

November 10, 2015

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: 300-1261-1
TestAmerica Sample Delivery Group: WC0515
Client Project/Site: CH2M Hill Chemical

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

Attn: CPP Sample Management



Authorized for release by:
11/10/2015 12:43:09 PM
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Designee for
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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 elss than five times the MDL.



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Qualifiers

HPLC/IC

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)



Client: CH2M Hill Plateau Remediation Company
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
SDG: WC0515

Job ID: 300-1261-1

Laboratory: TestAmerica Richland

Narrative

**Job Narrative
300-1261-1**

Comments

No additional comments.

Receipt

The sample was received on 10/29/2015 9:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 7.5° C.

HPLC/IC

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

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
X15-051-006
Page 1 of 1

Collector	K.C. Patterson/CHPRC	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	X15-051	Sampling Origin	Hanford Site	Purchase Order/Charge Code	302869
Project Title	200-BP-5 Treatability Test - Week 1	Logbook No.	HNF-N-506 <u>80/10</u>	Ice Chest No.	N/A
Shipped To (Lab)	TestAmerica Incorporated, Richland	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	CERCLA	Priority:	15 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS		
*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.			Hold Time		
			Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis
B32467	N	OCT 29 2015	0816	1x500-ml P	300.0 ANIONS_IC: COMMON
					Holding Time
					48 Hours
					Preservative
					Cool <=6C

November 10, 2015

300-1261 COC
#1261
Wc0515



Relinquished By	<i>[Signature]</i>	Print	Signature	Date/Time	Received By	<i>[Signature]</i>	Print	Signature	Date/Time	Matrix *
K.C. Patterson/CHPRC				OCT 29 2015 0824	F.M. Hall/CHPRC				OCT 29 2015 0825	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By	<i>[Signature]</i>	Print	Signature	Date/Time	Received By	<i>[Signature]</i>	Print	Signature	Date/Time	DS = Drum Solids DL = Drum Liquids T = Tissue WT = Wipe L = Liquid V = Vegetation X = Other
F.M. Hall/CHPRC				OCT 29 2015	J. Ptasz, T&E				OCT 29 2015	
Relinquished By				Date/Time	Received By				Date/Time	
Relinquished By				Date/Time	Received By				Date/Time	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By		Date/Time		

Client: CH2M Hill Plateau Remediation Company
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
 SDG: WC0515

Client Sample ID: B32J67

Lab Sample ID: 300-1261-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	29	D	0.40	0.20	mg/L	2		300.0	Total/NA
Nitrate as N	100	D	1.4	0.70	mg/L	50		300.0	Total/NA
Fluoride	0.30	D	0.10	0.050	mg/L	2		300.0	Total/NA
Sulfate	160	D	1.3	0.63	mg/L	5		300.0	Total/NA

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This Detection Summary does not include radiochemical test results.

November 10, 2015
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
 SDG: WC0515

Client Sample ID: B32J67
Date Collected: 10/29/15 08:16
Date Received: 10/29/15 09:45

Lab Sample ID: 300-1261-1
Matrix: Water

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	29	D	0.40	0.20	mg/L			10/29/15 12:52	2
Nitrate as N	100	D	1.4	0.70	mg/L			10/29/15 19:09	50
Fluoride	0.30	D	0.10	0.050	mg/L			10/29/15 12:52	2
Nitrite as N	0.038	U	0.076	0.038	mg/L			10/29/15 12:52	2
Sulfate	160	D	1.3	0.63	mg/L			10/29/15 13:52	5

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November 19, 2015
QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
SDG: WC0515

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-1715/5
Matrix: Water
Analysis Batch: 1715

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			10/29/15 11:37	1
Nitrite as N	0.019	U	0.038	0.019	mg/L			10/29/15 11:37	1

Lab Sample ID: LCS 300-1715/6
Matrix: Water
Analysis Batch: 1715

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	2.36		mg/L		105	80 - 120
Nitrite as N	3.04	3.20		mg/L		105	80 - 120

Lab Sample ID: 300-1260-A-5 MS
Matrix: Water
Analysis Batch: 1715

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	0.452	0.431	D	mg/L		95	75 - 125
Nitrite as N	0.038	U	0.609	0.586	D	mg/L		96	75 - 125

Lab Sample ID: 300-1260-A-5 DU
Matrix: Water
Analysis Batch: 1715

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	0.028	U	mg/L		NC	20
Nitrite as N	0.038	U	0.038	U	mg/L		NC	20

Lab Sample ID: MB 300-1716/5
Matrix: Water
Analysis Batch: 1716

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			10/29/15 11:37	1
Fluoride	0.025	U	0.050	0.025	mg/L			10/29/15 11:37	1
Sulfate	0.13	U	0.25	0.13	mg/L			10/29/15 11:37	1

Lab Sample ID: LCS 300-1716/6
Matrix: Water
Analysis Batch: 1716

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	16.5		mg/L		103	80 - 120
Fluoride	4.00	4.16		mg/L		104	80 - 120
Sulfate	20.0	20.7		mg/L		103	80 - 120

Client: CH2M Hill Plateau Remediation Company
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
 SDG: WC0515

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 300-1260-A-5 MS
Matrix: Water
Analysis Batch: 1716

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

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				
Chloride	9.3	D	3.20	12.6	D	mg/L		105	75 - 125
Fluoride	0.27	D	0.800	1.09	D	mg/L		101	75 - 125
Sulfate	43	D	4.00	47.3	D	mg/L		100	75 - 125

Lab Sample ID: 300-1260-A-5 DU
Matrix: Water
Analysis Batch: 1716

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD	Limit
	Result	Qualifier	Result	Qualifier					
Chloride	9.3	D	9.22	D	mg/L		0.5	20	
Fluoride	0.27	D	0.278	D	mg/L		1	20	
Sulfate	43	D	43.1	D	mg/L		0.4	20	

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November 10, 2015
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
 SDG: WC0515

HPLC/IC

Analysis Batch: 1715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-1260-A-5 DU	Duplicate	Total/NA	Water	300.0	
300-1260-A-5 MS	Matrix Spike	Total/NA	Water	300.0	
300-1261-1	B32J67	Total/NA	Water	300.0	
300-1261-1	B32J67	Total/NA	Water	300.0	
LCS 300-1715/6	Lab Control Sample	Total/NA	Water	300.0	
MB 300-1715/5	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 1716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-1260-A-5 DU	Duplicate	Total/NA	Water	300.0	
300-1260-A-5 MS	Matrix Spike	Total/NA	Water	300.0	
300-1261-1	B32J67	Total/NA	Water	300.0	
300-1261-1	B32J67	Total/NA	Water	300.0	
LCS 300-1716/6	Lab Control Sample	Total/NA	Water	300.0	
MB 300-1716/5	Method Blank	Total/NA	Water	300.0	

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Client: CH2M Hill Plateau Remediation Company
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
 SDG: WC0515

Client Sample ID: B32J67
Date Collected: 10/29/15 08:16
Date Received: 10/29/15 09:45

Lab Sample ID: 300-1261-1
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	10 mL		1715	10/29/15 12:52	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		1716	10/29/15 12:52	CPM	TAL RCH
Total/NA	Analysis	300.0		5	10 mL		1716	10/29/15 13:52	CPM	TAL RCH
Total/NA	Analysis	300.0		50	10 mL		1715	10/29/15 19:09	CPM	TAL RCH

Client Sample ID: Duplicate
Date Collected: 10/28/15 11:58
Date Received: 10/29/15 09:45

Lab Sample ID: 300-1260-A-5 DU
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	10 mL		1715	10/29/15 12:37	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		1716	10/29/15 12:37	CPM	TAL RCH

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

Lab Sample ID: LCS 300-1715/6
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	10 mL		1715	10/29/15 11:52	CPM	TAL RCH

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

Lab Sample ID: LCS 300-1716/6
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	10 mL		1716	10/29/15 11:52	CPM	TAL RCH

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

Lab Sample ID: MB 300-1715/5
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	10 mL		1715	10/29/15 11:37	CPM	TAL RCH

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

Lab Sample ID: MB 300-1716/5
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	10 mL		1716	10/29/15 11:37	CPM	TAL RCH

Client: CH2M Hill Plateau Remediation Company
 Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
 SDG: WC0515

Client Sample ID: Matrix Spike

Lab Sample ID: 300-1260-A-5 MS

Date Collected: 10/28/15 11:58

Matrix: Water

Date Received: 10/29/15 09:45

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	10 mL		1715	10/29/15 12:22	CPM	TAL RCH
Total/NA	Analysis	300.0		2	10 mL		1716	10/29/15 12:22	CPM	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: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
SDG: WC0515

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

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



Client: CH2M Hill Plateau Remediation Company
Project/Site: CH2M Hill Chemical

TestAmerica Job ID: 300-1261-1
SDG: WC0515

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-1261-1	B32J67	Water	10/29/15 08:16	10/29/15 09:45

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-1261-1

SDG Number: WC0515

Login Number: 1261**List Number: 1****Creator: Friesz, Jordan D****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.	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	
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 $<6\text{mm}$ (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	