

April 20, 2015

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-11221-1

TestAmerica Sample Delivery Group: SL1779
Client Project/Site: F13-002

For:

CH2M Hill Plateau Remediation Company
PO BOX 1600, MS H8-41
Richland, Washington 99352

Attn: General Mailbox



Authorized for release by:
4/20/2015 3:45:39 PM

Jayna Awalt, Project Manager II
(314)298-8566

jayna.awalt@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Job ID: 160-11221-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
April 20, 2015
Attention: Scot Fitzgerald

SDG : SL1779
Number of Samples : 3 samples
Sample Matrix : Water
Data Deliverable : Summary
Date SDG Closed : April 7, 2015

II. Introduction

On April 7, 3 samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and receipt checklists for documentation of any variations on receipt conditions and temperature. Upon receipt, samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F13-002

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with an LCS/LCS duplicate.

Note: For Metals analyses, per standard practice, all 6020 water and soil samples are initially prepared at 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate flagging unless otherwise noted in the case narrative.

For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

For WTPH methods, the lab utilizes method 8015B. Per CHPRC direction, the method name in the electronic data has been modified to read WTPH in the place of 8015B.

Per CHPRC direction (June 2014), Boron will be reported for Metals using method 6010. Boron will no longer be reported by method 6020.

IV. Definitions

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
DUP- Laboratory Duplicate



Job ID: 160-11221-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

MS- Matrix Spike
MSD- Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** - For organic analyses, the sample is estimated and less than the RL.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For Metals analyses, per standard practice, all solid samples are initially prepared at a 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate qualification unless otherwise noted in the case narrative.
- **N** - For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.
- **O** - For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **M** - For inorganic analyses, the precision was outside control limits.
- **P** - For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.

Volatiles

Batch: 184432

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 184432 were outside control limits for Trichloroethene. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control samples (LCS/LCSD) recoveries were within acceptance limits. (160-11195-B-21 MS) and (160-11195-C-21 MSD) This analyte has been qualified accordingly with a "T" flag in the associated samples.

The following samples were analyzed at reduced volume due to high concentrations of target analytes: B310Y9 (160-11221-1) and B31104 (160-11221-2). The reporting limits have been elevated by the appropriate factor. These analytes have been qualified accordingly with a "D" flag in the associated samples.

Batch: 184795

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 184795 were outside control limits for Trichloroethene. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control samples (LCS/LCSD) recoveries were within acceptance limits. (160-11239-B-2 MS) and (160-11239-C-2 MSD) This analyte has been qualified accordingly with a "T" flag in the associated samples.

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager or designee and the laboratory's client services representative as verified by their signature on this report.

Reviewed and approved:

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Job ID: 160-11221-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

Jayna Awalt
St. Louis Project Manager

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-11221-1

SDG Number: SL1779

Login Number: 11221

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	0.6, 1.1
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2MHill Plateau Remediation Company 51779		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-002-965	PAGE 1 OF 1
COLLECTOR D.L. Floyd/CHPRC	TELEPHONE NO. 373-7924	PROJECT COORDINATOR EVANS, RT	PRICE CODE 7C	DATA TURNAROUND 15 Days / 15 Days	
SAMPLING LOCATION 289-T, 299-W14-74, Valve V05-YE04	PROJECT DESIGNATION 200W Pump & Treat - Extraction Well Water Sampling	SAF NO. F13-002	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
ICE CHEST NO. GWS-417	FIELD LOGBOOK NO. HNF-N-891-9/125	ACTUAL SAMPLE DEPTH N/A	COA 303111	BILL OF LADING/AIR BILL NO. 7733 0091 5375	
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. N/A				

MATRIX* A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION HCl or H2SO4 to pH 14 Days	HOLDING TIME	TYPE OF CONTAINER aGs*	NO. OF CONTAINER(S) 4	VOLUME 40mL	SPECIAL ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.						
SPECIAL HANDLING AND/OR STORAGE N/A						
SAMPLE NO. B310Y9	MATRIX* WATER	SAMPLE DATE APR 06 2015	SAMPLE TIME 1031			

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM D.L. Floyd/CHPRC	DATE/TIME APR 06 2015 1100	RECEIVED BY/STORED IN L.D. Wall	DATE/TIME APR 06 2015 1100	** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-15-057	
RELINQUISHED BY/REMOVED FROM L.D. Wall	DATE/TIME APR 06 2015 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME APR 06 2015 1400	(1) 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};	
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN Jill Clark, Jill Clark	DATE/TIME 4-7-15 0920	TRVL-15-057	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TITLE	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DISPOSED BY	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME	
LABORATORY SECTION	RECEIVED BY	TITLE			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME			



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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-002-970	PAGE 1 OF 1
COLLECTOR	D.L. Floyd/CHPRC	COMPANY CONTACT	EVANS, RT	PROJECT COORDINATOR	EVANS, RT
SAMPLING LOCATION	289-T, 299-W11-96, Valve V05-YE08	PROJECT DESIGNATION	200W Pump & Treat - Extraction Well Water Sampling	SAF NO.	F13-002
ICE CHEST NO.	GW05-417	FIELD LOGBOOK NO.	HNF-N-491-9/29	COA	303111
SHIPPED TO	TestAmerica St. Louis	OFFSITE PROPERTY NO.	N/A	BILL OF LADING/AIR BILL NO.	7733 0091 5375
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Soil T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	HCl or H2SO4 to pH 14 Days	METHOD OF SHIPMENT	FEDERAL EXPRESS
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	aGs*		
SPECIAL HANDLING AND/OR STORAGE	N/A	NO. OF CONTAINER(S)	4		
		VOLUME	40mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		

SAMPLE NO.	MATRIX*	DATE/TIME	DATE/TIME	DATE/TIME	DATE/TIME
B31104	WATER	APR 06 2015	APR 06 2015	APR 06 2015	1100

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME	DATE/TIME
RELINQUISHED BY/REMOVED FROM D.L. Floyd/CHPRC		L.D. Wall	APR 06 2015	1100	
RELINQUISHED BY/REMOVED FROM L.D. Wall		FEDEX	APR 06 2015	1400	
RELINQUISHED BY/REMOVED FROM FEDEX		Jill Clarke	4-7-15	0920	
RELINQUISHED BY/REMOVED FROM					
RELINQUISHED BY/REMOVED FROM					
RELINQUISHED BY/REMOVED FROM					
RELINQUISHED BY/REMOVED FROM					

SPECIAL INSTRUCTIONS

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-15-057
 (1) 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};

TRVL-15-057

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-002-975	PAGE 1 OF 1
COLLECTOR	D.L. Floyd/CHPRC	COMPANY CONTACT	EVANS, RT	PROJECT COORDINATOR	EVANS, RT
SAMPLING LOCATION	289-T, 299-W6-15, Valve V18-YE14	PROJECT DESIGNATION	200W Pump & Treat - Extraction Well Water Sampling	SAF NO.	F13-002
ICE CHEST NO.	6WS-826	FIELD LOGBOOK NO.	N/A	COA	303111
SHIPPED TO	TestAmerica St. Louis	OFFSITE PROPERTY NO.	N/A	BILL OF LADING/AIR BILL NO.	7733 0263 3471
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Soil O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	HCl or H2SO4 to pH 14 Days	METHOD OF SHIPMENT	FEDERAL EXPRESS
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME		AIR QUALITY	<input type="checkbox"/>
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	agS*	PRICE CODE	7C
		NO. OF CONTAINER(S)	4	DATA TURNAROUND	15 Days / 15 Days
		VOLUME	40mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		

DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	RECEIVED BY/STORED IN
APR 06 2015 1320	L.D. Wall	APR 06 2015 1320	L.D. Wall
APR 06 2015 1400	FEDEX	APR 06 2015 1400	FEDEX
	John Clark	APR 06 2015 0920	John Clark

SAMPLE NO.	B31109	MATRIX*	WATER
DATE/TIME	APR 06 2015	SAMPLE TIME	1203
LABORATORY SECTION	RECEIVED BY	TITLE	TRVL-15- U57
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	

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Tracking No. or Nickname	Shipper city, state	Origin Terminal	Ship (P/U) date	Status
773302633471	RICHLAND, WA	PASCO, WA	4/06/2015 3:24 pm	
773300915375	RICHLAND, WA	PASCO, WA	4/06/2015 3:24 pm	

Delivered

773302633471

Travel History

Date/Time	Activity
- 4/07/2015 - Tuesday	
9:15 am	Delivered
7:22 am	On FedEx vehicle for delivery
7:16 am	At local FedEx facility
5:21 am	At destination sort facility
4:34 am	Departed FedEx location
12:49 am	Arrived at FedEx location
- 4/06/2015 - Monday	
5:04 pm	Left FedEx origin facility
4:05 pm	Shipment information sent to FedEx
3:24 pm	Picked up

Shipment Facts

Tracking number	773302633471	Service	FedEx F
Weight	85 lbs / 38.56 kgs	Delivered To	Shipping
Total pieces	1	Total shipment weight	85 lbs / ;
Shipper reference	gws-826	Packaging	Your Pa
Special			



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Delivered

Tracking No. or Nickname	Shipper city, state	Origin Terminal	Ship (P/U) date	Status
773302633471	RICHLAND, WA	PASCO, WA	4/06/2015 3:24 pm	
773300915375	RICHLAND, WA	PASCO, WA	4/06/2015 3:24 pm	

Delivered

773300915375

Travel History

Date/Time	Activity
- 4/07/2015 - Tuesday	
9:15 am	Delivered
6:59 am	On FedEx vehicle for delivery
6:54 am	At local FedEx facility
5:21 am	At destination sort facility
4:34 am	Departed FedEx location
12:49 am	Arrived at FedEx location
- 4/06/2015 - Monday	
5:04 pm	Left FedEx origin facility
3:24 pm	Picked up
2:46 pm	Shipment information sent to FedEx

Shipment Facts

Tracking number	773300915375	Service	FedEx F
Weight	70 lbs / 31.75 kgs	Delivered To	Shipping
Total pieces	1	Total shipment weight	70 lbs / ;
Shipper reference	GWS-417	Packaging	Your Pa
Special			

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
T	MS, MSD: Recovery exceeds upper or lower control limits.
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
U	Analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS VOA TICs

Qualifier	Qualifier Description
N	Presumptive evidence of material.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-11221-1	B310Y9	Water	04/06/15 10:31	04/07/15 09:20
160-11221-2	B31104	Water	04/06/15 10:15	04/07/15 09:20
160-11221-3	B31109	Water	04/06/15 12:03	04/07/15 09:20

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April 20, 2015
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS)

Client Sample ID: B310Y9
Date Collected: 04/06/15 10:31
Date Received: 04/07/15 09:20

Lab Sample ID: 160-11221-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	1100	D	50	6.5	ug/L			04/09/15 11:20	50
Chloroform	7.9	D	5.0	0.50	ug/L			04/09/15 17:13	5
Chloromethane	0.40	U	10	0.40	ug/L			04/09/15 17:13	5
cis-1,2-Dichloroethylene	0.45	U	5.0	0.45	ug/L			04/09/15 17:13	5
Methylene Chloride	1.4	U	5.0	1.4	ug/L			04/09/15 17:13	5
Trichloroethene	4.8	J D T	5.0	1.3	ug/L			04/09/15 17:13	5
Vinyl chloride	0.40	U	10	0.40	ug/L			04/09/15 17:13	5

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					04/09/15 11:20	50
Tentatively Identified Compound	None		ug/L					04/09/15 17:13	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		81 - 130		04/09/15 11:20	50
4-Bromofluorobenzene (Surr)	108		81 - 130		04/09/15 17:13	5
Dibromofluoromethane (Surr)	111		81 - 124		04/09/15 11:20	50
Dibromofluoromethane (Surr)	120		81 - 124		04/09/15 17:13	5
1,2-Dichloroethane-d4 (Surr)	99		75 - 129		04/09/15 11:20	50
1,2-Dichloroethane-d4 (Surr)	115		75 - 129		04/09/15 17:13	5
Toluene-d8 (Surr)	104		87 - 128		04/09/15 11:20	50
Toluene-d8 (Surr)	102		87 - 128		04/09/15 17:13	5

Client Sample ID: B31104
Date Collected: 04/06/15 10:15
Date Received: 04/07/15 09:20

Lab Sample ID: 160-11221-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	1200	D	50	6.5	ug/L			04/09/15 11:43	50
Chloroform	8.2	D	5.0	0.50	ug/L			04/09/15 17:37	5
Chloromethane	0.40	U	10	0.40	ug/L			04/09/15 17:37	5
cis-1,2-Dichloroethylene	0.45	U	5.0	0.45	ug/L			04/09/15 17:37	5
Methylene Chloride	1.4	U	5.0	1.4	ug/L			04/09/15 17:37	5
Trichloroethene	4.9	J D T	5.0	1.3	ug/L			04/09/15 17:37	5
Vinyl chloride	0.40	U	10	0.40	ug/L			04/09/15 17:37	5

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					04/09/15 11:43	50
Tentatively Identified Compound	None		ug/L					04/09/15 17:37	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		81 - 130		04/09/15 11:43	50
4-Bromofluorobenzene (Surr)	116		81 - 130		04/09/15 17:37	5
Dibromofluoromethane (Surr)	112		81 - 124		04/09/15 11:43	50
Dibromofluoromethane (Surr)	122		81 - 124		04/09/15 17:37	5
1,2-Dichloroethane-d4 (Surr)	96		75 - 129		04/09/15 11:43	50
1,2-Dichloroethane-d4 (Surr)	113		75 - 129		04/09/15 17:37	5
Toluene-d8 (Surr)	107		87 - 128		04/09/15 11:43	50
Toluene-d8 (Surr)	106		87 - 128		04/09/15 17:37	5

TestAmerica St. Louis

April 20, 2015
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS)

Client Sample ID: B31109
Date Collected: 04/06/15 12:03
Date Received: 04/07/15 09:20

Lab Sample ID: 160-11221-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	120	D	5.0	0.65	ug/L			04/10/15 10:03	5
Chloroform	1.8		1.0	0.10	ug/L			04/09/15 13:41	1
Chloromethane	0.080	U	2.0	0.080	ug/L			04/09/15 13:41	1
cis-1,2-Dichloroethylene	0.090	U	1.0	0.090	ug/L			04/09/15 13:41	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			04/09/15 13:41	1
Trichloroethene	0.63	J T	1.0	0.25	ug/L			04/09/15 13:41	1
Vinyl chloride	0.080	U	2.0	0.080	ug/L			04/09/15 13:41	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	66	N	ug/L		2.85			04/09/15 13:41	1
Tentatively Identified Compound	None		ug/L					04/10/15 10:03	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		81 - 130		04/09/15 13:41	1
4-Bromofluorobenzene (Surr)	112		81 - 130		04/10/15 10:03	5
Dibromofluoromethane (Surr)	117		81 - 124		04/09/15 13:41	1
Dibromofluoromethane (Surr)	114		81 - 124		04/10/15 10:03	5
1,2-Dichloroethane-d4 (Surr)	106		75 - 129		04/09/15 13:41	1
1,2-Dichloroethane-d4 (Surr)	103		75 - 129		04/10/15 10:03	5
Toluene-d8 (Surr)	107		87 - 128		04/09/15 13:41	1
Toluene-d8 (Surr)	103		87 - 128		04/10/15 10:03	5

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 160-184432/8

Matrix: Water

Analysis Batch: 184432

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.13	U	1.0	0.13	ug/L			04/09/15 08:59	1
Chloroform	0.10	U	1.0	0.10	ug/L			04/09/15 08:59	1
Chloromethane	0.080	U	2.0	0.080	ug/L			04/09/15 08:59	1
cis-1,2-Dichloroethylene	0.090	U	1.0	0.090	ug/L			04/09/15 08:59	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			04/09/15 08:59	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			04/09/15 08:59	1
Vinyl chloride	0.080	U	2.0	0.080	ug/L			04/09/15 08:59	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					04/09/15 08:59	1
Naphthalene	0.238	J	ug/L		16.37	91-20-3		04/09/15 08:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		81 - 130		04/09/15 08:59	1
Dibromofluoromethane (Surr)	103		81 - 124		04/09/15 08:59	1
1,2-Dichloroethane-d4 (Surr)	99		75 - 129		04/09/15 08:59	1
Toluene-d8 (Surr)	105		87 - 128		04/09/15 08:59	1

Lab Sample ID: LCS 160-184432/5

Matrix: Water

Analysis Batch: 184432

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	10.0	11.2		ug/L		112	83 - 125
Chloroform	10.0	10.3		ug/L		103	80 - 120
Chloromethane	10.0	9.89		ug/L		99	72 - 124
cis-1,2-Dichloroethylene	10.0	9.67		ug/L		97	80 - 120
Methylene Chloride	10.0	9.11		ug/L		91	80 - 120
Trichloroethene	10.0	8.66		ug/L		87	80 - 120
Vinyl chloride	10.0	8.76		ug/L		88	77 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		81 - 130
Dibromofluoromethane (Surr)	110		81 - 124
1,2-Dichloroethane-d4 (Surr)	108		75 - 129
Toluene-d8 (Surr)	103		87 - 128

Lab Sample ID: LCSD 160-184432/6

Matrix: Water

Analysis Batch: 184432

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	10.0	11.0		ug/L		110	83 - 125	2	20
Chloroform	10.0	10.1		ug/L		101	80 - 120	2	20
Chloromethane	10.0	9.52		ug/L		95	72 - 124	4	20
cis-1,2-Dichloroethylene	10.0	9.55		ug/L		96	80 - 120	1	20
Methylene Chloride	10.0	9.04		ug/L		90	80 - 120	1	20

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-184432/6

Matrix: Water

Analysis Batch: 184432

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichloroethene	10.0	8.70		ug/L		87	80 - 120	1	20
Vinyl chloride	10.0	8.55		ug/L		85	77 - 122	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	105		81 - 130
Dibromofluoromethane (Surr)	108		81 - 124
1,2-Dichloroethane-d4 (Surr)	100		75 - 129
Toluene-d8 (Surr)	103		87 - 128

Lab Sample ID: 160-11195-B-21 MS

Matrix: Water

Analysis Batch: 184432

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	0.13	U	10.0	11.2		ug/L		112	77 - 131
Chloroform	0.10	U	10.0	10.4		ug/L		104	80 - 120
Chloromethane	0.080	U	10.0	9.63		ug/L		96	62 - 132
cis-1,2-Dichloroethylene	0.090	U	10.0	9.60		ug/L		96	80 - 120
Methylene Chloride	0.27	U	10.0	9.05		ug/L		91	80 - 120
Trichloroethene	0.25	U T	10.0	7.88	T	ug/L		79	81 - 125
Vinyl chloride	0.080	U	10.0	8.73		ug/L		87	70 - 129

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	103		81 - 130
Dibromofluoromethane (Surr)	112		81 - 124
1,2-Dichloroethane-d4 (Surr)	101		75 - 129
Toluene-d8 (Surr)	104		87 - 128

Lab Sample ID: 160-11195-C-21 MSD

Matrix: Water

Analysis Batch: 184432

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	0.13	U	10.0	10.7		ug/L		107	77 - 131	5	20
Chloroform	0.10	U	10.0	10.1		ug/L		101	80 - 120	3	20
Chloromethane	0.080	U	10.0	9.30		ug/L		93	62 - 132	4	20
cis-1,2-Dichloroethylene	0.090	U	10.0	9.69		ug/L		97	80 - 120	1	20
Methylene Chloride	0.27	U	10.0	8.82		ug/L		88	80 - 120	3	20
Trichloroethene	0.25	U T	10.0	7.51	T	ug/L		75	81 - 125	5	20
Vinyl chloride	0.080	U	10.0	8.45		ug/L		85	70 - 129	3	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	102		81 - 130
Dibromofluoromethane (Surr)	111		81 - 124
1,2-Dichloroethane-d4 (Surr)	96		75 - 129
Toluene-d8 (Surr)	102		87 - 128

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 160-184795/9

Matrix: Water

Analysis Batch: 184795

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.13	U	1.0	0.13	ug/L			04/10/15 08:53	1
Chloroform	0.10	U	1.0	0.10	ug/L			04/10/15 08:53	1
Chloromethane	0.080	U	2.0	0.080	ug/L			04/10/15 08:53	1
cis-1,2-Dichloroethylene	0.090	U	1.0	0.090	ug/L			04/10/15 08:53	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			04/10/15 08:53	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			04/10/15 08:53	1
Vinyl chloride	0.080	U	2.0	0.080	ug/L			04/10/15 08:53	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					04/10/15 08:53	1
Naphthalene	0.252	J	ug/L		16.37	91-20-3		04/10/15 08:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		81 - 130		04/10/15 08:53	1
Dibromofluoromethane (Surr)	105		81 - 124		04/10/15 08:53	1
1,2-Dichloroethane-d4 (Surr)	99		75 - 129		04/10/15 08:53	1
Toluene-d8 (Surr)	106		87 - 128		04/10/15 08:53	1

Lab Sample ID: LCS 160-184795/6

Matrix: Water

Analysis Batch: 184795

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	10.0	11.2		ug/L		112	83 - 125
Chloroform	10.0	9.88		ug/L		99	80 - 120
Chloromethane	10.0	9.59		ug/L		96	72 - 124
cis-1,2-Dichloroethylene	10.0	9.29		ug/L		93	80 - 120
Methylene Chloride	10.0	8.70		ug/L		87	80 - 120
Trichloroethene	10.0	8.51		ug/L		85	80 - 120
Vinyl chloride	10.0	8.55		ug/L		86	77 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		81 - 130
Dibromofluoromethane (Surr)	105		81 - 124
1,2-Dichloroethane-d4 (Surr)	101		75 - 129
Toluene-d8 (Surr)	104		87 - 128

Lab Sample ID: LCSD 160-184795/7

Matrix: Water

Analysis Batch: 184795

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	10.0	11.8		ug/L		118	83 - 125	4	20
Chloroform	10.0	10.3		ug/L		103	80 - 120	4	20
Chloromethane	10.0	9.86		ug/L		99	72 - 124	3	20
cis-1,2-Dichloroethylene	10.0	9.79		ug/L		98	80 - 120	5	20
Methylene Chloride	10.0	8.84		ug/L		88	80 - 120	2	20

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-184795/7

Matrix: Water

Analysis Batch: 184795

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichloroethene	10.0	9.22		ug/L		92	80 - 120	8	20
Vinyl chloride	10.0	8.90		ug/L		89	77 - 122	4	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	101		81 - 130
Dibromofluoromethane (Surr)	105		81 - 124
1,2-Dichloroethane-d4 (Surr)	96		75 - 129
Toluene-d8 (Surr)	100		87 - 128

Lab Sample ID: 160-11239-B-2 MS

Matrix: Water

Analysis Batch: 184795

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	0.13	U	10.0	11.2		ug/L		112	77 - 131
Chloroform	0.10	U	10.0	10.1		ug/L		101	80 - 120
Chloromethane	0.080	U	10.0	9.78		ug/L		98	62 - 132
cis-1,2-Dichloroethylene	0.090	U	10.0	9.47		ug/L		95	80 - 120
Methylene Chloride	0.27	U	10.0	9.19		ug/L		92	80 - 120
Trichloroethene	0.25	U T	10.0	7.62	T	ug/L		76	81 - 125
Vinyl chloride	0.080	U	10.0	8.71		ug/L		87	70 - 129

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	106		81 - 130
Dibromofluoromethane (Surr)	113		81 - 124
1,2-Dichloroethane-d4 (Surr)	104		75 - 129
Toluene-d8 (Surr)	102		87 - 128

Lab Sample ID: 160-11239-C-2 MSD

Matrix: Water

Analysis Batch: 184795

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	0.13	U	10.0	10.5		ug/L		105	77 - 131	7	20
Chloroform	0.10	U	10.0	9.78		ug/L		98	80 - 120	3	20
Chloromethane	0.080	U	10.0	8.97		ug/L		90	62 - 132	9	20
cis-1,2-Dichloroethylene	0.090	U	10.0	9.33		ug/L		93	80 - 120	1	20
Methylene Chloride	0.27	U	10.0	8.81		ug/L		88	80 - 120	4	20
Trichloroethene	0.25	U T	10.0	7.19	T	ug/L		72	81 - 125	6	20
Vinyl chloride	0.080	U	10.0	8.21		ug/L		82	70 - 129	6	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	106		81 - 130
Dibromofluoromethane (Surr)	111		81 - 124
1,2-Dichloroethane-d4 (Surr)	99		75 - 129
Toluene-d8 (Surr)	100		87 - 128

April 20, 2015
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
 SDG: SL1779

GC/MS VOA

Analysis Batch: 184432

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-11195-B-21 MS	Matrix Spike	Total/NA	Water	8260C	
160-11195-C-21 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	
160-11221-1	B310Y9	Total/NA	Water	8260C	
160-11221-1	B310Y9	Total/NA	Water	8260C	
160-11221-2	B31104	Total/NA	Water	8260C	
160-11221-2	B31104	Total/NA	Water	8260C	
160-11221-3	B31109	Total/NA	Water	8260C	
LCS 160-184432/5	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-184432/6	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 160-184432/8	Method Blank	Total/NA	Water	8260C	

Analysis Batch: 184795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-11221-3	B31109	Total/NA	Water	8260C	
160-11239-B-2 MS	Matrix Spike	Total/NA	Water	8260C	
160-11239-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	
LCS 160-184795/6	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-184795/7	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 160-184795/9	Method Blank	Total/NA	Water	8260C	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F13-002

TestAmerica Job ID: 160-11221-1
 SDG: SL1779

Method: 8260C - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		BFB (81-130)	DBFM (81-124)	12DCE (75-129)	TOL (87-128)
160-11195-B-21 MS	Matrix Spike	103	112	101	104
160-11195-C-21 MSD	Matrix Spike Duplicate	102	111	96	102
160-11221-1	B310Y9	111	111	99	104
160-11221-1	B310Y9	108	120	115	102
160-11221-2	B31104	114	112	96	107
160-11221-2	B31104	116	122	113	106
160-11221-3	B31109	112	117	106	107
160-11221-3	B31109	112	114	103	103
160-11239-B-2 MS	Matrix Spike	106	113	104	102
160-11239-C-2 MSD	Matrix Spike Duplicate	106	111	99	100
LCS 160-184432/5	Lab Control Sample	104	110	108	103
LCS 160-184795/6	Lab Control Sample	106	105	101	104
LCSD 160-184432/6	Lab Control Sample Dup	105	108	100	103
LCSD 160-184795/7	Lab Control Sample Dup	101	105	96	100
MB 160-184432/8	Method Blank	112	103	99	105
MB 160-184795/9	Method Blank	112	105	99	106

Surrogate Legend

- BFB = 4-Bromofluorobenzene (Surr)
- DBFM = Dibromofluoromethane (Surr)
- 12DCE = 1,2-Dichloroethane-d4 (Surr)
- TOL = Toluene-d8 (Surr)

