

June 28, 2016

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: 160-17616-1

TestAmerica Sample Delivery Group: SL2210
Client Project/Site: F13-002

For:

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
6/28/2016 3:06:44 PM

Jayna Awalt, Project Manager II
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Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Job ID: 160-17616-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
June 28, 2016
Attention: Scot Fitzgerald

SDG : SL2210
Number of Samples : 1 sample
Sample Matrix : Water
Data Deliverable : Summary
Date SDG Closed : June 2, 2016

II. Introduction

On June 2, 1 sample was 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 solid matrices, all Metals analyses (including Hg) use a Standard Reference Material for the Laboratory Control Sample (LCS). Certificate for this source material may be obtained from TASL.

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.

Per CHPRC direction, due to the short hold times for Nitrate, Nitrite and Phosphate by IC (48 hours) as well as pH analysis (24 hours), a SIR request is not needed when samples are run outside 1x hold but within 2x hold. A narrative comment will be included below if a sample is run outside the lab-specified hold time for waters.



Case Narrative

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Job ID: 160-17616-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

For extractable and volatile organic analyses, several analytes are considered poor performers and will not meet CHPRC QC limits. Per CHPRC direction, the lab's statistical limits have been reported. Excursions outside these statistical limits will include a non-conformance in the sections below.

IV. Definitions

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

TDS

Batch: 254559

The following samples in TDS batch 160-254559 were diluted to bring the concentration of target analytes within the calibration range: (160-17614-B-1 DU). Elevated reporting limits (RLs) are provided. This sample has been qualified accordingly with the "D" flag in the associated samples.

TOC

Batch: 255921

Total Organic Carbon was detected in method blank MB 160-255921/31 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "B". If the associated sample reported a result above the MDL and/or RL and is not greater than 5x the method blank, the result has been flagged "C".

TIC

Batch: 256487

The following samples in TIC batch 160-256487 were diluted to bring the concentration of target analytes within the calibration range: (160-17614-C-1 MS), (160-17614-C-1 DU). Elevated reporting limits (RLs) are provided. This sample has been qualified accordingly with

Case Narrative

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Job ID: 160-17616-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

the "D" flag in the associated samples.

There were no observations or non-conformances associated with the following methods:

Alkalinity
Cyanide

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:

Jayna Awalt
St. Louis Project Manager



Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-17616-1

SDG Number: SL2210

Login Number: 17616

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
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	0.8
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 (excluding tests with immediate HTs)	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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-002-2061	PAGE 1 OF 1
COLLECTOR K.C. Patterson/CHPRC	92210	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	PRICE CODE 7H
SAMPLING LOCATION 299-E33-344, YE28 Wk 2 - FTB		PROJECT DESIGNATION 200W Pump & Treat - Extraction Well Water Sampling		SAF NO. F13-002	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. GWS-484 691bs		FIELD LOGBOOK NO. HNF-N-491 15	ACTUAL SAMPLE DEPTH N/A	COA 303111	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. 776415567538	

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	MATRIX*
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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. N/A	Cool <=6C HCl or H2SO4 to pH <2/Cool 28 Days	7 Days	aG	1	60mL	9060_TTC; COMMON;	MAY 31 2016	1130	WATER
		Cool <=6C HCl or H2SO4 to pH <2/Cool 14 Days	14 Days	aGS*	1	40mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS (Add-On);			
		Cool <=6C NaOH to pH >=12/Cool <=6C 14 Days	14 Days	G/P	1	60mL	9012_CYANIDE; COMMON;			

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B35JT0	WATER	MAY 31 2016	1130

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM K.C. Patterson/CHPRC		SSU-1	MAY 31 2016 1410
RELINQUISHED BY/REMOVED FROM SSU-1	<i>Don Weble Clark</i>	FEDEX	6-1-16 0800
RELINQUISHED BY/REMOVED FROM FEDEX	<i>Jill Clarke</i>	FEDEX	6-1-16 0800
RELINQUISHED BY/REMOVED FROM			

SPECIAL INSTRUCTIONS
TRVL-16-137
(1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};

LABORATORY SECTION	RECEIVED BY	DATE/TIME
2016		

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME

PRINTED ON 5/5/2016 FSR ID = FSR32158 TRVL NUM = TRVL-16-137 A-6003-618 (REV 2)



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776415567538

Ship date:

Wed 6/01/2016

Actual delivery:

Thu 6/02/2016 9:27 am

RICHLAND WA US

Delivered

EARTH CITY MO US

Signed for by: J CLARKE

Travel History

Date/Time	Activity	Location
- 6/02/2016 - Thursday		
9:27 am	Delivered	EARTH CITY, MO
7:27 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:21 am	At local FedEx facility	EARTH CITY, MO
5:28 am	At destination sort facility	BERKELEY, MO
4:43 am	Departed FedEx location	MEMPHIS, TN
12:28 am	Arrived at FedEx location	MEMPHIS, TN
- 6/01/2016 - Wednesday		
5:07 pm	Left FedEx origin facility	PASCO, WA
3:38 pm	Picked up	PASCO, WA
10:36 am	Shipment information sent to FedEx	

Shipment Facts

Tracking number	776415567538	Service	FedEx Standard Overnight
Weight	69 lbs / 31.3 kgs	Dimensions	29x16x16 in
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	69 lbs / 31.3 kgs	Terms	Recipient
Shipper reference	GWS-484	Packaging	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge		



Search or tracking number | Subri

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 Small Business Center
 Service Guide
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 FedEx SupplyChain

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Definitions/Glossary

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

TestAmerica Job ID: 160-17616-1
 SDG: SL2210

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.

GC/MS VOA TICs

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

General Chemistry

Qualifier	Qualifier Description
D	The reported value is from a dilution.
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.
C	The analyte was detected in both the sample and the associated QC blank, and the sample concentration was $\leq 5X$ the blank concentration.
B	Estimated result. Result is less than the RL, but greater than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	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)

Method Summary

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

TestAmerica Job ID: 160-17616-1
 SDG: SL2210

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL
160.1	Solids, Total Dissolved (TDS)	MCAWW	TAL SL
310.1	Alkalinity	MCAWW	TAL SL
9012B	Cyanide, Total and/or Amenable	SW846	TAL SL
9060	Organic Carbon, Total (TOC)	SW846	TAL SL
9060	Carbon, Total and Total Inorganic	SW846	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
 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



June 28, 2016

Sample Summary

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-17616-1	B35JT0	Water	05/31/16 11:30	06/02/16 09:30

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

Client Sample Results

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

TestAmerica Job ID: 160-17616-1
 SDG: SL2210

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

Client Sample ID: B35JT0
 Date Collected: 05/31/16 11:30
 Date Received: 06/02/16 09:30

Lab Sample ID: 160-17616-1
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			06/06/16 14:10	1
Chloroform	0.10	U	1.0	0.10	ug/L			06/06/16 14:10	1
Chloromethane	0.10	U	2.0	0.10	ug/L			06/06/16 14:10	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			06/06/16 14:10	1
Methylene Chloride	1.8		1.0	0.27	ug/L			06/06/16 14:10	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			06/06/16 14:10	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			06/06/16 14:10	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					06/06/16 14:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		81 - 130		06/06/16 14:10	1
Dibromofluoromethane (Surr)	101		81 - 124		06/06/16 14:10	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 129		06/06/16 14:10	1
Toluene-d8 (Surr)	102		87 - 128		06/06/16 14:10	1

General Chemistry

Client Sample ID: B35JT0
 Date Collected: 05/31/16 11:30
 Date Received: 06/02/16 09:30

Lab Sample ID: 160-17616-1
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	3.5	U	5.0	3.5	mg/L			06/03/16 08:36	1
Bicarbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			06/09/16 18:19	1
Carbonate Alkalinity as CaCO3	2.0	B	5.0	0.54	mg/L			06/09/16 18:19	1
Hydroxide Alkalinity	0.54	U	5.0	0.54	mg/L			06/09/16 18:19	1
Cyanide, Total	3.1	U	10.0	3.1	ug/L		06/08/16 17:15	06/09/16 13:54	1
Total Inorganic Carbon	0.25	B	1.0	0.22	mg/L			06/14/16 22:58	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			06/10/16 03:02	1

QC Sample Results

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

TestAmerica Job ID: 160-17616-1
 SDG: SL2210

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

Lab Sample ID: MB 160-254846/9
 Matrix: Water
 Analysis Batch: 254846

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			06/06/16 09:04	1
Chloroform	0.10	U	1.0	0.10	ug/L			06/06/16 09:04	1
Chloromethane	0.10	U	2.0	0.10	ug/L			06/06/16 09:04	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			06/06/16 09:04	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			06/06/16 09:04	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			06/06/16 09:04	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			06/06/16 09:04	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					06/06/16 09:04	1
Toluene	0.173	J	ug/L		10.41	108-88-3		06/06/16 09:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	110		81 - 130		06/06/16 09:04	1
Dibromofluoromethane (Surr)	100		81 - 124		06/06/16 09:04	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 129		06/06/16 09:04	1
Toluene-d8 (Surr)	108		87 - 128		06/06/16 09:04	1

Lab Sample ID: LCS 160-254846/6
 Matrix: Water
 Analysis Batch: 254846

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	10.8		ug/L		108	83 - 125
Chloroform	10.0	9.86		ug/L		99	80 - 120
Chloromethane	10.0	9.94		ug/L		99	72 - 124
cis-1,2-Dichloroethylene	10.0	9.78		ug/L		98	80 - 120
Methylene Chloride	10.0	9.51		ug/L		95	80 - 120
Trichloroethene	10.0	10.6		ug/L		106	80 - 120
Vinyl chloride	10.0	10.3		ug/L		103	77 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		81 - 130
Dibromofluoromethane (Surr)	101		81 - 124
1,2-Dichloroethane-d4 (Surr)	90		75 - 129
Toluene-d8 (Surr)	101		87 - 128

Lab Sample ID: LCSD 160-254846/7
 Matrix: Water
 Analysis Batch: 254846

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	10.8		ug/L		108	83 - 125	1	20
Chloroform	10.0	9.98		ug/L		100	80 - 120	1	20
Chloromethane	10.0	10.6		ug/L		106	72 - 124	6	20
cis-1,2-Dichloroethylene	10.0	10.3		ug/L		103	80 - 120	5	20
Methylene Chloride	10.0	9.85		ug/L		98	80 - 120	3	20

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

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

Lab Sample ID: LCSD 160-254846/7

Client Sample ID: Lab Control Sample Dup

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 254846

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichloroethene	10.0	10.9		ug/L		109	80 - 120	2	20
Vinyl chloride	10.0	10.6		ug/L		106	77 - 122	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	100		81 - 130
Dibromofluoromethane (Surr)	102		81 - 124
1,2-Dichloroethane-d4 (Surr)	93		75 - 129
Toluene-d8 (Surr)	100		87 - 128

Lab Sample ID: 160-17666-B-6 MS

Client Sample ID: Matrix Spike

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 254846

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	0.18	U	10.0	10.7		ug/L		107	77 - 131
Chloroform	0.10	U	10.0	9.97		ug/L		100	80 - 120
Chloromethane	0.10	U	10.0	9.89		ug/L		99	62 - 132
cis-1,2-Dichloroethylene	0.10	U	10.0	9.62		ug/L		96	80 - 120
Methylene Chloride	1.3		10.0	10.8		ug/L		95	80 - 120
Trichloroethene	0.25	U	10.0	10.6		ug/L		106	81 - 125
Vinyl chloride	0.19	U	10.0	10.0		ug/L		100	70 - 129

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	99		81 - 130
Dibromofluoromethane (Surr)	97		81 - 124
1,2-Dichloroethane-d4 (Surr)	89		75 - 129
Toluene-d8 (Surr)	101		87 - 128

Lab Sample ID: 160-17666-C-6 MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 254846

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride	0.18	U	10.0	10.1		ug/L		101	77 - 131	6	20
Chloroform	0.10	U	10.0	9.94		ug/L		99	80 - 120	0	20
Chloromethane	0.10	U	10.0	10.0		ug/L		100	62 - 132	1	20
cis-1,2-Dichloroethylene	0.10	U	10.0	9.68		ug/L		97	80 - 120	1	20
Methylene Chloride	1.3		10.0	10.8		ug/L		95	80 - 120	0	20
Trichloroethene	0.25	U	10.0	9.61		ug/L		96	81 - 125	10	20
Vinyl chloride	0.19	U	10.0	9.61		ug/L		96	70 - 129	4	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	103		81 - 130
Dibromofluoromethane (Surr)	102		81 - 124
1,2-Dichloroethane-d4 (Surr)	91		75 - 129
Toluene-d8 (Surr)	103		87 - 128

QC Sample Results

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Method: 160.1 - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 160-254559/1
Matrix: Water
Analysis Batch: 254559

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	3.5	U	5.0	3.5	mg/L			06/03/16 08:36	1

Lab Sample ID: LCS 160-254559/2
Matrix: Water
Analysis Batch: 254559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	500	504.0		mg/L		101	90 - 110

Method: 160.1 - Solids, Total Dissolved (TDS) - DL

Lab Sample ID: 160-17614-B-1 DU
Matrix: Water
Analysis Batch: 254559

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS) - DL	2810	D	2798	D	mg/L		0.5	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-255877/1
Matrix: Water
Analysis Batch: 255877

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			06/09/16 15:54	1
Carbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			06/09/16 15:54	1
Hydroxide Alkalinity	0.54	U	5.0	0.54	mg/L			06/09/16 15:54	1

Lab Sample ID: HLCS 160-255877/3
Matrix: Water
Analysis Batch: 255877

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity as CaCO3	403	379.0		mg/L		94	90 - 110

Lab Sample ID: LCS 160-255877/2
Matrix: Water
Analysis Batch: 255877

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity as CaCO3	201	189.0		mg/L		94	90 - 110

Lab Sample ID: 160-17615-A-2 MS
Matrix: Water
Analysis Batch: 255877

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
Bicarbonate Alkalinity as CaCO3	98.0		101	192.0		mg/L		93	80 - 120

TestAmerica St. Louis

QC Sample Results

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Lab Sample ID: 160-17615-A-2 DU
Matrix: Water
Analysis Batch: 255877

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Bicarbonate Alkalinity as CaCO3	98.0		96.00		mg/L		2	20
Carbonate Alkalinity as CaCO3	0.54	U	0.54	U	mg/L		NC	20
Hydroxide Alkalinity	0.54	U	0.54	U	mg/L		NC	20

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 160-255476/1-A
Matrix: Water
Analysis Batch: 255842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 255476

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cyanide, Total	3.1	U	10.0	3.1	ug/L		06/08/16 16:30	06/08/16 20:53	1

Lab Sample ID: HLCS 160-255476/3-A
Matrix: Water
Analysis Batch: 255842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 255476

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits

Lab Sample ID: LCS 160-255476/2-A
Matrix: Water
Analysis Batch: 255842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 255476

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

Lab Sample ID: 160-17614-E-1-C MS
Matrix: Water
Analysis Batch: 255842

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 255476

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
Cyanide, Total	3.1	U	200	212.7		ug/L		106	66 - 120

Lab Sample ID: 160-17614-E-1-B DU
Matrix: Water
Analysis Batch: 255842

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 255476

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Cyanide, Total	3.1	U	3.1	U	ug/L		NC	20

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 160-255921/31
Matrix: Water
Analysis Batch: 255921

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Organic Carbon	0.724	B	1.0	0.72	mg/L			06/10/16 00:56	1

QC Sample Results

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

Method: 9060 - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 160-255921/32
Matrix: Water
Analysis Batch: 255921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.88		mg/L		99	90 - 110

Lab Sample ID: 160-17615-A-1 MS
Matrix: Water
Analysis Batch: 255921

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
Total Organic Carbon	1.3	C	5.00	6.40		mg/L		102	76 - 120

Lab Sample ID: 160-17615-A-1 DU
Matrix: Water
Analysis Batch: 255921

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	1.3	C	1.27	C	mg/L		3	20

Method: 9060 - Carbon, Total and Total Inorganic

Lab Sample ID: MB 160-256487/4
Matrix: Water
Analysis Batch: 256487

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Inorganic Carbon	0.22	U	1.0	0.22	mg/L			06/14/16 21:21	1

Lab Sample ID: LCS 160-256487/5
Matrix: Water
Analysis Batch: 256487

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Inorganic Carbon	10.0	9.87		mg/L		99	85 - 129

Method: 9060 - Carbon, Total and Total Inorganic - DL

Lab Sample ID: 160-17614-C-1 MS ^10
Matrix: Water
Analysis Batch: 256487

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
Total Inorganic Carbon - DL	65.4		50.1	122.9	D	mg/L		115	76 - 120

Lab Sample ID: 160-17614-C-1 DU ^10
Matrix: Water
Analysis Batch: 256487

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Inorganic Carbon - DL	65.4		65.04	D	mg/L		0.6	20

QC Association Summary

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

TestAmerica Job ID: 160-17616-1
 SDG: SL2210

GC/MS VOA

Analysis Batch: 254846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17616-1	B35JT0	Total/NA	Water	8260C	
160-17666-B-6 MS	Matrix Spike	Total/NA	Water	8260C	
160-17666-C-6 MSD	Matrix Spike Duplicate	Total/NA	Water	8260C	
LCS 160-254846/6	Lab Control Sample	Total/NA	Water	8260C	
LCS 160-254846/7	Lab Control Sample Dup	Total/NA	Water	8260C	
MB 160-254846/9	Method Blank	Total/NA	Water	8260C	

General Chemistry

Analysis Batch: 254559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17614-B-1 DU - DL	Duplicate	Total/NA	Water	160.1	
160-17616-1	B35JT0	Total/NA	Water	160.1	
LCS 160-254559/2	Lab Control Sample	Total/NA	Water	160.1	
MB 160-254559/1	Method Blank	Total/NA	Water	160.1	

Prep Batch: 255476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17614-E-1-B DU	Duplicate	Total/NA	Water	9010C	
160-17614-E-1-C MS	Matrix Spike	Total/NA	Water	9010C	
160-17616-1	B35JT0	Total/NA	Water	9010C	
HLCS 160-255476/3-A	Lab Control Sample	Total/NA	Water	9010C	
LCS 160-255476/2-A	Lab Control Sample	Total/NA	Water	9010C	
MB 160-255476/1-A	Method Blank	Total/NA	Water	9010C	

Analysis Batch: 255842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17614-E-1-B DU	Duplicate	Total/NA	Water	9012B	255476
160-17614-E-1-C MS	Matrix Spike	Total/NA	Water	9012B	255476
160-17616-1	B35JT0	Total/NA	Water	9012B	255476
HLCS 160-255476/3-A	Lab Control Sample	Total/NA	Water	9012B	255476
LCS 160-255476/2-A	Lab Control Sample	Total/NA	Water	9012B	255476
MB 160-255476/1-A	Method Blank	Total/NA	Water	9012B	255476

Analysis Batch: 255877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17615-A-2 DU	Duplicate	Total/NA	Water	310.1	
160-17615-A-2 MS	Matrix Spike	Total/NA	Water	310.1	
160-17616-1	B35JT0	Total/NA	Water	310.1	
HLCS 160-255877/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-255877/2	Lab Control Sample	Total/NA	Water	310.1	
MB 160-255877/1	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 255921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17615-A-1 DU	Duplicate	Total/NA	Water	9060	
160-17615-A-1 MS	Matrix Spike	Total/NA	Water	9060	
160-17616-1	B35JT0	Total/NA	Water	9060	
LCS 160-255921/32	Lab Control Sample	Total/NA	Water	9060	
MB 160-255921/31	Method Blank	Total/NA	Water	9060	

QC Association Summary

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

TestAmerica Job ID: 160-17616-1
SDG: SL2210

General Chemistry (Continued)

Analysis Batch: 256487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-17614-C-1 DU ^10 - DL	Duplicate	Total/NA	Water	9060	
160-17614-C-1 MS ^10 - DL	Matrix Spike	Total/NA	Water	9060	
160-17616-1	B35JT0	Total/NA	Water	9060	
LCS 160-256487/5	Lab Control Sample	Total/NA	Water	9060	
MB 160-256487/4	Method Blank	Total/NA	Water	9060	

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

Surrogate Summary

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

TestAmerica Job ID: 160-17616-1
 SDG: SL2210

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	12DCE	TOL
		(81-130)	(81-124)	(75-129)	(87-128)
160-17616-1	B35JT0	104	101	94	102
160-17666-B-6 MS	Matrix Spike	99	97	89	101
160-17666-C-6 MSD	Matrix Spike Duplicate	103	102	91	103
LCS 160-254846/6	Lab Control Sample	100	101	90	101
LCSD 160-254846/7	Lab Control Sample Dup	100	102	93	100
MB 160-254846/9	Method Blank	110	100	94	108

Surrogate Legend

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

