Analytical Resources, Incorporated
Analytical Chemists and Consultants

OCT 18 2011
SEATTLE ORG. 5009

October 14, 2011

John Long
AMEC/Geomatrix
600 University Suite 600
Seattle, WA 98101

RE: Client Project: Former Rhone Poulenc- 8769 Shoreline Investigation
ARI Job Numbers: TN42, TN43

Dear John:

Please find enclosed the final data package for samples for the project referenced above. ARI received six water samples and one trip blank on September 21, 2011.

Please refer to the case narrative for details on the analyses of these samples.

An electronic copy of this package will be kept on file at ARI. If you have questions or problems, please feel free to contact me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

cc: file TN42_TN43

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

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Project: 8769 FRP Shoreline Investigation

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AMEC E&P RECEIVED OCT 18 2011 SEATTLE OFFICE

Signature

October-07-2011
Date

Chain of Custody Documentation

ARI Job ID: TN42, TN43

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: TN42	Turn-around Requested: Standard
ARI Client Company: AMEC	Phone: 206-342-1779
Client Contact: John Long / Nik Bacher	
Client Project Name: FRP 2011 Shoreline Investigation	
Client Project #: 8769	Samplers: Trevor Louviere

Page: 1 of 1	
Date: 9/21/11	Ice Present?
No. of Coolers:	Cooler Temps: 1, 2

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Total Metals 6010B	Mercury 7470A	VOCs 8260C	pH 150.1					Notes/Comments
FRP-092111-001	9/21/11	0920	W	5	X	X	X	X					
FRP-092111-002	↓	1110	↓	5	X	X	X	X					
FRP-092111-003		1255		5	X	X	X	X					
FRP-092111-004		1300		5	X	X	X	X					
FRP-092111-005		1445		5	X	X	X	X					
FRP-092111-006	↓	1600	↓	5	X	X	X	X					
Trip Blank	—	—	W	2			X						

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Metals include Al, As, Cd, Cr, Cu, Pb, Ni, Se, Tn, V, Zn.				
	Printed Name: Trevor Louviere	Printed Name: Jose Ugas	Printed Name:	Printed Name:
	Company: AMEC	Company: ARI	Company:	Company:
	Date & Time: 9/21/11 1640	Date & Time: 9/21/11 16:40	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: AMEC

Project Name: FRP 2011 shoreline investigation

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other: _____

Assigned ARI Job No: TN42

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 1.2

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: JU (AV) Date: 9/21/11 Time: 1640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other:			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	9-16-4	

Was Sample Split by ARI : NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: TS Date: 9-21-11 Time: 1600

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

FRP - 003 2"sm" FRP - 005 1"sm"
FRP - 004 1"sm"

By: TS Date: 9-21-11

Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

PRESERVATION VERIFICATION 09/21/11

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TN42**

Inquiry Number: NONE
Analysis Requested: 09/22/11
Contact: Long, John
Client: AMEC Geomatrix
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Kelly
VTSR: 09/21/11

Project #: 8769
Project: FRP 2011 Shoreline Investigation
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-20663 **TN42A**	FRP-092111-001						TOT Pass															
11-20664 **TN42B**	FRP-092111-002						TOT Fail												<2	111039	2.5mL	9-22-11 DM
11-20665 **TN42C**	FRP-092111-003						TOT Fail												↓	↓	↓	↓
11-20666 **TN42D**	FRP-092111-004						TOT Fail												↓	↓	↓	↓
11-20667 **TN42E**	FRP-092111-005						TOT Fail															DMDY 9-22-11 DM
11-20668 **TN42F**	FRP-092111-006						TOT Pass															

Weak ph

Checked By TS Date 9-21-11

TN42 : 000005

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Amec

Project Name: FRP 2011 shoreline investigation

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: TN43

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 1.2 ____ ____ ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: TS Date: 9-21-11 Time: 1740

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

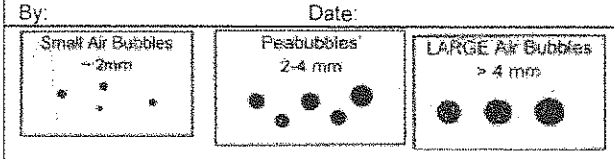
Samples Logged by: TS Date: 9-21-11 Time: 1650

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

TN42 : 00006

PRESERVATION VERIFICATION 09/21/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TN43**

PC: Kelly
VTSR: 09/21/11

Inquiry Number: NONE
Analysis Requested: 09/22/11
Contact: Long, John
Client: AMEC Geomatrix
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

Project #: 8769
Project: FRP Shoreline Investigation
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-20670 **TN43A**	FRP-092111-001						TOT Pass															
11-20671 **TN43B**	FRP-092111-002						TOT Fail												<2	1111030	2.5mL	9-22-11 OM
11-20672 **TN43C**	FRP-092111-003						TOT Fail												<2	1111030	2.5mL	9-22-11 OM
11-20673 **TN43D**	FRP-092111-004						TOT Fail												<2	1111030	2.5mL	9-22-11 OM
11-20674 **TN43E**	FRP-092111-005						TOT Fail															Okay 9-22-11 OM
11-20675 **TN43F**	FRP-092111-006						TOT Pass															

Weak pH

Checked By TS Date 9-21-11

TN42:00007

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TN42, TN43

Case Narrative

AMEC/Geomatrix
Client Project: Former Rhone Poulenc- 8769 Shoreline Investigation
ARI Job Numbers: TN42, TN43
October 14, 2011

Sample Receipt:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted six water samples and one trip blank in good condition on 9/21/11. Please see the enclosed Cooler Receipt Form for further details.

Volatiles by 8260C

The samples were analyzed on 9/26/11 within the method recommended holding times.

Initial calibration (s): All analytes of interest were within method acceptance criteria.

Continuing calibration (s): The continuing calibration (CCAL) on 9/26/11 fell outside the 20% control limit low for Acetone, Methyl Iodide, and trans-1,4-Dichloro-2-butene. All detected results associated with this CCAL have been flagged with a "Q" qualifier.

LCS/LCSD/RPDs: The LCS percent recovery of 2-Chloroethylvinylether fell outside the control limits low for **LCS-092611**.

Surrogates: All surrogate recoveries were within control limits.

Method Blank (s): The method blank was free of contamination.

Samples: Samples **FRP-092111-001**, **FRP-092111-002**, **FRP-092111-003**, **FRP-092111-004**, **FRP-092111-005**, and **FRP-092111-006** had a pH between 6 and 8.

Metals Analysis (6010, 200.8 and 7000 series)

The samples were digested on 9/23/11 and 10/4/11 - within the method recommended holding time and analyzed between 9/27/11 and 10/7/11.

Initial calibration (s): All analytes of interest were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria.

LCS (s): The percent recoveries were within control limits.

Method Blank (s): The method blanks were free of contamination.

Samples: There were no anomalies associated with these samples.

Case Narrative

Matrix spike/ Sample Duplicate RPD(s): The matrix spike percent recovery of selenium fell outside the control limits high for sample **FRP-092111-001**. A post digestion spike was performed and the recovery was within control limits. All relevant data have been flagged with an "N" qualifier on the appropriate Form V.

The matrix spike percent recovery of mercury fell outside the control limits low for sample **FRP-092111-001**. All relevant data have been flagged with an "N" qualifier on the appropriate Form V.

The duplicate RPD of mercury was outside the control limit for sample **FRP-092111-001**. All relevant data have been flagged with a "*" qualifier on the appropriate Form VI.

pH by method 150.1:

The samples were analyzed on 9/21/11 within method recommended holding time.

LCS (s): The LCS percent recovery was within control limits.

Sample Replicate RPD (s): The RPD is in control.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TN42
Client: AMEC Geomatrix
Project Event: 8769
Project Name: FRP 2011 Shoreline Investigation

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	FRP-092111-001	TN42A	11-20663	Water	09/21/11 09:20	09/21/11 16:40
2.	FRP-092111-002	TN42B	11-20664	Water	09/21/11 11:10	09/21/11 16:40
3.	FRP-092111-003	TN42C	11-20665	Water	09/21/11 12:55	09/21/11 16:40
4.	FRP-092111-004	TN42D	11-20666	Water	09/21/11 13:00	09/21/11 16:40
5.	FRP-092111-005	TN42E	11-20667	Water	09/21/11 14:45	09/21/11 16:40
6.	FRP-092111-006	TN42F	11-20668	Water	09/21/11 16:00	09/21/11 16:40
7.	Trip Blanks	TN42G	11-20669	Water	09/21/11	09/21/11 16:40

Printed 09/21/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TN43
Client: AMEC Geomatrix
Project Event: 8769
Project Name: FRP Shoreline Investigation

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	FRP-092111-001	TN43A	11-20670	Water	09/21/11 09:20	09/21/11 16:40
2.	FRP-092111-002	TN43B	11-20671	Water	09/21/11 11:10	09/21/11 16:40
3.	FRP-092111-003	TN43C	11-20672	Water	09/21/11 12:55	09/21/11 16:40
4.	FRP-092111-004	TN43D	11-20673	Water	09/21/11 13:00	09/21/11 16:40
5.	FRP-092111-005	TN43E	11-20674	Water	09/21/11 14:45	09/21/11 16:40
6.	FRP-092111-006	TN43F	11-20675	Water	09/21/11 16:00	09/21/11 16:40

Printed 09/21/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TN42:00013

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TN42:00014

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

TN42 : 00015

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1889-3	ABN	100/150	MEOH	03/01/12
B	1894-2	SIM PNA	15/75	ACETONE	09/22/12
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1887-1	LOW PCB	0.2	ACETONE	12/16/11
E	1900-2	HERB	62.5	MEOH	10/06/12
F	1896-2	PCP	12.5	ACETONE	12/09/11
G	1863-2	d8-DIOXANE	100	MEOH	11/19/11
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1896-3	LOW S. PNA	1.5	ACETONE	09/22/12
J	1787-2	TBT-PORE	0.125	MECL2	11/27/11
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1862-3	TBT	2.5	MECL2	11/27/11
M	1888-4	EPH	1500	MECL2	04/04/12
N	1876-3	PCB	2	ACETONE	12/16/11
O	1895-3	TPH	450	MECL2	02/04/12
P	1895-4	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

TN42 : 00016

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1888-2	PCB 1660	20	ACETONE	08/30/12
2#	NA	BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1779-1	EPH	1500	MECL2	11/11/11
6	1791-5	PCP	12.5/125	ACETONE	12/10/11
7	1888-1	ABN	100	MEOH	08/30/12
8	1785-3	TBT	2.5	MECL2	11/27/11
9	1786-3	PORE TBT	.125/.25	MECL2	11/27/11
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1879-3	1,4-DIOXANE	100	MEOH	02/05/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#	NA	DIPHENYL	100	MEOH	NA
26	1869-1	OP-PEST	25	MEOH	10/01/11
27	NA	STEROLS	200	MEOH	NA
28#	1807-1	ADD. PEST	2	ACETONE	08/31/11
29#	NA	DECANES	100	MEOH	NA

TN42:00017

LCS SOLUTIONS

30	NA	EDB/DBCP	0.2	MEOH	NA
31	1835-2	TERPINEOL	100	MEOH	09/02/11
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33	NA	RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36	NA	ALKYL PNA B	10	MEOH	NA
37	1773-1	CAR/PERY	100	ACETONE	10/14/11
38	1872-2	ABN ACID	200-450	MEOH	12/29/11
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1900-1	FULL RESIN	250	ACETONE	08/12/12
51	1772-1	DDTS	0.01	ACETONE	04/24/11
52	NA	1232 PCB	20	ACETONE	NA
53	1852-2	DALAPON	50	MEOH	12/03/11
54	1753-1	T-CHLORDANE	10	ACETONE	07/21/11
55	1753-2	TOXAPHENE	50	ACETONE	07/21/11
56	1874-1	ABN BASE	50-200	MEOH	01/05/12
#=PROJECT SPECIFIC SOLUTION					
*=REVERIFIED SOLUTION					

TN42:00018

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Volatile Organic Compounds (VOA) EPA SW-846 Methods 8260C 10 mL Purge Volume [1,6]

Effective: 8/30/2010

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI Control Limits	ARI ME Control Limits[2]
LCS Spike Recovery [5]		
Dichlorodifluoromethane	69 - 122	60 - 131
Chloromethane	76 - **120**	69 - 123
Vinyl Chloride	**80 - 120**	75 - 123
Bromomethane	71 - 120	63 - 129
Chloroethane	**80 - 120**	75 - 124
1,1,2-Trichloro-1,2,2-trifluoroethane	**80** - 121	76 - 128
Acrolein	69 - 126	60 - 136
Acetone	71 - **120**	64 - **120**
1,1-Dichloroethene	**80 - 120**	79 - 122
Bromoethane	**80 - 120**	80 - 121
Methyl Iodide	76 - 120	69 - 127
Methylene Chloride	**80 - 120**	77 - **120**
Acrylonitrile	79 - **120**	74 - **120**
Methyl tert-Butyl Ether	**80 - 120**	77 - 121
Carbon Disulfide	**80 - 120**	78 - 121
trans-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Vinyl Acetate	**80 - 120**	76 - **120**
1,1-Dichloroethane	**80 - 120**	**80 - 120**
2-Butanone	**80 - 120**	76 - **120**
2,2-Dichloropropane	**80 - 120**	77 - 120
cis-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Chloroform	**80 - 120**	**80 - 120**
Bromodichloromethane	**80 - 120**	**80 - 120**
1,1,1-Trichloroethane	**80 - 120**	**80 - 120**
1,1-Dichloropropene	**80 - 120**	**80 - 120**
Carbon Tetrachloride	**80 - 120**	**80** - 123
1,2-Dichloroethane	**80 - 120**	**80 - 120**
Benzene	**80 - 120**	**80 - 120**
Trichloroethene	**80 - 120**	**80** - 120
1,2-Dichloropropane	**80 - 120**	**80 - 120**
Bromochloromethane	**80 - 120**	**80 - 120**
Dibromomethane	**80 - 120**	**80 - 120**
2-Chloroethylvinylether	**80 - 120**	75 - **120**
4-Methyl-2-Pentanone	**80 - 120**	78 - **120**
cis-1,3-Dichloropropene	**80 - 120**	**80 - 120**
Toluene	**80 - 120**	**80 - 120**
trans-1,3-Dichloropropene	**80 - 120**	**80 - 120**

TN42 : 00019

2-Hexanone	80 - 120	75 - 120
1,1,2-Trichloroethane	80 - 120	80 - 120
1,3-Dichloropropane	80 - 120	80 - 120
Tetrachloroethene	80 - 120	80 - 120
Dibromochloromethane	80 - 120	80 - 120
Ethylene Dibromide	80 - 120	80 - 120
Chlorobenzene	80 - 120	80 - 120
Ethylbenzene	80 - 120	80 - 121
1,1,2,2-Tetrachloroethane	80 - 120	78 - 120
m,p-Xylene	80 - 120	80 - 120
o-Xylene	80 - 120	80 - 120
Styrene	80 - 120	80 - 122
Trichlorofluoromethane	80 - 120	78 123
Isopropylbenzene	80 - 120	79 - 121
Bromoform	80 - 120	79 - 120
1,1,1,2-Tetrachloroethane	80 - 120	80 - 120
1,2,3-Trichloropropane	80 - 120	77 - 120
trans-1,4-Dichloro-2-butene	74 - 122	66 - 130
n-Propylbenzene	80 - 120	80 - 120
Bromobenzene	80 - 120	78 - 120
1,3,5-Trimethylbenzene	80 - 120	80 - 120
2-Chlorotoluene	80 - 120	80 - 120
4-Chlorotoluene	80 - 120	80 - 120
tert-Butylbenzene	80 - 120	80 - 121
1,2,4-Trimethylbenzene	80 - 120	80 - 120
sec-Butylbenzene	80 - 120	80 - 121
4-Isopropyltoluene	80 - 120	80 - 123
1,3-Dichlorobenzene	80 - 120	80 - 120
1,4-Dichlorobenzene	80 - 120	80 - 120
n-Butylbenzene	80 - 120	80 - 122
1,2-Dichlorobenzene	80 - 120	80 - 120
1,2-Dibromo-3-chloropropane	76 - 120	71 - 120
1,2,4-Trichlorobenzene	77 - 120	71 - 120
Hexachloro-1,3-butadiene	77 - 120	70 - 127
Naphthalene	76 - 120	70 - 120
1,2,3-Trichlorobenzene	79 - 120	74 - 120
MB/LCS Surrogate Recovery		
Dibromofluoromethane	80 - 120	(3)
d4-1,2-Dichloroethane	80 - 120	(3)
d8-Toluene	80 - 120	(3)
4-Bromofluorobenzene	80 - 120	(3)
d4-1,2-Dichlorobenzene	80 - 120	(3)
Sample Surrogate Recovery		
Dibromofluoromethane	80 - 120	(3)

TN42 : 00020

d4-1,2-Dichloroethane	**80 - 120**	(3)
d8-Toluene	**80 - 120**	(3)
4-Bromofluorobenzene	**80 - 120**	(3)
D4-1,2-Dichlorobenzene	**80 - 120**	(3)

(1) Control Limits calculated using all data generated 7/1/09 through 6/30/10.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard[(4)] as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances require corrective action.
(3) Marginal Exceedances not allowed for surrogate standards. A corrective action is required for each surrogate recovery outside of the control limit range.
(4) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(5) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(6) Highlighted control limits (**bold font**) are adjusted from the calculated values as follows:

a) ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.

b) Control limits for analyzes with no separate preparation procedure are adjusted to reflect the minimum uncertainty in the calibration of the instrument allowed by the referenced analytical method.

TN42: 00021

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Summary of Laboratory Control Limits Metals Analyses (All Methods & Sample Matrices)

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Element	Matrix Spike Recovery	LCS Recovery	Replicate RPD
Aluminum	75 - 125	80 - 120	≤ 20%
Antimony	75 - 125	80 - 120	≤ 20%
Arsenic	75 - 125	80 - 120	≤ 20%
Barium	75 - 125	80 - 120	≤ 20%
Beryllium	75 - 125	80 - 120	≤ 20%
Boron	75 - 125	80 - 120	≤ 20%
Cadmium	75 - 125	80 - 120	≤ 20%
Calcium	75 - 125	80 - 120	≤ 20%
Chromium	75 - 125	80 - 120	≤ 20%
Cobalt	75 - 125	80 - 120	≤ 20%
Copper	75 - 125	80 - 120	≤ 20%
Iron	75 - 125	80 - 120	≤ 20%
Lead	75 - 125	80 - 120	≤ 20%
Magnesium	75 - 125	80 - 120	≤ 20%
Manganese	75 - 125	80 - 120	≤ 20%
Mercury	75 - 125	80 - 120	≤ 20%
Nickel	75 - 125	80 - 120	≤ 20%
Potassium	75 - 125	80 - 120	≤ 20%
Selenium	75 - 125	80 - 120	≤ 20%
Silica	75 - 125	80 - 120	≤ 20%
Silver	75 - 125	80 - 120	≤ 20%
Sodium	75 - 125	80 - 120	≤ 20%
Strontium	75 - 125	80 - 120	≤ 20%
Thallium	75 - 125	80 - 120	≤ 20%
Vanadium	75 - 125	80 - 120	≤ 20%
Zinc	75 - 125	80 - 120	≤ 20%

TN42 : 00022

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

TN42 : 00623

Volatile Analysis
Report and Summary QC Forms

ARI Job ID: TN42, TN43

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-001**
 SAMPLE

Lab Sample ID: TN42A
LIMS ID: 11-20663
Matrix: Water
Data Release Authorized: YW
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 16:03

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U J
75-15-0	**Carbon Disulfide**	**0.09**	**0.2**	**0.3**
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	**Benzene**	**0.06**	**0.2**	**0.3**
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	**Toluene**	**0.06**	**0.2**	**3.5**
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U J
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: FRP-092111-001
SAMPLE

Lab Sample ID: TN42A
LIMS ID: 11-20663
Matrix: Water
Date Analyzed: 09/26/11 16:03

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 UJ
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.2%
d8-Toluene	99.5%
Bromofluorobenzene	94.4%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-002**
 SAMPLE

Lab Sample ID: TN42B
LIMS ID: 11-20664
Matrix: Water
Data Release Authorized:
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 16:30

Sample Amount: 2.00 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.49	2.5	< 2.5 U
74-83-9	Bromomethane	0.22	5.0	< 5.0 U
75-01-4	Vinyl Chloride	0.38	1.0	< 1.0 U
75-00-3	Chloroethane	0.76	1.0	< 1.0 U
75-09-2	Methylene Chloride	2.0	2.5	< 2.5 U
67-64-1	Acetone	3.6	25	< 25 UJ
75-15-0	Carbon Disulfide	0.44	1.0	< 1.0 U
75-35-4	1,1-Dichloroethene	0.46	1.0	< 1.0 U
75-34-3	1,1-Dichloroethane	0.26	1.0	< 1.0 U
156-60-5	trans-1,2-Dichloroethene	0.42	1.0	< 1.0 U
156-59-2	cis-1,2-Dichloroethene	0.50	1.0	< 1.0 U
67-66-3	Chloroform	0.40	1.0	< 1.0 U
107-06-2	1,2-Dichloroethane	0.38	1.0	< 1.0 U
78-93-3	2-Butanone	4.0	25	< 25 U
71-55-6	1,1,1-Trichloroethane	0.44	1.0	< 1.0 U
56-23-5	Carbon Tetrachloride	0.38	1.0	< 1.0 U
108-05-4	Vinyl Acetate	0.34	5.0	< 5.0 U
75-27-4	Bromodichloromethane	0.26	1.0	< 1.0 U
78-87-5	1,2-Dichloropropane	0.46	1.0	< 1.0 U
10061-01-5	cis-1,3-Dichloropropene	0.29	1.0	< 1.0 U
79-01-6	Trichloroethene	0.38	1.0	< 1.0 U
124-48-1	Dibromochloromethane	0.45	1.0	< 1.0 U
79-00-5	1,1,2-Trichloroethane	0.18	1.0	< 1.0 U
71-43-2	Benzene	0.28	1.0	< 1.0 U
10061-02-6	trans-1,3-Dichloropropene	0.30	1.0	< 1.0 U
110-75-8	2-Chloroethylvinylether	0.43	5.0	< 5.0 U
75-25-2	Bromoform	0.35	1.0	< 1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	1.9	25	< 25 U
591-78-6	2-Hexanone	1.6	25	< 25 U
127-18-4	Tetrachloroethene	0.44	1.0	< 1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	0.34	1.0	< 1.0 U
108-88-3	Toluene	0.28	1.0	< 1.0 U
108-90-7	Chlorobenzene	0.21	1.0	< 1.0 U
100-41-4	Ethylbenzene	0.47	1.0	< 1.0 U
100-42-5	Styrene	0.33	1.0	< 1.0 U
75-69-4	Trichlorofluoromethane	0.46	1.0	< 1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.54	1.0	< 1.0 U
179601-23-1	m,p-Xylene	0.72	2.0	< 2.0 U
95-47-6	o-Xylene	0.28	1.0	< 1.0 U
95-50-1	1,2-Dichlorobenzene	0.28	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	0.20	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	0.28	1.0	< 1.0 U
107-02-8	Acrolein	1.5	25	< 25 U
74-88-4	Methyl Iodide	0.20	5.0	< 5.0 UJ
74-96-4	Bromoethane	0.45	1.0	< 1.0 U
107-13-1	Acrylonitrile	0.92	5.0	< 5.0 U
563-58-6	1,1-Dichloropropene	0.46	1.0	< 1.0 U
74-95-3	Dibromomethane	0.40	1.0	< 1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	0.34	1.0	< 1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	1.1	2.5	< 2.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-002**
 SAMPLE

Lab Sample ID: TN42B
LIMS ID: 11-20664
Matrix: Water
Date Analyzed: 09/26/11 16:30

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	1.1	2.5	< 2.5 U
110-57-6	trans-1,4-Dichloro-2-butene	1.2	5.0	< 5.0 UJ
108-67-8	1,3,5-Trimethylbenzene	0.32	1.0	< 1.0 U
95-63-6	1,2,4-Trimethylbenzene	0.29	1.0	< 1.0 U
87-68-3	Hexachlorobutadiene	0.56	2.5	< 2.5 U
106-93-4	Ethylene Dibromide	0.38	1.0	< 1.0 U
74-97-5	Bromochloromethane	0.34	1.0	< 1.0 U
594-20-7	2,2-Dichloropropane	0.42	1.0	< 1.0 U
142-28-9	1,3-Dichloropropane	0.10	1.0	< 1.0 U
98-82-8	Isopropylbenzene	0.31	1.0	< 1.0 U
103-65-1	n-Propylbenzene	0.40	1.0	< 1.0 U
108-86-1	Bromobenzene	0.26	1.0	< 1.0 U
95-49-8	2-Chlorotoluene	0.21	1.0	< 1.0 U
106-43-4	4-Chlorotoluene	0.36	1.0	< 1.0 U
98-06-6	tert-Butylbenzene	0.30	1.0	< 1.0 U
135-98-8	sec-Butylbenzene	0.38	1.0	< 1.0 U
99-87-6	4-Isopropyltoluene	0.38	1.0	< 1.0 U
104-51-8	n-Butylbenzene	0.54	1.0	< 1.0 U
120-82-1	1,2,4-Trichlorobenzene	0.50	2.5	< 2.5 U
91-20-3	Naphthalene	0.35	2.5	< 2.5 U
87-61-6	1,2,3-Trichlorobenzene	0.44	2.5	< 2.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.8%
d8-Toluene	99.4%
Bromofluorobenzene	94.3%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-003**
 SAMPLE

Lab Sample ID: TN42C
LIMS ID: 11-20665
Matrix: Water
Data Release Authorized: MW
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 16:57

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 UJ
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 UJ
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: FRP-092111-003
SAMPLE

Lab Sample ID: TN42C
LIMS ID: 11-20665
Matrix: Water
Date Analyzed: 09/26/11 16:57

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U J
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.1%
d8-Toluene	99.3%
Bromofluorobenzene	94.3%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-004**
 SAMPLE

Lab Sample ID: TN42D
LIMS ID: 11-20666
Matrix: Water
Data Release Authorized: MW
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 17:23

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 UJ
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 UJ
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-004**
 SAMPLE

Lab Sample ID: TN42D
LIMS ID: 11-20666
Matrix: Water
Date Analyzed: 09/26/11 17:23

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 UJ
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.1%
d8-Toluene	98.8%
Bromofluorobenzene	93.5%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-005**
 SAMPLE

Lab Sample ID: TN42E
LIMS ID: 11-20667
Matrix: Water
Data Release Authorized:
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 17:50

Sample Amount: 2.00 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.49	2.5	< 2.5 U
74-83-9	Bromomethane	0.22	5.0	< 5.0 U
75-01-4	Vinyl Chloride	0.38	1.0	< 1.0 U
75-00-3	Chloroethane	0.76	1.0	< 1.0 U
75-09-2	Methylene Chloride	2.0	2.5	< 2.5 U
67-64-1	Acetone	3.6	25	< 25 U J
75-15-0	Carbon Disulfide	0.44	1.0	< 1.0 U
75-35-4	1,1-Dichloroethene	0.46	1.0	< 1.0 U
75-34-3	1,1-Dichloroethane	0.26	1.0	< 1.0 U
156-60-5	trans-1,2-Dichloroethene	0.42	1.0	< 1.0 U
156-59-2	cis-1,2-Dichloroethene	0.50	1.0	< 1.0 U
67-66-3	Chloroform	0.40	1.0	< 1.0 U
107-06-2	1,2-Dichloroethane	0.38	1.0	< 1.0 U
78-93-3	2-Butanone	4.0	25	< 25 U
71-55-6	1,1,1-Trichloroethane	0.44	1.0	< 1.0 U
56-23-5	Carbon Tetrachloride	0.38	1.0	< 1.0 U
108-05-4	Vinyl Acetate	0.34	5.0	< 5.0 U
75-27-4	Bromodichloromethane	0.26	1.0	< 1.0 U
78-87-5	1,2-Dichloropropane	0.46	1.0	< 1.0 U
10061-01-5	cis-1,3-Dichloropropene	0.29	1.0	< 1.0 U
79-01-6	Trichloroethene	0.38	1.0	< 1.0 U
124-48-1	Dibromochloromethane	0.45	1.0	< 1.0 U
79-00-5	1,1,2-Trichloroethane	0.18	1.0	< 1.0 U
71-43-2	Benzene	0.28	1.0	< 1.0 U
10061-02-6	trans-1,3-Dichloropropene	0.30	1.0	< 1.0 U
110-75-8	2-Chloroethylvinylether	0.43	5.0	< 5.0 U
75-25-2	Bromoform	0.35	1.0	< 1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	1.9	25	< 25 U
591-78-6	2-Hexanone	1.6	25	< 25 U
127-18-4	Tetrachloroethene	0.44	1.0	< 1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	0.34	1.0	< 1.0 U
108-88-3	Toluene	0.28	1.0	< 1.0 U
108-90-7	Chlorobenzene	0.21	1.0	< 1.0 U
100-41-4	Ethylbenzene	0.47	1.0	< 1.0 U
100-42-5	Styrene	0.33	1.0	< 1.0 U
75-69-4	Trichlorofluoromethane	0.46	1.0	< 1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.54	1.0	< 1.0 U
179601-23-1	m,p-Xylene	0.72	2.0	< 2.0 U
95-47-6	o-Xylene	0.28	1.0	< 1.0 U
95-50-1	1,2-Dichlorobenzene	0.28	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	0.20	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	0.28	1.0	< 1.0 U
107-02-8	Acrolein	1.5	25	< 25 U
74-88-4	Methyl Iodide	0.20	5.0	< 5.0 U J
74-96-4	Bromoethane	0.45	1.0	< 1.0 U
107-13-1	Acrylonitrile	0.92	5.0	< 5.0 U
563-58-6	1,1-Dichloropropene	0.46	1.0	< 1.0 U
74-95-3	Dibromomethane	0.40	1.0	< 1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	0.34	1.0	< 1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	1.1	2.5	< 2.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: FRP-092111-005
SAMPLE

Lab Sample ID: TN42E
LIMS ID: 11-20667
Matrix: Water
Date Analyzed: 09/26/11 17:50

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	1.1	2.5	< 2.5 U
110-57-6	trans-1,4-Dichloro-2-butene	1.2	5.0	< 5.0 U J
108-67-8	1,3,5-Trimethylbenzene	0.32	1.0	< 1.0 U
95-63-6	1,2,4-Trimethylbenzene	0.29	1.0	< 1.0 U
87-68-3	Hexachlorobutadiene	0.56	2.5	< 2.5 U
106-93-4	Ethylene Dibromide	0.38	1.0	< 1.0 U
74-97-5	Bromochloromethane	0.34	1.0	< 1.0 U
594-20-7	2,2-Dichloropropane	0.42	1.0	< 1.0 U
142-28-9	1,3-Dichloropropane	0.10	1.0	< 1.0 U
98-82-8	Isopropylbenzene	0.31	1.0	< 1.0 U
103-65-1	n-Propylbenzene	0.40	1.0	< 1.0 U
108-86-1	Bromobenzene	0.26	1.0	< 1.0 U
95-49-8	2-Chlorotoluene	0.21	1.0	< 1.0 U
106-43-4	4-Chlorotoluene	0.36	1.0	< 1.0 U
98-06-6	tert-Butylbenzene	0.30	1.0	< 1.0 U
135-98-8	sec-Butylbenzene	0.38	1.0	< 1.0 U
99-87-6	4-Isopropyltoluene	0.38	1.0	< 1.0 U
104-51-8	n-Butylbenzene	0.54	1.0	< 1.0 U
120-82-1	1,2,4-Trichlorobenzene	0.50	2.5	< 2.5 U
91-20-3	Naphthalene	0.35	2.5	< 2.5 U
87-61-6	1,2,3-Trichlorobenzene	0.44	2.5	< 2.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.2%
d8-Toluene	98.5%
Bromofluorobenzene	93.7%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-092111-006**
 SAMPLE

Lab Sample ID: TN42F
LIMS ID: 11-20668
Matrix: Water
Data Release Authorized: MW
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 18:17

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	**Acetone**	**0.72**	**5.0**	**7.4 ~~U~~ J**
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	**Chloroform**	**0.08**	**0.2**	**1.1**
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U J
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: FRP-092111-006
SAMPLE

Lab Sample ID: TN42F
LIMS ID: 11-20668
Matrix: Water
Date Analyzed: 09/26/11 18:17

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U J
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.3%
d8-Toluene	100%
Bromofluorobenzene	95.9%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blanks**
 SAMPLE

Lab Sample ID: TN42G
LIMS ID: 11-20669
Matrix: Water
Data Release Authorized:
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 12:28

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blanks**
 SAMPLE

Lab Sample ID: TN42G
LIMS ID: 11-20669
Matrix: Water
Date Analyzed: 09/26/11 12:28

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.1%
d8-Toluene	99.5%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-092611	Method Blank	10	94.0%	99.0%	96.0%	100%	0
LCS-092611	Lab Control	10	93.9%	98.3%	98.1%	101%	0
LCSD-092611	Lab Control Dup	10	93.3%	99.9%	98.3%	99.9%	0
TN42A	FRP-092111-001	10	95.2%	99.5%	94.4%	101%	0
TN42B	FRP-092111-002	10	93.8%	99.4%	94.3%	101%	0
TN42C	FRP-092111-003	10	95.1%	99.3%	94.3%	101%	0
TN42D	FRP-092111-004	10	94.1%	98.8%	93.5%	102%	0
TN42E	FRP-092111-005	10	93.2%	98.5%	93.7%	101%	0
TN42F	FRP-092111-006	10	92.3%	100%	95.9%	100%	0
TN42G	Trip Blanks	10	94.1%	99.5%	96.4%	101%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	80-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 11-20663 to 11-20669

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C Sample ID: LCS-092611
  LAB CONTROL SAMPLE

Lab Sample ID: LCS-092611
LIMS ID: 11-20663
Matrix: Water
Data Release Authorized: MW
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT2/PAB
LCSD: NT2/PAB
Date Analyzed LCS: 09/26/11 10:06
LCSD: 09/26/11 10:33

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	8.4	10.0	84.0%	8.9	10.0	89.0%	5.8%
Bromomethane	8.0	10.0	80.0%	8.3	10.0	83.0%	3.7%
Vinyl Chloride	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
Chloroethane	8.8	10.0	88.0%	9.1	10.0	91.0%	3.4%
Methylene Chloride	9.2	10.0	92.0%	9.5	10.0	95.0%	3.2%
Acetone	41.3 Q	50.0	82.6%	41.9 Q	50.0	83.8%	1.4%
Carbon Disulfide	9.5	10.0	95.0%	9.6	10.0	96.0%	1.0%
1,1-Dichloroethene	8.8	10.0	88.0%	9.2	10.0	92.0%	4.4%
1,1-Dichloroethane	9.2	10.0	92.0%	9.3	10.0	93.0%	1.1%
trans-1,2-Dichloroethene	9.5	10.0	95.0%	9.5	10.0	95.0%	0.0%
cis-1,2-Dichloroethene	9.4	10.0	94.0%	9.7	10.0	97.0%	3.1%
Chloroform	9.5	10.0	95.0%	9.7	10.0	97.0%	2.1%
1,2-Dichloroethane	9.1	10.0	91.0%	9.4	10.0	94.0%	3.2%
2-Butanone	50.0	50.0	100%	49.8	50.0	99.6%	0.4%
1,1,1-Trichloroethane	9.4	10.0	94.0%	9.6	10.0	96.0%	2.1%
Carbon Tetrachloride	9.7	10.0	97.0%	9.9	10.0	99.0%	2.0%
Vinyl Acetate	9.6	10.0	96.0%	9.8	10.0	98.0%	2.1%
Bromodichloromethane	9.6	10.0	96.0%	9.8	10.0	98.0%	2.1%
1,2-Dichloropropane	9.3	10.0	93.0%	9.5	10.0	95.0%	2.1%
cis-1,3-Dichloropropene	9.6	10.0	96.0%	9.8	10.0	98.0%	2.1%
Trichloroethene	9.7	10.0	97.0%	9.9	10.0	99.0%	2.0%
Dibromochloromethane	10.0	10.0	100%	10.0	10.0	100%	0.0%
1,1,2-Trichloroethane	9.6	10.0	96.0%	9.9	10.0	99.0%	3.1%
Benzene	9.4	10.0	94.0%	9.8	10.0	98.0%	4.2%
trans-1,3-Dichloropropene	9.6	10.0	96.0%	9.6	10.0	96.0%	0.0%
2-Chloroethylvinylether	7.7	10.0	77.0%	8.3	10.0	83.0%	7.5%
Bromoform	10.4	10.0	104%	10.3	10.0	103%	1.0%
4-Methyl-2-Pentanone (MIBK)	49.8	50.0	99.6%	51.4	50.0	103%	3.2%
2-Hexanone	49.1	50.0	98.2%	49.6	50.0	99.2%	1.0%
Tetrachloroethene	9.9	10.0	99.0%	9.9	10.0	99.0%	0.0%
1,1,2,2-Tetrachloroethane	10.0	10.0	100%	9.9	10.0	99.0%	1.0%
Toluene	9.6	10.0	96.0%	9.9	10.0	99.0%	3.1%
Chlorobenzene	9.5	10.0	95.0%	9.7	10.0	97.0%	2.1%
Ethylbenzene	9.5	10.0	95.0%	9.5	10.0	95.0%	0.0%
Styrene	10.0	10.0	100%	10.2	10.0	102%	2.0%
Trichlorofluoromethane	9.7	10.0	97.0%	9.8	10.0	98.0%	1.0%
1,1,2-Trichloro-1,2,2-trifluoroetha	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
m,p-Xylene	19.5	20.0	97.5%	19.8	20.0	99.0%	1.5%
o-Xylene	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
1,2-Dichlorobenzene	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
1,3-Dichlorobenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
1,4-Dichlorobenzene	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
Acrolein	53.6	50.0	107%	56.1	50.0	112%	4.6%
Methyl Iodide	7.6 Q	10.0	76.0%	8.0 Q	10.0	80.0%	5.1%
Bromoethane	9.5	10.0	95.0%	9.6	10.0	96.0%	1.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-092611
LAB CONTROL SAMPLE

Lab Sample ID: LCS-092611
LIMS ID: 11-20663
Matrix: Water

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	9.4	10.0	94.0%	9.7	10.0	97.0%	3.1%
1,1-Dichloropropene	9.6	10.0	96.0%	9.9	10.0	99.0%	3.1%
Dibromomethane	9.4	10.0	94.0%	9.7	10.0	97.0%	3.1%
1,1,1,2-Tetrachloroethane	9.9	10.0	99.0%	9.9	10.0	99.0%	0.0%
1,2-Dibromo-3-chloropropane	9.6	10.0	96.0%	9.4	10.0	94.0%	2.1%
1,2,3-Trichloropropane	9.5	10.0	95.0%	9.6	10.0	96.0%	1.0%
trans-1,4-Dichloro-2-butene	7.8 Q	10.0	78.0%	7.7 Q	10.0	77.0%	1.3%
1,3,5-Trimethylbenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
1,2,4-Trimethylbenzene	9.7	10.0	97.0%	9.9	10.0	99.0%	2.0%
Hexachlorobutadiene	9.8	10.0	98.0%	10.3	10.0	103%	5.0%
Ethylene Dibromide	9.6	10.0	96.0%	9.9	10.0	99.0%	3.1%
Bromochloromethane	9.7	10.0	97.0%	9.8	10.0	98.0%	1.0%
2,2-Dichloropropane	9.0	10.0	90.0%	9.0	10.0	90.0%	0.0%
1,3-Dichloropropane	9.5	10.0	95.0%	9.5	10.0	95.0%	0.0%
Isopropylbenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
n-Propylbenzene	9.5	10.0	95.0%	9.7	10.0	97.0%	2.1%
Bromobenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
2-Chlorotoluene	9.4	10.0	94.0%	9.5	10.0	95.0%	1.1%
4-Chlorotoluene	9.5	10.0	95.0%	9.6	10.0	96.0%	1.0%
tert-Butylbenzene	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
sec-Butylbenzene	9.5	10.0	95.0%	9.8	10.0	98.0%	3.1%
4-Isopropyltoluene	9.6	10.0	96.0%	10.0	10.0	100%	4.1%
n-Butylbenzene	9.0	10.0	90.0%	9.7	10.0	97.0%	7.5%
1,2,4-Trichlorobenzene	9.8	10.0	98.0%	9.9	10.0	99.0%	1.0%
Naphthalene	10.2	10.0	102%	10.3	10.0	103%	1.0%
1,2,3-Trichlorobenzene	10.0	10.0	100%	10.2	10.0	102%	2.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	93.9%	93.3%
d8-Toluene	98.3%	99.9%
Bromofluorobenzene	98.1%	98.3%
d4-1,2-Dichlorobenzene	101%	99.9%

4A
VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB0926

Lab Name: ANALYTICAL RESOURCES INC

Client: AMEC EARTH AND ENVIRONME

ARI Job No: TN42

Project: 2011 FRP SHORELINE INVE

Lab File ID: MB0926

Lab Sample ID: MB0926

Date Analyzed: 09/26/11

Time Analyzed: 1100

Instrument ID: NT2

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS0926	LCS0926	LCS0926	1006
02	LCS0926	LCS0926	LCS0926A	1033
03	TRIP BLANKS	TN42G	TN42G2	1228
04	FRP-091911-0	TN00B	TN00B2	1255
05	FRP-091911-0	TN00C	TN00C2	1322
06	FRP-091911-0	TN00D	TN00D2	1349
07	FRP-091911-0	TN00E	TN00E2	1415
08	FRP-092011-0	TN19B	TN19B2	1442
09	FRP-092011-0	TN19C	TN19C2	1509
10	FRP-092011-0	TN19D	TN19D2	1536
11	FRP-092111-0	TN42A	TN42A2	1603
12	FRP-092111-0	TN42B	TN42B2	1630
13	FRP-092111-0	TN42C	TN42C2	1657
14	FRP-092111-0	TN42D	TN42D2	1723
15	FRP-092111-0	TN42E	TN42E2	1750
16	FRP-092111-0	TN42F	TN42F2	1817
17	FRP-091911-0	TN00CMS	TN00CMS	1843
18	FRP-091911-0	TN00CMSD	TN00CMSD	1910
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COMMENTS:

FORM IV VOA

OLM3.2M

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-092611**
 METHOD BLANK

Lab Sample ID: MB-092611
LIMS ID: 11-20663
Matrix: Water
Data Release Authorized: MW
Reported: 10/03/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/PAB
Date Analyzed: 09/26/11 11:00

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MB-092611
METHOD BLANK

Lab Sample ID: MB-092611
LIMS ID: 11-20663
Matrix: Water
Date Analyzed: 09/26/11 11:00

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.0%
d8-Toluene	99.0%
Bromofluorobenzene	96.0%
d4-1,2-Dichlorobenzene	100%

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC EARTH AND ENVIRONMENTAL

Lab Code: ARI Case No.: 2011 FRP SHORELINE INVESTIGATION SDG No.: TN42

Lab File ID: BFB0727 BFB Injection Date: 07/27/11

Instrument ID: NT5 BFB Injection Time: 1130

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.1
75	30.0 - 66.0% of mass 95	55.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.7 (1.0)1
174	50.0 - 101.0% of mass 95	72.0
175	4.0 - 9.0% of mass 174	6.0 (8.4)1
176	93.0 - 101.0% of mass 174	72.1 (100.1)1
177	5.0 - 9.0% of mass 176	4.7 (6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD60	IC0727	6000727	07/27/11	1220
02	VSTD40	IC0727	4000727	07/27/11	1248
03	VSTD20	IC0727	2000727	07/27/11	1316
04	VSTD10	IC0727	1000727	07/27/11	1345
05	VSTD4	IC0727	0400727	07/27/11	1413
06	VSTD1	IC0727	0100727	07/27/11	1441
07	VSTD0.5	IC0727	0050727	07/27/11	1510
08	VSTD0.2	IC0727	0020727	07/27/11	1538
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FORM V VOA OLM3.2M

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC EARTH AND ENVIRONMENTAL

Lab Code: ARI Case No.: 2011 FRP SHORELINE INVESTIGATION SDG No.: TN42

Lab File ID: BFB0921 BFB Injection Date: 09/21/11

Instrument ID: NT5 BFB Injection Time: 0812

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	18.7
75	30.0 - 66.0% of mass 95	55.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	5.9
173	Less than 2.0% of mass 174	0.2 (0.2)1
174	50.0 - 101.0% of mass 95	73.7
175	4.0 - 9.0% of mass 174	5.4 (7.3)1
176	93.0 - 101.0% of mass 174	73.3 (99.4)1
177	5.0 - 9.0% of mass 176	4.4 (5.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD10	CC0921	1000921	09/21/11	0855
02	LCS0921	LCS0921	LCS0921	09/21/11	1001
03	LCS0921	LCS0921	LCS0921A	09/21/11	1029
04	MB0921	MB0921	MB0921	09/21/11	1057
05	FRP-091911-002	TN00B	TN00B	09/21/11	1433
06	FRP-091911-003	TN00C	TN00C	09/21/11	1501
07	FRP-091911-004	TN00D	TN00D	09/21/11	1529
08	FRP-091911-005	TN00E	TN00E	09/21/11	1557
09	FRP-091911-006	TN00F	TN00F	09/21/11	1626
10	TRIP BLANKS	TN00G	TN00G	09/21/11	1654
11	FRP-092011-001	TN19A	TN19A	09/21/11	1722
12	FRP-092011-005	TN19E	TN19E	09/21/11	1915
13	TRIP BLANKS	TN19F	TN19F	09/21/11	1944
14					
15					
16					
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18					
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FORM V VOA OLM3.2M

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC EARTH AND ENVIRONMENTAL

Lab Code: ARI Case No.: 2011 FRP SHORELINE INVESTIGATION SDG No.: TN42

Lab File ID: BFB0921 BFB Injection Date: 09/21/11

Instrument ID: NT2 BFB Injection Time: 1241

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	18.7
75	30.0 - 66.0% of mass 95	53.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 101.0% of mass 95	79.2
175	4.0 - 9.0% of mass 174	5.7 (7.2)1
176	93.0 - 101.0% of mass 174	79.4 (100.3)1
177	5.0 - 9.0% of mass 176	5.5 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0.2	VSTD0.2	00_20921	09/21/11	1338
02	VSTD0.5	VSTD0.5	00_50921	09/21/11	1405
03	VSTD01	VSTD01	01_00921	09/21/11	1432
04	VSTD02	VSTD02	02_00921	09/21/11	1459
05	VSTD10	VSTD10	10_00921	09/21/11	1526
06	VSTD20	VSTD20	20_00921	09/21/11	1552
07	VSTD40	VSTD40	40_00921	09/21/11	1619
08	VSTD60	VSTD60	60_00921	09/21/11	1646
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5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC EARTH AND ENVIRONMENTAL

Lab Code: ARI Case No.: 2011 FRP SHORELINE INVESTIGATION SDG No.: TN42

Lab File ID: BFB0926 BFB Injection Date: 09/26/11

Instrument ID: NT2 BFB Injection Time: 0901

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	17.4
75	30.0 - 66.0% of mass 95	51.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.1 (0.1)1
174	50.0 - 101.0% of mass 95	82.2
175	4.0 - 9.0% of mass 174	5.7 (6.9)1
176	93.0 - 101.0% of mass 174	81.9 (99.6)1
177	5.0 - 9.0% of mass 176	5.5 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC0926	CC0926	CC0926	09/26/11	0939
02	LCS0926	LCS0926	LCS0926	09/26/11	1006
03	LCS0926	LCS0926	LCS0926A	09/26/11	1033
04	MB0926	MB0926	MB0926	09/26/11	1100
05	TRIP BLANKS	TN42G	TN42G2	09/26/11	1228
06	FRP-091911-002	TN00B	TN00B2	09/26/11	1255
07	FRP-091911-003	TN00C	TN00C2	09/26/11	1322
08	FRP-091911-004	TN00D	TN00D2	09/26/11	1349
09	FRP-091911-005	TN00E	TN00E2	09/26/11	1415
10	FRP-092011-002	TN19B	TN19B2	09/26/11	1442
11	FRP-092011-003	TN19C	TN19C2	09/26/11	1509
12	FRP-092011-004	TN19D	TN19D2	09/26/11	1536
13	FRP-092111-001	TN42A	TN42A2	09/26/11	1603
14	FRP-092111-002	TN42B	TN42B2	09/26/11	1630
15	FRP-092111-003	TN42C	TN42C2	09/26/11	1657
16	FRP-092111-004	TN42D	TN42D2	09/26/11	1723
17	FRP-092111-005	TN42E	TN42E2	09/26/11	1750
18	FRP-092111-006	TN42F	TN42F2	09/26/11	1817
19	FRP-091911-003MS	TN00CMS	TN00CMS	09/26/11	1843
20	FRP-091911-003MS	TN00CMSD	TN00CMSD	09/26/11	1910
21					
22					

FORM V VOA OLM3.2M

TN42:00048

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 Calibration Date: 07/27/11

LAB FILE ID: RF0.2: 0020727 RF0.5: 0050727 RF1: 0100727
RF4: 0400727 RF10: 1000727

COMPOUND	RF0.2	RF0.5	RF1	RF4	RF10
Chloromethane		0.445	0.457	0.360	0.340
Vinyl Chloride	0.387	0.360	0.422	0.419	0.431
Bromomethane	0.197	0.224	0.234	0.250	0.262
Chloroethane	0.276	0.227	0.280	0.231	0.255
Trichlorofluoromethane	0.957	0.998	1.258	1.074	1.068
Acrolein		0.042	0.034	0.033	0.034
112Trichloro122Trifluoroetha	0.463	0.450	0.550	0.466	0.445
Acetone			0.061	0.057	0.063
1,1-Dichloroethene	0.352	0.371	0.490	0.397	0.396
Bromoethane	0.262	0.252	0.278	0.248	0.257
Iodomethane		0.564	0.749	0.624	0.606
Methylene Chloride	0.348	0.486	0.452	0.387	0.396
Acrylonitrile			0.089	0.069	0.060
Carbon Disulfide	1.156	1.041	1.184	1.061	1.118
Trans-1,2-Dichloroethene	0.430	0.490	0.510	0.467	0.460
Vinyl Acetate		0.413	0.474	0.465	0.461
1,1-Dichloroethane	0.679	0.751	0.805	0.733	0.736
2-Butanone		0.078	0.097	0.087	0.083
2,2-Dichloropropane	0.862	0.880	1.027	0.962	0.990
Cis-1,2-Dichloroethene	0.446	0.434	0.510	0.463	0.474
Chloroform	1.037	0.831	1.051	0.976	0.911
Bromochloromethane	0.185	0.222	0.241	0.232	0.214
1,1,1-Trichloroethane	0.935	1.018	1.168	1.118	1.080
1,1-Dichloropropene	0.495	0.433	0.524	0.489	0.504
Carbon Tetrachloride	0.648	0.697	0.815	0.779	0.777
1,2-Dichloroethane	0.571	0.510	0.641	0.592	0.574
Benzene	1.219	1.141	1.347	1.264	1.263
Trichloroethene	0.359	0.361	0.405	0.402	0.397
1,2-Dichloropropane	0.197	0.242	0.301	0.233	0.240
Bromodichloromethane	0.587	0.499	0.577	0.564	0.540
Dibromomethane	0.172	0.180	0.213	0.200	0.194
2-Chloroethyl Vinyl Ether		0.094	0.116	0.115	0.124
4-Methyl-2-Pentanone		0.058	0.064	0.063	0.062
Cis 1,3-dichloropropene	0.466	0.524	0.587	0.555	0.548
Toluene	0.906	0.806	0.927	0.902	0.904
Trans 1,3-Dichloropropene	0.529	0.478	0.594	0.558	0.556
2-Hexanone		0.099	0.124	0.114	0.115

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 — Calibration Date: 07/27/11

LAB FILE ID: RF0.2: 0020727 RF0.5: 0050727 RF1: 0100727
RF4: 0400727 RF10: 1000727

COMPOUND	RF0.2	RF0.5	RF1	RF4	RF10
1,1,2-Trichloroethane	0.227	0.237	0.281	0.249	0.239
1,3-Dichloropropane	0.471	0.429	0.523	0.470	0.439
Tetrachloroethene	0.510	0.433	0.513	0.467	0.454
Chlorodibromomethane	0.381	0.358	0.464	0.425	0.420
1,2-Dibromoethane	0.280	0.234	0.279	0.264	0.262
Chlorobenzene	1.158	1.115	1.204	1.137	1.105
Ethyl Benzene	0.584	0.562	0.651	0.606	0.613
1,1,1,2-Tetrachloroethane	0.450	0.454	0.514	0.471	0.461
m,p-xylene	0.719	0.700	0.823	0.767	0.747
o-Xylene	0.592	0.609	0.769	0.695	0.714
Styrene	0.995	1.042	1.262	1.183	1.210
Bromoform	0.486	0.394	0.515	0.437	0.411
1,1,2,2-Tetrachloroethane	0.675	0.420	0.492	0.469	0.413
1,2,3-Trichloropropane	0.264	0.209	0.283	0.207	0.191
Trans-1,4-Dichloro 2-Butene			0.229	0.236	0.207
N-Propyl Benzene	3.544	3.127	3.884	3.502	3.307
Bromobenzene	0.950	0.906	1.048	0.900	0.835
Isopropyl Benzene	2.811	2.776	3.485	3.289	3.092
2-Chloro Toluene	2.351	2.305	2.711	2.443	2.307
4-Chloro Toluene	2.961	2.400	2.912	2.656	2.526
T-Butyl Benzene	2.160	2.101	2.624	2.386	2.279
1,3,5-Trimethyl Benzene	2.657	2.500	3.198	2.913	2.747
1,2,4-Trimethylbenzene	2.740	2.526	3.143	2.980	2.852
S-Butyl Benzene	3.035	2.770	3.343	2.996	2.938
4-Isopropyl Toluene	2.488	2.252	2.859	2.751	2.701
1,3-Dichlorobenzene	1.678	1.489	1.999	1.701	1.598
1,4-Dichlorobenzene	2.105	1.802	1.971	1.734	1.649
N-Butyl Benzene	1.928	1.951	2.329	2.148	2.111
1,2-Dichlorobenzene	1.733	1.498	1.780	1.579	1.456
1,2-Dibromo 3-Chloropropane	0.104	0.177	0.173	0.133	0.120
1,2,4-Trichlorobenzene	0.910	0.873	1.027	0.890	0.833
Hexachloro 1,3-Butadiene		0.550	0.577	0.472	0.444
Naphthalene	1.426	1.383	1.643	1.510	1.454
1,2,3-Trichlorobenzene	0.750	0.612	0.758	0.638	0.546
Dichlorodifluoromethane	0.511	0.578	0.594	0.616	0.646
Methyl tert butyl ether	1.258	1.246	1.428	1.319	1.291

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 Calibration Date: 07/27/11

LAB FILE ID: RF0.2: 0020727 RF0.5: 0050727 RF1: 0100727
RF4: 0400727 RF10: 1000727

COMPOUND	RF0.2	RF0.5	RF1	RF4	RF10
d4-1,2-Dichloroethane	0.541	0.588	0.595	0.598	0.570
d8-Toluene	1.120	1.100	1.111	1.136	1.126
4-Bromofluorobenzene	0.554	0.579	0.575	0.589	0.596
d4-1,2-Dichlorobenzene	0.861	0.875	0.902	0.882	0.882
Dibromofluoromethane	0.399	0.403	0.423	0.423	0.426

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 Calibration Date: 07/27/11

LAB FILE ID: RF20: 2000727 RF40: 4000727 RF60: 6000727

COMPOUND	RF20	RF40	RF60
Chloromethane	0.307	0.274	0.259
Vinyl Chloride	0.382	0.362	0.311
Bromomethane	0.267	0.276	0.256
Chloroethane	0.215	0.210	0.203
Trichlorofluoromethane	0.942	0.762	0.719
Acrolein	0.031	0.029	0.028
112Trichloro122Trifluoroetha	0.409	0.391	0.374
Acetone	0.049	0.054	0.053
1,1-Dichloroethene	0.359	0.339	0.314
Bromoethane	0.233	0.207	0.180
Iodomethane	0.548	0.505	0.418
Methylene Chloride	0.356	0.322	0.283
Acrylonitrile	0.060	0.059	0.058
Carbon Disulfide	0.995	0.897	0.942
Trans-1,2-Dichloroethene	0.437	0.405	0.414
Vinyl Acetate	0.456	0.463	0.423
1,1-Dichloroethane	0.690	0.698	0.621
2-Butanone	0.074	0.077	0.070
2,2-Dichloropropane	0.931	0.929	0.854
Cis-1,2-Dichloroethene	0.436	0.435	0.401
Chloroform	0.855	0.847	0.762
Bromochloromethane	0.200	0.194	0.182
1,1,1-Trichloroethane	0.993	0.975	0.872
1,1-Dichloropropene	0.468	0.452	0.424
Carbon Tetrachloride	0.718	0.701	0.637
1,2-Dichloroethane	0.540	0.532	0.492
Benzene	1.178	1.121	1.043
Trichloroethene	0.371	0.360	0.331
1,2-Dichloropropane	0.229	0.218	0.202
Bromodichloromethane	0.497	0.481	0.447
Dibromomethane	0.176	0.169	0.158
2-Chloroethyl Vinyl Ether	0.115	0.113	0.109
4-Methyl-2-Pentanone	0.057	0.054	0.050
Cis 1,3-dichloropropene	0.503	0.490	0.458
Toluene	0.830	0.800	0.734
Trans 1,3-Dichloropropene	0.525	0.499	0.455
2-Hexanone	0.102	0.080	

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 Calibration Date: 07/27/11

LAB FILE ID: RF20: 2000727 RF40: 4000727 RF60: 6000727

COMPOUND	RF20	RF40	RF60
1,1,2-Trichloroethane	0.221	0.218	0.204
1,3-Dichloropropane	0.402	0.396	0.376
Tetrachloroethene	0.430	0.409	0.384
Chlorodibromomethane	0.378	0.371	0.347
1,2-Dibromoethane	0.244	0.230	0.219
Chlorobenzene	1.021	0.986	0.894
Ethyl Benzene	0.575	0.540	0.497
1,1,1,2-Tetrachloroethane	0.426	0.411	0.376
m,p-xylene	0.690	0.647	0.578
o-Xylene	0.676	0.648	0.591
Styrene	1.125	1.045	0.944
Bromoform	0.358	0.339	
1,1,2,2-Tetrachloroethane	0.405		
1,2,3-Trichloropropane	0.174		
Trans-1,4-Dichloro 2-Butene	0.184	0.132	
N-Propyl Benzene	3.004	2.929	2.640
Bromobenzene	0.746	0.727	0.648
Isopropyl Benzene	2.818	2.721	2.425
2-Chloro Toluene	2.102	2.003	1.874
4-Chloro Toluene	2.340	2.147	2.131
T-Butyl Benzene	2.101	2.066	1.893
1,3,5-Trimethyl Benzene	2.529	2.467	2.227
1,2,4-Trimethylbenzene	2.608	2.552	2.326
S-Butyl Benzene	2.733	2.654	2.408
4-Isopropyl Toluene	2.494	2.465	2.192
1,3-Dichlorobenzene	1.470		
1,4-Dichlorobenzene	1.506	1.492	1.294
N-Butyl Benzene	1.986	1.974	
1,2-Dichlorobenzene	1.375	1.334	1.156
1,2-Dibromo 3-Chloropropane	0.113	0.105	0.090
1,2,4-Trichlorobenzene	0.766		
Hexachloro 1,3-Butadiene	0.385		
Naphthalene	1.353		
1,2,3-Trichlorobenzene	0.398		
Dichlorodifluoromethane	0.604	0.542	0.459
Methyl tert butyl ether	1.204	1.215	1.114

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 Calibration Date: 07/27/11

LAB FILE ID: RF20: 2000727 RF40: 4000727 RF60: 6000727

COMPOUND	RF20	RF40	RF60
d4-1,2-Dichloroethane	0.570	0.588	0.563
d8-Toluene	1.125	1.115	1.108
4-Bromofluorobenzene	0.620	0.597	0.505
d4-1,2-Dichlorobenzene	0.894	0.880	0.839
Dibromofluoromethane	0.415	0.422	0.409

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 — Calibration Date: 07/27/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
Chloromethane	LINR		0.9926
Vinyl Chloride	AVRG	0.384	10.4
Bromomethane	AVRG	0.246	10.5
Chloroethane	AVRG	0.237	12.5
Trichlorofluoromethane	AVRG	0.972	17.8
Acrolein	AVRG	0.033	13.6
112Trichloro122Trifluoroetha	AVRG	0.444	12.3
Acetone	AVRG	0.056	9.7
1,1-Dichloroethene	AVRG	0.377	14.1
Bromoethane	AVRG	0.240	13.4
Iodomethane	AVRG	0.573	18.0
Methylene Chloride	AVRG	0.379	17.6
Acrylonitrile	AVRG	0.066	18.2
Carbon Disulfide	AVRG	1.049	9.7
Trans-1,2-Dichloroethene	AVRG	0.452	8.1
Vinyl Acetate	AVRG	0.451	5.1
1,1-Dichloroethane	AVRG	0.714	7.7
2-Butanone	AVRG	0.081	11.3
2,2-Dichloropropane	AVRG	0.929	6.7
Cis-1,2-Dichloroethene	AVRG	0.450	7.3
Chloroform	AVRG	0.909	11.4
Bromochloromethane	AVRG	0.209	10.5
1,1,1-Trichloroethane	AVRG	1.020	9.6
1,1-Dichloropropene	AVRG	0.474	7.4
Carbon Tetrachloride	AVRG	0.722	8.9
1,2-Dichloroethane	AVRG	0.556	8.6
Benzene	AVRG	1.197	8.0
Trichloroethene	AVRG	0.373	7.0
1,2-Dichloropropane	AVRG	0.233	13.8
Bromodichloromethane	AVRG	0.524	9.6
Dibromomethane	AVRG	0.183	9.9
2-Chloroethyl Vinyl Ether	AVRG	0.112	8.4
4-Methyl-2-Pentanone	AVRG	0.058	8.9
Cis 1,3-dichloropropene	AVRG	0.516	8.8
Toluene	AVRG	0.851	8.1
Trans 1,3-Dichloropropene	AVRG	0.524	8.7
2-Hexanone	AVRG	0.105	14.6

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 — Calibration Date: 07/27/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
1,1,2-Trichloroethane	AVRG	0.234	10.0
1,3-Dichloropropane	AVRG	0.438	11.0
Tetrachloroethene	AVRG	0.450	10.1
Chlorodibromomethane	AVRG	0.393	10.1
1,2-Dibromoethane	AVRG	0.252	9.2
Chlorobenzene	AVRG	1.078	9.5
Ethyl Benzene	AVRG	0.578	8.2
1,1,1,2-Tetrachloroethane	AVRG	0.446	9.3
m,p-xylene	AVRG	0.709	10.6
o-Xylene	AVRG	0.662	9.6
Styrene	AVRG	1.101	10.2
Bromoform	AVRG	0.420	15.3
1,1,2,2-Tetrachloroethane	LINR		0.9985
1,2,3-Trichloropropane	AVRG	0.221	19.2
Trans-1,4-Dichloro 2-Butene	2ORDR		0.9956
N-Propyl Benzene	AVRG	3.242	12.2
Bromobenzene	AVRG	0.845	15.6
Isopropyl Benzene	AVRG	2.927	11.6
2-Chloro Toluene	AVRG	2.262	11.7
4-Chloro Toluene	AVRG	2.509	12.6
T-Butyl Benzene	AVRG	2.201	10.2
1,3,5-Trimethyl Benzene	AVRG	2.655	11.3
1,2,4-Trimethylbenzene	AVRG	2.716	9.8
S-Butyl Benzene	AVRG	2.860	9.9
4-Isopropyl Toluene	AVRG	2.525	9.3
1,3-Dichlorobenzene	AVRG	1.656	11.6
1,4-Dichlorobenzene	AVRG	1.694	15.7
N-Butyl Benzene	AVRG	2.061	7.0
1,2-Dichlorobenzene	AVRG	1.489	13.9
1,2-Dibromo 3-Chloropropane	2ORDR		0.9984
1,2,4-Trichlorobenzene	AVRG	0.883	9.8
Hexachloro 1,3-Butadiene	AVRG	0.485	16.1
Naphthalene	AVRG	1.461	7.1
1,2,3-Trichlorobenzene	2ORDR		0.9972
Dichlorodifluoromethane	AVRG	0.569	10.7
Methyl tert butyl ether	AVRG	1.260	7.3

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT5 — Calibration Date: 07/27/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
d4-1,2-Dichloroethane	AVRG	0.577	3.4
d8-Toluene	AVRG	1.118	1.0
4-Bromofluorobenzene	AVRG	0.577	6.0
d4-1,2-Dichlorobenzene	AVRG	0.877	2.2
Dibromofluoromethane	AVRG	0.415	2.5

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 Calibration Date: 09/21/11

LAB FILE ID: RF0.2: 00_20921 RF0.5: 00_50921 RF1: 01_00921
RF2: 02_00921 RF10: 10_00921

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
Chloromethane		0.942	0.850	0.880	0.733
Vinyl Chloride	0.625	0.610	0.625	0.659	0.642
Bromomethane			0.323	0.325	0.307
Chloroethane	0.427	0.407	0.388	0.412	0.385
Trichlorofluoromethane	0.798	0.711	0.725	0.783	0.724
Acrolein	0.058	0.054	0.057	0.057	0.061
112Trichloro122Trifluoroetha	0.529	0.449	0.475	0.479	0.440
Acetone		0.231	0.193	0.173	0.148
1,1-Dichloroethene	0.625	0.508	0.473	0.498	0.444
Bromoethane	0.340	0.311	0.329	0.338	0.314
Iodomethane			0.526	0.521	0.551
Methylene Chloride		0.598	0.546	0.550	0.507
Acrylonitrile		0.155	0.158	0.169	0.160
Carbon Disulfide	1.638	1.529	1.519	1.651	1.514
Trans-1,2-Dichloroethene	0.564	0.536	0.523	0.543	0.502
Vinyl Acetate	0.978	0.950	0.997	1.058	1.040
1,1-Dichloroethane	1.007	0.928	0.954	0.988	0.910
2-Butanone	0.252	0.236	0.247	0.257	0.244
2,2-Dichloropropane	0.928	0.805	0.770	0.815	0.778
Cis-1,2-Dichloroethene	0.584	0.561	0.559	0.573	0.534
Chloroform	0.956	0.887	0.938	0.963	0.909
Bromochloromethane	0.265	0.250	0.254	0.272	0.250
1,1,1-Trichloroethane	0.897	0.862	0.869	0.900	0.842
1,1-Dichloropropene	0.509	0.504	0.492	0.522	0.490
Carbon Tetrachloride	0.456	0.431	0.439	0.462	0.459
1,2-Dichloroethane	0.498	0.505	0.489	0.510	0.455
Benzene	1.487	1.436	1.433	1.489	1.356
Trichloroethene	0.407	0.350	0.365	0.370	0.346
1,2-Dichloropropane	0.383	0.348	0.350	0.373	0.339
Bromodichloromethane	0.450	0.418	0.421	0.454	0.447
Dibromomethane	0.205	0.183	0.200	0.207	0.187
2-Chloroethyl Vinyl Ether		0.117	0.114	0.107	0.146
4-Methyl-2-Pentanone	0.118	0.126	0.131	0.140	0.135
Cis 1,3-dichloropropene	0.547	0.501	0.535	0.563	0.552
Toluene	0.946	0.932	0.930	0.961	0.874
Trans 1,3-Dichloropropene	0.468	0.467	0.480	0.522	0.521
2-Hexanone	0.251	0.252	0.262	0.286	0.280

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 Calibration Date: 09/21/11

LAB FILE ID: RF0.2: 00_20921 RF0.5: 00_50921 RF1: 01_00921
RF2: 02_00921 RF10: 10_00921

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
1,1,2-Trichloroethane	0.328	0.290	0.297	0.308	0.286
1,3-Dichloropropane	0.575	0.562	0.574	0.590	0.558
Tetrachloroethene	0.412	0.403	0.418	0.415	0.394
Chlorodibromomethane	0.263	0.289	0.292	0.317	0.329
1,2-Dibromoethane	0.286	0.288	0.286	0.320	0.301
Chlorobenzene	1.135	1.029	1.070	1.096	1.005
Ethyl Benzene	0.608	0.561	0.552	0.588	0.548
1,1,1,2-Tetrachloroethane	0.347	0.304	0.329	0.358	0.353
m,p-xylene	0.689	0.688	0.693	0.737	0.677
o-Xylene	0.662	0.663	0.679	0.716	0.659
Styrene	0.991	1.031	1.056	1.187	1.121
Bromoform	0.280	0.276	0.289	0.304	0.343
1,1,2,2-Tetrachloroethane	0.602	0.660	0.667	0.683	0.684
1,2,3-Trichloropropane	0.250	0.226	0.232	0.229	0.226
Trans-1,4-Dichloro 2-Butene			0.119	0.136	0.125
N-Propyl Benzene	3.640	3.514	3.562	3.710	3.528
Bromobenzene	0.829	0.749	0.778	0.784	0.746
Isopropyl Benzene	2.501	2.530	2.531	2.670	2.579
2-Chloro Toluene	2.555	2.513	2.509	2.536	2.393
4-Chloro Toluene	2.419	2.278	2.373	2.345	2.236
T-Butyl Benzene	2.417	2.330	2.302	2.437	2.316
1,3,5-Trimethyl Benzene	2.501	2.530	2.531	2.670	2.579
1,2,4-Trimethylbenzene	2.527	2.071	2.293	2.468	2.448
S-Butyl Benzene	3.444	3.038	3.114	3.397	3.276
4-Isopropyl Toluene	2.861	2.170	2.452	2.708	2.665
1,3-Dichlorobenzene	1.651	1.547	1.536	1.610	1.506
1,4-Dichlorobenzene	1.674	1.654	1.641	1.681	1.556
N-Butyl Benzene	2.395	1.518	1.725	2.134	2.087
1,2-Dichlorobenzene	1.615	1.556	1.570	1.588	1.471
1,2-Dibromo 3-Chloropropane		0.112	0.127	0.133	0.135
1,2,4-Trichlorobenzene	1.082	0.757	0.815	0.997	0.996
Hexachloro 1,3-Butadiene		0.559	0.560	0.600	0.576
Naphthalene		1.645	1.739	2.138	2.152
1,2,3-Trichlorobenzene		0.704	0.719	0.921	0.886
Dichlorodifluoromethane	0.428	0.483	0.425	0.502	0.483
Methyl tert butyl ether	1.458	1.374	1.459	1.378	1.400

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 Calibration Date: 09/21/11

LAB FILE ID: RF0.2: 00_20921 RF0.5: 00_50921 RF1: 01_00921
RF2: 02_00921 RF10: 10_00921

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
d4-1,2-Dichloroethane	0.582	0.575	0.582	0.580	0.575
d8-Toluene	1.240	1.232	1.232	1.241	1.212
4-Bromofluorobenzene	0.558	0.551	0.550	0.557	0.548
d4-1,2-Dichlorobenzene	0.906	0.898	0.914	0.904	0.910
Dibromofluoromethane	0.449	0.444	0.447	0.453	0.459

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 Calibration Date: 09/21/11

LAB FILE ID: RF20: 20_00921 RF40: 40_00921 RF60: 60_00921

COMPOUND	RF20	RF40	RF60
Chloromethane	0.729	0.758	0.786
Vinyl Chloride	0.640	0.684	0.645
Bromomethane	0.311	0.341	0.355
Chloroethane	0.329		
Trichlorofluoromethane	0.725	0.682	0.628
Acrolein	0.070	0.071	0.073
112Trichloro122Trifluoroetha	0.460	0.467	0.457
Acetone	0.156	0.155	0.157
1,1-Dichloroethene	0.457	0.462	0.460
Bromoethane	0.316	0.313	0.311
Iodomethane	0.545	0.517	0.534
Methylene Chloride	0.524	0.536	0.534
Acrylonitrile	0.172	0.176	0.178
Carbon Disulfide	1.611	1.623	1.614
Trans-1,2-Dichloroethene	0.526	0.528	0.532
Vinyl Acetate	1.115	1.160	1.165
1,1-Dichloroethane	0.954	0.972	0.980
2-Butanone	0.265	0.270	
2,2-Dichloropropane	0.814	0.826	0.822
Cis-1,2-Dichloroethene	0.558	0.567	0.565
Chloroform	0.952	0.968	0.972
Bromochloromethane	0.258	0.259	0.261
1,1,1-Trichloroethane	0.890	0.900	0.893
1,1-Dichloropropene	0.517	0.519	0.517
Carbon Tetrachloride	0.492	0.499	0.506
1,2-Dichloroethane	0.486	0.485	0.492
Benzene	1.419	1.402	1.387
Trichloroethene	0.362	0.363	0.366
1,2-Dichloropropane	0.358	0.361	0.364
Bromodichloromethane	0.488	0.492	0.500
Dibromomethane	0.199	0.198	0.199
2-Chloroethyl Vinyl Ether	0.158	0.162	0.173
4-Methyl-2-Pentanone	0.147	0.144	0.147
Cis 1,3-dichloropropene	0.604	0.610	0.616
Toluene	0.914	0.897	0.892
Trans 1,3-Dichloropropene	0.566	0.576	0.582
2-Hexanone	0.296	0.290	0.279

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 Calibration Date: 09/21/11

LAB FILE ID: RF20: 20_00921 RF40: 40_00921 RF60: 60_00921

COMPOUND	RF20	RF40	RF60
1,1,2-Trichloroethane	0.304	0.301	0.304
1,3-Dichloropropane	0.575	0.587	0.583
Tetrachloroethene	0.409	0.410	0.404
Chlorodibromomethane	0.360	0.377	0.379
1,2-Dibromoethane	0.318	0.320	0.326
Chlorobenzene	1.037	1.035	1.023
Ethyl Benzene	0.569	0.573	0.571
1,1,1,2-Tetrachloroethane	0.370	0.380	0.382
m,p-xylene	0.700	0.691	0.678
o-Xylene	0.682	0.690	0.695
Styrene	1.186	1.225	1.221
Bromoform	0.409	0.422	0.429
1,1,2,2-Tetrachloroethane	0.728	0.727	0.728
1,2,3-Trichloropropane	0.239	0.234	0.231
Trans-1,4-Dichloro 2-Butene	0.178	0.194	0.200
N-Propyl Benzene	3.624	3.444	3.194
Bromobenzene	0.780	0.778	0.774
Isopropyl Benzene	2.668	2.616	2.475
2-Chloro Toluene	2.494	2.461	2.388
4-Chloro Toluene	2.320	2.283	2.204
T-Butyl Benzene	2.394	2.368	2.271
1,3,5-Trimethyl Benzene	2.668	2.616	2.475
1,2,4-Trimethylbenzene	2.601	2.622	2.505
S-Butyl Benzene	3.306	3.277	3.045
4-Isopropyl Toluene	2.793	2.859	2.682
1,3-Dichlorobenzene	1.565	1.555	1.525
1,4-Dichlorobenzene	1.619	1.606	1.569
N-Butyl Benzene	2.079	2.322	2.111
1,2-Dichlorobenzene	1.524	1.514	1.485
1,2-Dibromo 3-Chloropropane	0.153	0.155	0.158
1,2,4-Trichlorobenzene	0.955	1.014	0.957
Hexachloro 1,3-Butadiene	0.572	0.560	0.548
Naphthalene	1.962	1.832	1.857
1,2,3-Trichlorobenzene	0.865	0.888	0.848
Dichlorodifluoromethane	0.488	0.513	0.472
Methyl tert butyl ether	1.496	1.501	1.544

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 Calibration Date: 09/21/11

LAB FILE ID: RF20: 20_00921 RF40: 40_00921 RF60: 60_00921

COMPOUND	RF20	RF40	RF60
d4-1,2-Dichloroethane	0.581	0.588	0.588
d8-Toluene	1.242	1.215	1.221
4-Bromofluorobenzene	0.550	0.558	0.573
d4-1,2-Dichlorobenzene	0.918	0.909	0.903
Dibromofluoromethane	0.461	0.470	0.478

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 — Calibration Date: 09/21/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
Chloromethane	AVRG	0.811	10.0
Vinyl Chloride	AVRG	0.641	3.5
Bromomethane	AVRG	0.327	5.6
Chloroethane	AVRG	0.391	8.7
Trichlorofluoromethane	AVRG	0.722	7.4
Acrolein	AVRG	0.063	11.9
112Trichloro122Trifluoroetha	AVRG	0.470	5.8
Acetone	AVRG	0.173	17.2
1,1-Dichloroethene	AVRG	0.491	11.9
Bromoethane	AVRG	0.321	3.8
Iodomethane	AVRG	0.532	2.6
Methylene Chloride	AVRG	0.542	5.3
Acrylonitrile	AVRG	0.167	5.4
Carbon Disulfide	AVRG	1.587	3.6
Trans-1,2-Dichloroethene	AVRG	0.532	3.3
Vinyl Acetate	AVRG	1.058	7.8
1,1-Dichloroethane	AVRG	0.962	3.3
2-Butanone	AVRG	0.253	4.7
2,2-Dichloropropane	AVRG	0.820	5.9
Cis-1,2-Dichloroethene	AVRG	0.563	2.6
Chloroform	AVRG	0.943	3.2
Bromochloromethane	AVRG	0.259	3.0
1,1,1-Trichloroethane	AVRG	0.882	2.4
1,1-Dichloropropene	AVRG	0.509	2.4
Carbon Tetrachloride	AVRG	0.468	6.0
1,2-Dichloroethane	AVRG	0.490	3.4
Benzene	AVRG	1.426	3.2
Trichloroethene	AVRG	0.366	5.0
1,2-Dichloropropane	AVRG	0.360	3.9
Bromodichloromethane	AVRG	0.459	6.9
Dibromomethane	AVRG	0.197	4.1
2-Chloroethyl Vinyl Ether	AVRG	0.140	19.1
4-Methyl-2-Pentanone	AVRG	0.136	7.7
Cis 1,3-dichloropropene	AVRG	0.566	7.2
Toluene	AVRG	0.918	3.2
Trans 1,3-Dichloropropene	AVRG	0.523	9.2
2-Hexanone	AVRG	0.274	6.4

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 — Calibration Date: 09/21/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
1,1,2-Trichloroethane	AVRG	0.302	4.2
1,3-Dichloropropane	AVRG	0.576	1.9
Tetrachloroethene	AVRG	0.408	1.8
Chlorodibromomethane	AVRG	0.326	13.3
1,2-Dibromoethane	AVRG	0.306	5.6
Chlorobenzene	AVRG	1.054	4.1
Ethyl Benzene	AVRG	0.571	3.4
1,1,1,2-Tetrachloroethane	AVRG	0.353	7.4
m,p-xylene	AVRG	0.694	2.7
o-Xylene	AVRG	0.681	2.9
Styrene	AVRG	1.127	8.1
Bromoform	AVRG	0.344	19.3
1,1,2,2-Tetrachloroethane	AVRG	0.685	6.4
1,2,3-Trichloropropane	AVRG	0.233	3.4
Trans-1,4-Dichloro 2-Butene	2ORDR		0.9976
N-Propyl Benzene	AVRG	3.527	4.5
Bromobenzene	AVRG	0.777	3.3
Isopropyl Benzene	AVRG	2.571	2.9
2-Chloro Toluene	AVRG	2.481	2.5
4-Chloro Toluene	AVRG	2.307	3.1
T-Butyl Benzene	AVRG	2.354	2.5
1,3,5-Trimethyl Benzene	AVRG	2.571	2.9
1,2,4-Trimethylbenzene	AVRG	2.442	7.4
S-Butyl Benzene	AVRG	3.237	4.8
4-Isopropyl Toluene	AVRG	2.649	8.8
1,3-Dichlorobenzene	AVRG	1.562	3.0
1,4-Dichlorobenzene	AVRG	1.625	2.8
N-Butyl Benzene	AVRG	2.046	14.2
1,2-Dichlorobenzene	AVRG	1.540	3.3
1,2-Dibromo 3-Chloropropane	AVRG	0.139	12.2
1,2,4-Trichlorobenzene	AVRG	0.947	11.4
Hexachloro 1,3-Butadiene	AVRG	0.568	3.0
Naphthalene	AVRG	1.904	10.1
1,2,3-Trichlorobenzene	AVRG	0.833	10.3
Dichlorodifluoromethane	AVRG	0.474	6.8
Methyl tert butyl ether	AVRG	1.451	4.3

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC | Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 | Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 | Calibration Date: 09/21/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
d4-1,2-Dichloroethane	AVRG	0.581	0.9
d8-Toluene	AVRG	1.229	1.0
4-Bromofluorobenzene	AVRG	0.556	1.5
d4-1,2-Dichlorobenzene	AVRG	0.908	0.7
Dibromofluoromethane	AVRG	0.458	2.6

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 — Cont. Calib. Date: 09/26/11

Init. Calib. Date: 09/21/11 — Cont. Calib. Time: 0939

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Chloromethane	0.811	0.6624	0.100	AVRG	-18.3	
Vinyl Chloride	0.641	0.6043	0.010	AVRG	-5.7	
Bromomethane	0.327	0.2645	0.010	AVRG	-19.1	
Chloroethane	0.391	0.3501	0.010	AVRG	-10.5	
Trichlorofluoromethane	0.722	0.7138	0.010	AVRG	-1.1	
Acrolein	0.063	0.0569	0.010	AVRG	-9.7	
112Trichloro122Trifluoroetha	0.470	0.4519	0.010	AVRG	-3.8	
Acetone	0.173	0.1353	0.010	AVRG	-21.8	<-
1,1-Dichloroethene	0.491	0.4429	0.010	AVRG	-9.8	
Bromoethane	0.322	0.2964	0.010	AVRG	-8.0	
Iodomethane	0.532	0.3701	0.010	AVRG	-30.4	<-
Methylene Chloride	0.542	0.4977	0.010	AVRG	-8.2	
Acrylonitrile	0.167	0.1518	0.010	AVRG	-9.1	
Carbon Disulfide	1.587	1.5028	0.010	AVRG	-5.3	
Trans-1,2-Dichloroethene	0.532	0.5005	0.010	AVRG	-5.9	
Vinyl Acetate	1.058	0.9871	0.010	AVRG	-6.7	
1,1-Dichloroethane	0.962	0.8756	0.100	AVRG	-9.0	
2-Butanone	0.253	0.2338	0.010	AVRG	-7.6	
2,2-Dichloropropane	0.820	0.7671	0.010	AVRG	-6.4	
Cis-1,2-Dichloroethene	0.563	0.5241	0.010	AVRG	-6.9	
Chloroform	0.943	0.8900	0.010	AVRG	-5.6	
Bromochloromethane	0.259	0.2441	0.010	AVRG	-5.8	
1,1,1-Trichloroethane	0.882	0.8295	0.010	AVRG	-6.0	
1,1-Dichloropropene	0.509	0.4885	0.010	AVRG	-4.0	
Carbon Tetrachloride	0.468	0.4581	0.010	AVRG	-2.1	
1,2-Dichloroethane	0.490	0.4422	0.010	AVRG	-9.8	
Benzene	1.426	1.3452	0.010	AVRG	-5.7	
Trichloroethene	0.366	0.3516	0.010	AVRG	-3.9	
1,2-Dichloropropane	0.360	0.3312	0.010	AVRG	-8.0	
Bromodichloromethane	0.459	0.4406	0.010	AVRG	-4.0	
Dibromomethane	0.197	0.1840	0.010	AVRG	-6.6	
2-Chloroethyl Vinyl Ether	0.140	0.1201	0.010	AVRG	-14.2	
4-Methyl-2-Pentanone	0.136	0.1282	0.010	AVRG	-5.7	
Cis 1,3-dichloropropene	0.566	0.5365	0.010	AVRG	-5.2	
Toluene	0.918	0.8681	0.010	AVRG	-5.4	
Trans 1,3-Dichloropropene	0.523	0.5003	0.010	AVRG	-4.3	
2-Hexanone	0.274	0.2542	0.010	AVRG	-7.2	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2 — Cont. Calib. Date: 09/26/11

Init. Calib. Date: 09/21/11 — Cont. Calib. Time: 0939

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
1,1,2-Trichloroethane	0.302	0.2814	0.010	AVRG	-6.8	
1,3-Dichloropropane	0.576	0.5226	0.010	AVRG	-9.3	
Tetrachloroethene	0.408	0.4040	0.010	AVRG	-1.0	
Chlorodibromomethane	0.326	0.3289	0.010	AVRG	0.9	
1,2-Dibromoethane	0.306	0.2876	0.010	AVRG	-6.0	
Chlorobenzene	1.054	0.9954	0.300	AVRG	-5.6	
Ethyl Benzene	0.571	0.5373	0.010	AVRG	-5.9	
1,1,1,2-Tetrachloroethane	0.353	0.3456	0.010	AVRG	-2.1	
m,p-xylene	0.694	0.6739	0.010	AVRG	-2.9	
o-Xylene	0.681	0.6435	0.010	AVRG	-5.5	
Styrene	1.127	1.1296	0.010	AVRG	0.2	
Bromoform	0.344	0.3439	0.100	AVRG	-0.0	
1,1,2,2-Tetrachloroethane	0.685	0.6328	0.300	AVRG	-7.6	
1,2,3-Trichloropropane	0.233	0.2092	0.010	AVRG	-10.2	
Trans-1,4-Dichloro 2-Butene	10.000	7.018	0.010	2ORDR	-29.8	<-
N-Propyl Benzene	3.527	3.3874	0.010	AVRG	-4.0	
Bromobenzene	0.777	0.7278	0.010	AVRG	-6.3	
Isopropyl Benzene	2.571	2.4754	0.010	AVRG	-3.7	
2-Chloro Toluene	2.481	2.2921	0.010	AVRG	-7.6	
4-Chloro Toluene	2.307	2.1471	0.010	AVRG	-6.9	
T-Butyl Benzene	2.354	2.2400	0.010	AVRG	-4.8	
1,3,5-Trimethyl Benzene	2.571	2.4754	0.010	AVRG	-3.7	
1,2,4-Trimethylbenzene	2.442	2.4454	0.010	AVRG	0.1	
S-Butyl Benzene	3.237	3.1945	0.010	AVRG	-1.3	
4-Isopropyl Toluene	2.649	2.7596	0.010	AVRG	4.2	
1,3-Dichlorobenzene	1.562	1.4829	0.010	AVRG	-5.1	
1,4-Dichlorobenzene	1.625	1.5263	0.010	AVRG	-6.1	
N-Butyl Benzene	2.046	2.1562	0.010	AVRG	5.4	
1,2-Dichlorobenzene	1.540	1.4386	0.010	AVRG	-6.6	
1,2-Dibromo 3-Chloropropane	0.139	0.1218	0.010	AVRG	-12.4	
1,2,4-Trichlorobenzene	0.947	0.9954	0.010	AVRG	5.1	
Hexachloro 1,3-Butadiene	0.568	0.5674	0.010	AVRG	-0.1	
Naphthalene	1.904	2.0082	0.010	AVRG	5.5	
1,2,3-Trichlorobenzene	0.833	0.8534	0.010	AVRG	2.4	
Dichlorodifluoromethane	0.474	0.4563	0.010	AVRG	-3.7	
Methyl tert butyl ether	1.451	1.3215	0.010	AVRG	-8.9	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC
Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42
Project: 2011 FRP SHORELINE INVESTIG

Instrument ID: NT2
Cont. Calib. Date: 09/26/11

Init. Calib. Date: 09/21/11
Cont. Calib. Time: 0939

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
d4-1,2-Dichloroethane	0.581	0.5513	0.010	AVRG	-5.1
d8-Toluene	1.229	1.2170	0.010	AVRG	-1.0
4-Bromofluorobenzene	0.556	0.5536	0.010	AVRG	-0.4
d4-1,2-Dichlorobenzene	0.908	0.9103	0.010	AVRG	0.2
Dibromofluoromethane	0.458	0.4536	0.010	AVRG	-1.0

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIGA

Ical Midpoint ID: 1000727 — Ical Date: 07/27/11

Instrument ID: NT5 — Project Run Date: 09/21/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	319331	4.77	421917	5.21	402459	7.67
	UPPER LIMIT	638662	5.27	843834	5.71	804918	8.17
	LOWER LIMIT	159666	4.27	210958	4.71	201230	7.17
	Sample ID						
01	LCS0921	333608	4.77	454880	5.21	420554	7.67
02	LCS0921	316220	4.77	427131	5.21	395480	7.67
03	MB0921	297550	4.77	419779	5.21	387163	7.66
04	FRP-091911-0	243958	4.77	318525	5.21	289593	7.66
05	FRP-091911-0	259731	4.77	365931	5.21	382933	7.66
06	FRP-091911-0	292481	4.85	462562	5.28	394770	7.75
07	FRP-091911-0	293301	4.77	385524	5.21	364245	7.66
08	FRP-091911-0	265354	4.77	356334	5.21	338365	7.66
09	TRIP BLANKS	258822	4.77	347379	5.21	328343	7.66
10	FRP-092011-0	264434	4.77	356649	5.21	320607	7.67
11	FRP-092011-0	258738	4.77	345053	5.21	317057	7.67
12	TRIP BLANKS	255052	4.77	337989	5.21	315968	7.66
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIGA

Ical Midpoint ID: 1000727 — Ical Date: 07/27/11

Instrument ID: NT5 — Project Run Date: 09/21/11

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	245371	9.72				
	UPPER LIMIT	490742	10.22				
	LOWER LIMIT	122686	9.22				
	Sample ID						
01	LCS0921	251539	9.72				
02	LCS0921	223163	9.72				
03	MB0921	200860	9.72				
04	FRP-091911-0	152885	9.72				
05	FRP-091911-0	206198	9.72				
06	FRP-091911-0	152847	9.76				
07	FRP-091911-0	214077	9.72				
08	FRP-091911-0	186056	9.72				
09	TRIP BLANKS	174317	9.72				
10	FRP-092011-0	179204	9.72				
11	FRP-092011-0	173682	9.72				
12	TRIP BLANKS	167717	9.72				
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIGA

Ical Midpoint ID: 10_00921 — Ical Date: 09/21/11

Instrument ID: NT2 — Project Run Date: 09/26/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	331438	5.46	505777	5.86	491374	7.92
	UPPER LIMIT	662876	5.96	1011554	6.36	982748	8.42
	LOWER LIMIT	165719	4.96	252888	5.36	245687	7.42
	Sample ID						
01	LCS0926	302141	5.46	463384	5.86	458683	7.92
02	LCS0926	294107	5.46	447017	5.86	452687	7.92
03	MB0926	310738	5.46	468089	5.86	469380	7.92
04	TRIP BLANKS	306553	5.46	459320	5.86	459420	7.92
05	FRP-091911-0	321519	5.46	480140	5.86	472582	7.92
06	FRP-091911-0	312530	5.46	469646	5.85	462564	7.92
07	FRP-091911-0	318130	5.46	478761	5.85	472117	7.92
08	FRP-091911-0	312866	5.46	470323	5.85	465816	7.92
09	FRP-092011-0	305691	5.46	455665	5.86	454285	7.92
10	FRP-092011-0	297479	5.46	445846	5.86	448317	7.92
11	FRP-092011-0	304173	5.46	455255	5.86	455236	7.92
12	FRP-092111-0	317417	5.46	475118	5.85	466598	7.92
13	FRP-092111-0	321297	5.46	479180	5.85	472408	7.92
14	FRP-092111-0	318994	5.46	480834	5.85	469531	7.92
15	FRP-092111-0	324022	5.46	490358	5.85	479960	7.92
16	FRP-092111-0	319766	5.46	483678	5.85	474939	7.92
17	FRP-092111-0	299278	5.46	446469	5.86	445768	7.92
18	FRP-091911-0	315458	5.46	478667	5.85	464572	7.92
19	FRP-091911-0	324929	5.46	492284	5.85	477416	7.92
20							
21							
22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC EARTH AND ENVIRONMENTAL

ARI Job No: TN42 — Project: 2011 FRP SHORELINE INVESTIGA

Ical Midpoint ID: 10_00921 — Ical Date: 09/21/11

Instrument ID: NT2 — Project Run Date: 09/26/11

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	306350	9.62				
	UPPER LIMIT	612700	10.12				
	LOWER LIMIT	153175	9.12				
	Sample ID						
01	LCS0926	286825	9.61				
02	LCS0926	286948	9.61				
03	MB0926	284610	9.61				
04	TRIP BLANKS	282436	9.61				
05	FRP-091911-0	286008	9.61				
06	FRP-091911-0	277671	9.61				
07	FRP-091911-0	278594	9.61				
08	FRP-091911-0	277588	9.61				
09	FRP-092011-0	266535	9.61				
10	FRP-092011-0	273338	9.61				
11	FRP-092011-0	277228	9.61				
12	FRP-092111-0	278502	9.61				
13	FRP-092111-0	275481	9.61				
14	FRP-092111-0	270111	9.61				
15	FRP-092111-0	277630	9.61				
16	FRP-092111-0	279134	9.61				
17	FRP-092111-0	275086	9.61				
18	FRP-091911-0	284602	9.61				
19	FRP-091911-0	279507	9.61				
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TN42, TN43

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TN42

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
FRP-092111-001	TN42A	11-20663	
FRP-092111-001D	TN42ADUP	11-20663	
FRP-092111-001S	TN42ASPK	11-20663	
FRP-092111-002	TN42B	11-20664	
PBW	TN42MB1	11-20664	
LCSW	TN42MB1SPK	11-20664	
FRP-092111-003	TN42C	11-20665	
FRP-092111-004	TN42D	11-20666	
FRP-092111-005	TN42E	11-20667	
FRP-092111-006	TN42F	11-20668	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 10/11/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-001
SAMPLE

Lab Sample ID: TN42A
LIMS ID: 11-20663
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	**7429-90-5**	**Aluminum**	0.0257	0.05	**48.4**	
200.8	09/23/11	200.8	10/06/11	**7440-38-2**	**Arsenic**	0.00024	0.001	**0.019**	
3010A	09/23/11	6010B	09/27/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/23/11	6010B	09/27/11	**7440-47-3**	**Chromium**	0.00124	0.005	**0.182**	
3010A	09/23/11	6010B	09/27/11	**7440-50-8**	**Copper**	0.00092	0.002	**0.154**	
200.8	09/23/11	200.8	10/06/11	**7439-92-1**	**Lead**	0.000230	0.0005	**0.0108**	
3010A	09/23/11	6010B	09/27/11	**7440-02-0**	**Nickel**	0.0039	0.01	**0.07**	
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.0050	0.05	0.05	U J
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	**7440-62-2**	**Vanadium**	0.00027	0.003	**0.391**	
3010A	09/23/11	6010B	09/27/11	**7440-66-6**	**Zinc**	0.0014	0.01	**0.20**	

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-002
SAMPLE

Lab Sample ID: TN42B
LIMS ID: 11-20664
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	**7429-90-5**	**Aluminum**	0.051	0.1	**321**	
200.8	09/23/11	200.8	10/06/11	**7440-38-2**	**Arsenic**	0.000120	0.0005	**0.107**	
3010A	09/23/11	6010B	09/27/11	**7440-43-9**	**Cadmium**	0.00036	0.004	**0.006**	
3010A	09/23/11	6010B	09/27/11	**7440-47-3**	**Chromium**	0.0025	0.01	**0.53**	
3010A	09/23/11	6010B	09/27/11	**7440-50-8**	**Copper**	0.00184	0.004	**1.88**	
200.8	09/23/11	200.8	10/06/11	**7439-92-1**	**Lead**	0.000115	0.0002	**0.361**	
3010A	09/23/11	6010B	09/27/11	**7440-02-0**	**Nickel**	0.0077	0.02	**0.34**	
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.010	0.1	0.1	UJ
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.006	0.1	0.1	U
3010A	09/23/11	6010B	09/27/11	**7440-62-2**	**Vanadium**	0.00054	0.006	**1.32**	
3010A	09/23/11	6010B	09/27/11	**7440-66-6**	**Zinc**	0.0029	0.02	**1.27**	

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-003
SAMPLE

Lab Sample ID: TN42C
LIMS ID: 11-20665
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	**7429-90-5**	**Aluminum**	0.0257	0.05	**17.1**	
200.8	09/23/11	200.8	10/06/11	**7440-38-2**	**Arsenic**	0.000120	0.0005	**0.0085**	
3010A	09/23/11	6010B	09/27/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/23/11	6010B	09/27/11	**7440-47-3**	**Chromium**	0.00124	0.005	**0.082**	
3010A	09/23/11	6010B	09/27/11	**7440-50-8**	**Copper**	0.00092	0.002	**0.137**	
200.8	09/23/11	200.8	10/06/11	**7439-92-1**	**Lead**	0.000115	0.0002	**0.0152**	
3010A	09/23/11	6010B	09/27/11	**7440-02-0**	**Nickel**	0.0039	0.01	**0.02**	
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.0050	0.05	0.05	UJ
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	**7440-62-2**	**Vanadium**	0.00027	0.003	**0.398**	
3010A	09/23/11	6010B	09/27/11	**7440-66-6**	**Zinc**	0.0014	0.01	**0.17**	

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-004
SAMPLE

Lab Sample ID: TN42D
LIMS ID: 11-20666
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	**7429-90-5**	**Aluminum**	0.0257	0.05	**17.0**	
200.8	09/23/11	200.8	10/06/11	**7440-38-2**	**Arsenic**	0.000120	0.0005	**0.0090**	
3010A	09/23/11	6010B	09/27/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/23/11	6010B	09/27/11	**7440-47-3**	**Chromium**	0.00124	0.005	**0.079**	
3010A	09/23/11	6010B	09/27/11	**7440-50-8**	**Copper**	0.00092	0.002	**0.128**	
200.8	09/23/11	200.8	10/06/11	**7439-92-1**	**Lead**	0.000115	0.0002	**0.0150**	
3010A	09/23/11	6010B	09/27/11	**7440-02-0**	**Nickel**	0.0039	0.01	**0.02**	
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.0050	0.05	0.05	U J
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	**7440-62-2**	**Vanadium**	0.00027	0.003	**0.385**	
3010A	09/23/11	6010B	09/27/11	**7440-66-6**	**Zinc**	0.0014	0.01	**0.16**	

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-005
SAMPLE

Lab Sample ID: TN42E
LIMS ID: 11-20667
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	**7429-90-5**	**Aluminum**	0.0257	0.05	**13.4**	
200.8	09/23/11	200.8	10/06/11	**7440-38-2**	**Arsenic**	0.000120	0.0005	**0.0103**	
3010A	09/23/11	6010B	09/27/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/23/11	6010B	09/27/11	**7440-47-3**	**Chromium**	0.00124	0.005	**0.129**	
3010A	09/23/11	6010B	09/27/11	**7440-50-8**	**Copper**	0.00092	0.002	**0.082**	
200.8	09/23/11	200.8	10/06/11	**7439-92-1**	**Lead**	0.000115	0.0002	**0.0083**	
3010A	09/23/11	6010B	09/27/11	**7440-02-0**	**Nickel**	0.0039	0.01	**0.02**	
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.0050	0.05	0.05	UJ
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	**7440-62-2**	**Vanadium**	0.00027	0.003	**0.720**	
3010A	09/23/11	6010B	09/27/11	**7440-66-6**	**Zinc**	0.0014	0.01	**0.09**	

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-006
SAMPLE

Lab Sample ID: TN42F
LIMS ID: 11-20668
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	7429-90-5	Aluminum	0.0257	0.05	0.05	U
200.8	09/23/11	200.8	10/07/11	7440-38-2	Arsenic	0.000048	0.0002	0.0002	U
3010A	09/23/11	6010B	09/27/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/23/11	6010B	09/27/11	7440-47-3	Chromium	0.00124	0.005	0.005	U
3010A	09/23/11	6010B	09/27/11	7440-50-8	Copper	0.00092	0.002	0.002	U
200.8	09/23/11	200.8	10/07/11	7439-92-1	Lead	0.000046	0.0001	0.0001	U
3010A	09/23/11	6010B	09/27/11	7440-02-0	Nickel	0.0039	0.01	0.01	U
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.0050	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	7440-62-2	Vanadium	0.00027	0.003	0.003	U
3010A	09/23/11	6010B	09/27/11	7440-66-6	Zinc	0.0014	0.01	0.01	U

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-001
MATRIX SPIKE

Lab Sample ID: TN42A
LIMS ID: 11-20663
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	48.4	56.8	2.00	420%	H
Arsenic	200.8	0.019	0.046	0.025	108%	
Cadmium	6010B	0.002 U	0.539	0.500	108%	
Chromium	6010B	0.182	0.684	0.500	100%	
Copper	6010B	0.154	0.700	0.500	109%	
Lead	200.8	0.0108	0.0342	0.0250	93.6%	
Nickel	6010B	0.068	0.544	0.500	95.2%	
Selenium	6010B	0.05 U	1.42	2.00	71.0%	N
Thallium	6010B	0.05 U	2.05	2.00	102%	
Vanadium	6010B	0.391	0.857	0.500	93.2%	
Zinc	6010B	0.197	0.697	0.500	100%	

Reported in mg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-001
DUPLICATE

Lab Sample ID: TN42A
LIMS ID: 11-20663
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	48.4	49.9	3.1%	+/- 20%	
Arsenic	200.8	0.019	0.018	5.4%	+/- 20%	
Cadmium	6010B	0.002 U	0.002 U	0.0%	+/- 0.002	L
Chromium	6010B	0.182	0.181	0.6%	+/- 20%	
Copper	6010B	0.154	0.153	0.7%	+/- 20%	
Lead	200.8	0.0108	0.0108	0.0%	+/- 20%	
Nickel	6010B	0.07	0.07	0.0%	+/- 20%	
Selenium	6010B	0.05 U	0.05 U	0.0%	+/- 0.05	L
Thallium	6010B	0.05 U	0.05 U	0.0%	+/- 0.05	L
Vanadium	6010B	0.391	0.383	2.1%	+/- 20%	
Zinc	6010B	0.20	0.20	0.0%	+/- 20%	

Reported in mg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: TN42LCS
LIMS ID: 11-20664
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2.05	2.00	102%	
Arsenic	200.8	0.0257	0.0250	103%	
Cadmium	6010B	0.514	0.500	103%	
Chromium	6010B	0.502	0.500	100%	
Copper	6010B	0.506	0.500	101%	
Lead	200.8	0.0254	0.0250	102%	
Nickel	6010B	0.48	0.50	96.0%	
Selenium	6010B	1.86	2.00	93.0%	
Thallium	6010B	1.87	2.00	93.5%	
Vanadium	6010B	0.494	0.500	98.8%	
Zinc	6010B	0.48	0.50	96.0%	

Reported in mg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: TN42MB
LIMS ID: 11-20664
Matrix: Water
Data Release Authorized:
Reported: 10/11/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/23/11	6010B	09/27/11	7429-90-5	Aluminum	0.0257	0.05	0.05	U
200.8	09/23/11	200.8	10/06/11	7440-38-2	Arsenic	0.000048	0.0002	0.0002	U
3010A	09/23/11	6010B	09/27/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/23/11	6010B	09/27/11	7440-47-3	Chromium	0.00124	0.005	0.005	U
3010A	09/23/11	6010B	09/27/11	7440-50-8	Copper	0.00092	0.002	0.002	U
200.8	09/23/11	200.8	10/06/11	7439-92-1	Lead	0.000046	0.0001	0.0001	U
3010A	09/23/11	6010B	09/27/11	7440-02-0	Nickel	0.0039	0.01	0.01	U
3010A	09/23/11	6010B	09/27/11	7782-49-2	Selenium	0.0050	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/23/11	6010B	09/27/11	7440-62-2	Vanadium	0.00027	0.003	0.003	U
3010A	09/23/11	6010B	09/27/11	7440-66-6	Zinc	0.0014	0.01	0.01	U

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ug/L

SDG: TN42

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Aluminum	AL	ICP	IP092771	2000.0	1988.30	99.4	2000.0	2017.69	100.9	2040.49	102.0	1970.63	98.5	1963.83	98.2	1971.51	98.6
Arsenic	AS	PMS	MS100682	50.0	50.04	100.1	50.0	49.47	98.9	49.11	98.2	49.56	99.1	50.17	100.3	49.55	99.1
Cadmium	CD	ICP	IP092771	1000.0	1009.47	100.9	1000.0	1016.89	101.7	1035.92	103.6	1021.69	102.2	1002.41	100.2	1002.51	100.3
Chromium	CR	ICP	IP092771	1000.0	992.76	99.3	1000.0	997.19	99.7	1017.50	101.8	984.05	98.4	977.84	97.8	984.62	98.5
Copper	CU	ICP	IP092771	1000.0	970.43	97.0	1000.0	980.82	98.1	1000.32	100.0	990.53	99.1	973.04	97.3	966.19	96.6
Lead	PB	PMS	MS100682	50.0	49.54	99.1	50.0	49.07	98.1	48.89	97.8	48.84	97.7	48.99	98.0	49.54	99.1
Nickel	NI	ICP	IP092771	1000.0	987.11	98.7	1000.0	977.68	97.8	992.25	99.2	949.35	94.9	945.56	94.6	950.03	95.0
Selenium	SE	ICP	IP092771	2000.0	1889.99	94.5	2000.0	1882.97	94.1	1895.26	94.8	1850.95	92.5	1809.01	90.5	1803.80	90.2
Thallium	TL	ICP	IP092771	2000.0	1888.64	94.4	2000.0	1880.70	94.0	1897.32	94.9	1840.73	92.0	1800.53	90.0	1795.71	89.8
Vanadium	V	ICP	IP092771	1000.0	936.07	93.6	1000.0	940.86	94.1	959.18	95.9	945.69	94.6	930.59	93.1	927.77	92.8
Zinc	ZN	ICP	IP092771	1000.0	978.61	97.9	1000.0	975.28	97.5	996.03	99.6	962.06	96.2	958.41	95.8	969.58	97.0

Control Limits: Mercury 80-120; Other Metals 90-110

TN42:00086

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TN42

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Aluminum	AL	ICP	IP092771	2000.0	1953.33	97.7	1985.46	99.3	1980.30	99.0						
Arsenic	AS	PMS	MS100682	50.0	50.12	100.2	50.83	101.7	51.59	103.2						
Cadmium	CD	ICP	IP092771	1000.0	1011.85	101.2	1024.67	102.5	1017.58	101.8						
Chromium	CR	ICP	IP092771	1000.0	993.29	99.3	1010.51	101.1	1003.72	100.4						
Copper	CU	ICP	IP092771	1000.0	964.69	96.5	977.08	97.7	971.83	97.2						
Lead	PB	PMS	MS100682	50.0	48.91	97.8	49.44	98.9	49.91	99.8						
Nickel	NI	ICP	IP092771	1000.0	1012.21	101.2	1032.71	103.3	1028.05	102.8						
Selenium	SE	ICP	IP092771	2000.0	2030.04	101.5	2043.80	102.2	2016.20	100.8						
Thallium	TL	ICP	IP092771	2000.0	2000.47	100.0	2016.53	100.8	1994.11	99.7						
Vanadium	V	ICP	IP092771	1000.0	928.54	92.9	946.09	94.6	939.76	94.0						
Zinc	ZN	ICP	IP092771	1000.0	994.84	99.5	1013.46	101.3	1006.94	100.7						

Control Limits: Mercury 80-120; Other Metals 90-110

FORM II (1)

TN42 : 00067

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ug/L

SDG: TN42

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS100781	50.0	49.12	98.2	50.0	49.66	99.3	50.34	100.7	50.86	101.7				
Lead	PB	PMS	MS100781	50.0	48.89	97.8	50.0	48.79	97.6	48.49	97.0	47.95	95.9				

Control Limits: Mercury 80-120; Other Metals 90-110

TN42:00088

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TN42

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Aluminum	AL	ICP	IP092771	50.0	53.37	**106.7**	49.58	**99.2**								
Arsenic	AS	PMS	MS100682	0.2	0.19	**95.0**										
Cadmium	CD	ICP	IP092771	2.0	2.27	**113.5**	2.13	**106.5**								
Chromium	CR	ICP	IP092771	5.0	4.96	**99.2**	4.57	**91.4**								
Copper	CU	ICP	IP092771	2.0	2.84	**142.0**	1.90	**95.0**								
Lead	PB	PMS	MS100682	0.1	0.11	**110.0**										
Nickel	NI	ICP	IP092771	10.0	9.00	**90.0**	9.71	**97.1**								
Selenium	SE	ICP	IP092771	50.0	50.50	**101.0**	57.51	**115.0**								
Thallium	TL	ICP	IP092771	50.0	47.14	**94.3**	48.83	**97.7**								
Vanadium	V	ICP	IP092771	3.0	3.10	**103.3**	3.01	**100.3**								
Zinc	ZN	ICP	IP092771	10.0	9.91	**99.1**	9.42	**94.2**								
Arsenic	AS	PMS	MS100781	0.2	0.17	**85.0**										
Lead	PB	PMS	MS100781	0.1	0.11	**110.0**										

Control Limits: no control limits have been established by the EPA at this time.

FORM II (2)

TN42 : 00085

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ug/L

SDG: TN42

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Aluminum	AL	ICP	IP092771	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS100682	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	ICP	IP092771	5.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Chromium	CR	ICP	IP092771	10.0	5.0	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Copper	CU	ICP	IP092771	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Lead	PB	PMS	MS100682	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	NI	ICP	IP092771	40.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Selenium	SE	ICP	IP092771	5.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Thallium	TL	ICP	IP092771	10.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Vanadium	V	ICP	IP092771	50.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Zinc	ZN	ICP	IP092771	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TN42 . 000050

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TN42

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Aluminum	AL	ICP	IP092771	200.0	50.0	50.0	U	50.0	U	50.0	U						
Arsenic	AS	PMS	MS100682	10.0	0.2	0.2	U	0.2	U	0.2	U						
Cadmium	CD	ICP	IP092771	5.0	2.0	2.0	U	2.0	U	2.0	U						
Chromium	CR	ICP	IP092771	10.0	5.0	5.0	U	5.0	U	5.0	U						
Copper	CU	ICP	IP092771	25.0	2.0	2.0	U	2.0	U	2.0	U						
Lead	PB	PMS	MS100682	3.0	0.1	0.1	U	0.1	U	0.1	U						
Nickel	NI	ICP	IP092771	40.0	10.0	10.0	U	10.0	U	10.0	U						
Selenium	SE	ICP	IP092771	5.0	50.0	50.0	U	50.0	U	50.0	U						
Thallium	TL	ICP	IP092771	10.0	50.0	50.0	U	50.0	U	50.0	U						
Vanadium	V	ICP	IP092771	50.0	3.0	3.0	U	3.0	U	3.0	U						
Zinc	ZN	ICP	IP092771	20.0	10.0	10.0	U	10.0	U	10.0	U						

TN42 : 00051

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TN42

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS100781	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U				
Lead	PB	PMS	MS100781	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U				

TN42 : 000052

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TN42

ICS SOURCE: I.V.

RUNID: IP092771

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	206000.6	201923.8	**101.0**	195055.3	196102.2	**98.1**			
Antimony		1000	37.6	979.0	**97.9**	26.9	950.8	**95.1**			
Arsenic		1000	4.3	960.0	**96.0**	2.6	1015.2	**101.5**			
Barium		1000	0.8	980.4	**98.0**	0.5	983.3	**98.3**			
Beryllium		1000	0.1	960.4	**96.0**	0.0	1000.1	**100.0**			
Boron			-6.4	-8.5		-8.0	-10.4				
Cadmium		1000	1.4	1015.9	**101.6**	0.8	1013.8	**101.4**			
Calcium	100000	100000	106593.1	103349.4	**103.3**	101843.4	100570.1	**100.6**			
Chromium		1000	-0.2	996.6	**99.7**	-0.1	987.1	**98.7**			
Cobalt		1000	2.7	995.0	**99.5**	2.8	984.5	**98.5**			
Copper		1000	-0.2	1025.2	**102.5**	-1.2	1009.5	**101.0**			
Iron	200000	200000	201950.0	197833.9	**98.9**	188682.8	188999.9	**94.5**			
Lead		1000	-3.7	968.1	**96.8**	-3.8	1013.7	**101.4**			
Magnesium	100000	100000	106013.5	98317.3	**98.3**	100062.5	95476.3	**95.5**			
Manganese		1000	0.4	926.8	**92.7**	0.2	930.9	**93.1**			
Molybdenum			6.9	6.1		5.6	6.6				
Nickel		1000	-2.3	932.0	**93.2**	-2.1	961.4	**96.1**			
Potassium			49.1	222.2		27.5	197.5				
Selenium		1000	-38.0	907.0	**90.7**	-33.6	977.4	**97.7**			
Silicon			-23.0	-23.4		-19.7	-18.8				
Silver		1000	-0.6	996.5	**99.7**	-0.6	1051.3	**105.1**			
Sodium			16.1	6.2		10.7	-1.3				
Strontium			10.6	10.1		10.3	10.2				
Thallium		1000	13.7	979.1	**97.9**	14.2	1031.3	**103.1**			
Tin			-7.3	-7.2		-7.6	-10.4				
Titanium			1.5	1.5		1.0	0.9				
Vanadium		1000	4.3	958.1	**95.8**	2.4	948.4	**94.8**			
Zinc		1000	-1.2	930.8	**93.1**	-0.9	943.5	**94.4**			

TN42 - 000033

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ICS SOURCE: I.V.

PROJECT: FRP 2011 Shoreline I

RUNID: MS100682

SDG: TN42

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Cadmium		20	0.0	20.0	**100.0**						
Chromium		20	0.8	20.5	**102.5**						
Cobalt		20	0.1	19.6	**98.0**						
Copper		20	0.5	19.4	**97.0**						
Iron	20000	20000	20327.5	20246.7	**101.2**						
Manganese		20	0.7	20.0	**100.0**						
Molybdenum	400	400	427.1	421.6	**105.4**						
Nickel		20	0.7	18.7	**93.5**						
Silver		20	0.0	19.3	**96.5**						
Vanadium			0.0	-0.5							
Zinc		20	1.1	19.8	**99.0**						

TN42 : 00691

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TN42

ICS SOURCE: I.V.

RUNID: MS100781

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Cadmium		20	0.0	20.0	**100.0**						
Chromium		20	0.8	20.2	**101.0**						
Cobalt		20	0.1	18.7	**93.5**						
Copper		20	0.4	20.2	**101.0**						
Iron	20000	20000	19767.1	19820.1	**99.1**						
Manganese		20	0.7	19.2	**96.0**						
Molybdenum	400	400	453.7	461.5	**115.4**						
Nickel		20	0.6	20.0	**100.0**						
Selenium			0.0	0.1							
Silver		20	0.0	19.3	**96.5**						
Vanadium			0.0	-0.4							
Zinc		20	0.9	20.1	**100.5**						

TN42 : 000055

Post Digest Spike Sample Recovery

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

ANALYSIS METHOD: ICP

SDG: TN42

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	RUNID	SPIKED SAMPLE RESULT	C	SAMPLE RESULT	C	SPIKE ADDED	MATRIX	%R
Selenium	FRP-092111-001A	TN42APOST	IP092771	1851.06		50.00	U	2000	Water	92.6

FORM V

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

ANALYSIS METHOD: ICP

SDG: TN42

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFER-ENCE	Q
Aluminum	FRP-092111-001L	TN42A-L	Water	IP092771	48407.27		49709.35		2.7	
Cadmium	FRP-092111-001L	TN42A-L	Water	IP092771	0.48	U	10.00	U		
Chromium	FRP-092111-001L	TN42A-L	Water	IP092771	181.77		185.40		2.0	
Copper	FRP-092111-001L	TN42A-L	Water	IP092771	154.47		156.05		1.0	
Nickel	FRP-092111-001L	TN42A-L	Water	IP092771	68.25		72.45	B	6.2	
Selenium	FRP-092111-001L	TN42A-L	Water	IP092771	1.97	U	250.00	U		
Thallium	FRP-092111-001L	TN42A-L	Water	IP092771	4.06	U	250.00	U		
Vanadium	FRP-092111-001L	TN42A-L	Water	IP092771	390.68		400.50		2.5	
Zinc	FRP-092111-001L	TN42A-L	Water	IP092771	196.74		203.15		3.3	

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

ANALYSIS METHOD: PMS

SDG: TN42

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFER-ENCE	Q
Arsenic	FRP-092111-001L	TN42A-L	Water	MS100682	3.73	B	3.50	B	6.2	
Lead	FRP-092111-001L	TN42A-L	Water	MS100682	2.16	B	2.25	B	4.2	

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TN42

UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Aluminum	AL	ICP	OPTIMA ICP 2	308.22		200	50.0	4/1/2011	250000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Cadmium	CD	ICP	OPTIMA ICP 2	228.80		5	2.0	4/1/2011	20000.0	8/3/2011
Chromium	CR	ICP	OPTIMA ICP 2	267.72		10	5.0	4/1/2011	100000.0	8/3/2011
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Lead	PB	PMS	PE ELAN 6000 MS	0.00		3	0.1	4/1/2011		
Nickel	NI	ICP	OPTIMA ICP 2	231.60		40	10.0	4/1/2011	100000.0	8/3/2011
Selenium	SE	ICP	OPTIMA ICP 2	196.02		5	50.0	4/1/2011	20000.0	8/3/2011
Thallium	TL	ICP	OPTIMA ICP 2	190.86		10	50.0	4/1/2011	30000.0	8/3/2011
Vanadium	V	ICP	OPTIMA ICP 2	292.40		50	3.0	4/1/2011	50000.0	8/3/2011
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

IEC DATE: 9/26/2011

SDG: TN42

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3618900	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.0000000
Arsenic	188.98	0.0473543	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0061516	0.0000000	-0.1892080	0.0000000	0.0000000	0.0499666
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0220343	0.0000000	0.0000000	0.0000000	0.0000000	-0.0461558
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0514304
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2408020	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0597200
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5288270
Manganese	257.61	0.0065976	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0045330
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0103467	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0118175	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	8.8385500	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.1350590	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1171730
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	-0.0244672	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0593584	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0934302
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0135250	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TN42 - 00100

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

IEC DATE: 9/26/2011

SDG: TN42

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0464480	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0039764	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0780238	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

TN42 . 00161

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ANALYSIS METHOD: ICP

PROJECT: FRP 2011 Shoreline I

ARI PREP CODE: TWC

SDG: TN42

PREPDATE: 9/23/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-092111-001	TN42A	0.000	50.0	50.0
FRP-092111-001D	TN42ADUP	0.000	50.0	50.0
FRP-092111-001S	TN42ASPK	0.000	50.0	50.0
FRP-092111-002	TN42B	0.000	50.0	50.0
FRP-092111-003	TN42C	0.000	50.0	50.0
FRP-092111-004	TN42D	0.000	50.0	50.0
FRP-092111-005	TN42E	0.000	50.0	50.0
FRP-092111-006	TN42F	0.000	50.0	50.0
PBW	TN42MB1	0.000	50.0	50.0
LCSW	TN42MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ANALYSIS METHOD: PMS

PROJECT: FRP 2011 Shoreline I

ARI PREP CODE: REN

SDG: TN42

PREPDATE: 9/23/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-092111-001	TN42A	0.000	50.0	25.0
FRP-092111-001D	TN42ADUP	0.000	50.0	25.0
FRP-092111-001S	TN42ASPK	0.000	50.0	25.0
FRP-092111-002	TN42B	0.000	50.0	25.0
FRP-092111-003	TN42C	0.000	50.0	25.0
FRP-092111-004	TN42D	0.000	50.0	25.0
FRP-092111-005	TN42E	0.000	50.0	25.0
FRP-092111-006	TN42F	0.000	50.0	25.0
PBW	TN42MB1	0.000	50.0	25.0
LCSW	TN42MB1SPK	0.000	50.0	25.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/27/2011

SDG: TN42 RUNID: IP092771 METHOD: ICP END DATE: 9/27/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10250			X						X		X	X								X			X				X		X	X
S2	S2	1.00	10291									X		X	X																	X	
S3	S3	1.00	10305																				X			X				X			X
S4	S4	1.00	10332																														
S5	S5	1.00	10353			X																											
ZZZZZZ	ZZZZZZ	1.00	10400																														
ZZZZZZ	ZZZZZZ	1.00	10435																														
S2	S2	1.00	10481									X		X	X																	X	
ICV	ICV	1.00	10493			X						X		X	X								X			X				X		X	X
ICB	ICB	1.00	10531			X						X		X	X								X			X				X		X	X
CRI	CRII	1.00	10572			X						X		X	X								X			X				X		X	X
ICSA	ICSAI	1.00	11014			X						X		X	X								X			X				X		X	X
ICSAB	ICSABI	1.00	11055			X						X		X	X								X			X				X		X	X
CCV	CCV1	1.00	11093			X						X		X	X								X			X				X		X	X
CCB	CCB1	1.00	11132			X						X		X	X								X			X				X		X	X
ZZZZZZ	TN19MB1	1.00	11173																														
ZZZZZZ	ZZZZZZ	10.00	11214																														
ZZZZZZ	TN19A-L	25.00	11335																														
ZZZZZZ	TN19A	5.00	11380																														
ZZZZZZ	TN19ADUP	5.00	11422																														
ZZZZZZ	TN19ASPK	5.00	11463																														
ZZZZZZ	TN19B	1.00	11503																														
ZZZZZZ	TN19C	1.00	11550																														
ZZZZZZ	TN19MB1SPK	1.00	11593																														
ZZZZZZ	TN16MB2SPK	1.00	12032																														
CCV	CCV2	1.00	12072			X						X		X	X								X			X				X		X	X
CCB	CCB2	1.00	12111			X						X		X	X								X			X				X		X	X
PBW	TN42MB1	1.00	12152			X						X		X	X								X			X				X		X	X
FRP-092111-001L	TN42A-L	5.00	12193			X						X		X	X								X			X				X		X	X
FRP-092111-001	TN42A	1.00	12240			X						X		X	X								X			X				X		X	X
FRP-092111-001D	TN42ADUP	1.00	12282			X						X		X	X								X			X				X		X	X
FRP-092111-001S	TN42ASPK	1.00	12325			X						X		X	X								X			X				X		X	X
FRP-092111-001A	TN42APOST	1.00	12370																							X							
FRP-092111-002	TN42B	1.00	12412																														
ZZZZZZ	TN19D	1.00	12453																														

FORM XIV

IN42.00101

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/27/2011

SDG: TN42 RUNID: IP092771 METHOD: ICP END DATE: 9/27/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TN19E	1.00	12495																														
LCSW	TN42MB1SPK	1.00	12540			X						X		X	X								X			X				X		X	X
CCV	CCV3	1.00	12580			X						X		X	X								X			X				X		X	X
CCB	CCB3	1.00	13014			X						X		X	X								X			X				X		X	X
S0	S0	1.00	13055			X						X		X	X								X			X				X		X	X
CCV	CCV4	1.00	13094			X						X		X	X								X			X				X		X	X
CCB	CCB4	1.00	13133			X						X		X	X								X			X				X		X	X
ZZZZZZ	TN78MB	1.00	13174																														
ZZZZZZ	TN78A	1.00	13250																														
ZZZZZZ	TN79A	1.00	13291																														
FRP-092111-003	TN42C	1.00	13332																														
FRP-092111-004	TN42D	1.00	13380																														
FRP-092111-005	TN42E	1.00	13423																														
FRP-092111-006	TN42F	1.00	13470																														
ZZZZZZ	ZZZZZZ	5.00	13511																														
FRP-092111-002	TN42B	2.00	13552																														
ZZZZZZ	TN78MBSPK	1.00	13593																														
CCV	CCV5	1.00	14033			X						X		X	X								X			X				X		X	X
CCB	CCB5	1.00	14071			X						X		X	X								X			X				X		X	X
S2	S2	1.00	14161									X		X	X																	X	
S3	S3	1.00	14173																				X			X				X			X
CCV	CCV6	1.00	14193			X						X		X	X								X			X				X		X	X
CCB	CCB6	1.00	14232			X						X		X	X								X			X				X		X	X
FRP-092111-003	TN42C	1.00	14273			X						X		X	X								X			X				X		X	X
FRP-092111-004	TN42D	1.00	14321			X						X		X	X								X			X				X		X	X
FRP-092111-005	TN42E	1.00	14364			X						X		X	X								X			X				X		X	X
FRP-092111-006	TN42F	1.00	14411			X						X		X	X								X			X				X		X	X
ZZZZZZ	TN19APOST	5.00	14452																														
FRP-092111-002	TN42B	2.00	14493			X						X		X	X								X			X				X		X	X
CCV	CCV7	1.00	14534			X						X		X	X								X			X				X		X	X
CCB	CCB7	1.00	14573			X						X		X	X								X			X				X		X	X
CRI	CRIF	1.00	15014			X						X		X	X								X			X				X		X	X
ICSA	ICSAF	1.00	15055			X						X		X	X								X			X				X		X	X
ICSAB	ICSABF	1.00	15100			X						X		X	X								X			X				X		X	X
CCV	CCV8	1.00	15135			X						X		X	X								X			X				X		X	X

FORM XIV

TN42 . 0001615

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/27/2011

SDG: TN42 RUNID: IP092771 METHOD: ICP END DATE: 9/27/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB8	1.00	15173			X						X		X	X								X			X				X		X	X

TN42 - 000165

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 10/6/2011

SDG: TN42 RUNID: MS100682 METHOD: PMS END DATE: 10/6/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11460				X																	X									
ZZZZZZ	ZZZZZZ	1.00	11520																														
ZZZZZZ	ZZZZZZ	1.00	11590																														
S3	S3	1.00	12050				X																	X									
S4	S4	1.00	12120				X																	X									
S1	S1	1.00	12190				X																	X									
S2	S2	1.00	12250				X																	X									
ICV	MICV	1.00	12320				X																	X									
ICB	ICB	1.00	12400				X																	X									
CCV	MCCV1	1.00	12450				X																	X									
CCB	CCB1	1.00	12520				X																	X									
CRI	MCRI	1.00	12580				X																	X									
ICSA	ICSAI	1.00	13030				X																	X									
ICSAB	ICSABI	1.00	13100				X																	X									
ZZZZZZ	LR200	1.00	13160																														
ZZZZZZ	LR300	1.00	13230																														
CCV	MCCV2	1.00	13310				X																	X									
CCB	CCB2	1.00	13380				X																	X									
ZZZZZZ	TM71MB	2.00	13460																														
ZZZZZZ	TM67MBSPK	2.00	13520																														
ZZZZZZ	TM71R	2.00	13580																														
ZZZZZZ	TM71S	2.00	14050																														
ZZZZZZ	TM79C	2.00	14110																														
ZZZZZZ	TM67C	2.00	14180																														
ZZZZZZ	TM67A	5.00	14240																														
ZZZZZZ	TM67B	1000.00	14310																														
ZZZZZZ	TM79H	20.00	14370																														
ZZZZZZ	TM79J	5.00	14430																														
ZZZZZZ	ZZZZZZ	1.00	14500																														
CCV	MCCV3	1.00	14560				X																	X									
CCB	CCB3	1.00	15030				X																	X									
ZZZZZZ	TM79FDUP	1000.00	15150																														
ZZZZZZ	TM79F	1000.00	15210																														
ZZZZZZ	TM79FSPK	1000.00	15270																														
ZZZZZZ	TM79K	1000.00	15330																														

FORM XIV

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 10/6/2011

SDG: TN42 RUNID: MS100682 METHOD: PMS END DATE: 10/6/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TM79G	1000.00	15390																														
ZZZZZZ	TM79G	2.00	15460																														
ZZZZZZ	TN00A-L	100.00	15520																														
ZZZZZZ	TN00A	20.00	15590																														
ZZZZZZ	TN00ADUP	20.00	16050																														
ZZZZZZ	TN00ASPK	20.00	16120																														
CCV	MCCV4	1.00	16220				X																	X									
CCB	CCB4	1.00	16300				X																	X									
ZZZZZZ	TN00MB2	2.00	16350																														
ZZZZZZ	TN00MB1	20.00	16410																														
ZZZZZZ	TN00MB1SPK	20.00	16460																														
ZZZZZZ	TN00MB2SPK	2.00	16530																														
ZZZZZZ	TN00B-L	50.00	16590																														
ZZZZZZ	TN00B	10.00	17060																														
ZZZZZZ	TN00BDUP	10.00	17120																														
ZZZZZZ	TN00BSPK	10.00	17180																														
ZZZZZZ	TN00C	20.00	17250																														
ZZZZZZ	TN00D	5.00	17310																														
CCV	MCCV5	1.00	17370				X																	X									
CCB	CCB5	1.00	17440				X																	X									
ZZZZZZ	TN19MB1	2.00	17500																														
ZZZZZZ	TN19MB1SPK	2.00	17550																														
ZZZZZZ	TN00E	20.00	18020																														
ZZZZZZ	TN00F	5.00	18080																														
ZZZZZZ	ZZZZZZ	25.00	18140																														
ZZZZZZ	TN19A	5.00	18210																														
ZZZZZZ	TN19ADUP	5.00	18270																														
ZZZZZZ	TN19ASPK	5.00	18340																														
ZZZZZZ	TN19B	5.00	18400																														
ZZZZZZ	TN19C	5.00	18470																														
CCV	MCCV6	1.00	18520				X																	X									
CCB	CCB6	1.00	18590				X																	X									
PBW	TN42MB1	2.00	19050				X																	X									
LCSW	TN42MB1SPK	2.00	19100				X																	X									
ZZZZZZ	TN19D	5.00	19170																														

FORM XIV

TN42.00108

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 10/6/2011

SDG: TN42 RUNID: MS100682 METHOD: PMS END DATE: 10/6/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TN19E	5.00	19230																														
FRP-092111-001L	TN42A-L	50.00	19300				X																	X									
FRP-092111-001	TN42A	10.00	19360				X																	X									
FRP-092111-001D	TN42ADUP	10.00	19430				X																	X									
FRP-092111-001S	TN42ASPK	10.00	19490				X																	X									
FRP-092111-002	TN42B	5.00	19550				X																	X									
FRP-092111-003	TN42C	5.00	20020				X																	X									
CCV	MCCV7	1.00	20080				X																	X									
CCB	CCB7	1.00	20150				X																	X									
ZZZZZZ	TN24MB2	20.00	20210																														
ZZZZZZ	TN24MB2SPK	20.00	20270																														
FRP-092111-004	TN42D	5.00	20330				X																	X									
FRP-092111-005	TN42E	5.00	20390				X																	X									
FRP-092111-006	TN42F	5.00	20460																														
ZZZZZZ	TN24A	2.00	20520																														
ZZZZZZ	TN24B	2.00	20590																														
ZZZZZZ	TN24E	2.00	21050																														
ZZZZZZ	TN24C	20.00	21120																														
ZZZZZZ	TN24D	20.00	21180																														
CCV	MCCV8	1.00	21240				X																	X									
CCB	CCB8	1.00	21320				X																	X									

TN42-001165

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 10/7/2011

SDG: TN42 RUNID: MS100781 METHOD: PMS END DATE: 10/7/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08520				X																	X									
S1	S1	1.00	08580				X																	X									
S2	S2	1.00	09040				X																	X									
S3	S3	1.00	09110				X																	X									
S4	S4	1.00	09170				X																	X									
ZZZZZZ	Rinse Sampl	1.00	09240																														
ICV	MICV	1.00	09320				X																	X									
ICB	ICB	1.00	09390				X																	X									
CCV	MCCV1	1.00	09440				X																	X									
CCB	CCB1	1.00	09510				X																	X									
CRI	MCRI	1.00	09570				X																	X									
ICSA	ICSAI	1.00	10030				X																	X									
ICSAB	ICSABI	1.00	10090				X																	X									
ZZZZZZ	ZZZZZZ	1.00	10160																														
ZZZZZZ	LR200	1.00	10240																														
ZZZZZZ	LR300	1.00	10320																														
CCV	MCCV2	1.00	10390				X																	X									
CCB	CCB2	1.00	10460				X																	X									
ZZZZZZ	TN63MB2	2.00	10560																														
ZZZZZZ	TN00F	2.00	11020																														
FRP-092111-006	TN42F	2.00	11070				X																	X									
ZZZZZZ	TN19E	2.00	11130																														
ZZZZZZ	ZZZZZZ	50.00	11190																														
ZZZZZZ	TN19A	10.00	11250																														
ZZZZZZ	TN19ADUP	10.00	11310																														
ZZZZZZ	TN19ASPK	10.00	11380																														
ZZZZZZ	TN24A	100.00	11440																														
ZZZZZZ	TN24A	2.00	11510																														
CCV	MCCV3	1.00	11580				X																	X									
CCB	CCB3	1.00	12050				X																	X									

TN42:00110

Mercury Analysis
Report and Summary QC Forms

ARI Job ID: TN42, TN43

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest

SDG: TN43

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
FRP-092111-001	TN43A	11-20670	
FRP-092111-001D	TN43ADUP	11-20670	
FRP-092111-001S	TN43ASPK	11-20670	
FRP-092111-002	TN43B	11-20671	
PBW	TN43MB1	11-20671	
LCSW	TN43MB1SPK	11-20671	
FRP-092111-003	TN43C	11-20672	
FRP-092111-004	TN43D	11-20673	
FRP-092111-005	TN43E	11-20674	
FRP-092111-006	TN43F	11-20675	
FRP-092111-001	TN43RA	11-20670	R
FRP-092111-001D	TN43RADUP	11-20670	R
FRP-092111-001S	TN43RASPK	11-20670	R
FRP-092111-002	TN43RB	11-20671	R
PBW	TN43RMB1	11-20671	R
LCSW	TN43RMB1SPK	11-20671	R
FRP-092111-003	TN43RC	11-20672	R
FRP-092111-004	TN43RD	11-20673	R
FRP-092111-005	TN43RE	11-20674	R
FRP-092111-006	TN43RF	11-20675	R

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 10/3/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Total Mercury by Method SW7470A

Data Release Authorized:
Reported: 10/07/11
Date Received: 09/21/11

QC Report No: TN43-AMEC Geomatrix
Project: FRP Shoreline Investigation
8769

Client/ ARI ID	Date Sampled	Matrix	Prep Date Anal Date	RL	Result
FRP-092111-001 TN43A 11-20670	09/21/11	Water	10/04/11 10/06/11	20.0	136 J
FRP-092111-002 TN43B 11-20671	09/21/11	Water	10/04/11 10/06/11	400	9,760 J
FRP-092111-003 TN43C 11-20672	09/21/11	Water	10/04/11 10/06/11	400	400 U
FRP-092111-004 TN43D 11-20673	09/21/11	Water	10/04/11 10/06/11	400	558 J
FRP-092111-005 TN43E 11-20674	09/21/11	Water	10/04/11 10/06/11	400	820 J
FRP-092111-006 TN43F 11-20675	09/21/11	Water	10/04/11 10/06/11	20.0	20.0 U
MB-100411 Method Blank	NA	Water	10/04/11 10/06/11	20.0	20.0 U

Reported in ng/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-001
MATRIX SPIKE

Lab Sample ID: TN43A
LIMS ID: 11-20670
Matrix: Water
Data Release Authorized:
Reported: 10/07/11

QC Report No: TN43-AMEC Geomatrix
Project: FRP Shoreline Investigation 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7470A	136	311	100	175%	N

Reported in ng/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-092111-001
DUPLICATE

Lab Sample ID: TN43A
LIMS ID: 11-20670
Matrix: Water
Data Release Authorized:
Reported: 10/07/11

QC Report No: TN43-AMEC Geomatrix
Project: FRP Shoreline Investigation
8769
Date Sampled: 09/21/11
Date Received: 09/21/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7470A	136	307	77.2%	+/- 20%	*

Reported in ng/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: TN43LCS
LIMS ID: 11-20671
Matrix: Water
Data Release Authorized:
Reported: 10/07/11

QC Report No: TN43-AMEC Geomatrix
Project: FRP Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	7470A	201	200	100%	

Reported in ng/L

N-Control limit not met
Control Limits: 80-120%

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest

UNITS:ng/L

SDG: TN43

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Mercury	HG	CVL	HG100601	500.0	503.00	100.6	500.0	511.00	102.2	516.00	103.2	517.00	103.4	517.00	103.4		

Control Limits: Mercury 80-120; Other Metals 90-110

TN42:00117

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest

UNITS:ng/L

SDG: TN43

ANALYTE	EL	M	RUN	CRA/I	TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Mercury	HG	CVL	HG100601		20.0	20.00	100.0										

Control Limits: no control limits have been established by the EPA at this time.

FORM II (2)

TN42:00118

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest

UNITS:ng/L

SDG: TN43

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Mercury	HG	CVL	HG100601	25.0	20.0	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U		

TN43 - 00119

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

IDL DATE: 4/1/2011

PROJECT: FRP Shoreline Invest

ICP LR DATE:

SDG: TN43

UNITS: ng/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	ICP LINEAR RANGE (ng/L)
Mercury	HG	CVL	CETAC MERCURY	253.70		25	20.0	

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest

SDG: TN43

ANALYSIS METHOD: CVL

ARI PREP CODE: TLM

PREPDATE: 9/23/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-092111-001	TN43A	0.000	20.0	20.0
FRP-092111-001D	TN43ADUP	0.000	20.0	20.0
FRP-092111-001S	TN43ASPK	0.000	20.0	20.0
FRP-092111-002	TN43B	0.000	20.0	20.0
FRP-092111-003	TN43C	0.000	20.0	20.0
FRP-092111-004	TN43D	0.000	20.0	20.0
FRP-092111-005	TN43E	0.000	20.0	20.0
FRP-092111-006	TN43F	0.000	20.0	20.0
PBW	TN43MB1	0.000	20.0	20.0
LCSW	TN43MB1SPK	0.000	20.0	20.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ANALYSIS METHOD: CVL

PROJECT: FRP Shoreline Invest

ARI PREP CODE: TLM

SDG: TN43

PREPDATE: 10/4/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-092111-001	TN43RA	0.000	20.0	20.0
FRP-092111-001D	TN43RADUP	0.000	20.0	20.0
FRP-092111-001S	TN43RASPK	0.000	20.0	20.0
FRP-092111-002	TN43RB	0.000	1.0	20.0
FRP-092111-003	TN43RC	0.000	1.0	20.0
FRP-092111-004	TN43RD	0.000	1.0	20.0
FRP-092111-005	TN43RE	0.000	1.0	20.0
FRP-092111-006	TN43RF	0.000	20.0	20.0
PBW	TN43RMB1	0.000	20.0	20.0
LCSW	TN43RMB1SPK	0.000	20.0	20.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest | INSTRUMENT ID: CETAC MERCURY | START DATE: 10/6/2011

SDG: TN43 | RUNID: HG100601 METHOD: CVL | END DATE: 10/6/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11362														X																
S20	S20	1.00	11390														X																
S50	S50	1.00	11414														X																
S100	S100	1.00	11442														X																
S200	S200	1.00	11470														X																
S400	S400	1.00	11495														X																
S1000	S1000	1.00	11523														X																
ICV	AICV	1.00	11595														X																
ICB	ICB	1.00	12023														X																
CCV	ACCV1	1.00	12051														X																
CCB	CCB1	1.00	12080														X																
CRA	CRA	1.00	12104														X																
ZZZZZZ	TN03RMB1	1.00	12132																														
ZZZZZZ	TN03RMB1SPK	1.00	12160																														
ZZZZZZ	TN03RA	1.00	12184																														
ZZZZZZ	TN03RADUP	1.00	12212																														
ZZZZZZ	TN03RASPK	1.00	12240																														
ZZZZZZ	TN03RB	1.00	12265																														
ZZZZZZ	TN03RC	1.00	12293																														
ZZZZZZ	TN03RD	1.00	12321																														
ZZZZZZ	TN03RE	1.00	12345																														
CCV	ACCV2	1.00	12374														X																
CCB	CCB2	1.00	12402														X																
PBW	TN43RMB1	1.00	12431														X																
LCSW	TN43RMB1SPK	1.00	12455														X																
FRP-092111-001	TN43RA	1.00	12483														X																
FRP-092111-001D	TN43RADUP	1.00	12511														X																
FRP-092111-001S	TN43RASPK	1.00	12535														X																
FRP-092111-002	TN43RB	1.00	12563														X																
FRP-092111-003	TN43RC	1.00	12591														X																
FRP-092111-004	TN43RD	1.00	13015														X																
FRP-092111-005	TN43RE	1.00	13044														X																
FRP-092111-006	TN43RF	1.00	13072														X																
CCV	ACCV3	1.00	13100														X																
CCB	CCB3	1.00	13125														X																

FORM XIV

TN12 : 091123

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP Shoreline Invest INSTRUMENT ID: CETAC MERCURY START DATE: 10/6/2011

SDG: TN43 RUNID: HG100601 METHOD: CVL END DATE: 10/6/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
FRP-092111-001	TN43RA	1.00	13154																														
FRP-092111-001D	TN43RADUP	1.00	13182																														
FRP-092111-001S	TN43RASPK	1.00	13210																														
CCV	ACCV4	1.00	13235														X																
CCB	CCB4	1.00	13263														X																

TN42 . 00124

General Chemistry Analysis
Report and Summary QC Forms

ARI Job ID: TN42, TN43

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
pH by Method EPA 150.1

Data Release Authorized:
Reported: 09/23/11
Date Received: 09/21/11

QC Report No: TN42-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
FRP-092111-001 TN42A 11-20663	09/21/11	Water	09/21/11 17:28 092111#1	0.01	9.76
FRP-092111-002 TN42B 11-20664	09/21/11	Water	09/21/11 17:28 092111#1	0.01	7.93
FRP-092111-003 TN42C 11-20665	09/21/11	Water	09/21/11 17:28 092111#1	0.01	6.73
FRP-092111-004 TN42D 11-20666	09/21/11	Water	09/21/11 17:28 092111#1	0.01	6.70
FRP-092111-005 TN42E 11-20667	09/21/11	Water	09/21/11 17:28 092111#1	0.01	6.86
FRP-092111-006 TN42F 11-20668	09/21/11	Water	09/21/11 17:28 092111#1	0.01	6.91

Reported in std units

RL-Analytical reporting limit
U-Undetected at reported detection limit

REPLICATE RESULTS-CONVENTIONALS
TN42-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/21/11
Date Received: 09/21/11

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: TN42A Client ID: FRP-092111-001					
pH	09/21/11	std units	9.76	9.77	0.01

pH is evaluated as the Absolute Difference between the values rather than Relative Percent Difference

LAB CONTROL RESULTS-CONVENTIONALS
TN42-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	LCS	Spike Added	Recovery
pH	09/21/11	std units	6.97	7.00	0.03

pH is evaluated as the Absolute Difference between the values rather than Percent Recovery.