TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-14957-1
TestAmerica Sample Delivery Group: SL2024
Client Project/Site: X16-016
Revision: 1

For:
CH2M Hill Plateau Remediation Company
PO BOX 1600, MS H8-41
Richland, Washington 99352

Attn: Mr. Scot Fitzgerald

Authorized for release by:
1/11/2016 3:32:05 PM

Jayna Awalt, Project Manager II
(314)298-8566
jayna.awalt@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Job ID: 160-14957-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Rev. 1 - Per P&D SL2024, the 6010 Metals list has been revised to include only Ca/Na. The Alkalinity list has been revised to include only carb and bi-carb.

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
December 8, 2015
Attention: Scot Fitzgerald

SDG	: SL2024
Number of Samples	: 14 samples
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: November 20, 2015

II. Introduction

On November 20, 14 samples were received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and receipt checklists for documentation of any variations on receipt conditions and temperature. Upon receipt, samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: X16-016

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with an LCS/LCS duplicate.

Note: For Metals analyses, per standard practice, all 6020 water and soil samples are initially prepared at 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate flagging unless otherwise noted in the case narrative.

For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a “D” flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

For WTPH methods, the lab utilizes method 8015B. Per CHPRC direction, the method name in the electronic data has been modified to read WTPH in the place of 8015B.

Per CHPRC direction (June 2014), Boron will be reported for Metals using method 6010. Boron will no longer be reported by method 6020.

Per CHPRC direction, due to the short hold times for Nitrate, Nitrite and Phosphate by IC (48 hours) as well as pH analysis (24 hours), a SIR request is not needed when samples are run outside 1x hold but within 2x hold. A narrative comment will be included below if a sample is run outside the lab-specified hold time for waters.

Per CHPRC direction, data for pH analysis will be reported outside 1x 24 hour hold time due to this being a field parameter.

Job ID: 160-14957-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

IV. Definitions

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
DUP- Laboratory Duplicate
MS- Matrix Spike
MSD- Matrix Spike Duplicate

The term “Detection Limit” used in the analytical data report refers to either the lab’s standard reporting limits or contractually required reporting limits, whichever is applicable.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **J** - For organic analyses, the sample is estimated and less than the RL.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For Metals analyses, per standard practice, all solid samples are initially prepared at a 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate qualification unless otherwise noted in the case narrative.
- **N** - For inorganics and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.
- **O**- For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **M**- For inorganic analyses, the precision was outside control limits.
- **P -** For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.

ICP Metals

Batch: 225801

The following samples were diluted to bring the concentration of target analytes within the calibration range: B33L77 (160-14957-1), B33L76 (160-14957-2), B33L89 (160-14957-3), B33L88 (160-14957-4), B33L81 (160-14957-5), B33L80 (160-14957-6), B33LB0 (160-14957-7), B33LB1 (160-14957-8), B33L84 (160-14957-9), B33L85 (160-14957-10), B33L92 (160-14957-11), B33L93 (160-14957-12), B33L97 (160-14957-13), B33L96 (160-14957-14), (160-14957-B-1-B MS), (160-14957-B-1-C MSD) and (160-14957-B-1-A SD). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

Due to the high concentration of sodium the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-224091 and analytical batch 160-225801 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. (160-14957-B-1-B MS) and (160-14957-B-1-C MSD)

ICPMS Metals

Batch: 225892

The following samples were diluted due to the nature of the sample matrix. The samples were high in salts, which cause internal standard and QC failures when the samples are run at a lesser dilution: B33L77 (160-14957-1), B33L76 (160-14957-2), B33L89 (160-14957-3), B33L88 (160-14957-4), B33L81 (160-14957-5), B33L80 (160-14957-6), B33LB0 (160-14957-7), B33LB1 (160-14957-8), B33L84 (160-14957-9), B33L85 (160-14957-10), B33L92 (160-14957-11), B33L93 (160-14957-12), B33L97 (160-14957-13), B33L96 (160-14957-14), (160-14957-B-1-E MS), (160-14957-B-1-F MSD) and (160-14957-B-1-D SD). Elevated reporting limits (RLs) are provided. This analyte has been qualified accordingly with a "D" flag in the associated samples.

Job ID: 160-14957-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

Alkalinity

Batch: 224347

The following samples from alkalinity analytical batch 160-224347 were diluted to bring the concentrations of the target analyte within the titration range: B33L77 (160-14957-1), B33L89 (160-14957-3), B33L81 (160-14957-5), B33LB1 (160-14957-8), B33L85 (160-14957-10) and B33L93 (160-14957-12). Elevated reporting limits (RLs) are provided. Due to a limitation in the LIMS, the dilution factor for these samples will remain 1. The dilution was captured in the final volume used for analysis and is reflected in the reporting limit (> 5.0 mg/L). Due to the dilution factor showing as 1, no "D" flag is reported for these samples. Samples that were run at a dilution are included under the "DL" section of the sample results in the hardcopy.

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 signature on this report.

Reviewed and approved:

Jayna Awalt
St. Louis Project Manager

Problem and Discrepancy Report

TASL

SDG SL2024

01/07/16

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1. **The data package has the following issues:**

   Resolution: *Provide appropriate correction.*

For 6010 metals, please report only Calcium and Sodium, remove all other metals.

For Alkalinity GW01 list, please report only bi-carbonate alkalinity and carbonate alkalinity.

The SAF requests to only report these compounds. Our system is not able to note this on the GW COCs.

Lab Response: The analyte lists have been revised and reported.

Please correct the issue and resubmit the hardcopy data package.

Provide a resolution to each issue noted on the report

Page **1** of **1**

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-14957-1
SDG Number: SL2024

Login Number: 14957
List Number: 1
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

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.	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	0.9°
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	160-14957-3 through -8, -11, and -12 were received with a pH of ~7. Nitric acid
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	was added to correct pH to <2.
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-015**

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81 / 45	**Ice Chest No.**	GWS - 486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	775019809439
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33L77	N	W	11/19/15	1057	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L77	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B33L76	Y	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
D.L. Floyd/CHPRC		NOV 19 2015 1245	E.L. Kauer CHPRC		NOV 19 2015 1245
E.L. Kauer CHPRC		NOV 19 2015 1400	FEDEX		
FED EX			Jill Clarke	Jill Clarke	11.20.15 0820

Matrix *

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		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process): FED EX — Disposed By — Date/Time

PRINTED ON 10/28/2015 — FSR ID = FSR8689 — A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-018**

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81 / 44	**Ice Chest No.**	GWS - 486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	775019809439
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33L89	N	W	11/19/15	1143	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L89	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B33L88	Y	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

1143

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D.L. Floyd/CHPRC		NOV 19 2015 1245	E.L. Kauer	CHPRC		NOV 19 2015 1245
E.L. Kauer	CHPRC		NOV 19 2015 1400				

Relinquished By	Date/Time	Received By	Date/Time
		FEDEX	
	FED EX	Jill Clarke Jill Clarke	11.20.15 0920

Matrix *

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		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 10/28/2015 **FSR ID = FSR8692** A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-016**

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81 / 45	**Ice Chest No.**	GWS - 486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	775019809439
Protocol	CERCLA	**Priority:**	**30 Days** **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33L81	N	W	11/19/15	1122	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L81	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B33L80	Y	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
	D.L. Floyd/CHPRC	NOV 19 2015 1245		E.L. Kauer CHPRC	NOV 19 2015 1245
E.L. Kauer CHPRC		NOV 19 2015 1400		FEDEX	
		FED EX		Jill Clarke	11.20.15 0920

Matrix *

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		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 10/28/2015 **FSR ID = FSR8690** A-6004-842 (REV 2)

76 LBS.

CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-021**

Page 1 of 1

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81 / 44045	**Ice Chest No.**	GW5 - 486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7750 1980 9439
Protocol	CERCLA	**Priority:**	**30 Days** **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33LB0	Y	W	11/19/15	1019	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33LB1	N	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33LB1	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C

	Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
1	D.L. Floyd/CHPRC			NOV 19 2015 1245	E.L. Kauer CHPRC			NOV 19 2015 1245
2	E.L. Kauer CHPRC			NOV 19 2015 1400	FEDEX			
3	FED EX				Jill Clarke			11.20.15 0920
4								

Matrix *

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	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

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CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-017**

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81 / 44	**Ice Chest No.**	GWS-486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	775019809439
Protocol	CERCLA	**Priority:**	**30 Days** **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33L84	Y	W	11/19/15	0916	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L85	N	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L85	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
D.L. Floyd/CHPRC		NOV 19 2015 0937	DON BROTHERTON / CHPRC		NOV 19 2015 0937
DON BROTHERTON / CHPRC		NOV 19 2015 1400	FEDEX		
FED EX			Jill Clarke		11.20.15 0820

Matrix *

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		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 10/28/2015 **FSR ID = FSR8691** A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-019**

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81 / 44	**Ice Chest No.**	GWS-486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	775019809439
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33L92	Y	W	11/19/15	0806	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L93	N	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L93	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
D.L. Floyd/CHPRC		NOV 19 2015 0933	DON BROTHERTON / CHPRC		NOV 19 2015 0933
DON BROTHERTON / CHPRC		NOV 19 2015 1400	FEDEX		
	FED EX		Jill Clarke	Jill Clarke	11-20-15 0920

Matrix *

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	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 10/28/2015 | FSR ID = FSR8693 | A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company SL2024

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-016-020**

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	WHITLEY, KM	**Telephone No.**	373-4929
SAF No.	X16-016	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300205
Project Title	Uranium Sequestration - Day 13	**Logbook No.**	HNF-N-506 81/44	**Ice Chest No.**	GWS-486
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7750 1980 9439
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33L97	N	W	11/19/15	0841	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B33L97	N	W	"	"	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B33L96	Y	W	"	"	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
D.L. Floyd/CHPRC		NOV 19 2015 0937	DON BROTHERTON / CHPRC		NOV 19 2015 0937
DON BROTHERTON / CHPRC		NOV 19 2015 1400	FEDEX		
FED EX			Jill Clarke	Jill Clarke	11-20-15 0820

Matrix *

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		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 10/28/2015 **FSR ID = FSR8694** A-6004-842 (REV 2)

FedEx ® Tracking

775019809439

Ship date		Actual delivery
Thu 11/19/2015		**Fri 11/20/2015 9:20 am**
RICHLAND, WA US	**Delivered**	EARTH CITY, MO US
	Signed for by: J.CLARKE	

Travel History

Date/Time	Activity	Location
- 11/20/2015 - Friday		
9:20 am	Delivered	EARTH CITY, MO
7:16 am	At local FedEx facility	EARTH CITY, MO
5:30 am	At destination sort facility	BERKELEY, MO
4:42 am	Departed FedEx location	MEMPHIS, TN
12:27 am	Arrived at FedEx location	MEMPHIS, TN
- 11/19/2015 - Thursday		
5:09 pm	Left FedEx origin facility	PASCO, WA
3:24 pm	Picked up	PASCO, WA
3:18 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking number	775019809439	**Service**	FedEx Priority Overnight
Weight	76 lbs / 34.47 kgs	**Delivered To**	Shipping/Receiving
Total pieces	1	**Total shipment weight**	76 lbs / 34.47 kgs
Shipper reference	GWS-486	**Packaging**	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge		

Qualifiers

Metals

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.

General Chemistry

Qualifier	Qualifier Description
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, 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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SL
6020A	Metals (ICP/MS)	SW846	TAL SL
310.1	Alkalinity	MCAWW	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-14957-1	B33L77	Water	11/19/15 10:57	11/20/15 09:20
160-14957-2	B33L76	Water	11/19/15 10:57	11/20/15 09:20
160-14957-3	B33L89	Water	11/19/15 11:43	11/20/15 09:20
160-14957-4	B33L88	Water	11/19/15 11:43	11/20/15 09:20
160-14957-5	B33L81	Water	11/19/15 11:22	11/20/15 09:20
160-14957-6	B33L80	Water	11/19/15 11:22	11/20/15 09:20
160-14957-7	B33LB0	Water	11/19/15 10:19	11/20/15 09:20
160-14957-8	B33LB1	Water	11/19/15 10:19	11/20/15 09:20
160-14957-9	B33L84	Water	11/19/15 09:16	11/20/15 09:20
160-14957-10	B33L85	Water	11/19/15 09:16	11/20/15 09:20
160-14957-11	B33L92	Water	11/19/15 08:06	11/20/15 09:20
160-14957-12	B33L93	Water	11/19/15 08:06	11/20/15 09:20
160-14957-13	B33L97	Water	11/19/15 08:41	11/20/15 09:20
160-14957-14	B33L96	Water	11/19/15 08:41	11/20/15 09:20

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Method: 6010C - Metals (ICP)

Client Sample ID: B33L77
Date Collected: 11/19/15 10:57
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	15300		1000	54.2	ug/L		11/24/15 15:03	12/04/15 13:42	1
Sodium	444000	D	10000	1050	ug/L		11/24/15 15:03	12/07/15 09:40	10

Client Sample ID: B33L89
Date Collected: 11/19/15 11:43
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	32000		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:15	1
Sodium	1190000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:00	20

Client Sample ID: B33L81
Date Collected: 11/19/15 11:22
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	24800		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:24	1
Sodium	1240000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:09	20

Client Sample ID: B33LB1
Date Collected: 11/19/15 10:19
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	34000		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:36	1
Sodium	741000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:34	20

Client Sample ID: B33L85
Date Collected: 11/19/15 09:16
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	32900		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:45	1
Sodium	483000	D	10000	1050	ug/L		11/24/15 15:03	12/07/15 10:42	10

Client Sample ID: B33L93
Date Collected: 11/19/15 08:06
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	37500		1000	54.2	ug/L		11/24/15 15:03	12/04/15 15:06	1
Sodium	880000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:50	20

Client Sample ID: B33L97
Date Collected: 11/19/15 08:41
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	70700		1000	54.2	ug/L		11/24/15 15:03	12/04/15 15:10	1
Sodium	177000	D	10000	1050	ug/L		11/24/15 15:03	12/07/15 10:54	10

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Method: 6010C - Metals (ICP) - Dissolved

Client Sample ID: B33L76
Date Collected: 11/19/15 10:57
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	15700		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:11	1
Sodium	433000	D	10000	1050	ug/L		11/24/15 15:03	12/07/15 09:56	10

Client Sample ID: B33L88
Date Collected: 11/19/15 11:43
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	31600		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:19	1
Sodium	1130000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:05	20

Client Sample ID: B33L80
Date Collected: 11/19/15 11:22
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	24500		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:28	1
Sodium	1280000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:13	20

Client Sample ID: B33LB0
Date Collected: 11/19/15 10:19
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	35400		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:32	1
Sodium	735000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:17	20

Client Sample ID: B33L84
Date Collected: 11/19/15 09:16
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	32900		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:40	1
Sodium	483000	D	10000	1050	ug/L		11/24/15 15:03	12/07/15 10:38	10

Client Sample ID: B33L92
Date Collected: 11/19/15 08:06
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	37000		1000	54.2	ug/L		11/24/15 15:03	12/04/15 14:49	1
Sodium	887000	D	20000	2100	ug/L		11/24/15 15:03	12/07/15 10:46	20

Client Sample ID: B33L96
Date Collected: 11/19/15 08:41
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	73600		1000	54.2	ug/L		11/24/15 15:03	12/04/15 15:14	1
Sodium	179000	D	10000	1050	ug/L		11/24/15 15:03	12/07/15 10:58	10

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B33L77
Date Collected: 11/19/15 10:57
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	8.9	B D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 17:39	20

Client Sample ID: B33L89
Date Collected: 11/19/15 11:43
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	32.5	D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:01	20

Client Sample ID: B33L81
Date Collected: 11/19/15 11:22
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	208	D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:10	20

Client Sample ID: B33LB1
Date Collected: 11/19/15 10:19
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	29.2	D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:36	20

Client Sample ID: B33L85
Date Collected: 11/19/15 09:16
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	2.3	U	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:44	20

Client Sample ID: B33L93
Date Collected: 11/19/15 08:06
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	6.8	B D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:53	20

Client Sample ID: B33L97
Date Collected: 11/19/15 08:41
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	2.3	U	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:58	20

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: B33L76
Date Collected: 11/19/15 10:57
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	10.6	D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 17:57	20

Client Sample ID: B33L88
Date Collected: 11/19/15 11:43
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	33.1	D	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:05	20

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Method: 6020A - Metals (ICP/MS) - Dissolved

Client Sample ID: B33L80
Date Collected: 11/19/15 11:22
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	**170**	**D**	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:27	20

Client Sample ID: B33LB0
Date Collected: 11/19/15 10:19
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	**28.7**	**D**	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:31	20

Client Sample ID: B33L84
Date Collected: 11/19/15 09:16
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	2.3	U	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:40	20

Client Sample ID: B33L92
Date Collected: 11/19/15 08:06
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	**7.0**	**B D**	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 18:49	20

Client Sample ID: B33L96
Date Collected: 11/19/15 08:41
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	2.3	U	10.0	2.3	ug/L		11/24/15 15:07	12/07/15 19:02	20

General Chemistry

Client Sample ID: B33L97
Date Collected: 11/19/15 08:41
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**194**		5.0	0.54	mg/L			11/25/15 20:12	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/25/15 20:12	1

General Chemistry - DL

Client Sample ID: B33L77
Date Collected: 11/19/15 10:57
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**560**		25.0	2.7	mg/L			11/25/15 19:12	1
Carbonate Alkalinity	2.7	U	25.0	2.7	mg/L			11/25/15 19:12	1

Client Sample ID: B33L89
Date Collected: 11/19/15 11:43
Date Received: 11/20/15 09:20
Lab Sample ID: 160-14957-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**1320**		50.0	5.4	mg/L			11/25/15 19:35	1
Carbonate Alkalinity	5.4	U	50.0	5.4	mg/L			11/25/15 19:35	1

General Chemistry - DL

Client Sample ID: B33L81
Date Collected: 11/19/15 11:22
Date Received: 11/20/15 09:20

Lab Sample ID: 160-14957-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**1440**		50.0	5.4	mg/L			11/25/15 19:42	1
Carbonate Alkalinity	5.4	U	50.0	5.4	mg/L			11/25/15 19:42	1

Client Sample ID: B33LB1
Date Collected: 11/19/15 10:19
Date Received: 11/20/15 09:20

Lab Sample ID: 160-14957-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**760**		25.0	2.7	mg/L			11/25/15 19:50	1
Carbonate Alkalinity	2.7	U	25.0	2.7	mg/L			11/25/15 19:50	1

Client Sample ID: B33L85
Date Collected: 11/19/15 09:16
Date Received: 11/20/15 09:20

Lab Sample ID: 160-14957-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**535**		25.0	2.7	mg/L			11/25/15 19:57	1
Carbonate Alkalinity	2.7	U	25.0	2.7	mg/L			11/25/15 19:57	1

Client Sample ID: B33L93
Date Collected: 11/19/15 08:06
Date Received: 11/20/15 09:20

Lab Sample ID: 160-14957-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	**820**		25.0	2.7	mg/L			11/25/15 20:05	1
Carbonate Alkalinity	2.7	U	25.0	2.7	mg/L			11/25/15 20:05	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-224091/1-A
Matrix: Water
Analysis Batch: 225647

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224091

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	54.2	U	1000	54.2	ug/L		11/24/15 15:03	12/04/15 13:34	1

Lab Sample ID: MB 160-224091/1-A
Matrix: Water
Analysis Batch: 225801

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224091

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	105	U	1000	105	ug/L		11/24/15 15:03	12/07/15 09:20	1

Lab Sample ID: LCS 160-224091/2-A
Matrix: Water
Analysis Batch: 225647

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224091

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	10000	11580		ug/L		116	80 - 120

Lab Sample ID: LCS 160-224091/2-A
Matrix: Water
Analysis Batch: 225801

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224091

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sodium	10000	8901		ug/L		89	80 - 120

Lab Sample ID: 160-14957-1 MS
Matrix: Water
Analysis Batch: 225647

Client Sample ID: B33L77
Prep Type: Total/NA
Prep Batch: 224091

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	15300		10000	26190		ug/L		109	75 - 125

Lab Sample ID: 160-14957-1 MS
Matrix: Water
Analysis Batch: 225801

Client Sample ID: B33L77
Prep Type: Total/NA
Prep Batch: 224091

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sodium	444000	D	10000	428300	D	ug/L		-160	75 - 125

Lab Sample ID: 160-14957-1 MSD
Matrix: Water
Analysis Batch: 225647

Client Sample ID: B33L77
Prep Type: Total/NA
Prep Batch: 224091

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	15300		10000	26470		ug/L		111	75 - 125	1	20

Lab Sample ID: 160-14957-1 MSD
Matrix: Water
Analysis Batch: 225801

Client Sample ID: B33L77
Prep Type: Total/NA
Prep Batch: 224091

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sodium	444000	D	10000	444400	D	ug/L		1	75 - 125	4	20

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 160-224092/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 225892 — **Prep Batch: 224092**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	0.23	U	1.0	0.23	ug/L		11/24/15 15:07	12/07/15 17:31	2

Lab Sample ID: LCS 160-224092/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 225892 — **Prep Batch: 224092**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	1000	1006		ug/L		101	80 - 120

Lab Sample ID: 160-14957-1 MS — **Client Sample ID: B33L77**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 225892 — **Prep Batch: 224092**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	8.9	B D	1000	1000	D	ug/L		99	75 - 125

Lab Sample ID: 160-14957-1 MSD — **Client Sample ID: B33L77**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 225892 — **Prep Batch: 224092**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Uranium	8.9	B D	1000	989.6	D	ug/L		98	75 - 125	1	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-224347/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/25/15 18:50	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/25/15 18:50	1

Lab Sample ID: HLCS 160-224347/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	400	377.0		mg/L		94	90 - 110

Lab Sample ID: LCS 160-224347/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 224347

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	200	190.0		mg/L		95	90 - 110

Method: 310.1 - Alkalinity - DL

Lab Sample ID: 160-14957-1 MS
Matrix: Water
Analysis Batch: 224347

Client Sample ID: B33L77
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Bicarbonate Alkalinity - DL	560		501	1020		mg/L		92	80 - 120		

Lab Sample ID: 160-14957-1 DU
Matrix: Water
Analysis Batch: 224347

Client Sample ID: B33L77
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Bicarbonate Alkalinity - DL	560			560.0		mg/L				0	20
Carbonate Alkalinity - DL	2.7	U		2.7	U	mg/L				NC	20

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Metals

Prep Batch: 224091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-1	B33L77	Total/NA	Water	3010A	
160-14957-1 MS	B33L77	Total/NA	Water	3010A	
160-14957-1 MSD	B33L77	Total/NA	Water	3010A	
160-14957-2	B33L76	Dissolved	Water	3010A	
160-14957-3	B33L89	Total/NA	Water	3010A	
160-14957-4	B33L88	Dissolved	Water	3010A	
160-14957-5	B33L81	Total/NA	Water	3010A	
160-14957-6	B33L80	Dissolved	Water	3010A	
160-14957-7	B33LB0	Dissolved	Water	3010A	
160-14957-8	B33LB1	Total/NA	Water	3010A	
160-14957-9	B33L84	Dissolved	Water	3010A	
160-14957-10	B33L85	Total/NA	Water	3010A	
160-14957-11	B33L92	Dissolved	Water	3010A	
160-14957-12	B33L93	Total/NA	Water	3010A	
160-14957-13	B33L97	Total/NA	Water	3010A	
160-14957-14	B33L96	Dissolved	Water	3010A	
LCS 160-224091/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-224091/1-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 224092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-1	B33L77	Total/NA	Water	3010A	
160-14957-1 MS	B33L77	Total/NA	Water	3010A	
160-14957-1 MSD	B33L77	Total/NA	Water	3010A	
160-14957-2	B33L76	Dissolved	Water	3010A	
160-14957-3	B33L89	Total/NA	Water	3010A	
160-14957-4	B33L88	Dissolved	Water	3010A	
160-14957-5	B33L81	Total/NA	Water	3010A	
160-14957-6	B33L80	Dissolved	Water	3010A	
160-14957-7	B33LB0	Dissolved	Water	3010A	
160-14957-8	B33LB1	Total/NA	Water	3010A	
160-14957-9	B33L84	Dissolved	Water	3010A	
160-14957-10	B33L85	Total/NA	Water	3010A	
160-14957-11	B33L92	Dissolved	Water	3010A	
160-14957-12	B33L93	Total/NA	Water	3010A	
160-14957-13	B33L97	Total/NA	Water	3010A	
160-14957-14	B33L96	Dissolved	Water	3010A	
LCS 160-224092/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-224092/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 225647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-1	B33L77	Total/NA	Water	6010C	224091
160-14957-1 MS	B33L77	Total/NA	Water	6010C	224091
160-14957-1 MSD	B33L77	Total/NA	Water	6010C	224091
160-14957-2	B33L76	Dissolved	Water	6010C	224091
160-14957-3	B33L89	Total/NA	Water	6010C	224091
160-14957-4	B33L88	Dissolved	Water	6010C	224091
160-14957-5	B33L81	Total/NA	Water	6010C	224091
160-14957-6	B33L80	Dissolved	Water	6010C	224091
160-14957-7	B33LB0	Dissolved	Water	6010C	224091

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

Metals (Continued)

Analysis Batch: 225647 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-8	B33LB1	Total/NA	Water	6010C	224091
160-14957-9	B33L84	Dissolved	Water	6010C	224091
160-14957-10	B33L85	Total/NA	Water	6010C	224091
160-14957-11	B33L92	Dissolved	Water	6010C	224091
160-14957-12	B33L93	Total/NA	Water	6010C	224091
160-14957-13	B33L97	Total/NA	Water	6010C	224091
160-14957-14	B33L96	Dissolved	Water	6010C	224091
LCS 160-224091/2-A	Lab Control Sample	Total/NA	Water	6010C	224091
MB 160-224091/1-A	Method Blank	Total/NA	Water	6010C	224091

Analysis Batch: 225801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-1	B33L77	Total/NA	Water	6010C	224091
160-14957-1 MS	B33L77	Total/NA	Water	6010C	224091
160-14957-1 MSD	B33L77	Total/NA	Water	6010C	224091
160-14957-2	B33L76	Dissolved	Water	6010C	224091
160-14957-3	B33L89	Total/NA	Water	6010C	224091
160-14957-4	B33L88	Dissolved	Water	6010C	224091
160-14957-5	B33L81	Total/NA	Water	6010C	224091
160-14957-6	B33L80	Dissolved	Water	6010C	224091
160-14957-7	B33LB0	Dissolved	Water	6010C	224091
160-14957-8	B33LB1	Total/NA	Water	6010C	224091
160-14957-9	B33L84	Dissolved	Water	6010C	224091
160-14957-10	B33L85	Total/NA	Water	6010C	224091
160-14957-11	B33L92	Dissolved	Water	6010C	224091
160-14957-12	B33L93	Total/NA	Water	6010C	224091
160-14957-13	B33L97	Total/NA	Water	6010C	224091
160-14957-14	B33L96	Dissolved	Water	6010C	224091
LCS 160-224091/2-A	Lab Control Sample	Total/NA	Water	6010C	224091
MB 160-224091/1-A	Method Blank	Total/NA	Water	6010C	224091

Analysis Batch: 225892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-1	B33L77	Total/NA	Water	6020A	224092
160-14957-1 MS	B33L77	Total/NA	Water	6020A	224092
160-14957-1 MSD	B33L77	Total/NA	Water	6020A	224092
160-14957-2	B33L76	Dissolved	Water	6020A	224092
160-14957-3	B33L89	Total/NA	Water	6020A	224092
160-14957-4	B33L88	Dissolved	Water	6020A	224092
160-14957-5	B33L81	Total/NA	Water	6020A	224092
160-14957-6	B33L80	Dissolved	Water	6020A	224092
160-14957-7	B33LB0	Dissolved	Water	6020A	224092
160-14957-8	B33LB1	Total/NA	Water	6020A	224092
160-14957-9	B33L84	Dissolved	Water	6020A	224092
160-14957-10	B33L85	Total/NA	Water	6020A	224092
160-14957-11	B33L92	Dissolved	Water	6020A	224092
160-14957-12	B33L93	Total/NA	Water	6020A	224092
160-14957-13	B33L97	Total/NA	Water	6020A	224092
160-14957-14	B33L96	Dissolved	Water	6020A	224092
LCS 160-224092/2-A	Lab Control Sample	Total/NA	Water	6020A	224092
MB 160-224092/1-A	Method Blank	Total/NA	Water	6020A	224092

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-016

TestAmerica Job ID: 160-14957-1
SDG: SL2024

General Chemistry

Analysis Batch: 224347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14957-1 - DL	B33L77	Total/NA	Water	310.1	
160-14957-1 DU - DL	B33L77	Total/NA	Water	310.1	
160-14957-1 MS - DL	B33L77	Total/NA	Water	310.1	
160-14957-3 - DL	B33L89	Total/NA	Water	310.1	
160-14957-5 - DL	B33L81	Total/NA	Water	310.1	
160-14957-8 - DL	B33LB1	Total/NA	Water	310.1	
160-14957-10 - DL	B33L85	Total/NA	Water	310.1	
160-14957-12 - DL	B33L93	Total/NA	Water	310.1	
160-14957-13	B33L97	Total/NA	Water	310.1	
HLCS 160-224347/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-224347/2	Lab Control Sample	Total/NA	Water	310.1	
MB 160-224347/1	Method Blank	Total/NA	Water	310.1	