

# 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: 160-7151-1

TestAmerica Sample Delivery Group: SL1479  
Client Project/Site: L14-003  
Revision: 2

For:

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

Attn: General Mailbox



Authorized for release by:  
7/23/2014 12:02:20 PM

Jayna Awalt, Project Manager II  
(314)298-8566  
[jayna.awalt@testamericainc.com](mailto:jayna.awalt@testamericainc.com)

### LINKS

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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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## Case Narrative

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

**Job ID: 160-7151-1**

**Laboratory: TestAmerica St. Louis**

**Narrative**

**CASE NARRATIVE**

CH2MHill Plateau Remediation Company  
P.O. Box 1600  
MS B3-60  
Richland, Washington 99352  
June 27, 2014  
Attention: Scot Fitzgerald

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SDG	: SL1479
Number of Samples	: 1 sample
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: June 19, 2014

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II. Introduction

On June 19, 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: L14-003

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.

Deviation from Request: None

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

## Case Narrative

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

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**Job ID: 160-7151-1 (Continued)**


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**Laboratory: TestAmerica St. Louis (Continued)**

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. Due to limitations of the LIMS system, "D" flags may appear on QC samples.
- **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 organic 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.

**Anions****Batch: 127744**

Chloride was detected in method blank MB 160-127744/9 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".

The following samples were received with insufficient time remaining to perform the analysis within 1x holding time for Nitrate and Phosphate: B2WM01 (160-7151-1). These analytes were analyzed within 2x hold. Per CHPRC direction, the data for samples performed outside 1x hold but within 2x hold have been reported.

The matrix spike (MS) recovery for batch 127744 was outside control limit for Phosphate. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. (160-7152-3 MS) This analyte has been qualified accordingly with an "N" flag in the associated samples.

Sample B2WM01 (160-7151-1) is reporting Chloride, Nitrate and Sulfate within holding time. The sample duplicate and matrix spike used as batch QC are not reporting these anions due to the parent sample requiring further dilutions. This sample is associated with a passing LCS.

**TDS****Batch: 128393**

Total Dissolved Solids (TDS) was detected in method blank MB 160-128393/1 at a level exceeding the reporting limit. The associated sample displayed a result greater than 5x the method blank; therefore the sample has not been qualified.

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

**ICPMS Metals****Mercury****ICP Metals**

I certify that this Summary Package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the signature on the cover page has authorized release of the data contained in this hard copy data package.

**Case Narrative**

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

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**Job ID: 160-7151-1 (Continued)**

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**Laboratory: TestAmerica St. Louis (Continued)**

Reviewed and approved:

Jayna Awalt  
St. Louis Project Manager



**Problem and Discrepancy Report****TASL****SDG SL1479**

7/23/14

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**1. The data package has the following issues:**

- a) Method 6020 was reported in the electronic data instead of 200.8 for sample number B2WM01. Please re-submit the electronic data with the correct method.

**Resolution:** *Provide appropriate correction.*

**Lab Response: 200.8 Method was added to EDD and resubmitted to EDDPro.**

Please correct the issues and resubmit the electronic data package.

Provide a resolution to each issue noted on the report

Page 1 of 1

**Login Sample Receipt Checklist**

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-7151-1

SDG Number: SL1479

Login Number: 7151

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.	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	
Cooler Temperature is recorded.	True	1.1
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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



CH2M Hill Remediation Company		CHAIN OF CUSTODY/SF E ANALYSIS REQUEST		L14-003-019	PAGE 1 OF 1			
COLLECTOR <i>D Spicer</i>	8L1479	COMPANY CONTACT WATERS-HUSTED, K	TELEPHONE NO. 376-4650	PROJECT COORDINATOR BOWMAN, MW	PRICE CODE C05			
SAMPLING LOCATION TEDF End of Pipe (Bldg 6653)	<i>AW-618/14</i>	PROJECT DESIGNATION 200 TEDF EOP (Bldg 6653) - Monthly & Quarterly Sampling FY2014	SAF NO. L14-003	AIR QUALITY <input type="checkbox"/>	DATA TURNAROUND 7 Days / 7 Days			
ICE CHEST NO. <i>GWS-077 309</i>	<i>14-05 pg 44</i>	FIELD LOGBOOK NO. <i>N/A</i>	ACTUAL SAMPLE DEPTH <i>N/A</i>	METHOD OF SHIPMENT GOVERNMENT VEHICLE				
SHIPPED TO TestAmerica St. Louis	<i>N/A</i>	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO. <i>7703 4713 5591</i>					
SPECIAL HANDLING AND/OR STORAGE		POSSIBLE SAMPLE HAZARDS/ REMARKS						
MATRIX* OL = OTHER LIQUID OS = OTHER SOLID S = SOIL W = WATER		*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. OPS: Samples may contain corrosive preservatives. MSDS numbers: HCl #039256; NaOH #042214; HNO3 #039255; H2SO4 #039254. Wear proper PPE.						
SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	HOLDING TIME	PRESERVATION
B2WM01		W	<i>6-18-14</i>	<i>0038</i>	1X1L aG	✓ Anions; TDS (TDS);	28 Days/48 Hours	Cool-to-4C
B2WM01		W	<i>6-18-14</i>	<i>0038</i>	1X500mL P	ICP for TEDF End of pipe; ICP-MS for TEDF End of pipe; ✓	6 months/28 days	HNO3 to pH <2

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>D Spicer</i>	DATE/TIME <i>6-18-14 0635</i>	RECEIVED BY/STORED IN <i>Dana Wilberg</i>	DATE/TIME <i>6/18/14</i>	OPS: TEDF monthly composite sample to Test America St. Louis. For composite sample, record date/time the sampler was turned off on the COC as the sample date/time.	
RELINQUISHED BY/REMOVED FROM <i>D Spicer</i>	DATE/TIME <i>6-18-14 0635</i>	RECEIVED BY/STORED IN <i>L.D. Wall</i>	DATE/TIME <i>JUN 18 2014 0750</i>	OPS: Was there sufficient volume in the composite sampler to fill all the bottles (circle one)? Y / (N)	
RELINQUISHED BY/REMOVED FROM <i>L.D. Wall</i>	DATE/TIME <i>JUN 18 2014 1400</i>	RECEIVED BY/STORED IN <b>FED EX</b>	DATE/TIME <i>JUN 18 2014 0910</i>	TASL: Steam condensate/cooling water sample. Rad levels are expected to be < 10 pCi/L alpha, < 15 pCi/L beta.	
RELINQUISHED BY/REMOVED FROM <b>FED EX</b>	DATE/TIME <i>JUN 18 2014 0910</i>	RECEIVED BY <i>Jill Clarke</i>	DATE/TIME <i>6-19-14 0910</i>		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



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770347135591

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Wed 6/18/2014 3:51 pm  
RICHLAND, WA  
US



Delivered  
Signed for by: B.DANIELS  
Actual delivery :  
Thur 6/19/2014 9:11 am  
EARTH CITY, MO  
US

Delivery Options

This shipment's delivery has been customized by the recipient. Login or Signup for delivery options to add or cancel the settings. This shipment's delivery has been customized by the recipient. Signup for delivery options to edit or cancel the settings. This shipment's delivery has been customized by the recipient. Add this address to My Profile to edit or cancel the settings. Renew your enrollment to view details or edit this delivery option.  
Travel History

Date/Time	Activity	Location
6/19/2014 - Thursday		
9:11 am	Delivered	EARTH CITY, MO
7:05 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:01 am	At local FedEx facility	EARTH CITY, MO
5:26 am	At destination sort facility	BERKELEY, MO
4:37 am	Departed FedEx location	MEMPHIS, TN
12:40 am	Arrived at FedEx location	MEMPHIS, TN
6/18/2014 - Wednesday		
5:13 pm	Left FedEx origin facility	PASCO, WA
3:51 pm	Picked up	PASCO, WA
3:44 pm	Shipment information sent to FedEx	

Local Scan Time

Shipment Facts

Tracking number 770347135591  
Weight 65 lbs  
Total pieces 1  
Shipper reference gws-309  
Special handling section Deliver Weekday  
Service FedEx Priority Overnight  
Delivered To Shipping/Receiving  
Total shipment weight 65 lbs / 29.48 kgs  
Packaging Your Packaging



**Login Sample Receipt Checklist**

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-7151-1

SDG Number: SL1479

**Login Number: 7151**  
**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.	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	
Cooler Temperature is recorded.	True	1.1
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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

## Qualifiers

### Metals

Qualifier	Qualifier Description
U	Analyzed for but not detected.
B	Estimated result. Result is less than the RL, but greater than MDL

### General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.
B	Estimated result. Result is less than the RL, but greater than MDL
N	MS, MSD: Spike recovery exceeds upper or lower control limits.

## 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)

Method Summary

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
 SDG: SL1479

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL SL
245.1	Mercury (CVAA)	EPA	TAL SL
6010C	Metals (ICP)	SW846	TAL SL
300.0	Anions, Ion Chromatography	MCAWW	TAL SL
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

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

SM = "Standard Methods For The Examination Of Water And Wastewater",

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



### Sample Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-7151-1	B2WM01	Water	06/18/14 00:38	06/19/14 09:10

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- 1
- 2
- 3
- 4
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- 6
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- 9
- 10
- 11

Client Sample Results

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
 SDG: SL1479

Method: 200.8 - Metals (ICP/MS)

Client Sample ID: B2WM01  
 Date Collected: 06/18/14 00:38  
 Date Received: 06/19/14 09:10

Lab Sample ID: 160-7151-1  
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.2	U	2.0	1.2	ug/L		06/23/14 13:14	06/24/14 16:52	1
Cadmium	0.10	U	0.50	0.10	ug/L		06/23/14 13:14	06/24/14 16:52	1
Chromium	1.0	U	3.3	1.0	ug/L		06/23/14 13:14	06/24/14 16:52	1
Lead	0.26	B	0.50	0.17	ug/L		06/23/14 13:14	06/24/14 16:52	1
Manganese	2.3		1.0	0.25	ug/L		06/23/14 13:14	06/24/14 16:52	1

Method: 245.1 - Mercury (CVAA)

Client Sample ID: B2WM01  
 Date Collected: 06/18/14 00:38  
 Date Received: 06/19/14 09:10

Lab Sample ID: 160-7151-1  
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.050	U	0.20	0.050	ug/L		06/23/14 10:30	06/24/14 07:29	1

Method: 6010C - Metals (ICP)

Client Sample ID: B2WM01  
 Date Collected: 06/18/14 00:38  
 Date Received: 06/19/14 09:10

Lab Sample ID: 160-7151-1  
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	64.3	B	100	12.8	ug/L		06/23/14 13:20	06/24/14 11:00	1

General Chemistry

Client Sample ID: B2WM01  
 Date Collected: 06/18/14 00:38  
 Date Received: 06/19/14 09:10

Lab Sample ID: 160-7151-1  
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.60		0.020	0.0040	mg/L			06/20/14 04:03	1
Nitrite as N	0.047		0.020	0.0030	mg/L			06/20/14 04:03	1
Fluoride	0.077	B	0.10	0.010	mg/L			06/20/14 04:03	1
Chloride	3.0		0.20	0.020	mg/L			06/20/14 04:03	1
Bromide	0.025	U	0.25	0.025	mg/L			06/20/14 04:03	1
Sulfate	13.2		0.50	0.050	mg/L			06/20/14 04:03	1
Phosphate	1.4	N	0.50	0.078	mg/L			06/20/14 04:03	1
Total Dissolved Solids (TDS)	123		5.0	3.5	mg/L			06/24/14 13:43	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
 SDG: SL1479

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 160-128206/1-A  
 Matrix: Water  
 Analysis Batch: 128465

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 128206

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.2	U	2.0	1.2	ug/L		06/23/14 13:14	06/24/14 16:39	1
Cadmium	0.10	U	0.50	0.10	ug/L		06/23/14 13:14	06/24/14 16:39	1
Chromium	1.0	U	3.3	1.0	ug/L		06/23/14 13:14	06/24/14 16:39	1
Lead	0.17	U	0.50	0.17	ug/L		06/23/14 13:14	06/24/14 16:39	1
Manganese	0.25	U	1.0	0.25	ug/L		06/23/14 13:14	06/24/14 16:39	1

Lab Sample ID: LCS 160-128206/2-A  
 Matrix: Water  
 Analysis Batch: 128465

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 128206

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	1012		ug/L		101	85 - 115
Cadmium	1000	1016		ug/L		102	85 - 115
Chromium	1000	976.4		ug/L		98	85 - 115
Lead	1000	981.3		ug/L		98	85 - 115
Manganese	1000	1043		ug/L		104	85 - 115

Lab Sample ID: 160-7151-1 MS  
 Matrix: Water  
 Analysis Batch: 128465

Client Sample ID: B2WM01  
 Prep Type: Total/NA  
 Prep Batch: 128206

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.2	U	1000	999.9		ug/L		100	70 - 130
Cadmium	0.10	U	1000	1006		ug/L		101	70 - 130
Chromium	1.0	U	1000	963.6		ug/L		96	70 - 130
Lead	0.26	B	1000	991.9		ug/L		99	70 - 130
Manganese	2.3		1000	1033		ug/L		103	70 - 130

Lab Sample ID: 160-7151-1 MSD  
 Matrix: Water  
 Analysis Batch: 128465

Client Sample ID: B2WM01  
 Prep Type: Total/NA  
 Prep Batch: 128206

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1.2	U	1000	1017		ug/L		102	70 - 130	2	20
Cadmium	0.10	U	1000	1031		ug/L		103	70 - 130	2	20
Chromium	1.0	U	1000	974.6		ug/L		97	70 - 130	1	20
Lead	0.26	B	1000	1014		ug/L		101	70 - 130	2	20
Manganese	2.3		1000	1040		ug/L		104	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 160-128220/1-A  
 Matrix: Water  
 Analysis Batch: 128370

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 128220

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.050	U	0.20	0.050	ug/L		06/23/14 10:30	06/24/14 07:11	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 160-128220/2-A  
Matrix: Water  
Analysis Batch: 128370

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 128220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.17		ug/L		103	85 - 115

Lab Sample ID: 160-7140-C-1-B MS  
Matrix: Water  
Analysis Batch: 128370

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 128220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.050	U	5.00	5.04		ug/L		101	70 - 130

Lab Sample ID: 160-7140-C-1-C MSD  
Matrix: Water  
Analysis Batch: 128370

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 128220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.050	U	5.00	5.03		ug/L		101	70 - 130	0	20

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-128208/1-A  
Matrix: Water  
Analysis Batch: 128378

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 128208

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	12.8	U	100	12.8	ug/L		06/23/14 13:20	06/24/14 10:53	1

Lab Sample ID: LCS 160-128208/2-A  
Matrix: Water  
Analysis Batch: 128378

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 128208

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10000	10040		ug/L		100	80 - 120

Lab Sample ID: 160-7151-1 MS  
Matrix: Water  
Analysis Batch: 128378

Client Sample ID: B2WM01  
Prep Type: Total/NA  
Prep Batch: 128208

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	64.3	B	10000	10310		ug/L		102	75 - 125

Lab Sample ID: 160-7151-1 MSD  
Matrix: Water  
Analysis Batch: 128378

Client Sample ID: B2WM01  
Prep Type: Total/NA  
Prep Batch: 128208

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	64.3	B	10000	10270		ug/L		102	75 - 125	0	20

QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
SDG: SL1479

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 160-127744/9

Matrix: Water

Analysis Batch: 127744

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.0040	U	0.020	0.0040	mg/L			06/19/14 18:42	1
Nitrite as N	0.0030	U	0.020	0.0030	mg/L			06/19/14 18:42	1
Fluoride	0.010	U	0.10	0.010	mg/L			06/19/14 18:42	1
Chloride	0.0302	B	0.20	0.020	mg/L			06/19/14 18:42	1
Bromide	0.025	U	0.25	0.025	mg/L			06/19/14 18:42	1
Sulfate	0.050	U	0.50	0.050	mg/L			06/19/14 18:42	1
Phosphate	0.078	U	0.50	0.078	mg/L			06/19/14 18:42	1

Lab Sample ID: LCS 160-127744/10

Matrix: Water

Analysis Batch: 127744

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.400	0.401		mg/L		100	90 - 110
Nitrite as N	0.160	0.158		mg/L		99	90 - 110
Fluoride	1.00	0.963		mg/L		96	90 - 110
Chloride	2.00	1.94		mg/L		97	90 - 110
Bromide	2.00	1.97		mg/L		98	90 - 110
Sulfate	8.00	7.90		mg/L		99	90 - 110
Phosphate	8.00	7.91		mg/L		99	90 - 110

Lab Sample ID: 160-7152-A-3 MS

Matrix: Water

Analysis Batch: 127744

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
Nitrite as N	0.0030	U	0.100	0.0956		mg/L		96	90 - 110
Fluoride	0.35		2.00	2.42		mg/L		103	90 - 110
Bromide	0.025	U	2.00	2.00		mg/L		100	90 - 110
Phosphate	0.078	U	4.00	5.55	N	mg/L		139	90 - 110

Lab Sample ID: 160-7152-A-3 DU

Matrix: Water

Analysis Batch: 127744

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrite as N	0.0030	U	0.0030	U	mg/L		NC	20
Fluoride	0.35		0.352		mg/L		0.2	20
Bromide	0.025	U	0.025	U	mg/L		NC	20
Phosphate	0.078	U	0.078	U	mg/L		NC	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 160-128393/1

Matrix: Water

Analysis Batch: 128393

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)	12.00		5.0	3.5	mg/L			06/24/14 13:43	1

TestAmerica St. Louis

QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
 SDG: SL1479

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 160-128393/2  
 Matrix: Water  
 Analysis Batch: 128393

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	513.0		mg/L		103	90 - 110

Lab Sample ID: 160-7151-1 DU  
 Matrix: Water  
 Analysis Batch: 128393

Client Sample ID: B2WM01  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	123		129.0		mg/L		5	20



QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
 SDG: SL1479

Metals

Prep Batch: 128206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7151-1	B2WM01	Total/NA	Water	200.7/200.8	
160-7151-1 MS	B2WM01	Total/NA	Water	200.7/200.8	
160-7151-1 MSD	B2WM01	Total/NA	Water	200.7/200.8	
LCS 160-128206/2-A	Lab Control Sample	Total/NA	Water	200.7/200.8	
MB 160-128206/1-A	Method Blank	Total/NA	Water	200.7/200.8	

Prep Batch: 128208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7151-1	B2WM01	Total/NA	Water	3010A	
160-7151-1 MS	B2WM01	Total/NA	Water	3010A	
160-7151-1 MSD	B2WM01	Total/NA	Water	3010A	
LCS 160-128208/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-128208/1-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 128220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7140-C-1-B MS	Matrix Spike	Total/NA	Water	245.1	
160-7140-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	
160-7151-1	B2WM01	Total/NA	Water	245.1	
LCS 160-128220/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 160-128220/1-A	Method Blank	Total/NA	Water	245.1	

Analysis Batch: 128370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7140-C-1-B MS	Matrix Spike	Total/NA	Water	245.1	128220
160-7140-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	128220
160-7151-1	B2WM01	Total/NA	Water	245.1	128220
LCS 160-128220/2-A	Lab Control Sample	Total/NA	Water	245.1	128220
MB 160-128220/1-A	Method Blank	Total/NA	Water	245.1	128220

Analysis Batch: 128378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7151-1	B2WM01	Total/NA	Water	6010C	128208
160-7151-1 MS	B2WM01	Total/NA	Water	6010C	128208
160-7151-1 MSD	B2WM01	Total/NA	Water	6010C	128208
LCS 160-128208/2-A	Lab Control Sample	Total/NA	Water	6010C	128208
MB 160-128208/1-A	Method Blank	Total/NA	Water	6010C	128208

Analysis Batch: 128465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7151-1	B2WM01	Total/NA	Water	200.8	128206
160-7151-1 MS	B2WM01	Total/NA	Water	200.8	128206
160-7151-1 MSD	B2WM01	Total/NA	Water	200.8	128206
LCS 160-128206/2-A	Lab Control Sample	Total/NA	Water	200.8	128206
MB 160-128206/1-A	Method Blank	Total/NA	Water	200.8	128206



QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: L14-003

TestAmerica Job ID: 160-7151-1  
 SDG: SL1479

General Chemistry

Analysis Batch: 127744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7151-1	B2WM01	Total/NA	Water	300.0	
160-7152-A-3 DU	Duplicate	Total/NA	Water	300.0	
160-7152-A-3 MS	Matrix Spike	Total/NA	Water	300.0	
LCS 160-127744/10	Lab Control Sample	Total/NA	Water	300.0	
MB 160-127744/9	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 128393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-7151-1	B2WM01	Total/NA	Water	SM 2540C	
160-7151-1 DU	B2WM01	Total/NA	Water	SM 2540C	
LCS 160-128393/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 160-128393/1	Method Blank	Total/NA	Water	SM 2540C	

