

**REPORT OF  
PRELIMINARY SITE ASSESSMENT**

**QUALITY OIL CO. PROPERTY, PARCEL #9  
STATE PROJECT U-2550B, TIP NO. 34831.1.1  
2302 SOUTH STERLING STREET  
MORGANTON, NORTH CAROLINA**

Prepared for:

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

Prepared by:

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

**May 3, 2010**

**MACTEC Project No. 6470-10-0057**



engineering and constructing a better tomorrow

May 3, 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  
Quality Oil Co. Property, Parcel #9  
State Project U-2550B, TIP No. 34831.1.1  
2302 South Sterling Street  
Morganton, North Carolina  
MACTEC Project No. 6470-10-0057**

Dear Mr. Fox:

As authorized by Cathy Houser's acceptance of MACTEC Proposal No. PROP 10-RAL-126 dated March 10, 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.

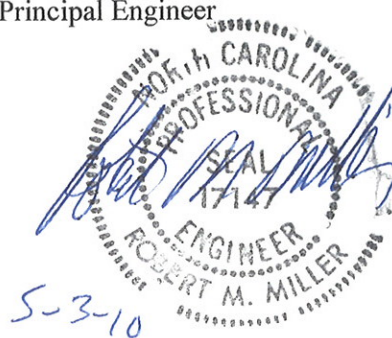
This report presents project information and assessment activities conducted, along with our findings, conclusions and recommendations. We appreciate your selection of MACTEC for this project and look forward to assisting you further on this and other projects. If you have any questions, please do not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

Sincerely,

**MACTEC ENGINEERING AND CONSULTING, INC.**

Matthew J. Gillis  
Staff Scientist

Robert M. Miller, P.E.  
Senior Project Manager/Principal Engineer



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## 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 Quality Oil Co. property (Quality Oil property) located at 2302 South Sterling Street in Morganton, Burke 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-2550B. 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 Quality Oil property is located at 2302 South Sterling Street in Morganton, Burke County, North Carolina. The site is developed with a Shell gas station/convenience store. The Burke County Geographic Information Services (GIS) identifies the site as parcel identification number (PIN) 2712189083. The site is bound to the northeast by South Sterling Street, across which is cleared land and Interstate 40; to the southeast by Parcel #10 (RAJ RN property); to the southwest by wooded, undeveloped land; and to the northwest by the El Paso Mexican Restaurant (Figure 2).

### 1.2 Background Information

The gas station building is 1,568 square feet and is constructed with a slab-on-grade concrete foundation and masonry exterior. The asphalt parking lot provides access to South Sterling Street. According to the North Carolina Department of Environment and Natural Resources Underground Storage Tank (UST) Registry, the property is identified by Facility I.D. No. 0-023414. According to NCDOT there are four USTs on the property and there is no record of contamination.

## 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 did not identify anomalies that may be USTs in the right-of-way, however, ground penetrating radar identified an anomaly probably caused by buried metal near soil boring SB-19. Schnabel's Geophysical Survey Report is included in Appendix A.

### 2.1 Soil Assessment

On April 2, 2010, Troxler Geologic Services, Inc. (Troxler), under contract to MACTEC, advanced five soil borings (Nos. SB-17 through SB-21) at the subject site using a Geoprobe™ direct-push technology. 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 Troxler 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 SB-17 through SB-21 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-of-custody records are included in Appendix D. TPH was not detected in soil borings SB-17 through SB-21 at concentrations that exceed the laboratory reporting limits.

## **4.0 CONCLUSIONS AND RECOMMENDATIONS**

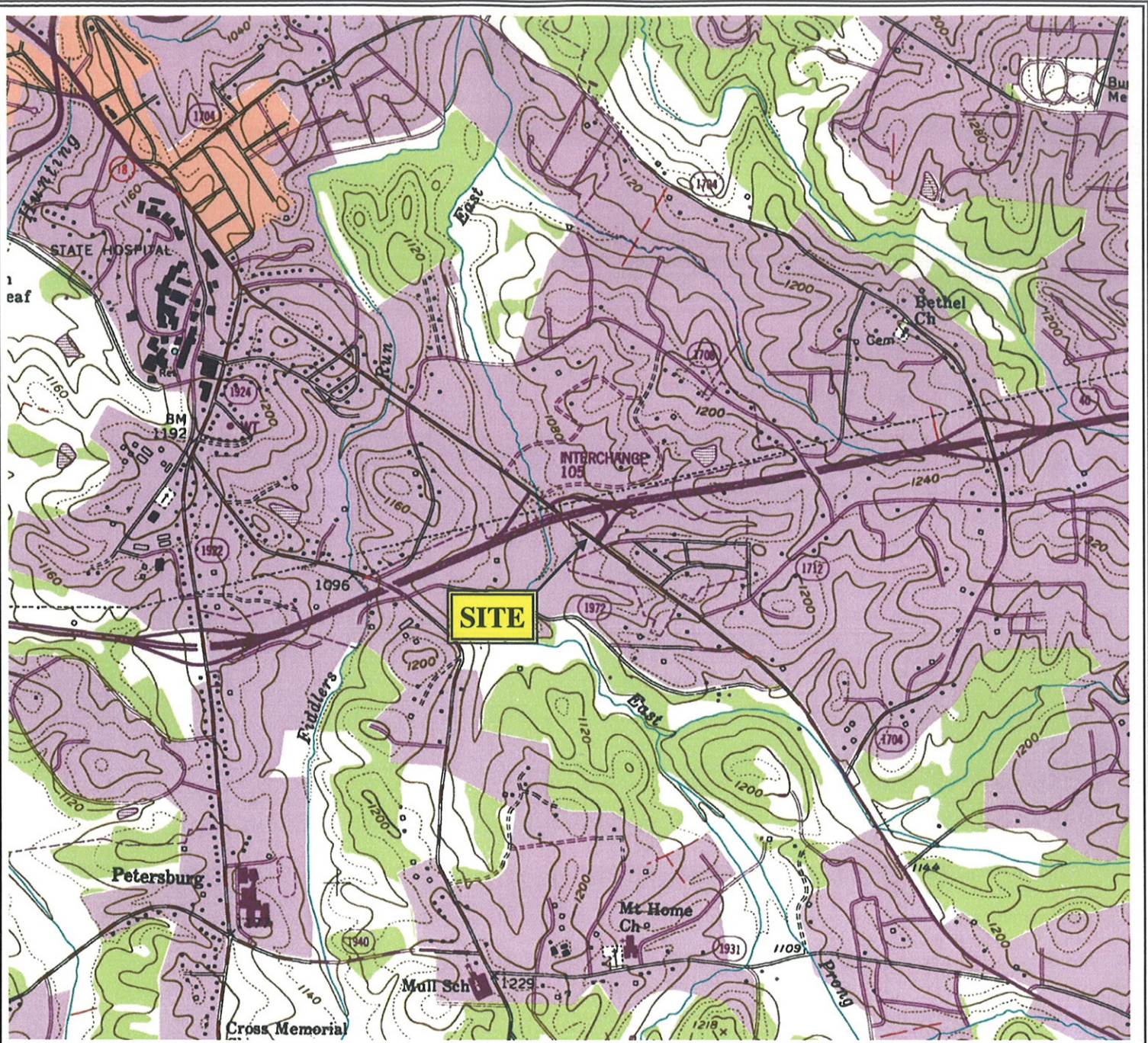
Based on the Preliminary Site Assessment, MACTEC offers the following conclusions and recommendations:

- MACTEC did not find evidence of a petroleum release in the vicinity of soil borings SB-17 through SB-21.
- MACTEC does not have evidence to support the need for further environmental assessment by NCDOT at this time.

## **5.0 QUALIFICATIONS**

This assessment was performed 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**



**MORGANTON SOUTH, NC**  
35081-F6-TF-024

**1993**

DMA 4655 II NW-SERIES V842

CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

1000 0 1000 2000

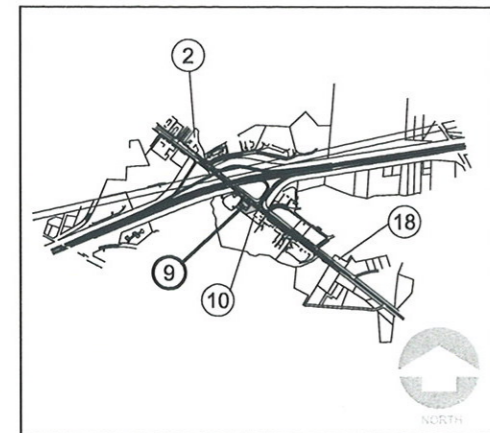
**MACTEC**  
MACTEC ENGINEERING AND CONSULTING, INC.  
3301 ATLANTIC AVENUE  
RALEIGH, NORTH CAROLINA

NOTE: SITE LOCATION IS APPROXIMATE

<b>TOPOGRAPHIC SITE MAP</b> <b>QUALITY OIL CO. PROPERTY</b> <b>PARCEL #9</b> <b>MORGANTON, NORTH CAROLINA</b>	DRAWN: MJG	DATE: APRIL 2010	DRAWING
	ENG CHECK: CBS	SCALE: 1 : 24000	
	APPROVAL: [Signature]	JOB: 6470-10-0057	1

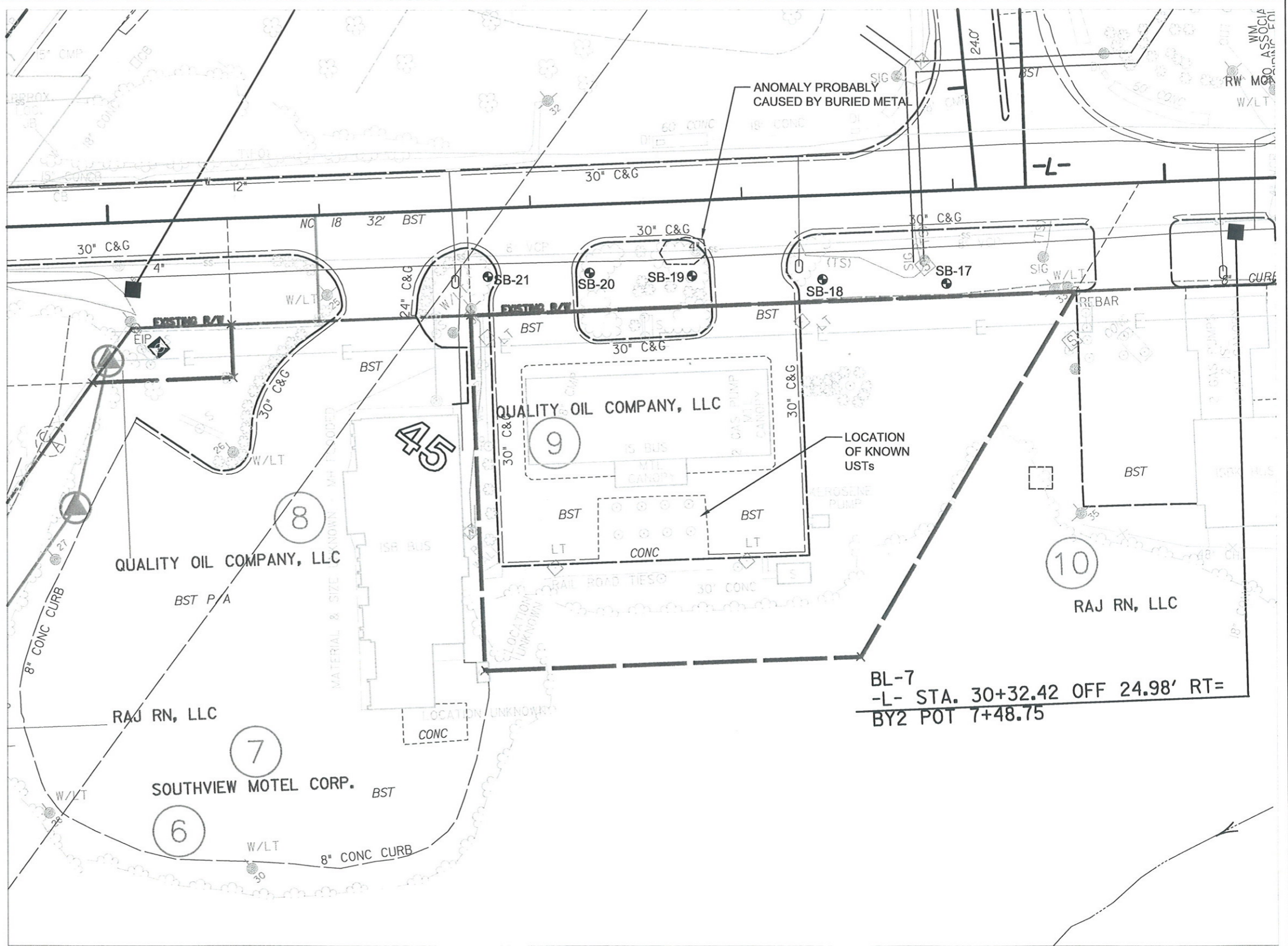
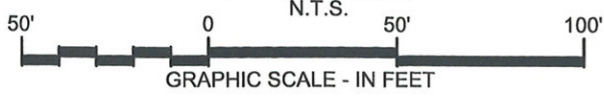
P:\6470\10\0057 DOT Morganton Site\Drawings\MS Files\Base Plan Final.dwg Mon, 03 May 2010 - 12:49pm rrahle

- LEGEND:**
- EXISTING PROPERTY LINE
  - EXISTING RIGHT OF WAY LINE
  - - - EXISTING ROAD SOILS
  - SS EXISTING UTILITY UG SANITARY SEWER LINE
  - W EXISTING UTILITY UG WATER LINE
  - EXISTING STRUCTURE
  - ⊙ PROPOSED RIGHT OF WAY LINE
  - PUE PROPOSED EASEMENT PERMANENT UTILITY
  - ⊙ EXISTING VEGETATION TREE
  - ⊙ EXISTING VEGETATION WOOD LINE
  - EXISTING UTILITY POLE
  - ⊕ SB- SOIL BORING LOCATION



SITE KEY MAP

N.T.S.



BL-7  
 -L- STA. 30+32.42 OFF 24.98' RT=  
 BY2 POT 7+48.75



**SITE LOCATION MAP**  
 QUALITY OIL CO. PROPERTY, PARCEL #9  
 NCDOT PROJECT NO. U-2550B  
 MORGANTON, NORTH CAROLINA

DRAWN:	R.R.	DATE:	MAY 2010
ENG CHECK:	<i>[Signature]</i>	SCALE:	AS SHOWN
APPROVAL:	<i>[Signature]</i>	JOB No.:	6470-10-0057

DRAWING  
**2**

REFERENCE: BASE DRAWING PROVIDED BY NCDOT; MACTEC FIELD NOTES.



## **TABLE**

<p style="text-align: center;"><b>Table 1</b>  <b>Summary of Laboratory Test Results</b>  <b>State Project U-2550B, TIP No. 34831.1.1</b>  <b>Quality Oil Co. Property, Parcel #9</b>  <b>Morganton, North Carolina</b>  <b>MACTEC Job No. 6470-10-0057</b></p>				
Analytical Method →		EPA 8015	EPA 8015	EPA 8015
Contaminant of Concern →		TPH-DRO	TPH-DRO	TPH-GRO
Sample ID	Date Collected	Sample Depth	mg/Kg	
SB-17	4/2/2010	11'-12'	<7.6	<5.5
SB-18	4/2/2010	11'-12'	<8.1	<5.8
SB-19	4/2/2010	11'-12'	<8.4	<6.0
SB-20	4/2/2010	11'-12'	<8.8	<6.3
SB-21	4/2/2010	11'-12'	<8.9	<6.4
NCDENR Action Level			10	10

Notes: NCDENR North Carolina Department of Environment and Natural Resources  
 <# Analyte not detected above the Reporting Limit shown

Prepared by: MJC Date: 4-27-10

Checked by: CTB Date: 4/27/10

**APPENDIX A**

**SCHNABEL ENGINEERING  
GEOPHYSICAL SURVEY REPORT**



April 26, 2010

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

RE:           State Project:   U-2550B  
              WBS Element:  34831.1.1  
              County:       Burke  
              Description:  Morganton – NC 18 (Sterling Street) and I-40 Interchange

**Subject:       Report on Geophysical Surveys for Parcel 9, Morganton, NC  
              Schnabel Engineering Project 09210013.19**

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 two 8.5x11 color figures.

## 1.0 INTRODUCTION

The work described in this report was conducted on March 25, 26, and 31, 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 9 (Quality Oil Co. Property, Quality Mart 22). 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 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 9 were sent to Robert Miller and Matt Gillis of Mactec and Terry Fox of the NCDOT on April 1, 2010.

## **3.0 DISCUSSION OF RESULTS**

The contoured EM61 data for Parcel 9 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 buried utilities, buried metal, or known site features (Figures 3 and 4). GPR data collected over differential EM61 anomalies does not indicate the presence of metallic UST's within the right-of-way and/or easement (Figures 3 and 4).

## **4.0 CONCLUSIONS**

Our evaluation of the geophysical data collected on Parcel 9 on Project U-2550B in Morganton, NC indicates the following:

The geophysical data do not indicate the presence of metallic UST's in the areas surveyed on Parcel 9.

## 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**



James W. Whitt  
Staff Geophysicist



Edward D. Billington, LG  
Senior Vice President

JW:NB

Attachment: Figures (4)

FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.19 (U-2550B, BURKE CO.)\REPORT\PARCEL 9\PARCEL 9 (U-3812).DOC



Parcel 9 – Quality Oil Co. Property, looking west



Parcel 9 – Quality Oil Co. Property, looking south



Geonics EM61-MK2



GSSI SIR-3000

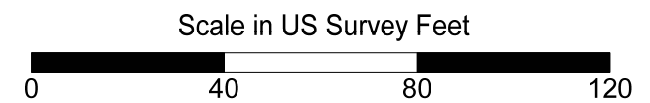
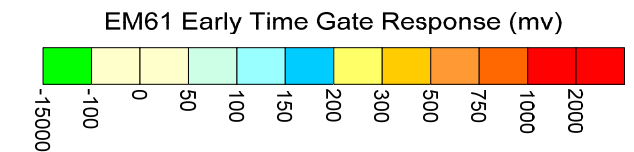
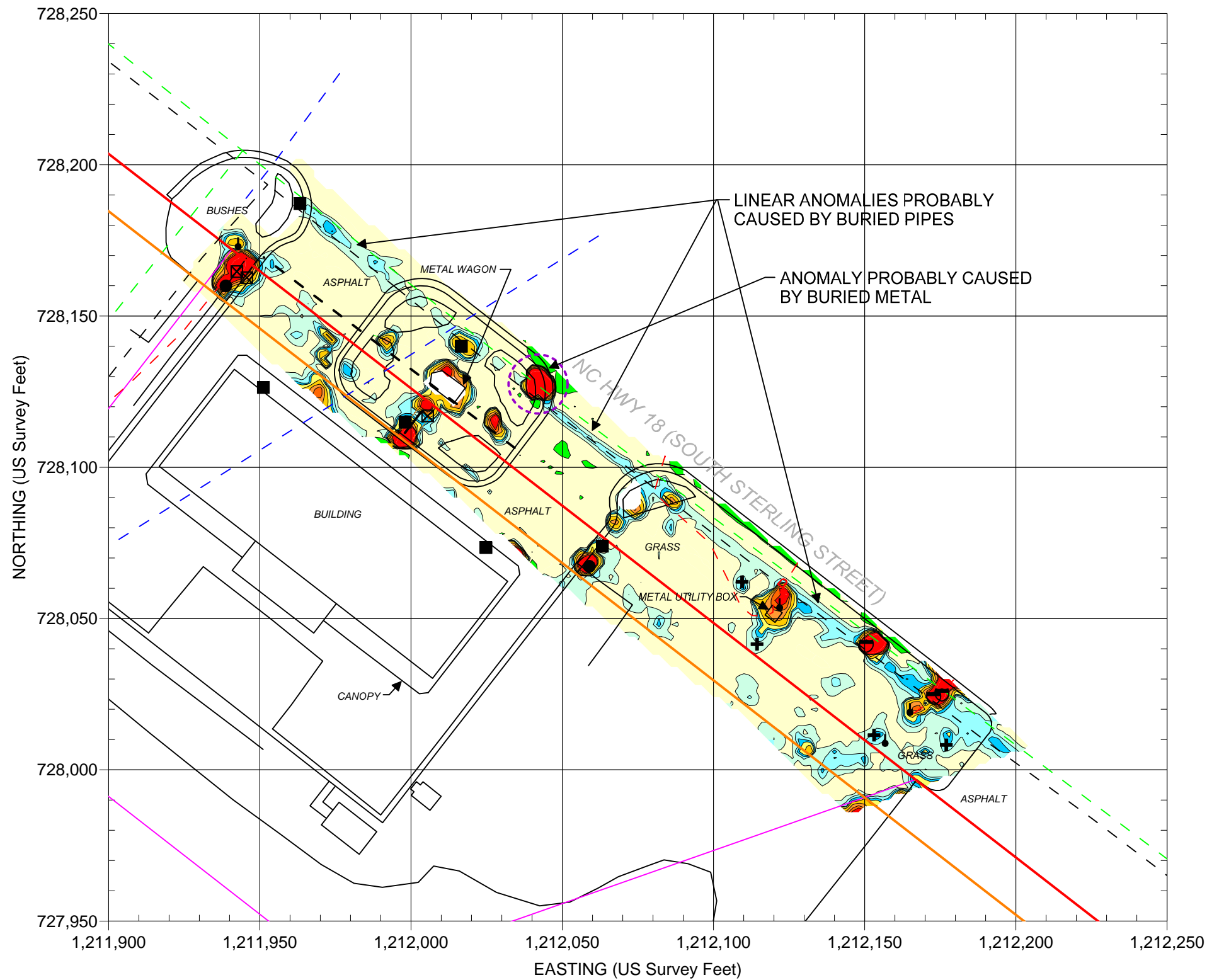


STATE PROJECT U-2550B  
BURKE CO., NORTH CAROLINA  
NC DEPT. OF TRANSPORTATION  
PROJECT NO. 09210013.19

PHOTOS OF  
GEOPHYSICAL  
EQUIPMENT USED

FIGURE 2





EXPLANATION	
	SIGN
	UTILITY POLE
	GUY WIRE
	MISCELLANEOUS METALLIC OBJECT
	UTILITY LID
	LIGHT POLE
	STORM SEWER INLET
	UST LID
	DOT PROPOSED RW
	DOT PROPOSED UTILITY EASEMENT
	PROPERTY LINE
	UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT (VARIOUS COLORS))
	GPR SURVEY AREA

REF.: NCDOT FILE: u2550b\_rdy\_psh05.dgn  
(FOR SOME SITE FEATURES)

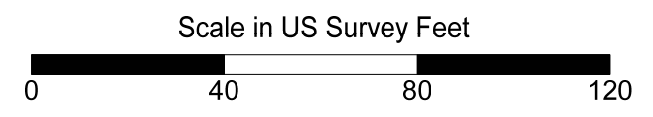
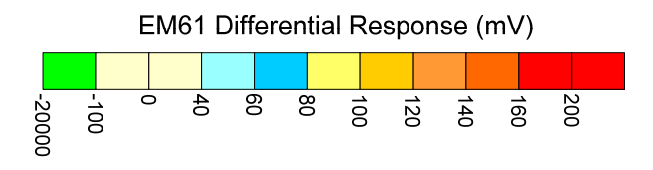
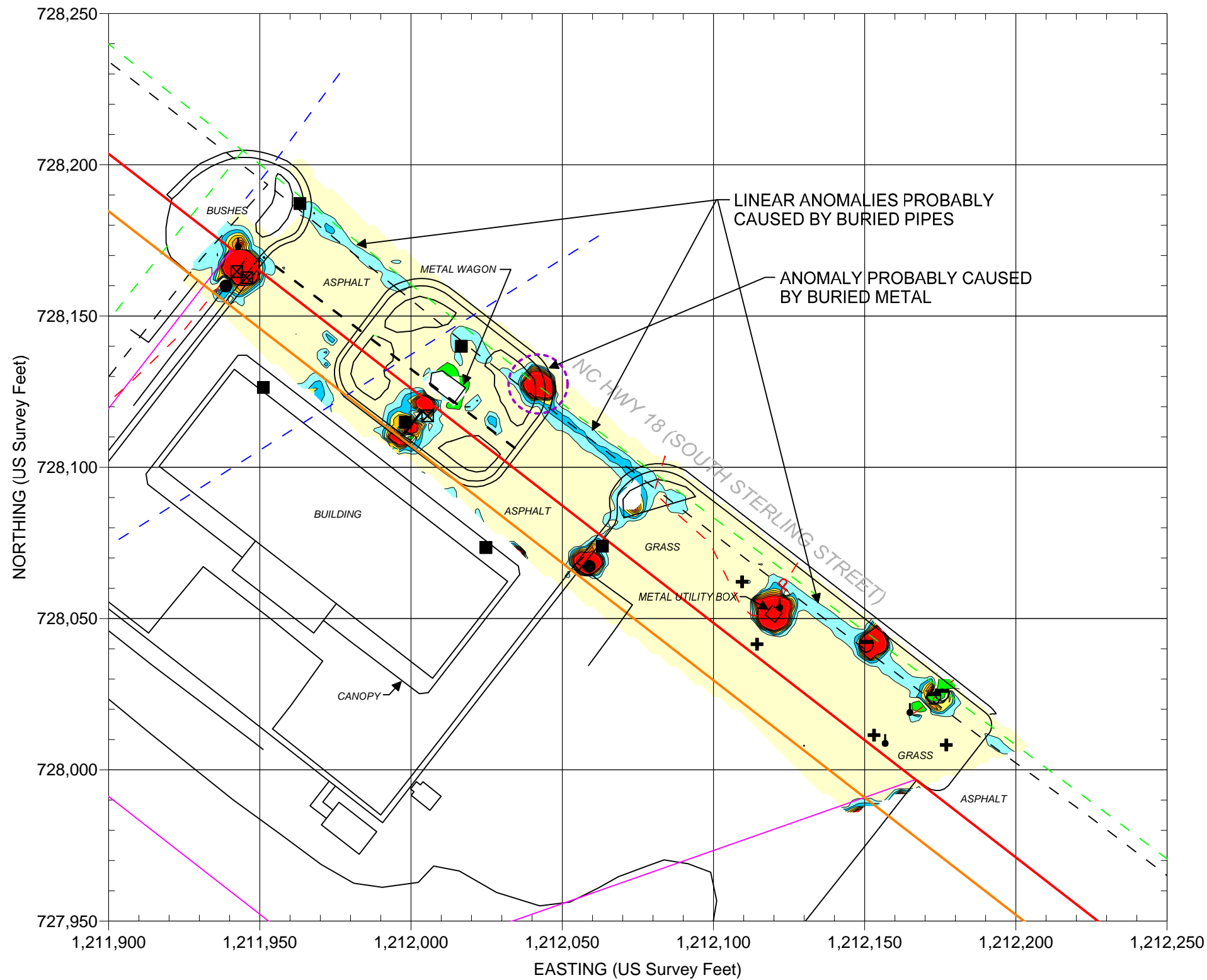
Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on March 25 and 26, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on March 31, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



STATE PROJECT U-2550B  
BURKE COUNTY, NORTH CAROLINA  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT NO. 09210013.19

PARCEL 9  
EM61 EARLY TIME GATE  
RESPONSE

FIGURE 3



EXPLANATION	
	SIGN
	UTILITY POLE
	GUY WIRE
	MISCELLANEOUS METALLIC OBJECT
	UTILITY LID
	LIGHT POLE
	STORM SEWER INLET
	UST LID
	DOT PROPOSED RW
	DOT PROPOSED UTILITY EASEMENT
	PROPERTY LINE
	UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT (VARIOUS COLORS))
	GPR SURVEY AREA

REF.: NCDOT FILE: u2550b\_rdy\_psh05.dgn  
(FOR SOME SITE FEATURES)

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 March 25 and 26, 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 March 31, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	STATE PROJECT U-2550B	PARCEL 9
	BURKE COUNTY, NORTH CAROLINA	EM61 DIFFERENTIAL
	NC DEPARTMENT OF TRANSPORTATION	RESPONSE
	PROJECT NO. 09210013.19	FIGURE 4

## **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**



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

Soil Boring Sample Record

MACTEC Project ID: NCDOT Morganton  
Parcel #9 Quality Oil Co. Property

MACTEC Field Representative

MACTEC Project #: 6470-10-0057

Lloyd

Date: 4/1/2010

Boring ID: SB-17

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Grass and roots		0		
1-2	Yellowish red (5YR 4/6) SILT with minor sand, soft, slightly plastic, some mica, some rock fragments. Moist.		0		No unusual odors or stains Fill
2-3	Yellowish red (5YR 4/6) SILT with minor sand, soft, slightly plastic, some mica, some rock fragments. Moist.		0		
3-4	Yellowish red (5YR 4/6) SILT with minor sand, soft, slightly plastic, some mica, some rock fragments. Moist.		0		
4-5	Yellowish red (5YR 4/6) SILT with minor sand, soft, slightly plastic, some mica, some rock fragments. Moist.		0		
5-6	Yellowish red (5YR 4/6) SILT with minor sand, soft, slightly plastic, some mica, some rock fragments. Moist.		0		
6-7	Strong brown (7.5YR 4/6) SILT, soft, slightly plastic, some mica, some fine sand. Moist		0		No unusual odors or stains Residual soil.
7-8	Strong brown (7.5YR 4/6) SILT, soft, slightly plastic, some mica, some fine sand. Moist		0		
8-9	Yellowish red (5YR 5/8) SANDY SILT, soft, slightly plastic, micaceous. Moist.		0		No unusual odors or stains
9-10	Yellowish red (5YR 5/8) SANDY SILT, soft, slightly plastic, micaceous. Moist.		0		
10-11	Very pale brown (10YR 8/2) SANDY SILT, soft, slightly plastic, some mica, some quartz, few feldspar, trace black. Moist.		0		No unusual odors or stains
11-12	Very pale brown (10YR 8/2) SANDY SILT, soft, slightly plastic, some mica, some quartz, few feldspar, trace black. Moist.	1520	0		Sample

Prepared by: MJG Date: 4-28-10  
Checked by: CBS Date: 4/28/10



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

Soil Boring Sample Record

MACTEC Project ID: NCDOT Morganton  
Parcel #9 Quality Oil Co. Property

MACTEC Field Representative

MACTEC Project #: 6470-10-0057

Lloyd

Date: 4/1/2010

Boring ID: SB-18

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Grass and roots		0		
1-2	Red (2.5YR 4/8) SILT with minor sand, soft, slightly plastic, some mica, few roots. Moist.		0		No unusual odors or stains
2-3	Red (2.5YR 4/8) SILT with minor sand, soft, slightly plastic, some mica, few roots. Moist.		0		
3-4	Red (2.5YR 4/8) SILT with minor sand, soft, slightly plastic, some mica, few roots. Moist.		0		
4-5	Strong brown (7.5YR 4/6) SILT, soft, slightly plastic, some mica, some coarse sand. Moist.		0		No unusual odors or stains
5-6	Strong brown (7.5YR 4/6) SILT, soft, slightly plastic, some mica, some coarse sand. Moist.		0		
6-7	Very pale brown (10YR 8/2) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		No unusual odors or stains
7-8	Very pale brown (10YR 8/2) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
8-9	Very pale brown (10YR 8/2) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
9-10	Yellowish brown (10YR 5/8) SILT, soft, slightly plastic, micaceous, some fine sand. Moist.		0		No unusual odors or stains
10-11	Yellowish brown (10YR 5/8) SILT, soft, slightly plastic, micaceous, some fine sand. Moist.		0		
11-12	Yellowish brown (10YR 5/8) SILT, soft, slightly plastic, micaceous, some fine sand. Moist.	1545	0		Sample

Prepared by: MJB Date: 4-28-10  
Checked by: CBS Date: 4/28/10



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

Soil Boring Sample Record

MACTEC Project ID: NCDOT Morganton  
Parcel #9 Quality Oil Co. Property  
MACTEC Project #: 6470-10-0057

MACTEC Field Representative

Lloyd

Date: 4/1/2010

Boring ID: SB-19

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Mulch		0		
1-2	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		No unusual odors or stains
2-3	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
3-4	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
4-5	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
5-6	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
6-7	Red (2.5YR 4/8) SANDY SILT, soft, slightly plastic, some mica. Damp.		0		No unusual odors or stains Residual soil
7-8	Red (2.5YR 4/8) SANDY SILT, soft, slightly plastic, some mica. Damp.		0		
8-9	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		No unusual odors or stains
9-10	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		
10-11	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		
11-12	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.	1610	0		Sample

Prepared by: MJG Date: 4-28-10  
Checked by: CBS Date: 4/28/10





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

Soil Boring Sample Record

MACTEC Project ID: NCDOT Morganton  
Parcel #9 Quality Oil Co. Property  
MACTEC Project #: 6470-10-0057

MACTEC Field Representative

Lloyd

Date: 4/1/2010

Boring ID: SB-20

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Mulch		0		
1-2	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		No unusual odors or stains
2-3	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
3-4	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
4-5	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
5-6	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
6-7	Red (2.5YR 4/8) SANDY SILT, soft, slightly plastic, some mica. Damp.		0		No unusual odors or stains
7-8	Red (2.5YR 4/8) SANDY SILT, soft, slightly plastic, some mica. Damp.		0		
8-9	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		No unusual odors or stains
9-10	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		
10-11	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		
11-12	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.	1630	0		Sample

Prepared by: MJG Date: 4-28-10  
Checked by: CBS Date: 4/28/10



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

Soil Boring Sample Record

MACTEC Project ID: NCDOT Morganton  
Parcel #9 Quality Oil Co. Property

MACTEC Field Representative

MACTEC Project #: 6470-10-0057

Lloyd

Date: 4/1/2010

Boring ID: SB-21

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Mulch		0		
1-2	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		No unusual odors or stains
2-3	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
3-4	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
4-5	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
5-6	Strong brown (7.5YR 4/6) SANDY SILT, soft, slightly plastic, some mica, some quartz. Moist.		0		
6-7	Red (2.5YR 4/8) SANDY SILT, soft, slightly plastic, some mica. Damp.		0		No unusual odors or stains
7-8	Red (2.5YR 4/8) SANDY SILT, soft, slightly plastic, some mica. Damp.		0		
8-9	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		No unusual odors or stains
9-10	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		
10-11	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.		0		
11-12	Yellowish brown (10YR 5/8) SILT with minor sand, soft, slightly plastic, micaceous, some quartz. Moist.	1650	0		Sample

Prepared by: MJT6 Date: 4-28-10  
Checked by: CBS Date: 4/28/10

**APPENDIX D**

**LABORATORY ANALYTICAL REPORTS  
AND CHAIN-OF-CUSTODY RECORDS**



**PRISM**  
LABORATORIES, INC.

## Case Narrative

**Date:** 04/19/10  
**Company:** N.C. Department of Transportation  
**Contact:** Matt Gillis  
**Address:** c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Client Project ID:** NCDOT Morganton  
**Prism COC Group No:** G0410079  
**Collection Date(s):** 03/31/10 thru 04/02/10  
**Lab Submittal Date(s):** 04/05/10

**Client Project Name Or No:** Morganton, NC WBS# 34831.1.1

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 32 pages. A chain-of-custody is also attached for the samples submitted to Prism for this project.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative. Quality control statements and/or sample specific remarks are included in the sample comments section of the laboratory report for each sample affected.

### Semi Volatile Analysis

Analysis Note for Q49432 MS Diesel Range Organics (DRO): Sample concentration too high for recovery evaluation.

Analysis Note for Q49432 MSD Diesel Range Organics (DRO): Sample concentration too high for recovery evaluation.

### Volatile Analysis

No Anomalies Reported

### Metals Analysis

N/A

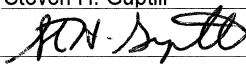
### Wet Lab and Micro Analysis

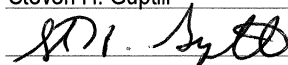
N/A

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

**Data Reviewed by:** Steven H. Guptill

**Project Manager:** Steven H. Guptill

**Signature:** 

**Signature:** 

**Review Date:** 04/19/10

**Approval Date:** 04/19/10

### **Data Qualifiers Key Reference:**

B: Compound also detected in the method blank.

#: Result outside of the QC limits.

DO: Compound diluted out.

E: Estimated concentration, calibration range exceeded.

J: The analyte was positively identified but the value is estimated below the reporting limit.

H: Estimated concentration with a high bias.

L: Estimated concentration with a low bias.

M: A matrix effect is present.

Notes: This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc. The results in this report relate only to the samples submitted for analysis.



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

# Laboratory Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1  
**Sample Matrix:** Soil

**Client Sample ID:** SB-17  
**Prism Sample ID:** 275765  
**COC Group:** G0410079  
**Time Collected:** 04/02/10 15:20  
**Time Submitted:** 04/05/10 15:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	91.4	%			1	SM2540 G	04/08/10 15:30	jbrayton	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	BRL	mg/kg	7.6	1.2	1	8015B	04/16/10 15:35	jvogel	Q49472
Sample Preparation:			25.07 g	/	1 mL	3545	04/15/10 16:00	athao	P27278
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	74	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	7.24	g			1	GRO	04/08/10 0:00	lbrown	
Weight 2	7.54	g			1	GRO	04/08/10 0:00	lbrown	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.5	3.4	50	8015B	04/14/10 2:20	heasler	Q49405
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	119	55 - 129	

**Sample Comment(s):**

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL.*

*The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.*

*All results are reported on a dry-weight basis*

Angela D. Overcash, V.P. Laboratory Services

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

# Laboratory Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1  
**Sample Matrix:** Soil

**Client Sample ID:** SB-18  
**Prism Sample ID:** 275766  
**COC Group:** G0410079  
**Time Collected:** 04/02/10 15:45  
**Time Submitted:** 04/05/10 15:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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**Percent Solids Determination**

Percent Solids	85.8	%			1	SM2540 G	04/08/10 15:30	jbrayton	
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**Diesel Range Organics (DRO) by GC-FID**

Diesel Range Organics (DRO)	BRL	mg/kg	8.1	1.3	1	8015B	04/16/10 16:10	jvogel	Q49472
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Sample Preparation: 25.1 g / 1 mL 3545 04/15/10 16:00 athao P27278

Surrogate	% Recovery	Control Limits
o-Terphenyl	71	49 - 124

**Sample Weight Determination**

Weight 1	9.63	g			1	GRO	04/08/10 0:00	lbrown	
Weight 2	8.60	g			1	GRO	04/08/10 0:00	lbrown	

**Gasoline Range Organics (GRO) by GC-FID**

Gasoline Range Organics (GRO)	BRL	mg/kg	5.8	3.6	50	8015B	04/14/10 2:52	heasler	Q49405
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Surrogate recovery was outside the control limits. No target compounds were detected in this sample that were associated with this surrogate. No further action was taken.

Surrogate	% Recovery	Control Limits
aaa-TFT	133 #	55 - 129

Sample Comment(s):

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL.*

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Angela D. Overcash, V.P. Laboratory Services

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04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1  
**Sample Matrix:** Soil

**Client Sample ID:** SB-19  
**Prism Sample ID:** 275767  
**COC Group:** G0410079  
**Time Collected:** 04/02/10 16:10  
**Time Submitted:** 04/05/10 15:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Percent Solids Determination</u></b>									
Percent Solids	83.0	%			1	SM2540 G	04/08/10 15:30	jbrayton	
<b><u>Diesel Range Organics (DRO) by GC-FID</u></b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.4	1.4	1	8015B	04/16/10 16:46	jvogel	Q49472
Sample Preparation:			25.08 g	/	1 mL	3545	04/15/10 16:00	athao	P27278
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	76	49 - 124	
<b><u>Sample Weight Determination</u></b>									
Weight 1	7.62	g			1	GRO	04/08/10 0:00	lbrown	
Weight 2	8.72	g			1	GRO	04/08/10 0:00	lbrown	
<b><u>Gasoline Range Organics (GRO) by GC-FID</u></b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.0	3.8	50	8015B	04/14/10 3:23	heasler	Q49405
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	124	55 - 129	

**Sample Comment(s):**

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL.*

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 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1  
**Sample Matrix:** Soil

**Client Sample ID:** SB-20  
**Prism Sample ID:** 275768  
**COC Group:** G0410079  
**Time Collected:** 04/02/10 16:30  
**Time Submitted:** 04/05/10 15:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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**Percent Solids Determination**

Percent Solids	79.3	%			1	SM2540 G	04/08/10 15:30	jbrayton	
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**Diesel Range Organics (DRO) by GC-FID**

Diesel Range Organics (DRO)	BRL	mg/kg	8.8	1.4	1	8015B	04/16/10 17:21	jvogel	Q49472
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Sample Preparation: 25.05 g / 1 mL 3545 04/15/10 16:00 athao P27278

Surrogate	% Recovery	Control Limits
o-Terphenyl	81	49 - 124

**Sample Weight Determination**

Weight 1	6.73	g			1	GRO	04/08/10 0:00	lbrown	
Weight 2	9.08	g			1	GRO	04/08/10 0:00	lbrown	

**Gasoline Range Organics (GRO) by GC-FID**

Gasoline Range Organics (GRO)	BRL	mg/kg	6.3	3.9	50	8015B	04/14/10 17:48	heasler	Q49444
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Surrogate recovery was outside the control limits. No target compounds were detected in this sample that were associated with this surrogate. No further action was taken.

Surrogate	% Recovery	Control Limits
aaa-TFT	134 #	55 - 129

Sample Comment(s):

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL.*

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Angela D. Overcash, V.P. Laboratory Services

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 NC Drinking Water Cert. No. 37735

# Laboratory Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1  
**Sample Matrix:** Soil

**Client Sample ID:** SB-21  
**Prism Sample ID:** 275769  
**COC Group:** G0410079  
**Time Collected:** 04/01/10 16:50  
**Time Submitted:** 04/05/10 15:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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**Percent Solids Determination**

Percent Solids	78.4	%			1	SM2540 G	04/07/10 16:22	jbrayton	
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**Diesel Range Organics (DRO) by GC-FID**

Diesel Range Organics (DRO)	BRL	mg/kg	8.9	1.4	1	8015B	04/14/10 17:04	jvogel	Q49432
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Sample Preparation: 25.19 g / 1 mL 3545 04/13/10 13:25 athao P27252

Surrogate	% Recovery	Control Limits
o-Terphenyl	79	49 - 124

**Sample Weight Determination**

Weight 1	8.69	g			1	GRO	04/08/10 0:00	lbrown	
Weight 2	9.67	g			1	GRO	04/08/10 0:00	lbrown	

**Gasoline Range Organics (GRO) by GC-FID**

Gasoline Range Organics (GRO)	BRL	mg/kg	6.4	4.0	50	8015B	04/10/10 20:51	heasler	Q49314
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Surrogate recovery was outside of the control limits.

Surrogate	% Recovery	Control Limits
aaa-TFT	150 #	55 - 129

**Sample Comment(s):**

*BRL = Below Reporting Limit*

*J- Estimated value between the Reporting Limit and the MDL.*

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*All results are reported on a dry-weight basis*

Angela D. Overcash, V.P. Laboratory Services

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

# Level II QC Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1

**COC Group Number:** G0410079  
**Date/Time Submitted:** 04/05/10 15:50

## Gasoline Range Organics (GRO) by GC-FID, method 8015B

### Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg	Q49295

### Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Gasoline Range Organics (GRO)	50.20	50	mg/kg	100	67-116	Q49295

### Matrix Spike

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
275461 Gasoline Range Organics (GRO)	41.90	50	mg/kg	84	57-113	Q49295

### Matrix Spike Duplicate

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
275461 Gasoline Range Organics (GRO)	44.10	50	mg/kg	88	57-113	5	0 - 23	Q49295

## Gasoline Range Organics (GRO) by GC-FID, method 8015B

### Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg	Q49314

### Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Gasoline Range Organics (GRO)	49.60	50	mg/kg	99	67-116	Q49314

### Matrix Spike

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
275755 Gasoline Range Organics (GRO)	37.45	50	mg/kg	75	57-113	Q49314

### Matrix Spike Duplicate

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
275755 Gasoline Range Organics (GRO)	37.25	50	mg/kg	75	57-113	1	0 - 23	Q49314

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

# Level II QC Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1

**COC Group Number:** G0410079  
**Date/Time Submitted:** 04/05/10 15:50

## Diesel Range Organics (DRO) by GC-FID, method 8015B

<b>Method Blank</b>									
	Result	RL	Control Limit	Units				QC Batch ID	
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg				Q49319	
<b>Laboratory Control Sample</b>									
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %		QC Batch ID	
Diesel Range Organics (DRO)	51.0	80		mg/kg	64	55-109		Q49319	
<b>Matrix Spike</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %		QC Batch ID	
275749 Diesel Range Organics (DRO)	54.8	80		mg/kg	69	50-117		Q49319	
<b>Matrix Spike Duplicate</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
275749 Diesel Range Organics (DRO)	55.7	80		mg/kg	70	50-117	2	0 - 24	Q49319

## Gasoline Range Organics (GRO) by GC-FID, method 8015B

<b>Method Blank</b>									
	Result	RL	Control Limit	Units				QC Batch ID	
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg				Q49405	
<b>Laboratory Control Sample</b>									
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %		QC Batch ID	
Gasoline Range Organics (GRO)	48.25	50		mg/kg	97	67-116		Q49405	
<b>Matrix Spike</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %		QC Batch ID	
275831 Gasoline Range Organics (GRO)	46.00	50		mg/kg	92	57-113		Q49405	
<b>Matrix Spike Duplicate</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
275831 Gasoline Range Organics (GRO)	47.80	50		mg/kg	96	57-113	4	0 - 23	Q49405

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

# Level II QC Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1

**COC Group Number:** G0410079  
**Date/Time Submitted:** 04/05/10 15:50

## Diesel Range Organics (DRO) by GC-FID, method 8015B

<b>Method Blank</b>									
	Result	RL	Control Limit	Units					QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg					Q49432
<b>Laboratory Control Sample</b>									
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Diesel Range Organics (DRO)	54.8	80		mg/kg	69	55-109			Q49432
<b>Matrix Spike</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
276286 Diesel Range Organics (DRO)	391	80		mg/kg	-8 #	50-117			Q49432
<b>Matrix Spike Duplicate</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
276286 Diesel Range Organics (DRO)	302	80		mg/kg	-119 #	50-117	26 #	0 - 24	Q49432

## Gasoline Range Organics (GRO) by GC-FID, method 8015B

<b>Method Blank</b>									
	Result	RL	Control Limit	Units					QC Batch ID
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg					Q49444
<b>Laboratory Control Sample</b>									
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Gasoline Range Organics (GRO)	47.65	50		mg/kg	95	67-116			Q49444
<b>Matrix Spike</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
275668 Gasoline Range Organics (GRO)	43.30	50		mg/kg	87	57-113			Q49444
<b>Matrix Spike Duplicate</b>									
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
275668 Gasoline Range Organics (GRO)	44.60	50		mg/kg	89	57-113	3	0 - 23	Q49444

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

# Level II QC Report

04/19/10

N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

**Project Name:** Morganton, NC  
**Project ID:** NCDOT Morganton  
**Project No.:** WBS# 34831.1.1

**COC Group Number:** G0410079  
**Date/Time Submitted:** 04/05/10 15:50

**Diesel Range Organics (DRO) by GC-FID, method 8015B**

**Method Blank**

	Result	RL	Control Limit	Units	QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg	Q49472

**Laboratory Control Sample**

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Diesel Range Organics (DRO)	54.6	80	mg/kg	68	55-109	Q49472

**Matrix Spike**

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
275759 Diesel Range Organics (DRO)	69.9	80	mg/kg	87	50-117	Q49472

**Matrix Spike Duplicate**

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
275759 Diesel Range Organics (DRO)	73.4	80	mg/kg	92	50-117	5	0 - 24	Q49472

**#-See Case Narrative**



Full-Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
Phone: 704/529-6364 • Fax: 704/525-0409

Client Company Name: MACTEC

Report To/Contact Name: M.H. G.H.S.

Reporting Address: 3301 ATLANTA AVE

Raleigh, NC

Phone: 919-831-8056 Fax (Yes)  (No)

Email (Yes)  (No) Email Address \_\_\_\_\_

EDD Type: PDF  Excel  Other \_\_\_\_\_

Site Location Name: NCDOT Morganton

Site Location Physical Address: Morganton, NC

# CHAIN OF CUSTODY RECORD

PAGE 2 OF 3 QUOTE # TO ENSURE PROPER BILLING:

Project Name: NCDOT Morganton

Short Hold Analysis: (Yes)  (No)  JUST Project: (Yes)  (No)

\*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements

Invoice To: Callahan

Address: \_\_\_\_\_

Purchase Order No./Billing Reference WBS 34831.1

Requested Due Date  1 Day  2 Days  3 Days  4 Days  5 Days

"Working Days"  6-9 Days  Standard 10 days  Pre-Approved

Samples received after 15:00 will be processed next business day.

Turnaround time is based on business days, excluding weekends and holidays.

(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER		PRESERVATIVES	ANALYSES REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO. SIZE				
SB-11	4/2/10	1110	Soil	6 Ch	Voa 2, 2	40ml Methanol	✓		275759
SB-12		1130							275760
SB-13		1355							275761
SB-14		1405							275762
SB-15		1425							275763
SB-16		1455							275764
SB-17		1520							275765
SB-18		1545							275766
SB-19		1610							275767
SB-20		1630							275768

Sample Iced Upon Collection: YES  NO

Certification: NELAC  USACE  FL  NC

Water Chlorinated: YES  NO

SC  OTHER  N/A

Additional Comments: 40

Site Arrival Time: \_\_\_\_\_

Site Departure Time: \_\_\_\_\_

Field Tech Fee: \_\_\_\_\_

Mileage: \_\_\_\_\_

**PRISM USE ONLY**

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

Sampled By (Print Name) Keuster Lloyd Affiliation \_\_\_\_\_

Upon relinquishing this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By (Signature) [Signature] Date 4-5-10 Military/Hours 1300

Received By (Signature) [Signature] Date \_\_\_\_\_

Relinquished By (Signature) [Signature] Date 4/5/10 Military/Hours 1530

Received By (Signature) [Signature] Date \_\_\_\_\_

Relinquished By (Signature) [Signature] Date \_\_\_\_\_

Received By (Signature) [Signature] Date \_\_\_\_\_

Method of Shipment:  Fed Ex  UPS  Hand-delivered  Prism Field Service  Other \_\_\_\_\_

NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC RECEIVED AT THE LABORATORY.

NPDES:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC

UST:  NC  SC  NC  SC  NC  SC  NC  SC

GROUNDWATER:  NC  SC  NC  SC  NC  SC

DRINKING WATER:  NC  SC  NC  SC  NC  SC

SOLID WASTE:  NC  SC  NC  SC  NC  SC

RCRA:  NC  SC  NC  SC  NC  SC

CERCLA:  NC  SC  NC  SC  NC  SC

OTHER:  NC  SC  NC  SC

\*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)



Full-Service Analytical & Environmental Solutions  
 449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
 Phone: 704/529-6364 • Fax: 704/525-0909

Client Company Name: MACEC  
 Report To/Contact Name: Math Gillis  
 Reporting Address: 330 Atlantic Ave  
Raleigh, NC  
 Phone: 919-839-8054 Fax (Yes) (No):  
 Email (Yes) (No) Email Address:  
 EDD Type: PDF X Excel Other  
 Site Location Name: NC DOT Morganton  
 Site Location Physical Address: Morganton NC

# CHAIN OF CUSTODY RECORD

PAGE 3 OF 3 QUOTE # TO ENSURE PROPER BILLING:  
 Project Name: NC DOT Morganton  
 Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)  
 \*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements  
 Invoice To: Capitol  
 Address:

Purchase Order No./Billing Reference WBS 34891.1  
 Requested Due Date  1 Day  2 Days  3 Days  4 Days  5 Days  
 "Working Days"  6-9 Days  Standard 10 days  Pre-Approved  
 Samples received after 15:00 will be processed next business day.  
 Turnaround time is based on business days, excluding weekends and holidays.  
 (SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL  
 Certification: NELAC \_\_\_\_\_ USACE \_\_\_\_\_ FL \_\_\_\_\_ NC \_\_\_\_\_  
 SC \_\_\_\_\_ OTHER \_\_\_\_\_ N/A \_\_\_\_\_  
 Water Chlorinated: YES \_\_\_\_\_ NO \_\_\_\_\_  
 Sample Iced Upon Collection: YES \_\_\_\_\_ NO \_\_\_\_\_

**LAB USE ONLY**  
 Samples INTACT upon arrival? YES  NO  N/A \_\_\_\_\_  
 Received ON WET ICE? Temp 4.9  
 PROPER PRESERVATIVES indicated?   
 Received WITHIN HOLDING TIMES?   
 CUSTODY SEALS INTACT?   
 VOLATILES rec'd W/OUT HEADSPACE?   
 PROPER CONTAINERS used?

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER			PRESERVATIVES	ANALYSES REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO.	SIZE				
SB-21	4/11/10	1650	Soil	Cg, VOA	2	2 1/2 quart method	✓			275769
SB-22	4/2/10	1070								275770
SB-23		1025								275771
SB-24		1040								275772
SB-25		1110								275773
SB-26		1120								275774
SB-27		1130								275775

**PRESS DOWN FIRMLY - 3 COPIES**

**PRISM USE ONLY**  
 Site Arrival Time:  
 Site Departure Time:  
 Field Tech Fee:  
 Mileage:

Additional Comments: 28

Sampler's Signature: Justin Lloyd Sampled By (Print Name): Keiston Lloyd Affiliation:  
 Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.  
 Relinquished By: (Signature) Justin Lloyd Date: 4/5/10 Military/Hours: 1300  
 Relinquished By: (Signature) David Mann Date: 4/5/10  
 Relinquished By: (Signature) Justin Lloyd Date: 4/5/10 Military/Hours: 1550  
 Relinquished By: (Signature) Justin Lloyd Date: 4/5/10 Military/Hours: 1550  
 Received For Prism Laboratories By: Justin Lloyd COC Group No. G04100379  
 Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.  
 Fed Ex  UPS  Hand-delivered  Prism Field Service  Other

**SEE REVERSE FOR TERMS & CONDITIONS**  
**ORIGINAL**

NPDES:  NC  SC  NC  SC  NC  SC  NC  SC  NC  SC  
 DRINKING WATER:  NC  SC  NC  SC  NC  SC  
 SOLID WASTE:  NC  SC  NC  SC  
 RCRA:  NC  SC  NC  SC  
 CERCLA:  NC  SC  NC  SC  
 LANDFILL:  NC  SC  NC  SC  
 OTHER:  NC  SC  NC  SC  
 \*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)