

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

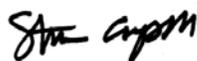
## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Richland  
2800 George Washington Way  
Richland, WA 99352  
Tel: (509)375-3131

TestAmerica Job ID: 300-3199-1  
TestAmerica Sample Delivery Group: WC1129  
Client Project/Site: F16-040

For:  
CH2M Hill Plateau Remediation Company  
PO BOX 1600  
Mail Stop R3-50  
Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:  
6/23/2016 2:38:13 PM  
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*I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this package. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the attached signature.*

*The laboratory is accredited to EPA 7196A in Solid and Chemical Materials, per Washington State Department of Ecology this is approved for non-discharge water samples. The sample/ sample duplicate RPD agreement is not applicable if one or both results are less than five times the MDL.*



### LINKS

Review your project results through  
**TotalAccess**

Have a Question?



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

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## Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
 SDG: WC1129

### Qualifiers

#### General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.
D	The reported value is from a dilution.

### 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)

Case Narrative

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

Job ID: 300-3199-1

Laboratory: TestAmerica Richland

Narrative

Job Narrative  
300-3199-1

Comments

No additional comments.

Receipt

The samples were received on 6/2/2016 3:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.5° C.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		FIG-040-005	PAGE 1 OF 1
COLLECTOR JR. Aguilera/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9544, I-005	PROJECT DESIGNATION 100-HR-3 Long Term & Interim Action Monitoring - Soil	FIELD LOGBOOK NO. 100-F-2-645-3/82	ACTUAL SAMPLE DEPTH 105.8' - 107.8'	SAF NO. F16-040	METHOD OF SHIPMENT GOVERNMENT VEHICLE <b>ORIGINAL</b>
ICE CHEST NO. N/A	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A			

MATRIX* A=Air DL=Drum L=Liquid DS=num S=Solids L=Liquid O=Oil 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/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. N/A	PRESERVATION Cool-4C	HOLDING TIME 30 Days	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 60ml	SAMPLE ANALYSIS 7195, CR6, COMMON
SAMPLE NO. B35FR2	MATRIX* SOIL	SAMPLE DATE 6-2-16	SAMPLE TIME 1020				

#3199  
USE 1129  
DUE - 6/17/16



300-3199 COC

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM JR. Aguilera/CHPRC	DATE/TIME JUN 02 2016 1140	RECEIVED BY/STORED IN L. Anderson, IMAI	DATE/TIME JUN 02 2016 1505	** All requests for Hexavalent Chromium at Test America Richland are to have a unique HEIS sample number and be assigned to a separate COC.	
RELINQUISHED BY/REMOVED FROM L. Anderson, IMAI	DATE/TIME JUN 02 2016 1505	RECEIVED BY/STORED IN L. Anderson, IMAI	DATE/TIME JUN 02 2016 1505		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		



CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		FIG-040-007	PAGE 1 OF 1
COLLECTOR JR Aguilar/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9544, I-005, DUP	PROJECT DESIGNATION 100-HR-3 Long Term & Interim Action Monitoring - Soil	FIELD LOGBOOK NO. HNF-2-645-3/82	ACTUAL SAMPLE DEPTH 105.8' - 107.8'	SAF NO. FI6-040	METHOD OF SHIPMENT GOVERNMENT VEHICLE
ICE CHEST NO. N/A	OFFSITE PROPERTY NO. N/A	COA 300115	BILL OF LADING/AIR BILL NO. N/A	ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland					

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/DATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. N/A	PRESERVATION Cool-to-4C	HOLDING TIME 30 Days	NO. OF CONTAINER(S) 1	VOLUME 60ml	SAMPLE ANALYSIS 7196 CR6- COMMON;		
		SPECIAL HANDLING AND/OR STORAGE						
		SAMPLE NO. B35FR4	MATRIX*	SAMPLE DATE 6-2-16	SAMPLE TIME 1020			

#3199  
USE 1129  
DOE-617116

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM JR Aguilar/CHPRC	DATE/TIME JUN 02 2016 1140	RECEIVED BY/STORED IN Ledy Wood	DATE/TIME JUN 02 2016 1140	** All requests for Hexavalent Chromium at Test America Richland are to have a unique HEIS sample number and be assigned to a separate COC.	
RELINQUISHED BY/REMOVED FROM Ledy Wood	DATE/TIME JUN 02 2016 1505	RECEIVED BY/STORED IN L Anderson, TRL	DATE/TIME JUN 02 2016 1505		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

June 23, 2016

## Detection Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

**Client Sample ID: B35FR2**

**Lab Sample ID: 300-3199-1**

No Detections.

**Client Sample ID: B35FR4**

**Lab Sample ID: 300-3199-2**

No Detections.

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This Detection Summary does not include radiochemical test results.

TestAmerica Richland

Client Sample Results

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
 SDG: WC1129

**Client Sample ID: B35FR2**  
**Date Collected: 06/02/16 10:20**  
**Date Received: 06/02/16 15:05**

**Lab Sample ID: 300-3199-1**  
**Matrix: Soil**

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		06/15/16 08:52	06/15/16 17:09	1

**Client Sample ID: B35FR4**  
**Date Collected: 06/02/16 10:20**  
**Date Received: 06/02/16 15:05**

**Lab Sample ID: 300-3199-2**  
**Matrix: Soil**

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		06/15/16 08:52	06/15/16 17:10	1

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QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 300-4550/1-A  
Matrix: Solid  
Analysis Batch: 4678

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 4550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.15	U	2.0	0.15	mg/Kg		06/15/16 08:52	06/15/16 17:00	1

Lab Sample ID: LCS 300-4550/2-A  
Matrix: Solid  
Analysis Batch: 4678

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 4550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	20.0	19.64		mg/Kg		98	85 - 115

Lab Sample ID: 300-3189-A-1-B MS  
Matrix: Solid  
Analysis Batch: 4678

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 4550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.15	U	30.0	27.81		mg/Kg		93	75 - 125

Lab Sample ID: 300-3189-A-1-D MSI  
Matrix: Solid  
Analysis Batch: 4678

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 4550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSI Result	MSI Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.15	U	727	750.1	D	mg/Kg		103	

Lab Sample ID: 300-3189-A-1-C DU  
Matrix: Solid  
Analysis Batch: 4678

Client Sample ID: Duplicate  
Prep Type: Total/NA  
Prep Batch: 4550

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cr (VI)	0.15	U	0.15	U	mg/Kg		NC	35

QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
 Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
 SDG: WC1129

General Chemistry

Prep Batch: 4550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3189-A-1-B MS	Matrix Spike	Total/NA	Solid	3060A	
300-3189-A-1-C DU	Duplicate	Total/NA	Solid	3060A	
300-3189-A-1-D MSI	Matrix Spike	Total/NA	Solid	3060A	
300-3199-1	B35FR2	Total/NA	Soil	3060A	
300-3199-2	B35FR4	Total/NA	Soil	3060A	
LCS 300-4550/2-A	Lab Control Sample	Total/NA	Solid	3060A	
MB 300-4550/1-A	Method Blank	Total/NA	Solid	3060A	

Analysis Batch: 4678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3189-A-1-B MS	Matrix Spike	Total/NA	Solid	7196A	4550
300-3189-A-1-C DU	Duplicate	Total/NA	Solid	7196A	4550
300-3189-A-1-D MSI	Matrix Spike	Total/NA	Solid	7196A	4550
300-3199-1	B35FR2	Total/NA	Soil	7196A	4550
300-3199-2	B35FR4	Total/NA	Soil	7196A	4550
LCS 300-4550/2-A	Lab Control Sample	Total/NA	Solid	7196A	4550
MB 300-4550/1-A	Method Blank	Total/NA	Solid	7196A	4550

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

**Client Sample ID: B35FR2**

Date Collected: 06/02/16 10:20

Date Received: 06/02/16 15:05

**Lab Sample ID: 300-3199-1**

Matrix: Soil

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5034 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5034 g	100 mL	4678	06/15/16 17:09	TDA	TAL RCH

**Client Sample ID: B35FR4**

Date Collected: 06/02/16 10:20

Date Received: 06/02/16 15:05

**Lab Sample ID: 300-3199-2**

Matrix: Soil

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5018 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5018 g	100 mL	4678	06/15/16 17:10	TDA	TAL RCH

**Client Sample ID: Duplicate**

Date Collected: 06/01/16 11:30

Date Received: 06/01/16 15:45

**Lab Sample ID: 300-3189-A-1-C DU**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.4986 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.4986 g	100 mL	4678	06/15/16 17:04	TDA	TAL RCH

**Client Sample ID: Lab Control Sample**

Date Collected: N/A

Date Received: N/A

**Lab Sample ID: LCS 300-4550/2-A**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5 g	100 mL	4678	06/15/16 17:01	TDA	TAL RCH

**Client Sample ID: Method Blank**

Date Collected: N/A

Date Received: N/A

**Lab Sample ID: MB 300-4550/1-A**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5 g	100 mL	4678	06/15/16 17:00	TDA	TAL RCH

**Client Sample ID: Matrix Spike**

Date Collected: 06/01/16 11:30

Date Received: 06/01/16 15:45

**Lab Sample ID: 300-3189-A-1-B MS**

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5013 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		1	2.5013 g	100 mL	4678	06/15/16 17:03	TDA	TAL RCH

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

Client Sample ID: Matrix Spike

Lab Sample ID: 300-3189-A-1-D MSI

Date Collected: 06/01/16 11:30

Matrix: Solid

Date Received: 06/01/16 15:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3060A			2.5013 g	100 mL	4550	06/15/16 08:52	HR	TAL RCH
Total/NA	Analysis	7196A		20	2.5013 g	100 mL	4678	06/15/16 17:05	TDA	TAL RCH

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

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## Method Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

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Method	Method Description	Protocol	Laboratory
7196A	Chromium, Hexavalent	SW846	TAL RCH

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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 RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131



### Sample Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-040

TestAmerica Job ID: 300-3199-1  
SDG: WC1129

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-3199-1	B35FR2	Soil	06/02/16 10:20	06/02/16 15:05
300-3199-2	B35FR4	Soil	06/02/16 10:20	06/02/16 15:05

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### Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-3199-1

SDG Number: WC1129

**Login Number: 3199**

**List Number: 1**

**Creator: Anderson, Lori F**

**List Source: TestAmerica Richland**

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	
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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

