

# **REPORT OF PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT**

**PRICE PROPERTY, PARCEL # 38  
STATE PROJECT U-2211B, WBS 34783.1.1  
1304 HIBRITEN DRIVE  
LENOIR, 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**

**MACTEC Project No. 6470-08-2286**

**January 30, 2009**





engineering and constructing a better tomorrow

January 30, 2009

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

Subject: **Report of Preliminary Environmental Site Assessment  
Price Property, Parcel #38  
State Project U-2211B, WBS 34783.1.1  
1304 Hibriten Drive  
Lenoir, North Carolina  
MACTEC Project No. 6470-08-2286**

Dear Mr. Caldwell:

As authorized by your acceptance of MACTEC Proposal No. PROP 08-RAL-457 dated November 25, 2008, MACTEC Engineering and Consulting, Inc. (MACTEC) is pleased to submit the attached Report of Preliminary Environmental 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 NDOT 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

Richard A. Kolb, L.G.  
Principal Geologist

Robert M. Miller, P.E.  
Senior Principal Engineer



2-2-09

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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 Environmental Site Assessment of the property owned by Edwin Price located at 1304 Hibriten Drive in Lenoir, Caldwell County, North Carolina (Figure 1). This property was one in a series of 11 sites that were investigated by MACTEC in conjunction with State Project U-2211B. MACTEC understands that NCDOT is planning road improvements to the area. Additional right-of-way on this property is being acquired by NCDOT for this project. NCDOT requested that MACTEC assess the subject site to evaluate the extent (if any) of soil and/or groundwater contamination related to activity (past or present) at this location and the impact (if any) on the proposed road improvements. This report presents MACTEC's assessment activities, findings, conclusions and recommendations.

### 1.1 Site Location

The Price property is located at 1304 Hibriten Drive in Lenoir, Caldwell County, North Carolina. The site consists of approximately 2.92 acres of land and is developed with Providence Baptist Church and Price Realty. The Caldwell County Geographic Information Services (GIS) identifies the site as parcel identification number (PIN) 2758587898. The site is bound to the north by two single-family residences; to the east by a single-family residence; to the south by Starcross Road, across which are three single-family residences; and to the west by Hibriten Drive, across which are a single-family residence and the Coffey Property (Figure 2).

### 1.2 Background Information

The Price Realty building is 3,600 square feet in area and is constructed with a concrete slab foundation and brick exterior. The Providence Baptist Church building is 2,340 square feet in area and is constructed with a concrete slab foundation and a brick exterior. The asphalt parking lot provides access to Hibriten Drive and Starcross Road. MACTEC observed an aboveground storage tank (AST) along the northern side of the church building. MACTEC observed three fill ports and a concrete pad under which underground storage tanks (USTs) are located near the western corner of the subject site.

MACTEC was provided a Preliminary Site Assessment Report, dated August 25, 1995 and prepared by Aquaterra, Inc. Aquaterra collected six soil samples, soil samples PC-1 through PC-6, around the former pump island and suspected UST locations in order to assess the total UST system. The laboratory did not detect total petroleum hydrocarbons (TPH) diesel range organics (DRO) or TPH gasoline range organics (GRO) at concentrations above the laboratory method detection limit. Aquaterra stated that, "No petroleum hydrocarbons were detected in concentrations that exceed the current NCDENR action levels. Aquaterra is of the opinion that further assessment activities are not warranted at this time."

## 2.0 ASSESSMENT ACTIVITIES

Prior to field activities, MACTEC prepared a site health and safety plan in accordance with OSHA 1910.120 requirements. NCDOT contracted with GEL Geophysics (GEL) to perform a geophysical investigation to identify suspected USTs on the property and to identify buried utilities at the site. GEL provided paint mark outs of buried utilities and suspected USTs locations to MACTEC prior to our assessment activities. They did not identify anomalies that may be USTs.

### 2.1 Soil Assessment

On December 9, 2008, Regional Probing Services, Inc. (Regional Probing), under contract to MACTEC, advanced eight soil borings (Nos. SB-29 through SB-36) 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. Coordinates of the soil boring locations were recorded using a hand-held GPS.

MACTEC collected soil samples from each boring using the procedures outlined in Appendix A. Copies of soil boring records are included in Appendix B.

MACTEC instructed Regional Probing to advance each soil boring to approximately five to seven feet below ground surface (bgs), due to the shallow groundwater table. 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-29 through SB-36 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.

### 2.3 Groundwater Assessment

Regional Probing extended soil boring SB-31 through the water table and constructed temporary monitoring well TW-1, using the procedures outlined in Appendix C. Regional Probing advanced the boring to a depth of eight feet bgs and screened the interval of 3-8 feet bgs. We encountered the water table in this boring at a depth of approximately five feet bgs. MACTEC collected a groundwater sample from TW-1 using the procedures outlined in Appendix D, after which Regional Probing abandoned this well according to the North Carolina well construction standards promulgated in Title 15A, Subchapter 2C, Section .0113 of NCAC.

## **2.4 Groundwater Analysis**

MACTEC submitted the groundwater samples to Prism for analysis for volatile organic compounds (VOCs) via Standard Method 6200B with IPE and MTBE, and semi-volatile organic compounds (SVOCs) via EPA Method 625 and 10 tentatively identified compounds.

## **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 E.

### **3.1 Soil Sample Analytical Results**

The laboratory detected TPH DRO in the soil samples collected from soil borings SB-31, SB-32, and SB-36 at concentrations that exceed the laboratory reporting limit. TPH DRO in soil borings SB-31 and SB-36 was detected at concentrations exceeding the North Carolina Department of Environment and Natural Resources (NCDENR) Action Level of 10 mg/Kg.

### **3.2 Groundwater Analytical Results**

The laboratory did not detect VOCs or SVOCs in groundwater at sample TW-1 at concentrations that exceed the laboratory reporting limits.

## **4.0 CONCLUSIONS AND RECOMMENDATIONS**

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

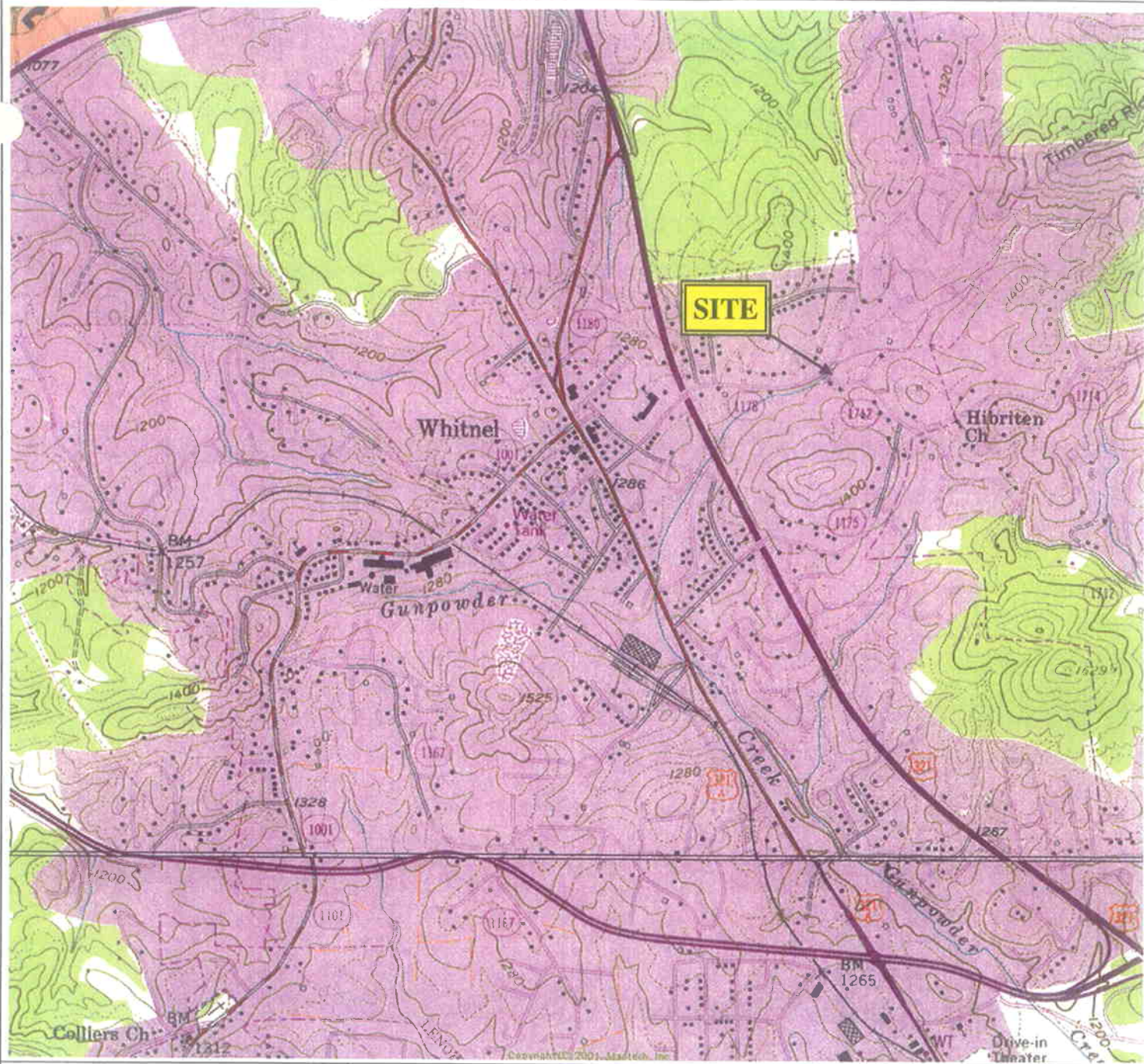
- The laboratory detected TPH DRO in two soil samples (SB-31 and SB-36) at concentrations which exceed NCDENR's Action Level of 10 mg/Kg.
- If the impacted soil at the locations of SB-31 and SB-36 extends up to five feet horizontally in all directions and five feet vertically from the boring location, an estimated total of 15 cubic yards of impacted soil is present at each soil boring location.
- The presence of TPH is evidence of a release of petroleum. MACTEC recommends notifying the property owner of this finding, who should then report this evidence to the Asheville Regional Office of NCDENR.
- We do not have evidence the groundwater has been affected by a release of petroleum fuels.

## **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**





NORTH

**LENOIR, NC**  
35081-H5-TF-024

1993

DMA 4655 I NE-SERIES V842

**DREXEL, NC**  
35081-G5-TF-024

1993

DMA 4655 I SE-SERIES V842

CONTOUR INTERVAL 40 FEET  
DOTTED LINES REPRESENT 20 FOOT CONTOURS  
NATIONAL GEODETIC VERTICAL DATUM OF 1929



QUADRANGLE LOCATION

NOTE: SITE LOCATION IS APPROXIMATE

**MACTEC**

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

**TOPOGRAPHIC SITE MAP**  
**PRICE PROPERTY**  
**PARCEL #38**  
**LENOIR, NORTH CAROLINA**

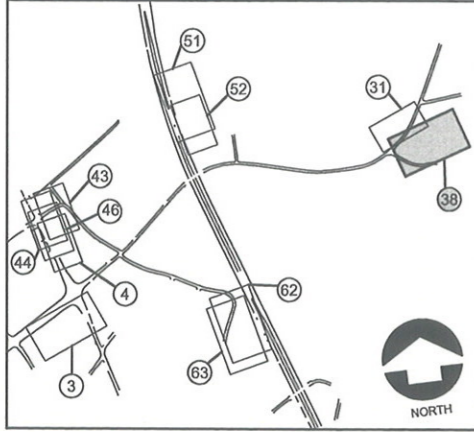
DRAWN: MJG	DATE: JANUARY 2009	FIGURE <b>1</b>
ENG CHECK: <i>WJ</i>	SCALE: 1 : 24000	
APPROVAL: <i>WJ</i>	JOB: 6470-08-2286	

P:\6470-08\NCDOT 2008-2009 Geotech Contract\6470-08-2286 U-2211B PS&s at 11 sites in Caldwell County\CAD Files\Drawings\Site Location Map Parcel 38.dwg Fri, 06 Mar 2009 9:35am rrobie

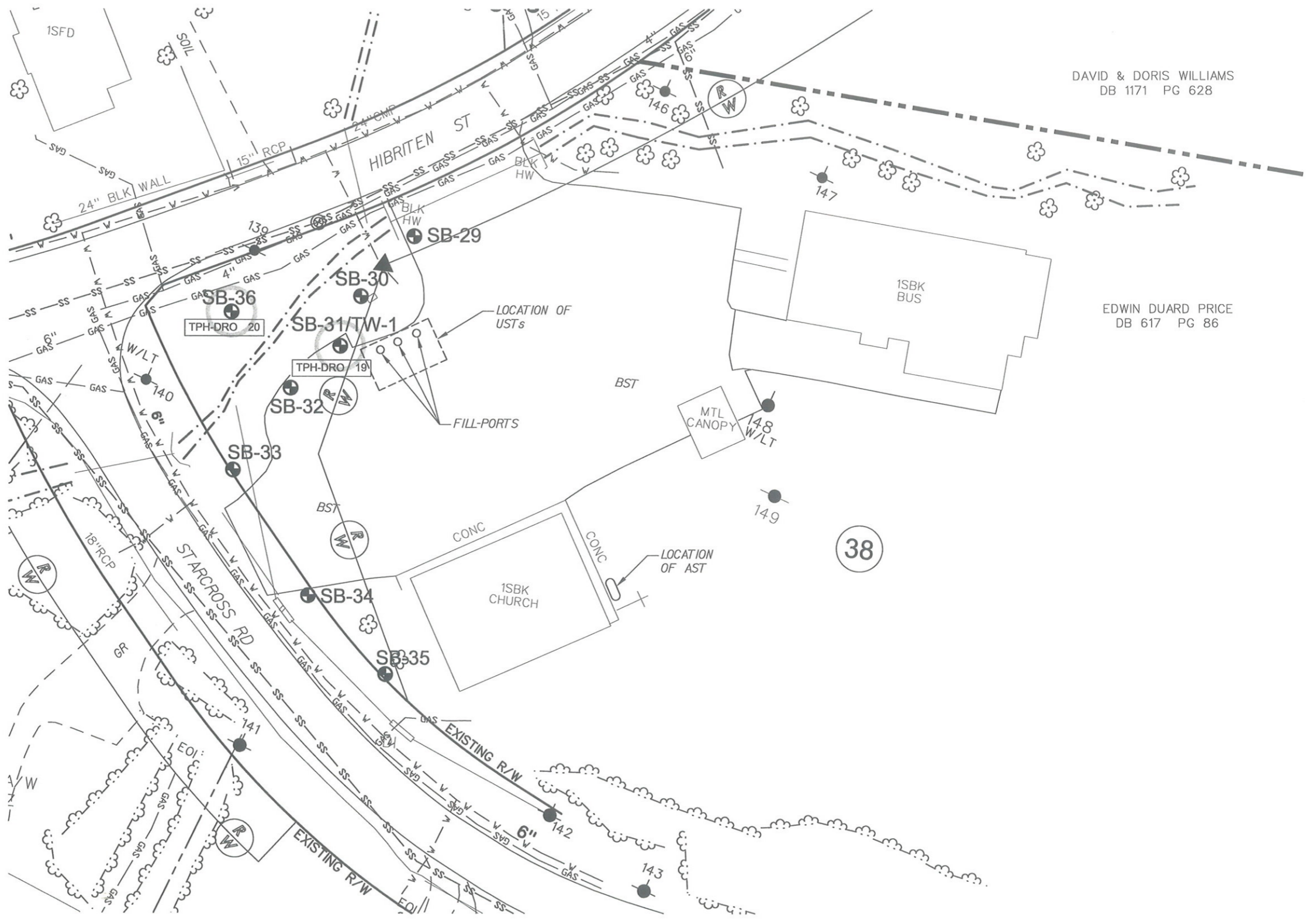


**LEGEND:**

- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING ROAD SOILS
- GAS --- EXISTING UTILITY UG GAS LINE
- SS --- SS --- EXISTING UTILITY UG SANITARY SEWER LINE
- W --- W --- EXISTING UTILITY UG WATER LINE
- EXISTING STRUCTURE
- EXISTING STREAM
- (R/W) --- PROPOSED RIGHT OF WAY LINE
- (#) --- DOT PARCEL NUMBER
- (Tree symbol) --- EXISTING VEGETATION TREE
- (Wood line symbol) --- EXISTING VEGETATION WOOD LINE
- (Dot) --- EXISTING UTILITY POLE
- (SB) --- SOIL BORING LOCATION
- (Circle with dot) --- SOIL BORING SHOWING ESTIMATED EXTENT OF CONTAMINATION ABOVE NCDENR ACTION LEVELS (Concentrations are in mg/kg)



**SITE KEY MAP**



DAVID & DORIS WILLIAMS  
DB 1171 PG 628

EDWIN DUARD PRICE  
DB 617 PG 86

38



**SITE LAYOUT SHOWING SOIL BORING LOCATIONS  
PRICE PROPERTY, PARCEL #38  
NCDOT PROJECT NO. U-2211B  
LENOIR, NORTH CAROLINA**

DRAWN: R.R.	DATE: JANUARY 2009
ENG CHECK: <i>mjb</i>	SCALE: 1" = 40'
APPROVAL: <i>[Signature]</i>	JOB No.: 6470-08-2286

FIGURE  
**2**

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

TABLE

**Table 1**  
**Summary of Laboratory Test Results**  
**State Project U-2211B, WBS 34783.1.1**  
**Price Property, Parcel #38**  
**Lenoir, North Carolina**  
**MACTEC Job No. 6470-08-2286**

Sample ID	Analytical Method →		Sample Depth	mg/Kg	
	Contaminant of Concern →			EPA 8015	EPA 8015
	Date Collected			TPH-DRO	TPH-GRO
SB-29	12/9/2008		4'-5'	<9.7	<6.9
SB-30	12/9/2008		4'-5'	<8.8	<6.3
SB-31	12/9/2008		4'-5'	<b>19</b>	<6.0
SB-32	12/9/2008		4'-5'	<b>8.1</b>	<5.8
SB-33	12/9/2008		6.5'-7.5'	<8.6	<6.2
SB-34	12/9/2008		4'-5'	<8.7	<6.3
SB-35	12/9/2008		6'-7'	<8.8	<6.3
SB-36	12/9/2008		6'-7'	<b>20</b>	<6.5
NCDENR Action Level				10	10

Notes:

NCDENR North Carolina Department of Environment and Natural Resources

**Bold** Concentration exceeds Reporting Limit (RL)

**Bold** Concentration exceeds the NCDENR Action Level

<# Analyte not detected above the RL shown

Prepared by: MJG Date: 1-21-09

Checked by: WJ Date: 1-14-09

**APPENDIX A**

**PROCEDURES FOR COLLECTING SOIL SAMPLES**

### **Procedures 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).
- 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 shipped under Chain-of-Custody via overnight express to the analytical laboratory within 24 hours following collection.

**APPENDIX B**  
**SOIL BORING RECORDS**



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38

MACTEC Project #: 6470-08-2286

MACTEC Field Representative

Gillis

Date: 12-9-08

Boring ID: SB-29

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 3" topsoil; Brown silty, micaceous, fine to medium sand		0.0		
1-2	Gray silty, micaceous, fine to medium sand		0.0		
2-3	Gray silty, micaceous, fine to medium sand		0.0		
3-4	Light Brown micaceous, fine to medium sand with quartz		0.0		
4-5	Light Brown micaceous, fine to medium sand with quartz	1600	0.0		Sample
5-6					
6-7					
7-8					Groundwater encountered
8-9					at approximately 5 feet bgs.
9-10					
10-11					
11-12					

Prepared By: MTG Date: 1-30-09

Checked By: R Date: 1/31/09





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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38

MACTEC Project #: 6470-08-2286

MACTEC Field Representative

Gillis

Date: 12-9-08

Boring ID: SB-30

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 3" topsoil; Brown silty, micaceous, fine to medium sand		0.0		
1-2	Reddish brown silty, micaceous, fine to medium sand		0.0		
2-3	Reddish brown silty, micaceous, fine to medium sand		0.0		
3-4	Gray to brown micaceous, fine to medium sand with quartz		0.0		
4-5	Gray to brown micaceous, fine to medium sand with quartz	1610	0.0		Sample
5-6					
6-7					Groundwater encountered
7-8					at approximately 5 feet bgs.
8-9					
9-10					
10-11					
11-12					

Prepared By: WJG Date: 1-30-09

Checked By: [Signature] Date: 1/30/09



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38  
MACTEC Project #: 6470-08-2286  
Date: 12-9-08  
Boring ID: SB-31/TW-1

MACTEC Field Representative  
Gillis

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 4" asphalt; Brown silty, micaceous, fine to medium sand		0.2		
1-2	Brown silty, micaceous, fine to medium sand		0.2		
2-3	Brown silty, micaceous, fine to medium sand		0.3		
3-4	Gray to brown silty, micaceous, fine to medium sand		0.3		
4-5	Gray to brown silty, micaceous, fine to medium sand	1620	1.9		Sample
5-6					
6-7					Groundwater encountered
7-8					at approximately 5 feet bgs.
8-9					
9-10					Groundwater sample collected
10-11					at 1700
11-12					

Prepared By: MSG Date: 1-30-09

Checked By: R Date: 1/20/09



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38  
MACTEC Project #: 6470-08-2286  
Date: 12-9-08  
Boring ID: SB-32

MACTEC Field Representative  
Gillis

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 4" asphalt; Brown silty, micaceous, fine to medium sand		0.0		
1-2	Brown silty, micaceous, fine to medium sand		0.0		
2-3	Gray to brown silty, micaceous, fine to medium sand		0.0		
3-4	Gray to brown silty, micaceous, fine to medium sand		0.0		
4-5	Gray to brown silty, micaceous, fine to medium sand	1625	0.0		Sample
5-6					
6-7					
7-8					Groundwater encountered at approximately 5 feet bgs.
8-9					
9-10					
10-11					
11-12					

Prepared By: WJG Date: 1-30-09

Checked By: [Signature] Date: 1/30/09



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38

MACTEC Field Representative

MACTEC Project #: 6470-08-2286

Gillis

Date: 12-9-08

Boring ID: SB-33

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 3" topsoil; Brown silty, micaceous, fine to medium sand some quartz		0.0		
1-2	Reddish brown silty, clayey, micaceous, fine to medium sand		0.0		
2-3	Reddish brown silty, clayey, micaceous, fine to medium sand		0.0		
3-4	Reddish brown silty, clayey, micaceous, fine to medium sand		0.0		
4-5	Reddish brown silty, clayey, micaceous, fine to medium sand		0.0		
5-6	Light brown to gray clayey, micaceous, fine to medium sand		0.0		
6-7	Light brown to gray clayey, micaceous, fine to medium sand	1635	0.0		Sample collected at 6.5' to 7.5'
7-8					
8-9					Encountered groundwater
9-10					at approximately 8 feet bgs.
10-11					
11-12					

Prepared By: MJB Date: 1-30-09

Checked By: [Signature] Date: 1/30/09



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38

MACTEC Field Representative

MACTEC Project #: 6470-08-2286

Gillis

Date: 12-9-08

Boring ID: SB-34

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 3" topsoil; Reddish brown silty, micaceous, fine to medium sand		0.0		
1-2	Reddish brown silty, micaceous, fine to medium sand		0.0		
2-3	Reddish brown silty, micaceous, fine to medium sand		0.0		
3-4	Reddish brown silty, micaceous, fine to medium sand		0.0		
4-5	Light brown clayey, micaceous, fine to medium sand	1640	0.0		Sample
5-6					
6-7					Groundwater encountered
7-8					at approximately 5 feet bgs.
8-9					
9-10					
10-11					
11-12					

Prepared By: MJB Date: 1-30-09

Checked By: [Signature] Date: 1/20/09



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38

MACTEC Project #: 6470-08-2286

Date: 12-9-08

Boring ID: SB-35

MACTEC Field Representative

Gillis

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 3" topsoil; Reddish brown silty, clayey, micaceous, fine to medium sand		0.0		
1-2	Reddish brown silty, fine to medium sand		0.0		
2-3	Reddish brown silty, fine to medium sand		0.0		
3-4	Reddish brown silty, fine to medium sand		0.0		
4-5	Light brown clayey, micaceous, fine to medium sand		0.0		
5-6	Light brown clayey, micaceous, fine to medium sand		0.0		
6-7	Light brown clayey, micaceous, fine to medium sand	1655	0.0		Sample
7-8					
8-9					Groundwater encountered
9-10					at approximately 7 feet bgs.
10-11					
11-12					

Prepared By: MJG Date: 1-30-09

Checked By: [Signature] Date: 1/30/09



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

Soil Boring Sample Record

MACTEC Project ID: Price Property, Parcel #38  
MACTEC Project #: 6470-08-2286  
Date: 12-9-08  
Boring ID: SB-36

MACTEC Field Representative  
Gillis

Depth Interval	Soil Description	Time	Headspace Screening Results (in ppm)		Comments
			PID		
0-1	Top 4" asphalt; Brown silty, micaceous, fine to medium sand		0.0		
1-2	Brown silty, micaceous, fine to medium sand		0.0		
2-3	Gray to brown silty, micaceous, fine to medium sand		0.0		
3-4	Gray to brown silty, micaceous, fine to medium sand		0.0		
4-5	Gray to brown silty, micaceous, fine to medium sand		0.0		
5-6	Light brown to reddish brown micaceous, fine to medium sand		0.0		
6-7	Light brown to reddish brown micaceous, fine to medium sand	1720	0.0		Sample
7-8					
8-9					Groundwater encountered
9-10					at approximately 7 feet bgs.
10-11					
11-12					

Prepared By: MT6 Date: 1-30-09

Checked By: [Signature] Date: 1/30/09

**APPENDIX C**

**PROCEDURES FOR CONSTRUCTING  
TEMPORARY MONITORING WELLS**



### *Procedures for Constructing Temporary Monitoring Wells*

- The temporary groundwater monitoring wells will consist of one-inch diameter, Schedule 40, polyvinyl chloride (PVC) well casing with flush-threaded joints installed in a four-inch nominal diameter borehole. The bottom 10-foot section of each well will be a manufactured well screen with 0.010-inch wide machined slots. The well screen will be installed at the termination depth of the boring advanced with the Geoprobe.
- A washed sand filter pack will be placed around the outside of the well casing/well screen from the bottom of the well screen to from two to three feet above the top of the well screen. The sand filter pack will be used to stabilize the formation and to help yield a less turbid groundwater sample.
- Temporary wells will be abandoned with bentonite chips following collection of the groundwater samples.

**APPENDIX D**

**PROCEDURES FOR COLLECTING  
GROUNDWATER SAMPLES**

*Procedures for Collecting Groundwater Samples  
from Temporary Monitoring Wells*

- The well will be purged using a peristaltic pump and new, dedicated, disposable tubing.
- Groundwater from each monitoring well will be purged until a visual determination of the turbidity is free of suspended solids.
- The pH, temperature, dissolved oxygen and specific conductance of the sample will be measured and recorded. These measurements will be taken from a sample deposited in a flow-through cell. Visual characteristics of the sample, including turbidity, will be recorded.
- Chemical preservatives, if applicable, will be added to sample bottles by the laboratory.
- Sample bottles will be labeled prior to sample collection.
- Groundwater samples will be decanted directly from the dedicated tubing for each well into pre-labeled, laboratory-supplied sample containers. Volatile organic samples will be collected first.
- Caps will be secured on bottles, bottle will be placed in plastic bags and the bags will be 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 ice packs for shipment.
- Chain-of-Custody Record and analytical request form will be placed inside cooler sealed with security tape.
- Samples will be shipped under Chain-of-Custody via overnight express to the analytical laboratory within 24 hours following collection.

**APPENDIX E**

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



## Case Narrative (Revised)

Date: 01/23/09  
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 Lenoir  
Prism COC Group No: G1208362  
Collection Date(s): 12/08/08 thru 12/10/08  
Lab Submittal Date(s): 12/10/08  
Client Project Name Or No: WBS# 34783.1.1

This is a revised report and supersedes our original laboratory report dated 12/24/08. Report modified to include Price Property data only.

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 31 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

No Anomalies Reported

### Volatile Analysis

No Anomalies Reported

### Metals Analysis

N/A

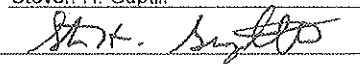
### Wet Lab and Micro Analysis

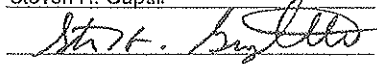
N/A

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

Date Reviewed by: Steven H. Guptill

Project Manager: Steven H. Guptill

Signature: 

Signature: 

Review Date: 01/23/09

Approval Date: 01/23/09

### 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.

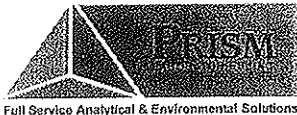
J: The analyte was positively identified but the value is estimated below the reporting limit.

H: Estimated concentration with a high bias.

L: Estimated concentration with a low bias.

M: A matrix effect is present.

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

# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
Project No.: WBS# 34783.1.1  
Sample Matrix: Soil

Client Sample ID: SB-29  
Prism Sample ID: 233002  
COC Group: G1208362  
Time Collected: 12/09/08 16:00  
Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	72.2	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	9.7	1.6	1	8015B	12/18/08 22:05	jvogel	Q37828
Sample Preparation:			25 g	/	1 mL	3545	12/17/08 14:00	pbarr	P23339
				<b>Surrogate</b>		<b>% Recovery</b>		<b>Control Limits</b>	
				o-Terphenyl		78		49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.19	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	6.02	g			1	GRO	12/12/08 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.9	0.84	50	8015B	12/17/08 11:23	dliamm	Q37707
				<b>Surrogate</b>		<b>% Recovery</b>		<b>Control Limits</b>	
				aaa-TFT		55		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.

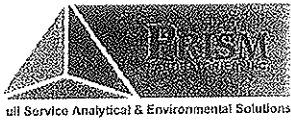
All results are reported on a dry-weight basis

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

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-30  
 Prism Sample ID: 233003  
 COC Group: G1208362  
 Time Collected: 12/09/08 16:10  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	79.8	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.8	1.4	1	8015B	12/18/08 22:40	jvogel	Q37828
Sample Preparation:			25 g	/	1 mL	3545	12/17/08 14:00	pbarr	P23339
					<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>		
					o-Terphenyl	73	49 - 124		
<b>Sample Weight Determination</b>									
Weight 1	6.98	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	6.29	g			1	GRO	12/12/08 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.3	0.76	50	8015B	12/17/08 2:51	dliamm	Q37707
					<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>		
					aaa-TFT	78	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.*

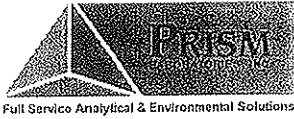
*All results are reported on a dry-weight basis*

Angela D. Overcash, V.P. Laboratory Services

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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-31  
 Prism Sample ID: 233004  
 COC Group: G1208362  
 Time Collected: 12/09/08 16:20  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	83.7	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	19	mg/kg	8.4	1.3	1	8015B	12/19/08 1:38	jvogel	Q37828
Sample Preparation:			25.03 g	/	1 mL	3545	12/17/08 14:00	pbarr	P23339
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	96	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	5.54	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	5.88	g			1	GRO	12/12/08 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.0	0.73	50	8015B	12/17/08 10:52	dliamm	Q37707
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	82	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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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Water

Client Sample ID: TW-1  
 Prism Sample ID: 233005  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:00  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b><u>Volatile Organic Compounds by GC/MS</u></b>									
1,1,1,2-Tetrachloroethane	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,1,1-Trichloroethane	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,1,2,2-Tetrachloroethane	BRL	µg/L	0.50	0.070	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,1,2-Trichloroethane	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,1-Dichloroethane	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,1-Dichloroethene	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,1-Dichloropropene	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2,3-Trichlorobenzene	BRL	µg/L	2.0	0.23	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2,3-Trichloropropane	BRL	µg/L	1.0	0.15	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2,4-Trichlorobenzene	BRL	µg/L	1.0	0.28	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2,4-Trimethylbenzene	BRL	µg/L	0.50	0.14	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2-Dibromo-3-chloropropane	BRL	µg/L	2.0	0.37	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2-Dibromoethane (EDB)	BRL	µg/L	0.50	0.11	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2-Dichlorobenzene	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2-Dichloroethane	BRL	µg/L	0.50	0.070	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,2-Dichloropropane	BRL	µg/L	0.50	0.080	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,3,5-Trimethylbenzene	BRL	µg/L	0.50	0.080	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,3-Dichlorobenzene	BRL	µg/L	0.50	0.10	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,3-Dichloropropane	BRL	µg/L	0.50	0.060	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
1,4-Dichlorobenzene	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
2,2-Dichloropropane	BRL	µg/L	2.0	0.22	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
2-Chlorotoluene	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
4-Chlorotoluene	BRL	µg/L	0.50	0.13	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Benzene	BRL	µg/L	0.50	0.040	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Bromobenzene	BRL	µg/L	0.50	0.10	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Bromochloromethane	BRL	µg/L	0.50	0.14	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Bromodichloromethane	BRL	µg/L	0.50	0.080	1	SM6200 B	12/17/08 18:58	Iwity	Q37764

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

# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Water

Client Sample ID: TW-1  
 Prism Sample ID: 233005  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:00  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Bromoform	BRL	µg/L	2.0	0.040	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Bromomethane	BRL	µg/L	1.0	0.27	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Carbon tetrachloride	BRL	µg/L	0.50	0.11	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Chlorobenzene	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Chlorodibromomethane	BRL	µg/L	0.50	0.070	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Chloroethane	BRL	µg/L	0.50	0.22	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Chloroform	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Chloromethane	BRL	µg/L	0.50	0.30	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
cis-1,2-Dichloroethene	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Dibromomethane	BRL	µg/L	0.50	0.21	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Dichlorodifluoromethane	BRL	µg/L	1.0	0.30	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Ethylbenzene	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Hexachlorobutadiene	BRL	µg/L	2.0	0.30	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Isopropyl ether (IPE)	BRL	µg/L	0.50	0.080	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Isopropylbenzene	BRL	µg/L	0.50	0.10	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
m,p-Xylenes	BRL	µg/L	1.0	0.13	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Methyl t-butyl ether (MTBE)	BRL	µg/L	0.50	0.11	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Methylene chloride	BRL	µg/L	2.0	0.080	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
n-Butylbenzene	BRL	µg/L	1.0	0.24	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
n-Propylbenzene	BRL	µg/L	0.50	0.090	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Naphthalene	BRL	µg/L	2.0	0.23	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
o-Xylene	BRL	µg/L	0.50	0.060	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
p-Isopropyltoluene	BRL	µg/L	0.50	0.14	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
sec-Butylbenzene	BRL	µg/L	0.50	0.12	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Styrene	BRL	µg/L	0.50	0.050	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
tert-Butylbenzene	BRL	µg/L	0.50	0.070	1	SM6200 B	12/17/08 18:58	Iwity	Q37764
Tetrachloroethene	BRL	µg/L	0.50	0.12	1	SM6200 B	12/17/08 18:58	Iwity	Q37764

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

# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Water

Client Sample ID: TW-1  
 Prism Sample ID: 233005  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:00  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Toluene	BRL	µg/L	0.50	0.060	1	SM6200 B	12/17/08 18:58	lwitry	Q37764
trans-1,2-Dichloroethene	BRL	µg/L	0.50	0.070	1	SM6200 B	12/17/08 18:58	lwitry	Q37764
Trichloroethene	BRL	µg/L	0.50	0.070	1	SM6200 B	12/17/08 18:58	lwitry	Q37764
Trichlorofluoromethane	BRL	µg/L	0.50	0.31	1	SM6200 B	12/17/08 18:58	lwitry	Q37764
Vinyl chloride	BRL	µg/L	0.50	0.28	1	SM6200 B	12/17/08 18:58	lwitry	Q37764

Surrogate	% Recovery	Control Limits
Toluene-d8	100	70 - 130
Dibromofluoromethane	103	70 - 130
Bromofluorobenzene	101	70 - 130

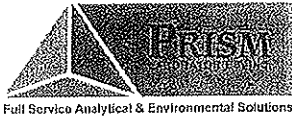
### Semivolatile Organic Compounds by GC/MS

1,2,4-Trichlorobenzene	BRL	µg/L	9.7	1.6	1	625	12/16/08 23:08	rseiph	Q37719
1,2-Dichlorobenzene	BRL	µg/L	9.7	1.9	1	625	12/16/08 23:08	rseiph	Q37719
1,3-Dichlorobenzene	BRL	µg/L	9.7	2.0	1	625	12/16/08 23:08	rseiph	Q37719
1,4-Dichlorobenzene	BRL	µg/L	9.7	1.7	1	625	12/16/08 23:08	rseiph	Q37719
2,4,5-Trichlorophenol	BRL	µg/L	9.7	2.6	1	625	12/16/08 23:08	rseiph	Q37719
2,4,6-Trichlorophenol	BRL	µg/L	9.7	3.0	1	625	12/16/08 23:08	rseiph	Q37719
2,4-Dichlorophenol	BRL	µg/L	9.7	1.5	1	625	12/16/08 23:08	rseiph	Q37719
2,4-Dimethylphenol	BRL	µg/L	9.7	2.4	1	625	12/16/08 23:08	rseiph	Q37719
2,4-Dinitrophenol	BRL	µg/L	49	1.1	1	625	12/16/08 23:08	rseiph	Q37719
2,4-Dinitrotoluene	BRL	µg/L	9.7	3.9	1	625	12/16/08 23:08	rseiph	Q37719
2,6-Dinitrotoluene	BRL	µg/L	9.7	2.7	1	625	12/16/08 23:08	rseiph	Q37719
2-Chloronaphthalene	BRL	µg/L	9.7	2.9	1	625	12/16/08 23:08	rseiph	Q37719
2-Chlorophenol	BRL	µg/L	9.7	1.7	1	625	12/16/08 23:08	rseiph	Q37719
2-Methylphenol	BRL	µg/L	9.7	1.8	1	625	12/16/08 23:08	rseiph	Q37719
2-Nitrophenol	BRL	µg/L	9.7	2.2	1	625	12/16/08 23:08	rseiph	Q37719
3&4-Methylphenol	BRL	µg/L	9.7	1.9	1	625	12/16/08 23:08	rseiph	Q37719

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

# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Water

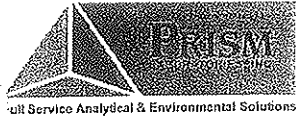
Client Sample ID: TW-1  
 Prism Sample ID: 233005  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:00  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
3,3'-Dichlorobenzidine	BRL	µg/L	49	2.5	1	625	12/16/08 23:08	rselph	Q37719
4,6-Dinitro-2-methylphenol	BRL	µg/L	49	1.8	1	625	12/16/08 23:08	rselph	Q37719
4-Bromophenylphenylether	BRL	µg/L	9.7	1.9	1	625	12/16/08 23:08	rselph	Q37719
4-Chloro-3-methylphenol	BRL	µg/L	9.7	2.2	1	625	12/16/08 23:08	rselph	Q37719
4-Chlorophenylphenylether	BRL	µg/L	9.7	2.8	1	625	12/16/08 23:08	rselph	Q37719
4-Nitrophenol	BRL	µg/L	49	0.74	1	625	12/16/08 23:08	rselph	Q37719
Acenaphthene	BRL	µg/L	9.7	4.0	1	625	12/16/08 23:08	rselph	Q37719
Acenaphthylene	BRL	µg/L	9.7	2.7	1	625	12/16/08 23:08	rselph	Q37719
Anthracene	BRL	µg/L	9.7	1.7	1	625	12/16/08 23:08	rselph	Q37719
Benzo(a)anthracene	BRL	µg/L	9.7	2.1	1	625	12/16/08 23:08	rselph	Q37719
Benzo(a)pyrene	BRL	µg/L	9.7	1.6	1	625	12/16/08 23:08	rselph	Q37719
Benzo(b)fluoranthene	BRL	µg/L	9.7	1.2	1	625	12/16/08 23:08	rselph	Q37719
Benzo(g,h,i)perylene	BRL	µg/L	9.7	2.1	1	625	12/16/08 23:08	rselph	Q37719
Benzo(k)fluoranthene	BRL	µg/L	9.7	2.6	1	625	12/16/08 23:08	rselph	Q37719
Bis(2-chloroethoxy)methane	BRL	µg/L	9.7	2.3	1	625	12/16/08 23:08	rselph	Q37719
Bis(2-chloroethyl)ether	BRL	µg/L	9.7	1.8	1	625	12/16/08 23:08	rselph	Q37719
Bis(2-chloroisopropyl)ether	BRL	µg/L	9.7	2.2	1	625	12/16/08 23:08	rselph	Q37719
Bis(2-ethylhexyl)phthalate	BRL	µg/L	9.7	2.6	1	625	12/16/08 23:08	rselph	Q37719
Butylbenzylphthalate	BRL	µg/L	9.7	1.9	1	625	12/16/08 23:08	rselph	Q37719
Chrysene	BRL	µg/L	9.7	3.0	1	625	12/16/08 23:08	rselph	Q37719
Di-n-butylphthalate	BRL	µg/L	9.7	1.5	1	625	12/16/08 23:08	rselph	Q37719
Di-n-octylphthalate	BRL	µg/L	9.7	2.5	1	625	12/16/08 23:08	rselph	Q37719
Dibenzo(a,h)anthracene	BRL	µg/L	9.7	2.2	1	625	12/16/08 23:08	rselph	Q37719
Dibenzofuran	BRL	µg/L	9.7	3.5	1	625	12/16/08 23:08	rselph	Q37719
Diethylphthalate	BRL	µg/L	9.7	2.1	1	625	12/16/08 23:08	rselph	Q37719
Dimethylphthalate	BRL	µg/L	9.7	1.9	1	625	12/16/08 23:08	rselph	Q37719
Fluoranthene	BRL	µg/L	9.7	1.5	1	625	12/16/08 23:08	rselph	Q37719

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

# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Water

Client Sample ID: TW-1  
 Prism Sample ID: 233005  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:00  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Fluorene	BRL	µg/L	9.7	4.3	1	625	12/16/08 23:08	rselph	Q37719
Hexachlorobenzene	BRL	µg/L	9.7	2.0	1	625	12/16/08 23:08	rselph	Q37719
Hexachlorobutadiene	BRL	µg/L	9.7	1.7	1	625	12/16/08 23:08	rselph	Q37719
Hexachlorocyclopentadiene	BRL	µg/L	9.7	2.0	1	625	12/16/08 23:08	rselph	Q37719
Hexachloroethane	BRL	µg/L	9.7	2.2	1	625	12/16/08 23:08	rselph	Q37719
Indeno(1,2,3-cd)pyrene	BRL	µg/L	9.7	3.5	1	625	12/16/08 23:08	rselph	Q37719
Isophorone	BRL	µg/L	9.7	2.5	1	625	12/16/08 23:08	rselph	Q37719
N-Nitrosodi-n-propylamine	BRL	µg/L	9.7	2.1	1	625	12/16/08 23:08	rselph	Q37719
Naphthalene	BRL	µg/L	9.7	1.6	1	625	12/16/08 23:08	rselph	Q37719
Nitrobenzene	BRL	µg/L	9.7	2.1	1	625	12/16/08 23:08	rselph	Q37719
Pentachlorophenol	BRL	µg/L	9.7	2.0	1	625	12/16/08 23:08	rselph	Q37719
Phenanthrene	BRL	µg/L	9.7	1.2	1	625	12/16/08 23:08	rselph	Q37719
Phenol	BRL	µg/L	9.7	0.56	1	625	12/16/08 23:08	rselph	Q37719
Pyrene	BRL	µg/L	9.7	1.7	1	625	12/16/08 23:08	rselph	Q37719

Surrogate recovery was outside of the control limits. Matrix interference is suspected.

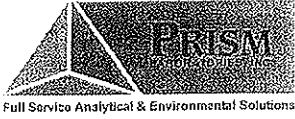
Sample Preparation: 1030 mL / 1 mL 625 12/12/08 7:00 smanivanh P23306

Surrogate	% Recovery	Control Limits
Terphenyl-d14	90	10 - 154
Phenol-d5	9 #	10 - 48
Nitrobenzene-d5	59	22 - 103
2-Fluorophenol	14	10 - 59
2-Fluorobiphenyl	66	29 - 112
2,4,6-Tribromophenol	86	27 - 125

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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Water

Client Sample ID: TW-1  
 Prism Sample ID: 233005  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:00  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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Sample Comment(s):

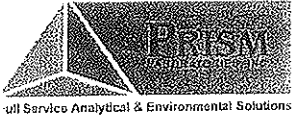
*BRL = Below Reporting Limit*

*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 wet-weight basis*

Angela D. Overcash, V.P. Laboratory Services



NC Certification No. 402  
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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-32  
 Prism Sample ID: 233006  
 COC Group: G1208362  
 Time Collected: 12/09/08 16:25  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<u>Percent Solids Determination</u>									
Percent Solids	86.5	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<u>Diesel Range Organics (DRO) by GC-FID</u>									
Diesel Range Organics (DRO)	8.1	mg/kg	8.1	1.3	1	8015B	12/19/08 1:02	jvogel	Q37828
Sample Preparation:				25 g	/	1 mL	3545	12/17/08 14:00	pbarr P23339
				<u>Surrogate</u>			<u>% Recovery</u>	<u>Control Limits</u>	
				o-Terphenyl			94	49 - 124	
<u>Sample Weight Determination</u>									
Weight 1	6.30	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	7.03	g			1	GRO	12/12/08 0:00	lbrown	
<u>Gasoline Range Organics (GRO) by GC-FID</u>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.8	0.71	50	8015B	12/17/08 1:48	dliamm	Q37707
				<u>Surrogate</u>			<u>% Recovery</u>	<u>Control Limits</u>	
				aaa-TFT			61	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.

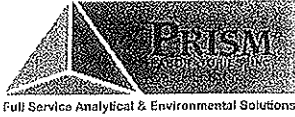
All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-33  
 Prism Sample ID: 233007  
 COC Group: G1208362  
 Time Collected: 12/09/08 16:35  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	81.1	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.6	1.4	1	8015B	12/18/08 23:51	jvoegel	Q37828
Sample Preparation:			25 g	/	1 mL	3545	12/17/08 14:00	pbarr	P23339
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						o-Terphenyl	76	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.63	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	6.49	g			1	GRO	12/12/08 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.2	0.75	50	8015B	12/17/08 1:17	dliamm	Q37707
						<b>Surrogate</b>	<b>% Recovery</b>	<b>Control Limits</b>	
						aaa-TFT	68	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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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-34  
 Prism Sample ID: 233008  
 COC Group: G1208362  
 Time Collected: 12/09/08 16:40  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<u>Percent Solids Determination</u>									
Percent Solids	79.8	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<u>Diesel Range Organics (DRO) by GC-FID</u>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.7	1.4	1	8015B	12/18/08 23:16	jvoegel	Q37828
Sample Preparation:			25.09 g	/	1 mL	3545	12/17/08 14:00	pbarr	P23339
						<u>Surrogate</u>	<u>% Recovery</u>	<u>Control Limits</u>	
						o-Terphenyl	76	49 - 124	
<u>Sample Weight Determination</u>									
Weight 1	6.86	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	6.38	g			1	GRO	12/12/08 0:00	lbrown	
<u>Gasoline Range Organics (GRO) by GC-FID</u>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.3	0.76	50	8015B	12/17/08 0:46	dliamm	Q37707
						<u>Surrogate</u>	<u>% Recovery</u>	<u>Control Limits</u>	
						aaa-TFT	65	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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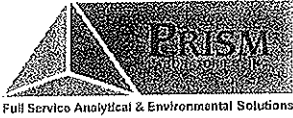
All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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NC Certification No. 402  
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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-35  
 Prism Sample ID: 233009  
 COC Group: G1208362  
 Time Collected: 12/09/08 16:55  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	79.6	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	BRL	mg/kg	8.8	1.4	1	8015B	12/19/08 16:10	jvoget	Q37878
Sample Preparation:			25.11 g	/	1 mL	3545	12/18/08 14:00	pbarr	P23354
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		72	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.64	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	6.44	g			1	GRO	12/12/08 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.3	0.77	50	8015B	12/17/08 0:14	dliamm	Q37707
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		65	55 - 129	

**Sample Comment(s):**

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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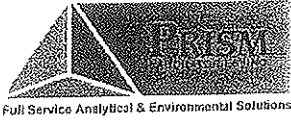
All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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# Laboratory Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1  
 Sample Matrix: Soil

Client Sample ID: SB-36  
 Prism Sample ID: 233010  
 COC Group: G1208362  
 Time Collected: 12/09/08 17:20  
 Time Submitted: 12/10/08 16:45

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Percent Solids Determination</b>									
Percent Solids	77.1	%			1	SM2540 G	12/15/08 14:00	dsullivan	
<b>Diesel Range Organics (DRO) by GC-FID</b>									
Diesel Range Organics (DRO)	20	mg/kg	9.0	1.5	1	8015B	12/22/08 10:50	jvoegel	Q37878
Sample Preparation:			25.12 g	/	1 mL	3545	12/18/08 14:00	pbarr	P23354
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					o-Terphenyl		69	49 - 124	
<b>Sample Weight Determination</b>									
Weight 1	6.01	g			1	GRO	12/12/08 0:00	lbrown	
Weight 2	5.85	g			1	GRO	12/12/08 0:00	lbrown	
<b>Gasoline Range Organics (GRO) by GC-FID</b>									
Gasoline Range Organics (GRO)	BRL	mg/kg	6.5	0.79	50	8015B	12/17/08 10:20	dliamm	Q37707
					<b>Surrogate</b>		<b>% Recovery</b>	<b>Control Limits</b>	
					aaa-TFT		74	55 - 129	

**Sample Comment(s):**

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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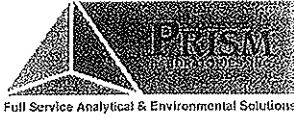
All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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

# Level II QC Report

01/23/09

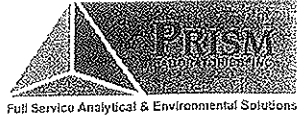
N.C. Department of Transportation  
 Attn: Matt Gillis  
 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

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

Method Blank							QC Batch ID	
	Result	RL	Control Limit	Units				
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg			Q37707	
Laboratory Control Sample								
	Result	Spike Amount	Units	Recovery %	Recovery Ranges %		QC Batch ID	
Gasoline Range Organics (GRO)	39.8	50	mg/kg	80	67-116		Q37707	
Matrix Spike								
Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %		QC Batch ID	
233019 Gasoline Range Organics (GRO)	29.6	50	mg/kg	59	57-113		Q37707	
Matrix Spike Duplicate								
Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
233019 Gasoline Range Organics (GRO)	33.8	50	mg/kg	68	57-113	13	0 - 23	Q37707



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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

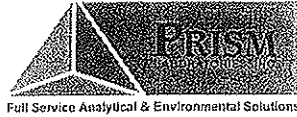
## Semivolatile Organic Compounds by GC/MS, method 625

Method Blank	Result	RL	Control Limit	Units	QC Batch ID
1,2,4-Trichlorobenzene	ND	0.01	<0.005	mg/L	Q37719
1,2-Dichlorobenzene	ND	0.01	<0.005	mg/L	Q37719
1,3-Dichlorobenzene	ND	0.01	<0.005	mg/L	Q37719
1,4-Dichlorobenzene	ND	0.01	<0.005	mg/L	Q37719
2,4,6-Trichlorophenol	ND	0.01	<0.005	mg/L	Q37719
2,4-Dichlorophenol	ND	0.01	<0.005	mg/L	Q37719
2,4-Dimethylphenol	ND	0.01	<0.005	mg/L	Q37719
2,4-Dinitrophenol	ND	0.05	<0.025	mg/L	Q37719
2,4-Dinitrotoluene	ND	0.01	<0.005	mg/L	Q37719
2,6-Dinitrotoluene	ND	0.01	<0.005	mg/L	Q37719
2-Chloronaphthalene	ND	0.01	<0.005	mg/L	Q37719
2-Chlorophenol	ND	0.01	<0.005	mg/L	Q37719
2-Methylphenol	ND	0.01	<0.005	mg/L	Q37719
2-Nitrophenol	ND	0.01	<0.005	mg/L	Q37719
3&4-Methylphenol	ND	0.01	<0.005	mg/L	Q37719
3,3'-Dichlorobenzidine	ND	0.05	<0.025	mg/L	Q37719
4,6-Dinitro-2-methylphenol	ND	0.05	<0.025	mg/L	Q37719
4-Bromophenylphenylether	ND	0.01	<0.005	mg/L	Q37719
4-Chloro-3-methylphenol	ND	0.01	<0.005	mg/L	Q37719
4-Chlorophenylphenylether	ND	0.01	<0.005	mg/L	Q37719
4-Nitrophenol	ND	0.05	<0.025	mg/L	Q37719
Acenaphthene	ND	0.01	<0.005	mg/L	Q37719
Acenaphthylene	ND	0.01	<0.005	mg/L	Q37719
Anthracene	ND	0.01	<0.005	mg/L	Q37719
Benzo(a)anthracene	ND	0.01	<0.005	mg/L	Q37719
Benzo(a)pyrene	ND	0.01	<0.005	mg/L	Q37719
Benzo(b)fluoranthene	ND	0.01	<0.005	mg/L	Q37719
Benzo(g,h,i)perylene	ND	0.01	<0.005	mg/L	Q37719
Benzo(k)fluoranthene	ND	0.01	<0.005	mg/L	Q37719
Bis(2-chloroethoxy)methane	ND	0.01	<0.005	mg/L	Q37719
Bis(2-chloroethyl)ether	ND	0.01	<0.005	mg/L	Q37719
Bis(2-chloroisopropyl)ether	ND	0.01	<0.005	mg/L	Q37719
Bis(2-ethylhexyl)phthalate	ND	0.01	<0.005	mg/L	Q37719
Butylbenzylphthalate	ND	0.01	<0.005	mg/L	Q37719

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

## Method Blank

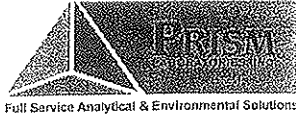
	Result	RL	Control Limit	Units	QC Batch ID
Chrysene	ND	0.01	<0.005	mg/L	Q37719
Di-n-butylphthalate	ND	0.01	<0.005	mg/L	Q37719
Di-n-octylphthalate	ND	0.01	<0.005	mg/L	Q37719
Dibenzo(a,h)anthracene	ND	0.01	<0.005	mg/L	Q37719
Diethylphthalate	ND	0.01	<0.005	mg/L	Q37719
Dimethylphthalate	ND	0.01	<0.005	mg/L	Q37719
Fluoranthene	ND	0.01	<0.005	mg/L	Q37719
Fluorene	ND	0.01	<0.005	mg/L	Q37719
Hexachlorobenzene	ND	0.01	<0.005	mg/L	Q37719
Hexachlorobutadiene	ND	0.01	<0.005	mg/L	Q37719
Hexachlorocyclopentadiene	ND	0.01	<0.005	mg/L	Q37719
Hexachloroethane	ND	0.01	<0.005	mg/L	Q37719
Indeno(1,2,3-cd)pyrene	ND	0.01	<0.005	mg/L	Q37719
Isophorone	ND	0.01	<0.005	mg/L	Q37719
N-Nitrosodi-n-propylamine	ND	0.01	<0.005	mg/L	Q37719
Naphthalene	ND	0.01	<0.005	mg/L	Q37719
Nitrobenzene	ND	0.01	<0.005	mg/L	Q37719
Pentachlorophenol	ND	0.01	<0.005	mg/L	Q37719
Phenanthrene	ND	0.01	<0.005	mg/L	Q37719
Phenol	ND	0.01	<0.005	mg/L	Q37719
Pyrene	ND	0.01	<0.005	mg/L	Q37719

## Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
1,2,4-Trichlorobenzene	0.08256	0.1	mg/L	83	44-142	Q37719
1,2-Dichlorobenzene	0.0763	0.1	mg/L	76	32-129	Q37719
1,3-Dichlorobenzene	0.07348	0.1	mg/L	73	20-124	Q37719
1,4-Dichlorobenzene	0.07438	0.1	mg/L	74	20-124	Q37719
2,4,6-Trichlorophenol	0.09056	0.1	mg/L	91	37-144	Q37719
2,4-Dichlorophenol	0.07959	0.1	mg/L	80	39-135	Q37719
2,4-Dimethylphenol	0.07049	0.1	mg/L	70	32-119	Q37719
2,4-Dinitrophenol	0.10232	0.1	mg/L	102	10-191	Q37719
2,4-Dinitrotoluene	0.1036	0.1	mg/L	104	39-139	Q37719
2,6-Dinitrotoluene	0.09787	0.1	mg/L	98	50-158	Q37719
2-Chloronaphthalene	0.08066	0.1	mg/L	81	60-118	Q37719
2-Chlorophenol	0.05954	0.1	mg/L	60	23-134	Q37719
2-Nitrophenol	0.08192	0.1	mg/L	82	29-182	Q37719

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
3,3'-Dichlorobenzidine	0.10313	0.1	mg/L	103	10-262	Q37719
4,6-Dinitro-2-methylphenol	0.09879	0.1	mg/L	99	10-181	Q37719
4-Bromophenylphenylether	0.09561	0.1	mg/L	96	53-127	Q37719
4-Chloro-3-methylphenol	0.07229	0.1	mg/L	72	22-147	Q37719
4-Chlorophenylphenylether	0.09732	0.1	mg/L	97	25-158	Q37719
4-Nitrophenol	0.0317	0.1	mg/L	32	10-132	Q37719
Acenaphthene	0.08416	0.1	mg/L	84	47-145	Q37719
Acenaphthylene	0.08388	0.1	mg/L	84	33-145	Q37719
Anthracene	0.10099	0.1	mg/L	101	27-133	Q37719
Benzo(a)anthracene	0.0968	0.1	mg/L	97	33-143	Q37719
Benzo(a)pyrene	0.11013	0.1	mg/L	110	17-163	Q37719
Benzo(b)fluoranthene	0.11539	0.1	mg/L	115	24-159	Q37719
Benzo(g,h,i)perylene	0.08992	0.1	mg/L	90	10-219	Q37719
Benzo(k)fluoranthene	0.11076	0.1	mg/L	111	11-162	Q37719
Bis(2-chloroethoxy)methane	0.08112	0.1	mg/L	81	33-184	Q37719
Bis(2-chloroethyl)ether	0.07099	0.1	mg/L	71	12-158	Q37719
Bis(2-chloroisopropyl)ether	0.07001	0.1	mg/L	70	36-166	Q37719
Bis(2-ethylhexyl)phthalate	0.07994	0.1	mg/L	80	10-158	Q37719
Butylbenzylphthalate	0.08643	0.1	mg/L	86	10-152	Q37719
Chrysene	0.09093	0.1	mg/L	91	17-168	Q37719
Di-n-butylphthalate	0.08657	0.1	mg/L	87	10-118	Q37719
Di-n-octylphthalate	0.08394	0.1	mg/L	84	10-146	Q37719
Dibenzo(a,h)anthracene	0.09544	0.1	mg/L	95	10-227	Q37719
Diethylphthalate	0.09117	0.1	mg/L	91	10-114	Q37719
Dimethylphthalate	0.08782	0.1	mg/L	88	10-112	Q37719
Fluoranthene	0.10465	0.1	mg/L	105	26-137	Q37719
Fluorene	0.08864	0.1	mg/L	89	59-121	Q37719
Hexachlorobenzene	0.09881	0.1	mg/L	99	10-152	Q37719
Hexachlorobutadiene	0.09433	0.1	mg/L	94	24-116	Q37719
Hexachloroethane	0.07407	0.1	mg/L	74	40-113	Q37719
Indeno(1,2,3-cd)pyrene	0.06574	0.1	mg/L	66	10-171	Q37719
Isophorone	0.09223	0.1	mg/L	92	21-196	Q37719
N-Nitrosodi-n-propylamine	0.08127	0.1	mg/L	81	10-230	Q37719
Naphthalene	0.074	0.1	mg/L	74	21-133	Q37719
Nitrobenzene	0.07426	0.1	mg/L	74	35-180	Q37719
Pentachlorophenol	0.10711	0.1	mg/L	107	14-176	Q37719

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Phenanthrene	0.09341	0.1	mg/L	93	54-120	Q37719
Phenol	0.02029	0.1	mg/L	20	10-112	Q37719
Pyrene	0.08591	0.1	mg/L	86	52-115	Q37719

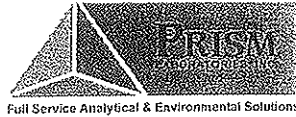
Matrix Spike	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Sample ID: 233192 1,2,4-Trichlorobenzene	0.14984	0.1960	mg/L	76	44-142	Q37719
1,2-Dichlorobenzene	0.13423	0.1960	mg/L	68	32-129	Q37719
1,3-Dichlorobenzene	0.12823	0.1960	mg/L	65	20-124	Q37719
1,4-Dichlorobenzene	0.12954	0.1960	mg/L	66	20-124	Q37719
2,4,6-Trichlorophenol	0.17480	0.1960	mg/L	89	37-144	Q37719
2,4-Dichlorophenol	0.15350	0.1960	mg/L	78	39-135	Q37719
2,4-Dimethylphenol	0.14419	0.1960	mg/L	74	32-119	Q37719
2,4-Dinitrophenol	0.24219	0.1960	mg/L	124	10-191	Q37719
2,4-Dinitrotoluene	0.20150	0.1960	mg/L	103	39-139	Q37719
2,6-Dinitrotoluene	0.19703	0.1960	mg/L	100	50-158	Q37719
2-Chloronaphthalene	0.14929	0.1960	mg/L	76	60-118	Q37719
2-Chlorophenol	0.11856	0.1960	mg/L	60	23-134	Q37719
2-Nitrophenol	0.15005	0.1960	mg/L	77	29-182	Q37719
4,6-Dinitro-2-methylphenol	0.20721	0.1960	mg/L	106	10-181	Q37719
4-Bromophenylphenylether	0.18054	0.1960	mg/L	92	53-127	Q37719
4-Chloro-3-methylphenol	0.15027	0.1960	mg/L	77	22-147	Q37719
4-Chlorophenylphenylether	0.18401	0.1960	mg/L	94	25-158	Q37719
4-Nitrophenol	8.71764	0.1960	mg/L	44	10-132	Q37719
Acenaphthene	0.15735	0.1960	mg/L	80	47-145	Q37719
Acenaphthylene	0.15298	0.1960	mg/L	78	33-145	Q37719
Anthracene	0.18943	0.1960	mg/L	97	27-133	Q37719
Benzo(a)anthracene	0.18970	0.1960	mg/L	97	33-143	Q37719
Benzo(a)pyrene	0.20747	0.1960	mg/L	106	17-163	Q37719
Benzo(b)fluoranthene	0.21450	0.1960	mg/L	109	24-159	Q37719
Benzo(g,h,i)perylene	0.17488	0.1960	mg/L	89	10-219	Q37719
Benzo(k)fluoranthene	0.20921	0.1960	mg/L	107	11-162	Q37719
Bis(2-chloroethoxy)methane	0.14813	0.1960	mg/L	76	33-184	Q37719
Bis(2-chloroethyl)ether	0.12656	0.1960	mg/L	65	12-158	Q37719
Bis(2-chloroisopropyl)ether	0.12486	0.1960	mg/L	64	36-166	Q37719
Bis(2-ethylhexyl)phthalate	0.16439	0.1960	mg/L	84	10-158	Q37719
Butylbenzylphthalate	0.17521	0.1960	mg/L	89	10-152	Q37719

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

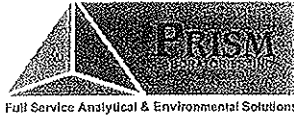
COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Matrix Spike							
Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID	
233192 Chrysene	0.17527	0.1960	mg/L	89	17-168	Q37719	
Di-n-butylphthalate	0.16176	0.1960	mg/L	83	10-118	Q37719	
Di-n-octylphthalate	0.16917	0.1960	mg/L	86	10-146	Q37719	
Dibenzo(a,h)anthracene	0.17947	0.1960	mg/L	92	10-227	Q37719	
Diethylphthalate	0.17411	0.1960	mg/L	89	10-114	Q37719	
Dimethylphthalate	0.16752	0.1960	mg/L	85	10-112	Q37719	
Fluoranthene	0.19443	0.1960	mg/L	99	26-137	Q37719	
Fluorene	0.16682	0.1960	mg/L	85	59-121	Q37719	
Hexachlorobenzene	0.18619	0.1960	mg/L	95	10-152	Q37719	
Hexachlorobutadiene	0.17064	0.1960	mg/L	87	24-116	Q37719	
Hexachloroethane	0.12845	0.1960	mg/L	66	40-113	Q37719	
Indeno(1,2,3-cd)pyrene	0.12633	0.1960	mg/L	64	10-171	Q37719	
Isophorone	0.16709	0.1960	mg/L	85	21-196	Q37719	
N-Nitrosodi-n-propylamine	0.14523	0.1960	mg/L	74	10-230	Q37719	
Naphthalene	0.13321	0.1960	mg/L	68	21-133	Q37719	
Nitrobenzene	0.13564	0.1960	mg/L	69	35-180	Q37719	
Pentachlorophenol	0.22347	0.1960	mg/L	114	14-176	Q37719	
Phenanthrene	0.17821	0.1960	mg/L	91	54-120	Q37719	
Phenol	5.88039	0.1960	mg/L	30	10-112	Q37719	
Pyrene	0.17643	0.1960	mg/L	90	52-115	Q37719	

Matrix Spike Duplicate								
Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
233192 1,2,4-Trichlorobenzene	0.14596	0.1960	mg/L	74	44-142	3	0 - 36	Q37719
1,2-Dichlorobenzene	0.13945	0.1960	mg/L	71	32-129	4	0 - 38	Q37719
1,3-Dichlorobenzene	0.13439	0.1960	mg/L	69	20-124	5	0 - 41	Q37719
1,4-Dichlorobenzene	0.13652	0.1960	mg/L	70	20-124	5	0 - 36	Q37719
2,4,6-Trichlorophenol	0.17923	0.1960	mg/L	91	37-144	3	0 - 30	Q37719
2,4-Dichlorophenol	0.15190	0.1960	mg/L	77	39-135	1	0 - 31	Q37719
2,4-Dimethylphenol	0.14268	0.1960	mg/L	73	32-119	1	0 - 26	Q37719
2,4-Dinitrophenol	0.24178	0.1960	mg/L	123	10-191	0	0 - 30	Q37719
2,4-Dinitrotoluene	0.20533	0.1960	mg/L	105	39-139	2	0 - 29	Q37719
2,6-Dinitrotoluene	0.19321	0.1960	mg/L	99	50-158	2	0 - 15	Q37719
2-Chloronaphthalene	0.15066	0.1960	mg/L	77	60-118	1	0 - 21	Q37719
2-Chlorophenol	0.11486	0.1960	mg/L	59	23-134	3	0 - 35	Q37719
2-Nitrophenol	0.14427	0.1960	mg/L	74	29-182	4	0 - 34	Q37719
4,6-Dinitro-2-methylphenol	0.20886	0.1960	mg/L	107	10-181	1	0 - 19	Q37719

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# Level II QC Report

01/23/09

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Project ID: NCDOT Lenoir  
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COC Group Number: G1208362  
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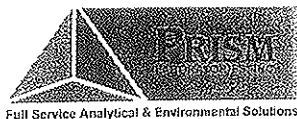
## Matrix Spike Duplicate

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
233192 4-Bromophenylphenylether	0.18470	0.1960	mg/L	94	53-127	2	0 - 18	Q37719
4-Chloro-3-methylphenol	0.15574	0.1960	mg/L	79	22-147	4	0 - 33	Q37719
4-Chlorophenylphenylether	0.19074	0.1960	mg/L	97	25-158	4	0 - 19	Q37719
4-Nitrophenol	7.83333	0.1960	mg/L	40	10-132	11	0 - 50	Q37719
Acenaphthene	0.16390	0.1960	mg/L	84	47-145	4	0 - 20	Q37719
Acenaphthylene	0.16186	0.1960	mg/L	83	33-145	6	0 - 24	Q37719
Anthracene	0.19882	0.1960	mg/L	101	27-133	5	0 - 30	Q37719
Benzo(a)anthracene	0.19141	0.1960	mg/L	98	33-143	1	0 - 26	Q37719
Benzo(a)pyrene	0.21329	0.1960	mg/L	109	17-163	3	0 - 25	Q37719
Benzo(b)fluoranthene	0.21870	0.1960	mg/L	112	24-159	2	0 - 29	Q37719
Benzo(g,h,i)perylene	0.18301	0.1960	mg/L	93	10-219	5	0 - 27	Q37719
Benzo(k)fluoranthene	0.21117	0.1960	mg/L	108	11-162	1	0 - 11	Q37719
Bis(2-chloroethoxy)methane	0.14462	0.1960	mg/L	74	33-184	2	0 - 31	Q37719
Bis(2-chloroethyl)ether	0.12907	0.1960	mg/L	66	12-158	2	0 - 36	Q37719
Bis(2-chloroisopropyl)ether	0.12686	0.1960	mg/L	65	36-166	2	0 - 40	Q37719
Bis(2-ethylhexyl)phthalate	0.16323	0.1960	mg/L	83	10-158	1	0 - 17	Q37719
Butylbenzylphthalate	0.17258	0.1960	mg/L	88	10-152	2	0 - 15	Q37719
Chrysene	0.17960	0.1960	mg/L	92	17-168	2	0 - 25	Q37719
Di-n-butylphthalate	0.17270	0.1960	mg/L	88	10-118	7	0 - 27	Q37719
Di-n-octylphthalate	0.17390	0.1960	mg/L	89	10-146	3	0 - 17	Q37719
Dibenzo(a,h)anthracene	0.19619	0.1960	mg/L	100	10-227	9	0 - 28	Q37719
Diethylphthalate	0.18325	0.1960	mg/L	93	10-114	5	0 - 16	Q37719
Dimethylphthalate	0.17631	0.1960	mg/L	90	10-112	5	0 - 15	Q37719
Fluoranthene	0.20727	0.1960	mg/L	106	26-137	6	0 - 24	Q37719
Fluorene	0.17682	0.1960	mg/L	90	59-121	6	0 - 15	Q37719
Hexachlorobenzene	0.19280	0.1960	mg/L	98	10-152	3	0 - 18	Q37719
Hexachlorobutadiene	0.16727	0.1960	mg/L	85	24-116	2	0 - 34	Q37719
Hexachloroethane	0.13447	0.1960	mg/L	69	40-113	5	0 - 38	Q37719
Indeno(1,2,3-cd)pyrene	0.13590	0.1960	mg/L	69	10-171	7	0 - 29	Q37719
Isophorone	0.16321	0.1960	mg/L	83	21-196	2	0 - 32	Q37719
N-Nitrosodi-n-propylamine	0.14156	0.1960	mg/L	72	10-230	3	0 - 36	Q37719
Naphthalene	0.13478	0.1960	mg/L	69	21-133	1	0 - 42	Q37719
Nitrobenzene	0.13419	0.1960	mg/L	68	35-180	1	0 - 25	Q37719
Pentachlorophenol	0.22588	0.1960	mg/L	115	14-176	1	0 - 21	Q37719
Phenanthrene	0.18605	0.1960	mg/L	95	54-120	4	0 - 29	Q37719
Phenol	5.19019	0.1960	mg/L	26	10-112	12	0 - 39	Q37719

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

# Level II QC Report

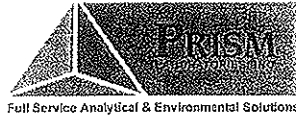
01/23/09

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

Project ID: NCDOT Lenoir  
Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
Date/Time Submitted: 12/10/08 16:45

Matrix Spike Duplicate								
Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
233192 Pyrene	0.17284	0.1960	mg/L	88	52-115	2	0 - 15	Q37719



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 c/o MACTEC Eng. & Consulting, Inc  
 3301 Atlantic Ave.  
 Raleigh, NC 27604

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

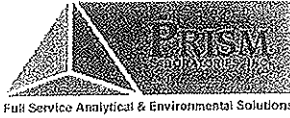
**Volatile Organic Compounds by GC/MS, method SM6200 B**

Method Blank	Result	RL	Control Limit	Units	QC Batch ID
1,1,1,2-Tetrachloroethane	ND	0.5	<0.25	µg/L	Q37764
1,1,1-Trichloroethane	ND	0.5	<0.25	µg/L	Q37764
1,1,2,2-Tetrachloroethane	ND	0.5	<0.25	µg/L	Q37764
1,1,2-Trichloroethane	ND	0.5	<0.25	µg/L	Q37764
1,1-Dichloroethane	ND	0.5	<0.25	µg/L	Q37764
1,1-Dichloroethene	ND	0.5	<0.25	µg/L	Q37764
1,1-Dichloropropene	ND	0.5	<0.25	µg/L	Q37764
1,2,3-Trichlorobenzene	ND	2	<1	µg/L	Q37764
1,2,3-Trichloropropane	ND	1	<0.5	µg/L	Q37764
1,2,4-Trichlorobenzene	ND	1	<0.5	µg/L	Q37764
1,2,4-Trimethylbenzene	ND	0.5	<0.25	µg/L	Q37764
1,2-Dibromo-3-chloropropane	ND	2	<1	µg/L	Q37764
1,2-Dibromoethane (EDB)	ND	0.5	<0.25	µg/L	Q37764
1,2-Dichlorobenzene	ND	0.5	<0.25	µg/L	Q37764
1,2-Dichloroethane	ND	0.5	<0.25	µg/L	Q37764
1,2-Dichloropropane	ND	0.5	<0.25	µg/L	Q37764
1,3,5-Trimethylbenzene	ND	0.5	<0.25	µg/L	Q37764
1,3-Dichlorobenzene	ND	0.5	<0.25	µg/L	Q37764
1,3-Dichloropropane	ND	0.5	<0.25	µg/L	Q37764
1,4-Dichlorobenzene	ND	0.5	<0.25	µg/L	Q37764
2,2-Dichloropropane	ND	2	<1	µg/L	Q37764
2-Chlorotoluene	ND	0.5	<0.25	µg/L	Q37764
4-Chlorotoluene	ND	0.5	<0.25	µg/L	Q37764
Benzene	ND	0.5	<0.25	µg/L	Q37764
Bromobenzene	ND	0.5	<0.25	µg/L	Q37764
Bromochloromethane	ND	0.5	<0.25	µg/L	Q37764
Bromodichloromethane	ND	0.5	<0.25	µg/L	Q37764
Bromoform	ND	2	<1	µg/L	Q37764
Bromomethane	ND	1	<0.5	µg/L	Q37764
Carbon tetrachloride	ND	0.5	<0.25	µg/L	Q37764
Chlorobenzene	ND	0.5	<0.25	µg/L	Q37764
Chlorodibromomethane	ND	0.5	<0.25	µg/L	Q37764
Chloroethane	ND	0.5	<0.25	µg/L	Q37764
Chloroform	ND	0.5	<0.25	µg/L	Q37764

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

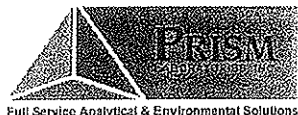
Method Blank	Result	RL	Control Limit	Units	QC Batch ID
Chloromethane	ND	0.5	<0.25	µg/L	Q37764
cis-1,2-Dichloroethene	ND	0.5	<0.25	µg/L	Q37764
Dibromomethane	ND	0.5	<0.25	µg/L	Q37764
Dichlorodifluoromethane	ND	1	<0.5	µg/L	Q37764
Ethylbenzene	ND	0.5	<0.25	µg/L	Q37764
Hexachlorobutadiene	ND	2	<1	µg/L	Q37764
Isopropyl ether (IPE)	ND	0.5	<0.25	µg/L	Q37764
Isopropylbenzene	ND	0.5	<0.25	µg/L	Q37764
m,p-Xylenes	ND	1	<0.5	µg/L	Q37764
Methyl t-butyl ether (MTBE)	ND	0.5	<0.25	µg/L	Q37764
Methylene chloride	ND	2	<1	µg/L	Q37764
n-Butylbenzene	ND	1	<0.5	µg/L	Q37764
n-Propylbenzene	ND	0.5	<0.25	µg/L	Q37764
Naphthalene	ND	2	<1	µg/L	Q37764
o-Xylene	ND	0.5	<0.25	µg/L	Q37764
p-Isopropyltoluene	ND	0.5	<0.25	µg/L	Q37764
sec-Butylbenzene	ND	0.5	<0.25	µg/L	Q37764
Styrene	ND	0.5	<0.25	µg/L	Q37764
tert-Butylbenzene	ND	0.5	<0.25	µg/L	Q37764
Tetrachloroethene	ND	0.5	<0.25	µg/L	Q37764
Toluene	ND	0.5	<0.25	µg/L	Q37764
trans-1,2-Dichloroethene	ND	0.5	<0.25	µg/L	Q37764
Trichloroethene	ND	0.5	<0.25	µg/L	Q37764
Trichlorofluoromethane	ND	0.5	<0.25	µg/L	Q37764
Vinyl chloride	ND	0.5	<0.25	µg/L	Q37764

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
1,1,1,2-Tetrachloroethane	22.14	20	µg/L	111	70-130	Q37764
1,1,1-Trichloroethane	22.32	20	µg/L	112	70-130	Q37764
1,1,2,2-Tetrachloroethane	19.37	20	µg/L	97	70-130	Q37764
1,1,2-Trichloroethane	21.12	20	µg/L	106	70-130	Q37764
1,1-Dichloroethane	22.92	20	µg/L	115	70-130	Q37764
1,1-Dichloroethene	25.99	20	µg/L	130	70-130	Q37764
1,1-Dichloropropene	23.84	20	µg/L	119	70-130	Q37764
1,2,3-Trichlorobenzene	19.48	20	µg/L	97	70-130	Q37764
1,2,3-Trichloropropane	17.91	20	µg/L	90	70-130	Q37764

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

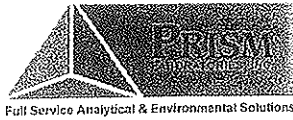
COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
1,2,4-Trichlorobenzene	19.41	20	µg/L	97	70-130	Q37764
1,2,4-Trimethylbenzene	20.95	20	µg/L	105	70-130	Q37764
1,2-Dibromo-3-chloropropane	22.33	20	µg/L	112	70-130	Q37764
1,2-Dibromoethane (EDB)	22.25	20	µg/L	111	70-130	Q37764
1,2-Dichlorobenzene	21.93	20	µg/L	110	70-130	Q37764
1,2-Dichloroethane	19.82	20	µg/L	99	70-130	Q37764
1,2-Dichloropropane	21.43	20	µg/L	107	70-130	Q37764
1,3,5-Trimethylbenzene	20.72	20	µg/L	104	70-130	Q37764
1,3-Dichlorobenzene	21.59	20	µg/L	108	70-130	Q37764
1,3-Dichloropropane	20.61	20	µg/L	103	70-130	Q37764
1,4-Dichlorobenzene	22.03	20	µg/L	110	70-130	Q37764
2,2-Dichloropropane	20.18	20	µg/L	101	70-130	Q37764
2-Chlorotoluene	19.69	20	µg/L	98	70-130	Q37764
4-Chlorotoluene	20.4	20	µg/L	102	70-130	Q37764
Benzene	22.48	20	µg/L	112	70-130	Q37764
Bromobenzene	21.6	20	µg/L	108	70-130	Q37764
Bromochloromethane	23.1	20	µg/L	116	70-130	Q37764
Bromodichloromethane	21.01	20	µg/L	105	70-130	Q37764
Bromoform	19.65	20	µg/L	98	70-130	Q37764
Bromomethane	17.07	20	µg/L	85	60-140	Q37764
Carbon tetrachloride	22.85	20	µg/L	114	70-130	Q37764
Chlorobenzene	20.86	20	µg/L	104	70-130	Q37764
Chlorodibromomethane	20.7	20	µg/L	104	70-130	Q37764
Chloroethane	25.54	20	µg/L	128	60-140	Q37764
Chloroform	21.92	20	µg/L	110	70-130	Q37764
Chloromethane	22.75	20	µg/L	114	60-140	Q37764
cis-1,2-Dichloroethene	24.2	20	µg/L	121	70-130	Q37764
Dibromomethane	21.83	20	µg/L	109	70-130	Q37764
Dichlorodifluoromethane	26.43	20	µg/L	132	60-140	Q37764
Ethylbenzene	22.19	20	µg/L	111	70-130	Q37764
Hexachlorobutadiene	23.44	20	µg/L	117	70-130	Q37764
Isopropyl ether (IPE)	23.04	20	µg/L	115	70-130	Q37764
Isopropylbenzene	20.37	20	µg/L	102	70-130	Q37764
m,p-Xylenes	43.26	40	µg/L	108	70-130	Q37764
Methyl t-butyl ether (MTBE)	22.57	20	µg/L	113	70-130	Q37764
Methylene chloride	22.19	20	µg/L	111	70-130	Q37764

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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

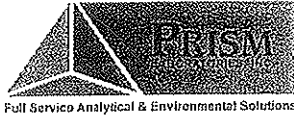
COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
n-Butylbenzene	19.94	20	µg/L	100	70-130	Q37764
n-Propylbenzene	23.31	20	µg/L	117	70-130	Q37764
Naphthalene	18.71	20	µg/L	94	70-130	Q37764
o-Xylene	19.63	20	µg/L	98	70-130	Q37764
p-Isopropyltoluene	20.29	20	µg/L	101	70-130	Q37764
sec-Butylbenzene	20.56	20	µg/L	103	70-130	Q37764
Styrene	20.19	20	µg/L	101	70-130	Q37764
tert-Butylbenzene	20.05	20	µg/L	100	70-130	Q37764
Tetrachloroethene	23.2	20	µg/L	116	70-130	Q37764
Toluene	21.24	20	µg/L	106	70-130	Q37764
trans-1,2-Dichloroethene	23.73	20	µg/L	119	70-130	Q37764
Trichloroethene	23.06	20	µg/L	115	70-130	Q37764
Trichlorofluoromethane	24.33	20	µg/L	122	60-140	Q37764
Vinyl chloride	24.46	20	µg/L	122	60-140	Q37764

Matrix Spike	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
233155 1,1,1,2-Tetrachloroethane	210.7	200	µg/L	105	70-130	Q37764
1,1,1-Trichloroethane	210.9	200	µg/L	105	70-130	Q37764
1,1,2,2-Tetrachloroethane	205.2	200	µg/L	103	70-130	Q37764
1,1,2-Trichloroethane	215.1	200	µg/L	108	70-130	Q37764
1,1-Dichloroethane	213.3	200	µg/L	107	70-130	Q37764
1,1-Dichloroethene	245.5	200	µg/L	123	70-130	Q37764
1,1-Dichloropropene	223.3	200	µg/L	112	70-130	Q37764
1,2,3-Trichlorobenzene	212.1	200	µg/L	106	70-130	Q37764
1,2,3-Trichloropropane	181.8	200	µg/L	91	70-130	Q37764
1,2,4-Trichlorobenzene	193.9	200	µg/L	97	70-130	Q37764
1,2,4-Trimethylbenzene	196.7	200	µg/L	98	70-130	Q37764
1,2-Dibromo-3-chloropropane	225.6	200	µg/L	113	70-130	Q37764
1,2-Dibromoethane (EDB)	216.9	200	µg/L	108	70-130	Q37764
1,2-Dichlorobenzene	214.7	200	µg/L	107	70-130	Q37764
1,2-Dichloroethane	195.2	200	µg/L	98	70-130	Q37764
1,2-Dichloropropane	207.8	200	µg/L	104	70-130	Q37764
1,3,5-Trimethylbenzene	197.9	200	µg/L	99	70-130	Q37764
1,3-Dichlorobenzene	212.2	200	µg/L	106	70-130	Q37764
1,3-Dichloropropane	202.1	200	µg/L	101	70-130	Q37764
1,4-Dichlorobenzene	211.4	200	µg/L	106	70-130	Q37764

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NC Certification No. 402  
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# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Matrix Spike	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Sample ID:						
233155 2,2-Dichloropropane	193	200	µg/L	97	70-130	Q37764
2-Chlorotoluene	186.4	200	µg/L	93	70-130	Q37764
4-Chlorotoluene	195.4	200	µg/L	98	70-130	Q37764
Benzene	216.8	200	µg/L	108	70-130	Q37764
Bromobenzene	211.5	200	µg/L	106	70-130	Q37764
Bromochloromethane	221.8	200	µg/L	111	70-130	Q37764
Bromodichloromethane	204.8	200	µg/L	102	70-130	Q37764
Bromoform	195.1	200	µg/L	98	70-130	Q37764
Bromomethane	210.8	200	µg/L	105	60-140	Q37764
Carbon tetrachloride	213.6	200	µg/L	107	70-130	Q37764
Chlorobenzene	201.9	200	µg/L	101	70-130	Q37764
Chlorodibromomethane	203.5	200	µg/L	102	70-130	Q37764
Chloroethane	237.2	200	µg/L	119	60-140	Q37764
Chloroform	212.2	200	µg/L	106	70-130	Q37764
Chloromethane	223.5	200	µg/L	112	60-140	Q37764
cis-1,2-Dichloroethene	229.7	200	µg/L	115	70-130	Q37764
Dibromomethane	220.2	200	µg/L	110	70-130	Q37764
Dichlorodifluoromethane	249.8	200	µg/L	125	60-140	Q37764
Ethylbenzene	211.6	200	µg/L	106	70-130	Q37764
Hexachlorobutadiene	238.5	200	µg/L	119	70-130	Q37764
Isopropyl ether (IPE)	219.1	200	µg/L	110	70-130	Q37764
Isopropylbenzene	193.5	200	µg/L	97	70-130	Q37764
m,p-Xylenes	408.2	400	µg/L	102	70-130	Q37764
Methyl t-butyl ether (MTBE)	222.7	200	µg/L	111	70-130	Q37764
Methylene chloride	209.8	200	µg/L	105	70-130	Q37764
n-Butylbenzene	188.4	200	µg/L	94	70-130	Q37764
n-Propylbenzene	218.9	200	µg/L	109	70-130	Q37764
Naphthalene	202.2	200	µg/L	101	70-130	Q37764
o-Xylene	189.1	200	µg/L	95	70-130	Q37764
p-Isopropyltoluene	193.3	200	µg/L	97	70-130	Q37764
sec-Butylbenzene	195	200	µg/L	98	70-130	Q37764
Styrene	192.2	200	µg/L	96	70-130	Q37764
tert-Butylbenzene	193.3	200	µg/L	97	70-130	Q37764
Tetrachloroethene	218.9	200	µg/L	109	70-130	Q37764
Toluene	209.7	200	µg/L	105	70-130	Q37764
trans-1,2-Dichloroethene	225.4	200	µg/L	113	70-130	Q37764

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# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

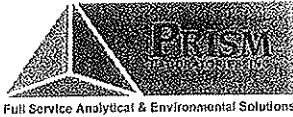
Matrix Spike		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Sample ID:							
233155	Trichloroethene	216.3	200	µg/L	108	70-130	Q37764
	Trichlorofluoromethane	226.4	200	µg/L	113	60-140	Q37764
	Vinyl chloride	229.2	200	µg/L	115	60-140	Q37764

Matrix Spike Duplicate		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
Sample ID:									
233155	1,1,1,2-Tetrachloroethane	194.6	200	µg/L	97	70-130	8	0 - 20	Q37764
	1,1,1-Trichloroethane	189.2	200	µg/L	95	70-130	11	0 - 20	Q37764
	1,1,2,2-Tetrachloroethane	178.5	200	µg/L	89	70-130	14	0 - 20	Q37764
	1,1,2-Trichloroethane	187.8	200	µg/L	94	70-130	14	0 - 20	Q37764
	1,1-Dichloroethane	194.6	200	µg/L	97	70-130	9	0 - 20	Q37764
	1,1-Dichloroethene	217.3	200	µg/L	109	70-130	12	0 - 20	Q37764
	1,1-Dichloropropene	196.1	200	µg/L	98	70-130	13	0 - 20	Q37764
	1,2,3-Trichlorobenzene	180.8	200	µg/L	90	70-130	16	0 - 20	Q37764
	1,2,3-Trichloropropane	162.5	200	µg/L	81	70-130	11	0 - 20	Q37764
	1,2,4-Trichlorobenzene	177	200	µg/L	89	70-130	9	0 - 20	Q37764
	1,2,4-Trimethylbenzene	181.9	200	µg/L	91	70-130	8	0 - 20	Q37764
	1,2-Dibromo-3-chloropropane	195.9	200	µg/L	98	70-130	14	0 - 20	Q37764
	1,2-Dibromoethane (EDB)	203.2	200	µg/L	102	70-130	7	0 - 20	Q37764
	1,2-Dichlorobenzene	195	200	µg/L	98	70-130	10	0 - 20	Q37764
	1,2-Dichloroethane	176.6	200	µg/L	88	70-130	10	0 - 20	Q37764
	1,2-Dichloropropane	189.9	200	µg/L	95	70-130	9	0 - 20	Q37764
	1,3,5-Trimethylbenzene	182.4	200	µg/L	91	70-130	8	0 - 20	Q37764
	1,3-Dichlorobenzene	191.9	200	µg/L	96	70-130	10	0 - 20	Q37764
	1,3-Dichloropropane	186.1	200	µg/L	93	70-130	8	0 - 20	Q37764
	1,4-Dichlorobenzene	196.3	200	µg/L	98	70-130	7	0 - 20	Q37764
	2,2-Dichloropropane	169.7	200	µg/L	85	70-130	13	0 - 20	Q37764
	2-Chlorotoluene	173.3	200	µg/L	87	70-130	7	0 - 20	Q37764
	4-Chlorotoluene	180.8	200	µg/L	90	70-130	8	0 - 20	Q37764
	Benzene	195.7	200	µg/L	98	70-130	10	0 - 20	Q37764
	Bromobenzene	194.5	200	µg/L	97	70-130	8	0 - 20	Q37764
	Bromochloromethane	204.5	200	µg/L	102	70-130	8	0 - 20	Q37764
	Bromodichloromethane	187.8	200	µg/L	94	70-130	9	0 - 20	Q37764
	Bromoform	178.1	200	µg/L	89	70-130	9	0 - 20	Q37764
	Bromomethane	187.7	200	µg/L	94	60-140	12	0 - 20	Q37764
	Carbon tetrachloride	192.6	200	µg/L	96	70-130	10	0 - 20	Q37764
	Chlorobenzene	183.1	200	µg/L	92	70-130	10	0 - 20	Q37764

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543

Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409



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

# Level II QC Report

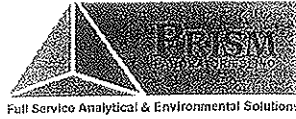
01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

Matrix Spike Duplicate		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
Sample ID:									
233155	Chlorodibromomethane	181.8	200	µg/L	91	70-130	11	0 - 20	Q37764
	Chloroethane	210.6	200	µg/L	105	60-140	12	0 - 20	Q37764
	Chloroform	192.6	200	µg/L	96	70-130	10	0 - 20	Q37764
	Chloromethane	203.3	200	µg/L	102	60-140	9	0 - 20	Q37764
	cis-1,2-Dichloroethene	208.4	200	µg/L	104	70-130	10	0 - 20	Q37764
	Dibromomethane	196.5	200	µg/L	98	70-130	11	0 - 20	Q37764
	Dichlorodifluoromethane	215.6	200	µg/L	108	60-140	15	0 - 20	Q37764
	Ethylbenzene	194	200	µg/L	97	70-130	9	0 - 20	Q37764
	Hexachlorobutadiene	221	200	µg/L	111	70-130	8	0 - 20	Q37764
	Isopropyl ether (IPE)	198.9	200	µg/L	99	70-130	10	0 - 20	Q37764
	Isopropylbenzene	180.2	200	µg/L	90	70-130	7	0 - 20	Q37764
	m,p-Xylenes	376.7	400	µg/L	94	70-130	8	0 - 20	Q37764
	Methyl t-butyl ether (MTBE)	196.5	200	µg/L	98	70-130	13	0 - 20	Q37764
	Methylene chloride	192.7	200	µg/L	96	70-130	8	0 - 20	Q37764
	n-Butylbenzene	175.2	200	µg/L	88	70-130	7	0 - 20	Q37764
	n-Propylbenzene	201.7	200	µg/L	101	70-130	8	0 - 20	Q37764
	Naphthalene	167.3	200	µg/L	84	70-130	19	0 - 20	Q37764
	o-Xylene	175.5	200	µg/L	88	70-130	7	0 - 20	Q37764
	p-Isopropyltoluene	178.2	200	µg/L	89	70-130	8	0 - 20	Q37764
	sec-Butylbenzene	178.5	200	µg/L	89	70-130	9	0 - 20	Q37764
	Styrene	181.9	200	µg/L	91	70-130	6	0 - 20	Q37764
	tert-Butylbenzene	178.1	200	µg/L	89	70-130	8	0 - 20	Q37764
	Tetrachloroethene	193.1	200	µg/L	97	70-130	13	0 - 20	Q37764
	Toluene	186.4	200	µg/L	93	70-130	12	0 - 20	Q37764
	trans-1,2-Dichloroethene	203	200	µg/L	102	70-130	10	0 - 20	Q37764
	Trichloroethene	193.4	200	µg/L	97	70-130	11	0 - 20	Q37764
	Trichlorofluoromethane	201.9	200	µg/L	101	60-140	11	0 - 20	Q37764
	Vinyl chloride	205.4	200	µg/L	103	60-140	11	0 - 20	Q37764



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

# Level II QC Report

01/23/09

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

Project ID: NCDOT Lenoir  
 Project No.: WBS# 34783.1.1

COC Group Number: G1208362  
 Date/Time Submitted: 12/10/08 16:45

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

Method Blank								QC Batch ID	
	Result	RL	Control Limit	Units					
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg				Q37828	
Laboratory Control Sample								QC Batch ID	
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			
Diesel Range Organics (DRO)	79.1	80		mg/kg	99	55-109		Q37828	
Matrix Spike								QC Batch ID	
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			
232999 Diesel Range Organics (DRO)	63.7	80		mg/kg	80	50-117		Q37828	
Matrix Spike Duplicate								QC Batch ID	
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
232999 Diesel Range Organics (DRO)	63.5	80		mg/kg	79	50-117	0	0 - 24	Q37828

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

Method Blank								QC Batch ID	
	Result	RL	Control Limit	Units					
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg				Q37878	
Laboratory Control Sample								QC Batch ID	
	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			
Diesel Range Organics (DRO)	74.1	80		mg/kg	93	55-109		Q37878	
Matrix Spike								QC Batch ID	
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			
233029 Diesel Range Organics (DRO)	69.9	80		mg/kg	87	50-117		Q37878	
Matrix Spike Duplicate								QC Batch ID	
Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
233029 Diesel Range Organics (DRO)	60	80		mg/kg	75	50-117	15	0 - 24	Q37878

#-See Case Narrative



Full Service Analytical & Environmental Solutions

448 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
Phone: 704/529-6384 • Fax: 704/525-0409

Client Company Name: MACTEC  
Report To/Contact Name: Matthew Gillis  
Reporting Address: 330 Atlantic Ave  
Wadeville, NC 27604

Phone: 519 831 8056 Fax (Yes) (No):  
Email (Yes) (No) Email Address: Mjgill@maectec.com  
EDD Type: PDF  Excel  Other  
Site Location Name: NCDDT LEWIS  
Site Location Physical Address: 6470-08-2286

# CHAIN OF CUSTODY RECORD

PAGE 3 OF 6 QUOTE # TO ENSURE PROPER BILLING:

Project Name: \_\_\_\_\_  
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: NCDDT  
Address: \_\_\_\_\_

Purchase Order No./Billing Reference \_\_\_\_\_  
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 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	12-9-08	1115	Soil	C	4	preserved	X		232894
SB-22		1130			4		X		232895
SB-23		1330			4		X		232896
SB-24		1345			4		X		232897
SB-25		1355			4		X		232898
SB-26		1415			4		X		232899
SB-27		1435			4		X		233000
SB-28		1450			4		X		233001
SB-29		1600			4		X		233002
SB-30		1610			4		X		233003

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 \_\_\_\_\_

Sampler's Signature: Matthew Gillis Sampled By (Print Name): Matthew Gillis Affiliation: MACTEC

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): Matthew Gillis Date: 12/15/08 Military Hours: 1675

Relinquished By (Signature): \_\_\_\_\_ Date: \_\_\_\_\_ Military Hours: \_\_\_\_\_

Relinquished By (Signature): \_\_\_\_\_ Date: \_\_\_\_\_ Military Hours: \_\_\_\_\_

Relinquished By (Signature): \_\_\_\_\_ Date: \_\_\_\_\_ Military Hours: \_\_\_\_\_

Method of Sampling:  Field 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 UNTIL RECEIVED AT THE LABORATORY.

Additional Comments: \_\_\_\_\_

PRISM USE ONLY  
Site Arrival Time: \_\_\_\_\_  
Site Departure Time: \_\_\_\_\_  
Field Trench Fees: \_\_\_\_\_  
Mileage: \_\_\_\_\_

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

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)

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL



Full Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
Phone: 704/528-6384 • Fax: 704/525-0409

Client Company Name: MACTEC  
Report To/Contact Name: Matt Gillis  
Reporting Address: 3201 Atlantic Ave  
Wilmington NC 27604

Phone: 919 831 9056 Fax (Yes) (No):  
Email (Yes) (No) Email Address: mgillis@maectec.com  
EDD Type: PDF  Excel  Other  
Site Location Name: NC DOT Lenora  
Site Location Physical Address: 6470-08-2286

# CHAIN OF CUSTODY RECORD

PAGE 4 OF 6 QUOTE # TO ENSURE PROPER BILLING:

Project Name: \_\_\_\_\_  
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)  
\*Please ATTACH any project specific reporting (QC LEVEL I III IV)  
provisions and/or QC Requirements  
Invoice To: NC DOT  
Address: \_\_\_\_\_

Purchase Order No./Billing Reference \_\_\_\_\_  
Requested Due Date  1 Day  2 Days  3 Days  4 Days  5 Days  
"Working Days"  6-9 Days  Standard 10 days  Rush Work Must Be  
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)

## LAB USE ONLY

Samples intact upon arrival? YES  NO   
Repacked in NET JES? Temp. HiB  
PROPER PRESERVATIVES indicated?  
Received WITHIN HOLDING TIMES?  
CUSTODY SEALS INTACT  
VOLATILES Tech/OUT HEADSPACE  
PROPER CONTAINERS Used?

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 \_\_\_\_\_

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-31	12-9-08	1620	SOIL	C	4		wellhead	X	X	233004
TW-1	12-9-08	1700	GW				Hcl	X	X	233005
SB-32	12-9-08	1625	SOIL		4		wellhead	X	X	233006
SB-33	12-9-08	1635			4			X	X	233007
SB-34	12-9-08	1640			4			X	X	233008
SB-35	12-9-08	1655			4			X	X	233009
SB-36	12-9-08	1720			4			X	X	233010
SB-37	12-10-08	0835			4			X	X	233011
SB-38	12-10-08	0845			4			X	X	233012
SB-39	12-10-08	0855			4			X	X	233013

PRESS DOWN FIRMLY - 3 COPIES

Sampler's Signature: Matthew Gillis Sampled By (Print Name): Matthew Gillis Affiliation: MACTEC

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) Matthew Gillis Date: 12/14/08 Military/Hours: 16:00

Relinquished By: (Signature) [Signature] Date: 12/14/08 Military/Hours: 16:00

Relinquished By: (Signature) [Signature] Date: 12/14/08 Military/Hours: 16:00

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

NPDES:  NC  SC  US:  NC  SC  GROUNDWATER:  NC  SC  DRINKING WATER:  NC  SC  SOLID WASTE:  NC  SC  RCRA:  NC  SC  CERCLA:  NC  SC  LANDFILL:  NC  SC  OTHER:  NC  SC  COG Group No. G-1808362

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

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

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

## **ATTACHMENT D (revised)**

### **RESULTS OF GEOPHYSICAL INVESTIGATION**

**Edwin Duard Price Property, Parcel #38**

**U-2211B, WBS No. 34783.1.1**

**Caldwell County, North Carolina**

A geophysical investigation was conducted on the Edwin Duard Price Property (Parcel No. 38) to identify the presence or absence of underground storage tanks (USTs) and associated appurtenances at the subject site. The geophysical investigation utilized ground penetrating radar and time domain electromagnetics. These instruments were used in concert with one another in order to identify subsurface metallic anomalies and, in particular, to identify the presence of USTs on site. A brief description of each instrument is presented in the following paragraphs followed by a discussion of the results of the geophysical evaluation.

#### **1.0 Ground Penetrating Radar Methodology**

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

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

**GEL Engineering of NC, Inc.**  
*an Affiliate of The GEL Group, Inc.*

**fc: ncdt01008**

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

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

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

## **2.0 Time Domain Electromagnetic Methodology**

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

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

earth materials. By recording the later time EM arrivals, only the response from metallic targets is measured, rather than the field generated by the earth material.

### **3.0 Field Procedures**

The geophysical field investigation was performed on December 1-2 & 8, 2008. Interpretation of the GPR data was conducted in the field and any potential anomalies were marked in the field. GPR data processing typically included band pass filtering, background removal, horizontal smoothing, and gain adjustments. TDEM was also used to scan the project site. Any electromagnetic anomalies indicative of buried metallic objects were marked in the field. One subsurface anomaly indicative of a buried metallic object was identified on the subject site during the survey. This anomaly was found outside of the NCDOT designated survey area.