

July 21, 2015

Analytical Data Package Prepared For
CH2M Hill Plateau Remediation

Chemical Analysis By
TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARK

Data Package Contains 11 Pages

Report No.: 66533

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
WC0119	F13-002	B31MK4 DUP	J5G060406-2	M67F91AD	M67F91AD	5188044
WC0121	F13-018	B31TR0	J5G060408-1	M67GK1AA	M67GK1AA	5188033
		B31TR1	J5G060408-4	M67GN1AA	M67GN1AA	5188044
		B31TR8	J5G060408-2	M67GL1AA	M67GL1AA	5188033
		B31TR9	J5G060408-3	M67GM1AA	M67GM1AA	5188033
WC0122	F15-005	B31MP0 DUP	J5G060409-4	M67GT1AC	M67GT1AC	5188033

Sample Date: 7/6/2015

Receipt Date: 7/6/2015

Data Deliverable: 7/21/2015

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. 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 following signature.

Reviewed and Approved:



Digitally signed by Whitney
Ritari
Date: 2015.07.21 14:45:46
-07'00'

Project Manager

July 21, 2015



Certificate of Analysis

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – R3-60
Richland, WA 99352

July 21, 2015

Attention: Scot Fitzgerald

SAF Number	:	F13-018
Date SDG Closed	:	July 6, 2015
Number of Samples	:	Four (4)
Sample Type	:	Water
SDG Number	:	WC0121
Data Deliverable	:	15- Day/ Summary

CASE NARRATIVE

I. Introduction

On July 6, 2015, four samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned laboratory ID numbers to correspond with the CH2M specific IDs.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

Anions, Ion Chromatography by EPA method 300.0

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

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CH2M Hill Plateau Remediation Company

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The sample/ sample duplicate agreement is not applicable if one or both results are less than five times the MDL.

QC and sample results are reported in the same units.

V. Comments

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

No analytical or quality issues were noted. The sample results and associated batch QC results are within contractual requirements.

Anions, Ion Chromatography by EPA method 300.0

The initial analysis batch was run within hold time, the samples that needed dilutions applied, were reanalyzed outside of hold time. There was a high nitrate and sulfate interference with the PO4-P recovery. Percent recovery for the matrix spike failed at 66%. If the nitrate and sulfate levels were at a 30x dilution the recovery increased to 98%. The bromide peak was manually integrated and was at the reporting limit. No other analytical or quality issues were noted. Except as noted, the sample results and associated batch QC results are within contractual requirements.

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

July 21, 2015

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST		PAGE 1 OF 1	
COLLECTOR	CHRIS FULTON CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	289-T, Effluent Tank, Valve V07-Y80D	PROJECT DESIGNATION	200W Pump & Treat - FBR Micronutrient Analysis - Water		
ICE CHEST NO.	(N/A)	FIELD LOGBOOK NO.	HNF-N-4919	ACTUAL SAMPLE DEPTH	(N/A)
SHIPPED TO	TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.	(N/A)	BILL OF LADING/AIR BILL NO.	(N/A)
MATRIX*	A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	Cool <=6C	PROJECT COORDINATOR	EVANS, RT
POSSIBLE SAMPLE HAZARDS/ REMARKS	*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.	HOLDING TIME	24 Hours	SAF NO.	F13-018
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag	AIR QUALITY	<input type="checkbox"/>
		NO. OF CONTAINER(S)	1	PRICE CODE	7C
		VOLUME	60ml	SAF QUALITY	<input type="checkbox"/>
		SAMPLE ANALYSIS	7195.C06; COMMON;	METHOD OF SHIPMENT	GOVERNMENT VEHICLE
SAMPLE NO.	WATER	SAMPLE DATE	JUL 06 2015	COA	303110
MATRIX*		SAMPLE TIME	1140	METHOD OF SHIPMENT	
				GOVERNMENT VEHICLE	

356060408
WED0121
DUE 7-21-15
m1616X



FILTER

CHAIN OF POSSESSION		SIGN / PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-15-115	
CHRIS FULTON	JUL 06 2015	F.M. HAWCHPRC	JUL 06 2015	FILTER	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
F.M. HAWCHPRC	JUL 06 2015	J. BOCK, TARL JUL 06 2015	JUL 06 2015		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TITLE	
				DISPOSED BY	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL NUM = TRVL-15-115	
				FRS ID = FSR1217	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	PRINTED ON 6/18/2015	
				A-6003-618 (REV 2)	

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-018-335	PAGE 1 OF 1
COLLECTOR	CHRIS FULTON CHPRC	COMPANY CONTACT	SUNNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	289-T, Air-Strip Effluent, Valve V05-Y63	PROJECT DESIGNATION	200W Pump & Treat - FBR Micronutrient Analysis - Water		
ICE CHEST NO.	(N/A)	FIELD LOGBOOK NO.	HMF-N-4919	ACTUAL SAMPLE DEPTH	(N/A)
SHIPPED TO	TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.	(N/A)	BILL OF LADING/AIR BILL NO.	(N/A)

MATRIX*	A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	Cool <=6C
POSSIBLE SAMPLE HAZARDS/ REMARKS	*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.	HOLDING TIME	24 Hours
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag
		NO. OF CONTAINER(S)	1
		VOLUME	60mL
		SAMPLE ANALYSIS	7196.CRS; COMMON;
SAMPLE NO.	B31TR9	SAMPLE DATE	JUL 06 2015
MATRIX*	WATER	SAMPLE TIME	225

SS6060408
WCO121
Due 7-21-15
m4n6m

FILTER

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-15-	
CHRIS FULTON	JUL 06 2015 1245	F.M. HAU/CHPRC	JUL 06 2015 1245		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
F.M. HAU/CHPRC	JUL 06 2015 1245	3. Bock, TARYL	JUL 06 2015 1245		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
				FILTER	
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	

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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-018-327	PAGE 1 OF 1
COLLECTOR CHRIS FULTON CHPRC	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR EVANS, RT	PRICE CODE 7C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 289-T, Effluent Tank, Valve V07-Y80D	PROJECT DESIGNATION 200W Pump & Treat - FBR Micronutrient Analysis - Water	SAF NO. F13-018	COA 303110	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT GOVERNMENT VEHICLE
ICE CHEST NO. (N/A)	FIELD LOGBOOK NO. HNF-N-4919	ACTUAL SAMPLE DEPTH (N/A)	BILL OF LADING/AIR BILL NO. (N/A)	ORIGINAL	
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO. (N/A)				

MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil 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.	PRESERVATION Cool <=6C	HOLDING TIME 48 Hours	TYPE OF CONTAINER P	NO. OF CONTAINER(S) 1	VOLUME 500mL	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE N/A							
SAMPLE NO. B31TR1	MATRIX* WATER	SAMPLE DATE JUL 06 2015	SAMPLE TIME 1140				

556000000
we 0121
Due 7-21-15
mbnbn

FILTER

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM CHRIS FULTON CHPRC	DATE/TIME JUL 06 2015	RECEIVED BY/STORED IN F.M. HAN/CHPRC	DATE/TIME JUL 06 2015	Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-15-115	
RELINQUISHED BY/REMOVED FROM F.M. HAN/CHPRC	DATE/TIME JUL 06 2015	RECEIVED BY/STORED IN J. Bock, TARL	DATE/TIME JUL 06 2015	(1) 300.0_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 300.0_ANIONS_IC: COMMON (Add-on) {Phosphorus in phosphate};	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	FILTER	
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	

THE LEADER IN ENVIRONMENTAL TESTING

Date/Time Received: 7-6-15 / 1430 Container GM Screen Result: (Airlock) 20 cpm Initials B
Sample GM Screen Result (Sample Receiving) 0 cpm Initials B

Client: FLH SDG #: WC0121 SAF #: F13-018 NA []

Lot Number: 556060404

Chain of Custody # F13-018-326, 334, 335, 327

Shipping Container ID or Air Bill Number : _____ NA B]

Samples received inside shipping container/cooler/box Yes B] Continue with 1 through 4. Initial appropriate response.
No [] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [] No [] No Custody Seal B]
- 2. Custody Seals dated and signed? Yes [] No [] No Custody Seal B]
- 3. Cooler temperature: 7.2 °C Ice NA []
- 4. Vermiculite/packing materials is NA B] Wet [] Dry []

Item 5 through 16 for samples. Initial appropriate response.

- 5. Chain of Custody record present? Yes B] No []
- 6. Number of samples received (Each sample may contain multiple bottles): 4
- 7. Containers received: 3x 60 mL Air; 1x 500 mL

- 8. Sample holding times exceeded? NA [] Yes [] No B]
- 9. Samples have: _____ tape _____ hazard labels B custody seals B appropriate sample labels
- 10. Matrix: _____ A (FLT, Wipe, Solid, Soil) B I (Water) _____ S (Air, Niosh 7400) _____ T (Biological, Ni-63)

11. Samples: B are in good condition _____ are leaking _____ are broken
_____ have air bubbles (Only for samples requiring no head space) Other _____

12. Sample pH appropriate for analysis requested Yes B] No [] NA []
(If acidification is necessary go to pH area & document sample ID) initial pH, amount of HNO₃ added and pH after addition on table)

13. Were any anomalies identified in sample receipt? Yes [] No B]

14. Description of anomalies (include sample numbers): NA B]

15. Sample Location, Sample Collector Listed on COC? * Yes B] No []
*For documentation only. No corrective action needed.

16. Additional Information: N/A

[] Client/Courier denied temperature check. B] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:

Signature: [Signature] Date: 7-6-15

Client Notification needed? Yes [] No B] Date: _____

By: _____
Person contacted: _____

B No action necessary; process as is

Project Manager Stan Capra Date 7/13/15

July 21, 2015

Sample Results Summary

Date: 21-Jul-15

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 66533

SDG No: WC0121

Batch Client ID	Date Sampled	Work Order No.	Parameter	Result	Qual	Units	MDL	RL	Date Analyzed	Dil Fct
5188033 7196_CR6 ,WATER										
B31TR0	07/06/15 11:40	M67GK1AA	HEXCHROME	0.00350	B	mg/L	0.0015	0.004	07/07/15 13:41	1
B31TR8	07/06/15 12:25	M67GL1AA	HEXCHROME	0.00360	B	mg/L	0.0015	0.004	07/07/15 13:42	1
B31TR9	07/06/15 12:25	M67GM1AA	HEXCHROME	0.00310	B	mg/L	0.0015	0.004	07/07/15 13:42	1
5188044 300.0_ANIONS_IC ,WATER										
B31TR1	07/06/15 11:40	M67GN1AA	Chloride	48.4	D	mg/L	0.2	0.4	07/07/15 19:10	2
			Fluoride	0.370	D	mg/L	0.05	0.1		2
			Nitrite as N	0.456	D	mg/L	0.038	0.076		2
			Nitrate as N	6.30	D	mg/L	0.028	0.056		2
			PO4_P	0.317	D	mg/L	0.082	0.163		2
			Sulfate	80.7	D	mg/L	0.25	0.5		2

No. of Results: 9

July 21, 2015

QC Results Summary
 TestAmerica Inc TARL
 Ordered by Method, Batch No, QC Type,.

Date: 21-Jul-15

Report No. : 66533

SDG No.: WC0119

Batch	Work Work No.	Parameter	Result	Qual	Units	LCS Recovery	MDL	RL	RPD	Dil Fct
7196_CR6										
5188033 MS, B31MK3	M67F81AC	HEXCHROME	0.0492		mg/L	98%	0.0015	0.004		1
5188033 DUP, B31MP0 DUP	M67GT1AC	HEXCHROME	0.00360 B		mg/L		0.0015	0.004	2.8	1
5188033 BLANK,	M67JF1AA	HEXCHROME	<0.00150 U		mg/L		0.0015	0.004		1
5188033 LCS,	M67JF1AC	HEXCHROME	0.260		mg/L	104%	0.0015	0.004		1
300.0_ANIONS_IC										
5188044 MS, B31MK4	M67F91AC	Bromide	0.357		mg/L	86%	0.0625	0.125		1
		Chloride	9.27		mg/L	100%	0.1	0.2		1
		Fluoride	0.190		mg/L	95%	0.025	0.05		1
		Nitrite as N	0.0720		mg/L	94%	0.019	0.038		1
		Nitrate as N	2.61		mg/L	101%	0.014	0.028		1
		PO4_P	0.109 N		mg/L	67%	0.041	0.0815		1
		Sulfate	26.7		mg/L	101%	0.125	0.25		1
5188044 DUP, B31MK4 DUP	M67F91AD	Bromide	0.366 D		mg/L		0.125	0.25	0.5	2
		Chloride	19.9 D		mg/L		0.2	0.4	1.3	2
		Fluoride	0.224 D		mg/L		0.05	0.1	2.3	2
		Nitrite as N	<0.0380 U D		mg/L		0.038	0.076		2
		Nitrate as N	85.3 D		mg/L		0.42	0.84	1.5	30
		PO4_P	<0.0820 U D		mg/L		0.082	0.163		2
		Sulfate	58.2 D		mg/L		0.25	0.5	1.3	2
5188044 BLANK,	M67KT1AA	Bromide	<0.0625 U		mg/L		0.0625	0.125		1
		Chloride	<0.100 U		mg/L		0.1	0.2		1
		Fluoride	<0.0250 U		mg/L		0.025	0.05		1
		Nitrite as N	<0.0190 U		mg/L		0.019	0.038		1
		Nitrate as N	<0.0140 U		mg/L		0.014	0.028		1
		PO4_P	<0.0410 U		mg/L		0.041	0.0815		1
		Sulfate	<0.125 U		mg/L		0.125	0.25		1
5188044 LCS,	M67KT1AC	Bromide	2.38		mg/L	95%	0.0625	0.125		1
		Chloride	3.94		mg/L	99%	0.1	0.2		1
		Fluoride	0.986		mg/L	99%	0.025	0.05		1
		Nitrite as N	0.739		mg/L	97%	0.019	0.038		1
		Nitrate as N	0.541		mg/L	96%	0.014	0.028		1
		PO4_P	1.57		mg/L	96%	0.041	0.0815		1
		Sulfate	4.89		mg/L	98%	0.125	0.25		1

TestAmerica Inc
 rptTALRchQcSummaryC V5.3.7
 A2002

B Qual - The analyte was detected at a value less than the reporting limit (RL), but greater than or equal to the MDL.
 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.
 N Qual - MS, MSD: Spike recovery exceeds upper or lower control limit.
 D Qual - The reported value is from a dilution

July 21, 2015

QC Results Summary
TestAmerica Inc TARL
Ordered by Method, Batch No, QC Type,.

Date: 21-Jul-15

Report No. : 66533

SDG No.: WC0119

Batch	Work Work No.	Parameter	Result	Qual	Units	LCS Recovery	MDL	RL	RPD	Dil Fct
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No. of Results: 32