

January 13, 2016

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: 160-14833-1

TestAmerica Sample Delivery Group: SL2011
Client Project/Site: X15-063

For:

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
1/13/2016 4:04:58 PM

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

LINKS

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results through
TotalAccess

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www.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.

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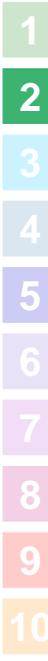


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Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Job ID: 160-14833-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
January 13, 2016
Attention: Scot Fitzgerald

SDG	: SL2011
Number of Samples	: 14 samples
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: November 13, 2015

II. Introduction

On November 13, 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.

Due to a large backlog for ICP, metals requests were run by ICPMS per SIR16-163.

The following SAFs are associated with this SDG: X15-063

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.

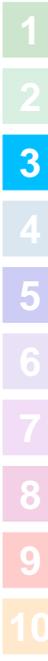
For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

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: 160-14833-1 (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.

ICPMS Metals

Batch: 232110

Sodium was detected in method blank MB 160-225828/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "B". If the associated sample reported a result above the MDL and/or RL and is not greater than 5x the method blank, the result has been flagged "C".

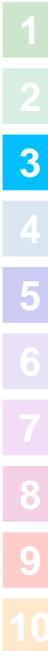
The CCVL was outside upper QC limits for sodium. The concentration of this analyte in the samples was at such a high level as to make the CCVL unnecessary. (CCVL 160-232110/42)

The following samples were diluted to bring the concentration of target analytes within the calibration range: B32YV6 (160-14833-3), B32YV7 (160-14833-4), B32YW1 (160-14833-5), B32YW0 (160-14833-6), B32YX6 (160-14833-13) and B32YX7 (160-14833-14). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

Batch: 227046

The following samples were diluted to bring the concentration of target analytes within the calibration range: B32YV6 (160-14833-3) and B32YV7 (160-14833-4). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

There were no observations or non-conformances associated with the following methods:



Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Job ID: 160-14833-1 (Continued)

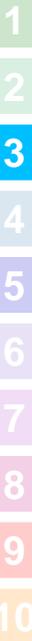
Laboratory: TestAmerica St. Louis (Continued)

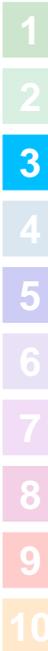
Alkalinity

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





SAMPLE ISSUE RESOLUTION	SIR NUM	SIR16-163
	REV NUM	0
	DATE INITIATED	1/7/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) X15-063
OPERABLE UNIT(S) 300-FF-5
PROJECT(S) CERC15
SAMPLE EVENT TITLE(S) CERC15
LABORATORY TestAmerica St. Louis

SAMPLING INFORMATION

NUMBER OF SAMPLES 14
SAMPLE NUMBERS B32YV2, B32YV3, B32YV6, B32YV7, B32YW0, B32YW1, B32YW4, B32YW5, B32YW8, B32YW9, B32YX2, B32YX3, B32YX6, B32YX7
SAMPLE MATRIX WATER
COLLECTION DATE 11/12/2015 - 11/12/2015
SDG NUM SL2011

ISSUE BACKGROUND

CLASS Sample Management Issues
TYPE Method Correction
DESCRIPTION The laboratory has a backlog for ICP and has requested permission to substitute ICP-MS.

DISPOSITION

DESCRIPTION Report requested analytes (sodium, calcium) by 6020.
JUSTIFICATION Final Disposition: Accept proposed resolution.
 SUBMITTED BY: Jayna Awalt DATE: 01/07/2016
 ACCEPTED BY: Karen Waters-Husted DATE: 01/08/2016

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-14833-1

SDG Number: SL2011

Login Number: 14833

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

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	0.7°
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.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

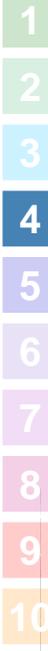
CH2M Hill Plateau Remediation Company SL2011
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **X15-063-015**
 Page 1 of 1

Collector: S.W. King/CHPRC
 Telephone No. 373-4929
 SAF No. X15-063
 Purchase Order/Charge Code 300205
 Project Title: Uranium Sequestration - Day 7
 Logbook No. HNF-N-506 81/30
 Ice Chest No. 605-484
 Shipped To (Lab): TestAmerica St. Louis
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No. 77496605637
 Protocol: CERCLA
 Priority: 30 Days
 Offsite Property No. N/A

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.
 SPECIAL INSTRUCTIONS: Hold Time
 Total Activity Exemption: Yes No

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YV2	Y	NOV 12 2015	0915	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YV3	N	NOV 12 2015	0915	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YV3	N	NOV 12 2015	0915	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C

Relinquished By S.W. King/CHPRC	Print <i>[Signature]</i>	Sign	Date/Time NOV 12 2015 1115	Received By L.D. Wall CHPRC	Print <i>[Signature]</i>	Sign	Date/Time NOV 12 2015 1115	Matrix *
Relinquished By L.D. Wall CHPRC	Print <i>[Signature]</i>	Sign	Date/Time NOV 12 2015 1400	Received By CHPRC	Print FEDEX	Sign	Date/Time NOV 12 2015 0925	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By	Print	Sign	Date/Time	Received By <i>[Signature]</i>	Print FED EX	Sign <i>[Signature]</i>	Date/Time 11.13.15	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Date/Time



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1/13/2016

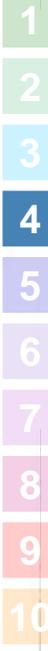
CH2M Hill Plateau Remediation Company SL2011
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **X15-063-016**
 Page 1 of 1

Collector: S.W. King/CHPRC Telephone No. 373-4929
 SAF No. X15-063 Purchase Order/Charge Code 300205
 Project Title: Uranium Sequestration - Day 7
 Shipped To (Lab): TestAmerica St. Louis
 Protocol: CERCLA
 Priority: 30 Days
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No. 774966605637
 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

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YV6	Y	NOV 17 2015	1031	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YV7	N	NOV 17 2015	1031	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YV7	N	NOV 12 2015	1031	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	Matrix *
S.W. King/CHPRC			NOV 12 2015 1115	L.D. Wall			NOV 12 2015 1115	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
L.D. Wall			NOV 12 2015 1400	CHPRC			NOV 12 2015 1400	
Relinquished By			F E D E X	Received By	FEDEX		NOV 13 2015 0925	
Relinquished By				Received By				



CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: D.L. Floyd/CHPRC
 Telephone No. 373-4929
 SAF No. X15-063
 Purchase Order/Charge Code 300205
 Project Title: Uranium Sequestration - Day 7
 Logbook No. HNF-N-506 80, 26
 Ice Chest No. GWS-484
 Shipped To (Lab): TestAmerica St. Louis
 Bill of Lading/Air Bill No. 774966605637
 Protocol: CERCLA
 Priority: 30 Days
 Method of Shipment: Commercial Carrier
 Offsite Property No. N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.
 SPECIAL INSTRUCTIONS: Hold Time
 Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YW1	N	W	NOV 17 2015	1012	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YW1	N	W	NOV 17 2015	1502	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B32YW0	Y	W	NOV 17 2015	1002	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

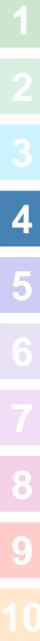
January 13, 2016

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
D.L. Floyd/CHPRC	<i>[Signature]</i>		NOV 17 2015		FEDEX		NOV 17 2015	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By			NOV 17 2015	Jill Clark	Jill Clark	Jill Clark	11.13.15 0925	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By								

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

DATE/TIME



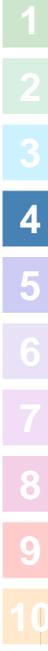
CH2M Hill Plateau Remediation Company <i>SL2011</i>		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # X15-063-018	
Collector D.L. Floyd/CHPRC		Contact/Requester WHITLEY, KM		Telephone No. 373-4929	
SAF No. X15-063		Sampling Origin HANFORD SITE		Purchase Order/Charge Code 300205	
Project Title Uranium Sequestration - Day 7		Logbook No. HNF-N-50680126		Ice Chest No. 605-484	
Shipped To (Lab) TestAmerica St. Louis		Method of Shipment Commercial Carrier		Bill of Lading/Air Bill No. 77496605637	
Protocol CERCLA		Priority: 30 Days		Offsite Property No. N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		SPECIAL INSTRUCTIONS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YW5	N	W	NOV 17 2015	0930	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YW5	N	W	NOV 12 2015	0930	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B32YW4	Y	W	NOV 12 2015	0930	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By D.L. Floyd/CHPRC	Print <i>[Signature]</i>	Sign	Date/Time NOV 12 2015 0945	Received By L.D. Wall CHPRC	Print <i>[Signature]</i>	Sign	Date/Time NOV 17 2015 0945
			Date/Time NOV 12 2015 1400	Received By FED EX	Print <i>[Signature]</i>	Sign	Date/Time NOV 12 2015 11:13:15
			Date/Time FED EX	Received By <i>[Signature]</i>	Print <i>[Signature]</i>	Sign	Date/Time 11-13-15 0925
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
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PRINTED ON 9/16/2015	FSR ID = FSR6161	A-6004-842 (REV 2)
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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: D.L. Floyd/CHPRC
 SAF No.: X15-063
 Project Title: Uranium Sequestration - Day 7
 Shipped To (Lab): TestAmerica St. Louis
 Protocol: CERCLA

Contact/Requester: WHITLEY, KM
 Sampling Origin: HANFORD SITE
 Logbook No.: HNF-N-50680124
 Method of Shipment: Commercial Carrier
 Priority: 30 Days

Telephone No.: 373-4929
 Purchase Order/Charge Code: 300205
 Ice Chest No.: GWS-484
 Bill of Lading/Air Bill No.: 774966605637
 Offsite Property No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS
 Hold Time: Total Activity Exemption: Yes No

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YW9	N	NOV 12 2015	1102	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YW9	N	NOV 17 2015	1102	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B32YW8	Y	NOV 12 2015	1102	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By: D.L. Floyd/CHPRC
 Relinquished By: [Signature]
 Relinquished By: [Signature]
 Relinquished By: [Signature]

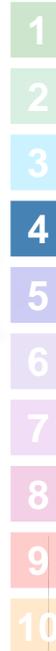
Received By: FEDEX
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 Received By: [Signature]
 Received By: [Signature]

Date/Time: NOV 12 2015 11:42:15
 Date/Time: NOV 12 2015 09:25
 Date/Time: 11.13.15 09:25
 Date/Time: [Signature]

Matrix *
 S = Soil DS = Drum Solids
 SE = Sediment DL = Drum Liquids
 SO = Solid T = Tissue
 SL = Sludge W = 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)

PRINTED ON 9/16/2015
 FSR ID = FSR6231
 A-6004-842 (REV 2)



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1/13/2016

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector D.L. Floyd/CHPRC
SAF No. X15-063
Project Title Uranium Sequestration - Day 7
Shipped To (Lab) TestAmerica St. Louis
Protocol CERCLA

Contact/Requester WHITLEY, KM
Sampling Origin HANFORD SITE
Logbook No. HNF-N-506 80126
Method of Shipment Commercial Carrier
Priority: 30 Days **PRIORITY**
Offsite Property No. N/A

Telephone No. 373-4929
Purchase Order/Charge Code 300205
Ice Chest No. GWS-484
Bill of Lading/Air Bill No. 774966605637

Special Instructions Hold Time
 Total Activity Exemption: Yes No

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.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YX3	N	W	NOV 12 2015	1134	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YX3	N	W	NOV 12 2015	1134	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C
B32YX2	Y	W	NOV 12 2015	1134	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By D.L. Floyd/CHPRC
Relinquished By
Relinquished By
Relinquished By

Received By FEDEX
Received By Jill Clarke
Received By

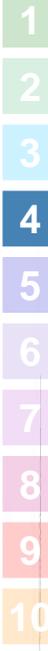
Date/Time NOV 12 2015 11:34
Date/Time NOV 12 2015 09:25
Date/Time

Print Sign
Print Sign
Print Sign

Matrix *
 S = Soil DS = Drum Solids
 SE = Sediment DL = Drum Liquids
 SO = Solid T = Tissue
 SL = Sludge W = 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)

PRINTED ON 9/16/2015
FSR ID = FSR6066
A-6004-842 (REV 2)



CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#
X15-063-021
Page 1 of 1

Collector: S.W. King/CHPRC Telephone No. 373-4929
 SAF No. X15-063 Purchase Order/Charge Code 300205
 Project Title: Uranium Sequestration - Day 7 Logbook No. HNF-N-506 81 / 30
 Shipped To (Lab): TestAmerica St. Louis Method of Shipment Commercial Carrier
 Protocol: CERCLA Priority: 30 Days **PRIORITY** Offsite Property No. 2A

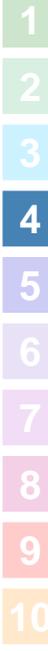
POSSIBLE SAMPLE HAZARDS/REMARKS
 *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.
 SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32YX6	Y	NOV 12 2015	0840	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YX7	N	NOV 12 2015	↓	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1); 6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B32YX7	N	NOV 12 2015	0840	1x500-mL G/P	310.1_ALKALINITY: GW 01	14 Days	Cool <=6C

Relinquished By S.W. King/CHPRC	Print <i>[Signature]</i>	Sign	Date/Time NOV 12 2015 1115	Received By L.D. Wall	Print L.D. Wall	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1115	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
Relinquished By L.D. Wall	Print L.D. Wall	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1400	Received By CHPRC	Print CHPRC	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1115	
Relinquished By CHPRC	Print CHPRC	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1400	Received By FEDEX	Print FEDEX	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1115	
Relinquished By CHPRC	Print CHPRC	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1400	Received By Jill Clark	Print Jill Clark	Sign <i>[Signature]</i>	Date/Time NOV 12 2015 1115	

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

PRINTED ON 9/16/2015 FSR ID = FSR6169 A-6004-842 (REV 2)





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774966605637

Ship date	Actual delivery
Thu 11/12/2015	Fri 11/13/2015 9:18 am
RICHLAND, WA US	EARTH CITY, MO US
Delivered	
<i>Signed for by: J. CLARKE</i>	

Travel History

Date/Time	Activity	Location
- 11/13/2015 - Friday		
9:18 am	Delivered	EARTH CITY, MO
7:15 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:08 am	At local FedEx facility	EARTH CITY, MO
5:02 am	At destination sort facility	BERKELEY, MO
4:16 am	Departed FedEx location	MEMPHIS, TN
12:22 am	Arrived at FedEx location	MEMPHIS, TN
- 11/12/2015 - Thursday		
5:02 pm	Left FedEx origin facility	PASCO, WA
3:40 pm	Shipment information sent to FedEx	
3:25 pm	Picked up	PASCO, WA

Shipment Facts

Tracking number	774966605637	Service	FedEx Priority Overnight
Weight	74 lbs / 33.57 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	74 lbs / 33.57 kgs
Shipper reference	gws-484	Packaging	Your Packaging
Special handling section	Deliver Weekday		



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Qualifiers

Metals

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

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.
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: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Method	Method Description	Protocol	Laboratory
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

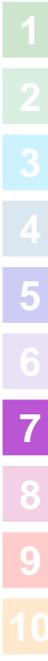


January 13, 2016
Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-14833-1	B32YV2	Water	11/12/15 09:15	11/13/15 09:25
160-14833-2	B32YV3	Water	11/12/15 09:15	11/13/15 09:25
160-14833-3	B32YV6	Water	11/12/15 10:31	11/13/15 09:25
160-14833-4	B32YV7	Water	11/12/15 10:31	11/13/15 09:25
160-14833-5	B32YW1	Water	11/12/15 10:02	11/13/15 09:25
160-14833-6	B32YW0	Water	11/12/15 10:02	11/13/15 09:25
160-14833-7	B32YW5	Water	11/12/15 09:30	11/13/15 09:25
160-14833-8	B32YW4	Water	11/12/15 09:30	11/13/15 09:25
160-14833-9	B32YW9	Water	11/12/15 11:02	11/13/15 09:25
160-14833-10	B32YW8	Water	11/12/15 11:02	11/13/15 09:25
160-14833-11	B32YX3	Water	11/12/15 11:34	11/13/15 09:25
160-14833-12	B32YX2	Water	11/12/15 11:34	11/13/15 09:25
160-14833-13	B32YX6	Water	11/12/15 08:40	11/13/15 09:25
160-14833-14	B32YX7	Water	11/12/15 08:40	11/13/15 09:25



January 13, 2016
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B32YV3
Date Collected: 11/12/15 09:15
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	721		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:09	2
Sodium	64600		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 18:48	2
Calcium	80300		100	68.1	ug/L		12/07/15 13:21	01/12/16 18:48	2

Client Sample ID: B32YV7
Date Collected: 11/12/15 10:31
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	5400	D	2.5	0.58	ug/L		12/07/15 13:21	12/13/15 14:42	5
Sodium	240000	D	250	119	ug/L		12/07/15 13:21	01/12/16 18:57	10
Calcium	250000	D	500	341	ug/L		12/07/15 13:21	01/12/16 18:57	10

Client Sample ID: B32YW1
Date Collected: 11/12/15 10:02
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	9.8		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:22	2
Sodium	158000	D	125	59.3	ug/L		12/07/15 13:21	01/12/16 19:14	5
Calcium	50100	D	250	170	ug/L		12/07/15 13:21	01/12/16 19:14	5

Client Sample ID: B32YW5
Date Collected: 11/12/15 09:30
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	182		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:44	2
Sodium	61800		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 19:23	2
Calcium	99100		100	68.1	ug/L		12/07/15 13:21	01/12/16 19:23	2

Client Sample ID: B32YW9
Date Collected: 11/12/15 11:02
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	30.8		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:52	2
Sodium	46200		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 19:31	2
Calcium	69200		100	68.1	ug/L		12/07/15 13:21	01/12/16 19:31	2

Client Sample ID: B32YX3
Date Collected: 11/12/15 11:34
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	97.1		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 22:01	2
Sodium	47500		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 19:40	2
Calcium	89700		100	68.1	ug/L		12/07/15 13:21	01/12/16 19:40	2

Client Sample ID: B32YX7
Date Collected: 11/12/15 08:40
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	364		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 22:14	2
Sodium	298000	D	250	119	ug/L		12/07/15 13:21	01/12/16 19:53	10
Calcium	90100	D	500	341	ug/L		12/07/15 13:21	01/12/16 19:53	10

TestAmerica St. Louis

January 13, 2016
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

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

Client Sample ID: B32YV2
Date Collected: 11/12/15 09:15
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	536		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 20:53	2
Sodium	53800		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 18:32	2
Calcium	67600		100	68.1	ug/L		12/07/15 13:21	01/12/16 18:32	2

Client Sample ID: B32YV6
Date Collected: 11/12/15 10:31
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	5310	D	2.5	0.58	ug/L		12/07/15 13:21	12/13/15 14:37	5
Sodium	243000	D	250	119	ug/L		12/07/15 13:21	01/12/16 18:52	10
Calcium	260000	D	500	341	ug/L		12/07/15 13:21	01/12/16 18:52	10

Client Sample ID: B32YW0
Date Collected: 11/12/15 10:02
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	9.4		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:40	2
Sodium	175000	D	125	59.3	ug/L		12/07/15 13:21	01/12/16 19:18	5
Calcium	52500	D	250	170	ug/L		12/07/15 13:21	01/12/16 19:18	5

Client Sample ID: B32YW4
Date Collected: 11/12/15 09:30
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	198		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:48	2
Sodium	61300		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 19:27	2
Calcium	99300		100	68.1	ug/L		12/07/15 13:21	01/12/16 19:27	2

Client Sample ID: B32YW8
Date Collected: 11/12/15 11:02
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	31.7		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 21:57	2
Sodium	45200		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 19:35	2
Calcium	68700		100	68.1	ug/L		12/07/15 13:21	01/12/16 19:35	2

Client Sample ID: B32YX2
Date Collected: 11/12/15 11:34
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	99.6		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 22:05	2
Sodium	44900		50.0	23.7	ug/L		12/07/15 13:21	01/12/16 19:44	2
Calcium	84600		100	68.1	ug/L		12/07/15 13:21	01/12/16 19:44	2

Client Sample ID: B32YX6
Date Collected: 11/12/15 08:40
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	369		1.0	0.23	ug/L		12/07/15 13:21	12/11/15 22:10	2
Sodium	291000	D	250	119	ug/L		12/07/15 13:21	01/12/16 19:48	10
Calcium	88200	D	500	341	ug/L		12/07/15 13:21	01/12/16 19:48	10

TestAmerica St. Louis

January 13, 2016
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

General Chemistry

Client Sample ID: B32YV3
Date Collected: 11/12/15 09:15
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	178		5.0	0.54	mg/L			11/16/15 12:26	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/16/15 12:26	1

Client Sample ID: B32YV7
Date Collected: 11/12/15 10:31
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	538		5.0	0.54	mg/L			11/16/15 12:26	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/16/15 12:26	1

Client Sample ID: B32YW1
Date Collected: 11/12/15 10:02
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	213		5.0	0.54	mg/L			11/20/15 09:17	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1

Client Sample ID: B32YW5
Date Collected: 11/12/15 09:30
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	126		5.0	0.54	mg/L			11/20/15 09:17	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1

Client Sample ID: B32YW9
Date Collected: 11/12/15 11:02
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	164		5.0	0.54	mg/L			11/20/15 09:17	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1

Client Sample ID: B32YX3
Date Collected: 11/12/15 11:34
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	158		5.0	0.54	mg/L			11/20/15 09:17	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1

Client Sample ID: B32YX7
Date Collected: 11/12/15 08:40
Date Received: 11/13/15 09:25

Lab Sample ID: 160-14833-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	292		5.0	0.54	mg/L			11/20/15 09:17	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1

January 13, 2016
QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 160-225828/1-A
Matrix: Water
Analysis Batch: 226920

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225828

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	0.23	U	1.0	0.23	ug/L		12/07/15 13:21	12/11/15 20:44	2

Lab Sample ID: MB 160-225828/1-A
Matrix: Water
Analysis Batch: 232110

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225828

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	44.06	B	50.0	23.7	ug/L		12/07/15 13:21	01/12/16 18:23	2
Calcium	68.1	U	100	68.1	ug/L		12/07/15 13:21	01/12/16 18:23	2

Lab Sample ID: LCS 160-225828/2-A
Matrix: Water
Analysis Batch: 226920

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225828

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Uranium	1000	911.0		ug/L		91	80 - 120

Lab Sample ID: LCS 160-225828/2-A
Matrix: Water
Analysis Batch: 232110

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225828

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Sodium	10000	9989		ug/L		100	80 - 120
Calcium	10000	10460		ug/L		105	80 - 120

Lab Sample ID: 160-14833-1 MS
Matrix: Water
Analysis Batch: 226920

Client Sample ID: B32YV2
Prep Type: Dissolved
Prep Batch: 225828

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Uranium	536		1000	1522		ug/L		99	75 - 125

Lab Sample ID: 160-14833-1 MS
Matrix: Water
Analysis Batch: 232110

Client Sample ID: B32YV2
Prep Type: Dissolved
Prep Batch: 225828

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Sodium	53800		10000	63430		ug/L		96	75 - 125
Calcium	67600		10000	77480		ug/L		98	75 - 125

Lab Sample ID: 160-14833-1 MSD
Matrix: Water
Analysis Batch: 226920

Client Sample ID: B32YV2
Prep Type: Dissolved
Prep Batch: 225828

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Uranium	536		1000	1540		ug/L		100	75 - 125	1	20

January 13, 2016
QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

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

Lab Sample ID: 160-14833-1 MSD
Matrix: Water
Analysis Batch: 232110

Client Sample ID: B32YV2
Prep Type: Dissolved
Prep Batch: 225828

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sodium	53800		10000	61870		ug/L		81	75 - 125	2	20
Calcium	67600		10000	76950		ug/L		93	75 - 125	1	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-222233/1
Matrix: Water
Analysis Batch: 222233

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/16/15 12:26	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/16/15 12:26	1

Lab Sample ID: HLCS 160-222233/3
Matrix: Water
Analysis Batch: 222233

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

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	400	374.0		mg/L		93	90 - 110

Lab Sample ID: LCS 160-222233/2
Matrix: Water
Analysis Batch: 222233

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	200	189.0		mg/L		94	90 - 110

Lab Sample ID: 160-14798-A-15 MS
Matrix: Water
Analysis Batch: 222233

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
Bicarbonate Alkalinity	96.0		100	185.0		mg/L		89	80 - 120

Lab Sample ID: 160-14798-A-15 DU
Matrix: Water
Analysis Batch: 222233

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Bicarbonate Alkalinity	96.0		96.00		mg/L		0	20
Carbonate Alkalinity	0.54	U	0.54	U	mg/L		NC	20

Lab Sample ID: MB 160-222867/1
Matrix: Water
Analysis Batch: 222867

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1
Carbonate Alkalinity	0.54	U	5.0	0.54	mg/L			11/20/15 09:17	1

TestAmerica St. Louis

January 13, 2016
QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
SDG: SL2011

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: HLCS 160-222867/3
Matrix: Water
Analysis Batch: 222867

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

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	400	370.0		mg/L		92	90 - 110

Lab Sample ID: LCS 160-222867/2
Matrix: Water
Analysis Batch: 222867

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	200	187.0		mg/L		93	90 - 110

Lab Sample ID: 160-14833-5 MS
Matrix: Water
Analysis Batch: 222867

Client Sample ID: B32YW1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bicarbonate Alkalinity	213		100	306.0		mg/L		93	80 - 120

Lab Sample ID: 160-14833-5 DU
Matrix: Water
Analysis Batch: 222867

Client Sample ID: B32YW1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Bicarbonate Alkalinity	213		214.0		mg/L		0.5	20
Carbonate Alkalinity	0.54	U	0.54	U	mg/L		NC	20

January 13, 2016
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
 SDG: SL2011

Metals

Prep Batch: 225828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14833-1	B32YV2	Dissolved	Water	3010A	
160-14833-1 MS	B32YV2	Dissolved	Water	3010A	
160-14833-1 MSD	B32YV2	Dissolved	Water	3010A	
160-14833-2	B32YV3	Total/NA	Water	3010A	
160-14833-3	B32YV6	Dissolved	Water	3010A	
160-14833-4	B32YV7	Total/NA	Water	3010A	
160-14833-5	B32YW1	Total/NA	Water	3010A	
160-14833-6	B32YW0	Dissolved	Water	3010A	
160-14833-7	B32YW5	Total/NA	Water	3010A	
160-14833-8	B32YW4	Dissolved	Water	3010A	
160-14833-9	B32YW9	Total/NA	Water	3010A	
160-14833-10	B32YW8	Dissolved	Water	3010A	
160-14833-11	B32YX3	Total/NA	Water	3010A	
160-14833-12	B32YX2	Dissolved	Water	3010A	
160-14833-13	B32YX6	Dissolved	Water	3010A	
160-14833-14	B32YX7	Total/NA	Water	3010A	
LCS 160-225828/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-225828/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 226920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14833-1	B32YV2	Dissolved	Water	6020A	225828
160-14833-1 MS	B32YV2	Dissolved	Water	6020A	225828
160-14833-1 MSD	B32YV2	Dissolved	Water	6020A	225828
160-14833-2	B32YV3	Total/NA	Water	6020A	225828
160-14833-5	B32YW1	Total/NA	Water	6020A	225828
160-14833-6	B32YW0	Dissolved	Water	6020A	225828
160-14833-7	B32YW5	Total/NA	Water	6020A	225828
160-14833-8	B32YW4	Dissolved	Water	6020A	225828
160-14833-9	B32YW9	Total/NA	Water	6020A	225828
160-14833-10	B32YW8	Dissolved	Water	6020A	225828
160-14833-11	B32YX3	Total/NA	Water	6020A	225828
160-14833-12	B32YX2	Dissolved	Water	6020A	225828
160-14833-13	B32YX6	Dissolved	Water	6020A	225828
160-14833-14	B32YX7	Total/NA	Water	6020A	225828
LCS 160-225828/2-A	Lab Control Sample	Total/NA	Water	6020A	225828
MB 160-225828/1-A	Method Blank	Total/NA	Water	6020A	225828

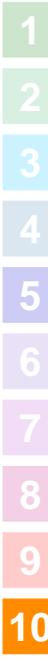
Analysis Batch: 227046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14833-3	B32YV6	Dissolved	Water	6020A	225828
160-14833-4	B32YV7	Total/NA	Water	6020A	225828

Analysis Batch: 232110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14833-1	B32YV2	Dissolved	Water	6020A	225828
160-14833-1 MS	B32YV2	Dissolved	Water	6020A	225828
160-14833-1 MSD	B32YV2	Dissolved	Water	6020A	225828
160-14833-2	B32YV3	Total/NA	Water	6020A	225828
160-14833-3	B32YV6	Dissolved	Water	6020A	225828
160-14833-4	B32YV7	Total/NA	Water	6020A	225828

TestAmerica St. Louis



January 13, 2016
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: X15-063

TestAmerica Job ID: 160-14833-1
 SDG: SL2011

Metals (Continued)

Analysis Batch: 232110 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14833-5	B32YW1	Total/NA	Water	6020A	225828
160-14833-6	B32YW0	Dissolved	Water	6020A	225828
160-14833-7	B32YW5	Total/NA	Water	6020A	225828
160-14833-8	B32YW4	Dissolved	Water	6020A	225828
160-14833-9	B32YW9	Total/NA	Water	6020A	225828
160-14833-10	B32YW8	Dissolved	Water	6020A	225828
160-14833-11	B32YX3	Total/NA	Water	6020A	225828
160-14833-12	B32YX2	Dissolved	Water	6020A	225828
160-14833-13	B32YX6	Dissolved	Water	6020A	225828
160-14833-14	B32YX7	Total/NA	Water	6020A	225828
LCS 160-225828/2-A	Lab Control Sample	Total/NA	Water	6020A	225828
MB 160-225828/1-A	Method Blank	Total/NA	Water	6020A	225828

General Chemistry

Analysis Batch: 222233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14798-A-15 DU	Duplicate	Total/NA	Water	310.1	
160-14798-A-15 MS	Matrix Spike	Total/NA	Water	310.1	
160-14833-2	B32YV3	Total/NA	Water	310.1	
160-14833-4	B32YV7	Total/NA	Water	310.1	
HLCS 160-222233/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-222233/2	Lab Control Sample	Total/NA	Water	310.1	
MB 160-222233/1	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 222867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-14833-5	B32YW1	Total/NA	Water	310.1	
160-14833-5 DU	B32YW1	Total/NA	Water	310.1	
160-14833-5 MS	B32YW1	Total/NA	Water	310.1	
160-14833-7	B32YW5	Total/NA	Water	310.1	
160-14833-9	B32YW9	Total/NA	Water	310.1	
160-14833-11	B32YX3	Total/NA	Water	310.1	
160-14833-14	B32YX7	Total/NA	Water	310.1	
HLCS 160-222867/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-222867/2	Lab Control Sample	Total/NA	Water	310.1	
MB 160-222867/1	Method Blank	Total/NA	Water	310.1	