

# 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: 300-8643-1

TestAmerica Sample Delivery Group: RL8643-1

Client Project/Site: S19-011

For:

CH2M Hill Plateau Remediation Company

825 Jadwin Avenue

Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:

12/6/2018 1:01:41 PM

Ashley Worthy, Project Manager I

(509)375-3131

[ashley.worthy@testamericainc.com](mailto:ashley.worthy@testamericainc.com)

### LINKS

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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.*

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## Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

## Qualifiers

## Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
y	Duplicate analysis not within 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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

**Job ID: 300-8643-1**

**Laboratory: TestAmerica Richland**

**Narrative****Job Narrative  
300-8643-1****Comments**

No additional comments.

**Receipt**

The sample was received on 11/6/2018 2:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice.

**RAD**

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

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## Client Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

**Client Sample ID: B3LW01****Date Collected: 11/06/18 12:15****Date Received: 11/06/18 14:30****Lab Sample ID: 300-8643-1****Matrix: Water****Method: EPA 520 - Carbon-14 (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2 $\sigma$ +/-)	Total Uncert. (2 $\sigma$ +/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
C-14	8.56	U	0.742	11.0	50.0	21.3	pCi/L	11/08/18 07:35	11/16/18 02:33	1

## QC Sample Results

Client: CH2M Hill Plateau Remediation Company  
Project/Site: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

## Method: EPA 520 - Carbon-14 (LSC)

Lab Sample ID: MB 300-15658/2-A

Matrix: Water

Analysis Batch: 16012

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 15658

Analyte	MB Result	MB Qualifier	Count Uncert. (2 $\sigma$ +/-)	Total Uncert. (2 $\sigma$ +/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
C-14	2.577	U	0.488	10.9	50.0	22.1	pCi/L	11/08/18 07:32	11/15/18 20:05	1

Lab Sample ID: LCS 300-15658/3-A

Matrix: Water

Analysis Batch: 16012

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 15658

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2 $\sigma$ +/-)	RL	MDC	Unit	%Rec	%Rec. Limits
C-14	474	417.0		26.4	50.0	22.3	pCi/L	88	80 - 120

Lab Sample ID: 300-8573-A-1-C MS

Matrix: Water

Analysis Batch: 16012

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 15658

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2 $\sigma$ +/-)	RL	MDC	Unit	%Rec	%Rec. Limits
C-14	17.7	U	472	449.0		30.2	50.0	21.6	pCi/L	95	75 - 125

Lab Sample ID: 300-8593-A-2-C DU

Matrix: Water

Analysis Batch: 16012

Client Sample ID: Duplicate

Prep Type: Total/NA

Prep Batch: 15658

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2 $\sigma$ +/-)	RL	MDC	Unit	RPD	RPD Limit
C-14	21.5	U	-11.6	U y	10.0	50.0	20.2	pCi/L	665	20

## QC Association Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

## Rad

## Prep Batch: 15658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-8643-1	B3LW01	Total/NA	Water	LSC_Dist_Susp	
MB 300-15658/2-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 300-15658/3-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
300-8573-A-1-C MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
300-8593-A-2-C DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

## Lab Chronicle

Client: CH2M Hill Plateau Remediation Company  
Project/Site: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

**Client Sample ID: B3LW01****Date Collected: 11/06/18 12:15****Date Received: 11/06/18 14:30****Lab Sample ID: 300-8643-1****Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	LSC_Dist_Susp					15658	11/08/18 07:35	MW	TAL RCH
Total/NA	Analysis	EPA 520		1	75 g	75 g	16012	11/16/18 02:33	DJ	TAL RCH

**Laboratory References:**

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



## Method Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

Method	Method Description	Protocol	Laboratory
EPA 520	Carbon-14 (LSC)	EPA	TAL RCH
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL RCH

**Protocol References:**

EPA = US Environmental Protection Agency  
None = None

**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: S19-011

TestAmerica Job ID: 300-8643-1  
SDG: RL8643-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-8643-1	B3LW01	Water	11/06/18 12:15	11/06/18 14:30

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				C.O.C. # S19-011-561 Page 1 of 1		
Collector: Chris Fulton /CHPRC			Contact/Requester: Karen Waters-Husted			Telephone No.: 509-376-4650		
SAF No.: S19-011			Sampling Origin: Hanford Site			Purchase Order/Charge Code: 300071		
Project Title: SURV, NOVEMBER 2018			Logbook No.: HNF-N-506 106			Ice Chest No.: N/A		
Shipped To (Lab): TestAmerica Incorporated, Rich			Method of Shipment: GOVERNMENT VEHICLE			Bill of Lading/Air Bill No.: N/A		
Protocol: SURV			Priority: 30 Days			Offsite Property No.: N/A		
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1					<b>SPECIAL INSTRUCTIONS</b> N/A			
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3LW01	N		NOV 06 2018	1215	1x500-mL G/P	C14_LSC: COMMON	6 Months	None



300-8643 COC

Relinquished By: Chris Fulton /CHPRC			Received By: Roger Friesz Jr. /CHPRC			<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquids SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other		
Print First and Last Name      Signature      Date/Time			Print First and Last Name      Signature      Date/Time					
Relinquished By: Roger Friesz Jr. /CHPRC			Received By: B. Jorgenson, TARL					
Print First and Last Name      Signature      Date/Time			Print First and Last Name      Signature      Date/Time					
Relinquished By:			Received By:					
Print First and Last Name      Signature      Date/Time			Print First and Last Name      Signature      Date/Time					
Relinquished By:			Received By:					
Print First and Last Name      Signature      Date/Time			Print First and Last Name      Signature      Date/Time					
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method (e.g., Return to customer, per lab procedure, used in process):				Disposed By:		Date/Time:

## Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-8643-1

SDG Number: RL8643-1

Login Number: 8643

List Number: 1

Creator: Jorgenson, Briana F

List Source: TestAmerica Richland

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	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.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	