# **REPORT OF PRELIMINARY SITE ASSESSMENT**

# C. RICHARD BRUNING IV PROPERTY (QUICK SHOP EXXON), PARCEL #32 STATE PROJECT U-2412B, TIP NO. 34802.1.1 5814-A HIGH POINT ROAD GREENSBORO, NORTH CAROLINA

Prepared for:

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

Prepared by:

MACTEC Engineering and Consulting, Inc. 3301 Atlantic Avenue Raleigh, North Carolina 27604

May 24, 2010

MACTEC Project No. 6470-10-0072





### engineering and constructing a better tomorrow

May 24, 2010

Mr. Terry W. Fox, L.G. Geoenvironmental Project Manager NCDOT Geotechnical Engineering Unit 1589 Mail Service Center Raleigh, North Carolina 27699

Subject: Report of Preliminary Site Assessment C. Richard Bruning IV Property (Quick Shop Exxon), Parcel #32 State Project U-2412B, TIP No. 34802.1.1 5814-A High Point Road Greensboro, North Carolina MACTEC Project No. 6470-10-0072

Dear Mr. Fox:

As authorized by Cathy Houser's acceptance of MACTEC Proposal No. PROP 10-RAL-141 dated March 22, 2010, MACTEC Engineering and Consulting, Inc. (MACTEC) is pleased to submit the attached Report of Preliminary Site Assessment for the above-referenced site.

This report is intended for the use of NCDOT subject to contractual terms between NCDOT and MACTEC. Reliance on this document by any other party is not allowed without the expressed, written consent of MACTEC. Use of this report for purposes beyond those reasonably intended by NCDOT and MACTEC will be at the sole risk of the user.

This report presents project information and assessment activities conducted, along with our findings, conclusions and recommendations. We appreciate your selection of MACTEC for this project and look forward to assisting you further on this and other projects. If you have any questions, please do not hesitate to contact us.

Sincerely,

MACTEC Engineering and Consulting, Inc.

William S. Grimes, L.G. Senior Geologist Robert M. Miller, P.E. Senior Project Manager/Principal Engineer

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Appendix D – Laboratory Analytical Reports and Chain-of-Custody Records

#### **1.0 INTRODUCTION**

MACTEC Engineering and Consulting, Inc. (MACTEC) was contracted by North Carolina Department of Transportation (NCDOT) to perform a Preliminary Site Assessment of the C. Richard Bruning IV property (Bruning property; also known as Quick Shop Exxon) located at 5814-A High Point Road in Greensboro, Guilford County, North Carolina (Figure 1). This property was one in a series of four sites that were investigated by MACTEC in conjunction with State Project U-2412B. MACTEC understands that NCDOT is planning road improvements to the area. Expanded right-of-way is being acquired by the NCDOT for this project. NCDOT requested that MACTEC assess the subject site to evaluate the extent (if any) of soil contamination related to the operation of the current building located on site and the impact (if any) of this operation on the proposed road improvements. This report presents a description of MACTEC's assessment activities, findings, conclusions and recommendations.

#### 1.1 Site Location

The Bruning property is located at 5814-A High Point Road in Greensboro, Guilford County, North Carolina. The site is developed with a Quick Shop Exxon gas station/convenience store with a car wash and a Zekos Pizza. The Guilford County Geographic Information Services (GIS) shows the property owner as C. Richard Bruning IV, and identifies the site as parcel number 0155988 with the PIN of 7832442937. The site is bound to the northeast by an ABC Store and Consignment Woman's Boutique; to the southeast by High Point Road, across which is a residential property that is currently vacant; to the Southwest by Metals Drive, across which is Owensby Truck Service; and to the northwest by Uncle Bob's Self-Storage (Figure 2).

#### **1.2 Background Information**

The gas station building is constructed with a slab-on-grade concrete foundation and brick exterior. The asphalt parking lot provides access to Metals Drive and High Point Road. According to the North Carolina Department of Environment and Natural Resources Underground Storage Tank (UST) Registry, two underground storage tanks (USTs) were removed in 1989. The site currently operates three USTs and identified by Facility I.D. No. 0-013002. Groundwater contamination was identified for an adjacent property, Sav-Way Foods located at 5814 High Point Road, however no incident number is available for this release.

#### 2.0 ASSESSMENT ACTIVITIES

Prior to field activities, MACTEC prepared a site health and safety plan in accordance with OSHA 1910.120 requirements. MACTEC contacted ULOCO and contracted Priority Underground Locating to mark the locations of underground utilities at the site. NCDOT contracted with Schnabel Engineering (Schnabel) to perform a geophysical survey to identify suspected USTs on the property and to identify buried utilities at the site. Schnabel provided paint mark outs of buried utilities and suspected UST locations to MACTEC prior to our assessment activities. Schnabel identified the three known USTs during their investigation located approximately 20 to 30 feet southwest of the westernmost canopy corner. Based on Schnabel's report, these USTs are located in the planned right-of-way and/or easement. Schnabel's Geophysical Survey Report is included in Appendix A.

#### 2.1 Soil Assessment

On April 20, 2010, Regional Probing Services (RPS), under contract to MACTEC, advanced six soil borings (Nos. SB4-1 through SB4-6) at the subject site using a Geoprobe<sup>TM</sup> direct-push drill rig. Soil boring locations were selected based on the proposed NCDOT right-of-way, results of the geophysical investigation and field observations. Figure 2 shows a site layout and the locations of the soil borings.

MACTEC collected a soil sample from each boring location using the procedures outlined in Appendix B. Copies of soil boring records are included in Appendix C.

MACTEC instructed RPS to advance each soil boring to 12 feet below ground surface (bgs). MACTEC screened soil samples from each boring at one-foot intervals for volatile organic vapors using a photoionization detector (PID) and selected one soil sample from each boring for laboratory testing. MACTEC selected the soil sample that exhibited the highest PID measurement or the deepest, unsaturated soil sample if the PID did not detect organic vapors. Soil borings SB4-1 through SB4-6 were backfilled with the excess soil cuttings and bentonite chips.

#### 2.2 Soil Analysis

MACTEC submitted the soil samples to Prism Laboratories (Prism) of Charlotte, North Carolina for analysis for total petroleum hydrocarbons (TPH) diesel range organics (DRO) according to EPA Preparation/Test Methods 3550/8015 and TPH gasoline range organics (GRO) according to EPA Preparation/Testing Methods 5035/8015.

#### 3.0 LABORATORY RESULTS

The laboratory test results are summarized on Table 1. The laboratory test reports and chain-ofcustody records are included in Appendix D. TPH was not detected in soil samples SB4-1 through SB4-6 at concentrations that exceed the laboratory reporting limits.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the Preliminary Site Assessment, MACTEC offers the following conclusions and recommendations:

- MACTEC did not find evidence of a petroleum release in the vicinity of soil borings SB4-1 through SB4-6.
- MACTEC does not have evidence to support the need for further environmental assessment by NCDOT at this time.

#### 5.0 QUALIFICATIONS

This assessment was conducted under a limited scope for those purposes described above. The conclusions and recommendations presented in this report are based upon the data that were reviewed and documented in this report along with our experience on similar projects. The discovery of any additional information concerning environmental conditions at the site should be reported to MACTEC for additional review so that potential environmental impacts can be reassessed and the conclusions and recommendations modified, if appropriate.

**FIGURES** 

TABLE

Table 1Summary of Laboratory Test ResultsState Project U-2412B, TIP No. 34802.1.1C. Richard Bruning IV Property (Quick Shop Exxon), Parcel #32Greensboro, North CarolinaMACTEC Job No. 6470-10-0072								
An	alytical Method $\rightarrow$		EPA 8015	EPA 8015				
	minant of Concern	TPH-DRO	TPH-GRO					
Sample ID	Date Collected	Sample Depth						
			mg/Kg					
SB4-1	4/20/2010	11'-12'	<11	<6.5				
SB4-2	4/20/2010	11'-12'	<10	<4.1				
SB4-3	4/20/2010	11'-12'	<9.2	<3.8				
SB4-4	4/20/2010	11'-12'	<10	<4.6				
SB4-5	4/20/2010	11'-12'	<10	<4.6				
SB4-6	4/20/2010	11'-12'	<10	<4.6				
NC	DENR Action Level		10	10				

Notes:

NCDENR <#

North Carolina Department of Environment and Natural Resources Analyte not detected above the Reporting Limit shown

Prepared by:  $\underline{l}\underline{l}\underline{l}\underline{l}\underline{l}\underline{l}\underline{l}\underline{l}\underline{l}$  Date:  $\underline{s}-\underline{b}-\underline{b}$ Checked by: <u>CT3s</u> Date:  $\underline{s}\underline{l}\underline{a}\underline{l}\underline{l}\underline{l}\underline{o}$ 

# APPENDIX A

# SCHNABEL ENGINEERING GEOPHYSICAL SURVEY REPORT



May 21, 2010

Mr. Robert Miller, PE, Senior Principal Engineer Mactec Engineering and Consulting, Inc 3301 Atlantic Avenue Raleigh, NC 27604

RE:

State Project:U-2412BWBS Element:34802.1.1County:GuilfordDescription:Greensboro – SR 4121 (Greensboro/High Point Road) from SR 1480<br/>(Vickery Chapel Road) to SR 1424 (Hilltop Road)

#### Subject: Report on Geophysical Surveys for Parcel 32, Greensboro, NC Schnabel Engineering Project 09210013.20

Dear Mr. Miller:

Schnabel Engineering South, P.C. (Schnabel) is pleased to present this report on the geophysical surveys we conducted on the subject property. We understand this letter report will be included as an appendix in your report to the NCDOT. The report includes two 11x17 color figures and three 8.5x11 color figures.

#### **1.0 INTRODUCTION**

The work described in this report was conducted on April 15, 19, and 20, 2010, by Schnabel under our 2009 contract with the NCDOT. The work was conducted within the accessible areas of the proposed right-of-way and/or easement as indicated by the NCDOT to support their environmental assessment of Parcel 32 (C. Richard Bruning IV Property, Quick Shop-Gas Stop Exxon). Photographs of the parcel are included on Figure 1. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (UST's) and associated metal product lines in the accessible areas of the right-of-way and/or easement.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61-MK2 instrument. The EM61 metal detector is used to locate metal objects buried up to about eight feet below ground surface. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies,

1 with 1-8

schnabel-eng.com

including areas of reinforced concrete, were conducted using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna. Photographs of the equipment used are shown on Figure 2.

### 2.0 FIELD METHODOLOGY

Locations of geophysical data points were obtained using a sub-meter Trimble Pro-XRS DGPS system. References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. The locations of existing site features (building, curbs, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

The EM61 data were collected along parallel survey lines spaced approximately 2.5 feet apart. The EM61 and DGPS data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected along survey lines spaced one to two feet apart in two orthogonal directions over anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of UST's. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

Preliminary results for Parcel 32 were sent to Robert Miller and Kristen Lloyd of Mactec and Terry Fox of the NCDOT on April 16, 2010.

### 3.0 DISCUSSION OF RESULTS

The contoured EM61 data for Parcel 32 are shown on Figures 3 and 4. The EM61 early time gate results are plotted on Figure 3. The early time gate data provide the more sensitive detection of metal objects. Figure 4 shows the difference between the response of the top and bottom coils of the EM61 instrument (differential response). The difference is taken to remove the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as UST's.

The early time gate and differential results show anomalies apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected near the southwestern side of the canopy on Parcel 32 indicated the presence of three known UST's located approximately 20 to 30 feet south of the westernmost canopy corner. The UST's are inside the limits of the planned right-of way and/or easement. An example GPR image showing the reflection from the known UST's on Parcel 32 is shown on Figures 3 and 4. Figures 3 and 4 also include the location of the known UST's as marked in the field. The GPR data indicate that two of the known UST's on Parcel 32 are buried approximately 2.0 to 3.0 feet below ground surface and are about 5 feet in diameter and about 24 feet long, equivalent to a capacity of about 4000 gallons. The GPR data indicate that the other known UST on Parcel 32 is buried approximately 2.0 to 3.0 feet below ground surface and are about 5 feet in diameter and about 24 feet long, equivalent to a capacity of about 12,000 gallons. Photographs of the known UST locations, as marked in the field, are included on Figure 5.

#### 4.0 CONCLUSIONS

Our evaluation of the geophysical data collected on Parcel 32 on Project U-2412B in Greensboro, NC indicates the following:

The geophysical data indicate the presence of three known UST's on Parcel 32 located approximately 20 to 30 feet south of the westernmost canopy corner. The UST's are inside the planned right-of-way and/or easement. Two of the known UST's are about 4000-gallon capacity and are buried about 2.0 to 3.0 feet below ground surface. The other known UST is about 12,000-gallon capacity and is buried about 2.0 to 3.0 feet below ground surface.

#### 5.0 LIMITATIONS

These services have been performed and this report prepared for the North Carolina Department of Transportation in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

Thank you for the opportunity to serve you on this project. Please call if you need additional information or have any questions.

Sincerely,

#### SCHNABEL ENGINEERING SOUTH, PC

n What

James W. Whitt Staff Geophysicist

Edward D. Billington, LG Senior Vice President

JW:NB Attachment: Figures (5) FILE: G:2009 PROJECTS:\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.20 (U-2412B, GUILFORD CO.)\REPORT\PARCEL 32\PARCEL 32 (U-2412B).DOC



Parcel 32 - C. Richard Bruning IV Property, looking northwest



Parcel 32 - C. Richard Bruning IV Property, looking north



STATE PROJECT U-2412B GUILFORD CO., NORTH CAROLINA NC DEPT. OF TRANSPORTATION PROJECT NO. 09210013.20

PARCEL 32 SITE PHOTOS

FIGURE 1

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Geonics EM61-MK2

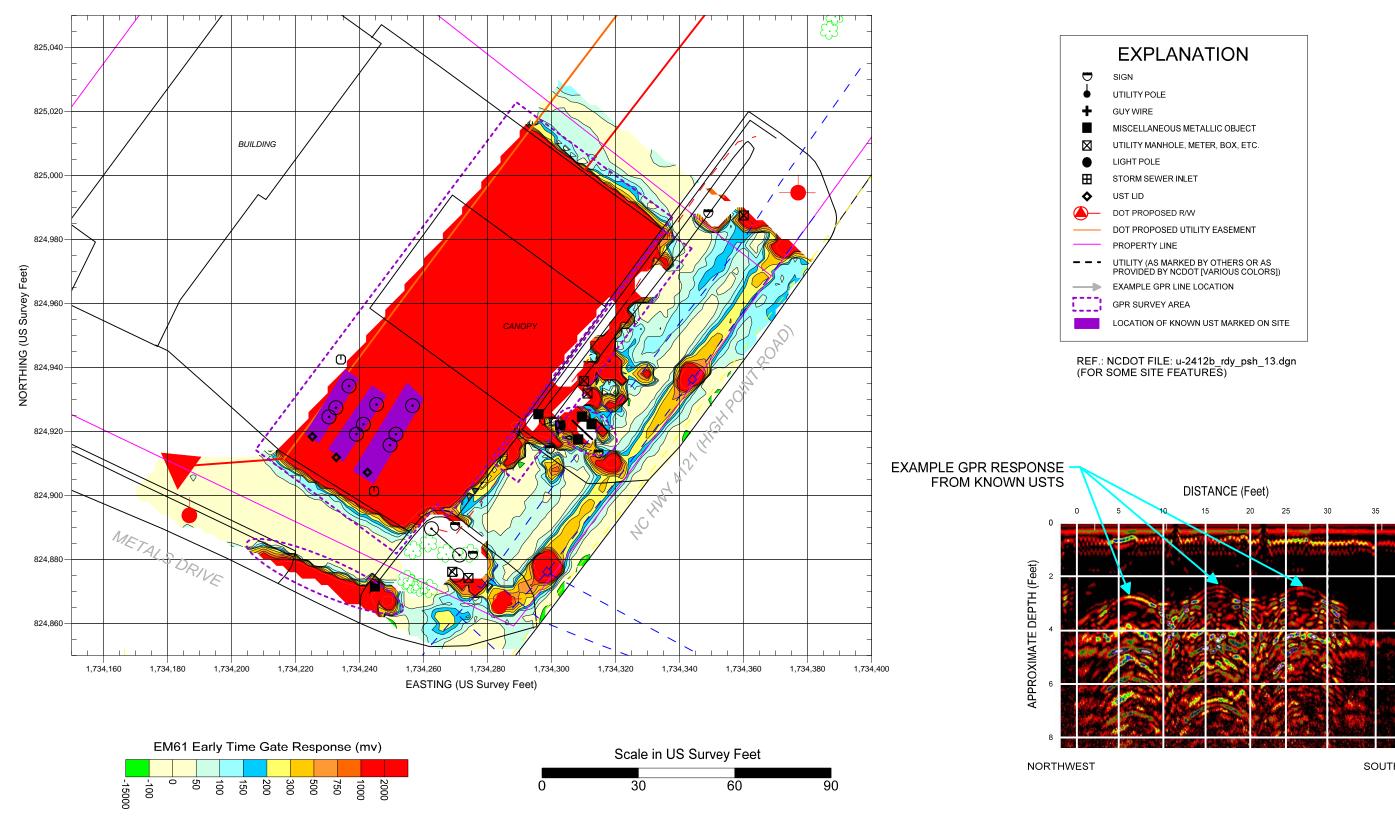


GSSI SIR-3000

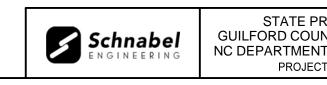


STATE PROJECT U-2412B GUILFORD CO., NORTH CAROLINA NC DEPT. OF TRANSPORTATION PROJECT NO. 09210013.20 PHOTOS OF GEOPHYSICAL EQUIPMENT USED

FIGURE 2



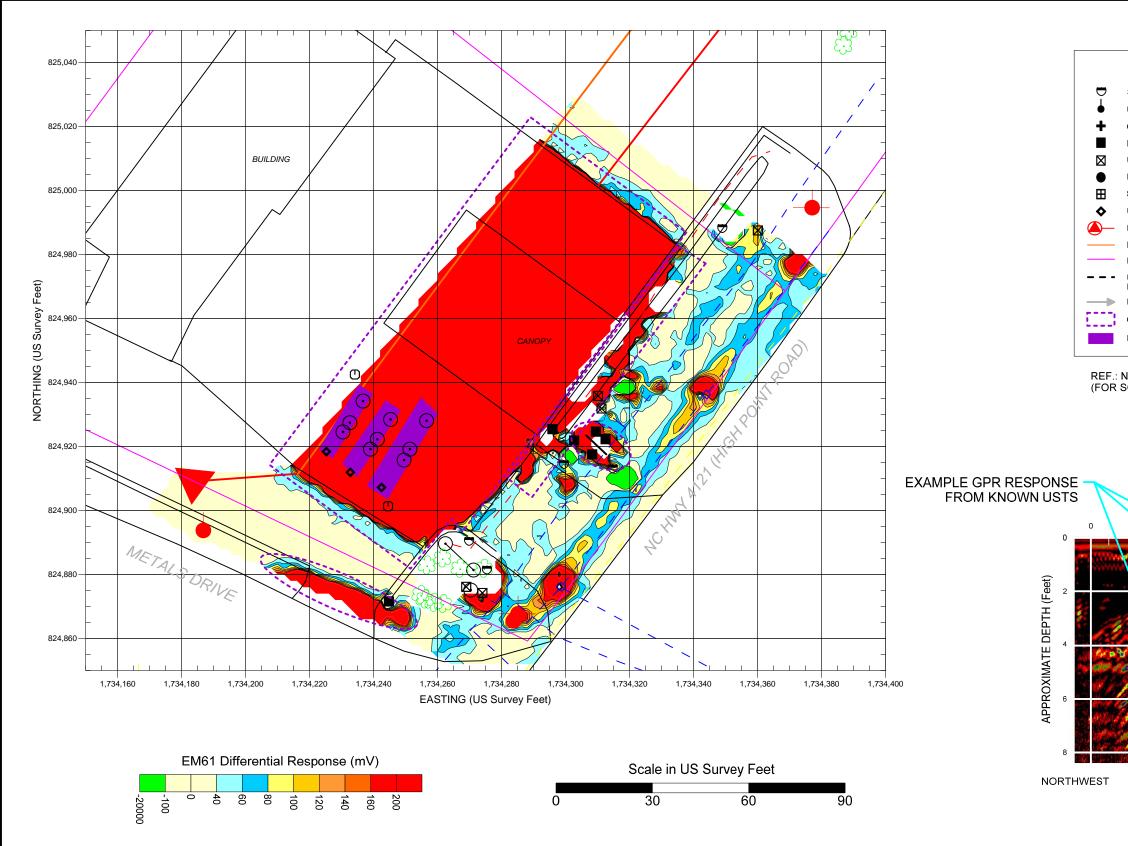
Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on April 15, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on April 19 and April 20, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



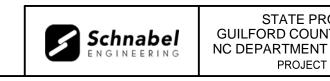
SOUTHEAST

STATE PROJECT U-2412B GUILFORD COUNTY, NORTH CAROLINA NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.20

#### PARCEL 32 EM61 EARLY TIME GATE RESPONSE FIGURE 3



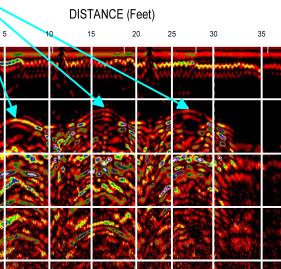
Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on April 14, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on April 19 and April 20, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



# EXPLANATION

- SIGN
- UTILITY POLE
- GUY WIRE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- LIGHT POLE
- STORM SEWER INLET
- UST LID
- DOT PROPOSED R/W
- DOT PROPOSED UTILITY EASEMENT
- PROPERTY LINE
- UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT [VARIOUS COLORS])
- EXAMPLE GPR LINE LOCATION
- GPR SURVEY AREA
- LOCATION OF KNOWN UST MARKED ON SITE

REF.: NCDOT FILE: u-2412b\_rdy\_psh\_13.dgn (FOR SOME SITE FEATURES)



SOUTHEAST

STATE PROJECT U-2412B GUILFORD COUNTY, NORTH CAROLINA NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.20

# PARCEL 32 EM61 DIFFERENTIAL RESPONSE

FIGURE 4

 $\mathbb{N}$ 



Parcel 32 – C. Richard Bruning IV Property, looking northeast. Photo shows approximate marked location of the known UST's near the southwestern side of the canopy.



Parcel 32 – C. Richard Bruning Property, looking southeast. Photo shows approximate marked location of the known UST's near the southwestern side of the canopy.



STATE PROJECT U-2412B GUILFORD CO., NORTH CAROLINA NC DEPT. OF TRANSPORTATION PROJECT NO. 09210013.20 PHOTOS OF KNOWN UST LOCATION FIGURE 5

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**APPENDIX B** 

PROCEDURES FOR COLLECTING SOIL SAMPLES

### Procedure for Collecting Soil Samples for Laboratory Testing Using the Geoprobe

- MACTEC will collect the soil samples using the Geoprobe hammer impact system. Downforce or percussion will be utilized to advance the sampler to the desired depth to obtain the soil sample.
- Soil cores will be retrieved from the sampler and classified by an on-site geologist or engineer. The one-inch diameter cores are approximately four feet in length and are contained within a pre-cleaned, disposable plastic sleeve.
- Soil samples from the boring soil cores will be placed in pre-labeled, airtight, plastic "twin" bags.
- After several minutes, the gas contained in the "headspace" or void area within one of the twin bags will be tested with a photoionization detector (PID) or flame ionization detector (FID).
- The duplicate of the sample that exhibits the highest headspace reading will be submitted to the laboratory for testing. The remaining portion of the soil core will be utilized for classification purposes.
- The soils will be classified in accordance with the Unified Soils Classification System.
- The soil sample will be placed into laboratory-supplied bottles.
- Sample bottles will be labeled prior to sample collection.
- Caps will be secured on bottles.
- All sample containers will be placed in plastic bags and the bags sealed.
- Documentation, including chain-of-custody record and laboratory analytical request form, will be completed for all samples.
- Samples will be packed in coolers with "bubble wrap" and ice packs for shipment to the laboratory.
- The chain-of-custody record and analytical request form will be placed inside the cooler, which will be sealed with security tape.
- Samples will be sent to the analytical laboratory by overnight courier.

**APPENDIX C** 

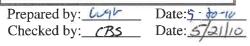
SOIL BORING RECORDS

	ACTEC Engineering and Consulting, Inc. 3301 Atlantic Avenue Raleigh, North Carolina			Soil Boring	Sample Record
	oject ID: NCDOT Greensboro Sites			MACTEC Field Represe	entative
	runing IV Property (Quick Shop Exxon), Parcel #32				
	oject #: 6470-10-0072			Lloyd	
ate: 4/20/20	10				
oring ID: Sl	B4-1			N 36.01342°, W 079.89	9822°
Depth Soil Description		Time	Head	space Screening Results (in ppm)	Comments
Interval	Son Description	Time		PID	comments
0-1	Grass and roots, Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, few gravel, few roots. Dry.			0	
1-2	Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, few gravel, few roots. Dry.			0	No unusual odors or stains
2-3	Strong brown (7.5YR 5/8) SILT, firm, slightly plastic. Moist.			0	No unusual odors or stains
3-4	Strong brown (7.5YR 5/8) SILT, firm, slightly plastic. Moist.			0	
4-5	Strong brown (7.5YR 5/8) SILT, firm, slightly plastic. Moist.			0	
5-6	Strong brown (7.5YR 5/8) SILT, firm, slightly plastic. Moist.			0	
6-7	Reddish yellow and red (7.5YR 6/8 and 2.5YR 5/8) SILT with very pale brown (10YR 8/2) mottles, firm, slightly plastic, trace mica. Moist.			0	No unusual odors or stains
7-8	Reddish yellow and red (7.5YR 6/8 and 2.5YR 5/8) SILT with very pale brown (10YR 8/2) mottles, firm, slightly plastic, trace mica. Moist.			0	
8-9	Reddish yellow and red (7.5YR 6/8 and 2.5YR 5/8) SILT with very pale brown (10YR 8/2) mottles, firm, slightly plastic, trace mica. Moist.			0	
9-10	Reddish yellow and red (7.5YR 6/8 and 2.5YR 5/8) SILT with very pale brown (10YR 8/2) mottles, firm, slightly plastic, trace mica. Moist.			0	
10-11	Reddish yellow and red (7.5YR 6/8 and 2.5YR 5/8) SILT with very pale brown (10YR 8/2) mottles, firm, slightly plastic, trace mica. Moist.			0	Becoming damp.
11-12	Reddish yellow and red (7.5YR 6/8 and 2.5YR 5/8) SILT with very pale brown (10YR 8/2) mottles, firm, slightly plastic, trace mica. Moist.	1415		0	

Prepared by: <u>WS</u> Date: <u>9-70-70</u> Checked by: <u>CBS</u> Date: <u>5/21/10</u>

	ACTEC Engineering and Consulting 3301 Atlantic Avenue Raleigh, North Carolina			Soil Boring Sample Record			
	roject ID: NCDOT Greensboro sites Sruning IV Property (Quick Shop Exxon), Parcel #32	<b>MACTEC Field Representative</b>					
	roject #: 6470-10-0072			Lloyd	1		
ate: 4/20/20	010						
oring ID: S	B4-2			N 36.01331°, W	079.89830°		
Depth	Soil Description	Time		e Screening (in ppm)	Comments		
Interval	Son Description	THIC	F	PID			
0-1	Grass and roots; Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, some gravel, few roots. Dry.			0			
1-2	Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, some gravel, few roots. Dry.			0	No unusual odors or stains		
2-3	Brownish yellow (10YR 6/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0	No unusual odors or stains		
3-4	Brownish yellow (10YR 6/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0			
4-5	Brownish yellow (10YR 6/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0			
5-6	Brownish yellow (10YR 6/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0			
6-7	Dark yellowish brown (10YR 4/6) CLAYEY SILT with gray (10YR 5/1) mottles, firm, plastic. Moist.			0	No unusual odors or stains		
7-8	Dark yellowish brown (10YR 4/6) CLAYEY SILT with gray (10YR 5/1) mottles, firm, plastic. Moist.			0			
8-9	Dark yellowish brown (10YR 4/6) CLAYEY SILT with gray (10YR 5/1) mottles, firm, plastic. Moist.			0			
9-10	Dark yellowish brown (10YR 4/6) CLAYEY SILT with gray (10YR 5/1) mottles, firm, plastic. Moist.			0			
10-11	Strong brown (7.5YR 5/8) SILT, firm, slightly plastic, trace black. Moist.			0	No unusual odors or stains		
11-12	Strong brown (7.5YR 5/8) SILT, firm, slightly plastic, trace black. Moist.	1435		0			

	ACTEC MACTEC Engineering and Consulting 3301 Atlantic Avenue Raleigh, North Carolina	g, Inc.		S	oil Boring Sample Record			
	oject ID: NCDOT Greensboro sites runing IV Property (Quick Shop Exxon), Parcel #32		M	ACTEC Field R	<u>Representative</u>			
ACTEC Project #: 6470-10-0072			Lloyd					
te: 4/20/20				Lioy	u			
ring ID: SI				N 36:01323°, W	<b>N79 89839°</b>			
Depth	Soil Description	Time		ce Screening (in ppm)	Comments			
Interval		Time	PI	PID				
0-1	Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, some gravel, few roots. Dry.			0				
1-2	Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, some gravel, few roots. Dry.			0	No unusual odors or stains			
2-3	Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, some gravel, few roots. Dry.			0				
3-4	Brown (7.5YR 4/4) SANDY SILT, firm, slightly plastic, some gravel, few roots. Dry.			0				
4-5	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic, few fine sand. Moist.			0	No unusual odors or stains			
5-6	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic, few fine sand. Moist.			0				
6-7	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic, few fine sand. Moist.			0				
7-8	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic, few fine sand. Moist.			0				
8-9	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic, few fine sand. Moist.			0				
9-10	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic, few fine sand. Moist.			0				
10-11	Brownish yellow and light greenish gray (10YR 6/6 and 5G 8/1) SANDY SILT, soft, slightly plastic. Moist to damp.			0	No unusual odors or stains			
11-12	Brownish yellow and light greenish gray (10YR 6/6 and 5G 8/1) SANDY SILT, soft, slightly plastic. Moist to damp.	1450		0				



	ACTEC Engineering and Consulting, 3301 Atlantic Avenue Raleigh, North Carolina	, Inc.		Se	oil Boring Sample Record		
	oject ID: NCDOT Greensboro sites runing IV Property (Quick Shop Exxon), Parcel #32	MACTEC Field Representative					
	oject #: 6470-10-0072			Lloyo	1		
Date: 4/20/20	V						
Boring ID: SI	34-4			N 36.01316°, W	079.89847°		
Depth	Soil Description	Time		ce Screening 5 (in ppm)	Comments		
Interval	Son Description		]	PID			
0-1	Asphalt and gravel; Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0			
1-2	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0	No unusual odors or stains		
2-3	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0			
3-4	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0			
4-5	Olive brown (2.5Y 4/3) CLAYEY SILT, firm, plastic. Moist.			0	No unusual odors or stains		
5-6	Olive brown (2.5Y 4/3) CLAYEY SILT, firm, plastic. Moist.			0			
6-7	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic. Moist.			0	No unusual odors or stains		
7-8	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic. Moist.			0			
8-9	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic. Moist.			0			
9-10	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic. Moist.			0			
10-11	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic. Moist.			0			
11-12	Brownish yellow and light greenish gray (10YR 6/8 and 5G 8/1) CLAYEY SILT, firm, plastic. Moist.	1515		0			

	ACTEC MACTEC Engineering and Consulting 3301 Atlantic Avenue Raleigh, North Carolina	, Inc.		S	oil Boring Sample Record	
	oject ID: NCDOT Greensboro sites runing IV Property (Quick Shop Exxon), Parcel #32		epresentative			
	running 1v Property (Quick Shop Exxon), Farcer #52	Lloyd				
Date: 4/20/20	60			Lioj		
Boring ID: S				N 36.01311°, W	079.89854°	
Depth	Soil Description	Time		ce Screening s (in ppm)	Comments	
Interval	Son Description	Time	PID			
0-1	Asphalt and gravel; Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0		
1-2	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0	No unusual odors or stains	
2-3	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0		
3-4	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.			0		
4-5	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.			0	No unusual odors or stains	
5-6	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.			0		
6-7	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.			0		
7-8	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.			0		
8-9	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.			0		
9-10	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.			0		
10-11	Dark yellowish brown and light greenish gray mottled (10YR 4/6 and 5G 7/1) CLAYEY SILT, firm, plastic. Moist.			0	No unusual odors or stains	
11-12	Dark yellowish brown and light greenish gray mottled (10YR 4/6 and 5G 7/1) CLAYEY SILT, firm, plastic. Moist.	1525		0		

Prepared by: 256 Date: 5-3070Checked by: 235 Date: 5/21/10

	ACTEC Engineering and Consulting, 3301 Atlantic Avenue Raleigh, North Carolina						
	oject ID: NCDOT Greensboro sites runing IV Property (Quick Shop Exxon), Parcel #32	<b>MACTEC Field Representative</b>					
	roject #: 6470-10-0072		Lloy	1			
acte: 4/20/20	v		Lioy	u			
ring ID: S			N 36.01319°, W	079.89870°			
Denth		Time	Headspace Screening Results (in ppm)	Comments			
Interval	Soil Description	Time	PID				
0-1	Asphalt and gravel; Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.		0				
1-2	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.		0	No unusual odors or stains			
2-3	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.		0				
3-4	Red (2.5YR 4/6) SILT with sand, firm, slightly plastic, some fine sand. Moist.	2	0				
4-5	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.		0	No unusual odors or stains			
5-6	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.		0				
6-7	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.		0				
7-8	Yellowish brown (10YR 5/8) CLAYEY SILT, firm, plastic. Moist.		0				
8-9	Dark yellowish brown and light greenish gray mottled (10YR 4/6 and 5G 7/1) CLAYEY SILT, firm, plastic. Moist.		0	No unusual odors or stains			
9-10	Dark yellowish brown and light greenish gray mottled (10YR 4/6 and 5G 7/1) CLAYEY SILT, firm, plastic. Moist.		0				
10-11	Dark yellowish brown and light greenish gray mottled (10YR 4/6 and 5G 7/1) CLAYEY SILT, firm, plastic. Moist.		0				
11-12	Dark yellowish brown and light greenish gray mottled (10YR 4/6 and 5G 7/1) CLAYEY SILT, firm, plastic. Moist.	1545	0				

# **APPENDIX D**

# LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY RECORDS



Full-Service Analytical & Environmental Solutions

NC Certification No. 402 SC Certification No. 99012 NC Drinking Water Cert No. 37735

05/05/2010

Mactec - Raleigh (NCDOT Project) Matt Gillis c/o MACTEC Eng. & Consulting, Inc, 3301 Atlantic Av Raleigh, NC 27604 Project: NCDOT Greensboro Project No.: WBS 34802.1.1 Lab Submittal Date: 04/22/2010 Prism Work Order: 0040318

Steven H. Suytile

Reviewed By

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.

Stova H. Systill

reporting limit indicated with a J.

**Project Manager** 

#### Data Qualifiers Key Reference:

MI	Matrix spike outside of the control limits. Matrix interference suspected.
М	Matrix spike outside of the control limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
D	RPD value outside of the control limits.
Af	Surrogate recovery is above the control limits.
Ae	Surrogate recovery is above range due to sample matrix interference.
Ad	Surrogate recovery above the control limits.
Ac	Surrogate recovery above range.
Ab	Surrogate recovered outside established QC range
Aa	Surrogate outside control limits.
A BRL MDL RPD	Sample analyzed out of hold time. Below Reporting Limit Method Detection Limit Relative Percent Difference
*	Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and

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Page 1 of 36

Full-Service Analytical & Environmental Solutions Sample Receipt Summary

05/05/2010

Prism Work Order: 0040318

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
SB1-1	0040318-01	Solid	04/19/10	04/22/10
SB1-2	0040318-02	Solid	04/19/10	04/22/10
SB1-3	0040318-03	Solid	04/19/10	04/22/10
SB1-4	0040318-04	Solid	04/19/10	04/22/10
SB1-5	0040318-05	Solid	04/19/10	04/22/10
SB1-6	0040318-06	Solid	04/19/10	04/22/10
SB2-1	0040318-07	Solid	04/19/10	04/22/10
SB2-2	0040318-08	Solid	04/19/10	04/22/10
SB2-3	0040318-09	Solid	04/19/10	04/22/10
SB2-4	_ 0040318-10	Solid	04/19/10	04/22/10
SB2-5	0040318-11	Solid	04/19/10	04/22/10
SB2-6	0040318-12	Solid	04/19/10	04/22/10
SB3-1	0040318-13	Solid	04/20/10	04/22/10
SB3-2	0040318-14	Solid	04/20/10	04/22/10
SB3-3	0040318-15	Solid	04/20/10	04/22/10
SB3-4	0040318-16	Solid	04/20/10	04/22/10
SB3-5	0040318-17	Solid	04/20/10	04/22/10
SB3-6	0040318-18	Solid	04/20/10	04/22/10
SB4-1	0040318-19	Solid	04/20/10	04/22/10
SB4-2	0040318-20	Solid	04/20/10	04/22/10
SB4-3	0040318-21	Solid	04/20/10	04/22/10
SB4-4	0040318-22	Solid	04/20/10	04/22/10
SB4-5	0040318-23	Solid	04/20/10	04/22/10
SB4-6	0040318-24	Solid	04/20/10	04/22/10

Samples received in good condition at 1.7 degrees C unless otherwise noted.

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PRISM	Full-Service Analytical & Environmental Solutions
	Environmental Contione

Mactec - Raleigh (NCDOT Project)

\* Cine

Attn: Matt Gillis

Raleigh, NC 27604

Project: NCDOT Greensboro

c/o MACTEC Eng. & Consulting, Inc, 3301 Project No.: WBS 34802.1.1 Sample Matrix: Solid

Client Sample ID: SB4-1 Prism Sample ID: 0040318-19 Prism Work Order: 0040318 Time Collected: 04/20/10 14:15 Time Submitted: 04/22/10 13:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Extractable Petroleum Hydro	carbons by GC/FID								
Diesel Range Organics	BRL	mg/kg dry	11	1.7	1	8015C	4/30/10 13:41	JMV	P0D0385
			Surrogate			Recov	/ery	Control I	_imits
			o-Terphenyl			126	5 %	49-124	Ab
General Chemistry Parameter	rs								
% Solids	66.3	% by Weight	0.100	0.100	1	*SM2540 G	4/26/10 12:40	JAB	P0D0254
Volatile Petroleum Hydrocarb	ons by GC/FID								
Gasoline Range Organics	BRL	mg/kg dry	6.5	0.84	50	8015C	5/3/10 21:25	HPE	P0E0019
· · · · · · · · · · · · · · · · · · ·		· · · ·	Surrogate			Recov	very	Control I	_imits
			a,a,a-Trifluor	otoluene		89	%	55-129	

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PRISM Full-Service Analytical Environmental Solution	<b>Caboratory</b> (Cepon 05/05/20								
Mactec - Raleigh (NCDOT Project)	Project: NC	DOT Gree	nsboro			Sample ID:		<b>,</b>	
Attn: Matt Gillis	Ducie et Nie	. 14/00 040	00 4 4	Prism Sample ID: 0040318-20					
c/o MACTEC Eng. & Consulting, Inc, 3301	-		JZ.1.1	Prism Work Order: 0040318					
Raleigh, NC 27604	Sample Matrix: Solid			Time Collected: 04/20/10 14:35					
					Time S	Submitted: 0	4/22/10 13:	50	
Parameter Res	uit	Units	Report	MDL	Dilution	Method	Analysis	Analyst	Batch

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Extractable Petroleum Hydro	ocarbons by GC/FID							•	
Diesel Range Organics	BRL	mg/kg dry	10	1.6	1	8015C	4/30/10 22:34	JMV	P0D0414
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			72	%	49-124	
General Chemistry Paramete	ers								
% Solids	69.7	% by Weight	0.100	0.100	1	*SM2540 G	4/26/10 12:40	JAB	P0D0254
Volatile Petroleum Hydrocar	bons by GC/FID								
Gasoline Range Organics	BRL	mg/kg dry	4.1	0.53	50	8015C	5/3/10 21:56	HPE	P0E0019
			Surrogate			Recov	ery	Control	Limits
			a,a,a-Trifluoi	rotoluene		132	2 %	55-129	Aa

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Laboratory Report

05/05/2010

	nental Solutions	
Mactec - Raleigh (NCDOT Proje	ect) Project: NCDOT Greensboro	Client Sample ID: SB4-
Atta: Matt Cillia		Driam Completing 0040

Attn: Matt Gillis c/o MACTEC Eng. & Consulting, Inc, 3301 Project No.: WBS 34802.1.1 Raleigh, NC 27604

Æ.

Sample Matrix: Solid

1-3 Prism Sample ID: 0040318-21 Prism Work Order: 0040318 Time Collected: 04/20/10 14:50 Time Submitted: 04/22/10 13:50

Laboratory Report

05/05/2010

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Extractable Petroleum Hydroca	arbons by GC/FID								
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	8015C	5/1/10 4:28	JMV	P0D0414
			Surrogate			Recov	/ery	Control	Limits
			o-Terphenyl			10	5 %	49-124	
General Chemistry Parameters									
% Solids	75.5	% by Weight	0.100	0.100	1	*SM2540 G	4/26/10 12:40	) JAB	P0D0254
Volatile Petroleum Hydrocarbo	ns by GC/FID								
Gasoline Range Organics	BRL	mg/kg dry	3.8	0.49	50	8015C	5/3/10 22:28	HPE	P0E0019
			Surrogate			Recov	very	Control	Limits
			a,a,a-Trifluor	rotoluene		130	6 %	55-129	Aa

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PRISE Full-Service Analytical Environmental Solution		
Mactec - Raleigh (NCDOT Project)	Project: NCDOT Greensboro	Client Sample ID:
Attn: Matt Gillis		Prism Sample ID:
c/o MACTEC Eng. & Consulting, Inc, 3301	Project No.: WBS 34802.1.1	Prism Work Order

Sample Matrix: Solid

Raleigh, NC 27604

#### ): SB4-4 ): 0040318-22 Prism Work Order: 0040318 Time Collected: 04/20/10 15:15 Time Submitted: 04/22/10 13:50

٢

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Extractable Petroleum Hydro	carbons by GC/FID								
Diesel Range Organics	BRL	mg/kg dry	10	1.7	1	8015C	4/30/10 23:09	JMV	P0D0414
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			82	%	49-124	
General Chemistry Paramete	ers								
% Solids	66.7	% by Weight	0.100	0.100	1	*SM2540 G	4/26/10 12:40	JAB	P0D0254
Volatile Petroleum Hydrocar	bons by GC/FID								
Gasoline Range Organics	BRL	mg/kg dry	4.6	0.60	50	8015C	5/3/10 22:59	HPE	P0E0019
			Surrogate		·	Recov	ery	Control	Limits
			a,a,a-Trifluor	otoluene		88	%	55-129	

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Laboratory Report 05/05/2010

# Laboratory Report

05/05/2010

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Mactec - Raleigh (NCDOT Project) Attn: Matt Gillis c/o MACTEC Eng. & Consulting, Inc, 3301 Project No.: WBS 34802.1.1 Raleigh, NC 27604

Project: NCDOT Greensboro

Sample Matrix: Solid

Client Sample ID: SB4-5 Prism Sample ID: 0040318-23 Prism Work Order: 0040318 Time Collected: 04/20/10 15:30 Time Submitted: 04/22/10 13:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Extractable Petroleum Hydroc	carbons by GC/FID								
Diesel Range Organics	BRL	mg/kg dry	10	1.6	1	8015C	4/30/10 23:45	JMV	P0D0414
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			89	%	49-124	
General Chemistry Parameter	s								
% Solids	68.7	% by Weight	0.100	0.100	1	*SM2540 G	4/26/10 12:40	JAB	P0D0254
Volatile Petroleum Hydrocarb	ons by GC/FID								
Gasoline Range Organics	BRL	mg/kg dry	4.6	0.59	50	8015C	5/3/10 23:30	HPE	P0E0019
<b>n n n</b> 1000 1000 1000	, , ,, ,, <b></b>		Surrogate		·	Recov	ery	Control	Limits
			a,a,a-Trifluor	otoluene		88	%	55-129	

PRISM	Full-Service Analytical & Environmental Solutions
LABORATORIES, INC.	

Laboratory Report

05/05/2010

Mactec - Raleigh (NCDOT Project)	Project: NCDOT Gr
Attn: Matt Gillis	
c/o MACTEC Eng. & Consulting, Inc, 3301	Project No.: WBS 34
Raleigh, NC 27604	Sample Matrix: Soli

reensboro

34802.1.1 lid

Client Sample ID: SB4-6 Prism Sample ID: 0040318-24 Prism Work Order: 0040318 Time Collected: 04/20/10 15:45 Time Submitted: 04/22/10 13:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Tim		yst	Batch ID	
Extractable Petroleum Hydrocarb	ons by GC/FID										
Diesel Range Organics	BRL	mg/kg dry	. 10	1.7	1	8015C	5/1/10 0::	20 JI	٨V	P0D0414	
			Surrogate			Recov	ery	Cor	ntrol L	imits	
			o-Terphenyl			88 %			49-124		
General Chemistry Parameters											
% Solids	68.2	% by Weight	0.100	0.100	1	*SM2540 G	4/26/10 12	:40 J/	AВ	P0D0254	
Volatile Petroleum Hydrocarbons	by GC/FID										
Gasoline Range Organics	BRL	mg/kg dry	4.6	0.60	50	8015C	5/4/10 0:0	)1 H	PE	P0E0019	
	,		Surrogate			Recov	ery	Cor	ntrol L	imits.	
			a,a,a-Trifluor	otoluene		118	3 %	55-	129		

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5/5/10



Attn: Matt Gillis

Raleigh, NC 27604

Mactec - Raleigh (NCDOT Project)

c/o MACTEC Eng. & Consulting, Inc, 3301

Full-Service Analytical & Environmental Solutions

Project: NCDOT Greensboro

Project No: WBS 34802.1.1

Prism Work Order: 0040318 Time Submitted: 04/22/10 1:50:00PM

Volatile Petroleum Hydrocarbons by GC/FID - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P0D0352 - 5035										
Blank (P0D0352-BLK1)				Prepared	: 04/28/10	Analyzed	: 04/30/10			
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	4.25		mg/kg wet	5.00		85	55-129			
LCS (P0D0352-BS1)				Prepared	: 04/28/10	Analyzed	: 04/30/10			
Gasoline Range Organics	43.2	5.0	mg/kg wet	50.0		86	67-116			
Surrogate: a,a,a-Trifluorotoluene	4.80		• mg/kg wet	5.00		96	55-129			
Matrix Spike (P0D0352-MS1)	Sour	ce: 004033	3-06	Prepared	: 04/28/10	Analyzed	: 04/30/10			
Gasoline Range Organics	59.1	6.2	mg/kg dry	62.1	BRL	95	57-113			
Surrogate: a,a,a-Trifluorotoluene	5.40		mg/kg dry	6.21		87	55-129			
Matrix Spike Dup (P0D0352-MSD1)	Sour	ce: 004033	3-06	Prepared	: 04/28/10	Analyzed	: 04/30/10			
Gasoline Range Organics	60.1	6.2	mg/kg dry	62.1	BRL	97	57-113	2	23	
Surrogate: a,a,a-Trifluorotoluene	5.28		mg/kg dry	6.21		85	55-129			
Batch P0D0421 - 5035										
Blank (P0D0421-BLK1)				Prepared	& Analyze	ed: 04/30/1	0			
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	4.65		mg/kg wet	5.00		93	55-129			
LCS (P0D0421-BS1)				Prepared	& Analyze	ed: 04/30/1	10			
Gasoline Range Organics	44.1	5.0	mg/kg wet	50.0		88	67-116			
Surrogate: a,a,a-Trifluorotoluene	4.90		mg/kg wet	5.00		98	55-129			
Matrix Spike (P0D0421-MS1)	Sour	ce: 004034	5-01	Prepared	& Analyze	ed: 04/30/*	10			
Gasoline Range Organics	<b>70.1</b>	6.2	mg/kg dry	61.7	BRL	114	57-113			
Surrogate: a,a,a-Trifluorotoluene	6.91		mg/kg dry	6.17		112	55-129			

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LABORATORIES, INC.		
Mactec - Raleigh (NCDOT Project) Attn: Matt Gillis	Project: NCDOT Greensboro	Prism Work Order: 0040318 Time Submitted: 04/22/10 1:50:00PM
c/o MACTEC Eng. & Consulting, Inc, 3301 Raleigh, NC 27604	Project No: WBS 34802.1.1	

Volatile Petroleum Hydrocarbons by GC/FID - Quality Control

Full-Service Analytical & Environmental Solutions

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0D0421 - 5035										
Matrix Spike Dup (P0D0421-MSD1)	Sou	ırce: 004034	5-01	Prepared	& Analyze	ed: 04/30/1	0			
Gasoline Range Organics	69.4	6.2	mg/kg dry	61.7	BRL	112	57-113	0.9	23	
Surrogate: a,a,a-Trifluorotoluene	6.98		mg/kg dry	6.17		113	55-129			
Batch P0E0019 - 5035										
Blank (P0E0019-BLK1)				Prepared	& Analyze	ed: 05/03/1	0			
Gasoline Range Organics	BRL	5.0	'mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	4.95		mg/kg wet	5.00		99	55-129			
LCS (P0E0019-BS1)				Prepared	& Analyze	ed: 05/03/1	0			
Gasoline Range Organics	39.6	5.0	mg/kg wet	50.0		79	67-116			
Surrogate: a,a,a-Trifiuorotoluene	4.80		mg/kg wet	5.00		96	55-129			
Matrix Spike (P0E0019-MS1)	Sou	ırce: 004031	8-16	Prepared	& Analyze	ed: 05/03/1	0			
Gasoline Range Organics	21.0	4.0	mg/kg dry	39.8	BRL	53	57-113			Mi
Surrogate: a,a,a-Trifiuorotoluene	3.03		mg/kg dry	3.98		76	55-129			
Matrix Spike Dup (P0E0019-MSD1)	Sou	urce: 004031	8-16	Prepared	& Analyze	ed: 05/03/1	0			
Gasoline Range Organics	22.2	4.0	mg/kg dry	39.8	BRL	56	57-113	6	23	M
Surrogate: a,a,a-Trifluorotoluene	3.11		mg/kg dry	3.98		78	55-129			

5/5/10

. .. . .....



Mactec - Raleigh (NCDOT Project) Attn: Matt Gillis c/o MACTEC Eng. & Consulting, Inc, 3301 Raleigh, NC 27604

Project: NCDOT Greensboro

Project No: WBS 34802.1.1

# Prism Work Order: 0040318

Time Submitted: 04/22/10 1:50:00PM

Extractable Petroleum Hydrocarb	ons by GC/FID - Quality Control
---------------------------------	---------------------------------

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0D0313 - 3545A										
Blank (P0D0313-BLK1)				Prepared	: 04/27/10	) Analyzec	I: 04/29/10			
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: o-Terphenyl	1.46		mg/kg wet	1.60		91	49-124			
LCS (P0D0313-BS1)				Prepared	: 04/27/10	Analyzed	i: 04/29/10			
Diesel Range Organics	58.8	7.0	mg/kg wet	80.0		74	55-109			
Surrogate: o-Terphenyl	1.91		. mg/kg wet	1.60		119	49-124			
Matrix Spike (P0D0313-MS1)	Sour	ce: 004031	8-02	Prepared	: 04/27/10	Analyzec	1: 04/29/10			
Diesel Range Organics	70.5	8.9	mg/kg dry	102	BRL.	69	50-117			
Surrogate: o-Terphenyl	2.45		mg/kg dry	2.04		120	49-124			
Matrix Spike Dup (P0D0313-MSD1)	Sour	ce: 004031	8-02	Prepared	: 04/27/10	Analyzec	l: 04/29/10			
Diesel Range Organics	77.5	8.9	mg/kg dry	102	BRL	76	50-117	9	24	
Surrogate: o-Terphenyl	2.61		mg/kg dry	2.04		128	49-124			Ac
Batch P0D0385 - 3545A										
Blank (P0D0385-BLK1)				Prepared	: 04/28/10	) Analyzec	1: 04/30/10			
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: o-Terphenyl	1.75		mg/kg wet	1.60		109	49-124			
LCS (P0D0385-BS1)				Prepared	: 04/28/10	) Analyzec	I: 04/30/10			
Diesel Range Organics	70.9	7.0	mg/kg wet	80.0		89	55-109			
Surrogate: o-Terphenyl	1.82		mg/kg wet	1.60		114	49-124			
Matrix Spike (P0D0385-MS1)	Sour	ce: 004034	5-01	Prepared	: 04/28/10	) Analyzed	1: 04/30/10			
Diesel Range Organics	155	8.6	mg/kg dry	98.4	107	49	50-117			MI
Surrogate: o-Terphenyl	1.80		mg/kg dry	1.97		91	49-124			

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LABORATORIES, INC.		
Mactec - Raleigh (NCDOT Project) Attn: Matt Gillis	Project: NCDOT Greensboro	Prism Work Order: 0040318 Time Submitted: 04/22/10 1:50:00PM
c/o MACTEC Eng. & Consulting, Inc, 3301 Raleigh, NC 27604	Project No: WBS 34802.1.1	

#### Extractable Petroleum Hydrocarbons by GC/FID - Quality Control

SN Full-Service Analytical & Environmental Solutions

	•									
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0D0385 - 3545A										
Matrix Spike Dup (P0D0385-MSD1)	Sou	rce: 004034	5-01	Prepared	: 04/28/10	Analyzed	i: 04/30/10			
Diesel Range Organics	307	8,6	mg/kg dry	98.5	107	203	50-117	66	24	D, M
Surrogate: o-Terphenyl	4.49		mg/kg dry	1.97		228	49-124			Ae
Batch P0D0414 - 3545A										
Blank (P0D0414-BLK1)				Prepared	: 04/29/10	Analyzed	I: 04/30/10			
Diesel Range Organics	BRL	7.0	' mg/kg wet							
Surrogate: o-Terphenyl	1.59		mg/kg wet	1.60		99	49-124			
LCS (P0D0414-BS1)				Prepared	: 04/29/10	Analyzed	1: 04/30/10			
Diesel Range Organics	63.5	7.0	mg/kg wet	80.0		79	55-109			
Surrogate: o-Terphenyl	2.11		. mg/kg wet	1.60		132	49-124			Ad
Matrix Spike (P0D0414-MS1)	Sou	rce: 004031	B-20	Prepared	: 04/29/10	Analyzed	1: 04/30/10			
Diesel Range Organics	97.5	10	mg/kg dry	115	BRL	85	50-117			
Surrogate: o-Terphenyl	3.16		mg/kg dry	2.29		138	49-124			А
Matrix Spike Dup (P0D0414-MSD1)	Sou	rce: 004031	8-20	Prepared	04/29/10	Analyzed	I: 04/30/10			
Diesel Range Organics	83.8	10	mg/kg dry	115	BRL	73	50-117	15	24	
Surrogate: o-Terphenyl	2.67		mg/kg`dry	2.29		116	49-124			

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Level II QC Report

5/5/10

Environmental Solution										5/5/10
Mactec - Raleigh (NCDOT Project) Attn: Matt Gillis	Project	: NCDOT Gr	eensbord	)			ork Order bmitted: 0		-	M
Attn: Matt Gillis       Time Submitted: 04/22/10       1:50:00PM         c/o MACTEC Eng. & Consulting, Inc, 3301       Project No: WBS 34802.1.1       Time Submitted: 04/22/10       1:50:00PM         Raleigh, NC 27604       Raleigh (NC 27604)       Recommendation (Statemendation (Sta										
General Chemistry Parameters - Quality Contro	bl									·
		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

 Batch P0D0254 - NO PREP

 Duplicate (P0D0254-DUP2)
 Source: 0040318-16
 Prepared & Analyzed: 04/26/10

Duplicate (P0D0254-D0P2)	Sour	ce: 0040318-16 Fiep	areu & Analyzeu. 04/20/10			
% Solids	66.0	0.100 % by Weight	65.7	0.5	20	

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Level II QC Report-

#### Sample Extraction Data

#### Prep Method: 3545A

Lab Number	<sup>/</sup> Batch	Initial	Final	Date	
0040318-01	P0D0313	25.02 g	1 mL	04/27/10	
0040318-02	P0D0313	25.07 g	1 mL	04/27/10	
0040318-03	P0D0313	25.04 g	1 mL	04/27/10	
0040318-04	P0D0313	25.06 g	1 mL	04/27/10	
0040318-05	P0D0313	25.02 g	1 mL	04/27/10	
0040318-06	P0D0313	25 g	1 mL	04/27/10	
0040318-07	P0D0313	25.02 g	1 mL	04/27/10	
0040318-08	P0D0313	25.1 g	1 mL	04/27/10	
0040318-09	P0D0313	25.06 g	1 mL	04/27/10	
0040318-10	P0D0313	25.1 g	1 mL	04/27/10	
0040318-11	P0D0385	25.07 g	1 mL	04/28/10	
0040318-12	P0D0385	25.09 g	1 mL	04/28/10	
0040318-13	P0D0385	25 g	1 mL	04/28/10	
0040318-14	P0D0385	25.03 g	1 mL	04/28/10	
0040318-15	P0D0385	25.06 g	1 mL	04/28/10	
0040318-16	P0D0385	25.01 g	1 mL	04/28/10	
0040318-17	P0D0385	- 25.05 g	1 mL	04/28/10	
0040318-18	P0D0385	25.05 g	1 mL	04/28/10	
0040318-19	P0D0385	25.05 g	1 mL	04/28/10	
0040318-20	P0D0414	25.18 g	1 mL	04/29/10	
0040318-21	P0D0414	25.09 g	1 mL	04/29/10	
0040318-22	P0D0414	25 g	1 mL	04/29/10	
0040318-23	P0D0414	25.07 g	1 mL	04/29/10	
0040318-24	P0D0414	25 g	1 mL	04/29/10	

#### NO PREP

Lab Number	Batch	Initial	Final	Date	
0040318-01	P0D0254	30 g	30 mL	04/26/10	
0040318-02	P0D0254	30 g	30 mL	04/26/10	
0040318-03	P0D0254	30 g	30 mĹ	04/26/10	
0040318-04	P0D0254	30 g	30 mL	04/26/10	
0040318-05	P0D0254	30 g	30 mL	04/26/10	
0040318-06	P0D0254	30 g	30 mL	04/26/10	
0040318-07	P0D0254	30 g	30 mL	04/26/10	
0040318-08	P0D0254	30 g	30 mL	04/26/10	
0040318-09	P0D0254	30 g	30 mL	04/26/10	
0040318-10	P0D0254	30 g	30 mL	04/26/10	
0040318-11	P0D0254	30 g	30 mL	04/26/10	
0040318-12	P0D0254	30 g	30 mL	04/26/10	
0040318-13	P0D0254	30 g	30 mL	04/26/10	
0040318-14	P0D0254	30 g	30 mL	04/26/10	
0040318-15	P0D0254	30 g	30 mL	04/26/10	
0040318-16	P0D0254	30 g	30 mL	04/26/10	
0040318-17	P0D0254	30 g	30 mL	04/26/10	
0040318-18	P0D0254	30 g	30 mL	04/26/10	
0040318-19	P0D0254	30 g	30 mL	04/26/10	
0040318-20	P0D0254	30 g	30 mL	04/26/10	
0040318-21	P0D0254	30 g	30 mL	04/26/10	
0040318-22	P0D0254	30 g	. 30 mL	04/26/10	
0040318-23	P0D0254	30 g	30 mL	04/26/10	
0040318-24	P0D0254	30 g	30 mL	04/26/10	
Prep Method: 5035					
Lab Number	Batch	Initial	Final	Date	
0040318-01	P0D0352	10.55 g	5 mL	04/28/10	

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#### Sample Extraction Data

#### Prep Method: 5035

Lab Number	Batch	Initial	Final	Date	
0040318-02	P0D0352	7.68 g	5 mL	04/28/10	
0040318-03	P0D0352	10.61 g	5 mL	04/28/10	
0040318-04	P0D0352	9.12 g	5 mL	04/28/10	
0040318-05	P0D0352	9.27 g	5 mL	04/28/10	•
0040318-06	P0D0352	10.87 g	5 mL	04/28/10	
0040318-07	P0D0352	9.74 g	5 mL	04/28/10	
0040318-08	P0D0421	9.54 g	5 mL	04/30/10	
0040318-09	P0D0421	8.23 g	5 mL	04/30/10	
0040318-10	P0D0421	8.97 g	5 mL	04/30/10	
0040318-11	P0D0421	7.8 g	5 mL	04/30/10	
0040318-12	P0D0421	7.64 g	5 mL	04/30/10	
0040318-13	· P0D0421	9.83 g	5 mL	04/30/10	
0040318-14	P0D0421	7.18 g	5 mL	04/30/10	
0040318-15	P0D0421	8.05 g	5 mL	04/30/10	
0040318-16	P0E0019	10.62 g	5 mL	05/03/10	
0040318-17	P0E0019	9.39 g	5 mL	05/03/10	
0040318-18	P0E0019	_ 11.65 g	• 5 mL	05/03/10	
0040318-19	P0E0019	5.81 g	5 mL	05/03/10	
0040318-20	P0E0019	8.85 g	5 mL	05/03/10	
0040318-21	P0E0019	8.75 g	5 mL	05/03/10	
0040318-22	P0E0019	8.17 g	5 mL	05/03/10	
0040318-23	P0E0019	7.98 g	5 mL	05/03/10	
0040318-24	P0E0019	7.98 g	5 mL	05/03/10	

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A49 Springbrook Road • P.O. Box 240543 • Charlotte, NC 24054	ytical & PAGE 2 OF Blutions PAGE 2 OF 8224-0543 Short Hold A *Please ATT provisions a Invoice To: Address:	$F_3_  QUOTE # TO ENSU-ne: NZDOT GARAnalysis: (Yes) NoFACH any project spec-and/or QC RequiremeNCDOT$	恐れららみい の) UST Project: 代を cific reporting (QC LEVEL ITI	Samples, NTACT UL Received ON WET PROPERIPRESER PROPERIPRESER Refeived WITHINIH CUSTODY SEALSH VOLATILES FOCOV PROPER CONTAIN	DED TEMP 132	
Phone: <u>IT &amp; ST Dec</u> Fax (res) (up: Email (res) (No) Email Address <u>Mg. II &amp; Man</u> EDD Type: PDF <u>Lacel</u> Other Site Location Name: <u>NZD&amp;T Greensbow S</u> Site Location Physical Address: <u>Thypernal</u> R	Key Samples recei	ie Date □ 1 Day □ 2 Da ys" □ 6-9 Days Xi Sta	Ans and ard 10 days ☐ 4 Days ☐ 5 Day and ard 10 days ☐ Rush Work Mus pre-Approved cessed next business day. lays, excluding weekends and holic ITIONS REGARDING SERVICES	st Be bays. Water Chlorinated:	ACUSACEFLNC OTHERN/A YESNO collection: YESNO	
CLIENT DATE COLLECTED SAMPLE DESCRIPTION COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE) SEE BELOW	PLE CONTAINER	PRESERVA- TIVES	ANALYSES REQUESTED	REMARKS PRISM LAB ID NO.	
SB2-5 4/19/10 1530	So,1 CG VOA	1 2 2 403 40m	Methand V V			
SB2-6 1 1600					12	
SB3-1 4/20/10 1025				,	13	
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563-3 1120					15	
SB 3-4 1145					16	
SB 3.5 1210			1		<u> </u> ]	
SB 3-6 1235					13	· ·
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SB4-2 J 1435					20	ļ
Sampler's Signature	Sampled By (Print Nam	ne) Acresten U	Loyd Affiliation_	annace must be	PRESS DOWN FIRMLY - 3 COPIE	
Upon relinquishing, this Chain of Custody is your auth submitted in writing to the Prism Project Manager. Th	ere will be charges for a Received By: (\$ightau	ny changes after analy	ses have been initialized.		PRISM USE ONLY	Y
Relinquisped By (Signature)		Var Lassit	<u>м он</u>	2210 1115	Site Arrival Time	
Reinquished By: Senature)	Received By: (Signat	NC	Pag 1/2 Date	2/10 1220	Field Tech Fee	
Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAI SAMPLES ARE NOT ACCEPTED AND VERIFIED	PED SHUT WITH CUSTODY SEA	LS FOR TRANSPORTATION 1	111	22/12 /350 C Group No.	Mileage :	
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NPDES: UST: GROUNDWATER: DF			A: CERCLA LANI	DFILL OTHER:	Page 35 of 36	

Ada Springbrook Road • F Phone: 704/529-6364 • F Client Company Name Report To/Contact Nam Reporting Address:	Fax: 704 : me: R & C Addre  	$ \begin{array}{c} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$	(D): gillsenace	28224-0543 7H Acc. cor	PAGE OF Project Name Short Hold A *Please ATT/ provisions ar Invoice To: Address: Purchase Or Requested Due "Working Days Samples receiv Turnaround tim (SEE REVE	auo e: acitysis: ACH any i ad/or QC  der No./E Date [] 1 ;" [] 6 ed after 15 e is based ense FOR T	(Yes) (No project spec Requirement Billing Referent Day 2 Day -9 Days 3 State con business da ERMS & CONDI	, sific reporting (C	ING: roject: QC LEVE QC LEVE QC LEVE Automatic and a second Rush Woo Pre-Appro ss day. kends and. kends and.	EL I II III I DA - 1 5 Days k Must Be oved d holidays.	No) V) TO E Certi	EROPERI Received CUSTODY VOLATILE REOPER E FILLE ification: er Chlori	HESERA VITHIN H SEALSI SI Sed W SONTAIN D IN B' NEL/ SC_ nated:	LABUSEO	MPLING PE	NC
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5B4-3	4/2	0]10	1450	Spil	CG VOA	2.2	4 DE 40ml	Methone	$\checkmark$	1						21
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564-6	Ł	<u>,</u>	1545	*		Ł	<u> </u>									94
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Sampler's Signature	Tus	ten {	4 S.l	Sampled E	By (Print Name	) <b>K</b> t	uster U	loyd	Affilia					PRESS DO	WN FIRML	Y - 3 COPIES
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