, naphthalene was detected in MW-1 at the 15A NCAC 2L groundwater standard of 6.0 ppb. No other contaminants were detected in MW-1 or MW-2 exceeding the 15A NCAC 2L standards (Table 8). The petroleum contaminant concentrations do not exceed the respective surface water standards by a factor of 10.

One (1) active drinking water supply well was located approximately 300 ft from the source of the release. Agra recommends that the site be ranked "High Risk".

## **B. Risk Characterization**

The Risk Classification and Land Use forms are attached in the Appendix.

## **C. Receptor Information**

### **1. Water Supply Wells**

A door-to-door survey to identify off-site water supply wells was performed at properties within 1,000 ft of the subject site. One (1) active water supply well (WSW-1) was identified approximately 300 ft from the source of the release. An interview with Mr. Jack Campbell III, owner of WSW-1, revealed that WSW-1 is currently being used as a primary drinking water source. Furthermore, the residence associated with WSW-1 is not currently connected to the public water supply. Mr. Campbell also stated that WSW-1 may be as shallow as 20 ft BGL.

One (1) inactive irrigation private water supply well (WSW-2) was identified approximately 550 ft south of the site. The owner of WSW-2, Mr. Poe, stated that WSW-1 is not currently active and was previously used for irrigation purposes only. Furthermore, the residence associated with WSW-2 is connected to the public water supply. No other private water supply wells were identified within 1,000 ft of the site. Surrounding property ownership information is included in Table 3 and Figure 3.

### **2. Public Water Supplies**

Telephone interview with Mr. Bob Stevens, Town Manager for the Town of Broadway, and Mr. Gerald Cox, Superintendent of Maintenance for the Town of Sanford, revealed that the Town of Sanford currently supplies drinking water to the properties surrounding the subject site.

The Town of Broadway currently purchases its drinking water from the Town of Sanford. The Town of Sanford obtains their drinking water from the Cape Fear River and does not operate any public water supply wells. Therefore, no public water supply wells are located within 1,000 ft of the site. County personnel contact information is included in Table 4.

### **3. Surface Water**

Drainage ditches were observed in the DOT right-of-way, along Highway 42 (Figure 2). The drainage ditches did not contain standing water during the site visits. A small pond was identified approximately 900 ft north of the site (Figure 3). The petroleum contamination detected in MW-1 and MW-2 did not exceed the surface water standards by a factor of 10.

### **4. Wellhead Protection Areas**

Telephone interviews with the Public Water Departments from the Town of Broadway and the Town of Sanford revealed that there are no wellhead protection areas located within 1,000 ft of the site.

## **5. Deep Aquifers in the Coastal Plain Physiographic Region**

According to the Geologic Map of North Carolina (1985) the site is located in the Middendorf Formation within the Piedmont Physiographic Region.

## **6. Subsurface Structures**

No subsurface structures were identified on the site.

## **7. Land Use**

The surrounding area is a mixture of residential properties, and undeveloped woodlands. Two (2) large cemeteries are located approximately 600 ft west of the site. The NC DOT is currently constructing the Highway 42 by-pass and by-pass on-ramp, located 600 ft east of the site (Figure 3). The land use of the surrounding area may change once the Highway 42 by-pass has been completed.

## **8. Property Owners and Occupants**

The surrounding property ownership information is included in Table 3 and Figure 3.

## **D. Site Geology and Hydrogeology**

According to the Geologic Map of North Carolina (1985) the site is located in the Middendorf Formation within the Piedmont Physiographic Region. Soils within this formation consist of gray to pale gray sand, sandstone, and mudstone, with orange cast and mottled clay balls with iron-cemented concretions. Soils encountered during the installation of MW-1 and MW-2 consisted of gray sandy clay to a depth of 3 ft BGL. Gray silty sand was encountered between 3 and 10 ft BGL.

## **E. Sampling Results**

### **Soil**

Soil samples were collected during the installation of monitoring wells MW-1 (SS-1 and SS-2) and MW-2 (SS-3 and SS-4), at depths of 5 ft BGL and 10 ft BGL. Additionally, soil samples were also collected from five (5) soil borings (SB-1 through SB-5) at a depth of 10 ft BGL.

Laboratory analysis of the soil samples revealed petroleum contamination in all the soil samples exceeding the method detection limits. However, none of the samples contained any petroleum contaminant exceeding the soil-to-groundwater MSCC standards. Soil laboratory analytical results are included in Table 7, Figure 4, and in the Appendix.

### **Groundwater**

Agra personnel supervised the installation of two (2) type II monitoring wells (MW-1 and MW-2) at the site on November 10, 2010. Environmental Drilling and Probing Services installed the monitoring wells in proximity to the former UST locations using an air-rig (Figure 2). MW-1 and MW-2 were each installed to a depth of 25 ft BGL and are screened between 10 and 15 ft BGL. Well construction information is included in Table 5 and in the Appendix.

Agra personnel collected groundwater samples from MW-1 and MW-2 on November 11, 2010. Depth to groundwater and field parameter readings were measured and recorded (Table 5 and Table 6, respectively). Each monitoring well was then purged of groundwater, three (3) times their well volume, prior to the collection of groundwater samples using disposable gloves and disposable polyethylene bailers. The groundwater samples were collected in 40-ml vials, 1-liter amber jars, and 8 ounce high-density polyethylene bottles. The groundwater samples were then placed on ice and shipped, under chain-of-custody, to Shealy Environmental to be analyzed by EPA Methods 6200B and 625, and MADEP-EPH, MADEP-VPH, and lead (3030c).

Laboratory analysis of the groundwater samples revealed benzene contamination in MW-1 (14 ppb) and MW-2 (9.5 ppb) exceeding the 15A NCAC 2L groundwater standard of 1 ppb. Additionally, naphthalene was also detected in MW-1 at the 15A NCAC 2L groundwater standard of 6.0 ppb. No other contaminants were detected in MW-1 or MW-2 exceeding the 15A NCAC 2L standards (Table 8). The petroleum contaminant concentrations do not exceed the respective surface water standards by a factor of 10. Groundwater analytical results are included in Table 8, Figure 4, and in the Appendix.

#### **Free Product Investigation**

No free product was observed during this sampling event.

#### **F. Conclusions and Recommendations**

Laboratory analysis revealed benzene contamination in MW-1 and MW-2 exceeding the 15A NCAC 2L groundwater standard of 1 ppb. The benzene concentrations did not exceed the gross contaminant level of 5,000 ppb.

Drainage ditches were identified in the DOT right-of-way along Highway 42 adjacent to the site. Additionally, a small pond is located approximately 900 ft north of the site. However, the benzene concentrations detected in MW-1 and MW-2 do not exceed the surface water standard by a factor of 10.

One (1) active private water supply well, WSW-1, was identified approximately 300 ft from the source of the release. WSW-1 is currently being used as a primary drinking water source and the associated residence is not connected to the public water supply.

Agra recommends that the site be ranked "High Risk" and efforts should be made to connect the residence associated with WSW-1 to the public water supply. If the residence cannot be connected to the public water supply, then Agra recommends that ORC socks be used to promote bioremediation at the site. Alternatively, a portable air sparge event may be performed at the site in an attempt to reduce the contaminant concentrations below the 15A NCAC 2L groundwater standards. If the subsequent sampling event reveals that the contaminant concentrations have not been reduced below the regulatory standards, then additional assessment may be required at the site.

# TABLES

Jack Campbell Property, #24435  
 Sanford, Lee County, North Carolina

Table 1  
 UST Information

Tank No.	UST Contents	Capacity (gallons)	Date Installed	Date Removed	Tank Dimensions	Associated with Release?
UST-1	Kerosene	1,000	1920s	2002	Unknown	Yes
UST-2	Gasoline	Unknown	1920s	2002	8 ft long	Yes
UST-3	Gasoline	Unknown	1920s	2002	6 ft long	Yes

Table 2  
 UST Ownership Information

UST #	UST Owner	Address	Telephone #	Date of Ownership
UST-1 UST-2 UST-3	Atlantic Richfield Company	NA (Dissolved)	NA	1920s-1943
UST-1 UST-2 UST-3	Mr. Jack Campbell, Sr.	NA (Deceased)	NA	1943-1954
UST-1 UST-2 UST-3	Ms. Linda Campbell	NA (Deceased)	NA	1954-1982
UST-1 UST-2 UST-3	Mr. Jack Campbell, Jr.	NA (Deceased)	NA	1982-2002

Jack Campbell, #24435  
Sanford, Lee County, North Carolina

Table 3  
Surrounding Property Owner Information

Map ID	Property Owner (Contact Phone #)	Property Address*	Property Owner's Address*	WSW (Status)
1 SITE	CAMPBELL, BERYL W	1235 BROADWAY RD SANFORD, NC 27330	1225 BROADWAY RD SANFORD, NC 27330	
2	CAMPBELL, JACK W III	1239 BROADWAY RD SANFORD, NC 27330	1225 BROADWAY RD SANFORD, NC 27330	WSW-1 (Active) Drinking
3	STEWART, TERRY LEIGH	1243 BROADWAY RD SANFORD, NC 27330	PO BOX 717 SANFORD, NC 27331	
4	NORRIS, ANN O	1251 BROADWAY RD SANFORD, NC 27330	2406 OVERBROOK SANFORD, NC 27330	
5	CAMPBELL, BERYL W	NA	1225 BROADWAY RD SANFORD, NC 27330	
6	CAMPBELL, LOIS BERYL	1225 BROADWAY RD SANFORD, NC 27330	1225 BROADWAY RD SANFORD, NC 27330	
7	CAMPBELL, LOIS BERYL	NA	1225 BROADWAY RD SANFORD, NC 27330	
8	SHALLOW WELL UN CHURCH OF CHRIST	1220 BROADWAY RD SANFORD, NC 27330	1220 BROADWAY RD SANFORD, NC 27330	
9	POE, MYRTLE MATTHEWS	NA	1127 BROADWAY RD SANFORD, NC 27330	WSW-2 (Inactive) Irrigation
10	SHALLOW WELL UN CHURCH OF CHRIST	1244 BROADWAY RD SANFORD, NC 27330	1220 BROADWAY RD SANFORD, NC 27330	
11	NC DOT	1248 BROADWAY RD SANFORD, NC 27330	PO Box 1067 ABERDEEN, NC 28315	
12	NC DOT	1252 BROADWAY RD SANFORD, NC 27330	PO Box 1067 ABERDEEN, NC 28315	

\* Property addresses and property owner's addresses were obtained from the Lee County Online GIS system.

Jack Campbell Property, #24435  
Sanford, Lee County, North Carolina

Table 4  
City Personnel Contact Information

<b>Office</b>	<b>Title</b>	<b>Name</b>	<b>Contact #</b>
Town of Broadway Water Department	Town Manager	Mr. Bob Stevens	919-258-9922
Town of Sanford Water Department	NA	NA	919-775-8307 (water plant) 919-775-8215 (customer service)
Town of Sanford Water Department	Superintendent of Maintenance	Mr. Gerald Cox	919-775-8137



Jack Campbell Property, #24435  
Sanford, Lee County, North Carolina

Table 5  
Monitoring Well Construction Data

Well I.D.#	Date Constructed	Date Measured	Total Depth (ft)	Screened Interval (ft)	Top of Casing Elevation	Depth to Water	Groundwater Elevation
MW-1	11/10/10	11/11/10	25	10-25	NA	12.58	NA
MW-2	11/10/10	11/11/10	25	10-25	NA	13.50	NA

Jack Campbell Property, #24435  
Sanford, Lee County, North Carolina

Table 6  
Field Parameter Measurements

Well I.D.#	Date Measured	DO	pH	Conductivity	Temp
MW-1	11/11/10	5.4	6.25	169	22.9
MW-2	11/11/10	6.2	6.00	148	21.7

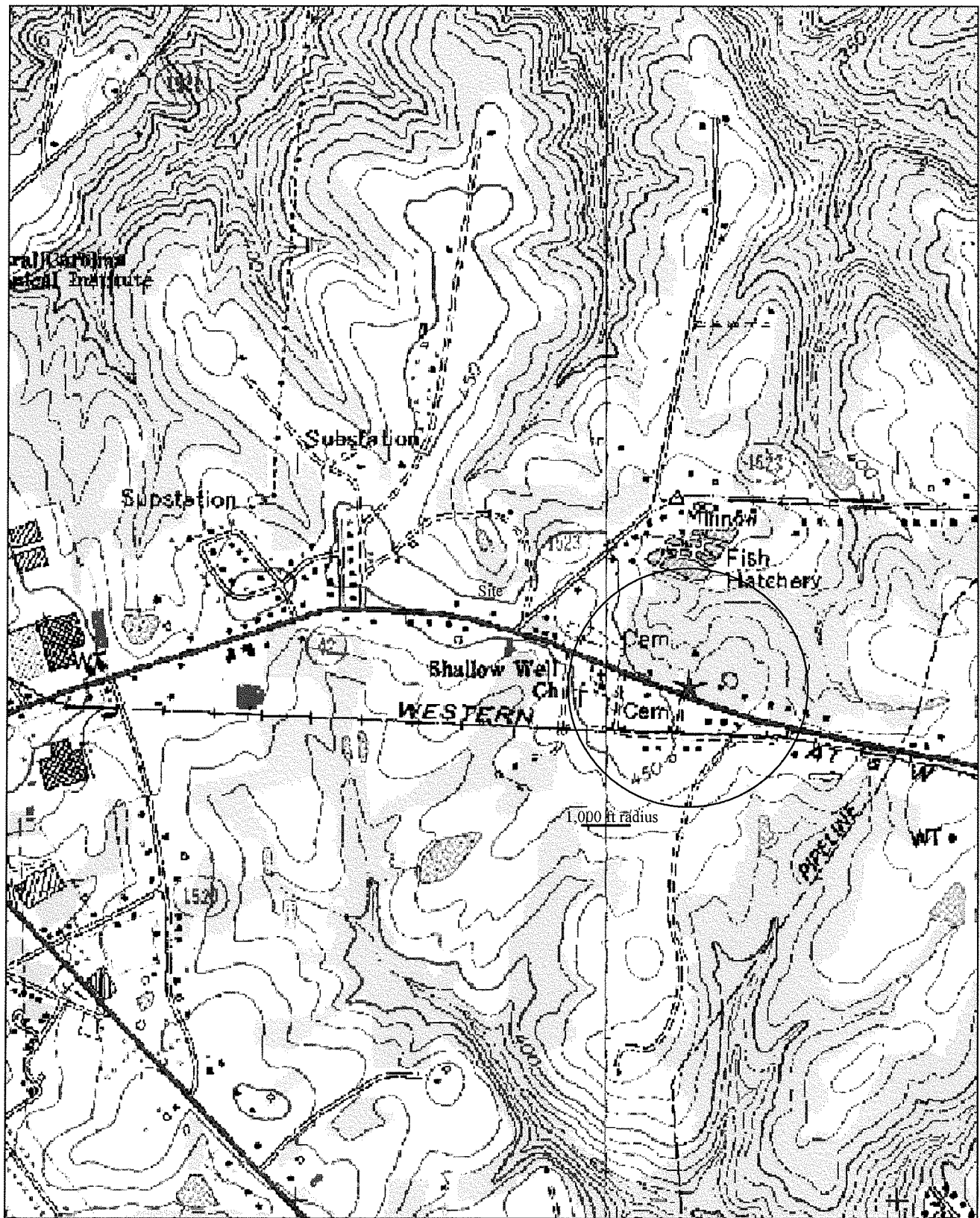


Table 8  
 Date: 12/14/10 Incident Number and Name: #24435 Jack Campbell Property  
 Summary of Groundwater Sampling Results

Analytical Method →		6200B	6200B	6200B	6200B	6200B	6200B	3030C	VPH	EPH	EPH	VPH	EPH		
Contaminant of Concern →															
Well ID	Sample ID	Date Collected	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Lead	C5-C8 Aliphatic	C9-C12 Aliphatic	C9-C18 Aliphatic	EPH	C19-C36 Aliphatic	VPH	EPH
MW-1	MW-1	11/11/10	14	10	7.5	45	6.0	2.1J	120	98	<100	<100	<100	51	<100
MW-2	MW-2	11/11/10	9.5	0.47J	<0.5	7.25	4.7	14.0	34	62	<100	<100	<100	<25	<100
2L Standard (ug/l)			1	600	600	500	6	15	420	4200	4200	42000	42000	210	210
GCL (ug/l)			5000	260000	84500	85500	6000	15000	NS	NS	NS	NS	NS	NS	NS

- Results reported in ug/l
- ug/L =micrograms per liter
- GCL = gross contamination level
- NA = Not Analyzed
- NS = No Groundwater Standard
- J = Concentrations detected above method detection limit, but below the reporting limit.

# FIGURES



3-D TopoQuads Copyright © 1999 Delorme Yarmouth ME 04096 Source Data USGS Scale: 1:12,800 Detail: 14-0 Datum: WGS84  
 0 ft 500 ft 1,000 ft

Site Location Map

Jack Compbell Property, #24435  
 1235 Broadway Road (HW 42)  
 Sonford, Lee County, NC

Agra Environmental, Inc.

P.O. Box 5611 Cary, NC 27512

Figure No:

1

Scale:

As Shown

Drawn By:

CJH

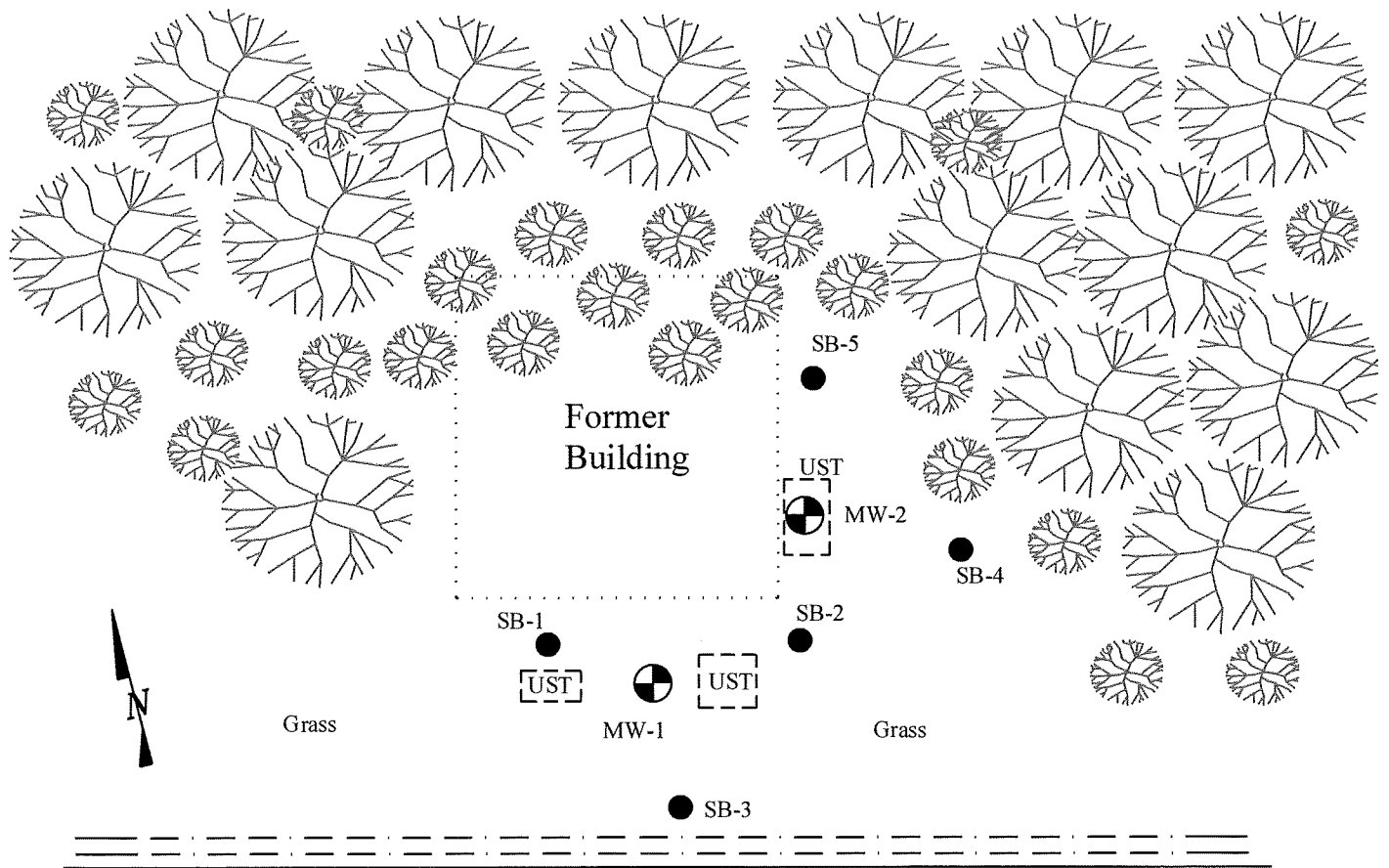
Checked By:

RS

Date:

12/15/10

Project No:



Broadway Road (HW 42)

Turn Lane

Broadway Road (HW 42)



	Monitoring Well		Former UST Basin
	Soil Boring Locations		Former Building
	Drainage Ditch		

**Site Map**

Jack Campbell Property, #24435  
 1235 Broadway Road (HW 42)  
 Sanford, Lee County, North Carolina

Agra Environmental, Inc.  
 P.O. Box 5611 Cary, NC 27512

Figure No:

2

Scale:

AS SHOWN

Drown By:

CJH

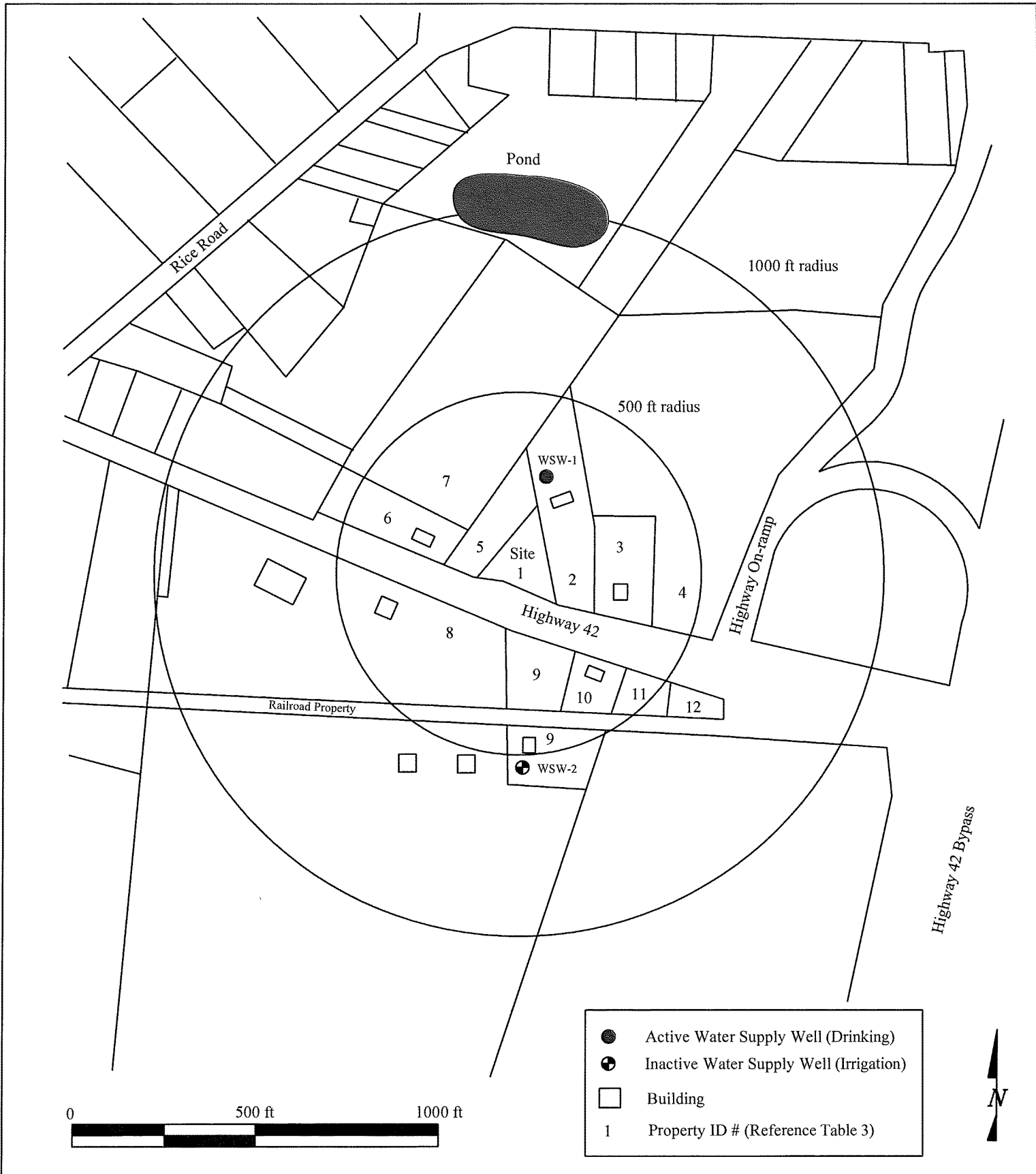
Checked By:

RS

Date:

12/14/10

Project No:



Surrounding Property Map  
 Jack Campbell Property, #24435  
 1235 Broadway Road (HW 42)  
 Sanford, Lee County, North Carolina

Agra Environmental, Inc.  
 P.O. Box 5611 Cary, NC 27512

Figure No:  
3

Scale:  
AS SHOWN

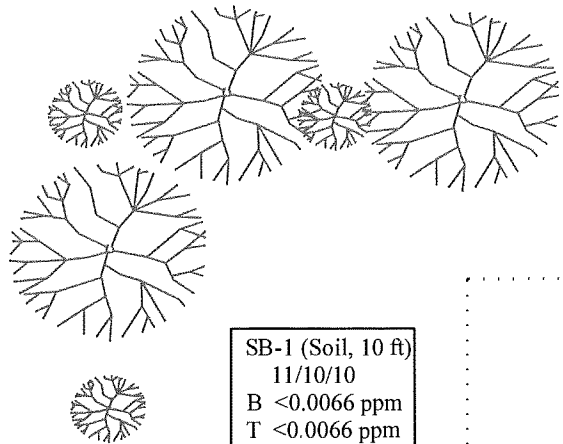
Drawn By:  
CJH

Checked By:  
RS

Date:  
12/14/10

Project No:





SB-5 (Soil, 10 ft)  
11/10/10  
B <0.0071 ppm  
T <0.0071 ppm  
E <0.0071 ppm  
X <0.0071 ppm  
N <0.0071 ppm

MW-2 (GW)  
11/11/10  
B **9.5 ppb**  
T 0.47 ppb  
E <0.5 ppb  
X 7.25 ppb  
N 4.7 ppb

SS-3 (Soil, 5 ft)  
11/10/10  
B <0.0052 ppm  
T <0.0052 ppm  
E 0.0022 ppm  
X 0.012 ppm  
N 0.0049 ppm

SB-1 (Soil, 10 ft)  
11/10/10  
B <0.0066 ppm  
T <0.0066 ppm  
E <0.0066 ppm  
X <0.0066 ppm  
N 0.016 ppm

Former Building

SS-4 (Soil, 10 ft)  
11/10/10  
B <0.0059 ppm  
T <0.0059 ppm  
E <0.0059 ppm  
X 0.0036 ppm  
N 0.0025 ppm

MW-1 (GW)  
11/11/10  
B **14 ppb**  
T 10 ppb  
E 7.5 ppb  
X 45 ppb  
N **6.0 ppb**

SB-1

MW-1

SB-2

SB-4

UST

UST

UST

MW-2

SB-3

SS-1 (Soil, 5 ft)  
11/10/10  
B <0.0051 ppm  
T <0.0051 ppm  
E <0.0051 ppm  
X <0.0051 ppm  
N <0.0051 ppm

SS-2 (Soil, 10 ft)  
11/10/10  
B <0.0059 ppm  
T <0.0059 ppm  
E <0.0059 ppm  
X <0.0059 ppm  
N 0.033 ppm

SB-3 (Soil, 10 ft)  
11/10/10  
B <0.0062 ppm  
T 0.004 ppm  
E 0.044 ppm  
X 0.23 ppm  
N 0.058 ppm

SB-2 (Soil, 10 ft)  
11/10/10  
B <0.0068 ppm  
T <0.0068 ppm  
E <0.0068 ppm  
X 0.0056 ppm  
N 0.012 ppm

SB-4 (Soil, 10 ft)  
11/10/10  
B <0.0064 ppm  
T <0.0064 ppm  
E <0.0064 ppm  
X <0.0064 ppm  
N <0.0064 ppm



	Monitoring Well		Former UST Basin
	Soil Boring Locations		Former Building
	Drainage Ditch		

Soil & Groundwater Laboratory Results  
Jack Campbell Property, #24435  
1235 Broadway Road (HW 42)  
Sanford, Lee County, North Carolina

Agra Environmental, Inc.  
P.O. Box 5611 Cary, NC 27512

Figure No: 4	Scale: AS SHOWN	Drawn By: CJH	Checked By: RS	Date: 12/15/10	Project No:
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# APPENDIX

# WELL CONSTRUCTION RECORDS



# NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3307

### 1. WELL CONTRACTOR:

Tommy Bolvard  
Well Contractor (Individual) Name  
Environmental Drilling & Probing Services, LLC  
Well Contractor Company Name  
17538 Greenhill Road  
Street Address  
Charlotte NC 28278  
City or Town State Zip Code  
(704) 607-7529  
Area code Phone number

### 2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# NA  
OTHER ASSOCIATED PERMIT#(if applicable) NA  
SITE WELL ID #(if applicable) MW-1

3. WELL USE (Check One Box) Monitoring  Municipal/Public   
Industrial/Commercial  Agricultural  Recovery  Injection   
Irrigation  Other  (list use) \_\_\_\_\_  
DATE DRILLED 11/10/10

### 4. WELL LOCATION:

1225 Broad Way Road  
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)  
CITY: Sanford COUNTY \_\_\_\_\_  
TOPOGRAPHIC / LAND SETTING: (check appropriate box)  
 Slope  Valley  Flat  Ridge  Other \_\_\_\_\_  
LATITUDE \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " DMS OR 35.461605 DD  
LONGITUDE \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " DMS OR -79.1225 DD  
Latitude/longitude source:  GPS  Topographic map  
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

### 5. FACILITY (Name of the business where the well is located.)

Jack Campbell Property  
Facility Name Facility ID# (if applicable) \_\_\_\_\_  
1225 Broad Way Road  
Street Address  
Sanford NC  
City or Town State Zip Code  
Contact Name \_\_\_\_\_  
Mailing Address \_\_\_\_\_  
City or Town State Zip Code \_\_\_\_\_  
Area code Phone number \_\_\_\_\_

### 6. WELL DETAILS:

a. TOTAL DEPTH: 25'  
b. DOES WELL REPLACE EXISTING WELL? YES  NO   
c. WATER LEVEL Below Top of Casing: 12.58 FT.  
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS -0.5' FT. Above Land Surface\*  
\*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): \_\_\_\_\_ METHOD OF TEST \_\_\_\_\_

f. DISINFECTION: Type \_\_\_\_\_ Amount \_\_\_\_\_

g. WATER ZONES (depth):  
Top \_\_\_\_\_ Bottom \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_  
Top \_\_\_\_\_ Bottom \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_  
Top \_\_\_\_\_ Bottom \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_

7. CASING: Depth	Diameter	Thickness/Weight	Material
Top <u>5</u> Bottom <u>0</u> Ft.	<u>2"</u>	<u>sch.40</u>	<u>PVC</u>
Top _____ Bottom _____ Ft.	_____	_____	_____
Top _____ Bottom _____ Ft.	_____	_____	_____

8. GROUT: Depth	Material	Method
Top <u>3</u> Bottom <u>2</u> Ft.	<u>Bentonite</u>	<u>Tremie</u>
Top <u>2</u> Bottom <u>0</u> Ft.	<u>Grout</u>	<u>Tremie</u>
Top _____ Bottom _____ Ft.	_____	_____

9. SCREEN: Depth	Diameter	Slot Size	Material
Top <u>25</u> Bottom <u>5</u> Ft.	<u>2" in.</u>	<u>0.01 in.</u>	<u>PVC</u>
Top _____ Bottom _____ Ft.	_____ in.	_____ in.	_____
Top _____ Bottom _____ Ft.	_____ in.	_____ in.	_____

10. SAND/GRAVEL PACK: Depth	Size	Material
Top <u>25</u> Bottom <u>3</u> Ft.	<u>#2med</u>	<u>Sand</u>
Top _____ Bottom _____ Ft.	_____	_____
Top _____ Bottom _____ Ft.	_____	_____

11. DRILLING LOG	Formation Description
Top _____ Bottom _____	_____
<u>0 / 3'</u>	<u>Grey B. H. Sandy Clay</u>
<u>3' / 25'</u>	<u>Grey Silty Sand</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

12. REMARKS: \_\_\_\_\_  
\_\_\_\_\_

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Tommy Bolvard 11/19/10  
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE  
Tommy Bolvard  
PRINTED NAME OF PERSON CONSTRUCTING THE WELL



# NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3307

### 1. WELL CONTRACTOR:

Tommy Bolvard  
Well Contractor (Individual) Name  
Environmental Drilling & Probing Services, LLC  
Well Contractor Company Name  
17538 Greenhill Road  
Street Address  
Charlotte NC 28278  
City or Town State Zip Code

(704) 607-7529  
Area code Phone number

### 2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# NA  
OTHER ASSOCIATED PERMIT#(if applicable) NA  
SITE WELL ID #(if applicable) MW-2

3. WELL USE (Check One Box) Monitoring  Municipal/Public   
Industrial/Commercial  Agricultural  Recovery  Injection   
Irrigation  Other  (list use) \_\_\_\_\_  
DATE DRILLED 11/10/10

### 4. WELL LOCATION:

1225 Broad Way Road  
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Sanford COUNTY \_\_\_\_\_

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

Slope  Valley  Flat  Ridge  Other \_\_\_\_\_

LATITUDE " ° ' " DMS OR 35.46163 DD

LONGITUDE " ° ' " DMS OR -79.12240 DD

Latitude/longitude source:  GPS  Topographic map  
(location of well must be shown on a USGS topo map and attached to this form if not using GPS)

### 5. FACILITY (Name of the business where the well is located.)

Jack Campbell Property  
Facility Name Facility ID# (if applicable)  
1225 Broad Way Road  
Street Address  
Sanford NC  
City or Town State Zip Code

Contact Name \_\_\_\_\_  
Mailing Address \_\_\_\_\_  
City or Town State Zip Code

( ) \_\_\_\_\_  
Area code Phone number

### 6. WELL DETAILS:

a. TOTAL DEPTH: 25'  
b. DOES WELL REPLACE EXISTING WELL? YES  NO   
c. WATER LEVEL Below Top of Casing: 13.50' FT.  
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS -0.5' FT. Above Land Surface\*  
\*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): \_\_\_\_\_ METHOD OF TEST \_\_\_\_\_

f. DISINFECTION: Type \_\_\_\_\_ Amount \_\_\_\_\_

g. WATER ZONES (depth):  
Top \_\_\_\_\_ Bottom \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_  
Top \_\_\_\_\_ Bottom \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_  
Top \_\_\_\_\_ Bottom \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_

7. CASING:	Depth	Diameter	Thickness/Weight	Material
Top	<u>5</u>	Bottom <u>0</u> Ft.	<u>2"</u>	<u>sch.40 PVC</u>
Top	_____	Bottom _____ Ft.	_____	_____
Top	_____	Bottom _____ Ft.	_____	_____

8. GROUT:	Depth	Material	Method
Top	<u>3</u>	Bottom <u>2</u> Ft.	<u>Bentonite Tremie</u>
Top	<u>2</u>	Bottom <u>0</u> Ft.	<u>Grout Tremie</u>
Top	_____	Bottom _____ Ft.	_____

9. SCREEN:	Depth	Diameter	Slot Size	Material
Top	<u>25</u>	Bottom <u>5</u> Ft.	<u>2" in.</u>	<u>0.01 in. PVC</u>
Top	_____	Bottom _____ Ft.	_____ in.	_____
Top	_____	Bottom _____ Ft.	_____ in.	_____

10. SAND/GRAVEL PACK:	Depth	Size	Material
Top	<u>25</u>	Bottom <u>3</u> Ft.	<u>#2med Sand</u>
Top	_____	Bottom _____ Ft.	_____
Top	_____	Bottom _____ Ft.	_____

11. DRILLING LOG	Top	Bottom	Formation Description
	<u>0</u>	<u>2'</u>	<u>Gray Buff Sand Clay</u>
	<u>2</u>	<u>25'</u>	<u>Coarse Silty Sand</u>
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

12. REMARKS: \_\_\_\_\_

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

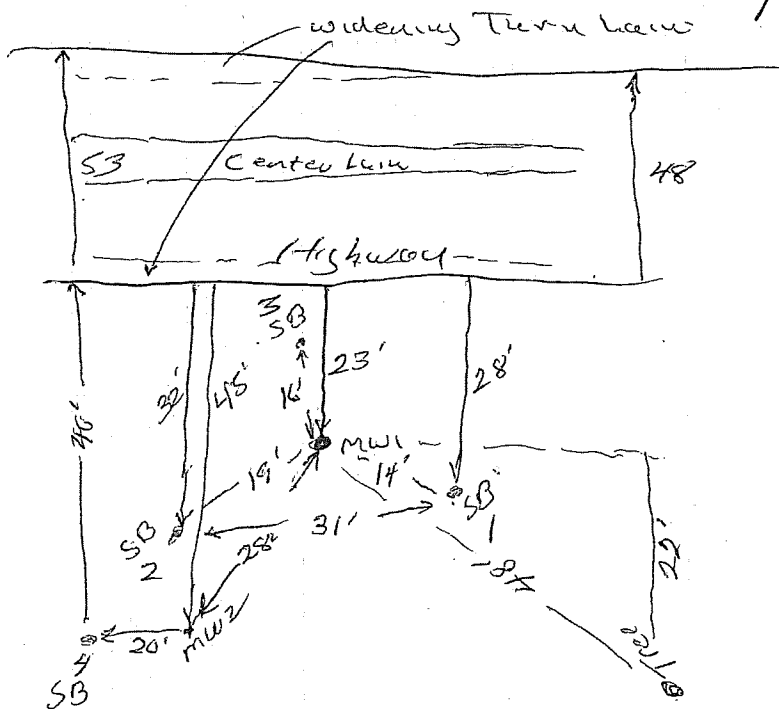
SIGNATURE OF CERTIFIED WELL CONTRACTOR [Signature] DATE 11/19/10

PRINTED NAME OF PERSON CONSTRUCTING THE WELL Tommy Bolvard

# FIELD NOTES

Date: 11/10/10

~~11/10/10~~  
Jack Campbell



MW1 and MW2

25' TD

1.5' Screen

GW MW1 = 12' 7"

(12.58)

MW2

GW 13' 6" At time of completion

(13.5')

SB1 through SB5

10' TD

Sample 10'

Jack Campbell Property

MW 1

GW 12' 6.8

12.68

DO 5.4 mg/l

PH 6.25

Temp 22.9

Cond 169

MW 2

GW 13' 5.9

13.59

6.2 mg/l

6.00

21.7

148

Sample Date

11/11/10



LAND USE AND RISK  
CLASSIFICATION LAND USE FORM

## Limited Site Assessment Risk Classification and Land Use Form

### Part I – Groundwater/Surface Water/Vapor Impacts

#### High Risk

1. Has the release contaminated any water supply well including any well used for non-drinking purposes? NO
  
2. Is a water supply well used for drinking water located within 1,000 feet of the source area of the release? YES  
One (1) active water supply well, WSW-1, is located approximately 300 ft from the source of the release. WSW-1 is currently being used as a primary drinking water source and the associated residence is not connected to the public water supply. An interview with the property owner revealed that WSW-1 might be as shallow as 20 ft BGL.
  
3. Is a water supply well not used for drinking water (e.g., irrigation, washing cars, industrial cooling water, filling swimming pools) located within 250 feet of the source area of the release? One (1) inactive irrigation WSW is located approximately 550 ft from the source of the release. NO
  
4. Does groundwater within 500 feet of the source area of the release have the potential for future use (there is no other source of water supply other than the groundwater)? NO
  
5. Do vapors from the release pose a threat of explosion because of accumulation of the vapors in a confined space or pose any other serious threat to public health, public safety or the environment? NO  
If yes, describe.
  
6. Are there any other factors that would cause the release to pose an imminent danger to public health, public safety, or the environment? NO  
If yes, describe.

#### Intermediate Risk

7. Is a surface water body located within 500 feet of the source area of the release? NO  
The closest surface water body is located approximately 900 ft north of the site.  
  
If YES, does the maximum groundwater contaminant concentration exceed the surface water quality standards and criteria found in 15A NCAC 2B .0200 by a factor of 10?
  
8. Is the source area of the release located within an approved or planned wellhead protection area as defined in 42 USC 300h-7(e)? NO  
If yes, describe.
  
9. Is the release located in the Coastal Plain Physiographic region as designated on a map entitled "Geology of North Carolina" published by the Department in 1985? NO  
  
If YES, is the source area of the release located in an area in which there is recharge to an unconfined or semi-confined deeper aquifer that is being used or may be used as a source of drinking water? NO  
If YES, describe.

10. Do the levels of groundwater contamination for any contaminant exceed the gross contamination levels (see Table 9) established by the Department? **NO**

## Part II - Land Use

### **Property Containing Source Area of Release**

The questions below pertain to the property containing the source area of the release.

1. Does the property contain one or more primary or secondary residences (permanent or temporary)? **NO**
2. Does the property contain a school, daycare center, hospital, playground, park, recreation area, church, nursing home, or other place of public assembly?  
Describe. **NO**
3. Does the property contain a commercial (e.g., retail, warehouse, office/business space, etc.) or industrial (e.g., manufacturing, utilities, industrial research and development, chemical/petroleum bulk storage, etc.) enterprise, an inactive commercial or industrial enterprise, or is the land undeveloped?  
Describe. The property has been cleared and is currently a vacant wooded lot. **NO**
4. Do children visit the property?  
Explain. **NO**  
The site is currently a vacant lot located along Highway 42.
5. Is access to the property reliably restricted consistent with its use (e.g., by fences, security personnel or both)? **NO**  
Explain. The property is not fenced or restricted.
6. Do pavement, buildings, or other structures cap the contaminated soil?  
Describe. **NO**  
  
If yes, what mechanisms are in place or can be put into place to ensure that the contaminated soil will remain capped in the foreseeable future?
7. What is the zoning status of the property?  
The zoning status of the property is R-20 (Residential)
8. Is the use of the property likely to change in the next 20 years? **YES**  
The property has been cleared and is currently a vacant wooded lot. The use of the property would likely change in the next 20 years, due to its proximity to the new Highway bypass on-ramp.

### **Property Surrounding Source Area of Release**

The questions below pertain to the area within 1,500 feet of the source area of the release (excludes property containing source area of the release):

1. What is the distance from the source area of the release to the **nearest** primary or secondary residence (permanent or temporary)?  
The closest off-site residence is located approximately 250 ft north of the source of the release.

2. What is the distance from the source area of the release to the nearest school, daycare center, hospital, playground, park, recreation area, church, nursing home or other place of public assembly?

The Shallow Well Church of Christ is located approximately 600 ft west of the site.

3. What is the zoning status of properties in the surrounding area?

The zoning status of the surrounding properties is a mixture of R-20 (Residential) and RA (Residential/Agricultural).

4. Briefly characterize the use and activities of the land in the surrounding area.

The surrounding area is a mixture of residential properties and undeveloped woodland. The NC DOT is in the process of constructing a bypass and bypass on-ramp approximately 600 ft to the east of the site.

# SITE PHOTOGRAPHS











# GROUNDWATER MONITORING LETTER REPORT

Jack Campbell Property (Incident #24335)

1235 Broadway Road (NC Highway 42)

Sanford, Lee County, North Carolina

July 21, 2015

Terracon Project No. 70159694



**Prepared for:**

North Carolina Department of Environment and Natural Resources  
Division of Waste Management  
Raleigh, North Carolina

**Prepared by:**

Terracon Consultants, Inc.  
Raleigh, North Carolina

[terracon.com](http://terracon.com)

**Terracon**

Environmental



Facilities



Geotechnical



Materials

July 21, 2015

Mr. Hassan Osman  
North Carolina Department of Environment and Natural Resources  
Division of Waste Management  
1637 Mail Service Center  
Raleigh, North Carolina 27699-1637  
Email: [hassan.osman@ncdenr.gov](mailto:hassan.osman@ncdenr.gov)

**Re: Groundwater Monitoring Letter Report  
Jack Campbell Property  
1235 Broadway Road (NC Highway 42)  
Sanford, Lee County, North Carolina  
Incident Number: 24335  
Terracon Project No. 70159694**

Dear Mr. Osman:

Terracon Consultants, Inc. (Terracon) is pleased to submit this groundwater monitoring letter report for the above referenced property. This report has been prepared in general accordance with North Carolina Department of Environment and Natural Resources (NCDENR), Underground Storage Tank (UST) Section *Guidelines for Assessment and Corrective Action for UST Releases*, dated July 15, 2008, revised December 2013 and Task Authorization No. 01, approved on April 20, 2015.

The Jack Campbell Property is situated on the northern side of Broadway Road (NC Highway 42) in Sanford, North Carolina (**Figures 1 and 2**). A petroleum release related to a former onsite UST system, which is depicted on **Figure 3**, was discovered at the site in 2002 during a Preliminary Site Assessment (PSA) being conducted for the North Carolina Department of Transportation (NCDOT). Two water supply wells (WSW-1 and WSW-2) have been identified within 1,000 feet of the source area. Information pertaining to these water supply wells is provided on **Table 1** and their locations are depicted on **Figure 4**. Municipal water is available to properties located within 1,000 feet of the source area. Water supply well and municipal water availability information was gathered during a 2010 Phase I Limited Site Assessment.

Terracon personnel mobilized to the site on May 19, 2015 in an attempt to collect a groundwater sample from on-site monitoring wells MW-1 and MW-2 and water supply well WSW-1. An attempt was not made to sample water supply well WSW-2 as it is an inactive well located beyond 250 feet from the source area. A sample was not obtained from water supply well WSW-1 as Mr. Jack Campbell, owner of the site and the WSW-1 property would not grant Terracon permission to collect the WSW-1 sample. The locations of monitoring wells MW-1 and MW-2 are depicted on **Figure 2**. During this sampling event, depth to groundwater in the monitoring wells ranged from 7.33 (MW-1) to 8.06 (MW-2) feet below top-of-casing (bTOC). Surficial topography suggests that groundwater would flow to the north. Measureable thicknesses of free product were not observed in the monitoring wells. Monitoring well construction details are provided in **Table 2**.

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



The groundwater samples were collected and placed in laboratory-supplied glassware, labeled and stored in an ice-packed cooler. The samples along with the chain-of-custody documentation were delivered to Pace Analytical Services, Inc. in Huntersville, North Carolina for analysis by EPA Method 6200B including methyl tert-butyl ether (MTBE), ethylene dibromide (EDB), and di-isopropyl ether (IPE.) Groundwater analytical data are summarized in **Table 3** and depicted on **Figure 3**.

Benzene (150 micrograms per liter [ $\mu\text{g/L}$ ]), 1,2-dichloroethane (6.6  $\mu\text{g/L}$ ), and naphthalene (20.3  $\mu\text{g/L}$ ) were detected at concentrations above their respective 15A NCAC 2L groundwater standards (2L standards) in monitoring well MW-1. In addition, benzene (1.8  $\mu\text{g/L}$ ) was detected above its 2L standard in MW-2. Additional petroleum constituents were detected in the monitoring wells, but at concentrations below their respective 2L standards.

Terracon recommends that WSW-1 be properly abandoned and the WSW-1 property be connected to the municipal water system. Pending the completion of the municipal water connection and abandonment of the water supply well WSW-1, the release incident could be closed with a Notice of Residual Petroleum (NORP) restricting the use of groundwater at the site.

If you have any questions regarding this report or the assessment activities, please contact us at (919) 873-2211.

Sincerely,  
**Terracon Consultants, Inc.**

Justin L. Fabriziani  
Project Scientist

Michael T. Jordan, PG, RSM  
Senior Project Geologist

- Attachments:
- Figure 1 – Site Location Map
  - Figure 2 – Site Plan
  - Figure 3 – Groundwater Analytical Results – 05/19/2015
  - Figure 4 – Water Supply Well Location
  - Table 1 – Water Supply Well Information
  - Table 2 – Monitoring Well Construction Information
  - Table 3 – Summary of Groundwater Analytical Results
  - Appendix A – Laboratory Analytical Results and Chain of Custody Form
  - Appendix B – Photographs and Field Notes

## **FIGURES**

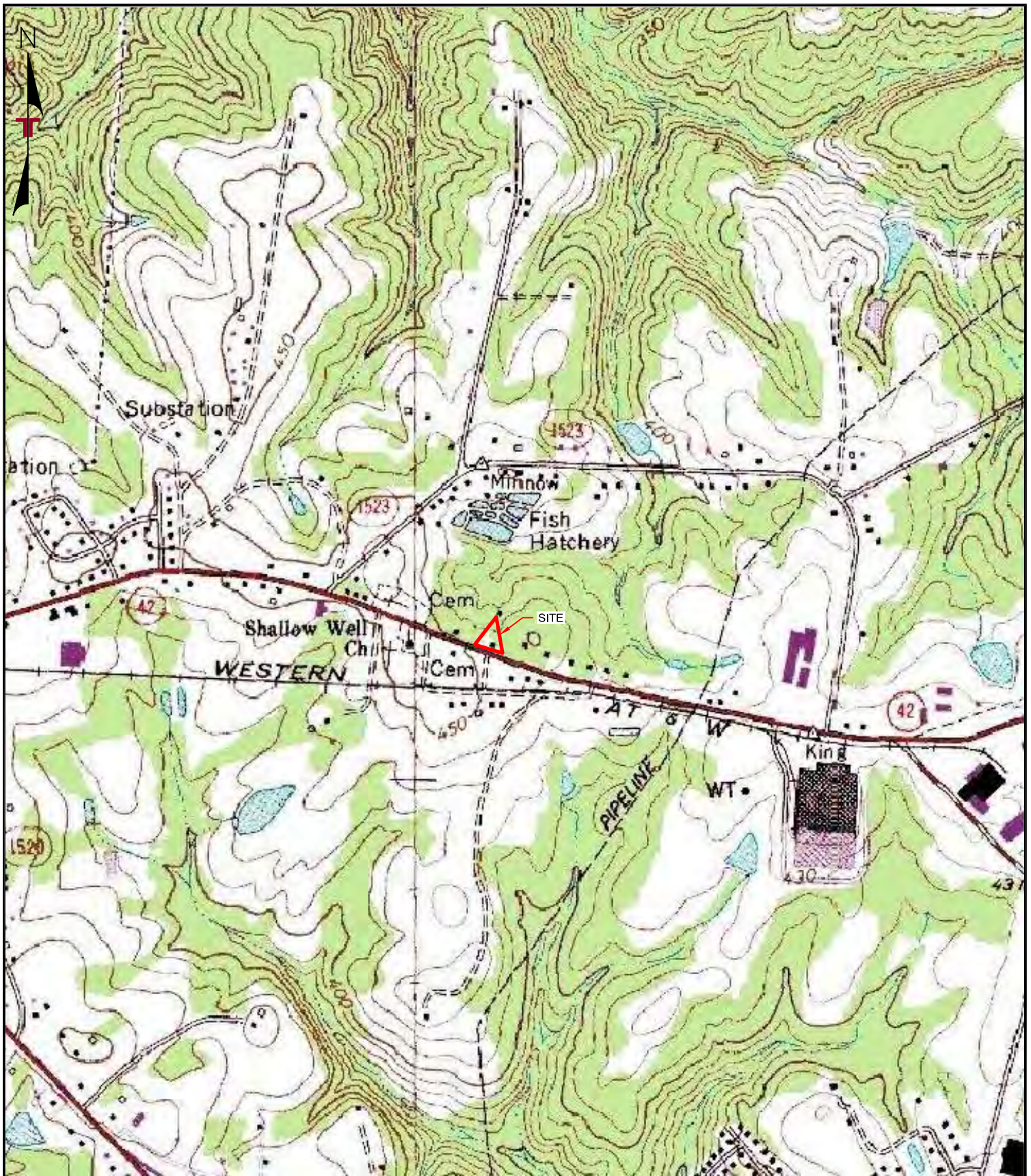


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	JLF	Project No.	70159694
Drawn By:	RLT/PTK	Scale:	AS SHOWN
Checked By:	JLF	File No.	70159694
Approved By:	JLF	Date:	06/02/2015

**Terracon**  
 Consulting Engineers and Scientists  
 2401 BRENTWOOD ROAD, STE. 107 RALEIGH, NC 27604  
 PH. (919) 873-2211 FAX. (919) 873-8555

SITE LOCATION PLAN  
 FORMER JACK CAMPBELL PROPERTY  
 (INCIDENT # 24435)  
 1235 NC HIGHWAY 42  
 SANFORD, LEE COUNTY, NORTH CAROLINA

Fig No.  
 1



**DATA SOURCES:**

- 1) WELL LOCATIONS - SOLUTIONS INDUSTRIAL & ENVIRONMENTAL SERVICES
- 2) SITE BOUNDARY - LEE COUNTY GIS
- 3) IMAGERY - GOOGLE MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



<b>LEGEND</b>	
	MONITORING WELL
	SITE BOUNDARY
	FORMER UST



Project Mngr:	JLF	Project No.	70159694
Drawn By:	RLT/PTK	Scale:	AS SHOWN
Checked By:	JLF	File No.	70159694
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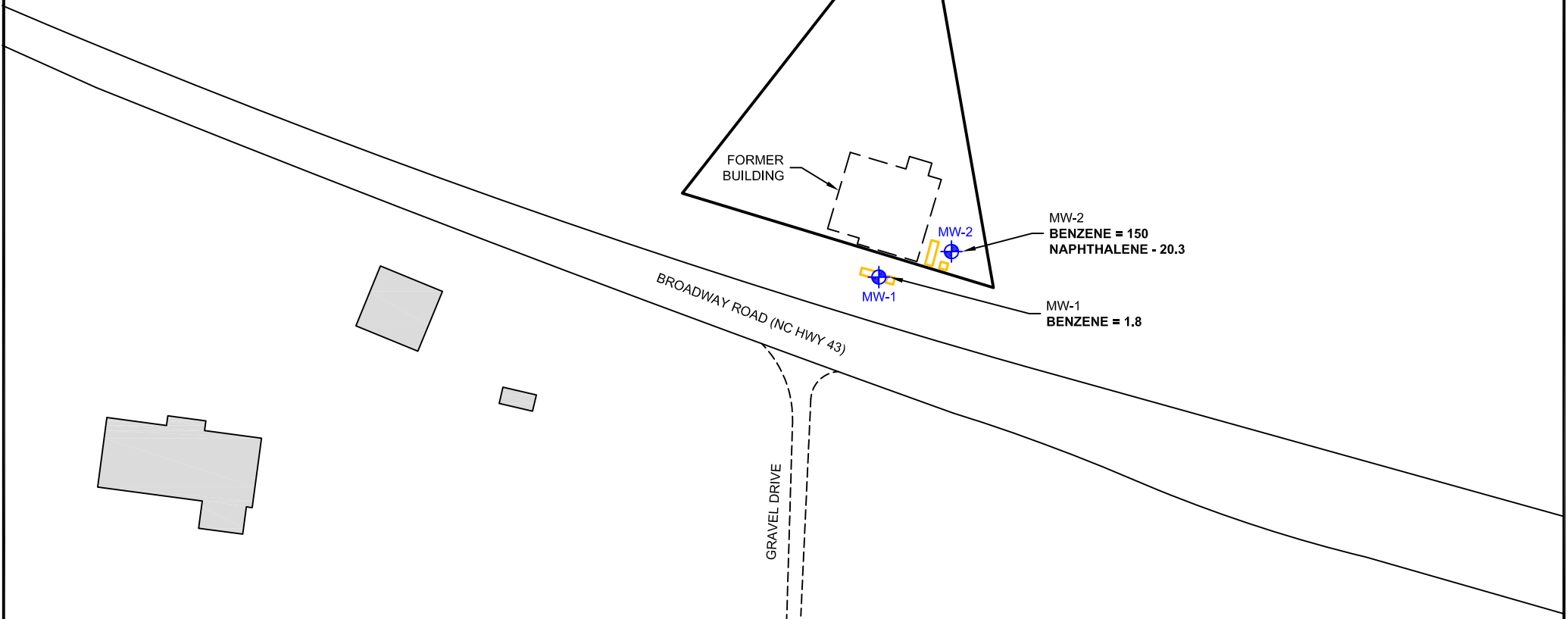
<b>SITE PLAN</b>
FORMER JACK CAMBELL PROPERTY (INCIDENT #24435) 1235 NC HIGHWAY 42 SANFORD, LEE COUNTY, NORTH CAROLINA

Fig No.	2
---------	---



**LEGEND**

-  MONITORING WELL
-  SITE BOUNDARY
-  FORMER UST



**NOTES:**  
 1) BOLDED CONCENTRATIONS EXCEED NCDENR 2L STANDARDS.  
 2) CONCENTRATIONS IN µg/L.  
 3) ONLY DETECT COMPOUNDS ARE SHOWN.

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngcr:	JLF	Project No.:	70159694
Drawn By:	RLT/PTK	Scale:	AS SHOWN
Checked By:	JLF	File No.:	70159694
Approved By:	JLF	Date:	06/02/2015

**Terracon**  
 Consulting Engineers and Scientists

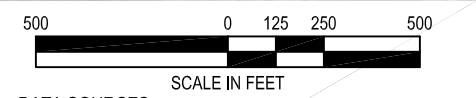
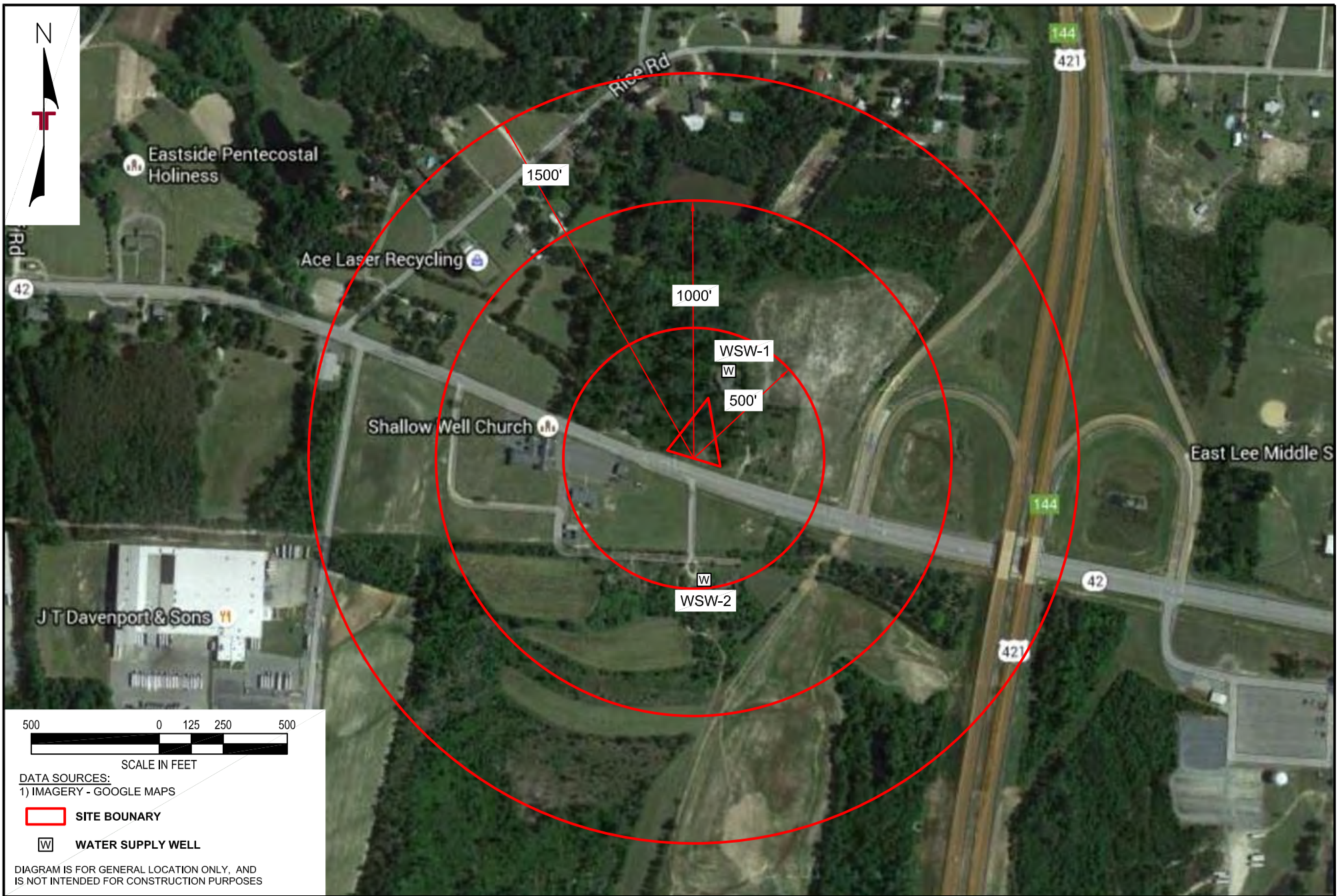
2401 BRENTWOOD ROAD, STE. 107 RALEIGH, NC 27604  
 PH. (919) 873-2211 FAX. (919) 873-9555

**GROUNDWATER ANALYTICAL RESULTS - 05/19/2015**

FORMER JACK CAMBELL PROPERTY  
 (INCIDENT #24435)  
 1235 NC HIGHWAY 42  
 SANFORD, LEE COUNTY, NORTH CAROLINA

Fig No.	<b>3</b>
---------	----------





DATA SOURCES:  
1) IMAGERY - GOOGLE MAPS

- SITE BOUNDARY
- W WATER SUPPLY WELL

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	JLF	Project No.	70159694
Drawn By:	RLT/PTK	Scale:	AS SHOWN
Checked By:	JLF	File No.	70159694
Approved By:	JLF	Date:	06/29/2015

**Terracon**  
Consulting Engineers and Scientists

2401 BRENTWOOD ROAD, STE. 107    RALEIGH, NC 27604  
PH. (919) 873-2211    FAX. (919) 873-9555

<p><b>WATER SUPPLY WELL LOCATION</b></p> <p>FORMER JACK CAMBELL PROPERTY (INCIDENT #24435) 1235 NC HIGHWAY 42 SANFORD, LEE COUNTY, NORTH CAROLINA</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>Fig No.</p> <p><b>4</b></p>
--------------------------------

## **TABLES**

**TABLE 1**  
**Water Supply Well Information**

**Jack Campbell Property**  
**Sanford, North Carolina**

**Terracon Project No. 70159694**  
**NCDENR Incident No. 24335**

Well No.	Property Owner	Mailing Address	Property Address	Distance/Direction from source area	Well Status/Use	Parcel ID	Notes
WSW-1	Jack W. Campbell III	1225 Broadway Road Sanford, NC 27730	1225 Broadway Road Sanford, NC 27730	400 feet / north	Potable	9662-32-5939-00	
WSW-2	Myrtle Matthews Pope	1127 Broadway Road Sanford, NC 27330	1127 Broadway Road Sanford, NC 27330	500 feet / south	Inactive	9662-32-6417-00	

**TABLE 2**  
**Monitoring Well Construction Information**

**Jack Campbell Property**  
**Sanford, North Carolina**

**Terracon Project No. 70159694**  
**NCDENR Incident No. 24335**

Well Id	Date Installed	Date Water Level Measured	Well Casing Depth (ft. BGS)	Screened Interval (x to y ft. BGS)	Bottom of Well (ft. BGS)	Top of Casing Elevation (ft.)	Depth to Water from Top of Casing (ft.)	Free Product Thickness (ft.)	Groundwater Elevation (ft.)	Comments
MW-1	11/10/2010	11/11/10	10	10-25	25	Not surveyed	12.58	-	N/A	Type II
		07/22/10					5.98	-	N/A	
		05/19/15					7.33	-	N/A	
MW-2	11/10/2010	11/11/10	10	10-25	25	Not surveyed	13.50	-	N/A	Type II
		07/22/10					6.49	-	N/A	
		05/19/15					8.06	-	N/A	

Notes:

1. "-" indicates, no free product was measured
2. Groundwater elevations adjusted for measurable free product by using the following calculation: (TOC Elevation - Depth to water) + (FP thickness \* 0.729)
3. 0.729 is the specific gravity for automotive gasoline
4. N/A = not applicable

**TABLE 3**  
**Summary of Groundwater Analytical Results**

Jack Campbell Property  
Sanford, North Carolina

Terracon Project No. 70159694  
NCDENR Incident No. 24335

Analytical Method		EPA Method 6200B																
Contaminant of Concern →																		
Well/Sample I.D.	Date Collected (mm/dd/yy)	Benzene	n-Butylbenzene	sec-Butylbenzene	1,2-Dibromoethane (EDB)	1,2-Dichloroethane	Diisopropyl Ether (IPE)	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Methyl tert-Butyl Ethyl (MTBE)	Naphthalene	n-Propylbenzene	Styrene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes (Total)
MW-1	11/11/10	14	ND	ND	ND	ND	10.3	7.5	ND	ND	10.8	6	ND	-	10	1	ND	45
	07/23/13	110	2.4	0.73	ND	7.9	ND	50	5.9	0.85	ND	24	5.4	-	24	58	22	167
	05/19/15	150	<0.50	0.37 J	<0.50	6.6	<0.50	11.0	2.9	<0.50	<0.50	20.3	2.2	<0.50	2.8	1.1	<0.50	5.5
MW-2	11/11/10	9.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.7	2.4	-	0.47 J	ND	ND	7.25
	07/23/13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND
	05/19/15	1.8	<0.50	<0.50	<0.50	0.34 J	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
2L Standard (ug/L)		1	70	70	0.02	0.4	70	600	70	25	20	6	70	70	600	400	400	500
GCL (ug/L)		5,000	6,900	8,500	50	400	70,000	84,500	25,000	11,700	20,000	6,000	30,000	70,000	260,000	28,500	25,000	85,500

- Notes: 1) All results in micrograms per liter (µg/L).  
2) '-' denotes not analyzed.  
3) Gray shading denotes concentrations above 2L standard.  
4) Yellow shading denotes concentrations above GCLs.  
5) J - estimated value below laboratory reporting limit and above method detection limit

**APPENDIX A**  
**LABORATORY ANALYTICAL RESULTS AND**  
**CHAIN-OF-CUSTODY FORM**

**APPENDIX B**  
**PHOTOGRAPHS and FIELD NOTES**

Groundwater Sampling Event – Terracon Project No. 70159694-24335  
**Jack Campbell Property (Incident #24335)**  
Date Photos Taken: May 19, 2015



**Photo #1** View of the site from the south



**Photo #2** View of MW-1 southwest



Groundwater Sampling Event – Terracon Project No. 70159694-24335  
**Jack Campbell Property (Incident #24335)**  
Date Photos Taken: May 19, 2015



**Photo #3** View of MW-2 facing northeast



**Photo #4** View of the site from southeast

5/19/15

0856- KH arrive on site.  
Objective: locate, gauge, sample  
2 MW and 1 SW.

0856- locate 2 MW & Daily  
Tailgate Safety

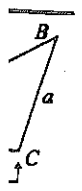
0922- found wells, took pictures.  
Calibrate YSI

item	before cal	after cal.
DM 4.00	3.67	4.00
pH 10.00	10.05	10.00
pH 7.00	7.27	7.00
Spec Cond	1.189	1.413
ORP	235.6	240.0

info about: both wells good condition, part  
missing locks

MW-1  
TD- 25ft  
Screen- 10 to 25ft ← fire ants  
DTW- 7.33ft everywhere

MW-2  
TD- 25ft  
Screen- 10 to 25ft  
DTW- 8.06ft



1/2  
1/2  
1/2

B)  
B)

0940- begin setting up to begin  
 purge at 10000 MW-1  
 0947- begin purging MW-1  
 1022- Sample MW-1 mho to MW-2  
 to begin purging MW-2  
 1031- begin purging MW-2  
 more info about wells-  
 MW-1  
 customer: EDPS  
 Charlotte, NC 28278  
 Reg. No. 3307  
 date: 11/10/10; depth: 25ft  
 screen: 10-25ft  
 sand: 0-25ft  
 grout: 0-6ft  
 bentonite: 6-8ft  
 casing depth: 10-0 depth diameter: 2in  
 MW-2  
 customer: EDPS  
 Charlotte, NC 28278  
 Reg. No. 3307  
 date: 11/10/10; depth: 25ft  
 casing depth: 0-10 ft diameter: 2in  
 screen: 10-25ft

sand: 0-25ft  
 bentonite: 6-8ft  
 grout: 0-6ft  
 1100- Sample MW-2 mho to 1031-1  
 back up site.  
 1133- OWNER didn't want us  
 to sample water. didn't  
 walk over like we use  
 site.  
 1125- KPA leave site  
 5/19/15

## Groundwater Sampling Log

Project No. 70159694  
 Site Location Sanford, NC  
 Weather 70s Sunny

Date 5/19/15  
 Well ID MW-1  
 Sample Collection Time 1022

### Casing

Diameter	Gal/ft	L/ft
<input type="checkbox"/> 6	1.47	5.56
<input type="checkbox"/> 4	.653	2.47
<input type="checkbox"/> 3	.367	1.39
<input checked="" type="checkbox"/> 2	.163	.618
<input type="checkbox"/> 1	.041	.154
<input type="checkbox"/> 3/4	.023	.087

### Evacuation Data

Screen Length (ft bls)	<u>10</u>
Well Length (ft bTOC)	<u>25</u>
Depth to water (ft bTOC)	<u>7.33</u>
Water column length (ft)	<u>17.67</u>
Well Volume	<u>2.88</u>

### Sample Method

- Peristaltic  
 Bladder  
 Bailor  
 Monsoon  
 Grundfos  
 Monsoon  
 PDB

### Purge Device

- Dedicated  
 Disposable  
 Decontaminated

### QA/QC Samples

- Duplicate  
 MS/MSD  
 Equipment Blank  
 Field Blank

### Sample ID for QA/QC

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Field Parameters

Time	Purge	Temp (°C)	pH (SU)	DO (mg/L)	Cond. (µmhos/cm)	Turb. (NTU)	Redox (mV)	Flow (mL/min)	Depth to water (bTOC) (ft)
0953	0	19.32	4.38	1.71	211		193.2		
0959	0.25	19.16	3.27	1.22	130		254.7		
1004	0.75	19.09	3.09	1.06	121		270.5		
1010	1	18.90	3.01	1.07	113		286.9		
1015	1.5	18.91	3.00	0.94	111		291.8		
1020	2	18.92	3.00	1.16	110		297.6		

### Laboratory Analyses

Analytical Parameter	Method	No. Bottles	Bottle Size/Type	Preservative
<input checked="" type="checkbox"/> VOCs	<u>6200B</u>	<u>3</u>	<u>40mL</u>	<u>HCl</u>
<input type="checkbox"/> PAHs				
<input type="checkbox"/> SVOCs				
<input type="checkbox"/> TPH				
<input type="checkbox"/> Metals				
<input type="checkbox"/>				

Notes: Fire ants on this MW, good condition, 2 bolts, missing well lock

Sampling Personnel: Natalie Shantz

## Groundwater Sampling Log

Project No. 70159769A  
 Site Location Santa Rosa, NC  
 Weather 70s Sunny

Date 5/19/15  
 Well ID MW-2  
 Sample Collection Time 1100

### Casing

Diameter	Gal/ft	L/ft
<input type="checkbox"/> 6	1.47	5.56
<input type="checkbox"/> 4	.653	2.47
<input type="checkbox"/> 3	.367	1.39
<input checked="" type="checkbox"/> 2	.163	.618
<input type="checkbox"/> 1	.041	.154
<input type="checkbox"/> 3/4	.023	.087

### Evacuation Data

Screen Length (ft bls)	<u>10</u>
Well Length (ft bTOC)	<u>25</u>
Depth to water (ft bTOC)	<u>8.06</u>
Water column length (ft)	<u>16.94</u>
Well Volume	<u>2.76</u>

### Sample Method

Peristaltic  
 Bladder  
 Bailer  
 Monsoon  
 Grundfos  
 Monsoon  
 PDB

### Purge Device

Dedicated  
 Disposable  
 Decontaminated

### QA/QC Samples

Duplicate  
 MS/MSD  
 Equipment Blank  
 Field Blank

### Sample ID for QA/QC

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Field Parameters

Time	Purge	Temp (°C)	pH (SU)	DO (mg/L)	Cond. (µmhos/cm)	Turb. (NTU)	Redox (mV)	Flow (mL/min)	Depth to water (bTOC) (ft)
1035	0	17.83	3.33	4.91	62		302.7		
1041	0.5	17.23	3.02	2.33	61		342.9		
1047	1.5	17.07	2.76	2.17	60		375.9		
1052	2.5	17.04	2.68	2.21	60		390.3		
1058	3.5	17.04	2.69	1.89	61		398.0		

### Laboratory Analyses

Analytical Parameter	Method	No. Bottles	Bottle Size/Type	Preservative
<input checked="" type="checkbox"/> VOCs	6200B	3	40ml	HCl
<input type="checkbox"/> PAHs				
<input type="checkbox"/> SVOCs				
<input type="checkbox"/> TPH				
<input type="checkbox"/> Metals				
<input type="checkbox"/>				

Notes: Condition good, 2 kolds, missing lock.

Sampling Personnel: Katie Haney

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

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PYRAMID GEOPHYSICAL SERVICES  
(PROJECT 2018-041)

# GEOPHYSICAL SURVEY

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## METALLIC UST INVESTIGATION: PARCELS 77, 78 & 79 NCDOT PROJECT R-3830 (38887.1.1)

1235 BROADWAY RD., 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.  
NC License #2181

Reviewed by: \_\_\_\_\_

Douglas A. Canavello, P.G.  
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406

P: 336.335.3174 F: 336.691.0648

C257: GEOLOGY C1251: ENGINEERING

**GEOPHYSICAL INVESTIGATION REPORT**  
**Parcels 77, 78 & 79 – 1235 Broadway Rd.**  
**Sanford, Lee County, North Carolina**

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Discussion of Results.....	3
<i>Discussion of EM Results</i> .....	3
<i>Discussion of GPR Results</i> .....	4
Summary & Conclusions .....	5
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**Figures**

- Figure 1 – Parcels 77, 78 & 79 Geophysical Survey Boundaries and Site Photographs
- Figure 2 – Parcels 77, 78 & 79 EM61 Results Contour Map
- Figure 3 – Parcels 77, 78 & 79 GPR 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

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**Project Description:** Pyramid Environmental conducted a geophysical investigation for Kleinfelder at Parcels 77, 78 & 79, located at 1235 Broadway Rd., 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 seven EM anomalies were identified. Several of the EM anomalies were directly attributed to visible cultural features. GPR was performed around areas of vehicle interference and an area of interference caused by a cluster of signs. The GPR did not record any evidence of large metallic structures such as USTs around the vehicles; utilities and apparent buried debris were observed in the GPR results. The GPR did not record any evidence of large metallic structures such as USTs around the signs. Collectively, the geophysical data did not record any evidence of metallic USTs at Parcels 77, 78 & 79.

## INTRODUCTION

---

Pyramid Environmental conducted a geophysical investigation for Kleinfelder at Parcels 77, 78 & 79, located at 1235 Broadway Rd., 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 small residential building surrounded by a grass field and asphalt road. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**. It should be noted that some portions of the proposed ROW and/or easements were inaccessible to the geophysical instruments due to dense vegetation. Data were collected across all accessible areas.

## 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
<b>Known UST</b> Active tank - spatial location, orientation, and approximate depth determined by geophysics.	<b>Probable UST</b> Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	<b>Possible UST</b> Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist’s discretion.

## DISCUSSION OF RESULTS

### *Discussion of EM Results*

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

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

<b>Metallic Anomaly #</b>	<b>Cause of Anomaly</b>	<b>Investigated with GPR</b>
1	Group of Signs	☑
2	Flag Pole	
3	Utility	☑
4	Storm Drain/Sewer	
5	Sign	
6	Storm Drain/Sewer	
7	Vehicles	☑

Several of the EM anomalies were directly attributed to visible cultural features at the ground surface, including utilities, signs, a flag pole, storm drains, and a vehicle. GPR was performed across Anomaly 1 due to the metallic interference from a group of signs. GPR was performed across Anomaly 3 to verify that this feature was associated with a buried utility. GPR was performed around the vehicles (Anomaly 7) 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. A total of seven formal GPR transects were performed at the parcel. All of the transect images are included in **Appendix A**. GPR Transects 1-4 were performed across EM Anomaly 7. These transects did not record any evidence of large metallic structures such as USTs within the area of vehicle interference; however, utilities and apparent buried debris were observed in the GPR results in this area. GPR Transects 5 and 6 were performed across EM Anomaly 1 and did not record any evidence of large metallic structures such as USTs within the area of interference caused by the signs. GPR Transect 7 verified the presence of a buried utility at the location of EM Anomaly 3.

Collectively, the geophysical data did not record any evidence of metallic USTs at Parcels 77, 78 & 79. **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 Parcels 77, 78 & 79 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 of vehicle interference and an area of interference caused by a cluster of signs.
- GPR did not record any evidence of large metallic structures such as USTs around the vehicles; however, utilities and apparent buried debris were observed in the GPR results in this area.
- GPR did not record any evidence of large metallic structures such as USTs around the signs.
- Collectively, the geophysical data did not record any evidence of metallic USTs at Parcels 77, 78 & 79.

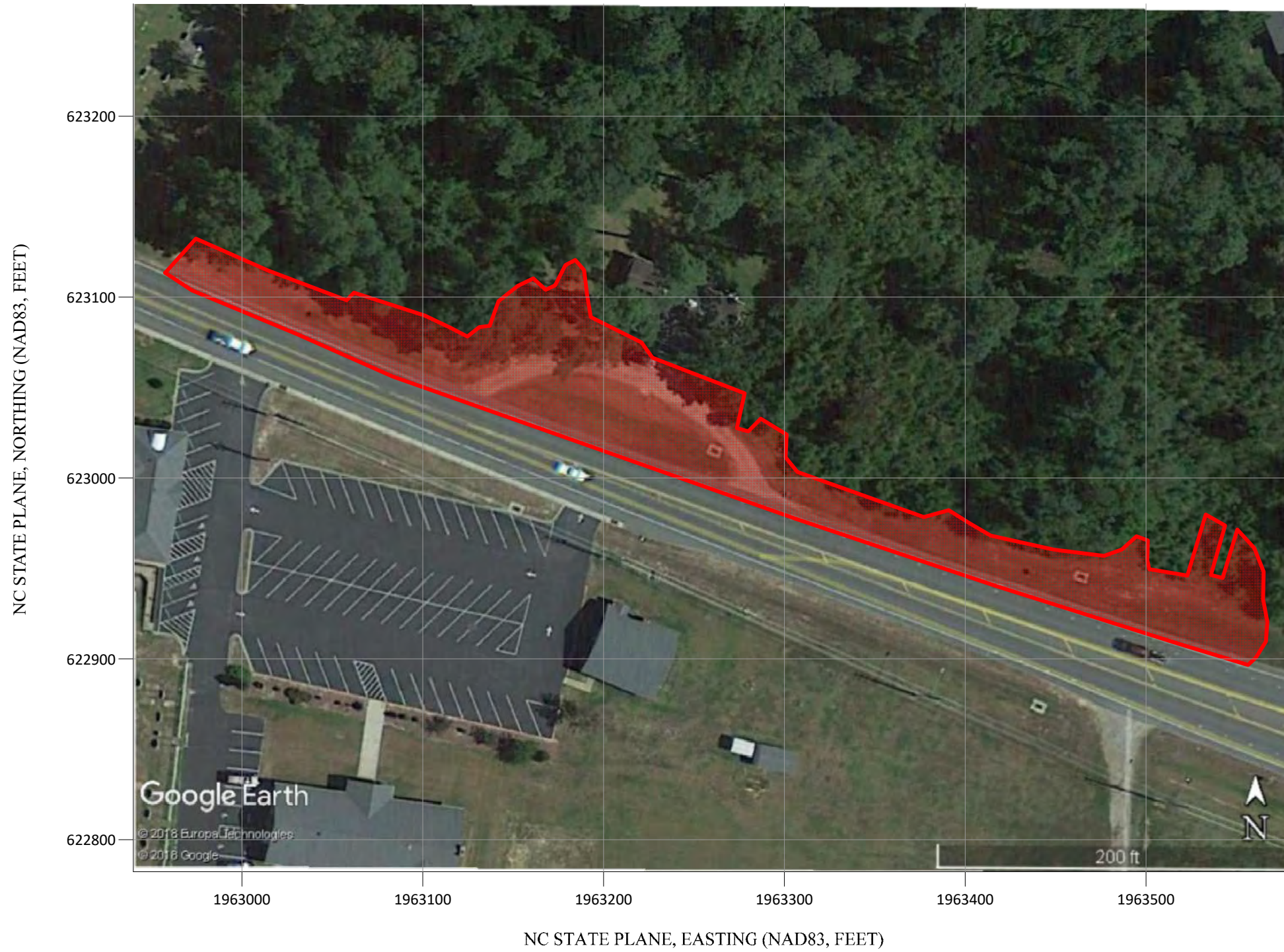
## LIMITATIONS

---

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 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)

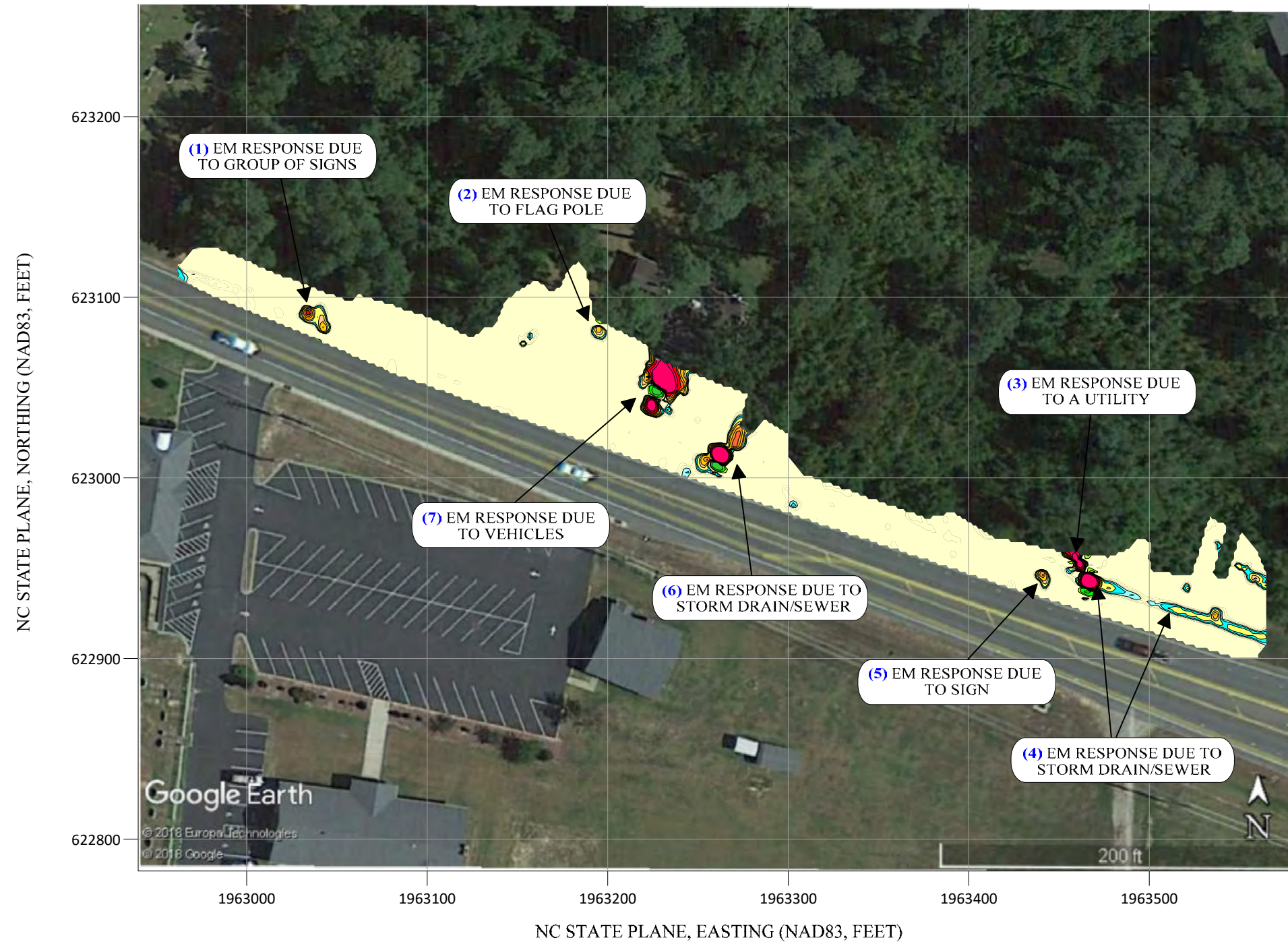


View of Survey Area  
(Facing Approximately East)

TITLE		PARCELS 77, 78 & 79 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	
PROJECT		PARCELS 77, 78 & 79 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	<b>FIGURE 1</b>	



### EM61 METAL DETECTION RESULTS

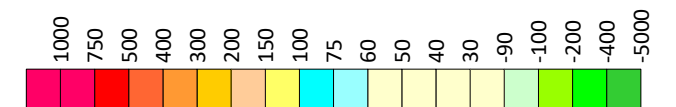



NUMBERS IN BLUE (x) CORRESPOND TO EM ANOMALY TABLE IN REPORT

### 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.

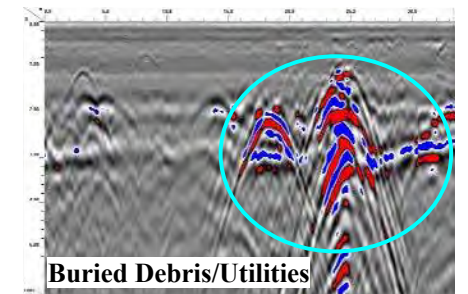
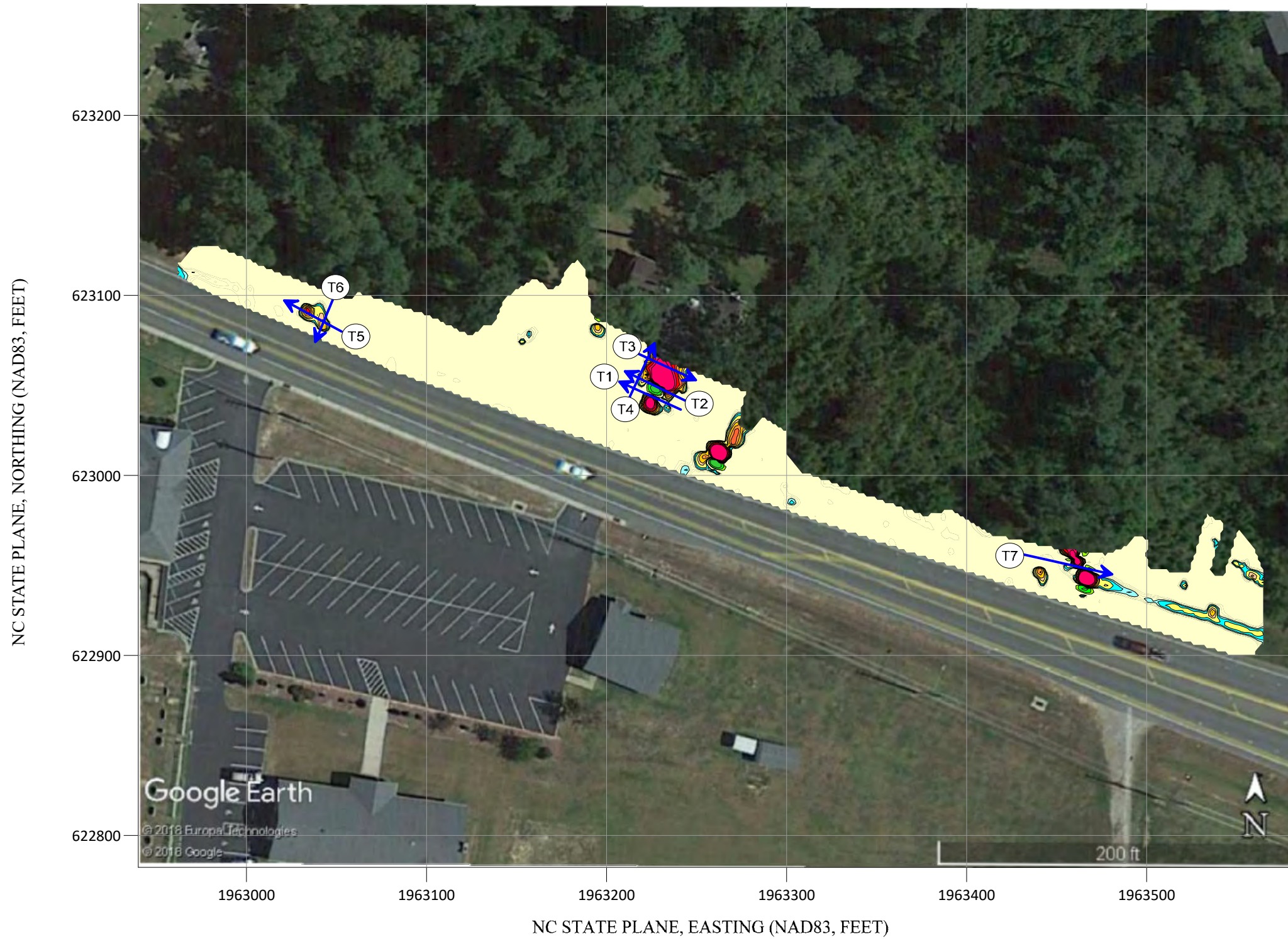
#### EM61 Metal Detection Response (millivolts)



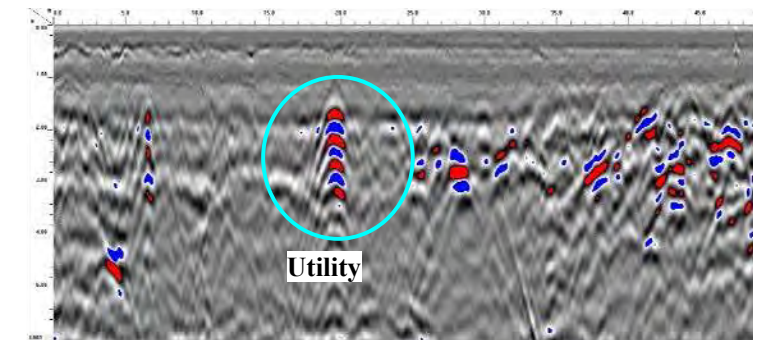
TITLE		PARCELS 77, 78 & 79 - EM61 METAL DETECTION CONTOUR MAP	
PROJECT		PARCELS 77, 78 & 79 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	2/22/2018	CLIENT	KLEINFELDER
PYRAMID PROJECT #:	2018-041	<b>FIGURE 2</b>	



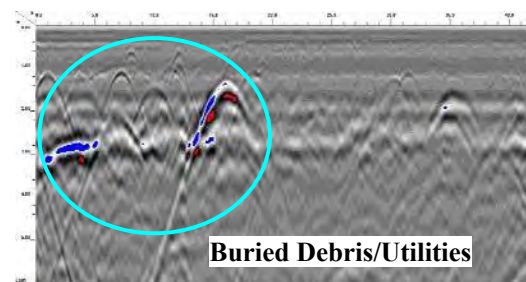
LOCATIONS OF GPR TRANSECTS



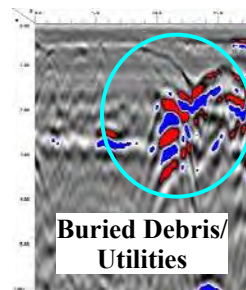
GPR TRANSECT 4 (T4)




GPR TRANSECT 7 (T7)



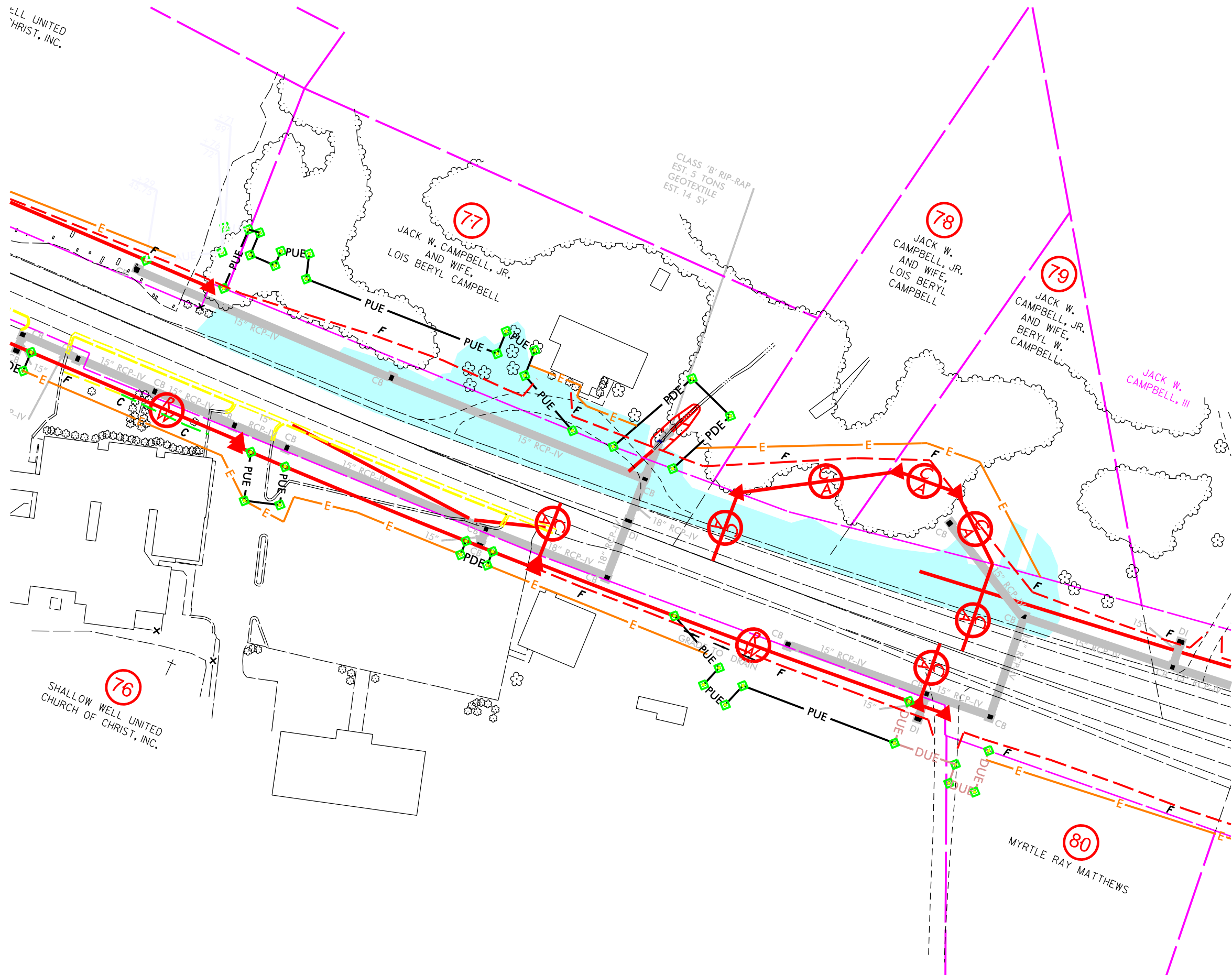
GPR TRANSECT 1 (T1)



GPR TRANSECT 3 (T3)

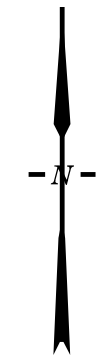
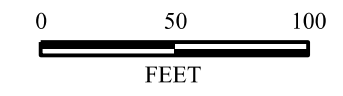
TITLE		PARCELS 77, 78 & 79 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	
PROJECT		PARCELS 77, 78 & 79 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	3/7/2018	CLIENT	KLEINFELDER
PYRAMID PROJECT #:	2018-041	<b>FIGURE 3</b>	

ALL UNITED  
CHRIST, INC.



**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 PARCELS 77, 78, & 79 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830	
503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 03-13-2018	REVISION NO. 0
PYRAMID PROJECT NO. 2018-041	FIGURE NO. 4

76  
SHALLOW WELL UNITED  
CHURCH OF CHRIST, INC.

77  
JACK W. CAMPBELL, JR.  
AND WIFE,  
LOIS BERYL CAMPBELL

78  
JACK W.  
CAMPBELL, JR.  
AND WIFE,  
LOIS BERYL  
CAMPBELL

79  
JACK W.  
CAMPBELL, JR.  
AND WIFE,  
BERYL W.  
CAMPBELL

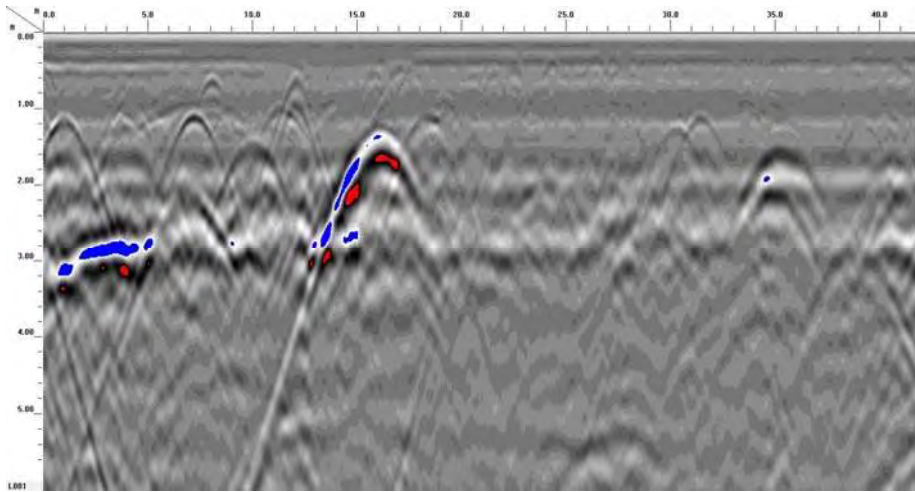
JACK W.  
CAMPBELL, III

80  
MYRTLE RAY MATTHEWS

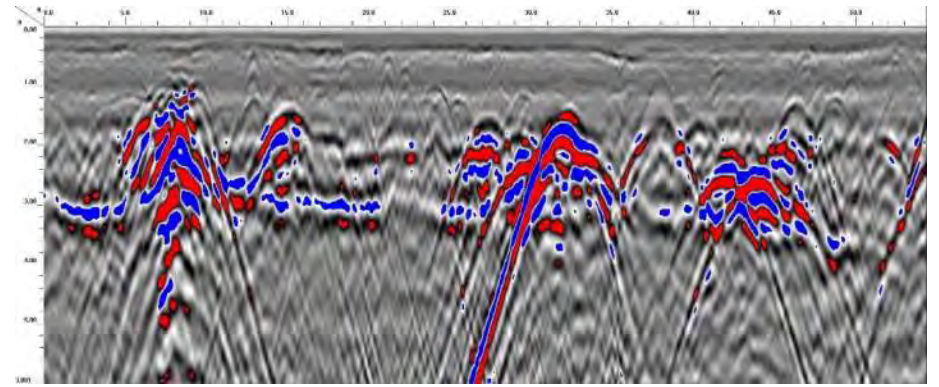
CLASS 'B' RIP-RAP  
EST. 5 TONS  
GEOTEXTILE  
EST. 14 SY

GRASS TO DRAIN

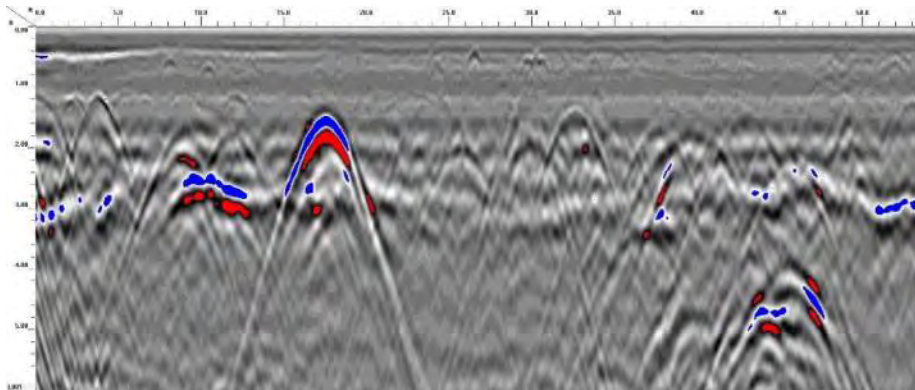
## **Appendix A – GPR Transect Images**



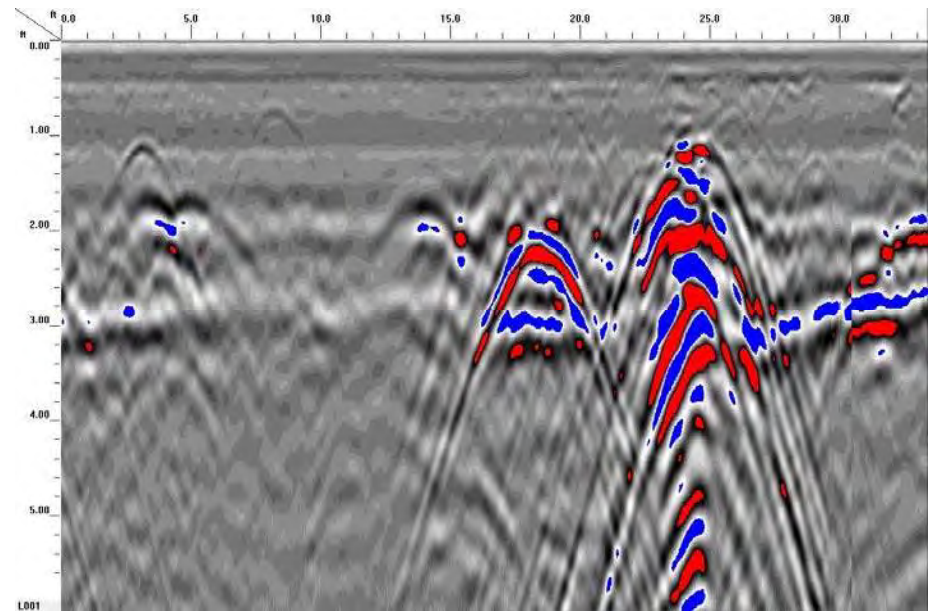
Transect 1



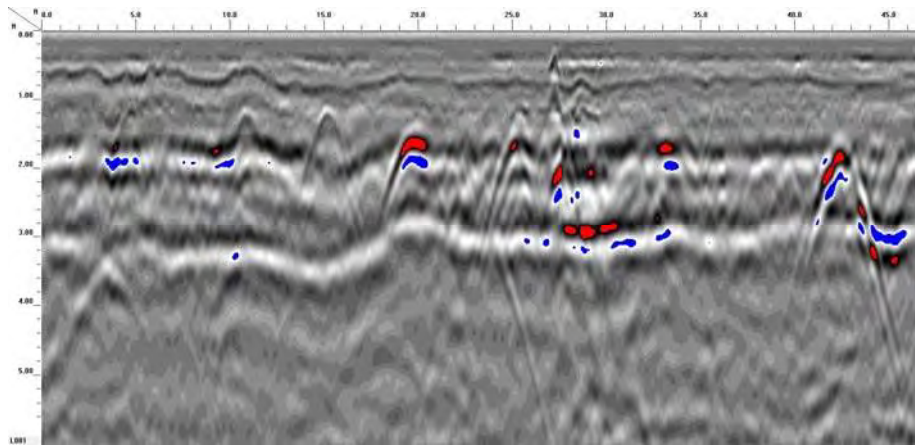
Transect 3



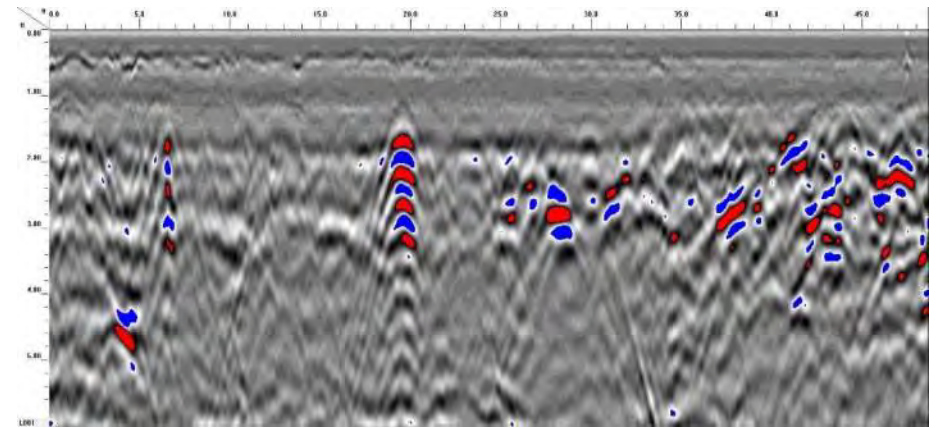
Transect 2



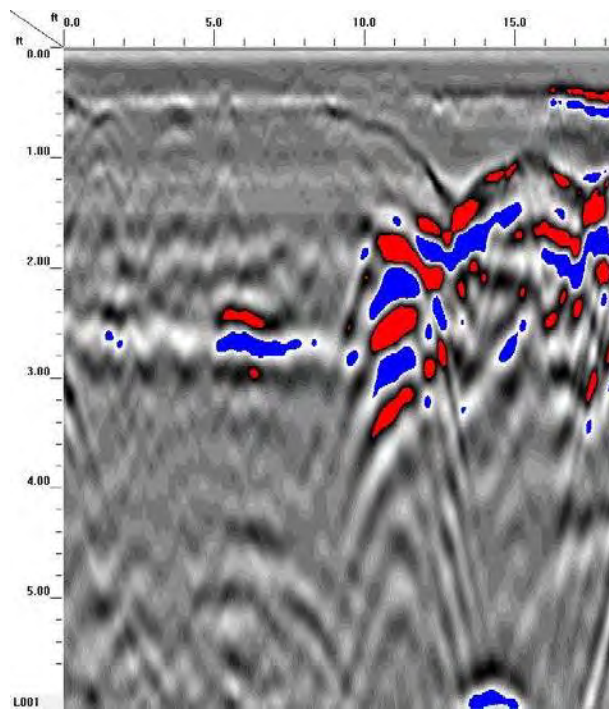
Transect 4



Transect 5



Transect 7



Transect 6

**APPENDIX D**  
**BORING LOGS**

---

**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**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 P077/78/79-SS1**

FIELD EXPLORATION

Northing: 623080.8610  
 Easting: 1963100.3120  
 Surface Condition: Grass

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
	Hand Auger		1 (UVF)	100%	3.07		<b>TOPSOIL</b>
			2	100%	0.53		<b>SAND:</b> brown and tan
			3 (UVF)	100%	1.21		<b>SAND:</b> coarse-grained, tan, moist
			4	100%	0.86		<b>Silty CLAY:</b> orange
5	Direct Push Sleeves		5	100%	1.51		<b>Sandy CLAY:</b> reddish brown
			6	100%	0.50		
			7	100%	0.98		
			8	100%	0.67		
			9	100%	0.63		
10			10	100%	0.57		<b>Sandy CLAY:</b> orange, 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 26, 2018.



PROJECT NO.: 20183507  
 DRAWN BY: JCH  
 CHECKED BY:  
 DATE:  
 REVISED: -

BORING LOG P077/78/79-SS1


R-3830  
 WBS 38887.1.1  
 Sanford, NC

**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**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 P077/78/79-SS2**

FIELD EXPLORATION						
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
						Northing: 623142.7910 Easting: 1963054.7310 Surface Condition: Gravel
						Lithologic Description
	Hand Auger		1	100%	NA	GRAVEL
			2	100%	1.20	SAND: coarse-grained, tan
			3 (UVF)	100%	2.84	
	Direct Push Sleeves		4	100%	0.17	Sandy CLAY: reddish brown
5			5	100%	0.20	
			6	100%	0.19	
			7	100%	0.17	
			8	100%	0.09	Sandy CLAY: red, orange, and gray
			9	100%	0.42	
10			10 (UVF)	100%	0.53	Sandy CLAY: gray
The borehole was terminated at approximately 10 ft. below ground surface.						<b>GROUNDWATER LEVEL INFORMATION:</b> Groundwater was not observed during drilling or after completion. <b>GENERAL NOTES:</b> The boring was backfilled with excavated material on March 26, 2018.

	PROJECT NO.: 20183507 DRAWN BY: JCH CHECKED BY: DATE: REVISED: -	<b>BORING LOG P077/78/79-SS2</b>	R-3830 WBS 38887.1.1 Sanford, NC



**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy










**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 P077/78/79-SS3**

FIELD EXPLORATION

Northing: 623074.3770  
 Easting: 1963191.7870  
 Surface Condition: Grass

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
	Hand Auger		1	100%	9.27		<b>TOPSOIL</b> <b>SAND:</b> tan and brown, moist
			2	100%	0.62		<b>SAND:</b> coarse-grained, tan
			3 (UVF)	100%	6.73		
			4-5 (UVF, 8260)	100%	7.63		<b>Sandy CLAY:</b> reddish brown
5	Direct Push Sleeves		6	100%	2.08		
			7	100%	1.12		
			8	100%	1.37		
			9	100%	1.15		
10			10	100%	1.34		

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 26, 2018.



PROJECT NO.: 20183507  
 DRAWN BY: JCH  
 CHECKED BY:  
 DATE:  
 REVISED: -

BORING LOG P077/78/79-SS3

R-3830  
 WBS 38887.1.1  
 Sanford, NC

**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**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 P077/78/79-SS4**

FIELD EXPLORATION

Northing: 623009.5720  
 Easting: 1963273.3450  
 Surface Condition: Grass

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
	Hand Auger		1	100%	0.57		<b>TOPSOIL</b>
			2	100%	0.76		<b>SAND:</b> coarse-grained, tan and brown, moist
			3 (UVF)	100%	2.04		<b>SAND:</b> coarse-grained, tan, moist
			4	100%	1.00		<b>Sandy CLAY:</b> orange, moist
5	Direct Push Sleeves		5	100%	1.00		
			6	100%	0.92		<b>Sandy CLAY:</b> reddish brown
			7	100%	1.90		
			8	100%	1.12		
			9	100%	2.16		
10			10 (UVF)	100%	2.44		<b>CLAY:</b> gray, stiff

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 26, 2018.



PROJECT NO.: 20183507  
 DRAWN BY: JCH  
 CHECKED BY:  
 DATE:  
 REVISED: -

BORING LOG P077/78/79-SS4

R-3830  
 WBS 38887.1.1  
 Sanford, NC

<b>Date Begin - End:</b> 3/26/2018	<b>Drilling Company:</b> Quantex	<b>BORING LOG P077/78/79-SS5</b>
<b>Logged By:</b> J. Hollinger	<b>Drill Crew:</b> JD Barker	
<b>Hor.-Vert. Datum:</b> Not Available	<b>Drilling Equipment:</b> 6620DT GeoProbe	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> See Drilling Method Column	
<b>Weather:</b> Cloudy	<b>Bore Diameter:</b> 2 in. O.D.	

FIELD EXPLORATION							
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
						Northing: 622967.7750 Easting: 1963388.5150 Surface Condition: Bare Earth	
						Lithologic Description	
	Hand Auger		1	100%	1.03		
			2 (UVF)	100%	1.61		
			3	100%	1.97		
	Direct Push Sleeves		4	100%	1.46		
			5	100%	1.99		
			6 (UVF)	100%	2.01		
			7	100%	1.43		
			8	100%	1.12		
				9	100%	1.38	
				10	100%	1.47	
The borehole was terminated at approximately 10 ft. below ground surface.						<u>GROUNDWATER LEVEL INFORMATION:</u> Groundwater was not observed during drilling or after completion. <u>GENERAL NOTES:</u> The boring was backfilled with excavated material on March 26, 2018.	


	PROJECT NO.: 20183507	<b>BORING LOG P077/78/79-SS5</b>
	DRAWN BY: JCH	
	CHECKED BY:	R-3830 WBS 38887.1.1 Sanford, NC
	DATE:	
	REVISED: -	

**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**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 P077/78/79-SS6**

FIELD EXPLORATION						
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
Northing: 622959.6686 Easting: 1963484.7265 Surface Condition: Bare Earth						
Lithologic Description						
	Hand Auger		1	100%	3.53	SAND: coarse-grained, tan
			2 (UVF)	100%	2.72	
			3	100%	2.15	
	Direct Push Sleeves		4	100%	1.69	Sandy CLAY: orange
5			5	100%	1.62	
			6	100%	2.41	Sandy CLAY: reddish brown and gray, stiff
			7 (UVF)	100%	2.86	
			8	100%	1.69	
			9	100%	1.42	CLAY: gray, stiff
10			10	100%	2.32	
The borehole was terminated at approximately 10 ft. below ground surface.				<u>GROUNDWATER LEVEL INFORMATION:</u> Groundwater was not observed during drilling or after completion. <u>GENERAL NOTES:</u> The boring was backfilled with excavated material on March 26, 2018.		

	PROJECT NO.: 20183507 DRAWN BY: JCH CHECKED BY: DATE: REVISED: -	<b>BORING LOG P077/78/79-SS6</b>	R-3830 WBS 38887.1.1 Sanford, NC
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**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**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 P077/78/79-SS7**

FIELD EXPLORATION

Northing: 622976.7840  
 Easting: 1963528.8370  
 Surface Condition: Grass

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
	Hand Auger		1	100%	2.62		<b>TOPSOIL</b> <b>SAND:</b> coarse-grained, tan
	Hand Auger		2	100%	1.30		
	Hand Auger		3 (UVF)	100%	1.40		<b>Sandy CLAY:</b> reddish brown
	Hand Auger		4	100%	1.54		
5	Direct Push Sleeves		5	100%	1.39		
	Direct Push Sleeves		6	100%	1.31		<b>Sandy CLAY:</b> reddish brown and gray, stiff
	Direct Push Sleeves		7	100%	1.24		
	Direct Push Sleeves		8 (UVF)	100%	1.43		
	Direct Push Sleeves		9	100%	1.38		
10	Direct Push Sleeves		10	100%	1.64		<b>CLAY:</b> gray, stiff

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 26, 2018.



PROJECT NO.: 20183507  
 DRAWN BY: JCH  
 CHECKED BY:  
 DATE:  
 REVISED: -

BORING LOG P077/78/79-SS7


R-3830  
 WBS 38887.1.1  
 Sanford, NC

**Date Begin - End:** 3/26/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**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 P077/78/79-SS8**

FIELD EXPLORATION						
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
						Northing: 622944.2660 Easting: 1963546.8875 Surface Condition: Grass
						Lithologic Description
	Hand Auger		1	100%	4.05	TOPSOIL: tan Sandy CLAY: orange
			2	100%	3.86	
			3 (UVF)	100%	3.70	
			4	100%	4.88	
5	Direct Push Sleeves		5	100%	5.40	Sandy CLAY: reddish brown
			6	100%	8.68	
			7	100%	27.56	
			8	100%	526.00	
			9 (UVF, 8260)	100%	1007	CLAY: gray, stiff
10			10 (UVF, 8260, 8270)	100%	1744	
The borehole was terminated at approximately 10 ft. below ground surface.						
<u>GROUNDWATER LEVEL INFORMATION:</u> Groundwater was not observed during drilling or after completion.						
<u>GENERAL NOTES:</u> The boring was backfilled with excavated material on March 26, 2018.						

	PROJECT NO.: 20183507 DRAWN BY: JCH CHECKED BY: DATE: REVISED: -	BORING LOG P077/78/79-SS8	
			R-3830 WBS 38887.1.1 Sanford, NC

<b>Date Begin - End:</b> 3/26/2018	<b>Drilling Company:</b> Quantex	<b>BORING LOG P077/78/79-SS9</b>
<b>Logged By:</b> J. Hollinger	<b>Drill Crew:</b> JD Barker	
<b>Hor.-Vert. Datum:</b> Not Available	<b>Drilling Equipment:</b> 6620DT GeoProbe	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> See Drilling Method Column	
<b>Weather:</b> Cloudy	<b>Bore Diameter:</b> 2 in. O.D.	

FIELD EXPLORATION						
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
						Northing: 622922.6045 Easting: 1963557.7287 Surface Condition: Grass
						Lithologic Description
	Hand Auger		1	100%	2.62	
			2	100%	4.43	
			3 (UVF)	100%	6.98	
			4-5 (UVF)	50%	12.20	
5	Direct Push Sleeves		6	50%	4.63	
			8	50%	12.63	
			10	50%	5.10	
The borehole was terminated at approximately 10 ft. below ground surface.						<u>GROUNDWATER LEVEL INFORMATION:</u> Groundwater was not observed during drilling or after completion. <u>GENERAL NOTES:</u> The boring was backfilled with excavated material on March 26, 2018.

	PROJECT NO.: 20183507	<b>BORING LOG P077/78/79-SS9</b>
	DRAWN BY: JCH	
	CHECKED BY:	R-3830 WBS 38887.1.1 Sanford, NC
	DATE:	
	REVISED: -	

<b>Date Begin - End:</b> 4/20/2018	<b>Drilling Company:</b> Kleinfelder	<b>BORING LOG P077/78/79-SS10</b>
<b>Logged By:</b> J. Hollinger	<b>Drill Crew:</b> J. Hollinger	
<b>Hor.-Vert. Datum:</b> Not Available	<b>Drilling Equipment:</b> Hand Auger	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> See Drilling Method Column	
<b>Weather:</b> Cloudy	<b>Bore Diameter:</b> 2 in. O.D.	

FIELD EXPLORATION						
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
Northing: 622948.7233 Easting: 1963531.7932 Surface Condition: Grass						
Lithologic Description						
			1	100%	0.9	
			2	100%	0.9	
			3	100%	0.5	
			4	100%	0.3	
5	Hand Auger		5	100%	3.6	
			6	100%	7.2	
			7	100%	14.5	
			8 (8260)	100%	161	
			9 (8260)	100%	1273	
10			10	100%	968	
The borehole was terminated at approximately 10 ft. below ground surface.						
<b>GROUNDWATER LEVEL INFORMATION:</b> Groundwater was not observed during drilling or after completion.						
<b>GENERAL NOTES:</b> The boring was backfilled with excavated material on April 20, 2018.						

	PROJECT NO.: 20183507	<b>BORING LOG P077/78/79-SS10</b>
	DRAWN BY: JCH	
	CHECKED BY:	R-3830 WBS 38887.1.1 Sanford, NC
	DATE:	
	REVISED: -	



**Date Begin - End:** 4/20/2018  
**Logged By:** J. Hollinger  
**Hor.-Vert. Datum:** Not Available  
**Plunge:** -90 degrees  
**Weather:** Cloudy

**Drilling Company:** Kleinfelder  
**Drill Crew:** J. Hollinger  
**Drilling Equipment:** Hand Auger  
**Drilling Method:** See Drilling Method Column  
**Bore Diameter:** 2 in. O.D.

**BORING LOG P077/78/79-SS11**

FIELD EXPLORATION

Northing: 622954.3625  
 Easting: 1963514.4517  
 Surface Condition: Grass

Lithologic Description

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log
	Hand Auger		1	100%	0.7	
			2	100%	0.9	
			3	100%	0.2	
			4	100%	0.7	
5			5	100%	0.9	
			6	100%	0.90	
			7	100%	2.2	
			8	100%	13.8	
			9	100%	145	
10			10 (8260)	100%	313	

**TOPSOIL:** tan  
**Sandy CLAY:** orange  
  
**Sandy CLAY:** reddish brown  
  
**CLAY:** gray, stiff

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 April 20, 2018.



PROJECT NO.: 20183507  
 DRAWN BY: JCH  
 CHECKED BY:  
 DATE:  
 REVISED: -

BORING LOG P077/78/79-SS11

R-3830  
 WBS 38887.1.1  
 Sanford, NC

<b>Date Begin - End:</b> 4/20/2018	<b>Drilling Company:</b> Kleinfelder	<b>BORING LOG P077/78/79-SS12</b>
<b>Logged By:</b> J. Hollinger	<b>Drill Crew:</b> J. Hollinger	
<b>Hor.-Vert. Datum:</b> Not Available	<b>Drilling Equipment:</b> Hand Auger	
<b>Plunge:</b> -90 degrees	<b>Drilling Method:</b> See Drilling Method Column	
<b>Weather:</b> Cloudy	<b>Bore Diameter:</b> 2 in. O.D.	

FIELD EXPLORATION							
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	
						Northing: 622936.7944 Easting: 1963511.2002 Surface Condition: Grass	
						Lithologic Description	
	Hand Auger		1	100%	0.2		<b>TOPSOIL:</b> tan
		2	100%	0.4		<b>Sandy CLAY:</b> orange	
		3	100%	0.1			
		4	100%	0.8			
5		5	100%	1.7		<b>Sandy CLAY:</b> reddish brown	
		6	100%	32.3			
		7	100%	128			
		8 (8260)	100%	793			
		9	100%	358		<b>CLAY:</b> gray, stiff	
10		10	100%	242			
The borehole was terminated at approximately 10 ft. below ground surface.						<b>GROUNDWATER LEVEL INFORMATION:</b> Groundwater was not observed during drilling or after completion. <b>GENERAL NOTES:</b> The boring was backfilled with excavated material on April 20, 2018.	

	PROJECT NO.: 20183507	<b>BORING LOG P077/78/79-SS12</b>
	DRAWN BY: JCH	
CHECKED BY:		R-3830 WBS 38887.1.1 Sanford, NC
DATE:		
REVISED:	-	

**APPENDIX E**  
**ANALYTICAL REPORT AND GRAPHS**

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### Hydrocarbon Analysis Results

**Client:** Kleinfelder  
**Address:** 3200 Gateway Centre Blvd Suite 100  
 Morrisville, NC

**Samples taken** Monday, March 26, 2018  
**Samples extracted** Monday, March 26, 2018  
**Samples analysed** Monday, March 26, 2018

**Contact:** Michael Burns

**Operator** J. Joseph Hodge

**Project:** R3830

U00902

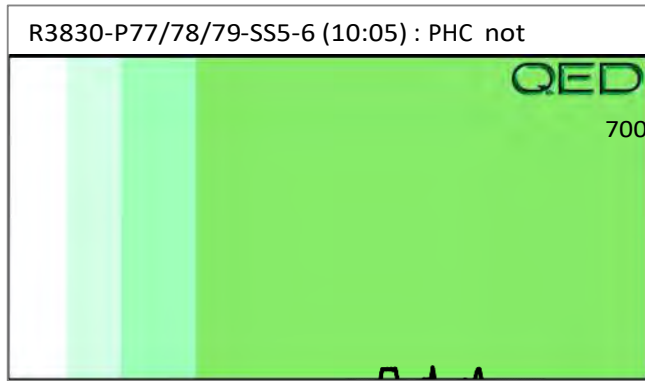
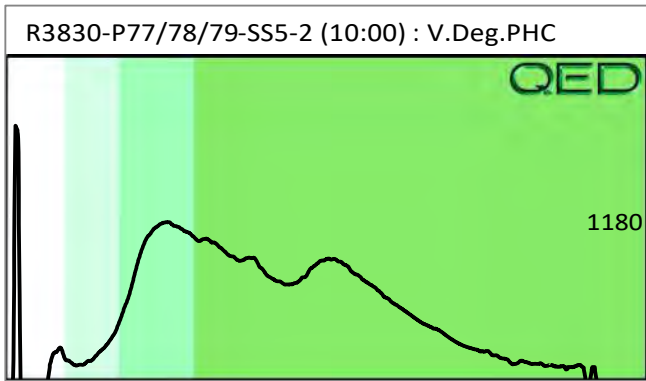
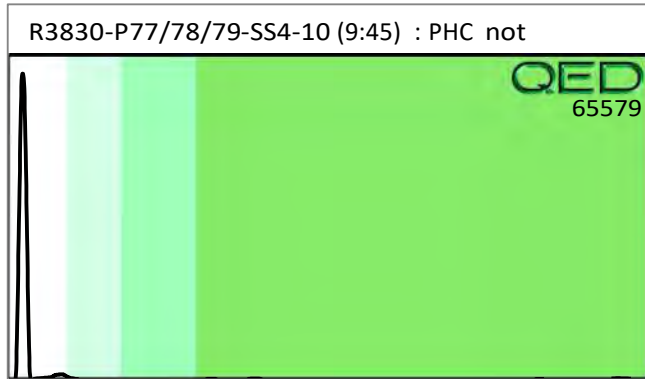
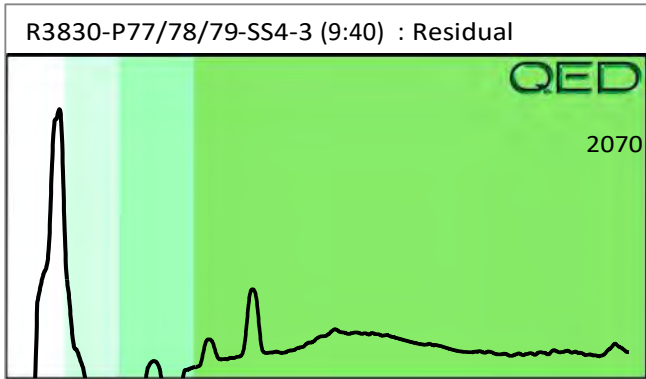
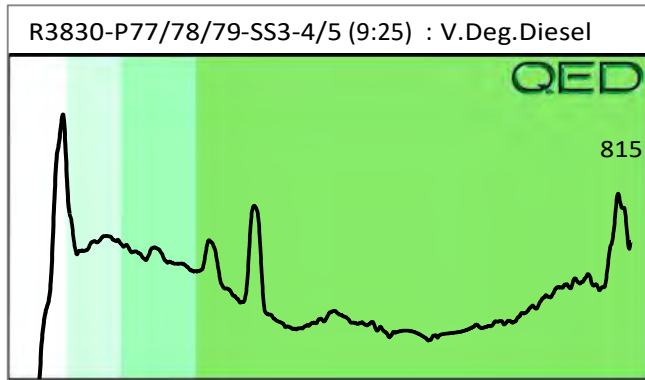
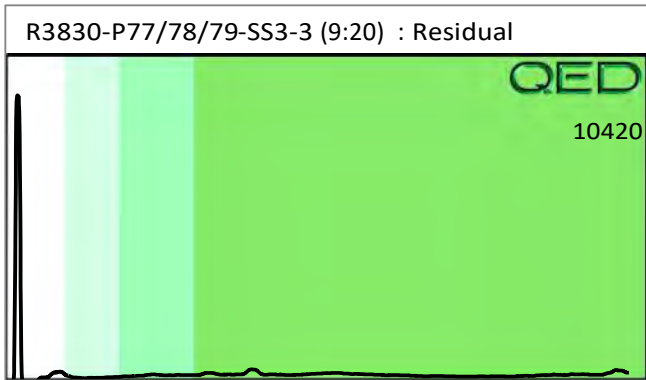
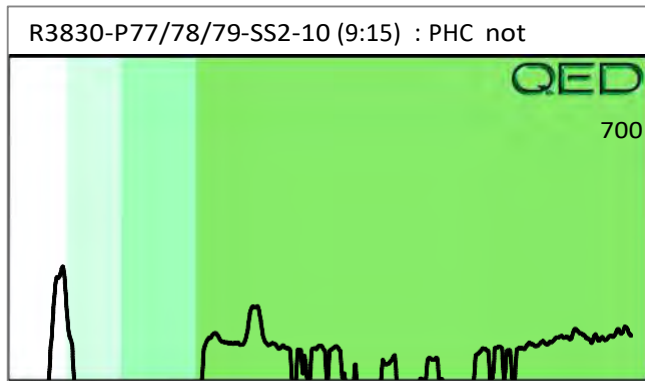
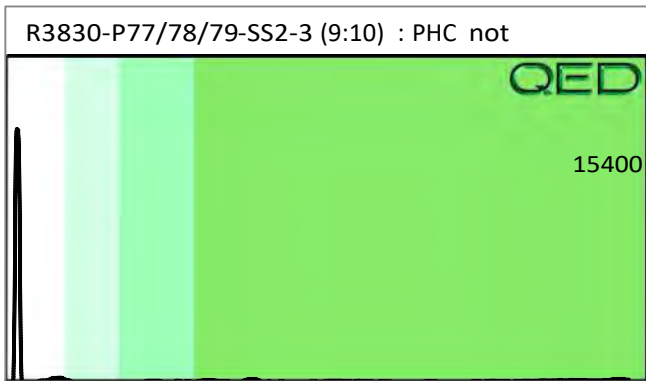
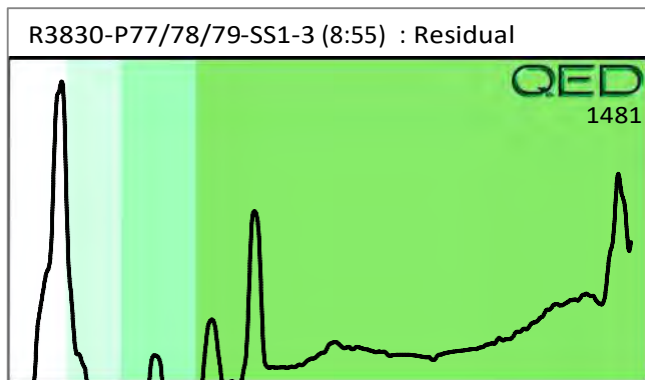
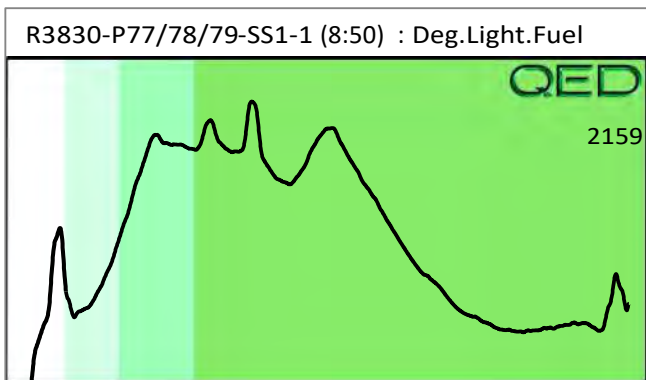
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	R3830-P77/78/79-SS1-1 (8:50)	24.8	<0.62	<0.62	1.5	1.5	1.2	0.05	<0.012	0	91.2	8	Deg.Light.Fuel 65.3%,(FCM),(BO),(OCR),(P)
s	R3830-P77/78/79-SS1-3 (8:55)	19.7	<0.49	<0.49	<0.04	<0.49	<0.1	<0.02	<0.01	0	0	0	Residual HC,(BO),(P)
s	R3830-P77/78/79-SS2-3 (9:10)	22.8	<0.57	<0.57	<0.05	<0.57	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(OCR),(P)
s	R3830-P77/78/79-SS2-10 (9:15)	22.8	<0.57	<0.57	<0.05	<0.57	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(BO),(OCR)
s	R3830-P77/78/79-SS3-3 (9:20)	20.3	<0.51	<0.51	<0.04	<0.51	<0.1	<0.02	<0.01	0	0	0	Residual HC,(OCR)
s	R3830-P77/78/79-SS3-4/5 (9:25)	23.2	<0.58	<0.58	0.74	0.74	0.38	<0.02	<0.012	0	99.1	0.8	V.Deg.Diesel 61.7%,(FCM),(BO),(OCR),(P)
s	R3830-P77/78/79-SS4-3 (9:40)	19.0	<0.47	<0.47	0.24	0.24	0.24	<0.02	<0.009	0	0	0	Residual HC,(BO),(P)
s	R3830-P77/78/79-SS4-10 (9:45)	23.6	<0.59	<0.59	<0.05	<0.59	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(P)
s	R3830-P77/78/79-SS5-2 (10:00)	29.5	<0.74	<0.74	0.38	0.38	0.38	<0.03	<0.015	0	91.9	7.3	V.Deg.PHC 77.3%,(FCM)
s	R3830-P77/78/79-SS5-6 (10:05)	19.8	<0.5	<0.5	<0.04	<0.5	<0.1	<0.02	<0.01	0	0	0	PHC not detected,(OCR)
Initial Calibrator QC check			OK		Final FCM QC Check			OK		101.8 %			

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 Suite 100  
 Morrisville, NC

**Samples taken** Monday, March 26, 2018  
**Samples extracted** Monday, March 26, 2018  
**Samples analysed** Monday, March 26, 2018

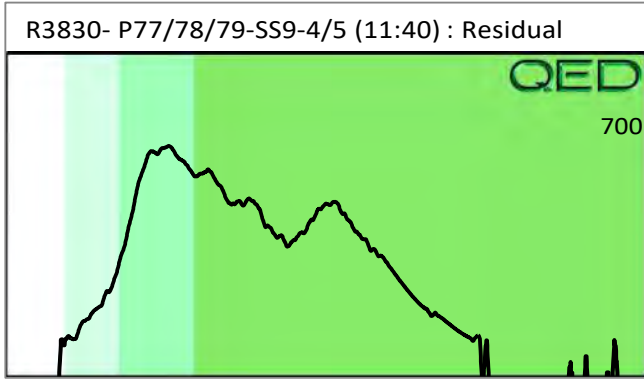
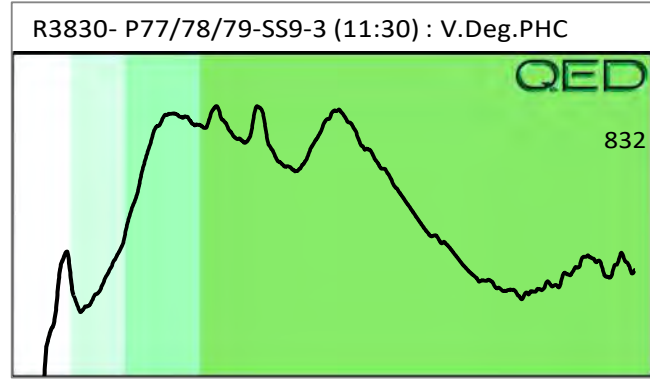
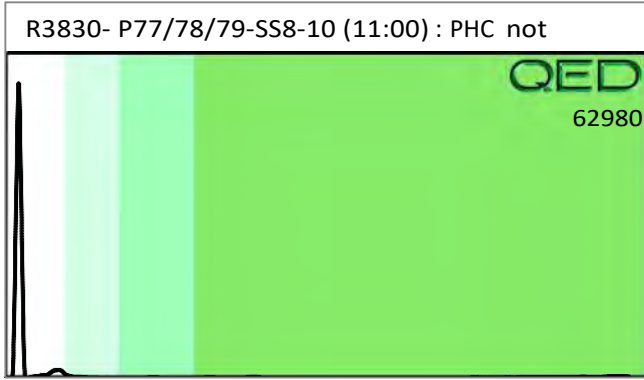
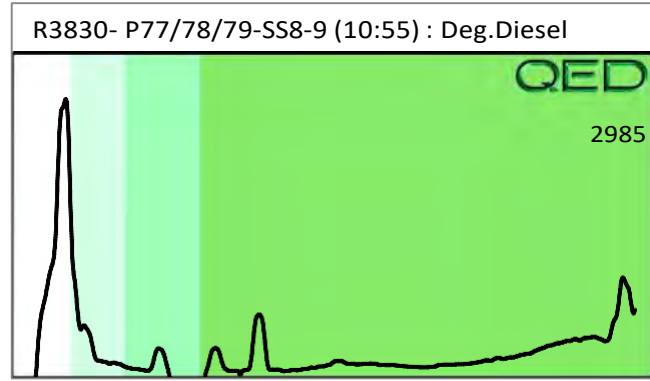
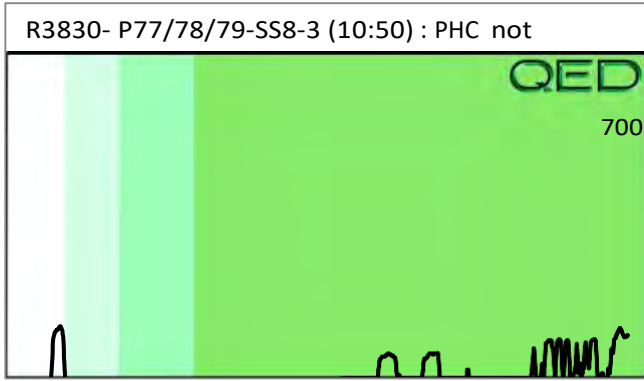
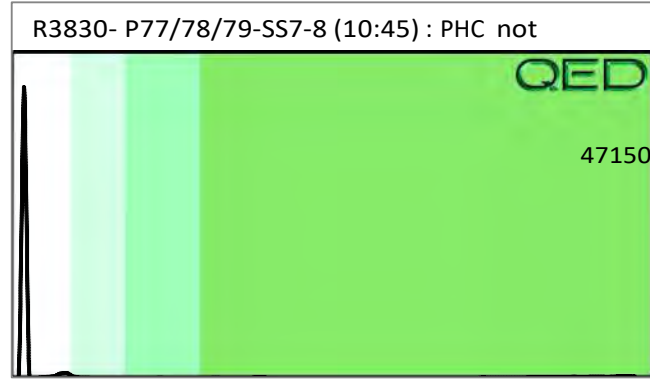
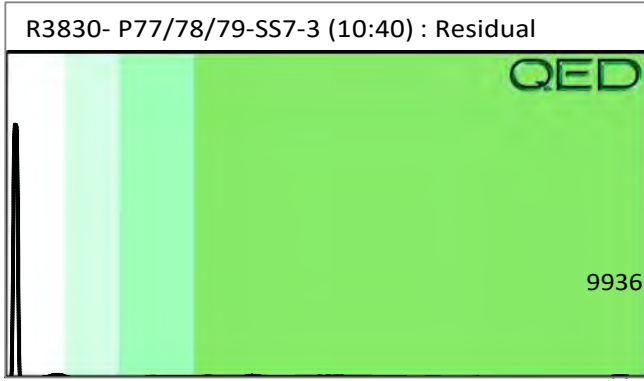
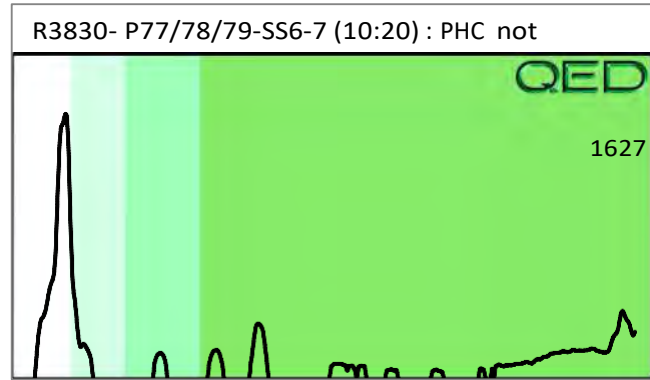
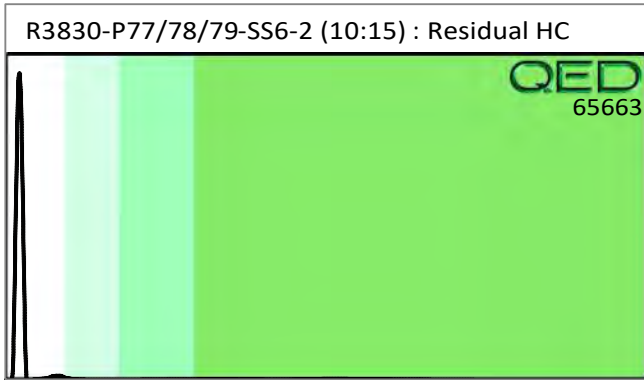
**Contact:** Michael Burns

**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-P77/78/79-SS6-2 (10:15)	23.0	<0.58	<0.58	<0.05	<0.58	<0.12	<0.02	<0.012	0	0	0	Residual HC
s	R3830-P77/78/79-SS6-7 (10:20)	19.7	<0.49	<0.49	<0.04	<0.49	<0.1	<0.02	<0.01	0	0	0	PHC not detected,(P)
s	R3830-P77/78/79-SS7-3 (10:40)	18.4	<0.46	<0.46	<0.04	<0.46	<0.09	<0.02	<0.009	0	0	0	Residual HC,(OCR)
s	R3830-P77/78/79-SS7-8 (10:45)	19.8	<0.5	<0.5	<0.04	<0.5	<0.1	<0.02	<0.01	0	0	0	PHC not detected,(P)
s	R3830-P77/78/79-SS8-3 (10:50)	25.0	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(BO),(OCR)
s	R3830-P77/78/79-SS8-9 (10:55)	24.5	<0.61	<0.61	0.05	0.05	<0.12	<0.02	<0.012	0	80.5	17.2	Deg.Diesel 48.2%,(FCM),(BO),(P)
s	R3830-P77/78/79-SS8-10 (11:00)	25.0	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(P)
s	R3830-P77/78/79-SS9-3 (11:30)	20.6	<0.52	<0.52	0.26	0.26	0.26	<0.02	<0.01	0	89.9	9	V.Deg.PHC 59.6%,(FCM),(BO)
s	R3830-P77/78/79-SS9-4/5 (11:40)	21.1	<0.53	<0.53	0.11	0.11	0.11	<0.02	<0.011	0	93.7	5.6	Residual HC,(OCR)
Initial Calibrator QC check			OK			Final FCM QC Check			OK			95.1 %	

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification. Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = 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: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 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.

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: R3038 WBS 38887.1.1

Pace Project No.: 92378489

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### 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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
92378489001	R3830-P76/77/78-SS3-4-5	Solid	03/26/18 09:15	03/27/18 14:00
92378489002	R3830-P76/77/78-SS8-9	Solid	03/26/18 11:00	03/27/18 14:00
92378489003	R3830-P76/77/78-SS8-10	Solid	03/26/18 11:05	03/27/18 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92378489001	R3830-P76/77/78-SS3-4-5	EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92378489002	R3830-P76/77/78-SS8-9	EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92378489003	R3830-P76/77/78-SS8-10	EPA 8270	BPJ	74	PASI-C
		EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

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**Method:** EPA 8270  
**Description:** 8270 MSSV Microwave  
**Client:** NCDOT East Central  
**Date:** April 03, 2018

**General Information:**

1 sample was analyzed for EPA 8270. 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.

**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.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

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**Method:** EPA 8260

**Description:** 8260/5035A Volatile Organics

**Client:** NCDOT East Central

**Date:** April 03, 2018

**General Information:**

3 samples were analyzed for EPA 8260. 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.

QC Batch: 404262

S1: Surrogate recovery outside laboratory control limits (confirmed by re-analysis).

- R3830-P76/77/78-SS8-10 (Lab ID: 92378489003)
  - 4-Bromofluorobenzene (S)
  - Toluene-d8 (S)

**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: 404262

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

- LCS (Lab ID: 2242807)
  - Vinyl acetate

**Matrix Spikes:**

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

QC Batch: 404007

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92378583008

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

- MS (Lab ID: 2241305)
  - 2-Butanone (MEK)

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

---

**Method:** EPA 8260

**Description:** 8260/5035A Volatile Organics

**Client:** NCDOT East Central

**Date:** April 03, 2018

QC Batch: 404007

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92378583008

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

- Chloromethane
- Dichlorodifluoromethane
- Tetrachloroethene
- Vinyl acetate
- MSD (Lab ID: 2241306)
  - 2-Butanone (MEK)
  - 2-Hexanone
  - 4-Methyl-2-pentanone (MIBK)
  - Bromoform
  - Bromomethane
  - Chloromethane
  - Dichlorodifluoromethane
  - Methyl-tert-butyl ether
  - Methylene Chloride
  - Tetrachloroethene
  - Vinyl acetate
  - cis-1,3-Dichloropropene
  - trans-1,3-Dichloropropene

R1: RPD value was outside control limits.

- MSD (Lab ID: 2241306)
  - Bromomethane

QC Batch: 404262

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92378826001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 2243651)
  - Vinyl acetate

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

- MS (Lab ID: 2243651)
  - 1,2,3-Trichlorobenzene
  - 1,2,4-Trichlorobenzene
  - 1,2-Dichlorobenzene
  - 1,3-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - Acetone
  - Hexachloro-1,3-butadiene
  - Methylene Chloride
  - Naphthalene
  - Styrene

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

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**Method:** EPA 8260

**Description:** 8260/5035A Volatile Organics

**Client:** NCDOT East Central

**Date:** April 03, 2018

QC Batch: 404494

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30247736005

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

- MS (Lab ID: 2244404)
  - 1,1,2,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 2-Butanone (MEK)
  - 2-Hexanone
  - 4-Methyl-2-pentanone (MIBK)
  - Vinyl acetate

**Duplicate Sample:**

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

**Additional Comments:**

Analyte Comments:

QC Batch: 404494

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

- R3830-P76/77/78-SS8-9 (Lab ID: 92378489002)
  - Toluene-d8 (S)

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: R3038 WBS 38887.1.1

Pace Project No.: 92378489

**Sample:** R3830-P76/77/78-SS3-4-5    **Lab ID:** 92378489001    Collected: 03/26/18 09:15    Received: 03/27/18 14:00    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	<b>0.046J</b>	mg/kg	0.10	0.010	1		03/29/18 15:07	67-64-1	
Benzene	ND	mg/kg	0.0050	0.0016	1		03/29/18 15:07	71-43-2	
Bromobenzene	ND	mg/kg	0.0050	0.0020	1		03/29/18 15:07	108-86-1	
Bromochloromethane	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	74-97-5	
Bromodichloromethane	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	75-27-4	
Bromoform	ND	mg/kg	0.0050	0.0023	1		03/29/18 15:07	75-25-2	
Bromomethane	ND	mg/kg	0.010	0.0025	1		03/29/18 15:07	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.10	0.0029	1		03/29/18 15:07	78-93-3	
n-Butylbenzene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.0050	0.0016	1		03/29/18 15:07	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.0050	0.0020	1		03/29/18 15:07	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.0050	0.0026	1		03/29/18 15:07	56-23-5	
Chlorobenzene	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	108-90-7	
Chloroethane	ND	mg/kg	0.010	0.0024	1		03/29/18 15:07	75-00-3	
Chloroform	ND	mg/kg	0.0050	0.0016	1		03/29/18 15:07	67-66-3	
Chloromethane	ND	mg/kg	0.010	0.0024	1		03/29/18 15:07	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0036	1		03/29/18 15:07	96-12-8	
Dibromochloromethane	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	106-93-4	
Dibromomethane	ND	mg/kg	0.0050	0.0025	1		03/29/18 15:07	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	1		03/29/18 15:07	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.010	0.0036	1		03/29/18 15:07	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0015	1		03/29/18 15:07	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0022	1		03/29/18 15:07	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0014	1		03/29/18 15:07	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0015	1		03/29/18 15:07	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0015	1		03/29/18 15:07	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	108-20-3	
Ethylbenzene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.0050	0.0020	1		03/29/18 15:07	87-68-3	
2-Hexanone	ND	mg/kg	0.050	0.0039	1		03/29/18 15:07	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	98-82-8	
p-Isopropyltoluene	<b>0.0068</b>	mg/kg	0.0050	0.0017	1		03/29/18 15:07	99-87-6	
Methylene Chloride	<b>0.0054J</b>	mg/kg	0.020	0.0030	1		03/29/18 15:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.050	0.0037	1		03/29/18 15:07	108-10-1	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

**Sample: R3830-P76/77/78-SS3-4-5**    **Lab ID: 92378489001**    Collected: 03/26/18 09:15    Received: 03/27/18 14:00    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	mg/kg	0.0050	0.0015	1		03/29/18 15:07	1634-04-4	
Naphthalene	<b>0.0061</b>	mg/kg	0.0050	0.0012	1		03/29/18 15:07	91-20-3	
n-Propylbenzene	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	103-65-1	
Styrene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0021	1		03/29/18 15:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	79-34-5	
Tetrachloroethene	ND	mg/kg	0.0050	0.0017	1		03/29/18 15:07	127-18-4	
Toluene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0022	1		03/29/18 15:07	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0016	1		03/29/18 15:07	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0021	1		03/29/18 15:07	79-00-5	
Trichloroethene	ND	mg/kg	0.0050	0.0021	1		03/29/18 15:07	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0022	1		03/29/18 15:07	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0016	1		03/29/18 15:07	96-18-4	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0020	1		03/29/18 15:07	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0018	1		03/29/18 15:07	108-67-8	
Vinyl acetate	ND	mg/kg	0.050	0.0089	1		03/29/18 15:07	108-05-4	
Vinyl chloride	ND	mg/kg	0.010	0.0018	1		03/29/18 15:07	75-01-4	
Xylene (Total)	ND	mg/kg	0.010	0.0036	1		03/29/18 15:07	1330-20-7	
m&p-Xylene	ND	mg/kg	0.010	0.0036	1		03/29/18 15:07	179601-23-1	
o-Xylene	ND	mg/kg	0.0050	0.0019	1		03/29/18 15:07	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	100	%	70-130		1		03/29/18 15:07	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130		1		03/29/18 15:07	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-132		1		03/29/18 15:07	17060-07-0	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>15.9</b>	%	0.10	0.10	1		03/28/18 11:04		

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

**Sample: R3830-P76/77/78-SS8-9** Lab ID: 92378489002 Collected: 03/26/18 11:00 Received: 03/27/18 14:00 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	ND	mg/kg	4.7	0.47	50		04/02/18 17:21	67-64-1	
Benzene	ND	mg/kg	0.23	0.075	50		04/02/18 17:21	71-43-2	
Bromobenzene	ND	mg/kg	0.23	0.094	50		04/02/18 17:21	108-86-1	
Bromochloromethane	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	74-97-5	
Bromodichloromethane	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	75-27-4	
Bromoform	ND	mg/kg	0.23	0.11	50		04/02/18 17:21	75-25-2	
Bromomethane	ND	mg/kg	0.47	0.12	50		04/02/18 17:21	74-83-9	
2-Butanone (MEK)	ND	mg/kg	4.7	0.14	50		04/02/18 17:21	78-93-3	
n-Butylbenzene	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.23	0.075	50		04/02/18 17:21	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.23	0.094	50		04/02/18 17:21	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.23	0.12	50		04/02/18 17:21	56-23-5	
Chlorobenzene	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	108-90-7	
Chloroethane	ND	mg/kg	0.47	0.11	50		04/02/18 17:21	75-00-3	
Chloroform	ND	mg/kg	0.23	0.075	50		04/02/18 17:21	67-66-3	
Chloromethane	ND	mg/kg	0.47	0.11	50		04/02/18 17:21	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.23	0.17	50		04/02/18 17:21	96-12-8	
Dibromochloromethane	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	106-93-4	
Dibromomethane	ND	mg/kg	0.23	0.12	50		04/02/18 17:21	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.23	0.094	50		04/02/18 17:21	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.47	0.17	50		04/02/18 17:21	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.23	0.070	50		04/02/18 17:21	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.23	0.10	50		04/02/18 17:21	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.23	0.066	50		04/02/18 17:21	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.23	0.070	50		04/02/18 17:21	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.23	0.070	50		04/02/18 17:21	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	108-20-3	
Ethylbenzene	<b>0.11J</b>	mg/kg	0.23	0.084	50		04/02/18 17:21	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.23	0.094	50		04/02/18 17:21	87-68-3	
2-Hexanone	ND	mg/kg	2.3	0.18	50		04/02/18 17:21	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	99-87-6	
Methylene Chloride	ND	mg/kg	0.94	0.14	50		04/02/18 17:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	2.3	0.17	50		04/02/18 17:21	108-10-1	

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

**Sample: R3830-P76/77/78-SS8-9**      **Lab ID: 92378489002**      Collected: 03/26/18 11:00      Received: 03/27/18 14:00      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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	mg/kg	0.23	0.070	50		04/02/18 17:21	1634-04-4	
Naphthalene	<b>0.063J</b>	mg/kg	0.23	0.056	50		04/02/18 17:21	91-20-3	
n-Propylbenzene	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	103-65-1	
Styrene	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.23	0.099	50		04/02/18 17:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.23	0.089	50		04/02/18 17:21	79-34-5	
Tetrachloroethene	ND	mg/kg	0.23	0.080	50		04/02/18 17:21	127-18-4	
Toluene	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.23	0.10	50		04/02/18 17:21	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.23	0.075	50		04/02/18 17:21	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.23	0.084	50		04/02/18 17:21	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.23	0.099	50		04/02/18 17:21	79-00-5	
Trichloroethene	ND	mg/kg	0.23	0.099	50		04/02/18 17:21	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.23	0.10	50		04/02/18 17:21	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.23	0.075	50		04/02/18 17:21	96-18-4	
1,2,4-Trimethylbenzene	<b>0.52</b>	mg/kg	0.23	0.094	50		04/02/18 17:21	95-63-6	
1,3,5-Trimethylbenzene	<b>0.25</b>	mg/kg	0.23	0.084	50		04/02/18 17:21	108-67-8	
Vinyl acetate	ND	mg/kg	2.3	0.41	50		04/02/18 17:21	108-05-4	
Vinyl chloride	ND	mg/kg	0.47	0.084	50		04/02/18 17:21	75-01-4	
Xylene (Total)	ND	mg/kg	0.47	0.17	50		04/02/18 17:21	1330-20-7	
m&p-Xylene	<b>0.26J</b>	mg/kg	0.47	0.17	50		04/02/18 17:21	179601-23-1	
o-Xylene	<b>0.18J</b>	mg/kg	0.23	0.089	50		04/02/18 17:21	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	104	%	70-130		50		04/02/18 17:21	2037-26-5	D3
4-Bromofluorobenzene (S)	105	%	70-130		50		04/02/18 17:21	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	70-132		50		04/02/18 17:21	17060-07-0	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>15.3</b>	%	0.10	0.10	1		03/28/18 11:04		

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

Sample: R3830-P76/77/78-SS8-10 Lab ID: 92378489003 Collected: 03/26/18 11:05 Received: 03/27/18 14:00 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 Microwave Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	mg/kg	0.41	0.095	1	03/27/18 19:45	04/03/18 12:48	83-32-9	
Acenaphthylene	ND	mg/kg	0.41	0.097	1	03/27/18 19:45	04/03/18 12:48	208-96-8	
Aniline	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	62-53-3	
Anthracene	ND	mg/kg	0.41	0.092	1	03/27/18 19:45	04/03/18 12:48	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.41	0.076	1	03/27/18 19:45	04/03/18 12:48	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.41	0.078	1	03/27/18 19:45	04/03/18 12:48	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.41	0.071	1	03/27/18 19:45	04/03/18 12:48	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.41	0.10	1	03/27/18 19:45	04/03/18 12:48	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.41	0.081	1	03/27/18 19:45	04/03/18 12:48	207-08-9	
Benzoic Acid	ND	mg/kg	2.1	0.075	1	03/27/18 19:45	04/03/18 12:48	65-85-0	
Benzyl alcohol	ND	mg/kg	0.82	0.082	1	03/27/18 19:45	04/03/18 12:48	100-51-6	
4-Bromophenylphenyl ether	ND	mg/kg	0.41	0.075	1	03/27/18 19:45	04/03/18 12:48	101-55-3	
Butylbenzylphthalate	ND	mg/kg	0.41	0.087	1	03/27/18 19:45	04/03/18 12:48	85-68-7	
4-Chloro-3-methylphenol	ND	mg/kg	0.82	0.085	1	03/27/18 19:45	04/03/18 12:48	59-50-7	
4-Chloroaniline	ND	mg/kg	2.1	0.11	1	03/27/18 19:45	04/03/18 12:48	106-47-8	
bis(2-Chloroethoxy)methane	ND	mg/kg	0.41	0.096	1	03/27/18 19:45	04/03/18 12:48	111-91-1	
bis(2-Chloroethyl) ether	ND	mg/kg	0.41	0.10	1	03/27/18 19:45	04/03/18 12:48	111-44-4	
2-Chloronaphthalene	ND	mg/kg	0.41	0.081	1	03/27/18 19:45	04/03/18 12:48	91-58-7	
2-Chlorophenol	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	95-57-8	
4-Chlorophenylphenyl ether	ND	mg/kg	0.41	0.085	1	03/27/18 19:45	04/03/18 12:48	7005-72-3	
Chrysene	ND	mg/kg	0.41	0.055	1	03/27/18 19:45	04/03/18 12:48	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.41	0.087	1	03/27/18 19:45	04/03/18 12:48	53-70-3	
Dibenzofuran	ND	mg/kg	0.41	0.067	1	03/27/18 19:45	04/03/18 12:48	132-64-9	
1,2-Dichlorobenzene	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.41	0.093	1	03/27/18 19:45	04/03/18 12:48	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.41	0.12	1	03/27/18 19:45	04/03/18 12:48	106-46-7	
3,3'-Dichlorobenzidine	ND	mg/kg	2.1	0.090	1	03/27/18 19:45	04/03/18 12:48	91-94-1	
2,4-Dichlorophenol	ND	mg/kg	0.41	0.090	1	03/27/18 19:45	04/03/18 12:48	120-83-2	
Diethylphthalate	ND	mg/kg	0.41	0.064	1	03/27/18 19:45	04/03/18 12:48	84-66-2	
2,4-Dimethylphenol	ND	mg/kg	0.41	0.16	1	03/27/18 19:45	04/03/18 12:48	105-67-9	
Dimethylphthalate	ND	mg/kg	0.41	0.083	1	03/27/18 19:45	04/03/18 12:48	131-11-3	
Di-n-butylphthalate	ND	mg/kg	0.41	0.067	1	03/27/18 19:45	04/03/18 12:48	84-74-2	
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.82	0.082	1	03/27/18 19:45	04/03/18 12:48	534-52-1	
2,4-Dinitrophenol	ND	mg/kg	2.1	0.067	1	03/27/18 19:45	04/03/18 12:48	51-28-5	
2,4-Dinitrotoluene	ND	mg/kg	0.41	0.077	1	03/27/18 19:45	04/03/18 12:48	121-14-2	
2,6-Dinitrotoluene	ND	mg/kg	0.41	0.086	1	03/27/18 19:45	04/03/18 12:48	606-20-2	
Di-n-octylphthalate	ND	mg/kg	0.41	0.086	1	03/27/18 19:45	04/03/18 12:48	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	117-81-7	
Fluoranthene	ND	mg/kg	0.41	0.060	1	03/27/18 19:45	04/03/18 12:48	206-44-0	
Fluorene	ND	mg/kg	0.41	0.085	1	03/27/18 19:45	04/03/18 12:48	86-73-7	
Hexachloro-1,3-butadiene	ND	mg/kg	0.41	0.071	1	03/27/18 19:45	04/03/18 12:48	87-68-3	
Hexachlorobenzene	ND	mg/kg	0.41	0.052	1	03/27/18 19:45	04/03/18 12:48	118-74-1	
Hexachlorocyclopentadiene	ND	mg/kg	0.41	0.076	1	03/27/18 19:45	04/03/18 12:48	77-47-4	
Hexachloroethane	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.41	0.085	1	03/27/18 19:45	04/03/18 12:48	193-39-5	

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**ANALYTICAL RESULTS**

Project: R3038 WBS 38887.1.1  
 Pace Project No.: 92378489

**Sample: R3830-P76/7778-SS8-10**      **Lab ID: 92378489003**      Collected: 03/26/18 11:05      Received: 03/27/18 14:00      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>8270 MSSV Microwave</b>		Analytical Method: EPA 8270      Preparation Method: EPA 3546							
Isophorone	ND	mg/kg	0.41	0.092	1	03/27/18 19:45	04/03/18 12:48	78-59-1	
1-Methylnaphthalene	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.41	0.088	1	03/27/18 19:45	04/03/18 12:48	91-57-6	
2-Methylphenol(o-Cresol)	ND	mg/kg	0.41	0.12	1	03/27/18 19:45	04/03/18 12:48	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	mg/kg	0.41	0.16	1	03/27/18 19:45	04/03/18 12:48	15831-10-4	
Naphthalene	ND	mg/kg	0.41	0.10	1	03/27/18 19:45	04/03/18 12:48	91-20-3	
2-Nitroaniline	ND	mg/kg	2.1	0.13	1	03/27/18 19:45	04/03/18 12:48	88-74-4	
3-Nitroaniline	ND	mg/kg	2.1	0.11	1	03/27/18 19:45	04/03/18 12:48	99-09-2	
4-Nitroaniline	ND	mg/kg	0.82	0.12	1	03/27/18 19:45	04/03/18 12:48	100-01-6	
Nitrobenzene	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	98-95-3	
2-Nitrophenol	ND	mg/kg	0.41	0.10	1	03/27/18 19:45	04/03/18 12:48	88-75-5	
4-Nitrophenol	ND	mg/kg	2.1	0.074	1	03/27/18 19:45	04/03/18 12:48	100-02-7	
N-Nitrosodimethylamine	ND	mg/kg	0.41	0.13	1	03/27/18 19:45	04/03/18 12:48	62-75-9	
N-Nitroso-di-n-propylamine	ND	mg/kg	0.41	0.078	1	03/27/18 19:45	04/03/18 12:48	621-64-7	
N-Nitrosodiphenylamine	ND	mg/kg	0.41	0.12	1	03/27/18 19:45	04/03/18 12:48	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	mg/kg	0.41	0.11	1	03/27/18 19:45	04/03/18 12:48	108-60-1	
Pentachlorophenol	ND	mg/kg	2.1	0.075	1	03/27/18 19:45	04/03/18 12:48	87-86-5	
Phenanthrene	ND	mg/kg	0.41	0.069	1	03/27/18 19:45	04/03/18 12:48	85-01-8	
Phenol	ND	mg/kg	0.41	0.12	1	03/27/18 19:45	04/03/18 12:48	108-95-2	
Pyrene	ND	mg/kg	0.41	0.070	1	03/27/18 19:45	04/03/18 12:48	129-00-0	
1,2,4-Trichlorobenzene	ND	mg/kg	0.41	0.080	1	03/27/18 19:45	04/03/18 12:48	120-82-1	
2,4,5-Trichlorophenol	ND	mg/kg	0.41	0.13	1	03/27/18 19:45	04/03/18 12:48	95-95-4	
2,4,6-Trichlorophenol	ND	mg/kg	0.41	0.091	1	03/27/18 19:45	04/03/18 12:48	88-06-2	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	36	%	23-110		1	03/27/18 19:45	04/03/18 12:48	4165-60-0	
2-Fluorobiphenyl (S)	38	%	30-110		1	03/27/18 19:45	04/03/18 12:48	321-60-8	
Terphenyl-d14 (S)	44	%	28-110		1	03/27/18 19:45	04/03/18 12:48	1718-51-0	
Phenol-d6 (S)	28	%	22-110		1	03/27/18 19:45	04/03/18 12:48	13127-88-3	
2-Fluorophenol (S)	32	%	13-110		1	03/27/18 19:45	04/03/18 12:48	367-12-4	
2,4,6-Tribromophenol (S)	39	%	27-110		1	03/27/18 19:45	04/03/18 12:48	118-79-6	
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	ND	mg/kg	0.084	0.0084	1		03/30/18 16:56	67-64-1	
Benzene	0.015	mg/kg	0.0042	0.0013	1		03/30/18 16:56	71-43-2	
Bromobenzene	ND	mg/kg	0.0042	0.0017	1		03/30/18 16:56	108-86-1	
Bromochloromethane	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	74-97-5	
Bromodichloromethane	ND	mg/kg	0.0042	0.0016	1		03/30/18 16:56	75-27-4	
Bromoform	ND	mg/kg	0.0042	0.0019	1		03/30/18 16:56	75-25-2	
Bromomethane	ND	mg/kg	0.0084	0.0021	1		03/30/18 16:56	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.084	0.0024	1		03/30/18 16:56	78-93-3	
n-Butylbenzene	ND	mg/kg	0.20	0.073	50		04/02/18 15:42	104-51-8	
sec-Butylbenzene	0.066	mg/kg	0.0042	0.0013	1		03/30/18 16:56	135-98-8	
tert-Butylbenzene	0.0070	mg/kg	0.0042	0.0017	1		03/30/18 16:56	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.0042	0.0022	1		03/30/18 16:56	56-23-5	
Chlorobenzene	ND	mg/kg	0.0042	0.0016	1		03/30/18 16:56	108-90-7	

**REPORT OF LABORATORY ANALYSIS**

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### ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

**Sample:** R3830-P76/77/78-SS8-10      **Lab ID:** 92378489003      Collected: 03/26/18 11:05      Received: 03/27/18 14:00      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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Chloroethane	ND	mg/kg	0.0084	0.0020	1		03/30/18 16:56	75-00-3	
Chloroform	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	67-66-3	
Chloromethane	ND	mg/kg	0.0084	0.0020	1		03/30/18 16:56	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0042	0.0030	1		03/30/18 16:56	96-12-8	
Dibromochloromethane	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	106-93-4	
Dibromomethane	ND	mg/kg	0.0042	0.0021	1		03/30/18 16:56	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.0042	0.0016	1		03/30/18 16:56	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.0042	0.0017	1		03/30/18 16:56	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.0084	0.0030	1		03/30/18 16:56	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.0042	0.0018	1		03/30/18 16:56	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.0042	0.0012	1		03/30/18 16:56	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.0042	0.0016	1		03/30/18 16:56	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.0042	0.0016	1		03/30/18 16:56	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	108-20-3	
Ethylbenzene	<b>0.24</b>	mg/kg	0.20	0.073	50		04/02/18 15:42	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.0042	0.0017	1		03/30/18 16:56	87-68-3	
2-Hexanone	ND	mg/kg	0.042	0.0033	1		03/30/18 16:56	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.20	0.077	50		04/02/18 15:42	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.20	0.069	50		04/02/18 15:42	99-87-6	
Methylene Chloride	ND	mg/kg	0.017	0.0025	1		03/30/18 16:56	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	0.042	0.0031	1		03/30/18 16:56	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	1634-04-4	
Naphthalene	<b>0.20J</b>	mg/kg	0.20	0.049	50		04/02/18 15:42	91-20-3	
n-Propylbenzene	<b>0.11J</b>	mg/kg	0.20	0.069	50		04/02/18 15:42	103-65-1	
Styrene	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0042	0.0018	1		03/30/18 16:56	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0042	0.0016	1		03/30/18 16:56	79-34-5	
Tetrachloroethene	ND	mg/kg	0.0042	0.0014	1		03/30/18 16:56	127-18-4	
Toluene	<b>0.16</b>	mg/kg	0.0042	0.0015	1		03/30/18 16:56	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.0042	0.0018	1		03/30/18 16:56	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.0042	0.0015	1		03/30/18 16:56	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.0042	0.0018	1		03/30/18 16:56	79-00-5	
Trichloroethene	ND	mg/kg	0.0042	0.0018	1		03/30/18 16:56	79-01-6	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

**Sample: R3830-P76/77/78-SS8-10 Lab ID: 92378489003** Collected: 03/26/18 11:05 Received: 03/27/18 14:00 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Trichlorofluoromethane	ND	mg/kg	0.0042	0.0018	1		03/30/18 16:56	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.0042	0.0013	1		03/30/18 16:56	96-18-4	
1,2,4-Trimethylbenzene	<b>0.89</b>	mg/kg	0.20	0.081	50		04/02/18 15:42	95-63-6	
1,3,5-Trimethylbenzene	<b>0.39</b>	mg/kg	0.20	0.073	50		04/02/18 15:42	108-67-8	
Vinyl acetate	ND	mg/kg	0.042	0.0074	1		03/30/18 16:56	108-05-4	L2
Vinyl chloride	ND	mg/kg	0.0084	0.0015	1		03/30/18 16:56	75-01-4	
Xylene (Total)	<b>1.2</b>	mg/kg	0.41	0.15	50		04/02/18 15:42	1330-20-7	
m&p-Xylene	<b>0.84</b>	mg/kg	0.41	0.15	50		04/02/18 15:42	179601-23-1	
o-Xylene	<b>0.39</b>	mg/kg	0.20	0.077	50		04/02/18 15:42	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	180	%	70-130		1		03/30/18 16:56	2037-26-5	S1
4-Bromofluorobenzene (S)	296	%	70-130		1		03/30/18 16:56	460-00-4	S1
1,2-Dichloroethane-d4 (S)	117	%	70-132		1		03/30/18 16:56	17060-07-0	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>18.4</b>	%	0.10	0.10	1		03/28/18 11:05		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

QC Batch: 404007 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics  
Associated Lab Samples: 92378489001

METHOD BLANK: 2241303 Matrix: Solid  
Associated Lab Samples: 92378489001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.0054	0.0023	03/29/18 11:29	
1,1,1-Trichloroethane	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
1,1,2-Trichloroethane	mg/kg	ND	0.0054	0.0023	03/29/18 11:29	
1,1-Dichloroethane	mg/kg	ND	0.0054	0.0016	03/29/18 11:29	
1,1-Dichloroethene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
1,1-Dichloropropene	mg/kg	ND	0.0054	0.0016	03/29/18 11:29	
1,2,3-Trichlorobenzene	mg/kg	ND	0.0054	0.0024	03/29/18 11:29	
1,2,3-Trichloropropane	mg/kg	ND	0.0054	0.0017	03/29/18 11:29	
1,2,4-Trichlorobenzene	mg/kg	ND	0.0054	0.0017	03/29/18 11:29	
1,2,4-Trimethylbenzene	mg/kg	ND	0.0054	0.0021	03/29/18 11:29	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.0054	0.0039	03/29/18 11:29	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
1,2-Dichlorobenzene	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
1,2-Dichloroethane	mg/kg	ND	0.0054	0.0024	03/29/18 11:29	
1,2-Dichloropropane	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
1,3-Dichlorobenzene	mg/kg	ND	0.0054	0.0021	03/29/18 11:29	
1,3-Dichloropropane	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
1,4-Dichlorobenzene	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
2,2-Dichloropropane	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
2-Butanone (MEK)	mg/kg	ND	0.11	0.0031	03/29/18 11:29	
2-Chlorotoluene	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
2-Hexanone	mg/kg	ND	0.054	0.0042	03/29/18 11:29	
4-Chlorotoluene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.054	0.0040	03/29/18 11:29	
Acetone	mg/kg	ND	0.11	0.011	03/29/18 11:29	
Benzene	mg/kg	ND	0.0054	0.0017	03/29/18 11:29	
Bromobenzene	mg/kg	ND	0.0054	0.0021	03/29/18 11:29	
Bromochloromethane	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
Bromodichloromethane	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
Bromoform	mg/kg	ND	0.0054	0.0025	03/29/18 11:29	
Bromomethane	mg/kg	ND	0.011	0.0027	03/29/18 11:29	
Carbon tetrachloride	mg/kg	ND	0.0054	0.0028	03/29/18 11:29	
Chlorobenzene	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
Chloroethane	mg/kg	ND	0.011	0.0026	03/29/18 11:29	
Chloroform	mg/kg	ND	0.0054	0.0017	03/29/18 11:29	
Chloromethane	mg/kg	ND	0.011	0.0026	03/29/18 11:29	
cis-1,2-Dichloroethene	mg/kg	ND	0.0054	0.0015	03/29/18 11:29	
cis-1,3-Dichloropropene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
Dibromochloromethane	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

METHOD BLANK: 2241303 Matrix: Solid  
Associated Lab Samples: 92378489001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	mg/kg	ND	0.0054	0.0027	03/29/18 11:29	
Dichlorodifluoromethane	mg/kg	ND	0.011	0.0039	03/29/18 11:29	
Diisopropyl ether	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
Ethylbenzene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
Hexachloro-1,3-butadiene	mg/kg	ND	0.0054	0.0021	03/29/18 11:29	
Isopropylbenzene (Cumene)	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
m&p-Xylene	mg/kg	ND	0.011	0.0039	03/29/18 11:29	
Methyl-tert-butyl ether	mg/kg	ND	0.0054	0.0016	03/29/18 11:29	
Methylene Chloride	mg/kg	ND	0.021	0.0032	03/29/18 11:29	
n-Butylbenzene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
n-Propylbenzene	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
Naphthalene	mg/kg	ND	0.0054	0.0013	03/29/18 11:29	
o-Xylene	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
p-Isopropyltoluene	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
sec-Butylbenzene	mg/kg	ND	0.0054	0.0017	03/29/18 11:29	
Styrene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
tert-Butylbenzene	mg/kg	ND	0.0054	0.0021	03/29/18 11:29	
Tetrachloroethene	mg/kg	ND	0.0054	0.0018	03/29/18 11:29	
Toluene	mg/kg	ND	0.0054	0.0019	03/29/18 11:29	
trans-1,2-Dichloroethene	mg/kg	ND	0.0054	0.0020	03/29/18 11:29	
trans-1,3-Dichloropropene	mg/kg	ND	0.0054	0.0016	03/29/18 11:29	
Trichloroethene	mg/kg	ND	0.0054	0.0023	03/29/18 11:29	
Trichlorofluoromethane	mg/kg	ND	0.0054	0.0024	03/29/18 11:29	
Vinyl acetate	mg/kg	ND	0.054	0.0094	03/29/18 11:29	
Vinyl chloride	mg/kg	ND	0.011	0.0019	03/29/18 11:29	
Xylene (Total)	mg/kg	ND	0.011	0.0039	03/29/18 11:29	
1,2-Dichloroethane-d4 (S)	%	93	70-132		03/29/18 11:29	
4-Bromofluorobenzene (S)	%	98	70-130		03/29/18 11:29	
Toluene-d8 (S)	%	100	70-130		03/29/18 11:29	

LABORATORY CONTROL SAMPLE: 2241304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	.052	0.052	99	74-137	
1,1,1-Trichloroethane	mg/kg	.052	0.043	82	67-140	
1,1,2,2-Tetrachloroethane	mg/kg	.052	0.051	97	72-141	
1,1,2-Trichloroethane	mg/kg	.052	0.049	94	78-138	
1,1-Dichloroethane	mg/kg	.052	0.043	82	69-134	
1,1-Dichloroethene	mg/kg	.052	0.045	86	67-138	
1,1-Dichloropropene	mg/kg	.052	0.045	85	69-139	
1,2,3-Trichlorobenzene	mg/kg	.052	0.059	112	70-146	
1,2,3-Trichloropropane	mg/kg	.052	0.055	106	69-144	
1,2,4-Trichlorobenzene	mg/kg	.052	0.060	114	68-148	
1,2,4-Trimethylbenzene	mg/kg	.052	0.053	100	74-137	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE: 2241304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	mg/kg	.052	0.053	101	65-140	
1,2-Dibromoethane (EDB)	mg/kg	.052	0.050	96	77-135	
1,2-Dichlorobenzene	mg/kg	.052	0.053	102	77-141	
1,2-Dichloroethane	mg/kg	.052	0.043	83	65-137	
1,2-Dichloropropane	mg/kg	.052	0.049	94	72-136	
1,3,5-Trimethylbenzene	mg/kg	.052	0.053	100	76-133	
1,3-Dichlorobenzene	mg/kg	.052	0.052	100	74-138	
1,3-Dichloropropane	mg/kg	.052	0.051	97	71-139	
1,4-Dichlorobenzene	mg/kg	.052	0.053	101	76-138	
2,2-Dichloropropane	mg/kg	.052	0.043	82	68-137	
2-Butanone (MEK)	mg/kg	.1	0.085J	81	58-147	
2-Chlorotoluene	mg/kg	.052	0.052	99	73-139	
2-Hexanone	mg/kg	.1	0.097	93	62-145	
4-Chlorotoluene	mg/kg	.052	0.053	101	76-141	
4-Methyl-2-pentanone (MIBK)	mg/kg	.1	0.097	92	64-149	
Acetone	mg/kg	.1	0.078J	75	53-153	
Benzene	mg/kg	.052	0.048	92	73-135	
Bromobenzene	mg/kg	.052	0.052	100	75-133	
Bromochloromethane	mg/kg	.052	0.044	83	73-134	
Bromodichloromethane	mg/kg	.052	0.049	94	71-135	
Bromoform	mg/kg	.052	0.053	101	66-141	
Bromomethane	mg/kg	.052	0.041	79	53-160	
Carbon tetrachloride	mg/kg	.052	0.043	82	60-145	
Chlorobenzene	mg/kg	.052	0.051	97	78-130	
Chloroethane	mg/kg	.052	0.041	79	64-149	
Chloroform	mg/kg	.052	0.043	81	70-134	
Chloromethane	mg/kg	.052	0.039	74	52-150	
cis-1,2-Dichloroethene	mg/kg	.052	0.045	86	70-133	
cis-1,3-Dichloropropene	mg/kg	.052	0.049	93	68-134	
Dibromochloromethane	mg/kg	.052	0.052	99	71-138	
Dibromomethane	mg/kg	.052	0.049	93	74-130	
Dichlorodifluoromethane	mg/kg	.052	0.033	64	40-160	
Diisopropyl ether	mg/kg	.052	0.044	85	69-141	
Ethylbenzene	mg/kg	.052	0.050	95	75-133	
Hexachloro-1,3-butadiene	mg/kg	.052	0.053	102	68-143	
Isopropylbenzene (Cumene)	mg/kg	.052	0.051	98	76-143	
m&p-Xylene	mg/kg	.1	0.10	97	75-136	
Methyl-tert-butyl ether	mg/kg	.052	0.043	82	68-144	
Methylene Chloride	mg/kg	.052	0.045	85	45-154	
n-Butylbenzene	mg/kg	.052	0.054	104	72-137	
n-Propylbenzene	mg/kg	.052	0.053	101	76-136	
Naphthalene	mg/kg	.052	0.063	120	68-151	
o-Xylene	mg/kg	.052	0.052	98	76-141	
p-Isopropyltoluene	mg/kg	.052	0.053	101	76-140	
sec-Butylbenzene	mg/kg	.052	0.052	99	79-139	
Styrene	mg/kg	.052	0.051	97	79-137	
tert-Butylbenzene	mg/kg	.052	0.047	89	74-143	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE: 2241304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	mg/kg	.052	0.040	76	71-138	
Toluene	mg/kg	.052	0.048	92	74-131	
trans-1,2-Dichloroethene	mg/kg	.052	0.044	85	67-135	
trans-1,3-Dichloropropene	mg/kg	.052	0.050	95	65-146	
Trichloroethene	mg/kg	.052	0.047	90	67-135	
Trichlorofluoromethane	mg/kg	.052	0.044	84	59-144	
Vinyl acetate	mg/kg	.1	0.078	75	40-160	
Vinyl chloride	mg/kg	.052	0.047	90	56-141	
Xylene (Total)	mg/kg	.16	0.15	97	76-137	
1,2-Dichloroethane-d4 (S)	%			89	70-132	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2241305 2241306

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92378583008 Result	Spike Conc.	Spike Conc.	MS Result						
1,1,1,2-Tetrachloroethane	mg/kg	ND	.025	.024	0.025	0.019	100	79	70-130	25	30
1,1,1-Trichloroethane	mg/kg	ND	.025	.024	0.021	0.018	87	75	70-130	16	30
1,1,2,2-Tetrachloroethane	mg/kg	ND	.025	.024	0.022	0.019	90	79	70-130	14	30
1,1,2-Trichloroethane	mg/kg	ND	.025	.024	0.022	0.019	89	78	70-130	15	30
1,1-Dichloroethane	mg/kg	ND	.025	.024	0.022	0.018	88	74	70-130	19	30
1,1-Dichloroethene	mg/kg	ND	.025	.024	0.023	0.019	93	77	49-180	21	30
1,1-Dichloropropene	mg/kg	ND	.025	.024	0.022	0.019	90	77	70-130	16	30
1,2,3-Trichlorobenzene	mg/kg	ND	.025	.024	0.021	0.017	83	72	70-130	16	30
1,2,3-Trichloropropane	mg/kg	ND	.025	.024	0.025	0.021	101	85	70-130	19	30
1,2,4-Trichlorobenzene	mg/kg	ND	.025	.024	0.022	0.018	89	75	70-130	19	30
1,2,4-Trimethylbenzene	mg/kg	ND	.025	.024	0.026	0.021	106	88	70-130	20	30
1,2-Dibromo-3-chloropropane	mg/kg	ND	.025	.024	0.023	0.021	93	86	70-130	9	30
1,2-Dibromoethane (EDB)	mg/kg	ND	.025	.024	0.023	0.019	93	77	70-130	20	30
1,2-Dichlorobenzene	mg/kg	ND	.025	.024	0.024	0.019	97	80	70-130	21	30
1,2-Dichloroethane	mg/kg	ND	.025	.024	0.021	0.019	85	76	70-130	13	30
1,2-Dichloropropane	mg/kg	ND	.025	.024	0.024	0.020	96	83	70-130	16	30
1,3,5-Trimethylbenzene	mg/kg	ND	.025	.024	0.026	0.022	107	91	70-130	18	30
1,3-Dichlorobenzene	mg/kg	ND	.025	.024	0.025	0.020	100	81	70-130	22	30
1,3-Dichloropropane	mg/kg	ND	.025	.024	0.025	0.021	99	84	70-130	18	30
1,4-Dichlorobenzene	mg/kg	ND	.025	.024	0.025	0.020	101	83	70-130	21	30
2,2-Dichloropropane	mg/kg	ND	.025	.024	0.021	0.017	84	71	70-130	19	30
2-Butanone (MEK)	mg/kg	ND	.049	.049	0.034J	0.032J	69	66	70-130		30 M1
2-Chlorotoluene	mg/kg	ND	.025	.024	0.026	0.021	105	87	70-130	20	30
2-Hexanone	mg/kg	ND	.049	.049	0.036J	0.031J	73	63	70-130		30 M1
4-Chlorotoluene	mg/kg	ND	.025	.024	0.026	0.021	104	87	70-130	20	30
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	.049	.049	0.040J	0.034J	81	69	70-130		30 M1
Acetone	mg/kg	ND	.049	.049	0.040J	0.035J	81	72	70-130		30

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Project No.: 92378489

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2241305												2241306	
Parameter	Units	92378583008 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual		
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD			
Benzene	mg/kg	ND	.025	.024	0.023	0.020	93	81	50-166	16	30		
Bromobenzene	mg/kg	ND	.025	.024	0.025	0.021	102	85	70-130	19	30		
Bromochloromethane	mg/kg	ND	.025	.024	0.022	0.019	90	77	70-130	17	30		
Bromodichloromethane	mg/kg	ND	.025	.024	0.023	0.019	92	78	70-130	18	30		
Bromoform	mg/kg	ND	.025	.024	0.021	0.017	84	69	70-130	21	30 M1		
Bromomethane	mg/kg	ND	.025	.024	0.024	0.016	95	65	70-130	39	30 M1,R1		
Carbon tetrachloride	mg/kg	ND	.025	.024	0.021	0.018	85	72	70-130	19	30		
Chlorobenzene	mg/kg	ND	.025	.024	0.024	0.019	95	79	43-169	20	30		
Chloroethane	mg/kg	ND	.025	.024	0.023	0.020	92	81	70-130	15	30		
Chloroform	mg/kg	ND	.025	.024	0.022	0.019	89	77	70-130	17	30		
Chloromethane	mg/kg	ND	.025	.024	0.017	0.015	69	61	70-130	14	30 M1		
cis-1,2-Dichloroethene	mg/kg	ND	.025	.024	0.022	0.019	89	77	70-130	16	30		
cis-1,3-Dichloropropene	mg/kg	ND	.025	.024	0.021	0.017	85	68	70-130	23	30 M1		
Dibromochloromethane	mg/kg	ND	.025	.024	0.023	0.018	92	74	70-130	23	30		
Dibromomethane	mg/kg	ND	.025	.024	0.023	0.019	93	80	70-130	16	30		
Dichlorodifluoromethane	mg/kg	ND	.025	.024	0.014	0.011J	56	47	70-130		30 M1		
Diisopropyl ether	mg/kg	ND	.025	.024	0.022	0.018	89	74	70-130	19	30		
Ethylbenzene	mg/kg	ND	.025	.024	0.024	0.020	99	82	70-130	20	30		
Hexachloro-1,3-butadiene	mg/kg	ND	.025	.024	0.023	0.017	91	71	70-130	27	30		
Isopropylbenzene (Cumene)	mg/kg	ND	.025	.024	0.025	0.020	100	82	70-130	21	30		
m&p-Xylene	mg/kg	ND	.049	.049	0.050	0.040	100	82	70-130	21	30		
Methyl-tert-butyl ether	mg/kg	ND	.025	.024	0.020	0.017	81	69	70-130	17	30 M1		
Methylene Chloride	mg/kg	ND	.025	.024	0.024J	0.017J	96	68	70-130		30 M1		
n-Butylbenzene	mg/kg	ND	.025	.024	0.025	0.020	102	84	70-130	21	30		
n-Propylbenzene	mg/kg	ND	.025	.024	0.027	0.022	109	90	70-130	21	30		
Naphthalene	mg/kg	ND	.025	.024	0.024	0.021	95	86	70-130	12	30		
o-Xylene	mg/kg	ND	.025	.024	0.024	0.020	98	82	70-130	19	30		
p-Isopropyltoluene	mg/kg	ND	.025	.024	0.026	0.021	104	85	70-130	22	30		
sec-Butylbenzene	mg/kg	ND	.025	.024	0.026	0.022	106	88	70-130	20	30		
Styrene	mg/kg	ND	.025	.024	0.022	0.018	91	72	70-130	24	30		
tert-Butylbenzene	mg/kg	ND	.025	.024	0.024	0.020	96	81	70-130	19	30		
Tetrachloroethene	mg/kg	76.1 ug/kg	.025	.024	0.038	0.039	-152	-154	70-130	1	30 M1		
Toluene	mg/kg	ND	.025	.024	0.022	0.018	89	76	52-163	18	30		
trans-1,2-Dichloroethene	mg/kg	ND	.025	.024	0.023	0.019	92	78	70-130	18	30		
trans-1,3-Dichloropropene	mg/kg	ND	.025	.024	0.021	0.017	84	68	70-130	22	30 M1		
Trichloroethene	mg/kg	ND	.025	.024	0.023	0.019	92	78	49-167	18	30		
Trichlorofluoromethane	mg/kg	ND	.025	.024	0.022	0.019	89	77	70-130	16	30		
Vinyl acetate	mg/kg	ND	.049	.049	0.024J	0.021J	48	42	70-130		30 M1		
Vinyl chloride	mg/kg	ND	.025	.024	0.023	0.019	91	78	70-130	18	30		
Xylene (Total)	mg/kg	ND	.075	.073	0.074	0.060	100	82	70-130	21	30		
1,2-Dichloroethane-d4 (S)	%						87	95	70-132				
4-Bromofluorobenzene (S)	%						94	95	70-130				
Toluene-d8 (S)	%						98	99	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

QC Batch: 404262 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics  
Associated Lab Samples: 92378489003

METHOD BLANK: 2242806 Matrix: Solid  
Associated Lab Samples: 92378489003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.0050	0.0021	03/30/18 14:53	
1,1,1-Trichloroethane	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
1,1,2-Trichloroethane	mg/kg	ND	0.0050	0.0021	03/30/18 14:53	
1,1-Dichloroethane	mg/kg	ND	0.0050	0.0015	03/30/18 14:53	
1,1-Dichloroethene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
1,1-Dichloropropene	mg/kg	ND	0.0050	0.0015	03/30/18 14:53	
1,2,3-Trichlorobenzene	mg/kg	ND	0.0050	0.0022	03/30/18 14:53	
1,2,3-Trichloropropane	mg/kg	ND	0.0050	0.0016	03/30/18 14:53	
1,2,4-Trichlorobenzene	mg/kg	ND	0.0050	0.0016	03/30/18 14:53	
1,2,4-Trimethylbenzene	mg/kg	ND	0.0050	0.0020	03/30/18 14:53	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.0050	0.0036	03/30/18 14:53	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
1,2-Dichlorobenzene	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
1,2-Dichloroethane	mg/kg	ND	0.0050	0.0022	03/30/18 14:53	
1,2-Dichloropropane	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
1,3-Dichlorobenzene	mg/kg	ND	0.0050	0.0020	03/30/18 14:53	
1,3-Dichloropropane	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
1,4-Dichlorobenzene	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
2,2-Dichloropropane	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
2-Butanone (MEK)	mg/kg	ND	0.099	0.0029	03/30/18 14:53	
2-Chlorotoluene	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
2-Hexanone	mg/kg	ND	0.050	0.0039	03/30/18 14:53	
4-Chlorotoluene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.050	0.0037	03/30/18 14:53	
Acetone	mg/kg	ND	0.099	0.0099	03/30/18 14:53	
Benzene	mg/kg	ND	0.0050	0.0016	03/30/18 14:53	
Bromobenzene	mg/kg	ND	0.0050	0.0020	03/30/18 14:53	
Bromochloromethane	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
Bromodichloromethane	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
Bromoform	mg/kg	ND	0.0050	0.0023	03/30/18 14:53	
Bromomethane	mg/kg	ND	0.0099	0.0025	03/30/18 14:53	
Carbon tetrachloride	mg/kg	ND	0.0050	0.0026	03/30/18 14:53	
Chlorobenzene	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
Chloroethane	mg/kg	ND	0.0099	0.0024	03/30/18 14:53	
Chloroform	mg/kg	ND	0.0050	0.0016	03/30/18 14:53	
Chloromethane	mg/kg	ND	0.0099	0.0024	03/30/18 14:53	
cis-1,2-Dichloroethene	mg/kg	ND	0.0050	0.0014	03/30/18 14:53	
cis-1,3-Dichloropropene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
Dibromochloromethane	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

METHOD BLANK: 2242806

Matrix: Solid

Associated Lab Samples: 92378489003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	mg/kg	ND	0.0050	0.0025	03/30/18 14:53	
Dichlorodifluoromethane	mg/kg	ND	0.0099	0.0036	03/30/18 14:53	
Diisopropyl ether	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
Ethylbenzene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
Hexachloro-1,3-butadiene	mg/kg	ND	0.0050	0.0020	03/30/18 14:53	
Isopropylbenzene (Cumene)	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
m&p-Xylene	mg/kg	ND	0.0099	0.0036	03/30/18 14:53	
Methyl-tert-butyl ether	mg/kg	ND	0.0050	0.0015	03/30/18 14:53	
Methylene Chloride	mg/kg	ND	0.020	0.0030	03/30/18 14:53	
n-Butylbenzene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
n-Propylbenzene	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
Naphthalene	mg/kg	ND	0.0050	0.0012	03/30/18 14:53	
o-Xylene	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
p-Isopropyltoluene	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
sec-Butylbenzene	mg/kg	ND	0.0050	0.0016	03/30/18 14:53	
Styrene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
tert-Butylbenzene	mg/kg	ND	0.0050	0.0020	03/30/18 14:53	
Tetrachloroethene	mg/kg	ND	0.0050	0.0017	03/30/18 14:53	
Toluene	mg/kg	ND	0.0050	0.0018	03/30/18 14:53	
trans-1,2-Dichloroethene	mg/kg	ND	0.0050	0.0019	03/30/18 14:53	
trans-1,3-Dichloropropene	mg/kg	ND	0.0050	0.0015	03/30/18 14:53	
Trichloroethene	mg/kg	ND	0.0050	0.0021	03/30/18 14:53	
Trichlorofluoromethane	mg/kg	ND	0.0050	0.0022	03/30/18 14:53	
Vinyl acetate	mg/kg	ND	0.050	0.0087	03/30/18 14:53	
Vinyl chloride	mg/kg	ND	0.0099	0.0018	03/30/18 14:53	
Xylene (Total)	mg/kg	ND	0.0099	0.0036	03/30/18 14:53	
1,2-Dichloroethane-d4 (S)	%	94	70-132		03/30/18 14:53	
4-Bromofluorobenzene (S)	%	101	70-130		03/30/18 14:53	
Toluene-d8 (S)	%	104	70-130		03/30/18 14:53	

LABORATORY CONTROL SAMPLE: 2242807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	.05	0.053	105	74-137	
1,1,1-Trichloroethane	mg/kg	.05	0.050	99	67-140	
1,1,2,2-Tetrachloroethane	mg/kg	.05	0.038	76	72-141	
1,1,2-Trichloroethane	mg/kg	.05	0.052	104	78-138	
1,1-Dichloroethane	mg/kg	.05	0.048	96	69-134	
1,1-Dichloroethene	mg/kg	.05	0.053	106	67-138	
1,1-Dichloropropene	mg/kg	.05	0.052	104	69-139	
1,2,3-Trichlorobenzene	mg/kg	.05	0.048	96	70-146	
1,2,3-Trichloropropane	mg/kg	.05	0.051	102	69-144	
1,2,4-Trichlorobenzene	mg/kg	.05	0.048	95	68-148	
1,2,4-Trimethylbenzene	mg/kg	.05	0.050	99	74-137	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE: 2242807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	mg/kg	.05	0.052	104	65-140	
1,2-Dibromoethane (EDB)	mg/kg	.05	0.050	100	77-135	
1,2-Dichlorobenzene	mg/kg	.05	0.049	98	77-141	
1,2-Dichloroethane	mg/kg	.05	0.049	98	65-137	
1,2-Dichloropropane	mg/kg	.05	0.052	103	72-136	
1,3,5-Trimethylbenzene	mg/kg	.05	0.050	100	76-133	
1,3-Dichlorobenzene	mg/kg	.05	0.049	97	74-138	
1,3-Dichloropropane	mg/kg	.05	0.053	105	71-139	
1,4-Dichlorobenzene	mg/kg	.05	0.048	97	76-138	
2,2-Dichloropropane	mg/kg	.05	0.050	100	68-137	
2-Butanone (MEK)	mg/kg	.1	0.098J	98	58-147	
2-Chlorotoluene	mg/kg	.05	0.049	97	73-139	
2-Hexanone	mg/kg	.1	0.10	104	62-145	
4-Chlorotoluene	mg/kg	.05	0.048	96	76-141	
4-Methyl-2-pentanone (MIBK)	mg/kg	.1	0.10	102	64-149	
Acetone	mg/kg	.1	0.10	101	53-153	
Benzene	mg/kg	.05	0.052	103	73-135	
Bromobenzene	mg/kg	.05	0.051	102	75-133	
Bromochloromethane	mg/kg	.05	0.051	101	73-134	
Bromodichloromethane	mg/kg	.05	0.053	106	71-135	
Bromoform	mg/kg	.05	0.054	107	66-141	
Bromomethane	mg/kg	.05	0.047	94	53-160	
Carbon tetrachloride	mg/kg	.05	0.051	101	60-145	
Chlorobenzene	mg/kg	.05	0.050	100	78-130	
Chloroethane	mg/kg	.05	0.050	99	64-149	
Chloroform	mg/kg	.05	0.047	93	70-134	
Chloromethane	mg/kg	.05	0.046	92	52-150	
cis-1,2-Dichloroethene	mg/kg	.05	0.050	100	70-133	
cis-1,3-Dichloropropene	mg/kg	.05	0.054	108	68-134	
Dibromochloromethane	mg/kg	.05	0.054	108	71-138	
Dibromomethane	mg/kg	.05	0.051	101	74-130	
Dichlorodifluoromethane	mg/kg	.05	0.045	90	40-160	
Diisopropyl ether	mg/kg	.05	0.051	101	69-141	
Ethylbenzene	mg/kg	.05	0.050	100	75-133	
Hexachloro-1,3-butadiene	mg/kg	.05	0.048	96	68-143	
Isopropylbenzene (Cumene)	mg/kg	.05	0.051	102	76-143	
m&p-Xylene	mg/kg	.1	0.10	100	75-136	
Methyl-tert-butyl ether	mg/kg	.05	0.051	102	68-144	
Methylene Chloride	mg/kg	.05	0.053	106	45-154	
n-Butylbenzene	mg/kg	.05	0.048	97	72-137	
n-Propylbenzene	mg/kg	.05	0.051	101	76-136	
Naphthalene	mg/kg	.05	0.049	98	68-151	
o-Xylene	mg/kg	.05	0.051	102	76-141	
p-Isopropyltoluene	mg/kg	.05	0.050	99	76-140	
sec-Butylbenzene	mg/kg	.05	0.050	99	79-139	
Styrene	mg/kg	.05	0.049	97	79-137	
tert-Butylbenzene	mg/kg	.05	0.047	93	74-143	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE: 2242807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	mg/kg	.05	0.045	89	71-138	
Toluene	mg/kg	.05	0.051	101	74-131	
trans-1,2-Dichloroethene	mg/kg	.05	0.051	101	67-135	
trans-1,3-Dichloropropene	mg/kg	.05	0.055	109	65-146	
Trichloroethene	mg/kg	.05	0.062	124	67-135	
Trichlorofluoromethane	mg/kg	.05	0.053	105	59-144	
Vinyl acetate	mg/kg	.1	0.034J	34	40-160	L2
Vinyl chloride	mg/kg	.05	0.056	111	56-141	
Xylene (Total)	mg/kg	.15	0.15	101	76-137	
1,2-Dichloroethane-d4 (S)	%			101	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 2243651

Parameter	Units	92378826001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	.018	0.015	88	70-130	
1,1,1-Trichloroethane	mg/kg	ND	.018	0.017	100	70-130	
1,1,2,2-Tetrachloroethane	mg/kg	ND	.018	0.014	82	70-130	
1,1,2-Trichloroethane	mg/kg	ND	.018	0.015	87	70-130	
1,1-Dichloroethane	mg/kg	ND	.018	0.016	94	70-130	
1,1-Dichloroethene	mg/kg	ND	.018	0.019	107	49-180	
1,1-Dichloropropene	mg/kg	ND	.018	0.017	99	70-130	
1,2,3-Trichlorobenzene	mg/kg	ND	.018	0.0059	34	70-130	M1
1,2,3-Trichloropropane	mg/kg	ND	.018	0.015	88	70-130	
1,2,4-Trichlorobenzene	mg/kg	ND	.018	0.0060	35	70-130	M1
1,2,4-Trimethylbenzene	mg/kg	ND	.018	0.015	85	70-130	
1,2-Dibromo-3-chloropropane	mg/kg	ND	.018	0.015	84	70-130	
1,2-Dibromoethane (EDB)	mg/kg	ND	.018	0.014	80	70-130	
1,2-Dichlorobenzene	mg/kg	ND	.018	0.010	59	70-130	M1
1,2-Dichloroethane	mg/kg	ND	.018	0.016	90	70-130	
1,2-Dichloropropane	mg/kg	ND	.018	0.016	92	70-130	
1,3,5-Trimethylbenzene	mg/kg	ND	.018	0.015	88	70-130	
1,3-Dichlorobenzene	mg/kg	ND	.018	0.011	60	70-130	M1
1,3-Dichloropropane	mg/kg	ND	.018	0.016	89	70-130	
1,4-Dichlorobenzene	mg/kg	ND	.018	0.010	59	70-130	M1
2,2-Dichloropropane	mg/kg	ND	.018	0.017	99	70-130	
2-Butanone (MEK)	mg/kg	ND	.035	0.036J	104	70-130	
2-Chlorotoluene	mg/kg	ND	.018	0.014	82	70-130	
2-Hexanone	mg/kg	ND	.035	0.032J	92	70-130	
4-Chlorotoluene	mg/kg	ND	.018	0.013	72	70-130	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	.035	0.034J	96	70-130	
Acetone	mg/kg	ND	.035	0.085J	153	70-130	M1
Benzene	mg/kg	ND	.018	0.016	94	50-166	
Bromobenzene	mg/kg	ND	.018	0.012	71	70-130	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

MATRIX SPIKE SAMPLE: 2243651		92378826001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromochloromethane	mg/kg	ND	.018	0.017	97	70-130	
Bromodichloromethane	mg/kg	ND	.018	0.015	88	70-130	
Bromoform	mg/kg	ND	.018	0.013	74	70-130	
Bromomethane	mg/kg	ND	.018	0.017	98	70-130	
Carbon tetrachloride	mg/kg	ND	.018	0.019	111	70-130	
Chlorobenzene	mg/kg	ND	.018	0.013	76	43-169	
Chloroethane	mg/kg	ND	.018	0.017	99	70-130	
Chloroform	mg/kg	ND	.018	0.017	97	70-130	
Chloromethane	mg/kg	ND	.018	0.015	86	70-130	
cis-1,2-Dichloroethene	mg/kg	ND	.018	0.016	94	70-130	
cis-1,3-Dichloropropene	mg/kg	ND	.018	0.014	78	70-130	
Dibromochloromethane	mg/kg	ND	.018	0.015	84	70-130	
Dibromomethane	mg/kg	ND	.018	0.014	80	70-130	
Dichlorodifluoromethane	mg/kg	ND	.018	0.013	72	70-130	
Diisopropyl ether	mg/kg	ND	.018	0.017	95	70-130	
Ethylbenzene	mg/kg	ND	.018	0.015	87	70-130	
Hexachloro-1,3-butadiene	mg/kg	ND	.018	0.010	58	70-130	M1
Isopropylbenzene (Cumene)	mg/kg	ND	.018	0.016	90	70-130	
m&p-Xylene	mg/kg	ND	.035	0.030	86	70-130	
Methyl-tert-butyl ether	mg/kg	ND	.018	0.017	95	70-130	
Methylene Chloride	mg/kg	ND	.018	0.015J	60	70-130	M1
n-Butylbenzene	mg/kg	ND	.018	0.014	78	70-130	
n-Propylbenzene	mg/kg	ND	.018	0.016	92	70-130	
Naphthalene	mg/kg	ND	.018	0.010	58	70-130	M1
o-Xylene	mg/kg	ND	.018	0.015	85	70-130	
p-Isopropyltoluene	mg/kg	ND	.018	0.015	85	70-130	
sec-Butylbenzene	mg/kg	ND	.018	0.016	90	70-130	
Styrene	mg/kg	ND	.018	0.011	64	70-130	M1
tert-Butylbenzene	mg/kg	ND	.018	0.015	88	70-130	
Tetrachloroethene	mg/kg	ND	.018	0.013	75	70-130	
Toluene	mg/kg	ND	.018	0.015	87	52-163	
trans-1,2-Dichloroethene	mg/kg	ND	.018	0.016	93	70-130	
trans-1,3-Dichloropropene	mg/kg	ND	.018	0.013	72	70-130	
Trichloroethene	mg/kg	ND	.018	0.016	90	49-167	
Trichlorofluoromethane	mg/kg	ND	.018	0.018	101	70-130	
Vinyl acetate	mg/kg	ND	.035	0.013J	37	70-130	M0
Vinyl chloride	mg/kg	ND	.018	0.018	104	70-130	
Xylene (Total)	mg/kg	ND	.053	0.045	86	70-130	
1,2-Dichloroethane-d4 (S)	%				106	70-132	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				101	70-130	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

SAMPLE DUPLICATE: 2243650

Parameter	Units	92378510001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,1-Trichloroethane	mg/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,2-Trichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethene	mg/kg	ND	ND		30	
1,1-Dichloropropene	mg/kg	ND	ND		30	
1,2,3-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,3-Trichloropropane	mg/kg	ND	ND		30	
1,2,4-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,4-Trimethylbenzene	mg/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	mg/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	mg/kg	ND	ND		30	
1,2-Dichlorobenzene	mg/kg	ND	ND		30	
1,2-Dichloroethane	mg/kg	ND	ND		30	
1,2-Dichloropropane	mg/kg	ND	ND		30	
1,3,5-Trimethylbenzene	mg/kg	ND	ND		30	
1,3-Dichlorobenzene	mg/kg	ND	ND		30	
1,3-Dichloropropane	mg/kg	ND	ND		30	
1,4-Dichlorobenzene	mg/kg	ND	ND		30	
2,2-Dichloropropane	mg/kg	ND	ND		30	
2-Butanone (MEK)	mg/kg	ND	0.0035J		30	
2-Chlorotoluene	mg/kg	ND	ND		30	
2-Hexanone	mg/kg	ND	ND		30	
4-Chlorotoluene	mg/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	ND		30	
Acetone	mg/kg	ND	ND		30	
Benzene	mg/kg	ND	ND		30	
Bromobenzene	mg/kg	ND	ND		30	
Bromochloromethane	mg/kg	ND	ND		30	
Bromodichloromethane	mg/kg	ND	ND		30	
Bromoform	mg/kg	ND	ND		30	
Bromomethane	mg/kg	ND	ND		30	
Carbon tetrachloride	mg/kg	ND	ND		30	
Chlorobenzene	mg/kg	ND	ND		30	
Chloroethane	mg/kg	ND	ND		30	
Chloroform	mg/kg	ND	ND		30	
Chloromethane	mg/kg	ND	ND		30	
cis-1,2-Dichloroethene	mg/kg	ND	ND		30	
cis-1,3-Dichloropropene	mg/kg	ND	ND		30	
Dibromochloromethane	mg/kg	ND	ND		30	
Dibromomethane	mg/kg	ND	ND		30	
Dichlorodifluoromethane	mg/kg	ND	ND		30	
Diisopropyl ether	mg/kg	ND	ND		30	
Ethylbenzene	mg/kg	ND	ND		30	
Hexachloro-1,3-butadiene	mg/kg	ND	ND		30	
Isopropylbenzene (Cumene)	mg/kg	ND	ND		30	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

SAMPLE DUPLICATE: 2243650

Parameter	Units	92378510001 Result	Dup Result	RPD	Max RPD	Qualifiers
m&p-Xylene	mg/kg	ND	ND		30	
Methyl-tert-butyl ether	mg/kg	ND	ND		30	
Methylene Chloride	mg/kg	ND	ND		30	
n-Butylbenzene	mg/kg	ND	ND		30	
n-Propylbenzene	mg/kg	ND	ND		30	
Naphthalene	mg/kg	ND	0.0013J		30	
o-Xylene	mg/kg	ND	ND		30	
p-Isopropyltoluene	mg/kg	ND	ND		30	
sec-Butylbenzene	mg/kg	ND	ND		30	
Styrene	mg/kg	ND	ND		30	
tert-Butylbenzene	mg/kg	ND	ND		30	
Tetrachloroethene	mg/kg	ND	ND		30	
Toluene	mg/kg	ND	ND		30	
trans-1,2-Dichloroethene	mg/kg	ND	ND		30	
trans-1,3-Dichloropropene	mg/kg	ND	ND		30	
Trichloroethene	mg/kg	ND	ND		30	
Trichlorofluoromethane	mg/kg	ND	ND		30	
Vinyl acetate	mg/kg	ND	ND		30	
Vinyl chloride	mg/kg	ND	ND		30	
Xylene (Total)	mg/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	100	123	9		
4-Bromofluorobenzene (S)	%	101	101	29		
Toluene-d8 (S)	%	105	101	32		

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

QC Batch: 404494 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics  
Associated Lab Samples: 92378489002

METHOD BLANK: 2244039 Matrix: Solid  
Associated Lab Samples: 92378489002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.0059	0.0025	04/02/18 15:03	
1,1,1-Trichloroethane	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
1,1,2-Trichloroethane	mg/kg	ND	0.0059	0.0025	04/02/18 15:03	
1,1-Dichloroethane	mg/kg	ND	0.0059	0.0018	04/02/18 15:03	
1,1-Dichloroethene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
1,1-Dichloropropene	mg/kg	ND	0.0059	0.0018	04/02/18 15:03	
1,2,3-Trichlorobenzene	mg/kg	ND	0.0059	0.0026	04/02/18 15:03	
1,2,3-Trichloropropane	mg/kg	ND	0.0059	0.0019	04/02/18 15:03	
1,2,4-Trichlorobenzene	mg/kg	ND	0.0059	0.0019	04/02/18 15:03	
1,2,4-Trimethylbenzene	mg/kg	ND	0.0059	0.0024	04/02/18 15:03	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.0059	0.0043	04/02/18 15:03	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
1,2-Dichlorobenzene	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
1,2-Dichloroethane	mg/kg	ND	0.0059	0.0026	04/02/18 15:03	
1,2-Dichloropropane	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
1,3-Dichlorobenzene	mg/kg	ND	0.0059	0.0024	04/02/18 15:03	
1,3-Dichloropropane	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
1,4-Dichlorobenzene	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
2,2-Dichloropropane	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
2-Butanone (MEK)	mg/kg	ND	0.12	0.0034	04/02/18 15:03	
2-Chlorotoluene	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
2-Hexanone	mg/kg	ND	0.059	0.0046	04/02/18 15:03	
4-Chlorotoluene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.059	0.0044	04/02/18 15:03	
Acetone	mg/kg	ND	0.12	0.012	04/02/18 15:03	
Benzene	mg/kg	ND	0.0059	0.0019	04/02/18 15:03	
Bromobenzene	mg/kg	ND	0.0059	0.0024	04/02/18 15:03	
Bromochloromethane	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
Bromodichloromethane	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
Bromoform	mg/kg	ND	0.0059	0.0027	04/02/18 15:03	
Bromomethane	mg/kg	ND	0.012	0.0030	04/02/18 15:03	
Carbon tetrachloride	mg/kg	ND	0.0059	0.0031	04/02/18 15:03	
Chlorobenzene	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
Chloroethane	mg/kg	ND	0.012	0.0029	04/02/18 15:03	
Chloroform	mg/kg	ND	0.0059	0.0019	04/02/18 15:03	
Chloromethane	mg/kg	ND	0.012	0.0029	04/02/18 15:03	
cis-1,2-Dichloroethene	mg/kg	ND	0.0059	0.0017	04/02/18 15:03	
cis-1,3-Dichloropropene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
Dibromochloromethane	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

METHOD BLANK: 2244039 Matrix: Solid  
Associated Lab Samples: 92378489002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	mg/kg	ND	0.0059	0.0030	04/02/18 15:03	
Dichlorodifluoromethane	mg/kg	ND	0.012	0.0043	04/02/18 15:03	
Diisopropyl ether	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
Ethylbenzene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
Hexachloro-1,3-butadiene	mg/kg	ND	0.0059	0.0024	04/02/18 15:03	
Isopropylbenzene (Cumene)	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
m&p-Xylene	mg/kg	ND	0.012	0.0043	04/02/18 15:03	
Methyl-tert-butyl ether	mg/kg	ND	0.0059	0.0018	04/02/18 15:03	
Methylene Chloride	mg/kg	ND	0.024	0.0036	04/02/18 15:03	
n-Butylbenzene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
n-Propylbenzene	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
Naphthalene	mg/kg	ND	0.0059	0.0014	04/02/18 15:03	
o-Xylene	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
p-Isopropyltoluene	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
sec-Butylbenzene	mg/kg	ND	0.0059	0.0019	04/02/18 15:03	
Styrene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
tert-Butylbenzene	mg/kg	ND	0.0059	0.0024	04/02/18 15:03	
Tetrachloroethene	mg/kg	ND	0.0059	0.0020	04/02/18 15:03	
Toluene	mg/kg	ND	0.0059	0.0021	04/02/18 15:03	
trans-1,2-Dichloroethene	mg/kg	ND	0.0059	0.0023	04/02/18 15:03	
trans-1,3-Dichloropropene	mg/kg	ND	0.0059	0.0018	04/02/18 15:03	
Trichloroethene	mg/kg	ND	0.0059	0.0025	04/02/18 15:03	
Trichlorofluoromethane	mg/kg	ND	0.0059	0.0026	04/02/18 15:03	
Vinyl acetate	mg/kg	ND	0.059	0.010	04/02/18 15:03	
Vinyl chloride	mg/kg	ND	0.012	0.0021	04/02/18 15:03	
Xylene (Total)	mg/kg	ND	0.012	0.0043	04/02/18 15:03	
1,2-Dichloroethane-d4 (S)	%	107	70-132		04/02/18 15:03	
4-Bromofluorobenzene (S)	%	99	70-130		04/02/18 15:03	
Toluene-d8 (S)	%	100	70-130		04/02/18 15:03	

LABORATORY CONTROL SAMPLE: 2244040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	.055	0.059	106	74-137	
1,1,1-Trichloroethane	mg/kg	.055	0.060	108	67-140	
1,1,2,2-Tetrachloroethane	mg/kg	.055	0.051	91	72-141	
1,1,2-Trichloroethane	mg/kg	.055	0.059	106	78-138	
1,1-Dichloroethane	mg/kg	.055	0.057	103	69-134	
1,1-Dichloroethene	mg/kg	.055	0.063	114	67-138	
1,1-Dichloropropene	mg/kg	.055	0.060	108	69-139	
1,2,3-Trichlorobenzene	mg/kg	.055	0.058	104	70-146	
1,2,3-Trichloropropane	mg/kg	.055	0.057	104	69-144	
1,2,4-Trichlorobenzene	mg/kg	.055	0.057	103	68-148	
1,2,4-Trimethylbenzene	mg/kg	.055	0.057	103	74-137	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE: 2244040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	mg/kg	.055	0.059	106	65-140	
1,2-Dibromoethane (EDB)	mg/kg	.055	0.058	105	77-135	
1,2-Dichlorobenzene	mg/kg	.055	0.057	103	77-141	
1,2-Dichloroethane	mg/kg	.055	0.060	108	65-137	
1,2-Dichloropropane	mg/kg	.055	0.059	107	72-136	
1,3,5-Trimethylbenzene	mg/kg	.055	0.058	104	76-133	
1,3-Dichlorobenzene	mg/kg	.055	0.056	101	74-138	
1,3-Dichloropropane	mg/kg	.055	0.059	107	71-139	
1,4-Dichlorobenzene	mg/kg	.055	0.056	101	76-138	
2,2-Dichloropropane	mg/kg	.055	0.059	107	68-137	
2-Butanone (MEK)	mg/kg	.11	0.14	126	58-147	
2-Chlorotoluene	mg/kg	.055	0.058	105	73-139	
2-Hexanone	mg/kg	.11	0.13	117	62-145	
4-Chlorotoluene	mg/kg	.055	0.058	104	76-141	
4-Methyl-2-pentanone (MIBK)	mg/kg	.11	0.12	110	64-149	
Acetone	mg/kg	.11	0.12	105	53-153	
Benzene	mg/kg	.055	0.059	107	73-135	
Bromobenzene	mg/kg	.055	0.056	101	75-133	
Bromochloromethane	mg/kg	.055	0.059	106	73-134	
Bromodichloromethane	mg/kg	.055	0.060	109	71-135	
Bromoform	mg/kg	.055	0.062	113	66-141	
Bromomethane	mg/kg	.055	0.051	92	53-160	
Carbon tetrachloride	mg/kg	.055	0.060	109	60-145	
Chlorobenzene	mg/kg	.055	0.057	104	78-130	
Chloroethane	mg/kg	.055	0.058	105	64-149	
Chloroform	mg/kg	.055	0.058	105	70-134	
Chloromethane	mg/kg	.055	0.053	96	52-150	
cis-1,2-Dichloroethene	mg/kg	.055	0.062	111	70-133	
cis-1,3-Dichloropropene	mg/kg	.055	0.060	108	68-134	
Dibromochloromethane	mg/kg	.055	0.059	107	71-138	
Dibromomethane	mg/kg	.055	0.058	105	74-130	
Dichlorodifluoromethane	mg/kg	.055	0.049	87	40-160	
Diisopropyl ether	mg/kg	.055	0.059	107	69-141	
Ethylbenzene	mg/kg	.055	0.058	105	75-133	
Hexachloro-1,3-butadiene	mg/kg	.055	0.056	101	68-143	
Isopropylbenzene (Cumene)	mg/kg	.055	0.059	107	76-143	
m&p-Xylene	mg/kg	.11	0.12	105	75-136	
Methyl-tert-butyl ether	mg/kg	.055	0.056	101	68-144	
Methylene Chloride	mg/kg	.055	0.059	107	45-154	
n-Butylbenzene	mg/kg	.055	0.058	105	72-137	
n-Propylbenzene	mg/kg	.055	0.059	106	76-136	
Naphthalene	mg/kg	.055	0.062	112	68-151	
o-Xylene	mg/kg	.055	0.059	107	76-141	
p-Isopropyltoluene	mg/kg	.055	0.057	103	76-140	
sec-Butylbenzene	mg/kg	.055	0.058	106	79-139	
Styrene	mg/kg	.055	0.057	103	79-137	
tert-Butylbenzene	mg/kg	.055	0.054	97	74-143	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE: 2244040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	mg/kg	.055	0.046	83	71-138	
Toluene	mg/kg	.055	0.058	104	74-131	
trans-1,2-Dichloroethene	mg/kg	.055	0.061	110	67-135	
trans-1,3-Dichloropropene	mg/kg	.055	0.061	110	65-146	
Trichloroethene	mg/kg	.055	0.063	114	67-135	
Trichlorofluoromethane	mg/kg	.055	0.060	108	59-144	
Vinyl acetate	mg/kg	.11	0.049J	44	40-160	
Vinyl chloride	mg/kg	.055	0.063	114	56-141	
Xylene (Total)	mg/kg	.17	0.18	106	76-137	
1,2-Dichloroethane-d4 (S)	%			102	70-132	
4-Bromofluorobenzene (S)	%			103	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 224404

Parameter	Units	30247736005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	.017	0.017	102	70-130	
1,1,1-Trichloroethane	mg/kg	ND	.017	0.017	104	70-130	
1,1,2,2-Tetrachloroethane	mg/kg	ND	.017	0.022	134	70-130	M1
1,1,2-Trichloroethane	mg/kg	ND	.017	0.020	122	70-130	
1,1-Dichloroethane	mg/kg	ND	.017	0.017	100	70-130	
1,1-Dichloroethene	mg/kg	ND	.017	0.019	113	49-180	
1,1-Dichloropropene	mg/kg	ND	.017	0.018	107	70-130	
1,2,3-Trichlorobenzene	mg/kg	ND	.017	0.015	88	70-130	
1,2,3-Trichloropropane	mg/kg	ND	.017	0.021	127	70-130	
1,2,4-Trichlorobenzene	mg/kg	ND	.017	0.014	84	70-130	
1,2,4-Trimethylbenzene	mg/kg	ND	.017	0.016	98	70-130	
1,2-Dibromo-3-chloropropane	mg/kg	ND	.017	0.024	145	70-130	M1
1,2-Dibromoethane (EDB)	mg/kg	ND	.017	0.020	119	70-130	
1,2-Dichlorobenzene	mg/kg	ND	.017	0.016	98	70-130	
1,2-Dichloroethane	mg/kg	ND	.017	0.020	118	70-130	
1,2-Dichloropropane	mg/kg	ND	.017	0.018	107	70-130	
1,3,5-Trimethylbenzene	mg/kg	ND	.017	0.017	105	70-130	
1,3-Dichlorobenzene	mg/kg	ND	.017	0.016	95	70-130	
1,3-Dichloropropane	mg/kg	ND	.017	0.020	120	70-130	
1,4-Dichlorobenzene	mg/kg	ND	.017	0.016	95	70-130	
2,2-Dichloropropane	mg/kg	ND	.017	0.017	102	70-130	
2-Butanone (MEK)	mg/kg	ND	.033	0.051J	153	70-130	M1
2-Chlorotoluene	mg/kg	ND	.017	0.016	99	70-130	
2-Hexanone	mg/kg	ND	.033	0.055	166	70-130	M1
4-Chlorotoluene	mg/kg	ND	.017	0.016	97	70-130	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	.033	0.052	156	70-130	M1
Acetone	mg/kg	ND	.033	0.060J	126	70-130	
Benzene	mg/kg	5.1 ug/kg	.017	0.022	103	50-166	
Bromobenzene	mg/kg	ND	.017	0.017	103	70-130	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

MATRIX SPIKE SAMPLE:	2244404	30247736005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromochloromethane	mg/kg	ND	.017	0.020	119	70-130	
Bromodichloromethane	mg/kg	ND	.017	0.018	108	70-130	
Bromoform	mg/kg	ND	.017	0.020	121	70-130	
Bromomethane	mg/kg	ND	.017	0.016	97	70-130	
Carbon tetrachloride	mg/kg	ND	.017	0.017	100	70-130	
Chlorobenzene	mg/kg	ND	.017	0.017	101	43-169	
Chloroethane	mg/kg	ND	.017	0.017	103	70-130	
Chloroform	mg/kg	ND	.017	0.018	108	70-130	
Chloromethane	mg/kg	ND	.017	0.015	89	70-130	
cis-1,2-Dichloroethene	mg/kg	ND	.017	0.018	107	70-130	
cis-1,3-Dichloropropene	mg/kg	ND	.017	0.018	107	70-130	
Dibromochloromethane	mg/kg	ND	.017	0.018	110	70-130	
Dibromomethane	mg/kg	ND	.017	0.019	114	70-130	
Dichlorodifluoromethane	mg/kg	ND	.017	0.014	86	70-130	
Diisopropyl ether	mg/kg	ND	.017	0.019	112	70-130	
Ethylbenzene	mg/kg	ND	.017	0.016	99	70-130	
Hexachloro-1,3-butadiene	mg/kg	ND	.017	0.013	78	70-130	
Isopropylbenzene (Cumene)	mg/kg	ND	.017	0.017	100	70-130	
m&p-Xylene	mg/kg	ND	.033	0.034	101	70-130	
Methyl-tert-butyl ether	mg/kg	ND	.017	0.020	120	70-130	
Methylene Chloride	mg/kg	ND	.017	0.013J	81	70-130	
n-Butylbenzene	mg/kg	ND	.017	0.016	95	70-130	
n-Propylbenzene	mg/kg	ND	.017	0.017	99	70-130	
Naphthalene	mg/kg	ND	.017	0.020	122	70-130	
o-Xylene	mg/kg	ND	.017	0.019	113	70-130	
p-Isopropyltoluene	mg/kg	ND	.017	0.017	100	70-130	
sec-Butylbenzene	mg/kg	ND	.017	0.016	99	70-130	
Styrene	mg/kg	ND	.017	0.017	99	70-130	
tert-Butylbenzene	mg/kg	ND	.017	0.015	91	70-130	
Tetrachloroethene	mg/kg	ND	.017	0.016	76	70-130	
Toluene	mg/kg	ND	.017	0.017	101	52-163	
trans-1,2-Dichloroethene	mg/kg	ND	.017	0.018	107	70-130	
trans-1,3-Dichloropropene	mg/kg	ND	.017	0.018	110	70-130	
Trichloroethene	mg/kg	ND	.017	0.016	97	49-167	
Trichlorofluoromethane	mg/kg	ND	.017	0.017	104	70-130	
Vinyl acetate	mg/kg	ND	.033	0.054	161	70-130 M1	
Vinyl chloride	mg/kg	ND	.017	0.019	111	70-130	
Xylene (Total)	mg/kg	ND	.05	0.052	105	70-130	
1,2-Dichloroethane-d4 (S)	%				114	70-132	
4-Bromofluorobenzene (S)	%				105	70-130	
Toluene-d8 (S)	%				101	70-130	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

SAMPLE DUPLICATE: 2244403

Parameter	Units	92378984001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,1-Trichloroethane	mg/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,2-Trichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethene	mg/kg	ND	ND		30	
1,1-Dichloropropene	mg/kg	ND	ND		30	
1,2,3-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,3-Trichloropropane	mg/kg	ND	ND		30	
1,2,4-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,4-Trimethylbenzene	mg/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	mg/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	mg/kg	ND	ND		30	
1,2-Dichlorobenzene	mg/kg	ND	ND		30	
1,2-Dichloroethane	mg/kg	ND	ND		30	
1,2-Dichloropropane	mg/kg	ND	ND		30	
1,3,5-Trimethylbenzene	mg/kg	ND	ND		30	
1,3-Dichlorobenzene	mg/kg	ND	ND		30	
1,3-Dichloropropane	mg/kg	ND	ND		30	
1,4-Dichlorobenzene	mg/kg	ND	ND		30	
2,2-Dichloropropane	mg/kg	ND	ND		30	
2-Butanone (MEK)	mg/kg	ND	ND		30	
2-Chlorotoluene	mg/kg	ND	ND		30	
2-Hexanone	mg/kg	ND	ND		30	
4-Chlorotoluene	mg/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	ND		30	
Acetone	mg/kg	ND	0.011J		30	
Benzene	mg/kg	ND	ND		30	
Bromobenzene	mg/kg	ND	ND		30	
Bromochloromethane	mg/kg	ND	ND		30	
Bromodichloromethane	mg/kg	ND	ND		30	
Bromoform	mg/kg	ND	ND		30	
Bromomethane	mg/kg	ND	ND		30	
Carbon tetrachloride	mg/kg	ND	ND		30	
Chlorobenzene	mg/kg	ND	ND		30	
Chloroethane	mg/kg	ND	ND		30	
Chloroform	mg/kg	ND	ND		30	
Chloromethane	mg/kg	ND	ND		30	
cis-1,2-Dichloroethene	mg/kg	ND	ND		30	
cis-1,3-Dichloropropene	mg/kg	ND	ND		30	
Dibromochloromethane	mg/kg	ND	ND		30	
Dibromomethane	mg/kg	ND	ND		30	
Dichlorodifluoromethane	mg/kg	ND	ND		30	
Diisopropyl ether	mg/kg	ND	ND		30	
Ethylbenzene	mg/kg	ND	ND		30	
Hexachloro-1,3-butadiene	mg/kg	ND	ND		30	
Isopropylbenzene (Cumene)	mg/kg	ND	ND		30	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

SAMPLE DUPLICATE: 2244403

Parameter	Units	92378984001 Result	Dup Result	RPD	Max RPD	Qualifiers
m&p-Xylene	mg/kg	ND	ND		30	
Methyl-tert-butyl ether	mg/kg	ND	ND		30	
Methylene Chloride	mg/kg	ND	ND		30	
n-Butylbenzene	mg/kg	ND	ND		30	
n-Propylbenzene	mg/kg	ND	ND		30	
Naphthalene	mg/kg	ND	ND		30	
o-Xylene	mg/kg	ND	ND		30	
p-Isopropyltoluene	mg/kg	ND	ND		30	
sec-Butylbenzene	mg/kg	ND	ND		30	
Styrene	mg/kg	ND	ND		30	
tert-Butylbenzene	mg/kg	ND	ND		30	
Tetrachloroethene	mg/kg	ND	ND		30	
Toluene	mg/kg	ND	ND		30	
trans-1,2-Dichloroethene	mg/kg	ND	ND		30	
trans-1,3-Dichloropropene	mg/kg	ND	ND		30	
Trichloroethene	mg/kg	ND	ND		30	
Trichlorofluoromethane	mg/kg	ND	ND		30	
Vinyl acetate	mg/kg	ND	ND		30	
Vinyl chloride	mg/kg	ND	ND		30	
Xylene (Total)	mg/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	104	99	7		
4-Bromofluorobenzene (S)	%	100	100	12		
Toluene-d8 (S)	%	102	100	10		

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

QC Batch: 403725

Analysis Method: EPA 8270

QC Batch Method: EPA 3546

Analysis Description: 8270 Solid MSSV Microwave

Associated Lab Samples: 92378489003

METHOD BLANK: 2239690

Matrix: Solid

Associated Lab Samples: 92378489003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	mg/kg	ND	0.33	0.064	04/02/18 12:06	
1,2-Dichlorobenzene	mg/kg	ND	0.33	0.088	04/02/18 12:06	
1,3-Dichlorobenzene	mg/kg	ND	0.33	0.075	04/02/18 12:06	
1,4-Dichlorobenzene	mg/kg	ND	0.33	0.093	04/02/18 12:06	
1-Methylnaphthalene	mg/kg	ND	0.33	0.086	04/02/18 12:06	
2,2'-Oxybis(1-chloropropane)	mg/kg	ND	0.33	0.088	04/02/18 12:06	
2,4,5-Trichlorophenol	mg/kg	ND	0.33	0.10	04/02/18 12:06	
2,4,6-Trichlorophenol	mg/kg	ND	0.33	0.073	04/02/18 12:06	
2,4-Dichlorophenol	mg/kg	ND	0.33	0.072	04/02/18 12:06	
2,4-Dimethylphenol	mg/kg	ND	0.33	0.13	04/02/18 12:06	
2,4-Dinitrophenol	mg/kg	ND	1.7	0.054	04/02/18 12:06	
2,4-Dinitrotoluene	mg/kg	ND	0.33	0.062	04/02/18 12:06	
2,6-Dinitrotoluene	mg/kg	ND	0.33	0.069	04/02/18 12:06	
2-Chloronaphthalene	mg/kg	ND	0.33	0.065	04/02/18 12:06	
2-Chlorophenol	mg/kg	ND	0.33	0.090	04/02/18 12:06	
2-Methylnaphthalene	mg/kg	ND	0.33	0.071	04/02/18 12:06	
2-Methylphenol(o-Cresol)	mg/kg	ND	0.33	0.10	04/02/18 12:06	
2-Nitroaniline	mg/kg	ND	1.7	0.10	04/02/18 12:06	
2-Nitrophenol	mg/kg	ND	0.33	0.080	04/02/18 12:06	
3&4-Methylphenol(m&p Cresol)	mg/kg	ND	0.33	0.13	04/02/18 12:06	
3,3'-Dichlorobenzidine	mg/kg	ND	1.7	0.072	04/02/18 12:06	
3-Nitroaniline	mg/kg	ND	1.7	0.090	04/02/18 12:06	
4,6-Dinitro-2-methylphenol	mg/kg	ND	0.66	0.066	04/02/18 12:06	
4-Bromophenylphenyl ether	mg/kg	ND	0.33	0.060	04/02/18 12:06	
4-Chloro-3-methylphenol	mg/kg	ND	0.66	0.068	04/02/18 12:06	
4-Chloroaniline	mg/kg	ND	1.7	0.092	04/02/18 12:06	
4-Chlorophenylphenyl ether	mg/kg	ND	0.33	0.068	04/02/18 12:06	
4-Nitroaniline	mg/kg	ND	0.66	0.093	04/02/18 12:06	
4-Nitrophenol	mg/kg	ND	1.7	0.059	04/02/18 12:06	
Acenaphthene	mg/kg	ND	0.33	0.076	04/02/18 12:06	
Acenaphthylene	mg/kg	ND	0.33	0.078	04/02/18 12:06	
Aniline	mg/kg	ND	0.33	0.089	04/02/18 12:06	
Anthracene	mg/kg	ND	0.33	0.074	04/02/18 12:06	
Benzo(a)anthracene	mg/kg	ND	0.33	0.061	04/02/18 12:06	
Benzo(a)pyrene	mg/kg	ND	0.33	0.063	04/02/18 12:06	
Benzo(b)fluoranthene	mg/kg	ND	0.33	0.057	04/02/18 12:06	
Benzo(g,h,i)perylene	mg/kg	ND	0.33	0.084	04/02/18 12:06	
Benzo(k)fluoranthene	mg/kg	ND	0.33	0.065	04/02/18 12:06	
Benzoic Acid	mg/kg	ND	1.7	0.060	04/02/18 12:06	
Benzyl alcohol	mg/kg	ND	0.66	0.066	04/02/18 12:06	
bis(2-Chloroethoxy)methane	mg/kg	ND	0.33	0.077	04/02/18 12:06	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

METHOD BLANK: 2239690

Matrix: Solid

Associated Lab Samples: 92378489003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	mg/kg	ND	0.33	0.084	04/02/18 12:06	
bis(2-Ethylhexyl)phthalate	mg/kg	ND	0.33	0.090	04/02/18 12:06	
Butylbenzylphthalate	mg/kg	ND	0.33	0.070	04/02/18 12:06	
Chrysene	mg/kg	ND	0.33	0.044	04/02/18 12:06	
Di-n-butylphthalate	mg/kg	ND	0.33	0.054	04/02/18 12:06	
Di-n-octylphthalate	mg/kg	ND	0.33	0.069	04/02/18 12:06	
Dibenz(a,h)anthracene	mg/kg	ND	0.33	0.070	04/02/18 12:06	
Dibenzofuran	mg/kg	ND	0.33	0.054	04/02/18 12:06	
Diethylphthalate	mg/kg	ND	0.33	0.051	04/02/18 12:06	
Dimethylphthalate	mg/kg	ND	0.33	0.067	04/02/18 12:06	
Fluoranthene	mg/kg	ND	0.33	0.048	04/02/18 12:06	
Fluorene	mg/kg	ND	0.33	0.068	04/02/18 12:06	
Hexachloro-1,3-butadiene	mg/kg	ND	0.33	0.057	04/02/18 12:06	
Hexachlorobenzene	mg/kg	ND	0.33	0.042	04/02/18 12:06	
Hexachlorocyclopentadiene	mg/kg	ND	0.33	0.061	04/02/18 12:06	
Hexachloroethane	mg/kg	ND	0.33	0.087	04/02/18 12:06	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.33	0.068	04/02/18 12:06	
Isophorone	mg/kg	ND	0.33	0.074	04/02/18 12:06	
N-Nitroso-di-n-propylamine	mg/kg	ND	0.33	0.063	04/02/18 12:06	
N-Nitrosodimethylamine	mg/kg	ND	0.33	0.11	04/02/18 12:06	
N-Nitrosodiphenylamine	mg/kg	ND	0.33	0.098	04/02/18 12:06	
Naphthalene	mg/kg	ND	0.33	0.081	04/02/18 12:06	
Nitrobenzene	mg/kg	ND	0.33	0.090	04/02/18 12:06	
Pentachlorophenol	mg/kg	ND	1.7	0.060	04/02/18 12:06	
Phenanthrene	mg/kg	ND	0.33	0.055	04/02/18 12:06	
Phenol	mg/kg	ND	0.33	0.099	04/02/18 12:06	
Pyrene	mg/kg	ND	0.33	0.056	04/02/18 12:06	
2,4,6-Tribromophenol (S)	%	78	27-110		04/02/18 12:06	
2-Fluorobiphenyl (S)	%	77	30-110		04/02/18 12:06	
2-Fluorophenol (S)	%	74	13-110		04/02/18 12:06	
Nitrobenzene-d5 (S)	%	72	23-110		04/02/18 12:06	
Phenol-d6 (S)	%	70	22-110		04/02/18 12:06	
Terphenyl-d14 (S)	%	89	28-110		04/02/18 12:06	

LABORATORY CONTROL SAMPLE & LCSD: 2239691

2239692

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	mg/kg	1.7	1.2	1.1	72	67	36-120	9	30	
1,2-Dichlorobenzene	mg/kg	1.7	1.2	1.1	73	68	41-120	9	30	
1,3-Dichlorobenzene	mg/kg	1.7	1.2	1.1	71	67	66-120	8	30	
1,4-Dichlorobenzene	mg/kg	1.7	1.2	1.1	73	68	42-120	9	30	
1-Methylnaphthalene	mg/kg	1.7	1.4	1.2	85	73	40-120	17	30	
2,2'-Oxybis(1-chloropropane)	mg/kg	1.7	1.2	0.99	69	61	17-120	15	30	
2,4,5-Trichlorophenol	mg/kg	1.7	1.4	1.3	85	79	37-120	9	30	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE & LCS: 2239691

2239692

Parameter	Units	Spike Conc.	LCS Result	LCS Result	LCS % Rec	LCS % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	mg/kg	1.7	1.5	1.3	90	82	40-120	11	30	
2,4-Dichlorophenol	mg/kg	1.7	1.4	1.2	86	75	33-120	16	30	
2,4-Dimethylphenol	mg/kg	1.7	1.6	1.4	93	83	36-120	14	30	
2,4-Dinitrophenol	mg/kg	8.4	6.6	6.6	78	81	22-121	1	30	
2,4-Dinitrotoluene	mg/kg	1.7	1.5	1.4	92	88	60-120	7	30	
2,6-Dinitrotoluene	mg/kg	1.7	1.5	1.4	92	86	54-120	8	30	
2-Chloronaphthalene	mg/kg	1.7	1.4	1.2	83	76	41-120	11	30	
2-Chlorophenol	mg/kg	1.7	1.3	1.1	76	69	39-120	12	30	
2-Methylnaphthalene	mg/kg	1.7	1.4	1.2	84	73	26-120	16	30	
2-Methylphenol(o-Cresol)	mg/kg	1.7	1.6	1.3	93	77	41-120	20	30	
2-Nitroaniline	mg/kg	3.3	3.1	2.9	92	87	45-120	7	30	
2-Nitrophenol	mg/kg	1.7	1.3	1.2	78	71	35-120	11	30	
3&4-Methylphenol(m&p Cresol)	mg/kg	1.7	1.5	1.2	88	71	35-120	23	30	
3,3'-Dichlorobenzidine	mg/kg	3.3	2.7	2.5	79	77	16-125	5	30	
3-Nitroaniline	mg/kg	3.3	3.0	2.9	90	87	45-120	5	30	
4,6-Dinitro-2-methylphenol	mg/kg	3.3	3.6	3.4	109	105	46-120	6	30	
4-Bromophenylphenyl ether	mg/kg	1.7	1.5	1.4	92	86	36-120	8	30	
4-Chloro-3-methylphenol	mg/kg	3.3	3.1	2.7	93	81	37-120	16	30	
4-Chloroaniline	mg/kg	3.3	2.7	2.3	79	70	35-120	15	30	
4-Chlorophenylphenyl ether	mg/kg	1.7	1.5	1.4	91	85	30-120	8	30	
4-Nitroaniline	mg/kg	3.3	3.2	3.1	96	94	48-120	4	30	
4-Nitrophenol	mg/kg	8.4	8.2	8.1	98	99	43-120	1	30	
Acenaphthene	mg/kg	1.7	1.5	1.4	92	84	46-120	11	30	
Acenaphthylene	mg/kg	1.7	1.6	1.4	93	85	46-120	10	30	
Aniline	mg/kg	1.7	1.1	0.98	68	60	33-120	14	30	
Anthracene	mg/kg	1.7	1.7	1.6	101	95	63-120	8	30	
Benzo(a)anthracene	mg/kg	1.7	1.4	1.3	81	80	61-120	3	30	
Benzo(a)pyrene	mg/kg	1.7	1.4	1.3	81	81	59-120	2	30	
Benzo(b)fluoranthene	mg/kg	1.7	1.3	1.3	80	79	55-120	4	30	
Benzo(g,h,i)perylene	mg/kg	1.7	1.4	1.3	82	81	57-120	4	30	
Benzo(k)fluoranthene	mg/kg	1.7	1.4	1.3	84	82	56-120	4	30	
Benzoic Acid	mg/kg	8.4	6.0	5.5	72	67	13-120	10	30	
Benzyl alcohol	mg/kg	3.3	2.8	2.3	85	70	34-120	21	30	
bis(2-Chloroethoxy)methane	mg/kg	1.7	1.4	1.2	85	76	21-120	14	30	
bis(2-Chloroethyl) ether	mg/kg	1.7	1.2	1.2	74	71	25-120	6	30	
bis(2-Ethylhexyl)phthalate	mg/kg	1.7	1.5	1.5	92	89	56-123	6	30	
Butylbenzylphthalate	mg/kg	1.7	1.6	1.5	94	92	57-120	5	30	
Chrysene	mg/kg	1.7	1.4	1.3	82	81	64-120	3	30	
Di-n-butylphthalate	mg/kg	1.7	1.8	1.6	105	99	58-120	8	30	
Di-n-octylphthalate	mg/kg	1.7	1.6	1.5	98	91	47-121	10	30	
Dibenz(a,h)anthracene	mg/kg	1.7	1.4	1.3	84	80	56-120	7	30	
Dibenzofuran	mg/kg	1.7	1.5	1.4	90	84	43-120	9	30	
Diethylphthalate	mg/kg	1.7	1.5	1.4	91	86	55-120	7	30	
Dimethylphthalate	mg/kg	1.7	1.5	1.4	90	86	54-120	7	30	
Fluoranthene	mg/kg	1.7	1.6	1.5	98	94	61-120	6	30	
Fluorene	mg/kg	1.7	1.6	1.5	96	89	51-120	9	30	
Hexachloro-1,3-butadiene	mg/kg	1.7	1.1	1.0	66	62	22-120	9	30	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

LABORATORY CONTROL SAMPLE & LCSD: 2239691		2239692									
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
Hexachlorobenzene	mg/kg	1.7	1.5	1.3	88	81	53-120	9	30		
Hexachlorocyclopentadiene	mg/kg	1.7	0.97	0.91	58	55	18-150	6	30		
Hexachloroethane	mg/kg	1.7	1.2	1.1	71	64	39-120	12	30		
Indeno(1,2,3-cd)pyrene	mg/kg	1.7	1.4	1.3	86	81	58-120	8	30		
Isophorone	mg/kg	1.7	1.4	1.2	83	73	38-120	14	30		
N-Nitroso-di-n-propylamine	mg/kg	1.7	1.6	1.3	98	78	30-120	25	30		
N-Nitrosodimethylamine	mg/kg	1.7	1.4	1.3	81	81	32-120	2	30		
N-Nitrosodiphenylamine	mg/kg	1.7	1.6	1.5	97	93	50-120	6	30		
Naphthalene	mg/kg	1.7	1.3	1.1	76	70	38-120	11	30		
Nitrobenzene	mg/kg	1.7	1.2	1.2	74	70	37-120	7	30		
Pentachlorophenol	mg/kg	3.3	3.1	3.0	94	92	10-120	3	30		
Phenanthrene	mg/kg	1.7	1.6	1.5	98	93	62-120	7	30		
Phenol	mg/kg	1.7	1.3	1.1	79	69	37-120	15	30		
Pyrene	mg/kg	1.7	1.6	1.5	97	92	63-120	7	30		
2,4,6-Tribromophenol (S)	%				90	85	27-110				
2-Fluorobiphenyl (S)	%				81	73	30-110				
2-Fluorophenol (S)	%				73	71	13-110				
Nitrobenzene-d5 (S)	%				73	67	23-110				
Phenol-d6 (S)	%				76	66	22-110				
Terphenyl-d14 (S)	%				88	83	28-110				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

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QC Batch: 403681 Analysis Method: ASTM D2974-87  
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture  
Associated Lab Samples: 92378489001, 92378489002, 92378489003

---

SAMPLE DUPLICATE: 2239489

Parameter	Units	92378114001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	23.1	24.3	5	25	

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SAMPLE DUPLICATE: 2239490

Parameter	Units	92378372002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	19.9	18.9	5	25	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: R3038 WBS 38887.1.1

Pace Project No.: 92378489

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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.

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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

R1 RPD value was outside control limits.

S1 Surrogate recovery outside laboratory control limits (confirmed by re-analysis).

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: R3038 WBS 38887.1.1  
Pace Project No.: 92378489

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92378489003	R3830-P76/77/78-SS8-10	EPA 3546	403725	EPA 8270	404469
92378489001	R3830-P76/77/78-SS3-4-5	EPA 8260	404007		
92378489002	R3830-P76/77/78-SS8-9	EPA 8260	404494		
92378489003	R3830-P76/77/78-SS8-10	EPA 8260	404262		
92378489001	R3830-P76/77/78-SS3-4-5	ASTM D2974-87	403681		
92378489002	R3830-P76/77/78-SS8-9	ASTM D2974-87	403681		
92378489003	R3830-P76/77/78-SS8-10	ASTM D2974-87	403681		

**REPORT OF LABORATORY ANALYSIS**

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**Laboratory receiving samples:**

Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

Sample Condition Upon Receipt

Client Name: Kleinfelder

Project #: **WO#: 92378489**



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

Custody Seal Present?  Yes  No    Seals Intact?  Yes  No

Date/Initials Person Examining Contents: 3-27-18<sup>SM</sup>

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

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

Biological Tissue Frozen?  Yes  No  N/A

Cooler Temp (°C): 2.6    Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 2.7

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

USDA Regulated Soil  N/A, water sample

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

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 checked="" type="checkbox"/> Yes <input 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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	9. <u>Rec'd 8270 for Sample 558-10 instead of 558-9 as indicated on COC.</u>
-Includes Date/Time/ID/Analysis Matrix: <u>SL</u>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

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: 3/28  
 Project Manager SRF Review: (Signature) Date: 3/28

**\*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# : 92378489**  
 PM: PTE Due Date: 04/03/18  
 CLIENT : 92-NCDOTEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	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)	AG6U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples						
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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



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# 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: Kleinfelder  
 Address: 3200 Gateway Centre  
 Morrisville, NC 27560  
 Email To: mhubens@Kleinfelder.com  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Requested Due Date/AT: \_\_\_\_\_

### Section B Required Project Information:

Report To: Mike Burns  
 Copy To: Chris Rollinger  
 Project Name: R3830 - P36/77  
 Purchase Order No.: \_\_\_\_\_  
 Project Number: R3830  
 Requested Analysis Filtered (Y/N): \_\_\_\_\_

### Section C Invoice Information:

Attention: \_\_\_\_\_  
 Company Name: NC DOT East Central  
 Address: \_\_\_\_\_  
 POC Name: \_\_\_\_\_  
 POC Title: Taguer Ezell  
 POC Phone #: 6019  
 REGULATORY AGENCY: \_\_\_\_\_  
 NPDES  GROUND WATER  DRINKING WATER   
 UST  RCRA  OTHER \_\_\_\_\_  
 Site Location STATE: NC

Page: 1 of 1

ITEM #	Section D Required Client Information	Matrix Codes (MATRIX / SOURCE)	MIXTURE CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives						Analysis Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	
					COMPOSITE START	COMPOSITE END/GRAB					Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>				Methanol
1	R3830 - P36/77/78 - 553-10						3/26	1100		1										
2	R3830 - P36/77/78 - 558-9						↓	1105		1										
3	R3830 - P36/77/78 - 558-10									1										
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS			RELINQUISHED BY / AFFILIATION			ACCEPTED BY / AFFILIATION			SAMPLE CONDITIONS			
DATE	TIME	SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME	SIGNATURE	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
		<u>Joseph C. Rollinger</u>			<u>Joseph C. Rollinger</u>			<u>Joseph C. Rollinger</u>				
		<u>Mike Burns</u>			<u>Mike Burns</u>			<u>Mike Burns</u>				

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

May 01, 2018

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

RE: Project: R3038 WBS 38887.1.1-Revised Report  
Pace Project No.: 92381911


Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 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 5/1/18 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: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

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### 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

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## SAMPLE SUMMARY

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92381911001	R-3830-P76/77/78-SS10-8	Solid	04/20/18 09:25	04/23/18 09:58
92381911002	R-3830-P76/77/78-SS10-9	Solid	04/20/18 09:30	04/23/18 09:58
92381911003	R-3830-P76/77/78-SS11-10	Solid	04/20/18 09:45	04/23/18 09:58
92381911004	R-3830-P76/77/78-SS12-8	Solid	04/20/18 10:00	04/23/18 09:58

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### SAMPLE ANALYTE COUNT

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92381911001	R-3830-P76/77/78-SS10-8	EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381911002	R-3830-P76/77/78-SS10-9	EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381911003	R-3830-P76/77/78-SS11-10	EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381911004	R-3830-P76/77/78-SS12-8	EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

Sample: R-3830-P76/77/78-SS10-8 Lab ID: 92381911001 Collected: 04/20/18 09:25 Received: 04/23/18 09:58 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	ND	mg/kg	5.1	0.51	50		04/24/18 16:39	67-64-1	
Benzene	ND	mg/kg	0.25	0.082	50		04/24/18 16:39	71-43-2	
Bromobenzene	ND	mg/kg	0.25	0.10	50		04/24/18 16:39	108-86-1	
Bromochloromethane	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	74-97-5	
Bromodichloromethane	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	75-27-4	
Bromoform	ND	mg/kg	0.25	0.12	50		04/24/18 16:39	75-25-2	
Bromomethane	ND	mg/kg	0.51	0.13	50		04/24/18 16:39	74-83-9	
2-Butanone (MEK)	ND	mg/kg	5.1	0.15	50		04/24/18 16:39	78-93-3	
n-Butylbenzene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.25	0.082	50		04/24/18 16:39	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.25	0.10	50		04/24/18 16:39	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.25	0.13	50		04/24/18 16:39	56-23-5	
Chlorobenzene	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	108-90-7	
Chloroethane	ND	mg/kg	0.51	0.12	50		04/24/18 16:39	75-00-3	
Chloroform	ND	mg/kg	0.25	0.082	50		04/24/18 16:39	67-66-3	
Chloromethane	ND	mg/kg	0.51	0.12	50		04/24/18 16:39	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.25	0.18	50		04/24/18 16:39	96-12-8	
Dibromochloromethane	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	106-93-4	
Dibromomethane	ND	mg/kg	0.25	0.13	50		04/24/18 16:39	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.25	0.10	50		04/24/18 16:39	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.51	0.18	50		04/24/18 16:39	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.25	0.076	50		04/24/18 16:39	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.25	0.11	50		04/24/18 16:39	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.25	0.071	50		04/24/18 16:39	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.25	0.076	50		04/24/18 16:39	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.25	0.076	50		04/24/18 16:39	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	108-20-3	
Ethylbenzene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.25	0.10	50		04/24/18 16:39	87-68-3	
2-Hexanone	ND	mg/kg	2.5	0.20	50		04/24/18 16:39	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	99-87-6	
Methylene Chloride	ND	mg/kg	1.0	0.15	50		04/24/18 16:39	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	2.5	0.19	50		04/24/18 16:39	108-10-1	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report  
Pace Project No.: 92381911

**Sample: R-3830-P76/77/78-SS10-8**    **Lab ID: 92381911001**    Collected: 04/20/18 09:25    Received: 04/23/18 09:58    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	mg/kg	0.25	0.076	50		04/24/18 16:39	1634-04-4	
Naphthalene	ND	mg/kg	0.25	0.061	50		04/24/18 16:39	91-20-3	
n-Propylbenzene	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	103-65-1	
Styrene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.25	0.11	50		04/24/18 16:39	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	79-34-5	
Tetrachloroethene	ND	mg/kg	0.25	0.087	50		04/24/18 16:39	127-18-4	
Toluene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.25	0.11	50		04/24/18 16:39	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.25	0.082	50		04/24/18 16:39	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.25	0.11	50		04/24/18 16:39	79-00-5	
Trichloroethene	ND	mg/kg	0.25	0.11	50		04/24/18 16:39	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.25	0.11	50		04/24/18 16:39	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.25	0.082	50		04/24/18 16:39	96-18-4	
1,2,4-Trimethylbenzene	ND	mg/kg	0.25	0.10	50		04/24/18 16:39	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.25	0.092	50		04/24/18 16:39	108-67-8	
Vinyl acetate	ND	mg/kg	2.5	0.45	50		04/24/18 16:39	108-05-4	
Vinyl chloride	ND	mg/kg	0.51	0.092	50		04/24/18 16:39	75-01-4	
Xylene (Total)	ND	mg/kg	0.51	0.18	50		04/24/18 16:39	1330-20-7	
m&p-Xylene	ND	mg/kg	0.51	0.18	50		04/24/18 16:39	179601-23-1	
o-Xylene	ND	mg/kg	0.25	0.097	50		04/24/18 16:39	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	101	%	70-130		50		04/24/18 16:39	2037-26-5	D3
4-Bromofluorobenzene (S)	101	%	70-130		50		04/24/18 16:39	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	70-132		50		04/24/18 16:39	17060-07-0	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>13.6</b>	%	0.10	0.10	1		04/24/18 09:52		

**Sample: R-3830-P76/77/78-SS10-9**    **Lab ID: 92381911002**    Collected: 04/20/18 09:30    Received: 04/23/18 09:58    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	ND	mg/kg	8.7	0.87	100		04/24/18 17:00	67-64-1	
Benzene	ND	mg/kg	0.43	0.14	100		04/24/18 17:00	71-43-2	
Bromobenzene	ND	mg/kg	0.43	0.17	100		04/24/18 17:00	108-86-1	
Bromochloromethane	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	74-97-5	
Bromodichloromethane	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	75-27-4	
Bromoform	ND	mg/kg	0.43	0.20	100		04/24/18 17:00	75-25-2	
Bromomethane	ND	mg/kg	0.87	0.22	100		04/24/18 17:00	74-83-9	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

Sample: R-3830-P76/77/78-SS10-9 Lab ID: 92381911002 Collected: 04/20/18 09:30 Received: 04/23/18 09:58 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
2-Butanone (MEK)	ND	mg/kg	8.7	0.25	100		04/24/18 17:00	78-93-3	
n-Butylbenzene	<b>0.22J</b>	mg/kg	0.43	0.16	100		04/24/18 17:00	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.43	0.14	100		04/24/18 17:00	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.43	0.17	100		04/24/18 17:00	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.43	0.23	100		04/24/18 17:00	56-23-5	
Chlorobenzene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	108-90-7	
Chloroethane	ND	mg/kg	0.87	0.21	100		04/24/18 17:00	75-00-3	
Chloroform	ND	mg/kg	0.43	0.14	100		04/24/18 17:00	67-66-3	
Chloromethane	ND	mg/kg	0.87	0.21	100		04/24/18 17:00	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.43	0.31	100		04/24/18 17:00	96-12-8	
Dibromochloromethane	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	106-93-4	
Dibromomethane	ND	mg/kg	0.43	0.22	100		04/24/18 17:00	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.43	0.17	100		04/24/18 17:00	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.87	0.31	100		04/24/18 17:00	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.43	0.13	100		04/24/18 17:00	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.43	0.19	100		04/24/18 17:00	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.43	0.12	100		04/24/18 17:00	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.43	0.13	100		04/24/18 17:00	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.43	0.13	100		04/24/18 17:00	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	108-20-3	
Ethylbenzene	<b>0.35J</b>	mg/kg	0.43	0.16	100		04/24/18 17:00	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.43	0.17	100		04/24/18 17:00	87-68-3	
2-Hexanone	ND	mg/kg	4.3	0.34	100		04/24/18 17:00	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	98-82-8	
p-Isopropyltoluene	<b>0.20J</b>	mg/kg	0.43	0.15	100		04/24/18 17:00	99-87-6	
Methylene Chloride	ND	mg/kg	1.7	0.26	100		04/24/18 17:00	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	4.3	0.32	100		04/24/18 17:00	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.43	0.13	100		04/24/18 17:00	1634-04-4	
Naphthalene	<b>0.20J</b>	mg/kg	0.43	0.10	100		04/24/18 17:00	91-20-3	B
n-Propylbenzene	<b>0.31J</b>	mg/kg	0.43	0.15	100		04/24/18 17:00	103-65-1	
Styrene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.43	0.18	100		04/24/18 17:00	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	79-34-5	
Tetrachloroethene	ND	mg/kg	0.43	0.15	100		04/24/18 17:00	127-18-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report  
Pace Project No.: 92381911

**Sample: R-3830-P76/77/78-SS10-9** **Lab ID: 92381911002** Collected: 04/20/18 09:30 Received: 04/23/18 09:58 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Toluene	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.43	0.19	100		04/24/18 17:00	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.43	0.14	100		04/24/18 17:00	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.43	0.16	100		04/24/18 17:00	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.43	0.18	100		04/24/18 17:00	79-00-5	
Trichloroethene	ND	mg/kg	0.43	0.18	100		04/24/18 17:00	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.43	0.19	100		04/24/18 17:00	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.43	0.14	100		04/24/18 17:00	96-18-4	
1,2,4-Trimethylbenzene	<b>2.3</b>	mg/kg	0.43	0.17	100		04/24/18 17:00	95-63-6	
1,3,5-Trimethylbenzene	<b>1.2</b>	mg/kg	0.43	0.16	100		04/24/18 17:00	108-67-8	
Vinyl acetate	ND	mg/kg	4.3	0.76	100		04/24/18 17:00	108-05-4	
Vinyl chloride	ND	mg/kg	0.87	0.16	100		04/24/18 17:00	75-01-4	
Xylene (Total)	<b>1.5</b>	mg/kg	0.87	0.31	100		04/24/18 17:00	1330-20-7	
m&p-Xylene	<b>0.95</b>	mg/kg	0.87	0.31	100		04/24/18 17:00	179601-23-1	
o-Xylene	<b>0.55</b>	mg/kg	0.43	0.16	100		04/24/18 17:00	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	99	%	70-130		100		04/24/18 17:00	2037-26-5	D3
4-Bromofluorobenzene (S)	103	%	70-130		100		04/24/18 17:00	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-132		100		04/24/18 17:00	17060-07-0	

**Percent Moisture**

Analytical Method: ASTM D2974-87

Percent Moisture	<b>12.1</b>	%	0.10	0.10	1		04/24/18 09:52		
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**Sample: R-3830-P76/77/78-SS11-10** **Lab ID: 92381911003** Collected: 04/20/18 09:45 Received: 04/23/18 09:58 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	ND	mg/kg	0.089	0.0089	1		04/25/18 16:22	67-64-1	
Benzene	ND	mg/kg	0.0044	0.0014	1		04/25/18 16:22	71-43-2	
Bromobenzene	ND	mg/kg	0.0044	0.0018	1		04/25/18 16:22	108-86-1	
Bromochloromethane	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	74-97-5	
Bromodichloromethane	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	75-27-4	
Bromoform	ND	mg/kg	0.0044	0.0020	1		04/25/18 16:22	75-25-2	
Bromomethane	ND	mg/kg	0.0089	0.0022	1		04/25/18 16:22	74-83-9	
2-Butanone (MEK)	ND	mg/kg	0.089	0.0026	1		04/25/18 16:22	78-93-3	
n-Butylbenzene	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.0044	0.0014	1		04/25/18 16:22	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.0044	0.0018	1		04/25/18 16:22	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.0044	0.0023	1		04/25/18 16:22	56-23-5	
Chlorobenzene	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	108-90-7	
Chloroethane	ND	mg/kg	0.0089	0.0021	1		04/25/18 16:22	75-00-3	

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

Sample: R-3830-P76/77/78-SS11-10 Lab ID: 92381911003 Collected: 04/20/18 09:45 Received: 04/23/18 09:58 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Chloroform	ND	mg/kg	0.0044	0.0014	1		04/25/18 16:22	67-66-3	
Chloromethane	ND	mg/kg	0.0089	0.0021	1		04/25/18 16:22	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0044	0.0032	1		04/25/18 16:22	96-12-8	
Dibromochloromethane	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	106-93-4	
Dibromomethane	ND	mg/kg	0.0044	0.0022	1		04/25/18 16:22	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.0044	0.0018	1		04/25/18 16:22	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.0089	0.0032	1		04/25/18 16:22	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.0044	0.0013	1		04/25/18 16:22	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.0044	0.0020	1		04/25/18 16:22	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.0044	0.0012	1		04/25/18 16:22	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.0044	0.0013	1		04/25/18 16:22	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.0044	0.0013	1		04/25/18 16:22	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	108-20-3	
Ethylbenzene	<b>0.0027J</b>	mg/kg	0.0044	0.0016	1		04/25/18 16:22	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.0044	0.0018	1		04/25/18 16:22	87-68-3	
2-Hexanone	ND	mg/kg	0.044	0.0035	1		04/25/18 16:22	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	98-82-8	
p-Isopropyltoluene	<b>0.0033J</b>	mg/kg	0.0044	0.0015	1		04/25/18 16:22	99-87-6	
Methylene Chloride	ND	mg/kg	0.018	0.0027	1		04/25/18 16:22	75-09-2	
4-Methyl-2-pentanone (MIBK)	<b>0.0052J</b>	mg/kg	0.044	0.0033	1		04/25/18 16:22	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.0044	0.0013	1		04/25/18 16:22	1634-04-4	
Naphthalene	<b>0.0027J</b>	mg/kg	0.0044	0.0011	1		04/25/18 16:22	91-20-3	
n-Propylbenzene	<b>0.0025J</b>	mg/kg	0.0044	0.0015	1		04/25/18 16:22	103-65-1	
Styrene	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0044	0.0019	1		04/25/18 16:22	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0044	0.0017	1		04/25/18 16:22	79-34-5	
Tetrachloroethene	ND	mg/kg	0.0044	0.0015	1		04/25/18 16:22	127-18-4	
Toluene	<b>0.0019J</b>	mg/kg	0.0044	0.0016	1		04/25/18 16:22	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.0044	0.0020	1		04/25/18 16:22	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.0044	0.0014	1		04/25/18 16:22	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.0044	0.0016	1		04/25/18 16:22	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.0044	0.0019	1		04/25/18 16:22	79-00-5	
Trichloroethene	ND	mg/kg	0.0044	0.0019	1		04/25/18 16:22	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.0044	0.0020	1		04/25/18 16:22	75-69-4	

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report  
Pace Project No.: 92381911

**Sample: R-3830-P76/77/78-SS11-10**    **Lab ID: 92381911003**    Collected: 04/20/18 09:45    Received: 04/23/18 09:58    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
1,2,3-Trichloropropane	<b>0.0021J</b>	mg/kg	0.0044	0.0014	1		04/25/18 16:22	96-18-4	
1,2,4-Trimethylbenzene	<b>0.046</b>	mg/kg	0.0044	0.0018	1		04/25/18 16:22	95-63-6	
1,3,5-Trimethylbenzene	<b>0.028</b>	mg/kg	0.0044	0.0016	1		04/25/18 16:22	108-67-8	
Vinyl acetate	ND	mg/kg	0.044	0.0078	1		04/25/18 16:22	108-05-4	
Vinyl chloride	ND	mg/kg	0.0089	0.0016	1		04/25/18 16:22	75-01-4	
Xylene (Total)	<b>0.026</b>	mg/kg	0.0089	0.0032	1		04/25/18 16:22	1330-20-7	
m&p-Xylene	<b>0.016</b>	mg/kg	0.0089	0.0032	1		04/25/18 16:22	179601-23-1	
o-Xylene	<b>0.0095</b>	mg/kg	0.0044	0.0017	1		04/25/18 16:22	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	105	%	70-130		1		04/25/18 16:22	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130		1		04/25/18 16:22	460-00-4	
1,2-Dichloroethane-d4 (S)	81	%	70-132		1		04/25/18 16:22	17060-07-0	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>20.1</b>	%	0.10	0.10	1		04/24/18 09:52		

**Sample: R-3830-P76/77/78-SS12-8**    **Lab ID: 92381911004**    Collected: 04/20/18 10:00    Received: 04/23/18 09:58    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Acetone	ND	mg/kg	2.1	0.21	25		04/24/18 17:39	67-64-1	
Benzene	ND	mg/kg	0.11	0.034	25		04/24/18 17:39	71-43-2	
Bromobenzene	ND	mg/kg	0.11	0.042	25		04/24/18 17:39	108-86-1	
Bromochloromethane	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	74-97-5	
Bromodichloromethane	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	75-27-4	
Bromoform	ND	mg/kg	0.11	0.049	25		04/24/18 17:39	75-25-2	
Bromomethane	ND	mg/kg	0.21	0.053	25		04/24/18 17:39	74-83-9	
2-Butanone (MEK)	ND	mg/kg	2.1	0.061	25		04/24/18 17:39	78-93-3	
n-Butylbenzene	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	104-51-8	
sec-Butylbenzene	ND	mg/kg	0.11	0.034	25		04/24/18 17:39	135-98-8	
tert-Butylbenzene	ND	mg/kg	0.11	0.042	25		04/24/18 17:39	98-06-6	
Carbon tetrachloride	ND	mg/kg	0.11	0.055	25		04/24/18 17:39	56-23-5	
Chlorobenzene	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	108-90-7	
Chloroethane	ND	mg/kg	0.21	0.051	25		04/24/18 17:39	75-00-3	
Chloroform	ND	mg/kg	0.11	0.034	25		04/24/18 17:39	67-66-3	
Chloromethane	ND	mg/kg	0.21	0.051	25		04/24/18 17:39	74-87-3	
2-Chlorotoluene	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	95-49-8	
4-Chlorotoluene	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	106-43-4	
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.11	0.076	25		04/24/18 17:39	96-12-8	
Dibromochloromethane	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	124-48-1	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	106-93-4	

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

Sample: R-3830-P76/77/78-SS12-8 Lab ID: 92381911004 Collected: 04/20/18 10:00 Received: 04/23/18 09:58 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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
Dibromomethane	ND	mg/kg	0.11	0.053	25		04/24/18 17:39	74-95-3	
1,2-Dichlorobenzene	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	95-50-1	
1,3-Dichlorobenzene	ND	mg/kg	0.11	0.042	25		04/24/18 17:39	541-73-1	
1,4-Dichlorobenzene	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	106-46-7	
Dichlorodifluoromethane	ND	mg/kg	0.21	0.076	25		04/24/18 17:39	75-71-8	
1,1-Dichloroethane	ND	mg/kg	0.11	0.032	25		04/24/18 17:39	75-34-3	
1,2-Dichloroethane	ND	mg/kg	0.11	0.047	25		04/24/18 17:39	107-06-2	
1,1-Dichloroethene	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	75-35-4	
cis-1,2-Dichloroethene	ND	mg/kg	0.11	0.030	25		04/24/18 17:39	156-59-2	
trans-1,2-Dichloroethene	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	156-60-5	
1,2-Dichloropropane	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	78-87-5	
1,3-Dichloropropane	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	142-28-9	
2,2-Dichloropropane	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	594-20-7	
1,1-Dichloropropene	ND	mg/kg	0.11	0.032	25		04/24/18 17:39	563-58-6	
cis-1,3-Dichloropropene	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	10061-01-5	
trans-1,3-Dichloropropene	ND	mg/kg	0.11	0.032	25		04/24/18 17:39	10061-02-6	
Diisopropyl ether	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	108-20-3	
Ethylbenzene	<b>0.056J</b>	mg/kg	0.11	0.038	25		04/24/18 17:39	100-41-4	
Hexachloro-1,3-butadiene	ND	mg/kg	0.11	0.042	25		04/24/18 17:39	87-68-3	
2-Hexanone	ND	mg/kg	1.1	0.083	25		04/24/18 17:39	591-78-6	
Isopropylbenzene (Cumene)	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	98-82-8	
p-Isopropyltoluene	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	99-87-6	
Methylene Chloride	ND	mg/kg	0.42	0.064	25		04/24/18 17:39	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	mg/kg	1.1	0.078	25		04/24/18 17:39	108-10-1	
Methyl-tert-butyl ether	ND	mg/kg	0.11	0.032	25		04/24/18 17:39	1634-04-4	
Naphthalene	ND	mg/kg	0.11	0.025	25		04/24/18 17:39	91-20-3	
n-Propylbenzene	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	103-65-1	
Styrene	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	100-42-5	
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.11	0.044	25		04/24/18 17:39	630-20-6	
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.11	0.040	25		04/24/18 17:39	79-34-5	
Tetrachloroethene	ND	mg/kg	0.11	0.036	25		04/24/18 17:39	127-18-4	
Toluene	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	108-88-3	
1,2,3-Trichlorobenzene	ND	mg/kg	0.11	0.047	25		04/24/18 17:39	87-61-6	
1,2,4-Trichlorobenzene	ND	mg/kg	0.11	0.034	25		04/24/18 17:39	120-82-1	
1,1,1-Trichloroethane	ND	mg/kg	0.11	0.038	25		04/24/18 17:39	71-55-6	
1,1,2-Trichloroethane	ND	mg/kg	0.11	0.044	25		04/24/18 17:39	79-00-5	
Trichloroethene	ND	mg/kg	0.11	0.044	25		04/24/18 17:39	79-01-6	
Trichlorofluoromethane	ND	mg/kg	0.11	0.047	25		04/24/18 17:39	75-69-4	
1,2,3-Trichloropropane	ND	mg/kg	0.11	0.034	25		04/24/18 17:39	96-18-4	
1,2,4-Trimethylbenzene	<b>0.24</b>	mg/kg	0.11	0.042	25		04/24/18 17:39	95-63-6	
1,3,5-Trimethylbenzene	<b>0.12</b>	mg/kg	0.11	0.038	25		04/24/18 17:39	108-67-8	
Vinyl acetate	ND	mg/kg	1.1	0.19	25		04/24/18 17:39	108-05-4	
Vinyl chloride	ND	mg/kg	0.21	0.038	25		04/24/18 17:39	75-01-4	
Xylene (Total)	<b>0.53</b>	mg/kg	0.21	0.076	25		04/24/18 17:39	1330-20-7	
m&p-Xylene	<b>0.36</b>	mg/kg	0.21	0.076	25		04/24/18 17:39	179601-23-1	

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## ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

**Sample: R-3830-P76/77/78-SS12-8    Lab ID: 92381911004    Collected: 04/20/18 10:00    Received: 04/23/18 09:58    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
<b>8260/5035A Volatile Organics</b>		Analytical Method: EPA 8260							
o-Xylene	<b>0.17</b>	mg/kg	0.11	0.040	25		04/24/18 17:39	95-47-6	
<b>Surrogates</b>									
Toluene-d8 (S)	100	%	70-130		25		04/24/18 17:39	2037-26-5	D3
4-Bromofluorobenzene (S)	99	%	70-130		25		04/24/18 17:39	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	70-132		25		04/24/18 17:39	17060-07-0	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>16.2</b>	%	0.10	0.10	1		04/24/18 09:52		

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

QC Batch: 407651 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics  
Associated Lab Samples: 92381911001, 92381911002, 92381911004

METHOD BLANK: 2261786 Matrix: Solid

Associated Lab Samples: 92381911001, 92381911002, 92381911004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.0056	0.0023	04/24/18 12:22	
1,1,1-Trichloroethane	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
1,1,2-Trichloroethane	mg/kg	ND	0.0056	0.0023	04/24/18 12:22	
1,1-Dichloroethane	mg/kg	ND	0.0056	0.0017	04/24/18 12:22	
1,1-Dichloroethene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
1,1-Dichloropropene	mg/kg	ND	0.0056	0.0017	04/24/18 12:22	
1,2,3-Trichlorobenzene	mg/kg	ND	0.0056	0.0025	04/24/18 12:22	
1,2,3-Trichloropropane	mg/kg	ND	0.0056	0.0018	04/24/18 12:22	
1,2,4-Trichlorobenzene	mg/kg	ND	0.0056	0.0018	04/24/18 12:22	
1,2,4-Trimethylbenzene	mg/kg	ND	0.0056	0.0022	04/24/18 12:22	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.0056	0.0040	04/24/18 12:22	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
1,2-Dichlorobenzene	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
1,2-Dichloroethane	mg/kg	ND	0.0056	0.0025	04/24/18 12:22	
1,2-Dichloropropane	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
1,3-Dichlorobenzene	mg/kg	ND	0.0056	0.0022	04/24/18 12:22	
1,3-Dichloropropane	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
1,4-Dichlorobenzene	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
2,2-Dichloropropane	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
2-Butanone (MEK)	mg/kg	ND	0.11	0.0032	04/24/18 12:22	
2-Chlorotoluene	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
2-Hexanone	mg/kg	ND	0.056	0.0044	04/24/18 12:22	
4-Chlorotoluene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.056	0.0041	04/24/18 12:22	
Acetone	mg/kg	ND	0.11	0.011	04/24/18 12:22	
Benzene	mg/kg	ND	0.0056	0.0018	04/24/18 12:22	
Bromobenzene	mg/kg	ND	0.0056	0.0022	04/24/18 12:22	
Bromochloromethane	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
Bromodichloromethane	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
Bromoform	mg/kg	ND	0.0056	0.0026	04/24/18 12:22	
Bromomethane	mg/kg	ND	0.011	0.0028	04/24/18 12:22	
Carbon tetrachloride	mg/kg	ND	0.0056	0.0029	04/24/18 12:22	
Chlorobenzene	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
Chloroethane	mg/kg	ND	0.011	0.0027	04/24/18 12:22	
Chloroform	mg/kg	ND	0.0056	0.0018	04/24/18 12:22	
Chloromethane	mg/kg	ND	0.011	0.0027	04/24/18 12:22	
cis-1,2-Dichloroethene	mg/kg	ND	0.0056	0.0016	04/24/18 12:22	
cis-1,3-Dichloropropene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
Dibromochloromethane	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

METHOD BLANK: 2261786

Matrix: Solid

Associated Lab Samples: 92381911001, 92381911002, 92381911004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	mg/kg	ND	0.0056	0.0028	04/24/18 12:22	
Dichlorodifluoromethane	mg/kg	ND	0.011	0.0040	04/24/18 12:22	
Diisopropyl ether	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
Ethylbenzene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
Hexachloro-1,3-butadiene	mg/kg	ND	0.0056	0.0022	04/24/18 12:22	
Isopropylbenzene (Cumene)	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
m&p-Xylene	mg/kg	ND	0.011	0.0040	04/24/18 12:22	
Methyl-tert-butyl ether	mg/kg	ND	0.0056	0.0017	04/24/18 12:22	
Methylene Chloride	mg/kg	ND	0.022	0.0034	04/24/18 12:22	
n-Butylbenzene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
n-Propylbenzene	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
Naphthalene	mg/kg	0.0020J	0.0056	0.0013	04/24/18 12:22	
o-Xylene	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
p-Isopropyltoluene	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
sec-Butylbenzene	mg/kg	ND	0.0056	0.0018	04/24/18 12:22	
Styrene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
tert-Butylbenzene	mg/kg	ND	0.0056	0.0022	04/24/18 12:22	
Tetrachloroethene	mg/kg	ND	0.0056	0.0019	04/24/18 12:22	
Toluene	mg/kg	ND	0.0056	0.0020	04/24/18 12:22	
trans-1,2-Dichloroethene	mg/kg	ND	0.0056	0.0021	04/24/18 12:22	
trans-1,3-Dichloropropene	mg/kg	ND	0.0056	0.0017	04/24/18 12:22	
Trichloroethene	mg/kg	ND	0.0056	0.0023	04/24/18 12:22	
Trichlorofluoromethane	mg/kg	ND	0.0056	0.0025	04/24/18 12:22	
Vinyl acetate	mg/kg	ND	0.056	0.0098	04/24/18 12:22	
Vinyl chloride	mg/kg	ND	0.011	0.0020	04/24/18 12:22	
Xylene (Total)	mg/kg	ND	0.011	0.0040	04/24/18 12:22	
1,2-Dichloroethane-d4 (S)	%	98	70-132		04/24/18 12:22	
4-Bromofluorobenzene (S)	%	97	70-130		04/24/18 12:22	
Toluene-d8 (S)	%	99	70-130		04/24/18 12:22	

LABORATORY CONTROL SAMPLE: 2261787

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	.046	0.049	107	74-137	
1,1,1-Trichloroethane	mg/kg	.046	0.049	107	67-140	
1,1,2,2-Tetrachloroethane	mg/kg	.046	0.037	81	72-141	
1,1,2-Trichloroethane	mg/kg	.046	0.047	104	78-138	
1,1-Dichloroethane	mg/kg	.046	0.046	101	69-134	
1,1-Dichloroethene	mg/kg	.046	0.048	106	67-138	
1,1-Dichloropropene	mg/kg	.046	0.049	108	69-139	
1,2,3-Trichlorobenzene	mg/kg	.046	0.049	108	70-146	
1,2,3-Trichloropropane	mg/kg	.046	0.052	114	69-144	
1,2,4-Trichlorobenzene	mg/kg	.046	0.050	109	68-148	
1,2,4-Trimethylbenzene	mg/kg	.046	0.048	105	74-137	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

LABORATORY CONTROL SAMPLE: 2261787

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	mg/kg	.046	0.047	103	65-140	
1,2-Dibromoethane (EDB)	mg/kg	.046	0.049	107	77-135	
1,2-Dichlorobenzene	mg/kg	.046	0.048	105	77-141	
1,2-Dichloroethane	mg/kg	.046	0.049	108	65-137	
1,2-Dichloropropane	mg/kg	.046	0.049	106	72-136	
1,3,5-Trimethylbenzene	mg/kg	.046	0.049	108	76-133	
1,3-Dichlorobenzene	mg/kg	.046	0.048	106	74-138	
1,3-Dichloropropane	mg/kg	.046	0.048	106	71-139	
1,4-Dichlorobenzene	mg/kg	.046	0.048	105	76-138	
2,2-Dichloropropane	mg/kg	.046	0.049	107	68-137	
2-Butanone (MEK)	mg/kg	.091	0.10	110	58-147	
2-Chlorotoluene	mg/kg	.046	0.048	105	73-139	
2-Hexanone	mg/kg	.091	0.10	109	62-145	
4-Chlorotoluene	mg/kg	.046	0.048	105	76-141	
4-Methyl-2-pentanone (MIBK)	mg/kg	.091	0.10	110	64-149	
Acetone	mg/kg	.091	0.11	126	53-153	
Benzene	mg/kg	.046	0.049	107	73-135	
Bromobenzene	mg/kg	.046	0.050	109	75-133	
Bromochloromethane	mg/kg	.046	0.046	101	73-134	
Bromodichloromethane	mg/kg	.046	0.050	108	71-135	
Bromoform	mg/kg	.046	0.050	110	66-141	
Bromomethane	mg/kg	.046	0.054	118	53-160	
Carbon tetrachloride	mg/kg	.046	0.050	110	60-145	
Chlorobenzene	mg/kg	.046	0.049	106	78-130	
Chloroethane	mg/kg	.046	0.045	99	64-149	
Chloroform	mg/kg	.046	0.047	103	70-134	
Chloromethane	mg/kg	.046	0.047	103	52-150	
cis-1,2-Dichloroethene	mg/kg	.046	0.049	108	70-133	
cis-1,3-Dichloropropene	mg/kg	.046	0.049	106	68-134	
Dibromochloromethane	mg/kg	.046	0.049	107	71-138	
Dibromomethane	mg/kg	.046	0.050	110	74-130	
Dichlorodifluoromethane	mg/kg	.046	0.042	92	40-160	
Diisopropyl ether	mg/kg	.046	0.047	104	69-141	
Ethylbenzene	mg/kg	.046	0.048	106	75-133	
Hexachloro-1,3-butadiene	mg/kg	.046	0.050	110	68-143	
Isopropylbenzene (Cumene)	mg/kg	.046	0.050	109	76-143	
m&p-Xylene	mg/kg	.091	0.097	106	75-136	
Methyl-tert-butyl ether	mg/kg	.046	0.046	101	68-144	
Methylene Chloride	mg/kg	.046	0.046	100	45-154	
n-Butylbenzene	mg/kg	.046	0.049	107	72-137	
n-Propylbenzene	mg/kg	.046	0.050	109	76-136	
Naphthalene	mg/kg	.046	0.049	107	68-151	
o-Xylene	mg/kg	.046	0.049	107	76-141	
p-Isopropyltoluene	mg/kg	.046	0.049	107	76-140	
sec-Butylbenzene	mg/kg	.046	0.049	108	79-139	
Styrene	mg/kg	.046	0.048	106	79-137	
tert-Butylbenzene	mg/kg	.046	0.046	101	74-143	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

LABORATORY CONTROL SAMPLE: 2261787

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	mg/kg	.046	0.042	91	71-138	
Toluene	mg/kg	.046	0.048	106	74-131	
trans-1,2-Dichloroethene	mg/kg	.046	0.048	105	67-135	
trans-1,3-Dichloropropene	mg/kg	.046	0.049	106	65-146	
Trichloroethene	mg/kg	.046	0.057	125	67-135	
Trichlorofluoromethane	mg/kg	.046	0.048	106	59-144	
Vinyl acetate	mg/kg	.091	0.040J	44	40-160	
Vinyl chloride	mg/kg	.046	0.049	108	56-141	
Xylene (Total)	mg/kg	.14	0.15	106	76-137	
1,2-Dichloroethane-d4 (S)	%			99	70-132	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2262937

Parameter	Units	92381984002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg			0.014			
1,1,1-Trichloroethane	mg/kg			0.014			
1,1,2,2-Tetrachloroethane	mg/kg			0.012			
1,1,2-Trichloroethane	mg/kg			0.015			
1,1-Dichloroethane	mg/kg			0.015			
1,1-Dichloroethene	mg/kg			0.016			
1,1-Dichloropropene	mg/kg			0.015			
1,2,3-Trichlorobenzene	mg/kg			0.0098			
1,2,3-Trichloropropane	mg/kg			0.012			
1,2,4-Trichlorobenzene	mg/kg			0.010			
1,2,4-Trimethylbenzene	mg/kg			0.014			
1,2-Dibromo-3-chloropropane	mg/kg			0.012			
1,2-Dibromoethane (EDB)	mg/kg			0.014			
1,2-Dichlorobenzene	mg/kg			0.012			
1,2-Dichloroethane	mg/kg			0.014			
1,2-Dichloropropane	mg/kg			0.015			
1,3,5-Trimethylbenzene	mg/kg			0.015			
1,3-Dichlorobenzene	mg/kg			0.013			
1,3-Dichloropropane	mg/kg			0.015			
1,4-Dichlorobenzene	mg/kg			0.012			
2,2-Dichloropropane	mg/kg			0.016			
2-Butanone (MEK)	mg/kg			0.027J			
2-Chlorotoluene	mg/kg			0.015			
2-Hexanone	mg/kg			0.026J			
4-Chlorotoluene	mg/kg			0.014			
4-Methyl-2-pentanone (MIBK)	mg/kg			0.028J			
Acetone	mg/kg			0.024J			
Benzene	mg/kg		ND .018	0.016	88	50-166	
Bromobenzene	mg/kg			0.014			

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

MATRIX SPIKE SAMPLE: 2262937		92381984002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromochloromethane	mg/kg			0.014			
Bromodichloromethane	mg/kg			0.014			
Bromoform	mg/kg			0.012			
Bromomethane	mg/kg			0.014			
Carbon tetrachloride	mg/kg			0.015			
Chlorobenzene	mg/kg			0.014			
Chloroethane	mg/kg			0.013			
Chloroform	mg/kg			0.015			
Chloromethane	mg/kg			0.011			
cis-1,2-Dichloroethene	mg/kg			0.014			
cis-1,3-Dichloropropene	mg/kg			0.014			
Dibromochloromethane	mg/kg			0.013			
Dibromomethane	mg/kg			0.012			
Dichlorodifluoromethane	mg/kg			0.011			
Diisopropyl ether	mg/kg			0.015			
Ethylbenzene	mg/kg			0.015			
Hexachloro-1,3-butadiene	mg/kg			0.015			
Isopropylbenzene (Cumene)	mg/kg			0.015			
m&p-Xylene	mg/kg			0.029			
Methyl-tert-butyl ether	mg/kg			0.013			
Methylene Chloride	mg/kg			0.014J			
n-Butylbenzene	mg/kg			0.015			
n-Propylbenzene	mg/kg			0.015			
Naphthalene	mg/kg	ND	.018	0.0092	51	70-130	M1
o-Xylene	mg/kg			0.015			
p-Isopropyltoluene	mg/kg			0.015			
sec-Butylbenzene	mg/kg			0.016			
Styrene	mg/kg			0.013			
tert-Butylbenzene	mg/kg			0.014			
Tetrachloroethene	mg/kg			0.015			
Toluene	mg/kg			0.016			
trans-1,2-Dichloroethene	mg/kg			0.015			
trans-1,3-Dichloropropene	mg/kg			0.013			
Trichloroethene	mg/kg			0.016			
Trichlorofluoromethane	mg/kg			0.015			
Vinyl acetate	mg/kg			0.017J			
Vinyl chloride	mg/kg			0.014			
Xylene (Total)	mg/kg			0.044			
1,2-Dichloroethane-d4 (S)	%				87	70-132	
4-Bromofluorobenzene (S)	%				95	70-130	
Toluene-d8 (S)	%				102	70-130	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

SAMPLE DUPLICATE: 2262936

Parameter	Units	92381216039 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,1-Trichloroethane	mg/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,2-Trichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethene	mg/kg	ND	ND		30	
1,1-Dichloropropene	mg/kg	ND	ND		30	
1,2,3-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,3-Trichloropropane	mg/kg	ND	ND		30	
1,2,4-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,4-Trimethylbenzene	mg/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	mg/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	mg/kg	ND	ND		30	
1,2-Dichlorobenzene	mg/kg	ND	ND		30	
1,2-Dichloroethane	mg/kg	ND	ND		30	
1,2-Dichloropropane	mg/kg	ND	ND		30	
1,3,5-Trimethylbenzene	mg/kg	ND	ND		30	
1,3-Dichlorobenzene	mg/kg	ND	ND		30	
1,3-Dichloropropane	mg/kg	ND	ND		30	
1,4-Dichlorobenzene	mg/kg	ND	ND		30	
2,2-Dichloropropane	mg/kg	ND	ND		30	
2-Butanone (MEK)	mg/kg	ND	ND		30	
2-Chlorotoluene	mg/kg	ND	ND		30	
2-Hexanone	mg/kg	ND	ND		30	
4-Chlorotoluene	mg/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	ND		30	
Acetone	mg/kg	ND	0.013J		30	
Benzene	mg/kg	ND	ND		30	
Bromobenzene	mg/kg	ND	ND		30	
Bromochloromethane	mg/kg	ND	ND		30	
Bromodichloromethane	mg/kg	ND	ND		30	
Bromoform	mg/kg	ND	ND		30	
Bromomethane	mg/kg	ND	ND		30	
Carbon tetrachloride	mg/kg	ND	ND		30	
Chlorobenzene	mg/kg	ND	ND		30	
Chloroethane	mg/kg	ND	ND		30	
Chloroform	mg/kg	ND	ND		30	
Chloromethane	mg/kg	ND	ND		30	
cis-1,2-Dichloroethene	mg/kg	ND	ND		30	
cis-1,3-Dichloropropene	mg/kg	ND	ND		30	
Dibromochloromethane	mg/kg	ND	ND		30	
Dibromomethane	mg/kg	ND	ND		30	
Dichlorodifluoromethane	mg/kg	ND	ND		30	
Diisopropyl ether	mg/kg	ND	ND		30	
Ethylbenzene	mg/kg	ND	ND		30	
Hexachloro-1,3-butadiene	mg/kg	ND	ND		30	
Isopropylbenzene (Cumene)	mg/kg	ND	ND		30	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

SAMPLE DUPLICATE: 2262936

Parameter	Units	92381216039 Result	Dup Result	RPD	Max RPD	Qualifiers
m&p-Xylene	mg/kg	ND	ND		30	
Methyl-tert-butyl ether	mg/kg	ND	ND		30	
Methylene Chloride	mg/kg	ND	ND		30	
n-Butylbenzene	mg/kg	ND	ND		30	
n-Propylbenzene	mg/kg	ND	ND		30	
Naphthalene	mg/kg	ND	ND		30	
o-Xylene	mg/kg	ND	ND		30	
p-Isopropyltoluene	mg/kg	ND	ND		30	
sec-Butylbenzene	mg/kg	ND	ND		30	
Styrene	mg/kg	ND	ND		30	
tert-Butylbenzene	mg/kg	ND	ND		30	
Tetrachloroethene	mg/kg	ND	ND		30	
Toluene	mg/kg	ND	ND		30	
trans-1,2-Dichloroethene	mg/kg	ND	ND		30	
trans-1,3-Dichloropropene	mg/kg	ND	ND		30	
Trichloroethene	mg/kg	ND	ND		30	
Trichlorofluoromethane	mg/kg	ND	ND		30	
Vinyl acetate	mg/kg	ND	ND		30	
Vinyl chloride	mg/kg	ND	ND		30	
Xylene (Total)	mg/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	99	81	8		
4-Bromofluorobenzene (S)	%	91	87	7		
Toluene-d8 (S)	%	97	107	22		

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

QC Batch: 407861

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV 5035A Volatile Organics

Associated Lab Samples: 92381911003

METHOD BLANK: 2262983

Matrix: Solid

Associated Lab Samples: 92381911003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	0.0048	0.0020	04/25/18 14:19	
1,1,1-Trichloroethane	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
1,1,2,2-Tetrachloroethane	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
1,1,2-Trichloroethane	mg/kg	ND	0.0048	0.0020	04/25/18 14:19	
1,1-Dichloroethane	mg/kg	ND	0.0048	0.0014	04/25/18 14:19	
1,1-Dichloroethene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
1,1-Dichloropropene	mg/kg	ND	0.0048	0.0014	04/25/18 14:19	
1,2,3-Trichlorobenzene	mg/kg	ND	0.0048	0.0021	04/25/18 14:19	
1,2,3-Trichloropropane	mg/kg	ND	0.0048	0.0015	04/25/18 14:19	
1,2,4-Trichlorobenzene	mg/kg	ND	0.0048	0.0015	04/25/18 14:19	
1,2,4-Trimethylbenzene	mg/kg	ND	0.0048	0.0019	04/25/18 14:19	
1,2-Dibromo-3-chloropropane	mg/kg	ND	0.0048	0.0034	04/25/18 14:19	
1,2-Dibromoethane (EDB)	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
1,2-Dichlorobenzene	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
1,2-Dichloroethane	mg/kg	ND	0.0048	0.0021	04/25/18 14:19	
1,2-Dichloropropane	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
1,3-Dichlorobenzene	mg/kg	ND	0.0048	0.0019	04/25/18 14:19	
1,3-Dichloropropane	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
1,4-Dichlorobenzene	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
2,2-Dichloropropane	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
2-Butanone (MEK)	mg/kg	ND	0.096	0.0028	04/25/18 14:19	
2-Chlorotoluene	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
2-Hexanone	mg/kg	ND	0.048	0.0037	04/25/18 14:19	
4-Chlorotoluene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	0.048	0.0035	04/25/18 14:19	
Acetone	mg/kg	ND	0.096	0.0096	04/25/18 14:19	
Benzene	mg/kg	ND	0.0048	0.0015	04/25/18 14:19	
Bromobenzene	mg/kg	ND	0.0048	0.0019	04/25/18 14:19	
Bromochloromethane	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
Bromodichloromethane	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
Bromoform	mg/kg	ND	0.0048	0.0022	04/25/18 14:19	
Bromomethane	mg/kg	ND	0.0096	0.0024	04/25/18 14:19	
Carbon tetrachloride	mg/kg	ND	0.0048	0.0025	04/25/18 14:19	
Chlorobenzene	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
Chloroethane	mg/kg	ND	0.0096	0.0023	04/25/18 14:19	
Chloroform	mg/kg	ND	0.0048	0.0015	04/25/18 14:19	
Chloromethane	mg/kg	ND	0.0096	0.0023	04/25/18 14:19	
cis-1,2-Dichloroethene	mg/kg	ND	0.0048	0.0013	04/25/18 14:19	
cis-1,3-Dichloropropene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
Dibromochloromethane	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

METHOD BLANK: 2262983

Matrix: Solid

Associated Lab Samples: 92381911003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	mg/kg	ND	0.0048	0.0024	04/25/18 14:19	
Dichlorodifluoromethane	mg/kg	ND	0.0096	0.0034	04/25/18 14:19	
Diisopropyl ether	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
Ethylbenzene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
Hexachloro-1,3-butadiene	mg/kg	ND	0.0048	0.0019	04/25/18 14:19	
Isopropylbenzene (Cumene)	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
m&p-Xylene	mg/kg	ND	0.0096	0.0034	04/25/18 14:19	
Methyl-tert-butyl ether	mg/kg	ND	0.0048	0.0014	04/25/18 14:19	
Methylene Chloride	mg/kg	ND	0.019	0.0029	04/25/18 14:19	
n-Butylbenzene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
n-Propylbenzene	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
Naphthalene	mg/kg	ND	0.0048	0.0011	04/25/18 14:19	
o-Xylene	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
p-Isopropyltoluene	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
sec-Butylbenzene	mg/kg	ND	0.0048	0.0015	04/25/18 14:19	
Styrene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
tert-Butylbenzene	mg/kg	ND	0.0048	0.0019	04/25/18 14:19	
Tetrachloroethene	mg/kg	ND	0.0048	0.0016	04/25/18 14:19	
Toluene	mg/kg	ND	0.0048	0.0017	04/25/18 14:19	
trans-1,2-Dichloroethene	mg/kg	ND	0.0048	0.0018	04/25/18 14:19	
trans-1,3-Dichloropropene	mg/kg	ND	0.0048	0.0014	04/25/18 14:19	
Trichloroethene	mg/kg	ND	0.0048	0.0020	04/25/18 14:19	
Trichlorofluoromethane	mg/kg	ND	0.0048	0.0021	04/25/18 14:19	
Vinyl acetate	mg/kg	ND	0.048	0.0084	04/25/18 14:19	
Vinyl chloride	mg/kg	ND	0.0096	0.0017	04/25/18 14:19	
Xylene (Total)	mg/kg	ND	0.0096	0.0034	04/25/18 14:19	
1,2-Dichloroethane-d4 (S)	%	79	70-132		04/25/18 14:19	
4-Bromofluorobenzene (S)	%	95	70-130		04/25/18 14:19	
Toluene-d8 (S)	%	107	70-130		04/25/18 14:19	

LABORATORY CONTROL SAMPLE: 2262984

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	.051	0.053	103	74-137	
1,1,1-Trichloroethane	mg/kg	.051	0.044	85	67-140	
1,1,2,2-Tetrachloroethane	mg/kg	.051	0.041	79	72-141	F3
1,1,2-Trichloroethane	mg/kg	.051	0.051	100	78-138	
1,1-Dichloroethane	mg/kg	.051	0.045	89	69-134	
1,1-Dichloroethene	mg/kg	.051	0.048	93	67-138	
1,1-Dichloropropene	mg/kg	.051	0.046	90	69-139	
1,2,3-Trichlorobenzene	mg/kg	.051	0.051	99	70-146	
1,2,3-Trichloropropane	mg/kg	.051	0.050	97	69-144	
1,2,4-Trichlorobenzene	mg/kg	.051	0.054	106	68-148	
1,2,4-Trimethylbenzene	mg/kg	.051	0.053	103	74-137	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

LABORATORY CONTROL SAMPLE: 2262984

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	mg/kg	.051	0.049	95	65-140	
1,2-Dibromoethane (EDB)	mg/kg	.051	0.052	101	77-135	
1,2-Dichlorobenzene	mg/kg	.051	0.054	105	77-141	
1,2-Dichloroethane	mg/kg	.051	0.044	86	65-137	
1,2-Dichloropropane	mg/kg	.051	0.046	89	72-136	
1,3,5-Trimethylbenzene	mg/kg	.051	0.053	103	76-133	
1,3-Dichlorobenzene	mg/kg	.051	0.053	103	74-138	
1,3-Dichloropropane	mg/kg	.051	0.051	100	71-139	
1,4-Dichlorobenzene	mg/kg	.051	0.053	103	76-138	
2,2-Dichloropropane	mg/kg	.051	0.047	93	68-137	
2-Butanone (MEK)	mg/kg	.1	0.090J	88	58-147	
2-Chlorotoluene	mg/kg	.051	0.052	101	73-139	
2-Hexanone	mg/kg	.1	0.11	107	62-145	
4-Chlorotoluene	mg/kg	.051	0.052	101	76-141	
4-Methyl-2-pentanone (MIBK)	mg/kg	.1	0.10	100	64-149	
Acetone	mg/kg	.1	0.084J	82	53-153	
Benzene	mg/kg	.051	0.046	90	73-135	
Bromobenzene	mg/kg	.051	0.055	107	75-133	
Bromochloromethane	mg/kg	.051	0.045	87	73-134	
Bromodichloromethane	mg/kg	.051	0.047	91	71-135	
Bromoform	mg/kg	.051	0.046	89	66-141	
Bromomethane	mg/kg	.051	0.045	88	53-160	
Carbon tetrachloride	mg/kg	.051	0.045	87	60-145	
Chlorobenzene	mg/kg	.051	0.050	97	78-130	
Chloroethane	mg/kg	.051	0.038	74	64-149	
Chloroform	mg/kg	.051	0.043	84	70-134	
Chloromethane	mg/kg	.051	0.041	79	52-150	
cis-1,2-Dichloroethene	mg/kg	.051	0.046	91	70-133	
cis-1,3-Dichloropropene	mg/kg	.051	0.050	98	68-134	
Dibromochloromethane	mg/kg	.051	0.053	103	71-138	
Dibromomethane	mg/kg	.051	0.044	86	74-130	
Dichlorodifluoromethane	mg/kg	.051	0.044	85	40-160	
Diisopropyl ether	mg/kg	.051	0.049	96	69-141	
Ethylbenzene	mg/kg	.051	0.048	94	75-133	
Hexachloro-1,3-butadiene	mg/kg	.051	0.053	104	68-143	
Isopropylbenzene (Cumene)	mg/kg	.051	0.050	98	76-143	
m&p-Xylene	mg/kg	.1	0.098	95	75-136	
Methyl-tert-butyl ether	mg/kg	.051	0.046	90	68-144	
Methylene Chloride	mg/kg	.051	0.047	92	45-154	
n-Butylbenzene	mg/kg	.051	0.053	103	72-137	
n-Propylbenzene	mg/kg	.051	0.052	101	76-136	
Naphthalene	mg/kg	.051	0.052	101	68-151	
o-Xylene	mg/kg	.051	0.050	97	76-141	
p-Isopropyltoluene	mg/kg	.051	0.052	101	76-140	
sec-Butylbenzene	mg/kg	.051	0.051	100	79-139	
Styrene	mg/kg	.051	0.049	96	79-137	
tert-Butylbenzene	mg/kg	.051	0.048	93	74-143	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report  
Pace Project No.: 92381911

LABORATORY CONTROL SAMPLE: 2262984

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	mg/kg	.051	0.045	87	71-138	
Toluene	mg/kg	.051	0.046	90	74-131	
trans-1,2-Dichloroethene	mg/kg	.051	0.045	88	67-135	
trans-1,3-Dichloropropene	mg/kg	.051	0.051	100	65-146	
Trichloroethene	mg/kg	.051	0.054	106	67-135	
Trichlorofluoromethane	mg/kg	.051	0.042	83	59-144	
Vinyl acetate	mg/kg	.1	0.046J	45	40-160	F3
Vinyl chloride	mg/kg	.051	0.045	87	56-141	
Xylene (Total)	mg/kg	.15	0.15	96	76-137	
1,2-Dichloroethane-d4 (S)	%			84	70-132	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2265101

Parameter	Units	92381216055 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	.013	0.011	84	70-130	
1,1,1-Trichloroethane	mg/kg	ND	.013	0.011	82	70-130	
1,1,2,2-Tetrachloroethane	mg/kg	ND	.013	0.011	81	70-130	
1,1,2-Trichloroethane	mg/kg	ND	.013	0.0097	74	70-130	
1,1-Dichloroethane	mg/kg	ND	.013	0.0093	71	70-130	
1,1-Dichloroethene	mg/kg	ND	.013	0.0096	74	49-180	
1,1-Dichloropropene	mg/kg	ND	.013	0.0087	66	70-130	M1
1,2,3-Trichlorobenzene	mg/kg	ND	.013	0.0028J	21	70-130	M1
1,2,3-Trichloropropane	mg/kg	ND	.013	0.011	88	70-130	
1,2,4-Trichlorobenzene	mg/kg	ND	.013	0.0027J	20	70-130	M1
1,2,4-Trimethylbenzene	mg/kg	ND	.013	0.0088	67	70-130	M1
1,2-Dibromo-3-chloropropane	mg/kg	ND	.013	0.011	88	70-130	
1,2-Dibromoethane (EDB)	mg/kg	ND	.013	0.0098	75	70-130	
1,2-Dichlorobenzene	mg/kg	ND	.013	0.0055	42	70-130	M1
1,2-Dichloroethane	mg/kg	ND	.013	0.011	81	70-130	
1,2-Dichloropropane	mg/kg	ND	.013	0.010	77	70-130	
1,3,5-Trimethylbenzene	mg/kg	ND	.013	0.010	80	70-130	
1,3-Dichlorobenzene	mg/kg	ND	.013	0.0054	41	70-130	M1
1,3-Dichloropropane	mg/kg	ND	.013	0.011	82	70-130	
1,4-Dichlorobenzene	mg/kg	ND	.013	0.0048	37	70-130	M1
2,2-Dichloropropane	mg/kg	ND	.013	0.010	80	70-130	
2-Butanone (MEK)	mg/kg	ND	.026	0.026J	101	70-130	
2-Chlorotoluene	mg/kg	ND	.013	0.0083	64	70-130	M1
2-Hexanone	mg/kg	ND	.026	0.022J	84	70-130	
4-Chlorotoluene	mg/kg	ND	.013	0.0065	50	70-130	M1
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	.026	0.022J	83	70-130	
Acetone	mg/kg	ND	.026	0.045J	173	70-130	M1
Benzene	mg/kg	ND	.013	0.0091	69	50-166	
Bromobenzene	mg/kg	ND	.013	0.0071	54	70-130	M1

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

MATRIX SPIKE SAMPLE:	2265101	92381216055	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromochloromethane	mg/kg	ND	.013	0.011	82	70-130	
Bromodichloromethane	mg/kg	ND	.013	0.0096	73	70-130	
Bromoform	mg/kg	ND	.013	0.010	78	70-130	
Bromomethane	mg/kg	ND	.013	0.011	82	70-130	
Carbon tetrachloride	mg/kg	ND	.013	0.011	82	70-130	
Chlorobenzene	mg/kg	ND	.013	0.0065	50	43-169	
Chloroethane	mg/kg	ND	.013	0.010	78	70-130	
Chloroform	mg/kg	ND	.013	0.010	78	70-130	
Chloromethane	mg/kg	ND	.013	0.0093	71	70-130	
cis-1,2-Dichloroethene	mg/kg	ND	.013	0.0090	69	70-130	M1
cis-1,3-Dichloropropene	mg/kg	ND	.013	0.0077	59	70-130	M1
Dibromochloromethane	mg/kg	ND	.013	0.0099	76	70-130	
Dibromomethane	mg/kg	ND	.013	0.0099	76	70-130	
Dichlorodifluoromethane	mg/kg	ND	.013	0.0088	68	70-130	M1
Diisopropyl ether	mg/kg	ND	.013	0.010	77	70-130	
Ethylbenzene	mg/kg	ND	.013	0.0083	64	70-130	M1
Hexachloro-1,3-butadiene	mg/kg	ND	.013	0.0066	51	70-130	M1
Isopropylbenzene (Cumene)	mg/kg	ND	.013	0.0088	68	70-130	M1
m&p-Xylene	mg/kg	ND	.026	0.016	60	70-130	M1
Methyl-tert-butyl ether	mg/kg	ND	.013	0.011	84	70-130	
Methylene Chloride	mg/kg	ND	.013	0.0087J	67	70-130	M1
n-Butylbenzene	mg/kg	ND	.013	0.0073	56	70-130	M1
n-Propylbenzene	mg/kg	ND	.013	0.0095	73	70-130	
Naphthalene	mg/kg	ND	.013	0.0019J	14	70-130	M1
o-Xylene	mg/kg	ND	.013	0.0082	63	70-130	M1
p-Isopropyltoluene	mg/kg	ND	.013	0.0096	74	70-130	
sec-Butylbenzene	mg/kg	ND	.013	0.010	77	70-130	
Styrene	mg/kg	ND	.013	0.0044	34	70-130	M1
tert-Butylbenzene	mg/kg	ND	.013	0.011	83	70-130	
Tetrachloroethene	mg/kg	ND	.013	0.0078	60	70-130	M1
Toluene	mg/kg	ND	.013	0.0078	60	52-163	
trans-1,2-Dichloroethene	mg/kg	ND	.013	0.0082	63	70-130	M1
trans-1,3-Dichloropropene	mg/kg	ND	.013	0.0068	52	70-130	M1
Trichloroethene	mg/kg	ND	.013	0.0086	66	49-167	
Trichlorofluoromethane	mg/kg	ND	.013	0.011	85	70-130	
Vinyl acetate	mg/kg	ND	.026	0.0075J	29	70-130	M1
Vinyl chloride	mg/kg	ND	.013	0.0099	76	70-130	
Xylene (Total)	mg/kg	ND	.039	0.024	61	70-130	MS
1,2-Dichloroethane-d4 (S)	%				117	70-132	
4-Bromofluorobenzene (S)	%				86	70-130	
Toluene-d8 (S)	%				99	70-130	

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1-Revised Report

Pace Project No.: 92381911

SAMPLE DUPLICATE: 2265100

Parameter	Units	92381216054 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,1-Trichloroethane	mg/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	mg/kg	ND	ND		30	
1,1,2-Trichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethane	mg/kg	ND	ND		30	
1,1-Dichloroethene	mg/kg	ND	ND		30	
1,1-Dichloropropene	mg/kg	ND	ND		30	
1,2,3-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,3-Trichloropropane	mg/kg	ND	ND		30	
1,2,4-Trichlorobenzene	mg/kg	ND	ND		30	
1,2,4-Trimethylbenzene	mg/kg	ND	ND		30	
1,2-Dibromo-3-chloropropane	mg/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	mg/kg	ND	ND		30	
1,2-Dichlorobenzene	mg/kg	ND	ND		30	
1,2-Dichloroethane	mg/kg	ND	ND		30	
1,2-Dichloropropane	mg/kg	ND	ND		30	
1,3,5-Trimethylbenzene	mg/kg	ND	ND		30	
1,3-Dichlorobenzene	mg/kg	ND	ND		30	
1,3-Dichloropropane	mg/kg	ND	ND		30	
1,4-Dichlorobenzene	mg/kg	ND	ND		30	
2,2-Dichloropropane	mg/kg	ND	ND		30	
2-Butanone (MEK)	mg/kg	ND	ND		30	
2-Chlorotoluene	mg/kg	ND	ND		30	
2-Hexanone	mg/kg	ND	ND		30	
4-Chlorotoluene	mg/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	mg/kg	ND	ND		30	
Acetone	mg/kg	ND	ND		30	
Benzene	mg/kg	ND	ND		30	
Bromobenzene	mg/kg	ND	ND		30	
Bromochloromethane	mg/kg	ND	ND		30	
Bromodichloromethane	mg/kg	ND	ND		30	
Bromoform	mg/kg	ND	ND		30	
Bromomethane	mg/kg	ND	ND		30	
Carbon tetrachloride	mg/kg	ND	ND		30	
Chlorobenzene	mg/kg	ND	ND		30	
Chloroethane	mg/kg	ND	ND		30	
Chloroform	mg/kg	ND	ND		30	
Chloromethane	mg/kg	ND	ND		30	
cis-1,2-Dichloroethene	mg/kg	ND	ND		30	
cis-1,3-Dichloropropene	mg/kg	ND	ND		30	
Dibromochloromethane	mg/kg	ND	ND		30	
Dibromomethane	mg/kg	ND	ND		30	
Dichlorodifluoromethane	mg/kg	ND	ND		30	
Diisopropyl ether	mg/kg	ND	ND		30	
Ethylbenzene	mg/kg	ND	ND		30	
Hexachloro-1,3-butadiene	mg/kg	ND	ND		30	
Isopropylbenzene (Cumene)	mg/kg	ND	ND		30	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

SAMPLE DUPLICATE: 2265100

Parameter	Units	92381216054 Result	Dup Result	RPD	Max RPD	Qualifiers
m&p-Xylene	mg/kg	ND	ND		30	
Methyl-tert-butyl ether	mg/kg	ND	ND		30	
Methylene Chloride	mg/kg	ND	ND		30	
n-Butylbenzene	mg/kg	ND	ND		30	
n-Propylbenzene	mg/kg	ND	ND		30	
Naphthalene	mg/kg	ND	ND		30	
o-Xylene	mg/kg	ND	ND		30	
p-Isopropyltoluene	mg/kg	ND	ND		30	
sec-Butylbenzene	mg/kg	ND	ND		30	
Styrene	mg/kg	ND	ND		30	
tert-Butylbenzene	mg/kg	ND	ND		30	
Tetrachloroethene	mg/kg	ND	ND		30	
Toluene	mg/kg	ND	ND		30	
trans-1,2-Dichloroethene	mg/kg	ND	ND		30	
trans-1,3-Dichloropropene	mg/kg	ND	ND		30	
Trichloroethene	mg/kg	ND	ND		30	
Trichlorofluoromethane	mg/kg	ND	ND		30	
Vinyl acetate	mg/kg	ND	ND		30	
Vinyl chloride	mg/kg	ND	ND		30	
Xylene (Total)	mg/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	82	103	45		
4-Bromofluorobenzene (S)	%	88	88	24		
Toluene-d8 (S)	%	104	97	16		

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**QUALITY CONTROL DATA**

Project: R3038 WBS 38887.1.1- Revised Report  
Pace Project No.: 92381911

QC Batch: 407531 Analysis Method: ASTM D2974-87  
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture  
Associated Lab Samples: 92381911001, 92381911002, 92381911003, 92381911004

SAMPLE DUPLICATE: 2261266

Parameter	Units	92381794001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.0	21.0	5	25	

SAMPLE DUPLICATE: 2261267

Parameter	Units	92381913003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.8	12.6	10	25	

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: R3038 WBS 38887.1.1- Revised Report  
Pace Project No.: 92381911

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above adjusted reporting limit.  
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

B Analyte was detected in the associated method blank.  
D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.  
F3 The recovery of the second source standard used to verify the initial calibration curve for this analyte is outside the laboratory's control limits. The result is estimated.  
M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.  
MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R3038 WBS 38887.1.1- Revised Report

Pace Project No.: 92381911

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92381911001	R-3830-P76/77/78-SS10-8	EPA 8260	407651		
92381911002	R-3830-P76/77/78-SS10-9	EPA 8260	407651		
92381911003	R-3830-P76/77/78-SS11-10	EPA 8260	407861		
92381911004	R-3830-P76/77/78-SS12-8	EPA 8260	407651		
92381911001	R-3830-P76/77/78-SS10-8	ASTM D2974-87	407531		
92381911002	R-3830-P76/77/78-SS10-9	ASTM D2974-87	407531		
92381911003	R-3830-P76/77/78-SS11-10	ASTM D2974-87	407531		
92381911004	R-3830-P76/77/78-SS12-8	ASTM D2974-87	407531		

### REPORT OF LABORATORY ANALYSIS

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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

**Laboratory receiving samples:**

Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

Sample Condition Upon Receipt

Client Name:  
Kleinfelder

Project #:

**WO# : 92381911**



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

Custody Seal Present?  Yes  No Seals Intact?  Yes  No

Date/Initials Person Examining Contents: 104-23-18

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): 4.9 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): 5.0

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 checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2.	<u>BN 4/23/18</u>
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 type="checkbox"/> No <input checked="" 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</u>			
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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: 4/24

Project Manager SRF Review: [Signature]

Date: 4/24



\*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 # **WO# : 92381911**  
 PM: PTE Due Date: 04/26/18  
 CLIENT: 92-Klein RA

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	/	/	/	/	/
2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	/	/	/	/	/
3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	/	/	/	/	/
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10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	/	/	/	/	/
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	/	/	/	/	/
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	6	/	/	/	/	/	/	/	/

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: Keim Fielder  
 Address: 3700 Gateway Center  
Morrisville, NC 27560  
 Email To: mburns@KeimFielder.com  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Requested Due Date/TAT: \_\_\_\_\_

**Section B**

Required Project Information:

Report To: Mike Burns  
 Copy To: Chris Mellinger  
 Purchase Order No.: \_\_\_\_\_  
 Project Name: R3830 - P9677/78  
 Project Number: R3830 - WBS 38337.1.1

**Section C**

Invoice Information:

Attention: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Reference: \_\_\_\_\_  
 Project Manager: Taylor Ball  
 Project Profile #: \_\_\_\_\_

Page: 1 of 1

REGULATORY AGENCY

NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  OTHER \_\_\_\_\_

Site Location  
 STATE: NC

ITEM #	Section D Required Client Information	Matrix Codes MATRIX L CODE	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/DRAW			H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Methanol	Other				
1	R-3830-P9677/78-5510-8	Drinking Water DW			4:20	09:25		1										02381911	
2	R-3830-P9677/78-5510-9	Water WT				09:30		1									032		
3	R-3830-P9677/78-5511-10	Waste Water WW				09:45		1									035		
4	R-3830-P9677/78-5512-9	Product P				10:00		1									034		
5		Soil/Solid SL																	
6		Oil OL																	
7		Wipe WP																	
8		Air AR																	
9		Tissue TS																	
10		Other OT																	
11																			
12																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Sample by W126	Joseph C. Mellinger	4/20	12:00	Joseph C. Mellinger	4/20	12:00	Y
	Joseph C. Mellinger	4/20	12:00	Joseph C. Mellinger	4/20	12:00	Y
	Joseph C. Mellinger	4/20	12:00	Joseph C. Mellinger	4/20	12:00	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Joseph C. Mellinger  
 SIGNATURE of SAMPLER: Joseph C. Mellinger  
 DATE Signed (MM/DD/YY): 04/20

Temp in °C \_\_\_\_\_  
 Received on Ice (Y/N) \_\_\_\_\_  
 Custody Sealed Cooler (Y/N) \_\_\_\_\_  
 Samples Intact (Y/N) \_\_\_\_\_

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to the changes of 1.5% per month for any invoices not paid within 30 days.

May 02, 2018

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

RE: Project: R-3830 WBS38887.1.1  
Pace Project No.: 92382472

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on April 26, 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.

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: R-3830 WBS38887.1.1

Pace Project No.: 92382472

---

### 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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: R-3830 WBS38887.1.1  
Pace Project No.: 92382472

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92382472001	R-3830-P77178179-MW1	Water	04/25/18 14:45	04/26/18 13:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92382472001	R-3830-P77178179-MW1	EPA 625	RES	58	PASI-C
		SM 6200B	CAH	63	PASI-C

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

---

**Method:** EPA 625

**Description:** 625 MSSV

**Client:** NCDOT East Central

**Date:** May 02, 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.

QC Batch: 407970

S0: Surrogate recovery outside laboratory control limits.

- R-3830-P77178179-MW1 (Lab ID: 92382472001)
- Terphenyl-d14 (S)

### 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: 407970

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

- LCS (Lab ID: 2263604)
- Hexachloroethane

### 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.

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## PROJECT NARRATIVE

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

---

**Method:** EPA 625

**Description:** 625 MSSV

**Client:** NCDOT East Central

**Date:** May 02, 2018

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

---

**Method:** SM 6200B

**Description:** 6200B MSV

**Client:** NCDOT East Central

**Date:** May 02, 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.

**Additional Comments:**

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: R-3830 WBS38887.1.1  
Pace Project No.: 92382472

Sample: R-3830-P77178179-MW1 Lab ID: 92382472001 Collected: 04/25/18 14:45 Received: 04/26/18 13:00 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	04/26/18 20:35	04/30/18 14:27	83-32-9	
Acenaphthylene	ND	ug/L	4.9	0.21	1	04/26/18 20:35	04/30/18 14:27	208-96-8	
Anthracene	ND	ug/L	4.9	0.14	1	04/26/18 20:35	04/30/18 14:27	120-12-7	
Benzo(a)anthracene	ND	ug/L	4.9	0.32	1	04/26/18 20:35	04/30/18 14:27	56-55-3	
Benzo(a)pyrene	ND	ug/L	4.9	0.29	1	04/26/18 20:35	04/30/18 14:27	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	4.9	0.27	1	04/26/18 20:35	04/30/18 14:27	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	4.9	0.37	1	04/26/18 20:35	04/30/18 14:27	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	4.9	0.42	1	04/26/18 20:35	04/30/18 14:27	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	4.9	0.80	1	04/26/18 20:35	04/30/18 14:27	101-55-3	
Butylbenzylphthalate	ND	ug/L	4.9	0.77	1	04/26/18 20:35	04/30/18 14:27	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	4.9	3.6	1	04/26/18 20:35	04/30/18 14:27	59-50-7	
bis(2-Chloroethoxy)methane	ND	ug/L	9.8	0.90	1	04/26/18 20:35	04/30/18 14:27	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	4.9	0.98	1	04/26/18 20:35	04/30/18 14:27	111-44-4	
2-Chloronaphthalene	ND	ug/L	4.9	0.96	1	04/26/18 20:35	04/30/18 14:27	91-58-7	
2-Chlorophenol	ND	ug/L	4.9	1.3	1	04/26/18 20:35	04/30/18 14:27	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	4.9	0.85	1	04/26/18 20:35	04/30/18 14:27	7005-72-3	
Chrysene	ND	ug/L	4.9	0.21	1	04/26/18 20:35	04/30/18 14:27	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	4.9	0.54	1	04/26/18 20:35	04/30/18 14:27	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	24.5	2.1	1	04/26/18 20:35	04/30/18 14:27	91-94-1	
2,4-Dichlorophenol	ND	ug/L	4.9	1.7	1	04/26/18 20:35	04/30/18 14:27	120-83-2	
Diethylphthalate	ND	ug/L	4.9	0.57	1	04/26/18 20:35	04/30/18 14:27	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1.2	1	04/26/18 20:35	04/30/18 14:27	105-67-9	
Dimethylphthalate	ND	ug/L	4.9	0.75	1	04/26/18 20:35	04/30/18 14:27	131-11-3	
Di-n-butylphthalate	ND	ug/L	4.9	0.74	1	04/26/18 20:35	04/30/18 14:27	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	19.6	2.5	1	04/26/18 20:35	04/30/18 14:27	534-52-1	
2,4-Dinitrophenol	ND	ug/L	49.0	8.8	1	04/26/18 20:35	04/30/18 14:27	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	4.9	0.88	1	04/26/18 20:35	04/30/18 14:27	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	4.9	0.96	1	04/26/18 20:35	04/30/18 14:27	606-20-2	
Di-n-octylphthalate	ND	ug/L	4.9	0.65	1	04/26/18 20:35	04/30/18 14:27	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	4.9	0.77	1	04/26/18 20:35	04/30/18 14:27	117-81-7	
Fluoranthene	ND	ug/L	4.9	0.21	1	04/26/18 20:35	04/30/18 14:27	206-44-0	
Fluorene	ND	ug/L	4.9	0.21	1	04/26/18 20:35	04/30/18 14:27	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	4.9	0.92	1	04/26/18 20:35	04/30/18 14:27	87-68-3	
Hexachlorobenzene	ND	ug/L	4.9	0.71	1	04/26/18 20:35	04/30/18 14:27	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	9.8	0.86	1	04/26/18 20:35	04/30/18 14:27	77-47-4	
Hexachloroethane	ND	ug/L	4.9	1.1	1	04/26/18 20:35	04/30/18 14:27	67-72-1	L2
Indeno(1,2,3-cd)pyrene	ND	ug/L	4.9	0.28	1	04/26/18 20:35	04/30/18 14:27	193-39-5	
Isophorone	ND	ug/L	9.8	0.87	1	04/26/18 20:35	04/30/18 14:27	78-59-1	
Naphthalene	8.6	ug/L	4.9	0.33	1	04/26/18 20:35	04/30/18 14:27	91-20-3	
Nitrobenzene	ND	ug/L	4.9	1.1	1	04/26/18 20:35	04/30/18 14:27	98-95-3	
2-Nitrophenol	ND	ug/L	4.9	0.89	1	04/26/18 20:35	04/30/18 14:27	88-75-5	
4-Nitrophenol	ND	ug/L	49.0	4.0	1	04/26/18 20:35	04/30/18 14:27	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	4.9	0.89	1	04/26/18 20:35	04/30/18 14:27	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	4.9	0.97	1	04/26/18 20:35	04/30/18 14:27	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	9.8	0.98	1	04/26/18 20:35	04/30/18 14:27	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	4.9	0.93	1	04/26/18 20:35	04/30/18 14:27	108-60-1	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

**Sample: R-3830-P77178179-MW1**    **Lab ID: 92382472001**    Collected: 04/25/18 14:45    Received: 04/26/18 13:00    Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>625 MSSV</b>									
Analytical Method: EPA 625    Preparation Method: EPA 625									
Pentachlorophenol	ND	ug/L	9.8	4.5	1	04/26/18 20:35	04/30/18 14:27	87-86-5	
Phenanthrene	ND	ug/L	4.9	0.22	1	04/26/18 20:35	04/30/18 14:27	85-01-8	
Phenol	ND	ug/L	4.9	1.9	1	04/26/18 20:35	04/30/18 14:27	108-95-2	
Pyrene	ND	ug/L	4.9	0.19	1	04/26/18 20:35	04/30/18 14:27	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	4.9	0.96	1	04/26/18 20:35	04/30/18 14:27	120-82-1	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1.3	1	04/26/18 20:35	04/30/18 14:27	88-06-2	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	74	%	10-120		1	04/26/18 20:35	04/30/18 14:27	4165-60-0	
2-Fluorobiphenyl (S)	72	%	15-120		1	04/26/18 20:35	04/30/18 14:27	321-60-8	
Terphenyl-d14 (S)	281	%	11-131		1	04/26/18 20:35	04/30/18 14:27	1718-51-0	S0
Phenol-d6 (S)	26	%	10-120		1	04/26/18 20:35	04/30/18 14:27	13127-88-3	
2-Fluorophenol (S)	39	%	10-120		1	04/26/18 20:35	04/30/18 14:27	367-12-4	
2,4,6-Tribromophenol (S)	80	%	10-137		1	04/26/18 20:35	04/30/18 14:27	118-79-6	
<b>6200B MSV</b>									
Analytical Method: SM 6200B									
Benzene	<b>43.1</b>	ug/L	0.50	0.25	1		05/01/18 07:42	71-43-2	
Bromobenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	108-86-1	
Bromochloromethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	75-27-4	
Bromoform	ND	ug/L	0.50	0.25	1		05/01/18 07:42	75-25-2	
Bromomethane	ND	ug/L	5.0	2.5	1		05/01/18 07:42	74-83-9	
n-Butylbenzene	<b>0.37J</b>	ug/L	0.50	0.25	1		05/01/18 07:42	104-51-8	
sec-Butylbenzene	<b>0.34J</b>	ug/L	0.50	0.25	1		05/01/18 07:42	135-98-8	
tert-Butylbenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	0.25	1		05/01/18 07:42	56-23-5	
Chlorobenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	108-90-7	
Chloroethane	ND	ug/L	1.0	0.50	1		05/01/18 07:42	75-00-3	
Chloroform	ND	ug/L	0.50	0.25	1		05/01/18 07:42	67-66-3	
Chloromethane	ND	ug/L	1.0	0.50	1		05/01/18 07:42	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.50	1		05/01/18 07:42	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	0.25	1		05/01/18 07:42	106-93-4	
Dibromomethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	75-34-3	
1,2-Dichloroethane	<b>2.0</b>	ug/L	0.50	0.25	1		05/01/18 07:42	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	142-28-9	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

Sample: R-3830-P77178179-MW1 Lab ID: 92382472001 Collected: 04/25/18 14:45 Received: 04/26/18 13:00 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
<b>6200B MSV</b>									
Analytical Method: SM 6200B									
2,2-Dichloropropane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	10061-02-6	
Diisopropyl ether	ND	ug/L	0.50	0.25	1		05/01/18 07:42	108-20-3	
Ethylbenzene	10.9	ug/L	0.50	0.25	1		05/01/18 07:42	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1.0	1		05/01/18 07:42	87-68-3	
Isopropylbenzene (Cumene)	1.8	ug/L	0.50	0.25	1		05/01/18 07:42	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1.0	1		05/01/18 07:42	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	0.50	0.25	1		05/01/18 07:42	1634-04-4	
Naphthalene	11.7	ug/L	2.0	1.0	1		05/01/18 07:42	91-20-3	
n-Propylbenzene	1.6	ug/L	0.50	0.25	1		05/01/18 07:42	103-65-1	
Styrene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	127-18-4	
Toluene	1.0	ug/L	0.50	0.25	1		05/01/18 07:42	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1.0	1		05/01/18 07:42	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1.0	1		05/01/18 07:42	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	79-00-5	
Trichloroethene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.50	1		05/01/18 07:42	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	0.25	1		05/01/18 07:42	96-18-4	
1,2,4-Trimethylbenzene	0.29J	ug/L	0.50	0.25	1		05/01/18 07:42	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.25	1		05/01/18 07:42	108-67-8	
Vinyl chloride	ND	ug/L	1.0	0.50	1		05/01/18 07:42	75-01-4	
m&p-Xylene	0.75J	ug/L	1.0	0.50	1		05/01/18 07:42	179601-23-1	
o-Xylene	0.47J	ug/L	0.50	0.25	1		05/01/18 07:42	95-47-6	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		05/01/18 07:42	17060-07-0	
4-Bromofluorobenzene (S)	96	%	70-130		1		05/01/18 07:42	460-00-4	
Toluene-d8 (S)	101	%	70-130		1		05/01/18 07:42	2037-26-5	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1  
Pace Project No.: 92382472

QC Batch: 408585 Analysis Method: SM 6200B  
QC Batch Method: SM 6200B Analysis Description: 6200B MSV  
Associated Lab Samples: 92382472001

METHOD BLANK: 2267080 Matrix: Water  
Associated Lab Samples: 92382472001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,1,1-Trichloroethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,1,2-Trichloroethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,1-Dichloroethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,1-Dichloroethene	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,1-Dichloropropene	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	1.0	05/01/18 02:35	
1,2,3-Trichloropropane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	1.0	05/01/18 02:35	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	0.50	05/01/18 02:35	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,2-Dichlorobenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,2-Dichloroethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,2-Dichloropropane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,3-Dichlorobenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,3-Dichloropropane	ug/L	ND	0.50	0.25	05/01/18 02:35	
1,4-Dichlorobenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
2,2-Dichloropropane	ug/L	ND	0.50	0.25	05/01/18 02:35	
2-Chlorotoluene	ug/L	ND	0.50	0.25	05/01/18 02:35	
4-Chlorotoluene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Benzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Bromobenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Bromochloromethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
Bromodichloromethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
Bromoform	ug/L	ND	0.50	0.25	05/01/18 02:35	
Bromomethane	ug/L	ND	5.0	2.5	05/01/18 02:35	
Carbon tetrachloride	ug/L	ND	0.50	0.25	05/01/18 02:35	
Chlorobenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Chloroethane	ug/L	ND	1.0	0.50	05/01/18 02:35	
Chloroform	ug/L	ND	0.50	0.25	05/01/18 02:35	
Chloromethane	ug/L	ND	1.0	0.50	05/01/18 02:35	
cis-1,2-Dichloroethene	ug/L	ND	0.50	0.25	05/01/18 02:35	
cis-1,3-Dichloropropene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Dibromochloromethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
Dibromomethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
Dichlorodifluoromethane	ug/L	ND	0.50	0.25	05/01/18 02:35	
Diisopropyl ether	ug/L	ND	0.50	0.25	05/01/18 02:35	
Ethylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	

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.

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1  
Pace Project No.: 92382472

METHOD BLANK: 2267080 Matrix: Water  
Associated Lab Samples: 92382472001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	2.0	1.0	05/01/18 02:35	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	0.25	05/01/18 02:35	
m&p-Xylene	ug/L	ND	1.0	0.50	05/01/18 02:35	
Methyl-tert-butyl ether	ug/L	ND	0.50	0.25	05/01/18 02:35	
Methylene Chloride	ug/L	ND	2.0	1.0	05/01/18 02:35	
n-Butylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
n-Propylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Naphthalene	ug/L	ND	2.0	1.0	05/01/18 02:35	
o-Xylene	ug/L	ND	0.50	0.25	05/01/18 02:35	
sec-Butylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Styrene	ug/L	ND	0.50	0.25	05/01/18 02:35	
tert-Butylbenzene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Tetrachloroethene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Toluene	ug/L	ND	0.50	0.25	05/01/18 02:35	
trans-1,2-Dichloroethene	ug/L	ND	0.50	0.25	05/01/18 02:35	
trans-1,3-Dichloropropene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Trichloroethene	ug/L	ND	0.50	0.25	05/01/18 02:35	
Trichlorofluoromethane	ug/L	ND	1.0	0.50	05/01/18 02:35	
Vinyl chloride	ug/L	ND	1.0	0.50	05/01/18 02:35	
1,2-Dichloroethane-d4 (S)	%	100	70-130		05/01/18 02:35	
4-Bromofluorobenzene (S)	%	97	70-130		05/01/18 02:35	
Toluene-d8 (S)	%	102	70-130		05/01/18 02:35	

LABORATORY CONTROL SAMPLE: 2267081

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.4	97	60-140	
1,1,1-Trichloroethane	ug/L	50	48.6	97	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	47.2	94	60-140	
1,1,2-Trichloroethane	ug/L	50	46.7	93	60-140	
1,1-Dichloroethane	ug/L	50	47.9	96	60-140	
1,1-Dichloroethene	ug/L	50	51.9	104	60-140	
1,1-Dichloropropene	ug/L	50	51.1	102	60-140	
1,2,3-Trichlorobenzene	ug/L	50	44.7	89	60-140	
1,2,3-Trichloropropane	ug/L	50	51.0	102	60-140	
1,2,4-Trichlorobenzene	ug/L	50	45.0	90	60-140	
1,2,4-Trimethylbenzene	ug/L	50	44.8	90	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	44.4	89	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	49.1	98	60-140	
1,2-Dichlorobenzene	ug/L	50	46.8	94	60-140	
1,2-Dichloroethane	ug/L	50	48.1	96	60-140	
1,2-Dichloropropane	ug/L	50	49.3	99	60-140	
1,3,5-Trimethylbenzene	ug/L	50	44.8	90	60-140	
1,3-Dichlorobenzene	ug/L	50	45.8	92	60-140	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

LABORATORY CONTROL SAMPLE: 2267081

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,3-Dichloropropane	ug/L	50	50.9	102	60-140	
1,4-Dichlorobenzene	ug/L	50	45.2	90	60-140	
2,2-Dichloropropane	ug/L	50	43.3	87	60-140	
2-Chlorotoluene	ug/L	50	45.7	91	60-140	
4-Chlorotoluene	ug/L	50	46.2	92	60-140	
Benzene	ug/L	50	45.5	91	60-140	
Bromobenzene	ug/L	50	49.0	98	60-140	
Bromochloromethane	ug/L	50	52.1	104	60-140	
Bromodichloromethane	ug/L	50	46.1	92	60-140	
Bromoform	ug/L	50	47.3	95	60-140	
Bromomethane	ug/L	50	36.8	74	60-140	
Carbon tetrachloride	ug/L	50	49.8	100	60-140	
Chlorobenzene	ug/L	50	49.2	98	60-140	
Chloroethane	ug/L	50	38.3	77	60-140	
Chloroform	ug/L	50	49.8	100	60-140	
Chloromethane	ug/L	50	37.1	74	60-140	
cis-1,2-Dichloroethene	ug/L	50	50.5	101	60-140	
cis-1,3-Dichloropropene	ug/L	50	48.8	98	60-140	
Dibromochloromethane	ug/L	50	49.6	99	60-140	
Dibromomethane	ug/L	50	49.0	98	60-140	
Dichlorodifluoromethane	ug/L	50	42.5	85	60-140	
Diisopropyl ether	ug/L	50	46.9	94	60-140	
Ethylbenzene	ug/L	50	46.4	93	60-140	
Hexachloro-1,3-butadiene	ug/L	50	41.1	82	60-140	
Isopropylbenzene (Cumene)	ug/L	50	46.6	93	60-140	
m&p-Xylene	ug/L	100	94.3	94	60-140	
Methyl-tert-butyl ether	ug/L	50	45.6	91	60-140	
Methylene Chloride	ug/L	50	53.9	108	60-140	
n-Butylbenzene	ug/L	50	43.8	88	60-140	
n-Propylbenzene	ug/L	50	47.2	94	60-140	
Naphthalene	ug/L	50	44.7	89	60-140	
o-Xylene	ug/L	50	47.0	94	60-140	
sec-Butylbenzene	ug/L	50	44.6	89	60-140	
Styrene	ug/L	50	46.9	94	60-140	
tert-Butylbenzene	ug/L	50	39.8	80	60-140	
Tetrachloroethene	ug/L	50	42.4	85	60-140	
Toluene	ug/L	50	48.8	98	60-140	
trans-1,2-Dichloroethene	ug/L	50	50.3	101	60-140	
trans-1,3-Dichloropropene	ug/L	50	48.5	97	60-140	
Trichloroethene	ug/L	50	47.4	95	60-140	
Trichlorofluoromethane	ug/L	50	47.4	95	60-140	
Vinyl chloride	ug/L	50	47.7	95	60-140	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			100	70-130	

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

Parameter	Units	92382565002		2267082		2267083		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
1,1,1,2-Tetrachloroethane	ug/L	ND	500	500	518	527	104	105	60-140	2	30		
1,1,1-Trichloroethane	ug/L	ND	500	500	540	539	108	108	60-140	0	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	500	500	487	505	97	101	60-140	4	30		
1,1,2-Trichloroethane	ug/L	ND	500	500	501	495	100	99	60-140	1	30		
1,1-Dichloroethane	ug/L	ND	500	500	537	521	107	104	60-140	3	30		
1,1-Dichloroethene	ug/L	ND	500	500	598	599	120	120	60-140	0	30		
1,1-Dichloropropene	ug/L	ND	500	500	553	560	111	112	60-140	1	30		
1,2,3-Trichlorobenzene	ug/L	ND	500	500	484	483	97	97	60-140	0	30		
1,2,3-Trichloropropane	ug/L	ND	500	500	498	519	100	104	60-140	4	30		
1,2,4-Trichlorobenzene	ug/L	ND	500	500	486	506	97	101	60-140	4	30		
1,2,4-Trimethylbenzene	ug/L	71.4	500	500	555	565	97	99	60-140	2	30		
1,2-Dibromo-3-chloropropane	ug/L	ND	500	500	449	470	90	94	60-140	5	30		
1,2-Dibromoethane (EDB)	ug/L	ND	500	500	498	518	100	104	60-140	4	30		
1,2-Dichlorobenzene	ug/L	ND	500	500	512	515	102	103	60-140	1	30		
1,2-Dichloroethane	ug/L	219	500	500	739	730	104	102	60-140	1	30		
1,2-Dichloropropane	ug/L	ND	500	500	535	545	107	109	60-140	2	30		
1,3,5-Trimethylbenzene	ug/L	47.1	500	500	543	543	99	99	60-140	0	30		
1,3-Dichlorobenzene	ug/L	ND	500	500	501	504	100	101	60-140	1	30		
1,3-Dichloropropane	ug/L	ND	500	500	544	540	109	108	60-140	1	30		
1,4-Dichlorobenzene	ug/L	ND	500	500	498	501	100	100	60-140	1	30		
2,2-Dichloropropane	ug/L	ND	500	500	437	435	87	87	60-140	0	30		
2-Chlorotoluene	ug/L	ND	500	500	485	481	97	96	60-140	1	30		
4-Chlorotoluene	ug/L	ND	500	500	497	501	99	100	60-140	1	30		
Benzene	ug/L	398	500	500	931	916	107	104	60-140	2	30		
Bromobenzene	ug/L	ND	500	500	538	536	108	107	60-140	0	30		
Bromochloromethane	ug/L	ND	500	500	549	563	110	113	60-140	3	30		
Bromodichloromethane	ug/L	ND	500	500	485	472	97	94	60-140	3	30		
Bromoform	ug/L	ND	500	500	446	464	89	93	60-140	4	30		
Bromomethane	ug/L	ND	500	500	328	402	66	80	60-140	20	30		
Carbon tetrachloride	ug/L	ND	500	500	569	570	114	114	60-140	0	30		
Chlorobenzene	ug/L	ND	500	500	537	535	107	107	60-140	0	30		
Chloroethane	ug/L	ND	500	500	476	475	95	95	60-140	0	30		
Chloroform	ug/L	ND	500	500	536	532	107	106	60-140	1	30		
Chloromethane	ug/L	ND	500	500	402	425	80	85	60-140	6	30		
cis-1,2-Dichloroethene	ug/L	ND	500	500	561	554	112	111	60-140	1	30		
cis-1,3-Dichloropropene	ug/L	ND	500	500	505	500	101	100	60-140	1	30		
Dibromochloromethane	ug/L	ND	500	500	500	502	100	100	60-140	0	30		
Dibromomethane	ug/L	ND	500	500	549	555	110	111	60-140	1	30		
Dichlorodifluoromethane	ug/L	ND	500	500	495	490	99	98	60-140	1	30		
Diisopropyl ether	ug/L	35.7	500	500	543	533	101	100	60-140	2	30		
Ethylbenzene	ug/L	73.7	500	500	584	591	102	103	60-140	1	30		
Hexachloro-1,3-butadiene	ug/L	ND	500	500	489	494	98	99	60-140	1	30		
Isopropylbenzene (Cumene)	ug/L	10.5J	500	500	529	530	104	104	60-140	0	30		
m&p-Xylene	ug/L	49.7	1000	1000	1080	1090	103	104	60-140	1	30		
Methyl-tert-butyl ether	ug/L	2640	500	500	3190	3210	109	114	60-140	1	30		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

Parameter	Units	2267082		2267083		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Methylene Chloride	ug/L	156	500	500	725	725	114	114	60-140	0	30	
n-Butylbenzene	ug/L	ND	500	500	496	502	99	100	60-140	1	30	
n-Propylbenzene	ug/L	17.1	500	500	534	533	103	103	60-140	0	30	
Naphthalene	ug/L	231	500	500	691	705	92	95	60-140	2	30	
o-Xylene	ug/L	48.5	500	500	564	568	103	104	60-140	1	30	
sec-Butylbenzene	ug/L	ND	500	500	498	516	100	103	60-140	4	30	
Styrene	ug/L	ND	500	500	502	512	100	102	60-140	2	30	
tert-Butylbenzene	ug/L	ND	500	500	445	456	89	91	60-140	3	30	
Tetrachloroethene	ug/L	ND	500	500	477	471	95	94	60-140	1	30	
Toluene	ug/L	ND	500	500	564	550	112	109	60-140	2	30	
trans-1,2-Dichloroethene	ug/L	ND	500	500	569	551	114	110	60-140	3	30	
trans-1,3-Dichloropropene	ug/L	ND	500	500	497	491	99	98	60-140	1	30	
Trichloroethene	ug/L	ND	500	500	538	531	108	106	60-140	1	30	
Trichlorofluoromethane	ug/L	ND	500	500	582	574	116	115	60-140	1	30	
Vinyl chloride	ug/L	ND	500	500	552	545	110	109	60-140	1	30	
1,2-Dichloroethane-d4 (S)	%						102	100	70-130			
4-Bromofluorobenzene (S)	%						95	96	70-130			
Toluene-d8 (S)	%						100	98	70-130			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1  
Pace Project No.: 92382472

QC Batch: 407970 Analysis Method: EPA 625  
QC Batch Method: EPA 625 Analysis Description: 625 MSS  
Associated Lab Samples: 92382472001

METHOD BLANK: 2263603 Matrix: Water  
Associated Lab Samples: 92382472001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	5.0	0.98	04/26/18 16:42	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	5.0	0.95	04/26/18 16:42	
2,4,6-Trichlorophenol	ug/L	ND	10.0	1.3	04/26/18 16:42	
2,4-Dichlorophenol	ug/L	ND	5.0	1.7	04/26/18 16:42	
2,4-Dimethylphenol	ug/L	ND	10.0	1.2	04/26/18 16:42	
2,4-Dinitrophenol	ug/L	ND	50.0	9.0	04/26/18 16:42	
2,4-Dinitrotoluene	ug/L	ND	5.0	0.90	04/26/18 16:42	
2,6-Dinitrotoluene	ug/L	ND	5.0	0.98	04/26/18 16:42	
2-Chloronaphthalene	ug/L	ND	5.0	0.98	04/26/18 16:42	
2-Chlorophenol	ug/L	ND	5.0	1.3	04/26/18 16:42	
2-Nitrophenol	ug/L	ND	5.0	0.91	04/26/18 16:42	
3,3'-Dichlorobenzidine	ug/L	ND	25.0	2.1	04/26/18 16:42	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	2.6	04/26/18 16:42	
4-Bromophenylphenyl ether	ug/L	ND	5.0	0.82	04/26/18 16:42	
4-Chloro-3-methylphenol	ug/L	ND	5.0	3.7	04/26/18 16:42	
4-Chlorophenylphenyl ether	ug/L	ND	5.0	0.87	04/26/18 16:42	
4-Nitrophenol	ug/L	ND	50.0	4.1	04/26/18 16:42	
Acenaphthene	ug/L	ND	5.0	0.25	04/26/18 16:42	
Acenaphthylene	ug/L	ND	5.0	0.21	04/26/18 16:42	
Anthracene	ug/L	ND	5.0	0.14	04/26/18 16:42	
Benzo(a)anthracene	ug/L	ND	5.0	0.33	04/26/18 16:42	
Benzo(a)pyrene	ug/L	ND	5.0	0.30	04/26/18 16:42	
Benzo(b)fluoranthene	ug/L	ND	5.0	0.28	04/26/18 16:42	
Benzo(g,h,i)perylene	ug/L	ND	5.0	0.38	04/26/18 16:42	
Benzo(k)fluoranthene	ug/L	ND	5.0	0.43	04/26/18 16:42	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	0.92	04/26/18 16:42	
bis(2-Chloroethyl) ether	ug/L	ND	5.0	1.0	04/26/18 16:42	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	0.79	04/26/18 16:42	
Butylbenzylphthalate	ug/L	ND	5.0	0.79	04/26/18 16:42	
Chrysene	ug/L	ND	5.0	0.21	04/26/18 16:42	
Di-n-butylphthalate	ug/L	ND	5.0	0.75	04/26/18 16:42	
Di-n-octylphthalate	ug/L	ND	5.0	0.66	04/26/18 16:42	
Dibenz(a,h)anthracene	ug/L	ND	5.0	0.55	04/26/18 16:42	
Diethylphthalate	ug/L	ND	5.0	0.58	04/26/18 16:42	
Dimethylphthalate	ug/L	ND	5.0	0.76	04/26/18 16:42	
Fluoranthene	ug/L	ND	5.0	0.21	04/26/18 16:42	
Fluorene	ug/L	ND	5.0	0.21	04/26/18 16:42	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	0.94	04/26/18 16:42	
Hexachlorobenzene	ug/L	ND	5.0	0.72	04/26/18 16:42	
Hexachlorocyclopentadiene	ug/L	ND	10.0	0.88	04/26/18 16:42	
Hexachloroethane	ug/L	ND	5.0	1.1	04/26/18 16:42	

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

METHOD BLANK: 2263603

Matrix: Water

Associated Lab Samples: 92382472001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Indeno(1,2,3-cd)pyrene	ug/L	ND	5.0	0.29	04/26/18 16:42	
Isophorone	ug/L	ND	10.0	0.89	04/26/18 16:42	
N-Nitroso-di-n-propylamine	ug/L	ND	5.0	0.99	04/26/18 16:42	
N-Nitrosodimethylamine	ug/L	ND	5.0	0.91	04/26/18 16:42	
N-Nitrosodiphenylamine	ug/L	ND	10.0	1.0	04/26/18 16:42	
Naphthalene	ug/L	ND	5.0	0.34	04/26/18 16:42	
Nitrobenzene	ug/L	ND	5.0	1.1	04/26/18 16:42	
Pentachlorophenol	ug/L	ND	10.0	4.6	04/26/18 16:42	
Phenanthrene	ug/L	ND	5.0	0.22	04/26/18 16:42	
Phenol	ug/L	ND	5.0	1.9	04/26/18 16:42	
Pyrene	ug/L	ND	5.0	0.19	04/26/18 16:42	
2,4,6-Tribromophenol (S)	%	70	10-137		04/26/18 16:42	
2-Fluorobiphenyl (S)	%	59	15-120		04/26/18 16:42	
2-Fluorophenol (S)	%	30	10-120		04/26/18 16:42	
Nitrobenzene-d5 (S)	%	63	10-120		04/26/18 16:42	
Phenol-d6 (S)	%	19	10-120		04/26/18 16:42	
Terphenyl-d14 (S)	%	51	11-131		04/26/18 16:42	

LABORATORY CONTROL SAMPLE: 2263604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	23.2	46	44-142	
2,2'-Oxybis(1-chloropropane)	ug/L	50	27.6	55	36-166	
2,4,6-Trichlorophenol	ug/L	50	39.9	80	37-144	
2,4-Dichlorophenol	ug/L	50	39.3	79	1-191	
2,4-Dimethylphenol	ug/L	50	40.3	81	32-119	
2,4-Dinitrophenol	ug/L	250	166	67	1-181	
2,4-Dinitrotoluene	ug/L	50	39.0	78	39-139	
2,6-Dinitrotoluene	ug/L	50	39.7	79	50-158	
2-Chloronaphthalene	ug/L	50	31.5	63	60-118	
2-Chlorophenol	ug/L	50	32.4	65	23-134	
2-Nitrophenol	ug/L	50	38.7	77	29-182	
3,3'-Dichlorobenzidine	ug/L	100	74.1	74	1-262	
4,6-Dinitro-2-methylphenol	ug/L	100	101	101	1-181	
4-Bromophenylphenyl ether	ug/L	50	36.1	72	53-127	
4-Chloro-3-methylphenol	ug/L	100	72.3	72	22-147	
4-Chlorophenylphenyl ether	ug/L	50	33.5	67	25-158	
4-Nitrophenol	ug/L	250	72.3	29	1-132	
Acenaphthene	ug/L	50	34.5	69	47-145	
Acenaphthylene	ug/L	50	34.7	69	33-145	
Anthracene	ug/L	50	38.6	77	1-166	
Benzo(a)anthracene	ug/L	50	38.8	78	33-143	
Benzo(a)pyrene	ug/L	50	37.0	74	17-163	
Benzo(b)fluoranthene	ug/L	50	37.0	74	24-159	

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

LABORATORY CONTROL SAMPLE: 2263604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(g,h,i)perylene	ug/L	50	34.9	70	1-219	
Benzo(k)fluoranthene	ug/L	50	37.3	75	11-162	
bis(2-Chloroethoxy)methane	ug/L	50	33.1	66	33-184	
bis(2-Chloroethyl) ether	ug/L	50	33.1	66	12-158	
bis(2-Ethylhexyl)phthalate	ug/L	50	36.0	72	8-158	
Butylbenzylphthalate	ug/L	50	36.2	72	1-152	
Chrysene	ug/L	50	39.2	78	17-168	
Di-n-butylphthalate	ug/L	50	36.5	73	1-118	
Di-n-octylphthalate	ug/L	50	41.6	83	4-146	
Dibenz(a,h)anthracene	ug/L	50	36.8	74	1-227	
Diethylphthalate	ug/L	50	37.3	75	1-114	
Dimethylphthalate	ug/L	50	36.1	72	1-112	
Fluoranthene	ug/L	50	38.7	77	26-137	
Fluorene	ug/L	50	37.2	74	59-121	
Hexachloro-1,3-butadiene	ug/L	50	18.7	37	24-116	
Hexachlorobenzene	ug/L	50	39.1	78	1-152	
Hexachlorocyclopentadiene	ug/L	50	28.4	57	25-150	
Hexachloroethane	ug/L	50	15.2	30	40-113 L2	
Indeno(1,2,3-cd)pyrene	ug/L	50	35.6	71	1-171	
Isophorone	ug/L	50	33.5	67	21-196	
N-Nitroso-di-n-propylamine	ug/L	50	34.3	69	1-230	
N-Nitrosodimethylamine	ug/L	50	20.5	41	25-150	
N-Nitrosodiphenylamine	ug/L	50	36.9	74	25-150	
Naphthalene	ug/L	50	26.8	54	21-133	
Nitrobenzene	ug/L	50	31.2	62	35-180	
Pentachlorophenol	ug/L	100	87.6	88	14-176	
Phenanthrene	ug/L	50	37.9	76	54-120	
Phenol	ug/L	50	14.8	30	5-112	
Pyrene	ug/L	50	40.1	80	52-115	
2,4,6-Tribromophenol (S)	%			83	10-137	
2-Fluorobiphenyl (S)	%			69	15-120	
2-Fluorophenol (S)	%			35	10-120	
Nitrobenzene-d5 (S)	%			65	10-120	
Phenol-d6 (S)	%			25	10-120	
Terphenyl-d14 (S)	%			52	11-131	

MATRIX SPIKE SAMPLE: 2263605

Parameter	Units	92382071001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	49	30.9	63	44-142	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	49	27.6	56	36-166	
2,4,6-Trichlorophenol	ug/L	ND	49	40.4	82	37-144	
2,4-Dichlorophenol	ug/L	ND	49	42.6	87	1-191	
2,4-Dimethylphenol	ug/L	ND	49	51.8	93	32-119	
2,4-Dinitrophenol	ug/L	ND	245	196	80	1-181	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

MATRIX SPIKE SAMPLE: 2263605		92382071001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
2,4-Dinitrotoluene	ug/L	ND	49	40.1	82	39-139	
2,6-Dinitrotoluene	ug/L	ND	49	38.1	78	50-158	
2-Chloronaphthalene	ug/L	ND	49	33.7	69	60-118	
2-Chlorophenol	ug/L	ND	49	32.8	67	23-134	
2-Nitrophenol	ug/L	ND	49	42.5	87	29-182	
3,3'-Dichlorobenzidine	ug/L	ND	98	59.0	60	1-262	
4,6-Dinitro-2-methylphenol	ug/L	ND	98	102	104	1-181	
4-Bromophenylphenyl ether	ug/L	ND	49	36.6	75	53-127	
4-Chloro-3-methylphenol	ug/L	ND	98	76.8	78	22-147	
4-Chlorophenylphenyl ether	ug/L	ND	49	35.2	72	25-158	
4-Nitrophenol	ug/L	ND	245	73.4	30	1-132	
Acenaphthene	ug/L	ND	49	36.1	74	47-145	
Acenaphthylene	ug/L	ND	49	36.3	74	33-145	
Anthracene	ug/L	ND	49	39.1	80	1-166	
Benzo(a)anthracene	ug/L	ND	49	37.9	77	33-143	
Benzo(a)pyrene	ug/L	ND	49	37.2	76	17-163	
Benzo(b)fluoranthene	ug/L	ND	49	36.8	75	24-159	
Benzo(g,h,i)perylene	ug/L	ND	49	34.9	71	1-219	
Benzo(k)fluoranthene	ug/L	ND	49	36.4	74	11-162	
bis(2-Chloroethoxy)methane	ug/L	ND	49	36.2	74	33-184	
bis(2-Chloroethyl) ether	ug/L	ND	49	32.5	66	12-158	
bis(2-Ethylhexyl)phthalate	ug/L	ND	49	34.2	70	8-158	
Butylbenzylphthalate	ug/L	ND	49	35.5	72	1-152	
Chrysene	ug/L	ND	49	38.3	78	17-168	
Di-n-butylphthalate	ug/L	ND	49	37.2	76	1-118	
Di-n-octylphthalate	ug/L	ND	49	39.3	80	4-146	
Dibenz(a,h)anthracene	ug/L	ND	49	36.2	74	1-227	
Diethylphthalate	ug/L	ND	49	37.1	76	1-114	
Dimethylphthalate	ug/L	ND	49	36.3	74	1-112	
Fluoranthene	ug/L	ND	49	40.1	82	26-137	
Fluorene	ug/L	ND	49	38.0	78	59-121	
Hexachloro-1,3-butadiene	ug/L	ND	49	27.0	55	24-116	
Hexachlorobenzene	ug/L	ND	49	37.8	77	1-152	
Hexachlorocyclopentadiene	ug/L	ND	49	35.0	71	25-150	
Hexachloroethane	ug/L	ND	49	36.7	75	40-113	
Indeno(1,2,3-cd)pyrene	ug/L	ND	49	35.5	72	1-171	
Isophorone	ug/L	ND	49	35.8	73	21-196	
N-Nitroso-di-n-propylamine	ug/L	ND	49	34.6	71	1-230	
N-Nitrosodimethylamine	ug/L	ND	49	23.8	49	25-150	
N-Nitrosodiphenylamine	ug/L	ND	49	36.8	75	25-150	
Naphthalene	ug/L	18.9	49	52.3	68	21-133	
Nitrobenzene	ug/L	ND	49	35.2	72	35-180	
Pentachlorophenol	ug/L	ND	98	94.5	96	14-176	
Phenanthrene	ug/L	ND	49	37.5	76	54-120	
Phenol	ug/L	ND	49	13.6	28	5-112	
Pyrene	ug/L	ND	49	37.7	77	52-115	
2,4,6-Tribromophenol (S)	%				81	10-137	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

MATRIX SPIKE SAMPLE: 2263605		92382071001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
2-Fluorobiphenyl (S)	%				70	15-120	
2-Fluorophenol (S)	%				33	10-120	
Nitrobenzene-d5 (S)	%				73	10-120	
Phenol-d6 (S)	%				22	10-120	
Terphenyl-d14 (S)	%				44	11-131	

SAMPLE DUPLICATE: 2263606

Parameter	Units	92382072001	Dup	RPD	Max	Qualifiers
		Result	Result		RPD	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	ND		30	
2,4,6-Trichlorophenol	ug/L	ND	ND		30	
2,4-Dichlorophenol	ug/L	ND	ND		30	
2,4-Dimethylphenol	ug/L	ND	ND		30	
2,4-Dinitrophenol	ug/L	ND	ND		30	
2,4-Dinitrotoluene	ug/L	ND	ND		30	
2,6-Dinitrotoluene	ug/L	ND	ND		30	
2-Chloronaphthalene	ug/L	ND	ND		30	
2-Chlorophenol	ug/L	ND	ND		30	
2-Nitrophenol	ug/L	ND	ND		30	
3,3'-Dichlorobenzidine	ug/L	ND	ND		30	
4,6-Dinitro-2-methylphenol	ug/L	ND	ND		30	
4-Bromophenylphenyl ether	ug/L	ND	ND		30	
4-Chloro-3-methylphenol	ug/L	ND	ND		30	
4-Chlorophenylphenyl ether	ug/L	ND	ND		30	
4-Nitrophenol	ug/L	ND	ND		30	
Acenaphthene	ug/L	ND	ND		30	
Acenaphthylene	ug/L	ND	ND		30	
Anthracene	ug/L	ND	ND		30	
Benzo(a)anthracene	ug/L	ND	ND		30	
Benzo(a)pyrene	ug/L	ND	ND		30	
Benzo(b)fluoranthene	ug/L	ND	ND		30	
Benzo(g,h,i)perylene	ug/L	ND	ND		30	
Benzo(k)fluoranthene	ug/L	ND	ND		30	
bis(2-Chloroethoxy)methane	ug/L	ND	ND		30	
bis(2-Chloroethyl) ether	ug/L	ND	ND		30	
bis(2-Ethylhexyl)phthalate	ug/L	ND	ND		30	
Butylbenzylphthalate	ug/L	ND	ND		30	
Chrysene	ug/L	ND	ND		30	
Di-n-butylphthalate	ug/L	ND	ND		30	
Di-n-octylphthalate	ug/L	ND	ND		30	
Dibenz(a,h)anthracene	ug/L	ND	ND		30	
Diethylphthalate	ug/L	ND	ND		30	
Dimethylphthalate	ug/L	ND	ND		30	
Fluoranthene	ug/L	ND	ND		30	

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### QUALITY CONTROL DATA

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

SAMPLE DUPLICATE: 2263606

Parameter	Units	92382072001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluorene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Hexachlorobenzene	ug/L	ND	ND		30	
Hexachlorocyclopentadiene	ug/L	ND	ND		30	
Hexachloroethane	ug/L	ND	ND		30	
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND		30	
Isophorone	ug/L	ND	ND		30	
N-Nitroso-di-n-propylamine	ug/L	ND	ND		30	
N-Nitrosodimethylamine	ug/L	ND	ND		30	
N-Nitrosodiphenylamine	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
Nitrobenzene	ug/L	ND	ND		30	
Pentachlorophenol	ug/L	ND	ND		30	
Phenanthrene	ug/L	ND	ND		30	
Phenol	ug/L	ND	ND		30	
Pyrene	ug/L	ND	ND		30	
2,4,6-Tribromophenol (S)	%	65	60	8		
2-Fluorobiphenyl (S)	%	53	52	0		
2-Fluorophenol (S)	%	26	27	6		
Nitrobenzene-d5 (S)	%	55	55	1		
Phenol-d6 (S)	%	17	21	18		
Terphenyl-d14 (S)	%	41	27	43		

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

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

S0 Surrogate recovery outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R-3830 WBS38887.1.1

Pace Project No.: 92382472

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92382472001	R-3830-P77178179-MW1	EPA 625	407970	EPA 625	408107
92382472001	R-3830-P77178179-MW1	SM 6200B	408585		

### REPORT OF LABORATORY ANALYSIS

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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

Laboratory receiving samples:  
 Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

Sample Condition Upon Receipt

Client Name:  
Kleinfelder

Project # **WO#: 92382472**



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

Custody Seal Present?  Yes  No Seals Intact?  Yes  No

Date/Initials Person Examining Contents: LRB 4-26-18

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): 3.7 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): 3.9

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 Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
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>WT</u>	
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY \_\_\_\_\_ Field Data Required?  Yes  No

Lot ID of split containers: \_\_\_\_\_

CLIENT NOTIFICATION/RESOLUTION

Person contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager SCURF Review: (Signature)

Date: 4/27

Project Manager SRF Review: (Signature)

Date: 4/27



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

Project #

**WO# : 92382472**

PM: PTE

Due Date: 05/03/18

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

CLIENT : 92-NCDOTEAST

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

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	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)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1	/	/	/	/	/	/	/	/	/	2	/	/	/	/	4	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	
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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: Kla.Felder  
 Address: 3200 Gateway Center Blvd  
Memphis, TN 37560  
 Email To: mbunson@kla.felder.com  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Requested Due Date/TAT: \_\_\_\_\_

**Section B**  
Required Project Information:

Report To: M. Ke Burns  
 Copy To: \_\_\_\_\_  
 Purchase Order No.: \_\_\_\_\_  
 Project Name: R-3830 WBS 55887.1.1  
 Project Number: R-3830 P977/75/79

**Section C**  
Invoice Information:

Attention: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Price Quote Reference: \_\_\_\_\_  
 Price Project Manager: Taylor Ezzell  
 Price Profile #: \_\_\_\_\_

**REGULATORY AGENCY**

NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  OTHER \_\_\_\_\_  
 Site Location STATE: NC

Page: 1 of 1  
 2056456

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	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)	SAMPLE CONDITIONS
					COMPOSITE START	COMPOSITE END/GRAB							
1	R-3830 - P977/75/79-MW1	Drinking Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	W	G	DATE	TIME	DATE	TIME	Unpreserved H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub> HCl NaOH Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Methanol Other	↓ Analysis Test ↓			
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

**ADDITIONAL COMMENTS**

RELINQUISHED BY / AFFILIATION: Taylor Ezzell / Kla.Felder DATE: 4/15/18 TIME: 15:55

ACCEPTED BY / AFFILIATION: M. Ke Burns DATE: 4/15/18 TIME: 15:55

**ADDITIONAL COMMENTS**

RELINQUISHED BY / AFFILIATION: M. Ke Burns DATE: 4/15/18 TIME: 07:30

ACCEPTED BY / AFFILIATION: M. Ke Burns DATE: 4/15/18 TIME: 07:30

RELINQUISHED BY / AFFILIATION: M. Ke Burns DATE: 4/15/18 TIME: 13:00

ACCEPTED BY / AFFILIATION: M. Ke Burns DATE: 4/15/18 TIME: 13:00

**ORIGINAL**

SAMPLER NAME AND SIGNATURE: \_\_\_\_\_  
 PRINT Name of SAMPLER: \_\_\_\_\_  
 SIGNATURE of SAMPLER: \_\_\_\_\_  
 DATE Signed (MM/DD/YY): \_\_\_\_\_

Temp in °C \_\_\_\_\_  
 Received on Ice (Y/N) \_\_\_\_\_  
 Custody Sealed Cooler (Y/N) \_\_\_\_\_  
 Samples Intact (Y/N) \_\_\_\_\_