

NC Department of Transportation Preliminary Site Assessment State Project: R-4047 WBS Element: 34599.1.1

> David J. Sutton Property Site #2 October 23, 2009

AMEC Earth and Environmental, Inc. of North Carolina
AMEC Project: 562114047

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#### 1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Notice to Proceed dated August 24, 2009, AMEC Earth and Environmental, Inc. of North Carolina (AMEC) has performed a Preliminary Site Assessment (PSA) for the David J. Sutton Property (the Site) to be acquired for a road widening project along Hwy 209 (Crabtree Road). David J. Sutton owns the property, which is identified as Site #2 within the NCDOT R-4047 design project. The property is located on Access Road in Waynesville, Haywood County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated August 24, 2009.

NCDOT contracted AMEC to perform a PSA on the David J. Sutton Property due to former usage of Underground Storage Tanks (UST) on the property. The property currently operates as David's Home Entertainment (the Site) that sells hot tubs, pool tables, televisions, gazebos, etc. The PSA was performed to determine if soils have been impacted by petroleum compounds as a result of past or present uses of the property within the proposed expanded right-of-way (ROW). The investigation was specifically completed to determine the presence or absence of petroleum hydrocarbons in soil along the proposed ROW and to assess ground water quality in one onsite and offsite monitoring well.

The following report describes our field investigations and results of chemical analyses. It includes the evaluation of the analytical data with regards to the presence or absence of soil contamination within the proposed right-of-way (ROW) and estimates the extent of soil contamination.

#### 1.1 Site Location and History

The David J. Sutton Property is located on the west side of Hwy 209 (Crabtree Road) approximately 50 feet north of Access Rd in Waynesville, Haywood County, North Carolina. It is located within the Sedimentary and Metamorphic sediments of the Blue Ridge Belt Physiographic Province of western North Carolina. Figure 1 shows the site location and vicinity.

AMEC studied the NCDENR UST Database for Incident Management and Registered Facilities and did not find any incidents reported for this site. Previously, a business called Quality Auto Service and Parts operated at this location. Mr. Sutton believes that the



applicable USTs were removed in the mid-1980s. In 1995 NCDOT contracted Front Royal Environmental Services to conduct soil borings and sampling on the property. Soil borings were performed near the former tank bed location. However, no soil borings were conducted near the former pump island.

#### 1.2 Site Description

A single story building occupies the Site. The proposed road widening will traverse the entire property of Site #2. Evidence of the former tank beds is no longer present. There are no monitoring wells on site. Appendix 1 includes a photo log for Site #2. Based on the report provided by Schnabel Engineering South of Greensboro, North Carolina, no USTs were detected in the areas surveyed. Figure 2 presents the Site Location Map.

The Property northeast of the Site is a commercial property occupied by Gem Motel. The property to the southwest is a commercial property occupied by Taco Bell. The properties to the west and northwest are residential.

#### 2.0 GEOLOGY

#### 2.1 Regional Geology

The David J. Sutton Property is located within the Biotite Gneiss group of the Blue Ridge Belt Physiographic Province of western North Carolina. The Biotite Gneiss group is migmatic, interlayered and gradational with biotite garnet gneiss and amphibolite.

#### 2.2 Site Geology

Site geology was observed through the sampling of 12 shallow direct push probe borings onsite. Borings extended to total depths ranging from 12 to 18 feet below ground surface (bgs). Soils generally consisted of micaceous silt. Boring logs are presented in Appendix 2. Saturated conditions (ground water) were first encountered in the borings at depths ranging from 12 to 17 feet bgs across the Site. One direct push boring, S2-SB5, was later extended with air rotary drilling in order to facilitate the installation of temporary monitoring well S2-MW1. This well intercepted partially weathered rock (PWR) at 30 feet bgs and had a total depth of 37 feet bgs. This boring log with construction information is also found in



Appendix 2. An offsite temporary well drilled through a cobble layer until 10 feet bgs and then through a micaceous silt saprolite until total depth of 29 feet bgs.

#### 3.0 FIELD ACTIVITIES

#### 3.1 Preliminary Activities

Prior to commencing field activities at the site, several tasks were accomplished in preparation for the subsurface investigation. The Health and Safety Plan (HSP) was modified to include the site-specific health and safety information necessary for the field activities. North Carolina-1-Call was contacted to facilitate the location of underground utilities in the vicinity of selected boring locations. Priority Underground Locating Services of Huntersville, North Carolina was coordinated by AMEC for utility locating services. SAEDACCO (South Atlantic Environmental Drilling and Construction Co.) of Fort Mill, South Carolina was retained by AMEC to perform the direct push sampling for soil borings and air rotary drilling for temporary well installations. AMEC coordinated with Schnabel Engineering South (Schnabel) who performed two geophysical surveys (electromagnetic and ground penetrating radar) onsite during August. The geophysical results were reviewed and discussed at the completion of each survey. Prism Laboratories, Inc. was contacted for acquisition of sample bottles. Soil boring locations focused around the former tank bed and dispensers, with some boring locations placed between to evaluate whether the connecting piping areas were free from soil contamination.

#### 3.2 Site Reconnaissance

AMEC personnel completed site reconnaissance on August 5, 2009. The area was visually examined for the presence of any current UST or areas/obstructions that could potentially affect the subsurface investigation and the geophysical subcontractor was met in the field. Marking of boring locations occurred on August 25, 2009.

#### 3.3 Well Survey

No well survey was performed as part of this PSA and no water supply wells were observed by AMEC on the site.



#### 3.4 Soil Sampling

Soil boring occurred on August 25, 2009 at Site #2. Twelve direct push soil borings were drilled adjacent to former tank beds and dispenser islands on Site #2. Figure 2 presents the Site Map with sample locations. These samples were staggered to optimize the likelihood of intercepting any potential soil contamination. The first sample (SB-1) was placed on the western side of Site #2, north of where the former tank beds were located. Subsequent samples SB-2 through SB-6 were staggered throughout the former tank bed area. The points were typically 20 feet apart in an east west direction and roughly 10 feet apart in a north south direction. Samples SB-10 through SB-12 were staggered throughout the former pump island location, directly in front of the existing building. Samples SB-7 through SB-9 were staggered throughout the area where the piping connecting the tank beds and pump island would have been.

Drilling and sample collection of the first four soil borings, SB-1 through SB-4, did not show any signs of staining, odor or significant Photo Ionization Detector (PID) reading. Samples from soil boring SB-5 however did indicate soil contamination with a maximum PID reading of 1551 parts per million (ppm) from a depth between 14 and 15 ft bgs. The subsequent soil borings SB-6 through SB-8 did not indicate significant readings on the PID, nor show visible or olfactory signs of petroleum impact. Soil boring SB-9 did indicate soil contamination with a maximum PID reading of 1,750 ppm. The remaining soil borings SB-10 through SB-12 did not indicate significant readings on the PID, nor show visible or olfactory evidence of petroleum impact.

Overall for the Site, evidence of potential soil contamination was identified by field observations (i.e. petroleum odors, petroleum staining, strong PID response) in the two borings, SB5 and SB9. PID screening results are incorporated in Table 1.

Soil samples were collected in accordance with EPA protocols in laboratory-supplied containers. The soil samples for Total Petroleum Hydrocarbons (TPH) –Gasoline Range Organics (GRO) analysis were collected using the 5030 prep method with methanol preservation. Samples for TPH-Diesel Range Organics (DRO) analysis were collected in 4oz. glass containers. Once placed in the containers, the samples were labeled with the sample number, time of collection, date of collection, name of the collector, and the requested analysis. The samples were packed on ice, and then hand delivered to Prism Laboratories, a North Carolina Certified Laboratory following proper chain-of-custody procedures.



#### 3.5 Groundwater Sampling

Two temporary groundwater wells were installed on August 27 and abandoned on September 3, 2009. Sampling of these wells occurred on August 28, 2009 for the Site #2 PSA. Well S2-MW1 was installed west of the David's Home Entertainment building, coincident with soil boring SB-5, which indicated the highest PID readings. During the purging and sampling of S2-MW1 a petroleum odor was noticed from the groundwater. Temporary well S2-MW2 was installed offsite, approximately 300 feet northeast and topographically down slope near ramp B as shown in Figure 3.

Odor was detected in the groundwater sample S2-MW1. No signs of discoloration or odor were detected from groundwater sample S2-MW2, but the well was not productive and it went dry during the purging process. The groundwater samples were collected in accordance with EPA protocols in laboratory-supplied containers. The water samples for the 625 analysis were collected using 1 Liter unpreserved amber bottles. The samples for 601/602 analysis were collected in Volatile Organic Analysis bottles with hydrochloric acid preservation. Once placed in the containers, the samples were labeled with the sample number, time of collection, date of collection, name of the collector, and the requested analysis. The samples were packed on ice, and then hand delivered to Prism Laboratories, a North Carolina Certified Laboratory following proper chain-of-custody procedures.

#### 3.6 Surface Water Sampling

One surface water source was sampled for the Site #2 PSA on August 28, 2009. Sample S2-SW1 was sampled southeast of the building, from the box culvert at the intersection of Hwy 209 and Access Road. This sample location is also shown in Figure 3, in relation to Site #2.

No signs of discoloration or odor were detected in the surface water sample. The water sample was collected in accordance with EPA protocols in laboratory-supplied containers. The water sample for the 625 analysis was collected using 1 Liter unpreserved amber bottles. The sample for 601/602 analysis was collected in Volatile Organic Analysis bottles with hydrochloric acid preservation. Once placed in the containers, the samples were labeled with the sample number, time of collection, date of collection, name of the collector, and the requested analysis. The samples were packed on ice, and then hand delivered to Prism Laboratories, a North Carolina Certified Laboratory following proper chain-of-custody procedures.



#### 4.0 RESULTS

#### 4.1 Soil Sampling Results

AMEC conducted soil sampling at the Site on August 25, 2009. The purpose of the sampling was to determine if releases of petroleum hydrocarbons had occurred, and if so, to estimate the volume of soil that might require special handling during construction activities. The sampling was accomplished using direct push methods accompanied by field screening for organic vapors with a PID. The laboratory soil results are tabulated in Table 1 and shown on Figure 4.

A minimum of one soil sample was collected from each of the 12 soil borings from Site #2. If impacted soil was identified, additional soil samples were obtained. PID readings and other field observations warranted that eight additional samples be acquired. Analyses of soil samples for DRO indicated two boring locations with concentrations above the 10 mg/kg NCDENR Initial Action Level for TPH in soil. Sample S2-SB1-1 from boring SB1 at the 6-10 ft bgs interval was reported with 30 mg/kg. This boring location was near the rear of the building. Two samples from boring SB9 located in front of the existing building and near the former pump island reported DRO concentrations. Sample SB9-2, analyzed at the 1-2 foot interval, was measured with a DRO concentration of 95 mg/kg while the deeper sample SB9-1 from the 7-9 foot interval was reported with 210 mg/kg.

Laboratory analyses indicate four samples from three borings had concentrations of GRO that exceeded the 10 mg/kg NCDENR Initial Action Level for TPH in soil. In boring SB9, mentioned above as located near the former pump island, samples SB9-1 and SB9-2 had concentrations of 1,800 mg/kg and 65 mg/kg, respectively. The other two samples with reported GRO detections came from the deeper samples within borings SB5 and SB6 located near the former UST bed. In boring SB5, a concentration of 63 GRO mg/kg was measured in SB5-1 from 14-15 feet bgs. In boring SB-6, a concentration of 16 mg/kg was reported in SB6-1 from 13-14 feet bgs.

Copies of the original laboratory report and chain-of-custody documentation are included as Appendix 3.



#### 4.2 Extent of Impacted Soils

This investigation and analytical program were implemented to determine the presence or absence of petroleum hydrocarbons and, if possible, to estimate the volume of impacted soil present within the proposed expanded ROW. For the purposes of this PSA it was assumed that soil excavation activities would not extend into groundwater.

The area of greatest concern of GRO/DRO concentrations was focused near boring SB-9 with some lesser impact at borings SB-5, SB-6 and SB-1. SB-1 is not within the proposed expanded ROW; therefore the contamination "footprint" would be represented by the remaining contaminated soil borings. AMEC estimates that a contaminated "footprint" within the expanded ROW potentially covers an area of 1316 square feet. This area, shown in Figure 5, ranges in thickness from roughly 14 feet (the entire unsaturated soil column) in the area of BS-9 to a deeper 3 foot section in the area of SB-5 and SB-6.

The current design is for the expanded ROW section of Site #2 to be an area of fill. If that remains the case then potentially the impacted soil will not be intercepted by future NCDOT construction activities. However if the design changes and excavation occurs in this area then potentially a soil volume of up to 11,188 cubic feet or 414 cubic yards could be intercepted down to the water table. This estimate assumes that half of the impacted footprint area would exhibit contamination with the maximum vertical thickness of 14 feet and half would exhibit contamination with the minimum vertical thickness of 3 feet.

#### 4.3 Groundwater Sampling Results

AMEC conducted onsite and offsite groundwater sampling for the Site #2 temporary wells on August 28, 2009. The purpose of the onsite sampling of S2-MW1 was to determine if potential Site #2 releases of petroleum hydrocarbons had impacted the underlying groundwater. Table 2 presents results of groundwater analyses for volatile and semi-volatile organic compounds for S2-MW1 and S2-MW2. These data are also shown in Figure 3. The sample from onsite well S2-MW1, located near the former UST bed, exhibited benzene, toluene, ethylbenzene, xylenes (BTEX) and naphthalene, which are typical gasoline components. The levels of benzene, naphthalene, and toluene exceeded the 2L Groundwater Protection standards. None of the gross contaminant levels (GCL) were exceeded. Results from the offsite well, S2-MW2, sample reported detections of the same five gasoline components but at lower concentrations, suggesting a groundwater plume stemming from Site #2 has migrated offsite to the northeast. Only the benzene



concentration, measured in the offsite well S2-MW2 exceeded its 2L groundwater protection standard.

#### 4.4 Surface Water Sampling Results

AMEC conducted surface water sampling at the Site on August 28, 2009. The purpose of the sampling was to determine if potential soil or groundwater impact from petroleum hydrocarbons had intercepted surface water. Analysis of the surface water sample for volatile and semi-volatile organic compounds did not indicate any detectable concentrations. These results are also summarized in Table 2 and Figure 3.

#### 5.0 CONCLUSIONS

The following conclusions are based upon AMEC's evaluation of field observations and laboratory analyses of samples collected from the Site on August 25 and 28, 2009.

- The property formerly operated as Quality Auto Service and multiple USTs were in use until closure by removal in mid-1980s.
- The current commercial building at the Site is occupied by a home entertainment store.
- High PID readings indicated the possibility of petroleum contaminants in two
  of twenty soil samples from two of twelve borings.
- Laboratory analyses of soil samples confirmed DRO detection of >10 mg/kg NC Action Level in three samples from two borings (SB1-1, SB9-1, SB9-2).
- Laboratory analyses of soil samples confirmed GRO detection of >10 mg/kg NC Action Level in four samples in three borings (SB5-1, SB6-1, SB9-1, SB9-2).
- The highest concentrations of both GRO and DRO occur at boring SB-9.
   This sample site is most likely where the former dispenser pump island was previously located.
- The concentrations of GRO and DRO detected at sample sites SB-1, SB-5 and SB-6 correlate to the former tank bed location.
- Approximately up to 414 cubic yards of petroleum-contaminated soil is potentially present within the Site #2 portion of the proposed ROW.



 Sampling results from the onsite temporary well indicated the presence of BTEX compounds, typical of gasoline, dissolved in groundwater at concentrations above groundwater protection standards. The same compounds, at lower concentrations, were measured in the assumed downgradient offsite well.

#### 6.0 RECOMMENDATIONS

If NCDOT intercepts soil in the contaminated area, AMEC recommends the following action:

 Segregation during soil excavation with proper disposal of potentially petroleum-impacted soil during roadway improvement construction operations.



Table 1
Soil Sampling Analytical Results, DRO-GRO
David J. Sutton Property - Site 2
Waynesville, Haywood Co., North Carolina

	SAMPLE	SAMPLE DEPTH	EPA Meth	od 8015B
SAMPLE ID	DATE	(ft bgs)	DRO (mg/kg)	GRO (mg/kg)
IC Action Levels			10	10
S2-SB1-1	8/25/2009	6 - 10.5	30	<6.9
S2-SB2-1	8/25/2009	7 - 10	<9.6	<6.8
S2-SB3-1	8/25/2009	6 - 8	<9.9	<7.1
S2-SB4-1	8/25/2009	1 - 5	<10	<7.1
S2-SB5-1	8/25/2009	14 - 15	<6.9	63
S2-SB5-2	8/25/2009	7 - 14	<8.9	<6.4
S2-SB6-1	8/25/2009	13 - 14	<10	16
S2-SB6-2	8/25/2009	7 - 11	<9.8	<7.0
S2-SB7-1	8/25/2009	10 - 16	<8.8	<6.3
S2-SB7-2	8/25/2009	6 - 10	<10	<7.3
S2-SB8-1	8/25/2009	10 - 11	<9.8	<7.0
S2-SB8-2	8/25/2009	1 - 10	<11	<7.6
S2-SB9-1	8/25/2009	7 - 9	<9.1 / <b>210</b> *	1,800
S2-SB9-2	8/25/2009	1 - 2	95	65
S2-SB10-1	8/25/2009	7 - 9	<8.7	<6.3
S2-SB10-2	8/25/2009	3 - 5	<8.5	<6.1
S2-SB11-1	8/25/2009	4 - 7	<9.1	<6.5
S2-SB11-2	8/25/2009	2 - 4	<9.0	<6.4
S2-SB12-1	8/25/2009	4 - 5	<8.9	<6.4
S2-SB12-2	8/25/2009	5 - 9	<9.0	<6.5

#### NOTES:

bgs = below ground surface

**Bold** Concentrations Exceed Action Levels

DRO = Diesel Range Organics

GRO = Gasoline Range Organics

Standards derived from the North Carolina UST Section Guidelines for Assessment and Corrective Action

<sup>\* =</sup> Reanalysis performed for DRO - sample was extracted past holding time.

Table 2 **Groundwater Sampling Analytical Results - VOCs, SVOCs David J. Sutton Property** Waynesville, Haywood Co., North Carolina

	SAMPLE DATE	VOCs EPA Method 601/602 (ug/L)					SVOCs EPA Method 625 (ug/L)	
SAMPLE ID		Benzene	Ethyl- benzene	Total Xylenes	Naphthalene	Toluene	2-Methyl- phenol	Naphthalene
Ground Water	Gross Contamination	5,000	550,000	87,500	15,500	257,500	NS	15,500
Surface Water Quality Standards (15A NCAC 2B, Aquatic Life or EPA National Criteria) May 2007		NS	97	670	330	11	NS	330
(15A NCAC	Surface Water Quality Standards (15A NCAC 2B, Human Health or EPA National Criteria) May 2007		NS	NS	NS	NS	NS	NS
	Ground water Protection Standards (2L), December 2006		550	530	21	1,000	14	21
S2-MW1	8/28/2009	21	210	1,030	45	1,400	6.0 J	<9.8
S2-MW2	8/28/2009	15	29	44	20	5.9	<9.8	11
SW-1	8/28/2009	BRL	BRL	BRL	BRL	BRL	BRL	BRL

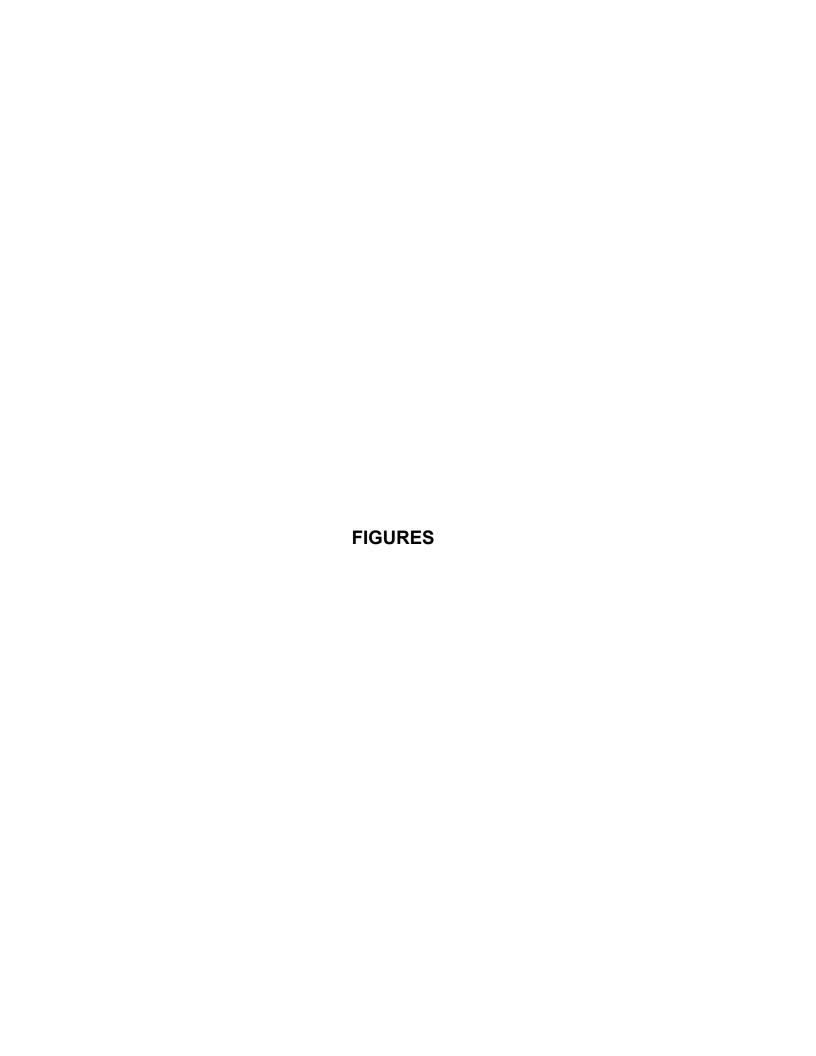
#### NOTES:

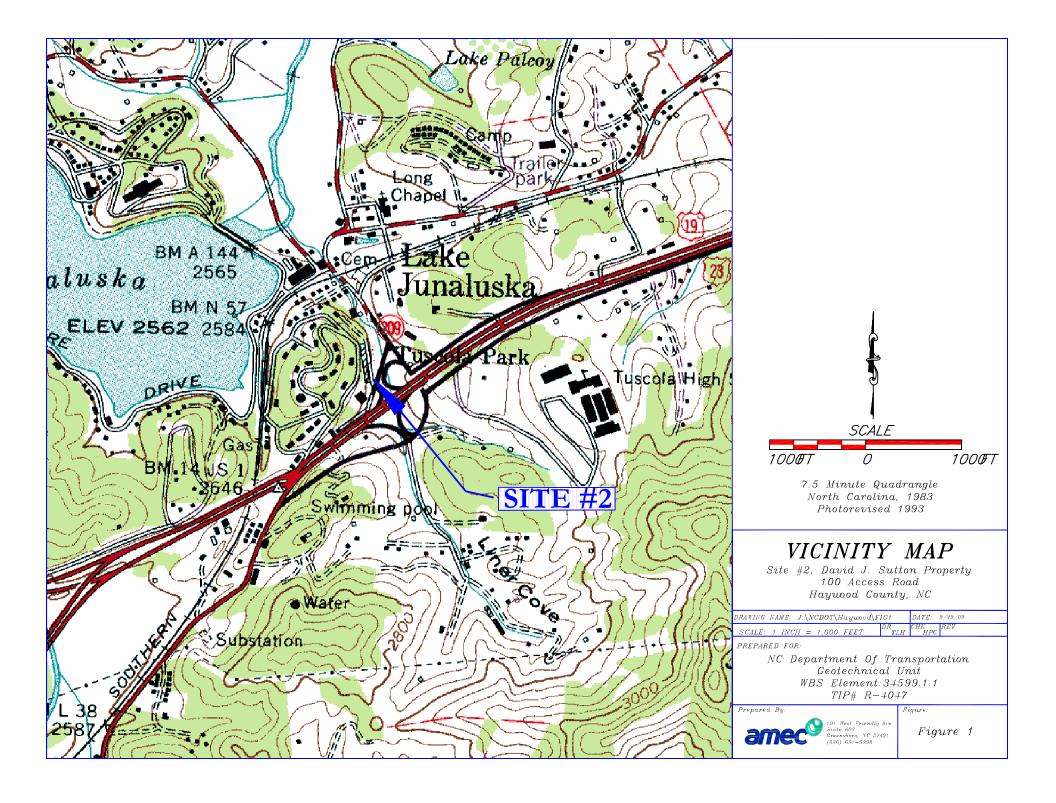
all units are in ug/L = micrograms per liter

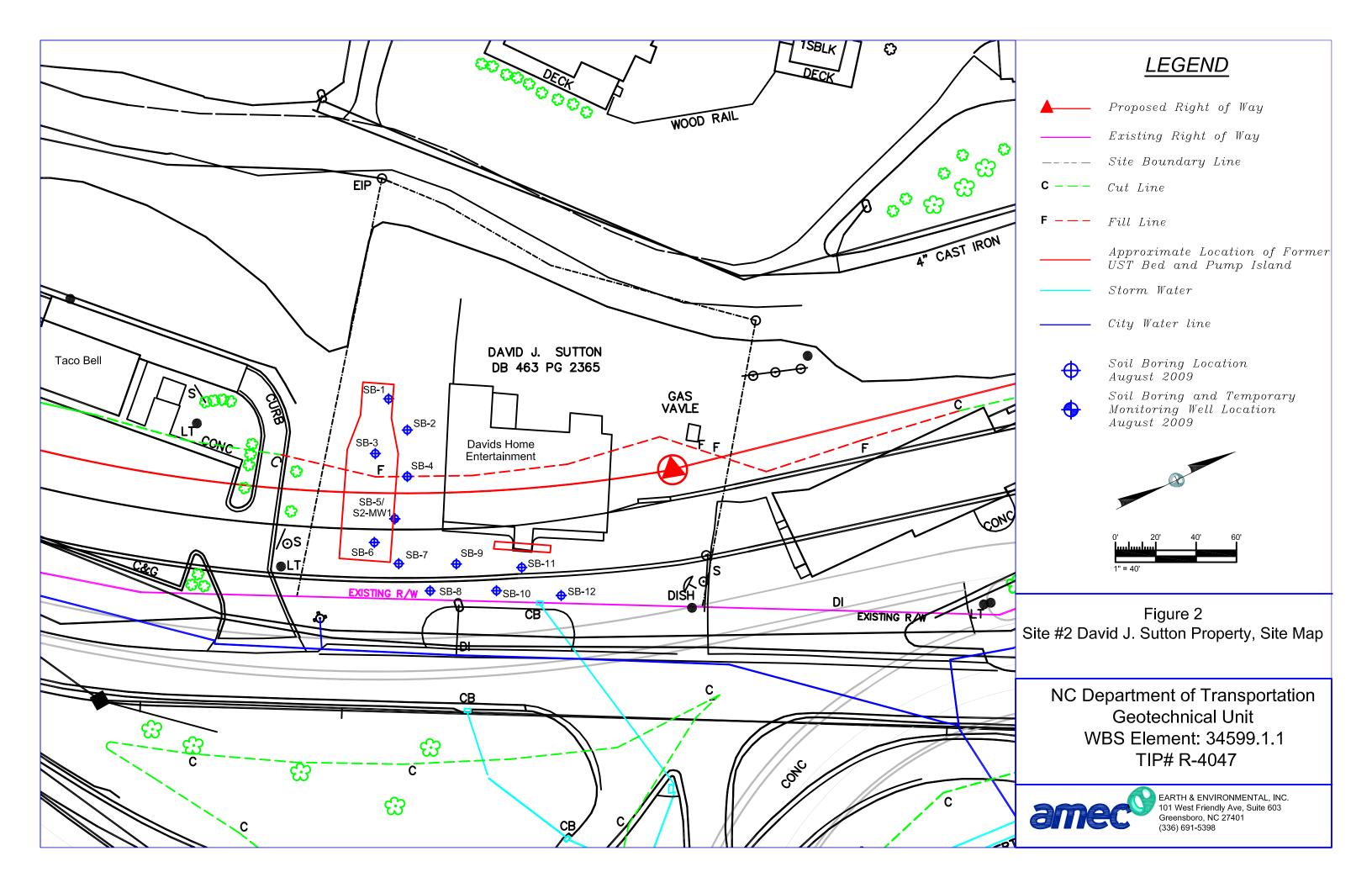
bgs = below ground surface BRL = below reporting limits

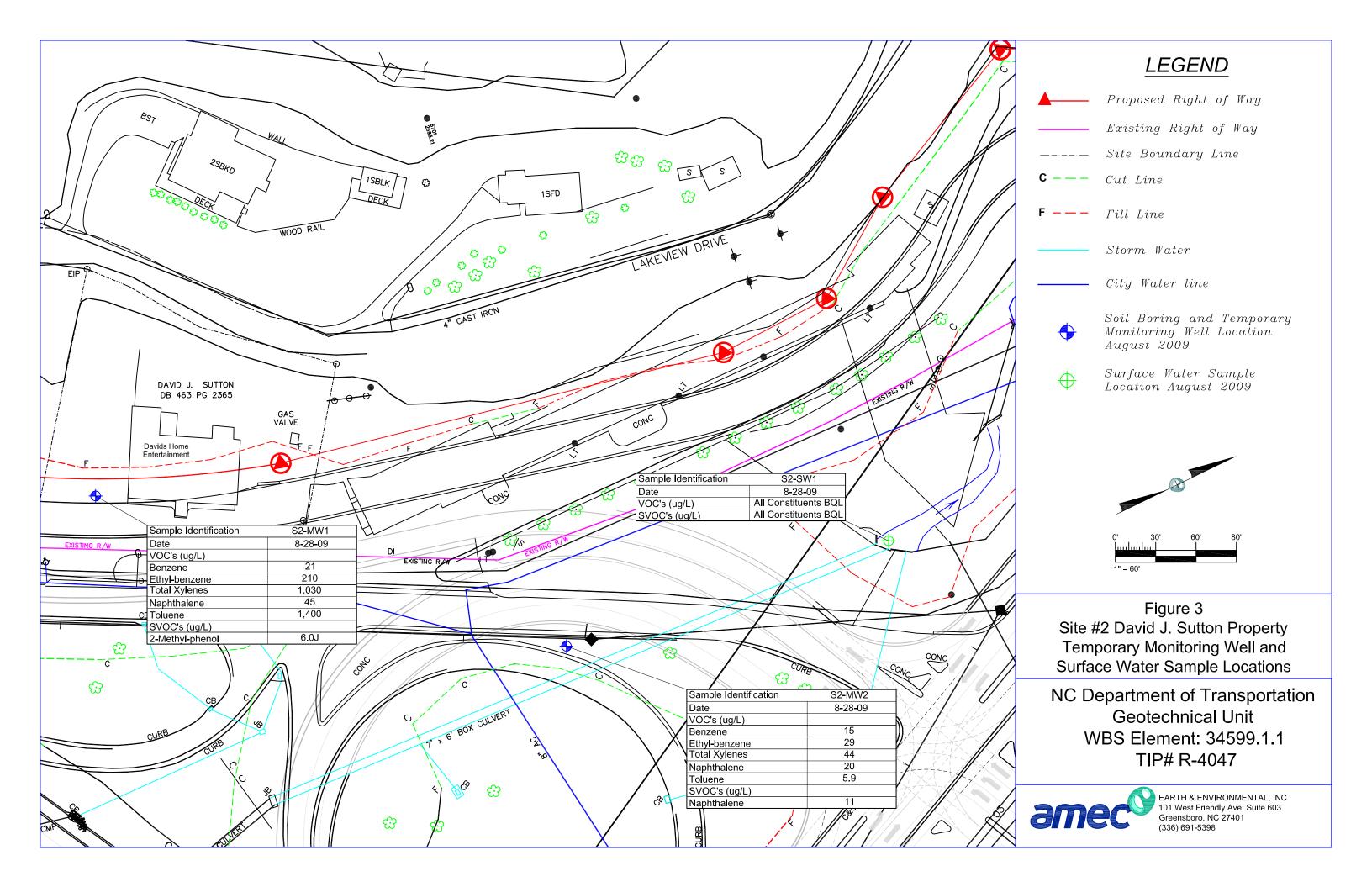
VOCs = volatile organic compounds

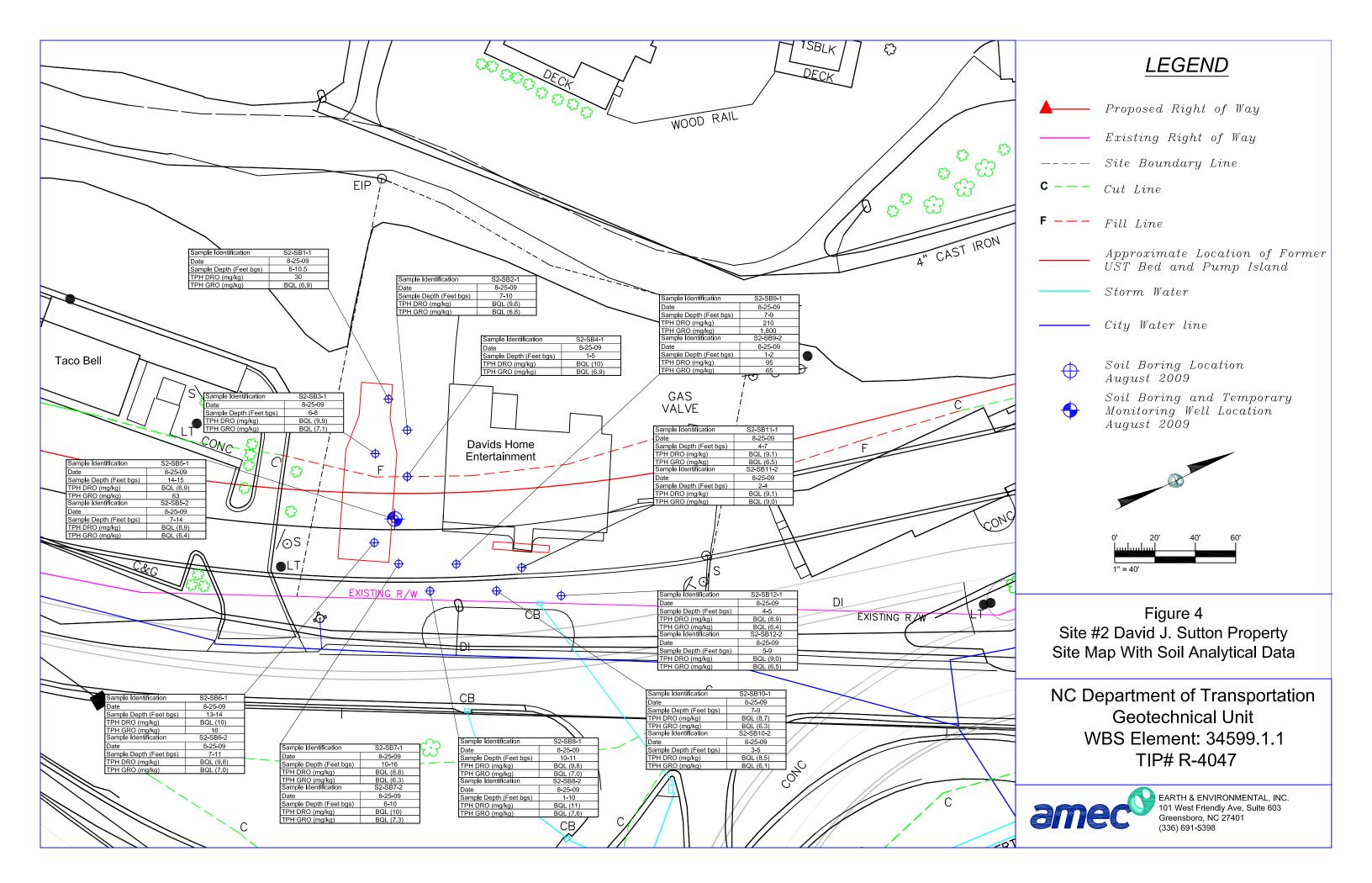
SVOCs = semi-volatile organic compounds

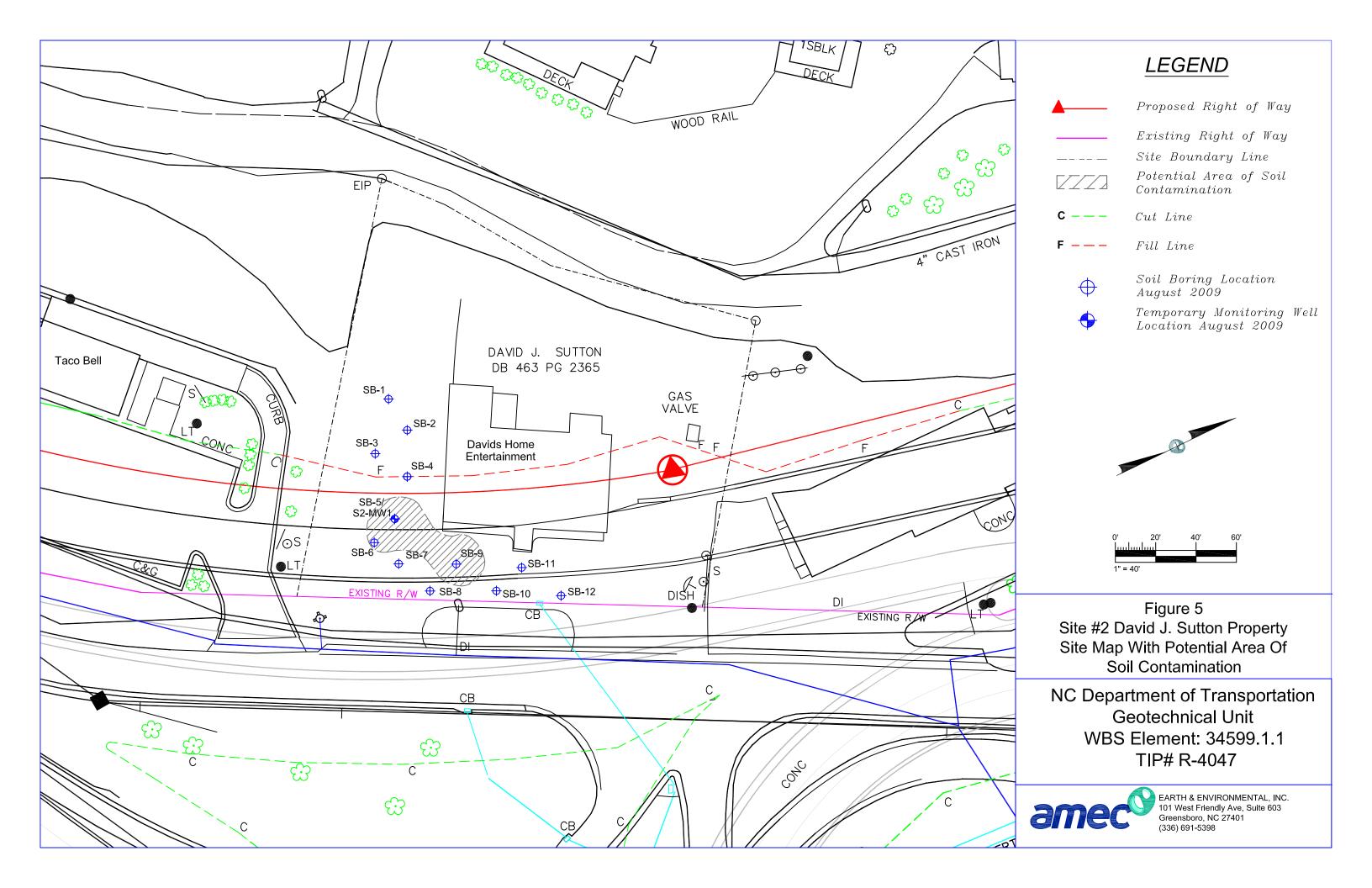












**APPENDIX 1** 

**Photo Log** 



Photo No.

**Date:** 08/5/09

Direction Photo Taken:

West

Description:

View of Site 2 in background and of Site 2 off site monitoring well location in foreground



Photo No.

**Date:** 08/25/09

Direction Photo Taken:

Southwest

Description:

View of probing in Site 2 parking lot at south edge of former UST bed





Photo No.

**Date:** 08/5/09

Direction Photo Taken:

West

**Description:** 

View of Site 2 offsite monitoring well location



Photo No.

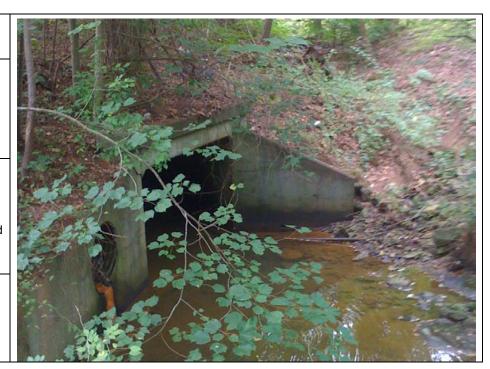
**Date:** 08/5/09

Direction Photo Taken:

Southwest

**Description:** 

View of Culvert where Site 2 off site surface water sample was collected



#### **APPENDIX 2**

**Boring and Well Construction Logs** 



Boring/Well No.: S2-SB1	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: SAEDACCO	Driller Name/Cert #: Keith Speece - 2856

Remarks:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	ğ .
0 - 0.5			Asphalt
0.5 - 1.5	0.6		Brown micaceous SILT
1.5 - 6	0.1		Tan brown micaceous SILT with white blebs
6 - 10.5	0.8		Tan brown micaceous SILT with orange and white blebs
10.5 - 12	0.2		Brown micaceous SILT with orange and white blebs, partially weathered rock (PWR).
			,
			12' refusal, PWR
		WELL CONS	TOUGHOU DETAIL O (IS A
Moll Type/Diam	notor:	WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Diam Total Depth:	icici.		Outer Casing Interval: Outer Casing Diameter:
Screen Interval:	•		Bentonite Interval:
Sand Interval:	•		Slot Size:
Grout Interval:			Static Water Level:



Boring/Well No.: S2-SB2 Site Name: David J. Sutton Property

Date: 8-25-09 Location: Waynesville, Haywood Co., NC

Job No.: 562114047 Sample Method: Direct Push

AMEC Rep: Troy Holzschuh Drilling Method: Direct Push

Drilling Company: SAEDACCO Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

		_	
Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	ğ .
0 - 0.5			Asphalt
0.5 - 6	0		Tan/orange micaceous SILT
6 - 7	0		Orange/white/tan micaceous SILT
7 - 10	0.2		Orange/brown micaceous SILT
10 - 12	0		Brown SILT with orange blebs
12 - 13	0		Brown micaceous SILT
13 - 14.5	0		Brown micaceous SILT with orange and white blebs
			Western and 4 El
			Water at 14.5'
		WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Diameter:			Outer Casing Interval:
Total Depth:			Outer Casing Diameter:
Screen Interval	:		Bentonite Interval:
Sand Interval:			Slot Size:
O			



Boring/Well No.: S2-SB3
Site Name: David J. Sutton Property

Date: 8-25-09
Location: Waynesville, Haywood Co., NC

Job No.: 562114047
Sample Method: Direct Push

AMEC Rep: Troy Holzschuh
Drilling Company: SAEDACCO
Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	ğ .
0 - 0.5			Asphalt
0.5 - 1			Brown micaceous SILT
1 - 6	0		Brown/orange micaceous SILT
6 -8	0		Brown micaceous SILT
8 - 10	0		Gray/tan clayey micaceous SILT
10 - 12	0		Brown/orange micaceous SILT
12 - 13	0		White SAND
13 - 17	0		Brown micaceous SILT
			Water at 17'
/ell Type/Diar	meter:	WELL CONS	TRUCTION DETAILS (If Applicable) Outer Casing Interval:
otal Depth:	neter.		Outer Casing Interval: Outer Casing Diameter:
creen Interva	l·		Bentonite Interval:
	1.		
and Interval:			Slot Size:



Boring/Well No.: S2-SB4 Site Name: David J. Sutton Property

Date: 8-25-09 Location: Waynesville, Haywood Co., NC

Job No.: 562114047 Sample Method: Direct Push

AMEC Rep: Troy Holzschuh Drilling Method: Direct Push

Drilling Company: SAEDACCO Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	•
0 - 0.5			Asphalt
0.5 - 1	0		Brown micaceous SILT
1 - 5	0		Brown/tan/orange clayey SILT, micaceous
5 - 6	0		Pink SAND
6 - 6.5	0		White SAND
6.5 - 10	0		Tan micaceous SILT
10 - 14.5	0		Tan micaceous SILT with PWR
14.5 - 17			Brown SILT
			Water at 17'
		WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Dian	neter:		Outer Casing Interval:
Total Depth:			Outer Casing Diameter:
Screen Interval	:		Bentonite Interval:
Sand Interval:			Slot Size:
0	-		



Boring/Well No.: S2-SB5 Site Name: David J. Sutton Property

Date: 8-25-09 Location: Waynesville, Haywood Co., NC

Job No.: 562114047 Sample Method: Direct Push

AMEC Rep: Troy Holzschuh Drilling Method: Direct Push

Drilling Company: SAEDACCO Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	• .
0 - 0.5			Asphalt
0.5 - 7	1.3		Tan/orange micaceous SILT (possible fill)
7 - 14	27		Tan SILT with orange blebs
14 - 15	1551		White SAND mixed with tan SILT
15 - 18	1364		Tan micaceous SILT with medium-grained quartz
			Water at 18'
		WELL CONS	 TRUCTION DETAILS (If Applicable)
Vell Type/Diar	neter:		Outer Casing Interval:
otal Depth:			Outer Casing Diameter:
Screen Interva	l:		Bentonite Interval:
Sand Interval:			Slot Size:



	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: SAEDACCO	Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	ğ .
0 - 0.5			Asphalt
0.5 - 11	0		Tan micaceous SILT
11 - 13	2.3		Red micaceous SILT
13 - 15	32.2		Gray micaceous SILT
			Water at 15'
Well Type/Diar	WELL CONS  Well Type/Diameter:		TRUCTION DETAILS (If Applicable) Outer Casing Interval:
Total Depth:			Outer Casing Diameter:
Screen Interva	l:		Bentonite Interval:
Sand Interval:			Slot Size:



Boring/Well No.: S2-SB7	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: SAEDACCO	Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts		
0 - 0.5			Asphalt	
0.5 - 6	0		Red clayey SILT, micaceous	
6 - 10	0		Tan micaceous SILT	
10 - 16	46.5		Tan micaceous SILT with white blebs	
			Water at 16'	
MA-II To a /D:	1	WELL CONS	TRUCTION DETAILS (If Applicable)	
Well Type/Dian Total Depth:	neter:		Outer Casing Interval: Outer Casing Diameter:	
Screen Interval	:		Bentonite Interval:	
Sand Interval:			Slot Size:	



Boring/Well No.: S2-SB8
Site Name: David J. Sutton Property

Date: 8-25-09
Location: Waynesville, Haywood Co., NC

Job No.: 562114047
Sample Method: Direct Push

AMEC Rep: Troy Holzschuh
Drilling Company: SAEDACCO
Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	•	
0 - 0.5			Asphalt	
0.5 - 1			Tan micaceous SILT	
1 - 10	2.7		Red clayey SILT, micaceous	
10 - 12	14		Tan clayey SILT, micaceous	
			Water at 12'	
		WELL CONO.	TOUCTION DETAILS (If Applies his)	
Moll Tyra /Dia	notori	WELL CONS	TRUCTION DETAILS (If Applicable)	
Well Type/Dian	neter:		Outer Casing Interval:	
Total Depth:			Outer Casing Diameter:	
Screen Interval	l <b>:</b>		Bentonite Interval:	
Sand Interval:			Slot Size:	



Boring/Well No.: S2-SB9
Site Name: David J. Sutton Property

Date: 8-25-09
Location: Waynesville, Haywood Co., NC

Job No.: 562114047
Sample Method: Direct Push

AMEC Rep: Troy Holzschuh
Drilling Company: SAEDACCO
Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	· ·
0 - 0.5			Asphalt
0.5 - 1	22		Red clayey SILT, micaceous
1 - 2	54		Brown clayey SILT, micaceous
2 - 10	1,750		Red clayey SILT, micaceous
10 - 14	1394		Tan micaceous SILT
			Water at 14'
		WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Diameter:			Outer Casing Interval:
otal Depth:			Outer Casing Diameter:
creen Interva	l:		Bentonite Interval:
Sand Interval:			Slot Size:
Sand Interval:			olot olze.



Boring/Well No.: S2-SB10	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: SAEDACCO	Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	Soil/Lithologic Description	
0 - 0.5			Asphalt	
0.5 - 1	0		Tan micaceous SILT	
1 - 7	1.1		Brown/orange silty CLAY	
7 - 16	30.3		Tan micaceous SILT with yellow blebs	
			Water at 16'	
	_			
		WELL CONS	TRUCTION DETAILS (If Applicable)	
Well Type/Dian	neter:		Outer Casing Interval:	
Total Depth:			Outer Casing Diameter:	
Screen Interval	l:		Bentonite Interval:	
Sand Interval:			Slot Size:	



Boring/Well No.: S2-SB11 Site Name: David J. Sutton Property

Date: 8-25-09 Location: Waynesville, Haywood Co., NC

Job No.: 562114047 Sample Method: Direct Push

AMEC Rep: Troy Holzschuh Drilling Method: Direct Push

Drilling Company: SAEDACCO Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	ğ .
0 - 0.5			Asphalt
0.5 - 1	1.1		Tan micaceous SILT
1 - 4	3.2		Orange/brown silty CLAY
4 - 7	34.8		Brown clayey SILT, micaceous
9 - 11	31.2		Tan clayey SILT, micaceous
11 - 12	14.5		Black sandy SILT
12 - 14	4.3		White sandy SILT
14 - 16	2.5		Tan sandy SILT
			Water at 16'
			Tracer de 10
		MELL CONS.	TRUCTION DETAILS (If Applicable)
/ell Type/Dier	neter:	AAETT COM2	
Well Type/Diameter:			Outer Casing Interval:
otal Depth: creen Interva			Outer Casing Diameter: Bentonite Interval:
	l.		
Sand Interval:			Slot Size:



## AMEC Earth & Environmental, Inc. BORING LOG

Boring/Well No.: S2-SB12	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: SAEDACCO	Driller Name/Cert #: Keith Speece - 2856

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Soil/Lithologic Description	
0 - 0.5			Asphalt
0.5 - 5			Orange/brown micaceous SILT
5 - 9			Brown/gray micaceous SILT
9 - 15			Tan/Red clayey SILT, micaceous
			Water at 15'
		+	
		+	
		1	
		1	
		1	
		ļ	
		1	
		1	
		WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Dian	neter:		Outer Casing Interval:
Total Depth:			Outer Casing Diameter:
Screen Interval	:		Bentonite Interval:
Sand Interval:			Slot Size:

Static Water Level:



# AMEC Earth & Environmental, Inc. BORING LOG

Boring/Well No.: S2-MW1	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: NA
AMEC Rep: Troy Holzschuh	Drilling Method: Air Rotary
Drilling Company: SAEDACCO	Driller Name/Cert #: Robert Miller - 2675

Remarks:

Bent Chips Interval: 0-24

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	Ç .
0 - 0.5			Asphalt
0.5 - 7			Tan/orange micaceous SILT (possible fill)
7 - 14			Tan SILT with orange blebs
14 - 15			White SAND mixed with tan SILT
15 - 30			Tan micaceous SILT with medium-grained quartz and orange blebs
30-37			Partially Weathered Rock
			Water at 18'
		WELL CON	STRUCTION DETAILS (If Applicable)
Well Type/Diar	neter: 1-inch	WLLL CON	Outer Casing Interval: none
Total Depth: 37			Outer Casing Interval. Hone Outer Casing Diameter: none
Screen Interva			Grout Interval: none
Sand Interval:2			Slot Size: 0.010-inch
Janu interval.2	. <del>1</del> -01.0		SIOL SIZE. U.U 1U-IIICH

Static Water Level: 16.82 ft bgs



# AMEC Earth & Environmental, Inc. BORING LOG

Boring/Well No.: S2-MW2	Site Name: David J. Sutton Property
Date: 8-25-09	Location: Waynesville, Haywood Co., NC
Job No.: 562114047	Sample Method: NA
AMEC Rep: Troy Holzschuh	Drilling Method: Air Rotary
Drilling Company: SAEDACCO	Driller Name/Cert #: Robert Miller - 2675

Remarks:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	
0 - 10			Cobbles/Rock
10-029			Tan/orange micaceous SILT
		1	
		1	
		+	
		+	
		+	
		+	
	<u> </u>	WELL CON	STRUCTION DETAILS (If Applicable)
Well Type/Diar	neter: 1-inch	TILLE CON	Outer Casing Interval: none
Total Depth: 29	9 ft		Outer Casing Diameter: none
Screen Interva	l: 19-29		Grout Interval: none
Sand Interval:			Slot Size: 0.010-inch
Bent Chips Inte			Static Water Level: 18.56 ft bgs

## Appendix 3 Laboratory Analytical Results

## **Case Narrative**



Date:

09/11/09

Company: N. C. Department of Transportation

Contact:

Helen Corley

Address: c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

**Client Project ID:** 

NCDOT: Haywood County

to be Robb, Jones

**Prism COC Group No:** 

G0809708 08/25/09

Collection Date(s): Lab Submittal Date(s):

08/27/09

Client Project Name Or No:

WBS #34599.1.1

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 24 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

Sample 256232-1 was re-extracted for DRO on 9/10/09.

#### **Volatile Analysis**

No Anomalies Reported

#### **Metals Analysis**

N/A

#### Wet Lab and Micro Analysis

N/A

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

Data Reviewed by:

Steven H. Guptill

**Project Manager:** 

**Approval Date:** 

Signature:

Signature:

09/11/09

**Review Date:** 

09/11/09

#### **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.

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S1-1 (6-10.5)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256220

Sample Matrix: Soil

COC Group: Time Collected: G0809708

08/25/09 11:45

Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	72.6	%			1	SM2540 G	08/31/09 14:30	) kpowers	
<u>Diesel Range Organics (DRO) by G</u> Diesel Range Organics (DRO)	<u>C-FID</u> 30	mg/kg	9.6	1.6	1	8015B	09/04/09 0:40	pbarr	Q44301
Sample Preparation:			2	5.2 g	/ 1 mL	3545	09/02/09 16:0	) pbarr	P25490
					Surrogate	•	% Recover	y Cor	ntrol Limits
					o-Terphen	yl	89		49 - 124
Sample Weight Determination Weight 1	5.86	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	6.34	g			1	GRO	08/31/09 0:00	lbrown	
Gasoline Range Organics (GRO) b Gasoline Range Organics (GRO)	y <u>GC-FID</u> BRL	mg/kg	6.9	4.3	50	8015B	09/02/09 18:2	4 grappacciol	i Q44245
					Surrogate	e	% Recove	ry Co	ntrol Limits
					aaa-TFT		102		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S2-1 (7-10)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256221

Sample Matrix: Soil

COC Group:

G0809708 12:10

Time Collected:

08/25/09

Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysi Date/Tir		Analyst	Batch ID
Percent Solids Determination Percent Solids	73.2	%			1	SM2540 G	08/31/09	14:30	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	C <u>-FID</u> BRL	mg/kg	9.6	1.5	1	8015B	09/03/09	21:07	pbarr	Q44301
Sample Preparation:			25	.27 g	1 mL	3545	09/02/09	16:00	pbarr	P25490
					Surrogate	<b>:</b>	% Red	covery	Cor	trol Limits
					o-Terphen	yl		53		49 - 124
Sample Weight Determination Weight 1	6.34	g			1	GRO	08/31/09	0:00	lbrown	
Weight 2	5.86	g			1	GRO	08/31/09	0:00	lbrown	
Gasoline Range Organics (GRO) by					-	00450	00/00/00	40.57		044045
Gasoline Range Organics (GRO)	BRL	mg/kg	6.8	4.3	50	8015B	09/02/09	18:57	grappaccioli	Q44245
					Surrogate	•	% Re	covery	, Coi	ntrol Limits
					aaa-TFT			103		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

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S3-1 (6-8)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256222

Sample Matrix: Soil

COC Group:

G0809708 08/25/09 13:55

Time Collected: Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	70.9	%			1	SM2540 G	08/31/09 14:30	kpowers	
Diesel Range Organics (DRO) by G		// - <b>-</b>	9.9	1.6	1	8015B	09/04/09 19:16	ivogel	Q44343
Diesel Range Organics (DRO)	BRL	mg/kg	9.9	1.0	'	00100	00/0-1/00 10.10	,	Ψ
Sample Preparation:				25 g	1 mL	3545	09/03/09 17:00	pbarr	P25500
					Surrogate	•	% Recovery	Con	trol Limits
					o-Terphen	yl	68		49 - 124
Sample Weight Determination									
Weight 1	6.06	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	5.63	g			1	GRO	08/31/09 0:00	Ibrown	
Gasoline Range Organics (GRO) by	y GC-FID								
Gasoline Range Organics (GRO)	BRL	mg/kg	7.1	4.4	50	8015B	09/02/09 19:29	grappaccioli	Q4424
					Surrogate	e	% Recover	, Cor	itrol Limits
					aaa-TFT		113		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S4-1 (1-5)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256223

Sample Matrix: Soil

COC Group:

G0809708

Time Collected:

08/25/09 14:20

13:00

Time Submitted: 08/27/09

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	70.2	%			1	SM2540 G	08/31/09 15:00	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	C-FID BRL	mg/kg	10	1.6	1	8015B	09/04/09 19:16	jvogel	Q44343
Sample Preparation:				25 g /	1 mL	3545	09/03/09 17:00	pbarr	P25500
					Surrogate	ı	% Recovery	Con	trol Limits
					o-Terphen	yl	64		49 - 124
Sample Weight Determination Weight 1	6.57	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	5.82	g			1	GRO	08/31/09 0:00	Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	GC-FID BRL	mg/kg	7.1	4.5	50	8015B	09/02/09 20:02	grappaccioli	Q44245
					Surrogate	)	% Recovery	Con	itrol Limits
					aaa-TFT		116		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S5-1 (14-15)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256224

Sample Matrix: Soil

COC Group: Time Collected: G0809708 15:00

08/25/09

13:00

			_
Time	Submitted	:	C

08/27/09

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysi Date/Tim		Analyst	Batch ID
Percent Solids Determination Percent Solids	73.0	%			1	SM2540 G	08/31/09	15:00	kpowers	
T GIOSIN GOING										
Diesel Range Organics (DRO) by GO	C-FID									
Diesel Range Organics (DRO)	BRL	mg/kg	9.6	1.5	1	8015B	09/04/09	18:41	jvogel	Q44343
Sample Preparation:			:	25.1 g	1 mL	3545	09/03/09	17:00	pbarr	P25500
					Surrogate	•	% Rec	overy	Cont	rol Limits
					o-Terphen	ıyl		65		49 - 124
Sample Weight Determination							00/04/00			
Weight 1	6.26	g			1	GRO	08/31/09	0:00	Ibrown	
Weight 2	6.88	g			1	GRO	08/31/09	0:00	Ibrown	
Gasoline Range Organics (GRO) by	GC-FID									
Gasoline Range Organics (GRO)	63	mg/kg	6.8	4.3	50	8015B	09/02/09	20:35	grappaccioli	Q44245
					Surrogate	e	% Red	coverv	, Con	trol Limits
					aaa-TFT			104		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S5-2 (7-14)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256225

Sample Matrix: Soil

COC Group:

G0809708

Time Collected:

08/25/09 15:10

Ti

ime Submitted: 06/27/09 13.00	ime	Submitted:	08/27/09	13:00
-------------------------------	-----	------------	----------	-------

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	78.4	%			1	SM2540 G	08/31/09 15:00	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	C <u>-FID</u> BRL	mg/kg	8.9	1.4	1	8015B	09/04/09 19:16	i jvogel	Q44343
Sample Preparation:			25	.06 g	/ 1 mL	3545	09/03/09 17:00	) pbarr	P25500
					Surrogate	<b>:</b>	% Recover	у Соі	ntrol Limits
					o-Terphen	yl	70		49 - 124
Sample Weight Determination Weight 1	6.81	g			1	GRO	08/31/09 0:00	Ibrown	
Weight 2	6.67	g			1	GRO	08/31/09 0:00	Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	GC-FID BRL	mg/kg	6.4	4.0	50	8015B	09/02/09 21:0	7 grappacciol	i Q44245
					Surrogate	•	% Recover	y Co	ntrol Limits
					aaa-TFT		118		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID: Project No.: NCDOT: Haywood County Client Sample ID: S2-S6-1 (13-14)

WBS #34599.1.1

Prism Sample ID: 256226

Sample Matrix: Soil

COC Group:

G0809708

Time Collected:

08/25/09 15:30

Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Tim		Analyst	Batch ID
Percent Solids Determination Percent Solids	69.4	%			1	SM2540 G	08/31/09 1	15:00	kpowers	
Diesel Range Organics (DRO) by Go	C-FID BRL	mg/kg	10	1.6	1	8015B	09/05/09 3	3:31	jvogel	Q44343
Sample Preparation:	2112	99	25	i.11 g	/ 1 mL	3545	09/03/09	17:00	pbarr	P25500
					Surrogate	•	% Rec	overy	Соі	ntrol Limits
					o-Terphen	yl		71		49 - 124
Sample Weight Determination Weight 1	6.46	g			1	GRO	08/31/09(	0:00	Ibrown	
Weight 2	6.67	g			1	GRO	08/31/09(	00:00	Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	<u>/ GC-FID</u> 16	mg/kg	7.2	4.5	50	8015B	09/02/09 2	21:39	grappacciol	i Q44245
					Surrogate	e	% Rec	overy	Co	ntrol Limits
					aaa-TFT			108		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S6-2 (7-11)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256227

Sample Matrix: Soil

COC Group:

G0809708

Time Collected:

08/25/09 15:40

Гіте	Submitted:	08/27/09	13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	71.4	%			1	SM2540 G	08/31/09 15:00	kpowers	
Diesel Range Organics (DRO) by GO Diesel Range Organics (DRO)	:-FID BRL	mg/kg	9.8	1.6	1	8015B	09/04/09 19:51	jvogel	Q44343
Sample Preparation:	DILL	g/Ng		25 g	/ 1 mL	3545	09/03/09 17:00	pbarr	P25500
					Surrogate	•	% Recovery	, Con	trol Limits
					o-Terphen	yl	61	,	49 - 124
Sample Weight Determination									
Weight 1	5.76	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	5.24	g			1	GRO	08/31/09 0:00	lbrown	
Gasoline Range Organics (GRO) by	GC-FID	•							
Gasoline Range Organics (GRO)	BRL	mg/kg	7.0	4.4	50	8015B	09/02/09 22:12	grappaccioli	Q44245
					Surrogate	e	% Recover	y Con	trol Limits
					aaa-TFT		117		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S7-1 (10-16)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256228

Sample Matrix: Soil

COC Group:

G0809708

Time Collected:

08/25/09 16:00

Ti

me Submitted:	08/27/09	13:00
me Submitted.	00/2//03	10.00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	79.0	%			1	SM2540 G	08/31/09 15:00	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	C-FID BRL	mg/kg	8.8	1.4	1	8015B	09/04/09 20:27	jvogel	Q44343
Sample Preparation:			25	.09 g	/ 1 mL	3545	09/03/09 17:00	pbarr	P25500
					Surrogate	•	% Recovery	, Coi	ntrol Limits
					o-Terphen	yl	74		49 - 124
Sample Weight Determination Weight 1	6.12	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	6.44	g			1	GRO	08/31/09 0:00	lbrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	<u>GC-FID</u> BRL	mg/kg	6.3	4.0	50	8015B	09/02/09 22:44	grappaccio	i Q44245
					Surrogate	e	% Recover	y Co	ntrol Limits
					aaa-TFT		111		55 - 129

#### Sample Comment(s):

BRL = Below Reporting Limit

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

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

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S7-2 (6-10)

Project No.:

Sample Matrix: Soil

WBS #34599.1.1

Prism Sample ID: 256229

COC Group:

G0809708

Time Collected:

16:10

Time Submitted: 08/27/09

08/25/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	68.2	%			1	SM2540 G	08/31/09 15:00	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	C-FID BRL	mg/kg	10	1.7	1	8015B	09/05/09 4:42	jvogel	Q44343
Sample Preparation:				25 g	/ 1 mL	3545	09/03/09 17:00	) pbarr	P25500
					Surrogate		% Recovery	y Con	trol Limits
					o-Terphen	yl	68		49 - 124
Sample Weight Determination Weight 1	6.95	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	6.67	g			1	GRO	08/31/09 0:00	Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	GC-FID BRL	mg/kg	7.3	4.6	50	8015B	09/02/09 23:16	3 grappaccioli	Q44245
					Surrogate	•	% Recover	y Con	trol Limits
					aaa-TFT		117		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S8-10 (10-11)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256230

Sample Matrix: Soil

COC Group:

G0809708 16:20

Time Collected: 08/25/09

Time Submitted: 08/27/09 13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	71.1	%			1	SM2540 G	08/31/09 15:00	kpowers	
Diesel Range Organics (DRO) by G Diesel Range Organics (DRO)	<u>C-FID</u> BRL	mg/kg	9.8	1.6	1	8015B	09/04/09 21:02	jvogel	Q44343
Sample Preparation:				25 g	/ 1 mL	3545	09/03/09 17:00	pbarr	P25500
					Surrogate	•	% Recovery	, Con	trol Limits
					o-Terpher	ıyl	62		49 - 124
Sample Weight Determination Weight 1	6.20	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	6.77	g			1	GRO	08/31/09 0:00	Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	y GC-FID BRL	mg/kg	7.0	4.4	50	8015B	09/03/09 0:53	grappaccioli	Q44245
					Surrogate	е	% Recover	y Cor	ntrol Limits
					aaa-TFT		114		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

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S8-2 (1-10)

Project No.:

WBS #34599.1.1

COC Group:

Prism Sample ID: 256231 G0809708

Sample Matrix: Soil

Time Collected:

08/25/09 16:30

T

Γime	Submitted:	08/27/09	13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analys Date/Tir		Analyst	Batch ID
Percent Solids Determination Percent Solids	65.4	%			1	SM2540 G	08/31/09	15:00	kpowers	
Diesel Range Organics (DRO) by G	GC-FID									
Diesel Range Organics (DRO)	BRL	mg/kg	11	1.7	1	8015B	09/04/09	21:37	jvogel	Q44343
Sample Preparation:			25	.16 g	/ 1 mL	3545	09/03/09	17:00	pbarr	P25500
					Surrogate	•	% Re	covery	Cont	rol Limits
					o-Terphen	ıyl		58		9 - 124
Sample Weight Determination	0.05				1	GRO	08/31/09	0.00	lbrown	
Weight 1	6.85	g								
Weight 2	6.63	g			1	GRO	08/31/09	0:00	Ibrown	
Gasoline Range Organics (GRO) b	y GC-FID									
Gasoline Range Organics (GRO)	BRL	mg/kg	7.6	4.8	50	8015B	09/03/09	1:26	grappaccioli	Q44245
					Surrogate	9	% Re	covery	y Cont	rol Limits
					aaa-TFT			117	5	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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S9-1 (7-9)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256232

Sample Matrix: Soil

COC Group: Time Collected: G0809708

08/25/09 16:50

Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	77.2	%			1	SM2540 G	08/31/09 15:00	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	<u>:-FID</u> BRL	mg/kg	9.1	1.5	1	8015B	09/04/09 23:58	jvogel	Q44343
Sample Preparation:				25 g	/ 1 mL	3545	09/03/09 17:00	pbarr	P25500
•					Surrogate	e	% Recovery	Cor	trol Limits
					o-Terpher	ıyl	64		49 - 124
Sample Weight Determination Weight 1	6.01	g			1	GRO	08/31/09 0:00	Ibrown	
Weight 2	6.32	g			1	GRO	08/31/09 0:00	lbrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	GC-FID 1800	mg/kg	65	41	500	8015B	09/03/09 13:32	grappacciol	i Q44245
					Surrogat	e	% Recovery	, Coi	ntrol Limits
					aaa-TFT		DO ;	<del>‡</del>	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

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID: Project No.:

Sample Matrix: Soil

NCDOT: Haywood County Client Sample ID: S2-S9-1 (7-9) Aliquot

for DRO Reanalysis

16:50

13:00

Page 14 of 21

COC Group:

Prism Sample ID: 256232-1

Time Collected:

G0809708

08/25/09

Time Submitted: 08/27/09

Ailquoted Sampl 256232

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics (DRO) by G Diesel Range Organics (DRO)	<u>C-FID</u> 210	mg/kg	7.0	1.1	5	8015B	09/11/09 11:53	vogel	Q44465
Sample was extracted paragrams Sample Preparation:	ast holdi	ng time		25 g	/ 1 mL	3545	09/10/09 16:00	aguptill	P25546
					Surrogate		% Recovery	Cont	rol Limits
					o-Terphen	γl	60	4	9 - 124

WBS #34599.1.1

#### 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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S9-2 (1-2)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256233

Sample Matrix: Soil

COC Group:

G0809708 17:00

Time Collected:

08/25/09

13:00

Time Submitted:	08/27/09	1

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysi Date/Tin		Analyst	Batch ID
Percent Solids Determination Percent Solids	81.0	%			1	SM2540 G	08/31/09	15:00	kpowers	
Diesel Range Organics (DRO) by Go	C-FID									
Diesel Range Organics (DRO)	95	mg/kg	8.6	1.4	1	8015B	09/05/09	1:10	jvogel	Q44343
Sample Preparation:				25 g	/ 1 mL	3545	09/03/09	17:00	pbarr	P25500
					Surrogate	<b>.</b>	% Red	covery	, Con	trol Limits
					o-Terphen	yl		68		49 - 124
Sample Weight Determination						000	00/04/00	0.00	llerouse	
Weight 1	6.74	g			1	GRO	08/31/09		lbrown	
Weight 2	8.10	g			1	GRO	08/31/09	0:00	lbrown	
Gasoline Range Organics (GRO) by	GC-FID									
Gasoline Range Organics (GRO)	65	mg/kg	6.2	3.9	50	8015B	09/03/09	2:30	grappaccioli	Q44245
					Surrogate	e	% Re	cover	y Con	trol Limits
					aaa-TFT			100		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S10-1 (7-9)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256234

Sample Matrix: Soil

COC Group: Time Collected:

G0809708 08/25/09 17:20

Time Submitted: 08/27/09 13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Tim		Analyst	Batch ID
Percent Solids Determination Percent Solids	80.0	%			1	SM2540 G	08/31/09 1	15:00	kpowers	
<u>Diesel Range Organics (DRO) by GO</u> Diesel Range Organics (DRO)	:-FID BRL	mg/kg	8.7	1.4	1	8015B	09/04/09 2	22:48	jvogel	Q44343
Sample Preparation:			25	5.05 g /	1 mL	3545	09/03/09	17:00	pbarr	P25500
					Surrogate	<b>.</b>	% Rec	overy	Conti	ol Limits
					o-Terphen	yl		68	4	9 - 124
Sample Weight Determination Weight 1	6.08	g			1	GRO	08/31/09	0:00	Ibrown	
Weight 2	6.40	g			1	GRO	08/31/09	0:00	Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	GC-FID BRL	mg/kg	6.3	3.9	50	8015B	09/03/09	3:02	grappaccioli	Q44245
Casonine range organise (orte)	2	99								
					Surrogate	e	% Rec	overy	Cont	rol Limits
					aaa-TFT		•	116	5	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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S10-2 (3-5)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256235

Sample Matrix: Soil

COC Group:

G0809708

Time Collected:

08/25/09

Time Submitted: 08/27/09

17:30 13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	82.1	%			1	SM2540 G	08/31/09 15:00	) kpowers	
<u>Diesel Range Organics (DRO) by Go</u> Diesel Range Organics (DRO)	C-FID BRL	mg/kg	8.5	1.4	1	8015B	09/04/09 23:2	3 jvogel	Q44343
Sample Preparation:			25	.02 g	/ 1 mL	3545	09/03/09 17:0	0 pbarr	P25500
					Surrogate	<b>.</b>	% Recove	y Cor	ntrol Limits
					o-Terphen	yl	71		49 - 124
Sample Weight Determination Weight 1	6.84	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	6.31	g			1	GRO	08/31/09 0:00	lbrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	<u>/ GC-FID</u> BRL	mg/kg	6.1	3.8	50	8015B	09/03/09 3:35	grappacciol	i Q44245
					Surrogate	e	% Recove	ry Coi	ntrol Limits
					aaa-TFT		116		55 - 129

## Sample Comment(s):

BRL = Below Reporting Limit

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

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S11-1 (4-7)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256236

Sample Matrix: Soil

COC Group:

G0809708 18:00

Time Collected:

08/25/09

Time Submitted:

08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Tim		Analyst	Batch ID
Percent Solids Determination Percent Solids	76.6	%			1	SM2540 G	08/31/09 1	5:00	kpowers	
<u>Diesel Range Organics (DRO) by Go</u> Diesel Range Organics (DRO)	C-FID BRL	mg/kg	9.1	1.5	1	8015B	09/05/09 2	2:20	jvogel	Q44343
Sample Preparation:				25 g	/ 1 mL	3545	09/03/09	17:00	pbarr	P25500
					Surrogate	)	% Rec	overy	Cont	rol Limits
					o-Terphen	yl	-	56		19 - 124
Sample Weight Determination Weight 1	6.64	g			1	GRO	08/31/09(	0:00	lbrown	
Weight 2	6.87	g			1	GRO	08/31/09	0:00	lbrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	<u>/ GC-FID</u> BRL	mg/kg	6.5	4.1	50	8015B	09/03/09	4:07	grappaccioli	Q44245
					Surrogate	e	% Rec	overy	Con	trol Limits
					aaa-TFT			92		55 - 129

## Sample Comment(s):

BRL = Below Reporting Limit

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

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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S11-2 (2-4)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256237

Sample Matrix: Soil

G0809708

COC Group: Time Collected:

08/25/09 18:10

Time Submitted: 08/27/09

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analys	Batch ID
Percent Solids Determination Percent Solids	77.7	%			1	SM2540 G	08/31/09 15:0	0 kpowers	
Diesel Range Organics (DRO) by G	C-FID								
Diesel Range Organics (DRO)	BRL	mg/kg	9.0	1.4	1	8015B	09/05/09 5:17	jvogel	Q44343
Sample Preparation:			25	.11 g /	1 mL	3545	09/03/09 17:0	0 pbarr	P25500
					Surrogate	•	% Recove	ry Co	ntrol Limits
					o-Terphen	yl	64		49 - 124
Sample Weight Determination						000	00/04/00 0.00	. He was a se	
Weight 1	6.74	g			1	GRO	08/31/09 0:00	Ibrown	
Weight 2	6.76	g			1	GRO	08/31/09 0:00	Ibrown	
Gasoline Range Organics (GRO) by	y GC-FID								
Gasoline Range Organics (GRO)	BRL	mg/kg	6.4	4.0	50	8015B	09/07/09 15:1	2 grappaccio	li Q44324
					Surrogate	e	% Recove	ry Co	ntrol Limits
					aaa-TFT		83		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S12-1 (4-5)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256238

Sample Matrix: Soil

COC Group: Time Collected:

G0809708 08/25/09 18:25

Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination Percent Solids	78.4	%			1	SM2540 G	08/31/09 15:00	kpowers	
<u>Diesel Range Organics (DRO) by Go</u> Diesel Range Organics (DRO)	C-FID BRL	mg/kg	8.9	1.4	1	8015B	09/05/09 1:45	jvogel	Q44343
Sample Preparation:	DAL	g/Ng		25 g	/ 1 mL	3545	09/03/09 17:00	pbarr	P25500
					Surrogate	<b>.</b>	% Recovery	Cont	trol Limits
					o-Terphen	yl	59	•	49 - 124
Sample Weight Determination Weight 1	6.63	g			1	GRO	08/31/09 0:00	lbrown	
Weight 2	6.58	g			1	GRO	08/31/09 0:00	lbrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	<u>/ GC-FID</u> BRL	mg/kg	6.4	4.0	50	8015B	09/07/09 15:44	grappaccioli	Q44324
					Surrogate	•	% Recover	y Con	trol Limits
					aaa-TFT		88		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



## **Laboratory Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-S12-2 (5-9)

Project No.:

WBS #34599.1.1

Prism Sample ID: 256239

Sample Matrix: Soil

COC Group:

G0809708 18:30

Time Collected:

08/25/09

Time Submitted: 08/27/09

13:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analys	t Batch ID
Percent Solids Determination Percent Solids	77.5	%			1	SM2540 G	08/31/09 15:0	0 kpowers	
Diesel Range Organics (DRO) by Go	C-FID BRL	mg/kg	9.0	1.5	1	8015B	09/04/09 22:	2 jvogel	Q44343
Sample Preparation:				25 g	/ 1 mL	3545	09/03/09 17:	00 pbarr	P25500
					Surrogate	•	% Recove	ery Co	ntrol Limits
					o-Terphen	yl	75		49 - 124
Sample Weight Determination Weight 1	6.32	g			1	GRO	08/31/09 0:0	) lbrown	
Weight 2	7.21	g			1	GRO	08/31/09 0:00	) Ibrown	
Gasoline Range Organics (GRO) by Gasoline Range Organics (GRO)	<u>/ GC-FID</u> BRL	mg/kg	6.5	4.0	50	8015B	09/07/09 16:	17 grappaccic	ıli Q44324
					Surrogate	e	% Recov	ery Co	ontrol Limits
					aaa-TFT		85		55 - 129

#### Sample Comment(s):

BRL = Below Reporting Limit

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

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



## **Level II QC Report**

09/11/09

N. C. Department of Transportation

Attn: Helen Corley Project No.:

NCDOT: Haywood County Project ID:

COC Group Number: G0809708

c/o AMEC Earth & Environmental, Inc. 101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Date/Time Submitted: 08/27/09 13:00 WBS #34599.1.1

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

Method Blank									QC Batch
	Result	RL	Control Limit	Units					ID
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg					Q44245
Laboratory Control Sample	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
Gasoline Range Organics (GRO)	47.95	50		mg/kg	96	67-116			Q44245
Matrix Spike					Recovery	Recovery Ranges			QC Batch
Sample ID:	Result	Spike Amour	nt	Units	%	%			ID
256220 Gasoline Range Organics (GRO)	52.75	50		mg/kg	106	57-113			Q44245
Matrix Spike Duplicate			,,		Recovery	Recovery Ranges	RPD	RPD Range	QC Batch
Sample ID:	Result	Spike Amour	nt	Units	%	%	%	%	ID
256220 Gasoline Range Organics (GRO)	53.45	50		mg/kg	107	57-113	1	0 - 23	Q44245

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

Method Blank	Result	RL	Control Limit	Units					QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg					Q44301
Laboratory Control Sample	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
Diesel Range Organics (DRO)	81.9	80		mg/kg	102	55-109			Q44301
Matrix Spike Sample ID:	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
256492 Diesel Range Organics (DRO)	64.6	80		mg/kg	81	50-117			Q44301
Matrix Spike Duplicate Sample ID:	Result	Spike Amou	nt	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
256492 Diesel Range Organics (DRO)	62.2	80		mg/kg	78	50-117	4	0 - 24	Q44301

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

Page 1 of 2



## **Level II QC Report**

09/11/09

N. C. Department of Transportation

Project ID:

NCDOT: Haywood County

COC Group Number: G0809708

Attn: Helen Corley

Project No.:

WBS #34599.1.1

Date/Time Submitted: 08/27/09 13:00

c/o AMEC Earth & Environmental, Inc. 101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

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

Method	d Blank	Result	RL	Control Limit	Units					QC Batch ID
	Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg	AMAAAAATTI				Q44324
Labora	tory Control Sample	Result	Spike Amoun	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
	Gasoline Range Organics (GRO)	51.75	50		mg/kg	104	67-116			Q44324
Matrix Sample I	•	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
256237	Gasoline Range Organics (GRO)	38.2	50		mg/kg	76	57-113			Q44324
Matrix Sample I	Spike Duplicate	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
256237	7 Gasoline Range Organics (GRO)	37.6	50		mg/kg	75	57-113	2	0 - 23	Q44324

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

Method Blank	Result	RL	Control Limit	Units					QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg					Q44343
Laboratory Control Sample	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
Diesel Range Organics (DRO)	72.4	80		mg/kg	91	55-109			Q44343
Matrix Spike Sample ID:	Result	Spike Amour	nt	Units	Recovery %	Recovery Ranges %			QC Batch ID
256235 Diesel Range Organics (DRO)	70.3	80		mg/kg	88	50-117			Q44343
Matrix Spike Duplicate Sample ID:	Result	Spike Amou	nt	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
256235 Diesel Range Organics (DRO)	75.3	80		mg/kg	94	50-117	7	0 - 24	Q44343

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

Method Blank	Result	RL	Control Limit	Units			QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg			Q44465
Laboratory Control Sample	Result	Spike Amount	t	Units	Recovery %	Recovery Ranges %	QC Batch ID
Diesel Range Organics (DRO)	70.9	80		mg/kg	89	55-109	Q44465

#-See Case Narrative

Page 2 of 2 Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

		Q U U
	Full-Service Analytical &	   
とりにしく	Environmental Solutions	PAGE C
LABORATORIES, INC.		Project Na
49 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543	0543 • Charlotte, NC 28224-0543	Short Hold

Ste Conductors: NC100 Phone: <u>となんらいろ39名</u> Fax (Yes) (No): Email (Xes) (No) Email Address <u>Yes にいいにない すがこし</u>らない 449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224 Phone: 704/529-6364 • Fax: 704/525-0409 Phone: 33/61-5398 Fax (Yes) (No): Report To/Contact Name: Client Company Name: \_\_ Reporting Address: 6 (OPMSbore

	Samples INTA	Received ON V	Beceived WIT	CUSTODY SE	VOLATILES re	PROPER CON
CHAIN OF CUSTODY RECORD	PAGE OF A QUOTE # TO ENSURE PROPER BILLING 345441	Project Name: Taywood County 1945	Short Hold Analysis: (Yes) (No) (ST Project: (Yes) (No)	*Please ATTACH any project specific reporting (QC LEVEL I II III IV)	provisions and/or QC Requirements	Invoice 10: Mary 13 Mary 10 1 Mary 10 1 Mary 10 Mary 1

2 3'd W/OUT HEADSPACE? SERVATIVES indicated? ST upon arrival? 3-b IIN HOLDING TIMES? TAINERS used? ALS INTACT?

LAB USE ONLY

Beforence WAS - 3454	MAC Strain Beforence WAC 3454411
5./Billing Reference W (8) □ 1 Day □ 2 Days □ 3 Days □ 6 0 Days □	Purchase Order No./Billing Reference W85 = 34544.1.1  Requested Due Date = 1 Day = 2 Days = 3 Days = 4 Days = 5 Days
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	Certification: NELACUSACEFLNC_	\ \ \ \ \ \
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, i	Water Chlorinated: YES NO	
	Sample Iced Upon Collection: YESNO	
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	PRISM	ID NO.	<b>3</b> 56330	<u>अन्ध्य</u> न	<b>विरिधवक्र</b>	<b>A</b> 56233	<b>३५६३५</b> म	296335	<b>अर्रहत्रत</b>	अध्यक्त	<b>अर्मस्वव</b>	<i>ે</i> ક્કિંગ્રચ્	- 3 COPIES	PDICH HEE ONLY	1510 5150	me:	-
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	MATRIX	WATER OR SLUDGE)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u> </u>						A CAMBRA		<b>\</b>	)	Sampled By	norization nere will be ch	Rece	^ _
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		CLIENI SAMPLE DESCRIPTION	30-4)1-12-12		ンペ	34-54-16-X	2.17.17.77	<b>!</b>	ا ا	(1) 1-96-76	) - r	3,4-5,1-10,10-16 (2,1-1)	24-21-4 (0-4	Sampler's Signature	Upon relinquishing, this submitted in writing to t	Relinquisped By: (Signature)	2 ~ Z

SEE REVERSE F TERMS & CONDIT ORIGINAL

ONC OSC ONC OSC

OTHER:

LANDFILL

CERCLA

RCRA:

SOLID WASTE:

DAINKING WATER:

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUST SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL.

Prism Field Service GROUNDWATER:

☐ Fed Ex ☐ UPS ☐ Hand-delivered

UST:

NPDES:

G084748

Site Departure Time:

Field Tech Fee.

13:00

Bate 8-12-09

COC Group No.

SALS FOR TRANSPORTATION TO THE LABORATORY. ED AT THE LABORATORY.

0121

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E15 8-26-19 12:40

Full-Service Analytica	Environmental Soluti	
	ろうこと	LABORATORIES, INC.

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

Report To/Contact Name: Client Company Name:

Phone: 336-641-5342 Fax (Yes) (No): 2740 Email (Xes) (No) Email Address Reporting Address: CS COPINS DOTO EDD Type: PD Site Location Site Location

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PAGE & OF & QUOTE # TO ENSURE PROPER BILLING: WBS 345444 Short Hold Analysis: (Yes) (No) 'UST Project: (Yes) (No \*Please ATTACH any project specific reporting (QC LEVEL I II III) Project Name: Haywood County

provisions and/or Q Jolnvoice To:

Requested Due Date □ 1 Dav □ 2 Davs □ 3 Davs □ 4 Davs □ 5 Davs Purchase Ord상 No./Billing Reference 34549년

x ;     	   	     	\   	     	     	
Received ON WET ICE? Temp 3.6	PROPER PRESERVATIVES indicated?	Received WITHIN HOLDING TIMES?	CUSTODY SEALS INTACT?	VOLATILES rec'd W/OUT HEADSPACE?	PROPER CONTAINERS used?	
•	_					

YES NO N/A

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

	SSS		Requested Due Date 🛚 1	Day □2 Days	□1 Day □2 Days □3 Days □4 Days □5 Days	Certification: NELACUSACEFL	NC NC
EDD Type: PDF Excel	Other	+	"Working Days" □ 6	-9 Days (Cstan	□ 6-9 Days (#Standard 10 days □ Pre-Approved	SCOTHERN/A	
Site Location Name:	Address: Site#		Samples received after 15:00 will be processed next busine Turnaround time is based on business days, excluding weel (SEE REVERSE FOR TERMS & CONDITIONS REGARDING: RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)	:00 will be proce on business day ERMS & CONDITI M LABORATORIE	o ∨ <b>o</b> o	Water Chlorinated: YESNO Sample Iced Upon Collection: YESNO	
1	TIME	MATRIX	SAMPLE CONTAINER	VINER		'SES REQUESTED	PRISM
RIPTION	<u> </u>	Šσ	*TYPE NO.	SIZE	TIVES CONT.	REMARKS	ID NO.
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Sampler's Signature	2 Mahaha	١,	Sampled By (Print Name)	1 7 vo	10/25Chulg Affiliation AM	F. PRESS DOWN FIRMLY - 3 COPIES	- 3 COPIES
Upon relinquishing, this Chay of Custod is your authorization for Prism to proceed with the analyses as requested above. A company in writing to the Prism Project Manager There will be charges for any changes after analyses have been initialized.	of Custody is your	authorization for	Prism to proceed with	the analyses after analyse	with the analyses as requested above. Any changes must be notes after analyses have been initialized.		PRISM USE ONLY
Relinquished By: (Signature)		Reck	Received By: (Signature)	1	Date	Military/Hours Additional Comments: Sitta Arrival Time:	mo:

Site Departure Time: Site Arrival Time: Field Tech Fee; Mileage:

8.27.9 13.00

COC Group No

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

Prism Laboratories By:

Received Fa

0821 POST 50

26/03

Relinquished By: (Signa

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921

0826UA

5 8-35-60 17:00

OTHER:

LANDFILL

CERCLA

RCRA:

SOLID WASTE:

DRINKING WATER:

GROUNDWATER:

☐ Hand-delivered

☐ Fed Ex ☐ UPS

NPDES:

1 Other \_

Costited Contraction

ORIGINAL

## **Case Narrative (Revised)**



Date:

09/14/09

Company: N. C. Department of Transportation

Contact:

Helen Corley

Address: c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Client Project ID:

NCDOT: Haywood County

Prism COC Group No:

G0809749

Collection Date(s): Lab Submittal Date(s): 08/28/09 08/28/09

Client Project Name Or No:

WBS #34599.1.1

This is a revised report and supersedes our original laboratory report dated 9/12/09. Sample ID for S2-MW-2 was corrected.

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 35 pages. A chain-of-custody is also attached for the samples submitted to Prism for this project.

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

#### Semi Volatile Analysis

Analysis Note for Q44380 LCS Di-n-octylphthalate: LCS recovery outside the control limits. This compound was not detected in samples associated with this batch. No further action was taken.

Analysis Note for Q44380 LCS Pyrene: LCS recovery outside the control limits. This compound was not detected in samples associated with this batch. No further action was taken.

Analysis Note for Q44380 MSD Dimethylphthalate: MSD recovery outside the control limits.

#### Volatile Analysis

No Anomalies Reported

#### **Metals Analysis**

N/A

#### Wet Lab and Micro Analysis

N/A

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

Data Reviewed by: Steven H. Guptill Project Manager: Robbi A. Jones

for Ribbi John Signature: Signature: 09/14/09 09/14/09 Approval Date: Review Date:

## **Data Qualifiers Key Reference:**

- B: Compound also detected in the method blank.
- #: Result outside of the QC limits.
- DO: Compound diluted out.
  - E: Estimated concentration, calibration range exceeded.
  - J: The analyte was positively identified but the value is estimated below the reporting limit.
  - H: Estimated concentration with a high bias.
  - L: Estimated concentration with a low bias.
  - M: A matrix effect is present.

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



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S1-MW1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256469

Sample Matrix: Water

COC Group:

G0809749

Time Collected: 08/28/09 8:30

Ti

ime Submitted:	08/28/09	14:02
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Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis A Date/Time	Analyst	Batch ID
Purgeable Halocarbons and Arc			4.0	0.24	4	601/602	09/08/09 16:11 eru:	المعع	Q44354
1,1,1-Trichloroethane	BRL	µg/L	1.0	0.21	1				
1,1,2,2-Tetrachloroethane	BRL	μg/L	1.0	0.21	1	601/602	09/08/09 16:11 eru		Q44354
1,1,2-Trichloroethane	BRL	μg/L	1.0	0.13	1	601/602	09/08/09 16:11 eru		Q44354
1,1-Dichloroethane	BRL	μg/L	1.0	0.14	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,1-Dichloroethene	BRL	μg/L	1.0	0.19	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,2-Dibromoethane (EDB)	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,2-Dichlorobenzene	BRL	μg/L	1.0	0.096	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,2-Dichloroethane	BRL	μg/L	1.0	0.16	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,2-Dichloropropane	BRL	μg/L	1.0	0.16	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,3-Dichlorobenzene	BRL	μg/L	1.0	0.17	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
1,4-Dichlorobenzene	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Benzene	BRL	μg/L	0.50	0.19	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Bromodichloromethane	BRL	μg/L	1.0	0.11	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Bromoform	BRL	μg/L	1.0	0.094	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Bromomethane	BRL	μg/L	5.0	0.087	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Carbon tetrachloride	BRL	μg/L	1.0	0.23	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Chlorobenzene	BRL	μg/L	1.0	0.37	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Chloroethane	BRL	μg/L	5.0	0.25	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Chloroform	BRL	μg/L	1.0	0.18	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Chloromethane	BRL	μg/L	5.0	0.24	. 1	601/602	09/08/09 16:11 eru	ussell	Q44354
cis-1,2-Dichloroethene	BRL	μg/L	1.0	0.51	. 1	601/602	09/08/09 16:11 eru	ussell	Q44354
cis-1,3-Dichloropropene	BRL	μg/L	1.0	0.16	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Dibromochloromethane	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Dichlorodifluoromethane	BRL	μg/L	5.0	0.21	1	601/602	09/08/09 16:11 er	ussell	Q44354
Ethylbenzene	BRL	μg/L	1.0	0.28	1	601/602	09/08/09 16:11 er	ussell	Q44354
Isopropyl ether (IPE)	BRL	μg/L	5.0	0.18	1	601/602	09/08/09 16:11 er	ussell	Q44354
m,p-Xylenes	BRL	μg/L	2.0	0.51	1	601/602	09/08/09 16:11 en	ussell	Q44354

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood CountyClient Sample ID: S1-MW1

Project No.:

Sample Matrix: Water

WBS #34599.1.1

Prism Sample ID: 256469

COC Group:

G0809749

Time Collected:

08/28/09

Time Submitted: 08/28/09 14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis A Date/Time	Analyst	Batch ID
Methyl t-butyl ether (MTBE)	BRL	μg/L	5.0	0.17	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
Methylene Chloride	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
Naphthalene	BRL	μg/L	1.0	0.63	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
o-Xylene	BRL	μg/L	1.0	0.31	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
Tetrachloroethene	BRL	μg/L	1.0	0.26	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
Toluene	BRL	μg/L	1.0	0.23	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
trans-1,2-Dichloroethene	BRL	μg/L	1.0	0.17	1	601/602	09/08/09 16:11 eru	ussell	Q44354
trans-1,3-Dichloropropene	BRL	μg/L	1.0	0.19	1	601/602	09/08/09 16:11 eru	ıssell	Q44354
Trichloroethene	BRL	μg/L	1.0	0.21	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Trichlorofluoromethane	BRL	μg/L	5.0	0.24	1	601/602	09/08/09 16:11 eru	ussell	Q44354
Vinyl chloride	BRL	μg/L	1.0	0.33	1	601/602	09/08/09 16:11 eru	ussell	Q44354

					Surrogate	•	% Re	covery		Control Limits
					Bromochlo	orobenzene-ELC	D	97		56 - 148
					1,4-Difluo	robenzene-PID		104		69 - 140
Semivolatile Organic Compounds b	y GC/MS									
1,2,4-Trichlorobenzene	BRL	μg/L	9.8	1.7	1	625	09/09/09	10:31	rselph	Q4438
1,2-Dichlorobenzene	BRL	μg/L	9.8	1.9	1	625	09/09/09	10:31	rselph	Q4438
1,3-Dichlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09	10:31	rselph	Q4438
1,4-Dichlorobenzene	BRL	μg/L	9.8	1.8	1	625	09/09/09	10:31	rselph	Q4438
2,4,5-Trichlorophenol	BRL	μg/L	9.8	2.6	1	625	09/09/09	10:31	rselph	Q4438
2,4,6-Trichlorophenol	BRL	μg/L	9.8	3.1	1	625	09/09/09	10:31	rselph	Q4438
2,4-Dichlorophenol	BRL	μg/L	9.8	1.5	1	625	09/09/09	10:31	rselph	Q4438
2,4-Dimethylphenol	BRL	μg/L	9.8	2.4	1	625	09/09/09	10:31	rselph	Q4438
2,4-Dinitrophenol	BRL	μg/L	49	1.1	1	625	09/09/09	10:31	rselph	Q4438
2,4-Dinitrotoluene	BRL	μg/L	9.8	3.9	1	625	09/09/09	10:31	rselph	Q4438
2,6-Dinitrotoluene	BRL	μg/L	9.8	2.8	1	625	09/09/09	10:31	rselph	Q4438

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## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S1-MW1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256469

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Ar Date/Time	nalyst	Batch ID
2-Chloronaphthalene	BRL	µg/L	9.8	2.9	1	625	09/09/09 10:31 rselp	h	Q44380
2-Chlorophenol	BRL	μg/L	9.8	1.7	1	625	09/09/09 10:31 rselp	h	Q44380
2-Methylphenol	BRL	μg/L	9.8	1.8	1	625	09/09/09 10:31 rselp	h	Q44380
2-Nitrophenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 10:31 rselp	h	Q44380
3&4-Methylphenol	BRL	μg/L	9.8	1.9	1	625	09/09/09 10:31 rselp	oh .	Q44380
3,3'-Dichlorobenzidine	BRL	μg/L	49	2.5	1	625	09/09/09 10:31 rselp	oh .	Q44380
4,6-Dinitro-2-methylphenol	BRL	μg/L	49	1.8	1	625	09/09/09 10:31 rselp	oh .	Q44380
4-Bromophenylphenylether	BRL	μg/L	9.8	1.9	1	625	09/09/09 10:31 rselp	bh	Q44380
4-Chloro-3-methylphenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 10:31 rselp	bh	Q44380
4-Chlorophenylphenylether	BRL	μg/L	9.8	2.8	1	625	09/09/09 10:31 rselp	oh	Q44380
4-Nitrophenol	BRL	μg/L	49	0.74	1	625	09/09/09 10:31 rselp	oh	Q44380
Acenaphthene	BRL	μg/L	9.8	4.1	1	625	09/09/09 10:31 rselp	oh .	Q44380
Acenaphthylene	BRL	μg/L	9.8	2.7	1	625	09/09/09 10:31 rselp	oh	Q44380
Anthracene	BRL	μg/L	9.8	1.7	1	625	09/09/09 10:31 rselp	oh	Q44380
Benzo(a)anthracene	BRL	μg/L	9.8	2.1	1	625	09/09/09 10:31 rselp	oh	Q44380
Benzo(a)pyrene	BRL	μg/L	9.8	1.6	1	625	09/09/09 10:31 rsel	oh	Q44380
Benzo(b)fluoranthene	BRL	μg/L	9.8	1.2	, <b>1</b>	625	09/09/09 10:31 rselp	oh	Q44380
Benzo(g,h,i)perylene	BRL	μg/L	9.8	2.1	1	625	09/09/09 10:31 rsel	ph	Q44380
Benzo(k)fluoranthene	BRL	μg/L	9.8	2.6	1	625	09/09/09 10:31 rsel	ph	Q44380
Bis(2-chloroethoxy)methane	BRL	μg/L	9.8	2.3	1	625	09/09/09 10:31 rsel	ph	Q44380
Bis(2-chloroethyl)ether	BRL	μg/L	9.8	1.9	1 .	625	09/09/09 10:31 rsel	ph	Q44380
Bis(2-chloroisopropyl)ether	BRL	μg/L	9.8	2.3	1	625	09/09/09 10:31 rsel	ph	Q44380
Bis(2-ethylhexyl)phthalate	BRL	μg/L	9.8	2.7	1	625	09/09/09 10:31 rsel	ph	Q44380
Butylbenzylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 10:31 rsel	ph	Q44380
Chrysene	BRL	μg/L	9.8	3.0	1	625	09/09/09 10:31 rsel	ph	Q44380
Di-n-butylphthalate	BRL	μg/L	9.8	1.5	1	625	09/09/09 10:31 rsel	ph	Q44380
Di-n-octylphthalate	BRL	μg/L	9.8	2.5	1	625	09/09/09 10:31 rsel	ph	Q44380

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## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S1-MW1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256469

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 8:30

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Dibenzo(a,h)anthracene	BRL	μg/L	9.8	2.2	1	625	09/09/09 10:31	rselph	Q44380
Dibenzofuran	BRL	μg/L	9.8	3.5	1	625	09/09/09 10:31	rselph	Q44380
Diethylphthalate	BRL	μg/L	9.8	2.1	1	625	09/09/09 10:31	rselph	Q44380
Dimethylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 10:31	rselph	Q44380
Fluoranthene	BRL	µg/L	9.8	1.5	1	625	09/09/09 10:31	rselph	Q44380
Fluorene	BRL	μg/L	9.8	4.3	1	625	09/09/09 10:31	rselph	Q44380
Hexachlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09 10:31	rselph	Q44380
Hexachlorobutadiene	BRL	μg/L	9.8	1.7	1	625	09/09/09 10:31	rselph	Q44380
Hexachlorocyclopentadiene	BRL	μg/L	9.8	2.0	1	625	09/09/09 10:31	rselph	Q44380
Hexachloroethane	BRL	μg/L	9.8	2.2	1	625	09/09/09 10:31	rselph	Q44380
Indeno(1,2,3-cd)pyrene	BRL	μg/L	9.8	3.6	1	625	09/09/09 10:31	rselph	Q44380
Isophorone	BRL	μg/L	9.8	2.6	1	625	09/09/09 10:31	rselph	Q44380
N-Nitrosodi-n-propylamine	BRL	μg/L	9.8	2.2	1	625	09/09/09 10:31	rselph	Q44380
Naphthalene	BRL	μg/L	9.8	1.6	1	625	09/09/09 10:31	rselph	Q44380
Nitrobenzene	BRL	μg/L	9.8	2.1	1	625	09/09/09 10:31	rselph	Q44380
Pentachlorophenol	BRL	μg/L	9.8	2.0	1	625	09/09/09 10:31	rselph	Q44380
Phenanthrene	BRL	μg/L	9.8	1.2	1	625	09/09/09 10:31	rselph	Q44380
Phenol	BRL	μg/L	9.8	0.57	1	625	09/09/09 10:31	rselph	Q44380
Pyrene	BRL	μg/L	9.8	1.8	1	625	09/09/09 10:31	rselph	Q44380



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S1-MW1

Project No.:

Sample Matrix: Water

WBS #34599.1.1

Prism Sample ID: 256469

COC Group:

G0809749

Time Collected:

08/28/09 8:30

Time Submitted: 08/28/09

00/00/00

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample	Preparation:		10	)20 mL /	1 mL	625	09/04/09 8:00	smanivanh	P25512
					Surrogate		% Recovery	Contr	ol Limits
					Terphenyl-	d14	100	10	0 - 154
					Phenol-d5		22	10	0 - 48

Surrogate	% Recovery	Control Limits
Terphenyl-d14	100	10 - 154
Phenol-d5	22	10 - 48
Nitrobenzene-d5	95	22 - 103
2-Fluorophenol	34	10 - 59
2-Fluorobiphenyl	105	29 - 112
2,4,6-Tribromophenol	97	27 - 125

TIC's By 625	Est.Conc	Units
Unknown phenol	31	ug/L
Unknown	76	ug/L
Unknown	110	ug/L
Benzophenone	. 34	ug/L

#### 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



**Laboratory Report** 

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256470

Sample Matrix: Water

COC Group: Time Collected: G0809749

08/28/09 9:15

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Purgeable Halocarbons and Arom			40	0.4	10	601/602	09/09/09 3:10	erussell	Q44354
1,1,1-Trichloroethane	BRL	μg/L	10	2.1	10				
1,1,2,2-Tetrachloroethane	BRL	μg/L	10	2.1	10	601/602	09/09/09 3:10	erussell	Q44354
1,1,2-Trichloroethane	BRL	μg/L	10	1.3	10	601/602	09/09/09 3:10	erussell	Q44354
1,1-Dichloroethane	BRL	μg/L	10	1.4	10	601/602	09/09/09 3:10	erussell	Q44354
1,1-Dichloroethene	BRL	μg/L	10	1.9	10	601/602	09/09/09 3:10	erussell	Q44354
1,2-Dibromoethane (EDB)	BRL	μg/L	10	1.2	10	601/602	09/09/09 3:10	erussell	Q44354
1,2-Dichlorobenzene	BRL	μg/L	10	0.96	10	601/602	09/09/09 3:10	erussell	Q44354
1,2-Dichloroethane	BRL	μg/L	10	1.6	10	601/602	09/09/09 3:10	erussell	Q44354
1,2-Dichloropropane	BRL	μg/L	10	1.6	10	601/602	09/09/09 3:10	erussell	Q44354
1,3-Dichlorobenzene	BRL	μg/L	10	1.8	10	601/602	09/09/09 3:10	erussell	Q44354
1,4-Dichlorobenzene	BRL	μg/L	10	1.2	10	601/602	09/09/09 3:10	erussell	Q44354
Benzene	21	μg/L	5.0	1.9	10	601/602	09/09/09 3:10	erussell	Q44354
Bromodichloromethane	BRL	μg/L	10	1.1	10	601/602	09/09/09 3:10	erussell	Q44354
Bromoform	BRL	μg/L	10	0.94	10	601/602	09/09/09 3:10	erussell	Q44354
Bromomethane	BRL	μg/L	50	0.87	10	601/602	09/09/09 3:10	erussell	Q44354
Carbon tetrachloride	BRL	µg/L	10	2.3	10	601/602	09/09/09 3:10	erussell	Q44354
Chlorobenzene	BRL	μg/L	10	3.7	10	601/602	09/09/09 3:10	erussell	Q44354
Chloroethane	BRL	μg/L	50	2.5	10	601/602	09/09/09 3:10	erussell	Q44354
Chloroform	BRL	μg/L	10	1.8	10	601/602	09/09/09 3:10	erussell	Q44354
Chloromethane	BRL	μg/L	50	2.4	10	601/602	09/09/09 3:10	erussell	Q44354
cis-1,2-Dichloroethene	BRL	μg/L	10	5.1	10	601/602	09/09/09 3:10	erussell	Q44354
cis-1,3-Dichloropropene	BRL	μg/L	10	1.6	10	601/602	09/09/09 3:10	erussell	Q44354
Dibromochloromethane	BRL	μg/L	10	1.2	10	601/602	09/09/09 3:10	erussell	Q44354
Dichlorodifluoromethane	BRL	μg/L	50	2.1	10	601/602	09/09/09 3:10	erussell	Q44354
Ethylbenzene	210	μg/L	10	2.8	10	601/602	09/09/09 3:10	erussell	Q44354
Isopropyl ether (IPE)	BRL	μg/L	50	1.8	10	601/602	09/09/09 3:10	erussell	Q44354
m,p-Xylenes	680	μg/L	20	5.0	10	601/602	09/09/09 3:10	erussell	Q44354



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256470

Sample Matrix: Water

COC Group:

G0809749

Time Collected: 08/28/09 9:15

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Methyl t-butyl ether (MTBE)	BRL	μg/L	50	1.7	10	601/602	09/09/09 3:10	erussell	Q44354
Methylene Chloride	BRL	μg/L	10	1.2	10	601/602	09/09/09 3:10	erussell	Q44354
Naphthalene	45	μg/L	10	6.3	10	601/602	09/09/09 3:10	erussell	Q44354
o-Xylene	350	μg/L	10	3.1	10	601/602	09/09/09 3:10	erussell	Q44354
Tetrachloroethene	BRL	μg/L	10	2.6	10	601/602	09/09/09 3:10	erussell	Q44354
Toluene	1400	μg/L	100	23	100	601/602	09/10/09 9:40	erussell	Q44354
trans-1,2-Dichloroethene	BRL	μg/L	10	1.7	10	601/602	09/09/09 3:10	erussell	Q44354
trans-1,3-Dichloropropene	BRL	μg/L	10	1.9	10	601/602	09/09/09 3:10	erussell	Q44354
Trichloroethene	BRL	μg/L	10	2.1	10	601/602	09/09/09 3:10	erussell	Q44354
Trichlorofluoromethane	BRL	μg/L	50	2.5	10	601/602	09/09/09 3:10	erussell	Q44354
Vinyl chloride	BRL	μg/L	10	3.3	10	601/602	09/09/09 3:10	erussell	Q44354

					Surrogate	e	% Recovery		Control Limits
					Bromochlorobenzene-ELC		CD 98		56 - 148
					1,4-Difluo	robenzene-PID		99	69 - 140
Semivolatile Organic Compound	s by GC/MS								
1,2,4-Trichlorobenzene	BRL	μg/L	9.8	1.7	1	625	09/09/09	12:23 rselp	h Q44380
1,2-Dichlorobenzene	BRL	μg/L	9.8	1.9	, 1	625	09/09/09	12:23 rselp	oh Q44380
1,3-Dichlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09	12:23 rselp	oh Q44380
1,4-Dichlorobenzene	BRL	μg/L	9.8	1.8	1	625	09/09/09	12:23 rselp	oh Q44380
2,4,5-Trichlorophenol	BRL	μg/L	9.8	2.6	1	625	09/09/09	12:23 rselp	oh Q44380
2,4,6-Trichlorophenol	BRL	μg/L	9.8	3.1	1	625	09/09/09	12:23 rselp	oh Q44380
2,4-Dichlorophenol	BRL	μg/L	9.8	1.5	1	625	09/09/09	12:23 rselp	oh Q44380
2,4-Dimethylphenol	BRL	μg/L	9.8	2.4	1	625	09/09/09	12:23 rselp	oh Q44380
2,4-Dinitrophenol	BRL	μg/L	49	1.1	1	625	09/09/09	12:23 rselp	oh Q44380
2,4-Dinitrotoluene	BRL	μg/L	9.8	3.9	1	625	09/09/09	12:23 rsel	oh Q44380
2,6-Dinitrotoluene	BRL	μg/L	9.8	2.8	1	625	09/09/09	12:23 rsel	ph Q44380



# **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256470

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 9:15

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
2-Chloronaphthalene	BRL	μg/L	9.8	2.9	1	625	09/09/09 12:23	rselph	Q44380
2-Chlorophenol	BRL	μg/L	9.8	1.7	1	625	09/09/09 12:23	rselph	Q44380
2-Methylphenol	6.0 J	μg/L	9.8	1.8	1	625	09/09/09 12:23	rselph	Q44380
2-Nitrophenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:23	rselph	Q44380
3&4-Methylphenol	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:23	rselph	Q44380
3,3'-Dichlorobenzidine	BRL	μg/L	49	2.5	1	625	09/09/09 12:23	rselph	Q44380
4,6-Dinitro-2-methylphenol	BRL	μg/L	49	1.8	1	625	09/09/09 12:23	rselph	Q44380
4-Bromophenylphenylether	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:23	rselph	Q44380
4-Chloro-3-methylphenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:23	rselph	Q44380
4-Chlorophenylphenylether	BRL	μg/L	9.8	2.8	1	625	09/09/09 12:23	rselph	Q44380
4-Nitrophenol	BRL	μg/L	49	0.74	1	625	09/09/09 12:23	rselph	Q44380
Acenaphthene	BRL	μg/L	9.8	4.1	1	625	09/09/09 12:23	rselph	Q44380
Acenaphthylene	BRL	μg/L	9.8	2.7	1	625	09/09/09 12:23	rselph	Q44380
Anthracene	BRL	μg/L	9.8	1.7	. 1	625	09/09/09 12:23	rselph	Q44380
Benzo(a)anthracene	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:23	rselph	Q44380
Benzo(a)pyrene	BRL	μg/L	9.8	1.6	1	625	09/09/09 12:23	rselph	Q44380
Benzo(b)fluoranthene	BRL	μg/L	9.8	1.2	1	625	09/09/09 12:23	rselph	Q44380
Benzo(g,h,i)perylene	BRL	μg/L	9.8	2.1	. 1	625	09/09/09 12:23	rselph	Q44380
Benzo(k)fluoranthene	BRL	μg/L	9.8	2.6	1	625	09/09/09 12:23	rselph	Q44380
Bis(2-chloroethoxy)methane	BRL	μg/L	9.8	2.3	1	625	09/09/09 12:23	rselph	Q44380
Bis(2-chloroethyl)ether	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:23	rselph	Q44380
Bis(2-chloroisopropyl)ether	BRL	μg/L	9.8	2.3	1	625	09/09/09 12:23	rselph	Q44380
Bis(2-ethylhexyl)phthalate	BRL	μg/L	9.8	2.7	1	625	09/09/09 12:23	rselph	Q44380
Butylbenzylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:23	s rselph	Q44380
Chrysene	BRL	μg/L	9.8	3.0	1	625	09/09/09 12:23	3 rselph	Q44380
Di-n-butylphthalate	BRL	μg/L	9.8	1.5	1	625	09/09/09 12:23	3 rselph	Q44380
Di-n-octylphthalate	BRL	μg/L	9.8	2.5	1	625	09/09/09 12:23	3 rselph	Q44380



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256470

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 9:15

Time Submitted: 08/28/09 14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Dibenzo(a,h)anthracene	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:23	rselph	Q44380
Dibenzofuran	BRL	μg/L	9.8	3.5	1	625	09/09/09 12:23	rselph	Q44380
Diethylphthalate	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:23	rselph	Q44380
Dimethylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:23	rselph	Q44380
Fluoranthene	BRL	μg/L	9.8	1.5	1	625	09/09/09 12:23	rselph	Q44380
Fluorene	BRL	μg/L	9.8	4.3	1	625	09/09/09 12:23	rselph	Q44380
Hexachlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09 12:23	rselph	Q44380
Hexachlorobutadiene	BRL	μg/L	9.8	1.7	1	625	09/09/09 12:23	rselph	Q44380
Hexachlorocyclopentadiene	BRL	μg/L	9.8	2.0	1	625	09/09/09 12:23	rselph	Q44380
Hexachloroethane	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:23	rselph	Q44380
Indeno(1,2,3-cd)pyrene	BRL	μg/L	9.8	3.6	1	625	09/09/09 12:23	rselph	Q44380
Isophorone	BRL	μg/L	9.8	2.6	1	625	09/09/09 12:23	rselph	Q44380
N-Nitrosodi-n-propylamine	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:23	rselph	Q44380
Naphthalene	BRL	μg/L	9.8	1.6	1	625	09/09/09 12:23	rselph	Q44380
Nitrobenzene	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:23	rselph	Q44380
Pentachlorophenol	BRL	μg/L	9.8	2.0	1	625	09/09/09 12:23	rselph	Q44380
Phenanthrene	BRL	μg/L	9.8	1.2	, 1	625	09/09/09 12:23	rselph	Q44380
Phenol	BRL	μg/L	9.8	0.57	1	625	09/09/09 12:23	rselph	Q44380
Pyrene	BRL	µg/L	9.8	1.8	1	625	09/09/09 12:23	rselph	Q44380



#### **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256470

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 9:15

Time Submitted: 08/28/09 14:02

Parameter		Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
,	Sample Preparation:			1	020 mL	/ 1 mL	625	09/04/09 8:00	smanivanh	P25512
						Surrogate		% Recovery	Contr	ol Limits
						Terphenyl-	d14	96	10	0 - 154
						Phenol-d5		20	1	0 - 48
						Nitrobenze	ne-d5	86	2:	2 - 103
						2-Fluoroph	enol	31	1	0 - 59
						2-Fluorobip	henyl	94	2	9 - 112
						2,4,6-Tribro	omophenol	103	2	7 - 125

TIC's By 625	Est.Conc	Units
Unknown aromatic	49	ug/L
Unknown aromatic	25	ug/L
Trimethylbenzene	38	ug/L
Trimethylbenzene	150	ug/L
Toluene	260	ug/L
m&p-Xylene	140	ug/L
Indane	22	ug/L
Ethylmethylbenzene	65	ug/L
Ethylmethylbenzene	59	ug/L
Ethylmethylbenzene	120	ug/L

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



#### **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256470

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09

14:02

Time Submitted: 08/28/09

Parameter	Result	Units	Report	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
			Limit		Factor		Date/Time		טו

#### 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

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



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-2

Project No.:

WBS #34599.1.1

Prism Sample ID: 256471

Sample Matrix: Water

COC Group:

G0809749

14:02

Time Collected:

08/28/09 10:15

Time Submitted: 08/28/09

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Purgeable Halocarbons and Aromati		ID/ELCD							
1,1,1-Trichloroethane	BRL	μg/L	1.0	0.21	1	601/602	09/09/09 3:57	erussell	Q44354
1,1,2,2-Tetrachloroethane	BRL	μg/L	1.0	0.21	1	601/602	09/09/09 3:57	erussell	Q44354
1,1,2-Trichloroethane	BRL	μg/L	1.0	0.13	1	601/602	09/09/09 3:57	erussell	Q44354
1,1-Dichloroethane	BRL	μg/L	1.0	0.14	1	601/602	09/09/09 3:57	erussell	Q44354
1,1-Dichloroethene	BRL	μg/L	1.0	0.19	1	601/602	09/09/09 3:57	erussell	Q44354
1,2-Dibromoethane (EDB)	BRL	μg/L	1.0	0.12	1	601/602	09/09/09 3:57	erussell	Q44354
1,2-Dichlorobenzene	BRL	μg/L	1.0	0.096	1	601/602	09/09/09 3:57	erussell	Q44354
1,2-Dichloroethane	BRL	μg/L	1.0	0.16	1	601/602	09/09/09 3:57	erussell	Q44354
1,2-Dichloropropane	BRL	μg/L	1.0	0.16	1	601/602	09/09/09 3:57	erussell	Q44354
1,3-Dichlorobenzene	BRL	μg/L	1.0	0.17	1	601/602	09/09/09 3:57	erussell	Q44354
1,4-Dichlorobenzene	BRL	μg/L	1.0	0.12	1	601/602	09/09/09 3:57	erussell	Q44354
Benzene	15	μg/L	0.50	0.19	1	601/602	09/09/09 3:57	erussell	Q44354
Bromodichloromethane	BRL	μg/L	1.0	0.11	1	601/602	09/09/09 3:57	erussell	Q44354
Bromoform	BRL	μg/L	1.0	0.094	1	601/602	09/09/09 3:57	erussell	Q44354
Bromomethane	BRL	μg/L	5.0	0.087	1	601/602	09/09/09 3:57	erussell	Q44354
Carbon tetrachloride	BRL	μg/L	1.0	0.23	1	601/602	09/09/09 3:57	erussell	Q44354
Chlorobenzene	BRL	μg/L	1.0	0.37	1	601/602	09/09/09 3:57	erussell	Q44354
Chloroethane	BRL	μg/L	5.0	0.25	-1	601/602	09/09/09 3:57	erussell	Q44354
Chloroform	BRL	μg/L	1.0	0.18	1	601/602	09/09/09 3:57	erussell	Q44354
Chloromethane	BRL	μg/L	5.0	0.24	1	601/602	09/09/09 3:57	erussell	Q44354
cis-1,2-Dichloroethene	BRL	μg/L	1.0	0.51	1	601/602	09/09/09 3:57	erussell	Q44354
cis-1,3-Dichloropropene	BRL	μg/L	1.0	0.16	1	601/602	09/09/09 3:57	erussell	Q44354
Dibromochloromethane	BRL	μg/L	1.0	0.12	1	601/602	09/09/09 3:57	erussell	Q44354
Dichlorodifluoromethane	BRL	μg/L	5.0	0.21	1	601/602	09/09/09 3:57	erussell	Q44354
Ethylbenzene	29	μg/L	1.0	0.28	1	601/602	09/09/09 3:57	erussell	Q44354
Isopropyl ether (IPE)	BRL	μg/L	5.0	0.18	1	601/602	09/09/09 3:57	erussell	Q44354
m,p-Xylenes	34	μg/L	2.0	0.51	1	601/602	09/09/09 3:57	erussell	Q44354



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-2

Project No.:

WBS #34599.1.1

Prism Sample ID: 256471

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 10:15

Time Submitted: 08/28/09 14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Methyl t-butyl ether (MTBE)	BRL	μg/L	5.0	0.17	1	601/602	09/09/09 3:57	erussell	Q44354
Methylene Chloride	BRL	μg/L	1.0	0.12	1	601/602	09/09/09 3:57	erussell	Q44354
Naphthalene	20	μg/L	1.0	0.63	1	601/602	09/09/09 3:57	erussell	Q44354
o-Xylene	10	μg/L	1.0	0.31	1	601/602	09/09/09 3:57	erussell	Q44354
Tetrachloroethene	BRL	μg/L	1.0	0.26	1	601/602	09/09/09 3:57	erussell	Q44354
Toluene	5.9	μg/L	1.0	0.23	1	601/602	09/09/09 3:57	erussell	Q44354
trans-1,2-Dichloroethene	BRL	μg/L	1.0	0.17	1	601/602	09/09/09 3:57	erussell	Q44354
trans-1,3-Dichloropropene	BRL	μg/L	1.0	0.19	1	601/602	09/09/09 3:57	erussell	Q44354
Trichloroethene	BRL	μg/L	1.0	0.21	1	601/602	09/09/09 3:57	erussell	Q44354
Trichlorofluoromethane	BRL	μg/L	5.0	0.24	1	601/602	09/09/09 3:57	erussell	Q44354
Vinyl chloride	BRL	μg/L	1.0	0.33	1	601/602	09/09/09 3:57	erussell	Q44354

					Surrogate	e	% Re	covery	<b>Control Limits</b>
					Bromochlo	orobenzene-ELC	D	103	56 - 148
					1,4-Difluo	robenzene-PID		116	69 - 140
Semivolatile Organic Compounds by	, GC/MS								
1,2,4-Trichlorobenzene	BRL	μg/L	9.8	1.7	1	625	09/09/09	12:51 rselp	h Q44380
1,2-Dichlorobenzene	BRL	μg/L	9.8	1.9	1	625	09/09/09	12:51 rselp	h Q44380
1,3-Dichlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09	12:51 rselp	h Q44380
1,4-Dichlorobenzene	BRL	μg/L	9.8	1.8	1	625	09/09/09	12:51 rselp	h Q44380
2,4,5-Trichlorophenol	BRL	μg/L	9.8	2.6	1	625	09/09/09	12:51 rselp	h Q44380
2,4,6-Trichlorophenol	BRL	μg/L	9.8	3.1	1	625	09/09/09	12:51 rselp	h Q44380
2,4-Dichlorophenol	BRL	μg/L	9.8	1.5	1	625	09/09/09	12:51 rselp	oh Q44380
2,4-Dimethylphenol	BRL	μg/L	9.8	2.4	1	625	09/09/09	12:51 rselp	oh Q44380
2,4-Dinitrophenol	BRL	μg/L	49	1.1	1	625	09/09/09	12:51 rselp	oh Q44380
2,4-Dinitrotoluene	BRL	μg/L	9.8	3.9	1	625	09/09/09	12:51 rselp	oh Q44380
2,6-Dinitrotoluene	BRL	μg/L	9.8	2.8	1	625	09/09/09	12:51 rselp	oh Q44380



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-2

Project No.:

WBS #34599.1.1

Prism Sample ID: 256471

Sample Matrix: Water

COC Group:

G0809749 10:15

Time Collected:

08/28/09

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
2-Chloronaphthalene	BRL	μg/L	9.8	2.9	1	625	09/09/09 12:51	rselph	Q44380
2-Chlorophenol	BRL	μg/L	9.8	1.7	1	625	09/09/09 12:51	rselph	Q44380
2-Methylphenol	BRL	μg/L	9.8	1.8	1	625	09/09/09 12:51	rselph	Q44380
2-Nitrophenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:51	rselph	Q44380
3&4-Methylphenol	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:51	rselph	Q44380
3,3'-Dichlorobenzidine	BRL	μg/L	49	2.5	1	625	09/09/09 12:51	rselph	Q44380
4,6-Dinitro-2-methylphenol	BRL	μg/L	49	1.8	1	625	09/09/09 12:51	rselph	Q44380
4-Bromophenylphenylether	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:51	rselph	Q44380
4-Chloro-3-methylphenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:51	rselph	Q44380
4-Chlorophenylphenylether	BRL	μg/L	9.8	2.8	1	625	09/09/09 12:51	rselph	Q44380
4-Nitrophenol	BRL	μg/L	49	0.74	1	625	09/09/09 12:51	rselph	Q44380
Acenaphthene	BRL	μg/L	9.8	4.1	1	625	09/09/09 12:51	rselph	Q44380
Acenaphthylene	BRL	μg/L	9.8	2.7	1	625	09/09/09 12:51	rselph	Q44380
Anthracene	BRL	μg/L	9.8	1.7	1	625	09/09/09 12:51	rselph	Q44380
Benzo(a)anthracene	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:51	rselph	Q44380
Benzo(a)pyrene	BRL	μg/L	9.8	1.6	1	625	09/09/09 12:51	rselph	Q44380
Benzo(b)fluoranthene	BRL	μg/L	9.8	1.2	1	625	09/09/09 12:51	rselph	Q44380
Benzo(g,h,i)perylene	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:51	rselph	Q44380
Benzo(k)fluoranthene	BRL	µg/L	9.8	2.6	1	625	09/09/09 12:51	rselph	Q44380
Bis(2-chloroethoxy)methane	BRL	μg/L	9.8	2.3	1	625	09/09/09 12:51	rselph	Q44380
Bis(2-chloroethyl)ether	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:51	rselph	Q44380
Bis(2-chloroisopropyl)ether	BRL	μg/L	9.8	2.3	1	625	09/09/09 12:51	rselph	Q44380
Bis(2-ethylhexyl)phthalate	BRL	μg/L	9.8	2.7	1	625	09/09/09 12:51	rselph	Q44380
Butylbenzylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:51	1 rselph	Q44380
Chrysene	BRL	μg/L	9.8	3.0	1	625	09/09/09 12:53	1 rselph	Q44380
Di-n-butylphthalate	BRL	μg/L	9.8	1.5	1	625	09/09/09 12:5	1 rselph	Q44380
Di-n-octylphthalate	BRL	μg/L	9.8	2.5	1	625	09/09/09 12:5	1 rselph	Q44380



**Laboratory Report** 

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-2

Project No.:

WBS #34599.1.1

Prism Sample ID: 256471

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 10:15

:02

Timo Concotoa: Conzervo	
Time Submitted: 08/28/09	14:

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Dibenzo(a,h)anthracene	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:51	rselph	Q44380
Dibenzofuran	BRL	μg/L	9.8	3.5	1	625	09/09/09 12:51	rselph	Q44380
Diethylphthalate	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:51	rselph	Q44380
Dimethylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 12:51	rselph	Q44380
Fluoranthene	BRL	μg/L	9.8	1.5	1	625	09/09/09 12:51	rselph	Q44380
Fluorene	BRL	μg/L	9.8	4.3	1	625	09/09/09 12:51	rselph	Q44380
Hexachlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09 12:51	rselph	Q44380
Hexachlorobutadiene	BRL	μg/L	9.8	1.7	1	625	09/09/09 12:51	rselph	Q44380
Hexachlorocyclopentadiene	BRL	μg/L	9.8	2.0	1	625	09/09/09 12:51	rselph	Q44380
Hexachloroethane	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:51	rselph	Q44380
Indeno(1,2,3-cd)pyrene	BRL	μg/L	9.8	3.6	1	625	09/09/09 12:51	rselph	Q44380
Isophorone	BRL	μg/L	9.8	2.6	1	625	09/09/09 12:51	rselph	Q44380
N-Nitrosodi-n-propylamine	BRL	μg/L	9.8	2.2	1	625	09/09/09 12:51	rselph	Q44380
Naphthalene	11	μg/L	9.8	1.6	1	625	09/09/09 12:51	rselph	Q44380
Nitrobenzene	BRL	μg/L	9.8	2.1	1	625	09/09/09 12:51	rselph	Q44380
Pentachlorophenol	BRL	μg/L	9.8	2.0	1	625	09/09/09 12:51	rselph	Q44380
Phenanthrene	BRL	μg/L	9.8	1.2	1	625	09/09/09 12:51	rselph	Q44380
Phenol	BRL	μg/L	9.8	0.57	1	625	09/09/09 12:51	rselph	Q44380
Pyrene	BRL	μg/L	9.8	1.8	1	625	09/09/09 12:51	rselph	Q44380



# **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-2

Project No.:

WBS #34599.1.1

Prism Sample ID: 256471

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 10:15

Time Submitted: 08/28/09 14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:			10	020 mL	/ 1 mL	625	09/04/09 8:00	smanivanh	P25512
					Surrogate		% Recovery	Contr	ol Limits
					Terphenyl-	d14	116	10	0 - 154
					Phenol-d5		27	10	0 - 48
					Nitrobenze	ne-d5	95	22	2 - 103
					2-Fluoroph	enol	38	10	0 - 59
					2-Fluorobip	ohenyl	104	2	9 - 112
					2,4,6-Tribre	omophenol	91	2	7 - 125

TIC's By 625	Est.Conc	Units
Unknown aromatic	85	ug/L
Unknown aromatic	24	ug/L
Unknown aromatic	23	ug/L
Unknown aromatic	19	ug/L
Unknown	14	ug/L
Unknown	13	ug/L
Trimethylbenzene	17	ug/L
Indane	23	ug/L
Ethylbenzene	23	ug/L
Diethylbenzene	27	ug/L



#### **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

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Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: S2-MW-2

Project No.:

WBS #34599.1.1

Prism Sample ID: 256471

Sample Matrix: Water

COC Group:

G0809749 10:15

Time Collected:

08/28/09

Time Submitted: 08/28/09 14:02

Parameter

Result

Units

MDL

Dilution

Factor

Method

**Analysis** Date/Time Analyst

Batch ID

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.

Report

Limit

All results are reported on a wet-weight basis

Angela D. Overcash, V.P. Laboratory Services

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



# **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: SW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256472

Sample Matrix: Water

COC Group: Time Collected: G0809749

08/28/09 10:45

Time Submitted: 08/28/09 14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Analyst Date/Time	Batch ID
Purgeable Halocarbons and Arc			1.0	0.21	1	601/602	09/08/09 16:58 erussell	Q44354
1,1,1-Trichloroethane	BRL	μg/L 					09/08/09 16:58 erussell	Q44354
1,1,2,2-Tetrachloroethane	BRL	μg/L	1.0	0.21	1	601/602		
1,1,2-Trichloroethane	BRL	μg/L	1.0	0.13	1	601/602	09/08/09 16:58 erussell	Q44354
1,1-Dichloroethane	BRL	μg/L	1.0	0.14	1	601/602	09/08/09 16:58 erussell	Q44354
1,1-Dichloroethene	BRL	μg/L	1.0	0.19	1	601/602	09/08/09 16:58 erussell	Q44354
1,2-Dibromoethane (EDB)	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:58 erussell	Q44354
1,2-Dichlorobenzene	BRL	μg/L	1.0	0.096	1	601/602	09/08/09 16:58 erussell	Q44354
1,2-Dichloroethane	BRL	μg/L	1.0	0.16	1	601/602	09/08/09 16:58 erussell	Q44354
1,2-Dichloropropane	BRL	μg/L	1.0	0.16	1	601/602	09/08/09 16:58 erussell	Q44354
1,3-Dichlorobenzene	BRL	μg/L	1.0	0.17	1	601/602	09/08/09 16:58 erussell	Q44354
1,4-Dichlorobenzene	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:58 erussell	Q44354
Benzene	BRL	μg/L	0.50	0.19	1	601/602	09/08/09 16:58 erussell	Q44354
Bromodichloromethane	BRL	μg/L	1.0	0.11	1	601/602	09/08/09 16:58 erussell	Q44354
Bromoform	BRL	μg/L	1.0	0.094	. 1	601/602	09/08/09 16:58 erussell	Q44354
Bromomethane	BRL	μg/L	5.0	0.087	1	601/602	09/08/09 16:58 erussell	Q44354
Carbon tetrachloride	BRL	μg/L	1.0	0.23	1	601/602	09/08/09 16:58 erussell	Q44354
Chlorobenzene	BRL	μg/L	1.0	0.37	1	601/602	09/08/09 16:58 erussell	Q44354
Chloroethane	BRL	μg/L	5.0	0.25	1	601/602	09/08/09 16:58 erussell	Q44354
Chloroform	BRL	μg/L	1.0	0.18	1	601/602	09/08/09 16:58 erussell	Q44354
Chloromethane	BRL	μg/L	5.0	0.24	1.	601/602	09/08/09 16:58 erussell	Q44354
cis-1,2-Dichloroethene	BRL	μg/L	1.0	0.51	1	601/602	09/08/09 16:58 erussell	Q44354
cis-1,3-Dichloropropene	BRL	μg/L	1.0	0.16	1	601/602	09/08/09 16:58 erussell	Q44354
Dibromochloromethane	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:58 erussell	Q44354
Dichlorodifluoromethane	BRL	μg/L	5.0	0.21	1	601/602	09/08/09 16:58 erussell	Q44354
Ethylbenzene	BRL	μg/L	1.0	0.28	1	601/602	09/08/09 16:58 erussell	Q44354
Isopropyl ether (IPE)	BRL	μg/L	5.0	0.18	1	601/602	09/08/09 16:58 erussell	Q44354
m,p-Xylenes	BRL	μg/L	2.0	0.51	1	601/602	09/08/09 16:58 erussell	Q44354
······································								



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: SW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256472

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09

10:45

Time Submitted: 08/28/09 14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Methyl t-butyl ether (MTBE)	BRL	μg/L	5.0	0.17	1	601/602	09/08/09 16:58	erussell	Q44354
Methylene Chloride	BRL	μg/L	1.0	0.12	1	601/602	09/08/09 16:58	erussell	Q44354
Naphthalene	BRL	μg/L	1.0	0.63	1	601/602	09/08/09 16:58	erussell	Q44354
o-Xylene	BRL	μg/L	1.0	0.31	1	601/602	09/08/09 16:58	erussell	Q44354
Tetrachloroethene	BRL	μg/L	1.0	0.26	1	601/602	09/08/09 16:58	erussell	Q44354
Toluene	BRL	μg/L	1.0	0.23	1	601/602	09/08/09 16:58	erussell	Q44354
trans-1,2-Dichloroethene	BRL	μg/L	1.0	0.17	1	601/602	09/08/09 16:58	erussell	Q44354
trans-1,3-Dichloropropene	BRL	μg/L	1.0	0.19	1	601/602	09/08/09 16:58	erussell	Q44354
Trichloroethene	BRL	μg/L	1.0	0.21	1	601/602	09/08/09 16:58	erussell	Q44354
Trichlorofluoromethane	BRL	μg/L	5.0	0.24	1	601/602	09/08/09 16:58	erussell	Q44354
Vinyl chloride	BRL	μg/L	1.0	0.33	1	601/602	09/08/09 16:58	erussell	Q44354

					Surrogate	9	% Re	covery	Control Limits
					Bromochlorobenzene-ELCD 1,4-Difluorobenzene-PID		D	99	56 - 148
								98	69 - 140
Semivolatile Organic Compou	nds by GC/MS								
1,2,4-Trichlorobenzene	BRL	μg/L	9.8	1.7	1	625	09/09/09	13:18 rselp	h Q4438
1,2-Dichlorobenzene	BRL	μg/L	9.8	1.9	1	625	09/09/09	13:18 rselp	h Q4438
1,3-Dichlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09	13:18 rselp	h Q4438
1,4-Dichlorobenzene	BRL	μg/L	9.8	1.8	1 .	625	09/09/09	13:18 rselp	h Q4438
2,4,5-Trichlorophenol	BRL	μg/L	9.8	2.6	1	625	09/09/09	13:18 rselp	h Q4438
2,4,6-Trichlorophenol	BRL	μg/L	9.8	3.1	1	625	09/09/09	13:18 rselp	h Q4438
2,4-Dichlorophenol	BRL	μg/L	9.8	1.5	1	625	09/09/09	13:18 rselp	h Q4438
2,4-Dimethylphenol	BRL	μg/L	9.8	2.4	1	625	09/09/09	13:18 rselp	h Q4438
2,4-Dinitrophenol	BRL	μg/L	49	1.1	1	625	09/09/09	13:18 rselp	h Q4438
2,4-Dinitrotoluene	BRL	μg/L	9.8	3.9	, 1	625	09/09/09	13:18 rselp	oh Q4438
2.6-Dinitrotoluene	BRL	μg/L	9.8	2.8	1	625	09/09/09	13:18 rselp	oh Q4438



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: SW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256472

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09

10:45 14:02

Time Submitted: 08/28/09

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Analy Date/Time	st Batch ID
2-Chloronaphthalene	BRL	μg/L	9.8	2.9	1	625	09/09/09 13:18 rselph	Q44380
2-Chlorophenol	BRL	μg/L	9.8	1.7	1	625	09/09/09 13:18 rselph	Q44380
2-Methylphenol	BRL	μg/L	9.8	1.8	1	625	09/09/09 13:18 rselph	Q44380
2-Nitrophenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 13:18 rselph	Q44380
3&4-Methylphenol	BRL	μg/L	9.8	1.9	1	625	09/09/09 13:18 rselph	Q44380
3,3'-Dichlorobenzidine	BRL	μg/L	49	2.5	1	625	09/09/09 13:18 rselph	Q44380
4,6-Dinitro-2-methylphenol	BRL	μg/L	49	1.8	1	625	09/09/09 13:18 rselph	Q44380
4-Bromophenylphenylether	BRL	μg/L	9.8	1.9	1	625	09/09/09 13:18 rselph	Q44380
4-Chloro-3-methylphenol	BRL	μg/L	9.8	2.2	1	625	09/09/09 13:18 rselph	Q44380
4-Chlorophenylphenylether	BRL	μg/L	9.8	2.8	1	625	09/09/09 13:18 rselph	Q44380
4-Nitrophenol	BRL	μg/L	49	0.74	1	625	09/09/09 13:18 rselph	Q44380
Acenaphthene	BRL	μg/L	9.8	4.1	1	625	09/09/09 13:18 rselph	Q44380
Acenaphthylene	BRL	μg/L	9.8	2.7	1	625	09/09/09 13:18 rselph	Q44380
Anthracene	BRL	μg/L	9.8	1.7	1	625	09/09/09 13:18 rselph	Q44380
Benzo(a)anthracene	BRL	μg/L	9.8	2.1	1	625	09/09/09 13:18 rselph	Q44380
Benzo(a)pyrene	BRL	μg/L	9.8	1.6	1	625	09/09/09 13:18 rselph	Q44380
Benzo(b)fluoranthene	BRL	μg/L	9.8	1.2	1	625	09/09/09 13:18 rselph	Q44380
Benzo(g,h,i)perylene	BRL	μg/L	9.8	2.1	1	625	09/09/09 13:18 rselph	Q44380
Benzo(k)fluoranthene	BRL	μg/L	9.8	2.6	1	625	09/09/09 13:18 rselph	Q44380
Bis(2-chloroethoxy)methane	BRL	μg/L	9.8	2.3	1	625	09/09/09 13:18 rselph	Q44380
Bis(2-chloroethyl)ether	BRL	μg/L	9.8	1.9	1	625	09/09/09 13:18 rselph	Q44380
Bis(2-chloroisopropyl)ether	BRL	μg/L	9.8	2.3	1	625	09/09/09 13:18 rselph	Q44380
Bis(2-ethylhexyl)phthalate	BRL	μg/L	9.8	2.7	1	625	09/09/09 13:18 rselph	Q44380
Butylbenzylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 13:18 rselph	Q44380
Chrysene	BRL	μg/L	9.8	3.0	1	625	09/09/09 13:18 rselph	Q44380
Di-n-butylphthalate	BRL	μg/L	9.8	1.5	1	625	09/09/09 13:18 rselph	Q44380
Di-n-octylphthalate	BRL	μg/L	9.8	2.5	1	625	09/09/09 13:18 rselph	Q44380



## **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: SW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256472

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 10:45

Time Submitted: 08/28/09

14:02

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Dibenzo(a,h)anthracene	BRL	μg/L	9.8	2.2	1	625	09/09/09 13:18	rselph	Q44380
Dibenzofuran	BRL	μg/L	9.8	3.5	1	625	09/09/09 13:18	rselph	Q44380
Diethylphthalate	BRL	μg/L	9.8	2.1	1	625	09/09/09 13:18	rselph	Q44380
Dimethylphthalate	BRL	μg/L	9.8	1.9	1	625	09/09/09 13:18	rselph	Q44380
Fluoranthene	BRL	μg/L	9.8	1.5	1	625	09/09/09 13:18	rselph	Q44380
Fluorene	BRL	μg/L	9.8	4.3	1	625	09/09/09 13:18	rselph	Q44380
Hexachlorobenzene	BRL	μg/L	9.8	2.0	1	625	09/09/09 13:18	rselph	Q44380
Hexachlorobutadiene	BRL	μg/L	9.8	1.7	1	625	09/09/09 13:18	rselph	Q44380
Hexachlorocyclopentadiene	BRL	μg/L	9.8	2.0	1	625	09/09/09 13:18	rselph	Q44380
Hexachloroethane	BRL	μg/L	9.8	2.2	1	625	09/09/09 13:18	rselph	Q44380
Indeno(1,2,3-cd)pyrene	BRL	μg/L	9.8	3.6	1	625	09/09/09 13:18	rselph	Q44380
Isophorone	BRL	μg/L	9.8	2.6	1	625	09/09/09 13:18	rselph	Q44380
N-Nitrosodi-n-propylamine	BRL	μg/L	9.8	2.2	1	625	09/09/09 13:18	rselph	Q44380
Naphthalene	BRL	μg/L	9.8	1.6	1	625	09/09/09 13:18	rselph	Q44380
Nitrobenzene	BRL	μg/L	9.8	2.1	1	625	09/09/09 13:18	rselph	Q44380
Pentachlorophenol	BRL	μg/L	9.8	2.0	1	625	09/09/09 13:18	rselph	Q44380
Phenanthrene	BRL	μg/L	9.8	1.2	1	625	09/09/09 13:18	rselph	Q44380
Phenol	BRL	μg/L	9.8	0.57	, 1	625	09/09/09 13:18	rselph	Q44380
Pyrene	BRL	μg/L	9.8	1.8	1	625	09/09/09 13:18	rselph	Q44380

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



#### **Laboratory Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Project ID:

NCDOT: Haywood County Client Sample ID: SW-1

Project No.:

WBS #34599.1.1

Prism Sample ID: 256472

Sample Matrix: Water

COC Group:

G0809749

Time Collected:

08/28/09 10:45

Fime Submitted: 08/28/09 1
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ameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:			1	1020 mL	/ 1 mL	625	09/04/09 8:00	smanivanh	P25512
					Surrogate		% Recovery	Contr	ol Limits
					Terphenyl-	d14	120	10	0 - 154
			•		Phenol-d5		28	1	0 - 48
					Nitrobenze	ne-d5	92	2:	2 - 103
					2-Fluoroph	enol	43	1	0 - 59
					2-Fluorobir	henyl	102	2	9 - 112
					2,4,6-Tribro	omophenol	111	2	7 - 125
TIC's By 625				Est.Cond	: Units				

#### 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



## Level II QC Report

09/14/09

N. C. Department of Transportation

Project ID:

NCDOT: Haywood County

COC Group Number: G0809749

Attn: Helen Corley

Project No.:

WBS #34599.1.1

Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

#### Purgeable Halocarbons and Aromatics by GC-PID/ELCD, method 601/602

thod Blank	Result	RL.	Control Limit	Units `	QC Batch ID
1,1,1-Trichloroethane	ND	1	<0.5	µg/L	Q44354
1,1,2,2-Tetrachloroethane	ND	1	<0.5	μg/L	Q44354
1,1,2-Trichloroethane	ND	1	<0.5	μg/L	Q44354
1,1-Dichloroethane	ND	1	<0.5	µg/L	Q44354
1,1-Dichloroethene	ND	1	<0.5	μg/L	Q44354
1,2-Dibromoethane (EDB)	ND	1	<0.5	μg/L	Q44354
1,2-Dichlorobenzene	ND	1	<0.5	μg/L	Q44354
1,2-Dichloroethane	ND	1	<0.5	μg/L	Q44354
1,2-Dichloropropane	ND	1	<0.5	μg/L	Q44354
1,3-Dichlorobenzene	ND	1	<0.5	μg/L	Q44354
1,4-Dichlorobenzene	ND	1	<0.5	μg/L	Q44354
Benzene	ND	0.5	<0.25	μg/L	Q44354
Bromodichloromethane	ND	1	<0.5	μg/L	Q44354
Bromoform	ND	1	<0.5	μg/L	Q44354
Bromomethane	ND	5	<2.5	μg/L	Q4435
Carbon tetrachloride	ND	1	<0.5	μg/L	Q4435
Chlorobenzene	ND	1	<0.5	μg/L	Q4435
Chloroethane	ND	5	<2.5	μg/L	Q4435
Chloroform	ND	1	<0.5	µg/L	Q4435
Chloromethane	ND	5	<2.5	μg/L	Q4435
cis-1,2-Dichloroethene	ND	1	<0.5	μg/L	Q4435
cis-1,3-Dichloropropene	ND	1	<0.5	μg/L	Q4435
Dibromochloromethane	ND	1	<0.5	μg/L	Q4435
Dichlorodifluoromethane	ND	5	<2.5	μg/L	Q4435
Ethylbenzene	ND	1	<0.5	μg/L	Q4435
Isopropyl ether (IPE)	ND	5	<2.5	μg/L	Q4435
m,p-Xylenes	ND	2	<1	μg/L	Q4435
Methyl t-butyl ether (MTBE)	ND	5	<2.5	μg/L	Q4435
Methylene Chloride	ND	1	<0.5	μg/L	Q4435
Naphthalene	ND	1	<0.5	μg/L	Q4435
o-Xylene	ND	1	<0.5	μg/L	Q4435
Tetrachloroethene	ND	1	<0.5	μg/L	Q4435
Toluene	ND	1	<0.5	μg/L	Q4435
trans-1,2-Dichloroethene	ND	1	<0.5	μg/L	Q4435



Level II QC Report

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID:

NCDOT: Haywood County

COC Group Number: G0809749

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Date/Time Submitted: 08/28/09 14:02 Project No.: WBS #34599.1.1

•							
Method Blank	Result	RL	Control Limit	Units			QC Batch ID
trans-1,3-Dichloropropene	ND	1	<0.5	μg/L			Q44354
Trichloroethene	ND	1	<0.5	μg/L			Q44354
Trichlorofluoromethane	ND	5	<2.5	μg/L			Q44354
Vinyl chloride	ND	1	<0.5	μg/L			Q44354
Laboratory Control Sample	Result	Spike Amou	unt	Units	Recovery %	Recovery Ranges %	QC Batch ID
1,1,1-Trichloroethane	20.065	20		μg/L	100	41-138	Q44354
1,1,2,2-Tetrachloroethane	22.838	20		μg/L	114	10-184	Q44354
1,1,2-Trichloroethane	21.427	20		μg/L	107	39-136	Q44354
1,1-Dichloroethane	21.151	20		μg/L	106	47-132	Q44354
1,1-Dichloroethene	18.946	20		μg/L	95	28-167	Q44354
1,2-Dibromoethane (EDB)	16.483	20		μg/L	82	78-131	Q44354
1,2-Dichlorobenzene	18.514	20		μg/L	93	37-154	Q44354
1,2-Dichloroethane	23.324	20		μg/L	117	51-147	Q44354
1,2-Dichloropropane	20.445	20		μg/L	102	44-156	Q44354
1,3-Dichlorobenzene	18.485	20		μg/L	92	50-141	Q44354
1,4-Dichlorobenzene	18.451	20		μg/L	92	42-143	Q44354
Benzene	21.2	20		μg/L	106	39-150	Q44354
Bromodichloromethane	19.278	20		μg/L	96	42-172	Q44354
Bromoform	15.421	20		μg/L	77	13-159	Q44354
Bromomethane	20.73	20		μg/L	104	10-144	Q44354
Carbon tetrachloride	20.107	20		μg/L	101	43-143	Q44354
Chlorobenzene	17.251	20		μg/L	86	38-150	Q44354
Chloroethane	18.477	20		μg/L	92	46-137	Q44354
Chloroform	23.57	20		μg/L	118	49-133	Q44354
Chloromethane	19.706	20		μg/L	99	10-193	Q44354
cis-1,2-Dichloroethene	18.65	20		μg/L	93	62-145	Q44354
cis-1,3-Dichloropropene	22.911	20		μg/L	115	22-178	Q44354
Dibromochloromethane	20.282	20		μg/L	101	24-191	Q44354
Dichlorodifluoromethane	20.186	20		μg/L	101	48-148	Q44354
Ethylbenzene	20.296	20		μg/L	101	32-160	Q44354
Isopropyl ether (IPE)	16.665	20		μg/L	83	61-134	Q44354
m,p-Xylenes	39.203	40		μg/L	98	69-130	Q44354
Methyl t-butyl ether (MTBE)	18.39	20		μg/L	92	74-130	Q44354
Methylene Chloride	19.456	20		μg/L	97	25-162	Q44354
Naphthalene	23.31	20		μg/L	117	60-136	Q44354



**Level II QC Report** 

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID: Project No.: NCDOT: Haywood County

COC Group Number: G0809749

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

WBS #34599.1.1

Date/Time Submitted: 08/28/09 14:02

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
o-Xylene	23.355	20	μg/L	117	66-129	Q44354
Tetrachloroethene	18.917	20	μg/L	95	26-162	Q44354
Toluene	19.909	20	μg/L	100	46-148	Q44354
trans-1,2-Dichloroethene	17.382	20	μg/L	87	38-155	Q44354
trans-1,3-Dichloropropene	21.287	20	μg/L	106	22-178	Q44354
Trichloroethene	18.303	20	μg/L	92	35-146	Q44354
Trichlorofluoromethane	24.118	20	μg/L	121	21-156	Q44354
Vinyl chloride	20.386	20	.µg/L	102	28-163	Q44354
Matrix Spike Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
256705 1,1,1-Trichloroethane	77.256	80	μg/L	97	41-138	Q44354
1,1,2,2-Tetrachloroethane	91.42	80	μg/L	114	10-184	Q44354
1,1,2-Trichloroethane	83.36	80	μg/L	104	39-136	Q44354
1,1-Dichloroethane	70.668	80	μg/L	88	47-132	Q44354
1,1-Dichloroethene	71.548	80	μg/L	89	28-167	Q44354
1,2-Dibromoethane (EDB)	63.792	80	μg/L	80	78-131	Q44354
1,2-Dichlorobenzene	71.496	80	μg/L	89	37-154	Q44354
1,2-Dichloroethane	89.784	80	μg/L	112	51-147	Q44354
1,2-Dichloropropane	77.26	80	μg/L	97	44-156	Q44354
1,3-Dichlorobenzene	69.532	80	μg/L	87	50-141	Q44354
1,4-Dichlorobenzene	70.632	80	μg/L	88	42-143	Q44354
Benzene	72.592	80	μg/L	91	39-150	Q44354
Bromodichloromethane	73.8	80	μg/L	92	42-172	Q44354
Bromoform	64.348	80	μg/L	80	13-159	Q44354
Bromomethane	85.516	80	μg/L	107	10-144	Q44354
Carbon tetrachloride	77.684	80	μg/L	97	43-143	Q44354
Chlorobenzene	65.536	80	μg/L	82	38-150	Q44354
Chloroethane	75.504	80	μg/L	94	46-137	Q44354
Chloroform	87.896	80	μg/L	110	49-133	Q44354
Chloromethane	95.452	80	μg/L	119	10-193	Q44354
cis-1,2-Dichloroethene	70.16	80	μg/L	88	57-137	Q44354
cis-1,3-Dichloropropene	84.384	80	μg/L	105	22-178	Q44354
Dibromochloromethane	78.148	80	μg/L	98	24-191	Q44354
Dichlorodifluoromethane	112.184	80	μg/L	140	47-143	Q44354
Ethylbenzene	77.16	80	μg/L	96	32-160	Q44354
Isopropyl ether (IPE)	63.328	80	μg/L	79	60-132	Q44354



**Level II QC Report** 

09/14/09

N. C. Department of Transportation

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Project ID:

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COC Group Number: G0809749

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08/28/09 14:02

c/o AMEC Earth & Environmental, Inc. 101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Matrix Spike Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %			QC Batch ID
256705 m,p-Xylenes	150.068	160	μg/L	94	59-126			Q44354
Methyl t-butyl ether (MTBE)	75.128	80	μg/L	94	73-130			Q44354
Methylene Chloride	75.608	80	μg/L	95	25-162			Q44354
Naphthalene	91.124	80	μg/L	114	58-132			Q44354
o-Xylene	79.728	80	μg/L	100	62-125			Q44354
Tetrachloroethene	70.54	80	μg/L	88	26-162			Q44354
Toluene	73.484	80	μg/L	92	46-148			Q44354
trans-1,2-Dichloroethene	66.38	80	μg/L	83	38-155			Q44354
trans-1,3-Dichloropropene	80.784	80	μg/L	101	22-178			Q44354
Trichloroethene	65.416	80	μg/L	82	35-146			Q44354
Trichlorofluoromethane	70.968	80	μg/L	89	21-156			Q44354
Vinyl chloride	80.192	80	μg/L	100	28-163			Q44354
Matrix Spike Duplicate Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
256705 1,1,1-Trichloroethane	78.4	80	μg/L	98	41-138	1	0 - 16	Q44354
1,1,2,2-Tetrachloroethane	94.852	80	μg/L	119	10-184	4	0 - 14	Q44354
1,1,2-Trichloroethane	87.308	80	μg/L	109	39-136	5	0 - 13	Q44354
1,1-Dichloroethane	80.496	80	μg/L	101	47-132	13	0 - 14	Q44354
1,1-Dichloroethene	71.128	80	μg/L	89	28-167	1	0 - 17	Q44354
1,2-Dibromoethane (EDB)	67.156	80	μg/L	84	78-131	5	0 - 13	Q44354
1,2-Dichlorobenzene	71.456	80	μg/L	89	37-154	0	0 - 15	Q44354
1,2-Dichloroethane	93.36	80	μg/L	117	51-147	4	0 - 15	Q44354
1,2-Dichloropropane	80.796	80	μg/L	101	44-156	4	0 - 12	Q44354
1,3-Dichlorobenzene	69.152	80	μg/L	86	50-141	1	0 - 13	Q44354
1,4-Dichlorobenzene	71.072	80	μg/L	89	42-143	1	0 - 14	Q44354
Benzene	73.904	80	μg/L	92	39-150	2	0 - 12	Q44354
Bromodichloromethane	76.516	80	μg/L	96	42-172	4	0 - 11	Q44354
Bromoform	63.976	80	μg/L	80	13-159	1	0 - 10	Q44354
Bromomethane	86.812	80	μg/L	109	10-144	2	0 - 21	Q44354
Carbon tetrachloride	79.612	80	μg/L	100	43-143	2	0 - 14	Q44354
Chlorobenzene	66.712	80	μg/L	83	38-150	2	0 - 12	Q44354
Chloroethane	75.748	80	μg/L	95	46-137	0	0 - 18	Q44354
Chloroform	91.488	80	μg/L	114	49-133	4	0 - 13	Q44354
Chloromethane	95.164	80	μg/L	119	10-193	0	0 - 21	Q44354
cis-1,2-Dichloroethene	72.068	80	μg/L	90	57-137	3	0 - 15	Q44354
cis-1,3-Dichloropropene	87.16	80	μg/L	109	22-178	3	0 - 13	Q44354



Level II QC Report

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID:

NCDOT: Haywood County

COC Group Number: G0809749

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Project No.: WBS #34599.1.1 Date/Time Submitted:

08/28/09 14:02

Greensboro,	NC.	27401
Greenspord,	140	21401

Matrix Spike Duplicate	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
Sample ID:				400			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	044254
256705 Dibromochloromethane	82.088	80	μg/L	103	24-191	5	0 - 10	Q44354
Dichlorodifluoromethane	111.644	80	μg/L	140	47-143	0	0 - 21	Q44354
Ethylbenzene	76.552	80	μg/L	96	32-160	1	0 - 10	Q44354
Isopropyl ether (IPE)	65.04	80	μg/L	81	60-132	3	0 - 15	Q44354
m,p-Xylenes	149.04	160	μg/L	93	59-126	1	0 - 11	Q44354
Methyl t-butyl ether (MTBE)	78.512	80	μg/L	98	73-130	4	0 - 16	Q44354
Methylene Chloride	79.528	80	μg/L	99	25-162	5	0 - 16	Q44354
Naphthalene	92.064	80	μg/L	115	58-132	1	0 - 17	Q44354
o-Xylene	75.42	80	μg/L	94	62-125	6	0 - 13	Q44354
Tetrachloroethene	71.528	80	μg/L	89	26-162	1	0 - 14	Q44354
Toluene	74.484	80	μg/L	93	46-148	1	0 - 11	Q44354
trans-1,2-Dichloroethene	67.024	80	μg/L	84	38-155	1	0 - 17	Q44354
trans-1,3-Dichloropropene	83.844	80	μg/L	105	22-178	4	0 - 10	Q44354
Trichloroethene	66.368	80	μg/L	83	35-146	1	0 - 14	Q44354
Trichlorofluoromethane	72.62	80	μg/L	91	21-156	2	0 - 19	Q44354
Vinyl chloride	73.56	80	μg/L	92	28-163	9	0 - 20	Q44354

Page 5 of 12 Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409



# **Level II QC Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID:

NCDOT: Haywood County

COC Group Number: G0809749

Project No.:

WBS #34599.1.1

Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc. 101 W. Friendly Ave. Suite 603 Greensboro, NC 27401

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

ethod Blank	Result	RL	Control Limit	Units	QC Batch ID
1,2,4-Trichlorobenzene	ND	10	<5	μg/L	Q44380
1,2-Dichlorobenzene	ND	10	<5	µg/L	Q44380
1,3-Dichlorobenzene	ND	10	<5	µg/L	Q44380
1,4-Dichlorobenzene	ND	10	<5	µg/L	Q44380
2,4,5-Trichlorophenol	ND	10	<5	µg/L	Q44380
2,4,6-Trichlorophenol	ND	10	<5	µg/L	Q44380
2,4-Dichlorophenol	ND	10	<5	µg/L	Q44380
2,4-Dimethylphenol	ND	10	<5	μg/L	Q44380
2,4-Dinitrophenol	ND	50	<25	μg/L	Q44380
2,4-Dinitrotoluene	ND	10	<5	µg/L	Q44380
2,6-Dinitrotoluene	ND	10	<5	μg/L	Q44380
2-Chloronaphthalene	ND	10	<5	μg/L	Q44380
2-Chlorophenol	ND	10	<5	µg/L	Q44380
2-Methylphenol	ND	10	<5	μg/L	Q44380
2-Nitrophenol	ND	10	<5	μg/L	Q44380
3&4-Methylphenol	ND	10	<5	μg/L	Q44380
3,3'-Dichlorobenzidine	ND	50	<25	μg/L	Q44380
4,6-Dinitro-2-methylphenol	ND	50	<25	μg/L	Q44380
4-Bromophenylphenylether	ND	10	<5	µg/L	Q44380
4-Chloro-3-methylphenol	ND	10	<5	µg/L	Q44380
4-Chlorophenylphenylether	ND	10	<5	µg/L	Q44380
4-Nitrophenol	ND	50	<25	µg/L	Q44380
Acenaphthene	ND	10	<5	μg/L	Q44380
Acenaphthylene	ND	10	<5	μg/L	Q44380
Anthracene	ND	10	<5	µg/L	Q44380
Benzo(a)anthracene	ND	10	<5	µg/L	Q44380
Benzo(a)pyrene	ND	10	<5	µg/L	Q44380
Benzo(b)fluoranthene	ND	10	<5	µg/L	Q4438
Benzo(g,h,i)perylene	ND	10	<5	μg/L	Q4438
Benzo(k)fluoranthene	ND	10	<5	µg/L	Q4438
Bis(2-chloroethoxy)methane	ND	10	<5	μg/L	Q4438
Bis(2-chloroethyl)ether	ND	10	<5	μg/L	Q4438
Bis(2-chloroisopropyl)ether	ND	10	<5	µg/L	Q4438
Bis(2-ethylhexyl)phthalate	ND	10	<5	μg/L	Q4438

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



# **Level II QC Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID: Project No.: **NCDOT: Haywood County** 

WBS #34599.1.1

COC Group Number: G0809749 Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401 **Method Blank** QC Batch ID Result RL Control Limit Units

	rtesuit	174	OOHIO LIIII	Office			
Butylbenzylphthalate	ND	10	<5	μg/L			Q44380
Chrysene	ND	10	<5	μg/L			Q44380
Di-n-butylphthalate	ND	10	<5	μg/L			Q44380
Di-n-octylphthalate	ND	10	<5	μg/L			Q44380
Dibenzo(a,h)anthracene	ND	10	<5	μg/L			Q44380
Dibenzofuran	ND	10	<5	μg/L			Q44380
Diethylphthalate	ND	10	<5	μg/L			Q44380
Dimethylphthalate	ND	10	<5	μg/L			Q44380
Fluoranthene	ND	10	<5	μg/L			Q44380
Fluorene	ND -	10	<5	μg/L			Q44380
Hexachlorobenzene	ND	10	<5	μg/L			Q44380
Hexachlorobutadiene	ND	10	<5	μg/L			Q44380
Hexachlorocyclopentadiene	ND	10	<5	μg/L			Q44380
Hexachloroethane	ND	10	<5	μg/L			Q44380
Indeno(1,2,3-cd)pyrene	ND	10	<5	μg/L			Q44380
Isophorone	ND	10	<5	μg/L			Q44380
N-Nitrosodi-n-propylamine	ND	10	<5	μg/L			Q44380
Naphthalene	ND	10	<5	μg/L			Q44380
Nitrobenzene	ND	10	<5	μg/L			Q44380
Pentachlorophenol	ND	10	<5	μg/L			Q44380
Phenanthrene	ND	10	<5	μg/L			Q44380
Phenol	ND	10	<5	µg/L			Q44380
Pyrene	ND	10	<5	μg/L			Q44380
ooratory Control Sample					Recovery	Recovery Ranges	QC Batch
	Result	Spike Amo	unt	Units	%	%	. ID
1,2,4-Trichlorobenzene	79.63	100		μg/L	80	44-142	Q44380
1,2-Dichlorobenzene	79.27	100		μg/L	79	32-129	Q44380
1,3-Dichlorobenzene	77.87	100		μg/L	78	20-124	Q44380
1,4-Dichlorobenzene	78.68	100		μg/L	79	20-124	Q44380
2,4,6-Trichlorophenol	99.95	100		μg/L	100	37-144	Q44380
2,4-Dichlorophenol	82.74	100		μg/L	83	39-135	Q44380
2,4-Dimethylphenol	81.39	100		μg/L	81	32-119	Q44380
2,4-Dinitrophenol	86.63	100		μg/L	87	10-191	Q44380
2,4-Dinitrotoluene	125.72	100		μg/L	126	39-139	Q44380
2,6-Dinitrotoluene	118.1	100		μg/L	118	50-158	Q44380
2-Chloronaphthalene	90.14	100		μg/L	90	60-118	Q44380



Level II QC Report

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID: Project No.: NCDOT: Haywood County

WBS #34599.1.1

COC Group Number: Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401 Recovery **Laboratory Control Sample** Recovery QC Batch ID Ranges Spike Amount Units % Q44380 23-134 69.93 100 μg/L 70 2-Chlorophenol Q44380 29-182 84.14 100 µg/L 84 2-Nitrophenol 10-98 Q44380 3&4-Methylphenol 56.94 100 μg/L 57 Q44380 3,3'-Dichlorobenzidine 115.17 100 μg/L 115 10-262 μg/L 108 10-181 Q44380 4,6-Dinitro-2-methylphenol 107.9 100 103 53-127 Q44380 4-Bromophenylphenylether 102.95 100 μg/L Q44380 22-147 4-Chloro-3-methylphenol 90.25 100 μg/L 90 25-158 Q44380 μg/L 109 4-Chlorophenylphenylether 108.58 100 Q44380 10-132 4-Nitrophenol 35.33 100 μg/L 35 Q44380 101 47-145 Acenaphthene 101.09 100 µg/L Q44380 μg/L 99 33-145 Acenaphthylene 99.3 100 μg/L 107 27-133 Q44380 100 Anthracene 107.23 Q44380 μg/L 33-143 Benzo(a)anthracene 116.48 100 116 17-163 Q44380 μg/L 127 100 Benzo(a)pyrene 126.5 Q44380 μg/L 127 24-159 126.91 100 Benzo(b)fluoranthene Q44380 10-219 Benzo(g,h,i)perylene 110.13 100 µg/L 110 Q44380 100 μg/L 122 11-162 Benzo(k)fluoranthene 121.7 Q44380 100 μg/L 82 33-184 Bis(2-chloroethoxy)methane 81.63 Q44380 12-158 100 μg/L 78 Bis(2-chloroethyl)ether 77.7 36-166 Q44380 100 µg/L 86 85.89 Bis(2-chloroisopropyl)ether Q44380 10-158 100 µg/L 125 Bis(2-ethylhexyl)phthalate 125.47 10-152 Q44380 μg/L 127 100 Butylbenzylphthalate 127.14 Q44380 μg/L 110 17-168 109.56 100 Chrysene Q44380 10-118 Di-n-butylphthalate 100 µg/L 101 101.37 μg/L 152 # 10-146 Q44380 100 Di-n-octylphthalate 151.98 Q44380 100 μg/L 117 10-227 116.96 Dibenzo(a,h)anthracene Q44380 10-114 100 µg/L 113 Diethylphthalate 112.99 μg/L 106 10-112 Q44380 100 Dimethylphthalate 105.66 μg/L 102 26-137 Q44380 100 101.65 Fluoranthene Q44380 108 59-121 Fluorene 108.21 100 µg/L μg/L 100 10-152 Q44380 100 Hexachlorobenzene 99.54 μg/L 79 24-116 Q44380 100 79.01 Hexachlorobutadiene 73 Q44380 73.06 100 μg/L 32-103 Hexachlorocyclopentadiene 74 40-113 Q44380 μg/L Hexachloroethane 74.11 100 10-171 Q44380 100 μg/L 110 109.98 Indeno(1,2,3-cd)pyrene 21-196 Q44380 100 μg/L 105 105.09 Isophorone



**Level II QC Report** 

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID: Project No.: NCDOT: Haywood County

WBS #34599.1.1

COC Group Number: G0809749 Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Benzo(g,h,i)perylene

209.137

196.07

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
N-Nitrosodi-n-propylamine	76.23	100	μg/L	76	10-230	Q44380
Naphthalene	82.86	100	μg/L	83	21-133	Q44380
Nitrobenzene	86.88	100	μg/L	87	35-180	Q44380
Pentachlorophenol	102.33	100	μg/L	102	14-176	Q44380
Phenanthrene	101.06	100	μg/L	101	54-120	Q44380
Phenol	32.98	100	μg/L	33	10-112	Q44380
Pyrene	118.04	100	μg/L	118 #	52-115	Q44380
Matrix Spike	Result	Spike Amount	Units	Recovery %	Recovery Ranges	QC Batch ID
Sample ID:					%	0.44000
256469 1,2,4-Trichlorobenzene	153.882	196.07	μg/L	78	44-142	Q44380
1,2-Dichlorobenzene	145.019	196.07	μg/L 	74	32-129	Q44380
1,3-Dichlorobenzene	140.843	196.07	µg/L	72	20-124	Q44380
1,4-Dichlorobenzene	143.392	196.07	μg/L	73	20-124	Q44380
2,4,6-Trichlorophenol	149.882	196.07	μg/L	76	37-144	Q44380
2,4-Dichlorophenol	159.627	196.07	μg/L	81	39-135	Q44380
2,4-Dimethylphenol	144.431	196.07	μg/L	74	32-119	Q44380
2,4-Dinitrophenol	44.4705	196.07	μg/L	23	10-191	Q44380
2,4-Dinitrotoluene	239.372	196.07	µg/L	122	39-139	Q44380
2,6-Dinitrotoluene	223.137	196.07	μg/L	114	50-158	Q44380
2-Chloronaphthalene	175.725	196.07	μg/L	90	60-118	Q44380
2-Chlorophenol	134.176	196.07	μg/L	68	23-134	Q44380
2-Nitrophenol	154.019	196.07	μg/L	79	29-182	Q44380
3&4-Methylphenol	129.509	196.07	μg/L	66	15-107	Q44380
3,3´-Dichlorobenzidine	206.941	196.07	μg/L	106	10-262	Q44380
4,6-Dinitro-2-methylphenol	95.1960	196.07	μg/L	49	10-181	Q44380
4-Bromophenylphenylether	200.921	196.07	μg/L	102	53-127	Q44380
4-Chloro-3-methylphenol	185.372	196.07	μg/L	95	22-147	Q44380
4-Chlorophenylphenylether	204.098	196.07	μg/L	104	25-158	Q44380
4-Nitrophenol	46.3725	196.07	μg/L	24	10-132	Q44380
Acenaphthene	194.274	196.07	μg/L	99	47-145	Q44380
Acenaphthylene	190.431	196.07	μg/L	97	33-145	Q44380
Anthracene	208.372	196.07	μg/L	106	27-133	Q44380
Benzo(a)anthracene	226.529	196.07	μg/L	116	33-143	Q44386
Benzo(a)pyrene	239.196	196.07	μg/L	122	17-163	Q4438
Benzo(b)fluoranthene	237.490	196.07	μg/L	121	24-159	Q4438
: :						

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μg/L

107

10-219

Q44380



# **Level II QC Report**

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

COC Group Number: G0809749 Project ID: NCDOT: Haywood County

Date/Time Submitted: 08/28/09 14:02 Project No.: WBS #34599.1.1

Matrix S <sub>I</sub> Sample ID:	•	Result	Spike Amount	Units	Recovery %	Recovery Ranges %			QC Batch ID
256469 F	Benzo(k)fluoranthene	228.529	196.07	μg/L	117	11-162			Q44380
E	Bis(2-chloroethoxy)methane	158.960	196.07	μg/L	81	33-184			Q44380
E	Bis(2-chloroethyl)ether	142.529	196.07	μg/L	73	12-158			Q44380
E	Bis(2-chloroisopropyl)ether	160.019	196.07	μg/L	82	36-166			Q44380
E	Bis(2-ethylhexyl)phthalate	239.196	196.07	μg/L	122	10-158			Q44380
Ε	Butylbenzylphthalate	245.313	196.07	μg/L	125	10-152			Q44380
(	Chrysene	213.627	196.07	μg/L	109	17-168			Q44380
Γ	Di-n-butylphthalate	196.862	196.07	μg/L	100	10-118			Q44380
Г	Di-n-octylphthalate	273.098	196.07	μg/L	139	10-146			Q44380
Γ	Dibenzo(a,h)anthracene	217.372	196.07	μg/L	111	10-227			Q44380
Γ	Diethylphthalate	215.313	196.07	μg/L	110	10-114			Q44380
Γ	Dimethylphthalate	213.470	196.07	μg/L	109	10-112			Q44380
F	Fluoranthene	195.627	196.07	μg/L	100	26-137			Q44380
·	Fluorene	202.392	196.07	μg/L	103	59-121			Q44380
ł	Hexachlorobenzene	193.078	196.07	μg/L	98	10-152			Q44380
ł	Hexachlorobutadiene	148.392	196.07	μg/L	76	24-116			Q44380
	Hexachlorocyclopentadiene	141.705	196.07	μg/L	72	48-94			Q44380
I	Hexachloroethane	134.078	196.07	μg/L	68	40-113			Q44380
	Indeno(1,2,3-cd)pyrene	213.980	196.07	μg/L	109	10-171			Q44380
i	Isophorone	206.745	196.07	μg/L	105	21-196			Q44380
. 1	N-Nitrosodi-n-propylamine	150.803	196.07	μg/L	77	10-230			Q44380
- [	Naphthalene	159.803	196.07	μg/L	82	21-133			Q44380
	Nitrobenzene	164.333	196.07	μg/L	84	35-180			Q44380
-1	Pentachlorophenol	76.8039	196.07	μg/L	39	14-176			Q44380
	Phenanthrene	194.980	196.07	μg/L	99	54-120			Q44380
f	Phenol	81.4313	196.07	μg/L	42	10-112			Q44380
!	Pyrene	225.352	196.07	μg/L	115	52-115			Q44380
Matrix S Sample ID:	Spike Duplicate	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
256469	1,2,4-Trichlorobenzene	182.392	196.07	μg/L	93	44-142	17	0 - 36	Q44380
	1,2-Dichlorobenzene	178.196	196.07	μg/L	91	32-129	21	0 - 38	Q44380
	1,3-Dichlorobenzene	173.196	196.07	μg/L	88	20-124	21	0 - 41	Q44380
	1,4-Dichlorobenzene	175.862	196.07	μg/L	90	20-124	20	0 - 36	Q44380
	2,4,6-Trichlorophenol	162.313	196.07	μg/L	83	37-144	8	0 - 30	Q44380
	2,4-Dichlorophenol	180.882	196.07	μg/L	92	39-135	12	0 - 31	Q44380
	_,,			1.0.					



**Level II QC Report** 

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID: Project No.: NCDOT: Haywood County

WBS #34599.1.1

COC Group Number: G0809749 Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc.

101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Matrix Spike Duplicate Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
256469 2,4-Dinitrophenol	48.3921	196.07	μg/L	25	10-191	8	0 - 30	Q44380
2,4-Dinitrotoluene	241.823	196.07	μg/L	123	39-139	1	0 - 29	Q44380
2,6-Dinitrotoluene	230.960	196.07	μg/L	118	50-158	3	0 - 15	Q44380
2-Chloronaphthalene	197.372	196.07	μg/L	101	60-118	12	0 - 21	Q44380
2-Chlorophenol	160.803	196.07	μg/L	82	23-134	18	0 - 35	Q44380
2-Nitrophenol	184	196.07	μg/L	94	29-182	18	0 - 34	Q44380
3&4-Methylphenol	141.627	196.07	µg/L	72	15-107	9	0 - 27	Q44380
3,3'-Dichlorobenzidine	212.019	196.07	μg/L	108	10-262	2	0 - 50	Q44380
4,6-Dinitro-2-methylphenol	96.3725	196.07	μg/L	49	10-181	1	0 - 19	Q44380
4-Bromophenylphenylether	210.901	196.07	μg/L	108	53-127	5	0 - 18	Q44380
4-Chloro-3-methylphenol	195.235	196.07	μg/L	100	22-147	5	0 - 33	Q44380
4-Chlorophenylphenylether	215.235	196.07	μg/L	110	25-158	5	0 - 19	Q44380
4-Nitrophenol	39.7450	196.07	μg/L	20	10-132	15	0 - 50	Q44380
Acenaphthene	211.019	196.07	μg/L	108	47-145	8	0 - 20	Q44380
Acenaphthylene	207.549	196.07	μg/L	106	33-145	9	0 - 24	Q44380
Anthracene	212.313	196.07	μg/L	108	27-133	2	0 - 30	Q44380
Benzo(a)anthracene	222.901	196.07	μg/L	114	33-143	2	0 - 26	Q44380
Benzo(a)pyrene	232.568	196.07	μg/L	119	17-163	3	0 - 25	Q44380
Benzo(b)fluoranthene	227.666	196.07	μg/L	116	24-159	4	0 - 29	Q44380
Benzo(g,h,i)perylene	212.058	196.07	μg/L	108	10-219	1	0 - 27	Q44380
Benzo(k)fluoranthene	221.666	196.07	μg/L	113	11-162	3	0 - 11	Q44380
Bis(2-chloroethoxy)methane	e 187	196.07	μg/L	95	33-184	16	0 - 31	Q44380
Bis(2-chloroethyl)ether	174.941	196.07	μg/L	89	12-158	20	0 - 36	Q44380
Bis(2-chloroisopropyl)ether	194.098	196.07	μg/L	99	36-166	19	0 - 40	Q44380
Bis(2-ethylhexyl)phthalate	225.529	196.07	μg/L	115	10-158	6	0 - 17	Q44380
Butylbenzylphthalate	235.215	196.07	μg/L	120	10-152	4	0 - 15	Q44380
Chrysene	213.156	196.07	μg/L	109	17-168	0	0 - 25	Q44380
Di-n-butylphthalate	196	196.07	μg/L	100	10-118	0	0 - 27	Q44380
Di-n-octylphthalate	251.921	196.07	μg/L	128	10-146	8	0 - 17	Q44380
Dibenzo(a,h)anthracene	222.313	196.07	μg/L	113	10-227	2	0 - 28	Q44380
Diethylphthalate	218.862	196.07	μg/L	112	10-114	2	0 - 16	Q44380
Dimethylphthalate	222.980	196.07	μg/L	114	# 10-112	4	0 - 15	Q44380
Fluoranthene	192	196.07	μg/L	98	26-137	2	0 - 24	Q44380
Fluorene	211.470	196.07	μg/L	108	59-121	4	0 - 15	Q44380
Hexachlorobenzene	195.588	196.07	μg/L	100	10-152	1	0 - 18	Q44380
Hexachlorobutadiene	180.372	196.07	μg/L	92	24-116	19	0 - 34	Q44380



Level II QC Report

09/14/09

N. C. Department of Transportation

Attn: Helen Corley

Project ID:

NCDOT: Haywood County

COC Group Number: G0809749

Project No.:

WBS #34599.1.1

Date/Time Submitted:

08/28/09 14:02

c/o AMEC Earth & Environmental, Inc. 101 W. Friendly Ave. Suite 603

Greensboro, NC 27401

Matrix Spike Duplicate	Result	ult Spike Amount	Recovery Recovery RPD			RPD Range	QC Batch ID	
Sample ID:	resuit	Opike Amount	Units		%	%	%	·
256469 Hexachlorocyclopentadiene	163.921	196.07	μg/L	84	48-94	15	0 - 30	Q44380
Hexachloroethane	168.823	196.07	μg/L	86	40-113	23	0 - 38	Q44380
Indeno(1,2,3-cd)pyrene	215.627	196.07	μg/L	110	10-171	1	0 - 29	Q44380
Isophorone	233.686	196.07	μg/L	119	21-196	12	0 - 32	Q44380
N-Nitrosodi-n-propylamine	175.176	196.07	μg/L	89	10-230	15	0 - 36	Q44380
Naphthalene	186.647	196.07	μg/L	95	21-133	15	0 - 42	Q44380
Nitrobenzene	198.039	196.07	μg/L	101	35-180	19	0 - 25	Q44380
Pentachlorophenol	70.7647	196.07	μg/L	36	14-176	8	0 - 21	Q44380
Phenanthrene	198.862	196.07	μg/L	101	54-120	2	0 - 29	Q44380
Phenol	87.8431	196.07	μg/L	45	10-112	8	0 - 39	Q44380
Pyrene	216.901	196.07	μg/L	111	52-115	4	0 - 15	Q44380

#-See Case Narrative

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

Page 12 of 12

Project Name: The Project Billing: JTD TIPLE.  Project Name: The Project Billing: JTD TIPLE.  Project Name: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and/or QC Requirements  Invoice To: The Project Specific reporting (QC LEVEL II III IV) provisions and or QC Pre-Approved Samples received after 15:00 will be processed next business days.  Invoice To: The Project Specific reporting Readers  Invoice To: The Project Specific reporting Readers  Invoice To: The Project Specific reporting Annal	RIPTION COLLECTED	DATE COLLECTED (SOIL,	MATRIX SAMPLE CONTAINER	(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)	Turnaround time is based on business days, excluding weekends and holidays.	Samples received after 15:00 will be processed next business day.	WOLVIII Days	"Working Days"   6-9 Days   Standard 10 days   Box A parameter Be	Requested Due Date	e: 310 641 - 544 Fax (Yes) (NO): Purchase Order No./Billing Reference 344 47, 1.1 TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL	Perspoil Ny LINE	rting Address: JOI W. Friendly Ave Sta LO3 address: N. ONT 1992 Hall Spring Central PROPER CONTAINERS used?			Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)	Project Name: The word county	Environmental Solutions FAGE OF QUOTE # TO ENSURE PROPER BILLING: 2 1.1 1 1.1	Full-Service Analytical & 74 (49 / /		
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