

July 28, 2016

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: 300-3458-1

TestAmerica Sample Delivery Group: WC1254

Client Project/Site: F16-057

For:

CH2M Hill Plateau Remediation Company

PO BOX 1600

Mail Stop R3-50

Richland, Washington 99352

Attn: CPP Sample Management



Authorized for release by:

7/28/2016 11:44:32 AM

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Designee for

Whitney Ritari, Project Manager I

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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.



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Qualifiers

HPLC/IC

Qualifier	Qualifier Description
D	The reported value is from a dilution.
B	Estimated result. Result is less than the RL, but greater than MDL
U	Analyzed for but not detected.

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: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Job ID: 300-3458-1

Laboratory: TestAmerica Richland

Narrative

**Job Narrative
300-3458-1**

Comments

No additional comments.

Receipt

The samples were received on 7/13/2016 3:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 10.5° C.

HPLC/IC

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		F16-057-022	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	PRICE CODE 7C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION ITB TANK VALVE	PROJECT DESIGNATION 200 West Pump & Treat - Special Sampling - Water	FIELD LOGBOOK NO. HNF-N-49115	ACTUAL SAMPLE DEPTH N/A	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT GOVERNMENT VEHICLE
ICE CHEST NO. N/A	OFFSITE PROPERTY NO. N/A	SAF NO. F16-057	COA 303110	BILL OF LADING/AIR BILL NO. N/A	
SHIPPED TO TestAmerica Incorporated, Richland		PRESERVATION Cool <=6C			

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	SPECIAL HANDLING AND/OR STORAGE	
				SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
-B36216	WATER	JUL 13 2016	1335	#3958 WCI254 Due 7-28-16	✓

July 28, 2016



CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Kevin Patterson CHPRC	RECEIVED BY/STORED IN Toy Bacon CHPRC	NA
RELINQUISHED BY/REMOVED FROM Toy Bacon CHPRC	RECEIVED BY/STORED IN J. Bock, TARL	(1) 300.0 ANIONS, IC: COMMON {Nitrogen in Nitrate, Sulfate}; 300.0 ANIONS, IC: COMMON (Add-on) {Phosphorus in phosphate};
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-057-027	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC	COMPANY CONTACT SUMNER, LC 376-3922	PROJECT COORDINATOR SUMNER, LC	PRICE CODE 7C	AIR QUALITY	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 289-T, Effluent Tank, Valve V07-Y80 ICE CHEST NO.	PROJECT DESIGNATION 200 West Pump & Treat - Special Sampling - Water FIELD LOGBOOK NO. HNF-N-49115	ACTUAL SAMPLE DEPTH COA 303110	SAF NO. F16-057	METHOD OF SHIPMENT GOVERNMENT VEHICLE ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil 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/DATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION Cool <=6C	HOLDING TIME 48 Hours	NO. OF CONTAINER(S) 1	VOLUME 125ml	SPECIAL HANDLING AND/OR STORAGE	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO. B362M0	MATRIX* WATER	SAMPLE DATE JUL 13 2016	SAMPLE TIME 1827	✓			

3458
woc1854

July 28, 2016

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Kevin Patterson CHPRC	RECEIVED BY/STORED IN Troy Babco CHPRC	NA
RELINQUISHED BY/REMOVED FROM Troy Babco CHPRC	RECEIVED BY/STORED IN J. Bock, TARL	(1) 300.0 ANIONS, IC: COMMON (Nitrogen in Nitrate, Sulfate); 300.0 ANIONS, IC: COMMON (Add-on) (Phosphorus in phosphate);
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

July 28, 2016
Detection Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Client Sample ID: B362L6

Lab Sample ID: 300-3458-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	6.8	D	0.056	0.028	mg/L	2		300.0	Total/NA
Orthophosphate as P	0.23	D	0.16	0.082	mg/L	2		300.0	Total/NA
Sulfate	98	D	0.50	0.25	mg/L	2		300.0	Total/NA

Client Sample ID: B362M0

Lab Sample ID: 300-3458-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	6.2	D	0.056	0.028	mg/L	2		300.0	Total/NA
Orthophosphate as P	0.20	D	0.16	0.082	mg/L	2		300.0	Total/NA
Sulfate	96	D	0.50	0.25	mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Richland

~~July 28, 2016~~
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Client Sample ID: B362L6

Lab Sample ID: 300-3458-1

Date Collected: 07/13/16 13:35

Matrix: Water

Date Received: 07/13/16 15:05

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	6.8	D	0.056	0.028	mg/L			07/14/16 15:58	2
Orthophosphate as P	0.23	D	0.16	0.082	mg/L			07/14/16 15:58	2
Sulfate	98	D	0.50	0.25	mg/L			07/14/16 15:58	2

Client Sample ID: B362M0

Lab Sample ID: 300-3458-2

Date Collected: 07/13/16 12:47

Matrix: Water

Date Received: 07/13/16 15:05

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	6.2	D	0.056	0.028	mg/L			07/14/16 16:13	2
Orthophosphate as P	0.20	D	0.16	0.082	mg/L			07/14/16 16:13	2
Sulfate	96	D	0.50	0.25	mg/L			07/14/16 16:13	2

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 300-4877/5
Matrix: Water
Analysis Batch: 4877

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			07/14/16 14:42	1
Orthophosphate as P	0.041	U	0.082	0.041	mg/L			07/14/16 14:42	1

Lab Sample ID: LCS 300-4877/6
Matrix: Water
Analysis Batch: 4877

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	2.28		mg/L		101	80 - 120
Orthophosphate as P	6.53	6.54		mg/L		100	80 - 120

Lab Sample ID: 300-3456-A-3 MS
Matrix: Water
Analysis Batch: 4877

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	5.0	D	0.452	5.53	D	mg/L		123	75 - 125
Orthophosphate as P	0.12	B D	1.31	1.17	D	mg/L		81	75 - 125

Lab Sample ID: 300-3456-A-3 DU
Matrix: Water
Analysis Batch: 4877

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	5.0	D	5.05	D	mg/L		1	20
Orthophosphate as P	0.12	B D	0.115	B D	mg/L		0.6	20

Lab Sample ID: MB 300-4878/5
Matrix: Water
Analysis Batch: 4878

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.13	U	0.25	0.13	mg/L			07/14/16 14:42	1

Lab Sample ID: LCS 300-4878/6
Matrix: Water
Analysis Batch: 4878

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	20.0	19.9		mg/L		100	80 - 120

Lab Sample ID: 300-3456-A-3 MS
Matrix: Water
Analysis Batch: 4878

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
Sulfate	100	D	20.0	123	D	mg/L		109	75 - 125

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 300-3456-A-3 DU
Matrix: Water
Analysis Batch: 4878

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	100	D	101	D	mg/L		0.2	20

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QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

HPLC/IC

Analysis Batch: 4877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3458-1	B362L6	Total/NA	Water	300.0	
300-3458-2	B362M0	Total/NA	Water	300.0	
MB 300-4877/5	Method Blank	Total/NA	Water	300.0	
LCS 300-4877/6	Lab Control Sample	Total/NA	Water	300.0	
300-3456-A-3 MS	Matrix Spike	Total/NA	Water	300.0	
300-3456-A-3 DU	Duplicate	Total/NA	Water	300.0	

Analysis Batch: 4878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-3458-1	B362L6	Total/NA	Water	300.0	
300-3458-2	B362M0	Total/NA	Water	300.0	
MB 300-4878/5	Method Blank	Total/NA	Water	300.0	
LCS 300-4878/6	Lab Control Sample	Total/NA	Water	300.0	
300-3456-A-3 MS	Matrix Spike	Total/NA	Water	300.0	
300-3456-A-3 DU	Duplicate	Total/NA	Water	300.0	

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Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Client Sample ID: B362L6

Date Collected: 07/13/16 13:35

Date Received: 07/13/16 15:05

Lab Sample ID: 300-3458-1

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			4877	07/14/16 15:58	CPM	TAL RCH
Total/NA	Analysis	300.0		2			4878	07/14/16 15:58	CPM	TAL RCH

Client Sample ID: B362M0

Date Collected: 07/13/16 12:47

Date Received: 07/13/16 15:05

Lab Sample ID: 300-3458-2

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			4877	07/14/16 16:13	CPM	TAL RCH
Total/NA	Analysis	300.0		2			4878	07/14/16 16:13	CPM	TAL RCH

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 300-4877/5

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			4877	07/14/16 14:42	CPM	TAL RCH

Client Sample ID: Method Blank

Date Collected: N/A

Date Received: N/A

Lab Sample ID: MB 300-4878/5

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			4878	07/14/16 14:42	CPM	TAL RCH

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 300-4877/6

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			4877	07/14/16 14:57	CPM	TAL RCH

Client Sample ID: Lab Control Sample

Date Collected: N/A

Date Received: N/A

Lab Sample ID: LCS 300-4878/6

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			4878	07/14/16 14:57	CPM	TAL RCH

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Client Sample ID: Matrix Spike

Lab Sample ID: 300-3456-A-3 MS

Date Collected: 07/13/16 11:46

Matrix: Water

Date Received: 07/13/16 15:05

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			4877	07/14/16 15:27	CPM	TAL RCH
Total/NA	Analysis	300.0		10			4878	07/14/16 17:43	CPM	TAL RCH

Laboratory References:

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

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Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

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



July 28, 2016
Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-057

TestAmerica Job ID: 300-3458-1
SDG: WC1254

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-3458-1	B362L6	Water	07/13/16 13:35	07/13/16 15:05
300-3458-2	B362M0	Water	07/13/16 12:47	07/13/16 15:05

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-3458-1

SDG Number: WC1254

Login Number: 3458

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	

