Solutions-IES
Industrial & Environmental Services

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February 11, 2014

Mr. Terry Fox, L.G.
North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: **Preliminary Site Assessment**
Curtis Leach Property (Parcel #020)
101 Anthony Road
Rockwell, Rowan County, North Carolina
NCDOT Tip No. W-5316
WBS Element 46139.1.1
SIES Project No. 2013.0077.NDOT

Dear Mr. Fox:

Solutions-IES, Inc., (SIES) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated November 26, 2013, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated December 3, 2013. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for laboratory analysis, and reviewing applicable North Carolina Department of Environment and Natural Resources (NCDENR) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

Location and Description

The Curtis Leach Property (Parcel #020) is located at 101 Anthony Road in Rockwell, Rowan County, North Carolina. The property is situated on the east side of US 52 at the intersection of US 52, Anthony Road, and Gold Knob Road (**Figure 1**). Based on NCDOT-supplied information and a site visit, SIES understands that the site is a former gas station (NCDOT confirmed with 1965 aerial photography) where an unknown number of underground storage tanks (USTs) were used. As of the date of the site visit, the property accommodated two

businesses; a general store (This & That Trading Post) and a nail salon (**Figure 2**). The structures on the site consist of one large building housing the store adjacent and parallel to Anthony Road and a smaller structure on the north side of the store where the salon is located. An asphalt parking lot is in front of the buildings and a gravel area is between the store and Anthony Road. A remnant of the pump island can be observed in front of the store. The NCDOT has advised that the property will be taken in its entirety. Because of the site history as a former gas station, the NCDOT requested a Preliminary Site Assessment. The scope of work as defined in the Request for Technical and Cost Proposal was to evaluate the site with respect to the presence of known and unknown USTs and assess where contamination exists on the property. An estimate of the quantity of impacted soil was to be provided.

SIES reviewed the on-line NCDENR Incident Management database and no Incident Number has been assigned to the property. SIES also examined the UST registration database to obtain UST ownership information. According to the database, no USTs have been registered for this address.

Geophysical Survey

Prior to SIES's mobilization to the site, Pyramid Environmental conducted a geophysical survey as part of this project to evaluate if USTs were present on the property. The geophysical survey consisted of an electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, specifically USTs. A survey grid was laid out at the property with the X-axis oriented approximately parallel to Anthony Road and the Y-axis oriented approximately parallel to US 52. The grid was located to cover the accessible portions of the property. The survey lines were spaced 5 feet apart and magnetic data was collected continuously along each survey line with a data logger. After collection, the data was reviewed in the field with graphical computer software. Following the electromagnetic survey, a ground penetrating radar (GPR) survey was conducted to further evaluate any significant metallic anomalies if such a survey was considered necessary.

Access was available to all areas of the property and several anomalies were detected with the geophysical survey. Three of these anomalies were attributed to possible or probable USTs. The remainder of the anomalies was interpreted as buried utility lines or conduits, or vehicles. One anomaly was detected in front of the store and oriented east-west. The GPR data suggest that the anomaly is a probable UST approximately 10 feet long and 6 feet wide is present. Another anomaly occurred between the buildings. The GPR data suggest that the anomaly is a probable UST about 8 feet long and 5 feet wide. The data also suggest that the anomaly may be a septic tank. A third anomaly was detected in the gravel area between the store building and Anthony Road. The GPR data suggest that the anomaly is a possible UST about 9 feet long and 6 feet wide. The GPR signature was inconclusive; therefore, the anomaly was classified as a possible UST. The survey concluded that no other metallic USTs were present on the property. A detailed report of findings and interpretations is presented in **Attachment A**. Based on this information, SIES revised the sampling plan to incorporate borings at the identified anomalies.

Site Assessment Activities

On January 8, 2014, SIES mobilized to the site to conduct a Geoprobe® direct push investigation to evaluate soil conditions on the property. Continuous sampling using SIES's Geoprobe® resulted in generally good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in 4-foot long acetate sleeves inside the direct push sampler. Each of these sleeves was divided into 2-foot long sections for soil sample screening. Each 2-foot interval was placed in a resealable plastic bag and the bag was set aside for a sufficient amount of time to allow volatilization of organic compounds from the soil to the bag headspace. The probe of a flame ionization detector (FID) was inserted into the bag and the reading was recorded. After terminating the sample hole, the soil sample from the depth interval with the highest FID reading was submitted for analysis to Pace Analytical in Huntersville, North Carolina, using standard chain-of-custody procedures. The laboratory analyzed the soil samples for total petroleum hydrocarbons (TPH) in the diesel range organics (DRO) and gasoline range organics (GRO). At the direction of the NCDOT, SIES split the soil samples and submitted a second set to KB Mobile Labs to evaluate the DRO and GRO concentrations using QROS's ultraviolet fluorescence (UVF) technology.

Seven direct-push holes (SB-1 through SB-7) were advanced throughout the property to a depth of 15 feet as shown in **Figure 2** and **Attachment B**. Borings SB-1 and SB-2 were located to evaluate the subsurface area at the geophysical anomaly at the front of the store. Borings SB-3 and SB-4 were placed to assess soil conditions at the geophysical anomaly between the store and Anthony Road. Borings SB-5 and SB-6 were situated to evaluate subsurface soil at the geophysical anomaly between the two buildings, and boring SB-7 was used as a step-out boring to estimate the extent of potential petroleum contamination on the property (**Attachment C**). The lithology encountered by the direct-push samples generally was consistent throughout the site. The ground surface was covered with about 0.5 to 1 foot of gravel or fill material. Below the surface to a depth of about 8 to 10 feet was a reddish brown to orange to tan silty clay. Underlying this stratum was a tan to orange clayey silt saprolite. Borings SB-3 and SB-4 encountered a silty gravel at a depth of 8 to 8.5 feet. No bedrock was encountered in any of the borings. The "Geologic Map of North Carolina" dated 1985 indicates that the site is underlain by a metamorphosed volcanic sequence of interbedded tuffs and flowrocks. The saprolite observed at the site is consistent with this parent rock. All the borings were terminated at a depth of 15 to 16 feet. Groundwater was observed in several of the borings at a depth of about 13.5 feet. In borings SB-3 and SB-4, groundwater was noted in the gravel lens encountered at 8 feet. Based on field screening, soil samples were submitted for laboratory analyses, which are summarized in **Table 1**. Following the completion of each boring, it was backfilled in accordance with 15A NCAC 2C.

Analytical Results

Based on the laboratory reports, summarized in **Table 1** and presented in **Attachment D (**the laboratory reports inadvertently included other sites, so only the results attributable to the Leach site have been included), petroleum hydrocarbon compounds identified as DRO and/or GRO by UVF and Method 8015 were detected in three of the seven soil samples collected from the site (**Figure 3**). As part of its on-going evaluation of laboratories and analytical methods, NCDOT requested that SIES split all soil samples for DRO/GRO analysis; one split to be analyzed using EPA Method 8015 and one split to be analyzed using the UVF method. Some discrepancy between the methods exists for DRO detections; however, the concentrations are in reasonable

agreement within the same order of magnitude. The GRO results showed a large difference between the two analytical methods. For sample SB-1, the 8015 results were 5,170 mg/kg and the UVF results were 844.7 mg/kg. Sample SB-2 contained an 8015 GRO concentration of 5,230 mg/kg and an UVF GRO concentration of 989.9 mg/kg, and sample SB-7 contained an 8015 GRO concentration of 5,360 mg/kg and an UVF GRO concentration of 293.4 mg/kg. Because of the large discrepancy, each laboratory performing the analysis was contacted for a clarification. From these discussions, SIES understands that 8015 GRO includes all peaks that elute under the GRO range of compounds, some of which can be classified as either DRO or GRO or both. Conversely, the UVF GRO reports those constituents in a narrow and specific range of compounds, generally much narrower than the 8015 analysis. The UVF laboratory further clarified that the fingerprint analysis identified the presence of degraded kerosene, but their experience in North Carolina suggested that the fingerprint was actually weathered gasoline. For the 8015 method, the analysis includes a wider range of hydrocarbons without differentiating aromatics (lighter volatile organics), some overlapping the DRO/GRO spectrum, and the result is expected to be higher. For the UVF method that comprises a narrow range of hydrocarbons and includes a specific range of aromatics, product degradation will result in a loss of aromatics and, therefore, a significantly reduced analytical result. Within the context of the analytical method, SIES considers each result valid.

While SIES considers both analyses valid, the wide variations precluded using both sets of data for assessing the site. Because the Method 8015 concentrations included a wider range of compounds that may subsequently be detected in risk-based analyses, these data were used for the site assessment discussion. The soil samples from borings SB-1, SB-2, and SB-7 contained DRO and GRO concentrations above the method detection limit. According to the NCDENR UST Section's *Guidelines for Site Checks, Tank Closure, and Initial Response* dated December 1, 2013, the action level for TPH analyses is 10 milligrams per kilogram (mg/kg) for both gasoline and diesel fuel. However, that agency's *Guidelines for Assessment and Corrective Action* dated December 1, 2013, does not allow for use of TPH analyses for confirmation of the extent of petroleum contamination or its cleanup. As a result, while TPH concentrations are no longer applicable in cleanup confirmation, this analysis is a legitimate screening tool. Based on the TPH action level for UST closures, the action level for this report is 10 mg/kg. The DRO and

GRO concentrations in the soil samples from borings SB-1, SB-2, and SB-7 were present at a concentration above the 10 mg/kg assumed action level.

Conclusions and Recommendations

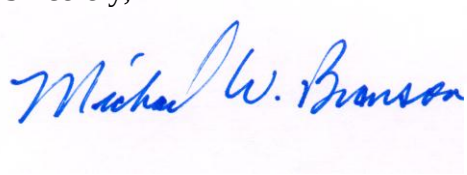
A Preliminary Site Assessment was conducted to evaluate the Curtis Leach Property (Parcel #020) located at 101 Anthony Road in Rockwell, Rowan County, North Carolina. A geophysical survey conducted at the site indicated that one possible and two probable USTs were detected at the property. One of the probable USTs was located in front of the store building and one probable UST (likely a septic tank) was detected between the two buildings. The possible UST was identified between the store building and Anthony Road. Seven soil borings were advanced to evaluate the subsurface soil conditions throughout the property, particularly at the potential USTs. The laboratory reports of the soil samples from these borings suggest that DRO and GRO concentrations were present above the action level in three of the seven soil samples analyzed. The location of these borings and the depth of contamination suggest that the contaminant source is the UST in front of the store building.

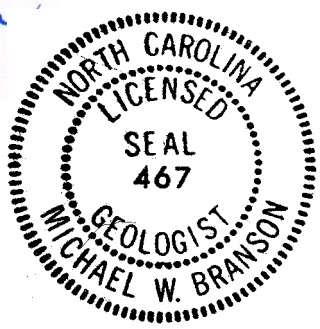
To evaluate the volume of soil requiring possible remediation, the soil samples with TPH concentrations above 10 mg/kg were considered. The analytical results of the soil samples show that the soil from borings SB-1 (3,440 mg/kg DRO; 5170 mg/kg GRO), SB-2 (3,220 mg/kg DRO; 5,170 mg/kg GRO), and SB-7 (528 mg/kg DRO; 5360 mg/kg GRO) contained TPH concentrations above the action level. SIES reviewed the field screening readings (**Table 1**) to estimate the thickness of the potentially contaminated soil. While there is no correlation between field screening results and laboratory results, SIES assumed, based on experience, that field screening readings over 50 parts per million (ppm) would equate to a TPH concentration above the action level. **Table 1** suggests that the thickness of the potentially contaminated soil is about 13 feet at SB-1 and SB-2, and about 8 feet at SB-7 for an average thickness of about 10.5 feet. After estimating the potential contamination geometry using field observations and experience with similar sites and geology, SIES measured the affected section on **Figure 3** by using CAD software, which indicated a total area of about 1,960 ft^2. Based on a 10.5-foot contamination thickness, this calculates to a volume of 762 cubic yards. This volume is estimated from TPH

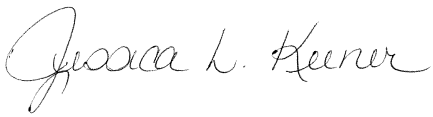
analytical data, which are no longer valid for remediation of sites reported after January 2, 1998. After that date, MADEP EPH/VPH and EPA Method 8260/8270 analyses will be required to confirm cleanup. However, these analyses do not correlate exactly with TPH data and, as a result, the actual volume of contaminated soil may be higher or lower.

SIES appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the action level in the soil samples, SIES recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Mooresville Regional Office. If you have any questions, please contact me at (919) 873-1060.

Sincerely,







Michael W. Branson, P.G.
Project Manager

Jessica Keener
Senior Hydrogeologist

Attachments

cc: Project File

TABLE 1

SOIL FIELD SCREENING AND ANALYTICAL RESULTS
LEACH PROPERTY (PARCEL #020)
ROCKWELL, ROWAN COUNTY, NORTH CAROLINA
NCDOT PROJECT NO. W-5316
WBS ELEMENT 46139.1.1
SIES PROJECT NO. 2013.0077.NDOT

LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ACTION LEVEL (mg/kg)
SB-1	0 - 2	1.02			
	2 - 4	72.56			
	4 - 6	1206			
	6 - 8	7824			
	8 - 10	21,200			
	10 - 12	90,800	SB-1	**8015 DRO (3440)** **8015 GRO (5170)** **UVF DRO (3504.6)** **UVF GRO (844.7)**	10 10 10 10
	12 - 14	>125,200			
	14 - 15	>125,200			
SB-2	0 - 2	49.82			
	2 - 4	640			
	4 - 6	3484			
	6 - 8	3002			
	8 - 10	7428			
	10 - 12	26,400	SB-2	**8015 DRO (3220)** **8015 GRO (5230)** **UVF DRO (2356)** **UVF GRO (989.9)**	10 10 10 10
	12 - 14	>125,200			
	14 - 15	>125,200			
SB-3	0 - 2	NR			
	2 - 4	4.7			
	4 - 6	7.25	SB-3	8015 DRO (<6.9) 8015 GRO (<7.4) UVF DRO (<0.9) UVF GRO (<0.9)	10 10 10 10
	6 - 8	6.19			
	8 - 10	6.75			
	10 - 12	4.62			
	12 - 14	4.83			
	14 - 15	4.54			
SB-4	0 - 2	1.89			
	2 - 4	1.48			
	4 - 6	1.23			
	6 - 8	1.59			
	8 - 10	7.92	SB-4	8015 DRO (<7.1) 8015 GRO (<8.1) UVF DRO (<0.8) UVF GRO (<0.8)	10 10 10 10
	10 - 12	17.32			
	12 - 14	19.68			
	14 - 15	20.42			

TABLE 1 (cont)

SOIL FIELD SCREENING AND ANALYTICAL RESULTS
LEACH PROPERTY (PARCEL #020)
ROCKWELL, ROWAN COUNTY, NORTH CAROLINA
NCDOT PROJECT NO. W-5316
WBS ELEMENT 46139.1.1
SIES PROJECT NO. 2013.0077.NDOT

LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ASSUMED ACTION LEVEL (mg/kg)
SB-5	0 - 2	0.1			
	2 - 4	0.08			
	4 - 6	0.09			
	6 - 8	0.77			
	8 - 10	3.34			
	10 - 12	8.77			
	12 - 14	9.02	SB-5	8015 DRO (<6.8) 8015 GRO (<6.7) UVF DRO (<0.8) UVF GRO (<0.8)	10 10 10 10
	14 - 15	8.64			
SB-6	0 - 2	0.13			
	2 - 4	0.05			
	4 - 6	0.07			
	6 - 8	0.5			
	8 - 10	1.27			
	10 - 12	2.12	SB-6	8015 DRO (<6.9) 8015 GRO (<6.7) UVF DRO (<0.7) UVF GRO (<0.7)	10 10 10 10
	12 - 14	2.05			
	14 - 15	2.02			
SB-7	0 - 2	0.8			
	2 - 4	0.29			
	4 - 6	9.77			
	6 - 8	26.02			
	8 - 10	182			
	10 - 12	842			
	12 - 14	70,200		**8015 DRO (528)** **8015 GRO (5360)** **UVF DRO (579.2)** **UVF GRO (293.4)**	10 10 10 10
	14 - 15	32,500			

Soil samples were collected on January 8, 2014.

8015 DRO - Diesel range organics by Method 8015.
8015 GRO - Gasoline range organics by Method 8015.
UVF DRO - Diesel range organics by UVF.
UVF GRO - Gasoline range organics by UVF.
ppm - parts per million.
mg/kg - milligrams per kilogram.
BOLD values are present above the action level.

FIGURES

PROJECT NUMBER 2013.0077.NDOT

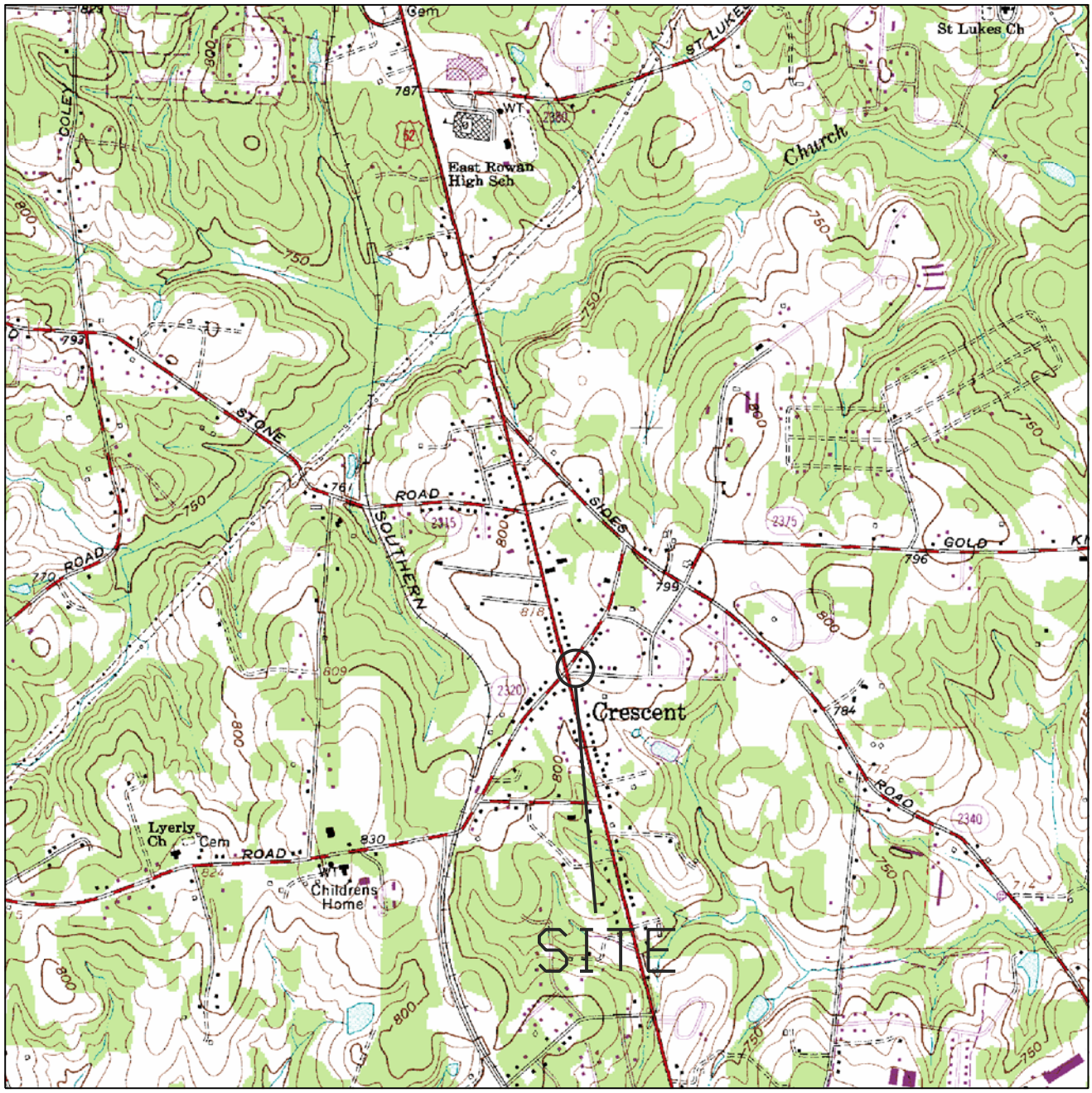
CHECKED BY MWB

PROJECT MANAGER MWB

DATE JANUARY 2013

ROWAN COUNTY PSA

FILE



SCALE 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: ROCKWELL, NC (REV 2013)

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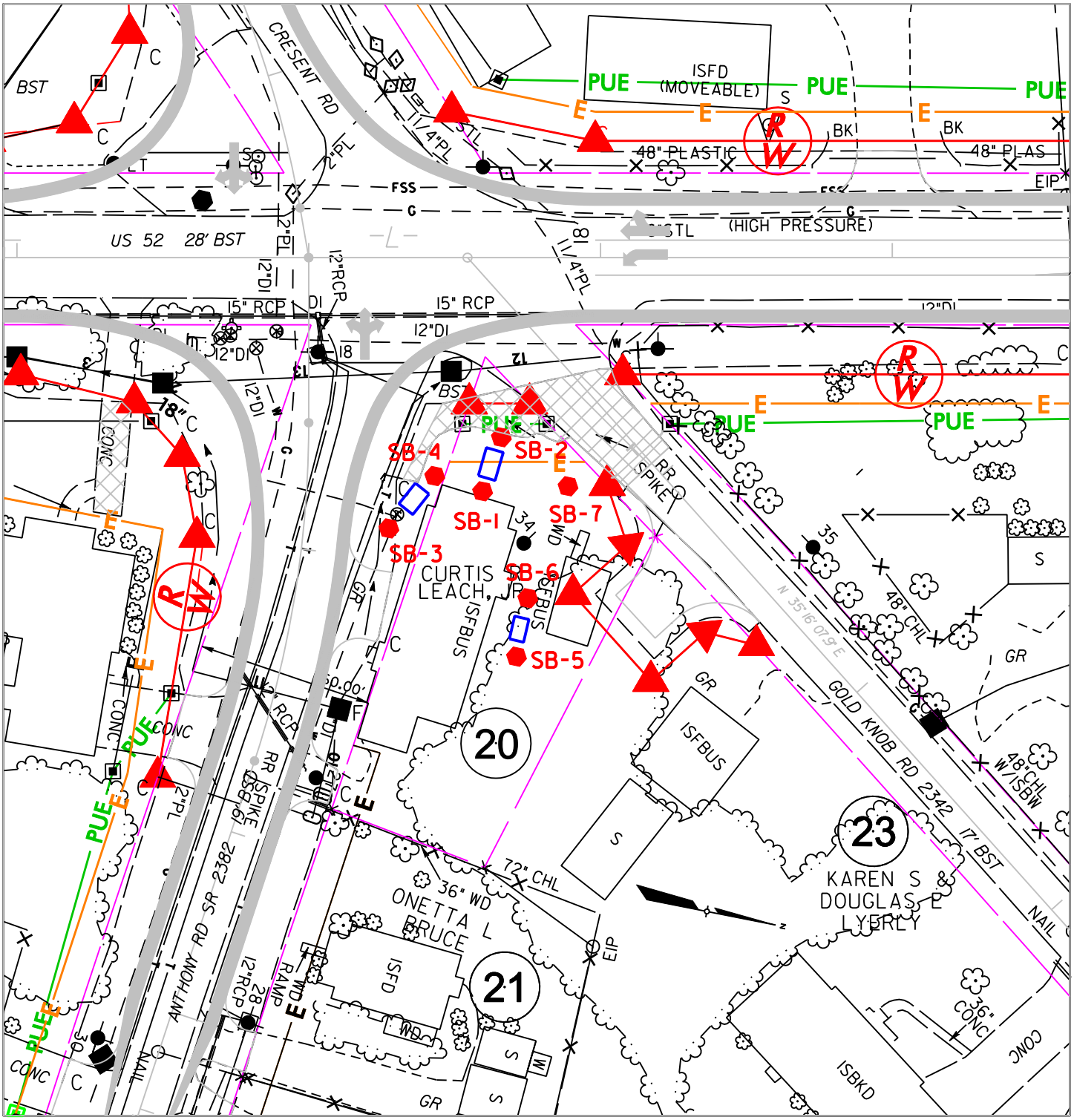
VICINITY MAP

CURTIS LEACH PROPERTY (PARCEL #020)
ROCKWELL, ROWAN COUNTY NORTH CAROLINA

FIGURE 1

PROJECT NUMBER 2013.0077.NDOT
DRAFTER MWB
CHECKED BY
PROJECT MANAGER MWB
DATE JANUARY 2013
FILE ROWAN CO PSA



LEGEND

SB-1

SOIL SAMPLE LOCATION AND IDENTIFICATION

APPROXIMATE PROBABLE/POSSIBLE UST LOCATIONS

Solutions-IES
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1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

SITE MAP

CURTIS LEACH PROPERTY (PARCEL #020)

ROCKWELL, ROWAN COUNTY, NORTH CAROLINA

FIGURE 2

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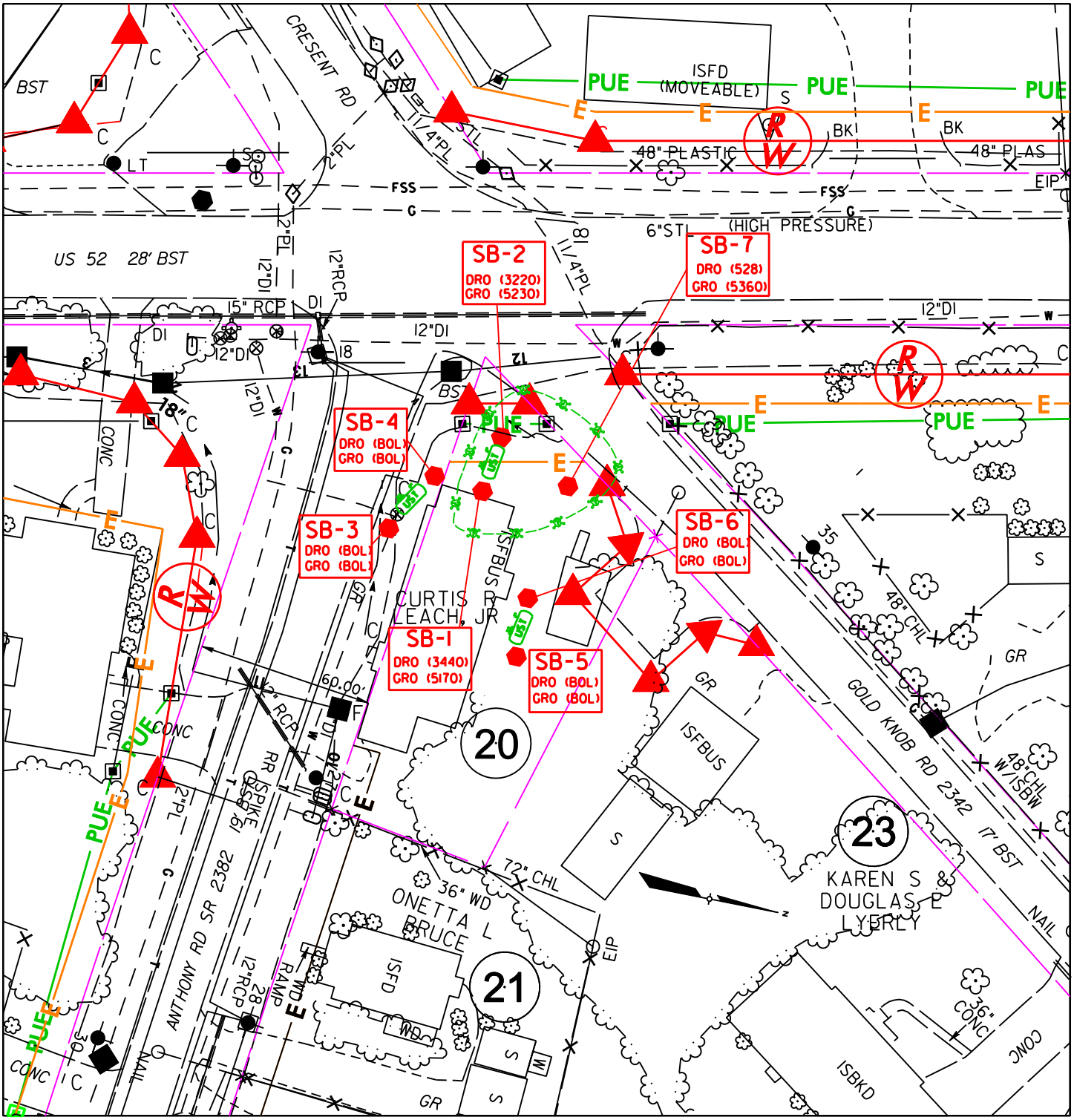

LEGEND

SB-1 SOIL SAMPLE LOCATION AND IDENTIFICATION

DRO (123) TPH AS DIESEL FUEL IN MG/KG

GRO (123) TPH AS GASOLINE IN MG/KG

BQL BELOW QUANTITATION LIMIT

APPROXIMATE POTENTIAL CONTAMINATION LIMIT (10 MG/KG)

0 25 50

GRAPHIC SCALE (FEET)

PROJECT NUMBER 2013.0077.NDOT

DRAFTER MWB

CHECKED BY

PROJECT MANAGER MWB

DATE JANUARY 2013

FILE ROWAN CO PSA

Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

SOIL SAMPLE ANALYTICAL RESULTS MAP

CURTIS LEACH PROPERTY (PARCEL #020)
ROCKWELL, ROWAN COUNTY, NORTH CAROLINA

FIGURE 3

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ATTACHMENT A

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2013-290)

GEOPHYSICAL SURVEY

PARCEL 020 –
U.S. HWY 52 AND CRESCENT ROAD
NCDOT PROJECT W-5316

ROCKWELL, ROWAN COUNTY, NC

JANUARY 3, 2013

Report prepared for: **Mike Branson**
Solutions, IES
1101 Nowell Road
Raleigh, North Carolina 27607

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

Reviewed by: _____
Douglas A. Canavello, P.G.
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P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 020, U.S. Hwy 52
Rockwell, Rowan County, North Carolina

Table of Contents

Figures

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Solutions, IES at Parcel 020, located at the northeast quadrant of the intersection of U.S. 52 and Crescent Road in Rockwell, Rowan County, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project W-5316). Solutions, IES directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to include all accessible areas across the entire parcel. The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys.

Geophysical Results: A suspected water line was observed to extend across the majority of the south survey boundary. A probable metallic UST was observed on the west side of the store building measuring approximately 10' x 6'. A possible metallic UST was observed on the southwest side of the building measuring approximately 9' x 6'. A probable metallic UST (suspected septic) was observed between the two buildings measuring approximately 8' x 5'.
All remaining anomalies were attributed to utilities or metallic debris. The geophysical investigation indicated the presence of two probable metallic USTs and one possible metallic UST at the property.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Solutions, IES at Parcel 020, located at the northeast quadrant of the intersection of U.S. 52 and Crescent Road in Rockwell, Rowan County, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project W-5316). Solutions, IES directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to include all accessible areas across the entire parcel. The survey grid spanned approximately 160 feet from west to east and approximately 100 feet from north to south. Conducted on December 12 and 13, 2013, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site contained an antique store and a small hair salon building, and consisted primarily of open gravel areas in front of the buildings and dirt/grass covered areas to the north and east. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 20-foot by 10-foot survey grid was established across the geophysical survey areas using measuring tapes and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. The EM survey was performed on December 12, 2013, using a Geonics EM61 metal detection instrument. 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, parallel survey lines spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics DAT61 and Surfer for Windows Version 11.0 software programs.

GPR data were acquired across select EM differential anomalies on December 13, 2013, using a Geophysical Survey Systems, Inc. (GSSI) SIR-2000 unit equipped with a 400 MHz antenna. Data were collected generally from east to west and north to south across the property. 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 8 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. GPR Transects across specific anomalies and areas of reinforced concrete were saved to the hard drive of the SIR unit for post-processing and figure generation.

DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results obtained across survey area at the property are presented in **Figure 2**. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines; small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drum and UST-size objects and ignore the smaller insignificant metal objects.

Discussion of EM Anomalies: Both of the buildings contained metal siding and possible reinforcement in their foundations, resulting in an EM response immediately surrounding the perimeter of each structure. The high amplitude EM feature at X=25, Y=105 was the result of a metal canopy at this location. However, the EM feature directly to the north at X=30, Y=95 was outside of the canopy area, and was consistent with the response associated with a metallic UST. This feature was investigated further with the GPR. The minor EM features to the north at X=25, Y=75, 65, and 55 were suspected to be the result of isolated metallic debris or a utility. The EM feature at X=52, Y=115 was not explained by any cultural features and was investigated further with the GPR. The EM feature at X=50, Y=105 was associated with a visible pipe protruding

from the ground surface. The EM features adjacent to the northwest corner of the store building were due to metal debris at the ground surface in this area. The EM feature at X=55, Y=35 was suspected to be due to a gas utility line. Similarly, the EM feature at X=75, Y=50 was associated with a visible gas meter. A metal sign base was observed at X=92, Y=55 that resulted in the surrounding EM responses. The EM feature at X=75, Y=65 was in the vicinity of a suspected septic tank, and was investigated further with the GPR. The EM feature extending along the majority of the survey area from east to west at the south survey boundary was suspected to be associated with a water line utility. The high amplitude EM responses at the northeast corner of the survey area were associated with a parked ATV and a metal gas line. Lastly, the high amplitude EM response adjacent to the east side of the store building was associated with metal siding scattered on the ground surface. All unknown anomalies, as well as suspected utilities, were investigated further with the GPR.

Discussion of GPR Survey: **Figure 3** presents the locations of the formal GPR transects performed at the property, as well as images of the transects. Additional reconnaissance GPR transects were performed and viewed in real time. The results of the GPR survey indicated the presence of two probable metallic USTs and one possible metallic UST. The remaining unexplained EM features were attributed to debris or utilities. A detailed discussion is presented below.

GPR Transects Across Suspected Utilities and Debris

GPR Transect 1 was performed across a suspected gas utility located on the northeast side of the hair salon building at the location of the EM anomaly at X=55, Y=35. This transect recorded a reflector that was consistent with a utility line. Additional reconnaissance transects traced the line outside of the survey area. GPR Transects 2 and 3 were performed across the minor EM anomalies on the west side of the survey area. These transects recorded isolated reflectors that were consistent with isolated metallic debris. GPR Transects 10, 11 and 12 were performed from north to south across the suspected water line extending across the south side of the survey area. All three transects verified the presence of an east/west oriented utility line extending across this area, suspected to be a water line. The remaining GPR transects were focused on suspected possible or probable metallic USTs.

Possible and Probable Metallic USTs

GPR Transects 4 and 5 were performed across the EM anomaly on the west side of the store building. These transects recorded reflectors that are consistent with a metallic UST. The combination of the significant EM response and the high amplitude GPR reflectors at this location results in categorizing this object as a **probable metallic UST**. The probable UST was observed to be approximately 10 feet long and 6 feet wide, at an approximate depth of 2.0-2.5 feet below the ground surface.

GPR Transects 6 and 7 were performed across the EM anomaly on the southwest side of the store building. This anomaly was directly adjacent to a visible pipe protruding from the ground surface. The GPR transects recorded evidence of a distinct object in the subsurface that may be a metallic UST. The flat nature of the top of the object and the proximity of the water line utility in this area suggests that the structure may also be related to the water line, such as an access vault or reinforced panel. For these reasons, the object has been categorized as a **possible metallic UST**. The possible UST was observed to be approximately 9 feet long and 6 feet wide, at an approximate depth of 2 feet below the ground surface.

GPR Transects 8 and 9 were performed across the EM anomaly between the two buildings on the property. During the field survey, a neighbor indicated that he had seen septic cleaning activities in this area, and indicated that a shared septic tank was present at this location connected to the two buildings. The GPR transects recorded reflectors that are consistent with a metallic UST. The combined high amplitude EM response and the GPR reflectors at this location results in categorizing the object as a **probable metallic UST,** likely the septic tank. The probable UST was approximately 8 feet long and 5 feet wide, at an approximate depth of 1.5-2.0 feet below the ground surface. Figure 4 presents the locations of all probable and possible USTs at the property.

Parcel 020 Probable/Possible UST Locations

North Carolina State Plane (US Survey Feet)

UST	Northing	Easting
Probable UST#1	667407.993	1577920.368
Probable UST#2	667432.957	1577963.349
Possible UST#1	667382.313	1577939.905

In addition to the GPR transects presented on Figure 4, general reconnaissance GPR surveys were performed across the site in areas with limited access, such as around the metallic debris and the ATV. A gas line was observed on the north side of the store building extending to the east. No evidence of additional USTs was observed.

The geophysical investigation indicated the presence of two probable metallic USTs and one possible metallic UST at the property. No evidence of additional USTs was recorded at the property.

SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across Parcel 020 in Rockwell, 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.
- Many of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as metal debris and the buildings, or were associated with utilities.
- A suspected water line was observed to extend across the majority of the south survey boundary.
- A probable metallic UST was observed on the west side of the store building measuring approximately 10’ x 6’.
- A possible metallic UST was observed on the southwest side of the building measuring approximately 9’ x 6’.
- A probable metallic UST (suspected septic) was observed between the two buildings measuring approximately 8’ x 5’.
- All remaining anomalies were attributed to utilities or metallic debris.
- The geophysical investigation indicated the presence of two probable metallic USTs and one possible metallic UST at the property.

LIMITATIONS

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

Approximate Boundaries of the Geophysical Survey Area

View of South Portion of Survey Area
(Facing Approximately East)

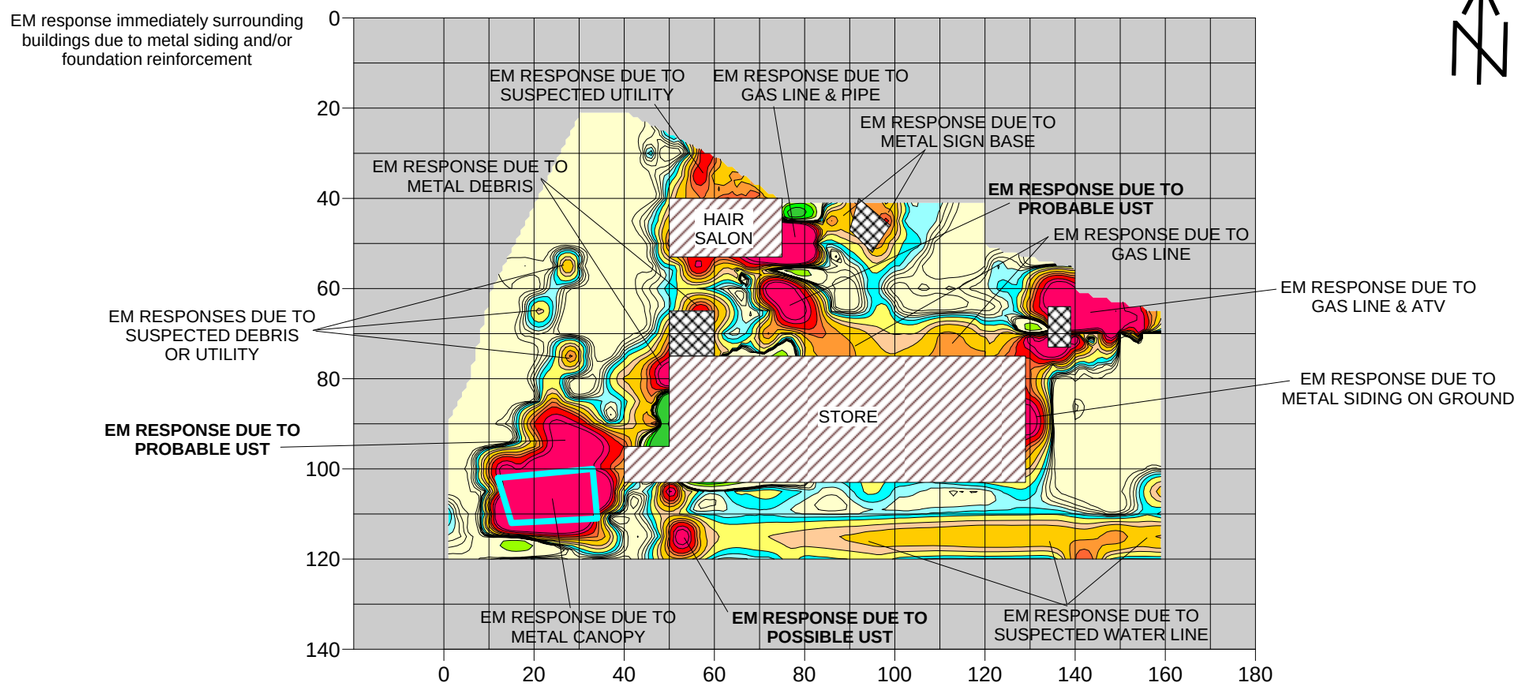
View of North Portion of Survey Area
(Facing Approximately East)

TITLE	PARCEL 20: GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
PROJECT	NCDOT PROJECT W-5316 ROCKWELL, ROWAN COUNTY, NC

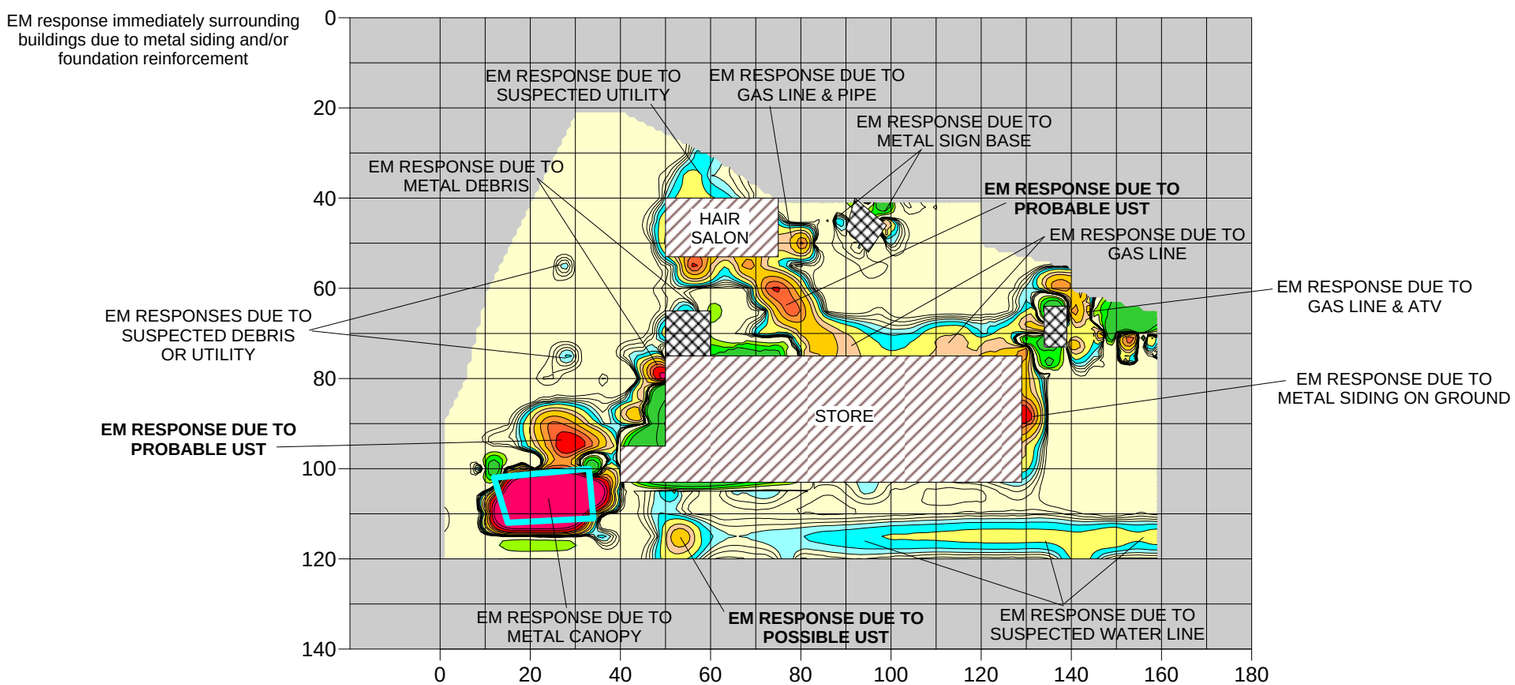
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 12/17/2013	CLIENT SOLUTIONS, IES
PYRAMID PROJECT #: 2013-290	**FIGURE 1**

EM61 Bottom Coil Results



EM61 Differential Results



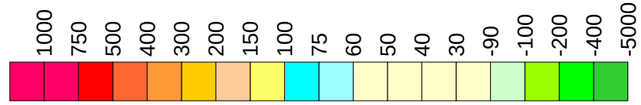
EVIDENCE OF TWO PROBABLE & ONE POSSIBLE METALLIC USTs OBSERVED

The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris.The EM61 data were collected on December 12, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were collected on December 13, 2013, using aGSSI SIR 2000 unit coupled to a 400 MHz antennae.

Outline of metal canopy

Visible metallic debris/structure (ATV)

EM61 Metal Detection Response (millivolts)



TITLE: PARCEL 20: EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAPS

PROJECT: NCDOT PROJECT W-5316 ROCKWELL, ROWAN COUNTY, NC

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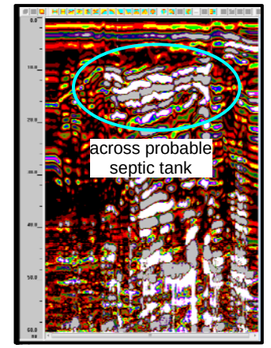
DATE: 12/17/2013

CLIENT: SOLUTIONS, IES

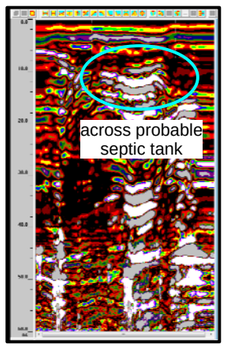
PYRAMID PROJECT #: 2013-290

FIGURE 2

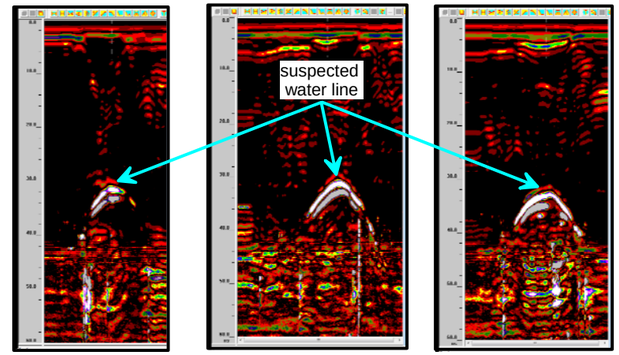
Approximate Locations of GPR Transects



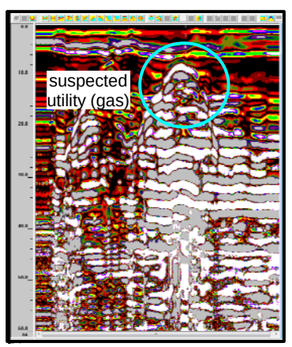
GPR Transect 8



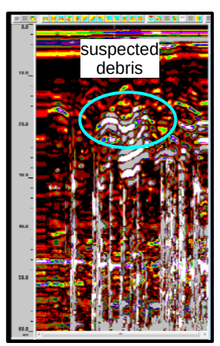
GPR Transect 9



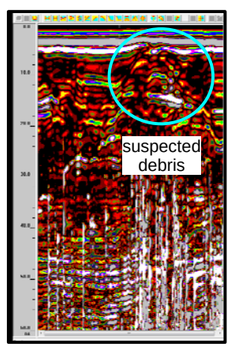
GPR Transects 10-12
Across Suspsected Water Line



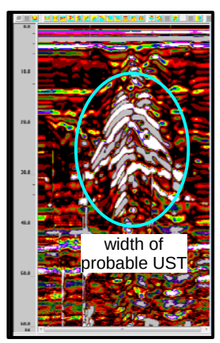
GPR Transect 1



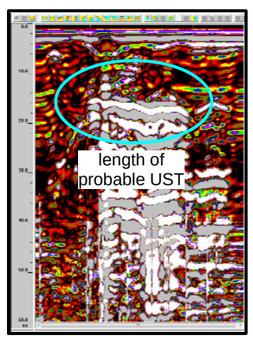
GPR Transect 2



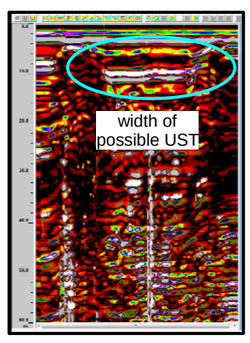
GPR Transect 3



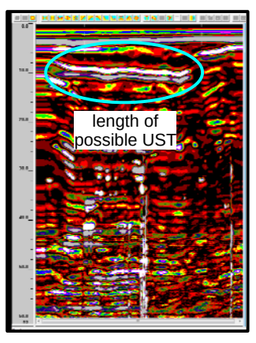
GPR Transect 4



GPR Transect 5



GPR Transect 6



GPR Transect 7

TITLE
PARCEL 20:
GPR TRANSECT LOCATIONS
AND SELECT IMAGES

PROJECT
NCDOT PROJECT W-5316
ROCKWELL, ROWAN COUNTY, NC

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DATE 12/17/2013

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PYRAMID PROJECT #: 2013-290

FIGURE 3

Probable UST #1

Probable UST #2

Possible UST #1

Parcel 020 Probable/Possible UST Locations

North Carolina State Plane (US Survey Feet)

UST	Northing	Easting
Probable UST#1	667407.993	1577920.368
Probable UST#2	667432.957	1577963.349
Possible UST#1	667382.313	1577939.905

Parcel 020 Probable & Possible UST Size/Depth

UST	Size	Depth (ft)
Probable UST #1	~ 10' x 6'	2.5'
Probable UST #2	~ 8' x 5'	1.5-2.0'
Possible UST #1	~ 9' x 6'	2.0'

TITLE

PARCEL 20:
APPROXIMATE LOCATIONS OF
POSSIBLE/PROBABLE USTs

PROJECT

NCDOT PROJECT W-5316
ROCKWELL, ROWAN COUNTY, NC

PYRAMID
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DATE 12/17/2013

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PYRAMID PROJECT #: 2013-290

FIGURE 4

ATTACHMENT B

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB1

BORING LOCATION:	Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT	
DRILLING CONTRACTOR:	Solutions-IES	DATE STARTED: 1/8/2014	DATE FINISHED: 1/8/2014
DRILLING METHOD:	Direct Push	TOTAL DEPTH (ftbgs): 16'	SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT:	Geoprobe 5400	NORTHING: NA	EASTING: NA
SAMPLING METHOD:	Macro Core	INITIAL DTW: NA	FINAL DTW: NA
LOGGED BY: Stewart Farling	CHECKED BY: MWB		

DEPTH (ftbgs)	SAMPLES: Sample ID	SAMPLES: Lab Sample	SAMPLES: Recovery	FID Reading (ppm)		DESCRIPTION OF MATERIALS
0–3			100%	1.0	CL	Red silty clay. Dry.
3–4				72.6	CL	Red, grey and brown silty clay with hydrocarbon odor. Dry.
4–7			100%	1,206	CL	Brown to orange silty clay. Dry.
7–9				7,825	CL	Brown, orange and grey silty clay with hydrocarbon odor. Dry.
9–10			100%	21,200	ML	Orange to brown clayey silt with hydrocarbon odor. Dry.
10–12	SB1			90,800	ML	Tan to orange clayey silt with hydrocarbon odor. Damp.
12–14			100%	>125,200	ML	Tan to orange clayey silt with hydrocarbon odor. Damp.
14–16				>125,200	ML	Brown, red and grey clayey silt with hydrocarbon odor. Damp.

End of Boring.

Notes: No groundwater encountered.

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB2

BORING LOCATION:	Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT	
DRILLING CONTRACTOR:	Solutions-IES	DATE STARTED: 1/8/2014	DATE FINISHED: 1/8/2014
DRILLING METHOD:	Direct Push	TOTAL DEPTH (ftbgs): 16'	SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT:	Geoprobe 5400	NORTHING: NA	EASTING: NA
SAMPLING METHOD:	Macro Core	INITIAL DTW: NA	FINAL DTW: NA
LOGGED BY: Stewart Farling	CHECKED BY: MWB		

DEPTH (ftbgs)	SAMPLES: Sample ID	SAMPLES: Lab Sample	SAMPLES: Recovery	PID Reading (ppm)		DESCRIPTION OF MATERIALS
0–3			100%	1.0	CL	Red silty clay. Dry.
				72.6		
3–5			100%	1,206	CL	Brownish red silty clay with hydrocarbon odor. Dry.
5–6					CL	Tan, orange and brown silty clay with hydrocarbon odor. Dry.
6–8				7,825	CL	Brown to orange silty clay. Dry.
8–9			100%	21,200	CL	Tan and brown silty clay. Dry.
9–10						
10–11	SB1			90,800	ML	Tan to orange clayey silt. Damp.
11–12						
12–14			100%	>125,200	ML	Orange and tan clayey silt with brown and grey mottling. Damp.
14–15				>125,200		
15–16					CL	Brown and red silty clay with grey mottling. Damp with hydrocarbon odor.

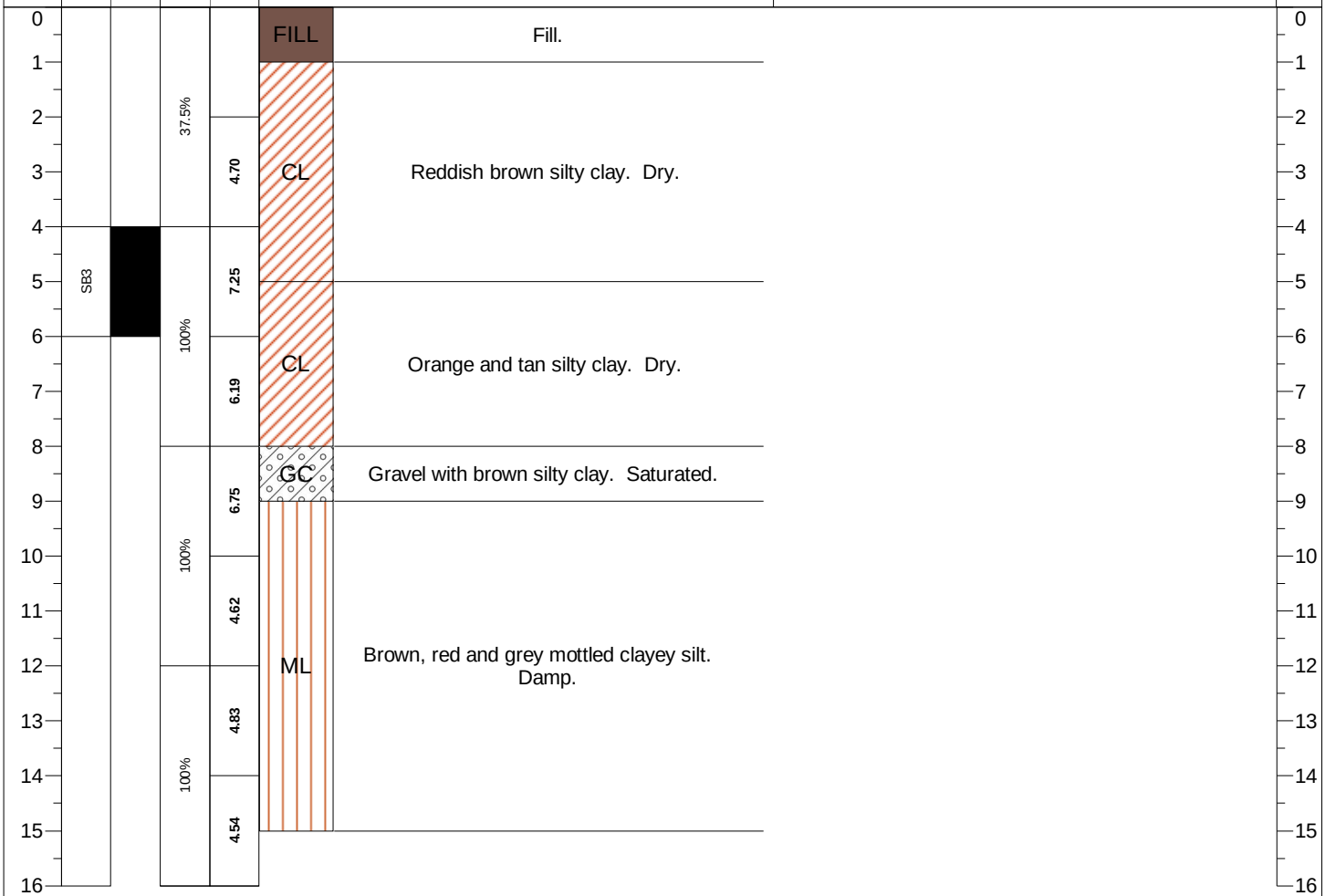
End of Boring.

Notes: Groundwater encountered at approximately 13.5' bgs.

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB3

BORING LOCATION:	Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT	
DRILLING CONTRACTOR:	Solutions-IES	DATE STARTED: 1/8/2014	DATE FINISHED: 1/8/2014
DRILLING METHOD:	Direct Push	TOTAL DEPTH (ftbgs): 16'	SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT:	Geoprobe 5400	NORTHING: NA	EASTING: NA
SAMPLING METHOD:	Macro Core	INITIAL DTW: NA	FINAL DTW: NA
LOGGED BY: Stewart Farling	CHECKED BY: MWB		



Notes: Groundwater encountered at approximately 8' bgs.

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB4

BORING LOCATION: Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT
DRILLING CONTRACTOR: Solutions-IES	DATE STARTED: 1/8/2014 — DATE FINISHED: 1/8/2014
DRILLING METHOD: Direct Push	TOTAL DEPTH (ftbgs): 15' — SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT: Geoprobe 5400	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Stewart Farling — CHECKED BY: MWB	

DEPTH (ftbgs)	SAMPLES: Sample ID	SAMPLES: Lab Sample	SAMPLES: Recovery	FID Reading (ppm)	DESCRIPTION OF MATERIALS
0–1			100%	1.89	FILL — Gravel fill.
1–5				1.48	CL — Reddish brown silty clay. Dry.
5–6			100%	1.23	CL — Orange and tan silty clay. Dry.
6–7				1.59	CL — Brown and tan silty clay with grey mottling. Dry.
7–8					GC — Gravel with brown silty clay. Damp.
8–10			100%	7.92	ML — Brown and red clayey silt with grey mottling. Damp.
10–11	SB3			17.32	
11–12					
12–14			100%	19.68	
14–15				20.42	
15–16					End of Boring.

Notes: Groundwater encountered at approximately 8' bgs.

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB5

BORING LOCATION: Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT
DRILLING CONTRACTOR: Solutions-IES	DATE STARTED: 1/8/2014 — DATE FINISHED: 1/8/2014
DRILLING METHOD: Direct Push	TOTAL DEPTH (ftbgs): 15' — SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT: Geoprobe 5400	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Stewart Farling — CHECKED BY: MWB	

DEPTH (ftbgs)	SAMPLES: Sample ID	SAMPLES: Lab Sample	SAMPLES: Recovery	FID Reading (ppm)	DESCRIPTION OF MATERIALS
0–1			100%	0.10	CL — Brown and red silty clay. Dry.
1–4				0.08	CL — Red and orange silty clay. Dry.
4–5			100%	0.09	CL — Orange silty clay. Dry.
5–10				0.77, 3.34	ML — Orange clayey silt. Dry.
10–12			100%	8.77	ML — Orange clayey silt. Dry.
12–13	SB5			9.02	ML — Orange clayey silt. Dry.
13–14			100%	9.02	ML — Orange clayey silt. Dry.
14–15				8.64	ML — Orange clayey silt. Dry.
15–16					End of Boring.

Notes: No groundwater encountered.

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB6

BORING LOCATION: Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT
DRILLING CONTRACTOR: Solutions-IES	DATE STARTED: 1/8/2014 — DATE FINISHED: 1/8/2014
DRILLING METHOD: Direct Push	TOTAL DEPTH (ftbgs): 15' — SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT: Geoprobe 5400	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Stewart Farling — CHECKED BY: MWB	

DEPTH (ftbgs)	SAMPLES: Sample ID	SAMPLES: Lab Sample	SAMPLES: Recovery	FID Reading (ppm)	DESCRIPTION OF MATERIALS
0–2			100%	0.13	FILL — Fill
2–4				0.05	CL — Red silty clay. Dry.
4–6			100%	0.07	ML — Orange and tan clayey silt. Saturated at 8'.
6–8				0.50	ML — Orange and tan clayey silt. Saturated at 8'.
8–10			100%	1.27	ML — Orange and tan clayey silt. Dry.
10–12	SB6	■		2.12	ML — Tan clayey silt. Dry.
12–14			100%	2.05	ML — Tan clayey silt. Dry.
14–15				2.02	ML — Tan clayey silt. Dry.
15–16					End of Boring.

Notes: Groundwater encountered at approximately 8' bgs.

Solutions-IES
Industrial & Environmental Services

Log of Soil Boring SB7

BORING LOCATION:	Rowan Co., NC - Parcel 20	PROJECT NUMBER: 2013.0077.NDOT	
DRILLING CONTRACTOR:	Solutions-IES	DATE STARTED: 1/8/2014	DATE FINISHED: 1/8/2014
DRILLING METHOD:	Direct Push	TOTAL DEPTH (ftbgs): 15'	SCREEN INTERVAL (ftbgs): NA
DRILLING EQUIPMENT:	Geoprobe 5400	NORTHING: NA	EASTING: NA
SAMPLING METHOD:	Macro Core	INITIAL DTW: NA	FINAL DTW: NA
LOGGED BY: Stewart Farling	CHECKED BY: MWB		

DEPTH (ftbgs)	SAMPLES: Sample ID	SAMPLES: Lab Sample	SAMPLES: Recovery	FID Reading (ppm)		DESCRIPTION OF MATERIALS
0					FILL	Fill.
1				0.80	ML	Brownish red clayey silt. Dry.
2			100%			
3				0.29	ML	Red clayey silt. Dry.
4					ML	Red to tan clayey silt. Dry.
5				9.77		
6			100%		ML	Tan clayey silt. Dry.
7				26.02		
8					ML	Tan to black clayey silty with grey mottling. Dry.
9				182.00	ML	Orange and brown clayey silt. Damp.
10			100%			
11				842.00		
12					ML	Same as above, hydrocarbon odor noted.
13	SB7			70,200		
14			100%			
15				32,500	ML	Orange, brown and red clayey silt with hydrocarbon odor. Damp.
16						

End of Boring.

Notes: No groundwater encountered.

ATTACHMENT C

PHOTO 1- BORING AT GEOPHYSICAL ANOMALY LOOKING EAST

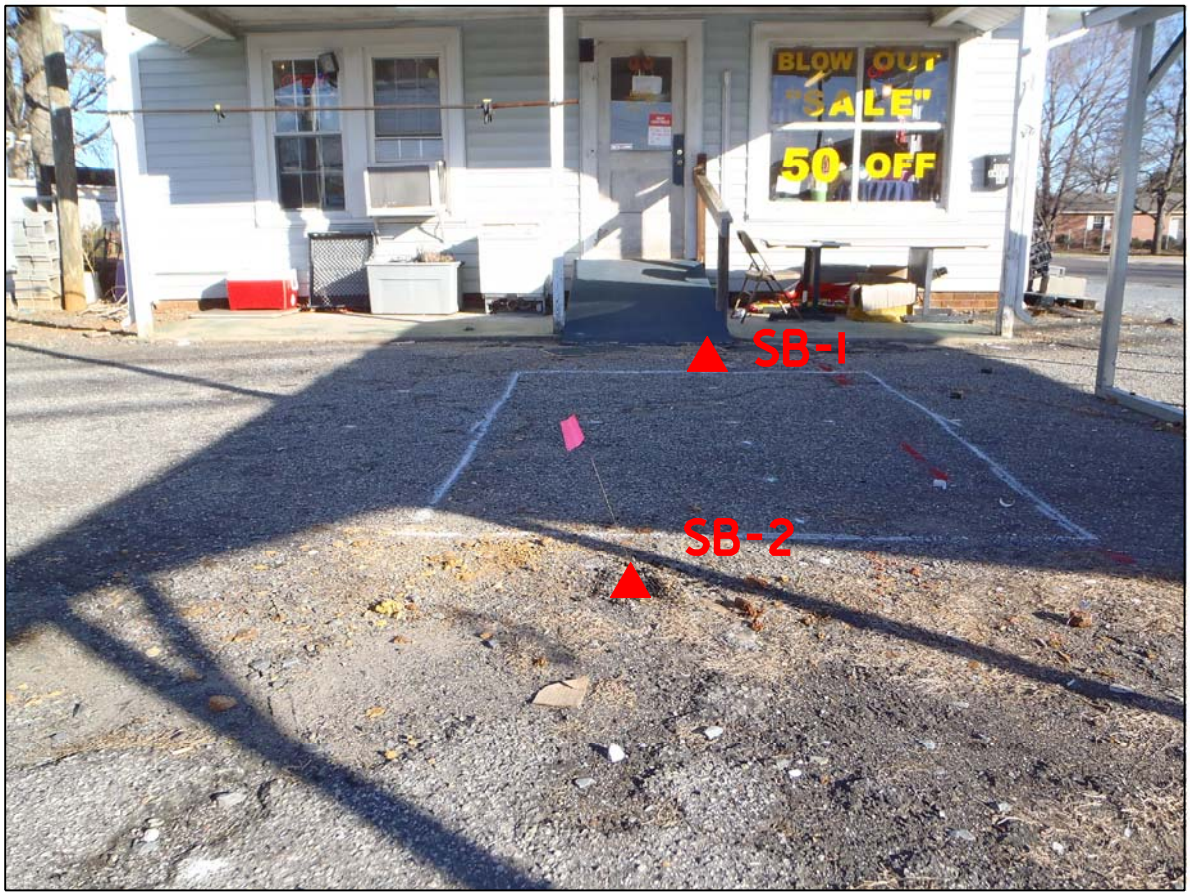


PHOTO 2 - BORINGS AT GEOPHYSICAL ANOMALY LOOKING EAST

PHOTO 3 - BORINGS AT GEOPHYSICAL ANOMALY LOOKING NORTHEAST

PHOTO 4 - BORINGS AT GEOPHYSICAL ANOMALY LOOOKING NORTHEAST

PHOTO 5 - BORING AT GEOPHYSICAL ANOMALY LOOKING EAST

PHOTO 6 - BORING AT GEOPHYSICAL ANOMALY LOOKING WEST

PHOTO 7 - STEP-OUT BORING LOOKING SOUTHEAST

ATTACHMENT D

Hydrocarbon Analysis Results

Client: Solutions IES
Address: Raleigh, NC

Samples taken 1/8/14, 1/9/14
Samples extracted 1/8/14, 1/9/14
Samples analysed Friday, January 10, 2014

Contact: Mike Branson

Operator Bob George

Project: Rowan Co. PSA

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	SB1	100.8	336.3	844.7	3504.6	4349.3	405.2	5.4	<0.25	99.6	0.3	0.1	Deg.Kerosene (est) 84.6%
s	SB2	110.9	452.3	989.9	2356	3345.9	253.3	3.7	<0.28	99.7	0.2	0.1	Deg.Kerosene (est) 79.1%
s	SB3	17.0	<0.9	<0.9	<0.9	<0.9	< 0.85	< 0.09	< 0.043	0	0	100	Match not possible
s	SB4	15.9	<0.8	<0.8	<0.8	<0.8	< 0.79	< 0.08	< 0.04	0	0	100	Match not possible
s	SB5	16.3	<0.8	<0.8	<0.8	<0.8	< 0.82	< 0.08	< 0.041	0	0	100	Match not possible
s	SB6	14.8	<0.7	<0.7	<0.7	<0.7	< 0.74	< 0.07	< 0.037	0	0	100	Match not possible
s	SB7	24.5	146.1	293.4	579.2	872.6	69.87	1.06	< 0.061	99.4	0.5	0.1	Deg Petrol (est) 72%

Initial Calibrator QC check OK

Low Range Calibrator Final check OK 0.080

High Range Calibrator Final check OK 1.515

Results generated by a QED HC-1 analyser

Concentration values in mg/kg for soil samples and mg/L for water samples.

Soil values are not corrected for moisture or stone content

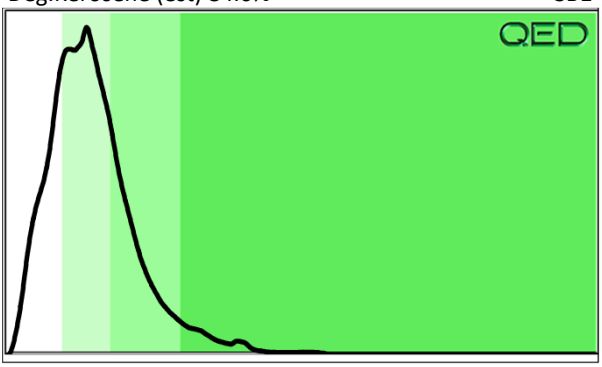
Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches

Fingerprint match abbreviations Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match

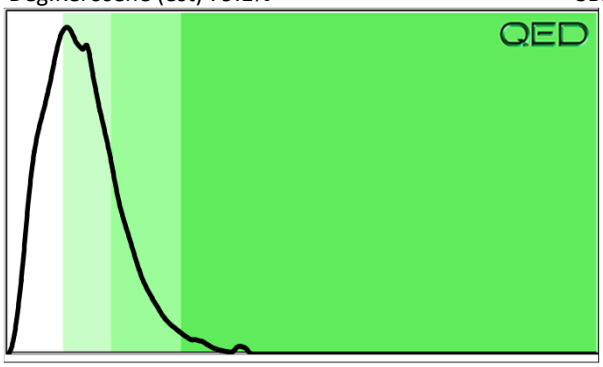
(SBS)= site specific background subracted (LBS)= Library background subtracted % = match confidence

Project Rowan Co. PSA **Date** Friday, January 10, 2014

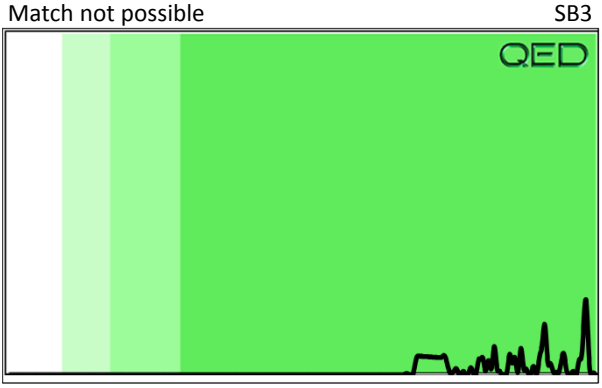
Deg.Kerosene (est) 84.6% SB1



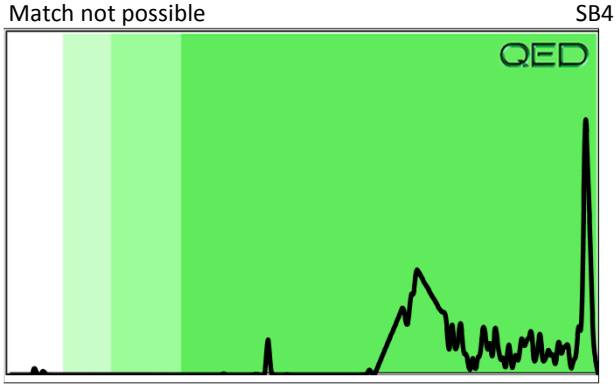
Deg.Kerosene (est) 79.1% SB2



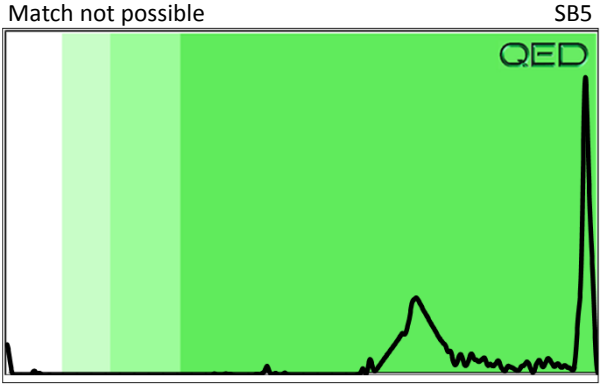
Match not possible SB3



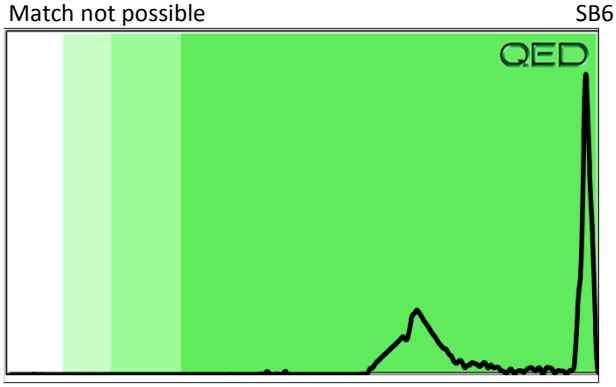
Match not possible SB4



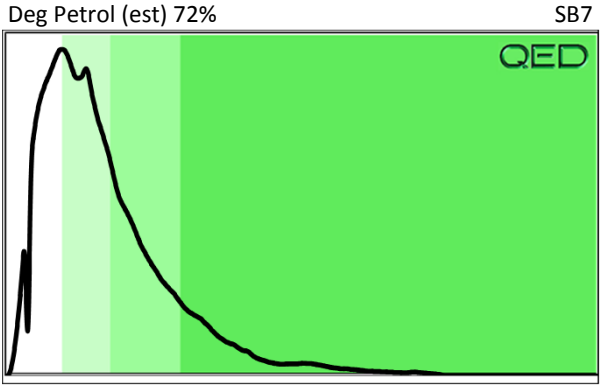
Match not possible SB5



Match not possible SB6



Deg Petrol (est) 72% SB7



KB LABS inc.
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

CHAIN-OF-CUSTODY RECORD

1 of 2

MOBILE UNIT #

CLIENT NAME	PROJECT NAME & ADDRESS
Solutions-JES	Bowman Co. PSA 2013.6011 NDOT
SAMPLERS	**CONTACT PERSON**
Stewart Farling	Mike Bowman

BATCH # (Lab Use Only)

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	DRO (C10-C28) - SIM			COMMENT
SB1	1/8/14	1500		X				S	1		X			petro odor
SB2	"	1501		"				"	"		"			petro odor
SB3		1502												
SB4		1503												
SB5		1504												
SB6		1505												
SB7		1506												
24-1		1115												
24-2		1116												
24-3	"	1119												
24-4	1/9/14	855												
24-5	↓	856												
24-6	↓	857		↓				↓	↓		↓			

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time	**Remarks and Observations**
	1/14/14 1220		1/15/14 1220	
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

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Huntersville, NC 28078
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January 29, 2014

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

RE: Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on January 11, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

The laboratory report is being reissued on January 29, 2014, due to laboratory log in error.

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

Sincerely,

Angela M. Baioni

Angela Baioni
angela.baioni@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92186113001	**SB-1**	Solid	01/08/14 15:00	01/11/14 10:20
92186113002	**SB-2**	Solid	01/08/14 15:01	01/11/14 10:20
92186113003	**SB-3**	Solid	01/08/14 15:02	01/11/14 10:20
92186113004	**SB-4**	Solid	01/08/14 15:03	01/11/14 10:20
92186113005	**SB-5**	Solid	01/08/14 15:04	01/11/14 10:20
92186113006	**SB-6**	Solid	01/08/14 15:05	01/11/14 10:20
92186113007	**SB-7**	Solid	01/08/14 15:06	01/11/14 10:20
		Solid	01/09/14 16:00	01/11/14 10:20
		Solid	01/09/14 16:02	01/11/14 10:20
		Solid	01/09/14 16:04	01/11/14 10:20
		Solid	01/09/14 16:06	01/11/14 10:20
		Solid	01/09/14 16:08	01/11/14 10:20
		Solid	01/09/14 16:10	01/11/14 10:20
		Solid	01/09/14 16:12	01/11/14 10:20
		Solid	01/09/14 16:14	01/11/14 10:20
		Solid	01/09/14 16:16	01/11/14 10:20
		Solid	01/09/14 16:20	01/11/14 10:20
		Solid	01/09/14 16:22	01/11/14 10:20
		Solid	01/09/14 16:40	01/11/14 10:20
		Solid	01/08/14 17:15	01/11/14 10:20
		Solid	01/08/14 17:16	01/11/14 10:20
		Solid	01/08/14 17:17	01/11/14 10:20
		Solid	01/09/14 08:55	01/11/14 10:20
		Solid	01/09/14 08:55	01/11/14 10:20
		Solid	01/09/14 08:57	01/11/14 10:20

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SAMPLE ANALYTE COUNT

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92186113001	**SB-1**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92186113002	**SB-2**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92186113003	**SB-3**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92186113004	**SB-4**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92186113005	**SB-5**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92186113006	**SB-6**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92186113007	**SB-7**	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
		EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
		EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
		EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
		EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
		EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
		EPA 8015 Modified	NU1	2	PASI-C

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-1 **Lab ID: 92186113001** Collected: 01/08/14 15:00 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	**3440**	mg/kg	68.3	61.5	10	01/13/14 14:20	01/15/14 15:21	68334-30-5	
Surrogates									
n-Pentacosane (S)	0	%	41-119		10	01/13/14 14:20	01/15/14 15:21	629-99-2	S4
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	**5170**	mg/kg	132	132	20	01/14/14 09:26	01/14/14 16:02	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	120	%	70-167		20	01/14/14 09:26	01/14/14 16:02	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**26.8**	%	0.10	0.10	1		01/17/14 09:32		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-2 **Lab ID: 92186113002** Collected: 01/08/14 15:01 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	**3220**	mg/kg	72.0	64.8	10	01/13/14 14:20	01/15/14 15:21	68334-30-5	
Surrogates									
n-Pentacosane (S)	0	%	41-119		10	01/13/14 14:20	01/15/14 15:21	629-99-2	S4
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	**5230**	mg/kg	138	138	20	01/14/14 09:26	01/14/14 16:25	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	130	%	70-167		20	01/14/14 09:26	01/14/14 16:25	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**30.6**	%	0.10	0.10	1		01/17/14 09:33		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-3 **Lab ID: 92186113003** Collected: 01/08/14 15:02 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.9	6.2	1	01/13/14 14:20	01/14/14 21:28	68334-30-5	
Surrogates									
n-Pentacosane (S)	69	%	41-119		1	01/13/14 14:20	01/14/14 21:28	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	7.4	7.4	1	01/14/14 09:26	01/14/14 14:06	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-167		1	01/14/14 09:26	01/14/14 14:06	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**27.9**	%	0.10	0.10	1		01/17/14 09:33		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-4 **Lab ID: 92186113004** Collected: 01/08/14 15:03 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	7.1	6.4	1	01/13/14 14:20	01/14/14 21:52	68334-30-5	
Surrogates									
n-Pentacosane (S)	71	%	41-119		1	01/13/14 14:20	01/14/14 21:52	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	8.1	8.1	1	01/14/14 09:26	01/14/14 14:29	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-167		1	01/14/14 09:26	01/14/14 14:29	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**29.2**	%	0.10	0.10	1		01/17/14 09:33		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-5 **Lab ID: 92186113005** Collected: 01/08/14 15:04 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.8	6.1	1	01/13/14 14:20	01/14/14 22:16	68334-30-5	
Surrogates									
n-Pentacosane (S)	65	%	41-119		1	01/13/14 14:20	01/14/14 22:16	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.7	6.7	1	01/14/14 09:26	01/14/14 14:52	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-167		1	01/14/14 09:26	01/14/14 14:52	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**26.1**	%	0.10	0.10	1		01/17/14 09:33		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-6 **Lab ID: 92186113006** Collected: 01/08/14 15:05 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.9	6.2	1	01/13/14 14:20	01/14/14 22:40	68334-30-5	
Surrogates									
n-Pentacosane (S)	71	%	41-119		1	01/13/14 14:20	01/14/14 22:40	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.7	6.7	1	01/16/14 09:28	01/16/14 11:04	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	109	%	70-167		1	01/16/14 09:28	01/16/14 11:04	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**27.8**	%	0.10	0.10	1		01/17/14 09:33		

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ANALYTICAL RESULTS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Sample: SB-7 **Lab ID: 92186113007** Collected: 01/08/14 15:06 Received: 01/11/14 10:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	**528**	mg/kg	15.1	13.6	2	01/13/14 14:20	01/15/14 15:45	68334-30-5	
Surrogates									
n-Pentacosane (S)	75	%	41-119		2	01/13/14 14:20	01/15/14 15:45	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	**5360**	mg/kg	80.9	80.9	10	01/16/14 09:28	01/16/14 19:04	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	155	%	70-167		10	01/16/14 09:28	01/16/14 19:04	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**33.7**	%	0.10	0.10	1		01/17/14 09:33		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: GCV/7709 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92186113001, 92186113002, 92186113003, 92186113004, 92186113005

METHOD BLANK: 1120401 Matrix: Solid
Associated Lab Samples: 92186113001, 92186113002, 92186113003, 92186113004, 92186113005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	01/14/14 10:38	
4-Bromofluorobenzene (S)	%	102	70-167	01/14/14 10:38	

LABORATORY CONTROL SAMPLE: 1120402

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	50	53.2	106	70-165	
4-Bromofluorobenzene (S)	%			96	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1120403 1120404

Parameter	Units	92185828001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	60.7	60.7	71.9	65.6	117	107	47-187	9	30	
4-Bromofluorobenzene (S)	%						107	106	70-167			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1120405 1120406

Parameter	Units	92185830001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	63.6	63.6	73.9	73.1	115	114	47-187	1	30	
4-Bromofluorobenzene (S)	%						106	109	70-167			

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: GCV/7714 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92186113006, 92186113007, 92186113008, 92186113009, 92186113010, 92186113011, 92186113012, 92186113013, 92186113014, 92186113015, 92186113016, 92186113017, 92186113018, 92186113019, 92186113020, 92186113021, 92186113022, 92186113023, 92186113024, 92186113025

METHOD BLANK: 1122174 Matrix: Solid
Associated Lab Samples: 92186113006, 92186113007, 92186113008, 92186113009, 92186113010, 92186113011, 92186113012, 92186113013, 92186113014, 92186113015, 92186113016, 92186113017, 92186113018, 92186113019, 92186113020, 92186113021, 92186113022, 92186113023, 92186113024, 92186113025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	01/16/14 10:41	
4-Bromofluorobenzene (S)	%	103	70-167	01/16/14 10:41	

LABORATORY CONTROL SAMPLE: 1122175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.6	52.7	106	70-165	
4-Bromofluorobenzene (S)	%			99	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1122176 1122177

Parameter	Units	92186113006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	56.1	56.1	63.4	62.1	113	110	47-187	2	30	
4-Bromofluorobenzene (S)	%						106	105	70-167			

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: MERP/6049 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 92186113017, 92186113018, 92186113019

METHOD BLANK: 1121654 Matrix: Solid
Associated Lab Samples: 92186113017, 92186113018, 92186113019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0050	01/15/14 18:25	

LABORATORY CONTROL SAMPLE: 1121655

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.067	0.071	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1121656 1121657

Parameter	Units	92186004001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.0045	.063	.053	.0023J	0.0043	-3	0	75-125		20	M1

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: MPRP/15050 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 92186113017, 92186113018, 92186113019

METHOD BLANK: 1121372 Matrix: Solid
Associated Lab Samples: 92186113017, 92186113018, 92186113019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	01/16/14 17:14	
Cadmium	mg/kg	ND	0.10	01/16/14 17:14	
Chromium	mg/kg	ND	0.50	01/16/14 17:14	
Lead	mg/kg	ND	0.50	01/16/14 17:14	
Selenium	mg/kg	ND	1.0	01/16/14 17:14	

LABORATORY CONTROL SAMPLE: 1121373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	49.7	99	80-120	
Cadmium	mg/kg	50	49.7	99	80-120	
Chromium	mg/kg	50	47.1	94	80-120	
Lead	mg/kg	50	49.9	100	80-120	
Selenium	mg/kg	50	49.9	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1121374 1121375

Parameter	Units	92186081001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1.1	61.5	51.3	59.0	46.3	94	88	75-125	24	20	R1
Cadmium	mg/kg	ND	61.5	51.3	57.8	45.0	94	88	75-125	25	20	R1
Chromium	mg/kg	2.3	61.5	51.3	58.5	46.3	91	86	75-125	23	20	R1
Lead	mg/kg	2.7	61.5	51.3	59.8	46.9	93	86	75-125	24	20	R1
Selenium	mg/kg	ND	61.5	51.3	57.3	44.4	93	86	75-125	25	20	R1

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: MSV/25542 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92186113017, 92186113018, 92186113019, 92186113024, 92186113025

METHOD BLANK: 1123342 Matrix: Solid
Associated Lab Samples: 92186113017, 92186113018, 92186113019, 92186113024, 92186113025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.5	01/17/14 12:16	
1,1,1-Trichloroethane	ug/kg	ND	5.5	01/17/14 12:16	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.5	01/17/14 12:16	
1,1,2-Trichloroethane	ug/kg	ND	5.5	01/17/14 12:16	
1,1-Dichloroethane	ug/kg	ND	5.5	01/17/14 12:16	
1,1-Dichloroethene	ug/kg	ND	5.5	01/17/14 12:16	
1,1-Dichloropropene	ug/kg	ND	5.5	01/17/14 12:16	
1,2,3-Trichlorobenzene	ug/kg	ND	5.5	01/17/14 12:16	
1,2,3-Trichloropropane	ug/kg	ND	5.5	01/17/14 12:16	
1,2,4-Trichlorobenzene	ug/kg	ND	5.5	01/17/14 12:16	
1,2,4-Trimethylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.5	01/17/14 12:16	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.5	01/17/14 12:16	
1,2-Dichlorobenzene	ug/kg	ND	5.5	01/17/14 12:16	
1,2-Dichloroethane	ug/kg	ND	5.5	01/17/14 12:16	
1,2-Dichloropropane	ug/kg	ND	5.5	01/17/14 12:16	
1,3,5-Trimethylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
1,3-Dichlorobenzene	ug/kg	ND	5.5	01/17/14 12:16	
1,3-Dichloropropane	ug/kg	ND	5.5	01/17/14 12:16	
1,4-Dichlorobenzene	ug/kg	ND	5.5	01/17/14 12:16	
2,2-Dichloropropane	ug/kg	ND	5.5	01/17/14 12:16	
2-Butanone (MEK)	ug/kg	ND	111	01/17/14 12:16	
2-Chlorotoluene	ug/kg	ND	5.5	01/17/14 12:16	
2-Hexanone	ug/kg	ND	55.3	01/17/14 12:16	
4-Chlorotoluene	ug/kg	ND	5.5	01/17/14 12:16	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	55.3	01/17/14 12:16	
Acetone	ug/kg	ND	111	01/17/14 12:16	
Benzene	ug/kg	ND	5.5	01/17/14 12:16	
Bromobenzene	ug/kg	ND	5.5	01/17/14 12:16	
Bromochloromethane	ug/kg	ND	5.5	01/17/14 12:16	
Bromodichloromethane	ug/kg	ND	5.5	01/17/14 12:16	
Bromoform	ug/kg	ND	5.5	01/17/14 12:16	
Bromomethane	ug/kg	ND	11.1	01/17/14 12:16	
Carbon tetrachloride	ug/kg	ND	5.5	01/17/14 12:16	
Chlorobenzene	ug/kg	ND	5.5	01/17/14 12:16	
Chloroethane	ug/kg	ND	11.1	01/17/14 12:16	
Chloroform	ug/kg	ND	5.5	01/17/14 12:16	
Chloromethane	ug/kg	ND	11.1	01/17/14 12:16	
cis-1,2-Dichloroethene	ug/kg	ND	5.5	01/17/14 12:16	
cis-1,3-Dichloropropene	ug/kg	ND	5.5	01/17/14 12:16	
Dibromochloromethane	ug/kg	ND	5.5	01/17/14 12:16	
Dibromomethane	ug/kg	ND	5.5	01/17/14 12:16	
Dichlorodifluoromethane	ug/kg	ND	11.1	01/17/14 12:16	

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

METHOD BLANK: 1123342 Matrix: Solid
Associated Lab Samples: 92186113017, 92186113018, 92186113019, 92186113024, 92186113025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.5	01/17/14 12:16	
Ethylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
Hexachloro-1,3-butadiene	ug/kg	ND	5.5	01/17/14 12:16	
Isopropylbenzene (Cumene)	ug/kg	ND	5.5	01/17/14 12:16	
m&p-Xylene	ug/kg	ND	11.1	01/17/14 12:16	
Methyl-tert-butyl ether	ug/kg	ND	5.5	01/17/14 12:16	
Methylene Chloride	ug/kg	ND	22.1	01/17/14 12:16	
n-Butylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
n-Propylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
Naphthalene	ug/kg	ND	5.5	01/17/14 12:16	
o-Xylene	ug/kg	ND	5.5	01/17/14 12:16	
p-Isopropyltoluene	ug/kg	ND	5.5	01/17/14 12:16	
sec-Butylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
Styrene	ug/kg	ND	5.5	01/17/14 12:16	
tert-Butylbenzene	ug/kg	ND	5.5	01/17/14 12:16	
Tetrachloroethene	ug/kg	ND	5.5	01/17/14 12:16	
Toluene	ug/kg	ND	5.5	01/17/14 12:16	
trans-1,2-Dichloroethene	ug/kg	ND	5.5	01/17/14 12:16	
trans-1,3-Dichloropropene	ug/kg	ND	5.5	01/17/14 12:16	
Trichloroethene	ug/kg	ND	5.5	01/17/14 12:16	
Trichlorofluoromethane	ug/kg	ND	5.5	01/17/14 12:16	
Vinyl acetate	ug/kg	ND	55.3	01/17/14 12:16	
Vinyl chloride	ug/kg	ND	11.1	01/17/14 12:16	
Xylene (Total)	ug/kg	ND	11.1	01/17/14 12:16	
1,2-Dichloroethane-d4 (S)	%	122	70-132	01/17/14 12:16	
4-Bromofluorobenzene (S)	%	83	70-130	01/17/14 12:16	
Toluene-d8 (S)	%	99	70-130	01/17/14 12:16	

LABORATORY CONTROL SAMPLE: 1123343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	55.7	52.9	95	70-131	
1,1,1-Trichloroethane	ug/kg	55.7	53.3	96	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	55.7	50.3	90	70-130	
1,1,2-Trichloroethane	ug/kg	55.7	51.5	92	70-132	
1,1-Dichloroethane	ug/kg	55.7	53.2	95	70-143	
1,1-Dichloroethene	ug/kg	55.7	55.0	99	70-137	
1,1-Dichloropropene	ug/kg	55.7	53.6	96	70-135	
1,2,3-Trichlorobenzene	ug/kg	55.7	45.6	82	69-153	
1,2,3-Trichloropropane	ug/kg	55.7	54.4	98	70-130	
1,2,4-Trichlorobenzene	ug/kg	55.7	43.7	79	55-171	
1,2,4-Trimethylbenzene	ug/kg	55.7	51.8	93	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	55.7	48.8	88	68-141	
1,2-Dibromoethane (EDB)	ug/kg	55.7	51.3	92	70-130	
1,2-Dichlorobenzene	ug/kg	55.7	52.0	93	70-140	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

LABORATORY CONTROL SAMPLE: 1123343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/kg	55.7	53.6	96	70-137	
1,2-Dichloropropane	ug/kg	55.7	52.5	94	70-133	
1,3,5-Trimethylbenzene	ug/kg	55.7	52.2	94	70-143	
1,3-Dichlorobenzene	ug/kg	55.7	50.5	91	70-144	
1,3-Dichloropropane	ug/kg	55.7	54.0	97	70-132	
1,4-Dichlorobenzene	ug/kg	55.7	51.9	93	70-142	
2,2-Dichloropropane	ug/kg	55.7	54.1	97	68-152	
2-Butanone (MEK)	ug/kg	111	94.1J	84	70-149	
2-Chlorotoluene	ug/kg	55.7	50.5	91	70-141	
2-Hexanone	ug/kg	111	108	97	70-149	
4-Chlorotoluene	ug/kg	55.7	51.8	93	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	111	107	96	70-153	
Acetone	ug/kg	111	106J	95	70-157	
Benzene	ug/kg	55.7	51.6	93	70-130	
Bromobenzene	ug/kg	55.7	50.8	91	70-141	
Bromochloromethane	ug/kg	55.7	52.6	95	70-149	
Bromodichloromethane	ug/kg	55.7	52.8	95	70-130	
Bromoform	ug/kg	55.7	51.9	93	70-131	
Bromomethane	ug/kg	55.7	57.5	103	64-136	
Carbon tetrachloride	ug/kg	55.7	53.8	97	70-154	
Chlorobenzene	ug/kg	55.7	52.3	94	70-135	
Chloroethane	ug/kg	55.7	54.3	97	68-151	
Chloroform	ug/kg	55.7	54.8	98	70-130	
Chloromethane	ug/kg	55.7	49.6	89	70-132	
cis-1,2-Dichloroethene	ug/kg	55.7	52.1	93	70-140	
cis-1,3-Dichloropropene	ug/kg	55.7	48.9	88	70-137	
Dibromochloromethane	ug/kg	55.7	52.2	94	70-130	
Dibromomethane	ug/kg	55.7	51.6	93	70-136	
Dichlorodifluoromethane	ug/kg	55.7	51.6	93	36-148	
Diisopropyl ether	ug/kg	55.7	56.7	102	70-139	
Ethylbenzene	ug/kg	55.7	53.4	96	70-137	
Hexachloro-1,3-butadiene	ug/kg	55.7	46.0	83	70-145	
Isopropylbenzene (Cumene)	ug/kg	55.7	56.4	101	70-141	
m&p-Xylene	ug/kg	111	111	100	70-140	
Methyl-tert-butyl ether	ug/kg	55.7	55.7	100	45-150	
Methylene Chloride	ug/kg	55.7	54.5	98	70-133	
n-Butylbenzene	ug/kg	55.7	53.9	97	65-155	
n-Propylbenzene	ug/kg	55.7	54.9	99	70-148	
Naphthalene	ug/kg	55.7	49.2	88	70-148	
o-Xylene	ug/kg	55.7	53.8	97	70-141	
p-Isopropyltoluene	ug/kg	55.7	54.4	98	70-148	
sec-Butylbenzene	ug/kg	55.7	55.6	100	70-145	
Styrene	ug/kg	55.7	55.1	99	70-138	
tert-Butylbenzene	ug/kg	55.7	53.5	96	70-143	
Tetrachloroethene	ug/kg	55.7	50.2	90	70-140	
Toluene	ug/kg	55.7	52.3	94	70-130	
trans-1,2-Dichloroethene	ug/kg	55.7	51.8	93	70-136	
trans-1,3-Dichloropropene	ug/kg	55.7	53.3	96	70-138	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

LABORATORY CONTROL SAMPLE: 1123343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	55.7	53.8	97	70-132	
Trichlorofluoromethane	ug/kg	55.7	57.5	103	69-134	
Vinyl acetate	ug/kg	111	119	107	24-161	
Vinyl chloride	ug/kg	55.7	53.9	97	55-140	
Xylene (Total)	ug/kg	167	165	99	70-141	
1,2-Dichloroethane-d4 (S)	%			103	70-132	
4-Bromofluorobenzene (S)	%			95	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE SAMPLE: 1124395

Parameter	Units	92186115001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	28.2	24.2	86	49-180	
Benzene	ug/kg	ND	28.2	29.8	105	50-166	
Chlorobenzene	ug/kg	ND	28.2	30.1	107	43-169	
Toluene	ug/kg	ND	28.2	45.3	160	52-163	
Trichloroethene	ug/kg	ND	28.2	29.5	105	49-167	
1,2-Dichloroethane-d4 (S)	%				120	70-132	
4-Bromofluorobenzene (S)	%				90	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 1124394

Parameter	Units	92186113017 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	6J		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	6.6		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	
1,3-Dichloropropane	ug/kg	ND	ND		30	
1,4-Dichlorobenzene	ug/kg	ND	ND		30	
2,2-Dichloropropane	ug/kg	ND	ND		30	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

SAMPLE DUPLICATE: 1124394

Parameter	Units	92186113017 Result	Dup Result	RPD	Max RPD	Qualifiers
2-Butanone (MEK)	ug/kg	ND	8J		30	
2-Chlorotoluene	ug/kg	ND	ND		30	
2-Hexanone	ug/kg	ND	ND		30	
4-Chlorotoluene	ug/kg	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		30	
Acetone	ug/kg	ND	69.2J		30	
Benzene	ug/kg	ND	ND		30	
Bromobenzene	ug/kg	ND	ND		30	
Bromochloromethane	ug/kg	ND	ND		30	
Bromodichloromethane	ug/kg	ND	ND		30	
Bromoform	ug/kg	ND	ND		30	
Bromomethane	ug/kg	ND	ND		30	
Carbon tetrachloride	ug/kg	ND	ND		30	
Chlorobenzene	ug/kg	ND	ND		30	
Chloroethane	ug/kg	ND	ND		30	
Chloroform	ug/kg	ND	ND		30	
Chloromethane	ug/kg	ND	ND		30	
cis-1,2-Dichloroethene	ug/kg	ND	ND		30	
cis-1,3-Dichloropropene	ug/kg	ND	ND		30	
Dibromochloromethane	ug/kg	ND	ND		30	
Dibromomethane	ug/kg	ND	ND		30	
Dichlorodifluoromethane	ug/kg	ND	ND		30	
Diisopropyl ether	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	
Hexachloro-1,3-butadiene	ug/kg	ND	ND		30	
Isopropylbenzene (Cumene)	ug/kg	ND	ND		30	
m&p-Xylene	ug/kg	ND	8.6J		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Methylene Chloride	ug/kg	ND	ND		30	
n-Butylbenzene	ug/kg	ND	ND		30	
n-Propylbenzene	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	5.4J		30	
o-Xylene	ug/kg	ND	2.6J		30	
p-Isopropyltoluene	ug/kg	ND	ND		30	
sec-Butylbenzene	ug/kg	ND	ND		30	
Styrene	ug/kg	ND	ND		30	
tert-Butylbenzene	ug/kg	ND	ND		30	
Tetrachloroethene	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	3.3J		30	
trans-1,2-Dichloroethene	ug/kg	ND	ND		30	
trans-1,3-Dichloropropene	ug/kg	ND	ND		30	
Trichloroethene	ug/kg	ND	ND		30	
Trichlorofluoromethane	ug/kg	ND	ND		30	
Vinyl acetate	ug/kg	ND	ND		30	
Vinyl chloride	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	107	100	5		
4-Bromofluorobenzene (S)	%	88	85	10		

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

SAMPLE DUPLICATE: 1124394

Parameter	Units	92186113017 Result	Dup Result	RPD	Max RPD	Qualifiers
Toluene-d8 (S)	%	99	100	14		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: OEXT/25495 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92186113001, 92186113002, 92186113003, 92186113004, 92186113005, 92186113006, 92186113007, 92186113008, 92186113009, 92186113010, 92186113011, 92186113012, 92186113013, 92186113014, 92186113016, 92186113017, 92186113018, 92186113019, 92186113020

METHOD BLANK: 1120120 Matrix: Solid
Associated Lab Samples: 92186113001, 92186113002, 92186113003, 92186113004, 92186113005, 92186113006, 92186113007, 92186113008, 92186113009, 92186113010, 92186113011, 92186113012, 92186113013, 92186113014, 92186113016, 92186113017, 92186113018, 92186113019, 92186113020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	01/14/14 20:41	
n-Pentacosane (S)	%	77	41-119	01/14/14 20:41	

LABORATORY CONTROL SAMPLE: 1120121

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	49.5	74	49-113	
n-Pentacosane (S)	%			81	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1120122 1120123

Parameter	Units	92186113004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Components	mg/kg	ND	94.2	94.2	65.3	49.5	68	51	10-146	28	30	
n-Pentacosane (S)	%						73	53	41-119			

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: OEXT/25503 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92186113021, 92186113022, 92186113023, 92186113024, 92186113025

METHOD BLANK: 1120384 Matrix: Solid
Associated Lab Samples: 92186113021, 92186113022, 92186113023, 92186113024, 92186113025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	01/15/14 01:49	
n-Pentacosane (S)	%	76	41-119	01/15/14 01:49	

LABORATORY CONTROL SAMPLE: 1120385

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	51.4	77	49-113	
n-Pentacosane (S)	%			79	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1120386 1120387

Parameter	Units	92186150001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Components	mg/kg	ND	87.4	87.4	63.5	65.8	72	74	10-146	4	30	
n-Pentacosane (S)	%						76	77	41-119			

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: OEXT/25493 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 Solid MSSV Microwave
Associated Lab Samples: 92186113017, 92186113018, 92186113019

METHOD BLANK: 1120090 Matrix: Solid
Associated Lab Samples: 92186113017, 92186113018, 92186113019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	01/14/14 11:51	
1,2-Dichlorobenzene	ug/kg	ND	330	01/14/14 11:51	
1,3-Dichlorobenzene	ug/kg	ND	330	01/14/14 11:51	
1,4-Dichlorobenzene	ug/kg	ND	330	01/14/14 11:51	
1-Methylnaphthalene	ug/kg	ND	330	01/14/14 11:51	
2,4,5-Trichlorophenol	ug/kg	ND	330	01/14/14 11:51	
2,4,6-Trichlorophenol	ug/kg	ND	330	01/14/14 11:51	
2,4-Dichlorophenol	ug/kg	ND	330	01/14/14 11:51	
2,4-Dimethylphenol	ug/kg	ND	330	01/14/14 11:51	
2,4-Dinitrophenol	ug/kg	ND	1650	01/14/14 11:51	
2,4-Dinitrotoluene	ug/kg	ND	330	01/14/14 11:51	
2,6-Dinitrotoluene	ug/kg	ND	330	01/14/14 11:51	
2-Chloronaphthalene	ug/kg	ND	330	01/14/14 11:51	
2-Chlorophenol	ug/kg	ND	330	01/14/14 11:51	
2-Methylnaphthalene	ug/kg	ND	330	01/14/14 11:51	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	01/14/14 11:51	
2-Nitroaniline	ug/kg	ND	1650	01/14/14 11:51	
2-Nitrophenol	ug/kg	ND	330	01/14/14 11:51	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	330	01/14/14 11:51	
3,3'-Dichlorobenzidine	ug/kg	ND	1650	01/14/14 11:51	
3-Nitroaniline	ug/kg	ND	1650	01/14/14 11:51	
4,6-Dinitro-2-methylphenol	ug/kg	ND	660	01/14/14 11:51	
4-Bromophenylphenyl ether	ug/kg	ND	330	01/14/14 11:51	
4-Chloro-3-methylphenol	ug/kg	ND	660	01/14/14 11:51	
4-Chloroaniline	ug/kg	ND	1650	01/14/14 11:51	
4-Chlorophenylphenyl ether	ug/kg	ND	330	01/14/14 11:51	
4-Nitroaniline	ug/kg	ND	660	01/14/14 11:51	
4-Nitrophenol	ug/kg	ND	1650	01/14/14 11:51	
Acenaphthene	ug/kg	ND	330	01/14/14 11:51	
Acenaphthylene	ug/kg	ND	330	01/14/14 11:51	
Aniline	ug/kg	ND	330	01/14/14 11:51	
Anthracene	ug/kg	ND	330	01/14/14 11:51	
Benzo(a)anthracene	ug/kg	ND	330	01/14/14 11:51	
Benzo(a)pyrene	ug/kg	ND	330	01/14/14 11:51	
Benzo(b)fluoranthene	ug/kg	ND	330	01/14/14 11:51	
Benzo(g,h,i)perylene	ug/kg	ND	330	01/14/14 11:51	
Benzo(k)fluoranthene	ug/kg	ND	330	01/14/14 11:51	
Benzoic Acid	ug/kg	ND	1650	01/14/14 11:51	
Benzyl alcohol	ug/kg	ND	660	01/14/14 11:51	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	01/14/14 11:51	
bis(2-Chloroethyl) ether	ug/kg	ND	330	01/14/14 11:51	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	01/14/14 11:51	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	01/14/14 11:51	

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

METHOD BLANK: 1120090 Matrix: Solid
Associated Lab Samples: 92186113017, 92186113018, 92186113019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	01/14/14 11:51	
Chrysene	ug/kg	ND	330	01/14/14 11:51	
Di-n-butylphthalate	ug/kg	ND	330	01/14/14 11:51	
Di-n-octylphthalate	ug/kg	ND	330	01/14/14 11:51	
Dibenz(a,h)anthracene	ug/kg	ND	330	01/14/14 11:51	
Dibenzofuran	ug/kg	ND	330	01/14/14 11:51	
Diethylphthalate	ug/kg	ND	330	01/14/14 11:51	
Dimethylphthalate	ug/kg	ND	330	01/14/14 11:51	
Fluoranthene	ug/kg	ND	330	01/14/14 11:51	
Fluorene	ug/kg	ND	330	01/14/14 11:51	
Hexachloro-1,3-butadiene	ug/kg	ND	330	01/14/14 11:51	
Hexachlorobenzene	ug/kg	ND	330	01/14/14 11:51	
Hexachlorocyclopentadiene	ug/kg	ND	330	01/14/14 11:51	
Hexachloroethane	ug/kg	ND	330	01/14/14 11:51	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	01/14/14 11:51	
Isophorone	ug/kg	ND	330	01/14/14 11:51	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	01/14/14 11:51	
N-Nitrosodimethylamine	ug/kg	ND	330	01/14/14 11:51	
N-Nitrosodiphenylamine	ug/kg	ND	330	01/14/14 11:51	
Naphthalene	ug/kg	ND	330	01/14/14 11:51	
Nitrobenzene	ug/kg	ND	330	01/14/14 11:51	
Pentachlorophenol	ug/kg	ND	1650	01/14/14 11:51	
Phenanthrene	ug/kg	ND	330	01/14/14 11:51	
Phenol	ug/kg	ND	330	01/14/14 11:51	
Pyrene	ug/kg	ND	330	01/14/14 11:51	
2,4,6-Tribromophenol (S)	%	46	27-110	01/14/14 11:51	
2-Fluorobiphenyl (S)	%	48	30-110	01/14/14 11:51	
2-Fluorophenol (S)	%	48	13-110	01/14/14 11:51	
Nitrobenzene-d5 (S)	%	47	23-110	01/14/14 11:51	
Phenol-d6 (S)	%	52	22-110	01/14/14 11:51	
Terphenyl-d14 (S)	%	90	28-110	01/14/14 11:51	

LABORATORY CONTROL SAMPLE: 1120091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	3330	2300	69	39-101	
1,2-Dichlorobenzene	ug/kg	3330	2180	65	36-110	
1,3-Dichlorobenzene	ug/kg	3330	2220	67	35-110	
1,4-Dichlorobenzene	ug/kg	3330	2230	67	35-110	
1-Methylnaphthalene	ug/kg	3330	2610	78	45-105	
2,4,5-Trichlorophenol	ug/kg	3330	3170	95	48-109	
2,4,6-Trichlorophenol	ug/kg	3330	2770	83	45-111	
2,4-Dichlorophenol	ug/kg	3330	2690	81	51-116	
2,4-Dimethylphenol	ug/kg	3330	2760	83	42-103	
2,4-Dinitrophenol	ug/kg	16700	13200	79	28-103	

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

LABORATORY CONTROL SAMPLE: 1120091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrotoluene	ug/kg	3330	3260	98	46-114	
2,6-Dinitrotoluene	ug/kg	3330	3340	100	48-112	
2-Chloronaphthalene	ug/kg	3330	2250	68	44-105	
2-Chlorophenol	ug/kg	3330	2610	78	36-110	
2-Methylnaphthalene	ug/kg	3330	2730	82	39-112	
2-Methylphenol(o-Cresol)	ug/kg	3330	2720	81	39-101	
2-Nitroaniline	ug/kg	6670	6010	90	44-111	
2-Nitrophenol	ug/kg	3330	3010	90	41-100	
3&4-Methylphenol(m&p Cresol)	ug/kg	3330	2670	80	43-103	
3,3'-Dichlorobenzidine	ug/kg	6670	4890	73	10-150	
3-Nitroaniline	ug/kg	6670	5720	86	35-110	
4,6-Dinitro-2-methylphenol	ug/kg	6670	5220	78	38-118	
4-Bromophenylphenyl ether	ug/kg	3330	2740	82	47-115	
4-Chloro-3-methylphenol	ug/kg	6670	5920	89	43-127	
4-Chloroaniline	ug/kg	6670	5090	76	34-109	
4-Chlorophenylphenyl ether	ug/kg	3330	2810	84	44-115	
4-Nitroaniline	ug/kg	6670	5990	90	37-111	
4-Nitrophenol	ug/kg	16700	12200	73	21-152	
Acenaphthene	ug/kg	3330	2530	76	38-117	
Acenaphthylene	ug/kg	3330	2670	80	46-107	
Aniline	ug/kg	3330	2420	73	29-110	
Anthracene	ug/kg	3330	2690	81	50-110	
Benzo(a)anthracene	ug/kg	3330	2580	77	47-116	
Benzo(a)pyrene	ug/kg	3330	2920	88	47-106	
Benzo(b)fluoranthene	ug/kg	3330	2710	81	47-109	
Benzo(g,h,i)perylene	ug/kg	3330	2890	87	39-115	
Benzo(k)fluoranthene	ug/kg	3330	2550	76	45-117	
Benzoic Acid	ug/kg	16700	12600	76	16-110	
Benzyl alcohol	ug/kg	6670	4680	70	38-105	
bis(2-Chloroethoxy)methane	ug/kg	3330	2600	78	39-110	
bis(2-Chloroethyl) ether	ug/kg	3330	2590	78	19-119	
bis(2-Chloroisopropyl) ether	ug/kg	3330	2340	70	21-110	
bis(2-Ethylhexyl)phthalate	ug/kg	3330	2630	79	35-116	
Butylbenzylphthalate	ug/kg	3330	2760	83	38-110	
Chrysene	ug/kg	3330	2690	81	49-110	
Di-n-butylphthalate	ug/kg	3330	2540	76	43-109	
Di-n-octylphthalate	ug/kg	3330	2840	85	37-109	
Dibenz(a,h)anthracene	ug/kg	3330	3020	90	43-116	
Dibenzofuran	ug/kg	3330	2280	68	45-106	
Diethylphthalate	ug/kg	3330	2580	77	41-114	
Dimethylphthalate	ug/kg	3330	2590	78	43-110	
Fluoranthene	ug/kg	3330	2760	83	50-114	
Fluorene	ug/kg	3330	2670	80	46-114	
Hexachloro-1,3-butadiene	ug/kg	3330	2390	72	28-111	
Hexachlorobenzene	ug/kg	3330	2430	73	46-120	
Hexachlorocyclopentadiene	ug/kg	3330	3150	94	18-119	
Hexachloroethane	ug/kg	3330	2170	65	33-110	
Indeno(1,2,3-cd)pyrene	ug/kg	3330	3050	92	42-115	

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

LABORATORY CONTROL SAMPLE: 1120091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	3330	2880	86	44-109	
N-Nitroso-di-n-propylamine	ug/kg	3330	2110	63	43-104	
N-Nitrosodimethylamine	ug/kg	3330	2340	70	29-110	
N-Nitrosodiphenylamine	ug/kg	3330	2150	64	48-113	
Naphthalene	ug/kg	3330	2540	76	41-110	
Nitrobenzene	ug/kg	3330	2690	81	38-110	
Pentachlorophenol	ug/kg	6670	3890	58	32-128	
Phenanthrene	ug/kg	3330	2610	78	50-110	
Phenol	ug/kg	3330	2640	79	28-106	
Pyrene	ug/kg	3330	2840	85	45-114	
2,4,6-Tribromophenol (S)	%			89	27-110	
2-Fluorobiphenyl (S)	%			78	30-110	
2-Fluorophenol (S)	%			81	13-110	
Nitrobenzene-d5 (S)	%			79	23-110	
Phenol-d6 (S)	%			83	22-110	
Terphenyl-d14 (S)	%			87	28-110	

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(828)254-7176

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

QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: PMST/6159
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92186113009, 92186113010, 92186113011, 92186113012, 92186113013, 92186113014, 92186113015

SAMPLE DUPLICATE: 1121730

Parameter	Units	92186192001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.3	13.9	5	25	

SAMPLE DUPLICATE: 1121731

Parameter	Units	92186113015 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.9	17.7	7	25	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: PMST/6163
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92186113001, 92186113002, 92186113003, 92186113004, 92186113005, 92186113006, 92186113007, 92186113008, 92186113016, 92186113017, 92186113018, 92186113019, 92186113020, 92186113021

SAMPLE DUPLICATE: 1121766

Parameter	Units	92186378006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.8	13.7	6	25	

SAMPLE DUPLICATE: 1121767

Parameter	Units	92186113021 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	23.5	23.3	1	25	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

QC Batch: PMST/6164
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92186113022, 92186113023, 92186113024, 92186113025

SAMPLE DUPLICATE: 1121804

Parameter	Units	92186316001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	19.3	18.7	3	25	

SAMPLE DUPLICATE: 1121805

Parameter	Units	92186447002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	98.3	98.4	0	25	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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.

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

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

A+	The reaction of the soil preservative, sodium bisulfate, is known to react with humic acid in soils to produce ketones. Based upon method blank results, the laboratory feels the ketones in this sample are a result of that reaction.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92186113001	**SB-1**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113002	**SB-2**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113003	**SB-3**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113004	**SB-4**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113005	**SB-5**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113006	**SB-6**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113007	**SB-7**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113008	**4-1**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113009	**4-2**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113010	**4-3**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113011	**4-4**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113012	**4-5**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113013	**4-6**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113014	**4-7**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113016	**4-9**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113017	**4-10**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113018	**4-11**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113019	**4-12**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113020	**27-1**	EPA 3546	OEXT/25495	EPA 8015 Modified	GCSV/16432
92186113021	**27-2**	EPA 3546	OEXT/25503	EPA 8015 Modified	GCSV/16433
92186113022	**27-3**	EPA 3546	OEXT/25503	EPA 8015 Modified	GCSV/16433
92186113023	**27-4**	EPA 3546	OEXT/25503	EPA 8015 Modified	GCSV/16433
92186113024	**27-5**	EPA 3546	OEXT/25503	EPA 8015 Modified	GCSV/16433
92186113025	**27-6**	EPA 3546	OEXT/25503	EPA 8015 Modified	GCSV/16433
92186113001	**SB-1**	EPA 5035A/5030B	GCV/7709	EPA 8015 Modified	GCV/7712
92186113002	**SB-2**	EPA 5035A/5030B	GCV/7709	EPA 8015 Modified	GCV/7712
92186113003	**SB-3**	EPA 5035A/5030B	GCV/7709	EPA 8015 Modified	GCV/7712
92186113004	**SB-4**	EPA 5035A/5030B	GCV/7709	EPA 8015 Modified	GCV/7712
92186113005	**SB-5**	EPA 5035A/5030B	GCV/7709	EPA 8015 Modified	GCV/7712
92186113006	**SB-6**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113007	**SB-7**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113008	**4-1**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113009	**4-2**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113010	**4-3**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113011	**4-4**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113012	**4-5**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113013	**4-6**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113014	**4-7**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113015	**4-8**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113016	**4-9**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113017	**4-10**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113018	**4-11**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113019	**4-12**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113020	**27-1**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113021	**27-2**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113022	**27-3**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113023	**27-4**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rowan Co. PSA WBS46139.1.1
Pace Project No.: 92186113

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92186113024	**27-5**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113025	**27-6**	EPA 5035A/5030B	GCV/7714	EPA 8015 Modified	GCV/7718
92186113017	**4-10**	EPA 3050	MPRP/15050	EPA 6010	ICP/13661
92186113018	**4-11**	EPA 3050	MPRP/15050	EPA 6010	ICP/13661
92186113019	**4-12**	EPA 3050	MPRP/15050	EPA 6010	ICP/13661
92186113017	**4-10**	EPA 7471	MERP/6049	EPA 7471	MERC/5840
92186113018	**4-11**	EPA 7471	MERP/6049	EPA 7471	MERC/5840
92186113019	**4-12**	EPA 7471	MERP/6049	EPA 7471	MERC/5840
92186113017	**4-10**	EPA 3546	OEXT/25493	EPA 8270	MSSV/8650
92186113018	**4-11**	EPA 3546	OEXT/25493	EPA 8270	MSSV/8650
92186113019	**4-12**	EPA 3546	OEXT/25493	EPA 8270	MSSV/8650
92186113017	**4-10**	EPA 8260	MSV/25542		
92186113018	**4-11**	EPA 8260	MSV/25542		
92186113019	**4-12**	EPA 8260	MSV/25542		
92186113024	**27-5**	EPA 8260	MSV/25542		
92186113025	**27-6**	EPA 8260	MSV/25542		
92186113001	**SB-1**	ASTM D2974-87	PMST/6163		
92186113002	**SB-2**	ASTM D2974-87	PMST/6163		
92186113003	**SB-3**	ASTM D2974-87	PMST/6163		
92186113004	**SB-4**	ASTM D2974-87	PMST/6163		
92186113005	**SB-5**	ASTM D2974-87	PMST/6163		
92186113006	**SB-6**	ASTM D2974-87	PMST/6163		
92186113007	**SB-7**	ASTM D2974-87	PMST/6163		
92186113008	**4-1**	ASTM D2974-87	PMST/6163		
92186113009	**4-2**	ASTM D2974-87	PMST/6159		
92186113010	**4-3**	ASTM D2974-87	PMST/6159		
92186113011	**4-4**	ASTM D2974-87	PMST/6159		
92186113012	**4-5**	ASTM D2974-87	PMST/6159		
92186113013	**4-6**	ASTM D2974-87	PMST/6159		
92186113014	**4-7**	ASTM D2974-87	PMST/6159		
92186113015	**4-8**	ASTM D2974-87	PMST/6159		
92186113016	**4-9**	ASTM D2974-87	PMST/6163		
92186113017	**4-10**	ASTM D2974-87	PMST/6163		
92186113018	**4-11**	ASTM D2974-87	PMST/6163		
92186113019	**4-12**	ASTM D2974-87	PMST/6163		
92186113020	**27-1**	ASTM D2974-87	PMST/6163		
92186113021	**27-2**	ASTM D2974-87	PMST/6163		
92186113022	**27-3**	ASTM D2974-87	PMST/6164		
92186113023	**27-4**	ASTM D2974-87	PMST/6164		
92186113024	**27-5**	ASTM D2974-87	PMST/6164		
92186113025	**27-6**	ASTM D2974-87	PMST/6164		

Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.13	Issuing Authority: Pace Huntersville Quality Office

Client Name: Solutions

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

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1102 T1301 Type of Ice: Wet Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor T1102: No Correction T1301: No Correction

Corrected Cooler Temp.: 3.8 °C Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: mm 1/11/14

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7. DRO
Sufficient Volume:	☐Yes ☑No ☐N/A	8. jar for 4-8 Acid broken
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☐Yes ☑No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Mike Branson Date/Time: 1-13-14

Comments/ Resolution: WBS 446139.1.1

1-13-14 → let him know WOFU broken for 4-8. Cannot run DRO.

SCURF Review:	AMB	Date:	1-13-14
SRF Review:	JDB	Date:	1/13/14

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)

WO# : 92186113

92186113

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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.

1745164

Section A Required Client Information:

Company: Solutions - IES
Address: 1101 Nowell Rd.
Raleigh NC. 27607
Email To: mbranson@solutions-ies.com
Phone: (919) 873-1060 Fax:
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: Mike Branson
Copy To:
Purchase Order No.:
Project Name: BOWMAN Stokes Co. PSA
Project Number: 2013.0077.NDOT

Section C Invoice Information:

Attention: Emily Davis
Company Name: SIES
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information (SAMPLE ID)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: DRO/GRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB1	SL	G	1/8/14	1500	1/8/14	1500		4	X						X		X		921840113 001
2	SB2				1501		1501													002
3	SB3				1502		1502													003
4	SB4				1503		1503													004
5	SB5				1504		1504													005
6	SB6				1505		1505													006
7	SB7				1506		1506		4											007
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Parcel 20 samples	[signature] /SIES	1/10/14	1215	[signature]	1/10/14	12:15				
SB1 and SB2 are hot.				[signature]	1/11/14	10:20	3.6	4gr	N	No

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Stewart Farling
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM/DD/YY):

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

ORIGINAL

*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.

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