

April 30, 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: 160-11408-1

TestAmerica Sample Delivery Group: SL1793  
Client Project/Site: K14-001A

For:

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

Attn: General Mailbox



Authorized for release by:  
4/30/2015 1:35:38 PM

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

[jayna.awalt@testamericainc.com](mailto:jayna.awalt@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

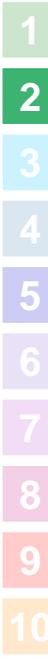
Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

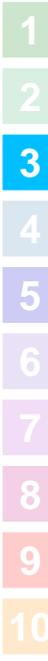
*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

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



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**Job ID: 160-11408-1**

**Laboratory: TestAmerica St. Louis**

**Narrative**

**CASE NARRATIVE**

CH2MHill Plateau Remediation Company  
P.O. Box 1600  
Richland, Washington 99352  
April 30, 2015  
Attention: Scot Fitzgerald

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SDG : SL1793  
Number of Samples : 2 samples  
Sample Matrix : Water  
Data Deliverable : Summary  
Date SDG Closed : April 18, 2015

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II. Introduction

On April 18, 2 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: K14-001A

Samples were sent from GEL for TOC analysis.

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.

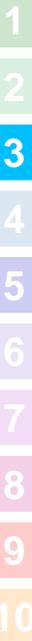
For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

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



**Job ID: 160-11408-1 (Continued)**

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

- 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.

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

**TOC**

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: 160-11408-1

SDG Number: SL1793

Login Number: 11408

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> 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	1.8
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").	N/A	
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		K14-001-007A	PAGE 1 OF 1
COLLECTOR JR Lowrey	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION TRENCH 31 LEACHATE, MARCH 2015	PROJECT DESIGNATION Mixed Waste Disposal Facility F039 Leachate Sampling (Trenches 31 & 34)	FIELD LOGBOOK NO. N/A	SAF NO. K14-001	AIR QUALITY	
ICE CHEST NO. 6005-305	ACTUAL SAMPLE DEPTH N/A	OFFSITE PROPERTY NO. 5516	COA 300049	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO SEE PTR 3/25/15 7732 1983 5461 BILL OF LADING/AIR BILL NO.					
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other					
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					
HNO3 to pH <2 HCl or H2SO4 to pH <2/Cool. 28 Days Cool <=6C 7 Days HNO3 to pH <2 6 Months 6 Months G/P G 1 2 1L 250mL 500mL 7470_MERCURY CV: COMMON (AQUEOUS); SEE ITEM (1) IN SPECIAL INSTRUCTIONS Gross alpha/gross beta; SEE ITEM (2) IN SPECIAL INSTRUCTIONS					
B30T80	MATRIX*	WATER	SAMPLE DATE	3/25/15	12:45
CHAIN OF POSSESSION RECEIVED BY/ STORED IN F.M. Hall/CHPRC DATE/TIME 3/25/15 13:15 RELINQUISHED BY/REMOVED FROM JR Lowrey DATE/TIME 3/25/15 13:15 RELINQUISHED BY/REMOVED FROM F.M. Hall/CHPRC DATE/TIME MAR 25 2015 07:30 RELINQUISHED BY/REMOVED FROM L.D. Wall/COLO DATE/TIME MAR 26 2015 07:30 RELINQUISHED BY/REMOVED FROM F.M. Hall/CHPRC DATE/TIME MAR 26 2015 1400 RELINQUISHED BY/REMOVED FROM L.D. Wall/COLO DATE/TIME MAR 26 2015 1400 RECEIVED BY/ STORED IN Chexco Security/Chexco/Jeffer DATE/TIME 03/20/15 0830 RECEIVED BY/ STORED IN Fed Ex DATE/TIME 4/15/15 1400 RELINQUISHED BY/REMOVED FROM Fed Ex DATE/TIME 4/15/15 1400					
SPECIAL INSTRUCTIONS ***Packaging and shipping samples charge to 300049JDBA. TRVL-15-055 (1) 160.1_TDS: COMMON; 160.2_TSS: COMMON; 9040_pH (AQUEOUS): COMMON; (2) 6020_METALS_ICPMS: COMMON {Aluminum, Antimony, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Selenium, Silver}; 6020_METALS_ICPMS: COMMON (Add-on) {Arsenic, Manganese, Nickel, Thallium, Uranium, Zinc}; 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium, Vanadium}; 6010_METALS_ICP: COMMON (Add-on) {Silicon};					
TRVL-15-055					
RECEIVED BY DISPOSED BY					
TITILE DATE/TIME DATE/TIME					
LABORATORY SECTION FINAL SAMPLE DISPOSITION RECEIVED BY DISPOSED BY					





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## FedEx® Tracking

**633621118990**

Ship (P/U) date :  
**Fri 4/17/2015 5:15 pm**

Actual delivery :  
**Sat 4/18/2015 8:37 am**

CHARLESTON, SC US

**Delivered**

EARTH CITY, MO US

Signed for by: J.CLARK

### Travel History

Date/Time	Activity	Location
- 4/18/2015 - Saturday		
8:37 am	Delivered	EARTH CITY, MO
8:25 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:40 am	At local FedEx facility	EARTH CITY, MO
5:28 am	At destination sort facility	BERKELEY, MO
4:40 am	Departed FedEx location	MEMPHIS, TN
- 4/17/2015 - Friday		
11:33 pm	Arrived at FedEx location	MEMPHIS, TN
8:18 pm	Left FedEx origin facility	CHARLESTON, SC
5:15 pm	Picked up	CHARLESTON, SC
4:24 pm	Shipment information sent to FedEx	

### Shipment Facts

Tracking number	633621118990	Service	FedEx Priority Overnight
Weight	30 lbs / 13.61 kgs	Dimensions	1x1x1 in.
Delivered To	Receptionist/Front Desk	Total pieces	1
Total shipment weight	30 lbs / 13.61 kgs	Shipper reference	G-CHEM 20100
Packaging	Your Packaging	Special handling section	For Saturday Delivery



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## Qualifiers

### General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.

## 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)



Client: CH2M Hill Plateau Remediation Company  
Project/Site: K14-001A

TestAmerica Job ID: 160-11408-1  
SDG: SL1793

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Method	Method Description	Protocol	Laboratory
9060	Organic Carbon, Total (TOC)	SW846	TAL SL

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**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: K14-001A

TestAmerica Job ID: 160-11408-1  
SDG: SL1793

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-11408-1	B30T80	Water	03/25/15 12:45	04/18/15 08:45
160-11408-2	B30T81	Water	03/25/15 10:30	04/18/15 08:45

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April 30, 2015  
Client Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: K14-001A

TestAmerica Job ID: 160-11408-1  
SDG: SL1793

General Chemistry

Client Sample ID: B30T80  
Date Collected: 03/25/15 12:45  
Date Received: 04/18/15 08:45

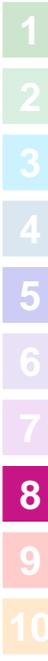
Lab Sample ID: 160-11408-1  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	3.4		1.0	0.35	mg/L			04/20/15 23:52	1

Client Sample ID: B30T81  
Date Collected: 03/25/15 10:30  
Date Received: 04/18/15 08:45

Lab Sample ID: 160-11408-2  
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	2.8		1.0	0.35	mg/L			04/21/15 00:08	1



Client: CH2M Hill Plateau Remediation Company  
Project/Site: K14-001A

TestAmerica Job ID: 160-11408-1  
SDG: SL1793

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

Lab Sample ID: MB 160-187145/4  
Matrix: Water  
Analysis Batch: 187145

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.35	U	1.0	0.35	mg/L			04/20/15 19:34	1

Lab Sample ID: LCS 160-187145/5  
Matrix: Water  
Analysis Batch: 187145

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	10.15		mg/L		101	90 - 110

Lab Sample ID: 160-11407-A-1 MS  
Matrix: Water  
Analysis Batch: 187145

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	0.35	U	5.00	5.37		mg/L		107	76 - 120

Lab Sample ID: 160-11407-A-1 DU  
Matrix: Water  
Analysis Batch: 187145

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	0.35	U	0.35	U	mg/L		NC	20

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April 30, 2015  
QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: K14-001A

TestAmerica Job ID: 160-11408-1  
SDG: SL1793

General Chemistry

Analysis Batch: 187145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-11407-A-1 DU	Duplicate	Total/NA	Water	9060	
160-11407-A-1 MS	Matrix Spike	Total/NA	Water	9060	
160-11408-1	B30T80	Total/NA	Water	9060	
160-11408-2	B30T81	Total/NA	Water	9060	
LCS 160-187145/5	Lab Control Sample	Total/NA	Water	9060	
MB 160-187145/4	Method Blank	Total/NA	Water	9060	

