problem solved

GEOPHYSICAL SURVEY AND
PRELIMINARY SITE ASSESSMENT REPORT
James E. Bridgers Property
Parcel 5
302 South Main Street (NC 33)
Princeville, North Carolina
WBS Element # 32782.1.1
Edgecombe County

North Carolina Department of Transportation Geotechnical Engineering Unit 1589 Mail Service Center Raleigh, North Carolina 27699-1589

January 4, 2008

GEOPHYSICAL SURVEY AND PRELIMINARY SITE ASSESSMENT REPORT

James E. Bridgers Property
Parcel 5
302 South Main Street (NC 33)
Princeville, North Carolina
Rocky Mount Northern Outer Loop
From US 258/NC 111-122 (Mutual Boulevard)
to SR 1308 (Albemarle Avenue)
WBS Element # 32782.1.1
State Project B-2965
Edgecombe County

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Signature Page

This document, entitled "Geophysical Survey and Preliminary Site Assessment Report," has been prepared for the James E. Bridgers Property, Parcel 5, located at 302 South Main Street (NC 33) in Princeville, North Carolina (WBS Element # 32782.1.1, State Project B-2965, Edgecombe County). It has been prepared by GEL Engineering of NC, Inc. in accordance with the Notice to Proceed provided by the North Carolina Department of Transportation-GeoEnvironmental Section, Geotechnical Engineering Unit for the exclusive use of the North Carolina Department of Transportation. It has been prepared in accordance with accepted quality control practices and has been reviewed by the undersigned.

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

Adam B. Phillips

Environmental Scientist I

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

Robert M. Miller, P.E.

Senior Staff Engineer

North Carolina License Number 17147

1-4-08

~

Date

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Executive Summary

The subject site is Parcel 5 (the James E. Bridgers Property), located at 302 South Main Street (NC 33) in Princeville, North Carolina. The primary purpose of this investigation was to determine the presence or absence of constituents of concern in soil and groundwater within the proposed North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) of Parcel 5 as a result of previous and/or current operations at the subject site.

Currently, the site is a gasoline service station. GEL Engineering of NC, Inc. (GEL) performed a geophysical evaluation and a preliminary site assessment at the subject site that included the collection and analysis of soil samples and one groundwater sample. Underground utilities and three subsurface anomalies (active underground storage tanks (USTs)) were identified on site during the geophysical survey. The underground utilities and one UST were identified to be within the proposed NCDOT ROW.

Soil samples were collected for analysis from six borings constructed on the subject site. The soil samples were analyzed for diesel range organics (DRO) and gasoline range organics (GRO). Analytical results for soil samples collected from one soil boring (SS-16) indicated that the detected DRO and GRO concentrations exceed the North Carolina Department of Environment and Natural Resources (NCDENR) recommended DRO and GRO action level of 10 mg/kg. Therefore, these analytical results are potentially indicative of soil impact. However, analysis of the soil for petroleum constituents and/or a target list of organic compounds would be needed to confirm the soil impact. The total

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estimated quantity of impacted soil (DRO >10 mg/kg) at the subject site is approximately 23 cubic yards in a localized area encompassing soil boring SS-16.

One groundwater sample, SS-16-GW, was collected at soil boring location SS-16, based on elevated soil vapor measurements in the soil sample collected from the boring SS-16. Analytical results for this sample indicate that there is petroleum contamination in groundwater within the vicinity of boring SS-16. While this is indicative of groundwater contamination in the vicinity of boring SS-16, it should also be noted that groundwater was encountered at a depth of approximately 15 feet bls. It is unlikely that groundwater will be encountered during construction activities within the proposed NCDOT ROW.

Based on the soil and groundwater data generated from this investigation, there is no evidence that a significant release(s) of petroleum hydrocarbon constituents of concern has occurred within the proposed NCDOT ROW at the subject site.

It is recommended that the USTs identified within the proposed ROW during the geophysical survey be removed prior to construction excavation activities (if any) in this vicinity, and that further soil assessment be performed at that time to determine the presence or absence of soil impact. Furthermore, it is recommended that confirmation soil samples be collected and analyzed for petroleum hydrocarbon constituents following any planned excavation in the vicinity of boring SS-16 in order to confirm the presence or absence of soil impact from petroleum hydrocarbons.

The detection of an elevated DRO concentration in the groundwater sample collected during the preliminary site assessment indicates there may have been a release at the gasoline station on the subject site. Additional groundwater assessment would most likely be required to confirm and delineate the groundwater impact within the proposed NCDOT ROW.

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1.0 Introduction

This document presents the details of a geophysical survey and preliminary site assessment performed within the proposed NCDOT Right-of-Way (ROW) at the above referenced property (the subject site). The subject site is referenced as Parcel 5 (the James E. Bridgers Property), located at 302 South Main Street (NC 33), southwest of the intersection of Black Street and South Main Street (NC 33), in Princeville, North Carolina. The subject site is owned by James E. Bridgers. The site is a gasoline service station. The site location is shown on Figure 1, an excerpt from the United States Geological Survey (USGS) 7.5-minute quadrangle map of Tarboro, North Carolina. This geophysical survey and preliminary site assessment was conducted by GEL Engineering of NC, Inc. (GEL) in accordance with the Notice to Proceed issued by the North Carolina Department of Transportation (NCDOT) on October 15, 2007.

The primary purpose of this investigation was to determine the presence or absence of constituents of concern in soil and groundwater within the proposed NCDOT ROW at the subject site as a result of current and/or former operations.

2.0 Background

NCDOT is planning road improvements to the area in the vicinity of BR 24 over the Tar River on NC 33 (Main Street) from US 258/NC 111-122 (Mutual Boulevard) to SR 1308 (Albemarle Avenue). NCDOT wanted to assess the proposed ROW at the subject site to evaluate the presence or absence of soil and groundwater contamination related to the current and/or former on-site operations, and the impact (if any) of these operations on the proposed road improvements. Figure 2 shows the general site layout.

3.0 Local Geology and Hydrogeology

The site is in a developed area of Princeville in Edgecombe County, North Carolina. Surrounding land uses include residential and light commercial development. The site is located in the Coastal Plain physiographic province of North Carolina. The Coastal Plain consists of a wedge of mostly marine sedimentary rocks that gradually thicken to the east. The Cretaceous Cape Fear and Black Creek Formations underlie the subject site. They consist of sandstone and sandy mudstone comprised of mostly estuarine and marine deposits. These Formations are overlain by Cenozoic unconsolidated alluvial, estuarine, and marine sediments in the vicinity of the subject site.

Uppermost soils are characterized mostly of gravel, sand, and clayey sediments associated with alluvial morphology of the Tar River, including Pleistocene terraces and floodplain deposits. The United States Department of Agriculture's *Soil Survey of Edgecombe County, North Carolina* (1908) classifies the soil in the vicinity of the site as belonging to the Norfolk-Portsmouth series, which typically consists of sand and sandy loam soils. The soil encountered in the vicinity of this site during the preliminary site assessment was predominately tan/orange poorly-graded sand with brown/grey sandy fill material near the surface.

Groundwater was encountered during the preliminary site assessment and a groundwater assessment was performed. Groundwater was encountered at a depth of approximately 15 feet below land surface (bls). Based on the topographic map in Figure 1, the subject site is located approximately 20 feet above mean sea level (MSL).

The nearest perennial surface water body to the subject site is the Tar River. The watercourse is located approximately 2,000 feet north of the subject site. Based on the United States Geological Survey topographic map presented as Figure 1, the groundwater flow direction underlying the subject site is most likely northwesterly towards the Tar River.

4.0 Subsurface Investigation

To determine the presence or absence of impact to subsurface soil within the proposed NCDOT ROW at the subject site, GEL performed a limited site assessment that consisted of the following tasks:

• Performance of a geophysical evaluation to identify the presence or absence of underground storage tanks (USTs) and associated appurtenances, and

other underground anomalies, including utilities, at the subject site and their locations.

- Soil vapor screening of soil samples from subsurface soil borings to determine the potential presence or absence of soil impact from petroleum constituents of concern.
- Laboratory analysis of collected soil samples.

The details of these tasks are discussed in the following sections.

4.1 Geophysical Evaluation

The geophysical investigation included the deployment of ground penetrating radar technology, radio frequency electromagnetic technology, and time domain electromagnetic technology to the site. These technologies were used in concert with one another in order to identify subsurface metallic anomalies and, in particular, to identify the presence of USTs on site. A brief description of each technology is presented in the following paragraphs followed by a discussion of the results of the geophysical evaluation.

4.1.1 Ground Penetrating Radar Methodology

A RAMAC digital radar control system configured with a 250 Megahertz (MHz) antenna array was used in this investigation. Ground Penetrating Radar (GPR) is an electromagnetic geophysical method that detects interfaces between subsurface materials with differing dielectric constants. The GPR system consists of an antenna that houses the transmitter and receiver, a digital control unit that both generates and digitally records the GPR data, and a color video monitor to view data as they are collected in the field.

The transmitter radiates repetitive short-duration electromagnetic waves (at radar frequencies) into the earth from an antenna moving across the ground surface. These radar waves are reflected back to the receiver from the interface of materials with different dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant between the materials, the conductivity of the material through which the wave is traveling, and the frequency of the signal. Subsurface features that commonly cause such reflections are: 1) natural geologic conditions, such as changes in sediment composition, bedding, and cementation horizons and voids; or 2) unnatural changes to the subsurface, such as disturbed soils, soil backfill, buried debris, tanks,

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

GPR data profiles are collected along transects, which are measured paths along which the GPR antenna is moved. During a survey, marks are placed in the data by the operator at designated points along the GPR transects or with a survey wheel odometer. These marks allow for a correlation between the GPR data and the position of the GPR antenna on the ground.

Depth of investigation of the GPR signal is highly site-specific and is limited by signal attenuation (absorption) in the subsurface materials. Signal attenuation is dependent on the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities, such as clays, brackish groundwater, or groundwater with a high dissolved solid content from natural or manmade sources. Signal attenuation is lowest in relatively low-conductivity materials, such as dry sand or rock. Depth of investigation is also dependent on the antenna's transmitting frequency. Depth of investigation generally increases as transmitting frequency decreases; however, the ability to resolve smaller subsurface features is diminished as frequency is decreased.

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

4.1.2 Radio Frequency Electromagnetic Methodology

A Radio Detection RD4000PXL2 unit was used in this investigation. Radio Frequency Electromagnetic (EM) utility locating equipment consists of a transmitter and a dual-function receiver. The receiver can be operated in a "passive" mode or in an "active" mode. The two modes of operation provide various levels of detection capabilities depending on the specific target or application.

The system is operated in the "active" mode by either inducing or conducting a signal into the underground utility to be traced. A transmitter is placed over and in line with a suspected buried utility. The transmitter induces a signal that propagates along the buried utility. As the receiver is moved back and forth across the suspected path of the utility, the trace signal induces a signal into the receivers coil sensor. A visual and audio response indicates when the receiver is directly over the buried utility. Another means of detecting in the "active" mode utilizes a method to "conduct" a signal within the buried utility. To accomplish this, a cable from the transmitter is clamped onto an exposed

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section of the buried utility and a signal propagates along the buried line. This technique minimizes any interference caused by parasitic emissions from adjacent cables in congested areas. When the system is utilized in the "passive" mode, the receiver is responding to a 60-Hertz cycle current energized by underground utilities.

Interference can and may occur when buried utilities intersect or are adjacent to each other. This effect, referred to as "bleed-off," may provide a false response to the identification of the tracked utility. "Bleed-off" is caused by utilities that may be energized in the "active" or "passive" mode.

4.1.3 Time Domain Electromagnetic Methodology

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

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

4.1.4 Field Procedures

The geophysical field investigation was performed on October 29-30, 2007. A GPR system time range setting of 90 nanoseconds (ns) was used during the entire investigation. This range was determined after a series of test lines were conducted to evaluate the GPR response in the local geologic section. Interpretation of the GPR data was conducted in the field and potential anomalies were marked on the ground. GPR data processing typically included band pass filtering, background removal, horizontal smoothing, and gain adjustments.

EM was used to scan the project site using both the passive (detecting 60-Hertz cycles from active electrical lines or induced 60-Hertz cycles on other metallic lines) and active modes (putting a traceable signal on utilities at points where the utility ties into above ground installations or inducing a traceable signal from the surface). TDEM was also used to scan the project site. Electromagnetic anomalies indicative of buried metallic objects were marked in the field. Marked utilities, grid corners, buried metallic objects, and other reference points were surveyed with a surveying instrument (Trimble Geodimeter 600).

As shown on Figure 2, underground utilities and three subsurface anomalies were identified on the subject site during the survey. The anomalies were identified as three underground storage tanks that contain gasoline. Utilities below the maximum penetration depth were not detected with geophysical techniques.

4.2 Subsurface Soil Investigation

To determine the presence or absence of impact to subsurface soil by constituents of concern, GEL collected soil samples from six subsurface soil borings at the subject site on November 6 and 7, 2007, for analysis. Soil borings SS-12 through SS-17 were constructed within the subject site. The locations of soil borings SS-12 through SS-17 are shown on Figure 2, and the longitude and latitude coordinates for the boring locations are listed in the table below. The borings were located in areas on the site where there appeared to be a potential of soil impact based on on-site activities and in other areas that are representative of the subject site. Minor, isolated surface staining was observed in some areas on the asphalt-paved parking area.

All borings were advanced to a total depth of 8 feet bls. Soil samples were collected at 3-4 feet, 5-6 feet, and 7-8 feet bls from each borehole. All soil samples were inspected for indications of impact by constituents of concern including petroleum hydrocarbons, such as odors, discoloration, or visible sheen. This sampling was accomplished using direct push technology (DPT) provided by Regional Probing Services of Wake Forest, North Carolina (Regional Probing). Soil boring lithologic logs are attached as Appendix I of this document. No groundwater was encountered during construction of the borings.

The soil samples were screened for the presence of organic vapors using a portable photoionization detector (PID). The PID measures the concentration of organic compounds in the vapor space above a soil sample resulting from volatilization of organic compounds contained in the soil. To screen the soils, each sample was placed in

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a clean, resealable polyethylene bag. The bag was sealed, and the sample was allowed to equilibrate for approximately 5 minutes, after which time a small opening was made in the bag. The probe of the PID was then inserted into the bag, and the airspace above the soil was screened for organic vapors.

To assess the subsurface soil quality, one soil sample was collected from each soil boring at the sampled depth interval with the highest PID reading and submitted for laboratory analysis. The depth intervals and PID measurements of the collected soil samples submitted to the laboratory for analysis are listed below.

Summary of Location Data and PID Measurements for Soil Samples Collected for Analysis

Soil Boring	Depth Interval of Soil Sample Collected for Analysis (feet bls)	PID Reading (ppm)	Latitude/Longitude (NAD83)
SS-12	5-6	5.8	35°53'12.52"N / 77°31'47.82"W
SS-13	3-4	4.1	35°53'13.13"N / 77°31'47.93"W
SS-14	7-8	5.6	35°53'13.52"N / 77°31'48.07"W
SS-15	7-8	10.1	35°53'13.74"N / 77°31'48.07"W
SS-16	7-8	970	35°53'14.17"N / 77°31'48.14"W
SS-17	5-6	30.9	35°53'14.78"N / 77°31'48.18"W

Notes:

- 1) Coordinates are based on North American Datum of 1983 (NAD83)
- 2) bls = below land surface
- 3) PID = photoionization detector
- 4) ppm = parts per million

Following completion of the sampling activities, all borings were abandoned by filling the boreholes with hydrated bentonite, and topped with asphalt patching, as required. Soil samples were submitted to Pace Analytical Service, Inc. in Huntersville, North Carolina (North Carolina Certification No. 37706) for analysis of diesel range organics (DRO) by EPA Method 8015 with EPA Method 3545 sample preparation, and gasoline range organics (GRO) by EPA Method 8015 with EPA Method 5035A/5030B sample preparation. The analytical results are summarized in the following table and are included on the Certificates of Analysis provided in Appendix II.

Summary of Analytical Results for Soil Samples

Soil Sample	Depth Interval of Soil Sample Collected for Analysis (feet bls)	DRO	GRO
SS-12	5-6	ND	ND
SS-13	3-4	ND	ND
SS-14	7-8	ND	ND
SS-15	7-8	ND	ND
SS-16	7-8	26.3	65.0
SS-17	5-6	ND	ND
NCDENR Action Level		10*	10

Notes:

- 1) ND = Not Detected
- 2) Concentrations shown are in milligram per kilogram (mg/kg).
- 3) **Bold** = detected concentration above the NCDENR action level
- 4) * = Recommended action level for DRO. Currently the enforced NCDENR action level is 40 mg/kg.

DRO and GRO were detected at concentrations exceeding the recommended NCDENR action level for DRO (10 milligrams per kilogram (mg/kg)) in the soil sample collected from boring SS-16. These DRO and GRO exceedances were for a soil sample collected in the deepest 8 foot of soil in the boring. Soil sample SS-16 was collected from a location that was hydraulically downgradient from the three USTs at the subject site. No soil staining was observed during the construction of boring SS-16, but strong petroleum hydrocarbon odors were observed.

The elevated DRO and GRO concentrations detected in soil sample SS-16 are most likely the result of leaks associated with the on-site USTs and/or minor spills of gasoline from fueling activities, and not indicative of significant widespread soil impact from petroleum. However, analysis of the soil for petroleum hydrocarbon constituents would be needed to confirm the presence or absence of soil impact from petroleum hydrocarbons.

It is estimated that there is an approximate total volume of 23 cubic yards of impacted soil (DRO and GRO >10 mg/kg) in the vicinity of boring SS-16 based on the following assumed area (as shown on Figure 2) and depth of impacted soil:

• SS-16: 78.5 sq. feet x 8 feet = 628 cubic feet (23 cubic yards)

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4.3 Groundwater Investigation

GEL collected one groundwater sample at the subject site, SS-16-GW, to determine if groundwater has been impacted by constituents of concern. Groundwater sample SS-16-GW was collected after soil boring location SS-16 was converted to a temporary groundwater monitoring well, as shown in Figure 2. Groundwater sample SS-16-GW was collected at this location based on it being hydraulically downgradient from the USTs located on the subject site.

Regional Probing collected the groundwater sample using DPT. To collect the groundwater sample, the DPT probe was advanced to a depth slightly below the water table, which was encountered at a depth of approximately 18 feet bls. The DPT probe was then retracted while an internal PVC slotted screen was released from the bottom of the probe. The groundwater samples were collected from within the slotted screen using new Teflon® tubing and a peristaltic pump. The collected groundwater samples were submitted to Pace Analytical Service, Inc. for analysis of DRO by EPA Method 8015 with EPA Method 3510 sample preparation and GRO by EPA Method 8015 with EPA Method 5030 sample preparation. The analytical results for SS-16-GW indicated that DRO constituents were detected at 300 micrograms per liter (µg/L). Therefore, groundwater impact in the vicinity of boring SS-16 is suspected based on the data collected. While this is indicative of groundwater contamination in the vicinity of SS-16, it should also be noted that groundwater was encountered at a depth of approximately 15 feet bls. It is unlikely that groundwater will be encountered during construction activities for the proposed NCDOT ROW.

5.0 Conclusions and Recommendations

GEL performed a geophysical evaluation and a preliminary site assessment to determine the presence or absence of impact to subsurface soil by petroleum constituents of concern at the subject site. Underground utilities and three active USTs were identified on-site during the geophysical survey.

Soil samples were collected for analysis from six borings constructed on the subject site. The soil samples were analyzed for DRO and GRO. Analytical results for the soil sample collected from soil boring SS-16 indicated that the detected DRO concentration exceeded the NCDENR recommended DRO action level of 10 mg/kg. Therefore, these analytical results are potentially indicative of soil impact. However, analysis of the soil for petroleum hydrocarbon constituents would be needed to confirm the soil impact. The

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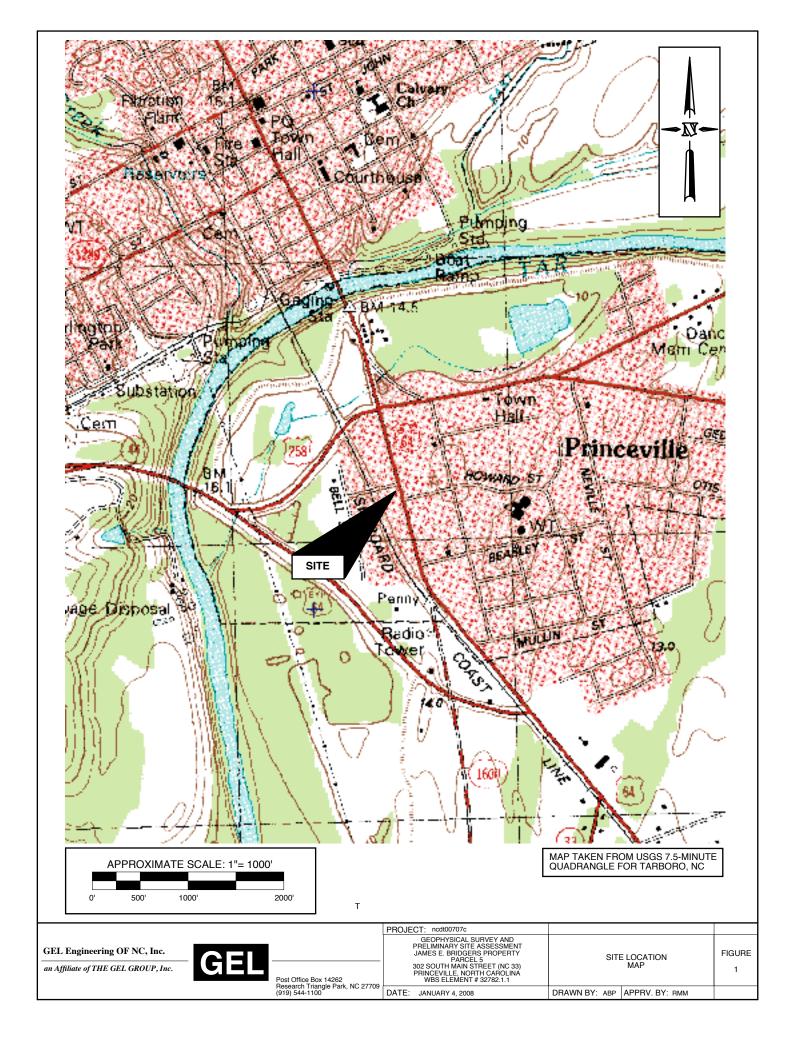
total estimated quantity of impacted soil (DRO and GRO >10 mg/kg) at the subject site is approximately 23 cubic yards in a localized area encompassing soil boring SS-16.

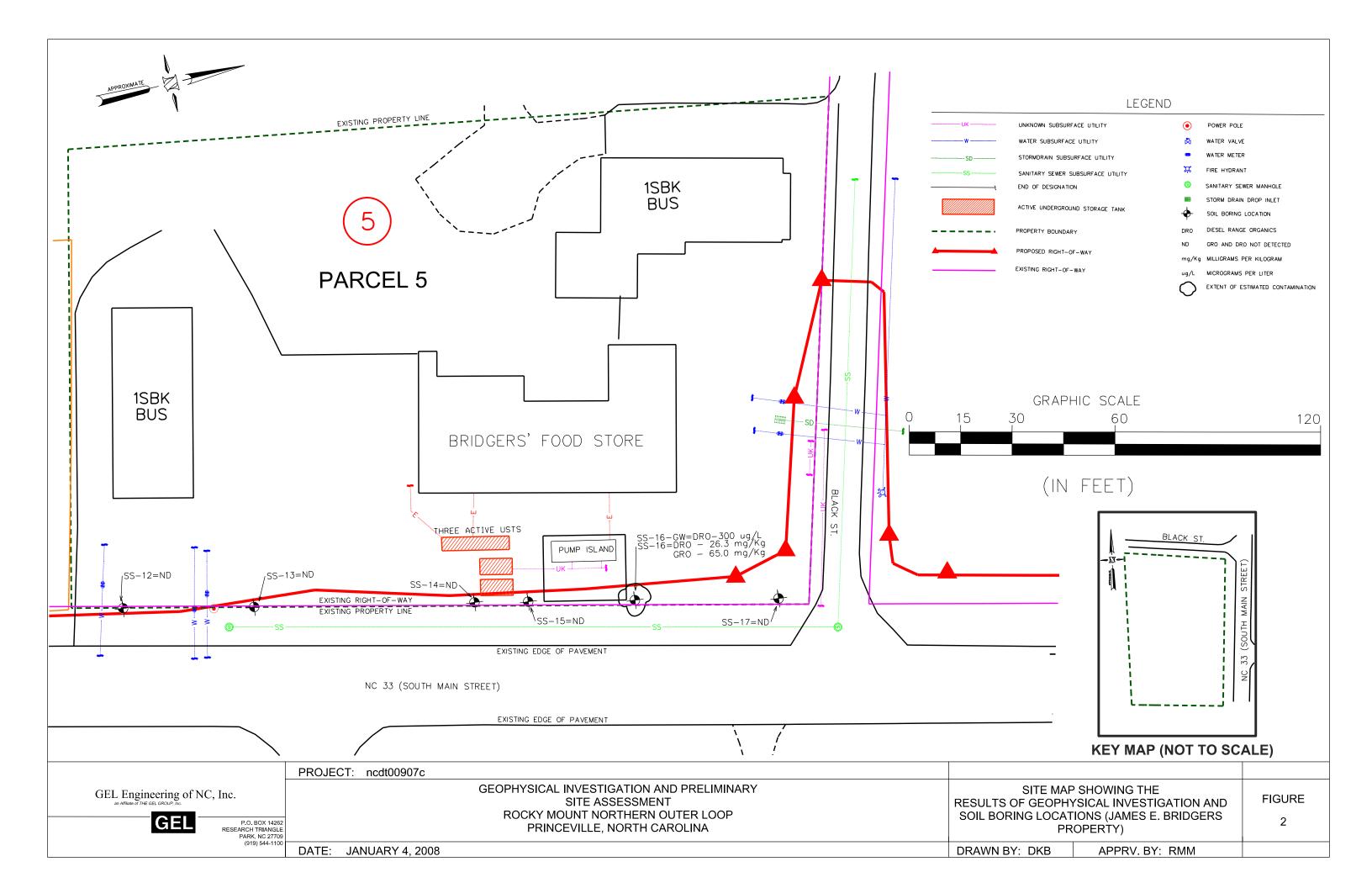
One groundwater sample was collected at soil boring location SS-16, based on elevated soil vapor measurements in the soil sample collected from the boring SS-16. Analytical results for this sample indicate that there is petroleum contamination in groundwater within the vicinity of boring SS-16. While this is indicative of groundwater contamination in the vicinity of SS-16, it should also be noted that groundwater was encountered at a depth of approximately 15 feet bls. It is unlikely that groundwater will be encountered during construction activities for the proposed NCDOT ROW.

Based on the data generated from this investigation, there is no evidence that a significant widespread release(s) of constituents of concern has occurred within the proposed NCDOT ROW at the subject site.

It is recommended that the USTs identified within the proposed ROW during the geophysical survey be removed prior to construction excavation activities (if any) in this vicinity, and that further soil assessment be performed at that time to determine the presence or absence of soil impact. Furthermore, it is recommended that confirmation soil samples be collected and analyzed for petroleum hydrocarbon constituents following any planned excavation in the vicinity of boring SS-16 in order to confirm the presence or absence of soil impact from petroleum hydrocarbons.

The detection of an elevated DRO concentration in the groundwater sample collected during the preliminary site assessment indicates there may have been a release at the gasoline station on the subject site. Additional groundwater assessment would most likely be required to confirm and delineate the groundwater impact within the proposed NCDOT ROW.





APPENDIX I SOIL BORING LITHOLOGIC LOGS

Boring/Well No.: **SS-12** Date Started: 11/06/07 Date Completed: 11/06/07

	Depth	Blow	PID	Soil	
No.	Interval	Counts	(ppm)	Description	Soil Type
1	0.0' - 4.0'		1.7	Asphalt and grey sandy/gravel fill material (dry, no odor) to alternating grey and tan/orange sandy clay (damp and firm, but not plastic).	vi
2	4.0' –5.0'		1.,	Same, but changing to tan/orange medium grained sand with depth; poorly graded, no odor.	SC
3	5.0' – 6.0'		5.8	Same	SC
4	6.0' – 7.0'			Tan/orange friable medium grained sand; poorly graded, wet, no odor.	SP
5	6.0' - 8.0'		4.6	Same	SP
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at indicated depth intervals.

Boring/Well No.: **SS-13**Date Started: 11/06/07
Date Completed: 11/06/07

	Donth	Blow	PID	Soil	
No.	Depth Interval	Counts	(ppm)	Description	Soil Type
110.	Interval	Counts	(ppm)		Soil Type
				Grey sandy/gravel fill material (dry, no	
	0.01.4.01		1.0	odor) to alternating grey and tan/orange	
1	0.0' - 4.0'		1.3	sandy clay (damp, no odor)	
	4.03 5.03			Tan/orange sandy clay; poorly graded, no	9.0
2	4.0' – 5.0'			odor.	SC
3	5.0' – 6.0'		3.6	Same	SC
	3.0 0.0		5.0	Tan/orange friable medium grained sand;	50
4	6.0' – 7.0'			poorly graded, wet, no odor.	SP
	7.0			poorly graded, well, no odor.	51
5	7.0' – 8.0'		2.9	Same	SP
6				Total depth = 8 feet below land surface	
0				Total deptil – 8 feet below falld surface	
7					
8					
9					
10					
11					
10					
12					

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at indicated depth intervals.

Boring/Well No.: **SS-14**Date Started: 11/06/07
Date Completed: 11/06/07

	Depth	Blow	PID	Soil	
No.	Interval	Counts	(ppm)	Description	Soil Type
				Asphalt and grey sandy fill material (dry, no odor) to brown/orange medium grained poorly graded sand (friable, damp, no	
1	0.0' - 4.0'		5.0	odor).	SP
2	4.0' – 5.0'			Brown/orange medium grained poorly graded sand; no odor.	SP
3	5.0' - 6.0'		5.4	Same	SP
4	6.0' – 7.0'			Same but grading to tan/white fine/medium grained sand near bottom; medium grading, wet, no odor.	SP
5	7.0' – 8.0'		5.6	Same	SP
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at indicated depth intervals.

Boring/Well No.: **SS-15** Date Started: 11/06/07 Date Completed: 11/06/07

	Depth	Blow	PID	Soil	
No.	Interval	Counts	(ppm)	Description	Soil Type
				Asphalt, orange/yellow medium grained sand (poorly graded, no odor, dry, friable) to black fine-grained sand (damp, no odor)	
1	0.0' – 4.0'		4.5	to firm, stiff grey/yellow clay (slightly sandy, damp, no odor).	SP
2	4.0' – 5.0'			Same	SP
3	5.0' – 6.0'		1.7	Same	SP
4	6.0' – 7.0'			Orange medium grained sand to white/grey sand; friable, poorly graded, damp, no odor,	SP
5	7.0' – 8.0'		10.1	Orange medium grained sand to white/grey sand; friable, poorly graded, damp, no odor,	SP
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at indicated depth intervals.

Boring/Well No.: **SS-16**Date Started: 11/07/07
Date Completed: 11/07/07

	D 41	DI	DID	G T	
	Depth	Blow	PID	Soil	G 11 FB
No.	Interval	Counts	(ppm)	Description	Soil Type
				Asphalt/yellow sandy fill material (well	
				graded) to black/grey/brown sandy clay;	SC
1	0.0' - 4.0'		166	very plastic, strong odor.	
2	4.0' – 5.0'			Same	SC
3	5.0' – 6.0'		276	Same	SC
				Orange medium-grained sand to	
				white/grey sand; friable, poorly graded,	
4	6.0' – 7.0'			damp, no odor,	SP
_				~	~-
5	7.0' – 8.0'		970	Same	SP
				T 4 1 1 41 0 C 41 1 1 1 C	
6				Total depth = 8 feet below land surface	
7					
/					
8					
9					
10					
11					
12					

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at indicated depth intervals.

Boring/Well No.: **SS-17** Date Started: 11/06/07 Date Completed: 11/06/07

	Depth	Blow	PID	Soil	
No.	Interval	Counts	(ppm)	Description	Soil Type
				Asphalt/black/brown clayey sand (fine	
				grained, poorly graded, friable to firm,	
	0.01 4.01			slight odor) to dark grey clayey sand	9.0
1	0.0' - 4.0'		11.1	(damp).	SC
2	4.0' – 5.0'			Same, becoming more clayey with depth	SC
3	5.0' – 6.0'		30.9	Same; wet at 6 feet	SC
				Grey/white/tan fine to medium grained	
				sand; friable, poorly graded, slight odor,	
4	6.0' – 7.0'			wet.	SP
5	7.0' – 8.0'		21.2	Same	SP
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at indicated depth intervals.

APPENDIX II

CERTIFICATES OF ANALYSIS AND CHAIN OF CUSTODY RECORD FOR SOIL SAMPLES



Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176 Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

November 26, 2007

Mr. Bob Miller General Engineering PO Box 14262 Research Triangle, NC 27709

RE: Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Dear Mr. Miller:

Enclosed are the analytical results for sample(s) received by the laboratory between November 07, 2007 and November 09, 2007. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

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

Sincerely,

Annette Scott

Annetta Scott

annette.scott@pacelabs.com Project Manager

Enclosures

cc: Mr. Christopher Peoples, NCDOT- Materials & Test Unit







Pace Analytical Services, Inc. 2225 Riverside Dr.

> Asheville, NC 28804 (828)254-7176

Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100

(704)875-9092

Huntersville, NC 28078

CERTIFICATIONS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Charlotte Certification IDs

Florida/NELAP Certification Number: E87627 Kansas Certification Number: E-10364 Louisiana/LELAP Certification Number: 04034

North Carolina Drinking Water Certification Number: 37706

North Carolina Wastewater Certification Number: 12

Asheville Certification IDs

Florida/NELAP Certification Number: E87648 Louisiana/LELAP Certification Number: 03095 New Jersey Certification Number: NC011

North Carolina Drinking Water Certification Number: 37712 North Carolina Wastewater Certification Number: 40 North Carolina Bioassay Certification Number: 9

Pennsylvania Certification Number: 68-03578 South Carolina Certification Number: 99030001

South Carolina Bioassay Certification Number: 99030002

North Carolina Field Services Certification Number: 5342 South Carolina Certification Number: 990060001

South Carolina Bioassay Certification Number: 990060003

Tennessee Certification Number: 2980 Virginia Certification Number: 00072

Tennessee Certification Number: 04010

Virginia Certification Number: 00213

Eden Certification IDs

North Carolina Drinking Water Certification Number: 37738 Virginia Drinking Water Certification Number: 00424

North Carolina Wastewater Certification Number: 633





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-12-5 Lab ID: 927329001 Collected: 11/06/07 12:30 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND m	g/kg	5.4	1	11/10/07 00:00	11/13/07 14:58	68334-30-5	
n-Pentacosane (S)	54 %		50-135	1	11/10/07 00:00	11/13/07 14:58	629-99-2	
Gasoline Range Organics	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND m	g/kg	7.2	1	11/09/07 10:34	11/09/07 19:53	8006-61-9	
4-Bromofluorobenzene (S)	104 %		50-135	1	11/09/07 10:34	11/09/07 19:53	460-00-4	
Percent Moisture	Analytical Met	hod: ASTM D	2974-87					
Percent Moisture	7.9 %		0.10	1		11/08/07 14:03		

Date: 11/26/2007 04:54 PM REPORT OF LABORATORY ANALYSIS





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-13-3 Lab ID: 927329002 Collected: 11/06/07 12:45 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight" basis								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	g/kg	5.9	1	11/10/07 00:00	11/13/07 02:53	68334-30-5	
n-Pentacosane (S)	56 %		50-135	1	11/10/07 00:00	11/13/07 02:53	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V/5030B		
Gasoline Range Organics	ND mg	g/kg	5.4	1	11/09/07 10:34	11/09/07 20:54	8006-61-9	
4-Bromofluorobenzene (S)	95 %		50-135	1	11/09/07 10:34	11/09/07 20:54	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	15.7 %		0.10	1		11/08/07 14:03		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-14-7 Lab ID: 927329003 Collected: 11/06/07 13:00 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results	Units Report Lim	it DI	Prepared	d Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method:	EPA 8015 Modified Pre	oaration	Method: EPA 35	45		
Diesel Components	ND mg/kg	5	.9 1	11/10/07 00:	:00 11/13/07 03:18	68334-30-5	
n-Pentacosane (S)	53 %	50-13	35 1	11/10/07 00:	:00 11/13/07 03:18	629-99-2	
Gasoline Range Organics	Analytical Method:	EPA 8015 Modified Pre	paration	Method: EPA 50	35A/5030B		
Gasoline Range Organics	ND mg/kg	6	.4 1	11/09/07 10:	:34 11/09/07 21:15	8006-61-9	
4-Bromofluorobenzene (S)	95 %	50-13	35 1	11/09/07 10:	:34 11/09/07 21:15	460-00-4	
Percent Moisture	Analytical Method:	ASTM D2974-87					
Percent Moisture	15.4 %	0.	10 1		11/08/07 14:04		

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Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-15-5 Lab ID: 927329004 Collected: 11/06/07 13:15 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Methor	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	/kg	6.0	1	11/10/07 00:00	11/13/07 03:18	68334-30-5	
n-Pentacosane (S)	70 %		50-135	1	11/10/07 00:00	11/13/07 03:18	629-99-2	
Gasoline Range Organics	Analytical Metho	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	/kg	8.7	1	11/09/07 10:34	11/09/07 21:35	8006-61-9	
4-Bromofluorobenzene (S)	97 %		50-135	1	11/09/07 10:34	11/09/07 21:35	460-00-4	
Percent Moisture	Analytical Methor	od: ASTM D2	2974-87					
Percent Moisture	16.3 %		0.10	1		11/08/07 14:04		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-17-5 Lab ID: 927329005 Collected: 11/06/07 13:55 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis										
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual			
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545						
Diesel Components	ND mg	g/kg	5.8	1	11/10/07 00:00	11/13/07 03:44	68334-30-5				
n-Pentacosane (S)	64 %		50-135	1	11/10/07 00:00	11/13/07 03:44	629-99-2				
Gasoline Range Organics	Analytical Meth	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B									
Gasoline Range Organics	ND mg	g/kg	5.5	1	11/09/07 10:34	11/09/07 21:56	8006-61-9				
4-Bromofluorobenzene (S)	94 %		50-135	1	11/09/07 10:34	11/09/07 21:56	460-00-4				
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87								
Percent Moisture	14.5 %		0.10	1		11/08/07 14:04					

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-3-5 Lab ID: 927329006 Collected: 11/06/07 14:25 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis										
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual			
8015 GCS THC-Diesel for ASE	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545						
Diesel Components	ND m	g/kg	5.6	1	11/10/07 00:00	11/13/07 03:44	68334-30-5				
n-Pentacosane (S)	68 %		50-135	1	11/10/07 00:00	11/13/07 03:44	629-99-2				
Gasoline Range Organics	Analytical Met	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B									
Gasoline Range Organics	ND m	g/kg	5.9	1	11/09/07 10:34	11/09/07 22:16	8006-61-9				
4-Bromofluorobenzene (S)	96 %		50-135	1	11/09/07 10:34	11/09/07 22:16	460-00-4				
Percent Moisture	Analytical Met	hod: ASTM D	2974-87								
Percent Moisture	11.4 %		0.10	1		11/08/07 14:04					

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-2-3 Lab ID: 927329007 Collected: 11/06/07 14:45 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight" basis										
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual		
8015 GCS THC-Diesel for ASE	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545					
Diesel Components	ND mg	ı/kg	5.7	1	11/10/07 00:00	11/13/07 04:10	68334-30-5			
n-Pentacosane (S)	65 %		50-135	1	11/10/07 00:00	11/13/07 04:10	629-99-2			
Gasoline Range Organics	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V/5030B				
Gasoline Range Organics	ND mg	ı/kg	5.6	1	11/09/07 10:34	11/09/07 22:36	8006-61-9			
4-Bromofluorobenzene (S)	95 %		50-135	1	11/09/07 10:34	11/09/07 22:36	460-00-4			
Percent Moisture	Analytical Meth	od: ASTM D	2974-87							
Percent Moisture	12.4 %		0.10	1		11/09/07 13:54				

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Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-4-5 Lab ID: 927329008 Collected: 11/06/07 15:00 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	41.8 mg	g/kg	5.6	1	11/12/07 00:00	11/13/07 19:13	68334-30-5	
n-Pentacosane (S)	108 %		50-135	1	11/12/07 00:00	11/13/07 19:13	629-99-2	
Gasoline Range Organics	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND m	g/kg	5.5	1	11/09/07 10:34	11/09/07 22:57	8006-61-9	
4-Bromofluorobenzene (S)	106 %		50-135	1	11/09/07 10:34	11/09/07 22:57	460-00-4	
Percent Moisture	Analytical Met	nod: ASTM D	2974-87					
Percent Moisture	10.2 %		0.10	1		11/09/07 13:55		

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Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-5-7 Lab ID: 927329009 Collected: 11/06/07 15:20 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis										
Parameters	Results Ur	nits Report Limit	DF	Prepared	Analyzed	CAS No.	Qual				
8015 GCS THC-Diesel for ASE	Analytical Method: E	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3545									
Diesel Components	69.4 mg/kg	5.6	1	11/12/07 00:00	11/13/07 19:38	68334-30-5					
n-Pentacosane (S)	114 %	50-135	1	11/12/07 00:00	11/13/07 19:38	629-99-2					
Gasoline Range Organics	Analytical Method: E	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B									
Gasoline Range Organics	70.1 mg/kg	6.1	1	11/09/07 10:34	11/09/07 23:17	8006-61-9					
4-Bromofluorobenzene (S)	111 %	50-135	1	11/09/07 10:34	11/09/07 23:17	460-00-4					
Percent Moisture	Analytical Method: A	STM D2974-87									
Percent Moisture	10.2 %	0.10	1		11/09/07 13:55						

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-6-7 Lab ID: 927329010 Collected: 11/06/07 15:40 Received: 11/07/07 15:55 Matrix: Solid Results reported on a "dry-weight" basis **Parameters** Results Units Report Limit DF Prepared Analyzed CAS No. Qual 8015 GCS THC-Diesel for ASE Analytical Method: EPA 8015 Modified Preparation Method: EPA 3545 **Diesel Components** 5.8 11/12/07 00:00 11/13/07 19:38 68334-30-5 114 mg/kg 11/12/07 00:00 11/13/07 19:38 629-99-2 n-Pentacosane (S) 141 % 50-135 S5

Gasoline Range Organics Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B

Gasoline Range Organics ND mg/kg 6.8 1 11/09/07 10:34 11/09/07 23:38 8006-61-9 4-Bromofluorobenzene (S) 91 % 50-135 1 11/09/07 10:34 11/09/07 23:38 460-00-4

Percent Moisture Analytical Method: ASTM D2974-87

Percent Moisture 14.2 % 0.10 1 11/09/07 13:55





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-7-7 Lab ID: 927329011 Collected: 11/06/07 15:55 Received: 11/07/07 15:55 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	ı/kg	5.9	1	11/12/07 00:00	11/13/07 20:04	68334-30-5	
n-Pentacosane (S)	71 %		50-135	1	11/12/07 00:00	11/13/07 20:04	629-99-2	
Gasoline Range Organics	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	ı/kg	5.1	1	11/09/07 10:34	11/09/07 23:58	8006-61-9	
4-Bromofluorobenzene (S)	94 %		50-135	1	11/09/07 10:34	11/09/07 23:58	460-00-4	
Percent Moisture	Analytical Meth	od: ASTM D	2974-87					
Percent Moisture	15.6 %		0.10	1		11/09/07 13:55		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-12-8 Lab ID: 927329012 Collected: 11/06/07 16:20 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Metl	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	g/kg	5.7	1	11/12/07 00:00	11/13/07 20:04	68334-30-5	
n-Pentacosane (S)	71 %		50-135	1	11/12/07 00:00	11/13/07 20:04	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	g/kg	5.3	1	11/13/07 16:45	11/13/07 21:18	8006-61-9	
4-Bromofluorobenzene (S)	99 %		50-135	1	11/13/07 16:45	11/13/07 21:18	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	12.0 %		0.10	1		11/14/07 09:05		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-9-3 Lab ID: 927329013 Collected: 11/06/07 16:30 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EPA	8015 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	18.0 mg/kg	5.9	1	11/12/07 00:00	11/13/07 20:30	68334-30-5	
n-Pentacosane (S)	82 %	50-135	1	11/12/07 00:00	11/13/07 20:30	629-99-2	
Gasoline Range Organics	Analytical Method: EPA	8015 Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg/kg	7.6	1	11/13/07 16:45	11/13/07 21:39	8006-61-9	
4-Bromofluorobenzene (S)	99 %	50-135	1	11/13/07 16:45	11/13/07 21:39	460-00-4	
Percent Moisture	Analytical Method: AST	M D2974-87					
Percent Moisture	14.9 %	0.10	1		11/14/07 09:05		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS8-7 Lab ID: 927329014 Collected: 11/06/07 16:50 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND m	g/kg	5.6	1	11/12/07 00:00	11/13/07 20:30	68334-30-5	
n-Pentacosane (S)	70 %		50-135	1	11/12/07 00:00	11/13/07 20:30	629-99-2	
Gasoline Range Organics	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND m	g/kg	6.8	1	11/13/07 16:45	11/13/07 21:59	8006-61-9	
4-Bromofluorobenzene (S)	95 %		50-135	1	11/13/07 16:45	11/13/07 21:59	460-00-4	
Percent Moisture	Analytical Met	hod: ASTM D	2974-87					
Percent Moisture	10.7 %		0.10	1		11/14/07 09:06		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-16-7 Lab ID: 927329015 Collected: 11/07/07 09:35 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EPA 80	15 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	26.3 mg/kg	5.4	1	11/12/07 00:00	11/13/07 20:55	68334-30-5	
n-Pentacosane (S)	73 %	50-135	1	11/12/07 00:00	11/13/07 20:55	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 80	15 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	65.0 mg/kg	5.8	1	11/13/07 16:45	11/13/07 22:20	8006-61-9	
4-Bromofluorobenzene (S)	113 %	50-135	1	11/13/07 16:45	11/13/07 22:20	460-00-4	
Percent Moisture	Analytical Method: ASTM I	D2974-87					
Percent Moisture	7.6 %	0.10	1		11/14/07 09:16		



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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-13-5 Lab ID: 927329016 Collected: 11/07/07 11:00 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	9.6 mg	g/kg	5.8	1	11/12/07 00:00	11/13/07 21:21	68334-30-5	
n-Pentacosane (S)	67 %		50-135	1	11/12/07 00:00	11/13/07 21:21	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	g/kg	5.4	1	11/13/07 16:45	11/13/07 22:40	8006-61-9	
4-Bromofluorobenzene (S)	94 %		50-135	1	11/13/07 16:45	11/13/07 22:40	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	13.2 %		0.10	1		11/14/07 09:17		





 Services, Inc.
 Pace Analytical Services, Inc.

 25 Riverside Dr.
 9800 Kincey Ave. Suite 100

 ville, NC 28804
 Huntersville, NC 28078

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 (704)875-9092

ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-14-5 Lab ID: 927329017 Collected: 11/07/07 11:15 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND m	g/kg	5.8	1	11/12/07 00:00	11/13/07 21:46	68334-30-5	
n-Pentacosane (S)	77 %		50-135	1	11/12/07 00:00	11/13/07 21:46	629-99-2	
Gasoline Range Organics	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND m	g/kg	5.1	1	11/13/07 16:45	11/13/07 23:00	8006-61-9	
4-Bromofluorobenzene (S)	91 %		50-135	1	11/13/07 16:45	11/13/07 23:00	460-00-4	
Percent Moisture	Analytical Met	hod: ASTM D	2974-87					
Percent Moisture	14.4 %		0.10	1		11/14/07 09:17		

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REPORT OF LABORATORY ANALYSIS





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-15-5 Lab ID: 927329018 Collected: 11/07/07 11:45 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight"	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND m	g/kg	5.8	1	11/12/07 00:00	11/13/07 22:11	68334-30-5	
n-Pentacosane (S)	68 %		50-135	1	11/12/07 00:00	11/13/07 22:11	629-99-2	
Gasoline Range Organics	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND m	g/kg	5.3	1	11/13/07 16:45	11/14/07 00:02	8006-61-9	
4-Bromofluorobenzene (S)	91 %		50-135	1	11/13/07 16:45	11/14/07 00:02	460-00-4	
Percent Moisture	Analytical Met	nod: ASTM D	2974-87					
Percent Moisture	13.5 %		0.10	1		11/14/07 09:17		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-16-5 Lab ID: 927329019 Collected: 11/07/07 13:40 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EPA 8015	Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/kg	6.1	1	11/12/07 00:00	11/13/07 22:37	68334-30-5	
n-Pentacosane (S)	62 %	50-135	1	11/12/07 00:00	11/13/07 22:37	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015	Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg/kg	6.0	1	11/13/07 16:45	11/14/07 00:22	8006-61-9	
4-Bromofluorobenzene (S)	97 %	50-135	1	11/13/07 16:45	11/14/07 00:22	460-00-4	
Percent Moisture	Analytical Method: ASTM D2	2974-87					
Percent Moisture	17.5 %	0.10	1		11/14/07 09:17		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-17-5 Lab ID: 927329020 Collected: 11/07/07 14:00 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight"	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	g/kg	5.4	1	11/13/07 00:00	11/14/07 17:14	68334-30-5	
n-Pentacosane (S)	67 %		50-135	1	11/13/07 00:00	11/14/07 17:14	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	g/kg	6.0	1	11/13/07 16:45	11/14/07 00:43	8006-61-9	
4-Bromofluorobenzene (S)	94 %		50-135	1	11/13/07 16:45	11/14/07 00:43	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	6.8 %		0.10	1		11/14/07 09:18		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-18-5 Lab ID: 927329021 Collected: 11/07/07 14:10 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	/kg	6.3	1	11/15/07 00:00	11/19/07 03:48	68334-30-5	
n-Pentacosane (S)	57 %		50-135	1	11/15/07 00:00	11/19/07 03:48	629-99-2	
Gasoline Range Organics	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	/kg	6.7	1	11/13/07 16:45	11/14/07 01:03	8006-61-9	
4-Bromofluorobenzene (S)	98 %		50-135	1	11/13/07 16:45	11/14/07 01:03	460-00-4	
Percent Moisture	Analytical Meth	od: ASTM D	2974-87					
Percent Moisture	20.2 %		0.10	1		11/14/07 09:18		

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REPORT OF LABORATORY ANALYSIS





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-19-5 Lab ID: 927329022 Collected: 11/07/07 15:15 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	ı/kg	33.4	1	11/15/07 00:00	11/19/07 04:14	68334-30-5	
n-Pentacosane (S)	65 %		50-135	1	11/15/07 00:00	11/19/07 04:14	629-99-2	
Gasoline Range Organics	Analytical Meth	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	ı/kg	6.1	1	11/13/07 16:45	11/14/07 01:24	8006-61-9	
4-Bromofluorobenzene (S)	95 %		50-135	1	11/13/07 16:45	11/14/07 01:24	460-00-4	
Percent Moisture	Analytical Meth	od: ASTM D	2974-87					
Percent Moisture	10.1 %		0.10	1		11/14/07 09:18		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-20-7 Lab ID: 927329023 Collected: 11/08/07 11:40 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8015 GCS THC-Diesel for ASE	Analytical Metho	od: EPA 8015	Modified Prepara	ation M	ethod: EPA 3545				
Diesel Components	ND mg/	′kg	5.1	1	11/13/07 00:00	11/14/07 17:39	68334-30-5		
n-Pentacosane (S)	78 %		50-135	1	11/13/07 00:00	11/14/07 17:39	629-99-2		
Gasoline Range Organics	Analytical Metho	nalytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND mg/	′kg	6.7	1	11/13/07 16:45	11/14/07 01:44	8006-61-9		
4-Bromofluorobenzene (S)	97 %		50-135	1	11/13/07 16:45	11/14/07 01:44	460-00-4		
Percent Moisture	Analytical Metho	od: ASTM D2	974-87						
Percent Moisture	1.6 %		0.10	1		11/14/07 09:19			





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-21-7 Lab ID: 927329024 Collected: 11/08/07 11:55 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results L	Jnits Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: E	EPA 8015 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/kg	5.7	1	11/13/07 00:00	11/14/07 18:05	68334-30-5	
n-Pentacosane (S)	72 %	50-135	1	11/13/07 00:00	11/14/07 18:05	629-99-2	
Gasoline Range Organics	Analytical Method: E	EPA 8015 Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg/kg	6.9	1	11/13/07 16:45	11/14/07 02:05	8006-61-9	
4-Bromofluorobenzene (S)	96 %	50-135	1	11/13/07 16:45	11/14/07 02:05	460-00-4	
Percent Moisture	Analytical Method: A	ASTM D2974-87					
Percent Moisture	12.7 %	0.10	1		11/14/07 09:19		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-22-5 Lab ID: 927329025 Collected: 11/08/07 13:16 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	g/kg	5.9	1	11/13/07 00:00	11/14/07 18:05	68334-30-5	
n-Pentacosane (S)	75 %		50-135	1	11/13/07 00:00	11/14/07 18:05	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg	g/kg	5.5	1	11/13/07 16:45	11/14/07 02:26	8006-61-9	
4-Bromofluorobenzene (S)	100 %		50-135	1	11/13/07 16:45	11/14/07 02:26	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D2	2974-87					
Percent Moisture	15.4 %		0.10	1		11/14/07 09:19		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-23-7 Lab ID: 927329026 Collected: 11/08/07 13:30 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EPA	8015 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/kg	5.3	1	11/13/07 00:00	11/14/07 18:30	68334-30-5	
n-Pentacosane (S)	74 %	50-135	1	11/13/07 00:00	11/14/07 18:30	629-99-2	
Gasoline Range Organics	Analytical Method: EPA	8015 Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg/kg	6.4	1	11/13/07 16:45	11/14/07 02:46	8006-61-9	
4-Bromofluorobenzene (S)	99 %	50-135	1	11/13/07 16:45	11/14/07 02:46	460-00-4	
Percent Moisture	Analytical Method: AST	M D2974-87					
Percent Moisture	4.8 %	0.10	1		11/14/07 09:19		





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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-24-3 Lab ID: 927329027 Collected: 11/08/07 14:05 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	g/kg	5.9	1	11/13/07 00:00	11/14/07 18:30	68334-30-5	
n-Pentacosane (S)	63 %		50-135	1	11/13/07 00:00	11/14/07 18:30	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	g/kg	6.0	1	11/13/07 16:45	11/14/07 03:07	8006-61-9	
4-Bromofluorobenzene (S)	93 %		50-135	1	11/13/07 16:45	11/14/07 03:07	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	14.9 %		0.10	1		11/14/07 09:19		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-25-3 Lab ID: 927329028 Collected: 11/08/07 14:50 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Metho	d: EPA 8015	Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/k	κg	5.8	1	11/15/07 00:00	11/19/07 04:14	68334-30-5	
n-Pentacosane (S)	66 %		50-135	1	11/15/07 00:00	11/19/07 04:14	629-99-2	
Gasoline Range Organics	Analytical Metho	d: EPA 8015	Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg/k	κg	6.3	1	11/16/07 17:01	11/17/07 04:02	8006-61-9	
4-Bromofluorobenzene (S)	78 %		50-135	1	11/16/07 17:01	11/17/07 04:02	460-00-4	
Percent Moisture	Analytical Metho	d: ASTM D29	974-87					
Percent Moisture	14.3 %		0.10	1		11/14/07 09:19		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-16-GW	Lab ID: 927	329029	Collected: 11/07/0	7 09:40	Received: 11	/09/07 16:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation Me	ethod: EPA 3510			
Diesel Components	0.30 mg	g/L	0.14	1	11/14/07 00:00	11/15/07 17:42	68334-30-5	
n-Pentacosane (S)	71 %		50-135	1	11/14/07 00:00	11/15/07 17:42	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 503	0/8015 Mod.					
Gasoline Range Organics	ND mg	_J /L	0.080	1		11/16/07 20:53	8006-61-9	
4-Bromofluorobenzene (S)	80 %		50-150	1		11/16/07 20:53	460-00-4	

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Date: 11/26/2007 04:54 PM

Sample: SS-15-GW	Lab ID: 927	329030	Collected: 11/07/0	7 11:55	Received: 11	/09/07 16:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Met	hod: EPA 801	5 Modified Prepara	ation Me	ethod: EPA 3510			
Diesel Components	ND m	g/L	0.14	1	11/14/07 00:00	11/15/07 18:07	68334-30-5	
n-Pentacosane (S)	77 %		50-135	1	11/14/07 00:00	11/15/07 18:07	629-99-2	
Gasoline Range Organics	Analytical Met	hod: EPA 503	80/8015 Mod.					
Gasoline Range Organics	ND m	g/L	0.080	1		11/14/07 19:13	8006-61-9	
4-Bromofluorobenzene (S)	86 %	-	50-150	1		11/14/07 19:13	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-18-GW	Lab ID: 927	329031	Collected: 11/07/0	7 14:15	Received: 11	/09/07 16:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation Me	ethod: EPA 3510			
Diesel Components	ND mg	g/L	0.11	1	11/14/07 00:00	11/15/07 18:07	68334-30-5	
n-Pentacosane (S)	71 %		50-135	1	11/14/07 00:00	11/15/07 18:07	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 503	80/8015 Mod.					
Gasoline Range Organics	ND mg	g/L	0.080	1		11/14/07 19:33	8006-61-9	
4-Bromofluorobenzene (S)	78 %	-	50-150	1		11/14/07 19:33	460-00-4	

Date: 11/26/2007 04:54 PM REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-23-GW	Lab ID: 927	329032	Collected: 11/08/0	7 13:35	Received: 11	/09/07 16:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Meti	nod: EPA 801	5 Modified Prepara	ation Me	thod: EPA 3510			
Diesel Components	ND mg	g/L	0.12	1	11/14/07 00:00	11/15/07 18:33	68334-30-5	
n-Pentacosane (S)	78 %		50-135	1	11/14/07 00:00	11/15/07 18:33	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 503	80/8015 Mod.					
Gasoline Range Organics	ND mg	g/L	0.080	1		11/14/07 19:54	8006-61-9	
4-Bromofluorobenzene (S)	90 %	-	50-150	1		11/14/07 19:54	460-00-4	

Date: 11/26/2007 04:54 PM **REPORT OF LABORATORY ANALYSIS**

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-26-3 Lab ID: 927329033 Collected: 11/08/07 15:10 Received: 11/09/07 16:00 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	19.1 mg	g/kg	5.3	1	11/15/07 00:00	11/19/07 04:39	68334-30-5	
n-Pentacosane (S)	70 %		50-135	1	11/15/07 00:00	11/19/07 04:39	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	g/kg	5.4	1	11/16/07 17:01	11/17/07 04:55	8006-61-9	
4-Bromofluorobenzene (S)	73 %		50-135	1	11/16/07 17:01	11/17/07 04:55	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	5.5 %		0.10	1		11/14/07 09:20		

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ANALYTICAL RESULTS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

Sample: SS-26-GWMW	Lab ID: 927	329034	Collected: 11/08/0	7 15:15	Received: 11	/09/07 16:00 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation Me	ethod: EPA 3510			
Diesel Components	0.12 mg	g/L	0.11	1	11/16/07 00:00	11/20/07 22:12	68334-30-5	
n-Pentacosane (S)	79 %		50-135	1	11/16/07 00:00	11/20/07 22:12	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 503	80/8015 Mod.					
Gasoline Range Organics	ND mg	g/L	0.080	1		11/20/07 16:49	8006-61-9	
4-Bromofluorobenzene (S)	78 %	-	50-150	1		11/20/07 16:49	460-00-4	

Date: 11/26/2007 04:54 PM **REPORT OF LABORATORY ANALYSIS**

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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: PMST/1203 Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 927329001, 927329002, 927329003, 927329004, 927329005, 927329006

SAMPLE DUPLICATE: 38089

ParameterUnits927298001 ResultDup ResultRPDQualifiersPercent Moisture%15.213.115

Date: 11/26/2007 04:54 PM REPORT OF LABORATORY ANALYSIS





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: PMST/1208 Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 927329007, 927329008, 927329009, 927329010, 927329011

SAMPLE DUPLICATE: 38744

Date: 11/26/2007 04:54 PM

927467001 Dup

Parameter Units Result Result RPD Qualifiers

Percent Moisture % 16.7 12.6 28 R1



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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: GCV/1342 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics

Associated Lab Samples: 927329001, 927329002, 927329003, 927329004, 927329005, 927329006, 927329007, 927329008, 927329009,

927329010, 927329011

METHOD BLANK: 38850

Associated Lab Samples: 927329001, 927329002, 927329003, 927329004, 927329005, 927329006, 927329007, 927329008, 927329009,

927329010, 927329011

		Blank	Reporting	
Parameter	Units	Result	Limit	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	
4-Bromofluorobenzene (S)	%	101	50-135	

LABORATORY CONTROL SAMPLE: 38851

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Gasoline Range Organics	mg/kg	25	29.5	118	70-150	
4-Bromofluorobenzene (S)	%			104	50-135	

MATRIX SPIKE SAMPLE: 38852

WATRIX OF IRE GAWII EE.	30032	927295001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Gasoline Range Organics	mg/kg	ND	32.1	38.2	111	70-148	
4-Bromofluorobenzene (S)	%				95	50-135	

SAMPLE DUPLICATE: 38853

Parameter	Units	927295002 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/kg %	ND	ND 104	89	





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: OEXT/1697 Analysis Method: EPA 8015 Modified QC Batch Method: EPA 3545 Analysis Description: 8015 Solid GCSV

Associated Lab Samples: 927329001, 927329002, 927329003, 927329004, 927329005, 927329006, 927329007

METHOD BLANK: 39631

n-Pentacosane (S)

Date: 11/26/2007 04:54 PM

Associated Lab Samples: 927329001, 927329002, 927329003, 927329004, 927329005, 927329006, 927329007

Blank Reporting Parameter Units Result Limit Qualifiers **Diesel Components** ND 5.0 mg/kg

%

LABORATORY CONTROL SAMPLE: 39632

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Diesel Components	mg/kg	167	100	60	50-114	
n-Pentacosane (S)	%			68	50-135	

88

50-135

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 40587 40588 MSD MS 927170003 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** Qual

59.9 **Diesel Components** mg/kg 167 167 178 215 71 93 50-107 19 n-Pentacosane (S) % 97 103 50-135





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: OEXT/1707 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3545 Analysis Description: 8015 Solid GCSV

Associated Lab Samples: 927329008, 927329009, 927329010, 927329011, 927329012, 927329013, 927329014, 927329015, 927329016,

927329017, 927329018, 927329019

METHOD BLANK: 39873

Associated Lab Samples: 927329008, 927329009, 927329010, 927329011, 927329012, 927329013, 927329014, 927329015, 927329016,

927329017, 927329018, 927329019

ParameterUnitsBlank ResultReporting LimitQualifiersDiesel Components n-Pentacosane (S)mg/kgND5.07150-135

LABORATORY CONTROL SAMPLE: 39874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components n-Pentacosane (S)	mg/kg %	167	115	69 99	50-114 50-135	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 39875 39876

Parameter	Units	927329015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Components n-Pentacosane (S)	mg/kg %	26.3	181	181	181	188	86 101	90 95	50-107 50-135	4	





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

 QC Batch:
 OEXT/1720
 Analysis Method:
 EPA 8015 Modified

 QC Batch Method:
 EPA 3545
 Analysis Description:
 8015 Solid GCSV

 Associated Lab Samples:
 927329020, 927329023, 927329024, 927329025, 927329026, 927329027

METHOD BLANK: 40371

Date: 11/26/2007 04:54 PM

Associated Lab Samples: 927329020, 927329023, 927329024, 927329025, 927329026, 927329027

Parameter Units Blank Reporting Result Limit Qualifiers

onents mg/kg ND 5.0

 Diesel Components
 mg/kg
 ND
 5.0

 n-Pentacosane (S)
 %
 74
 50-135

LABORATORY CONTROL SAMPLE: 40372

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Diesel Components** mg/kg 167 118 71 50-114 n-Pentacosane (S) % 80 50-135

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 40373 40374

		927631001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Diesel Components n-Pentacosane (S)	mg/kg %	10800	190	190	10400	9080	-204 4520	-916 12000	50-107 50-135	14 1g S5	





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: PMST/1219 Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 927329012, 927329013, 927329014

SAMPLE DUPLICATE: 40497

		927509001	Dup		
Parameter	Units	Result	Result	RPD	Qualifiers
Percent Moisture	 %	42.0	43.2	3	





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: PMST/1220 Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 927329015, 927329016, 927329017, 927329018, 927329019, 927329020, 927329021, 927329022, 927329023,

927329024, 927329025, 927329026, 927329027, 927329028, 927329033

SAMPLE DUPLICATE: 40502

Date: 11/26/2007 04:54 PM

 Parameter
 Units
 927631001 Result
 Dup Result
 RPD
 Qualifiers

 Percent Moisture
 %
 11.9
 12.4
 4

REPORT OF LABORATORY ANALYSIS



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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: GCV/1363 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics

Associated Lab Samples: 927329012, 927329013, 927329014, 927329015, 927329016, 927329017, 927329018, 927329019, 927329020,

927329021, 927329022, 927329023, 927329024, 927329025, 927329026, 927329027

METHOD BLANK: 40536

LABORATORY CONTROL SAMPLE:

4-Bromofluorobenzene (S)

Associated Lab Samples: 927329012, 927329013, 927329014, 927329015, 927329016, 927329017, 927329018, 927329019, 927329020,

927329021, 927329022, 927329023, 927329024, 927329025, 927329026, 927329027

		Blank	Reporting	
Parameter	Units	Result	Limit	Qualifiers
Gasoline Range Organics	mg/kg	ND ND	6.0	
4-Bromofluorobenzene (S)	%	98	50-135	

40537

Parameter	Units		_CS esult	LCS % Rec	% Rec Limits	Qualifiers	
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/kg %	25	26.7	107 100	70-150 50-135		
MATRIX SPIKE SAMPLE:	40538	927566001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/kg %	NI	25.9	27.7	100		

102

2

SAMPLE DUPLICATE: 40539					
		927566003	Dup		
Parameter	Units	Result	Result	RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND	ND	113	

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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: GCV/1366 Analysis Method: EPA 5030/8015 Mod.

QC Batch Method: EPA 5030/8015 Mod. Analysis Description: Gasoline Range Organics

Associated Lab Samples: 927329029, 927329030, 927329031, 927329032

METHOD BLANK: 40795

Associated Lab Samples: 927329029, 927329030, 927329031, 927329032

ParameterUnitsBlank Reporting ResultReporting LimitQualifiersGasoline Range Organicsmg/LND0.0804-Bromofluorobenzene (S)%10450-150

LABORATORY CONTROL SAMPLE: 40796

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/L %	.5	0.54	107 99	70-137 50-150	

MATRIX SPIKE SAMPLE: 40797

Parameter	Units	927030001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/L %	ND	.5	0.47	90 94	53-150 50-150	

SAMPLE DUPLICATE: 40798

Date: 11/26/2007 04:54 PM

Parameter	Units	927030002 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/L %	3.2 101	3.2 101	1 0	

REPORT OF LABORATORY ANALYSIS





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: OEXT/1729 Analysis Method: EPA 8015 Modified

QC Batch Method: EPA 3510 Analysis Description: 8015 GCS

Associated Lab Samples: 927329029, 927329030, 927329031, 927329032

METHOD BLANK: 41069

Associated Lab Samples: 927329029, 927329030, 927329031, 927329032

ParameterUnitsBlank ResultReporting LimitQualifiersDiesel Components n-Pentacosane (S)mg/LND0.107650-135

LABORATORY CONTROL SAMPLE & LCSD: 41070 41071 Spike LCS **LCSD** LCS LCSD % Rec Max Parameter Units Conc. Result Result % Rec % Rec Limits **RPD RPD** Qualifiers **Diesel Components** mg/L 5 3.6 4.1 72 81 50-110 12 30 n-Pentacosane (S) % 84 85 50-135





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: OEXT/1743 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3545 Analysis Description: 8015 Solid GCSV

Associated Lab Samples: 927329021, 927329022, 927329028, 927329033

METHOD BLANK: 41892

Date: 11/26/2007 04:54 PM

Associated Lab Samples: 927329021, 927329022, 927329028, 927329033

ParameterUnitsBlank Reporting ResultReporting LimitQualifiersDiesel Components n-Pentacosane (S)mg/kgND5.07350-135

LABORATORY CONTROL SAMPLE: 41893

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components n-Pentacosane (S)	mg/kg %	167	120	72 85	50-114 50-135	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 41894 41895

		927895001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	Qual
Diesel Components n-Pentacosane (S)	mg/kg %	837	185	185	858	706	12 78	-71 71	50-107 50-135	19 2g	

REPORT OF LABORATORY ANALYSIS





96

93

50-135

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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: OEXT/1762 Analysis Method: EPA 8015 Modified

QC Batch Method: EPA 3510 Analysis Description: 8015 GCS

Associated Lab Samples: 927329034

METHOD BLANK: 42530

n-Pentacosane (S)

Associated Lab Samples: 927329034

ParameterUnitsBlank ResultReporting LimitQualifiersDiesel Components n-Pentacosane (S)mg/L ND 0.100.10%89 50-135

%

LABORATORY CONTROL SAMPLE & LCSD: 42531 42532 Spike LCS LCSD LCS LCSD % Rec Max Parameter Units Conc. Result Result % Rec % Rec Limits **RPD RPD** Qualifiers **Diesel Components** mg/L 5 4.1 4.1 81 81 50-110 .2 30

Date: 11/26/2007 04:54 PM





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: GCV/1380
QC Batch Method: EPA 5035A/5030B

Analysis Method:

EPA 8015 Modified

QC Batch Method: EPA 5035A/5030B

Analysis Description: Gasoline

Gasoline Range Organics

107

82

% Rec

Limits

70-150

50-135

Qualifiers

Associated Lab Samples: 927329028, 927329033

METHOD BLANK: 42698

Associated Lab Samples: 92

927329028, 927329033

Blank

Reporting

Parameter Units

s Result

Limit Qualifiers

Gasoline Range Organics mg/kg ND 6.0

4-Bromofluorobenzene (S)

%

64

50-135

LABORATORY CONTROL SAMPLE: 42699

		Spike	LCS	LCS
Parameter	Units	Conc.	Result	% Rec
Gasoline Range Organics	mg/kg		26.7	1
4-Bromofluorobenzene (S)	%			

MATRIX SPIKE SAMPLE:

42700

WATER OF THE OAWN EE.	42700	927329028	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/kg %	ND	26.1	28.9	111 81	70-148 50-135	

SAMPLE DUPLICATE: 42701

Date: 11/26/2007 04:54 PM

Parameter	Units	927329033 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	mg/kg	ND ND	ND	0	
4-Bromofluorobenzene (S)	%		75	3	





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QUALITY CONTROL DATA

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

QC Batch: GCV/1393

QC Batch Method: EPA 5030/8015 Mod.

Associated Lab Samples: 927329034

Analysis Method: Analysis Description: EPA 5030/8015 Mod.

Gasoline Range Organics

METHOD BLANK: 43953

927329034

Associated Lab Samples:

Blank

Reporting

Result

Limit Qualifiers

Gasoline Range Organics

4-Bromofluorobenzene (S)

Parameter

mg/L %

Units

ND 77

0.080 50-150

LABORATORY CONTROL SAMPLE: 43954

> Parameter Units

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Gasoline Range Organics 4-Bromofluorobenzene (S)

mg/L %

.5

ND

78

111 85

RPD

0

1

70-137 50-150

43955

927329034

Dup

0.55

Parameter Gasoline Range Organics 4-Bromofluorobenzene (S)

SAMPLE DUPLICATE:

mg/L

%

Units Result

Result

ND

79

Qualifiers





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QUALIFIERS

Project: NCDOT 00907/WSB#32782.1.1

Pace Project No.: 927329

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.

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.

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

ANALYTE QUALIFIERS

Date: 11/26/2007 04:54 PM

2g

R1	RPD value was	outcido	control limite
K I	RPD value was	outside	control limits.

S5 Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

The spike Recovery was outside acceptance limits for the MS and MSD due to an analyte concentration in the sample at four times greater than the spike concentration. The QC batch was accepted based upon LCS recoveries within acceptance limits.

The spike recovery was outside acceptance limits for the MS and MSD due to an analyte concentration in the sample at four times greater than the spike concentration. The QC batch was accepted based upon LCS recoveries within

acceptance limits.

REPORT OF LABORATORY ANALYSIS





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

November 27, 2007

Mr. Bob Miller General Engineering PO Box 14262 Research Triangle, NC 27709

RE: Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Dear Mr. Miller:

Enclosed are the analytical results for sample(s) received by the laboratory on November 13, 2007. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

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

Sincerely,

Annette Scott

Annetta Scott

annette.scott@pacelabs.com Project Manager

Enclosures

cc: Mr. Christopher Peoples, NCDOT- Materials & Test Unit







(828)254-7176

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

CERTIFICATIONS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Charlotte Certification IDs

Florida/NELAP Certification Number: E87627 Kansas Certification Number: E-10364 Louisiana/LELAP Certification Number: 04034 North Carolina Drinking Water Certification Number: 37706

North Carolina Wastewater Certification Number: 12

Asheville Certification IDs

Florida/NELAP Certification Number: E87648 Louisiana/LELAP Certification Number: 03095 New Jersey Certification Number: NC011

North Carolina Drinking Water Certification Number: 37712 North Carolina Wastewater Certification Number: 40 North Carolina Bioassay Certification Number: 9

Eden Certification IDs

North Carolina Drinking Water Certification Number: 37738 Virginia Drinking Water Certification Number: 00424 North Carolina Field Services Certification Number: 5342

South Carolina Certification Number: 990060001 South Carolina Bioassay Certification Number: 990060003

Tennessee Certification Number: 04010 Virginia Certification Number: 00213

Pennsylvania Certification Number: 68-03578 South Carolina Certification Number: 99030001

South Carolina Bioassay Certification Number: 99030002

Tennessee Certification Number: 2980 Virginia Certification Number: 00072

North Carolina Wastewater Certification Number: 633





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-27-7 Lab ID: 927717001 Collected: 11/09/07 09:25 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND m	g/kg	5.1	1	11/16/07 00:00	11/19/07 20:22	68334-30-5	
n-Pentacosane (S)	69 %		50-135	1	11/16/07 00:00	11/19/07 20:22	629-99-2	
Gasoline Range Organics	Analytical Met	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND m	g/kg	5.8	1	11/16/07 18:50	11/16/07 22:36	8006-61-9	
4-Bromofluorobenzene (S)	83 %		50-135	1	11/16/07 18:50	11/16/07 22:36	460-00-4	
Percent Moisture	Analytical Met	hod: ASTM D	2974-87					
Percent Moisture	2.2 %		0.10	1		11/15/07 15:49		





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-28-7 Lab ID: 927717002 Collected: 11/09/07 10:30 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	9.9 m	g/kg	5.5	1	11/16/07 00:00	11/19/07 20:22	68334-30-5	
n-Pentacosane (S)	73 %		50-135	1	11/16/07 00:00	11/19/07 20:22	629-99-2	
Gasoline Range Organics	Analytical Met	hod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND m	g/kg	5.0	1	11/16/07 18:50	11/16/07 23:37	8006-61-9	
4-Bromofluorobenzene (S)	81 %)	50-135	1	11/16/07 18:50	11/16/07 23:37	460-00-4	
Percent Moisture	Analytical Met	hod: ASTM D2	2974-87					
Percent Moisture	9.1 %)	0.10	1		11/15/07 15:49		





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-29-7 Lab ID: 927717003 Collected: 11/09/07 10:45 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Metho	d: EPA 8015	Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/l	κg	6.3	1	11/16/07 00:00	11/19/07 20:48	68334-30-5	
n-Pentacosane (S)	61 %		50-135	1	11/16/07 00:00	11/19/07 20:48	629-99-2	
Gasoline Range Organics	Analytical Metho	d: EPA 8015	Modified Prepara	ation M	ethod: EPA 5035A	/5030B		
Gasoline Range Organics	ND mg/l	κg	7.2	1	11/16/07 18:50	11/16/07 23:58	8006-61-9	
4-Bromofluorobenzene (S)	71 %		50-135	1	11/16/07 18:50	11/16/07 23:58	460-00-4	
Percent Moisture	Analytical Metho	d: ASTM D2	974-87					
Percent Moisture	21.2 %		0.10	1		11/15/07 15:49		





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-30-5 Lab ID: 927717004 Collected: 11/09/07 11:05 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results Ur	nits Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8015 GCS THC-Diesel for ASE	Analytical Method: EF	PA 8015 Modified Prepara	ation M	ethod: EPA 3545				
Diesel Components	ND mg/kg	5.1	1	11/16/07 00:00	11/19/07 20:48	68334-30-5		
n-Pentacosane (S)	78 %	50-135	1	11/16/07 00:00	11/19/07 20:48	629-99-2		
Gasoline Range Organics	Analytical Method: EF	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND mg/kg	6.3	1	11/16/07 18:50	11/17/07 00:18	8006-61-9		
4-Bromofluorobenzene (S)	81 %	50-135	1	11/16/07 18:50	11/17/07 00:18	460-00-4		
Percent Moisture	Analytical Method: AS	STM D2974-87						
Percent Moisture	1.7 %	0.10	1		11/15/07 15:50			

Date: 11/27/2007 10:52 AM

REPORT OF LABORATORY ANALYSIS





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-31-3 Lab ID: 927717005 Collected: 11/09/07 11:25 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EPA 80	015 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/kg	5.3	1	11/16/07 00:00	11/19/07 21:13	68334-30-5	
n-Pentacosane (S)	72 %	50-135	1	11/16/07 00:00	11/19/07 21:13	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 80	015 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg/kg	4.8	1	11/16/07 18:50	11/17/07 00:39	8006-61-9	
4-Bromofluorobenzene (S)	81 %	50-135	1	11/16/07 18:50	11/17/07 00:39	460-00-4	
Percent Moisture	Analytical Method: ASTM	D2974-87					
Percent Moisture	6.5 %	0.10	1		11/15/07 15:50		



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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-32-7 Lab ID: 927717006 Collected: 11/09/07 11:45 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Metho	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/	/kg	5.3	1	11/16/07 00:00	11/19/07 21:13	68334-30-5	
n-Pentacosane (S)	67 %		50-135	1	11/16/07 00:00	11/19/07 21:13	629-99-2	
Gasoline Range Organics	Analytical Metho	od: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg/	/kg	6.2	1	11/16/07 18:50	11/17/07 00:59	8006-61-9	
4-Bromofluorobenzene (S)	79 %		50-135	1	11/16/07 18:50	11/17/07 00:59	460-00-4	
Percent Moisture	Analytical Metho	od: ASTM D2	2974-87					
Percent Moisture	5.6 %		0.10	1		11/15/07 15:50		





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-33-5 Lab ID: 927717007 Collected: 11/09/07 12:00 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis							
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg	g/kg	10.9	1	11/16/07 00:00	11/19/07 21:39	68334-30-5	
n-Pentacosane (S)	73 %		50-135	1	11/16/07 00:00	11/19/07 21:39	629-99-2	
Gasoline Range Organics	Analytical Meth	nod: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg	g/kg	5.0	1	11/16/07 18:50	11/17/07 01:19	8006-61-9	
4-Bromofluorobenzene (S)	78 %		50-135	1	11/16/07 18:50	11/17/07 01:19	460-00-4	
Percent Moisture	Analytical Meth	nod: ASTM D	2974-87					
Percent Moisture	8.6 %		0.10	1		11/15/07 15:50		

Date: 11/27/2007 10:52 AM REPORT OF I

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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-34-7 Lab ID: 927717008 Collected: 11/09/07 12:15 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Un	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EF	PA 8015 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/kg	5.8	1	11/16/07 00:00	11/19/07 21:39	68334-30-5	
n-Pentacosane (S)	64 %	50-135	1	11/16/07 00:00	11/19/07 21:39	629-99-2	
Gasoline Range Organics	Analytical Method: EF	PA 8015 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg/kg	4.6	1	11/16/07 18:50	11/17/07 01:40	8006-61-9	
4-Bromofluorobenzene (S)	80 %	50-135	1	11/16/07 18:50	11/17/07 01:40	460-00-4	
Percent Moisture	Analytical Method: AS	STM D2974-87					
Percent Moisture	14.1 %	0.10	1		11/15/07 15:50		

Date: 11/27/2007 10:52 AM REPC

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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-35-3 Lab ID: 927717009 Collected: 11/09/07 12:30 Received: 11/13/07 16:35 Matrix: Solid

Results reported on a "dry-weight	" basis						
Parameters	Results Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel for ASE	Analytical Method: EPA 801	5 Modified Prepara	ation M	ethod: EPA 3545			
Diesel Components	ND mg/kg	5.8	1	11/16/07 00:00	11/20/07 09:33	68334-30-5	
n-Pentacosane (S)	89 %	50-135	1	11/16/07 00:00	11/20/07 09:33	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 801	5 Modified Prepara	ation M	ethod: EPA 5035A	V5030B		
Gasoline Range Organics	ND mg/kg	5.4	1	11/16/07 18:50	11/17/07 02:00	8006-61-9	
4-Bromofluorobenzene (S)	80 %	50-135	1	11/16/07 18:50	11/17/07 02:00	460-00-4	
Percent Moisture	Analytical Method: ASTM D2	2974-87					
Percent Moisture	14.0 %	0.10	1		11/15/07 15:51		

Date: 11/27/2007 10:52 AM REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Sample: SS-27-GW	Lab ID: 927	717010	Collected: 11/09/0	7 09:35	Received: 11	/13/07 16:35 M	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Met	hod: EPA 801	5 Modified Prepara	ation Me	thod: EPA 3510			
Diesel Components	ND m	g/L	0.12	1	11/14/07 00:00	11/15/07 18:58	68334-30-5	
n-Pentacosane (S)	75 %	•	50-135	1	11/14/07 00:00	11/15/07 18:58	629-99-2	
Gasoline Range Organics	Analytical Met	hod: EPA 503	0/8015 Mod.					
Gasoline Range Organics	ND m	g/L	0.080	1		11/20/07 17:30	8006-61-9	
4-Bromofluorobenzene (S)	80 %	- 1	50-150	1		11/20/07 17:30	460-00-4	

Date: 11/27/2007 10:52 AM REPORT OF LABORATORY ANALYSIS





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ANALYTICAL RESULTS

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

Date: 11/27/2007 10:52 AM

Sample: SS-35-GW	Lab ID: 9277	717011	Collected: 11/09/0	7 14:00	Received: 11	/13/07 16:35 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Meth	od: EPA 801	15 Modified Prepara	ation Me	ethod: EPA 3510			
Diesel Components	0.70 mg	/L	0.50	1	11/14/07 00:00	11/15/07 18:58	68334-30-5	
n-Pentacosane (S)	76 %		50-135	1	11/14/07 00:00	11/15/07 18:58	629-99-2	
Gasoline Range Organics	Analytical Meth	od: EPA 503	30/8015 Mod.					
Gasoline Range Organics	2.8 mg	/L	0.080	1		11/20/07 17:50	8006-61-9	
4-Bromofluorobenzene (S)	91 %		50-150	1		11/20/07 17:50	460-00-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

QC Batch: OEXT/1729 Analysis Method: EPA 8015 Modified

QC Batch Method: EPA 3510 Analysis Description: 8015 GCS

Associated Lab Samples: 927717010, 927717011

METHOD BLANK: 41069

Associated Lab Samples: 927717010, 927717011

ParameterUnitsBlank Reporting ResultReporting LimitQualifiersDiesel Componentsmg/LND0.10

n-Pentacosane (S) % 76 50-135

LABORATORY CONTROL SAMPLE & LCSD: 41070 41071 Spike LCS **LCSD** LCS LCSD % Rec Max % Rec Parameter Units Conc. Result Result % Rec Limits **RPD RPD** Qualifiers **Diesel Components** mg/L 5 3.6 4.1 72 81 50-110 12 30 n-Pentacosane (S) % 84 85 50-135





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QUALITY CONTROL DATA

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

QC Batch: PMST/1228 Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 927717001, 927717002, 927717003, 927717004, 927717005, 927717006, 927717007, 927717008, 927717009

SAMPLE DUPLICATE: 41469

 Parameter
 Units
 927619005 Result
 Dup Result
 RPD
 Qualifiers

 Percent Moisture
 %
 18.7
 18.1
 3





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QUALITY CONTROL DATA

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

QC Batch: OEXT/1765 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3545 Analysis Description: 8015 Solid GCSV

Associated Lab Samples: 927717001, 927717002, 927717003, 927717004, 927717005, 927717006, 927717007, 927717008, 927717009

METHOD BLANK: 42760

Associated Lab Samples: 927717001, 927717002, 927717003, 927717004, 927717005, 927717006, 927717007, 927717008, 927717009

ParameterUnitsBlank Reporting ResultReporting LimitQualifiersDiesel Components n-Pentacosane (S)mg/kgND5.08750-135

LABORATORY CONTROL SAMPLE: 42761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	167	115	69	50-114	
n-Pentacosane (S)	%			86	50-135	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 42763 MSD MS 928026008 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** Qual 161 **Diesel Components** mg/kg 193 193 261 254 52 48 50-107 3 M0 n-Pentacosane (S) % 174 216 50-135 S5

Date: 11/27/2007 10:52 AM REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

QC Batch: GCV/1382 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics

Associated Lab Samples: 927717001, 927717002, 927717003, 927717004, 927717005, 927717006, 927717007, 927717008, 927717009

METHOD BLANK: 42859

Associated Lab Samples: 927717001, 927717002, 927717003, 927717004, 927717005, 927717006, 927717007, 927717008, 927717009

ParameterUnitsBlank Reporting ResultReporting LimitQualifiersGasoline Range Organicsmg/kgND6.04-Bromofluorobenzene (S)%8450-135

LABORATORY CONTROL SAMPLE: 42860

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg		29.3	117	70-150	
4-Bromofluorobenzene (S)	%			80	50-135	

MATRIX SPIKE SAMPLE: 42861

Parameter	Units	927626001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/kg %	ND	32.5	37.9	117 92	70-148 50-135	

SAMPLE DUPLICATE: 42862

Parameter	Units	927626002 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics 4-Bromofluorobenzene (S)	mg/kg %	ND	ND 78	0	





EPA 5030/8015 Mod.

Qualifiers

Gasoline Range Organics

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QUALITY CONTROL DATA

Analysis Method:

Analysis Description:

Project: NCDT00907C/WBS#32782.1.1

Pace Project No.: 927717

QC Batch: GCV/1393

QC Batch Method: EPA 5030/8015 Mod.

Associated Lab Samples: 927717010, 927717011

METHOD BLANK: 43953

Associated Lab Samples: 927717010, 927717011

Blank Reporting

 Parameter
 Units
 Result
 Limit

 ange Organics
 mg/L
 ND
 0.080

Gasoline Range Organics mg/L ND 0.080 4-Bromofluorobenzene (S) % 77 50-150

LABORATORY CONTROL SAMPLE: 43954

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Gasoline Range Organics mg/L .5 0.55 111 70-137 4-Bromofluorobenzene (S) % 85 50-150

SAMPLE DUPLICATE: 43955

Parameter	Units	927329034 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	mg/L	ND 78	ND 79	0	
4-Bromofluorobenzene (S)	%	78	79		1





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QUALIFIERS

NCDT00907C/WBS#32782.1.1 Project:

Pace Project No.: 927717

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.

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.

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

ANALYTE QUALIFIERS

Date: 11/27/2007 10:52 AM

M0 Matrix spike recovery was outside laboratory control limits.

S5 Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

REPORT OF LABORATORY ANALYSIS



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical

Section A Required Client Information:	σα	Section B Required Project Information:	piect Infe	ormation:				0, 3	Section C	Section C	ì							<u>a.</u>	Page:		**************************************	
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Face Analytical

Pace Project No./ Lab I.D. South of (N/A) DRINKING WATER Samples Intact (3) (Y) SAMPLE CONDITIONS OTHER (N/Y) ("Y") Sealed Cooler muni Custody ö Ice (Y/V) Received on GROUND WATER Residual Chlorine (Y/N) O° ni qmeT Page: REGULATORY AGENCY RCRA 2 0. Requested Analysis Filtered (Y/N) TIME Site Location STATE NPDES DATE TSN ACCEPTED BY / AFFILIATION 그렇죠 1 089 1 N /A taeT sisylenA Other Methanol NaOH Na₂S₂O₃ Preservatives 300 HCI Invoice information. HNO³ Company Name: 00 [†]OS^zH Vanager: Pace Profile #: Section C Reference: Pace Project Unpreserved TIME ace Quote Address: Attention # OF CONTAINERS 7 F SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SAMPLE TEMP AT COLLECTION 0000 1.05/28 > 0 20 DATE 7 2 3 5.6 14:10 TIME ु COMPOSITE ENDIGRAB 14/41 (3) 7 F3/4/1 ¥\$~ 17 1177 DATE COLLECTED -----8-2965 RELINQUISHED BY / AFFILIATION TIME 3070 VX COMPOSITE START Project Number. 7160777700 DATE Required Project Information () (<u>)</u> (j) Purchase Order No.: (G=GRAB C=COMP) SAMPLE TYPE (j) (3) ζ_{i}^{t} Ó Ü () (1) į, 5 وليان واسمان **BUOD XIRTAM** Project Name: Section B 38 Report To: Copy To: Matrix Codes MATRIX / CODE Drinking Water Water Waste Water Product Soil/Soild Oil Wipe Wipe Wipe Oilter U @a21,00m (55-10-8) ADDITIONAL COMMENTS 99442 (A-Z, 0-9 / .-) Sample IDs MUST BE UNIQUE Sompany TEL ENGINERATING OF SAMPLE ID Requested Due Date/TAT: 36-7-5 39-Required Client Information 1) 1) Section A Required Client Information; CHU - 1100 ر ف O 00 Section D Address mail To: N m S ဖ œ ō # WBL!

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SIGNATURE of SAMPLER:

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DATE Signed (MM/DD/YY):

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