

June 30, 2017

# 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: 300-5688-1

TestAmerica Sample Delivery Group: WC2127

Client Project/Site: F16-055

For:

CH2M Hill Plateau Remediation Company

825 Jadwin Avenue

Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:

6/30/2017 4:12:47 PM

Whitney Ritari, Project Manager I

(509)375-3131 ext164

[whitney.ritari@testamericainc.com](mailto:whitney.ritari@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*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.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Definitions/Glossary . . . . .	3
Case Narrative . . . . .	4
Chain of Custody . . . . .	5
Detection Summary . . . . .	6
Client Sample Results . . . . .	7
QC Sample Results . . . . .	8
QC Association Summary . . . . .	10
Lab Chronicle . . . . .	11
Method Summary . . . . .	12
Sample Summary . . . . .	13
Receipt Checklists . . . . .	14

## Qualifiers

### HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
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	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)

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

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**Job ID: 300-5688-1**

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**Laboratory: TestAmerica Richland**

**Narrative**

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**Job Narrative  
300-5688-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 6/21/2017 12:25 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

**HPLC/IC**

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-055-009	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT MEDLEY, HA	TELEPHONE NO. 373-6909	PROJECT COORDINATOR MEDLEY, HA	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION TEDF Generator - 283-W (SL-47-P-04)	PROJECT DESIGNATION Treated Effluent Disposal Facility (TEDF) Generator Indicator Sampling - 28	FIELD LOGBOOK NO. HNF-A-50738/14	ACTUAL SAMPLE DEPTH N/A	SAF NO. F16-055	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. NA	OFFSITE PROPERTY NO. NA	COA 301754	BILL OF LADING/AIR BILL NO. NA	METHOD OF SHIPMENT GOVERNMENT VEHICLE <b>ORIGINAL</b>	
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 WF=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	Cool <=6C
		HOLDING TIME	48 Hours
		TYPE OF CONTAINER	P
		NO. OF CONTAINER(S)	1
		VOLUME	125ml
SPECIAL HANDLING AND/OR STORAGE NA		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO. B3BCP2	MATRIX* WATER	SAMPLE DATE JUN 21 2017	SAMPLE TIME 1034

*Handwritten:* 15684  
0202121

300-5688 COC



CHAIN OF POSSESSION

SIGN/PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM Kevin Patterson CHPRC	JUN 21 2017 1050	RECEIVED BY/STORED IN Frank Hall CHPRC	JUN 21 2017 1050	TRVL-17-161; Samplers: obtain field data from generator: Flow: 0.5 pH: 6.89 conductivity: 440.1 283-W POC is Sam Camp, 509-372-0175. (1) 300.0 ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 300.0 ANIONS_IC: COMMON (Add on) {Bromide, Phosphorus in phosphate};
RELINQUISHED BY/REMOVED FROM Frank Hall CHPRC	JUN 21 2017 1225	RECEIVED BY/STORED IN Back	JUN 21 2017 1225	
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

PRINTED ON 6/8/2017 FSR ID = FSR46089 TRVL NUM = TRVL-17-161 A-6003-618 (REV 2)

# June 30, 2017 Detection Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

**Client Sample ID: B3BCP2**

**Lab Sample ID: 300-5688-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	2.5	D	0.40	0.20	mg/L	2		300.0	Total/NA
Nitrate as N	0.072	D	0.056	0.028	mg/L	2		300.0	Total/NA
Fluoride	0.11	D	0.10	0.050	mg/L	2		300.0	Total/NA
Sulfate	21	D	0.50	0.25	mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

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- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

**Client Sample ID: B3BCP2**

**Lab Sample ID: 300-5688-1**

**Date Collected: 06/21/17 10:34**

**Matrix: Water**

**Date Received: 06/21/17 12:25**

**Method: 300.0 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Chloride</b>	<b>2.5</b>	<b>D</b>	0.40	0.20	mg/L			06/21/17 17:24	2
<b>Nitrate as N</b>	<b>0.072</b>	<b>D</b>	0.056	0.028	mg/L			06/21/17 17:24	2
<b>Fluoride</b>	<b>0.11</b>	<b>D</b>	0.10	0.050	mg/L			06/21/17 17:24	2
Nitrite as N	0.038	U D	0.076	0.038	mg/L			06/21/17 17:24	2
Orthophosphate as P	0.082	U D	0.16	0.082	mg/L			06/21/17 17:24	2
<b>Sulfate</b>	<b>21</b>	<b>D</b>	0.50	0.25	mg/L			06/21/17 17:24	2
Bromide	0.13	U D	0.25	0.13	mg/L			06/21/17 17:24	2



Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

**Method: 300.0 - Anions, Ion Chromatography**

Lab Sample ID: MB 300-8342/12  
Matrix: Water  
Analysis Batch: 8342

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	0.014	U	0.028	0.014	mg/L			06/21/17 15:54	1
Nitrite as N	0.019	U	0.038	0.019	mg/L			06/21/17 15:54	1
Orthophosphate as P	0.041	U	0.082	0.041	mg/L			06/21/17 15:54	1

Lab Sample ID: LCS 300-8342/13  
Matrix: Water  
Analysis Batch: 8342

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	2.26	2.35		mg/L		104	80 - 120
Nitrite as N	3.04	3.25		mg/L		107	80 - 120
Orthophosphate as P	6.53	6.74		mg/L		103	80 - 120

Lab Sample ID: 300-5687-A-2 MS  
Matrix: Water  
Analysis Batch: 8342

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
Nitrate as N	0.028	U D	0.452	0.417	D	mg/L		92	75 - 125
Nitrite as N	0.038	U D	0.609	0.563	D	mg/L		92	75 - 125
Orthophosphate as P	0.96	D	1.31	2.00	D	mg/L		80	75 - 125

Lab Sample ID: 300-5687-A-2 DU  
Matrix: Water  
Analysis Batch: 8342

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	0.028	U D	0.028	U D	mg/L		NC	20
Nitrite as N	0.038	U D	0.038	U D	mg/L		NC	20
Orthophosphate as P	0.96	D	0.943	D	mg/L		2	20

Lab Sample ID: MB 300-8343/12  
Matrix: Water  
Analysis Batch: 8343

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.10	U	0.20	0.10	mg/L			06/21/17 15:54	1
Fluoride	0.025	U	0.050	0.025	mg/L			06/21/17 15:54	1
Sulfate	0.13	U	0.25	0.13	mg/L			06/21/17 15:54	1
Bromide	0.063	U	0.13	0.063	mg/L			06/21/17 15:54	1

Lab Sample ID: LCS 300-8343/13  
Matrix: Water  
Analysis Batch: 8343

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	16.0	16.7		mg/L		104	80 - 120
Fluoride	4.00	4.10		mg/L		102	80 - 120
Sulfate	20.0	21.4		mg/L		107	80 - 120

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Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

**Method: 300.0 - Anions, Ion Chromatography (Continued)**

Lab Sample ID: LCS 300-8343/13  
Matrix: Water  
Analysis Batch: 8343

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	10.0	10.5		mg/L		105	80 - 120

Lab Sample ID: 300-5687-A-2 MS  
Matrix: Water  
Analysis Batch: 8343

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
Chloride	9.2	D	3.20	12.5	D	mg/L		102	75 - 125
Fluoride	0.14	D	0.800	0.869	D	mg/L		91	75 - 125
Sulfate	55	D	4.00	58.5	D	mg/L		84	75 - 125
Bromide	0.36	D	2.00	2.13	D	mg/L		89	75 - 125

Lab Sample ID: 300-5687-A-2 DU  
Matrix: Water  
Analysis Batch: 8343

Client Sample ID: Duplicate  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	9.2	D	9.10	D	mg/L		1	20
Fluoride	0.14	D	0.145	D	mg/L		1	20
Sulfate	55	D	54.5	D	mg/L		1	20
Bromide	0.36	D	0.353	D	mg/L		0.8	20

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

**HPLC/IC**

**Analysis Batch: 8342**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-5688-1	B3BCP2	Total/NA	Water	300.0	
MB 300-8342/12	Method Blank	Total/NA	Water	300.0	
LCS 300-8342/13	Lab Control Sample	Total/NA	Water	300.0	
300-5687-A-2 MS	Matrix Spike	Total/NA	Water	300.0	
300-5687-A-2 DU	Duplicate	Total/NA	Water	300.0	

**Analysis Batch: 8343**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-5688-1	B3BCP2	Total/NA	Water	300.0	
MB 300-8343/12	Method Blank	Total/NA	Water	300.0	
LCS 300-8343/13	Lab Control Sample	Total/NA	Water	300.0	
300-5687-A-2 MS	Matrix Spike	Total/NA	Water	300.0	
300-5687-A-2 DU	Duplicate	Total/NA	Water	300.0	



Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

**Client Sample ID: B3BCP2**  
Date Collected: 06/21/17 10:34  
Date Received: 06/21/17 12:25

**Lab Sample ID: 300-5688-1**  
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2			8342	06/21/17 17:24	ALR	TAL RCH
Total/NA	Analysis	300.0		2			8343	06/21/17 17:24	ALR	TAL RCH

**Client Sample ID: Method Blank**  
Date Collected: N/A  
Date Received: N/A

**Lab Sample ID: MB 300-8342/12**  
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			8342	06/21/17 15:54	ALR	TAL RCH

**Client Sample ID: Method Blank**  
Date Collected: N/A  
Date Received: N/A

**Lab Sample ID: MB 300-8343/12**  
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			8343	06/21/17 15:54	ALR	TAL RCH

**Client Sample ID: Lab Control Sample**  
Date Collected: N/A  
Date Received: N/A

**Lab Sample ID: LCS 300-8342/13**  
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			8342	06/21/17 16:09	ALR	TAL RCH

**Client Sample ID: Lab Control Sample**  
Date Collected: N/A  
Date Received: N/A

**Lab Sample ID: LCS 300-8343/13**  
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			8343	06/21/17 16:09	ALR	TAL RCH

**Client Sample ID: Matrix Spike**  
Date Collected: 06/21/17 10:02  
Date Received: 06/21/17 12:25

**Lab Sample ID: 300-5687-A-2 MS**  
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		2			8342	06/21/17 16:39	ALR	TAL RCH
Total/NA	Analysis	300.0		2			8343	06/21/17 16:39	ALR	TAL RCH

**Laboratory References:**

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

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

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Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL RCH

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**Protocol References:**

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

**Laboratory References:**

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



# June 30, 2017 Sample Summary

Client: CH2M Hill Plateau Remediation Company  
Project/Site: F16-055

TestAmerica Job ID: 300-5688-1  
SDG: WC2127

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-5688-1	B3BCP2	Water	06/21/17 10:34	06/21/17 12:25

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- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

## Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-5688-1

SDG Number: WC2127

**Login Number: 5688**

**List Number: 1**

**Creator: Bock, Julie A**

**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.	True	
Residual Chlorine Checked.	N/A	

